YAMAHA

DIGITAL MIXING CONSOLE

02R96 Version 2

Owner's Manual

Keep This Manual For Future Reference.

EN

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT! This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.
2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures: Relocate either this product or the device that is being affected by the interference. Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s. In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable. If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park, CA 90620

   The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries.

WARNING: THIS APPARATUS MUST BE EARTHED

IMPORTANT

THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

GREEN-AND-YELLOW :	EARTH
BLUE :	NEUTRAL
BROWN :	LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured GREEN and YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN and YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

* This applies only to products distributed by YAMAHA KEMBLE MUSIC (U.K.) LTD.

ADVARSEL!
Lithiumbatteri—Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandoren.

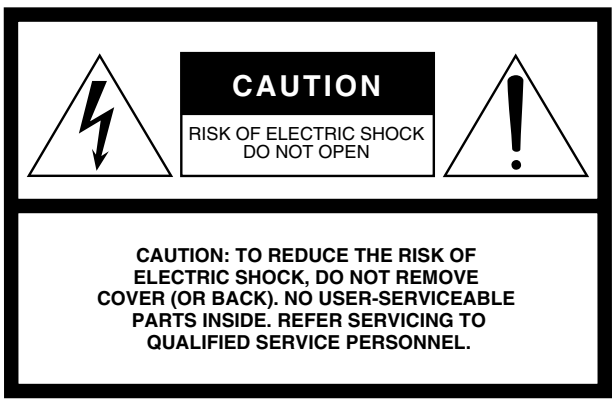
VARNING
Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

NEDERLAND / THE NETHERLANDS

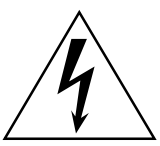
- Dit apparaat bevat een lithium batterij voor geheugen back-up.
- This apparatus contains a lithium battery for memory back-up.
- Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat ann het einde van de levensduur of gelieve dan contact op te nemen met de vertegenwoordiging van Yamaha in uw land.
- For the removal of the battery at the moment of the disposal at the end of life please consult your retailer or Yamaha representative office in your country.
- Gooi de batterij niet weg, maar lever hem in als KCA.
- Do not throw away the battery. Instead, hand it in as small chemical waste.

(lithium disposal)



The above warning is located on the side of the unit.

• Explanation of Graphical Symbols



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Important Information

Warnings

- Connect this unit's power cord only to an AC outlet of the type stated in this Owner's Manual or as marked on the unit. Failure to do so is a fire and electrical shock hazard.
- Be sure to connect to an appropriate outlet with a protective grounding connection. Improper grounding can result in electrical shock.
- Do not allow water to enter this unit or allow the unit to become wet. Fire or electrical shock may result.
- Do not place heavy objects, including this unit, on top of the power cord. A damaged power cord is a fire and electrical shock hazard. In particular, be careful not to place heavy objects on a power cord covered by a carpet.
- Do not place a container with liquid or small metal objects on top of this unit. Liquid or metal objects inside this unit are a fire and electrical shock hazard.
- This unit is equipped with a dedicated ground connection to prevent electrical shock. Before connecting the power plug to an AC outlet, be sure to ground the unit. If the power cord has a three-pin plug, it will provide sufficient grounding so long as the AC outlet is grounded correctly.
- Do not scratch, bend, twist, pull, or heat the power cord. A damaged power cord is a fire and electrical shock hazard.
- Do not remove the unit's cover. You could receive an electrical shock. If you think internal inspection, maintenance, or repair is necessary, contact your dealer.
- Do not modify the unit. Doing so is a fire and electrical shock hazard.
- If lightning begins to occur, turn off the power switch of the unit as soon as possible, and unplug the power cable plug from the electrical outlet.
- If there is a possibility of lightning, do not touch the power cable plug if it is still connected. Doing so may be an electrical shock hazard.
- Use only the included power cord for this unit. Using other types may be a fire and electrical shock hazard.
- The 02R96 has four rear-panel slots for installing mini-YGDAI cards. For technical reasons, certain card combinations are not supported. Before installing any cards, check the Yamaha web site to if your card is compatible. Installing cards that are not endorsed by Yamaha may cause electrical shock, fire, or damage to the unit.
- If the power cord is damaged (i.e., cut or a bare wire is exposed), ask your dealer for a replacement. Using the unit with a damaged power cord is a fire and electrical shock hazard.
- If you notice any abnormality, such as smoke, odor, or noise, or if a foreign object or liquid gets inside the unit, turn it off immediately. Remove the power cord from the AC outlet. Consult your dealer for repair. Using the unit in this condition is a fire and electrical shock hazard.
- Should this unit be dropped or the cabinet be damaged, turn the power switch off, remove the power plug from the AC outlet, and contact your dealer. If you continue using the unit without heeding this instruction, fire or electrical shock may result.

Cautions

- Keep this unit away from the following locations:
  - — Locations exposed to oil splashes or steam, such as near cooking stoves, humidifiers, etc.
  - — Unstable surfaces, such as a wobbly table or slope.
  - — Locations exposed to excessive heat, such as inside a car with all the windows closed, or places that receive direct sunlight.
  - — Locations subject to excessive humidity or dust accumulation.

- Hold the power cord plug when disconnecting it from an AC outlet. Never pull the cord. A damaged power cord is a potential fire and electrical shock hazard.
- Do not touch the power plug with wet hands. Doing so is a potential electrical shock hazard.
- This unit has ventilation holes along the front underside and at the rear to prevent the internal temperature from rising too high. Do not block them. Blocked ventilation holes are a fire hazard. In particular, do not operate the unit while it's on its side, is upside down, or while it's covered with a cloth or dust sheet.
- If you are using the optional MB02R96 Peak Meter Bridge, do not hold only the MB02R96 when moving the 02R96. Otherwise, the meter brackets may be damaged, the main unit may malfunction, or you may be injured if the unit falls.
- This unit is heavy. Use two or more people to carry it.
- When you transport or move the 02R96 with the MB02R96 attached, do not permit impact or stress on the cable connector that connects the MB02R96 to the 02R96. Otherwise, malfunction may occur.
- To relocate the unit, turn the power switch off, remove the power plug from the AC outlet, and remove all connecting cables. Damaged cables may cause fire or electrical shock.
- When setting up the product, make sure that the AC outlet you are using is easily accessible. If some trouble or malfunction occurs, immediately turn off the power switch and disconnect the plug from the outlet. Even when the power switch is turned off, electricity is still flowing to the product at the minimum level. When you are not using the product for a long time, make sure to unplug the power cord from the wall AC outlet.
- If you know you will not use this unit for a long period of time, such as when going on vacation, remove the power plug from the AC outlet. Leaving it connected is a potential fire hazard.
- The inside of the unit should be cleaned periodically. Dust accumulation inside the unit may cause malfunction and is a potential fire hazard. Consult your dealer for information about cleaning.
- To prevent electrical shock when cleaning the unit, remove the power plug from the AC outlet.
- Do not apply oil, grease, or contact cleaner to the faders. Doing so may cause problems with electrical contact or fader motion.
- Do not use the headphones for a long period of time at a high or uncomfortable volume level, since this can cause permanent hearing loss. If you experience any hearing loss or ringing in the ears, consult a physician.

Operating Notes

- XLR-type connectors are wired as follows: pin 1–ground, pin 2–hot (+), and pin 3–cold (–).
- Insert TRS phone jacks are wired as follows: sleeve–ground, tip–send, and ring–return.
- The performance of components with moving contacts, such switches, rotary controls, faders, and connectors, deteriorates over time. The rate of deterioration depends on the operating environment and is unavoidable. Consult your dealer about replacing defective components.
- Using a mobile telephone near this unit may induce noise. If noise occurs, use the telephone away from the unit.
- If the message "WARNING Low Battery!" appears when you turn on this unit, contact your dealer as soon as possible about replacing the internal data backup battery. The unit will still operate correctly, but data other than the presets will be lost.
- Before replacing the batteries, back up your data to a memory card, or another unit by using MIDI Bulk Dump.
- The digital circuits of this unit may induce a slight noise into nearby radios and TVs. If noise occurs, relocate the affected equipment.

- When connecting D-sub cables, be sure to tighten the screws on both sides of the connector securely. To disconnect the cable, loosen the screws completely, then remove the cable by holding the connector part. Do not remove the plug by pulling the cable while the screws are still attached. Otherwise, the connector may be damaged, leading to malfunction.
- When you change the wordclock settings on any device in your digital audio system, some devices may output noise, so turn down your power amps beforehand, otherwise your speakers may be damaged.

Interference

The 02R96 uses high-frequency digital circuits that may cause interference on radio and television equipment located nearby. If interference is a problem, relocate the affected equipment. Using a mobile telephone near the unit may induce noise. In this case use the telephone away from the unit.

02R96 Exclusion of Certain Responsibility

Manufacturer, importer, or dealer shall not be liable for any incidental damages including personal injury or any other damages caused by improper use or operation of the 02R96.

Trademarks

ADAT MultiChannel Optical Digital Interface is a trademark and ADAT and Alesis are registered trademarks of Alesis Corporation. Apogee is a trademark of Apogee Electronics, Inc. Apple, Mac, and Power Macintosh are registered trademarks and Mac OS is a trademark of Apple Corporation, Inc. HUI is a trademark of Mackie Designs, Inc. Intel and Pentium are registered trademarks of Intel Corporation. Nuendo is a registered trademark of Steinberg Media Technologies AG. Pro Tools is a trademark or registered trademark of Digidesign and/or Avid Technology, Inc. Tascam Digital Interface is a trademark and Tascam and Teac are registered trademarks of Teac Corporation. Microsoft and Windows are registered trademarks of Microsoft Corporation, Inc. Waves is a trademark of Waves, Inc. Yamaha is a trademark of Yamaha Corporation. Nuendo and Cubse SX are trademarks of Steinberg Media Technologies GmbH. All other trademarks are the property of their respective holders and are hereby acknowledged.

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Yamaha Web Site

Further information about the 02R96, related products, and other Yamaha professional audio equipment is available on the Yamaha Professional Audio Web site at: <http://www.yamahaproaudio.com/>.

Package Contents

- 02R96 Digital Mixing Console
- CD-ROM
- Power cord
- This manual
- Studio Manager Installation Guide

Optional Extras

- MB02R96 Peak Meter Bridge
- SP02R96 Wooden Side Panels
- mini YGDAI I/O cards

About this Owner's Manual

This *Owner's Manual* covers the 02R96 Digital Mixing Console.

All the information you need in order to operate the 02R96 Digital Mixing Console is contained in this manual. Use the table of contents to familiarize yourself with the manual's organization and to locate tasks and topics, and use the index to locate specific information. Before diving in, it's recommend that you read the "Operating Basics" chapter, starting on page 43.

Each chapter of this manual discusses a specific section or function of the 02R96. The Input and Output Channels are explained in the following chapters: "Input Channels," "Bus Outs," "Aux Sends," and "Stereo Out." Where possible, these chapters have been organized in order of signal flow, from input through to output.

Functions such as EQ and Delay are common to all channels. Rather than repeat the same information over and over, these functions are explained once in the "Common Channel Functions" chapter, which starts on page 107. The Input Channels, Bus Outs, Aux Sends, and Stereo Out chapters contain cross-references to the relevant sections of the "Common Channel Functions" chapter.

Conventions Used in this Manual

The 02R96 features two types of button: physical buttons that you can press (e.g., ENTER and DISPLAY) and buttons that appear on the display pages. References to physical buttons are enclosed in square brackets, for example, "press the [ENTER] button." References to display page buttons are not emphasized, for example, "press the ENTER button."

Display pages can be selected by using the [DISPLAY] buttons or the Left Tab Scroll, Right Tab Scroll, and F1–4 buttons below the display. In order to simplify explanations, only the [DISPLAY] button method is mentioned in the procedures. See "Selecting Display Pages" on page 45 for details on all the ways in which pages can be selected.

Installing the 02R96

The 02R96 should be placed on a strong and stable surface, somewhere that complies with the warnings and cautions listed in the previous sections.

New Functions in 02R96 Version 2

The following functions have been added to the 02R96 as part of the upgrade of the firmware from version 1.2 to version 2.0.

Control Surface

- Encoder mode now features an assignable function, ALT LAYER, which enables you to control the channel level for all 48 channels without switching between layers. → page 50
- There are now 48 assignable Encoder mode parameters. → page 52

Input Channels

- Surround Pan supports 6.1 Surround. → page 85
- You can change the bus assigned to each surround pan channel. → page 87
- The Fader Group Master function enables you to control the overall level of the Fader group channels simultaneously while maintaining the relative level balance of each channel. → page 80
- The Mute Group Master function enables you to mute all channels in a Mute group simultaneously. → page 79
- The on/off status of the Follow Pan button is reflected in the pan and Surround Pan settings. → page 82

Aux Sends

- You can exclude channels from Aux Sends (Mix Minus). → page 104
- You can copy the channel fader positions to Aux Sends. → page 104
- You can set all Send levels to nominal simultaneously. → page 99
- If an Aux Send is set to pre-fader, you can set the Pre point before or after the [ON] button. → page 99

Common Channel Functions

- Input and Output Channel Meter pages indicate the gain reduction being applied by the Gate and Compressor. → page 108
- You can select whether the Input Channel's Pan setting is used when the Input Channel Solo signal is set to Pre Fader. → page 121
- Raising the channel faders for soloed Channels from –∞ can unsolo the Channels. → page 121
- The AUX SELECT [AUX 1]–[AUX 8] buttons enable you to solo or unsolo Aux Sends. → page 121
- The Fader Group Master function enables you to control the overall level of the Fader group channels simultaneously while maintaining the relative level balance of each channel. → page 127
- The Mute Group Master function enables you to mute all channels in a Mute group simultaneously. → page 129

Monitor

- The level of the Surround Monitor can be reset to 85dB SPL. → page 138
- A new parameter has been added to Base Management on the Surround Monitor Setup page. → page 140
- Surround Monitor is also available when Surround mode is set to Stereo.
- You can simultaneously select BUS and SLOT on the Surround Monitor page.
- You can select from Slot Channel 9 through Channel 16 as Surround Monitor signal sources.
- You can simultaneously select 2TRD, D2, D3, A1, or A2, and STEREO, ASSIGN1, or ASSIGN2 as Control Monitor signal sources.
- You can select the Talkback mic signal as the Studio Monitor source. → page 142

Internal Effects and Plug-ins

- You can add optional Add-On Effects to the preset effects. → page 157

Scene Memory

- You can globally apply the Fade Time setting to all scenes. → page 166
- You can globally apply the Recall Safe setting to all scenes. → page 167
- Any channel or parameter settings in the current scene can be copied and pasted into other scenes. → page 168
- You can select more parameters for the Recall Safe function. → page 167

Automix

- You can insert the current mix parameters in a region specified in the Automix data. → page 180
- Touching the faders can punch parameter values in and out if the corresponding OVERWRITE button is set to on. → page 171
- A parameter related to timecode synchronization has been added. → page 234

Remote Control

- The Joystick or the controls in the SELECTED CHANNEL section enable you to control Pro Tools Surround Pan settings.
- The USER DEFINED KEYS enable you to switch windows in the included Studio Manager application software.

Other Functions

- A user-assignable layer enables you to assign Channels to Remote layer targets. → page 228
- You can also select General DAW (for DAW software that supports the Pro Tools protocol) or Cubase SX as the target for a Remote layer. → page 219
- Yamaha's proprietary Advanced DAW protocol has been added to Nuendo, Cubase SX, and General DAW. This enables you to control these devices using the 02R96's SELECTED CHANNEL section. (Controllable functions vary depending on the DAW software and version you are using.)
- You can now assign any of 174 functions to the USER DEFINED KEYS. → page 238
- You can assign the selected channels to a Fader or Mute group using the USER DEFINED KEYS. → page 238
- An Operation Lock function prevents unintentional edits and uses a password to restrict access to panel operation. → page 235
- The Oscillator can output sine wave signals with different frequencies to the L and R channels and odd and even buses. → page 234
- You can set the Auto Direct Out On check box so that if you change a channel's Direct Out destination, the channel Direct Out will automatically be enabled. → page 231
- You can set the Routing ST Pair Link check box so that the routing from paired Channels to the Stereo Bus is linked. → page 231

This product contains a battery that contains perchlorate material.
Perchlorate Material—special handling may apply,
See www.dtsc.ca.gov/hazardouswaste/perchlorate.

* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA. (Perchlorate)

COMPLIANCE INFORMATION STATEMENT
(DECLARATION OF CONFORMITY PROCEDURE)

Responsible Party : Yamaha Corporation of America
Address : 6600 Orangethorpe Ave., Buena Park, Calif. 90620
Telephone : 714-522-9011
Type of Equipment : Digital Mixing Console
Model Name : 02R96

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
1) this device may not cause harmful interference, and
2) this device must accept any interference received including interference that may cause undesired operation.
See user manual instructions if interference to radio reception is suspected.

* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA. (FCC DoC)

This product contains a high intensity lamp that contains a small amount of mercury. Disposal of this material may be regulated due to environmental considerations. For disposal information in the United States, refer to the Electronic Industries Alliance web site: www.eiae.org

* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA. (mercury)

Contents

1 Welcome 16

2 Control Surface & Rear Panel 19

Control Surface 19
Rear Panel 37

3 Operating Basics 43

Connecting the Power Cord 43
Turning On & Off the 02R96 43
About the Display 44
Selecting Display Pages 45
Display Parameter Boxes 45
Parameter Windows 46
Confirmation Messages 46
Title Edit Window 46
Selecting Layers 47
Selecting Channels 48
Selecting Fader Modes 49
Selecting Encoder Modes 50
Assigning Parameters to the ENCODER MODE Assign Buttons 51

4 Analog I/O & the AD Input Section 53

AD Input Section 53
Stereo Out 54
Control Room Monitor Out 54
Studio Monitor Out 54
Omni Outs 54
2TR Analog INs 54

5 Digital I/O & Cascading 55

Wordclocks 55
2TR Digital Outs 57
2TR Digital Ins 58
2TR In Sampling Rate Conversion 58
Slot I/O 59
Dithering Digital Outputs 62
Monitoring Digital Input Channel Status 62
Cascading Consoles 63

6 Input & Output Patching 66

Input Patching 66
Output Patching 68
Naming Input & Output Ports 71
Patch Select Window 71
Patching with the Encoders 72

7 Input Channels 73

Patching Input Channels 73
Metering Input Channels 73
Reversing the Signal Phase 73
Gating Input Channels 74
Attenuating Input Channels 75
EQ'ing Input Channels 75
Grouping Input Channel EQs 76
Input Channel Inserts 76
Compressing Input Channels 76
Grouping Input Channel Compressors 77
Delaying Input Channels 77
Muting Input Channels (ON/OFF) 77
Grouping Input Channel Mutes (ON/OFF) 78
Input Channel Mute Master 79
Setting Input Channel Levels 79
Grouping Input Channel Faders 79
Group Master for Input Channel Faders 80
Routing Input Channels 82
Panning Input Channels 83
Using Surround Pan 85
Assigning Surround Channels to Buses 87
Sending Input Channels to Aux Sends 90
Soloing Input Channels 90
Direct Outs 90
Pairing Input Channels 90
Viewing Input Channel Settings 90
Naming Input Channels 90
Using the MS Stereo Microphone 91

8 Stereo Out 92

Stereo Out Connectors 92
Patching the Stereo Out to Outputs 92
Routing Input Channels to the Stereo Out 92
Sending Bus Outs to the Stereo Out 92
Metering the Stereo Out 92
Monitoring the Stereo Out 92
Attenuating the Stereo Out 92
EQ'ing the Stereo Out 92
Grouping Master EQs 92
Stereo Out Inserts 93
Compressing the Stereo Out 93
Grouping Master Compressors 93
Muting the Stereo Out (ON/OFF) 93
Grouping Master Mutes (ON/OFF) 93
Setting the Stereo Out Level 93
Grouping Master Faders 93
Balancing the Stereo Out 94
Delaying the Stereo Out 94
Viewing Stereo Out Settings 94
Naming the Stereo Out 94

9 Bus Outs 95

Patching Bus Outs to Outputs 95
Routing Input Channels to Bus Outs 95
Metering Bus Outs 95
Monitoring Bus Outs 95
Attenuating Bus Outs 95
EQ'ing Bus Outs 95
Grouping Master EQs 95
Bus Out Inserts 95
Compressing Bus Outs 95
Grouping Master Compressors 95
Muting Bus Outs (ON/OFF) 96
Grouping Master Mutes (ON/OFF) 96
Setting Bus Out Levels 96
Grouping Master Faders 96
Delaying Bus Outs 96
Soloing Bus Outs 96
Pairing Bus Outs 96
Sending Bus Outs to the Stereo Out 97
Viewing Bus Out Settings 97
Naming Bus Outs 97

10 Aux Sends 98

Patching Aux Send Masters to Outputs 98
Setting the Aux Send Mode 98
Pre-Fader or Post-Fader Aux Sends 98
Setting Aux Send Levels 99
Aux Send Pages 99
Viewing Aux Send Settings 101
Panning Aux Sends 103
Excluding Certain Channels from Aux Sends (Mix Minus) 104
Copying Channel Fader Positions to Aux Sends 104
Metering Aux Send Masters 105
Monitoring Aux Send Masters 105
Attenuating Aux Send Masters 105
EQ'ing Aux Send Masters 105
Grouping Master EQs 105
Aux Send Master Inserts 105
Compressing Aux Send Masters 105
Grouping Master Compressors 105
Muting Aux Send Masters (ON/OFF) 105
Grouping Master Mutes (ON/OFF) 106
Settings Aux Send Master Levels 106
Grouping Master Faders 106
Delaying Aux Send Masters 106
Soloing Aux Sends 106
Pairing Aux Sends 106
Viewing Aux Send Master Settings 106
Naming Aux Send Masters 106

11 Common Channel Functions 107

Metering 107
Attenuating Signals 110
Using EQ 111
Grouping Output Channel EQs 114
Using Inserts 115
Compressing Channels 116
Grouping Output Channel Compressors 119
Delaying Channel Signals 120
Soloing Channels 121
Pairing Channels 123
Grouping Output Channel Faders 126
Group Master for the Output Channel Faders 127
Grouping Output Channel Mutes (ON/OFF) 128
Output Channel Mute Master 129
Viewing Channel Parameter Settings 129
Viewing Channel Fader Settings 130
Naming Channels 134

12 Monitoring & Talkback 136

Control Room Monitoring 136
Studio Monitoring 137
Surround Monitoring 138
Using Talkback 142

13 Libraries 143

About the Libraries 143
General Library Operation 143
Channel Library 144
Input Patch Library 145
Output Patch Library 145
Effects Library 146
Bus to Stereo Library 147
Gate Library 148
Comp Library 149
EQ Library 150
Automix Library 151
Surround Monitor Library 152

14 Internal Effects & Plug-Ins 153

About the Effects 153
Patching Effects Processors 153
Preset Effects & Types 153
Editing Effects 156
Adding Optional Add-On Effects 157
About Plug-Ins 158
Configuring Plug-Ins 159
Editing Plug-Ins 160

15 Scene Memories 162

About Scene Memories 162
Auto Scene Memory Update 163
Storing & Recalling Scenes with the SCENE MEMORY Buttons 164
Using the Scene Memory Page 165
Fading Scenes 166
Recalling Scenes Safely 167
Sorting Scenes 168
Copying and Pasting a Scene (Global Paste) 168

16 Automix 170

About Automix 170
What's Recorded in an Automix? 170
Automix Main Page 171
Channel Strip [AUTO] Buttons 174
Automix Memory Page 175
Fader Edit Pages 175
Selecting the Timecode Source & Frame Rate 177
Creating a Time Signature Map 178
Recording an Automix 179
Inserting Mix Parameters into Automix 180
Rerecording Events 181
Parameter Recording 182
Punching In & Out Individual Parameters 183
Playing Back an Automix 184
Editing Events Offline 185
Event Edit Page 188

17 MIDI 190

MIDI & the 02R96 190
MIDI I/O 190
MIDI Port Setup 191
MIDI Channel Setup 192
Assigning Scenes to Program Changes 193
Assigning Parameters to Control Changes 194
Controlling Parameters by Using Parameter Changes 194
Using Bulk Dump 195

18 Pro Tools Remote Layer 196

Configuring Windows Computers 196
Configuring Macintosh Computers (MacOS 8.6 to 9.2.2) 196
Configuring Macintosh Computer (MacOS X) 196
Configuring the 02R96 197
Configuring Pro Tools 197
Control Surface Operation with the Pro Tools Remote Layer 199
Selecting Channels 209
Setting Channel Levels 209
Muting Channels 209
Panning Channels 209
Soloing Channels 210
Viewing Send Destinations 210
Configuring Sends as Pre or Post 210
Setting Send Levels 210
Muting Sends 210
Panning Sends 210
Flip Mode 211
Assigning Inserts/Plug-ins 212
Editing Plug-ins 213
Bypassing Plug-ins 214
Resetting Faders, Sends, & Panpots 214
Navigating the Edit Window 214
Zooming 215
Making Fine Adjustments to the Selected Region 215
Scrub & Shuttle 215
Automation 216
Panner 217

19 Remote Control 219

About the Remote Layer 219
About Machine Control 222
GPI (General Purpose Interface) 225

20 Other Functions 228

Using the User Assignable Layers 228
Using the User Defined Keys 229
Setting Preferences 230
Using the Oscillator 234
Operation Lock 235
Checking the Battery and the System Version 237
Initializing the 02R96 237
Initializing the Password 237

Appendix A: Parameter Lists 238

USER DEFINED KEYS 238
USER DEFINED KEYS Initial Assignments 240
Input Patch Parameters 241
Initial Input Patch Settings 244
Output Patch Parameters 245
Initial Output Patch Settings 249
Initial Input Channel Names 250
Initial Output Channel Names 250
Initial Input Port Names 251
Initial Output Port Names 252
GPI Trigger Source & Target List 253
User Defined Remote Layer Initial Bank Settings 255
Effects Parameters 259
Effects and tempo synchronization 281
Preset EQ Parameters 282
Preset Gate Parameters
(fs = 44.1 kHz) 283
Preset Compressor Parameters (fs = 44.1 kHz) 284
Dynamics Parameters 286

Appendix B: Specifications 291

General Spec 291
Libraries 296
Analog Input Spec 297
Analog Output Spec 297
Digital Input Spec 298
Digital Output Spec 298
I/O Slot Spec (1–4) 299
Control I/O Spec 299
Connector Pin Assignments 300
Dimensions 301

Appendix C: MIDI 302

Scene Memory to Program Change Table 302
MIDI Data Format 319
Format Details 319

Appendix D: Options 335

MB02R96 Peak Meter Bridge 335
SP02R96 Wooden Side Panels 337

Index 338

1 Welcome

Thank you for choosing the Yamaha 02R96 Digital Mixing Console.

The 02R96 Digital Mixing Console offers 24-bit/96 kHz digital audio processing without compromise, comprehensive surround mixing and monitoring, including bass management, and hands-on control of popular DAW (Digital Audio Workstation) systems.

Sonic Spec

- Linear 24-bit, 128-times oversampling A/D converters
- Linear 24-bit, 128-times oversampling D/A converters
- 20 Hz–40 kHz (0.5, –1.5 dB) frequency response at 96 kHz sampling rate
- 105 dB typical dynamic range (AD Input to Stereo Out)
- 32-bit internal signal processing (58-bit accumulator)

Channel Architecture

- 56 Input Channels, with Direct Outs
- 8 Bus Outs, with to Stereo Out routing for subgrouping
- 8 Aux Sends
- Stereo Out
- Channels can be named for easy identification
- Channel library with 127 user memories

I/O Architecture

- 16 analog mic inputs on balanced XLRs (plus 48 V phantom) 24 analog line inputs on balanced phone jacks
- 16 analog inserts
- 32 inputs, 32 outputs via four mini-YGDAI slots and optional I/O cards, which offer a variety of analog and digital I/O options, with support for all the popular digital audio interconnect formats, including AES/EBU, ADAT, Tascam TDIF-1, and mLAN.
- 8 assignable Omni outputs
- 1 AES/EBU, 2 Coaxial 2-track digital input, with sampling rate converters for connecting 44.1/48 kHz legacy digital audio equipment
- 1 AES/EBU, 2 Coaxial 2-track digital output
- 2 analog 2-track inputs
- XLR and phono connector stereo outputs
- Control room monitor outputs
- Dedicated studio monitor outputs
- Double channel digital I/O for use with legacy 44.1/48 kHz multitrack recorders
- Cascade ports for cascading up to four 02R96s (i.e., 224 Input Channels)

I/O Patching

- Any available input port can be patched to the Input Channels, Insert Ins, or Effects inputs
- Direct Outs, Insert Outs, Bus Outs, Aux Sends, and the Stereo Out can be patched to any output port
- Input and output ports can be named for easy identification
- Patches can be stored in the Input and Output Patch libraries

EQ

- 4-band parametric EQ on all Input and Output Channels
- EQ library with 40 presets, 160 user memories

Groups & Pairs

- Horizontal and vertical pairing of Input Channels
- Horizontal pairing of Bus Outs, Aux Sends, and Surround Pan
- 8 Input Channel, 4 Output Channel Fader groups
- 8 Input Channel, 4 Output Channel Mute groups
- 4 Input Channel, 4 Output Channel EQ groups
- 4 Input Channel, 4 Output Channel Compressor groups

Effects

- 4 internal effects processors
- Effects library with 61 presets, 67 user memories (presets 53–61 are used for optional Add-On Effects.)
- Optional Add-On Effect package includes effects that featuring new algorithms.
- Multichannel effects for surround sound processing
- Joystick control of early reflections and reverb with the Reverb 5.1 effect
- Optional Waves 56K effects plug-in cards
- User defined plug-ins for external effects control via MIDI, with Learn function

Dynamics

- Gates on all 56 Input Channels
- Gate library with 4 presets, 124 user memories
- Compressors on all Input Channels and Out Channels (74 in total)
- Compressor library with 36 presets, 92 user memories

Automation

- Dynamic automation of virtually all mix parameters, with 1/4-frame accuracy
- Automix library with 16 memories
- Snapshot style automation with 99 Scene memories, recallable via MIDI or Automix
- Individual fade time settings for all Input and Output faders
- Scene and library recalls
- Punch in/out entire channels with dedicated [AUTO] buttons, or individual parameters
- Editing fader moves with Fader Return, Fader Takeover, Absolute/Relative modes
- Offline event editing includes, erase, copy, move/merge, trim, duplicate, delete, and insert

Surround Sound

- 3-1, 5.1 and 6.1 Surround modes
- Joystick control
- Bass management
- Monitor matrix
- Surround monitor speaker alignment functions
- Surround monitor library with 32 user memories

Remote Control

- Control and manage your 02R96 from your Mac or PC by using the bundled Studio Manager software
- Remote Layers for external equipment control, including predefined targets for controlling DAW systems, and user defined targets for controlling MIDI equipment, with Learn function
- Comprehensive machine control via MMC, including transport, track arming, jog/shuttle, and built-in locator with eight Locate memories
- Assignable GPI (General Purpose Interface) port for external control and "Recording" light

MIDI

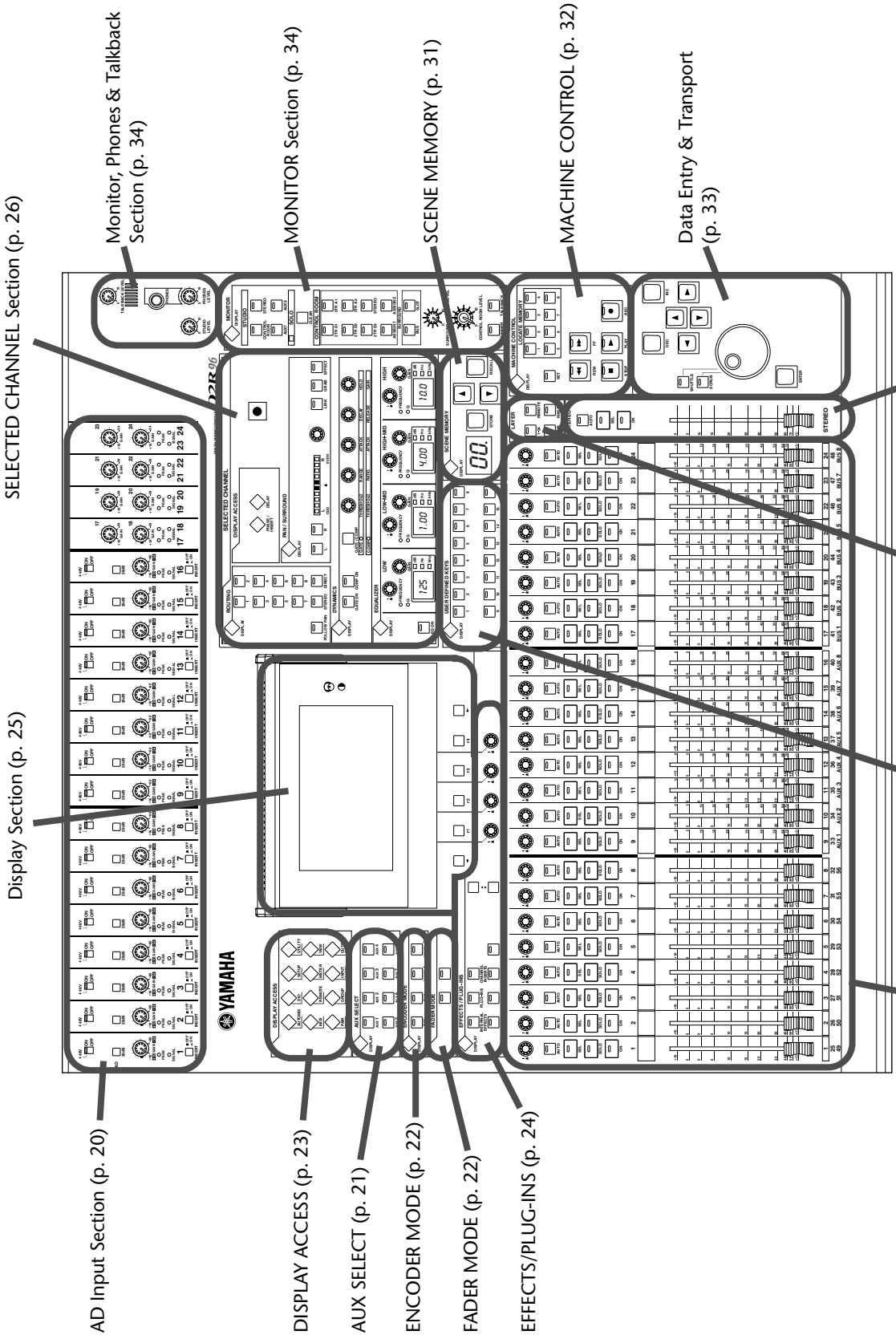
- Standard MIDI ports, USB TO HOST port, or SERIAL TO HOST port
- USB, and SERIAL offer multiport operation
- Scene recall, mix parameter control, Bulk Dump, MTC and MIDI Clock for Automix synchronization, MMC for external machine control

Control Surface

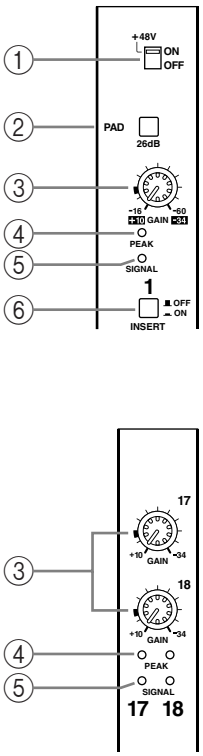
- 25 touch-sensitive 100-mm motorized faders (touch sense used to select channels or punch faders in/out during Automix recording)
- Use the faders to set channel levels or Aux Send levels
- Use the 24 Encoders to control Pan, Aux Send levels, or user assigned parameters
- Channels arranged into two Input Layers, Master Layer, and Remote Layer
- 320 x 240 dot LCD display with fluorescent backlight
- Complete hands-on control of all channel functions via the SELECTED CHANNEL section
- 2-digit Scene memory display
- 4 EQ displays for frequency, gain, and Q
- 16 user-definable buttons make light work of repetitive tasks

2 Control Surface & Rear Panel

Control Surface



AD Input Section



AD Input #1 is shown at the top; AD Inputs #17 and #18 below.

① **+48V ON/OFF switches (AD 1–16)**
These switches turn on and off the +48 V phantom power feed to each INPUT A (XLR-type connector). Phantom power is typically used to power condenser-type microphones or direct boxes. See "Phantom Power (AD 1–16)" on page 53 for more information.

② **PAD switches (AD 1–16)**
These switches turn on and off the 26 dB pad (attenuator) for each AD Input. See "Pad (AD 1–16)" on page 53 for more information.

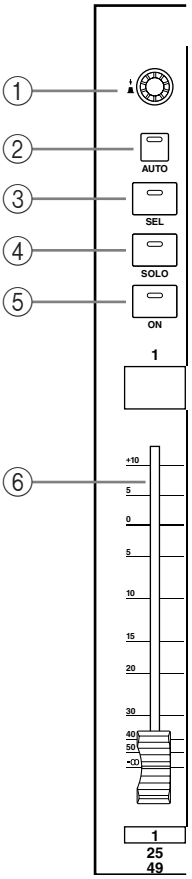
③ **GAIN controls**
These controls adjust the gain of the AD Input Head Amps. They have an input sensitivity of –16 dB to –60 dB or +10 dB to –34 dB when Pad is on. AD Inputs 17 to 24 have an input sensitivity of +10 dB to –34 dB. See "Gain" on page 53 for more information.

④ **PEAK indicators**
These indicators light up when the input signal level is 3 dB below clipping. See "PEAK & SIGNAL Indicators" on page 53 for more information.

⑤ **SIGNAL indicators**
These indicators light up when the input signal level is 20 dB below nominal. See "PEAK & SIGNAL Indicators" on page 53 for more information.

⑥ **INSERT ON/OFF switches (AD 1–16)**
These switches are for turning on and off the AD Input inserts. See "AD Inserts (AD 1–16)" on page 54 for more information.

Channel strips



Channel strip #1 is shown here.

The function of each channel strip depends on the currently selected Layer. See "Selecting Layers" on page 47 for more information.

① **Encoders**
These controls are used to edit Input and Output Channel parameters. Their exact operation depends on the currently selected Encoder mode and Layer. There are two preset Encoder modes, Pan and Aux, and two assignable modes, with over 40 parameters to choose from. See "Selecting Encoder Modes" on page 50 for more information.

The Encoders feature push switches that are used to punch the parameter currently assigned to the Encoders in and out during Automix recording. See "Punching In & Out Individual Parameters" on page 183 for more information.

② **AUTO buttons**
These buttons are used to set Automix recording and playback for each channel. Their exact operation depends on the currently selected Layer. Their indicators light up orange in Record-Ready mode, red while recording, and green during playback. See "Channel Strip [AUTO] Buttons" on page 174 for more information.

③ **SEL buttons**
These buttons are used to select Input and Output Channels for editing with the SELECTED CHANNEL section. Their exact operation depends on the currently selected Layer. The [SEL] button indicator of the currently selected channel lights up. See "Selecting Channels" on page 48 for more information. The [SEL] buttons can also be used to pair channels, and to add and remove channels to and from the EQ, Comp, Fader, and Mute groups.

④ **SOLO buttons**
These buttons are used to solo Channels. The [SOLO] button indicators of channels that are soloed light up. See "Soloing Channels" on page 121 for more information.

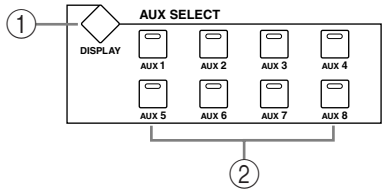
⑤ **ON buttons**
These buttons are used to mute Input and Output Channels. Their exact operation depends on the currently selected Layer. The [ON] button indicators of channels that are on light up.

You can also use these buttons along with the AUX SELECT buttons to turn Aux Sends on and off (Mix Minus) (page 104).

⑥ **Channel faders**
These 100 mm touch-sensitive motorized faders are used to set the levels of Input Channels, Bus Outs, and Aux Sends. Their exact operation depends on the currently selected Fader mode and Layer. See "Selecting Fader Modes" on page 49 for more information. Faders can be grouped for simultaneous operation. See "Grouping Input Channel Faders" on page 79 and "Grouping Output Channel Faders" on page 126 for more information.

Faders can also be used to select Input and Output Channels. See "Auto Channel Select & Touch Sense Select" on page 49 for more information. They can also be used to punch channels in and out during Automix recording. See "Punching In & Out Individual Parameters" on page 183 for more information.

AUX SELECT



① **AUX SELECT DISPLAY button**
This button is used to select the following pages: Aux Send, Aux Send Pan, and Input Channel Aux View. See "Aux Sends" on page 98 for more information.

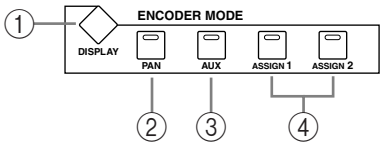
② **AUX 1–8 buttons**
These buttons are used to select Aux Sends when sending Input Channel signals to Aux Sends. The button indicator of the currently selected Aux Send lights up. If the currently selected Aux Send is paired, the indicator of its partner flashes. See "Aux Sends" on page 98 for more information. These buttons can also be used to pair Aux Sends. See "Pairing Channels" on page 123 for more information.

Using these buttons along with the channel [ON] buttons enables you to turn Aux Sends on and off (Mix Minus) (page 104).

Using these buttons along with the LAYER buttons enables you to copy the corresponding channel levels to the Aux Send levels.

These buttons are also used to turn the Aux Out Solo function on and off when Aux/Solo Link is turned on (page 121).

ENCODER MODE



① ENCODER MODE DISPLAY button

This button is used to select the Encoder Mode Assign page. See "Selecting Encoder Modes" on page 50 for more information.

② PAN button

This button is used to select the Pan Encoder mode. Its indicator lights up when this mode is selected. In this mode, the Encoders function as Pan controls while an Input Channel Layer is selected. While the Master Layer is selected, Encoders 1–8 function as Input Channel 49–56 Pan controls, and Encoders 9–24 are inactive. See "Selecting Encoder Modes" on page 50 for more information.

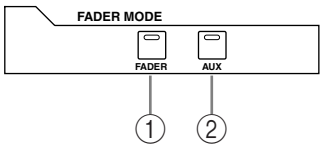
③ AUX button

This button is used to select the Aux Encoder mode. Its indicator lights up when this mode is selected. In this mode, the Encoders function as Aux Send level controls when an Input Channel Layer is selected. While the Master Layer is selected, Encoders 1–8 function as Input Channel 49–56 Aux Send controls, and Encoders 9–24 are inactive. See "Selecting Encoder Modes" on page 50.

④ ASSIGN 1 & 2 buttons

These buttons are used to select the assignable Encoder modes. The button indicator for the currently selected mode lights up. When an assignable mode is selected, the function of the Encoders depends on the assigned parameter. Up to two parameters, from a list of over 40, can be assigned to these two buttons. See "Assigning Parameters to the ENCODER MODE Assign Buttons" on page 51 for more information.

FADER MODE



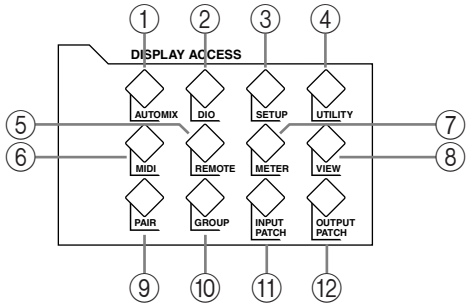
① FADER button

This button selects Fader mode, in which the faders control Input or Output Channel levels, depending on the currently selected Layer. Its indicator lights up when this mode is selected. See "Selecting Fader Modes" on page 49 for more information.

② AUX button

This button selects the Aux Fader mode, in which the faders control Aux Send levels. Its indicator lights up when this mode is selected. See "Selecting Fader Modes" on page 49 for more information.

DISPLAY ACCESS



① AUTOMIX button

This button is used to select the following Automix pages: Automix Main, Automix Memory, Fader Edit, Event Copy, and Event Edit. See "Automix" on page 170 for more information.

② DIO button

This button is used to select the following pages: Word Clock Select, Dither, Cascade In, Cascade Out, Sampling Rate Converter, and Higher Sample Rate Data Transfer Format. See "Digital I/O & Cascading" on page 55 for more information.

③ SETUP button

This button is used to select the following pages: Preferences 1, Preferences 2, Preferences 3, MIDI/TO HOST Setup, GPI Setup, Input Port Name, Output Port Name, Time Reference, Time Signature, and Surround Bus Setup.

④ UTILITY button

This button is used to select the following pages: Oscillator, Channel Status Monitor, Battery Check, and Operation Lock.

⑤ REMOTE button

This button is used to select the Remote page. See "About the Remote Layer" on page 219 for more information.

⑥ MIDI button

This button is used to select the following pages: MIDI Setup, Program Change Assign Table, Control Change Assign Table, and Bulk Dump. See "MIDI" on page 190 for more information.

⑦ METER button

This button is used to select the following pages: Input Channel Meter, Master Meter, Effect 1-4 Input/Output Meter, Stereo Meter, and Metering Position. See "Metering" on page 107 for more information.

⑧ VIEW button

This button is used to select the following pages: Parameter View, Fader View, and Channel Library. See "Viewing Channel Parameter Settings" on page 129, "Viewing Channel Fader Settings" on page 130, and "Channel Library" on page 144 for more information.

⑨ PAIR button

This button is used to select the Input and Output Pair pages. See "Pairing Channels" on page 123 for more information.

⑩ GROUP button

This button is used to select the following pages: Input Channel Fader Group, Input Channel Mute Group, Output Fader Group, Output Mute Group, Input Equalizer Link, Output Equalizer Link, Input Comp Link, Output Comp Link, Input Fader Group Master, and Output Fader Group Master.

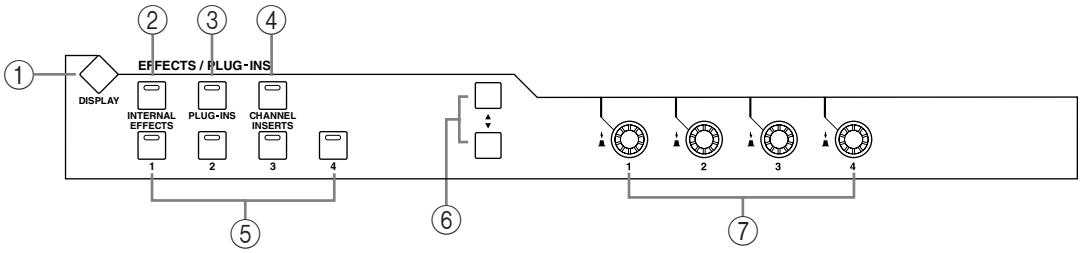
⑪ INPUT PATCH button

This button is used to select the following pages: Input Channel Patch, Input Channel Insert In Patch, Effect Input/Output Patch, Input Channel Name, and Input Patch Library. See "Input Patching" on page 66 for more information.

⑫ OUTPUT PATCH button

This button is used to select the following pages: Slot Output Patch, Omni Out Patch, Output Insert In Patch, Input Channel Direct Out Destination, 2TR Out Digital Patch, Output Channel Name, and Output Patch Library. See "Output Patching" on page 68 for more information.

EFFECTS/PLUG-INS



① EFFECTS/PLUG-INS DISPLAY button

This button is used to select the following pages: Effects Edit, Effects Library, Plug-In Setup, and Plug-In Edit. See "Internal Effects & Plug-Ins" on page 153 for more information.

② INTERNAL EFFECTS button

This button is used to select the internal effects processors in conjunction with the EFFECTS/PLUG-INS [1–4] buttons. Its indicator lights up when it's pressed. See "Editing Effects" on page 156 for more information.

③ PLUG-INS button

This button is used to select the Plug-Ins in conjunction with the EFFECTS/PLUG-INS [1–4] buttons. Its indicator lights up when it's pressed. See "Editing Plug-Ins" on page 160 for more information.

④ CHANNEL INSERTS button

If an internal effects processor or Y56K card effect is inserted in the currently selected channel, the relevant Effects Edit or Plug-In Edit page appears when this button is pressed, and its indicator lights up. In addition, the corresponding EFFECTS/PLUG-INS [1–4] button indicator flashes. If it's a Y56K that is inserted, the [PLUG-INS] button indicator also flashes. If it's an internal effects processor, the [INTERNAL EFFECTS] button indicator flashes. A warning message appears if there's nothing inserted in the currently selected channel. See "Editing Effects" on page 156 and "Editing Plug-Ins" on page 160 for more information.

⑤ EFFECTS/PLUG-INS 1–4 buttons

These buttons are used to select the internal effects processors and Plug-Ins in conjunction with the EFFECTS/PLUG-INS [INTERNAL EFFECTS] and [PLUG-INS] buttons. The button indicator of the currently selected internal effects processor or Plug-In lights up. While the EFFECTS/PLUG-INS [CHANNEL INSERTS] button indicator is lit, all of these buttons are inactive.

⑥ Parameter Up/Down buttons

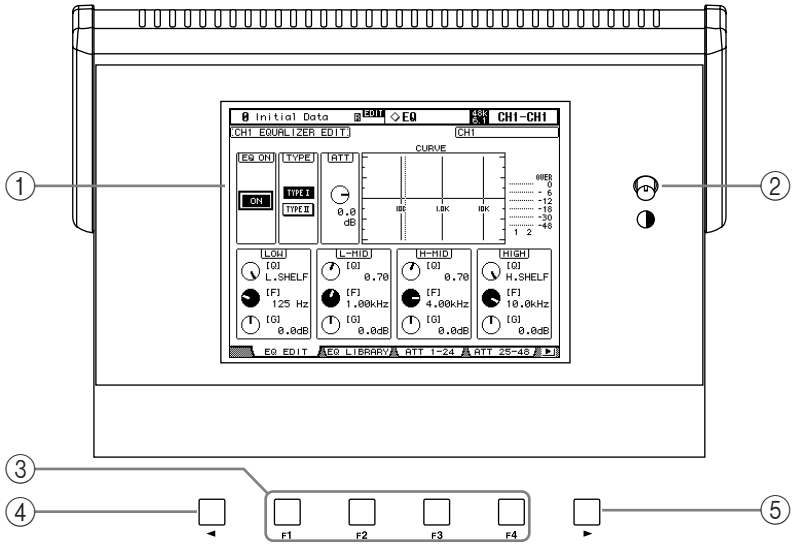
These buttons are used to select the rows of internal effects processor and Plug-In parameters for editing with Parameter controls 1–4. The parameters in the currently selected row appear highlighted. Up to 16 parameters can be displayed at a time. If more are available, an up or down arrow is displayed. See "Editing Effects" on page 156 and "Editing Plug-Ins" on page 160 for more information.

⑦ Parameter controls 1–4

These are rotary controls and push switches. The rotary controls are used to edit the parameters of the currently selected internal effects processor or Plug-In. When the Effects Edit page is selected, they control the currently selected row of parameters, rows being selected by the Parameter Up/Down buttons. See "Editing Effects" on page 156 and "Editing Plug-Ins" on page 160 for more information.

The push switches are used to punch the Effects or Plug-In parameters currently being controlled by the rotary controls in and out during Automix recording. See "Punching In & Out Individual Parameters" on page 183 for more information.

Display Section



① Display

This 320 x 240 dot display with fluorescent backlight displays pages, information on the currently selected Scene and channel, the sampling rate, and more. See "About the Display" on page 44 for more information.

② Contrast control

This control is used to adjust the contrast of the display.

③ F1–F4 buttons

These buttons are used to select the pages whose tabs are currently visible. See "Selecting Display Pages" on page 45 for more information.

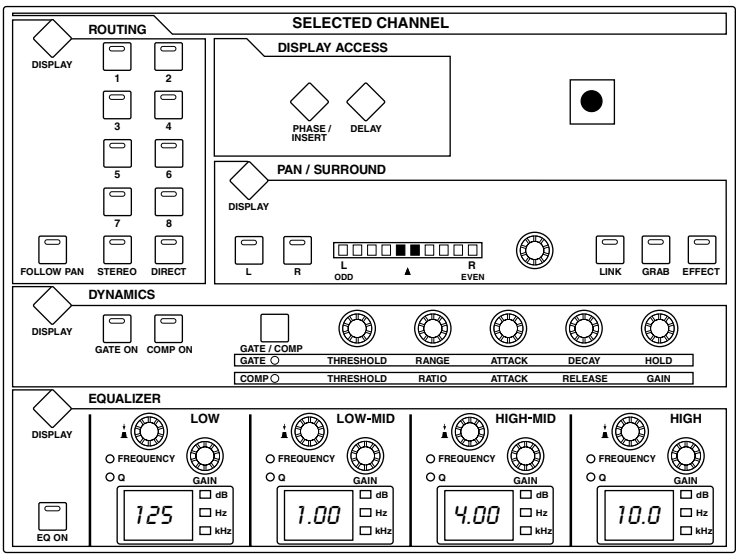
④ Left Tab Scroll button

This button, which is active only when the left Tab Scroll arrow is displayed, is used to display the tabs of pages available to the left of the currently selected page. See "Selecting Display Pages" on page 45 for more information.

⑤ Right Tab Scroll button

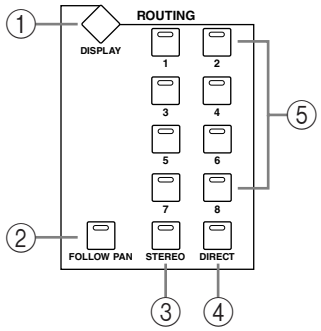
This button, which is active only when the right Tab Scroll arrow is displayed, is used to display the tabs of pages available to the right of the currently selected page. See "Selecting Display Pages" on page 45 for more information.

SELECTED CHANNEL Section



The subsections of the SELECTED CHANNEL section are explained below.

ROUTING



① ROUTING DISPLAY button

This button is used to select the following pages: Input Channel Routing, Bus to Stereo, and Bus to Stereo Library. See "Routing Input Channels" on page 82 and "Sending Bus Outs to the Stereo Out" on page 97 for more information.

② FOLLOW PAN button

This button determines whether or not the currently selected Input Channel's pan setting, and Surround pan setting are applied to the Bus Outs. Its indicator lights up when it's pressed. See "Routing Input Channels" on page 82 for more information.

③ STEREO button

This button is used to route the currently selected Input Channel to the Stereo Out. Its indicator lights up when it's pressed. See "Routing Input Channels" on page 82 for more information.

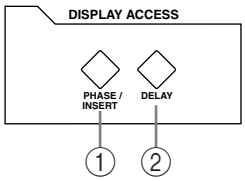
④ DIRECT button

This button is used to route the currently selected Input Channel to its Direct Out. Its indicator lights up when it's pressed. See "Routing Input Channels" on page 82 for more information.

⑤ ROUTING 1–8 buttons

These buttons are used to route the currently selected Input Channel to the Bus Outs. The button indicators of Bus Outs to which the Input Channel is routed light up. See "Routing Input Channels" on page 82 for more information.

DISPLAY ACCESS



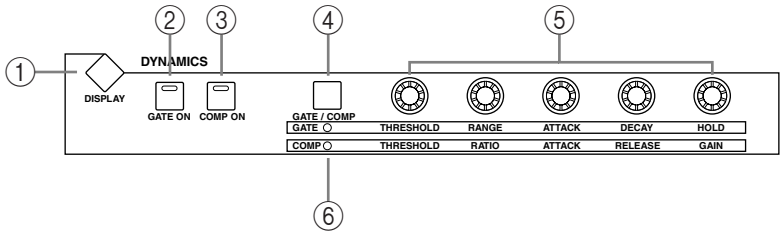
① PHASE/INSERT button

This button is used to select the Input Channel Phase and Insert pages. See "Reversing the Signal Phase" on page 73 and "Using Inserts" on page 115 for more information.

② DELAY button

This button is used to select the Delay pages. See "Delaying Channel Signals" on page 120 for more information.

DYNAMICS



① DYNAMICS DISPLAY button

This button is used to select the following pages: Gate Edit, Gate Library, Comp Edit, and Comp Library. See "Gating Input Channels" on page 74 and "Compressing Channels" on page 116 for more information.

② GATE ON button

This button is used to turn the currently selected Input Channel's Gate on and off. Its indicator lights up when the Gate is on. See "Gating Input Channels" on page 74 for more information.

③ COMP ON button

This button is used to turn the currently selected channel's Compressor on and off. Its indicator lights up when the Compressor is on. See "Compressing Channels" on page 116 for more information.

④ GATE/COMP button

This button is used to set the rotary controls for either Gate or Compressor operation. When an Output Channel is selected, Compressor is selected automatically and cannot be changed. See "Gating Input Channels" on page 74 and "Compressing Channels" on page 116 for more information.

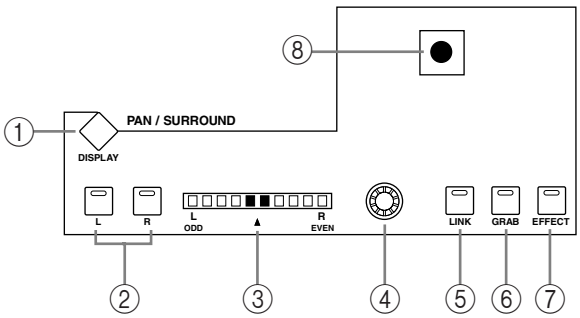
⑤ THRESHOLD, RANGE, ATTACK, DECAY, HOLD (THRESHOLD, RATIO, ATTACK, RELEASE, GAIN) controls

When the GATE/COMP button is set to GATE, these controls set the Threshold, Range, Attack, Decay, and Hold parameters of the currently selected Input Channel's Gate. When it's set to COMP, they set the Threshold, Ratio, Attack, Release, and Gain parameters of the currently selected channel's Compressor. See "Gating Input Channels" on page 74 and "Compressing Channels" on page 116 for more information.

⑥ GATE/COMP indicators

These indicators show whether the rotary controls are set to control a Gate or Compressor. The GATE indicator lights up when they're set to control a Gate; the COMP indicator, when they're set to control a Compressor. See "Gating Input Channels" on page 74 and "Compressing Channels" on page 116 for more information.

PAN/SURROUND



① PAN/SURROUND DISPLAY button

This button is used to select the Input Channel Pan pages, the Surround Mode page, and the Surround Edit pages. See "Panning Input Channels" on page 83 and "Using Surround Pan" on page 85.

② L & R buttons

These buttons can be used to select horizontally or vertically partnered Input or Output Channels. They can be used to select the left and right channels when the Stereo Out is selected. For Input Channels, in Individual Pan mode, the [L] button indicator lights up when an odd/left channel is selected; the [R] button indicator, when an even/right channel is selected. In Gang or Inverse Gang Pan mode, the button indicator of the other channel in the pair flashes while its partner is selected.

③ PAN display

This 10-segment display indicates the pan position of the currently selected Input Channel. When pan is set to center, the center two segments light up. When the Stereo Out is selected, it displays the balance.

④ PAN control

This rotary control is used to pan the currently selected Input Channel. When the Stereo Out is selected, it is used to set the balance. For Input Channels in Gang or Inverse Gang Pan mode, horizontally or vertically paired Input Channels are panned simultaneously. See "Panning Input Channels" on page 83 and "Balancing the Stereo Out" on page 94.

⑤ LINK button

This button, which is enabled only when a Surround mode other than Stereo is selected, is used to link the PAN control and the Joystick so that either control can be used for normal and surround panning. It's a global setting that applies to all Input Channels. Its indicator lights up when the PAN control and Joystick are linked. If the Joystick is set to control effects (i.e., the [EFFECT] button indicator is lit), this button is disabled. See "Panning Input Channels" on page 83 and "Using Surround Pan" on page 85 for more information.

⑥ GRAB button

This button is used to turn on and off Joystick control for the currently selected Input Channel. Its indicator lights up when Grab is on. When Grab is on, the Joystick can be used to control the currently selected Input Channel's surround pan position. When turned off, the Joystick does not control surround pan. In Stereo mode, it controls the currently-selected Input Channel's pan position. If the PAN control and the Joystick are linked (i.e., the [LINK] button indicator is lit), Grab is turned off if the PAN control is adjusted. If the Joystick is set to control effects (i.e., the [EFFECT] button indicator is lit), this button is disabled.

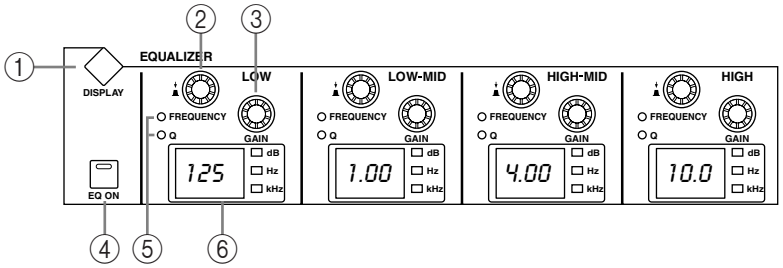
⑦ EFFECT button

This button is used to select the Joystick for parameter control of the Reverb 5.1 effect. Its indicator lights up when Reverb 5.1 effect control is on, and the Joystick cannot be used for surround panning. See "REVERB 5.1" on page 276 for more information.

⑧ Joystick

This control can be used for surround panning, normal panning, or parameter control of the Reverb 5.1 effect. When the [EFFECT] button indicator is lit, the Joystick controls the Reverb 5.1 effect. See "REVERB 5.1" on page 276 for more information. When the [EFFECT] button indicator is off and the [GRAB] button indicator is on, the Joystick controls surround panning of the currently selected Input Channel. When the [EFFECT] button and [GRAB] button indicators are both off, the Joystick can still be used for surround panning if the Auto Grab preference is on. See "Using Surround Pan" on page 85 for more information. When the [EFFECT] button indicator is off but the [GRAB] button and [LINK] button indicators are both on, the Joystick can be used for normal panning in unison with the PAN control. See "Panning Input Channels" on page 83 for more information.

EQUALIZER



① EQUALIZER DISPLAY button

This button is used to select the following pages: Equalizer Edit, Equalizer Library, Input Channel Attenuator/Shifter, and Output Attenuator.

② FREQUENCY/Q controls

These are rotary controls and push switches. The push switches are used to select either frequency or Q. The current setting is shown by the FREQUENCY/Q indicators. The rotary controls are used to set the frequency or Q, as selected by the push switches. See "Using EQ" on page 111 for more information.

③ EQ GAIN controls

These controls are used to set the gain of each EQ band. See "Using EQ" on page 111 for more information.

④ EQ ON button

This button is used to turn the EQ of the currently selected channel on and off. Its indicator lights up when the EQ is on. See "Using EQ" on page 111 for more information.

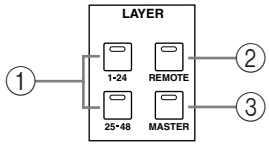
⑤ FREQUENCY/Q indicators

These indicators show whether each FREQUENCY/Q control is set to control frequency or Q. The FREQUENCY indicator lights up when it's set to control frequency; the Q indicator, when it's set to control Q. See "Using EQ" on page 111 for more information.

⑥ EQ displays

Normally these displays show the frequency of each band. When the GAIN is adjusted, the gain value is displayed. When the Q is adjusted, the Q value is displayed. If the gain or Q is not adjusted for two seconds, the frequency value reappears. See "Using EQ" on page 111 for more information.

LAYER



① 1–24 & 25–48 buttons

These buttons select the Input Channel Layers, which determine which Input Channels are controlled by the channel strips. The LAYER button indicator for the currently selected Layer lights up. See "Selecting Layers" on page 47 for more information.

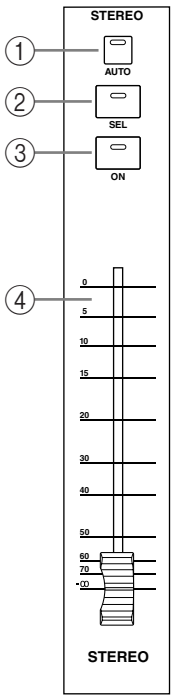
② REMOTE button

This button selects the Remote Layer, which can be used to control external devices, including DAWs. See "About the Remote Layer" on page 219 for more information. Its button indicator lights up when the Remote Layer is selected. See "Selecting Layers" on page 47 for more information.

③ MASTER button

This button selects the Master Layer, from which the channel strips control Input Channels 49–56, Bus Outs, and Aux Sends. Its indicator lights up when the Master Layer is selected. See "Selecting Layers" on page 47 for more information.

STEREO



① AUTO button

This button is used exclusively to set Automix recording and playback for the Stereo Out. Its indicator lights up orange in Record-Ready mode, red while recording, and green during playback. See "Channel Strip [AUTO] Buttons" on page 174 for more information.

② SEL button

The Stereo Out [SEL] button is used exclusively to select the Stereo Out for editing with the SELECTED CHANNEL section. Its indicator lights up when the Stereo Out is selected. Each time it's pressed, the selection toggles between the Stereo Out's left and right channels. See "Selecting Channels" on page 48 for more information. It can also be used to add and remove the Stereo Out to and from EQ, Comp, Fader, and Mute groups.

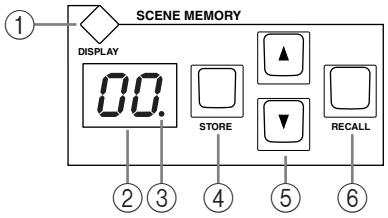
③ ON button

This button is used exclusively to mute the Stereo Out. Its indicator lights up when the Stereo Out is on. See "Muting the Stereo Out (ON/OFF)" on page 93 for more information.

④ Fader

This 100 mm touch-sensitive motorized fader is used exclusively to adjust the level of the Stereo Out. See "Setting the Stereo Out Level" on page 93 for more information. It can be grouped with other Output Channel faders for simultaneous operation. See "Grouping Output Channel Faders" on page 126 for more information. It can also be used to select the Stereo Out, see "Auto Channel Select & Touch Sense Select" on page 49, or to punch the Stereo Out in and out during Automix recording. See "Punching In & Out Individual Parameters" on page 183 for more information.

SCENE MEMORY



① SCENE MEMORY DISPLAY button

This button is used to select the following pages: Scene Memory, Input Channel Fade Time, Output Fade Time, Recall Safe, and Scene Memory Sort. See "Scene Memories" on page 162 for more information.

② Scene memory display

This displays the number of the currently selected Scene memory. See "Scene Memories" on page 162 for more information.

③ Edit indicator

This indicates that the current mix settings no longer match those of the Scene that was recalled last. See "Edit Buffer & Edit Indicator" on page 162 for more information.

④ STORE button

This button is used to store the current Scene to the selected Scene memory. See "Storing & Recalling Scenes with the SCENE MEMORY Buttons" on page 164.

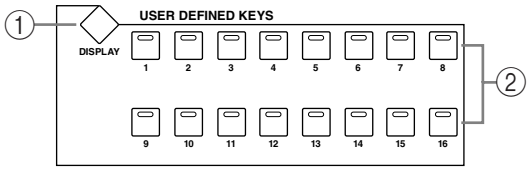
⑤ Scene Up/Down buttons

These buttons are used to select Scene memories. Pressing the Scene Up [▲] button increments the selection; pressing the Scene Down [▼] button decrements the selection. Holding down a button causes the selection to increment/decrement continuously. See "Storing & Recalling Scenes with the SCENE MEMORY Buttons" on page 164.

⑥ RECALL button

This button is used to recall the selected Scene memory. See "Storing & Recalling Scenes with the SCENE MEMORY Buttons" on page 164.

USER DEFINED KEYS



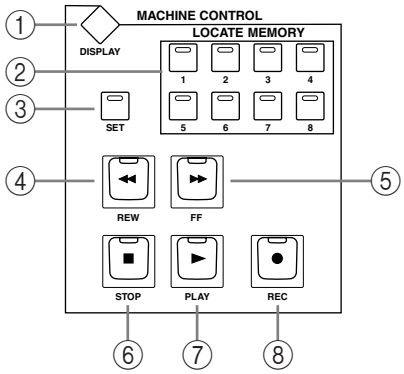
① USER DEFINED KEYS DISPLAY button

This button is used to select the User Defined Key Assign page. See "Using the User Defined Keys" on page 229 for more information.

② USER DEFINED KEYS 1–16 buttons

Up to 16 functions, from a list of over 172, can be assigned to these buttons. See "Using the User Defined Keys" on page 229 for more information. These buttons have specific functions when the DAW Remote Layer is selected. See "About the Remote Layer" on page 219 for more information.

MACHINE CONTROL



① MACHINE CONTROL DISPLAY button

This button is used to select the Locate Memory and Machine Configuration pages. See "Setting the Locate Memories" on page 224 and "Configuring Machines" on page 222 respectively for more information.

② LOCATE MEMORY 1–8 buttons

Pressing these buttons transmits Locate commands to the target machine (DAW, MMC) in order to locate the Locate memory points. Their indicators light up momentarily when they're pressed. See "Using the Locator" on page 224 for more information.

③ SET button

This button is used when specifying the eight Locate points. Its indicator lights up while it's pressed. See "Using the Locator" on page 224 for more information.

④ REW button

This button starts rewind on the target machine (DAW, MMC). Its indicator lights up while rewinding is in progress. See "Transport Buttons" on page 223.

⑤ FF button

This button starts fast forward on the target machine (DAW, MMC). Its indicator lights up while fast forwarding is in progress. See "Transport Buttons" on page 223.

⑥ STOP button

This button stops the target machine (DAW, MMC). Its indicator lights up momentarily when it's pressed. See "Transport Buttons" on page 223.

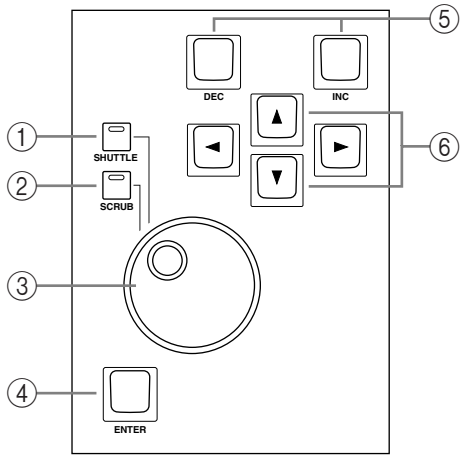
⑦ PLAY button

This button starts playback on the target machine (DAW, MMC). Its indicator lights up while playback is in progress. See "Transport Buttons" on page 223.

⑧ REC button

This button is used in conjunction with the [PLAY] button to start recording on the target machine (DAW, MMC). Its indicator lights up while recording is in progress. See "Transport Buttons" on page 223.

Data Entry & Transport



① SHUTTLE button

This button is used to set the Parameter wheel to Shuttle mode for machine control (DAW, MMC). Its indicator lights up when Shuttle mode is on. See "Using Shuttle & Scrub" on page 223 for more information.

② SCRUB button

This button is used to set the Parameter wheel to Scrub mode for machine control (DAW, MMC). Its indicator lights up when Scrub mode is on. See "Using Shuttle & Scrub" on page 223 for more information.

③ Parameter wheel

The Parameter wheel is used to edit parameter values, scroll through Scene and library lists, and to position the cursor when titling Scenes, Effects, and so on. Its detented action gives it a positive feel, allowing quick and accurate parameter editing. Turning it clockwise increases parameter values; turning it counterclockwise decreases them. Turning it fast allows quick parameter editing.

The Parameter wheel is also used with the Shuttle and Scroll functions. See "Using Shuttle & Scrub" on page 223 for more information.

④ ENTER button

This button is used to select and finalize parameter settings, to set on/off-type parameters, such as EQ ON/OFF, and to enter characters when titling Scenes, Effects, and so on. When a Pan control is selected on a Pan display page, pressing this button resets the pan position to center. For certain parameters, the [ENTER] button supports double clicking (i.e., two quick presses).

⑤ DEC & INC buttons

These buttons are used to adjust parameter values. Pressing the [INC] button increases the value of the currently selected parameter by one. Pressing the [DEC] decreases it. Pressing and holding either button causes the parameter value to change continuously.

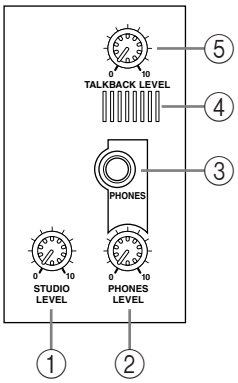
These buttons can also be used to set on/off-type parameters, such as EQ ON/OFF. When such a parameter is selected, pressing the [DEC] button turns the function off, pressing the [INC] button turns it on.

These buttons can also used to scroll through Scene and library lists.

⑥ Cursor buttons

These buttons are used to move the cursor around the display pages, selecting parameters and options. The cursor appears as a flashing box, making it easy to see which parameter or option is currently selected. Holding down a cursor button moves the cursor continuously in the respective direction.

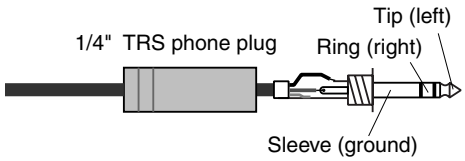
Monitor, Phones & Talkback Section



① **STUDIO LEVEL control**
This control is used to set the level of the STUDIO MONITOR OUT. See "Studio Monitoring" on page 137 for more information.

② **PHONES LEVEL control**
This control is used to set the level of the PHONES. See "Control Room Monitoring" on page 136 for more information.

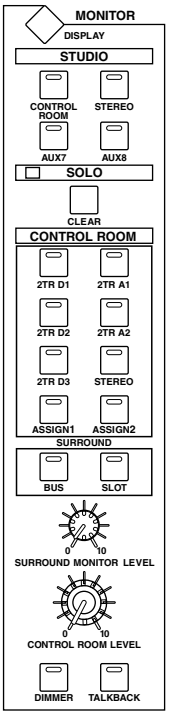
③ **PHONES jack**
This stereo TRS phone jack outputs the Control room signal for monitoring via a pair of stereo headphones.



④ **Talkback mic**
This built-in microphone is used for talkback. See "Using Talkback" on page 142 for more information.

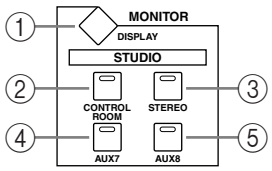
⑤ **TALKBACK LEVEL control**
This control is used to set the level of the built-in talkback microphone. See "Using Talkback" on page 142 for more information.

MONITOR Section



The various subsections of the MONITOR section are explained below.

STUDIO



① **MONITOR DISPLAY button**
This button is used to select the following pages: Solo Setting, Control Room Setup, Talkback Setup, Surround Monitor, Surround Monitor Setup, Surround Monitor Patch, and Surround Monitor Library. See "Configuring Solo" on page 121, "Control Room Monitoring" on page 136 "Using Talkback" on page 142, and "Surround Monitoring" on page 138 respectively for more information.

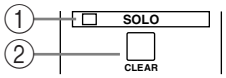
② **CONTROL ROOM button**
This button selects the Control Room Monitor signal as the Studio Monitor signal source. Its indicator lights up when this source is selected. See "Studio Monitoring" on page 137 for more information.

③ **STEREO button**
This button selects the Stereo Out signal as the Studio Monitor signal source. Its indicator lights up when this source is selected. See "Studio Monitoring" on page 137 for more information.

④ **AUX 7 button**
This button selects Aux Send #7 as the Studio Monitor signal source. Its indicator lights up when this source is selected. See "Studio Monitoring" on page 137 for more information.

⑤ **AUX 8 button**
This button selects Aux Send #8 as the Studio Monitor signal source. Its indicator lights up when this source is selected. See "Studio Monitoring" on page 137 for more information.

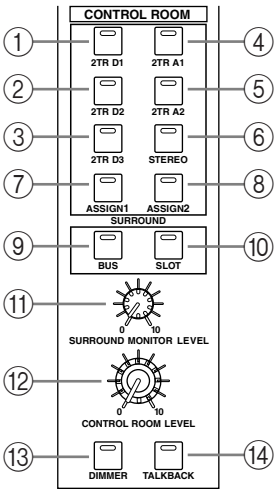
SOLO



① **SOLO indicator**
This indicator flashes when one or more Channels are soloed, indicating that the Solo function is active. See "Soloing Channels" on page 121 for more information.

② **CLEAR button**
This button can be used to unsolo all soloed Channels. See "Soloing Channels" on page 121 for more information.

CONTROL ROOM



① **STEREO 2TR D1 button**
This button selects the 2TR IN DIGITAL AES/EBU 1 as the Control Room Monitor signal source. Its indicator lights up when this source is selected. See "Control Room Monitoring" on page 136 for more information.

② **STEREO 2TR D2 button**
This button selects the 2TR IN DIGITAL COAXIAL 2 as the Control Room Monitor signal source. Its indicator lights up when this source is selected. See "Control Room Monitoring" on page 136 for more information.

③ **STEREO 2TR D3 button**
This button selects the 2TR IN DIGITAL COAXIAL 3 as the Control Room Monitor signal source. Its indicator lights up when this source is selected. See "Control Room Monitoring" on page 136 for more information.

④ **STEREO 2TR A1 button**
This button selects the 2TR IN ANALOG 1 as the Control Room Monitor signal source. Its indicator lights up when this source is selected. See "Control Room Monitoring" on page 136 for more information.

⑤ **STEREO 2TR A2 button**
This button selects the 2TR IN ANALOG 2 as the Control Room Monitor signal source. Its indicator lights up when this source is selected. See "Control Room Monitoring" on page 136 for more information.

⑥ **STEREO button**
This button selects the Stereo Out as the Control Room Monitor signal source. Its indicator lights up when this source is selected. See "Control Room Monitoring" on page 136 for more information.

⑦ **STEREO ASSIGN 1 button**
This button is used to select the assigned Output Channel as the Control Room Monitor signal source. Its indicator lights up when this source is selected. See "Control Room Setup" on page 137 for more information.

⑧ **STEREO ASSIGN 2 button**
This button is used to select the assigned Output Channel as the Control Room Monitor signal source. Its indicator lights up when this source is selected. See "Control Room Setup" on page 137 for more information.

⑨ **SURROUND BUS button**
This button is used to select the Bus Outs as the Surround Monitor signal source. Its indicator lights up when this source is selected. See "Surround Monitoring" on page 138 for more information.

⑩ **SURROUND SLOT button**
This button is used to select the assigned Slot's Inputs as the Surround Monitor signal source. Its indicator lights up when this source is selected. See "Surround Monitoring" on page 138 for more information.

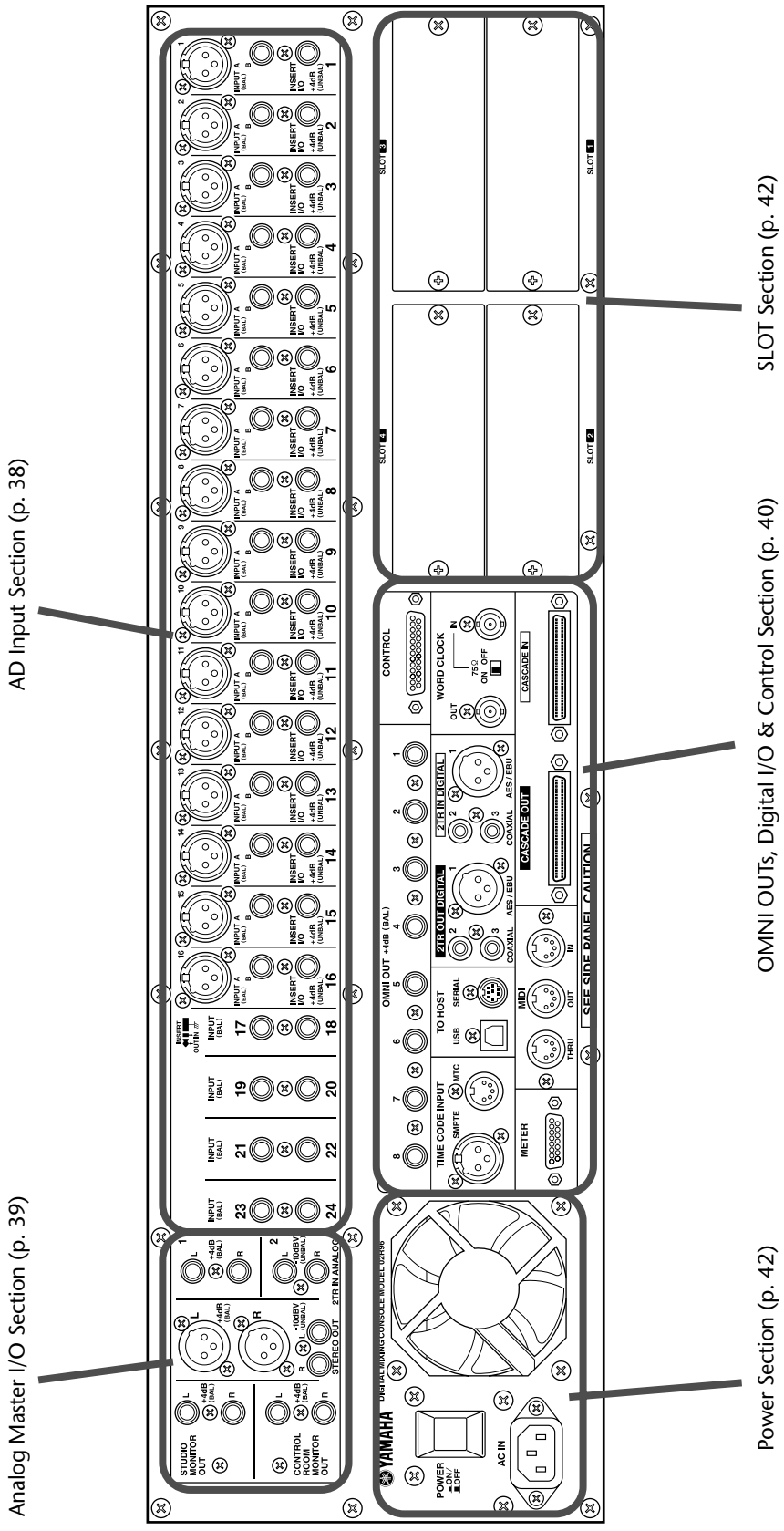
⑪ **SURROUND MONITOR LEVEL control**
This control is used to adjust the level of the Surround Monitor signals. See "Surround Monitoring" on page 138 for more information.

⑫ **CONTROL ROOM LEVEL control**
This control is used to adjust the level of the Control Room Monitor signal. See "Control Room Monitoring" on page 136 for more information.

⑬ **DIMMER button**
This button is used to dim the Control Room Monitor and Surround Monitor signals. Its indicator lights up when these signals are dimmed. See "Control Room Monitoring" on page 136 for more information.

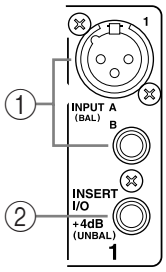
⑭ **TALKBACK button**
This button is used to turn on the Talkback function, which distributes the Talkback mic signal to the Studio Monitor Outs, Slot Inputs and Omni Outputs specified on the Talkback Setup page. See "Using Talkback" on page 142 for more information.

Rear Panel


AD Input Section (p. 38)
Analog Master I/O Section (p. 39)
OMNI OUTs, Digital I/O & Control Section (p. 40)
SLOT Section (p. 42)
Power Section (p. 42)

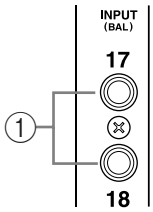
AD Input Section

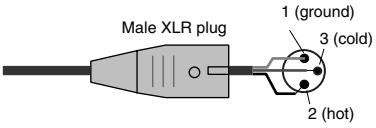
AD Input #1 is shown at the top; AD Inputs #17 and #18 below

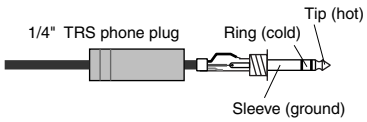


① INPUT A & B (BAL) connectors

AD Inputs 1 through 16 feature balanced XLR-3-31-type connectors and balanced 1/4-inch phone jacks, both with a nominal input range of –60 dB to +10 dB. Phantom powering (+48 V) is supplied to the XLR-type connectors, with individual ON/OFF switches on each input. The phone jacks, which can also be used with unbalanced phone plugs, have priority over the XLR-type connectors, so when a phone plug is inserted, the XLR-type connector is disconnected. AD Inputs 17–24 feature balanced 1/4-inch phone jacks. AD Inputs can be patched individually to the Input Channels or Insert Ins. See "AD Input Section" on page 53 for more information.

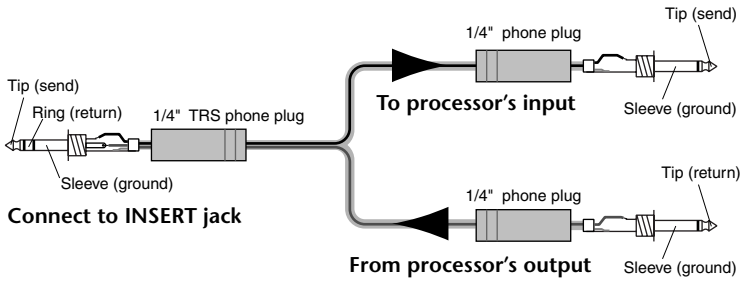




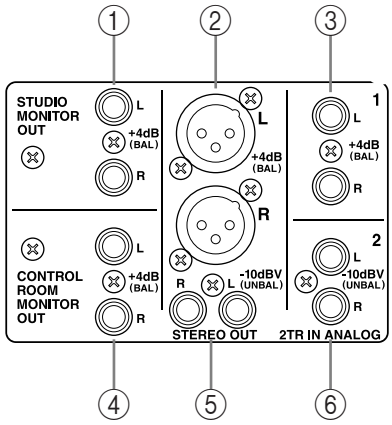


② INSERT I/O +4dB (UNBAL) connectors (AD 1–16)

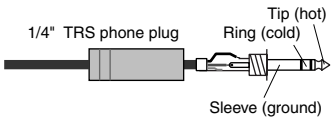
These unbalanced 1/4-inch TRS phone jacks are used to insert external signal processors, etc., into AD Inputs 1 through 16. They are wired: sleeve–ground, ring–return, tip–send. The nominal signal level is +4 dB. Inserts can be turned on and off individually by using the INSERT ON/OFF switches. See "AD Input Section" on page 53 for more information.



Analog Master I/O Section

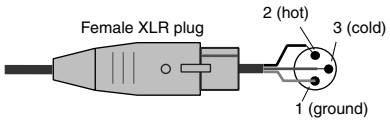


① STUDIO MONITOR OUT +4 dB (BAL)



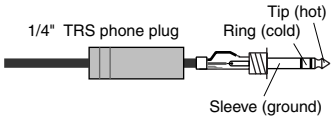
These balanced 1/4-inch TRS phone jacks, nominal output level +4 dB, output the analog Studio Monitor signal for monitoring in the actual studio. The source, which is selected by using the STUDIO buttons in the MONITOR section, can be Aux Send #7, Aux Send #8, the Stereo Out, or Control Room. The output level is controlled by the STUDIO LEVEL control. See "Studio Monitoring" on page 137 for more information.

② STEREO OUT +4 dB (BAL)



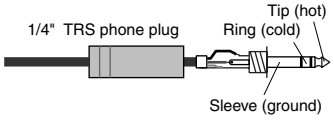
These balanced XLR-3-32-type connectors, nominal output level +4 dB, output the analog Stereo Out signal and are typically connected the stereo inputs of a 2-track recorder. They are wired pin 1–ground, pin 2–hot (+), and pin 3–cold (–). See "Stereo Out Connectors" on page 92.

③ 2TR IN ANALOG 1 +4 dB (BAL)



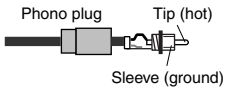
These balanced 1/4-inch TRS phone jacks, nominal input level +4 dB, are typically used to connect the analog stereo outputs of a 2-track recorder. Signals connected here can be monitored via the CONTROL ROOM MONITOR OUT by pressing the CONTROL ROOM [2TR A1] button. In addition, these inputs can be patched to Input Channels or Insert Ins. See "2TR Analog INs" on page 54.

④ CONTROL ROOM MONITOR OUT +4 dB (BAL)



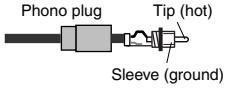
These balanced 1/4-inch TRS phone jacks, nominal output level +4 dB, output the analog Control Room Monitor signal and are typically used to feed the control room's main monitors. See "Control Room Monitoring" on page 136 for more information.

⑤ STEREO OUT –10 dBV (UNBAL)



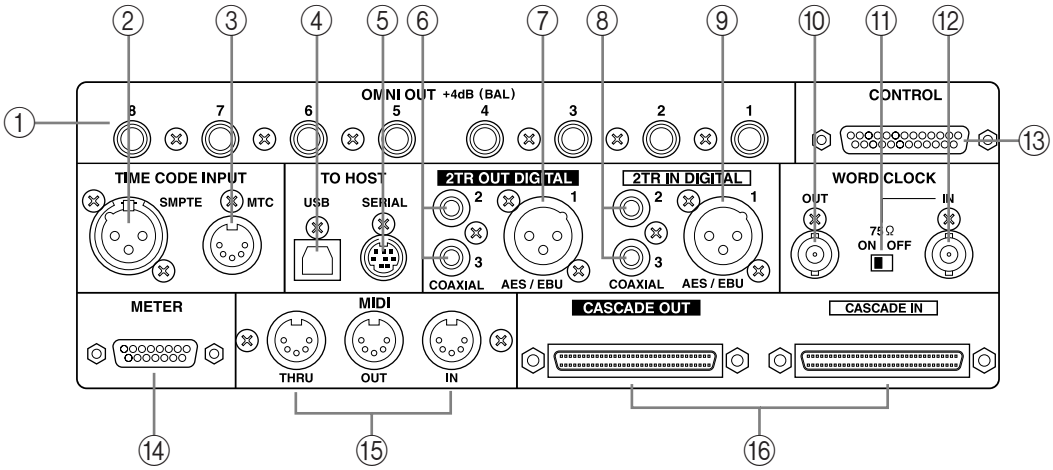
These unbalanced phono connectors, nominal output level –10 dBV, output the analog Stereo Out signal and are typically connected to the stereo inputs of a 2-track recorder. See "Stereo Out Connectors" on page 92.

⑥ 2TR IN ANALOG 2 –10 dBV (UNBAL)



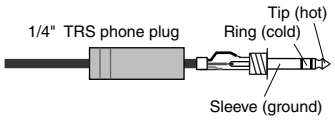
These unbalanced phono connectors, nominal input level –10 dBV, are typically used to connect the analog stereo outputs of a 2-track recorder. Signals connected here can be monitored via the CONTROL ROOM MONITOR OUTs by pressing the CONTROL ROOM [2TR A2] button. In addition, these inputs can be patched to Input Channels or Insert Ins. See "2TR Analog INs" on page 54.

OMNI OUTs, Digital I/O & Control Section



① OMNI OUT +4dB (BAL)

These balanced 1/4-inch TRS phone jacks, nominal output level +4 dB, provide eight analog outputs that can be patched to the following: Bus Outs, Aux Sends, the Stereo Out, Insert Outs, Direct Outs, or Surround Monitor Channels. See "Omni Outs" on page 54.



② SMPTE TIME CODE INPUT connector

This balanced XLR-3-31-type connector is used to input SMPTE timecode for synchronizing the Automix function. See "Selecting the Timecode Source & Frame Rate" on page 177.

③ MTC TIME CODE INPUT connector

This 5-pin DIN connector is used to input MTC for synchronizing the Automix function. See "Selecting the Timecode Source & Frame Rate" on page 177.

④ USB TO HOST port

This USB port is for MIDI communication between the 02R96 and a host computer with a USB port. See "MIDI I/O" on page 190 for more information.

⑤ SERIAL TO HOST port

This 8-pin mini DIN port is for MIDI communication between the 02R96 and a host computer with a serial port. See "MIDI I/O" on page 190 for more information.

⑥ 2TR OUT DIGITAL COAXIAL 2 & 3

These phono connectors output consumer format (IEC-60958) digital audio, and are typically connected to the digital stereo inputs of 2-track recorders. The following signals can be patched to these outputs: Stereo Out, Bus Outs, Aux Sends, Direct Outs, Insert Outs, and Control Room. Dither can be applied for digital audio transfer to lower-resolution systems. See "2TR Digital Outs" on page 57 for more information.

⑦ 2TR OUT DIGITAL AES/EBU 1

This XLR-3-32-type connector outputs AES/EBU format digital audio, and is typically connected to the digital stereo input of a 2-track recorder. The following signals can be patched to this output: Stereo Out, Bus Outs, Aux Sends, Direct Outs, Insert Outs, and Control Room. Dither can be applied for digital audio transfer to lower-resolution systems. See "2TR Digital Outs" on page 57 for more information.

⑧ 2TR IN DIGITAL COAXIAL 2 & 3

These phono connectors accept consumer format (IEC-60958) digital audio, and are typically used to connect the digital stereo outputs of 2-track recorders. Signals connected here can be monitored via the CONTROL ROOM MONITOR OUT by pressing the CONTROL ROOM [2TR D2] or [2TR D3] button. In addition, these inputs can be patched to Input Channels or Insert Ins. Unsynchronized digital audio signals can be converted by the internal sampling rate converters. See "2TR Digital Ins" on page 58 for more information.

⑨ 2TR IN DIGITAL AES/EBU 1

This XLR-3-31-type connector accepts AES/EBU format digital audio, and is typically used to connect the digital stereo output of a 2-track recorder. Signals connected here can be monitored via the CONTROL ROOM MONITOR OUT by pressing the CONTROL ROOM [2TR D1] button. In addition, this input can be patched to Input Channels or Insert Ins. Unsynchronized digital audio signals can be converted by the internal sampling rate converters. See "2TR Digital Ins" on page 58 for more information.

⑩ WORD CLOCK OUT connector

This BNC connector outputs a wordclock signal at the same clock rate as the 02R96. See "Wordclock Connections" on page 55 for more information.

⑪ WORD CLOCK 75Ω ON/OFF termination switch

This switch applies 75Ω termination to the WORD CLOCK IN. See "Terminating External Wordclocks" on page 57 for more information.

⑫ WORD CLOCK IN connector

This BNC connector is for connecting an external wordclock signal. See "Selecting the Wordclock Source" on page 56 for more information.

⑬ CONTROL port

This 25-pin D-sub connector provides access to the GPI (General Purpose Interface) through which external equipment can be triggered when specified 02R96 faders or USER DEFINE KEYS are operated. It can also be used to control a "RECORDING" light outside of a studio, to trigger the Solo function of an 02R Digital Recording Console, or to turn on Talkback from an external device. See "GPI (General Purpose Interface)" on page 225 for more information.

⑭ METER port

This 15-pin D-sub connector is for connecting the optional MB02R96 Peak Meter Bridge.

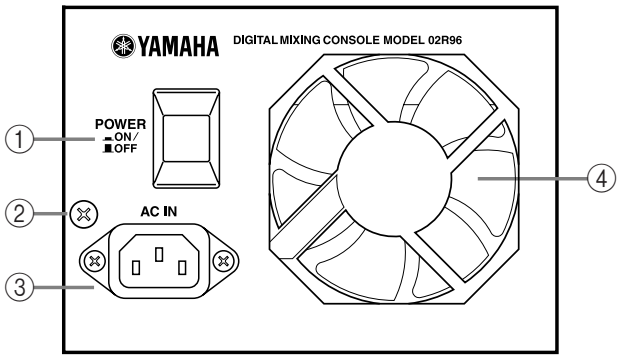
⑮ MIDI IN, OUT & THRU ports

These standard MIDI IN, OUT, and THRU ports are used to connect the 02R96 to other MIDI equipment. Supported MIDI messages include Program Changes for Scene recall, Control Changes and Parameter Changes for real-time parameter control, Bulk Dump for data storage, MIDI Clock, MTC, and MMC. See "MIDI I/O" on page 190 for more information.

⑯ CASCADE IN & OUT ports

These 64-pin connectors can be used to cascade up to four 02R96s to create a multiple-unit mixing system. The 02R96 can also be cascaded with an 02R Digital Recording Console. See "Cascading Consoles" on page 63 for more information.

Power Section



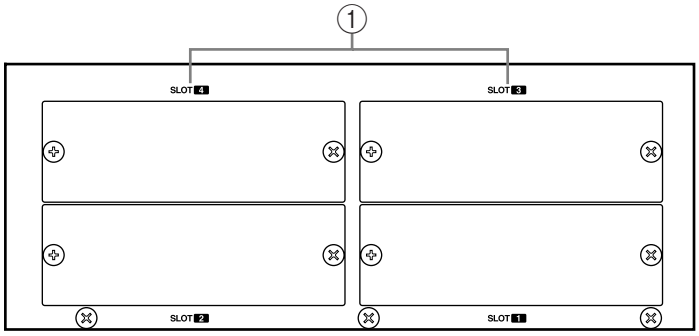
① **POWER ON/OFF switch**
This switch is used to turn on the power to the 02R96. See "Turning On & Off the 02R96" on page 43 for more information.

② **Grounding screw**
For electrical safety reasons, and correct operation of the touch-sensitive faders, it's important that the 02R96 is grounded properly. The supplied power cord has a three-pin plug, and if the ground terminal of the AC outlet is grounded, then the unit will be grounded sufficiently through the power cord. If the AC outlet does not provide a suitable ground, this screw must be connected to a suitable ground point. Grounding is also an effective method for eliminating hum, interference, and other noise.

③ **AC IN connector**
This connector is used to connect the 02R96 to an AC outlet via the supplied power cord. See "Connecting the Power Cord" on page 43 for more information.

④ **Cooling fan**
The cooling fan expels air out through this outlet. If the airflow is restricted, the 02R96 may overheat, so make sure this outlet is not blocked.

SLOT Section



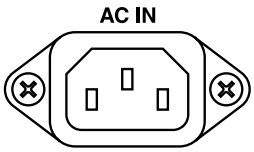
① **SLOT 1–4**
These four slots are for use with optional mini YGDAI cards, which offer a variety of analog and digital I/O options. See "Slot I/O" on page 59 for more information. Slot inputs can be patched to Input Channels or Insert Ins. See "Input Patching" on page 66 for more information. The following signals can be patched to the Slot Outputs: Bus Outs, Aux Sends, Stereo Out, Insert Outs, Direct Outs, and Surround Monitor Channels. See "Output Patching" on page 68 for more information.

3 Operating Basics

Connecting the Power Cord

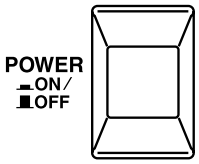
Warning: Turn off all equipment connected to the 02R96 before making any power connections.

Connect the socket-end of the supplied power cord to the AC IN on the rear panel of the 02R96. Connect the plug-end to a suitable AC wall outlet, one that conforms to the power supply requirements stated on the 02R96's rear panel.



Turning On & Off the 02R96

To prevent loud clicks and thumps in your speakers, turn on your audio equipment in the following order (reverse this order when turning off)—sound sources, multitrack and master recorders, 02R96, monitoring power amplifiers.



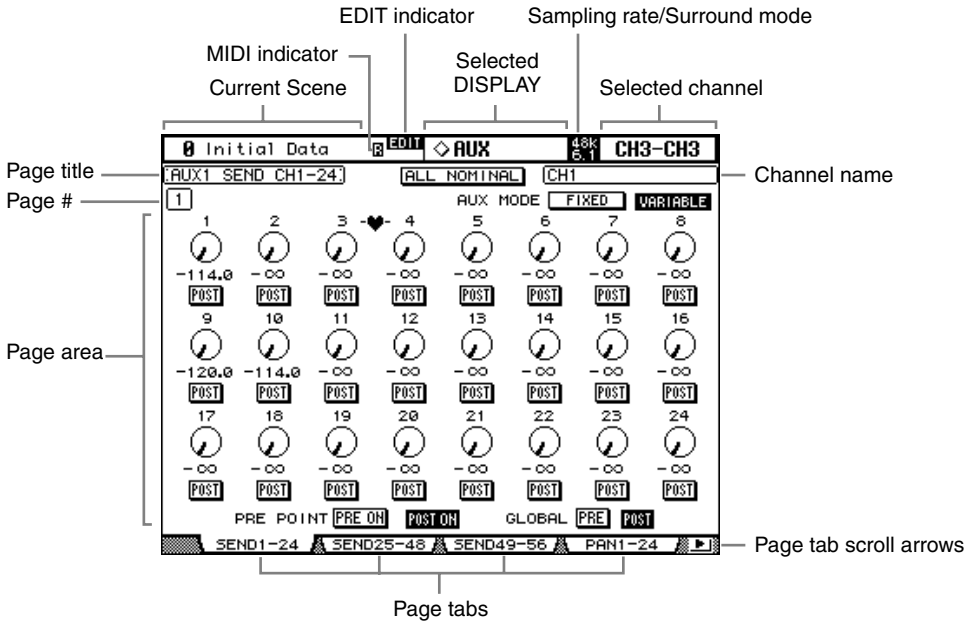
1 **To turn on the 02R96, press the [POWER] switch.**

The startup page appears for a while, and then the last selected display page appears.

2 **To turn off the 02R96, press the [POWER] switch again.**

About the Display

All 02R96 mix parameters can be edited on the various display pages.



Current Scene: The number and title of the currently selected Scene memory are displayed here. See "Storing & Recalling Scenes with the SCENE MEMORY Buttons" on page 164 for more information. If the selected Scene is write-protected, a padlock icon appears. See "Using the Scene Memory Page" on page 165 for more information.

MIDI indicator: This indicator appears when the 02R96 is receiving MIDI data via the MIDI IN port, USB TO HOST port, or SERIAL TO HOST port.

EDIT indicator: This indicator appears when the current mix settings no longer match those of the Scene that was recalled last. It works in unison with the Edit indicator dot on the SCENE MEMORY display. See "Edit Buffer & Edit Indicator" on page 162 for more information.

Selected DISPLAY: This indicates the currently selected display page group, for example, AUX, EQ, or AUTOMIX. Display page groups are selected by using the [DISPLAY] buttons.

Sampling rate/Surround mode: This indicates the current sampling rate—44.1 kHz (44k), 48 kHz (48k), 88.2 kHz (88k), or 96 kHz (96k), and surround mode—6.1, 5.1, 3-1, and ST.

Selected channel: The Input or Output Channel currently selected by the [SEL] buttons is indicated here. See "Selecting Channels" on page 48. The first four characters are the Channel ID (e.g., CH1–CH56, BUS1–BUS8, AUX1–AUX8, ST-L, ST-R. The second four, are the channel's Short name. See "Naming Channels" on page 134. If the Channel ID preference is on, only the Channel ID is displayed. See "Channel ID" on page 232 for more information.

Channel name: Depending on the currently selected page, this is the Long name of either the currently selected channel or the channel selected by the cursor buttons. On some pages, the Aux Send pages, for example, it's possible to edit Aux Send levels without having to select each Input Channel. Instead, Input Channel Aux Sends can be selected by using the cursor buttons. In this case, the name displayed here is different to the name displayed in the upper-right corner of the display.

Page title: This is the title of the currently selected page.

Page #: Depending on the group of pages currently selected, page numbers are displayed here. For example, although you can view only one Input Channel 1–24 Aux Send page at a time, there are in fact eight Input Channel 1–24 Aux Send pages, one for each of the eight Aux Sends. Page numbers are also displayed when the Effects page group is selected.

Page area: This area of the display is where the various display pages appear.

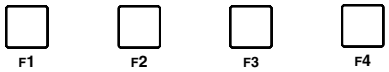
Page tabs: These tabs are used when selecting pages. Up to four tabs are visible at a time. See "Selecting Display Pages" on page 45 for more information.

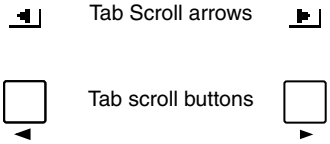
Page tab scroll arrows: These arrows indicate that there are more pages available. See "Selecting Display Pages" on page 45 for more information.

Selecting Display Pages

Display pages are grouped by function, and each group of pages can be selected by using the following [DISPLAY] buttons: AUX SELECT, ENCODER MODE, EFFECTS/PLUG-INS, ROUTING, DYNAMICS, PAN/SURROUND, EQUALIZER, SCENE MEMORY, USER DEFINED KEYS, MACHINE CONTROL, MONITOR. Further page groups can be selected by using the DISPLAY ACCESS buttons.

- The next page in the group can be selected by pressing the [DISPLAY] button.
- Previous pages can be selected by pressing and holding down the [DISPLAY] button.
- The first page in the group can be selected by double-clicking the [DISPLAY] button.
- Pages whose tabs are currently displayed can be selected by using the F1–F4 buttons.





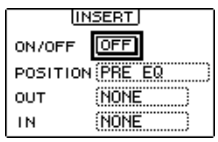
If there are more pages available than the four whose tabs are currently displayed, depending on whether they are located to the left or right, either the left or right Tab Scroll arrow appears. Pressing either the Left or Right Tab Scroll button displays the tabs of these pages, which can then be selected by using the F1–F4 buttons.

When parameters are divided among several pages, for example, the Input Channel Attenuators, which are divided among three pages, the page containing the parameter for the currently selected channel is selected automatically when channels on different Layers are selected. For example, if the Input Channel 1–24 Attenuator page is currently selected, and then you select, say, Input Channel #25 by using the LAYER [25–48] button and [SEL] button #1, the Input Channel 25–48 Attenuator page is selected automatically.

The currently selected page in a group, and the parameter selected on that page, are remembered when you select another group of pages, so when you return to that group, by pressing its [DISPLAY] button, that page is displayed with the same parameter selected.

The Auto Display preferences can be set so that certain pages appear automatically when a corresponding control is adjusted. For example, if the "Auto EQUALIZER Display" preference is on, the EQ page appears automatically when a SELECTED CHANNEL EQUALIZER control is operated. See page 230 for information on the Auto Display preferences.

Display Parameter Boxes

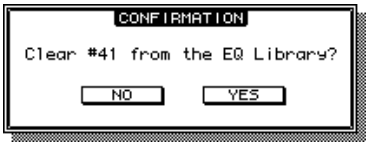


Operation of the various buttons, rotary controls, and faders that appear on the display pages is straightforward. The only items that require a special mention are the parameter boxes, such as the INSERT POSITION, OUT, and IN parameter boxes shown here. Operation of these boxes consists of two steps. First you select a value, typically by using the Parameter wheel or INC/DEC buttons. Second you confirm your selection, while the value is flashing, by pressing the [ENTER] button. If you select another parameter while the value is still flashing, it remains unchanged.

Parameter Windows

When a rotary control in the SELECTED CHANNEL section is operated, if the corresponding parameter does not appear on the currently selected page, a parameter window like the one shown here is displayed while the control is adjusted. If the control is not adjusted for awhile, the window closes automatically. If the Auto Display preference for the adjusted parameter is on, the page containing that parameter appears instead of this parameter window.

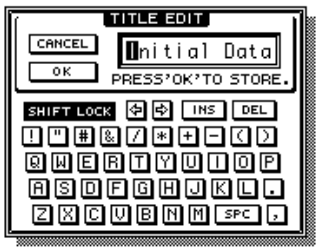
Confirmation Messages

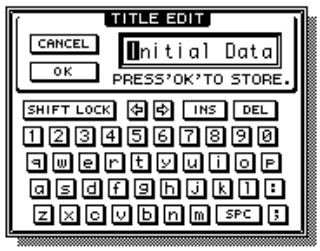


For certain functions, the 02R96 prompts you for confirmation before executing them, as shown here. Press YES to execute the function, or press NO to cancel. If no action is taken for awhile, the confirmation window closes automatically and the function is not executed.

Title Edit Window

The Title Edit window is used to enter titles for Scene and library memories, automixes, and so on. Depending on the item being titled, the number of characters that can be entered is either 4, 12, or 16. The following screen shots show the available characters. The one on the left shows uppercase characters and various punctuation marks. That on the right, lowercase characters and numbers.





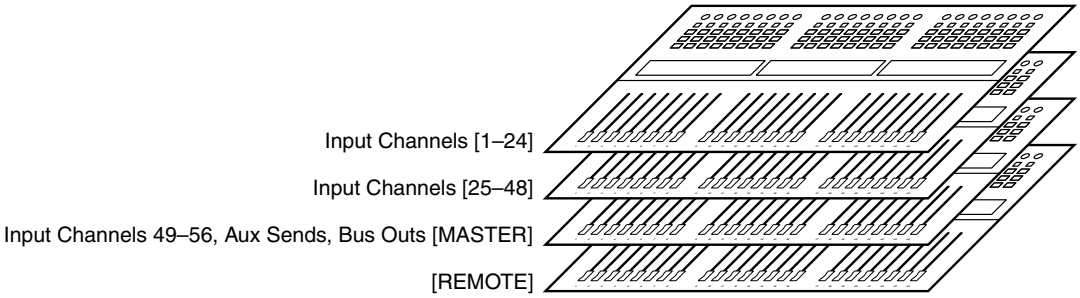
Use the cursor buttons to select characters, and the [ENTER] button to enter them into the title. The cursor moves to the right automatically as each character is entered. The Parameter wheel or the arrow buttons can be used to move the cursor within the title.

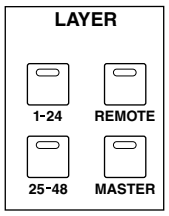
Use the SHIFT LOCK button to select uppercase and lowercase characters, and use the SPC button to enter a space. To insert a space at the cursor position and move subsequent characters to the right, press the INS button. To delete the character at the cursor position, press the DEL button.

When you've finished, press the OK button to enter the title, or press CANCEL to cancel title entry.

Selecting Layers

Input and Output Channels are arranged into Layers, as illustrated below. There are four Layers altogether: two Input Channel Layers, a Master Layer (or Output Layer), and a Remote Layer.





To select Input and Output Channels for editing with the channel strip controls, you use the LAYER buttons to select a Layer.

The LAYER button indicator for the currently selected Layer lights up.

The currently selected Layer determines the function of the channel strip Encoders, [AUTO] buttons, [SEL] buttons, [SOLO] buttons, [ON] buttons, and faders. For example, when Layer 1–24 is selected, [SEL] button #1 controls Input Channel #1. When Layer 25–48 is selected, it controls Input Channel #25. And when the Master Layer is selected, it controls Input Channel #49.

The following table shows which Input and Output Channels are controlled by the channel strips on each Layer.

Layers	Channel Strips		
	1–8	9–16	17–24
1–24	Input Channels 1–24		
25–48	Input Channels 25–48		
MASTER	Input Channels 49–56	Aux Send masters 1–8	Bus Out masters 1–8
REMOTE	Operation depends on the selected target. See "About the Remote Layer" on page 219 for more information.		

The exact function of each channel strip fader and Encoder also depends on the currently selected Fader mode and Encoder mode respectively. See "Selecting Fader Modes" on page 49 and "Selecting Encoder Modes" on page 50 for more information.

Selecting Channels

To select Input and Output Channels for editing with the SELECTED CHANNEL controls, you use the LAYER buttons to select a Layer, and the [SEL] buttons to select a channel on that Layer.

1 Select a Layer, as explained on page 47.

2 Use the [SEL] buttons to select an Input or Output Channel.

The [SEL] button indicator for the currently selected channel lights up. In addition, the Channel's ID and Short name appear in the upper right corner of the display (see page 44).

The exact channel selected by each [SEL] button depends on the currently selected Layer. For example, when Layer 1–24 is selected, [SEL] button #1 selects Input Channel #1. When Layer 25–48 is selected, it selects Input Channel #25. And when the Master Layer is selected, it selects Input Channel #49, as shown in the following table.

Layer	[SEL] Button		
	1–8	9–16	17–24
1–24	Input Channels 1–24		
25–48	Input Channels 25–48		
MASTER	Input Channels 49–56	Aux Sends 1–8	Bus Outs 1–8
REMOTE	Operation depends on the selected target. See "About the Remote Layer" on page 219 for more information.		

For paired Input or Output channels, the channel whose [SEL] button you press is selected, and its indicator lights up. The [SEL] button indicator of the other channel flashes.

Vertical and horizontal Input and Output channel partners can also be selected by using the SELECTED CHANNEL PAN/SURROUND [L] and [R] buttons, which can also be used to select left and right channels when the Stereo Out is selected.

If the currently displayed page contains a relevant parameter, when a channel's [SEL] button is pressed, the cursor moves to that parameter automatically. If the currently displayed page contains no such parameter, the page that does contain such a parameter is selected automatically. For example, if a Delay page for the Output Channels is selected when an Input Channel [SEL] button is pressed, the Delay page showing the relevant Input Channel Delay parameter is selected automatically.

Stereo Out [SEL] Button

The Stereo Out [SEL] button is used exclusively to select the Stereo Out for editing with the SELECTED CHANNEL controls. Its indicator lights up when the Stereo Out is selected. Each time it's pressed, the selection toggles between the Stereo Out's left and right channels. The SELECTED CHANNEL PAN/SURROUND [L] and [R] buttons can also be used to select the left and right channels.

If the currently displayed page contains a Stereo Out parameter, that parameter is selected automatically when the Stereo Out [SEL] button is pressed. If the currently selected page contain no such parameter, the page that does contain such a parameter is selected automatically. For example, if a Delay page for the Input Channels is currently selected when the Stereo Out [SEL] button is pressed, the Delay page showing the Stereo Out Delay parameter is selected automatically.

Auto Channel Select & Touch Sense Select

While the Auto Channel Select preference is on (see page 230), channels can be selected by moving the corresponding fader or Encoder, or by turning on the corresponding [AUTO], [SOLO], or [ON] button. Note that you can use the [AUTO] buttons to select channels only during Automix recording or in Automix record ready mode.

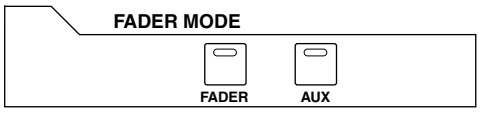
While the Fader Touch Sense SELECT preference is on (see page 232), channels can be selected simply by touching the fader knobs.

Selecting Fader Modes

The exact function of each fader depends on the selected Layer and Fader mode.

1 Select a Layer, as explained on page 47.

2 Use the FADER MODE buttons to select a Fader mode.



[FADER]: Channel faders control Input Channel levels or Output Channel master levels, depending on the selected Layer.

[AUX]: Channel faders control Aux Send levels, depending on the selected Layer.

The indicator of the currently selected FADER MODE button lights up.

The following table shows the channel fader functions for each Layer and Fader mode.

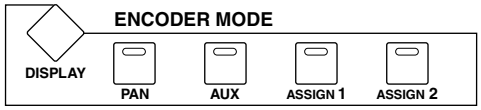
Layer	Fader Mode	Fader		
		1–8	9–16	17–24
1–24	Fader	Input Channels 1–24 level		
	Aux	Input Channels 1–24 Aux Send level		
25–48	Fader	Input Channels 25–48 level		
	Aux	Input Channels 25–48 Aux Send level		
Master	Fader	Input Channels 49–56 level	Aux Sends 1–8 master level	Bus Outs 1–8 master level
	Aux	Input Channels 49–56 Aux Send level	No operation: faders fixed at –∞	
Remote	Fader	Operation depends on the selected target. See "About the Remote Layer" on page 219 for more information.		
	Aux			

Selecting Encoder Modes

The exact function of each Encoder depends on the selected Layer and Encoder mode. There are two preset Encoder modes, Pan and Aux, and two assignable modes, for which you can choose from over 40 parameters.

1 Select a Layer, as explained in page 47.

2 Use the ENCODER MODE buttons to select an Encoder mode.



[PAN]: Encoders function as Pan controls.

[AUX]: Encoders control Aux Send levels, depending on the selected Layer.

[ASSIGN 1/2]: Encoders control the parameters assigned to the ASSIGN buttons. See "Assigning Parameters to the ENCODER MODE Assign Buttons" on page 51 for more information.

The indicator of the currently selected ENCODER MODE button lights up.

The following table shows the exact Encoder functions for each Layer and Encoder mode.

Layer	Encoder Mode	Encoder		
		1–8	9–16	17–24
1–24	Pan	Input Channels 1–24 pan		
	Aux	Input Channels 1–24 Aux Send level		
	Assign 1/2	Input Channels 1–24 assigned parameter[1]		
25–48	Pan	Input Channels 25–48 pan		
	Aux	Input Channels 25–48 Aux Send level		
	Assign 1/2	Input Channels 25–48 assigned parameter[1]		
Master	Pan	Input Channels 49–56 pan	No operation	
	Aux	Input Channels 49–56 Aux Send level	No operation	
	Assign 1/2	Input Channels 49–56 assigned parameter	Aux Sends 1–8 assigned parameter	Bus Outs 1–8 assigned parameter
Remote	Pan	Operation depends on the selected target. See "About the Remote Layer" on page 219 for more information.		
	Aux			
	Assign 1/2			

1. When Alt Layer is assigned, the Encoders enable you to control a parameter that is assigned to the corresponding channel fader in the partner layer. (A partner layer would be the layer of channels 25-48 if the layer of channels 1-24 is currently selected.)

Assigning Parameters to the ENCODER MODE Assign Buttons

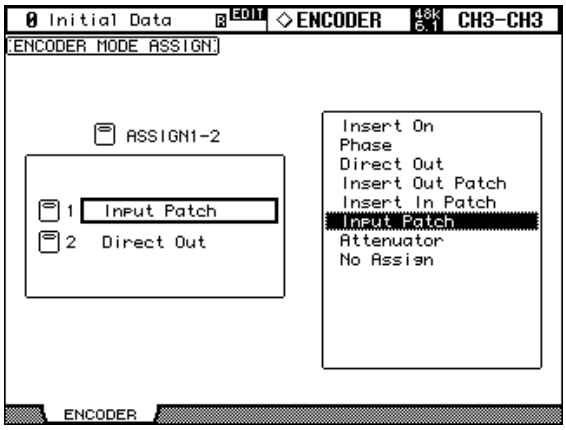
Up to two parameters can be assigned to the two ENCODER MODE ASSIGN buttons.

Initially, the following parameters are assigned to the ASSIGN buttons:

[ASSIGN 1]: Input Patch

[ASSIGN 2]: Direct Out

1 Use the ENCODER MODE [DISPLAY] button to select the Encoder Mode Assign page.



The names of the parameters currently assigned to each ASSIGN button are displayed in the left-hand box. The parameter currently assigned to the selected ASSIGN button appears highlighted in the right-hand box.

2 Press an ASSIGN button, or use the Up/Down cursor buttons, to select an ASSIGN button.

3 Use the Parameter wheel, or the INC/DEC buttons to select a parameter.

A parameter is selected when it appears inside the dotted box.

See the "Assignable Encoder Mode Parameter List" on page 52 for a complete list of assignable parameters.

4 Press the [ENTER] button to assign your choice.

Once assigned, the selected parameter appears highlighted in the right-hand box.

When channels that do not feature the currently assigned parameter are selected, the Encoders are inactive. For example, if the assigned Encoder parameter is "Phase," and the Master Layer is selected, Encoders 9–24 are inactive, because the Aux Sends and Bus Outs do not feature Phase parameters.

Assignable Encoder Mode Parameter List

#	Parameter	Encoder Operation	Push Switch Operation
1	**No Assign**	—	—
2	**Attenuator**	Attenuator	—
3	**Input Patch**	Input Channel patch	Confirm or execute patch selection.
4	**Insert In Patch**	Insert In patch	Confirm or execute patch selection.
5	**Insert Out Patch**	Insert Out patch	Confirm or execute patch selection.
6	**Direct Out**	Direct Out patch	Confirm or execute patch selection.
7	**Phase**	Phase: normal/reverse	—
8	**Insert On**	Insert on/off	—
9	**Aux pre/post**	Aux pre/post	—
10	**Delay On**	Delay on/off	—
11	**Delay Time**	Delay Time	—
12	**Delay FB.Gain**	Delay FB.Gain	—
13	**Delay Mix**	Delay Mix	—
14	**EQ On**	EQ on/off	—
15	**EQ Type**	EQ Type	—
16	**EQ Low Q**	EQ Low Q	—
17	**EQ Low F**	EQ Low Frequency	—
18	**EQ Low G**	EQ Low Gain	—
19	**EQ Low-Mid Q**	EQ Low-Mid Q	—
20	**EQ Low-Mid F**	EQ Low-Mid Frequency	—
21	**EQ Low-Mid G**	EQ Low-Mid Gain	—
22	**EQ High-Mid Q**	EQ High-Mid Q	—
23	**EQ High-Mid F**	EQ High-Mid Frequency	—
24	**EQ High-Mid G**	EQ High-Mid Gain	—
25	**EQ High Q**	EQ High Q	—
26	**EQ High F**	EQ High Frequency	—
27	**EQ High G**	EQ High Gain	—
28	**Gate On**	Gate on/off	—
29	**Gate Threshold**	Gate Threshold	—
30	**Gate Range**	Gate Range	—
31	**Gate Attack**	Gate Attack	—
32	**Gate Decay**	Gate Decay	—
33	**Gate Hold**	Gate Hold	—
34	**Comp On**	Comp on/off	—
35	**Comp Threshold**	Comp Threshold	—
36	**Comp Ratio**	Comp Ratio	—
37	**Comp Attack**	Comp Attack	—
38	**Comp Release**	Comp Release	—
39	**Comp Out Gain**	Comp Out Gain	—
40	**Comp Knee/Width**	Comp Knee/Width	—
41	**Surr L/R Pan**	Surround L/R Pan	—
42	**Surr F/R Pan**	Surround F/R Pan	—
43	**Surr Front DIV**	Surround Front DIV	—
44	**Surr Rear DIV**	Surround Rear DIV	—
45	**Surr. LFE Level**	Surround LFE level	—
46	**Surr. Pan Wheel**	Surround Pan Wheel	—
47	**Scene Fade Time**	Scene Fade Time	—
48	**Alt Layer**	Alt Layer	—

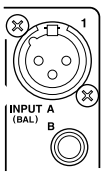
4 Analog I/O & the AD Input Section

AD Input Section

The 02R96 features 24 AD Inputs for connecting microphone and line-level sources.

AD Inputs can be patched to Input Channels or Input Channel Insert Ins (see page 66). They can also be patched to Output Channel Insert Ins (see page 69).

AD Input Connectors (AD 1–16)



AD Inputs 1 through 16 feature balanced XLR-3-31-type connectors and balanced 1/4-inch phone jacks, both with a nominal input range of –60 dB to +10 dB. The phone jacks, which can also be used with unbalanced phone plugs, have priority over the XLR-type connectors, so when a phone plug is inserted, the XLR-type connector is disconnected.

AD Input Connectors (AD 17–24)

AD Inputs 17 through 24 feature balanced 1/4-inch phone jacks, with a nominal input range of –34 dB to +10 dB. They can also be used with unbalanced phone plugs.

Phantom Power (AD 1–16)

AD Inputs 1 through 16 feature switchable +48 V phantom powering for use with condenser-type microphones and direct boxes. Phantom power is supplied to the balanced XLR-3-31-type connector, and can be switched individually for each AD Input.

Pad (AD 1–16)

AD Inputs 1 through 16 feature pad switches, which attenuate input signals by 26 dB, allowing the Head Amps to work with high-level signals. Pad is typically used to attenuate "hot" signals from bass or snare drum microphones, or "hot" line-level signals.

Gain

AD Inputs 1–16

AD Inputs 17–24

AD Inputs feature detented rotary gain controls with an input sensitivity of –16 dB to –60 dB, or +10 dB to –34 dB when the Pad is on (+10 dB to –34 dB for AD Inputs 17–24). The GAIN controls adjust the gain of the Head Amps, allowing you to optimize input signal levels for the best signal-to-noise performance. Ideally, the GAIN control should be set so that the signal level is relatively high, and it's okay for the PEAK indicator to light up occasionally. If the PEAK indicator lights up often, however, you should back off the GAIN control a little, otherwise, signal clipping may occur. If the GAIN is set too low, the signal-to-noise performance will suffer.

PEAK & SIGNAL Indicators

These indicators are used in conjunction with the GAIN controls and PAD switches to optimize signal levels. The SIGNAL indicator lights up when the input signal level is 20 dB below the rated level. The PEAK indicator lights up when the input signal level is 3 dB below clipping.

AD Inserts (AD 1–16)

AD Inputs 1 through 16 feature switchable analog inserts on 1/4-inch TRS phone jacks for the send and return signals. They are wired: sleeve–ground, ring–return, tip–send. The rated level for both connectors is +4 dB.

AD Input inserts can be turned on and off individually by using the INSERT ON/OFF switches, so you don't have to disconnect your external equipment in order to remove an insert.

Stereo Out

See page 92 for information on the Stereo Out outputs.

Control Room Monitor Out

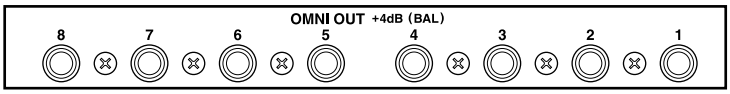
See page 136 for information on the Control Room Monitor output.

Studio Monitor Out

See page 137 for information on the Studio Monitor output.

Omni Outs

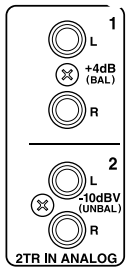
The 02R96 features assignable Omni Outs on balanced 1/4-inch TRS phone jacks. Omni Outs can be patched to Bus Outs, Aux Sends, the Stereo Out, Input or Output Channel Insert Outs, or Surround Monitor Channels (see page 69). In addition, Input Channel Direct Outs can be patched to the Omni Outs (see page 70).



The maximum output level of each OMNI OUT can be set internally to either +4 dB (–10 dB operating level) or +18 dB (+4 dB operating level). Contact your dealer for further details.

2TR Analog INs

The 02R96 features two sets of 2-track analog inputs: 2TR IN ANALOG 1 +4 dB (BAL) uses balanced 1/4-inch TRS phone jacks. 2TR IN ANALOG 2 –10 dBV (UNBAL) uses unbalanced phono connectors. These inputs can be monitored via the Control Room monitors by pressing the CONTROL ROOM [2TR A1] and [2TR A2] buttons. They can be patched to Input Channels (see page 66), Input Channel Insert Ins (see page 67), or Output Channel Insert Ins (see page 69).



5 Digital I/O & Cascading

Wordclocks

Unlike analog audio equipment, digital audio equipment must be synchronized when digital audio signals are transferred from one device to another, otherwise, signals may not be received correctly and audible noise, glitches, or clicks may occur. Synchronization is achieved using what's called a *wordclock*, which is a clock signal for synchronizing all the digital audio signals in a system. Note that wordclocks are not the same as SMPTE/EBU or MTC timecode, which is typically used to synchronize tape machines, MIDI sequencers, and so on. Wordclock synchronization refers to the synchronization of the digital audio processing circuits inside each digital audio device.

In a typical digital audio system, one device operates as the wordclock master, and the other devices operate as wordclock slaves, synchronizing to the wordclock master. Wordclock signals can be distributed via dedicated cables, typically BNC cables, or derived from digital audio connections, including AES/EBU, ADAT, and Tascam formats.

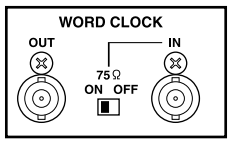
If you're connecting to the 02R96 using only analog inputs and outputs, no special wordclock settings are required, and the 02R96 can be set to use its own internally generated wordclock. If you're connecting other equipment digitally, however, you must decide which device to use as the wordclock master and which devices to use as slaves.

The 02R96 can be used as the wordclock master running at either 44.1 kHz, 48 kHz, 88.2 kHz, or 96 kHz, or slaved to an external wordclock source. External wordclock signals can be received via the Slot Inputs, 2TR Digital Inputs, the CASCADE IN port, or the dedicated BNC WORD CLOCK IN connector.

In a system where all devices share a common wordclock, it's important that all devices be turned on even if they're not being used. Turn on the wordclock master first, and then the slaves. When shutting down the system, turn off the slaves first, and then the master. Before use, make sure that the wordclock slaves are correctly locked to the wordclock master. Most devices have front panel indicators to indicate this. Refer to the relevant owner's manuals for more information.

Wordclock Connections

The 02R96 features a BNC wordclock input and a BNC wordclock output. External wordclock signals can be connected to the WORD CLOCK IN connector, and terminated by using the 75Ω ON/OFF switch (see page 57). The WORD CLOCK OUT outputs a wordclock signal at the same clock rate as the 02R96.

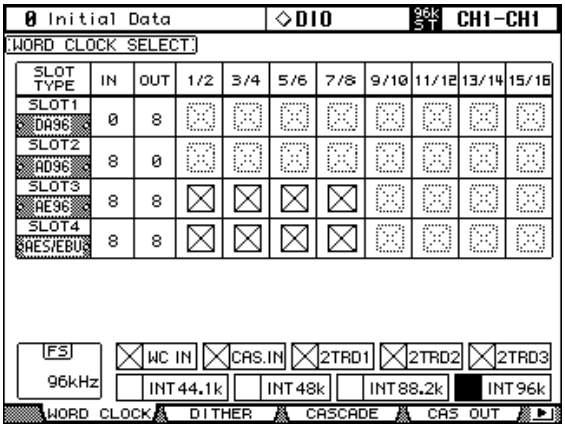


Selecting the Wordclock Source

The wordclock source can be selected as follows.

Note: When you change the wordclock settings on any device in your digital audio system, some devices may output noise, so turn down your power amps beforehand, otherwise your speakers may be damaged.

1 Use the DISPLAY ACCESS [DIO] button to locate the Word Clock Select page.



2 Use the cursor buttons to select the sources, and press [ENTER] to set.

The SLOT TYPE column displays the names of any installed I/O Cards. The IN and OUT columns indicate the number of inputs and outputs available for each installed I/O Card. The FS box in the lower-left corner displays the current wordclock status: 44.1kHz, 48kHz, 88.2kHz, 96kHz, or Unlock.

The following are possible wordclock sources:

SLOT1–4 (1/2–15/16): These buttons select the Slot Inputs as the wordclock source. Inputs are selected in pairs, the number of pairs depending on the type of I/O Card installed.

WC IN: This button selects the WORDCLOCK IN connector as the wordclock source.

CAS. IN: This button selects the CASCADE IN port as the wordclock source.

2TRD1, 2TRD2, 2TRD3: These buttons select the 2TR Digital Inputs as the wordclock source.

INT44.1k, INT48k, INT88.2k, INT96k: These buttons select the internal wordclock generator as the wordclock source.

The source select buttons have the following indications:

- ☐ A usable wordclock signal is present at this input.
- ☒ No wordclock signal is present at this input.
- ⧄ A wordclock signal is present, but it's out of sync with the current 02R96 clock.
- ■ This is the currently selected wordclock source.
- ☒ This input was selected as the wordclock source, but no usable signal was received.
- ⬚ This cannot be selected as the wordclock source because a wordclock signal cannot be sourced from this input on this type of I/O Card, or no I/O Card is installed.

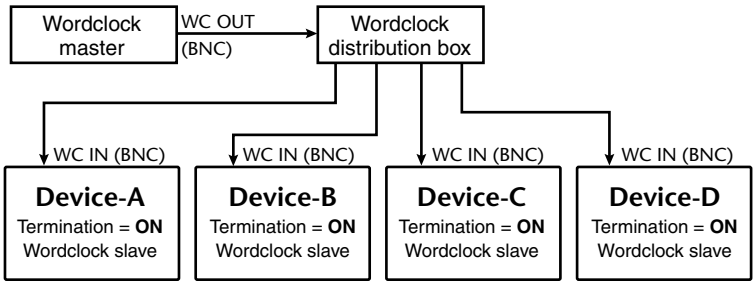
If an external wordclock source fails for some reason, the 02R96 automatically switches to its internal wordclock generator at the closest frequency.

Terminating External Wordclocks

Wordclock signals distributed via BNC cables must be terminated correctly, otherwise, jitter and synchronization errors may result. Ideally, you should make a separate wordclock connection to each device and terminate it. The following examples show two ways in which wordclock signals can be distributed and how termination should be applied in each case. Normally the WORD CLOCK 75Ω ON/OFF switch should be set to ON. The OFF setting provides support for wordclock source devices with special specifications.

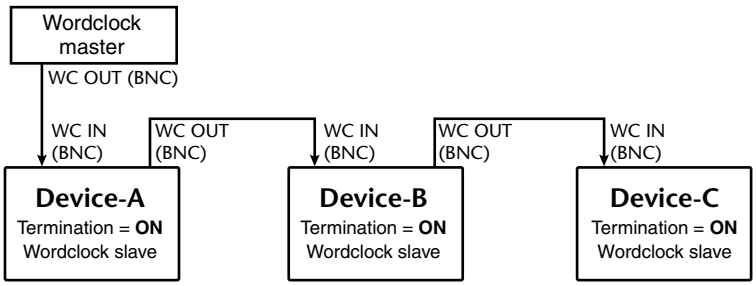
Star Distribution

In this example a dedicated wordclock distribution box is used to supply wordclock signals to each device individually. Termination is applied at each device.

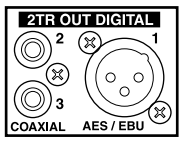


Daisy Chain Distribution

In this example the wordclock signal is distributed in a "daisy-chain" fashion, with each device feeding the wordclock signal on to the next. This method of distribution is not recommended for larger systems.

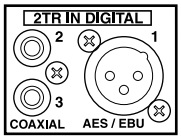


2TR Digital Outs



The 02R96 features three sets of 2-track digital outputs: 2TR OUT DIGITAL AES/EBU 1 uses an XLR-3-32-type connector and outputs AES/EBU format digital audio. 2TR OUT DIGITAL COAXIAL 2 and 3 use phono connectors and output consumer format (IEC-60958) digital audio. These outputs can be patched to the Bus Outs, Aux Sends, the Stereo Out, Input or Output Channel Insert Outs, or the Control Room signal (see page 70). They can also be patched to Direct Outs (see page 70). Digital output signals can be dithered for transfer to lower-resolution systems (see page 62).

2TR Digital Ins

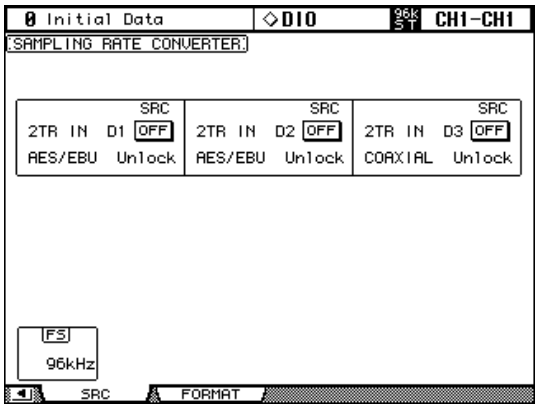


The 02R96 features three sets of 2-track digital inputs: 2TR IN DIGITAL AES/EBU 1 uses an XLR-3-31-type connector and accepts AES/EBU format digital audio. 2TR IN DIGITAL COAXIAL 2 and 3 use phono connectors and accept consumer format (IEC-60958) digital audio. These inputs can be monitored via the Control Room monitors by using the CONTROL ROOM [2TR D1], [2TR D2], and [2TR D3] buttons. They can be patched to Input Channels (see page 66), Input Channel Insert Ins (see page 67), or Output Channel Insert Ins (see page 69). Digital audio signals received at sampling rates other than the current 02R96 rate can be converted by the internal sampling rate converters (see page 58). You can monitor the Channel Status of digital signals present at these inputs on the Channel Status Monitor page (see page 62).

2TR In Sampling Rate Conversion

The 02R96's 2TR Digital Inputs feature sampling rate converters so you can easily connect your legacy 44.1/48 kHz digital audio equipment.

1 Use the DISPLAY ACCESS [DIO] button to locate the Sampling Rate Converter page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, or [ENTER] button to set them.

The FS box in the lower-left corner displays the current wordclock status: 44.1kHz, 48kHz, 88.2kHz, 96kHz, or Unlock.

2TR IN D1–3: These buttons are used to turn on and off the sampling rate converter for each 2TR Digital Input. When on, the sampling rate of the received digital audio is converted to the 02R96's current sampling rate. The original sampling rate is displayed.

Slot I/O

The 02R96 features four Slots for installing optional mini-YGDAI (Yamaha General Digital Audio Interface) I/O Cards, which offer various analog I/O options and digital I/O interfaces in all the popular digital audio interconnect formats, including AES/EBU, ADAT, and Tascam.

Slot Inputs can be assigned to Input Channels or Input Channel Insert Ins (see page 66), or to Output Channel Insert Ins (see page 69). Slot Outputs can be assigned to Bus Outs, Aux Sends, the Stereo Out, Insert Outs, or the Surround Monitor Channels (see page 68), or Direct Outs (see page 70).

Slot outputs can be dithered for digital audio transfer to lower-resolution systems (see page 62).

Available Cards

The following mini-YGDAI I/O Cards are currently available. See the Yamaha Professional Audio Web site at the following URL for up-to-date news on I/O Cards: <http://www.yamahaproaudio.com/>.

Card	Format	In	Out	Resolution/Sampling Rate	Connectors
MY8-AD	Analog in	8	—	20-bit, 44.1/48 kHz	Phone jack (balanced) x8
MY8-AD24[1]				24-bit, 44.1/48 kHz	
MY4-AD		4			XLR-3-31 type (balanced) x4
MY8-AD96		8		24-bit, 44.1/48/88.2/96 kHz	D-sub 25-pin
MY4-DA	Analog out	—	4	20-bit, 44.1/48 kHz	XLR-3-32 type (balanced) x4
MY8-DA96			8	24-bit, 44.1/48/88.2/96 kHz	D-sub 25-pin
MY8-ADDA96	Analog in/out	8	8		Euroblock x4
MY8-AE[2]	AES/EBU I/O	8	8	24-bit, 44.1/48 kHz	D-sub 25-pin
MY16-AE[2]		16	16		
MY8-AEB		8	8		BNC connector x8
MY8-AE96		8	8	24-bit, 44.1/48/88.2/96 kHz	D-sub 25-pin
MY8-AE96S[3]					
MY8-AT[2]	ADAT I/O	8	8	24-bit, 44.1/48 kHz	Optical x2
MY16-AT[2]		16	16		Optical x4
MY8-TD[2]	Tascam	8	8		D-sub 25-pin BNC wordclock output
MY16-TD[2]		16	16		D-sub 25-pin
MY8-mLAN[2]	IEEE1394	8	8		6-pin 1394 connector x2
MY16-mLAN[2]		16	16		
WAVES Y56K	ADAT	8	8	24-bit, 44.1/48 kHz	Optical x2
WAVES Y96K				24-bit, 44.1/48/88.2/96 kHz	

1. This card is a substitution for a 20-bit MY8-AD card.
2. These cards support 24-bit/96 kHz in Double Channel mode. (Separate 96 kHz wordclock required.)
3. This card is identical to the MY8-AE96, except that it features a sampling rate converter.

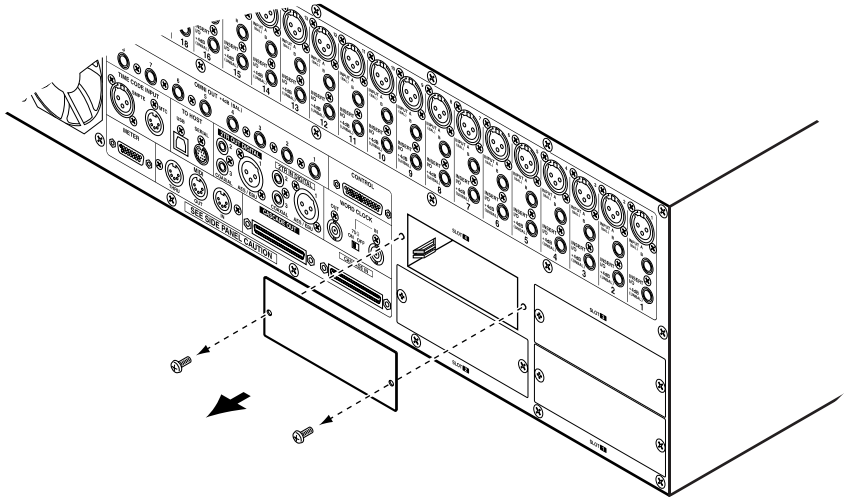
Installing I/O Cards

For technical reasons, certain card combinations are not supported. Before installing any cards, check the Yamaha web site (see page 5) to see whether your card is compatible.
http://www.yamahaproaudio.com/
Also check the total number of cards that can be installed in the unit. Installing cards that are not endorsed by Yamaha may cause electrical shock, fire, or damage to the unit.

This section explains how to install I/O Cards.

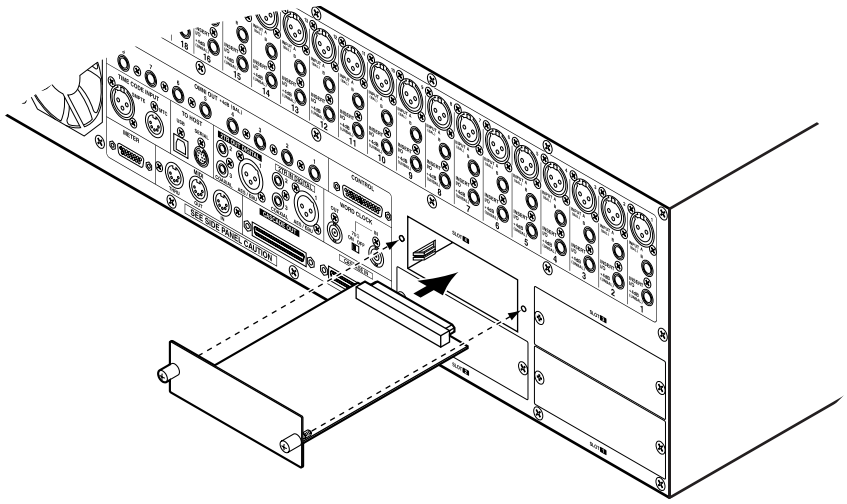
1 Turn off the 02R96.

2 Undo the two fixing screws and remove the slot cover, as shown below.



Keep the cover and fixing screws in a safe place for future use.

3 Insert the card between the guide rails and slide it all the way into the slot, as shown below. You may have to push firmly to plug the card into the internal connector.



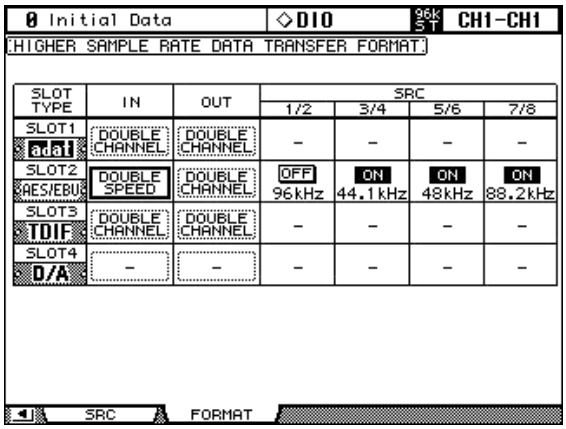
4 Secure the card using the attached thumbscrews. Do not leave them loose, as the card will not be grounded correctly, which may cause the 02R96 to malfunction.

You can check which I/O Cards are installed on the Word Clock Select page (see page 56).

Setting the Transfer Format for Higher Sampling Rates

The data transfer format for the higher sampling rates can be set as follows.

1 Use the DISPLAY ACCESS [DIO] button to locate the Higher Sample Rate Data Transfer Format page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, or [ENTER] button to set them.

The SLOT TYPE column displays the names of any installed I/O Cards.

IN/OUT: These parameters are used to set the input and output data transfer format of I/O Cards when running at the higher sampling rates (i.e., 88.2 kHz or 96 kHz) to either Double Channel, Double Speed or Single. In Double Speed mode, digital audio data is received and transmitted at the current higher sampling rate (i.e., 88.2 kHz or 96 kHz). In Double Channel mode, digital audio data is received and transmitted at a sampling rate that is exactly half the current higher sampling rate and data is handled by two channels, thereby reducing the total number of inputs or outputs for an eight channel I/O Card to four. In Double Channel mode, the even-numbered channels are disabled. Double Channel mode allows you to record 96 kHz audio to legacy 44.1/48 kHz digital multitrack recorders. In Single mode, digital audio data is received and transmitted at a sampling rate that is exactly half the current higher sampling rate. This is useful for digital MTR recording and playback situations.

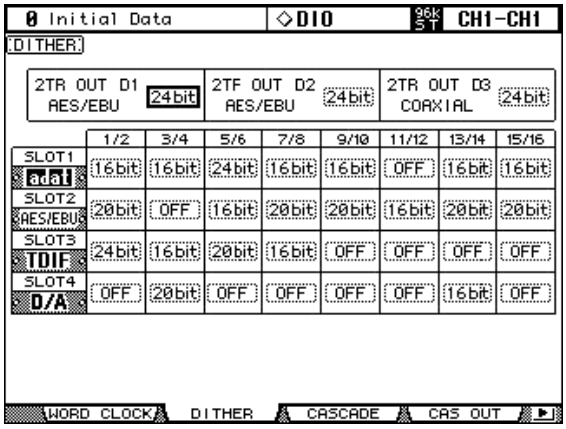
The IN and OUT parameters are only available when a higher sampling rate (i.e., 88.2 kHz or 96 kHz) is selected. When the sampling rate is 44.1 kHz or 48 kHz, all parameters on this page are unavailable. As are individual parameters for Slots with analog I/O Cards installed, or no I/O Card installed. When a digital I/O card that does not support 88.2/96 kHz is installed, such as the MY8-AE, MY8-AT, or MY8-TD, its IN and OUT formats cannot be set to Double Speed mode.

SRC: These parameters are used to turn on and off the sampling rate converter for each pair of Slot Inputs. When on, the sampling rate of the received digital audio is converted to the 02R96's current sampling rate. The original sampling rate is displayed. These parameters are available only when an I/O Card with onboard sampling rate converters is installed, such as the MY8-AE96S.

Dithering Digital Outputs

For digital audio transfer to lower-resolution systems, the 2TR Digital Outputs and Slot Outputs can be dithered to 16-bit, 20-bit, or 24-bit.

1 Use the DISPLAY ACCESS [DIO] button to locate the Dither page.



2 Use the cursor buttons to select the Dither parameters, and use the Parameter wheel or INC/DEC buttons to set them.

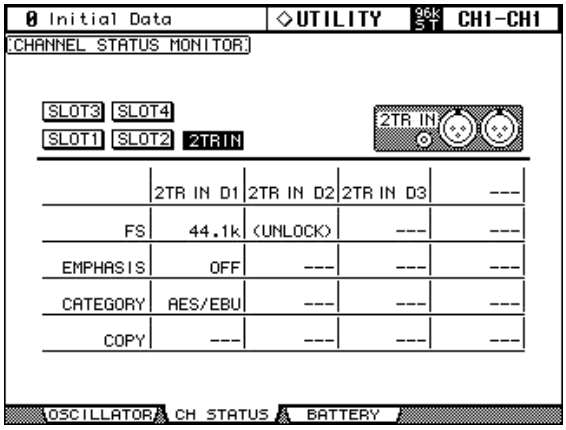
The SLOT column displays the names of any installed I/O Cards.

You can copy the currently selected setting to all Dither parameters by double-clicking the [ENTER] button.

Monitoring Digital Input Channel Status

You can monitor the Channel Status of digital audio signals connected to the 2TR Digital Inputs and Slot Inputs as follows.

1 Use the DISPLAY ACCESS [UTILITY] button to locate the Channel Status Monitor page.



2 Use the cursor buttons to select the SLOT 1–4 and 2TR IN buttons, and the press [ENTER].

Displayed Channel Status information includes sampling rate (FS), emphasis, category, and copy protection.

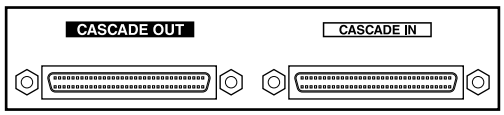
However, if a mini-YGDAI I/O card other than AES/EBU format is installed, Channel Status information will be grayed out.

3 **If you select the SLOT button for a slot that has an MY16-AE card installed, use the 01–08 and 09–16 buttons located in the lower-right corner of the screen to select a channel group you wish to display.**

Cascading Consoles

Total four 02R96s or DM2000s can be cascaded, offering a maximum of 224 Input Channels. Several functions are linked between all cascaded consoles, including Solo, Scene Recall and Store, so that all consoles work just like one big console. A single Yamaha 02R Digital Recording Console can be included in the cascade system.

The CASCADE IN and CASCADE OUT ports are used to transmit and receive Cascade and control signals. Only use the optional dedicated Cascade cables for connecting.



Linked Functions

The following 02R96 functions are linked via the cascade ports:

- AUX SELECT (Not linked with DM2000's Aux 9–12.)
- Display page selection (Not linked with the DM2000.)
- Solo function
- FADER MODE
- ENCODER MODE
- Metering position setting
- Peak Hold On/Off
- Meter Fast Fall on/off
- Scene Store, Recall, and Title Edit

  When a Scene is recalled on the master console, that scene is recalled on all cascaded consoles.
- The following Automix functions: Make New Automix, Store, Recall, Title Edit, Transport (AutoREC, REC, PLAY, STOP, ABORT).
- The following Automix parameters: Automix Enable/Disable, Internal Start Time, Offset Time, Frame Rate, Overwrite (FADER, ON, PAN, SURR, AUX, AUX ON, EQ), Motor ON/OFF, Edit Out Mode OFF/RETURN/TAKEOVER, Return Time, Update To End On/Off, ABSOLUTE/RELATIVE Fader Edit Mode, Touch Sense Edit In On/Off, Touch Sense Edit Out On/Off, Touch Sense Edit Off/Touch/Latch.

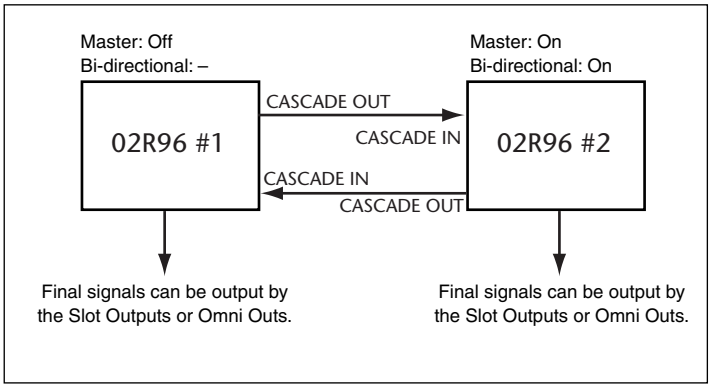
  Function and parameter linking can be turned on or off by using the Cascade COMM Link preference (see page 231). The Solo function is always linked regardless of this preference.

Note: When the Cascade COMM Link preference is on, do not make any MIDI connections between cascaded 02R96/DM2000s. If two 02R96/DM2000s are cascaded and connected via MIDI, and the Cascade COMM Link preference is on, when a store operation is performed on the master console, a loop will be created, causing both consoles to execute endless store operations.

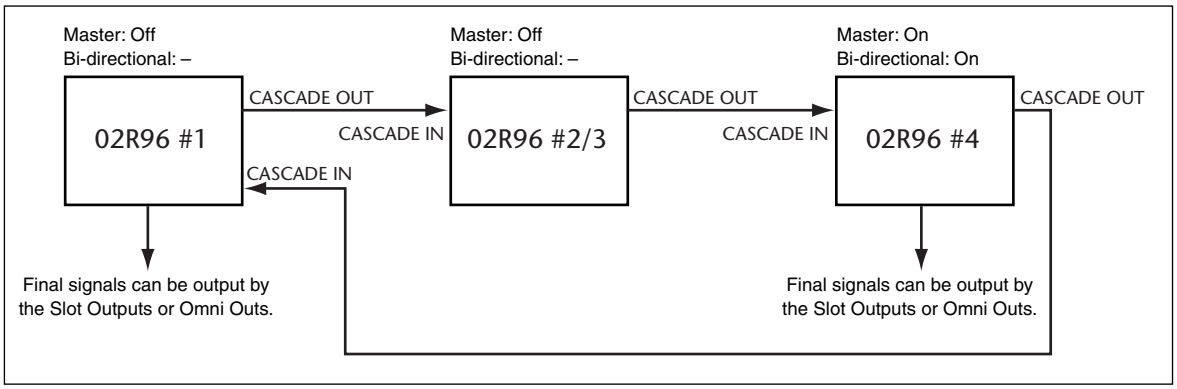
When the 02R96 is cascaded with a Yamaha DM2000 Digital Production Console, display page selection is not linked, and Matrix Send select actions, and Aux Send 9–12 select actions performed on the DM2000 are ignored by the 02R96.

Cascade Hookup Examples

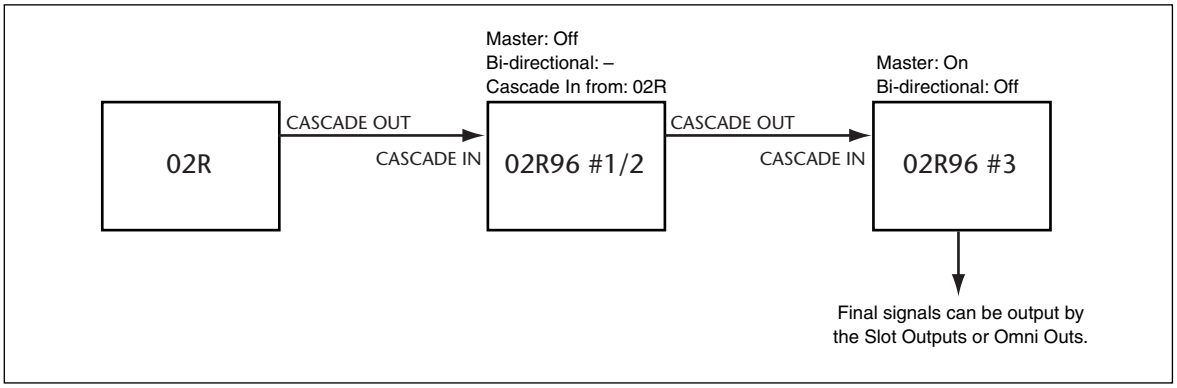
Cascading Two 02R96s



Cascading Three or More 02R96s



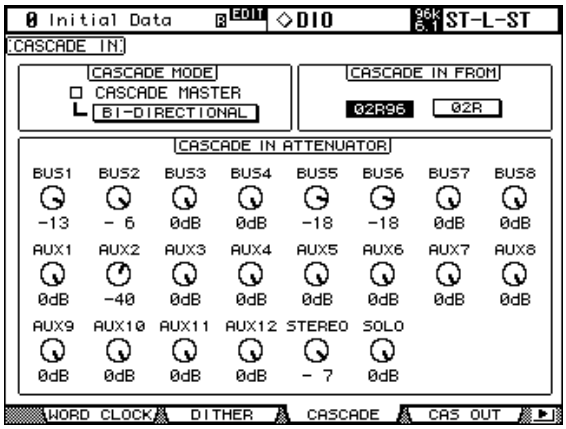
Cascading an 02R Digital Recording Console



Attenuating Cascade Inputs

Cascade Inputs can be attenuated, and the Cascade mode and Cascade source can be specified on the Cascade In page.

1 Use the DISPLAY ACCESS [DIO] button to locate the Cascade In page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, or [ENTER] button to set them.

CASCADE MODE: When you want to output the same signals from two 02R96s, turn on the BI-DIRECTIONAL button. In this case, the Cascade connections are looped. Turn on the CASCADE MASTER option on the last 02R96 to make it the master console. When the BI-DIRECTIONAL button is off, the last 02R96 in the cascade is automatically configured as the master console and it output the final signals.

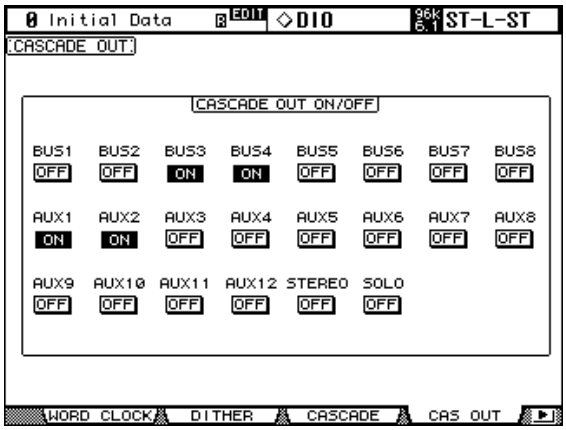
CASCADE IN FROM: This is used to specify the type of device connected to the CASCADE IN port, either 02R96 or 02R. When a 02R96 or DM2000 is connected to the CASCADE IN port, 02R96 is specified automatically.

CASCADE IN ATTENUATOR: These controls are used to attenuate Cascade Input signals. The AUX9–AUX12 controls attenuate the corresponding signals only when the 02R96 is cascaded between two Yamaha DM2000 Digital Production Consoles, they have no effect on the 02R96 itself. You can copy the currently selected setting to all Attenuator parameters by double-clicking the [ENTER] button.

Turning On & Off Cascade Outputs

Individual Cascade Outputs can be turned on or off as follows.

1 Use the DISPLAY ACCESS [DIO] button to locate the Cascade Out page.



2 Use the cursor buttons to select the ON/OFF buttons, and use the [ENTER] button to set them.

6 Input & Output Patching

Input Patching

Input and Output signals for the Input Channels, Input Channel Insert Ins, and internal effects processors are selected on the Input Patch pages, which are selected by using the DISPLAY ACCESS [INPUT PATCH] button. Use the cursor buttons to select the patch parameters, use the Parameter wheel or INC/DEC buttons to select a source, and press [ENTER] to set.

Patch parameters display Short Port names. The Long Port name of the currently selected patch parameter is displayed in the upper-right corner of each page.

Patching can also be done by using the Patch Select Window (see page 71). Input Channel Inputs, Insert Ins, and Insert Outs can also be patched by using the Encoders (see page 72).

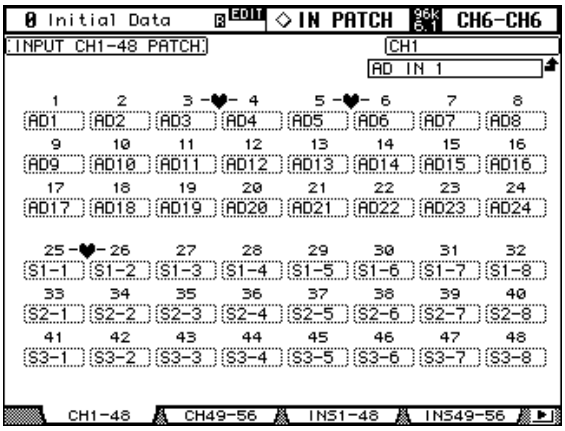
See page 241 for a complete list of input patch sources. See page 244 for a list of initial input patches.

Input Patch settings can be stored in the Input Patch library, which contains 1 preset memory and 32 user memories. See "Input Patch Library" on page 145 for more information.

Patching Input Channels

AD Inputs, Slot Inputs, internal effects processor outputs, Digital or Analog 2TR Inputs, Bus Outs, or Aux Sends can be patched to the Input Channel Inputs.

The Input Channel Patch parameters for the 56 Input Channels are divided between two pages. The Input Channel 1–48 Patch page is shown below. The layout of the other page is the same. When Vertical Input Channel pairing mode is selected, patch parameters for vertical partners are displayed, for example, CH1, CH25, CH2, CH26, and so on.

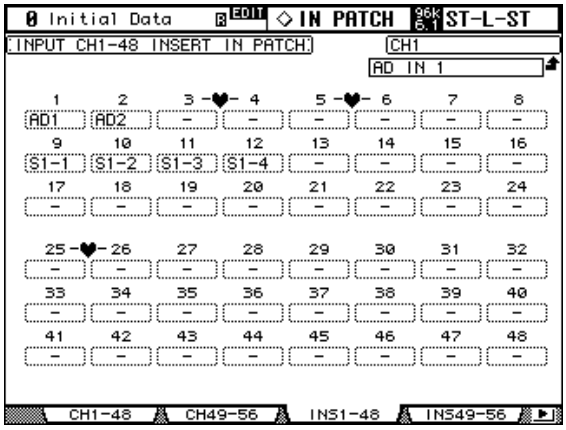


In addition to using the cursor buttons, Patch parameters can also be selected by using the LAYER and [SEL] buttons.

Patching Input Channel Insert Ins

AD Inputs, Slot Inputs, internal effects processor outputs, Digital or Analog 2TR Inputs can be patched to the Input Channel Insert Ins.

The Input Channel Insert In Patch parameters for the 56 Input Channels are divided between two pages. The Input Channel 1–48 Insert In Patch page is shown below. The layout of the other page is the same. When Vertical Input Channel pairing mode is selected, patch parameters for vertical partners are displayed, for example, CH1, CH25, CH2, CH26, and so on.

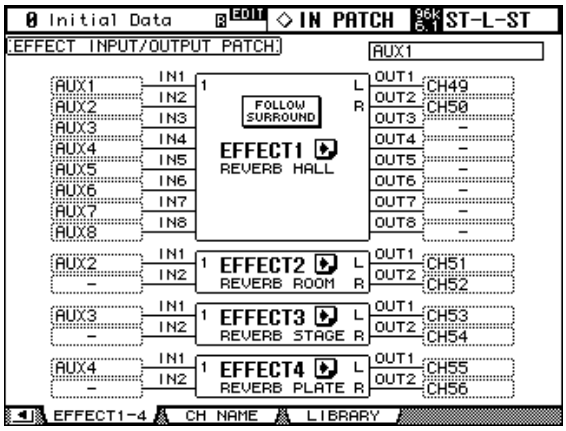


In addition to using the cursor buttons, Patch parameters can also be selected by using the LAYER and [SEL] buttons.

Patching Effects Inputs and Outputs

Aux Sends, internal effects processor outputs (OUT1 and OUT2 only), or Output Channel Insert Outs can be patched to the internal effects processor inputs.

Input Channels, or Insert Ins can be patched to the internal effects processor outputs. Internal effects processor inputs can be also patched to the internal effects processor outputs (OUT1 and OUT2 only).



FOLLOW SURROUND: When surround effects are recalled to Effects processor 1, this button sorts the effect inputs and outputs displayed in the list in the order specified on the Surround Bus Setup page (see page 87). If the recalled surround effects are compatible with 5.1 Channel systems, the surround bus setting for 5.1 surround mode will be used.

: Press this button repeatedly until an Effect Edit (1–4) page for the effects processor you wish to edit appears.

Output Patching

Signal sources for the Slot Outputs, Omni Outs, Output Channel Inserts Ins, Direct Outs, and 2TR Digital Outputs are selected on the Output Patch pages, which are selected by using the DISPLAY ACCESS [OUTPUT PATCH] button. Use the cursor buttons to select the patch parameters, use the Parameter wheel or INC/DEC buttons to select a source, and press [ENTER] to set.

Depending on the patch page, patch parameters display either Short Channel or Short Port names. The Long Channel or Port name of the currently selected patch parameter is displayed in the upper-right corner of each page.

Signal sources can also be selected by using the Patch Select Window (see page 71). Insert Ins, Insert Outs, and Direct Outs can also be patched by using the Encoders (see page 72).

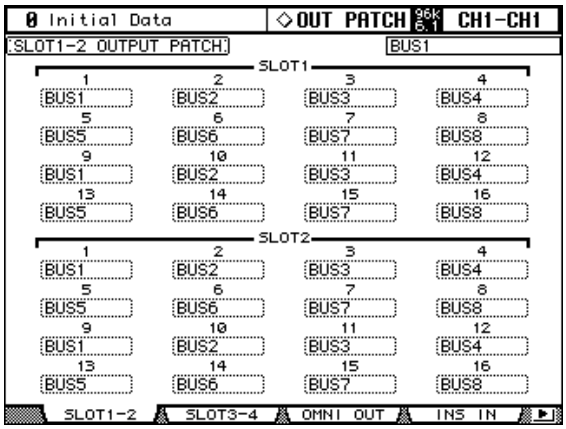
See page 245 for a complete list of output patch sources. See page 249 for a list of initial output patches.

Output Patch settings can be stored in the Output Patch library, which contains 1 preset memory and 32 user memories. See "Output Patch Library" on page 145 for more information.

Patching Slot Outputs

Bus Outs, Aux Sends, the Stereo Out, Input or Output Channel Insert Outs, or Surround Monitor Channels can be patched to the Slot Outputs. Slot Outputs can be patched to Direct Outs on the Direct Out Destination pages (see page 70).

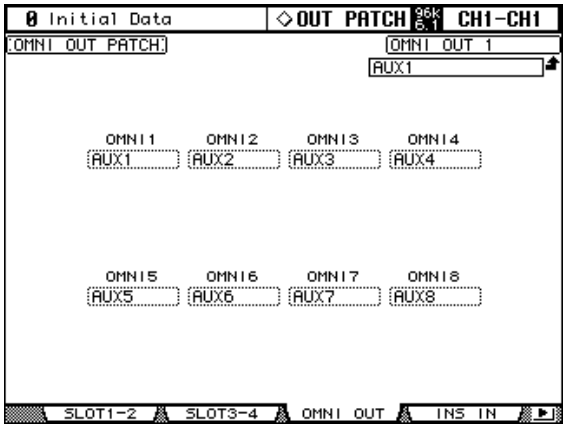
The Slot Output Patch parameters for the four Slots are arranged into two pages. The Slot 1–2 Output Patch page is shown below. The layout of the other page is the same.



When a Slot Output is patched to a Direct Out (see page 70), and that Direct Out is assigned on an Input Channel Routing page, the Slot Output patch cannot be changed here. If the higher sampling rate (88.2 kHz/96 kHz) data format is set to Double Channel mode, the Slot's even channel patch is disabled and cannot be changed.

Patching Omni Outs

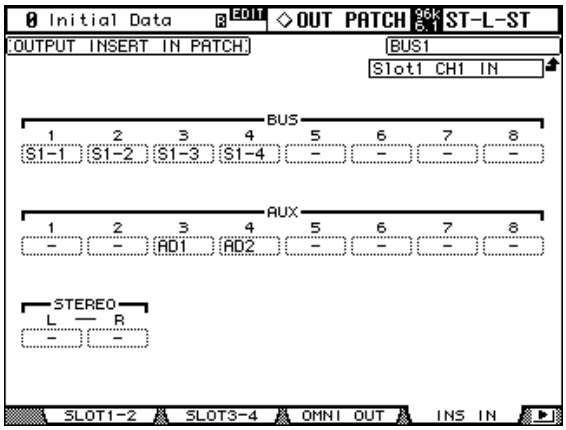
Bus Outs, Aux Sends, the Stereo Out, Input or Output Channel Insert Outs, or Surround Monitor Channels can be patched to the Omni Outs. Omni Outs can be patched to Direct Outs on the Direct Out Destination pages (see page 70).



When an Omni Out is patched to a Direct out (see page 70), and that Direct Out is assigned on an Input Channel Routing page, the Omni Out patch cannot be changed here.

Output Channel Inserts Ins

AD Inputs, Slot Inputs, internal effects processor outputs, or Digital or Analog 2TR Inputs can be patched to the Output Channel Insert Ins. The left and right channels of the Stereo Out can be patched individually.

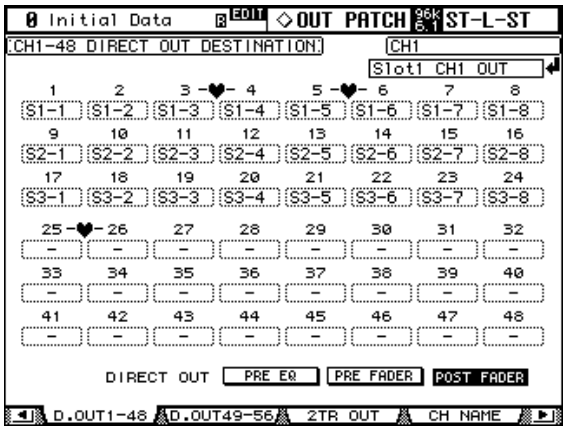


In addition to using the cursor buttons, Patch parameters can also be selected by using the [SEL] buttons.

Patching Direct Outs

Direct Outs can be patched to the Slot Outputs, Omni Outs, or 2TR Digital Outputs.

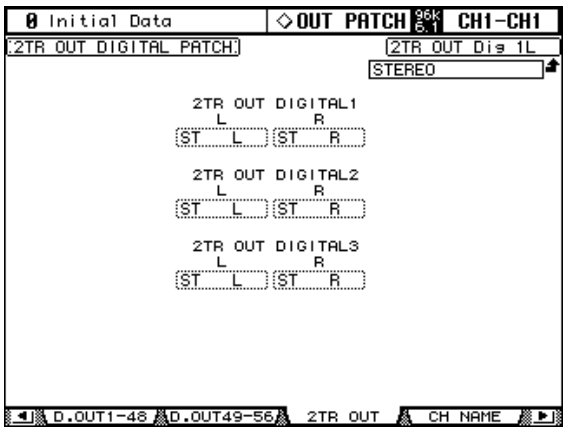
The Direct Out Destination parameters for the 56 Input Channels are divided between two pages. The Input Channel 1–48 Direct Out Destination page is shown below. The layout of the other page is the same.



In addition to using the cursor buttons, Patch parameters can also be selected by using the LAYER and [SEL] buttons.

Patching the 2TR Digital Outputs

Bus Outs, Aux Sends, the Stereo Out, Input or Output Channel Insert Outs, or the Control Room signal can be patched to the 2TR Digital Outputs. 2TR Digital Outputs can be patched to Direct Outs on the Direct Out Destination pages (see page 70). The left and right channels of each Digital Output can be patched individually.



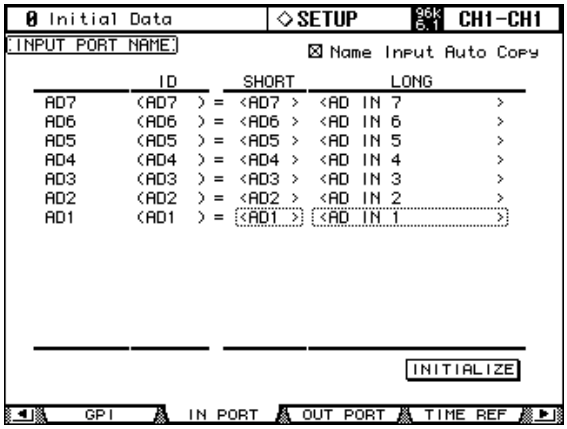
When a 2TR Digital Output is patched to a Direct out (see page 70), and that Direct Out is assigned on an Input Channel Routing page, the 2TR Digital Output patch cannot be changed here.

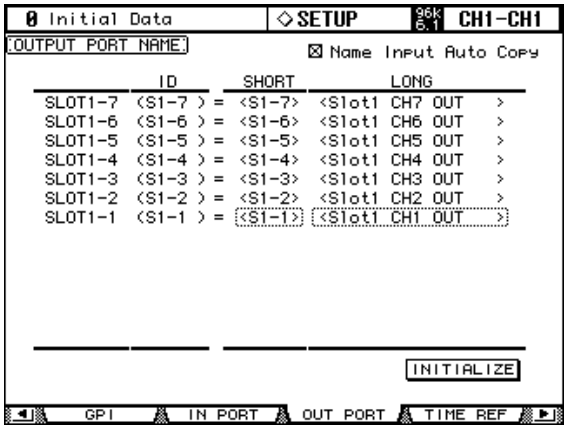
Naming Input & Output Ports

You can specify Long and Short names for the Input and Output Ports as follows. These names appear on the Input and Output Patch pages.

See page 251 for a list of the initial Input Port names; page 252 for Output Port names.

1 Use the DISPLAY ACCESS [SETUP] button to locate the Input Port or Output Port Name page.





2 Use the Parameter wheel or INC/DEC buttons to select the ports.

3 Use the cursor buttons to select the Long or Short name, and then press [ENTER].

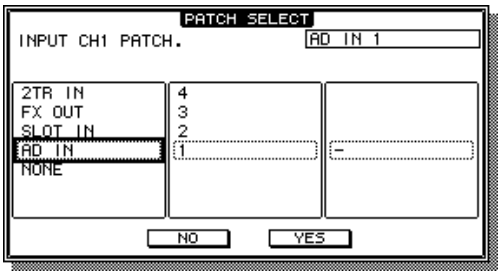
When the Title Edit window appears, edit the port name, and press OK when you've finished. See "Title Edit Window" on page 46 for more information.

When the Name Input Auto Copy option is on, the first four characters of a newly entered Long name are automatically copied to the Short name and vice versa.

You can reset all port names back to their initial values by pressing the INITIALIZE button.

Patch Select Window

Input and Output patches can be made by using the Patch Select window, shown below, which appears when the [ENTER] button is pressed while a patch parameter is selected.



Available input and output sources and destinations are displayed in a hierarchical format in three panes. The existing source or destination is displayed in the upper-right corner of the window. Use the cursor buttons to move the cursor to the pane on the left, and use the Parameter wheel or INC/DEC buttons to select the top level item. Then move the cursor to the center pane, and select an item at the next level. Select an item in the right pane, if available, and then select the YES button and press [ENTER].

Patching with the Encoders

The following patches can be made by using the Encoders: Input Channel Inputs, Insert Outs, Insert Ins, and Direct Outs.

1 **Assign one of the above parameters to an Encoder ASSIGN button, as explained on page 51.**

2 **Press the ASSIGN button to which you assigned the patch parameter.**

3 **Use the Encoders to select ports, and press the Encoder push switches to set them.**

The coresponding Patch page appears when an Encoder is operated. If you operate another Encoder, the selection is cancelled and the patch is left unchanged.

7 Input Channels

Patching Input Channels

AD Inputs, Slot Inputs, internal effects processor outputs, Digital or Analog 2TR Inputs, Bus Outs, or Aux Sends can be patched to the Input Channel Inputs. See "Patching Input Channels" on page 66 for more information.

Metering Input Channels

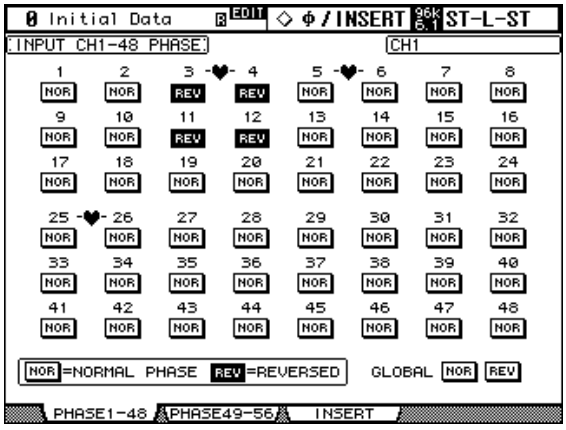
Input Channel signal levels can be metered on the Meter pages. See "Metering" on page 107 for more information.

Reversing the Signal Phase

The signal phase of each Input Channel can be reversed as follows.

1 Use the SELECTED CHANNEL DISPLAY ACCESS [PHASE/INSERT] button to select the Phase pages.

The Phase parameters for the 56 Input Channels are divided between two pages. The Input Channel 1–48 Phase page is shown below. The layout of the other page is the same.



2 Use the cursor buttons or Parameter wheel to select the NOR/REV buttons, and the [ENTER] button and INC/DEC buttons to set them.

The NOR/REV buttons can also be selected by using the [SEL] buttons.

GLOBAL NOR/REV: These buttons allow you to set the phase of all Input Channels simultaneously.

Gating Input Channels

Each Input Channel features a noise Gate for automatically shutting out unwanted noise. Gate settings can be stored in the Gate library, which contains 4 preset memories and 124 user memories. See "Gate Library" on page 148 for more information.

Preset Gates & Types

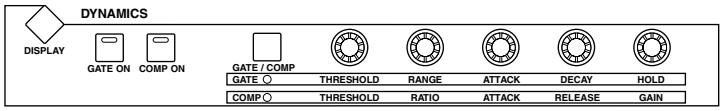
The following table lists the preset Gates and types. See page 283 for detailed parameter information.

#	Preset Name	Type	Description
1	**Gate**	GATE	Gate template
2	**Ducking**	DUCKING	Ducking template
3	**A. Dr. BD**	GATE	Gate preset for use with acoustic bass drums
4	**A. Dr. SN**	GATE	Gate preset for use with acoustic snare drums

Using the SELECTED CHANNEL DYNAMICS Controls

1 Use the LAYER buttons to select Layers, and use the [SEL] buttons to select Input Channels.

2 Use the [GATE ON] button to turn the currently selected Input Channel's Gate on or off.



3 Use the [GATE/COMP] button to set the DYNAMICS controls to GATE (GATE indicator lit), and use the THRESHOLD, RANGE, ATTACK, DECAY, and HOLD controls to set the Gate.

Gate Edit Page

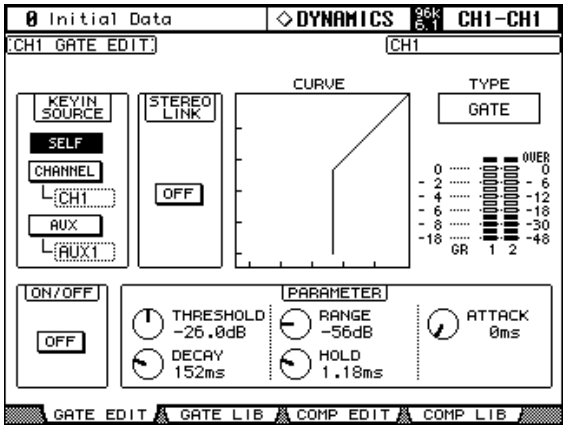
Gate settings can be viewed and set on the Gate Edit page. If the Auto DYNAMICS Display preference is on, this page appears automatically when a gate control in the SELECTED CHANNEL DYNAMICS section is operated.

1 Use the LAYER buttons to select Layers, and use the [SEL] buttons to select Input Channels.

2 Use the SELECTED CHANNEL DYNAMICS [DISPLAY] button to locate the Gate Library page, and then recall a Gate preset that contains the gate type that you want.

See "Gate Library" on page 148 for more information.

3 Use the SELECTED CHANNEL DYNAMICS [DISPLAY] button to locate the Gate Edit page.



4 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

KEYIN SOURCE: This determines the trigger source for the currently selected Input Channel's Gate. Trigger sources include SELF (the Gate's own input signal), CHANNEL (another Input Channel), or AUX (an Aux Send from 1–8). Input Channel trigger sources are selectable in blocks of 12 channels. For example, if Input Channel #1 is currently selected, an Input Channel from 1–12 can be selected as the trigger source. However, if Input Channel #13 is currently selected, an Input Channel from 13–24 can be selected.

STEREO LINK: This allows you to pair Gates for stereo operation even when Input Channels are not paired. Input Channel Gates are paired either horizontally or vertically depending on the Pair mode setting for the currently selected Input Channel. See "Pairing Channels" on page 123 for more information on horizontal and vertical pairing. When Input Channels are paired, this parameter is turned on automatically and cannot be changed.

CURVE: This displays the gate curve (i.e., input level vs. output level).

TYPE: This is the gate type used by the currently selected Input Channel's Gate.

Meters: These meters indicate the levels of the currently selected Input Channel and its horizontal or vertical partner. The GR meter indicates the amount of gain reduction being applied by the currently selected Input Channel's Gate.

ON/OFF: This turns the currently selected Input Channel's Gate on and off. It works in unison with the SELECTED CHANNEL DYNAMICS [GATE ON] button.

PARAMETER: These controls are used to set the Threshold, Range, Attack, Decay, and Hold parameters.

Attenuating Input Channels

Input Channels signals can be attenuated pre-EQ. See "Attenuating Signals" on page 110 for more information.

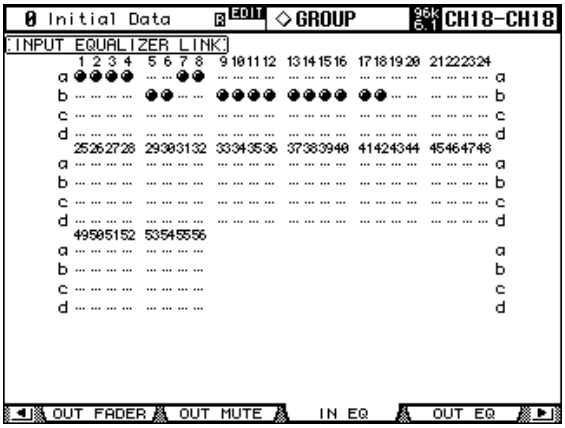
EQ'ing Input Channels

Each Input Channel features 4-band parametric EQ. See "Using EQ" on page 111 for more information.

Grouping Input Channel EQs

Input Channel EQs can be grouped, allowing you to control the EQ of several Input Channels simultaneously. There are four Input Channel EQ groups: a, b, c, and d.

1 Use the DISPLAY ACCESS [GROUP] button to locate the Input Equalizer Link page.



2 Use the LAYER buttons to select the Layers.

The corresponding group row is selected as each Layer is selected.

3 Use the Up/Down cursor buttons to select EQ groups a–d.

The selected group is highlighted by a flashing cursor box.

4 Use the [SEL] buttons to add and remove Input Channels to and from the selected group.

The EQ settings of the first Input Channel added to the group are applied to all subsequently added Input Channels.

When an Input Channel is added to a group, its [SEL] button indicator lights up.

Input Channel Inserts

Internal effects processors and external signal processors can be patched into the Input Channels by using the Inserts. See "Using Inserts" on page 115 for more information.

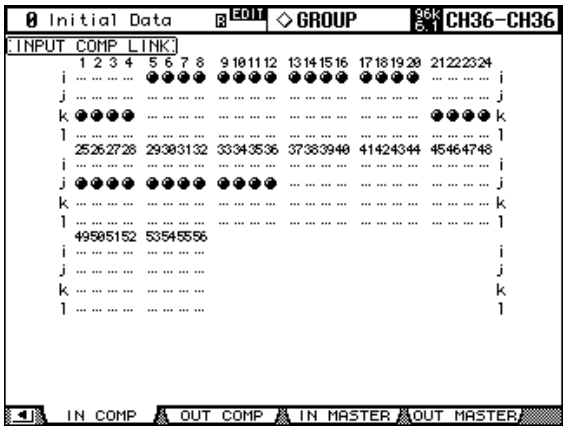
Compressing Input Channels

Each Input Channel features a Compressor. See "Compressing Channels" on page 116 for more information.

Grouping Input Channel Compressors

Input Channel Compressors can be grouped, allowing you to control the compression of several Input Channels simultaneously by operating any Compressor control in the group. There are four Input Channel Compressor groups: i, j, k, and l.

1 Use the DISPLAY ACCESS [GROUP] button to locate the Input Comp Link page.



2 Use the LAYER buttons to select the Layers.

The corresponding group row is selected as each Layer is selected.

3 Use the Up/Down cursor buttons to select Comp groups i–l.

The selected group is highlighted by a flashing cursor box.

4 Use the [SEL] buttons to add and remove Input Channels to and from the selected group.

The Compressor settings of the first Input Channel added to the group are applied to all subsequently added Input Channels.

When an Input Channel is added to a group, its [SEL] button indicator lights up.

Delaying Input Channels

Each Input Channel features a Delay function. See "Delaying Channel Signals" on page 120 for more information.

Muting Input Channels (ON/OFF)

Input Channels can be muted as follows.

1 Use the LAYER buttons to select the Layers.

2 Use the [ON] buttons to mute the Input Channels.

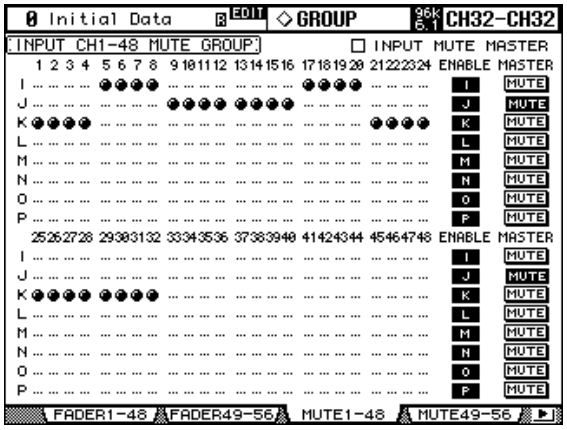
The [ON] button indicators of channels that are on are lit.

Grouping Input Channel Mutes (ON/OFF)

Input Channel Mutes can be grouped, allowing you to mute several Input Channels simultaneously. There are eight Input Channel Mute groups: I, J, K, L, M, N, O, and P.

1 Use the DISPLAY ACCESS [GROUP] button to locate the Input Channel Mute Group pages.

The Mute group parameters for the 56 Input Channels are divided between two pages. The Input Channel 1–48 Mute Group page is shown below. The layout of the other page is the same.



2 Use the LAYER buttons to select the Layers.

The corresponding Mute Group page and group row is selected as each Layer is selected.

3 Use the Up/Down cursor buttons to select Mute groups I–P.

The selected group is highlighted by a flashing cursor box.

4 Use the [SEL] buttons to add and remove mutes to and from the selected group.

When an Input Channel is added to a Mute group, its [SEL] button indicator lights up.

ENABLE: These buttons are used to enable and disable the groups.

INPUT MUTE MASTER: When this check box is checked, clicking a MASTER MUTE button mutes or unmutes all channels in the corresponding Mute group. When this check box is unchecked, the Input Channel [ON] button status links to the mute on/off status of the channels in the group.

MASTER MUTE: When the Input Mute Master check box is checked, use this button to mute or unmute all channels in the corresponding Mute group.

When the Input Mute Master check box is unchecked, pressing the Input Channel [ON] button mutes or unmutes the channels in the corresponding Mute group (Mute On channels turn off and Mute Off channels turn on).

Input Channel Mute Master

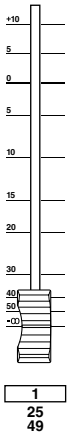
The 02R96 features a Mute Master function that enables you to mute all channels in the Mute group using the MASTER button, much like a Mute group on an analog mixing console. When the Mute Group Master function is enabled, the channel [ON] button status does not link to the corresponding Mute group.

1 Follow Steps 1–4 as described in the "Grouping Input Channel Mutes (ON/OFF)" section on the previous page, select the Input Mute Master check box, then press the [ENTER] button to check or uncheck the Input Mute Group Master check box.

2 When the Input Mute Master check box is checked, the MASTER MUTE button for each Mute group turns mute on or off for the channels in the corresponding Mute group.

If the channels are muted by the Mute Master function, the corresponding channel [ON] button indicators flash. You can assign the MASTER MUTE button function to one of the USER DEFINED KEYS for convenient operation.

Setting Input Channel Levels



Input Channel levels can be set as follows.

1 Use the LAYER buttons to select the Layers.

2 Press the FADER MODE [FADER] button to select Fader mode.

3 Use the faders to set the Input Channel levels.

Refer to the legend on the left side of the faders when setting Input Channel levels.

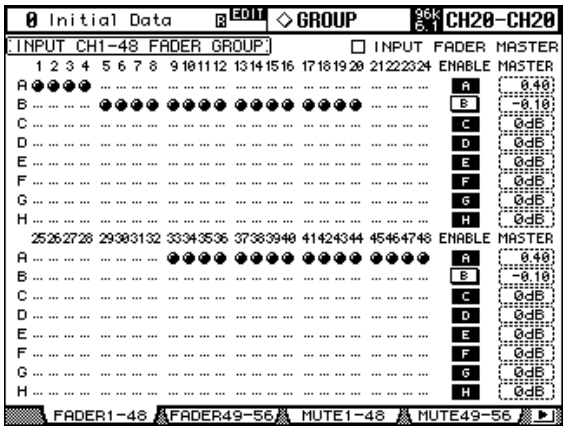
Fader positions can be viewed on the Fader View pages. See "Viewing Channel Fader Settings" on page 130 for more information.

Grouping Input Channel Faders

Input Channel faders can be grouped, allowing you to control the level of several Input Channels simultaneously. There are eight Input Channel Fader groups: A, B, C, D, E, F, G, and H.

1 Use the DISPLAY ACCESS [GROUP] button to locate the Input Channel Fader Group pages.

The Fader Group parameters for the 56 Input Channels are divided between two pages. The Input Channel 1–48 Fader Group page is shown below. The layout of the other page is the same.



2 Use the LAYER buttons to select the Layers.

The corresponding Fader Group page and group row is selected as each Layer is selected.

3 Use the Up/Down cursor buttons to select Fader groups A–H.

The selected group is highlighted by a flashing cursor box.

4 Use the [SEL] buttons to add and remove faders to and from the selected group.

When an Input Channel is added to a group, its [SEL] button indicator lights up.

ENABLE: These buttons are used to enable and disable the groups.

INPUT FADER MASTER: When this check box is unchecked, the Input Channel fader positions link to the fader levels for the channels in the corresponding Fader group. When this check box is checked, you can set the master level for the corresponding Input Channel Fader group in the Master column. The resultant Input Channel level equals the corresponding Input Channel fader level plus the Group Master level. See "Group Master for Input Channel Faders" on page 80.

When the Input Fader Master check box is not checked, operating the channel faders will affect the input levels for the corresponding Fader group. Pressing and holding down the [SEL] button while operating the fader of an Input Channel will temporarily cancel the corresponding Fader group, which is convenient if you want to adjust the relative balance between channels.

Fader groups are active only in Fader mode (i.e., when the FADER MODE [FADER] button indicator is on). See "Selecting Fader Modes" on page 49 for more information.

Group Master for Input Channel Faders

The 02R96 features a Fader Group Master function that enables you to control the level of all channels using the Group Master level while maintaining the relative balance between channels, much like a VCA group on an analog mixing console. While this function is enabled, channel fader operation does not affect channel levels in the corresponding Fader group.

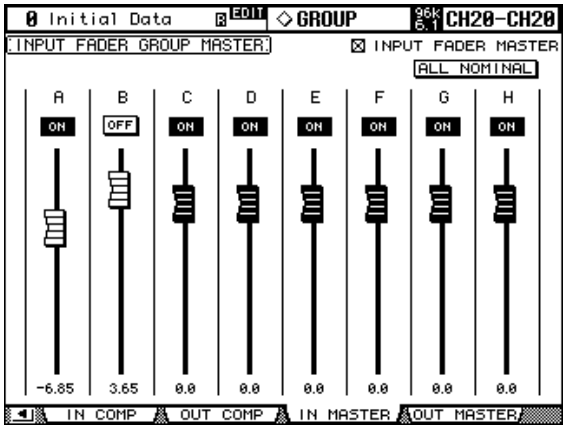
1 Follow Steps 1–4 as described in the "Grouping Input Channel Faders" section on the previous page, select the Input Fader Master check box, then press the [ENTER] button to check or uncheck the Input Fader Master check box.

2 When the Input Fader Master check box is checked, you can set channel levels of the Fader groups in the Master column.

When the Master column is selected, repeatedly pressing the [ENTER] button turns the Input Fader group on and off.

You can also make these settings in the Input Fader Group Master page, as shown below.

3 Use the DISPLAY ACCESS [GROUP] button to locate the Input Fader Group Master page.



4 Use the cursor buttons to select parameters, then use the Parameter wheel, INC/DEC buttons, or [ENTER] button to set the parameters.

INPUT FADER MASTER: When this check box is checked, you can set the master levels for the Input Fader groups. The resultant Input Channel level equals the corresponding Input Channel fader level plus the Group Master level.

ALL NOMINAL: This button resets the master levels for all Input Fader groups to nominal.

ON/OFF: This turns each Input Fader group on or off. This function works like a VCA mute on an analog mixing console.

Faders: These faders adjust the master levels of the Fader groups. Fader knobs are highlighted when faders are set to 0.0 dB. Press the [ENTER] button to set the currently-selected fader to 0.0 dB.

You can also control the parameters from the channel strips on the control surface as described below by using the User Assignable Layer of the Remote Layers. See page 228 for information on the User Assignable Layer.

Encoders: The Encoders are not available.

[AUTO] buttons: These buttons are used to control the Fader Group Master On/Off and the master level during Automix.

[SEL] buttons: These buttons move the cursor on the Input Fader Group Master page.

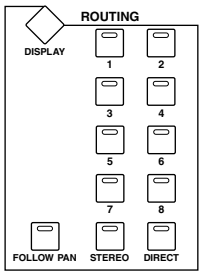
[SOLO] buttons: These buttons turn the Solo function of each Fader group on and off. You can monitor all the channels in each Fader group.

Channel Faders: The channel faders enable you to set the master level for each Fader group.

Routing Input Channels

Each Input Channel can be routed to the Bus Outs, Stereo Out, or its own Direct Out.

Using the SELECTED CHANNEL ROUTING Controls



1 Use the LAYER buttons to select the Layers, and use the [SEL] buttons to select the Input Channels.

2 Use the [1–8], [STEREO], and [DIRECT] buttons to route the currently selected Input Channel.

[1–8]: These buttons route the currently selected Input Channel to the Bus Outs.

[STEREO]: This button routes the currently selected Input Channel to the Stereo Out.

DIRECT: This button routes the currently selected Input Channel to its Direct Out.

[FOLLOW PAN]: This determines whether the Input Channel's Pan control setting is applied to the Bus Outs. When off, the levels of the signals fed to the odd and even Bus Outs is the same. When on, the levels of the signals fed to the odd and even Bus Outs follows the Pan control.

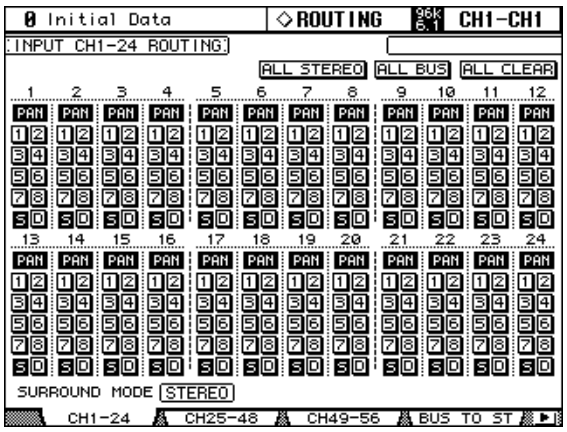
In Surround mode, when this button is turned off, the surround pan setting does not affect signals fed to the Bus Outs. You can enable the surround pan setting when the input source is monaural, and patch the surround sources or surround effects directly to the Surround Buses.

Routing Pages

Input Channel routing settings can be viewed and set on the Routing pages. If the Auto ROUTING Display preference is on, these pages appear automatically when a button in the SELECTED CHANNEL ROUTING section is pressed. See "Auto ROUTING Display" on page 230.

1 Use the SELECTED CHANNEL ROUTING [DISPLAY] button to select the Routing pages.

The Routing parameters for the 56 Input Channels are divided among three pages. The Input Channel 1–24 Routing page is shown below. The layout of the other two pages is the same.



2 Use the cursor buttons and Parameter wheel to select the parameters, and use the [ENTER] button or INC/DEC buttons to set them.

Channels can also be selected by using the LAYER buttons and [SEL] buttons.

ALL STEREO: This button assigns all Input Channels that are currently displayed to the Stereo Out.

ALL BUS: This button assigns all Input Channels that are currently displayed to all Bus Outs

ALL CLEAR: This button clears all routing assignments that are currently displayed.

The currently selected Surround mode is displayed in the lower-left corner. When Stereo mode is selected, the Bus Out routing buttons display numbers from 1 through 8. When a Surround Pan mode is selected, they display abbreviations of the Surround Channel names, as shown in the following table. See "Using Surround Pan" on page 85 for more information.

Surround Mode	Bus Outs							
	1	2	3	4	5	6	7	8
Stereo	1	2	3	4	5	6	7	8
3-1	L	R	C	S	5	6	7	8
5.1	L	R	Ls	Rs	C	E[1]	7	8
6.1	L	R	Ls	Rs	C	Bs	E	8

1. Short for LFE (Low frequency Effects).

This table shows the default assignments. The actual assignments may vary depending on the settings on the Surround Bus Setup page. See "Assigning Surround Channels to Buses" on page 87 for more information.

Panning Input Channels

Input Channels can be panned between the left and right channels of the Stereo Out.

Using the Encoders

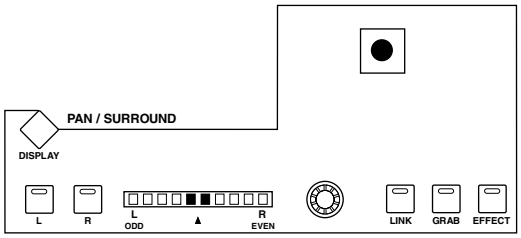
1 Use the LAYER buttons to select the Layers.

2 Press the ENCODER MODE [PAN] button to select the Pan Encoder mode.

3 Use the Encoders to pan the input channels.

Using the SELECTED CHANNEL PAN/SURROUND Controls

1 Use the LAYER buttons to select the Layers, and use the [SEL] buttons to select the Input Channels.



2 Use the Pan control to pan the currently selected Input Channel.

The pan display indicates the pan position of the currently selected Input Channel. When pan is set to center, the center two segments light up. You can use the [L] and [R] buttons to select horizontal or vertical Input Channel partners.

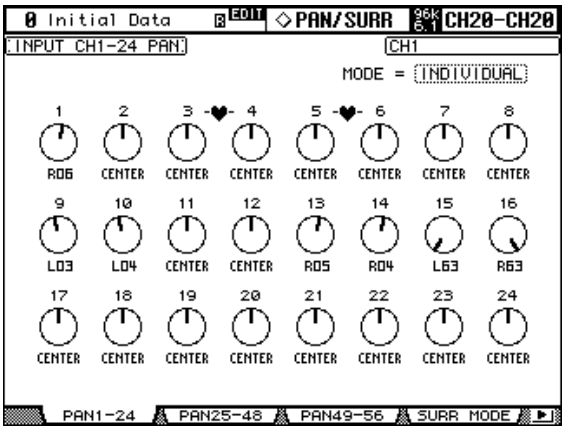
The [LINK] button, which is enabled only when a Surround mode other than Stereo is selected, is used to link the Pan control and the Joystick so that either control can be used for panning. This setting applies only to Input Channels that are currently selected. For this to work, the [EFFECT] button indicator must be off and the [GRAB] and [LINK] button indicators must be on.

Pan Pages

Pan settings can be viewed and set on the Pan pages. If the Auto PAN/SURROUND Display preference is on, these pages appear automatically when a control in the SELECTED CHANNEL PAN/SURROUND section is operated.

1 Use the SELECTED CHANNEL PAN/SURROUND [DISPLAY] button to select the Input Channel Pan pages.

The Pan parameters for the 56 Input Channels are arranged into three pages. The Input Channel 1–24 Pan page is shown below. The layout of the other two pages is the same.



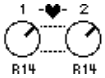
2 Use the cursor buttons to select the Pan controls, and use the Parameter wheel and INC/DEC buttons to set them.

Pan parameters can also be selected by using the LAYER buttons and [SEL] buttons.

The currently selected Pan control can be set to center by pressing [ENTER].

MODE: There are three Pan modes that determine how horizontally and vertically paired Input Channels are panned: Individual, Gang, and Inverse Gang. This is a global setting that applies to all paired Input Channels.

In individual mode, paired Input Channel pan controls operate independently.



In Gang mode, paired Input Channel pan controls operate in unison.

In Inverse Gang mode, paired Input Channel pan controls operate in unison but move in opposite directions.

Aux Send Pan controls can be linked to Input Channel Pan controls so that operating an Input Channel Pan control also operates the corresponding Aux Send Pan control, and vice versa (see page 103). While linked, the Pan mode can be set on the Aux Pan page or the Input Channel Pan page.

Note: While the PAN/SURROUND [LINK] button is turned on, the Pan mode is automatically set to Individual. When the Pan mode is switched from Gang mode to Inverse Gang mode, the [LINK] button is turned off.

Using Surround Pan

The 02R96 supports 3-1, 5.1 and 6.1 Surround modes. Surround pan is independent of normal panning. Normal panning determines how the Input Channel signal is panned between the left and right channels of the Stereo out. Whereas surround panning determines how the Input Channel signal is panned among the Surround channels (i.e., the Bus Outs).

If Input Channel Follow Pan is off, you can patch signals to the corresponding Bus Outs without being affected by the surround pan setting. This is useful when you want to assign the surround source or surround effect return to Bus Outs.

When the Nominal Pan preference is on (see page 231), signals will be at nominal level when panned hard left or hard right, and at +3 dB when the preference is turned off.

Note: If you have saved a scene with the Follow Pan function turned off on a 02R96 that is older than Version 2.0, the surround setting may not be reproduced

The following table shows how Surround channels are handled by the Bus Outs.

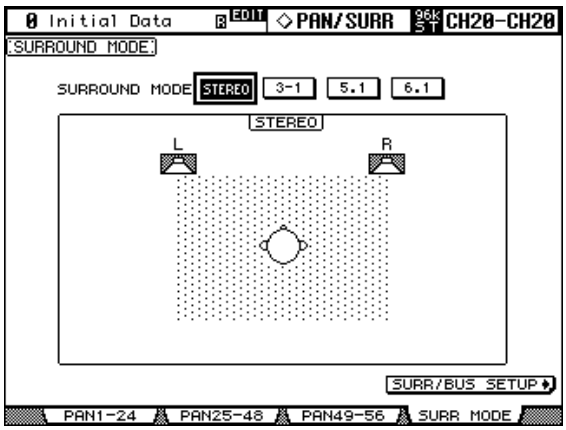
The table may vary depending on the settings on the Surround Bus Setup page (see page 87).

Surround Mode	Bus Outs						
	1	2	3	4	5	6	7
3-1	L	R	C	S	—	—	—
	Front left	Front right	Center	Surround			
5.1	L	R	Ls	Rs	C	LFE	—
	Front left	Front right	Rear left	Rear right	Center	Subwoofer	
6.1	L	R	Ls	Rs	C	Bs	LFE
	Front left	Front right	Rear left	Rear right	Center	Rear center	Subwoofer

Selecting Surround Pan Modes

The Surround mode can be selected as follows.

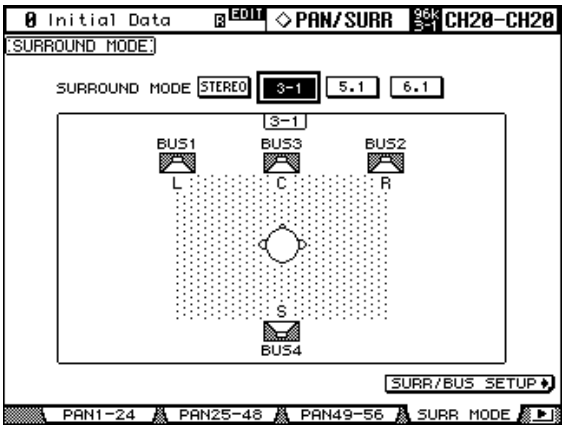
1 Use the SELECTED CHANNEL PAN/SURROUND [DISPLAY] button to select the Surround Mode page.



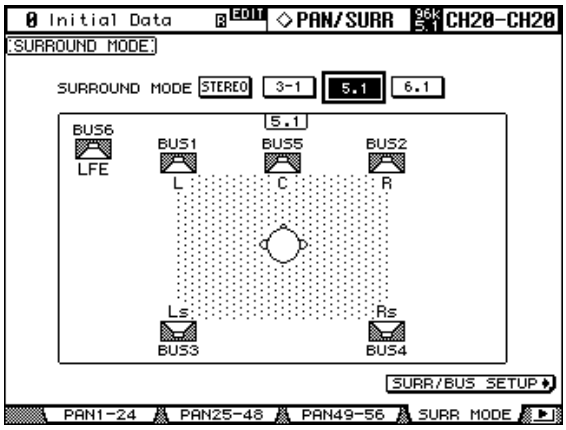
2 Use the cursor buttons to select the surround mode buttons, and press [ENTER] to activate the selected mode.

The diagram on each page shows the typical sound image placement and the Surround channel to Bus Out configuration.

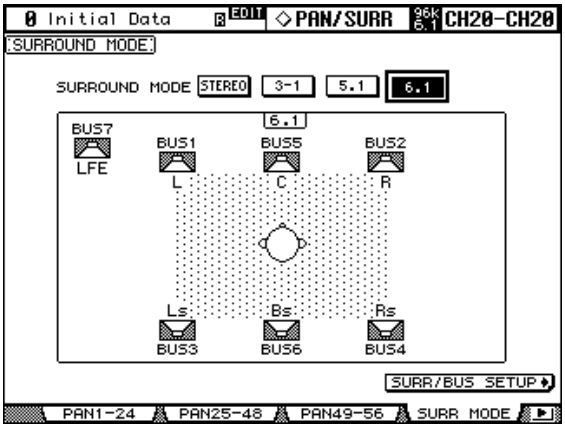
3-1 Surround



5.1 Surround



6.1 Surround

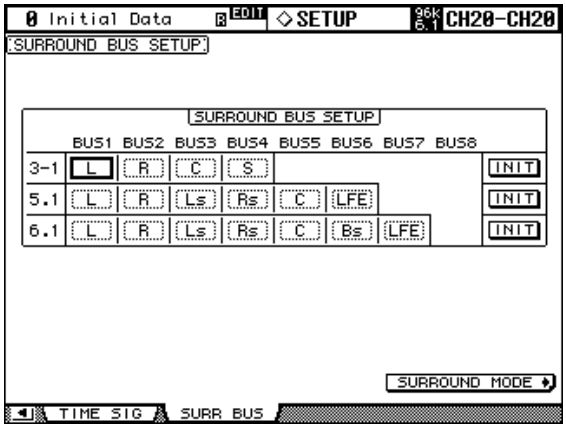


Select the SURR/BUS SETUP button, then press the [ENTER] button to display the Surround Bus Setup page, which enables you to change the Surround Channel to Bus Out assignment. See "Assigning Surround Channels to Buses" on page 87 for more information on the Surround Bus Setup page.

Assigning Surround Channels to Buses

You can modify the Surround Channel to Bus assignment.

1 Use the DISPLAY ACCESS [SETUP] button to locate the Surround Bus Setup page.

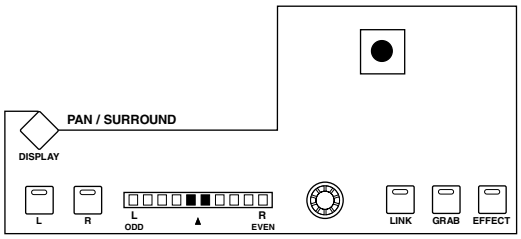


2 Use the cursor buttons to select the bus for which you want to change the surround channel assignment, then use the Parameter wheel or INC/DEC buttons to select a surround channel.

INIT: These buttons reset the channel assignment to the default setting.

Using the Joystick

1 Use the LAYER buttons to select the Layers, and use the [SEL] buttons to select the Input Channels.



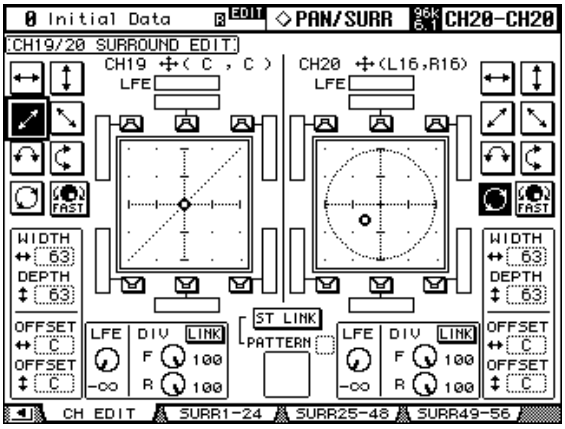
2 Press the [GRAB] button to grab the current Joystick position, and then use the Joystick to set the surround pan.

This is used to turn on and off Joystick surround pan control for the currently selected Input Channel. While Grab is on, the Joystick can be used to set the surround pan position of the currently selected Input Channel. If the Joystick is set to control effects (i.e., the [EFFECT] button indicator is lit), the [GRAB] button is disabled.

Selected Channel Surround Edit Page

Surround pan settings can be viewed and set on the Input Channel Surround Edit page. If the Auto PAN/SURROUND Display preference is on, and a Surround Pan mode other than Stereo is selected, this page appears automatically when a PAN/SURROUND control other than the [EFFECT] button is operated. See "Auto PAN/SURROUND Display" on page 230.

1 Use the SELECTED CHANNEL PAN/SURROUND [DISPLAY] button to select the Surround Edit page.



2 Use the LAYER buttons to select the Layers, and use the [SEL] buttons to select the Input Channels.

The Surround Edit page displays surround pan parameters for the currently selected Input Channel and its horizontal or vertical partner. The current surround pan position of each Input Channel is indicated by a small circle. It's also indicated numerically next to each Input Channel number, for example, "CH1 (L9, R10)."

The graph of the currently selected Input Channel displays a small square, which indicates the current position of the Joystick. If the Auto Grab preference is on (see page 231), when the Joystick is moved to the current surround pan position, the Joystick kicks in as surround pan control and the small square disappears.

The number of speaker icons and meters around the surround graph depends on the currently selected Surround mode. The meters indicate Bus Out signal levels.

You can move the surround pan directly to one of the speaker icons, including the box icons without speakers, by selecting its icon, and then pressing [ENTER].

3 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

Patterns: These buttons are used to select the seven patterns that determine how the surround pan moves by the Parameter wheel and INC/DEC buttons.

FAST: This sets the speed of surround pan control when using the Parameter wheel and INC/DEC buttons.

WIDTH: This sets the left-to-right width of the selected pattern.

DEPTH: This sets the front-to-rear depth of the selected pattern.

WIDTH OFFSET: This can be used to offset the left-to-right direction of the selected pattern.

DEPTH OFFSET: This can be used to offset the front-to-rear direction of the selected pattern.

LFE: This sets the level of the LFE (Low Frequency Effects) Channel (5.1 and 6.1 mode only).

DIV (divergence): This determines how the Center signal is fed to the Left, Right, and Center channels. When set to 0, the Center signal is fed only to the Left and Right channels (i.e., Phantom Center). When set to 50, the Center signal is fed equally to the Left, Right, and Center channels. When set to 100, it's fed to only the Center channel (i.e., Real Center) (3-1 and 5.1 mode only).

DIV F/R: The F parameter control determines how the Front Center signal is fed to the Left and Right channels. The R parameter control determines how the rear surround signal is fed to the Left and Right surround channels (only for 6.1 surround).

DIV LINK: When DIV LINK is on, the F and R parameter controls are set to the same value and linked to each other (only for 6.1 Surround).

ST LINK: This can be used to link the surround pan parameters of the currently selected Input Channel and its horizontal or vertical partner regardless of whether they are paired.

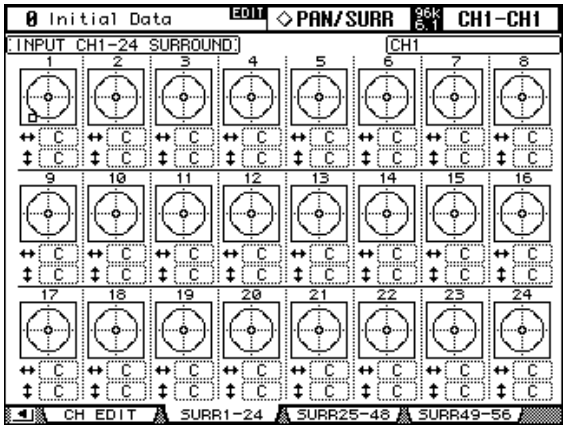
PATTERN: When Input Channels are linked, the eight patterns selectable here determine how the linked surround pan moves by the Parameter wheel and INC/DEC buttons.

Input Channel Surround Pages

Surround pan positions can be viewed and set on the Surround pages.

1 Use the SELECTED CHANNEL PAN/SURROUND [DISPLAY] button to select the Input Channel Surround pages.

The Surround parameters for the 56 Input Channels are arranged into three pages. The Input Channel 1–24 Surround page is shown below. The layout of the other two pages is the same.



2 Use the cursor buttons to select the Surround parameters, and use the Parameter wheel and INC/DEC buttons to set them.

Input Channels can also be selected by using the LAYER buttons and [SEL] buttons. The graph for the currently selected Input Channel displays a small square, which indicates the current position of the Joystick.

L/R: These parameters are used to set the left/right surround position. While selected, they can quickly be set to center by pressing [ENTER].

F/R: These parameters are used to set the front/rear surround position. While selected, they can quickly be set to center by pressing [ENTER].

You can jump to the more detailed Surround Edit page by pressing [ENTER] while an Input Channel's surround graph is selected.

Sending Input Channels to Aux Sends

Input Channel signals can be sent to Aux Sends 1–8. See "Setting Aux Send Levels" on page 99 and "Pre-Fader or Post-Fader Aux Sends" on page 98.

Soloing Input Channels

Input Channels can be soloed. See page 121 for more information.

Direct Outs

Each Input Channel features a Direct Out, which can be patched to the Slot Outputs, Omni Outs, or the 2TR Digital Outputs. Direct Out signals can be sourced pre-EQ, pre-fader, or post-fader. See "Patching Direct Outs" on page 70 and "Routing Input Channels" on page 82 for more information.

Pairing Input Channels

Horizontal or vertical Input Channel partners can be paired for stereo operation. See "Pairing Channels" on page 123 for more information.

Viewing Input Channel Settings

Parameter and fader settings for each Input Channel can be viewed on the View pages. See "Viewing Channel Parameter Settings" on page 129 and "Viewing Channel Fader Settings" on page 130 for more information.

Naming Input Channels

Input Channels can be named for easy identification. See "Naming Channels" on page 134 for more information.

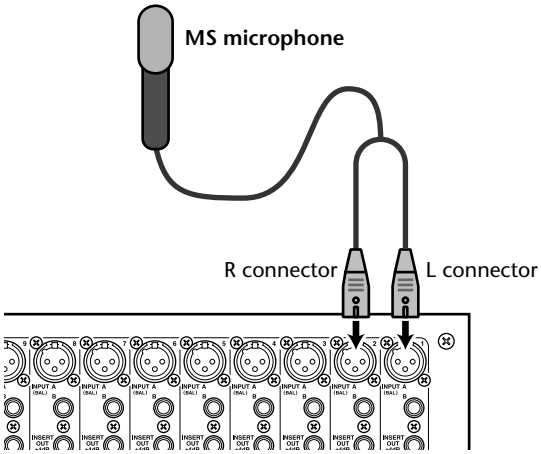
Using the MS Stereo Microphone

The MS system is a type of stereo recording that uses two microphones: mono-directional M (Middle) and bi-directional S (Side) microphones. An M microphone picks up main signals, and an S microphone picks up directional signals. These two signals are decoded by calculating a sum (M plus S) and a difference (M minus S), and are recorded to L and R channels.

An MS microphone is usually a stereo microphone that features both M and S functions. To use an MS microphone, do the following:

1 Connect the L connector of an MS microphone to an odd channel input jack, and the R connector to an even channel input jack.

Signals from the MS microphone are input from the L and R connectors. To use an MS microphone with the 02R96, connect the L connector to the input jack of an odd Input Channel, and connect the R connector to the input jack of the partner channel.



2 Use the DISPLAY ACCESS [PAIR] button to locate the Pair pages.

3 Turn on the MS button for the channels to which the MS microphone is connected.

The two channels are automatically paired and MS Decoding is turned on. With MS Decoding turned on, the faders and Encoders (Pan parameters) function as follows:

- **Odd-channel faders**.....M level (Controls the volume level.)
- **Odd-channel Encoders**.....ML/MR balance
- **Even-channel faders**.....S level (Controls the left and right directional spread.)
- **Even-channel Encoders**.....SL/SR balance

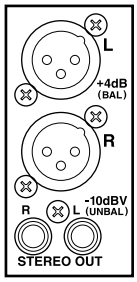
4 Use the faders and Encoders to adjust the MS microphone level and balance.

When the signals are routed to paired Buses or the Stereo Bus, a sum of signals (ML plus SL) is sent to the odd-numbered Bus, and a difference of signals (ML minus SL) is sent to the even-numbered Bus.

8 Stereo Out

Stereo Out Connectors

The Stereo Out is output by the STEREO OUT +4 dB (BAL) balanced XLR-3-32-type connectors and the STEREO OUT –10 dBV (UNBAL) unbalanced phono connectors.



Patching the Stereo Out to Outputs

The left and right channels of the Stereo Out can be patched to the Slot Outputs, Omni Outs, or the 2TR Digital Outputs. See "Output Patching" on page 68 for more information.

Routing Input Channels to the Stereo Out

Input Channels can be routed and panned to the Stereo Out. See "Routing Input Channels" on page 82 for more information.

Sending Bus Outs to the Stereo Out

Bus Out signals can be sent to the Stereo Out. See "Sending Bus Outs to the Stereo Out" on page 97 for more information.

Metering the Stereo Out

Stereo Out signal levels can be metered on the Meter pages. See "Metering" on page 107 for more information.

Monitoring the Stereo Out

The Stereo Out can be monitored via the CONTROL ROOM MONITOR OUTs and the PHONES (see page 136) or the STUDIO MONITOR OUT (see page 137).

Attenuating the Stereo Out

Stereo Out signals can be attenuated pre-EQ. See "Attenuating Signals" on page 110 for more information.

EQ'ing the Stereo Out

The Stereo Out features 4-band parametric EQ. See "Using EQ" on page 111 for more information.

Grouping Master EQs

The Stereo Out EQ can be grouped with the EQs of other Output Channels. See "Grouping Output Channel EQs" on page 114 for more information.

Stereo Out Inserts

Internal effects processors and external signal processors can be patched into the Stereo Out by using the Inserts. See "Using Inserts" on page 115 for more information.

Compressing the Stereo Out

Signal dynamics can be controlled by using the Stereo Out Compressor. See "Compressing Channels" on page 116 for more information.

Grouping Master Compressors

The Stereo Out Compressor can be grouped with the Compressors of other Output Channels. See "Grouping Output Channel Compressors" on page 119 for more information.

Muting the Stereo Out (ON/OFF)

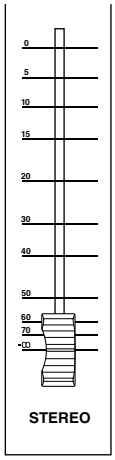
The Stereo Out can be muted by using the STEREO [ON] button, which is used exclusively for this task and is not affected by the Layers. Its indicator lights up when the Stereo Out is on.

Grouping Master Mutes (ON/OFF)

The Stereo Out Mute can be grouped with the Mutes of other Output Channels. See "Grouping Output Channel Mutes (ON/OFF)" on page 128 for more information.

Setting the Stereo Out Level

The Stereo Out level is set by using the STEREO fader, which is used exclusively for this task and is not affected by the Layers or Fader modes.



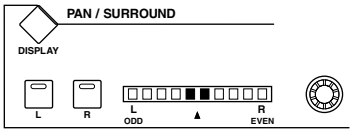
Grouping Master Faders

The Stereo Out fader can be grouped with the faders of other Output Channels. See "Grouping Output Channel Faders" on page 126 for more information.

Balancing the Stereo Out

The left and right channels of the Stereo Out can be balanced as follows.

1 Press the STEREO [SEL] button to select the Stereo Out.



2 Use the Pan control to set the balance.

The pan display indicates the balance. When the balance is set to center, the center two segments light up.

The Stereo Out balance can also be set on the Stereo Fader View page. See "Viewing Channel Fader Settings" on page 130 for more information.

Delaying the Stereo Out

The left and right channels of the Stereo Out can be delayed independently by using the Stereo Out Delay. See "Delaying Channel Signals" on page 120 for more information.

Viewing Stereo Out Settings

Parameter and fader settings for the Stereo Out can be viewed and set on the View pages. See "Viewing Channel Parameter Settings" on page 129 and "Viewing Channel Fader Settings" on page 130 for more information.

Naming the Stereo Out

The Stereo Out can be named for easy identification. See "Naming Channels" on page 134 for more information.

9 Bus Outs

Patching Bus Outs to Outputs

Bus Outs can be patched to the Slot Outputs, Omni Outs, or the 2TR Digital Outputs. See "Output Patching" on page 68 for more information.

Routing Input Channels to Bus Outs

Input Channels can be routed to the Bus Outs. See "Routing Input Channels" on page 82 for more information.

Metering Bus Outs

Bus Out signal levels can be metered on the Meter pages. See "Metering" on page 107 for more information.

Monitoring Bus Outs

Bus Outs can be assigned to the CONTROL ROOM [ASSIGN 1] or [ASSIGN 2] button for monitoring. See "Control Room Monitoring" on page 136 for more information.

Attenuating Bus Outs

Bus Out signals can be attenuated pre-EQ. See "Attenuating Signals" on page 110 for more information.

EQ'ing Bus Outs

Each Bus Out features 4-band parametric EQ. See "Using EQ" on page 111 for more information.

Grouping Master EQs

Bus Out EQs can be grouped with the EQs of other Output Channels. See "Grouping Output Channel EQs" on page 114 for more information.

Bus Out Inserts

Internal effects processors and external signal processors can be patched into the Bus Outs by using the Inserts. See "Using Inserts" on page 115 for more information.

Compressing Bus Outs

Signal dynamics can be controlled by using the Bus Out Compressors. See "Compressing Channels" on page 116 for more information.

Grouping Master Compressors

Bus Out Compressors can be grouped with the Compressors of other Output Channels. See "Grouping Output Channel Compressors" on page 119 for more information.

Muting Bus Outs (ON/OFF)

Bus Outs can be muted by using the channel strip [ON] buttons.

1 **Press the LAYER [MASTER] button to select the Master Layer.**

2 **Use channel strip [ON] buttons 17–24 to mute the Bus Outs.**

The [ON] button indicators of Bus Outs that are on light up.

Grouping Master Mutes (ON/OFF)

Bus Out Mutes can be grouped with the Mutes of other Output Channels. See "Grouping Output Channel Mutes (ON/OFF)" on page 128 for more information.

Setting Bus Out Levels

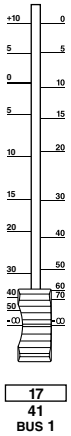
Bus Out levels can be set as follows.

1 **Press the LAYER [MASTER] button to select the Master Layer.**

2 **Press the FADER MODE [FADER] button to select Fader mode.**

3 **Use faders 17–24 to set the Bus Out levels.**

Refer to the legend on the right side of the faders when setting Bus Out levels.



Grouping Master Faders

Bus Out faders can be grouped with the faders of other Output Channels. See "Grouping Output Channel Faders" on page 126 for more information.

Delaying Bus Outs

Each Bus Out features a Delay function. See "Delaying Channel Signals" on page 120 for more information.

Soloing Bus Outs

Bus Outs can be soloed. See page 121 for more information.

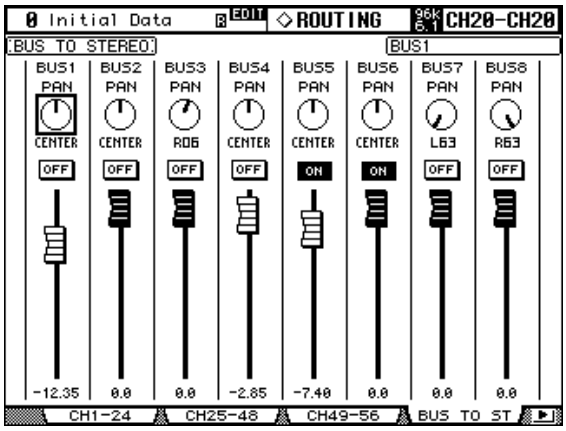
Pairing Bus Outs

Bus Outs can be paired for stereo operation. See "Pairing Channels" on page 123 for more information.

Sending Bus Outs to the Stereo Out

Bus Outs can be routed to the Stereo Out buses as follows. Bus Out to Stereo Out settings can be stored in the Bus to Stereo library, which contains 1 preset memory and 32 user memories. See "Bus to Stereo Library" on page 147 for more information.

1 Use the SELECTED CHANNEL ROUTING [DISPLAY] button to locate the Bus to Stereo page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

PAN: These controls are used to pan the Bus Out signals between the left and right Stereo Out buses. The currently selected Pan control can be set to center by pressing [ENTER].

ON/OFF: These buttons are used to turn on and off the Bus Out to Stereo Out routing.

Faders: These faders are used to set the Bus Out to Stereo Out levels. Fader knobs appear highlighted when faders are set to 0.0 dB.

Press the [ENTER] button to set the currently-selected fader to 0.0 dB. You can copy the currently-selected fader position to other faders by double-clicking the [ENTER] button.

Viewing Bus Out Settings

Parameter and fader settings for each Bus Out can be viewed and set on the View pages. See "Viewing Channel Parameter Settings" on page 129 and "Viewing Channel Fader Settings" on page 130 for more information.

Naming Bus Outs

Bus Outs can be named for easy identification. See "Naming Channels" on page 134 for more information.

10 Aux Sends

Patching Aux Send Masters to Outputs

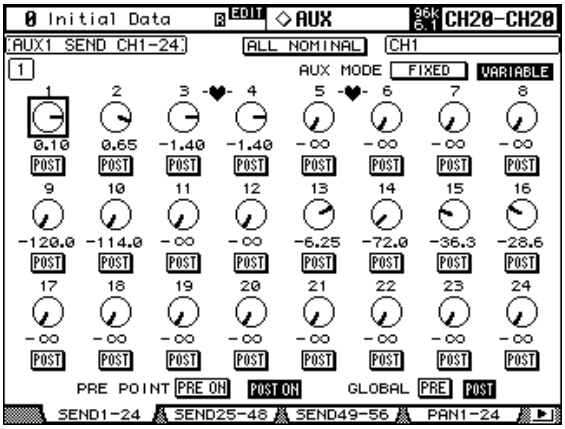
Aux Send Masters can be patched to the Slot Outputs, Omni Outs, or the 2TR Digital Outputs. See "Output Patching" on page 68 for more information.

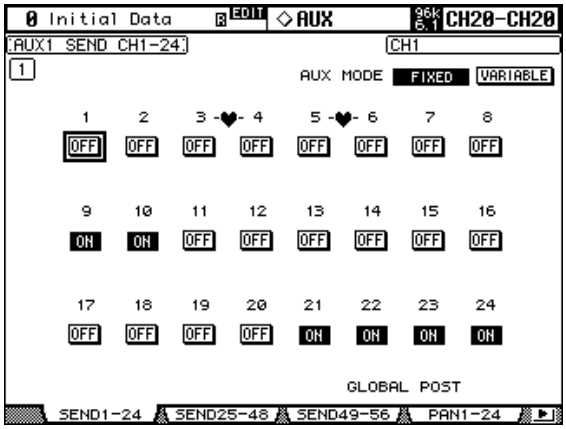
Setting the Aux Send Mode

Aux Sends have two operating modes—Variable and Fixed—which can be set individually for each of the eight Aux Sends. In Variable mode, Aux Send levels are variable and the signal source point can be either pre-fader or post-fader. In Fixed mode, Aux Send levels are fixed at nominal and the signal source point is fixed to post-fader.

1 Use the AUX SELECT [DISPLAY] button to select the Aux Send pages.

The Aux Send parameters for the 56 Input Channels are divided among three pages. The Input Channel 1–24 Aux Send page is shown below: Variable mode on the left, Fixed mode on the right. The layout of the other two pages is the same.





On the Fixed mode page, "GLOBAL POST" is displayed in the lower-right corner, indicating that the Aux Send Pre/Post parameter is fixed at Post.

2 Use the AUX SELECT [AUX 1]–[AUX 8] buttons to select Aux Sends 1–8.

3 Use the cursor buttons to select the FIXED and VARIABLE buttons, and press [ENTER] to select a mode.

When the Aux mode is changed, the parameters of the selected Aux Send are set as follows.

Parameters	Change from Variable to Fixed	Change from Fixed to Variable
Level	All set to nominal	All set to –∞
Pre/Post	All set to Post	
On/Off	All turned off	All turned on

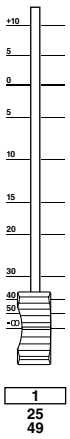
Pre-Fader or Post-Fader Aux Sends

Aux Sends can be configured individually as either pre-fader or post-fader on the Aux Send pages (see page 99) or the Aux View pages (see page 102). If Aux Sends are configured as pre-fader, you can position the send points before or after the [ON] buttons.

Setting Aux Send Levels

Aux Send levels can be set by using the faders or Encoders.

Using the Faders



1 **Use the LAYER buttons to select the Layers.**

2 **Press the FADER MODE [AUX] button to select the Aux Fader mode.**

3 **Use the AUX SELECT [AUX 1]–[AUX 8] buttons to select Aux Sends 1–8.**

4 **Use the faders to set the Aux Send levels.**

Refer to the legend on the left side of the faders when setting Aux Send levels.

Using the Encoders

1 **Use the LAYER buttons to select the Layers.**

2 **Press the ENCODER MODE [AUX] button to select the Aux Encoder mode.**

3 **Use the AUX SELECT [AUX 1]–[AUX 8] buttons to select Aux Sends 1–8.**

4 **Use the Encoders to set the Aux Send levels.**

Aux Send Pages

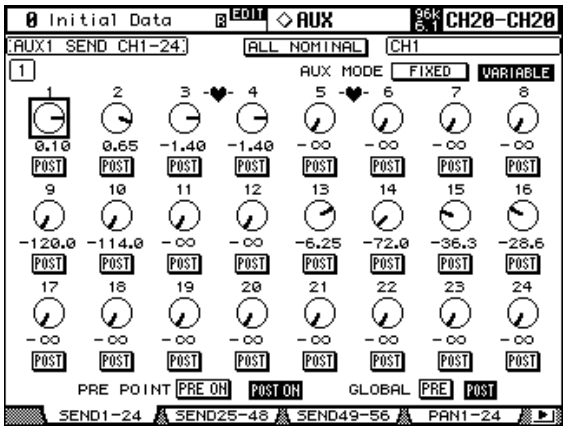
You can view and set the Aux Send parameters of all Input Channels on the Aux Send pages. Operation of the Aux Send pages in Variable and Fixed mode is explained separately.

Variable Mode

See page 98 for information on how to select Variable Aux mode.

1 **Use the AUX SELECT [DISPLAY] button to select the Aux Send pages.**

The Aux Send parameters for the 56 Input Channels are divided among three pages. The Input Channel 1–24 Aux Send page in Variable mode is shown below. The layout of the other two pages is the same.



2 **Use the AUX SELECT [AUX 1]–[AUX 8] buttons to select Aux Sends 1–8.**

3 **Use the cursor buttons to select the Input Channel Aux Send controls.**

Input Channels can also be selected by using the LAYER buttons and [SEL] buttons.

4 To turn Aux Sends on and off, select the rotary controls, and press [ENTER].

The rotary controls of Aux Sends that are turned off, appear gray, and "OFF" appears in place of the level value. Aux Send levels can still be changed even when they're off.

5 To set Aux Send levels, select the rotary controls, and use the Parameter wheel or INC/DEC buttons.

To set Aux Send levels for all Input Channels to nominal, select the ALL NOMINAL button.

6 To set the Pre Fader and Post Fader parameters, select the PRE/POST buttons, and use the [ENTER] button or INC/DEC buttons.

7 To set all Input Channels for the selected Aux Send to pre-fader or post-fader simultaneously, select the GLOBAL PRE or POST button, and then press [ENTER].

The PRE or POST button is highlighted, and remains highlighted as long as all Input Channel pre or post settings remain unchanged, so you can quickly see if all Input Channels are set to either pre-fader or post-fader.

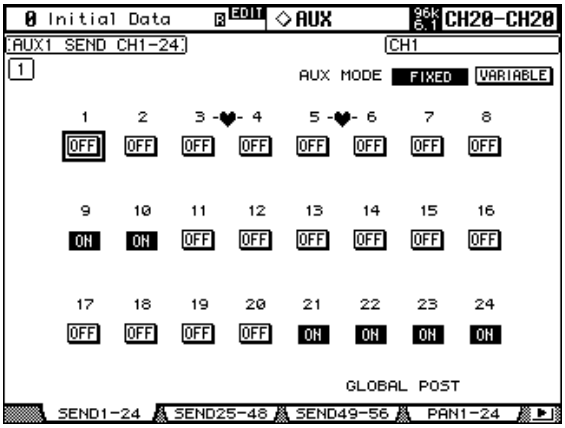
8 If you selected pre-fader, turn on the PRE ON button or POST ON button to set the Pre point before or after each channel's [ON] button.

Fixed Mode

See page 98 for information on how to select Fixed Aux mode.

1 Use the AUX SELECT [DISPLAY] button to select the Aux Send pages.

The Input Channel 1–24 Aux Send page in Fixed mode is shown below. The layout of the other two Aux Send pages in Fixed mode is the same.



2 Use the AUX SELECT [AUX 1]–[AUX 8] buttons to select Aux Sends 1–8.

3 Use the cursor buttons or Parameter wheel to select the Aux Send buttons.

Input Channels can also be selected by using the LAYER buttons and [SEL] buttons.

4 Use the [ENTER] button or INC/DEC buttons to turn Aux Sends on and off.

If the Fader mode is set to Aux, the faders provide a visual indication of the On/Off status of each Input Channel for the currently selected Aux Send. For Aux Sends that are on, faders move to the nominal position. Aux Sends that are off, they move to the –∞ position. On/Off settings cannot be changed by using the faders.

Viewing Aux Send Settings

You can view and set settings of all Aux Sends on the Aux View pages. Level and Pre/Post parameters are displayed separately.

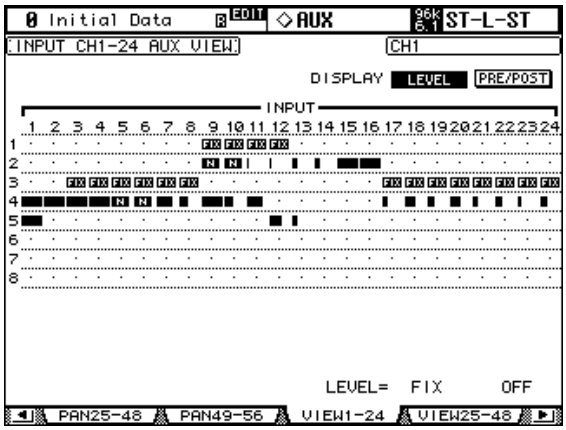
Level Parameters

In Level mode, the Aux View pages display Aux Send Level and On/Off parameters. Fixed mode Aux Sends can be turned on and off only.

1 Use the AUX SELECT [DISPLAY] button to select the Aux View pages.

2 Select the DISPLAY LEVEL button, and press [ENTER].

The Aux View parameters for the 56 Input Channels are divided among three pages. The Input Channel 1–24 Aux View page is shown below in Level mode. The layout of the other two pages is the same.



3 Use the cursor buttons to select the Input Channel Aux Sends.

Input Channels can also be selected by using the Input Channel Layer buttons and [SEL] buttons. Aux Sends can also be selected by using the AUX SELECT [AUX 1]–[AUX 8] buttons.

4 Use the Parameter wheel or INC/DEC buttons to set the Aux Send levels.

5 Use the [ENTER] button to turn on and off the selected Aux Send.

The various Aux View page indicators are as follows:

- · Send level set to –∞, or Fixed mode Aux Send set to off.
- ■ Send level bar.
- □ Send set to off.
- N Send level set to nominal.
- N Send off, level set to nominal.
- FIX Fixed mode Aux Send set to on.

In Variable Aux mode, the Level and On/Off parameter values for the selected Aux Send are displayed in the lower-right corner of the page, for example, "LEVEL: –2.0 dB ON/OFF: ON."

In Fixed Aux mode, the On/Off parameter values for the selected Aux Send are displayed in the lower-right corner of the page, for example, "LEVEL: FIXED ON/OFF: ON."

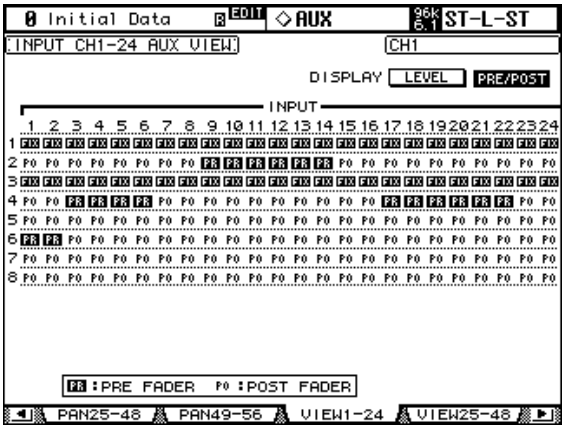
Pre/Post Parameters

In Pre/Post mode, the Aux View pages display Aux Send Pre/Post parameters. Fixed mode Aux Sends can be turned on and off only.

1 Use the AUX SELECT [DISPLAY] button to select the Aux View pages.

2 Select the DISPLAY PRE/POST button, and press [ENTER].

The Input Channel 1–24 Aux View page is shown below in Pre/Post mode. The layout of the other two Aux View pages in Pre/Post mode is the same.



3 Use the cursor buttons or Parameter wheel to select the Input Channel Aux Sends.

Input Channels can also be selected by using the LAYER buttons and [SEL] buttons. Aux Sends can also be selected by using the AUX SELECT [AUX 1]–[AUX 8] buttons.

4 Use the [ENTER] button or INC/DEC buttons to set the selected Aux Send to either pre-fader or post-fader.

The various Aux View page indicators are as follows:

- **PR** Aux Send configured pre-fader.
- **PO** Aux Send configured post-fader.
- **FIX** Fixed mode Aux Send.

Fixed mode Aux Sends can be turned on and off by using the [ENTER] or INC/DEC buttons.

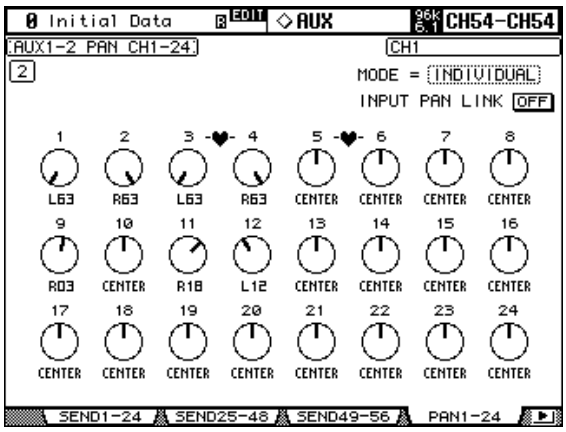
Panning Aux Sends

When Aux Sends are paired, Aux Sends can be panned between the paired Aux buses. See "Pairing Channels" on page 123 for more information. If the selected Aux Send is not paired, the message "AUX*x*–*x* are not paired" appears.

If the currently selected pair of Aux Send Masters is set to Follow Surround on the Output Pair page, Aux Sends follow the Input Channel Surround Pan settings and cannot be set here, in which case the message "Now AUX*x*-*x* PAN Following Surround" appears. See "Pairing Aux Sends" on page 106 for more information.

1 Use the AUX SELECT [DISPLAY] button to select the Aux Pan pages.

The Aux Pan parameters for the 56 Input Channels are divided among three pages. The Input Channel 1–24 Aux Pan page is shown below. The layout of the other two pages is the same.



2 Use the AUX SELECT [AUX 1]–[AUX 8] buttons to select the Aux Sends 1–8.

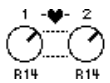
3 Use the cursor buttons to select Input Channel Aux Send pan controls, and use the Parameter wheel or INC/DEC buttons to set them.

Input Channels can also be selected by using the LAYER buttons and [SEL] buttons.

The currently selected Pan control can be set to center by pressing [ENTER].

MODE: There are three Pan modes that determine how paired Aux Sends are panned: Individual, Gang, and Inverse Gang. This is an individual setting that applies to each send in a pair of Aux Sends.

In individual mode, Aux Send pan controls operate independently.



In Gang mode, the Aux Send pan controls of paired Input Channels operate in unison.

In Inverse Gang mode, the Aux Send pan controls of paired Input Channels operate in unison but move in opposite directions.

INPUT PAN LINK: This is used to link Aux Send Pan controls to Input Channel Pan controls so that operating an Input Channel Pan control also operates the corresponding Aux Send Pan control, and vice versa. This can be set individually for each pair of Aux Send Masters. When a link is established, the pan positions and Pan mode of the Input Channels are copied to the Aux Sends. While linked, the Pan mode can be set from either the Aux Pan page or the Input Channel Pan page (see page 84). The Pan mode setting for Aux Sends is linked to the Pan mode setting for Input Channels.

Excluding Certain Channels from Aux Sends (Mix Minus)

You can quickly exclude certain channel signals from Aux Sends by using the controls on the top panel. This operation is called "Mix Minus."

For example, when Aux Sends are being used as monitors for the musicians or a narrator, you can turn off the audio signals of the musicians or narrator, excluding them from the monitor sound.

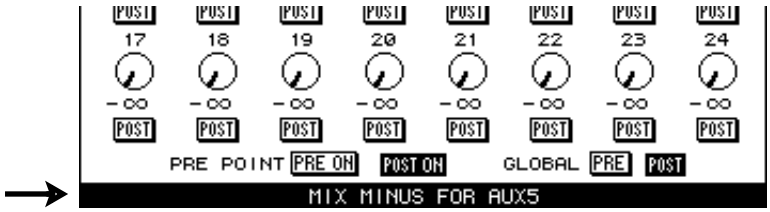
1 Press and hold down the AUX SELECT [AUX 1]–[AUX 8] buttons of the desired Aux Sends.

The [ON] button indicators in the channel strip remain lit while you hold down the button. This means that signals routed from channels with a lit [ON] button indicator to the Aux Send are turned on.

Note: If you release the AUX SELECT button before you proceed to Step 2, you will be unable to complete the Mix Minus operation.

2 Press the [ON] buttons of the Input Channels you wish to exclude from the Aux Send. You can select multiple channels.

The selected channels' [ON] button indicators turn off, and signals routed from those channels to the corresponding Aux Send are turned off. "MIX MINUS FOR AUX * " appears at the bottom of the screen. (The asterisk represents an Aux number.)



Tip: At this time, the Send Level controls on the Aux Send page are grayed out.

3 To reset the setting, while pressing and holding down the AUX SELECT [AUX 1]–[AUX 8] buttons you pressed in Step 1, press the [ON] buttons you pressed in Step 2.

The corresponding [ON] button indicators light up.

Copying Channel Fader Positions to Aux Sends

While Aux Sends are in Variable mode, you can copy all Input Channel fader positions on one layer to the corresponding Aux Sends.

This is convenient when you wish to send to the musicians monitor signals that have the same balance setting as the Stereo Out signals.

1 Locate the copy source layer button from the Input Channel Layer buttons, then press and hold down the button.

Note: If you release the button in the LAYER section before you proceed to Step 2, you will be unable to complete the Copy operation.

2 Press one of the AUX SELECT [AUX 1]–[AUX 8] buttons to select the desired Aux Send copy destination.

The confirmation message appears.

3 To execute the Copy operation, move the cursor to the [YES] button, then press [ENTER].

To cancel the Copy operation, move the cursor to the [NO] button, then press [ENTER].

Tip: If the copy destination Input Channel has been paired with a vertical partner in another Layer, the fader position will be copied to the partner's Aux Send.

Metering Aux Send Masters

Aux Send Master levels can be metered on the Meter pages. See "Metering" on page 107 for more information.

Monitoring Aux Send Masters

Aux Send Masters can be assigned to the CONTROL ROOM [ASSIGN 1] or [ASSIGN 2] button for monitoring. See "Control Room Monitoring" on page 136 for more information. Aux 7 and Aux 8 can be monitored via the STUDIO MONITOR OUT (see page 137).

Attenuating Aux Send Masters

Aux Send Master signals can be attenuated pre-EQ. See "Attenuating Signals" on page 110 for more information.

EQ'ing Aux Send Masters

Each Aux Send Master features 4-band parametric EQ. See "Using EQ" on page 111 for more information.

Grouping Master EQs

Aux Send Master EQs can be grouped with the EQs of other Output Channels. See "Grouping Output Channel EQs" on page 114 for more information.

Aux Send Master Inserts

Internal effects processors and external signal processors can be patched into the Aux Send Masters by using the Inserts. See "Using Inserts" on page 115 for more information.

Compressing Aux Send Masters

Signal dynamics can be controlled by using the Aux Send Master Compressors. See "Compressing Channels" on page 116 for more information.

Grouping Master Compressors

Aux Send Master Compressors can be grouped with the Compressors of other Output Channels. See "Grouping Output Channel Compressors" on page 119 for more information.

Muting Aux Send Masters (ON/OFF)

Aux Send Masters can be muted as follows.

1 Press the LAYER [MASTER] button to select the Master Layer.

2 Use channel strip [ON] buttons 9–16 to mute the Aux Send Masters.

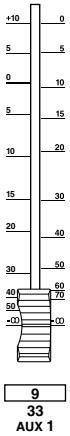
The [ON] button indicators of Aux Send Masters that are on light up.

Grouping Master Mutes (ON/OFF)

Aux Send Master Mutes can be grouped with the Mutes of other Output Channels. See "Grouping Output Channel Mutes (ON/OFF)" on page 128 for more information.

Settings Aux Send Master Levels

Aux Send Master levels can be set as follows.



1 **Press the LAYER [MASTER] button to select the Master Layer.**

2 **Press the FADER MODE [FADER] button to select the Fader mode.**

3 **Use faders 9–16 to set the Aux Send Master levels.**

Refer to the legend on the right side of the faders when setting Aux Send Master levels.

Grouping Master Faders

Aux Send Master faders can be grouped with the faders of other Output Channels. See "Grouping Output Channel Faders" on page 126 for more information.

Delaying Aux Send Masters

Each Aux Send Master features a Delay function. See "Delaying Channel Signals" on page 120 for more information.

Soloing Aux Sends

Aux Sends can be soloed. See page 121 for more information.

Pairing Aux Sends

Aux Sends can be paired for stereo operation. See "Pairing Channels" on page 123 for more information.

Viewing Aux Send Master Settings

Parameter and fader settings for each Aux Send Master can be viewed and set on the View pages. See "Viewing Channel Parameter Settings" on page 129 and "Viewing Channel Fader Settings" on page 130 for more information.

Naming Aux Send Masters

Aux Send Masters can be named for easy identification. See "Naming Channels" on page 134 for more information.

11 Common Channel Functions

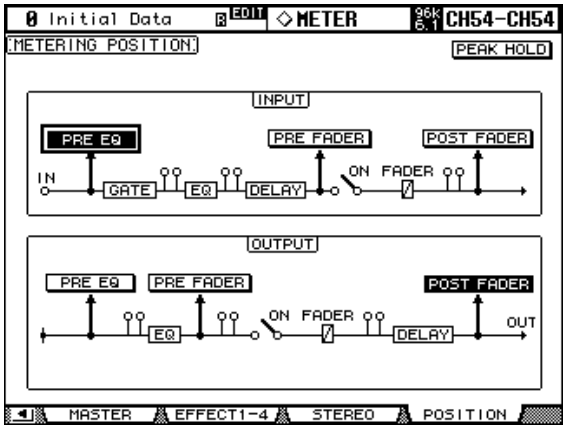
Metering

Input Channels, Bus Outs, Aux Sends, the Stereo Out, and the effects processors can be metered on the various Meter pages, which are located by using the DISPLAY ACCESS [METER] button.

Input and Output Channel Meter pages also display fader positions numerically. The Peak Hold function, which applies to all level meters, can be turned on or off on any of the Meter pages.

Setting the Metering Position

Input and Output Channels can be metered pre-EQ, pre-fader, or post-fader. This setting, which can be set independently for the Input and Output Channels, can be set on the Metering Position page shown below, or any of the Input and Output Channel Meter pages.



PRE EQ: Channels are metered pre-EQ.

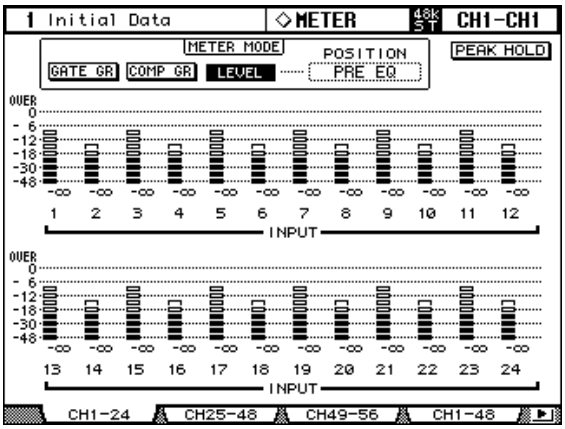
PRE FADER: Channels are metered pre-fader.

POST FADER: Channels are metered post-fader.

Metering Input Channels

There are two types of Input Channel Meter page: 24-channel and 48-channel.

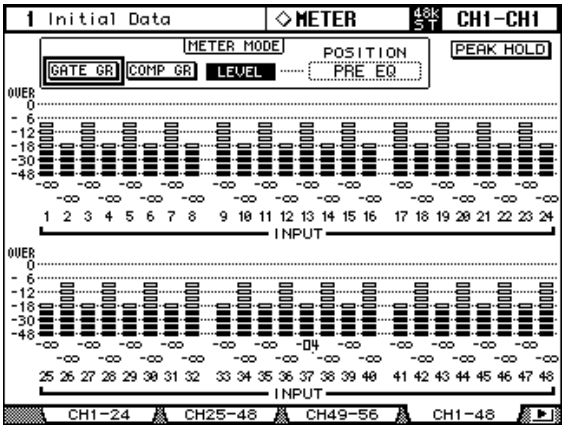
There are three 24-channel Meter pages. The Input Channel 1–24 Meter page is shown below. The layout of the other two pages is the same. These pages feature two level meters for each Input Channel. When Input Channels are vertically paired, both meters operate. When Input Channels are horizontally paired, only the left-hand meter operates.



GATE GR: The meters indicate the gain reduction being applied by the Gate.

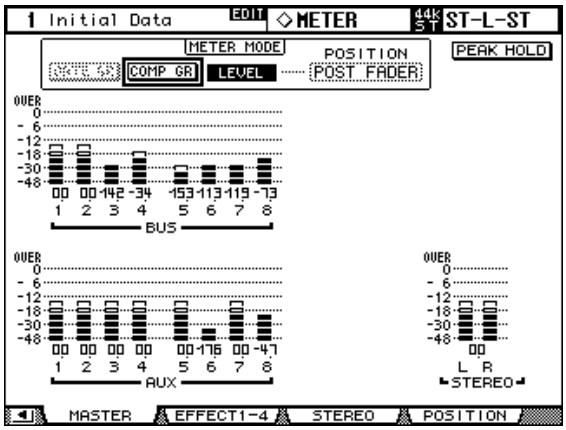
COMP GR: The meters indicate the gain reduction being applied by the Compressor.

There are two 48-channel Meter pages. The Input Channel 1–48 Meter page is shown below. The layout of the other page is the same.



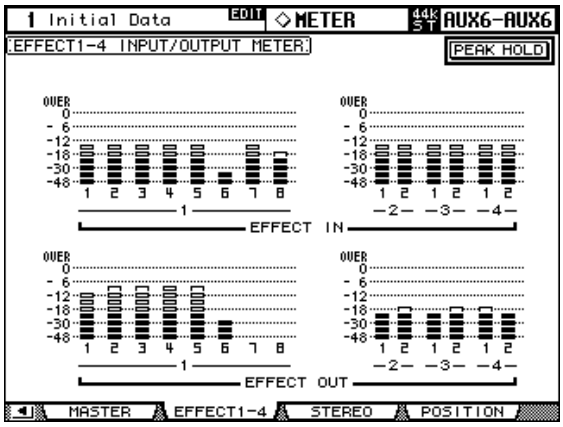
Metering Output Channels

Bus Outs, Aux Sends, and the Stereo Out can all be metered on the Master Meter page.



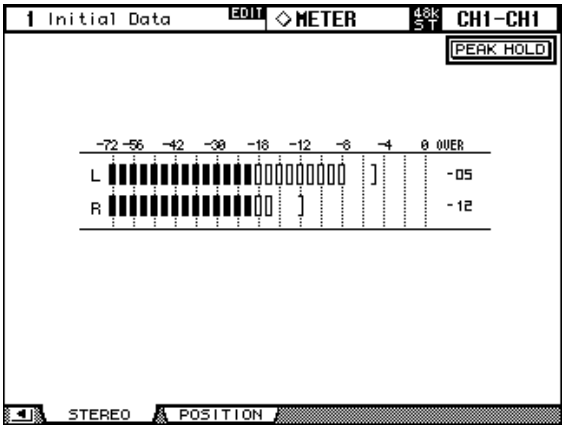
Metering Effects

Effects inputs and outputs are metered on the Effect 1–4 page. There are eight input and output meters for effect #1, and 2 input and output meters for effects 2 through 4.



Metering the Stereo out

The Stereo Out can be metered on the Stereo Meter page. Peak signal levels for the left and right channels are displayed numerically.

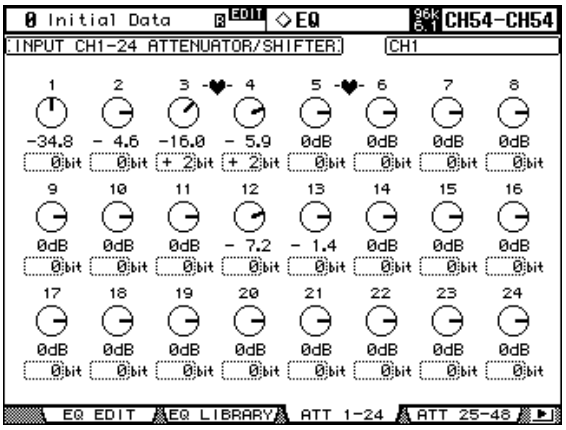


Attenuating Signals

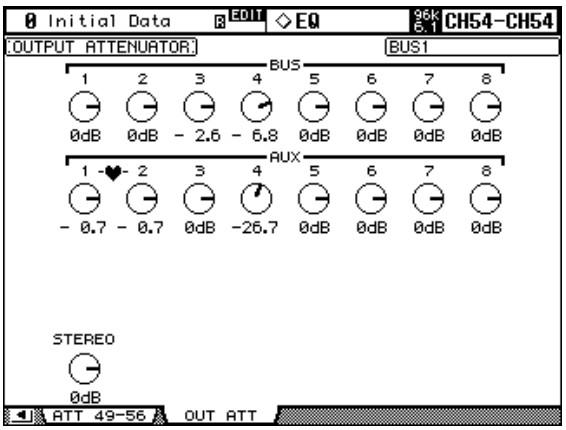
Input Channels, Bus Outs, Aux Sends, and the Stereo Out all feature pre-EQ attenuation, which is useful for attenuating "hot" signals before EQ'ing.

1 Use the EQUALIZER [DISPLAY] button to select the Attenuator pages.

The Attenuator parameters for the 56 Input Channels are arranged into three pages. The Input Channel 1–24 Attenuator/Shifter page is shown below. The layout of the other two pages is the same.



The attenuator parameters for the Output Channels appear on the Output Attenuator page.



2 Use the cursor buttons to select the channels, and use the Parameter wheel or INC/DEC buttons to set the amount of attenuation.

Input and Output Channels can also be selected by using the LAYER and [SEL] buttons.

You can copy the currently selected Input or Output Channel attenuation setting to all Input or Output Channels respectively by double-clicking the [ENTER] button.

For Input Channels, you can also set the amount of attenuation in bits from +2 bits to –24 bits. Use the cursor buttons to select the bit shift parameters, and use the Parameter wheel or INC/DEC buttons to set them. The rotary attenuators and the bit shift parameters can be set independently.

You can set the attenuator parameters for individual Input and Output Channels on the Input Attenuator and Output Attenuator pages, regardless of paired channels. The changes made on the Attenuator pages, along with the level balance between channels, will be reflected in the settings in the SELECTED CHANNEL section, in the EQUALIZER [ATT] controls, and on the EQ Edit page.

Using EQ

Input Channels, Bus Outs, Aux Sends, and the Stereo Out all feature 4-band parametric EQ. The LOW-MID and HIGH-MID bands are peaking type. The LOW and HIGH bands can be set to shelving, peaking, or HPF and LPF respectively. EQ settings can be stored in the EQ library, which contains 40 preset memories and 160 user memories. See "EQ Library" on page 150 for more information.

Preset EQs

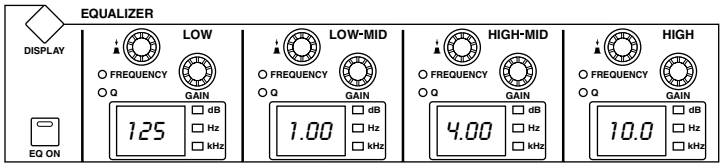
The following table lists the preset EQs. See page 282 for detailed parameter information.

#	Preset Name	Description
1	**Bass Drum 1**	Emphasizes the low range of a bass drum and the attack created by the beater.
2	**Bass Drum 2**	Creates a peak around 80 Hz, producing a tight, stiff sound.
3	**Snare Drum 1**	Emphasizes "snappy" and rimshot sounds.
4	**Snare Drum 2**	Emphasizes various ranges for that classic rock snare drum sound.
5	**Tom-tom 1**	Emphasizes the attack of tom-toms, and creates a long, "leathery" decay.
6	**Cymbal**	Emphasizes the attack of crash cymbals, extending the "sparkling" decay.
7	**High Hat**	Use on a tight high-hat, emphasizing the mid to high range.
8	**Percussion**	Emphasizes attack and adds clarity to the high-range of instruments, such as shakers, cabasas, and congas.
9	**E. Bass 1**	Produces a tight electric bass sound by cutting very low frequencies.
10	**E. Bass 2**	Unlike preset 9, this preset emphasizes the low range of an electric bass.
11	**Syn. Bass 1**	Use on a synth bass with emphasized low range.
12	**Syn. Bass 2**	Emphasizes the attack that is peculiar to synth bass.
13	**Piano 1**	Makes pianos sound brighter.
14	**Piano 2**	Used in conjunction with a compressor, this preset emphasizes the attack and low range of pianos.
15	**E. G. Clean**	Use for line-level recording of an electric or semi-acoustic guitar to get a slightly harder sound.
16	**E. G. Crunch 1**	Adjusts the tonal quality of a slightly distorted guitar sound.
17	**E. G. Crunch 2**	A variation on preset 16.
18	**E. G. Dist. 1**	Makes a heavily distorted guitar sound clearer.
19	**E. G. Dist. 2**	A variation on preset 18.
20	**A. G. Stroke 1**	Emphasizes the bright tones of acoustic guitars.
21	**A. G. Stroke 2**	A variation on preset 20. You can also use it with gutsy guitar sounds.
22	**A. G. Arpeg. 1**	Ideal for arpeggio playing on acoustic guitars.
23	**A. G. Arpeg. 2**	A variation on preset 22.
24	**Brass Sec.**	Use with trumpets, trombones, or saxes. When used with a single instrument, try adjusting the HIGH or HIGH-MID frequency.
25	**Male Vocal 1**	An EQ template for male vocals. Try adjusting the HIGH or HIGH-MID parameters according to the voice quality.
26	**Male Vocal 2**	A variation on preset 25.
27	**Female Vo. 1**	An EQ template for female vocals. Try adjusting the HIGH or HIGH-MID parameters according to the voice quality.
28	**Female Vo. 2**	A variation on preset 27.
29	**Chorus&Harmo**	An EQ template for brightening choruses.
30	**Total EQ 1**	Use on a stereo mix during mixdown. Sounds even better when used with a compressor.
31	**Total EQ 2**	A variation on preset 30.
32	**Total EQ 3**	A variation on preset 30. Can also be used with paired Input or Output Channels.

#	Preset Name	Description
33	**Bass Drum 3**	A variation on preset 1, with low and mid range reduced.
34	**Snare Drum 3**	A variation on preset 3, creating a thicker sound.
35	**Tom-tom 2**	A variation on preset 5, emphasizing the mid and high ranges.
36	**Piano 3**	A variation on preset 13.
37	**Piano Low**	Emphasizes the low range of pianos recorded in stereo.
38	**Piano High**	Emphasizes the high range of pianos recorded in stereo.
39	**Fine-EQ Cass**	Add clarity when recording to or from cassette tape.
40	**Narrator**	Ideal for recording narration.

Using the SELECTED CHANNEL EQUALIZER Controls

1 Use the LAYER buttons to select Layers, and use the [SEL] buttons to select channels.



2 Use the [EQ ON] button to turn the EQ on or off.

3 Use the GAIN controls to set the gain of each band.

When a GAIN control is adjusted, the gain in dB is displayed on the corresponding EQ display. If the GAIN control is not adjusted for two seconds, the EQ display returns to displaying the frequency.

4 To set the frequency, press a FREQUENCY/Q control so that the FREQUENCY indicator lights up, and use the FREQUENCY/Q control to set the frequency.

The frequency is displayed by the corresponding EQ display.

5 To set the Q, press a FREQUENCY/Q control so that the Q indicator lights up, and use the FREQUENCY/Q control to set the Q.

The Q value is displayed by the corresponding EQ display. If the Q control is not adjusted for two seconds, the EQ display returns to displaying the frequency.

To reset an individual gain control, hold down the corresponding FREQUENCY/Q control. To reset all gain controls, press the LOW and HIGH FREQUENCY/Q controls.

The EQ parameter ranges are as follows.

Parameter	LOW	LOW-MID	HIGH-MID	HIGH
Gain	–18.0 dB to +18.0 dB (0.1 dB steps)[1]			
Frequency	21.2 Hz to 20.0 kHz (120 steps per 1/12 octave)			
Q	HPF, 10.0 to 0.10 (41 steps), L.SHELF	10.0 to 0.10 (41 steps)		LPF, 10.0 to 0.10 (41 steps), H.SHELF

1. The LOW and HIGH GAIN controls function as filter on/off controls when Q is set to HPF or LPF respectively.

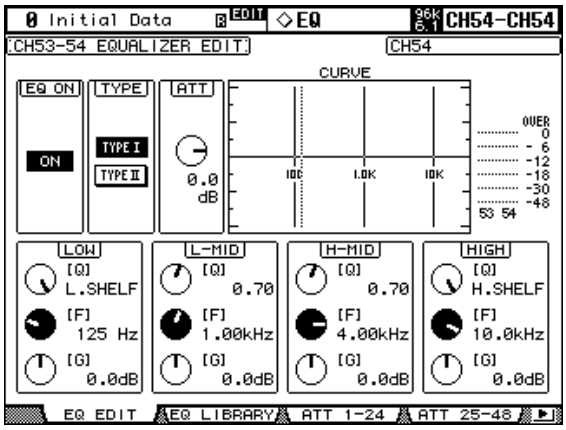
The initial EQ parameter settings are as follows.

Parameter	LOW	LOW-MID	HIGH-MID	HIGH
Gain	0 dB			
Frequency	125 Hz	1.00 kHz	4.00 kHz	10.0 kHz
Q	L.SHELF	0.70		H.SHELF

EQ Edit Pages

EQ parameters can also be set on the EQ Edit page. If the Auto EQUALIZER Display preference is on, this page appears automatically when a control in the SELECTED CHANNEL EQUALIZER section is operated. See "Auto EQUALIZER Display" on page 230.

1 Use the EQUALIZER [DISPLAY] button to select the EQ Edit page.



2 Use the LAYER buttons to select Layers, and use the [SEL] buttons to select channels.

3 Use the cursor buttons to select the parameters, and use the Parameter wheel and INC/DEC buttons to set them.

EQ ON: This turns the EQ on and off. While this page is selected, the [ENTER] button can be used to turn the EQ on and off so long as any parameter other than TYPE is selected.

TYPE: This selects the type of EQ: TYPE I (the EQ type used on legacy Yamaha digital mixing consoles) or TYPE II (a newly developed algorithm).

ATT: This can be used to attenuate signals pre-EQ. It's the same Attenuator parameter that appears on the Attenuator pages. See "Attenuating Signals" on page 110 for more information.

CURVE: This displays the EQ curve of the currently selected Input Channel.

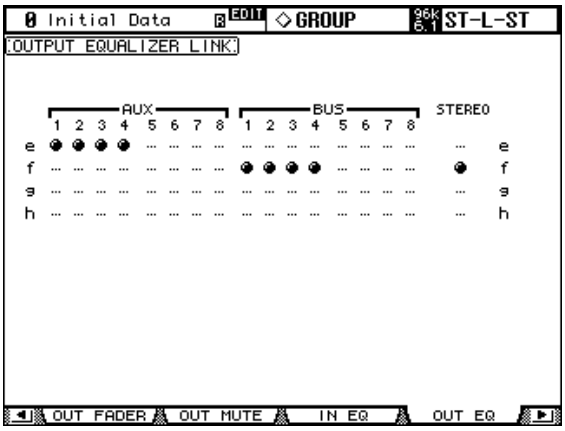
Level meters: These meters indicate the levels of the currently selected Input Channel and its horizontal or vertical partner.

LOW, L-MID, H-MID, HIGH: These are the Q, Frequency (F), and Gain (G) parameters for the four bands. The parameter (F or Q) you selected using the FREQUENCY/Q control is highlighted.

Grouping Output Channel EQs

The Bus Out, Aux Send, and Stereo Out EQs can be grouped, allowing you to control the EQ of several Output Channels simultaneously. There are four Output Channel EQ groups: e, f, g, and h.

1 Use the DISPLAY ACCESS [GROUP] button to locate the Output Equalizer Link page.



2 Press the LAYER [MASTER] button.

3 Use the Up/Down cursor buttons to select EQ groups e–h.

The selected group is highlighted by a flashing cursor box.

4 Use the [SEL] buttons to add and remove Output Channels to and from the selected group.

The EQ settings of the first Output Channel added to the group are applied to all subsequently added Output Channels.

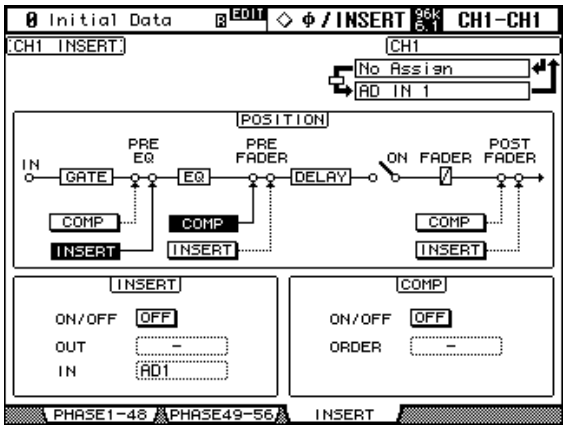
When an Output Channel is added to a group, its [SEL] button indicator lights up.

Using Inserts

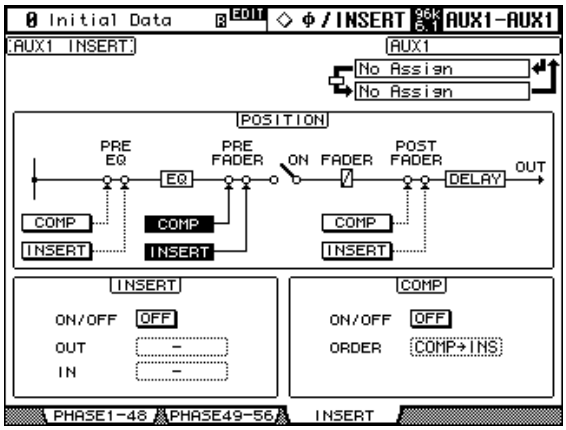
Input Channels, Bus Outs, Aux Sends, and the Stereo Out all feature assignable Inserts.

1 Use the SELECTED CHANNEL DISPLAY ACCESS [PHASE/INSERT] button to select the Insert page.

The Insert page for Input Channels is shown below.



The Insert page for Bus Outs, Aux Sends, and the Stereo out is shown below.



2 Use the LAYER buttons to select Layers, and use the [SEL] buttons to select channels.

3 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

POSITION: This determines the position of the Insert and Compressor within the channel, and can be set to pre-EQ, pre-fader, or post-fader. Click the desired [COMP] and [INSERT] buttons in the POSITION block diagram to select the Compressor and Insert positions.

INSERT ON/OFF: This turns the currently selected channel's Insert on and off.

INSERT OUT: This selects the destination for the Insert Out, which can be a Slot Output, Omni Out, 2TR Digital Output, or the input to an internal effects processor. See page 241 and page 245 for Input and Output patch parameter lists. The Port ID of the currently selected destination is displayed below the currently selected channel's Long name in the upper-right corner of the page. The destination port can also be selected by using the Patch Select window (see page 71), which is accessed by pressing [ENTER] while this parameter is selected. Insert Outs can also be patched on the Output Patch pages. See "Output Patching" on page 68 for more information.

INSERT IN: This selects the source for the Insert In, which can be an AD Input, Slot Input, 2TR Digital or Analog Input, or the output of an internal effects processor. See page 241 for a list of Input Channel Insert In sources; page 245 for a list of Output Channel Insert In sources. The Port ID of the currently selected source is displayed below the currently selected channel's Long name in the upper-right corner of the page. The source port can also be selected by using the Patch Select window (see page 71), which is accessed by pressing [ENTER] while this parameter is selected. Insert Ins can also be patched on the Input Channel Insert In Patch pages. See "Patching Input Channel Insert Ins" on page 67 for more information.

COMP ON/OFF: This turns the currently selected channel's Compressor on and off. It works in unison with the SELECTED CHANNEL DYNAMICS [COMP ON] button, and the ON/OFF button on the Comp Edit page. See "Compressing Channels" on page 116 for more information.

COMP ORDER: If the Insert and Compressor are set to the same position in the channel (i.e., INSERT POSITION and COMP POSITION are the same), you can use this parameter to set the order of the Insert and Compressor to either Comp->Ins or Ins->Comp.

When a Y56K card effect, or an internal effects processor is inserted in the currently selected channel, when the EFFECTS/PLUG-INS [CHANNEL INSERTS] button is pressed, the corresponding EFFECTS/PLUG-INS [1–4] button indicator flashes, and the corresponding Effects, or Plug-In edit page appears. If it's a Y56K card that's inserted, the [PLUG-INS] button indicator also flashes. If it's an internal effects processor, the [INTERNAL EFFECTS] button indicator also flashes. This applies only to effects that are inserted into channels. If there's nothing inserted in the currently selected channel, a message appears.

Compressing Channels

Input Channels, Bus Outs, Aux Sends, and the Stereo Out all feature a Compressor. Settings can be stored in the Comp library, which contains 36 preset memories and 92 user memories. See "Comp Library" on page 149 for more information.

Preset Comps & Types

The following table lists the preset Comps and types. See page 284 for detailed parameter information.

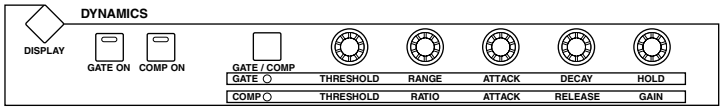
#	Preset Name	Type	Description
1	**Comp**	COMP	Compressor intended to reduce the overall volume level. Use it on the stereo output during mixdown, or with paired Input or Output Channels.
2	**Expand**	EXPAND	Expander template.
3	**Compander (H)**	COMPAND-H	Hard-kneed compressor template.
4	**Compander (S)**	COMPAND-S	Soft-kneed compressor template.
5	**A. Dr. BD**	COMP	Compressor for use with acoustic bass drum.
6	**A. Dr. BD**	COMPAND-H	Hard-kneed compander for use with acoustic bass drum.
7	**A. Dr. SN**	COMP	Compressor for use with acoustic snare drum.
8	**A. Dr. SN**	EXPAND	Expander for use with acoustic snare drum.
9	**A. Dr. SN**	COMPAND-S	Soft-kneed compander for use with acoustic snare drum.
10	**A. Dr. Tom**	EXPAND	Expander for use with acoustic tom toms, which automatically reduces the volume when the tom toms are not played, improving mic separation.
11	**A. Dr. OverTop**	COMPAND-S	Soft-kneed compander for emphasizing the attack and ambience of cymbals recorded with overhead mics. It automatically reduces the volume when the cymbals are not played, improving mic separation.
12	**E. B. Finger**	COMP	Compressor for leveling the attack and volume of a finger-picked electric bass guitar.

#	Preset Name	Type	Description
13	**E. B. Slap**	COMP	Compressor for leveling the attack and volume of a slapped electric bass guitar.
14	**Syn. Bass**	COMP	Compressor for controlling or emphasizing the level of a synth bass.
15	**Piano1**	COMP	Compressor for brightening the tonal color of a piano.
16	**Piano2**	COMP	A variation on preset 15, using a deep threshold to change the overall attack and level.
17	**E. Guitar**	COMP	Compressor for electric guitar "cutting" or arpeggio-style backing. The sound color can be varied by playing different styles.
18	**A. Guitar**	COMP	Compressor for acoustic guitar "stroke" or arpeggio-style backing.
19	**Strings1**	COMP	Compressor for use with strings.
20	**Strings2**	COMP	A variation on preset 19, intended for violas or cellos.
21	**Strings3**	COMP	A variation on preset 20, intended for string instruments with a very low range, such as cellos or contrabass.
22	**BrassSection**	COMP	Compressor for brass sounds with a fast and strong attack.
23	**Syn. Pad**	COMP	Compressor for synth pad, intended to prevent diffusion of the sound.
24	**SamplingPerc**	COMPAND-S	Compressor for making sampled percussion sound like real acoustic percussion.
25	**Sampling BD**	COMP	A variation on preset 24, intended for sampled bass drum sounds.
26	**Sampling SN**	COMP	A variation on preset 25, intended for sampled snare drum sounds.
27	**Hip Comp**	COMPAND-S	A variation on preset 26, intended for sampled loops and phrases.
28	**Solo Vocal1**	COMP	Compressor for use with main vocals.
29	**Solo Vocal2**	COMP	A variation on preset 28.
30	**Chorus**	COMP	A variation on preset 28, intended for choruses.
31	**Click Erase**	EXPAND	Expander for removing a click track that may bleed through from a musicians headphones.
32	**Announcer**	COMPAND-H	Hard-kneed compander for reducing the level of the music when an announcer speaks.
33	**Limiter1**	COMPAND-S	A soft-kneed compander with a slow release.
34	**Limiter2**	COMP	A "peak-stop" compressor.
35	**Total Comp1**	COMP	Compressor for reducing the overall volume level. Use it on the stereo output during mixdown, or with paired Input or Output Channels.
36	**Total Comp2**	COMP	A variation on preset 35, but with more compression.

Using the SELECTED CHANNEL DYNAMICS Controls

1 Use the LAYER buttons to select Layers, and use the [SEL] buttons to select channels.

2 Use the SELECTED CHANNEL DYNAMICS [COMP ON] button to turn the currently selected channel's Compressor on or off.



3 Use the SELECTED CHANNEL DYNAMICS [GATE/COMP] button to set the DYNAMICS controls to COMP (COMP indicator lit), and use the THRESHOLD, RATIO, ATTACK, RELEASE, and GAIN controls to set the Compressor.

While an output Channel is selected, the [GATE/COMP] button is fixed at COMP.

Comp Edit Page

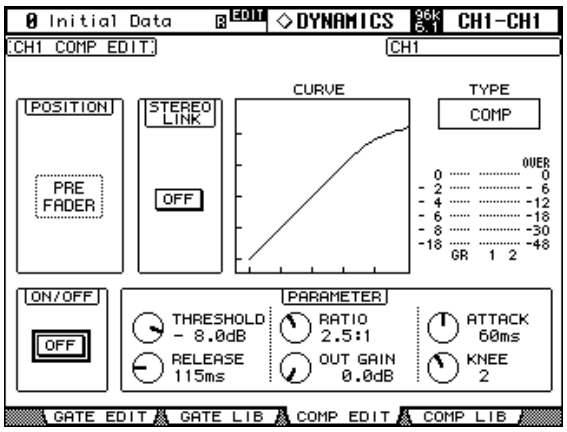
Compressor settings can be viewed and set on the Comp Edit page. If the Auto DYNAMICS Display preference is on, this page appears automatically when a Compressor control in the SELECTED CHANNEL DYNAMICS section is operated. See "Auto DYNAMICS Display" on page 230.

1 Use the LAYER buttons to select Layers, and use the [SEL] buttons to select channels.

2 Use the SELECTED CHANNEL DYNAMICS [DISPLAY] button to locate the Comp Library page, and recall a preset Compressor that contains the comp type that you want.

See "Comp Library" on page 149 for more information.

3 Use the SELECTED CHANNEL DYNAMICS [DISPLAY] button to locate the Comp Edit page.



4 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

POSITION: This determines the position of the Compressor within the channel, and can be set to pre-EQ, pre-fader, or post-fader. It works in unison with the COMP POSITION parameter on the Insert page. See "Using Inserts" on page 115 for more information.

STEREO LINK: This allows you to pair Comps for stereo operation even when channels are not paired. Input Channel Comps are paired either horizontally or vertically depending on the Pair mode setting for the currently selected Input Channel. See "Pairing Channels"

on page 123 for more information on horizontal and vertical pairing. When channels are paired, this parameter is turned on automatically and cannot be changed.

CURVE: This displays the Compressor curve (i.e., input level vs. output level).

TYPE: This is the comp type used by the currently selected channel's Compressor.

Meters: These meters indicate the levels of the currently selected Input Channel and its horizontal or vertical partner. The GR meter indicates the amount of gain reduction being applied by the currently selected channel's Compressor.

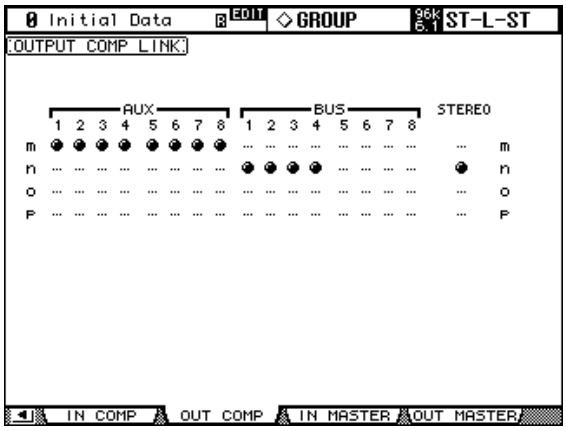
ON/OFF: This turns the currently selected channel's Compressor on and off. It works in unison with the SELECTED CHANNEL DYNAMICS [COMP ON] button.

PARAMETER: These controls are used to set the Threshold, Ratio, Attack, Release, Out Gain, and Knee (Width) parameters.

Grouping Output Channel Compressors

The Bus Out, Aux Send, and Stereo Out Compressors can be grouped, allowing you to control the compression of several Output Channels simultaneously. There are four Output Channel Compressor groups: m, n, o, and p.

1 Use the DISPLAY ACCESS [GROUP] button to locate the Output Comp Link page.



2 Press the LAYER [MASTER] button.

3 Use the Up/Down cursor buttons to select Comp groups m–p.

The selected group is highlighted by a flashing cursor box.

4 Use the [SEL] buttons to add and remove Output Channels to and from the selected group.

The Compressor settings of the first Output Channel added to the group are applied to all subsequently added Output Channels.

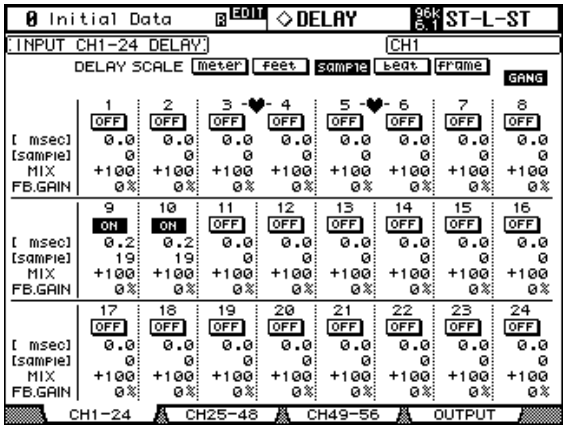
When an Output Channel is added to a group, its [SEL] button indicator lights up.

Delaying Channel Signals

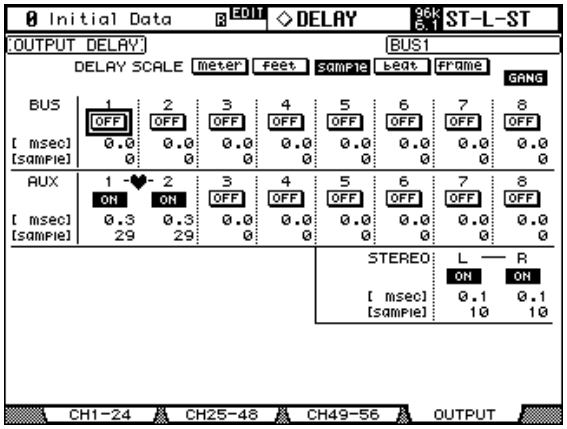
Input Channels, Bus Outs, Aux Sends, and the Stereo Out all feature independent Delay functions. Input Channel Delays feature feedback, with independent Mix and Gain parameters.

1 Use the SELECTED CHANNEL DISPLAY ACCESS [DELAY] button to select the Delay pages.

The Delay parameters for the 56 Input Channels are arranged into three pages. The Input Channel 1–24 Delay page is shown below. The layout of the other two pages is the same.



The Delay parameters for the Bus Outs, Aux Sends, and the Stereo Out appear on the Output Delay page.



2 Use the cursor buttons to select the Delay parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

Input and Output Channels can also be selected by using the LAYER and [SEL] buttons.

DELAY SCALE: These buttons determine the units of the delay value shown below the msec value. Units can be set to meters, feet, samples, beats, or timecode frames.

GANG: When this option is turned on, the delay time for paired channels can be set simultaneously. Ganging is relative, so any delay time difference between the two channels is maintained when this is turned on.

ON/OFF: These buttons turn the individual Delay functions on and off. The [ENTER] button can be used to turn a Delay on and off regardless of which parameter is selected.

msec: This sets the delay time in milliseconds. The delay time can also be set by using the parameter below, which is the delay time in the units selected by the DELAY SCALE buttons. You can copy the currently selected Input or Output Channel delay setting to all Input or Output Channels respectively by double-clicking the [ENTER] button.

MIX: This parameter, available only on the Input Channel Delay pages, sets the mix of dry and wet signals.

FB.GAIN: This parameter, available only on the Input Channel Delay pages, sets the amount of feedback.

Soloing Channels

Input Channels, Bus Outs, and Aux Sends can be soloed as follows.

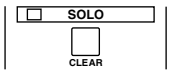
1 Use the LAYER buttons to select the Input Channel Layers if you want to solo Input Channels, or select the Master Layer if you want to solo Output Channels.

Input and Output Channels cannot be soloed simultaneously. Soled Input Channels will be unsoled when an Output Channel is soloed, and vice versa.

2 Use the [SOLO] buttons to solo the channels on the selected Layer.

The [SOLO] button indicators of channels that are soloed light up.

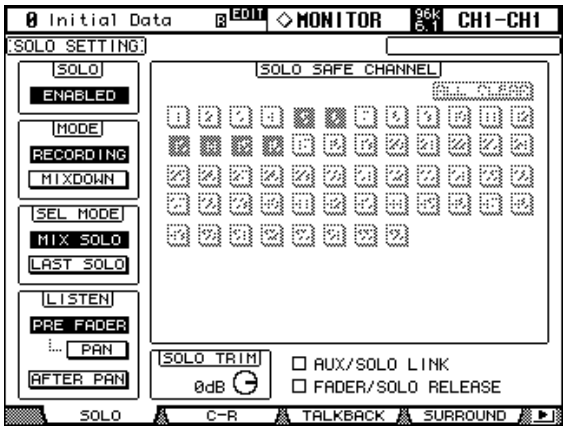
The SOLO indicator in the MONITOR section flashes when the Solo function is active. You can unsolo all soloed channels by pressing the SOLO [CLEAR] button.



Configuring Solo

The Solo function is configured on the Solo Setup page. If the Auto SOLO Display preference is on, this page appears automatically when a channel is soloed. See "Auto SOLO Display" on page 230.

1 Use the MONITOR [DISPLAY] button to locate the Solo Setup page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

SOLO: This is used to enable and disable the Solo function.

STATUS: This determines the Solo mode: Recording or Mixdown. It affects only Input Channels.

In Recording Solo mode, soloed Input Channel signals are fed to the Solo bus and output via the Control Room Outputs. Other buses are unaffected by this mode. If the Listen parameter is set to AFTER PAN, the signal source for Input Channels that are off, is pre fader.

In Mixdown Solo mode, soloed Input Channel signals are fed to the Stereo bus and output via the Stereo Out and Control Room Outputs. Unsoloed Input Channels are muted and their [ON] button indicators flash (unless they are Solo Safe enabled). Only Input Channels that are routed to the Stereo Out can be soloed in this mode. Input Channels that are off are temporarily turned on when they are soloed.

SEL MODE: This determines the Solo Select mode: Mix Solo or Last Solo. In Mix Solo mode, any number of channels can be soloed simultaneously. In Last Solo mode, only one channel can be soloed at a time.

LISTEN: This determines the source of the Input Channel Solo signal: Pre Fader or After Pan. It does not affect Mixdown Solo mode. Output Channels are fixed at After Pan. If you select Pre Fader, turning on the PAN button below it enables you to solo the channel with the Pan setting still applied.

SOLO TRIM: This is used to trim the level of the Solo signal. This parameter does not affect Mixdown Solo mode.

SOLO SAFE CHANNEL: For Mixdown Solo mode, Input Channels can be configured individually so that they are not muted when other Input Channels are soloed. Use the [SEL] buttons, cursor buttons, or Parameter wheel to select the SOLO SAFE CHANNEL buttons. Use the [ENTER] or INC/DEC buttons to set Solo Safe for each Input Channel. These settings do not affect Recording Solo mode. You can clear all Solo Safe settings by selecting the ALL CLEAR button and pressing [ENTER].

AUX/SOLO LINK: When this check box is checked, you can solo or unsolo the Aux Sends using the AUX SELECT [AUX 1]–[AUX 8] buttons without changing the Master layer. This is convenient when you want to solo or unsolo Aux Outs while controlling the Aux Sends from the Input Channels. Press the AUX SELECT key for the AUX send that you want to solo, making it light. Then press that key once again to solo only the selected AUX send. When Aux Sends are soloed, the corresponding AUX SELECT button indicators flash.

FADER/SOLO RELEASE: When you check this check box, raising the channel faders of soloed Channels from –∞ will unsolo the Channels. If the channel fader position is higher than –∞, you cannot solo the corresponding channel.

This function is disabled in Mixdown Solo mode and for the Output Channels.

Note: When the AUX/SOLO LINK or FADER/SOLO RELEASE check box is checked, the solo setting is cancelled.

Pairing Channels

Input Channels, Bus Outs, and Aux Sends can be paired for stereo operation. Input Channels can be paired either horizontally, that is, adjacent odd-even channels on the same Layer (e.g., 1-2, 3-4, 5-6, etc) or vertically, that is, counterpart channels on adjacent Layers (e.g., 1-25, 2-26, 49-73, 50-74, etc). Bus Outs and Aux Sends can be paired only horizontally.

Pairing Channels by Using the [SEL] Buttons

Only horizontal pairing can be set by using the [SEL] buttons.

1 Use the LAYER buttons to select the Layer containing the channels that you want to pair.

2 While holding down the [SEL] button of the first channel, press the [SEL] button of the second channel.

The settings of the first channel are copied to the second channel and the channels are paired. The [SEL] button indicator of the currently selected channel lights up, while the [SEL] button indicator of the other channel flashes.

To cancel a pair, while holding down the [SEL] button of the first channel, press the [SEL] button of the second channel.

The following channel parameters are copied, and controlled together, when channels are paired: Fader, On/Off, Insert On/Off, Aux On/Off, Aux Send Mode, Aux Send Level, Aux Pre/Post, Aux Pre Point, Gate parameters, Compressor parameters, EQ parameters, Fader group, Mute group, EQ group, Comp group, Solo, Solo Safe, [AUTO] button, Fade Time, Recall Safe, Bus to Stereo On/Off, Bus to Stereo Level.

The following channel parameters are not copied, or controlled together, when channels are paired: Input Patch, Insert Patch, Output Patch, Comp Position, Phase, Delay On/Off, Delay Time, Delay Feedback, Delay Mix, Routing, Pan, Follow Pan, Surround Pan, Bus to Stereo Pan, Aux Send Pan, Balance.

When channels are paired, the Attenuator value is copied, but the changes made in the Attenuator page are not reflected in the pair partner. However, if you change the values in the EQ Edit page, Parameter view page, or on the control surface, the changes will be reflected in the pair partner while maintaining the relative level difference.

When Aux Send Mode is set to Fixed, Aux Send On/Off is not controlled together.

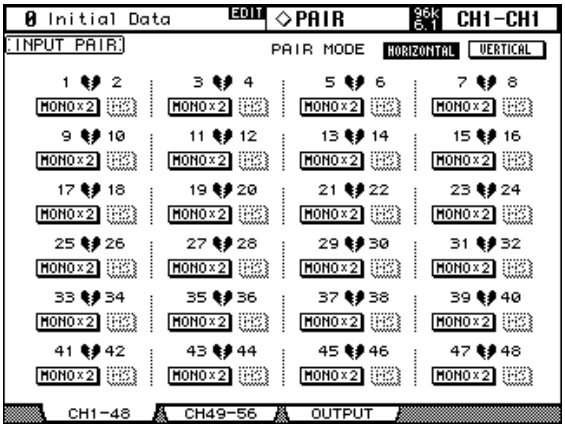
Check the Routing ST Pair Link check box to link the routing from the paired channels to the Stereo Bus. See “Setting Preferences” on page 230 for more information.

Pairing Channels by Using the Pair Pages

Both horizontal and vertical pairing can be set on the Pair pages.

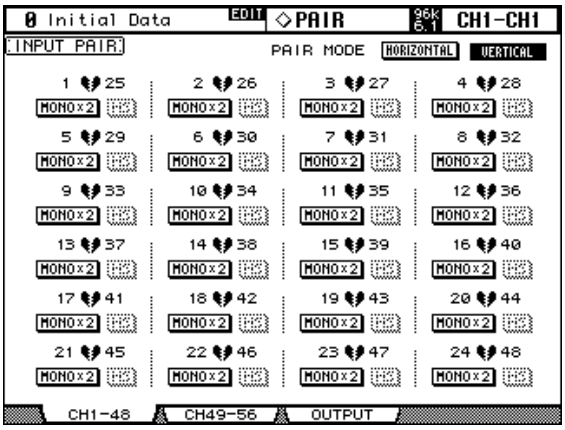
1 Use the DISPLAY ACCESS [PAIR] button to locate the Pair pages.

The Pair parameters for the 56 Input Channels are divided between two pages. The Input Channel 1–48 Pair page is shown below. The layout of the other page is the same.

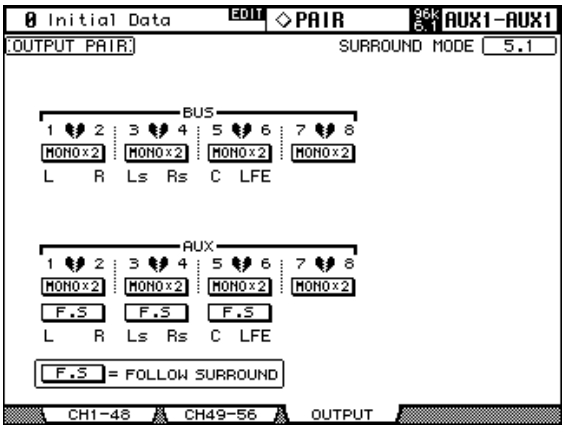


2 To set the pair mode, select the PAIR MODE HORIZONTAL or VERTICAL buttons, and press [ENTER].

The Pair mode can be set independently for Input Channels 1–48 and Input Channels 49–56. The Input Channel 1–48 Pair page in Vertical mode is shown below.



Pair parameters for the Bus Outs and Aux Sends appear on the Output Pair page.



3 Use the cursor buttons or Parameter wheel to select the channel pair buttons, and press [ENTER] to make or break pairs.

Input and Output Channels can also be selected by using the LAYER and [SEL] buttons.

A dialog box appears with options for copying the settings of the first channel to the second channel, the second channel to the first channel, and for resetting both channels to their initial settings. Choose the option required, and then press [ENTER].

On other display pages, paired channels have a heart icon, or a dash between their channel numbers.

When Input Channels are paired, MS Decoding can be used to decode signals from microphones arranged as MS pairs. MS Decoding is set on the Input Channel Pair pages. This can be turned on and off for each pair of channels by using the MS buttons.

The Output Pair page displays the currently selected Surround mode (i.e., Stereo, 3-1, 5.1, or 6.1), which can be set on the Surround Mode page (see page 85). When a Surround mode other than Stereo is selected, the names of the Surround channels are shown below the Bus Out and Aux Send pair buttons, as shown in the following table.

Surround Mode	Bus Out/Aux Send							
	1	2	3	4	5	6	7	8
3-1	L	R	C	S	—	—	—	—
5.1	L	R	Ls	Rs	C	LFE	—	—
6.1	L	R	Ls	Rs	C	Bs	LFE	—

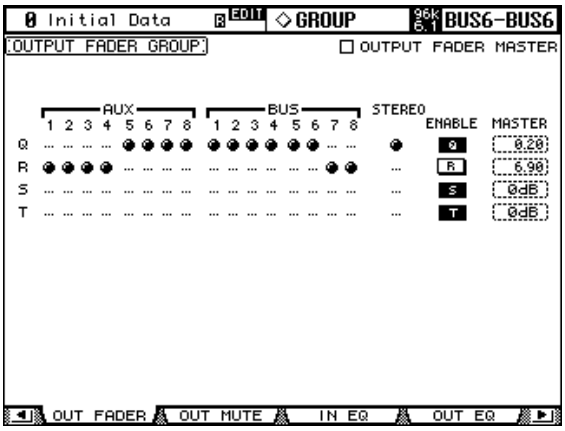
This table shows the default assignment. The assignment may vary depending on the settings in the Surround Bus Setup page (see page 87).

When a Surround mode other than Stereo is selected, Aux Sends can be set to follow the same Input Channel Surround Pan that applies to the Bus Outs, which is useful for feeding Surround channel signals to external effects processors. This is turned on and off by using the F.S buttons that appear below the Aux Send Pair buttons. When a pair of Aux Sends are set to follow Surround Pan, their Aux Send Pair button is unavailable, and their Aux Pan parameters (see page 103) are unavailable.

Grouping Output Channel Faders

The Bus Out, Aux Send, and Stereo Out faders can be grouped, allowing you to control the level of several Output Channels simultaneously. There are four Output Channel Fader groups: Q, R, S, and T.

1 Use the DISPLAY ACCESS [GROUP] button to locate the Output Fader Group page.



2 Press the LAYER [MASTER] button.

3 Use the Up/Down cursor buttons to select Fader groups Q–T.

The selected group is highlighted by a flashing cursor box.

4 Use the [SEL] buttons to add and remove Output Channel faders to and from the selected group.

When an Output Channel is added to a group, its [SEL] button indicator lights up.

ENABLE: These buttons are used to enable and disable the groups.

OUTPUT FADER MASTER: When this check box is not checked, the Output Channel fader positions determine the fader levels in the Output Channel Fader groups. When this check box is checked, you can set the master level for the corresponding Output Channel Fader group in the Master column. The resultant Output Channel level equals the corresponding Output Channel fader level plus the Group master level. See "Group Master for the Output Channel Faders" on page 127 for more information.

When the Output Fader Master check box is not checked, operating the channel faders will affect the Output Channel levels in the corresponding Fader group. Pressing and holding down the [SEL] button while operating the fader of an Output Channel will temporarily cancel the corresponding Fader group, which is convenient if you want to adjust the relative balance between channels.

When the Output Fader Master check box is not checked, fader groups are active only in Fader mode. See "Selecting Fader Modes" on page 49 for more information.

Group Master for the Output Channel Faders

The 02R96 also features a Fader Group Master function that enables you to control the level of all channels using the Group Master level while maintaining the balance between the channels, much like a VCA Group on an analog mixing console. While this function is enabled, channel fader operation will not affect the channel levels of the corresponding Fader group.

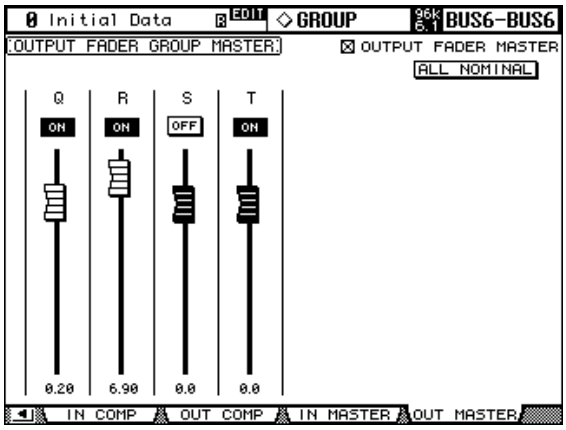
1 Follow Steps 1–4 as described in the "Grouping Output Channel Faders" section on the previous page, select the Output Fader Master check box, then press the [ENTER] button to check or uncheck the Output Fader Master check box.

2 When the Output Fader Master check box is checked, you can set the channel levels of the Fader groups in the Master column.

When the Master column is selected, repeatedly pressing the [ENTER] button turns the Output Fader Group on and off.

You can also make these settings in the Output Fader Group Master page, as shown below.

3 Use the DISPLAY ACCESS [GROUP] button to locate the Output Fader Group Master page.



4 Use the cursor buttons to select the parameters, then use the Parameter wheel, INC/DEC buttons or [ENTER] button to set them.

OUTPUT FADER MASTER: When this check box is checked, you can set the master levels for the Output Fader groups. The resultant Output Channel level equals the corresponding Output Channel fader level plus the Group master level.

ALL NOMINAL: This button resets the master levels for all Output Fader groups to nominal.

ON/OFF: This turns each Output Fader group on or off, like a VCA mute on an analog mixing console.

Faders: These faders adjust the master levels of the Fader groups. Fader knobs appear highlighted when faders are set to 0.0 dB. Press the [ENTER] button to set the currently-selected fader to 0.0 dB.

You can also control the Fader Master function from the channel strips on the control surface as described below by using the User Assignable Layer of the Remote Layers. See page 228 for information on the User Assignable Layer.

Encoders: The Encoders are not available.

[AUTO] buttons: These buttons are used to control the Fader Group Master On/Off and the master level during Automix.

[SEL] buttons: These buttons move the cursor on the Output Fader Group Master page.

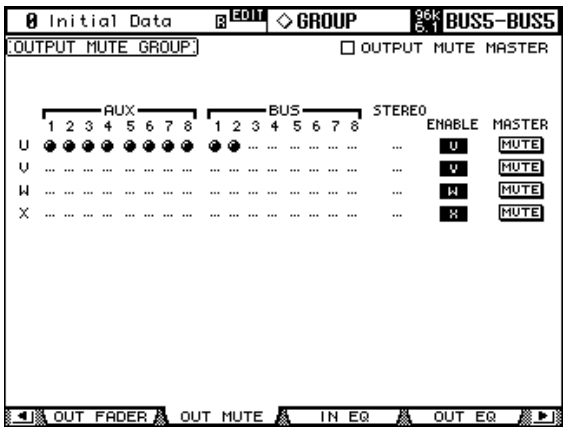
[SOLO] buttons: These buttons turn the Solo function of each Fader group on and off, enabling you to monitor every channel in each Fader group.

Channel Faders: The Channel Faders enable you to set the master level for each Fader group.

Grouping Output Channel Mutes (ON/OFF)

The Bus Out, Aux Send, and Stereo Out mutes can be grouped, allowing you to mute several Output Channels simultaneously. There are four Output Channel Mute groups: U, V, W, and X.

1 Use the DISPLAY ACCESS [GROUP] button to locate the Output Mute Group page.



2 Press the LAYER [MASTER] button.

3 Use the Up/Down cursor buttons to select Mute groups U–X.

The selected group is highlighted by a flashing cursor box.

4 Use the [SEL] buttons to add and remove Output Channels to and from the selected group.

When an Output Channel is added to a Mute group, its [SEL] button indicator lights up.

ENABLE: These buttons are used to enable and disable the groups.

OUTPUT MUTE MASTER: When this check box is checked, pressing the MASTER MUTE button turns mute on or off for all channels in the corresponding Mute group. When this check box is unchecked, the Output Channel [ON] button status mutes or unmutes the channels in the group.

MASTER MUTE: When the Output Mute Master check box is checked, use this button to mute or unmute all channels in the corresponding Mute group.

When the Output Mute Master check box is unchecked, pressing the Output Channel [ON] button mutes or unmutes the channel in the corresponding Mute group (Mute On channels are turned off and Mute Off channels are turned on).

Output Channel Mute Master

The 02R96 features a Mute Group Master function that enables you to mute all channels in the Mute group using the MASTER button, much like a Mute group on an analog mixing console. When this function is enabled, the channel [ON] buttons do not control the channels in the group collectively.

1 **Follow Steps 1–4 described in the "Grouping Output Channel Mutes (ON/OFF)" section on the previous page, select the Output Mute Master check box, then press the [ENTER] button to check or uncheck the Output Mute Master check box.**

2 **When the Output Mute Master check box is checked, the MASTER MUTE button in each group mutes or unmutes the channels in the corresponding group.**

If the channels are muted by the Mute Master function, the corresponding channel [ON] button indicators flash. You can assign the MASTER MUTE button function to one of the USER DEFINED KEYS for convenient operation.

Viewing Channel Parameter Settings

The parameter setting of the currently selected Input Channel, Bus Out, Aux Send, or the Stereo Out can be viewed and set on the Parameter View pages.

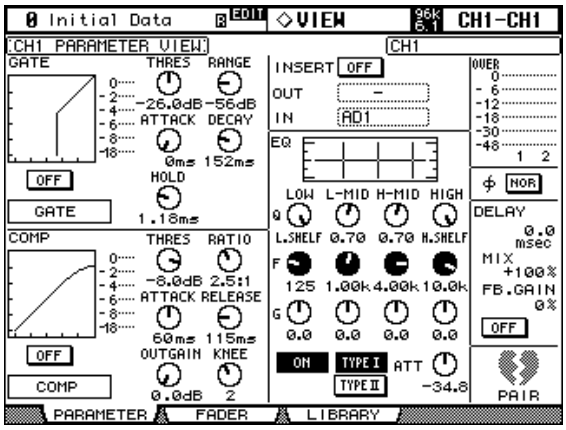
1 **Use the DISPLAY ACCESS [VIEW] button to select the Parameter View page.**

2 **Use the LAYER buttons to select Layers, and use the [SEL] buttons to select channels.**

3 **Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] buttons to set them.**

Input Channels

This is the Parameter View page for the Input Channels.



GATE: The following Gate parameters for the currently selected Input Channel can be set: Gate On/Off, Threshold, Range, Attack, Decay, and Hold. The GR meter indicates the amount of gain reduction being applied by the Gate. Also displayed are the gate curve and gate type. See "Gating Input Channels" on page 74 for more information.

COMP: The following Compressor parameters for the currently selected channel can be set: Comp On/Off, Threshold, Ratio, Attack, Release, Gain, and Knee. The GR meter indicates the amount of gain reduction being applied by the Compressor. Also displayed are the comp curve and comp type. See "Compressing Channels" on page 116 for more information.

INSERT: The currently selected channel's Insert can be turned on and off and patched. See "Using Inserts" on page 115 for more information.

EQ: The currently selected channel's EQ and Attenuator can be set. Also displayed is the EQ curve of the currently selected Input Channel. See "Using EQ" on page 111 for more information.

Meters: These meters indicate the levels of the currently selected channel and its horizontal or vertical partner.

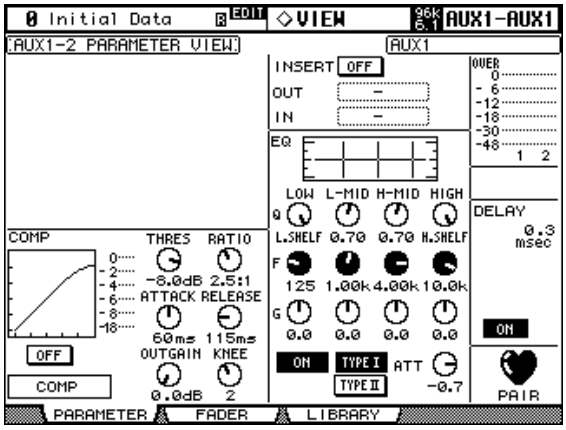
Phase: The signal phase of the currently selected Input Channel can be reversed. See "Reversing the Signal Phase" on page 73 for more information.

DELAY: The currently selected channel's Delay function can be set. See "Delaying Channel Signals" on page 120 for more information.

PAIR: This heart icon indicates whether or not channels are paired. See "Pairing Channels" on page 123 for more information.

Output Channels

This is the Parameter View page for the Bus Outs, Aux Sends, and the Stereo Out. Parameters are the same as for the Input Channel Parameter View page, minus the GATE and Phase sections and the DELAY MIX and FB GAIN parameters. The parameter settings of the left and right channels of the Stereo Out can be viewed individually. Use the [SEL] buttons to toggle between the left and right channels.



Viewing Channel Fader Settings

The fader-related settings of the currently selected Input Channel, Bus Out, Aux Send, or the Stereo Out can be viewed and set on the Fader View pages.

1 Use the DISPLAY ACCESS [VIEW] button to select the Fader View page.

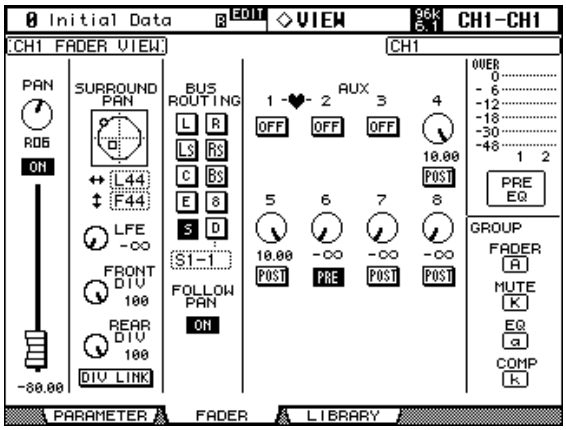
2 Use the LAYER buttons to select Layers, and use the [SEL] buttons to select channels.

3 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] buttons to set them.

Pan and Balance controls can be set to center by pressing [ENTER] while they're selected.

Input Channels

This is the Fader View page for the Input Channels.



PAN: This is the currently selected Input Channel's Pan parameter. Select this parameter using the cursor buttons, then press the [ENTER] button to set the Pan parameter to Center. See "Panning Input Channels" on page 83 for more information.

ON/OFF: This is the On/Off parameter of the currently selected Input Channel. See "Muting Input Channels (ON/OFF)" on page 77 for more information.

Fader: This indicates the fader position of the currently selected Input Channel. The fader knob appears highlighted when the fader is set to 0.0 dB. The fader position is displayed numerically below the fader. See "Setting Input Channel Levels" on page 79 for more information.

SURROUND PAN: The Surround pan parameters for the currently selected Input Channel are displayed only when a Surround mode other than Stereo is selected. See "Using Surround Pan" on page 85 for more information.

BUS ROUTING: This section contains Routing and Follow Pan buttons for the currently selected Input Channel. See "Routing Input Channels" on page 82 for more information. The Direct Out output patch can also be set. See "Patching Direct Outs" on page 70 for more information.

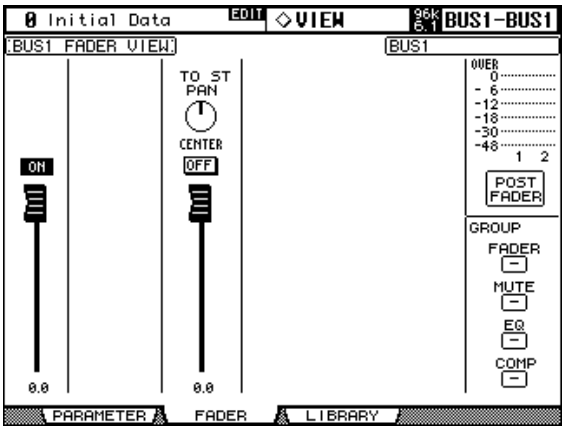
AUX: These are the currently selected Input Channel's Aux Send Level, On/Off, and Pre/Post parameters. While a rotary control is selected, the Aux Send can be turned on and off by pressing [ENTER]. See "Aux Sends" on page 98 for more information.

Meters: These meters indicate the levels of the currently selected Input Channel and its horizontal or vertical partner. The metering position is displayed below them.

GROUP: These buttons indicate which Fader, Mute, EQ, or Comp group, if any, the currently selected Input Channel is in.

Bus Outs

This is the Fader View page for the Bus Outs.



ON/OFF: This is the On/Off parameter of the currently selected Bus Out. See "Muting Bus Outs (ON/OFF)" on page 96 for more information.

Fader: This indicates the fader position of the currently selected Bus Out. The fader knob appears highlighted when the fader is set to 0.0 dB. The fader position is displayed numerically below the fader. See "Setting Bus Out Levels" on page 96 for more information.

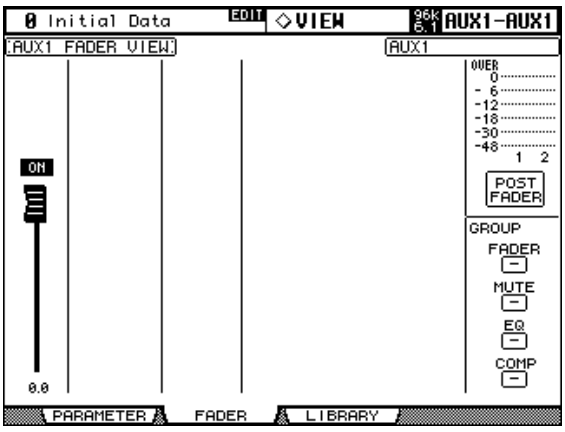
TO ST PAN, ON/OFF & Fader: These are the Bus Out to Stereo Out Pan, On/Off, and Fader parameters for the currently selected Bus Out. The fader knob appears highlighted when the fader is set to 0.0 dB. The fader position is displayed numerically below the fader. See "Sending Bus Outs to the Stereo Out" on page 97 for more information.

Meters: These meters indicate the levels of the currently selected Bus Out and its partner. The metering position is displayed below them.

GROUP: These buttons indicate which Fader, Mute, EQ, or Comp group, if any, the currently selected Bus Out is in.

Aux Sends

Below is the Fader View page for the Aux Sends.



ON/OFF: This is the On/Off parameter of the currently selected Aux Send. See "Aux Send Pages" on page 99 for more information.

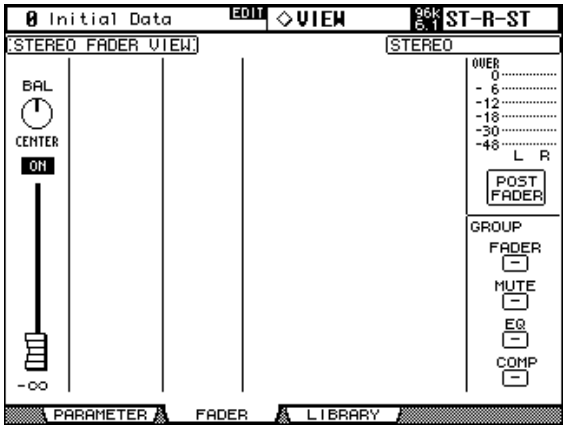
Fader: This indicates the fader position of the currently selected Aux Send. The fader knob appears highlighted when the fader is set to 0.0 dB. The fader position is displayed numerically below the fader. See "Settings Aux Send Master Levels" on page 106.

Meters: These meters indicate the levels of the currently selected Aux Send and its partner. The metering position is displayed below them.

GROUP: These buttons indicate which Fader, Mute, EQ, or Comp group, if any, the currently selected Aux Send is in.

Stereo Out

Below is the Fader View page for the Stereo Out. The settings of the left and right channels of the Stereo Out can be viewed individually. Use the STEREO [SEL] button to toggle between the left and right channels.



BAL: This is the Balance parameter for the Stereo Out. Select this parameter using the cursor buttons, then press the [ENTER] button to set the parameter to Center. See "Balancing the Stereo Out" on page 94 for more information.

ON/OFF: This is the On/Off parameter of the Stereo Out. See "Muting the Stereo Out (ON/OFF)" on page 93 for more information.

Fader: This indicates the fader position of the Stereo Out. The fader knob appears highlighted when the fader is set to 0.0 dB. The fader position is displayed numerically below the fader. See "Setting the Stereo Out Level" on page 93 for more information.

Meters: These meters indicate the levels of the Stereo Out. The metering position is displayed below them.

GROUP: These buttons indicate which Fader, Mute, EQ, or Comp group, if any, the Stereo Out is in.

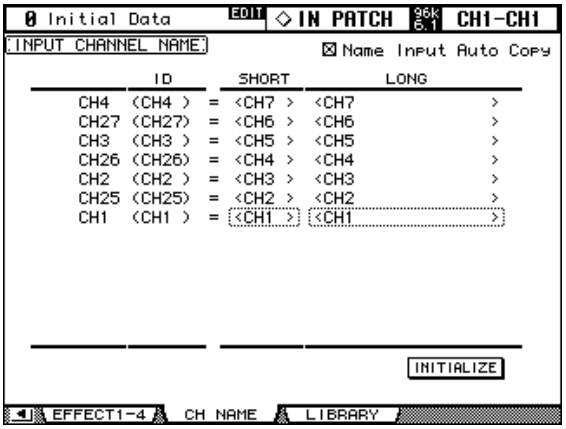
Naming Channels

You can specify Long and Short names for the Input Channels, Bus Outs, Aux Sends, and the Stereo Out as follows.

See page 250 for a list of initial Input Channel names; page 250 for Output Channel names.

Input Channels

1 Use the DISPLAY ACCESS [INPUT PATCH] button to locate the Input Channel Name page.



2 Use the Parameter wheel, INC/DEC buttons, or the LAYER and [SEL] buttons to select the Input Channels.

When Vertical Input Channel pairing mode is selected, Input Channels are listed in order of vertical partners, for example, CH1, CH25, CH2, CH26, and so on.

3 Use the cursor buttons to select the Input Channel's Long or Short name, and then press [ENTER].

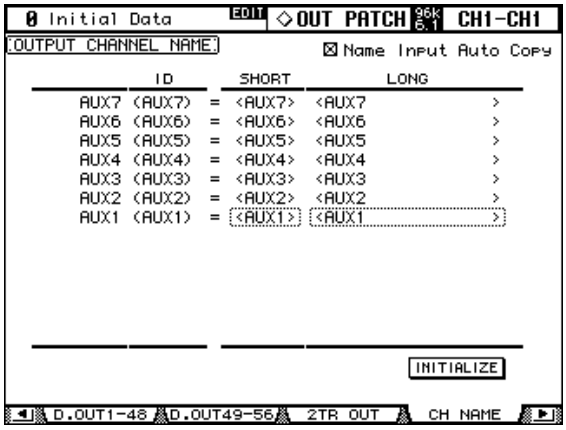
When the Title Edit window appears, edit the Input Channel name, and press OK when you've finished. See "Title Edit Window" on page 46 for more information.

You can reset all Input Channel names back to their initial values by pressing the INITIALIZE button.

If the Name Input Auto Copy check box in the upper right corner is checked, the first four characters of the name entered in the LONG column are automatically copied to the SHORT column. Also, a name entered in the SHORT column is automatically copied to the LONG column.

Output Channels

1 Use the DISPLAY ACCESS [OUTPUT PATCH] button to locate the Output Channel Name page



2 Use the Parameter wheel, INC/DEC buttons, or the Master Layer and [SEL] buttons to select the Output Channels.

3 Use the cursor buttons to select the Output Channel's Long or Short name, and then press [ENTER].

When the Title Edit window appears, edit the Output Channel name, and press OK when you've finished. See "Title Edit Window" on page 46 for more information.

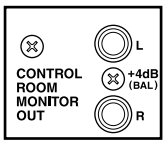
You can reset all Output Channel names back to their initial values by pressing the INITIALIZE button.

If the Name Input Auto Copy check box in the upper right corner is checked, the first four characters of the name entered in the LONG column are automatically copied to the SHORT column. Also, a name entered in the SHORT column is automatically copied to the LONG column.

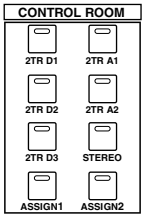
12 Monitoring & Talkback

Control Room Monitoring

The CONTROL ROOM MONITOR OUT uses balanced 1/4-inch phone jacks, nominal level +4 dB. Typically it's used to feed the control room's main monitors.



The Control Room Monitor signal source is selected by using the CONTROL ROOM buttons.



[2TR D1]: Selects the 2TR IN DIGITAL AES/EBU 1.

[2TR D2]: Selects the 2TR IN DIGITAL COAXIAL 2.

[2TR D3]: Selects the 2TR IN DIGITAL COAXIAL 3.

[2TR A1]: Selects the 2TR IN ANALOG 1.

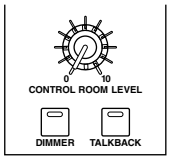
[2TR A2]: Selects the 2TR IN ANALOG 2.

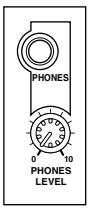
[STEREO]: Selects the Stereo Out.

[ASSIGN 1]: Selects the Output Channel assigned to this button on the Control Room Setup page. See "Control Room Setup" on page 137.

[ASSIGN 2]: Selects the Output Channel assigned to this button on the Control Room Setup page. See "Control Room Setup" on page 137.

The level of the Control Room Monitor signal can be set by using the CONTROL ROOM LEVEL control. The [DIMMER] button activates the Dimmer function, which dims the Control Room Monitor and Surround Monitor signals by the amount specified on the Control Room Setup page (page 137). The Dimmer function is activated automatically when the Talkback or Oscillator function is active.



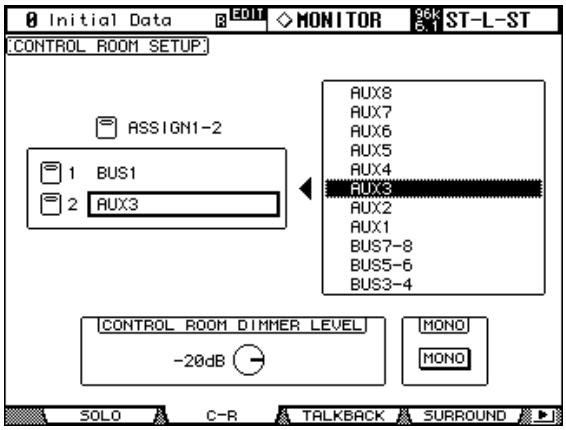


The Control Room Monitor signal is also fed to the PHONES jack, the level of which is set by using the PHONES LEVEL control.

Control Room Setup

Control room monitoring is configured on the Control Room Setup page.

1 Use the MONITOR [DISPLAY] button to locate the Control Room Setup page.



2 Use the cursor buttons to select the ASSIGN buttons in the left-hand box, and use the Parameter wheel to select an Output Channel in the right-hand box.

Bus Outs or Aux Sends can be assigned to the [ASSIGN 1] and [ASSIGN 2] buttons.

3 Press [ENTER] to assign the selected Output Channel.

Once assigned, the selected Output Channel appears highlighted in the right-hand box.

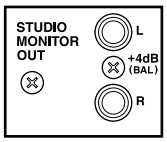
The other parameters on this page are as follows.

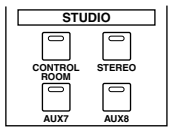
CONTROL ROOM DIMMER LEVEL: This determines the amount of attenuation applied to the Control Room Monitor and Surround Monitor signals by the Dimmer function. Use the cursor buttons to select it, and use the Parameter wheel or INC/DEC buttons to set it from.

MONO: This button is be used to switch the Control Room Monitor signal into mono.

Studio Monitoring

The STUDIO MONITOR OUT uses balanced 1/4-inch phone jacks, nominal level +4 dB. Typically it's used to feed monitoring systems in the actual studio.





The Studio Monitor signal source is selected by using the STUDIO buttons.

[CONTROL ROOM]: Selects the Control Room Monitor.

[STEREO]: Selects the Stereo Out.

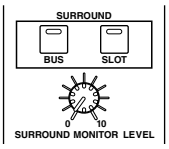
[AUX 7]: Selects Aux Send #7.

[AUX 8]: Selects Aux Send #8.

The level of the Studio Monitor signal can be set by using the STUDIO LEVEL control.

Surround Monitoring

The 02R96 features comprehensive surround monitoring functions, including a pink noise generator for speaker setup, Bass Management, and down mixing.



The Surround Monitor signal source is selected by using the SURROUND buttons. The [BUS] button selects the Bus Outs as the source. The [SLOT] button selects the Inputs of the Slots specified on the Surround Monitor page as the source. Surround mixes from up to four multitrack recorders can be monitored by patching Slot Inputs to Surround Monitor Channels (see page 141) and selecting with the [SLOT] button. The level of the Surround Monitor can be set by using the SURROUND MONITOR LEVEL control.

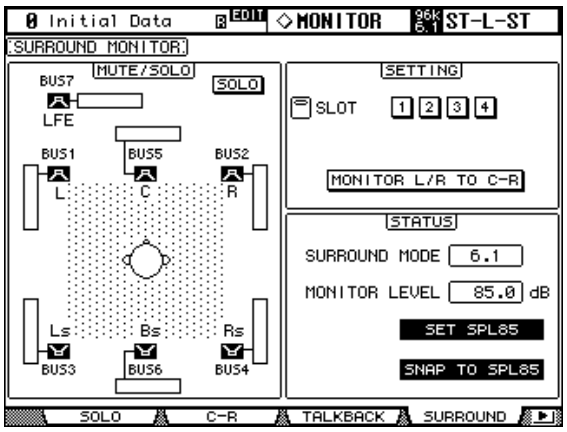
Surround monitor speakers can be aligned by using the individual Attenuator and Delay parameters on each Surround Monitor Channel. In addition to the standard Ls and Rs speakers, the 02R96 supports Ls2 and Rs2 speakers, with independent Attenuator and Delay parameters, for a more diffused surround monitoring environment. See "Configuring Surround Monitoring" on page 139 for more information.

Surround Monitor Channels can be patched to Slot Outputs or Omni Outputs. See "Output Patching" on page 68 for more information.

Surround Monitor settings can be stored in the Surround Monitor library, which contains 1 preset memory and 32 user memories. See "Surround Monitor Library" on page 152 for more information.

General surround monitoring is performed on the Surround Monitor page.

1 Use the MONITOR [DISPLAY] button to locate the Surround Monitor page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

The number of speaker icons and meters shown on the Surround Monitor page depends on the currently selected Surround mode. The meters indicate Bus Out signal levels.

MUTE/SOLO: These parameters are used to mute and solo Surround Channels. A Surround Channel is on when its speaker icon is highlighted. Speaker icons can be selected by using the cursor buttons. When SOLO is on, Surround Channels can be soloed by selecting speaker icons and pressing [ENTER].

SETTING: These buttons are used to select which Slot's Inputs are monitored when the SURROUND [SLOT] button is pressed. Up to four Slots can be assigned, and the signals from each Slot are mixed. Individual Slot Inputs can be patched to Surround Monitor Channels on the Surround Monitor Patch page (see page 141).

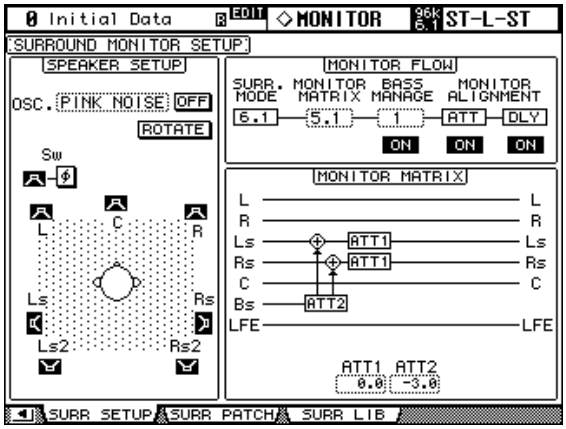
When the MONITOR L/R to C-R button is on, the Left and Right Surround Monitor Channels are fed to the Control Room Monitors. This is useful when you want to use the same speakers for Left and Right Surround Monitors and Control Room Monitors.

STATUS: SURROUND MODE indicates the currently selected Surround mode, which is set on the Surround Mode page (see page 85). MONITOR LEVEL indicates the volume setting of the SURROUND MONITOR LEVEL control, which can be calibrated to 85 dB SPL, the cinema standard for setting up Surround Channel Monitor speakers. To do this, output pink noise from the built-in Oscillator (see page 139), set the SURROUND MONITOR LEVEL control and the level controls on the Surround Monitor speaker amps so that the total output is 85 dB SPL, then press the SET SPL85 button. The MONITOR LEVEL indication will then display the volume setting relative to 85 dB SPL. Press the SET SPL85 button again to return to the normal volume indication. Press the SNAP TO SPL85 button to reset the SURROUND MONITOR LEVEL control to 85 dB SPL.

Configuring Surround Monitoring

Surround monitoring, including speaker setup, monitor matrix, Bass Management, and monitor alignment, is configured on the Surround Monitor Setup page.

1 Use the MONITOR [DISPLAY] button to locate the Surround Monitor Setup page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

SPEAKER SETUP: These parameters are for setting the volume balance of the surround monitor speakers. Select the OSC (Oscillator) parameter and choose from PINK NOISE, 500-2K (pink noise through a 500 Hz to 2 kHz BPF), 1K (1 kHz sinewave), or 50 Hz (50 Hz sinewave). Use the ON/OFF button to turn the Oscillator on and off. When on, the Oscillator outputs a signal at –20 dB to the Surround Channels whose icons are highlighted. You can turn on and off Oscillator output for speakers individually. Speaker icons can be selected by using the cursor buttons or the Bus Out [SEL] buttons on the Master Layer. The signal phase of the LFE Channel can be reversed by using the SW Phase button. When ROTATE is on, the Oscillator signal is output by each speaker in turn in a clockwise direction (3 second signal, 2 second pause).

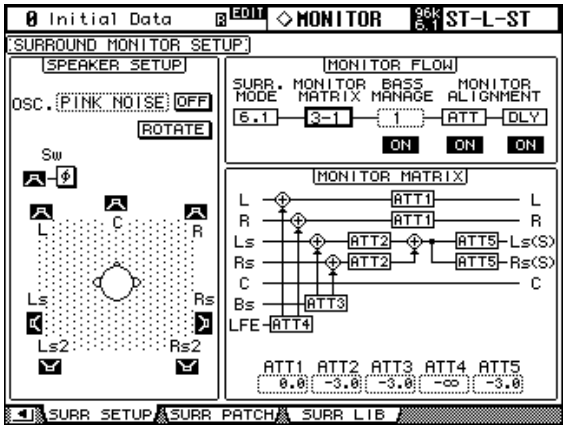
SURR. MODE: This indicates the currently selected Surround mode, which is set on the Surround Mode page (see page 85).

MONITOR MATRIX: This is used to select the Surround Monitor Matrix. In 6.1 Surround mode, you can select 6.1, 5.1, 3-1, or ST. In 5.1 Surround mode, you can select 5.1, 3-1, or ST. In 3-1 Surround mode, you can select 3-1 or ST.

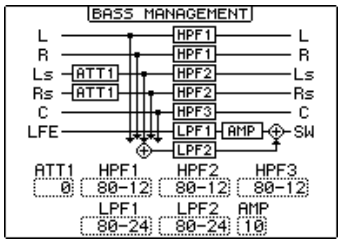
When a down mix Monitor Matrix is selected, you can attenuate signals by using the ATT parameters.

You can use the Surround Monitor settings in Stereo mode, but Monitor Matrix is fixed to ST.

The following screen shows an example in 6.1 Surround mode and 3-1 Monitor Matrix mode.



BASS MANAGEMENT: You can set the filter and attenuator settings for each Surround Monitor Channel using five preset Bass Management modes.



The following presets are available:

Presets		Parameters				
No.	Title	HPF 1, 2, 3	LPF1	LPF2	ATT 1 & 2	AMP
1	DVD Mix w/BS	80–12	80–24	80–24	0	10
2	DVD Author w/BS	80–12	120–42	80–24	0	10
3	Film Mix w/BS	80–12	80–24	80–24	–3	10
4	Film Author w/BS	80–12	120–42	80–24	–3	10
5	Bypass	THRU	THRU	MUTE	0	0

ATT1: Adjusts the level difference between LR and LsRs.
ATT2: Adjusts the level difference between C and Bs.
AMP: Corrects the LFE channel level.
HPF1–3: Cut the low range so that the speakers' supporting frequency ranges will not interfere with the subwoofer signals.
HPF1–2: Cut the high range so that the subwoofer's supporting frequency ranges will not interfere with other speakers' signals.

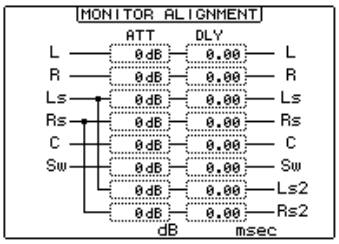
Tip: If you select 3-1 Monitor Matrix mode, use Presets 1 or 2 to establish an appropriate monitoring environment.

You can set the Bass Management parameters in the following ranges:

Parameters	Range
HPF 1, 2, 3	THRU, 80-12, 80-12L, 80-24, 80-24L
LPF1	THRU, 80-24, 80-24L, 120-42
LPF2	THRU, 80-24, 80-24L, MUTE
ATT 1 & 2	0 to –12 dB (1 dB steps)
AMP	0 to +12 dB (1 dB steps)

The HPF 1, 2, 3, and LPF 1 & 2 values indicate a cut-off frequency and a filter response. For example, "80-12" means a cutoff frequency of 80 Hz and a filter response of –12 dB/octave.
"L" means Linkwitz filter. Other filters are Butterworth.

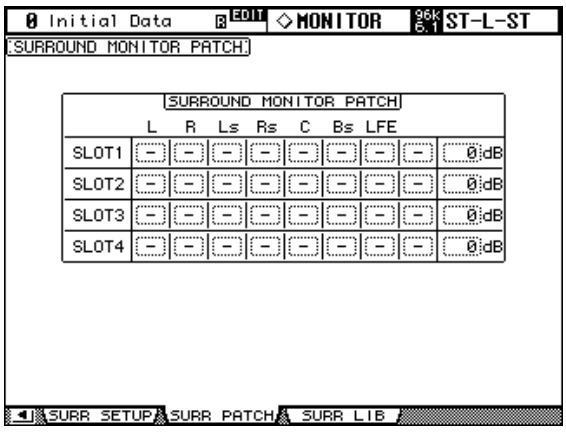
MONITOR ALIGNMENT ATT & DLY ON/OFF: These buttons are used to turn on and off the Monitor Alignment Attenuator and Delay parameters of all Surround speakers. The MONITOR ALIGNMENT diagram and Surround Channel Attenuator and Delay parameters, which are displayed when either of these buttons are selected, allow you to align the surround monitor speakers by attenuating and delaying Surround Channels as necessary. The Attenuator parameters can be set –∞, –12 dB to +12 dB in 0.1 dB steps. The Delay parameters can be set from 0 to 30 msec in 0.02 msec steps.



Patching Slot Inputs to Surround Channels

Individual Slot Inputs can be patched to Surround Monitor Channels as follows.

1 Use the MONITOR [DISPLAY] button to locate the Surround Monitor Patch page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

SLOT/CH: This patching matrix is used to patch Inputs 1–16 from each of the four Slots to the Surround Monitor Channels. Each Slot Input can be patched to only one Surround Monitor Channel.

LEVEL: These parameters are used to set the monitor level of each Slot.

Using Talkback

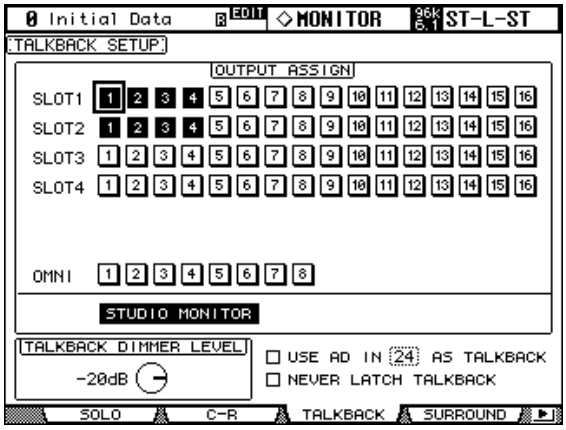
The Talkback function distributes the Talkback mic signal to the Studio Monitor Outs and any Slot or Omni Outputs specified on the Talkback Setup page.

The TALKBACK LEVEL control sets the level of the built-in talkback microphone.

The [TALKBACK] button has two modes of operation: If it's pressed once (i.e., for less than 300 ms), the Talkback function is turned on and remains on when the button is released. This is Latched mode (this mode can be disabled on the Talkback Setup page). If it's pressed and held for longer, the Talkback function is turned on, but turns off when the button is released. This is Unlatched mode. The [TALKBACK] button indicator flashes while the Talkback function is active.

Talkback Setup

1 Use the MONITOR [DISPLAY] button to locate the Talkback Setup page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

OUTPUT ASSIGN: These buttons are used to assign the Talkback mic signal to Slot and Omni Outputs.

STUDIO MONITOR: This allows you to select the Talkback mic signal as the Studio Monitor source.

TALKBACK DIMMER LEVEL: When the Talkback function is active, this determines the amount of attenuation applied to sound sources assigned to the Studio Monitors and selected for Talkback.

USE AD IN *x* AS TALKBACK: This allows you to select an AD Input as the Talkback signal source. Use the check box to turn this option on and off, and use the number parameter to specify the number of the AD Input. The signal from the specified AD Input is mixed with the Talkback mic signal. Turn down the TALKBACK LEVEL if you do not want to use the Talkback mic.

NEVER LATCH TALKBACK: This options allows you to disable latching for the Talkback function.

13 Libraries

About the Libraries

The 02R96 features 10 libraries for storing Automix, Effects, Channel, Input Patch, Output Patch, Bus to Stereo, Gate, Comp, EQ, and Surround Monitor data.

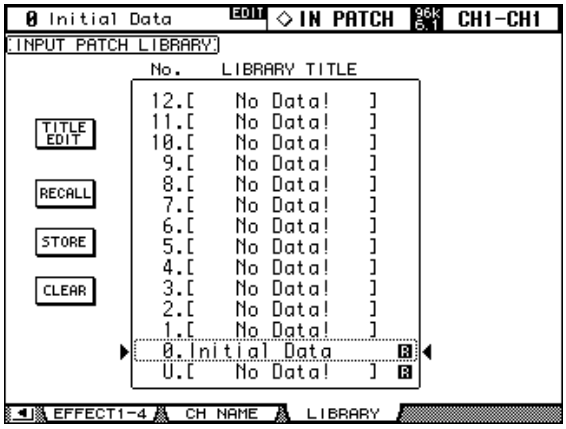
Library data can be stored to an external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump (see page 195).

General Library Operation

Since most library functions are the same for each library, rather than explain them several times, they're explained only here for conciseness.

1 Locate the various library pages as explained in the following sections.

The Input Patch Library page shown below is used here for explanation purposes.



2 Use the Parameter wheel or INC/DEC buttons to select the memories.

A memory is selected when it appears inside the dotted box.

3 Use the cursor buttons to select the following page buttons.

TITLE EDIT: To edit the title of the selected memory, select this and press [ENTER]. When the Title Edit window appears, edit the title, and press OK when you've finished. See "Title Edit Window" on page 46 for more information.

RECALL: To recall the contents of the selected memory, select this and press [ENTER]. If the Recall Confirmation preference is on, a confirmation window appears before the contents are recalled.

STORE: To store settings to the selected memory, select this and press [ENTER]. When the Title Edit window appears, enter a title, and press OK. See "Title Edit Window" on page 46 for more information. You can stop the Title Edit window from appearing by turning off the Store Confirmation preference on page 230.

CLEAR: To delete the contents and title of the selected memory, select this and press [ENTER]. A confirmation window appears before the memory is cleared.

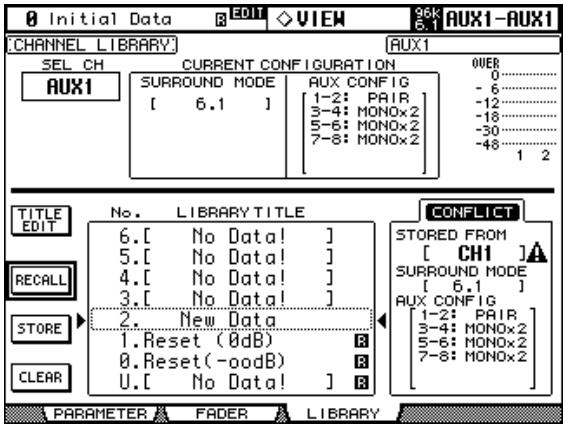
Read-only preset memories have an "R" icon next to their name. You cannot store, clear, or edit the title of these memories. Empty memories have the title "No Data!" Memory #0 is a read-only memory that you can recall to reset settings to their initial values.

Memory #U is a special read-only memory that allows you to undo and redo memory recall and store operations. After recalling a memory, you can revert to the previously recalled memory by recalling memory #U. After storing a memory, you can revert it to its previous contents by recalling memory #U. You can redo either of these undo operations by recalling memory #U again.

Channel Library

Input Channel, Bus Out, Aux Send, and Stereo Out channel settings can be stored in the Channel library, which contains 2 preset memories and 127 user memories. Preset memories are read-only. User memories enable you to store custom settings.

1 Use the DISPLAY ACCESS [VIEW] button to select the Channel Library page.



2 Use the LAYER buttons to select Layers, and the [SEL] buttons to select channels.

When storing, the settings of the currently selected channel are stored to the selected memory. When recalling, the settings in the selected memory are applied to the currently selected channel.

Only memories whose contents correspond to the currently selected channel can be recalled. For example, you can recall Input Channel settings to Input Channels, but not to Aux Sends. When the selected memory and currently selected channel don't correspond, a warning triangle and the word "CONFLICT" appear in the STORED FROM box.

Preset memory #0, "Reset(–∞dB)," resets all parameters of the currently selected channel to their initial values and sets the channel level to –∞ dB. Preset memory #1, "Reset (0dB)," also resets all parameters, but sets the channel level to 0 dB (i.e., nominal).

SEL CH: This indicates the currently selected channel.

CURRENT CONFIGURATION: If the currently selected channel is an Input Channel, Surround mode and Aux configuration information is displayed here.

Level meters: These meters indicate the levels of the currently selected Input Channel and its horizontal or vertical partner.

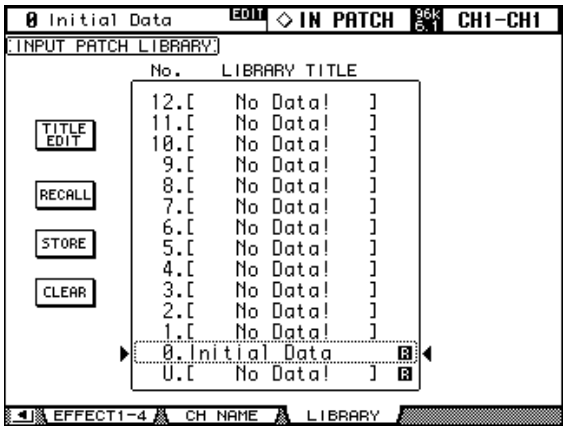
STORED FROM: This indicates the channel whose settings were originally stored in the selected memory. If the currently selected channel is an Input channel, Pan mode and Aux pairing information is also displayed.

For details on the Store, Recall, Title Edit, and Clear functions, see "General Library Operation" on page 143.

Input Patch Library

Input Patch settings can be stored in the Input Patch library, which contains 1 preset memory and 32 user memories. The preset memory is read-only. User memories enable you to store custom settings. See page 66 for information on Input Patch settings.

1 Use the DISPLAY ACCESS [INPUT PATCH] button to select the Input Patch Library page.



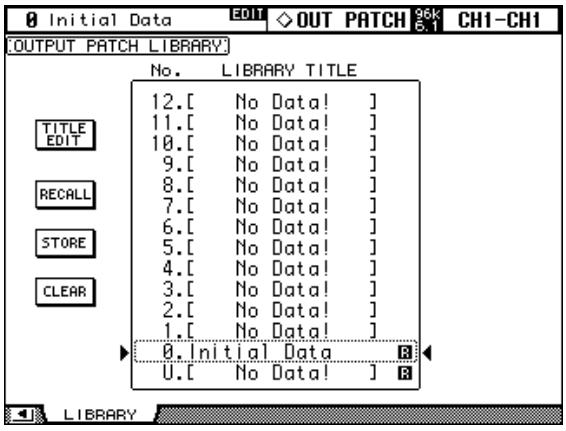
When storing, the current Input Patch settings are stored to the selected memory.

For details on the Store, Recall, Title Edit, and Clear functions, see "General Library Operation" on page 143.

Output Patch Library

Output Patch settings can be stored in the Output Patch library, which contains 1 preset memory and 32 user memories.The preset memory is read-only. User memories enable you to store custom settings. See page 68 for information on Output Patch settings.

1 Use the DISPLAY ACCESS [OUTPUT PATCH] button to select the Output Patch Library page.



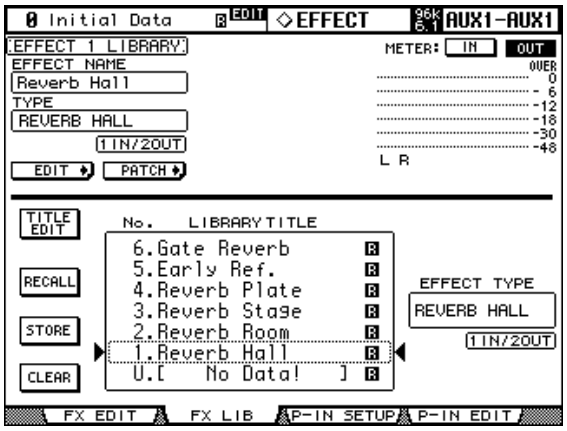
When storing, the current Output Patch settings are stored to the selected memory.

For details on the Store, Recall, Title Edit, and Clear functions, see "General Library Operation" on page 143.

Effects Library

Effects settings can be stored in the Effects library, which contains 61 preset memories and 67 user memories. Preset memories are read-only. User memories enable you to store custom settings. See page 153 for information on using the Effects.

1 Use the EFFECTS/PLUG-INS [DISPLAY] button to select the Effect Library page.



2 Press the EFFECTS/PLUG-INS [INTERNAL EFFECTS] button, and use the EFFECTS/PLUG-INS [1–4] buttons to select the internal effects processors.

When storing, the settings of the currently selected internal effects processor, indicated in the upper-left corner, are stored to the selected memory.

EFFECT NAME: This is the name of the previously recalled Effects memory.

TYPE: This is the effects type used in the previously recalled Effects memory. Its I/O configuration is shown below this.

EDIT: Pressing this button, then the [ENTER] button, displays the Effects Edit page, which enables you to adjust the Effects parameters. See "Editing Effects" on page 156 for more information.

PATCH: Pressing this button, then the [ENTER] button, displays the Effects Input Patch page, which enables you to patch internal Effects processor inputs and outputs. See "Patching Effects Inputs and Outputs" on page 67 for more information.

Level meters: These meters indicate the input and output levels of the currently selected Effects processor. Use the IN and OUT buttons to switch between input level and output level. There are eight meters for Effects processors #1, and two meters for Effects processors #2 through #4.

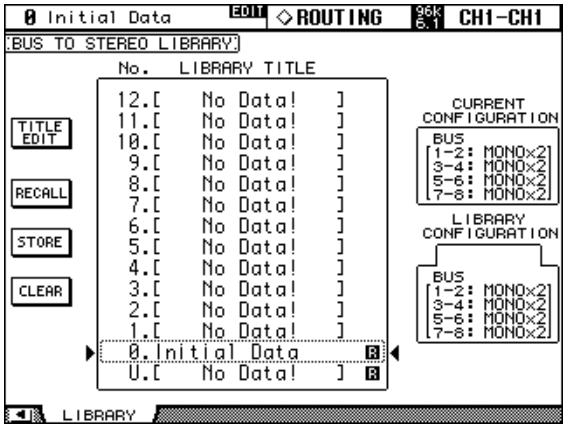
EFFECT TYPE: This is the effects type in the selected memory. Its I/O configuration is shown below this.

For details on the Store, Recall, Title Edit, and Clear functions, see "General Library Operation" on page 143.

Bus to Stereo Library

Bus to Stereo settings can be stored in the Bus to Stereo library, which contains 1 preset memory and 32 user memories. The preset memory is read-only. User memories enable you to store custom settings. See page 97 for information on Bus to Stereo routing.

1 Use the ROUTING [DISPLAY] button to select the Bus to Stereo Library page.



When storing, the current Bus Out to Stereo Out settings are stored to the selected memory.

CURRENT CONFIGURATION: Bus Out pairing information for the current configuration is displayed here.

LIBRARY CONFIGURATION: Bus Out pairing information for the configuration stored in the currently selected memory is displayed here.

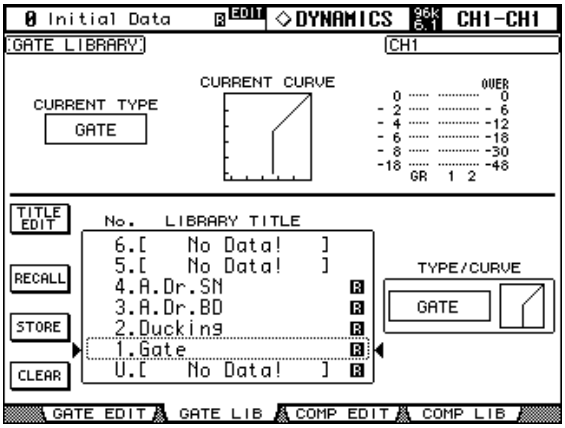
If the Bus Out pairing configuration does not match the current configuration, the word "CONFLICT" will appear in the LIBRARY CONFIGURATION box. In this case, if you recall such a memory, the 02R96 will apply the current Bus Out pairing configuration and related parameter settings to the recalled memory settings.

For details on the Store, Recall, Title Edit, and Clear functions, see "General Library Operation" on page 143.

Gate Library

Input Channel Gate settings can be stored in the Gate library, which contains 4 preset memories and 124 user memories. Preset memories are read-only. User memories enable you to store custom settings. See page 74 for information on gating Input Channels.

1 Use the DYNAMICS [DISPLAY] button to select the Gate Library page.



2 Use the LAYER buttons to select the Layers, and the [SEL] buttons to select Input Channels.

When storing, the Gate settings of the currently selected Input Channel, indicated in the upper-right corner, are stored to the selected memory. When recalling, the Gate settings in the selected memory are applied to the currently selected Input Channel.

CURRENT TYPE: This indicates the current Gate type of the currently selected channel.

CURRENT CURVE: This is the Gate curve of the currently selected channel.

GR meters: These meters indicate the amount of gain reduction being applied by the Gate, and the levels of the currently selected channel and its adjacent channel. If Pair mode for the currently selected channel is set to Vertical, the level of its counterpart on the adjacent Layer is displayed.

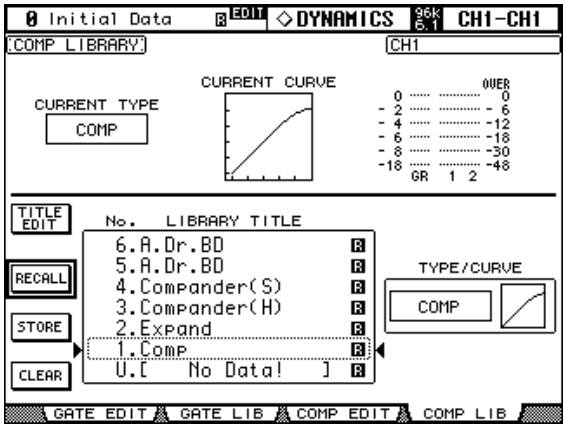
TYPE/CURVE: The type (Gate or Ducking) and curve of the currently selected memory is displayed to the right of the memory list.

For details on the Store, Recall, Title Edit, and Clear functions, see “General Library Operation” on page 143.

Comp Library

Comp settings can be stored in the Comp library, which contains 36 preset memories and 92 user memories. Preset memories are read-only. User memories enable you to store custom settings. See page 116 for information on the Comps.

1 Use the DYNAMICS [DISPLAY] button to select the Comp Library page.



2 Use the LAYER buttons to select Layers, and the [SEL] buttons to select channels.

When storing, the Comp settings of the currently selected channel, indicated in the upper-right corner, are stored to the selected memory. When recalling, the Comp settings in the selected memory are applied to the currently selected channel.

CURRENT TYPE: This indicates the current Comp type of the currently selected channel.

CURRENT CURVE: This is the Comp curve of the currently selected channel.

GR meters: These meters indicate the amount of gain reduction being applied by the Comp, and the levels of the currently selected channel and its adjacent channel. If Pair mode for the currently selected channel is set to Vertical, the level of its counterpart on the adjacent Layer is displayed.

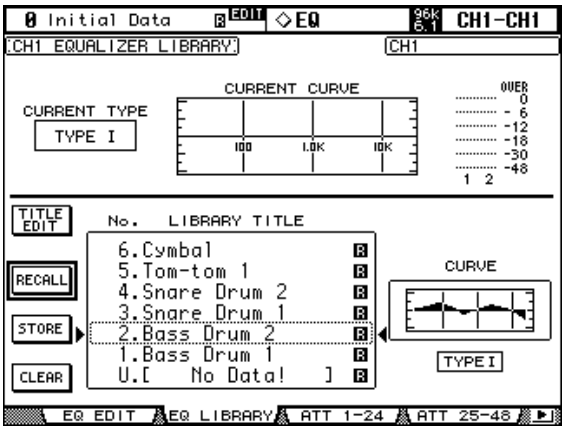
TYPE/CURVE: The type (Comp, Expand, Comp Hard, Comp Soft) and curve of the currently selected memory is displayed to the right of the memory list.

For details on the Store, Recall, Title Edit, and Clear functions, see “General Library Operation” on page 143.

EQ Library

Input Channel, Bus Out, Aux Send, and Stereo Out EQ settings can be stored in the EQ library, which contains 40 preset memories and 160 user memories. Preset memories are read-only. User memories enable you to store custom settings. See page 111 for information on EQ'ing.

1 Use the EQUALIZER [DISPLAY] button to select the EQ Library page.



2 Use the LAYER buttons to select Layers, and the [SEL] buttons to select channels.

When storing, the EQ settings of the currently selected channel, indicated in the upper-left and right corners, are stored to the selected memory. When recalling, the EQ settings in the selected memory are applied to the currently selected channel.

CURRENT TYPE: This indicates the current EQ type (TYPE I or TYPE II) for the currently selected channel.

CURRENT CURVE: This is the EQ curve of the currently selected channel.

Level meters: These meters indicate the levels of the currently selected Input Channel and its horizontal or vertical partner.

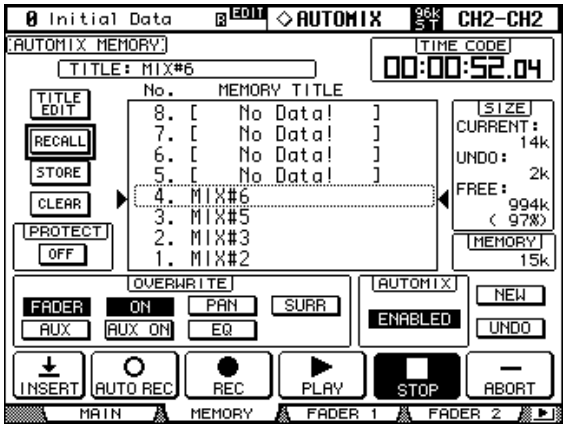
CURVE: This displays the EQ curve in the currently selected memory.

For details on the Store, Recall, Title Edit, and Clear functions, see "General Library Operation" on page 143.

Automix Library

Up to 16 Automixes can be stored in the Automix library. See page 170 for information on using Automix.

1 Use the DISPLAY ACCESS [AUTOMIX] button to select the Automix Memory page.



When storing, the current Automix is stored to the selected memory.

TITLE: This is the title of the current Automix.

CURRENT: This is the size of the current Automix.

UNDO: This is the size of the Automix data in the current Undo buffer.

FREE: This is the amount of free memory for storing the current Automix.

MEMORY: This is the size of the selected Automix memory.

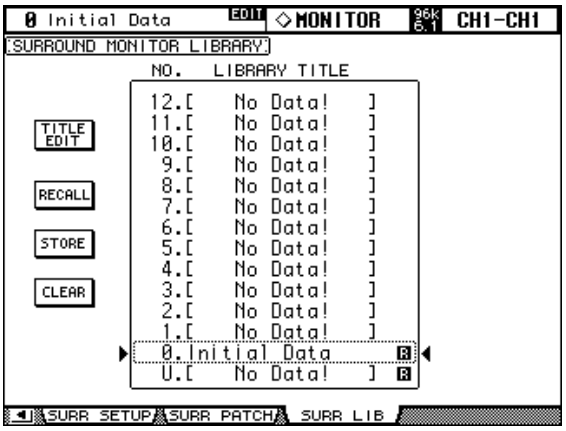
PROTECT: To protect the contents of the selected memory, select this and press [ENTER]. A padlock icon appears next to the titles of memories that are write-protected. Automixes cannot be stored to write-protected memories.

For details on the Store, Recall, Title Edit, and Clear functions, see "General Library Operation" on page 143.

Surround Monitor Library

Surround Monitor settings can be stored in the Surround Monitor library, which contains 1 preset memory and 32 user memories. The preset memory is read-only. User memories enable you to store custom settings. See page 138 for information on Surround Monitoring.

1 Use the MONITOR [DISPLAY] button to select the Surround Monitor Library page.



When storing, the current Surround Monitor settings are stored to the selected memory.

For details on the Store, Recall, Title Edit, and Clear functions, see "General Library Operation" on page 143.

14 Internal Effects & Plug-Ins

About the Effects

The 02R96 features four internal multi-effects processors, offering a whole host of effects types, including reverbs, delays, modulation-based effects, combination effects, and multi-channel effects designed especially for use with surround sound.

Effects processors 2–4 feature assignable stereo inputs and outputs. Processor #1, which is intended for use with the multichannel surround effects, features eight assignable inputs and outputs. Processor inputs and outputs can be patched to various sources, including the inputs and outputs of other effects processors, allowing you to chain processors together in series. (The only outputs available for patching in series are effects processor outputs OUT1 and OUT2.)

The input and output signal levels of the currently selected Effects processor can be metered on the Effects Edit page and the Effects Library page. The input and output signal levels of all effects processors can be metered on the Meter pages. See "Metering" on page 107 for more information.

Effects settings can be stored in the Effects library, which contains 61 preset memories and 67 user memories. See "Effects Library" on page 146 for more information.

Patching Effects Processors

Effects processor inputs can be fed from the Aux Sends, Input and Output Channel Insert Outs, or the outputs of another effects processor. See "Patching Effects Inputs and Outputs" on page 67 for more information.

Effects processor outputs can be patched to the Input Channels, Input and Output Channel Insert Ins, or the inputs of another effects processor. See "Output Patching" on page 68 for more information.

Preset Effects & Types

The following tables list the preset effects and types. See page 259 for detailed parameter information.

Reverbs

#	Preset Name	Type	Description
1	**Reverb Hall**	REVERB HALL	Concert hall reverberation simulation with gate
2	**Reverb Room**	REVERB ROOM	Room reverberation simulation with gate
3	**Reverb Stage**	REVERB STAGE	Reverb designed for vocals, with gate
4	**Reverb Plate**	REVERB PLATE	Plate reverb simulation with gate
5	**Early Ref.**	EARLY REF.	Early reflections without the subsequent reverb
6	**Gate Reverb**	GATE REVERB	Gated early reflections
7	**Reverse Gate**	REVERSE GATE	Gated reverse early reflections

Delays

#	Preset Name	Type	Description
8	**Mono Delay**	MONO DELAY	Simple mono delay
9	**Stereo Delay**	STEREO DELAY	Simple stereo delay
10	**Mod.delay**	MOD.DELAY	Simple repeat delay with modulation
11	**Delay LCR**	DELAY LCR	3-tap (left, center, right) delay
12	**Echo**	ECHO	Stereo delay with crossed left/right feedback

Modulation-based Effects

#	Preset Name	Type	Description
13	**Chorus**	CHORUS	Chorus
14	**Flange**	FLANGE	Flanger
15	**Symphonic**	SYMPHONIC	Proprietary Yamaha effect that produces a richer and more complex modulation than normal chorus
16	**Phaser**	PHASER	16-stage stereo phase shifter
17	**Auto Pan**	AUTO PAN	Auto-panner
18	**Tremolo**	TREMOLO	Tremolo
19	**HQ.Pitch**	HQ.PITCH	Mono pitch shifter, producing stable results
20	**Dual Pitch**	DUAL PITCH	Stereo pitch shifter
21	**Rotary**	ROTARY	Rotary speaker simulation
22	**Ring Mod.**	RING MOD.	Ring modulator
23	**Mod.Filter**	MOD.FILTER	Modulated filter

Guitar Effects

#	Preset Name	Type	Description
24	**Distortion**	DISTORTION	Distortion
25	**Amp Simulate**	AMP SIMULATE	Guitar amp simulation

Dynamic Effects

#	Preset Name	Type	Description
26	**Dyna.Filter**	DYNA.FILTER	Dynamically controlled filter
27	**Dyna.Flange**	DYNA.FLANGE	Dynamically controlled flanger
28	**Dyna.Phaser**	DYNA.PHASER	Dynamically controlled phase shifter

Combination Effects

#	Preset Name	Type	Description
29	**Rev+Chorus**	REV+CHORUS	Reverb and chorus in parallel
30	**Rev->Chorus**	REV->CHORUS	Reverb and chorus in series
31	**Rev+Flange**	REV+FLANGE	Reverb and flanger in parallel
32	**Rev->Flange**	REV->FLANGE	Reverb and flanger in series
33	**Rev+Sympho.**	REV+SYMPHO.	Reverb and symphonic in parallel
34	**Rev->Sympho.**	REV->SYMPHO.	Reverb and symphonic in series
35	**Rev->Pan**	REV->PAN	Reverb and auto-pan in series
36	**Delay+ER.**	DELAY+ER.	Delay and early reflections in parallel
37	**Delay->ER.**	DELAY->ER.	Delay and early reflections in series
38	**Delay+Rev**	DELAY+REV	Delay and reverb in parallel
39	**Delay->Rev**	DELAY->REV	Delay and reverb in series
40	**Dist->Delay**	DIST->DELAY	Distortion and delay in series

Others

#	Preset Name	Type	Description
41	**Multi.Filter**	MULTI.FILTER	3-band parallel filter (24 dB/octave)
42	**Freeze**	FREEZE	Simple sampler
43	**Stereo Reverb**	ST REVERB	Stereo reverb
44[1]	**Reverb 5.1**	REVERB 5.1[2]	6-channel reverb for 5.1 surround
45[1]	**Octa Reverb**	OCTA REVERB[2]	8-channel reverb for 7.1 surround
46[1]	**Auto Pan 5.1**	AUTO PAN 5.1	6-channel auto pan for 5.1 surround
47[1]	**Chorus 5.1**	CHORUS 5.1	6-channel chorus for 5.1 surround
48[1]	**Flange 5.1**	FLANGE 5.1	6-channel flanger for 5.1 surround
49[1]	**Sympho. 5.1**	SYMPHO. 5.1	6-channel symphonic effect for 5.1 surround
50	**M. Band Dyna.**	M. BAND DYNA.	Multi-band dynamics processor
51[1]	**Comp 5.1**	COMP 5.1[2]	Multi-band compressor for 5.1 surround
52[1]	**Compand 5.1**	COMPAND 5.1[2]	Multi-band compander for 5.1 surround
53[3]	**Comp276**	—	—
54[3]	**Comp276S**	—	—
55[3]	**Comp260**	—	—
56[3]	**Comp260S**	—	—
57[3]	**Equalizer601**	—	—
58[3]	**OpenDeck**	—	—
59[3]	**REV-X Hall**	—	—
60[3]	**REV-X Room**	—	—
61[3]	**REV-X Plate**	—	—

1. These effects can be recalled only to effects processor #1.
2. Since these effects types require four DSPs, the total number of effects processors is reduced by three when one of these types is used. For example, if REVERB 5.1 is used with effects processor #1, processors 2–4 are unavailable.
3. Preset numbers are reserved for Add-On Effects. Effects that are not installed appear in gray and are unavailable for use. See “Adding Optional Add-On Effects” on page 157 for more information on Add-On Effects.

Editing Effects

The internal effects processors can be edited as follows.

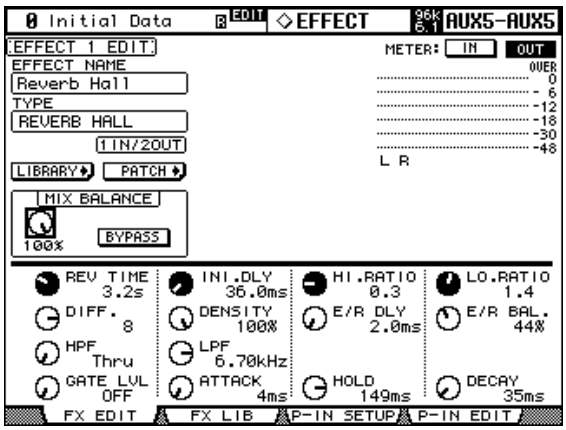
1 Press the EFFECTS/PLUG INS [INTERNAL EFFECTS] button.

2 Use the EFFECTS/PLUG INS [1–4] buttons to select the internal effects processors.

3 Use the EFFECTS/PLUG INS [DISPLAY] button to locate the Effects Library page, and recall a preset effects memory that contains the effects type that you want.

See "Effects Library" on page 146 for more information.

4 Use the EFFECTS/PLUG INS [DISPLAY] button to locate the Effects Edit page.



The available effects parameters depends on the effects type currently selected. See page 153 for detailed parameter information.

5 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, or [ENTER] button to set them.

EFFECT NAME: This is the name of the currently-recalled Effects memory.

TYPE: This is the effects type used in the currently-recalled Effects memory. Its I/O configuration is shown below this.

LIBRARY: Select the LIBRARY button, then press [ENTER] to display the Library page for the selected effects processor. See "Effects Library" on page 146 for more information.

PATCH: Select the PATCH button, then press [ENTER] to display the Effects Input/Output Patch page, which enables you to patch internal Effects processor inputs and outputs. See "Patching Effects Inputs and Outputs" on page 67 for more information.

MIX BALANCE: This is used to set the balance between the wet and dry signals. When set to 0%, only the dry signal is heard. When set to 100%, only the wet signal is heard.

BYPASS: This button is used to bypass the currently selected effects processor.

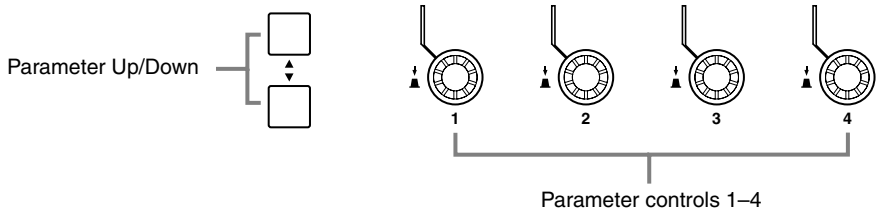
TEMPO: The TEMPO section displays TEMPO parameters for delay and modulation-based effects. These TEMPO parameters calculate and set the delay time for delay effects, or the modulation frequency for modulation effects, relative to the specified tempo and note duration. Use these parameters along with the SYNC and NOTE parameters.

When you turn on the SYNC parameter, the 02R96 recalculates the delay time or modulation frequency based on the TEMPO parameter value (tempo) and the NOTE parameter value (note). For example, if the TEMPO parameter is set to 120BPM and the NOTE parameter is set to an eighth note, turning on the SYNC parameter sets the delay time to 250msec and the modulation frequency to 0.25Hz.

Tip:
- *If you turn on the SYNC parameter and edit the TEMPO or NOTE parameter, the 02R96 recalculates the delay time or modulation frequency.*
- *If you turn on the SYNC parameter and edit the delay time or modulation frequency, the NOTE parameter value changes based on the TEMPO parameter setting.*
- *See "Effects and tempo synchronization" on page 281 for more information on the tempo sync parameters.*

Level meters: The Level meters indicate the input and output levels of the currently selected Effects processor. Select the IN or OUT button to display input or output levels respectively. There are eight output meters for Effects processors 1, and two output meters for Effects processors 2 through 4.

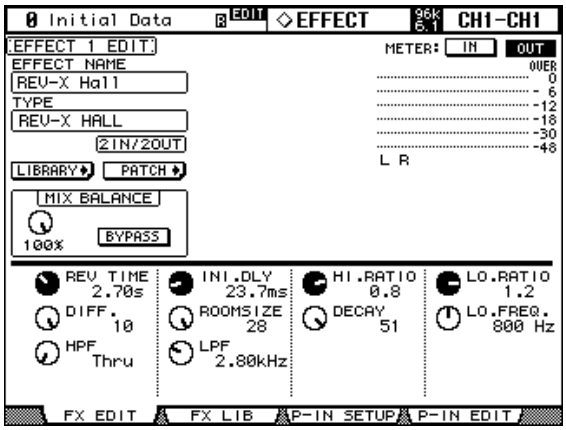
Effects parameters can also be adjusted by using Parameter controls 1–4. Use the Parameter Up/Down buttons to select the rows of parameters. The parameters in the currently selected row appear highlighted. Up to 16 parameters can be displayed at a time, and if more are available, an up or down arrow is displayed.



When a Y56K card effect, or an internal effects processor is inserted in the currently selected channel, when the EFFECTS/PLUG-INS [CHANNEL INSERTS] button is pressed, the corresponding EFFECTS/PLUG-INS [1–4] button indicator flashes, and the corresponding Effects, or Plug-In edit page appears. If it's a Y56K card that's inserted, the [PLUG-INS] button indicator also flashes. If it's an internal effects processor, the [INTERNAL EFFECTS] button indicator also flashes. This applies only to effects that are inserted into channels. If there's nothing inserted in the currently selected channel, a message appears.

Adding Optional Add-On Effects

Installing an optional Add-On Effect package enables you to expand the internal Effects processors. You can use installed Add-On Effects as preset effects #53 and up. Edited settings can be stored in user memories #68 and up. Refer to the installation guide included in your Add-On Effect package for information on installing the effects.



As of January 2004, the following Add-On Effect packages are available:

- AE011 Channel Strip Package
- AE021 Master Strip Package
- AE031 Reverb Package

Additional packages will be released in the future. Visit the Yamaha web site for the latest information:

http://www.yamahaproaudio.com/

About Plug-Ins

There are two types of Plug-Ins: Waves Plug-Ins and User Defined Plug-Ins. Waves Plug-Ins are available on Y56K cards, which need to be installed in the 02R96's mini YGDAI Slots (Slots 3 and 4 only). See your Yamaha dealer for details. User Defined Plug-Ins can be used to control up to 32 user definable parameters via MIDI Control Change or Parameter Change messages on an external MIDI device, such as an external effects processor. Plug-In parameters can be controlled by using the four Parameter controls below the display. Plug-In parameter settings are stored in Scenes, for snapshot-style automation.

When installing Y56K cards, mini YGDAI Slots 3 and 4 correspond to Plug-Ins 3 and 4, so if you install, for example, a Y56K card in Slot #4, it's automatically configured as Plug-In #4. 02R96 signals are patched through to the Y56K card's effect chains just like any other signal is patched through to a Slot Input or Output. Slot Outputs (i.e., effect chain inputs) can be fed from the Bus Outs, Aux Sends, Stereo Out, or the Input and Output Channel Insert Outs. Slot Inputs (i.e., effect chain outputs) can be fed to the Input Channels, or the Input and Output Channel Insert Ins. See "Input & Output Patching" on page 66.

Settings for Y56K cards are stored in memory on the card when you store a Scene, and recalled automatically during Scene recall. Please note, however, that these settings cannot be stored in 02R96 Scenes. Therefore, the cards do not support Scene memory global paste, sort, sort, and other scene related functions.

Note: Y56K cards use Scenes #1–#96. If you store or recall Scenes #97 and up, the Y56K card settings will not reflect the Scenes. (A warning message will appear.)

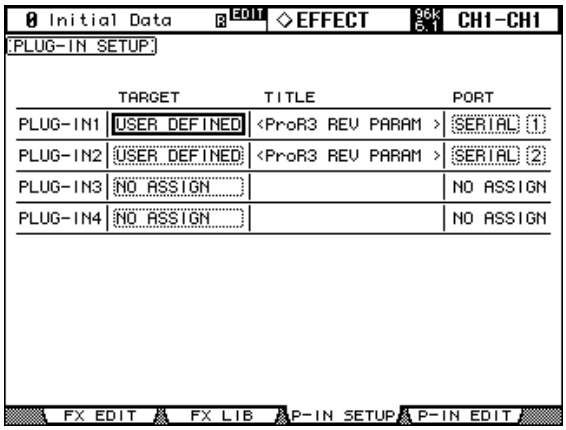
Configuring Plug-Ins

Plug-Ins can be configured as follows.

If you've installed a Y56K card into one of the Slots, the 02R96 configures itself automatically and no further configuration settings are required.

1 Press the EFFECTS/PLUG INS [PLUG-INS] button.

2 Use the EFFECTS/PLUG INS [DISPLAY] button to locate the Plug-In Setup page.



3 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

TARGET: These are used to assign a target to each of the four Plug-Ins. Parameters for the specified target appear on the Plug-In Edit page when that Plug-In is selected by using the EFFECTS PLUG-INS [1–4] buttons. In addition to using the cursor buttons, Plug-Ins can also be selected on this page by using the EFFECTS PLUG-INS [1–4] buttons.

TITLE: If a Y56K card is installed, its name is displayed here. If the target is set to USER DEFINED, the specified title of the bank currently selected on the Plug-In Edit page is displayed.

PORT: If a Y56K card is installed, its Slot number is displayed here. If the target is set to USER DEFINED, you can specify the Plug-Ins MIDI port as MIDI, SERIAL 1–8, USB 1–8, or SLOT1 1–8. Plug-In MIDI Ports can also be set on the MIDI/To Host Setup page. See "MIDI I/O" on page 190 for more information.

Editing Plug-Ins

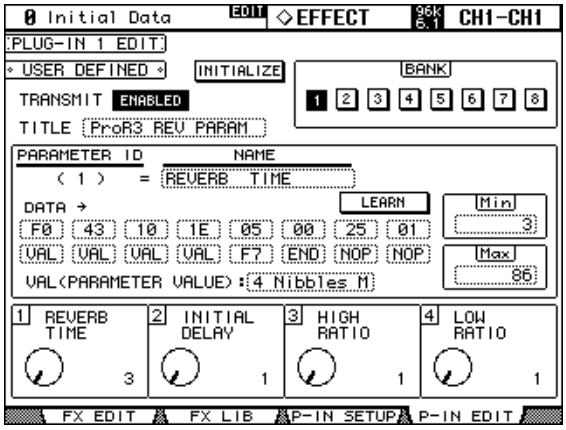
Plug-Ins can be edited as follows. The settings of Waves Plug-Ins and User Defined Plug-In banks can be stored to an external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump (see page 195).

If you've installed a Y56K card into one of the Slots, display pages especially for the Waves card are displayed when the corresponding Plug-In is selected. See the Waves documentation for more information. The following explanation applies only to User Defined Plug-Ins.

1 Press the EFFECTS/PLUG INS [PLUG-INS] button.

2 Use the EFFECTS/PLUG INS [1–4] buttons to select the Plug-Ins.

3 Use the EFFECTS/PLUG INS [DISPLAY] button to locate the Plug-In Edit page.



4 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

TRANSMIT: This enables and disables MIDI data transmission for the currently selected Plug-In.

INITIALIZE: This initializes the settings of the currently selected bank.

BANK: These buttons are used to select the parameter banks of the currently selected Plug-In. Up to four parameter settings can be stored in each bank, making a total of 32 parameters per Plug-In.

TITLE: This is used to enter a title (up to 16 characters long) for each bank. To enter a title for the currently selected bank, select this and press [ENTER]. When the Title Edit window appears, enter a title, and press OK when you've finished. See "Title Edit Window" on page 46 for more information.

PARAMETER ID/NAME: This is used to select the four rotary controls at the bottom of the Plug-In Edit page for editing, and to enter a name (up to 16 characters long) for each control. Use the Parameter wheel or INC/DEC buttons to select a Parameter ID from 1–4, and then press [ENTER]. When the Title Edit window appears, enter a title, and press OK when you've finished. See "Title Edit Window" on page 46 for more information.

DATA: This is used to specify the MIDI message (up to 16 bytes) to be transmitted when each parameter control is adjusted. Use the PARAMETER ID/NAME parameter to select a Parameter ID from 1–4, and then edit as necessary. Data values can be set in hex from 00 to FF. The VAL setting is the value of the parameter control. The END setting specifies the end of the data. NOP means no data is transmitted.

LEARN: This button is used to turn on and off the Learn function, which can be used to learn what MIDI messages are transmitted by external MIDI devices when their controls or parameters are adjusted. When on, received MIDI messages are displayed by the DATA parameter. Only the first 16 bytes of data, starting with a Status bit, are displayed.

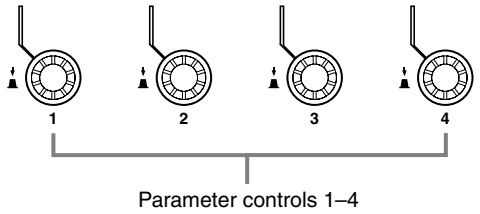
MIN/MAX: These parameters determine the minimum and maximum values of the MIDI data transmitted when each parameter control is adjusted. Use the PARAMETER ID/NAME parameter to select a Parameter ID from 1–4, and then edit as necessary.

VAL: This is used to select the format for converting parameter control values to the DATA parameter's VAL setting. It applies to the currently selected bank. The available options are listed in the following table.

VAL	Description	VAL count
One byte	Transmit the lower 7 bits of the parameter value as 1 word	Up to one VAL
MSB/LSB	Transmit the lower 14 bits of the parameter value in 7-bit units starting from the upper byte	Up to two VAL's
LSB/MSB	Transmit the lower 14 bits of the parameter value in 7-bit units starting from the lower byte	Up to two VAL's
2 Nibbles M	Transmit the lower 8 bits of the parameter value in 4-bit units, consecutively from the highest data	Up to two VAL's
3 Nibbles M	Transmit the lower 12 bits of the parameter value in 4-bit units, consecutively from the highest data	Up to three VAL's
4 Nibbles M	Transmit the parameter value in 16 bit units, consecutively from the highest data	Up to four VAL's
2 Nibbles L	Transmit the lower 8 bits of the parameter value in 4-bit units, consecutively from the lowest data	Up to two VAL's
3 Nibbles L	Transmit the lower 12 bits of the parameter value in 4-bit units, consecutively from the lowest data	Up to three VAL's
4 Nibbles L	Transmit the parameter value in 16-bit units, consecutively from the lowest data	Up to four VAL's

When the controls at the bottom of the Plug-In Edit page are operated, the specified MIDI data, along with the value of the parameter control, is transmitted.

Plug-In parameters can also be adjusted by using Parameter controls 1–4, which correspond to the four parameters shown at the bottom of the Plug-In Edit page.



When a Y56K card effect, or an internal effects processor is inserted in the currently selected channel, when the EFFECTS/PLUG-INS [CHANNEL INSERTS] button is pressed, the corresponding EFFECTS/PLUG-INS [1–4] button indicator flashes, and the corresponding Effects, or Plug-In edit page appears. If it's a Y56K card that's inserted, the [PLUG-INS] button indicator also flashes. If it's an internal effects processor, the [INTERNAL EFFECTS] button indicator also flashes. This applies only to effects that are inserted into channels. If there's nothing inserted in the currently selected channel, a message appears.

The parameter settings, and the target and bank for each Plug-In are stored in Scenes. When a Scene is recalled, if the Plug-In's Target is the same as when the Scene was stored, the parameters are set accordingly and the corresponding MIDI data is transmitted (so long as the REMOTE parameter is set to ENABLED). If the Target is not the same, the parameters are set accordingly but no MIDI data is transmitted.

15 Scene Memories

About Scene Memories

Scene memories allow you to store a snapshot of virtually every 02R96 mix setting in a Scene. There are 99 Scene memories, and they can be titled for easy identification. Scenes can be linked to Input and Output Patch library memories, so that input and output patches are recalled along with Scenes. A fade time of up to 30 seconds can be set individually for each Input and Output Channel fader. Recall Safe can be used to exclude individual Input and Output Channels and certain parameters from Scene recalls. Stored Scenes can be sorted as necessary.

Scenes can be stored and recalled by using the SCENE MEMORY [STORE] and [RECALL] buttons, or by using the Scene Memory page. Scenes can be assigned MIDI Program Change numbers and recalled remotely. See "Assigning Scenes to Program Changes" on page 193 for more information. When a Scene is recalled on the 02R96, the Program Change number assigned to that Scene is transmitted, which can be used to recall programs, effects, etc., on other MIDI equipment. In addition, manual Scene recalls can be recorded on-the-fly in an Automix. When that Automix is replayed, the Scenes are recalled automatically. See "Automix" on page 170 for more information.

Scene memories can be stored to external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump (see page 195).

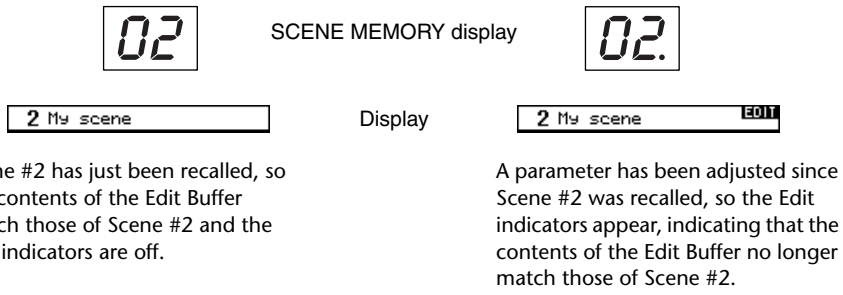
What's Stored in a Scene?

The following items are stored in Scenes: Input and Output Channel settings, Effects settings, Group and Pair settings, Fade Time settings, and Scene title.

Edit Buffer & Edit Indicator

The Edit Buffer is where the current mix settings (i.e., the current Scene) are stored. When a Scene is stored, the mix settings in the Edit Buffer are written to the selected Scene memory. When a Scene is recalled, the contents of the selected Scene memory are copied to the Edit Buffer, making them the current mix settings.

When a parameter is adjusted after a Scene has been recalled, the Edit indicators—the dot on the SCENE MEMORY display and "EDIT" on the display—appear, indicating that the current mix settings (i.e., those in the Edit Buffer) no longer match those of the Scene that was recalled last, as illustrated below.



The contents of the Edit Buffer are retained while the 02R96 is turned off.

Scene Memories #0 & #U

Scene memory #0 is a special read-only memory that contains the initial settings of all mix parameters. It can be recalled, but not stored. When you want to reset all mix parameters to their initial, or default values, recall Scene memory #0. Input Channel faders are set to either –∞dB or nominal, depending on the Initial Data Nominal preference (see page 231).

Scene memory #U is a special read-only memory that allows you to undo and redo Scene memory recall and store operations. After recalling a Scene memory, you can revert to the previously recalled Scene memory by recalling Scene memory #U. After storing a Scene memory, you can revert it to its previous contents by recalling Scene memory #U. You can redo either of these undo operations by recalling Scene memory #U again.

Auto Scene Memory Update

Normally, when a Scene is recalled and then edited, that Scene must be stored again in order to save the edits. If the Scene MEM Auto Update preference on page 231 is on, however, those edits are stored automatically in a Shadow memory. There's one Shadow memory for each Original Scene memory. The contents of the Original and Shadow memories can be recalled alternately, which is useful for doing A/B comparisons.

When a Scene is recalled, the current mix settings are automatically stored in the Shadow memory of the Scene memory that was recalled last. When you return to that Scene, you can recall the Shadow or Original memory alternately.

While the Scene MEM Auto Update preference is on, Shadow memories, not Original memories are recalled initially. To recall an Original memory, recall its Shadow memory first, and while the Edit indicators are both off, recall again. This time the Original memory is recalled.

When recalling Original and Shadow memories, you can easily tell which is currently active by the Edit indicators, which are off when an Original memory is active, and on when a Shadow memory is active. Note that when a Scene is stored, the contents of the Original and Shadow memories will be the same and the Edit indicators will be off regardless of which memory is active.

When recalling Scenes in an Automix, only the Original memories can be recalled. When recalling Scenes via MIDI Program Change messages, Original and Shadow memories can be recalled, and operation is the same as for recalling Scenes by using the 02R96's SCENE MEMORY buttons or the Scene Memory page.

Storing & Recalling Scenes with the SCENE MEMORY Buttons

As each Scene memory is selected, its number flashes on the SCENE MEMORY display, and its number and title flash in the Scene memory section of the display. These stop flashing when the selected Scene memory is either stored or recalled. Empty Scene memories have the title "No Data!" and cannot be recalled. You cannot store to Scene memories that are write-protected.

Warning: When storing Scenes, make sure that there are no settings in the Edit Buffer that you do not want to store. Perhaps some settings have been adjusted accidentally, or by someone else. If you are not sure of the Edit Buffer's exact contents, recall the last Scene, make the adjustments that you really want, and then store the Scene. You may want to store the current Scene to an unused Scene memory just in case.

Storing Scenes

1 **Use the SCENE MEMORY Up [▲] and Down [▼] buttons to select the Scene memories.**

2 **Press the [STORE] button.**

The Title Edit window appears. This window can be disabled by the Store Confirmation preference on page 230.

3 **Enter a title.**

See "Title Edit Window" on page 46 for more information.

4 **Press OK on the Title Edit window.**

The current Scene is stored to the selected Scene memory.

You can undo Scene stores, reverting to the previous mix settings, by recalling Scene memory #U ("Ud" on the SCENE MEMORY display).

Recalling Scenes

1 **Use the SCENE MEMORY Up [▲] and Down [▼] buttons to select the Scene memories.**

2 **Press the [RECALL] button.**

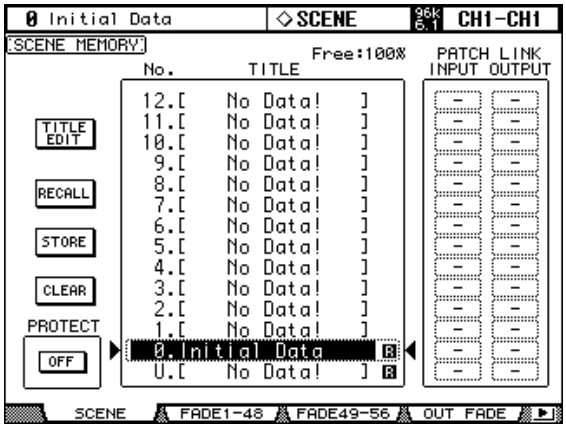
The contents of the selected Scene memory are recalled and all mix parameters are set accordingly. If the Recall Confirmation preference is on, a confirmation window appears before a Scene is recalled.

You can undo Scene recalls, reverting to the previous mix settings, by recalling Scene memory #U ("Ud" on the SCENE MEMORY display).

Using the Scene Memory Page

On the Scene Memory page you can store, recall, write-protect, delete, and edit the titles of Scenes.

1 Use the SCENE MEMORY [DISPLAY] button to locate the Scene Memory page.



2 Use the Parameter wheel or INC/DEC buttons to select the Scene memories.

A Scene memory is selected when it appears inside the dotted box.

3 Use the cursor buttons to select the following buttons.

TITLE EDIT: To edit the title of the selected Scene memory, select this and press [ENTER]. When the Title Edit window appears, edit the title, and press OK when you've finished. See "Title Edit Window" on page 46 for more information.

RECALL: To recall the contents of the selected Scene memory, select this and press [ENTER]. The contents of the selected Scene memory are recalled, all parameters are set accordingly, the Scene memory's number and title stop flashing, and the Edit indicators go off. If the Recall Confirmation preference is on, a confirmation window appears before a Scene is recalled.

STORE: To store the current Scene to the selected Scene memory, select this and press [ENTER]. When the Title Edit window appears, enter a title, and press OK. See "Title Edit Window" on page 46 for more information. When a Scene is stored, the Scene memory's number and title stop flashing, and the Edit indicators go off. You can stop the Title Edit window from appearing by turning off the Store Confirmation preference on page 230. The "Free: 100%" value indicates the amount of free memory available for storing Scenes.

CLEAR: To delete the contents and title of the selected Scene memory, select this, press [ENTER], and the press YES when the confirmation window appears.

PROTECT: To protect the contents of the selected Scene memory, select this and press [ENTER]. A padlock icon appears next to the titles of Scene memories that are write-protected. Scenes cannot be stored to write-protected Scene memories. While the PROTECT button is selected, the selected Scene memory can be protected and unprotected by using the INC/DEC buttons.

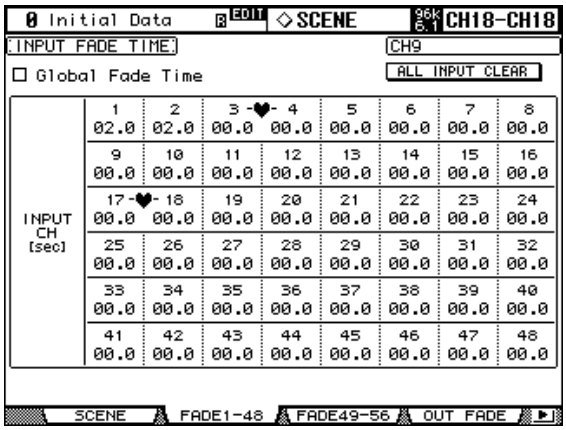
PATCH LINK: This indicates the Input/Output Patch library number that is linked to each scene. When you store a scene, the number of the input/output patch that was most recently recalled or stored will automatically be linked with that scene. When you recall that scene, this library number will also be automatically recalled. You can also move the cursor to the parameter boxes and change the library numbers.

Fading Scenes

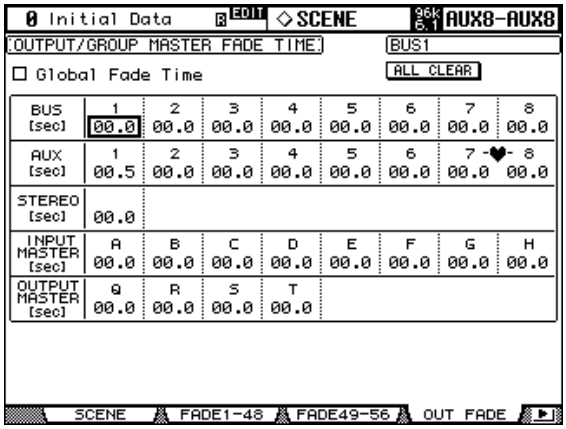
Fade times can be specified for individual Input Channels, Bus Outs, Aux Sends, Stereo Out, and the Group Master. The fade time determines the time it takes the Input and Output Channel faders to move to their new positions when a Scene is recalled. Fade time settings can be specified for each Scene individually.

1 Use the SCENE MEMORY [DISPLAY] button to locate a Fade Time page.

The Fade Time parameters for the 56 Input Channels are divided between two pages. The Input Channel 1–48 Fade time page is shown below. The layout of the other page is the same.



The Fade Time parameters for the Output Channels appear on the Output Fade Time page.



2 Use the cursor buttons or [SEL] buttons to select the individual Fade Time parameters, and use the Parameter wheel or INC/DEC buttons to set them.

You can copy the currently selected Input or Output Channel Fade Time setting to all Input or Output Channels respectively by double-clicking the [ENTER] button. If the Input or Output Group Master is selected, you can copy the setting to all Input or Output Channel Group Master channels.

The Long name of the channel whose Fade Time parameter is currently selected appears in the upper-right corner of the page. When a channel is selected by using the [SEL] buttons, its Long name also appears in the upper-right corner of the display.

The Fade Time can be set from 0 to 30 seconds in 0.1 second steps.

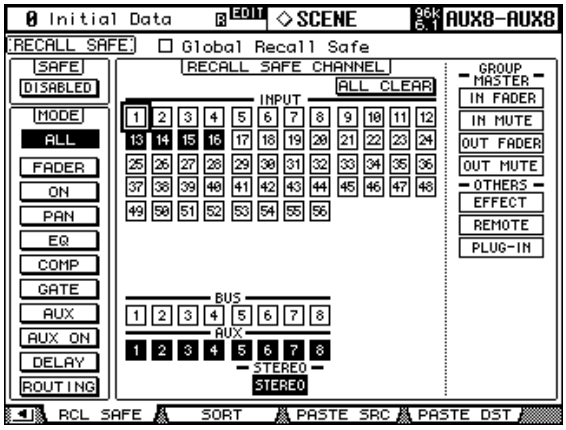
You can reset all Input Channel Fade Time parameters to zero by selecting the ALL INPUT CLEAR buttons, then pressing the [ENTER] button. You can reset all Output Channel Fade Time parameters to zero by selecting the [ALL CLEAR] buttons, then pressing the [ENTER] button.

Global Fade Time: When this check box is checked, a Scene is recalled using the Fade Time that is applied globally to all Scenes. (The Fade Time setting stored in the recalled Scene is temporarily ignored.)

Recalling Scenes Safely

When a Scene is recalled, all mix parameters are set accordingly. In some situations, you may want to retain the settings of certain parameters on certain channels, and this can be achieved by using the Recall Safe function. Recall Safe can be set individually for Input/Output Channels, Group Master, Internal Effect Processor, and the Remote Layer, etc.

1 Use the SCENE MEMORY [DISPLAY] button to locate the Recall Safe page.



2 Select the SAFE ENABLED/DISABLED button, and use the [ENTER] button or the INC/DEC buttons to enable or disable the Recall Safe function.

3 Use the cursor buttons, [SEL] buttons, or Parameter wheel to select channels, and use the [ENTER] button or the INC/DEC buttons to set them as Safe channels.

When a channel is Safe, its number appears highlighted.

GROUP MASTER/OTHERS: Recall Safe can be set individually not only for Input/Output Channels, but also Group Master, Internal Effect Processors, User Defined Remote Layer, and Plug-ins.

4 Use the cursor buttons or Parameter wheel to select the MODE parameters, and the [ENTER] button to set them.

The MODE buttons determine which Safe channel parameters are unaffected by Scene recalls. ALL (all parameters. This option is mutually exclusive with the following options), FADER (faders), ON (On/Off parameters), PAN (Pan parameters), EQ (EQ parameters), COMP (Comp parameters), GATE (Gate parameters), AUX (Aux Send levels), AUX ON (Aux Send On/Off parameters), DELAY (Delay parameters), ROUTING (Routing parameters).

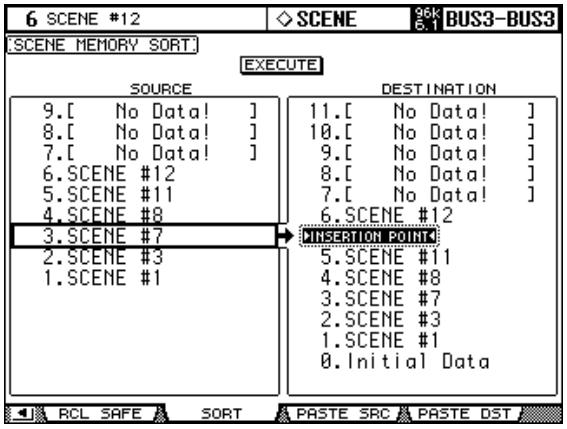
GLOBAL RECALL SAFE: When this check box is checked, a Scene is recalled using the settings that are applied globally to all Scenes. The settings stored in the recalled Scene are temporarily ignored.

Recall Safe settings are stored in Scene memories.

Sorting Scenes

Scene can be sorted by using the Scene Memory Sort function.

1 Use the SCENE MEMORY [DISPLAY] button to locate the Scene Memory Sort page.



2 Use the cursor button to the select the SOURCE list, and use the Parameter wheel or the INC/DEC buttons to select the Scene memory you want to move.

3 Use the cursor button to the select the DESTINATION list, and use the Parameter wheel or the INC/DEC buttons to select the position to which you want to move the source Scene memory.

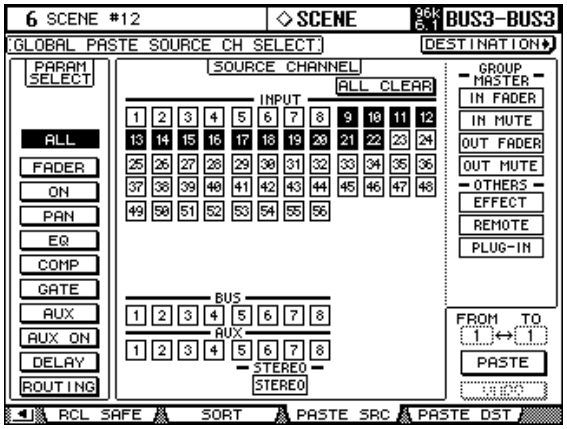
4 Press [ENTER] to move the source Scene memory to the specified destination.

The [ENTER] button executes the Sort function regardless of its position.

Copying and Pasting a Scene (Global Paste)

Any channel or parameter settings for the current scene can be copied and pasted into other scenes. This function is useful when you want to apply edited parameter settings in the current scene to other scenes.

1 Use the SCENE MEMORY [DISPLAY] button to locate the Global Paste Source CH Select page.



2 Use the cursor buttons, [SEL] buttons, or Parameter wheel to select the channel category, then use the [ENTER] button or the INC/DEC buttons to select the copy source channel.

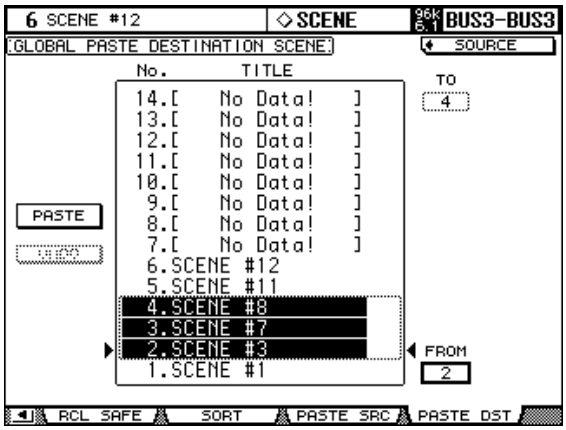
The number of the source channel is highlighted.

GROUP MASTER/OTHERS: You can select as the copy source each Group Master, internal Effects processos, User Defined Remote layer, or user Defined plug-in, as well as each channel.

3 Use the cursor buttons or Parameter wheel to select the copy source parameter, then press the [ENTER] button.

4 Use the cursor buttons or Parameter wheel to select the destination channels, then press the [ENTER] button.

5 Use the SCENE MEMORY [DISPLAY] button to locate the Global Paste Destination Scene page.



6 Use the Parameter wheel or INC/DEC buttons to select the destination scene(s).

Scenes specified between FROM and TO (inclusive) become the paste destination. You can paste up to 10 scenes at a time.

7 Use the cursor buttons to select the PASTE button, then use the [ENTER] button to paste the settings.

You cannot paste the settings to write-protected scenes.

UNDO: This button restores the settings used prior to the paste operation. However, if the settings in the scene are changed after the paste operation (such as by saving, clearing, or sorting the scene, or receiving scene data via MIDI Bulk Dump), the UNDO function is disabled.

16 Automix

About Automix

The 02R96's Automix function allows dynamic automation of virtually all mix parameters, including Levels, Mutes, Pan, Surround Pan, Aux Sends, Aux Send Mutes, EQ, effects, and Plug-Ins. You can specify which of these parameters will be recorded, and punch channels in and out of recording on-the-fly. User Defined Remote Layer operations, and scene and library recall operations can also be automated, combining snap shot and dynamic mix automation. Events are recorded in real time and can be edited either offline, with 1/4 frame accuracy, or by rerecording with punch in/out. Automix can be synchronized to an external timecode source or to the internal timecode generator.

Up to 16 Automixes can be stored in the Automix library. See "Automix Library" on page 151 for more information. They can also be stored to an external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump (see page 195).

What's Recorded in an Automix?

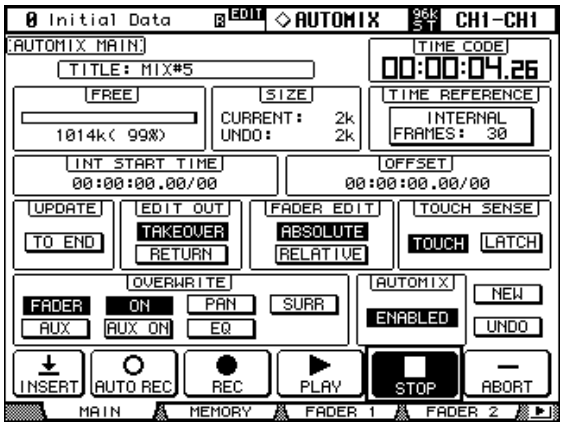
The following parameters can be recorded in an Automix.

Parameter	Input Channels	Bus Out Masters	Aux Send Masters	Stereo Out
Channel Levels (faders)	O	O	O	O
Channel Mutes (ON/OFF)	O	O	O	O
Pan	O	—	—	—
Surround Pan	O	—	—	—
EQ (F, Q, G, On/Off)	O	O	O	O
Aux Send 1–8 levels	O	—	—	—
Aux Send 1–8 mutes	O	—	—	—
Feder Group Master (Level, On/Off)	—			
Scene recalls	—			
EQ, Gate, Comp, Effects, Channel library recalls	—			
Effect parameters (certain parameters)	—			
User Defined Plug-Ins (parameters 1–4)	—			
User Defined Remote Layers (faders, [ON], Encoders)	—			

Automix Main Page

This section explains the Automix Main page.

1 Use the DISPLAY ACCESS [AUTOMIX] button to locate the Automix Main page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

TITLE: This is the title of the current Automix.

TIME CODE: This counter displays the current timecode position.

FREE: The amount of free Automix memory remaining is displayed here in kilobytes, percent, and graphically by a bargraph.

SIZE: The size of the current Automix and the size of any Automix data in the undo buffer are displayed here in kilobytes.

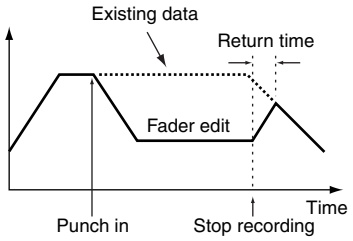
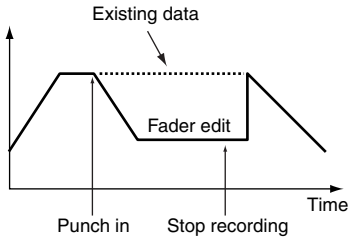
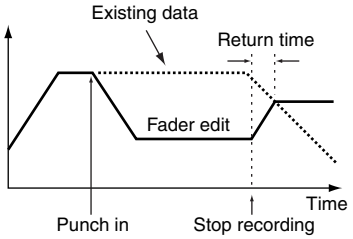
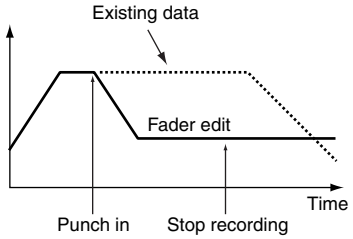
TIME REFERENCE: This section displays the current timecode source and frame rate. If you select this item and then press the [ENTER] button, you can jump directly to the Time Reference page (see page 177).

INT START TIME: This parameter is used to set the start time of the internal timecode generator in hours, minutes, seconds, frames, and subframes. Press the [ENTER] button to reset the currently selected digits to "00." The internal timecode generator is selected on the Time Reference page (see page 177).

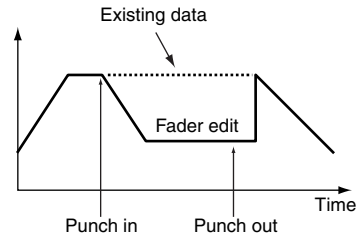
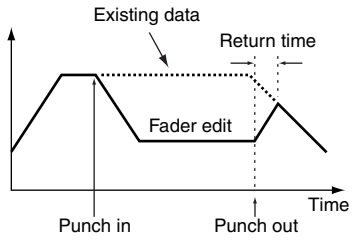
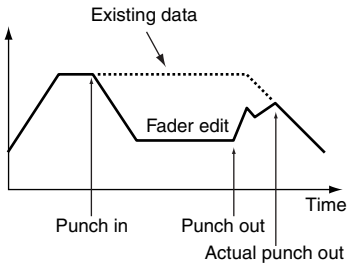
OFFSET: This parameter can be used to specify an offset relative to the external timecode source in hours, minutes, seconds, frames, and subframes. Specify a "+" value to move events forward relative to the incoming timecode. Specify a "–" value to move events backwards relative to the incoming timecode. Press the [ENTER] button to reset the currently selected digits to "00." If the Timecode Display Relative preference is turned on (see page 233), the indicated timecode is offset.

UPDATE: This button determines the fate of events that exist beyond the point at which rerecording is stopped. When TO END is on, all events that exist beyond the point at which rerecording is stopped for parameters that have been edited during the current pass are erased. This function is useful when you want parameters to remain the same right through to the end of the Automix. Events are erased only when the current pass is actually stopped, not when a punch out occurs. When TO END is off, existing events are left as they are.

When TO END is on, the way in which Fader events are processed depends on the currently selected Fader Edit mode and Edit Out mode. In the following table, the Fader Edit mode is set to Absolute. If the Fader Edit mode is set to Relative, and the Edit Out mode is set to either Takeover or Off, the fader will remain at a position relative to the position at which recording is stopped.

	Return	Takeover or Off
TO END is OFF	At the point at which recording is stopped, the fader returns to the position specified by the existing fader data, at the speed specified by the Time parameter on the Fader Edit pages. 	At the point at which recording is stopped, the fader remains at the same position until the next Fader event in the existing data occurs. 
TO END is ON	At the point at which recording is stopped, the fader returns to the position specified by the existing fader data, at the speed specified by the Time parameter, and all subsequent events are erased so that the fader remains at that position right through to the end of the Automix. 	At the point at which recording is stopped, all subsequent events are erased so that the fader remains at that position right through to the end of the Automix. 

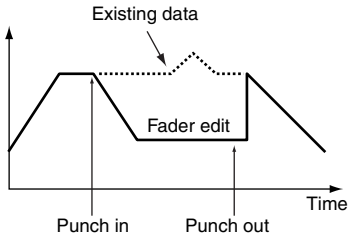
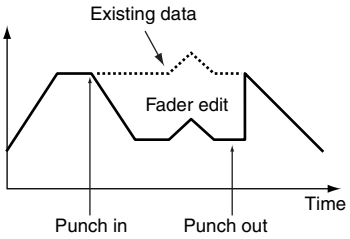
EDIT OUT: These buttons are used to set the Edit Out mode: Off, Takeover, or Return. The Edit Out mode determines how rerecorded fader moves align with existing fader data at the punch out point. Fader data includes Input Channel levels, Bus Out master levels, Aux Send master levels, the Stereo Out level, User Defined Remote Layer faders, and Group master levels. The Edit Out modes are explained in the following table. The Return Time is specified on the Fader Edit page (see page 176).

Off	Return	Takeover
At the punch out point, the fader remains at the same position until the next Fader event in the existing data occurs. 	At the punch out point, the fader returns to the position specified by the existing fader data, at the speed specified by the Time parameter on the Fader Edit pages. 	At the punch out point, recording continues until the fader position intersects the existing fader data. If you are still touching the fader knob at the actual punch out point, the fader is disabled until you release it.  In this example, punch out was performed by pressing the [AUTO] button, and the fader was moved manually between the punch out and actual punch out points.

FADER EDIT: These buttons are used to set the Fader Edit mode: Absolute or Relative. The Fader Edit mode determines how fader moves are rerecorded. It has no effect during the first recording pass. In Absolute mode, fader moves are rerecorded as absolute values and existing fader data is erased. In Relative mode, fader moves are rerecorded relative to the existing fader data.

Fader data includes Input Channel levels, Bus Out master levels, Aux Send master levels, Stereo Out level, User Defined Remote Layer faders, and Group master levels.

The following table explains Fader Edit mode operation (TO END: off. Edit Out: off)

Absolute	Relative
Fader edits are recorded as absolute values and existing fader data between the punch in and out points is erased.	Fader edits are rerecorded relative to the existing fader data.
	

TOUCH SENSE: When the TOUCH button is selected, the Touch Sense function enables you to touch the faders to punch parameter values in and out. The corresponding parameters' OVERWRITE button must be set to on. When the LATCH button is selected, only punch in operations are available (the punch out function is disabled).

OVERWRITE: These buttons determine which parameters can be recorded on the first pass, and rerecorded (i.e., overwritten) on subsequent passes. They can be set while recording is in progress. Parameters for which the corresponding OVERWRITE button is not set, cannot be edited while recording is in progress.

Parameter button	Description
FADER	Channel faders (Inputs Channels, Bus Out masters, Aux Send masters, the Stereo Out, Group master levels, and User Defined Layer faders)
ON	Channel Mutes (ON/OFF), User Defined Layer [ON] buttons, and Group master ON
PAN	Input Channel Pan, User Defined Layer Encoders
SURR	Input Channel Surround pan, LFE level, DIV parameter, and RDIV parameter
AUX	Aux Send 1–8 levels
AUX ON	Aux Send 1–8 mutes
EQ	EQ (F, Q, G, On/Off)

Scene and library recalls, and internal effects processors and Plug-Ins parameters can be recorded regardless of the OVERWRITE settings.

AUTOMIX: This button is used to enable and disable the Automix function. It works in unison with the AUTOMIX [ENABLE] button.

NEW: This button is used to create a new Automix. When a new Automix is created, a Scene recall event to recall the current Scene (i.e., the last Scene recalled) is automatically inserted at the start of the Automix. You can edit this event so that another Scene is recalled. This initial Scene is important because it sets all the mix parameters how you'd like them at the beginning of the Automix. Without it, mix parameters would remain the same as when Automix playback was stopped.

UNDO: This button is used to undo various Automix operations. During each recording pass, when a new Automix is created, when an Automix is recalled, when an offline edit is performed, or when the Undo function is used, the current Automix data is copied to the Undo buffer, from which it can be retrieved by pressing UNDO while Automix is stopped.

The Undo buffer is cleared when the 02R96 is turned off. If you want to save the contents of the Undo buffer, perform the undo, and then store the Automix (see page 151).

INSERT: The INSERT button inserts the current Scene into the current Automix data. This is useful when you want to quickly swap out a specified range of the Automix data, such as a line of dialog. See "Inserting Mix Parameters into Automix" on page 180 for more information.

AUTO REC: This button works the same as the REC button except that it remains on when Automix recording is stopped. It appears highlighted while Auto Record mode is on.

REC: This button is used to engage Record-Ready mode, in which Automix recording starts automatically as soon as the specified timecode source starts. Unlike the AUTO REC button, however, it's turned off when recording is stopped. It flashes in Record-Ready mode, and is highlighted during recording. This button can also be used to engage Automix recording during playback. To do this, while the PLAY button is highlighted (i.e., during playback), press the REC button (it flashes in Record-Ready mode). Then press the PLAY button to start recording.

PLAY: This button is used to start Automix recording and playback when the timecode source is set to internal. When an external timecode source is selected, while the external timecode is being received, recording and playback are started, and this button is turned on automatically. If Automix is stopped by pressing the STOP or ABORT button, recording or playback can be restarted by pressing this button so long as timecode is still being received. This button can also be used in conjunction with the REC button to punch in recording during Automix playback.

STOP: This button is used to stop Automix playback and recording. It appears highlighted while Automix is stopped.

ABORT: This button is used to abort the current recording and inserting without updating the existing Automix data.

Channel Strip [AUTO] Buttons

The channel strip [AUTO] buttons are used to arm channels in Record-Ready mode, and to punch channels in and out during recording.

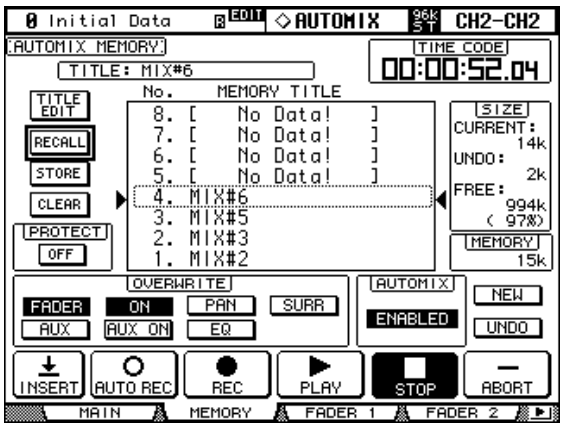
The [AUTO] button indicators operate as follows:

- Off: Automix playback disabled
- Green: Automix stopped or playing
- Orange: Record-Ready mode
- Red: Recording (even for individual parameters, see page 183)
- Flashing red: Takeover in progress
- Flashing green: indicates that a fader is inactive, for example, when you continue touching a fader after actual punch out has occurred when using the Takeover Edit Out mode.

Automix Memory Page

Automixes can be stored and recalled on the Automix Memory page. The lower half of this page is identical to the Automix Main page.

1 Use the DISPLAY ACCESS [AUTOMIX] button to locate the Automix Memory page.



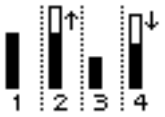
2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

The Automix library functions are explained in "Automix Library" on page 151. The remaining items are the same as on the Main page and are explained on page 171.

Fader Edit Pages

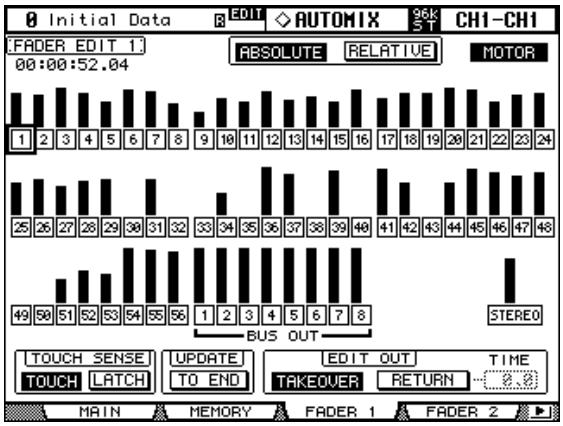
During playback, fader positions are displayed graphically as black bars on the Fader Edit page, of which there are three. The Fader Edit 1 page displays Faders positions for Input Channel 1 through 56, the Bus Outs, and Stereo Out. The Fader Edit 2 page displays faders positions for Input Channel 1 through 56, the Bus Outs, and Aux Sends. The Fader Edit 3 page displays fader positions for the Input Group Master Levels and Output Group Master Levels. When the Fader mode is set to Fader, Input and Output Channel levels are displayed. When it's set to Aux mode, Aux Send levels are displayed.

During rerecording, arrows are displayed next to each fader bar. A downward arrow indicates that the current fader position is higher than that specified by the existing fader data. An upward arrow indicates that the current fader position is lower than that specified by the existing fader data.



1 Use the DISPLAY ACCESS [AUTOMIX] button to locate the Fader Edit pages.

The Fader Edit 1 page is shown here.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

The counter in the upper-left corner displays the current timecode position.

Edit Safe buttons: The numbered buttons below each fader bar are Channel Safe buttons, which can be used to prohibit automix recording on certain channels. A channel is set to safe when its button appears highlighted.

You can make all channels safe by selecting one "non-safe" button and double-clicking the [ENTER] button. A confirmation message appears.

You can cancel all safe channels by selecting one "safe" button and double-clicking the [ENTER] button. A confirmation message appears.

During recording, events cannot be recorded, or rerecorded on safe channels, although existing events are played back and faders, Encoders, [ON] buttons, and so on can still be used, which is useful for rehearsing mix moves. Channel safe settings cannot be changed during recording.

ABSOLUTE & RELATIVE: These buttons are the same as those on the Main and Memory pages. See "Automix Main Page" on page 171 for more information.

MOTOR: This button is used to turn the fader motors are on and off for Automix playback. The button appears highlighted when the motors are on. The motors cannot be turned off during recording, and are automatically turned on when recording starts.

TOUCH SENSE: This button is the same as the TOUCH SENSE button on the Automix Main page (see page 173).

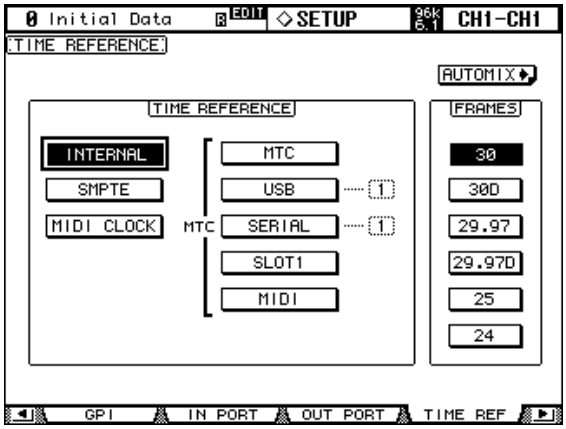
UPDATE: This button is the same as that on the Main and Memory pages. See "Automix Main Page" on page 171 for more information.

EDIT OUT: The TAKEOVER and RETURN buttons are the same as those on the Main and Memory pages. See "Automix Main Page" on page 171 for more information. The TIME parameter determines the time it takes faders to return to levels specified by the existing Automix data when the Edit Out mode is set to Return. It can be set from 0.0 to 30.0 seconds in 0.1 second steps.

Selecting the Timecode Source & Frame Rate

The timecode source and frame rate for Automix can be set as follows.

1 Use the DISPLAY ACCESS [SETUP] button to select the Time Reference page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

TIME REFERENCE: The following timecode sources can be selected.

Source	Description
INTERNAL	Internally generated timecode
SMPTE	SMPTE timecode received via the SMPTE TIME CODE INPUT
MIDI CLOCK	MIDI Clock received via the MIDI IN port
MTC	MTC received via the MTC TIME CODE INPUT
USB	MTC received via the USB TO HOST port
SERIAL	MTC received via the SERIAL TO HOST port
SLOT1	MTC received via Slot #1 (for use with an optional mLAN I/O Card installed in Slot #1)
MIDI	MTC received via the MIDI IN port

For the USB and SERIAL sources, you must specify a port from 1–8.

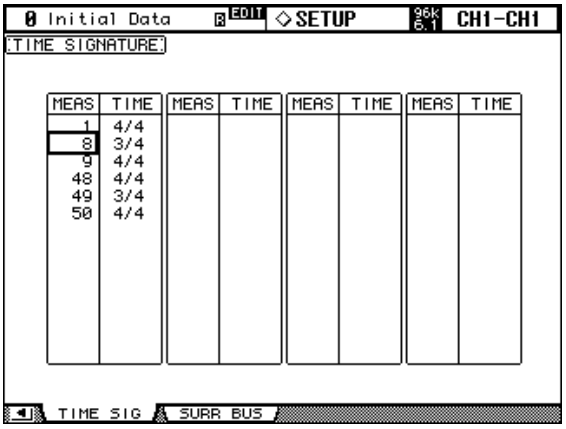
FRAMES: The frame rate can be set to: 30, 30D, 29.97, 29.97D, 25, or 24. An Automix will playback correctly even if the frame rate is different to that which was used when the Automix was originally recorded.

The MIDI CLOCK source supports Song position Pointers, F8 TIMING CLOCK (timing info), FA START (starts Automix from beginning), FB CONTINUE (starts Automix from current position), and FC STOP (stops Automix).

Creating a Time Signature Map

When using the MIDI CLOCK timecode source, you'll also need to specify the initial time signature and any time signature changes that follow.

1 Use the DISPLAY ACCESS [SETUP] button to select the Time Signature page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel or INC/DEC buttons to specify the measure and time signature.

To insert a time signature change, use the cursor buttons to select the next available entry, and press [ENTER], or turn the Parameter wheel.

To delete a time signature change, select it, and then press [ENTER]. The initial time signature entry at measure #1 cannot be deleted.

Recording an Automix

This section provides a general procedure for Automix recording.

1 **Connect a timecode source.**

2 **Select the timecode source and frame rate.**

See "Selecting the Timecode Source & Frame Rate" on page 177 for more information.

3 **Use the DISPLAY ACCESS [AUTOMIX] button to locate the Automix Main page.**

4 **On the Automix Main page, use the ENABLED/DISABLED button to enable the Automix function.**

5 **On the Automix Main page, use the OVERWRITE buttons to select which parameters you want to record.**

The corresponding OVERWRITE buttons pages appear highlighted.

6 **On the Automix Main page, press the REC button.**

The REC button flashes.

Alternatively, you could press the AUTO REC button so that Automix recording starts automatically when timecode is received. The main difference between REC and AUTO REC is that the AUTO REC functions remains on when recording is stopped, whereas REC must be pressed each and every time you want to start recording. Initially however, REC may be the safer option.

7 **Use the [AUTO] buttons to arm channels for Automix recording.**

The [AUTO] button indicators of armed channels light up orange.

8 **Start the timecode source.**

The REC and PLAY buttons appear highlighted.

9 **Adjust the faders and other controls as necessary.**

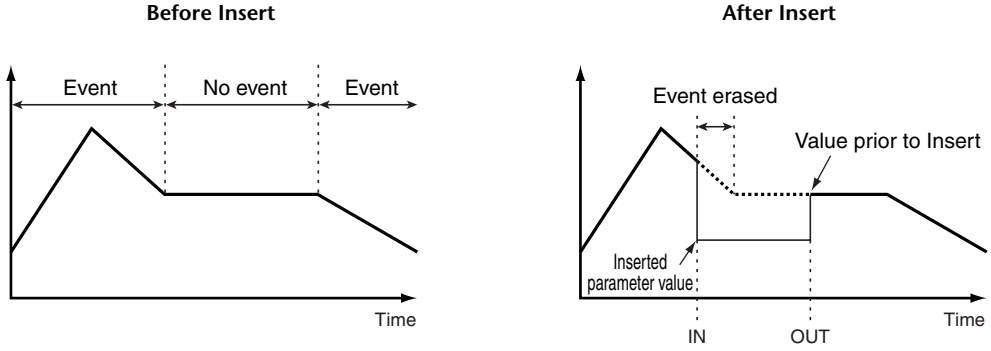
Use the SELECTED CHANNEL section to edit the currently selected channel. Channels are selected automatically when the [AUTO] buttons are pressed. You can punch channels out of recording by using the [AUTO] buttons.

10 **To stop Automix recording, stop the timecode source, or press the STOP button on the Automix Main or Memory page.**

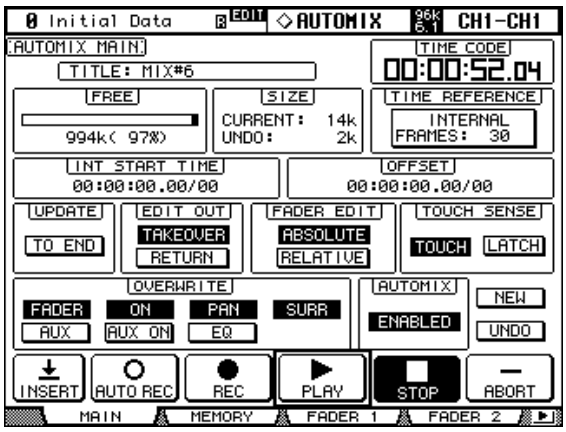
When the Mix Update Confirmation preference is on (see page 233), a confirmation message appears asking if you want to update the existing Automix data (i.e., keep the edits just recorded).

Inserting Mix Parameters into Automix

You can insert the static mix parameter settings into the range specified by the IN and OUT parameters in the current Automix data. This is useful when you want to quickly insert static EQ settings into a specified range of the Automix data.

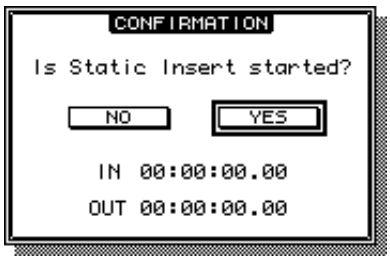


1 Follow Steps 1–4 as described in the "Recording an Automix" section on the previous page, then press the DISPLAY ACCESS [AUTOMIX] button to display the Automix Main page.



2 Use the cursor buttons to select the INSERT button, then press [ENTER].

A confirmation message appears.



3 Use the IN and OUT parameters to specify the region to be inserted.

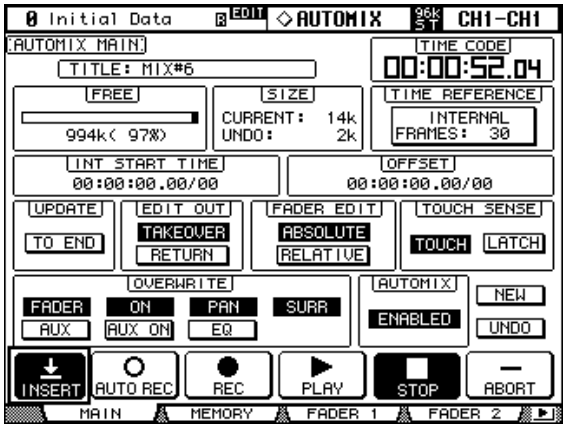
The default IN and OUT parameter values use the Locate memories specified by the Insert Time Link preference (see page 234). If you change the Locate points for the corresponding Locate memories while the confirmation message is displayed, the IN and OUT parameter values will be updated accordingly.

If MIDI clock is selected as a timecode source, these parameters indicate the position in bar:beats:clocks and use the IN and OUT parameter values in the TIME SETTING section on the Event Job page. In this case, the Insert Time Link preference is disabled.

4 Use the cursor buttons to select YES, then press [ENTER].

The 02R96 enters Insert mode, and the INSERT button is highlighted.

The fader positions, mute function and other parameters are updated to the settings specified for the time value of the IN parameter.



5 Select the parameter you wish to insert using the AUTOMIX OVERWRITE buttons.

To select effect or plug-in parameters, locate the Effect Edit or Plug-in Edit page, then move the cursor to the desired parameter and press [ENTER].

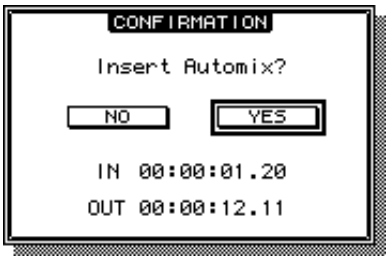
6 Select the insert destination channel by pressing the corresponding [AUTO] button.

The selected [AUTO] button indicator lights up red.

7 Edit a parameter you wish to insert.

8 Use the cursor buttons to select the INSERT button, then press [ENTER].

A confirmation message appears.



9 Use the cursor buttons to select YES, then press [ENTER] to insert the data.

Once the data is inserted, Insert mode is cancelled and the INSERT button is unhighlighted.

Rerecording Events

Events can be rerecorded as many times as you like. Remember, however, that unlike the first pass, on subsequent passes existing events for the currently punched in parameter are overwritten, so use the OVERWRITE buttons and [AUTO] buttons with care. Instead of using the [AUTO] buttons to punch in an entire channel, you can reduce the risk of overwriting important data by punching in and out individual parameters (see page 183). Use the Update To End option to determine how existing events are handled when rerecording is stopped (see page 171). Use the Edit Out (see page 172) and Fader Edit (see page 173) options to determine how Fader events are rerecorded.

Parameter Recording

The following table summarizes parameter recording operation for each parameter. Parameter adjustments made on the respective display pages are also recorded.

Parameter	Channel	OVER-WRITE	Operation	Pair/Group
Channel Levels (faders)	Input	FADER	Set Layer to input, Fader mode to Fader, use faders	Faders of paired channels and grouped faders are recorded together
	Bus Out, Aux Send		Set Layer to Master, Fader mode to Fader, use faders	
	Stereo Out		Use Stereo Out fader	
	Group Master levels		Use faders assigned to Group Master in the User Assignable Layer.	
Channel Mutes (ON/OFF)	Input	ON	Set Layer to input, use [ON] buttons	[ON] buttons of paired channels and grouped mutes are recorded together
	Bus Out, Aux Send		Set Layer to Master, use [ON] buttons	
	Stereo Out		Use Stereo Out [ON] button	
	Group Master On/Off		Use [ON] buttons assigned to Group Master in the User Assignable Layer.	
Pan	Input	PAN	Set Layer to input, Encoder mode to Pan, use Encoders.	If Pan mode is Gang or Inverse-Gang, paired channels are recorded together.
Surround Pan	Input	SURR	Use Joystick (If a surround parameter is assigned to the Encoders, also use Encoders)	If ST LINK button on Surround Edit page is on, adjacent channels are recorded together.
EQ (F, Q, G, On/Off)	Input, Bus Out, Aux Send, Stereo Out	EQ	Use SELECTED CHANNEL EQUALIZER section (If EQ parameter assigned to an Encoder, also use Encoders)	EQ of paired channels, and grouped EQs recorded together
Aux send 1–8 levels	Input	AUX	If Fader mode is Aux, use faders. If Encoder mode is Aux, use Encoders (also use Aux Send or Aux view pages)	Aux send levels of paired channels recorded together. (If the selected Aux Send is paired, the send level to both Aux Sends is recorded.)
Aux send 1–8 mutes	Input	AUX ON	Use Aux Send or Aux view pages	Aux send mutes of paired channels recorded together (If the selected Aux Send is paired, mutes for both Aux Sends recorded.)
Scene recalls	—	—	Use SCENE MEMORY section or Scene Memory page	—
Library recalls	EQ, Gate, Comp, Effects, Channel	—	Use corresponding library page	—
Effect parameters (certain parameters)	Effects processors 1–4	—	Use Parameter controls 1–4 (push to punch in/out). Select the desired parameter on the Effect Edit page, then press [ENTER]	—
User Defined Plug-Ins (parameters 1–4)	Plug-Ins 1–4	—	Use Parameter controls 1–4 (push to punch in/out). Select the desired parameter on the Plug-in Edit page, then press [ENTER]	—
User Defined Remote Layers	Faders	FADER	Select User Defined Remote Layer, use faders	—
	[ON] buttons	ON	Select User Defined Remote Layer, use [ON] buttons	—
	Encoders	PAN	Select User Defined Remote Layer, use Encoder	—

Punching In & Out Individual Parameters

During Automix rerecording, channels can be punched in and out by pressing the channel strip [AUTO] buttons. Individual parameters can be punched in and out as follows.

Parameter	Channel	OVER-WRITE	Operation	Punch In	Punch Out
Channel Levels (faders)	Input	FADER	Set Layer to input, Fader mode to Fader	Touch fader knob and adjust[1]	Release fader knob[2]
	Bus Out, Aux Send		Set Layer to Master, Fader mode to fader		
	Stereo Out		Stereo Out fader		
	Group Master faders		Set the Fader mode to Fader; Set the Group Master in the User Assignable Layer.		
Pan	Input	PAN	Set Layer to input, Encoder mode to Pan.	Press Encoder and adjust	Press Encoder
Surround Pan	Input	SURR	Select Input Layer and assign Surround LFE Level or Surround Pan Wheel to the Encoders	Press Encoder and adjust	Press Encoder
EQ (F, Q, G)	All channels	EQ	Turn on Auto EQ Edit In preference (see page 233). Use SELECTED CHANNEL EQUALIZER section (If EQ parameter assigned to an Encoder, also use Encoders)	Adjust control	Press [AUTO] button
EQ On/Off				Press EQ [ON] button	Press [AUTO] button
Aux send 1–8 levels	Input	AUX	Set Layer to input, Fader mode to Aux	Touch fader knob and adjust[1]	Release fader knob[2]
			Set Layer to input, Encoder mode to Aux	Press Encoder and adjust	Press Encoder
Effect parameters (certain parameters)	Effects processors 1–4	—	Select internal effects processors	Push Parameter 1–4 control, or select the parameters on the Effect Edit page, then press [ENTER]	Push Parameter 1–4 control, or select the parameters on the Effect Edit page, then press [ENTER]
User Defined Plug-Ins (parameters 1–4)	Plug-Ins 1–4	—	Select Plug-Ins	Push Parameter 1–4 control. Select the desired parameter on the Plug-in Edit page, then press [ENTER]	Push Parameter 1–4 control Select the desired parameter on the Plug-in Edit page, then press [ENTER]
User Defined Remote Layers	Faders	FADER	Select User Defined Remote Layer	Touch fader knob and adjust[1]	Release fader knob[2]
	Encoders	PAN	Select User Defined Remote Layer	Press Encoder and adjust	Press Encoder

1. TOUCH SENSE on Fader Edit page must be TOUCH or LATCH.
2. TOUCH SENSE on Fader Edit page must be TOUCH.

If during Automix recording you punch in an individual parameter by using the controls listed in the above table, even if some OVERWRITE buttons are on, only the existing data of that particular parameter will be overwritten. Likewise, when you punch out an individual parameter by using the controls listed above, only that particular parameter will be punched out.

If during Automix recording you press an [AUTO] button to punch in a channel, the existing data of all parameters for which the corresponding OVERWRITE buttons are on will be overwritten. When you press the [AUTO] button to punch out of recording, all of those parameters will be punched out.

When faders are grouped with the Fader Group Master function turned off, if the OVERWRITE FADER button is on, pressing an [AUTO] button, or touching the fader knob of any fader in the group (if TOUCH SENSE on the Fader Edit page is on) puts all the corresponding channels into Record mode and all the [AUTO] button indicators light up red. The same applies to Mute (OVERWRITE ON button) and EQ (OVERWRITE EQ button) groups.

Playing Back an Automix

So long as the Automix function is enabled, the Automix function will chase the incoming timecode and play and stop the current Automix accordingly. Playback stops automatically when the end of the Automix data is reached. Playback can be stopped manually by pressing the STOP or ABORT button on the Automix Main or Memory page. Playback will stop automatically if no timecode is received for a while, for example, if the timecode source is disconnected or turned off.

If the timecode source is set to internal, use the PLAY button on the Automix Main or Memory page to start Automix playback, and the STOP button to stop it.

You can disable Automix playback on individual channels by using the channel strip [AUTO] buttons. During playback, the [AUTO] button indicators appear green. When Automix playback for an individual channel is disabled, its [AUTO] button indicator goes out.

During playback, faders move in accordance with recorded Fader events (so long as the corresponding Layer and Fader mode is selected). Fader movement can be disabled by turning off the fader motors (see page 175). Fader events can be viewed on the Fader Edit pages (see page 175).

Other events are displayed by the display pages and button indicators. Recorded events of the currently selected channel are displayed by the SELECTED CHANNEL section controls and displays.

Warning: If the effects type is different to that which was used when the effects parameter edits were recorded, the parameter edits will not be played back. However, they are not deleted. When you rerecord effects parameter edits, it's recommended that you delete the existing effects events offline. See "Editing Events Offline" on page 185 for more information.

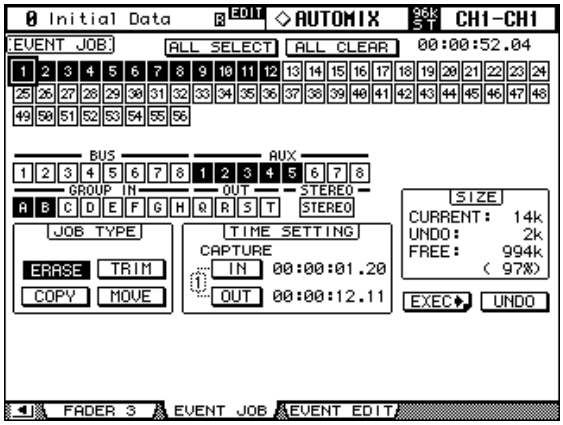
Editing Events Offline

Automix events can be edited offline on the Event Job and Event Edit pages. Offline editing can be performed only while the Automix function is stopped.

Event Job Page

On the Event Job page, specified events on specified channels between specified in and out points can be erased, copied, moved/merged, or trimmed.

1 Use the DISPLAY ACCESS [AUTOMIX] button to locate the Event Job page.



2 Use the cursor buttons to select the channels to edit, then press [ENTER] to set them.

You can select multiple Input Channels, Bus Outs, Aux Outs, Stereo Out, and the Fader Group Master. When you select a channel, its button is highlighted. (You can select multiple channels.)

ALL SELECT: The ALL SELECT button selects all channels.

ALL CLEAR: The ALL CLEAR button de-selects all channels.

3 Use the cursor buttons to select the IN and OUT parameters, then use the Parameter wheel, INC/DEC buttons or [ENTER] button to specify the edit range.

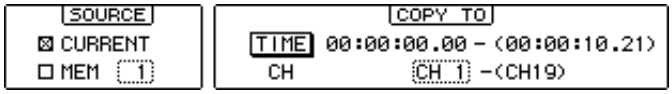
TIME SETTING: The IN and OUT parameters are used to specify the region of Automix data to be erased, copied, moved/merged, or trimmed. The IN and OUT points can be set on-the-fly by pressing the [ENTER] button while the IN or OUT button is selected. The captured timecode values can be edited by using the Parameter wheel or the INC/DEC buttons. Press the [ENTER] button to reset the currently selected digits to "00." Up to eight IN and OUT timecode values can be captured and stored in the eight Capture memories. Use the cursor buttons to select the Capture memory number, and use the Parameter wheel or the INC/DEC buttons to select the Capture memories.

4 Use the cursor buttons to select a Job, then press [ENTER].

The following Jobs are available. Certain Jobs feature an additional parameter below the TIME SETTING section.

ERASE: The ERASE button erases specified Automix data.

COPY: The COPY button copies specified Automix data. This Job features a SOURCE section and COPY TO section (below the TIME SETTING section).



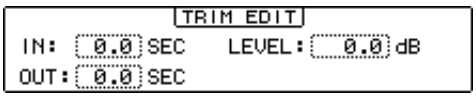
The SOURCE section enables you to select the copy source Automix. You can select CURRENT (the current Automix) or MEM (any Automix from 1 to 16).

The TIME parameter determines the point to which the specified data is copied. The number in parentheses on the right indicates the end point of the copy destination. You can set the TIME parameter on-the-fly by selecting the TIME button, then pressing [ENTER]. You can edit the captured timecode value using the Parameter wheel or INC/DEC buttons. Press [ENTER] to reset the currently-selected digit to "00."

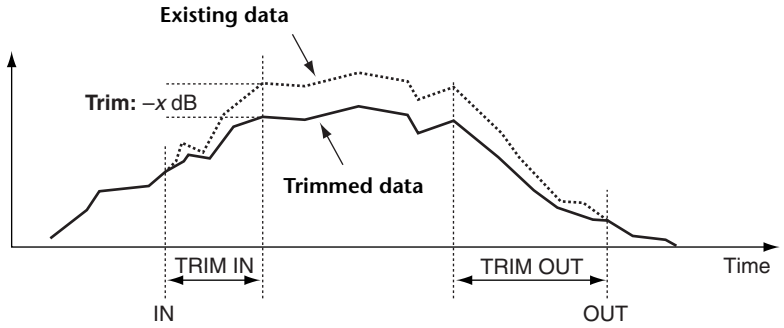
The CH parameter specifies the channel to which the specified data will be copied. The number of destination channels depends on the specified number of copy source channels. For example, if Input Channels 1 though 8 are specified as the source, then the number of destination channels will be eight (8). Destination channels are contiguous and only the first channel in the range can be specified. The number in parentheses on the right indicates the last channel in the copy destination.

You cannot copy from Input Channels to Output Channels. Also, even within Output Channels, you cannot copy between Aux and Bus channels.

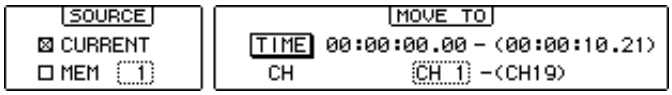
TRIM: The TRIM button trims the specified Automix data. This Job includes a TRIM EDIT section below the TIME SETTING section.



The IN parameter determines the amount of time required for the faders to achieve the specified trim amount. The OUT parameter determines the amount of time required for the faders to return to the previous levels. The LEVEL parameter specifies the fader trim amount in the range of –96 dB to +96 dB.



MOVE/MERGE: This Job features a SOURCE section and a MOVE TO (MERGE TO) section below the TIME SETTING section. The function of this button changes depending on the SOURCE section setting. If you select CURRENT (current Automix) in the SOURCE section, this button becomes the MOVE button, which enables you to move the specified range of Automix data to another position. If you select MEM (Automix memories 1–16) in the SOURCE section, this button becomes the MERGE button, which enables you to merge the specified range of Automix data with other Automix data.



The SOURCE section enables you to select the move/merge source Automix. You can select CURRENT (the current Automix) or MEM (any Automix from 1 to 16).

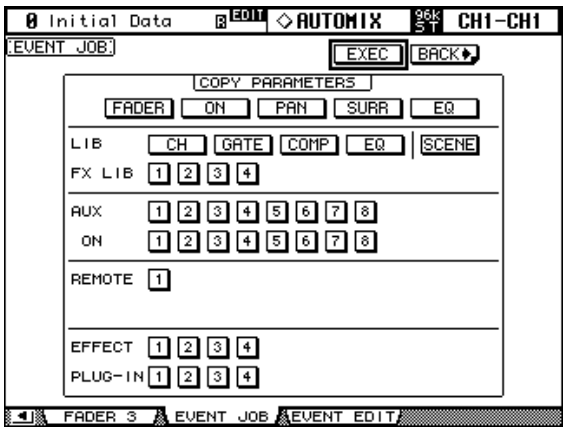
The TIME parameter determines the point to which the specified data is moved or merged. The number in parentheses on the right indicates the end point of the move/merge destination. You can set the TIME parameter on-the-fly by selecting the TIME button, then pressing [ENTER]. You can edit the captured timecode value using the Parameter wheel or the INC/DEC buttons. Press the [ENTER] button to reset the currently-selected digit to "00."

The CH parameter specifies the channel to which the specified data will be moved or merged. The number of destination channels depends on the number of move/merge source channels specified. For example, if Input Channels 1 though 8 are specified as the source, then the number of destination channels will be eight (8). Destination channels are contiguous and only the first channel in the range can be specified. The number in parentheses on the right indicates the last channel of the move/merge destination.

You cannot move or merge from Input Channels to Output Channels. Also, even within Output Channels, you cannot move or merge between Aux and Bus channels.

5 Use the cursor buttons to select the EXEC button, then press [ENTER].

The PARAMETERS window appears, which enables you to select the parameters to be edited, and to perform the selected Job.



When you select a parameter, its button is highlighted. You can specify multiple parameters.

Double-clicking a non-highlighted parameter button will display a message confirming that you wish to highlight all parameter buttons. Double-clicking a highlighted parameter button will display a message that you wish to unhighlight all parameter buttons.

These buttons correspond to the following parameters:

Button		Events
FADER		Channel Fader events (Inputs Channels, Bus Out masters, Aux Send masters, Group master levels, and the Stereo Out)
ON		Channel Mute events, Group master ON
PAN		Input Channel pan events
SURR		Input Channel surround pan, LFE level, DIV parameter events, and RDIV parameter events
EQ		Channel EQ events
LIB	**CH**	Channel library recall events
	GATE	Gate library recall events
	COMP	Comp library recall events
	EQ	EQ library recall events
	SCENE	Scene recall events
FX LIB	**1–4**	Effects library recall events of each internal effects processor
AUX	**1–8**	Level events of each Aux Send
ON	**1–8**	Mute events of each Aux Send
REMOTE	**1**	User Defined Remote Layer events
EFFECT	**1–4**	Parameter events for each internal effects processor
PLUG-IN	**1–4**	Parameter events for each Plug-In

6 Use the cursor buttons to select the EXEC button, then press [ENTER].

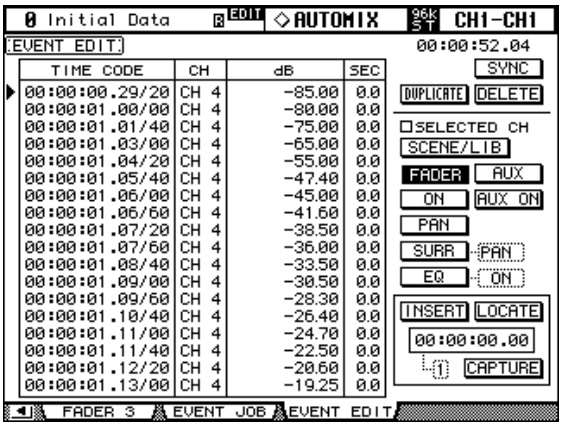
When the confirmation message appears, select YES to execute the Job.

BACK: Select this button to return to the previous page without executing the Job.

Event Edit Page

On the Event Edit page, you can edit, duplicate, delete, and insert new events.

1 Use the DISPLAY ACCESS [AUTOMIX] button to locate the Event Edit page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

Event list: Automix events are listed in chronological order. The type of events listed depends on the Event select buttons. Use the cursor buttons to select event parameters. While the cursor is on the SYNC, DUPLICATE, DELETE, SELECTED CH, or Event select buttons, you can use the Parameter wheel or the INC/DEC buttons to scroll the list. While the cursor is inside the event list, you can use these controls to edit event parameters. The triangular cursor at the left side of the list indicates the currently selected event. When an event's timecode value is edited, the list is resorted automatically.

SYNC button: This button is used to synchronize the list to the current timecode position. When pressed, events closest to the current timecode position are displayed. This function can be used during Automix playback.

DUPLICATE button: This button is used to duplicate events. Use the Parameter wheel to select an event, select the DUPLICATE button, and then press [ENTER]. A duplicate event is inserted below the currently selected event. If there are no events in the list, you can use this button to insert a new event of the type specified by the Event select buttons.

DELETE button: This button is used to delete events. Use the Parameter wheel to select an event, select the DELETE button, and then press [ENTER].

SELECTED CH: When this option is on, only events of the currently selected channel are displayed. All Scene recall and effects library recall events are displayed regardless of this option. For paired channels, only events of the currently selected channel are displayed.

Event select buttons: These buttons are used to select the type of events to be displayed in the event list.

Button	Events Listed	List Format
SCENE/LIB	Library and Scene recall events	TIME CODE, CH, SCENE/LIB
FADER	Channel faders (Inputs Channels, Bus Out masters, Aux Send masters, Group master levels, and the Stereo Out)	TIME CODE, CH, dB, SEC
ON	Channel Mutes (ON/OFF)	TIME CODE, CH, ON/OFF
PAN	Pan	TIME CODE, CH, L-C-R
SURR-PAN	Surround pan	TIME CODE, CH, SURR
SURR-LFE	Surround LFE	TIME CODE, CH, dB
SURR-DIV	Surround DIV	TIME CODE, CH, DIV
SURR-RDIV	Surround RDIV	TIME CODE, CH, DIV
EQ-ON	EQ ON/OFF	TIME CODE, CH, ON/OFF
EQ-FREQ	EQ Frequency	TIME CODE, CH, BAND/Hz
EQ-Q	EQ Q	TIME CODE, CH, BAND/Q
EQ-GAIN	EQ Gain	TIME CODE, CH, BAND/dB
AUX	Aux Send 1–8 levels	TIME CODE, CH, AUX, dB
AUX ON	Aux Send 1–8 mutes	TIME CODE, CH, AUX, ON/OFF

INSERT button: This button is used to insert new events. Use the Event select buttons to select the type of event that you want to insert. Use the Captured timecode counter to specify the point at which you want to insert the new event. Select the INSERT button, and then press [ENTER].

LOCATE button: This button is used to locate events at the Capture memory display position.

Capture memory display: This displays the captured timecode position. The captured timecode values can be edited by using the Parameter wheel or the INC/DEC buttons. Press the [ENTER] button to reset the currently selected digits to "00."

CAPTURE button: This button is used to capture the current timecode position. Up to eight timecode values can be captured and stored in the eight Capture memories. Use the cursor buttons to select the Capture memory number, and use the Parameter wheel or the INC/DEC buttons to select the Capture memories. Capture memories can be selected even while the CAPTURE, LOCATE, or INSERT button is selected.

If the Auto Inc TC capture preference is on (see page 233), Capture memories increment automatically each time a timecode position is captured.

If the Link Capture & Locate Memory preference is on (see page 233), the eight Capture memories are linked to the eight Locate memories so that, for example, edits made to Capture memory #1 are reflected on Locate memory #1, and vice versa.

17 MIDI

MIDI & the 02R96

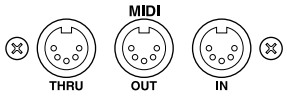
The 02R96 supports the following MIDI messages:

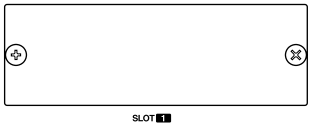
- Program Changes for recalling Scenes (see page 193)
- Control Changes for real-time parameter control (see page 194)
- System Exclusive Parameter Changes for real-time parameter control (see page 194)
- MIDI Note On/Off for Freeze effect etc. (see page 275)
- Bulk Dump for transmitting Scene, library, and setup data (see page 195)
- MTC and MIDI Clock for Automix synchronization (see page 177)
- MMC for external machine control (see page 222)
- User Defined Plug-Ins transmit user-specified MIDI data when Parameter controls 1–4 are operated (see page 158)
- User Defined Remote Layer transmits user-specified MIDI data when the channel strip faders, Encoders, and [ON] buttons are operated (see page 219)
- Predefined Remote Layers for controlling popular DAWs (Digital Audio Workstations), including Pro Tools (see page 196)

MIDI I/O

The 02R96 features four types of interface for transmitting and receiving MIDI data:

- Standard MIDI ports
- TO HOST USB port
- TO HOST SERIAL port
- SLOT1 (for use with an optional mLAN I/O Card installed in Slot #1)





TO HOST SERIAL and TO HOST USB are multiport interfaces, with eight ports each.

When the 02R96 receives MIDI data via any of these interfaces, the MIDI indicator appears on the display (see page 44).

If you are connecting a Windows computer to the TO HOST USB or TO HOST SERIAL port, you must install and use the YAMAHA CBX Driver for Windows and the YAMAHA USB Driver for Windows, which are included on the supplied CD-ROM.

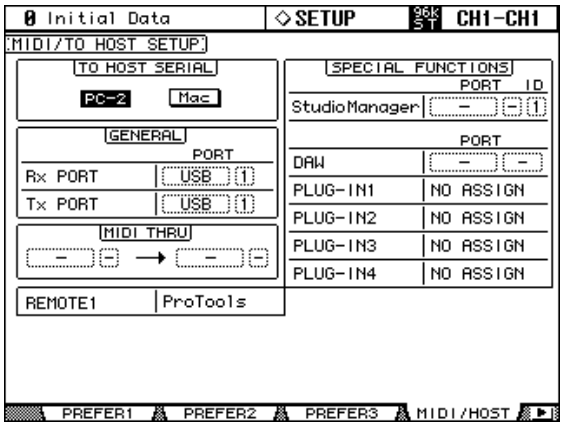
If you plan to connect a Macintosh computer to the TO HOST USB port, you must install and use the YAMAHA USB Driver for Macintosh, or the YAMAHA USB Driver for MacOS X. If you are using MacOS 8.6–9.2.2, you must install OMS 2.3.3 in the Macintosh.

If you plan to connect a Macintosh computer running MacOS 8.6–9.2.2 to the TO HOST SERIAL port on the 02R96, you must install OMS 2.3.3 in the Macintosh.

MIDI Port Setup

MIDI ports are configured as follows.

1 Use the DISPLAY ACCESS [SETUP] button to locate the MIDI/TO HOST Setup page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

TO HOST SERIAL: These buttons are used to configure the TO HOST SERIAL port for use with either a Mac or PC.

Caution: When a PC is connected to the TO HOST SERIAL port, do not set this to Mac because your PC may crash.

GENERAL: These parameters are used to select ports for general MIDI data transmission and reception, including Program Changes for recalling Scenes, Control Changes for real-time parameter control, and Note On/Off for use with the Freeze effect. Available ports include: MIDI, SERIAL 1–8, USB 1–8, and SLOT1.

MIDI THRU: These parameters allow you to route the incoming MIDI data from one port through to another port. Available ports include: MIDI, SERIAL 1–8, USB 1–8, and SLOT1.

REMOTE1: This parameter is used to select a port for the Remote Layer. Available ports include: MIDI, SERIAL 1–8, USB 1–8, and SLOT1. If Pro Tools is selected as the target for a Remote Layer, "Pro Tools" is displayed here and no settings can be made.

Studio Manager: These parameters are used to select a port for use with the Studio Manager software and to assign the 02R96 an ID from 1 to 8. Available ports include: MIDI, SERIAL 1–8, USB 1–8, and SLOT1. See the Studio Manager documentation for more information.

DAW: These parameters are used to select ports for use with DAWs. Since four ports are required to control DAWs, ports are selected in groups of four, as follows: 1–4, 2–5, 3–6, 4–7, 5–8. Available ports include: SERIAL, USB, and SLOT1.

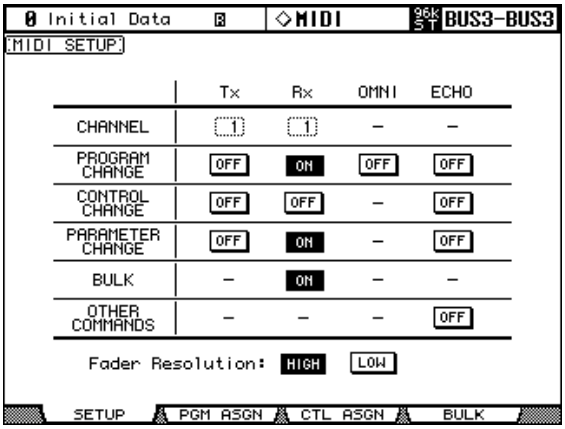
PLUG-IN1–4: These parameters are used to select ports for use with the Plug-Ins. If a Waves Plug-In card is installed in a Slot, the number of that Slot is displayed and no settings can be made. If the Plug-In target is set to USER DEFINED, you can select a port from MIDI, SERIAL 1–8, USB 1–8, or SLOT1. Ports for User Defined Plug-Ins can also be set on the Plug-In Setup page (see page 159).

Note: Some functions cannot share ports. If you try to assign a port that's already assigned to such a function, the message "Change Port?" appears. If you select YES, the port will be assigned to the selected function and the previously assigned function will be set to "NO ASSIGN."

MIDI Channel Setup

MIDI Channels for reception and transmission are specified as follows.

1 Use the DISPLAY ACCESS [MIDI] button to locate the MIDI Setup page.



2 Use the cursor buttons or Parameter wheel to select the parameters, and use the INC/DEC buttons or [ENTER] button to set them.

Select MIDI channels for transmission and reception in the CHANNEL row, and turn the transmission and reception of each MIDI message on or off using the buttons in the parameter rows from PROGRAM CHANGE to OTHER COMMANDS.

CHANNEL

This parameter row enables you to specify MIDI Channels for MIDI message transmission and reception. The following parameters are available in this row:

Tx: This parameter box specifies a MIDI Transmit Channel.

Rx: This parameter box specifies a MIDI Receive Channel.

PROGRAM CHANGE

This parameter row enables or disables transmission and reception of Program Changes.

Tx ON/OFF: Transmission of Program Change messages is enabled or disabled.

Rx ON/OFF: Reception of Program Change messages is enabled or disabled.

OMNI ON/OFF: When this button is turned on, Program Changes on all MIDI Channels are received regardless of the CHANNEL row settings.

ECHO ON/OFF: This button determines whether Program Change messages received at the MIDI IN port are echoed through to the MIDI OUT port.

CONTROL CHANGE

This parameter row enables or disables transmission and reception of Control Changes.

Tx ON/OFF: Transmission of Control Change messages is enabled or disabled.

Rx ON/OFF: Reception of Control Change messages is enabled or disabled.

ECHO ON/OFF: This button determines whether Control Change messages received at the MIDI IN port are echoed through to the MIDI OUT port.

PARAMETER CHANGE

This parameter row enables or disables transmission and reception of Parameter Changes.

Tx ON/OFF: Transmission of Parameter Change messages is enabled or disabled.

Rx ON/OFF: Reception of Parameter Change messages is enabled or disabled.

ECHO ON/OFF: This button determines whether Parameter Change messages received at the MIDI IN port are echoed through to the MIDI OUT port.

BULK

This parameter row enables or disables reception of Bulk Dump data.

Rx ON/OFF: Reception of Bulk Dump data is enabled or disabled.

OTHER COMMANDS

ECHO ON/OFF: This button determines whether other MIDI messages received at the MIDI IN port are echoed through to the MIDI OUT port.

Fader Resolution

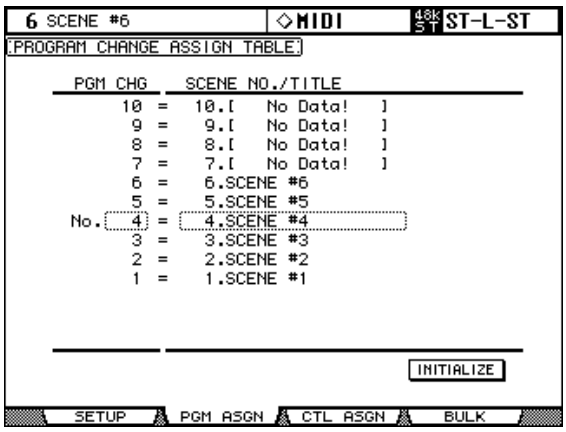
HIGH/LOW: This parameter specifies the resolution of the value output when you operate the 02R96's faders. To transfer fader value data between two cascaded 02R96s, or to record the 02R96 operation to or play it back from a sequencer, select the HIGH button. When the LOW button is selected, the fader resolution switches to 256 steps.

Assigning Scenes to Program Changes

02R96 Scenes can be assigned to MIDI Program Changes for remote recall. When a Scene is recalled on the 02R96, the assigned Program Change number is transmitted. If that Scene is assigned to more than one Program Change, the lowest Program Change is transmitted. Likewise, when a Program Change message is received, the assigned Scene is recalled. You must set the MIDI Setup parameters in order to transmit and receive Program Change messages (see page 192).

Initially, Scenes 1 through 99 are assigned sequentially to Program Changes 1 through 99. Scene #0 is assigned to Program Changes #100. A Scene to Program Change assignment table, listing initial assignments and with space to note user assignments, is provided on page 302. This table can be stored to an external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump (see page 195).

1 Use the DISPLAY ACCESS [MIDI] button to locate the Program Change Assign Table page.



2 Use the cursor buttons to select the PGM CHG. column, and use the Parameter wheel or INC/DEC buttons to select the Program Changes.

3 Use the cursor buttons to select the SCENE No/TITLE column, and use the Parameter wheel or INC/DEC buttons to select Scenes.

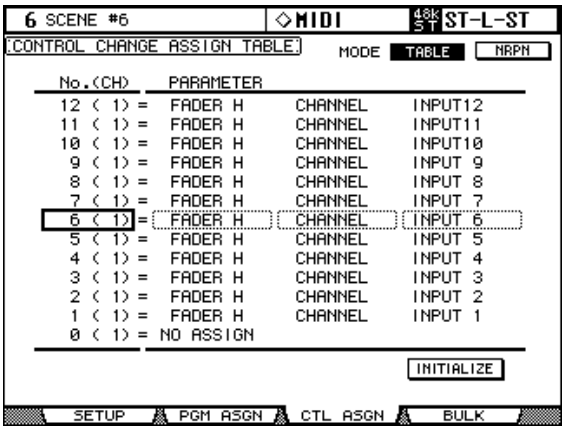
You can initialize the Scene to Program Change assignment table by selecting the INITIALIZE button, and then pressing [ENTER].

Assigning Parameters to Control Changes

02R96 parameters can be assigned to MIDI Control Changes for real-time control. When a parameter is adjusted on the 02R96, the assigned Control Change message is transmitted. Likewise, when a Control Change message is received, the assigned 02R96 parameter is set. You must set the MIDI Setup parameters in order to transmit and receive Control Change messages (see page 192).

A Parameter to Control Change assignment table, listing the initial assignments, is provided on page 303. This table can be stored to an external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump (see page 195).

1 Use the DISPLAY ACCESS [MIDI] button to locate the Control Change Assign Table page.



2 Use the cursor buttons to select the MODE TABLE button, and press [ENTER].

In TABLE mode, when 02R96 parameters are adjusted, MIDI Control Change messages are transmitted in accordance with the assignments on this page. In NRPN mode, when 02R96 parameters are adjusted, predefined NRPNs (Non Registered Parameter Number) are transmitted.

3 Use the cursor buttons to select the No. (CH) column, and use the Parameter wheel or INC/DEC buttons to select the Control Changes.

4 Use the cursor buttons to select the three PARAMETER columns, and use the Parameter wheel or INC/DEC buttons to select the parameters.

Parameters with more than 128 steps require two or more Control Change messages for MIDI transmission and reception. Certain Delay parameters and the faders are divided into L and H parameters. Delay Time parameters are divided into LOW, MID, and HIGH parameters. For accurate transmission, all parameters (e.g., both L and H for faders) must be assigned to individual Control Changes.

You can initialize the Parameter to Control Change assignment table by selecting the INITIALIZE button, and then pressing [ENTER].

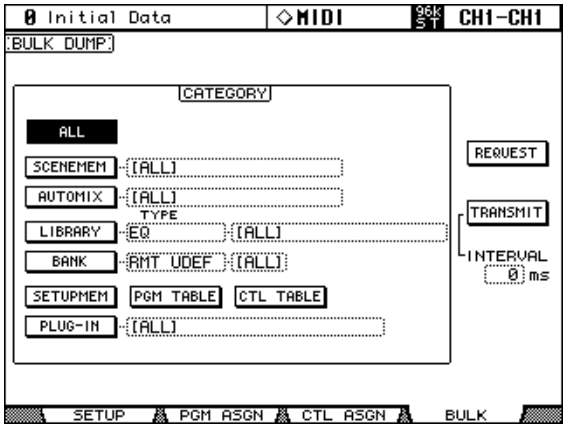
Controlling Parameters by Using Parameter Changes

02R96 parameters can be controlled in real time by using Parameter Change messages, which are System Exclusive messages. When a parameter is adjusted on the 02R96, a Parameter Change message is transmitted. Likewise, when a Parameter Change message is received, a 02R96 parameter is adjusted. See "MIDI Data Format" on page 319 for detailed information. You must set the MIDI Setup parameters in order to transmit and receive Parameter Change messages (see page 192).

Using Bulk Dump

02R96 data can be stored to an external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump.

1 Use the DISPLAY ACCESS [MIDI] button to locate the Bulk Dump page.



2 To transmit data, use the CATEGORY parameters to select the type of data you want to transmit, select the TRANSMIT button, and then press [ENTER].

The INTERVAL parameter sets the interval between data packets during transmission.

The CATEGORY parameters can be set as follows:

ALL: All data.

SCENE MEM: ALL Scenes, individual Scenes, or current (i.e., the Edit buffer).

AUTOMIX: ALL Automixes, individual Automixes, or the current Automix.

LIBRARY: The following libraries: EQ, Gate, Comp, Channel, Effects, Bus to Stereo, Input Patch, Output Patch, Surround Monitor. For each library you can specify ALL user memories, individual user memories, and for the Bus to Stereo, Input Patch, Output Patch, Surround Monitor libraries you can also specify the current settings.

BANK: User Defined Remote Layer banks (RMT UDEF), User Defined Plug-Ins banks (PLUG UDEF), User Defined Keys banks (KEYS UDEF), or the USER ASSIGNABLE LAYER banks (USR LAYER). For each item you can specify ALL or individual banks.

SETUP MEM: 02R96 setup data (i.e., system settings).

PGM TABLE: Scene to MIDI Program Change table. See "Assigning Scenes to Program Changes" on page 193.

CTL TABLE: Parameter to MIDI Control Change table. See "Assigning Parameters to Control Changes" on page 194.

PLUG-IN: The settings of any installed Y56K cards. You can specify ALL Slots or Slot 3 or 4.

3 You can also transmit 02R96 data via a MIDI cable. To receive data, use the CATEGORY parameters to select the type of data you want to receive, select the REQUEST button, then press [ENTER].

18 Pro Tools Remote Layer

The 02R96 features a Remote Layer target especially designed for controlling Pro Tools.

If an optional MB02R96 Peak Meter Bridge is installed, Pro Tools channel levels are displayed on its meters.

Configuring Windows Computers

1 Connect your PC.

The 02R96 can be connected to your Windows PC by connecting the TO HOST SERIAL port to a suitable RS232 serial port on your PC, or by connecting the TO HOST USB port to a USB port on your PC. If you use the TO HOST SERIAL port, make sure that the TO HOST SERIAL parameter on the MIDI/TO HOST Setup page is set to PC-2 (see page 191).

2 Install the necessary drivers.

Once your PC is connected, you'll need to install the TO HOST SERIAL or TO HOST USB drivers included on the 02R96 CD-ROM.

Configuring Macintosh Computers (MacOS 8.6 to 9.2.2)

1 Connect your Mac.

The 02R96 can be connected to your Mac by connecting the TO HOST SERIAL port to either the Printer or Modem port on your Mac, or by connecting the TO HOST USB port to a USB port on your Mac. If you use the TO HOST SERIAL port, make sure that the TO HOST SERIAL parameter on the MIDI/TO HOST Setup page is set to Mac (see page 191).

2 Install OMS.

The 02R96 communicates with Pro Tools via OMS (Open Music System) software. If you already have OMS installed on your Mac, there's no need to install it again and you can move on to the next section. If you don't already have OMS installed, it's included on the 02R96 CD-ROM. Refer to the OMS documentation included on the 02R96 CD-ROM for more information on installing.

3 Install Yamaha USB MIDI driver 1.04 or later.

If you are using the TO HOST USB port, you must also install the Yamaha USB MIDI driver included on the 02R96 CD-ROM. See the included documentation for more information.

Configuring Macintosh Computer (MacOS X)

1 Connect the 02R96 TO HOST USB port to a USB port on your Mac.

2 Install the Yamaha USB MIDI Driver for MacOS X on the computer.

Configuring the 02R96

1 **Use the DISPLAY ACCESS [SETUP] button to locate the MIDI/TO HOST Setup page, and use the DAW parameter to specify the port to which Pro Tools is connected.**

See "MIDI Port Setup" on page 191 for more information.

2 **Use the DISPLAY ACCESS [REMOTE] button to locate the Remote page, and set the target to Pro Tools.**

See "Assigning a Target to the Remote Layer" on page 219 for more information.

3 **Use the LAYER [REMOTE] button to select the Remote Layer.**

When the Pro Tools Remote Layer is selected, the 02R96's control surface controls Pro Tools, not the 02R96. In order to control the 02R96, you need to select an Input Channel Layer or the Master Layer. Audio mixing on the other Layers and Automix continues while the Pro Tools Layer is selected.

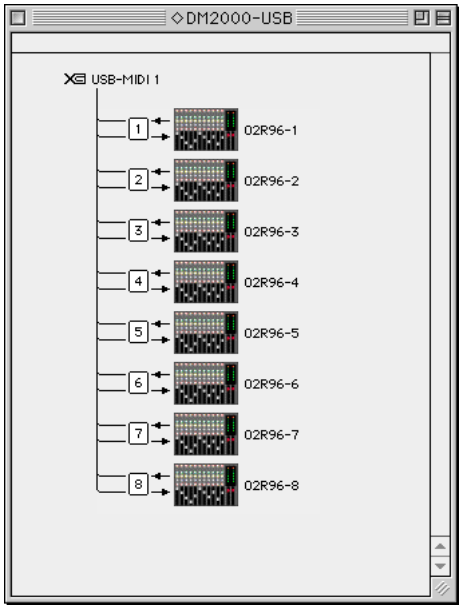
Configuring Pro Tools

Pro Tools needs to be configured as follows. For more information, see your Pro Tools documentation.

1 **Launch Pro Tools.**

2 **If you are using MacOS 8.6 - 9.2.2, choose OMS Studio Setup from the Setups menu, and configure OMS as necessary.**

This screen shot shows the Yamaha USB MIDI driver with eight ports. An OMS-compatible device profile for the 02R96 is included on the 02R96 CD-ROM. See the included documentation for more information.



3 **Choose Peripherals from the Setups menu.**

4 When the Peripherals window appears, click the MIDI Controllers button.

5 Select HUI as the Type of controller for #1–#3, and select MCS PANNER for #4 to enable use of the Joystick.

6 Select the Receive From and Send To ports, and then click OK.

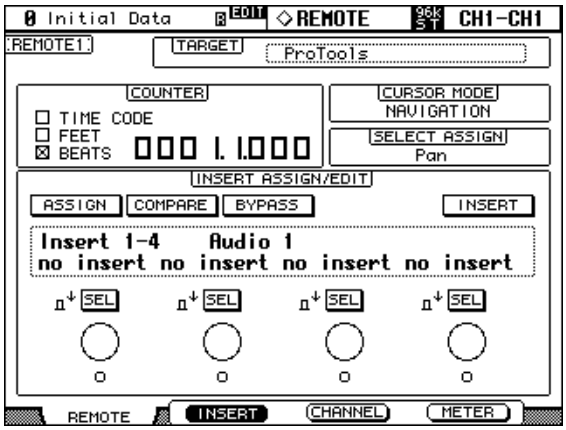
The 02R96 can emulate up to three typical 8-channel Pro Tools MIDI controllers. A single MIDI port is required for every eight channels. So, you must configure MIDI Controller #1 to use channels 1 through 8, MIDI Controller #2 to use channels 9 through 16, and MIDI Controller #3 to use channels 17 through 24.

Control Surface Operation with the Pro Tools Remote Layer

This section explains the operation of the 02R96 control surface when the Pro Tools Remote Layer is selected. 02R96 buttons and controls are referred to by the names printed on the 02R96 with the name of the corresponding Pro Tools function in parenthesis. For example, "Press the AUX SELECT [AUX 1] (SEND A) button."

Display

This is the Pro Tools Remote Layer page, the various sections of which are explained below.



F2 (INSERT), F3 (CHANNEL), F4 (METER) buttons

These buttons are used to select the following display modes:

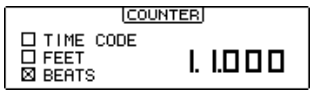
- [F2]—Insert Assign/Edit Display mode (see page 200)
- [F3]—Channel Display mode (see page 200)
- [F4]—Meter Display mode (see page 201)

TARGET

This parameter cannot be changed here. To change the target for this Layer, you must first select another Layer, and then press the DISPLAY ACCESS [REMOTE] button. See "Assigning a Target to the Remote Layer" on page 219 for more information.

COUNTER

This counter works in unison with the timecode counter in Pro Tools. The display format is specified in Pro Tools. The three check boxes indicate the currently selected format, as follows:



TIME CODE: Pro Tools timecode format set to "Time Code."

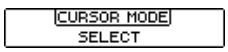
FEET: Pro Tools timecode format set to "Feet:Frames."

BEATS: Pro Tools timecode format set to "Bars:Beats."

When the Pro Tools timecode format is set to "Minutes:Seconds" or "Samples," no check boxes are selected.

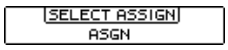
CURSOR MODE

The currently selected Cursor mode is displayed here: NAVIGATION, ZOOM, or SELECT. Cursor modes are selected by using the [INC] (CURSOR MODE) button.



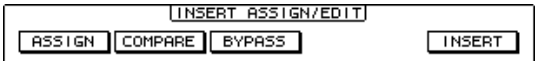
SELECT ASSIGN

This indicates the current function of the Encoders. For example, Pan (PanR), SndA, SndB, SndC, SndD, or SndE.



INSERT ASSIGN/EDIT Display Mode

Press the [F2] button to select this mode.



ASSIGN: This indicator flashes when the EFFECTS/PLUG-INS [1] (ASSIGN) button is pressed. See "Assigning Inserts/Plug-ins" on page 212 for more information.

COMPARE: This indicator appears highlighted when the EFFECTS/PLUG-INS [2] (COMPARE) button is pressed. See "Editing Plug-ins" on page 213 for more information.

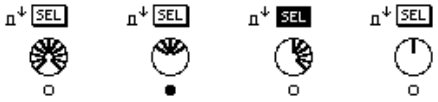
BYPASS: This indicator appears highlighted when the EFFECTS/PLUG-INS [3] (BYPASS) button is pressed. See "Editing Plug-ins" on page 213 and "Bypassing Plug-ins" on page 214 for more information.

INSERT: This indicator appears highlighted when the EFFECTS/PLUG-INS [4] (INSERT/ASSIGN) button is pressed. See "Editing Plug-ins" on page 213 for more information.

INSERT/PARAM Display

This section displays mainly insert and plug-in-related information, although other messages are also displayed here.

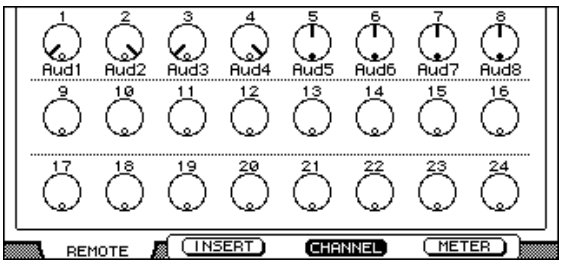
Encoder Display



This section displays information about the Parameter controls 1–4. The SEL indicators show the on/off status of the Parameter control push-switches. The rotary control indicators show the positions of the Parameter controls. The "O" symbol below each Parameter control shows the automation status for each Parameter control.

Channel Display Mode

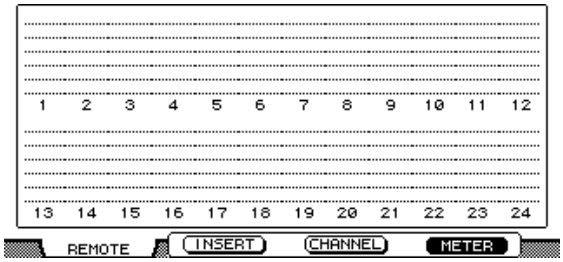
Press the [F3] button to select this display mode.



In this display mode, controls for the parameters currently assigned to the Encoders are displayed (e.g., pan or aux send). When displaying panpots, the small circles inside the Encoder icons are highlighted when pan is at center. The name of each channel is displayed below the Encoder icons. Automation mode settings, aux send destinations, and aux send pre/post settings can also be displayed here. See "Viewing the Automation Mode" on page 216, "Viewing Send Destinations" on page 210, and "Configuring Sends as Pre or Post" on page 210 respectively for more information.

Meter Display Mode

Press the [F4] button to select this display mode.



In this display mode, stereo meters for each channel are displayed. The name of each channel is displayed below the meters. Automation mode settings, aux send destinations, and aux send pre/post settings can also be displayed here. See "Viewing the Automation Mode" on page 216, "Viewing Send Destinations" on page 210, and "Configuring Sends as Pre or Post" on page 210 respectively for more information.

Channel Strips

02R96 channel strips correspond to Pro Tools channels from left to right, with the leftmost Pro Tools channel being handled by 02R96 channel strip #1. You can change the order of channel strips by dragging the channel select buttons in Pro Tools, in which case the 02R96 automatically reorders its channel strips. By using the USER DEFINED KEYS, Pro Tools channels can be scrolled in banks of 24 (see page 206).

Encoders & Push-Switches

The Encoders are used to set pan and send levels. The Encoder push-switches are used to reset send levels and panpots and to set sends to pre or post fader. Their exact operation depends on the currently selected Encoder mode, as shown in the following table.

Encoder Mode	Encoder	Push-switches
[PAN]	Pan (see page 209)	Reset pan (see page 214)
[SEND LEVEL]	Send levels (see page 210)	Send pre/post (see page 210) Reset send levels (see page 214)

[AUTO] buttons

These buttons are used in conjunction with USER DEFINED KEYS [3–8] to set the Automation mode of each channel. See "Setting the Automation Mode" on page 216 for more information.

[SEL] buttons

These buttons are used to select channels (see page 209) and to select inserts (see page 213).

[SOLO] buttons

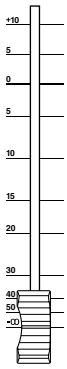
These buttons are used to solo channels. See "Soloing Channels" on page 210 for more information.

[ON] buttons

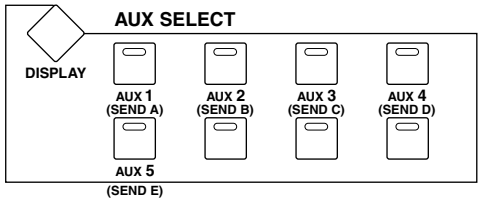
These buttons are used to mute channels. See "Muting Channels" on page 209 for more information.

Faders

The faders are used to set channel levels (see page 209), or to set send levels in Flip mode (see page 211).

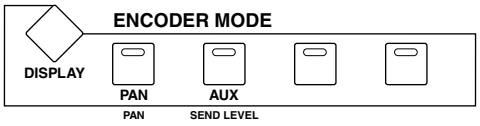


AUX SELECT Section



AUX SELECT [AUX 1]–[AUX 5] buttons are used to select sends A–E. The button indicator of the currently selected send lights up.

ENCODER MODE Section



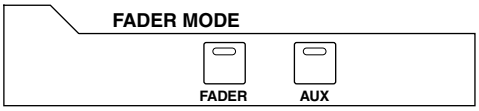
[PAN] (PAN) button

When this button is pressed, the Encoders work as channel panpots. Its indicator lights up when it's pressed. See "Panning Channels" on page 209 for more information.

[AUX] (SEND LEVEL) button

When this button is pressed, the Encoders work as send level controls. Its indicator lights up when it's pressed, and send A is selected automatically. If the Encoders are currently set to control pan, its indicator lights automatically when one of the AUX SELECT [AUX 1]–[AUX 5] (SEND A–E) buttons is pressed.

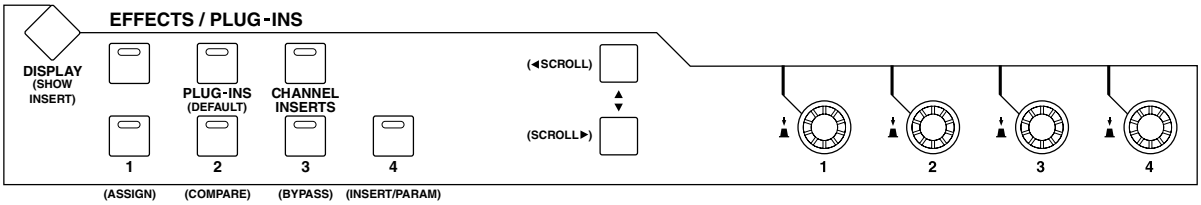
FADER MODE Section



[FADER] & [AUX] buttons

These buttons are used to select Flip mode, in which faders, Encoders, and [ON] buttons can be used to control sends. See "Flip Mode" on page 211 for more information.

EFFECTS/PLUG-INS Section



[DISPLAY] (SHOW INSERT) button
This button is used to open and close plug-in windows.

[PLUG-INS] (DEFAULT) button
This button is used in conjunction with other controls to reset faders, panpots, and sends to their default values. See "Resetting Faders, Sends, & Panpots" on page 214 for more information.

[CHANNEL INSERTS]
This button determines the operation of the [SEL] buttons. When its indicator is off (Channel Select mode), [SEL] buttons select channels (see page 209). When its indicator is on (Insert Select mode), they select inserts/plug-ins (see page 213).

[1] (ASSIGN) button
This button is used in conjunction with other controls to assign inserts/plug-ins to channels. See "Assigning Inserts/Plug-ins" on page 212 for more information.

[2] (COMPARE) button
This button is used to compare plug-in edits before and after. See "Editing Plug-ins" on page 213 for more information.

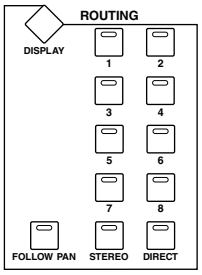
[3] (BYPASS) button
This button is used to bypass plug-ins. See "Editing Plug-ins" on page 213 and "Bypassing Plug-ins" on page 214 for more information.

[4] (INSERT/PARAM) button
This button is used in conjunction with other controls when editing plug-ins. See "Editing Plug-ins" on page 213 for more information.

Parameter Up (◄ SCROLL) & Parameter Down (SCROLL ►) buttons
These buttons are used to scroll parameters when assigning inserts and editing plug-ins. See "Assigning Inserts/Plug-ins" on page 212 and "Editing Plug-ins" on page 213 for more information.

SELECTED CHANNEL Section

■ ROUTING



[1] button
Selects the previous track to be controlled by the Joystick.

[2] button
Selects the next track to be controlled by the Joystick.

[3] button
Functions the same as the [OPTION] key on a computer keyboard.

[4] button
Switches between L and R of the selected track. The [4] button indicator lights up when the R channel is selected.

[5] button
Selects Main, or Send (in this order) for the selected track.

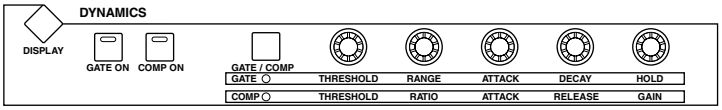
[6] button
Switches the mode of the knob controls for the panner. The [6] button indicator lights up or turns off.

[7] button
Selects Send, or Main (in this order) for the selected track.

[8] button
Mutes or unmutes the selected track. The [8] button indicator lights up while the track is muted.

[DIRECT] button
Functions the same as the [SHIFT] key on the computer keyboard.

■ DYNAMICS



[THRESHOLD] control
If the ROUTING [6] button indicator is off, the [THRESHOLD] control adjusts the front position. If the ROUTING [6] button indicator is lit, the control adjusts the front divergence.

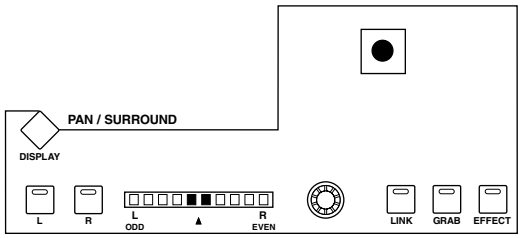
[RANGE/RATIO] control
If the ROUTING [6] button indicator is off, the [RANGE/RATIO] control adjusts the rear position. If the ROUTING [6] button indicator is lit, the control adjusts the rear divergence.

[ATTACK] control
If the ROUTING [6] button indicator is off, the [ATTACK] control adjusts the F/R (front/rear) position. If the ROUTING [6] button indicator is lit, the control adjusts the F/R (front/rear) divergence.

[DECAY/RELEASE] control
If the ROUTING [6] button indicator is off, the [DECAY/RELEASE] control adjusts the LFE level. If the ROUTING [6] button indicator is lit, this control adjusts the center percentage.

[HOLD/GAIN] control
Adjusts the channel volume.

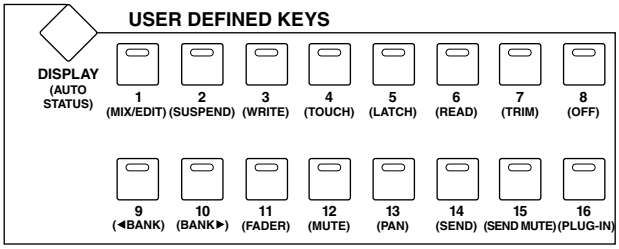
■ PAN/SURROUND



[GRAB] button
Press this button, turning on the button indicator, then operate the Joystick to quickly set the pan position.

Joystick
Operating the Joystick while the [GRAB] button indicator is turned on enables you to quickly set the pan position.

USER DEFINED KEYS Section



[DISPLAY] (AUTO STATUS) button

This button is used to display the Automation mode settings of all channels. See "Viewing the Automation Mode" on page 216 for more information.

[1] (MIX/EDIT)

This button is used to toggle between the Mix and Edit windows.

[2] (SUSPEND) button

This button is used to temporarily suspend all automation recording and playback. Its indicator flashes while automation is suspended.

[3] (WRITE), [4] (TOUCH), [5] (LATCH), [6] (READ), [7] (TRIM), [8] (OFF) buttons

These buttons are used in conjunction with the channel strip [AUTO] buttons to set the Automation mode of each channel strip. See "Setting the Automation Mode" on page 216 for more information.

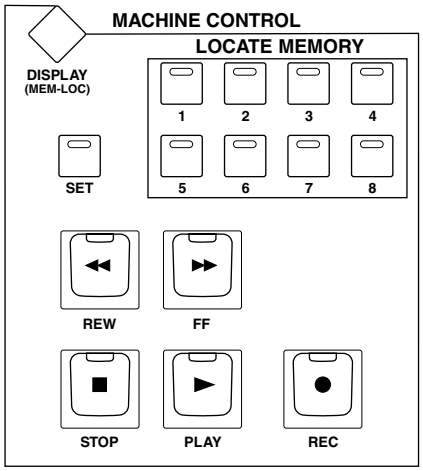
[9] (◄ BANK) & [10] (BANK ►) buttons

These buttons are used to swap channel banks 24 channels at a time.

[11] (FADER), [12] (MUTE), [13] (PAN), [14] (SEND), [15] (SEND MUTE), [16] (PLUG-IN) buttons

These buttons are used to select parameters for automation recording and playback. See "Arming Parameters for Automation" on page 217 for more information.

MACHINE CONTROL Section



[DISPLAY] (MEM-LOC) button
This button is used to open and close the Memory Locations window.

LOCATE MEMORY [1–8] buttons
These buttons perform the same transport-related functions as the 1–8 number keys on a Macintosh keyboard. If you set the Numeric keypad Mode in Pro Tools to "Classic" (Setups menu, Preferences), these buttons can be used to directly locate markers 1–8.

[REW] button
This button rewinds from the current cursor position (it's non-latching).

[FF] button
This button fast forwards from the current cursor position (it's non-latching).

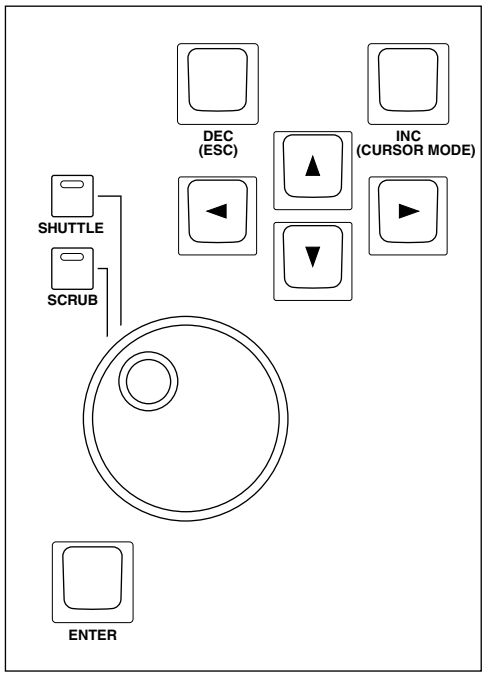
[STOP] button
This button stops playback and recording.

[PLAY] button
This button starts playback from the current cursor position.

[REC] button
This button arms Pro Tools for recording ([REC] button indicator flashing), recording is started by pressing the [PLAY] button ([REC] button indicator lit continuously).

The MACHINE CONTROL section enables you to control Pro Tools only while the DAW CONTROL option is turned on either on the Locate Memory page (see page 224) or on the Machine Configuration page (see page 222), regardless of which layer is currently selected.

Data Entry Section



Parameter Wheel
The Parameter wheel is used for shuttling and scrubbing (see page 215). It's also used for making fine adjustments to the selected region (see page 215).

[SHUTTLE] & [SCRUB] buttons
These buttons are used to select the Shuttle and Scrub modes. See "Scrub & Shuttle" on page 215 for more information. These buttons are mutually exclusive with the [QUICK PUNCH] and [LOOP] buttons. Also, the cursor in the window on the computer monitor disappears.

[ENTER] button
This button works the same as the Enter key on your computer keyboard. Pressing it opens the New Memory Location dialog box. While a dialog box is open, pressing it performs the same action as clicking the OK button.

[DEC] (ESC) button
For the most part, this button works the same as the Esc key on your computer keyboard. While a dialog box is open, pressing it performs the same action as clicking the Cancel button.

[INC] (CURSOR MODE) button
This button is used to select the following cursor modes: Navigation (see page 214), Zoom (see page 215), and Select (see page 215).

Cursor buttons
These buttons can be used to navigate the Edit window (see page 214), zoom waveforms (see page 215), and to make fine adjustments to the selected region (see page 215). Their exact operation depends on the currently selected cursor mode.

Selecting Channels

Channels can be selected as follows.

(Make sure the EFFECTS/PLUG-INS [CHANNEL INSERTS] button indicator is not lit before proceeding.)

1 **Use the [SEL] buttons to select channels.**

The [SEL] button indicators of selected channels light up.

2 **To select multiple channels in each eight-channel block (e.g., 1–8, 9–16, or 17–24), while holding down one [SEL] button, use the [SEL] buttons of the other channels in the same block to add and remove channels.**

Setting Channel Levels

Channel levels can be set as follows.

(Make sure the FADER MODE [FADER] and [AUX] button indicators are not flashing before proceeding.)

1 **Use the faders to set channels levels.**

Faders in a mix group are controlled together.

Muting Channels

Channels can be muted as follows.

1 **Use the [ON] buttons to mute channels.**

The [ON] button indicators of muted channels go out.

2 **Press the [ON] buttons again to unmute channels.**

The [ON] button indicators of unmuted channels are lit.

Grouped channels are muted together.

Panning Channels

Channels can be panned as follows.

1 **Press the ENCODER MODE [PAN] (PAN) button.**

Its indicator lights up.

2 **Use the Encoders to pan the channels.**

Pan positions are displayed in Channel Display mode. See "Channel Display Mode" on page 200 for more information.

For stereo aux input channels (i.e., channels with two panpots), use the ENCODER MODE [PAN] (PAN) button to toggle between the left and right panpots, and pan with the Encoder. When the left panpot is active, the ENCODER MODE [PAN] (PAN) button indicator is lit continuously and the SELECT ASSIGN section of the display shows "Pan." When the right panpot is active, the ENCODER MODE [PAN] (PAN) button indicator flashes and the SELECT ASSIGN section of the display shows "PanR."

Soloing Channels

Channels can be soloed as follows.

1 **Use the [SOLO] buttons to solo channels.**

The [SOLO] button indicators of soloed channels light up and the [ON] button indicators of unsoloed channels flash.

2 **Press the [SOLO] buttons again to unsolo channels.**

Grouped channels are soloed together.

Viewing Send Destinations

Send destinations can be viewed in Channel Display mode [F3] or Meter Display mode [F4] (see page 200) by pressing the holding the AUX SELECT [AUX 1]–[AUX 5] (SEND A–E) buttons.

Configuring Sends as Pre or Post

Sends can be configured as either pre or post as follows.

(Make sure the ENCODER MODE [PAN] (PAN) button indicator is not lit before proceeding.)

1 **Use the AUX SELECT [AUX 1]–[AUX 5] (SEND A–E) buttons to select the sends.**

The ENCODER MODE [AUX] (SEND LEVEL) button indicator lights up, as does the button indicator of the selected send.

2 **Use the Encoder push-switches to toggle between pre and post.**

Sends can also be set as pre or post fader by using the Encoder push-switches in Flip mode. See "Flip Mode" on page 211 for more information.

Send pre/post status can be viewed in Channel Display mode [F3] or Meter Display mode [F4] (see page 200) by pressing the holding the Encoder push-switches.

Setting Send Levels

Send levels can be set as follows.

1 **Use the AUX SELECT [AUX 1]–[AUX 5] (SEND A–E) buttons to select the sends.**

The ENCODER MODE [AUX] (SEND LEVEL) button indicator lights up, as does the button indicator of the selected send.

The levels for the selected send are displayed in Channel Display mode. See "Channel Display Mode" on page 200 for more information.

2 **Use the Encoders to set the send levels.**

Send levels can also be set by using the faders in Flip mode. See "Flip Mode" on page 211 for more information.

Muting Sends

Sends can be muted by using the [ON] buttons in Flip mode. See "Flip Mode" on page 211 for more information.

Panning Sends

Only sends assigned to stereo destinations can be panned. Sends can be panned by using the Encoders in Flip mode. See "Flip Mode" on page 211 for more information.

Flip Mode

In Flip mode, the faders, Encoders, and [ON] buttons can be used to control sends, as shown in the following table.

Control	Normal mode	Flip mode
Fader	Channel level	Send level
Encoder	Channel pan/send level	Send pan
Encoder push-switches	Encoder mode is Pan, inactive Encoder mode is Send level, Send pre/post	Send pre/post
[ON] button	Channel mute	Send mute

1 Press the FADER MODE [FADER] or [AUX] button.

The FADER MODE [FADER] and [AUX] button indicators flash alternately, and both the ENCODER MODE [PAN] (PAN) and [AUX] (SEND LEVEL) button indicators light up. The SELECT ASSIGN section of the display shows "FLIP."

2 Use the AUX SELECT [AUX 1]–[AUX 5] (SEND A–E) buttons to select the sends.

The button indicator of the selected send lights up.

3 Use the faders, Encoders, and [ON] buttons to control the currently selected send.

For stereo aux input channels (i.e., channels with two send panpots), use the ENCODER MODE [PAN] (PAN) button to toggle between the left and right panpots, and pan with the Encoder. When the left panpot is active, the ENCODER MODE [PAN] (PAN) button indicator is lit continuously. When the right panpot is active, the ENCODER MODE [PAN] (PAN) button indicator flashes.

Assigning Inserts/Plug-ins

Inserts can be assigned to channels as follows. The Pro Tools transport must be stopped in order to make these assignments.

1 Press the EFFECTS PLUG-INS [CHANNEL INSERTS] button.

Its indicator lights up and the [SEL] buttons are set to Insert Select mode.

2 Use the [SEL] buttons to select channels for insert assignment.

The name of the selected channel appears in the INSERT/PARAM section of the display. The border of the corresponding channel name in the Pro Tools Mix window is highlighted red.

3 Press the EFFECTS/PLUG-INS [1] (ASSIGN) button.

Its indicator flashes, as does the ASSIGN indicator on the display.

4 Use Parameter controls 1–4 to select inserts/plug-ins.

The names of the inserts/plug-ins appear on the display in abbreviated form. When you select an insert/plug-in other than the current, the corresponding SEL button flashes on the display.

5 To confirm your selection, press the relevant Parameter control's push-switch.

The SEL button stops flashing.

While the EFFECTS/PLUG-INS [1] (ASSIGN) button indicator is still flashing, you can assign more inserts/plug-ins to the same channel. To set insert #5, press the Parameter Down (SCROLL >) button. Press the Parameter Up (< SCROLL) button to view inserts 1–4 again.

To assign inserts/plug-ins to other channels, use the [SEL] buttons to select them. You'll need to press the EFFECTS/PLUG-INS [1] (ASSIGN) button each time you select another channel.

You can cancel this function by pressing the [DEC] (ESC) button.

Editing Plug-ins

Plug-ins can be edited as follows.

1 Press the EFFECTS PLUG-INS [CHANNEL INSERTS] button.

Its indicator lights up and the [SEL] buttons are set to Insert Select mode.

2 Use the [SEL] buttons to select the channel whose plug-in you want to edit.

That channel's [SEL] button indicator lights up, and the border of the corresponding channel name in the Pro Tools Mix window is highlighted red. The names of the Plug-ins inserted in the channel are displayed in the INSERT ASSIGN/EDIT section of the display.

3 Use the Parameter control 1–4 push-switches to select the plug-in that you want to edit.

Plug-in Edit mode is set and the plug-in's parameters are displayed in the INSERT ASSIGN/EDIT section of the display. The EFFECTS/PLUG-INS [4] (INSERT/PARAM) button indicator lights up and the PARAM indicator on the display appears highlighted.

4 Use Parameter controls 1–4 and their push-switches to edit the displayed parameters.

Parameters displayed on the top row can be edited by using the push-switches. Parameters displayed on the bottom row can be edited by using the Parameter controls.

5 Use the Parameter Down (SCROLL >) button and Parameter Up (< SCROLL) button to select the parameter pages.

When a parameter page is first selected, the number of the current parameter page and the total number of parameter pages is displayed momentarily. For example, "1/2" indicates that the first page of two is currently selected. While "3/4" indicates that the third page of four is currently selected. The title of the plug-in is also displayed.

While editing a plug-in you can bypass it by pressing the EFFECTS/PLUG-INS [3] (BYPASS) button. In which case, the BYPASS indicator on the display appears highlighted.

As soon as you begin editing a plug-in, the COMPARE indicator on the display appears highlighted. You can compare your edits with the original settings by pressing the EFFECTS/PLUG-INS [2] (COMPARE) button. The COMPARE indicator on the display appears highlighted while the original settings are active, and unhighlighted while your edits are active.

6 To edit another plug-in, press the EFFECTS/PLUG-INS [4] (INSERT/PARAM) button (its indicator goes out), use the [SEL] buttons to select the channel (same as step #2), and use the Parameter control 1–4 push-switches to select the plug-in (same as step #3).

Bypassing Plug-ins

Plug-ins can be bypassed as follows.

(Make sure the EFFECTS/PLUG-INS [4] (INSERT/PARAM) button indicator is not lit before proceeding.)

1 Press the EFFECTS PLUG-INS [CHANNEL INSERTS] button.

Its indicator lights up and the [SEL] buttons are set to Insert Select mode.

2 Use the [SEL] buttons to select plug-ins.

3 While holding down the EFFECTS/PLUG-INS [3] (BYPASS) button, use Parameter control 1–4 push switches to bypass the plug-ins.

To bypass plug-in #5, press the Parameter Down (SCROLL >) button, and then perform step 3. Press the Parameter Up (< SCROLL) button to view plug-ins 1–4 again.

The titles of bypassed plug-ins are displayed in uppercase characters. For example, the title of the plug in "D-Verb" appears as "d-verb" when it's not bypassed, and appears as "D-VERB" when it is bypassed.

Resetting Faders, Sends, & Panpots

Faders, panpots, and sends can be reset to their default values as follows. For faders and send controls, this is "0." For panpots, it's center.

Make sure that the EFFECTS PLUG-INS [CHANNEL INSERTS] button indicator is off before proceeding with these shortcuts.

To do this...	Do this!
Reset a channel fader	EFFECTS PLUG-INS [PLUG-INS]+[SEL]
Reset a channel panpot	[PAN], EFFECTS PLUG-INS [PLUG-INS]+[ENCODER push]
Reset a channel send level	AUX SELECT [AUX 1]–[AUX 5], EFFECTS PLUG-INS [PLUG-INS]+[ENCODER push]

While the EFFECTS PLUG-INS [PLUG-INS] (DEFAULT) button is being pressed, its indicator flashes and "DFLT" appears in the SELECT ASSIGN section of the display.

Grouped channels are reset together.

Navigating the Edit Window

The cursor buttons can be used to navigate the Edit window as follows.

1 Use the [INC] (CURSOR MODE) button to select Navigation cursor mode.

The CURSOR MODE section of the display shows "NAVIGATION."

2 To move the edit cursor to the previous region boundary, or to the previous marker, press the Left cursor button.

3 To move the edit cursor to the next region boundary, or to the next marker, press the Right cursor button.

4 To select the track above, press the Up cursor button.

5 To select the track below, press the Down cursor button.

Zooming

The cursor buttons can be used to zoom the Edit window as follows.

1 Use the [INC] (CURSOR MODE) button to select Zoom cursor mode.

The CURSOR MODE section of the display shows "ZOOM."

In Zoom cursor mode, the cursor buttons work as follows:

- Left cursor button: Zoom out horizontally.
- Right cursor button: Zoom in horizontally.
- Up cursor button: Zoom in vertically.
- Down cursor button: Zoom out vertically.

Making Fine Adjustments to the Selected Region

The cursor buttons can be used in conjunction with the Parameter wheel to make fine adjustments to the selected region.

1 Use the [INC] (CURSOR MODE) button to select Select cursor mode.

The CURSOR MODE section of the display shows "SELECT."

2 While holding down the left cursor button, turn the Parameter wheel to make fine adjustments to the in point of the selected region.

3 While holding down the right cursor button, turn the Parameter wheel to make fine adjustments to the out point of the selected region.

4 To select the track above, press the Up cursor button.

5 To select the track below, press the Down cursor button.

6 To move the cursor to the in point of the selected region, double-click the Left cursor button.

7 To move the cursor to the out point of the selected region, double-click the Right cursor button.

Scrub & Shuttle

The Parameter wheel can be used to scrub and shuttle as follows.

1 Make sure that Pro Tools is stopped.

2 Press the [SCRUB] button if you want to scrub, press the [SHUTTLE] button if you want to shuttle.

The corresponding button indicator lights up. The [REW] and [FF] button indicators also light up, and the cursor mode is set to Navigation (the CURSOR MODE section of the display shows "NAVIGATION").

3 Turn the Parameter wheel clockwise to scrub/shuttle forwards. Turn it counterclockwise to scrub/shuttle backwards.

Scrub/shuttle starts at the in point of the selected region. If no region is selected, the edit cursor position is used. Note that if the Edit Insertion Follows Scrub/Shuttle preference is turned on in Pro Tools (Setups menu, Preferences command, Operation page), the currently selected region will be cancelled when the [SCRUB] or [SHUTTLE] button is pressed.

Press the left cursor button to move to the in point. Press the right cursor button, to move to the out point.

You can toggle between scrub and shuttle by pressing the [SCRUB] and [SHUTTLE] buttons, in which case scrub or shuttle continues from the current position.

4 To stop scrub/shuttle, press the [SCRUB] or [SHUTTLE] button again, or press the [STOP] button.

If you press the [REW], [FF], or [PLAY] button, scrub/shuttle operation is stopped before rewind, fast forward, or playback commences.

While scrub/ shuttle is active, only the following Pro Tools/02R96 controls can be used: [SCRUB] and [SHUTTLE] buttons, Parameter wheel, transport buttons, faders, [ON] buttons, and [SOLO] buttons. The current position can be stored as a marker by pressing the [ENTER] button.

The scrub resolution depends on the current zoom setting, the more zoomed in you are, the higher the resolution.

Automation

Viewing the Automation Mode

The Automation mode setting of each channel can be viewed as follows.

1 Press either the [F3] or [F4] button.

Channel Display mode or Meter Display mode is selected.

2 Press and hold a channel's [AUTO] button.

The channel's Automation mode is displayed while the [AUTO] button is pressed.

Pro Tools	Display	[AUTO] Button Indicators
Auto write	Wrt	Flashing red (Record Ready) Red (Recording)
Auto touch	Tch	
Auto latch	Ltch	
Auto read	Read	Green
Auto off	Off	Off

For MIDI tracks, "—" appears on the display.

The Automation mode settings of all channels can be viewed as follows.

3 Press and hold the USER DEFINED [DISPLAY] (AUTO STATUS) button.

The Automation modes of all channels are displayed while the USER DEFINED [DISPLAY] (AUTO STATUS) button is pressed.

Setting the Automation Mode

The Automation mode can be set as follows.

1 While holding down a channel's [AUTO] button, press the USER DEFINED [3] (WRITE), [4] (TOUCH), [5] (LATCH), [6] (READ), [7] (TRIM), or [8] (OFF) button.

If Channel Display mode or Meter Display mode is currently selected, the channel's Automation mode is displayed while the [AUTO] button is pressed.

Grouped channels are set together.

Trim Mode

Trim mode can be set as follows.

1 While holding down a channel's [AUTO] button, press the USER DEFINED KEYS [7] (TRIM) button.

If channel Display mode [F3] or Meter Display mode [F4] is currently selected, the channel's Automation mode is displayed while its [AUTO] button is pressed.

Pro Tools	Display	[AUTO] Button Indicators
Auto trim/write	TWrt	Flashing red/orange (Record Ready) Orange (Recording)
Auto trim/touch	TTch	
Auto trim/latch	TLch	
Auto trim/read	TRd	Flashing green/orange

You can display the Automation mode settings of all channels by pressing and holding the USER DEFINED KEYS [DISPLAY] (AUTO STATUS) button.

Grouped channels are set together.

Arming Parameters for Automation

Parameters can be selected for automation recording as follows.

1 Use the following USER DEFINED KEYS to arm parameters.

USER DEFINED KEYS	Pro Tools
[11] (FADER)	Volume
[12] (MUTE)	Mute
[13] (PAN)	Pan
[14] (SEND)	Send level
[15] (SEND MUTE)	Send mute
[16] (PLUG-IN)	Plug-in

The button indicators for armed parameters light up.

Panner

Selecting a Track

Use the SELECTED CHANNEL ROUTING buttons to manipulate the following track operations.

To do this...	Use these buttons:
Selecting the previous track	ROUTING [1] button
Selecting the next track	ROUTING [2] button
Selecting the top track	ROUTING [3] + [1] buttons
Selecting the last track	ROUTING [3] + [2] buttons
Selecting the main output of the selected track	ROUTING [3] + [5] buttons
Selecting Send 5 of the selected track	ROUTING [3] + [7] buttons
Selecting the output/send of the selected track	ROUTING [5] + [7] buttons

Stereo Track Link

You can control the panner for the L and R channels of stereo tracks simultaneously or individually, depending on the stereo link status.

To cancel the stereo panner link, press and hold down the [Control] key on the keyboard and move the Joystick.

Panner Operation via the Joystick

1 Select the track you wish to pan.

2 Press the [GRAB] button, turning on the [GRAB] button indicator.

3 While the [GRAB] button indicator is lit, operate the Joystick.

If you move the Joystick for direct panning while the [GRAB] button indicator is lit, the pan position is specified as an absolute value, which may cause the pan position to jump drastically.

You can also restrict the trajectory direction of the Joystick. To limit movement to the L and R directions, press and hold down the [DIRECT] button and move the Joystick. To limit movement to the up and down (front and rear) directions, select 3 Knob mode in the Pro Tools Panner window.

Panner Operation via Knob Controls

You can control the following parameters using the DYNAMICS controls.

Controls	ROUTING [6] indicator is off	ROUTING [6] indicator is on
THRESHOLD	Front position	Front divergence
RANGE/RATIO	Rear position	Rear divergence
ATTACK	F/R position	F/R divergence
DECAY/RELEASE	LFE level	Center percentage
HOLD/GAIN	Channel volume	

1 Select the track and output, if desired.

2 Press the ROUTING [6] button to select the knob control mode that is appropriate for the parameter you wish to control.

3 Use the appropriate control to adjust the parameter.

Pressing and holding down the [Command] key on the keyboard and rotating the controls reduces the change in the parameter values.

19 Remote Control

About the Remote Layer

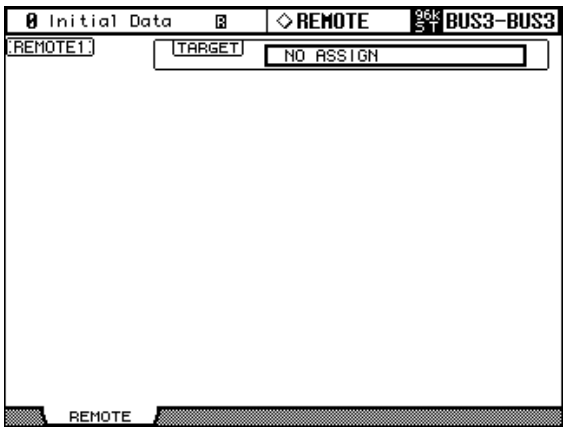
The 02R96's Remote Layer allows you to control external MIDI equipment directly from the 02R96. The type of device to be controlled (i.e., the target) can be specified for each Remote Layer. There are six types of target: User Defined, Pro Tools, Nuendo, Cubase SX, General DAW, and User Assignable Layer. User Defined targets allow you to specify the MIDI data that will be transmitted when the 24 channel strip faders, Encoders, and [ON] buttons are operated. These settings are stored in Scenes, for snapshot-style automation. The Pro Tools, Nuendo, Cubase SX, and General DAW targets have been especially designed to control Pro Tools, Nuendo, Cubase SX, and other DAW software that uses the Pro Tools protocol.

The User Assignable Layer target enables you to combine 02R96 channels to create a custom layer. See page 228 for more information on the User Assignable Layer.

Assigning a Target to the Remote Layer

Targets are assigned to the Remote Layer as follows.

1 Use the DISPLAY ACCESS [REMOTE] button to locate the Remote 1–4 pages.



2 Use the cursor buttons to select the TARGET parameter, use the Parameter wheel or INC/DEC buttons to select a target, and then press [ENTER].

TARGET: This can be set to NO ASSIGN, USER DEFINED, Pro Tools, Nuendo, Cubase SX, General DAW, or User Assignable Layer. See page 220 for more information on the User Defined target. See page 196 for more information on the Pro Tools target. See page 228 for more information on the User Assignable Layer.

To conrol Nuendo or Cubase SX remotely, make the following settings in addition to the TARGET parameter.

3 Select the desired port for the DAW parameter on the MIDI/To Host Setup page (see page 191).

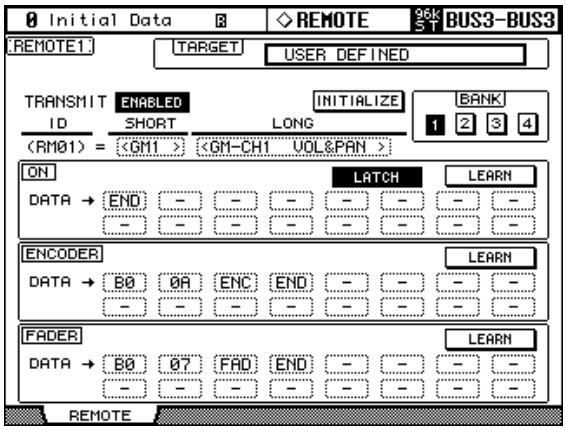
4 Select an appropriate device in the Device menu of Nuendo or Cubase SX and specify the 02R96 as a controller.

For more information on the necessary settings, refer to the Owner's Manual that came with Nuendo or Cubase SX.

Configuring the User Defined Remote Layer

The User Defined Remote Layer can be configured as follows.

1 Use the DISPLAY ACCESS [REMOTE] button to locate the Remote page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

TARGET: This is used to select the target (only the User Defined target is explained in this section).

TRANSMIT: This enables and disables MIDI data transmission for the Remote Layer.

INITIALIZE: This initializes the settings of the currently selected bank.

BANK: These buttons are used to select banks 1, 2, 3, and 4. Each bank can contain MIDI settings for the 24 faders, Encoders, and [ON] buttons. Banks can be stored to an external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump (see page 195). See "User Defined Remote Layer Initial Bank Settings" on page 255 for a list of initial bank settings.

ID/SHORT/LONG: On the Remote Layer, channel strips 1–24 are identified by the fixed IDs RM01–RM24. You can enter a Short and Long name for each Remote channel strip. To enter a name, use the cursor buttons to select the SHORT or LONG name, use the [SEL] buttons, Parameter wheel, or INC/DEC buttons to select the channel strips, and then press [ENTER]. When the Title Edit window appears, enter a name, and press OK when you've finished. See "Title Edit Window" on page 46 for more information.

ON: These parameters are used to specify the MIDI message (up to 16 bytes) to be transmitted when an [ON] button is pressed. Use the [SEL] buttons to select the channel strips, and then edit as necessary. When a value from 00 to FF is specified, that value is transmitted when an [ON] button is pressed. For the SW setting, data value 7F is transmitted when an [ON] button is turned on, and data value 00 is transmitted when an [ON] button is turned off. The END setting specifies the end of the data. "–" means no data is transmitted.

UNLATCH/LATCH: This parameter determines the operation of the [ON] buttons: Latching or Non-latching. When set to UNLATCH, an ON value is transmitted when an buttons is pressed, and an OFF value is transmitted when it's released. When set to LATCH, an ON value is transmitted when the button is pressed and that value is maintained when the button is released. The next time you press that button, the OFF value is transmitted.

LEARN: This button is used to turn on and off the Learn function, which can be used to learn what MIDI messages are being transmitted by external MIDI devices when their controls or parameters are adjusted. When on, received MIDI messages are displayed in the DATA area. Only the first 16 bytes of data, starting with a Status bit, are displayed.

ENCODER: These parameters are used to specify the MIDI message (up to 16 bytes) to be transmitted when an Encoder is operated. Use the [SEL] buttons to select the channel strips, and then edit as necessary. When a value from 00 to FF is specified, that value is transmitted

when an Encoder is adjusted. For the ENC setting, the Encoder's current value from 0–127 is transmitted when it's adjusted. The END setting specifies the end of the data. "–" means no data is transmitted.

LEARN: This works the same as the [ON] button Learn function above, except the received MIDI messages are displayed in the ENCODER DATA area. Only one Learn function can be used at a time.

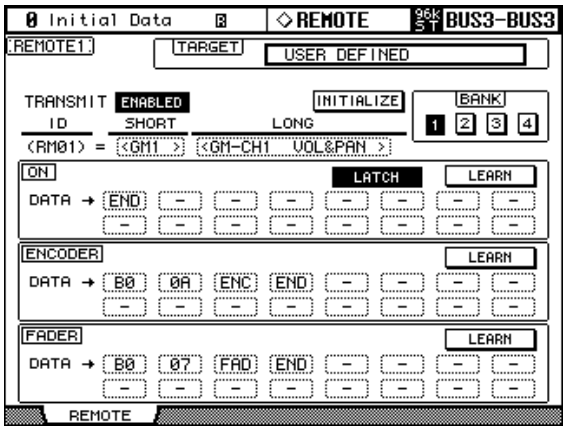
FADER: These parameters are used to specify the MIDI message (up to 16 bytes) to be transmitted when a fader is operated. Use the [SEL] buttons to select the channel strips, and then edit as necessary. When a value from 00 to FF is specified, that value is transmitted when a fader is adjusted. For the FAD setting, a fader's current value from 0–127 is transmitted when it's adjusted. The END setting specifies the end of the data. "–" means no data is transmitted.

LEARN: This works the same as the [ON] button Learn function above, except the received MIDI messages are displayed in the FADER DATA area. Only one Learn function can be used at a time.

Using the User Defined Remote Layer

Once configured, the User Defined Remote Layer can be used as follows.

1 Use the LAYER [REMOTE] button to select the User Defined Remote Layer.



While the User Defined Remote Layer is selected, operating the channel strip faders, Encoders, and [ON] buttons causes the specified MIDI data to be transmitted.

When the User Defined Remote Layer is selected, the Remote page appears. Since this is the same page as that selected by the DISPLAY ACCESS [REMOTE] button, the User Defined Remote Layer can be configured here as well, even the target can be changed.

The settings of the channel strip faders, Encoders, and [ON] buttons, and the current target and bank setting for the Remote Layer are stored in Scenes. When a Scene is recalled, if the Remote Layer's target is the same as when the Scene was stored, the faders, Encoders, and [ON] buttons are set accordingly and the corresponding MIDI data is transmitted (so long as the TRANSMIT parameter is set to ENABLED). If the target is not the same, the faders, Encoders, and [ON] buttons are set accordingly, but no MIDI data is transmitted.

About Machine Control

The 02R96 can control the transport and locate functions of up to eight external recording machines that support MMC (MIDI Machine Control).

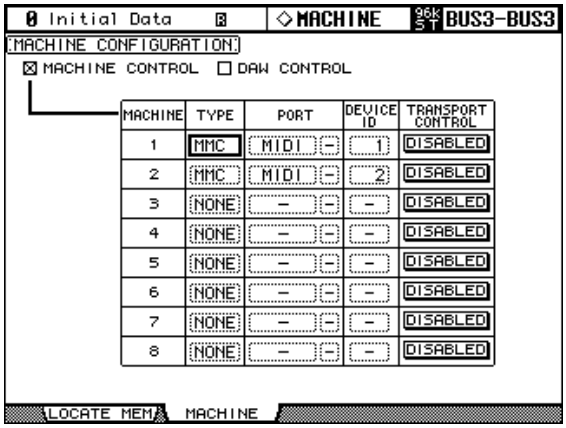
Machines that support MMC can be controlled by connecting them to the 02R96's MIDI, SERIAL, USB, or SLOT1 (with optional mLAN I/O Card installed in Slot #1).

MMC support varies from machine to machine. Some machines may not operate exactly as explained in this section.

Configuring Machines

Up to eight machines can be configured as follows.

1 Use the MACHINE CONTROL [DISPLAY] button to locate the Machine Configuration page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

MACHINE CONTROL/DAW CONTROL: When the MACHINE CONTROL option is on, the MACHINE CONTROL section controls external MMC machines, regardless of the layer selection. When the DAW CONTROL option is on, the MACHINE CONTROL section controls DAWs, regardless of the layer selection.

TYPE: This is used to specify the type of machine: MMC or NONE.

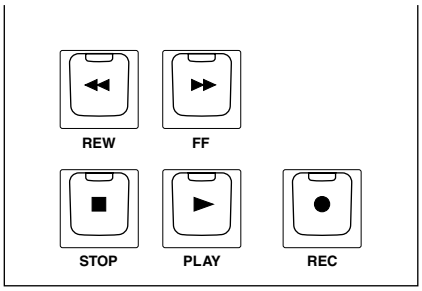
PORT: When the machine TYPE is MMC, use this parameter to specify the port for MMC communications. Available ports include: MIDI, SERIAL 1–8, USB 1–8, and SLOT1.

DEVICE ID: When the machine TYPE is MMC, use this parameter to specify the device ID from 1 to 127 or ALL. The target machine must be set to the same ID. The same ID cannot be assigned to more than one SERIAL, USB, or SLOT1 port.

TRANSPORT CONTROL: This parameter determines which machine is controlled by the 02R96's transport buttons. Only one machine can be controlled at a time.

Transport Buttons

The 02R96's transport can be used to control external machines. The machine that is to be controlled can be selected on the Machine Configuration page (see page 222).



[REW] button

This button starts rewind on the external machines.

[FF] button

This button starts fast forward on the external machines.

[STOP] button

This button stops the external machines.

[PLAY] button

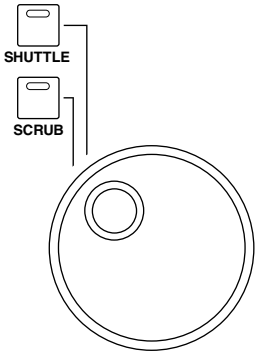
This button starts playback on the external machines. It's also used to punch out of recording.

[REC] button

This button is used in conjunction with the [PLAY] button to start recording on the external machines.

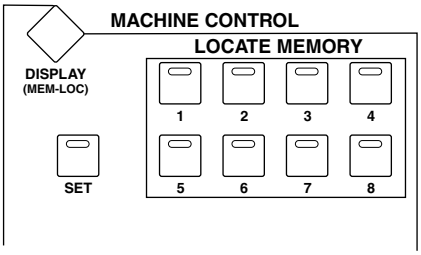
Using Shuttle & Scrub

The Parameter wheel can be used to shuttle and scrub the external machines.



When the [SHUTTLE] button indicator is lit, the Parameter wheel can be used to shuttle. When the [SCRUB] button indicator is lit, the Parameter wheel can be used to scrub. Turn the Parameter wheel clockwise to shuttle/scrub forwards. Turn it counterclockwise to shuttle/scrub backwards.

Using the Locator



LOCATE MEMORY [1–8] buttons

These buttons are used to set and to locate to the eight Locate memories. Locate memories can be set on the Locate Memory page (see page 224). To set a locate memory on-the-fly, while holding down the [SET] button, press a LOCATE MEMORY [1–8] button. The 02R96 must be receiving timecode in order to do this. Once set, the stored position can be located by pressing the corresponding button. If the button is pressed while the machine is stopped, the stored position is located. If the button is pressed while the machine is playing, the stored position is located and then playback continues from that position.

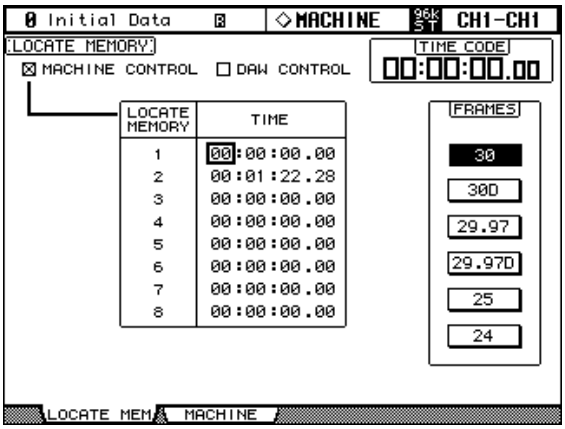
[SET] button

This button is used in conjunction with the LOCATE MEMORY [1–8], [IN], [OUT], and [RETURN TO ZERO] buttons to set the locate points.

Setting the Locate Memories

The locate points can be set as follows.

1 Use the MACHINE CONTROL [DISPLAY] button to locate the Locate Memory page.



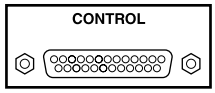
2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC buttons, and [ENTER] button to set them.

MACHINE CONTROL/DAW CONTROL: When the MACHINE CONTROL option is on, the MACHINE CONTROL section controls external MMC machines, regardless of the layer selection. When the DAW CONTROL option is on, the MACHINE CONTROL section controls DAWs, regardless of the layer selection.

LOCATE MEMORY 1–8: These time values determine the points that will be located when the LOCATe MEMORY [1–8] buttons are pressed. They can only be set while the MACHINE CONTROL option is on. Locate points can be specified in hours, minutes, seconds, and frames, the frame range being dependent on the frame rate setting on the Time Reference page (see page 177).

FRAMES: This parameter selects the timecode frame rate.

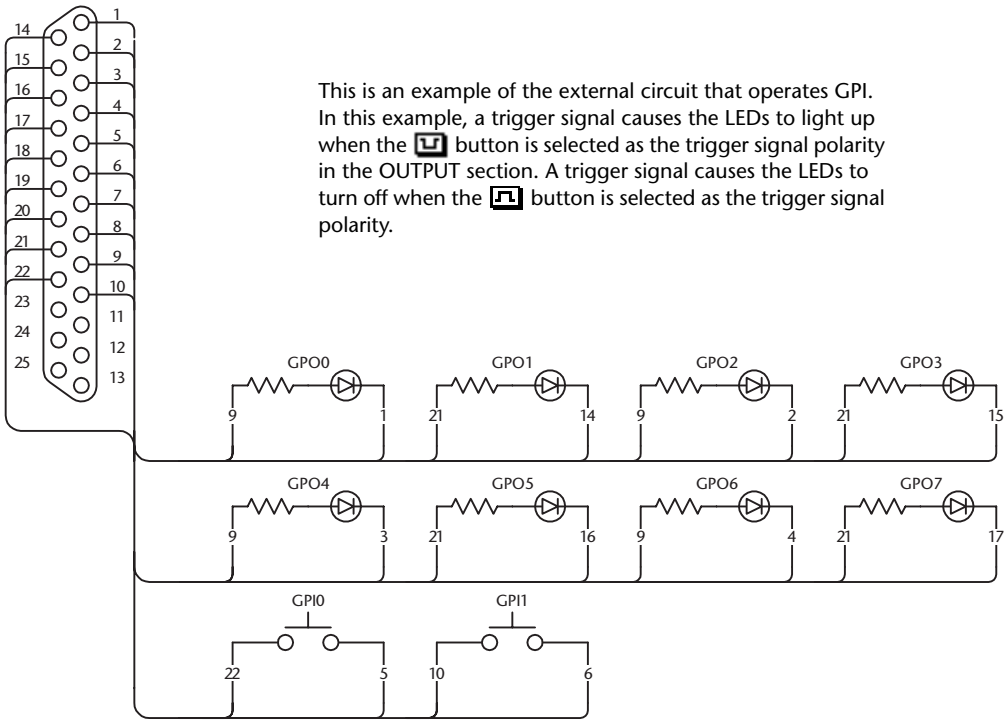
GPI (General Purpose Interface)



The 02R96's CONTROL port (25-pin D-sub connector) provides a GPI (General Purpose Interface). You can configure the GPI so that it will output 8-channel trigger signals when you operate the faders or User Defined Keys, or receive 2-channel trigger signals to control 02R96 parameters.

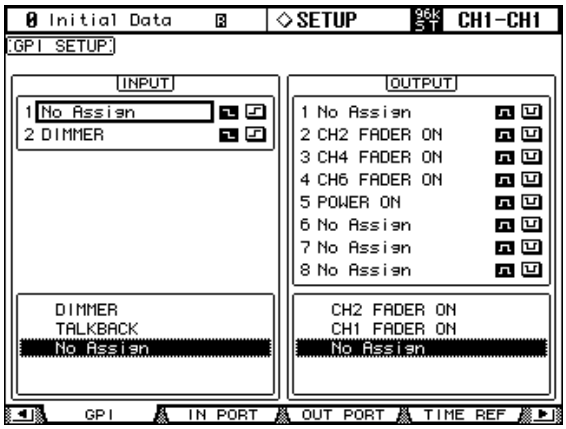
You can assign any function to these trigger signals. In this way, for example, you can control a "RECORDING" warning light outside a studio from the 02R96, or you can control the 02R96's Talkback function or Dimmer function using an outside switch.

See page 300 for more information on pin assignment.



This is an example of the external circuit that operates GPI. In this example, a trigger signal causes the LEDs to light up when the button is selected as the trigger signal polarity in the OUTPUT section. A trigger signal causes the LEDs to turn off when the button is selected as the trigger signal polarity.

1 Use the DISPLAY ACCESS [SETUP] button to select the GPI Setup page.



2 To assign functions to incoming trigger signals, use the cursor buttons to select INPUT 1 or 2.

3 Use the Parameter wheel or INC/DEC buttons to select a parameter, then press [ENTER].

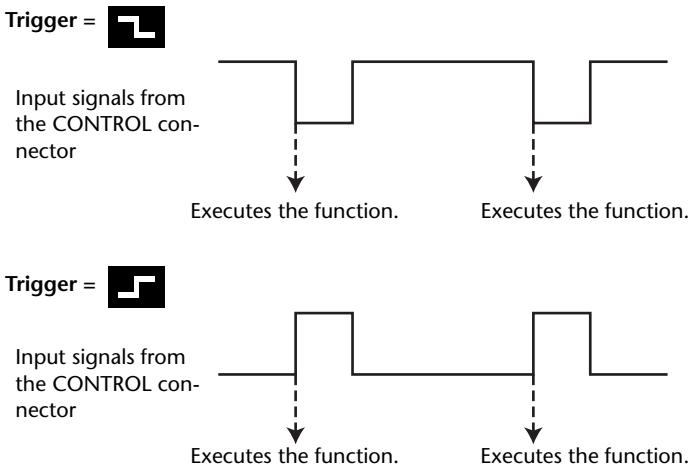
4 Select one of two buttons located to the right of trigger signal parameters INPUT 1 & 2 to specify how the incoming trigger signals will be detected.

: When the switch is grounded (Low), the trigger signal is active and the selected parameter changes.

: When the GPI Input goes High (open), the trigger signal is active and the selected parameter changes.

You can execute functions assigned to the MONITOR section buttons and User Defined Keys, and turn channels on and off. See "GPI Trigger Source & Target List" on page 253 for a complete list of assignable functions.

Note: "xxx UNLATCH" means that the assigned function is enabled only while the incoming trigger signal is active. For example, if CH1 ON is selected, the channel on/off status changes each time the trigger signal is detected. If CH1 ON UNLATCH is selected, Channel 1 turns on only while the trigger signal is active.



At this point, when the 02R96 receives the trigger signal at the CONTROL connector, the selected parameter changes.

Tip: Refer to the page 253 for a complete list of assignable parameters.

TALKBACK - SMALL: Functions the same as the MONITOR section buttons.

SR xxx: Functions the same as the SURROUND buttons in the MONITOR section.

CR xxx: Functions the same as the CONTROL ROOM buttons in the MONITOR section.

SM xxx: Functions the same as the STUDIO buttons in the MONITOR section.

xxx UNLATCH: The assigned function is enabled only while the incoming trigger signal is active.

xxx ON: The corresponding channels turn on or off each time the incoming trigger signal becomes active.

xxx ON UNLATCH: The corresponding channels turn on only while the incoming trigger signal is active.

UDEFxxx: Functions the same as the USER DEFINED KEYS.

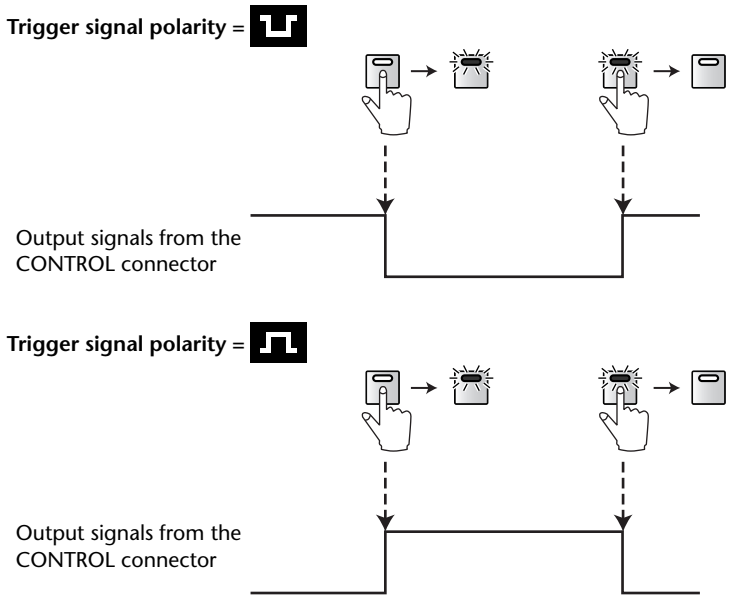
5 To select parameters or controls as trigger signal sources, use the cursor buttons to select an output from OUTPUT 1–8, then select trigger signal parameters as you would for the INPUT section.

See "GPI Trigger Source & Target List" on page 253 for a complete list of assignable parameters.

6 Use the buttons located to the right of the OUTPUT (1–8) parameters to switch the polarity of the trigger signals that are output when you control the trigger sources.

: The GPI Output goes High (open) when the trigger signal source is active.

: The GPI Output goes Low (ground) when the trigger signal source is active.



At this time, the trigger signal is output from the CONTROL connector when you operate the assigned parameters or controls.

Tip: Refer to page 253 for a complete list of assignable parameters and controls.

xxx FADER ON: A trigger signal of 250 ms is transmitted when you raise a fader from –∞.

xxx FADER OFF: A trigger signal of 250 ms is transmitted when you lower a fader to –∞.

xxx FADER TALLY: The trigger signal becomes active when the fader is set to any level other than –∞, and the trigger signal turns off when the fader is set to –∞.

UDEFxx LATCH: Pressing the corresponding button in the USER DEFINED KEYS section activates the trigger signal, and pressing the button again turns it off.

UDEF xx UNLATCH: A trigger signal of 250 ms is transmitted each time you press the corresponding button in the USER DEFINED KEYS section.

REC LAMP: This source can be used to control a "RECORDING" warning light outside a studio. The trigger signal is active while the [REC] button indicator is lit.

POWER ON: The trigger signal is active while the power to the 02R96 is on.

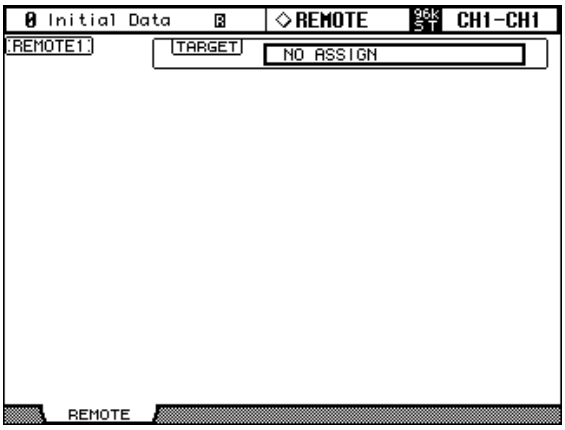
Important note: GPI outputs are open collector outputs. GPI inputs have an internal pull-up to 5 V.

20 Other Functions

Using the User Assignable Layers

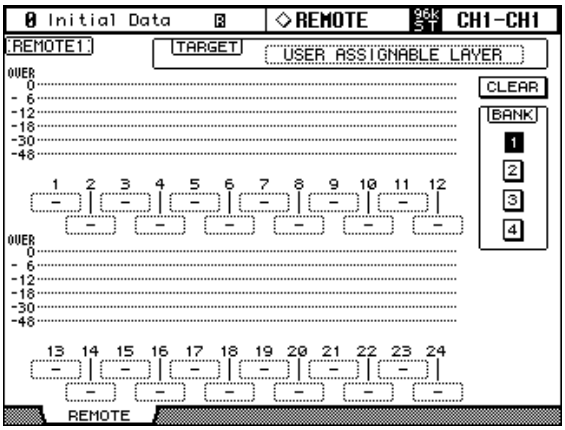
If you set the Remote layer target to "USER ASSIGNABLE," you can create a custom layer by combining any 02R96 channels (excluding the Stereo Out).

1 Use the DISPLAY ACCESS [REMOTE] button to locate Remote page.



2 Use the cursor buttons to select the TARGET parameter, use the Parameter wheel or INC/DEC buttons to select USER ASSIGNABLE LAYER, then press [ENTER].

A confirmation message appears. Select the YES button and press [ENTER].



3 Use the cursor buttons to select parameter 1–24, use the Parameter wheel or INC/DEC buttons to select a channel you want to assign, then press [ENTER].

You can store up to four 24-channel setups in four banks by switching Banks 1–4 via the BANK 1–4 buttons.

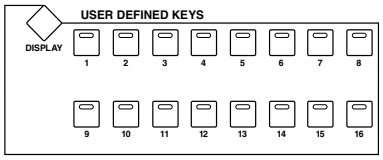
Pressing the [ENTER] button prior to selecting assigned channels enables you to select a channel in the User CH Select window.

4 Select a Remote layer using the LAYER [REMOTE] button.

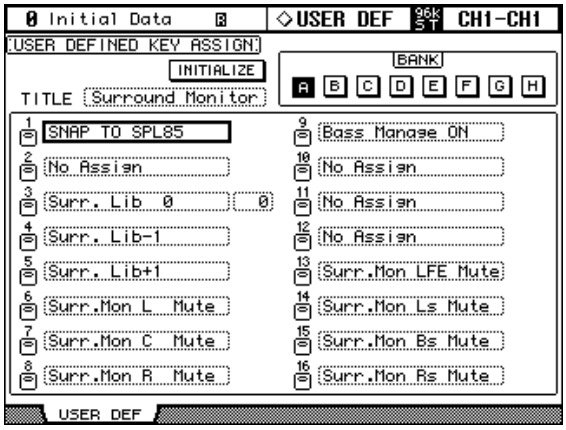
You can use the faders, Encoders, [ON] buttons, [AUTO] buttons, and [SOLO] buttons to control assigned channels. If you connected an optional MB02R96 Meter Bridge, its meters indicate the level of the channels currently-assigned to layer channels 1–24.

Using the User Defined Keys

Up to 16 functions from a list of over 170 can be assigned to the USER DEFINED KEYS, and up to eight assignment setups can be stored in banks A to H. See page 238 for a list of initial bank assignments.



1 Use the USER DEFINED KEYS [DISPLAY] button to locate the User Defined Key Assign page.

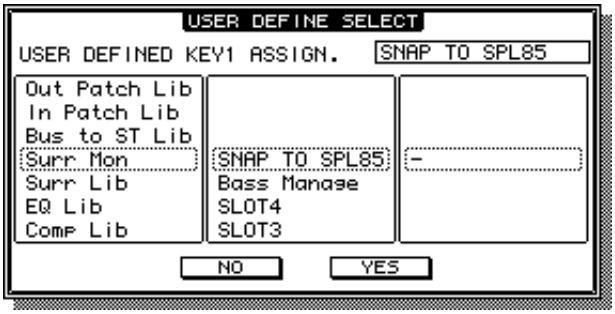


2 Use the cursor buttons to select the BANK buttons, A to H, and press [ENTER] to select a bank.

The TITLE parameter box displays the name of the selected bank. Select the TITLE parameter box, then press [ENTER]. The Title Edit window appears, enabling you to enter a name.

3 Use the cursor buttons to select from 1–16, then press [ENTER].

The following User Define Select window opens.



4 Move the cursor to the left column, then rotate the Parameter wheel or press the [INC]/[DEC] buttons to select the function you wish to assign.

5 Select options in the center and right columns in the same way.

The items displayed in the center and right columns vary depending on the function assigned in Step 4.

6 Use the cursor buttons to select YES, then press [ENTER].

When the window closes, the specified function is assigned to the selected User Defined button.

When you select a function that recalls a specific Scene or library memory, you need to specify the number of the memory that you want recalled when the USER DEFINED KEY is pressed. To do this, in the left-hand box, select the number parameter next to the Assign button, and use the Parameter wheel or INC/DEC buttons to specify the number.

You can initialize the assignments of the currently selected bank by selecting the INITIALIZE button, and pressing [ENTER].

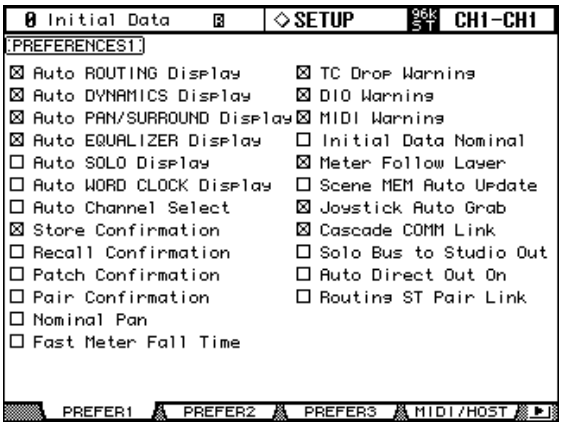
User Defined Keys banks can be stored to an external MIDI device, such as a MIDI data filer, by using MIDI Bulk Dump (see page 195).

Setting Preferences

You can customize the operation of the 02R96 by using the preferences pages.

Preferences 1

1 Use the DISPLAY ACCESS [SETUP] button to locate the Preferences 1 page.



2 Use the cursor buttons or Parameter wheel to select the preferences, and use the INC/DEC buttons or [ENTER] button to set them.

Auto ROUTING Display: When this preference is on, the Routing pages appear automatically when a button in the SELECTED CHANNEL ROUTING section is pressed (see page 82).

Auto DYNAMICS Display: When this preference is on, the Gate Edit page appears automatically when a gate control in the SELECTED CHANNEL DYNAMICS section is operated (see page 74), and the Comp Edit page appears automatically when a Compressor control in the SELECTED CHANNEL DYNAMICS section is operated (see page 116).

Auto PAN/SURROUND Display: When this preference is on and Input Channels have been selected, the Pan pages appears automatically when a control in the SELECTED CHANNEL PAN/SURROUND section is operated (see page 84). Similarly, when a Surround Pan mode other than Stereo is selected, the Input Channel Surround Edit page appears automatically when the Joystick is operated (see page 88). Also, when Stereo is selected, the Fader View page appears automatically when the Pan controls are operated.

Auto EQUALIZER Display: When this preference is on, the EQ Edit page appears automatically when a control in the SELECTED CHANNEL EQUALIZER section is operated (see page 113).

Auto SOLO Display: When this option is on, the Solo Setup page appears automatically when an channel is soloed (see page 121).

Auto WORD CLOCK Display: When this preference is on, the Word Clock Select page appears automatically if the currently selected external wordclock source fails (see page 56).

Auto Channel Select: When this preference is on, channels can be selected by moving the corresponding fader or Encoder, or by turning on the corresponding [AUTO], [SOLO], or [ON] button.

Store Confirmation: When this preference is on, the Title Edit window appears when you store a Scene (page 164) or library memory (page 143).

Recall Confirmation: When this preference is on, a confirmation message appears when you recall a Scene (page 164) or library memory (page 143).

Patch Confirmation: When this preference is on, a confirmation message appears when you edit the Input and Output Patches (see page 66).

Pair Confirmation: When this preference is on, a confirmation message appears when you pair channels using the [SEL] buttons.

Nominal Pan: When this preference is on, left/odd and right/even signals will be at nominal level when Input Channel, or Bus to Stereo signals are panned hard left or hard right, and at –3 dB when panned center. When this preference is off, signals panned hard left or hard right will be at 3 dB, and at nominal level when panned center. In Surround mode, this preference setting is used for the signal of any Surround Pan channel that is fully panned.

Fast Meter Fall Time: When this preference is on, the level meters fall quicker.

TC Drop Warning: When this preference is on, a warning message appears if a dropout is detected in the incoming timecode.

DIO Warning: When this preference is on, a warning message appears if any errors are detected in digital audio signals received by the Slot Inputs or 2TR Digital Inputs.

MIDI Warning: When this preference is on, a warning message appears if any errors are detected in the incoming MIDI messages.

Initial Data Nominal: When this preference is on, Input Channel faders are set to nominal when Scene #0 is recalled.

Meter Follow Layer: When this preference is on, the optional MB02R96 Peak Meter Bridge automatically follows the Layer selection on the 02R96.

Scene MEM Auto Update: When this preference is on, the Shadow Scene memories can be used (see page 163).

Joystick Auto Grab: When this preference is on, the Joystick automatically kicks in as the surround pan control when it's moved to the current surround pan position (see page 88).

Cascade COMM Link: When this preference is on, various functions are linked between cascaded 02R96s (see page 63). When this preference is off, only digital audio signals are distributed among the cascaded 02R96s.

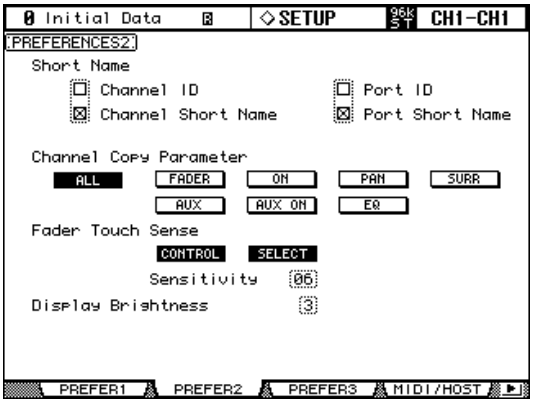
Solo Bus to Studio Out: When this preference is on and all STUDIO buttons ([CONTROL ROOM], [STEREO], [AUX 7], [AUX 8]) in the MONITOR section are turned off, soloed Input Channel signals are output via the STUDIO MONITOR OUT.

Auto Direct Out On: When this preference is on and you change the channel Direct Out destination from "–" to any other output, the channel Direct Out is automatically enabled. If you change the channel Direct Out destination from an output to "–," the channel Direct Out is automatically disabled.

Routing ST Pair Link: When this preference is on, routing from paired channels to the Stereo Bus is linked.

Preferences 2

1 Use the DISPLAY ACCESS [SETUP] button to locate the Preferences 2 page.



2 Use the cursor buttons to select the preferences, and use the Parameter wheel, INC/DEC buttons, or [ENTER] button to set them.

Channel ID: The corresponding Channel ID is indicated in the upper right corner of the display.

Channel Short Name: The corresponding Channel Short Name is indicated in the upper right corner of the display.

Port ID: The Port ID is indicated in the upper right corner of the display.

Port Short Name: The Port Short Name is indicated in the upper right corner of the display.

Channel Copy Parameter: These buttons allow you to choose which channel parameters are copied by the Channel Copy function: ALL parameters, or any combination of FADER, ON, PAN, SURR, AUX, AUX ON, and EQ.

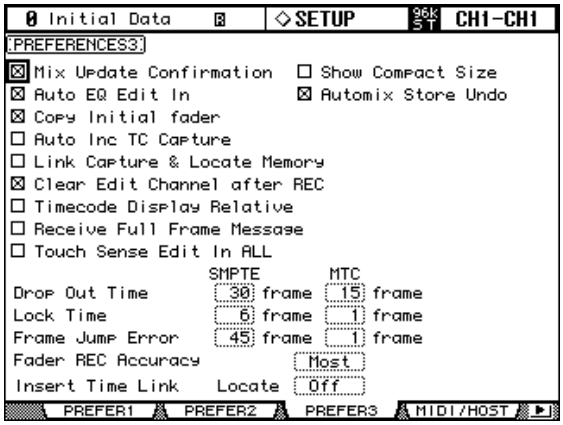
Fader Touch Sense: These parameters control the Touch Sense function. If the CONTROL button is turned on and the touch sensors are not triggered, fader operation is ignored. During Automix recording, you can "cut-in" by touching a fader. When this button is off, the 02R96 always recognizes fader movements. If the SELECT button is on, you can select channels using the Touch Sense function.

The Sensitivity parameter adjusts touch sensitivity. If you're having trouble selecting channels because the fader knobs are insufficiently sensitive, try increasing this value. If they are too sensitive, try reducing it. It's important that the 02R96 is grounded properly for Touch Select to work correctly. See "Grounding screw" on page 42 for more information.

Display Brightness: This preference is used to set the brightness of the LED displays and indicators.

Preferences 3

1 Use the DISPLAY ACCESS [SETUP] button to locate the Preferences 3 page.



2 Use the cursor buttons or Parameter wheel to select the preferences, and use the INC/DEC buttons or [ENTER] button to set them.

Mix Update Confirmation: When this preference is on, a confirmation message asking if you want to update the current Automix with the latest edits appears when Automix recording is stopped.

Auto EQ Edit In: When this preference is on, EQ is automatically punched into Automix recording when an EQ control is adjusted.

Copy Initial Fader: When this preference is on, when Fader events are copied or moved on the Automix Event Copy page, the fader value at the specified IN point is copied to the specified TO point. This eliminates fader position matching problems when no fader event exists at the specified TO point.

Auto Inc TC Capture: When this preference is on, the Timecode Capture memory is incremented automatically each time a timecode address is captured on the Automix Event Edit page (see page 185).

Link Capture & Locate Memory: When this preference is on, the eight Capture memories on the Automix Event Edit page are linked to the eight Locate memories so that, for example, edits made to Capture memory #1 are reflected on Locate memory #1, and vice versa.

Clear Edit Channel after REC: When this preference is on, when using Auto Rec, channels are automatically unarmed (i.e., [AUTO] buttons are turned off) when Automix recording stops. When this preference is off, channels remain armed when recording stops.

Timecode Display Relative: When this preference is on, the indicated timecode is offset as specified by the OFFSET parameter on the Automix Main page.

Receive Full Frame Message: When this preference is on, MTC full frame messages are recognized and Automix follows them.

Touch Sense Edit In All: When this preference is on, using the faders' Touch Sense function enables you to punch in and out all parameters for which the corresponding OVERWRITE buttons are turned on. When this preference is off, you can punch in and out only these faders selected in Fader mode.

Show Compact Size: Automix data, except that in the Undo buffer, is compressed while recording. When this preference is on, the compressed size of the Automix is displayed on the Automix Main and Memory pages. When this preference is off, the uncompressed size is displayed.

Automix Store Undo: When this preference is on, Automix Store operations can be undone by using the Undo function.

Drop Out Time: This parameter sets an interval (in frames) between the interruption of incoming timecode and the stoppage of Automix recording or playback.

Lock Time: This parameter sets the interval (in frames) allowed until the Automix locks to incoming timecode messages. If the sync operation is unstable, set this value higher.

Frame Jump Error: This parameter sets the time interval (in frames) required by the 02R96 to recognize an error after incoming timecode messages jump. If the actual interval is shorter than the value specified by this parameter, the 02R96 continues the sync operation. If the frame jump causes the recording or playback to stop during the MTC and SMPT sync operation, set the parameter value higher than the number of frames indicated in the error message.

If you set the parameter to a higher value, adjust the Drop Out Time parameter value, if necessary.

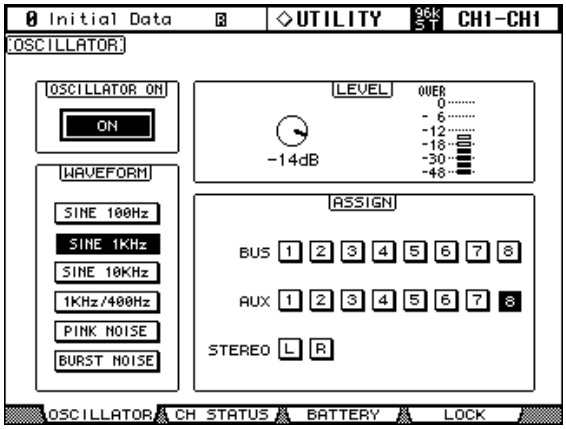
Fader REC Accuracy: This parameter sets the accuracy of recording faders over time to "Little," "Some," "More," or "Most." If you set the parameter to lower values, you will save Automix memory space.

Insert Time Link: This parameter enables you to select the locate memory used for the IN and OUT parameters in the Insert operation.

Using the Oscillator

The 02R96 features an oscillator that can be used for calibration or diagnostic purposes.

1 Use the DISPLAY ACCESS [UTILITY] button to locate the Oscillator page.



2 Use the cursor buttons to select the parameters, and use the Parameter wheel, INC/DEC button, or [ENTER] button to set them.

OSCILLATOR ON: This turns the Oscillator on or off. While the LEVEL parameter is selected, the [ENTER] button can be used to turn on and off the Oscillator.

Note: To prevent any sudden tone burst surprises in your monitors or headphones, you may want to set the LEVEL parameter to minimum before turning on the oscillator.

LEVEL: This sets the Oscillator output level, which is displayed by the adjacent meter. This parameter can be set by using the Parameter wheel regardless of which parameter is currently selected.

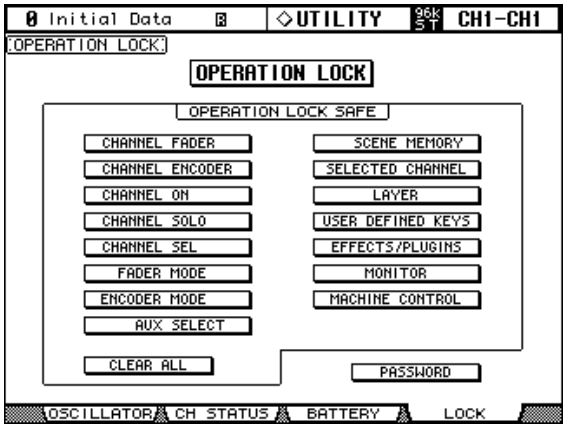
WAVEFORM: These buttons are used to select the waveforms: SINE 100Hz, SINE 1kHz, SINE 10kHz, 1kHz/400Hz, PINK NOISE, or BURST NOISE, which is 200 msec pink noise pulses at four second intervals. If you select 1 kHz/400 Hz, the Oscillator outputs a sine wave at different frequencies to L, R, and odd/even buses.

ASSIGN: These buttons are used to assign the Oscillator output to Bus Outs, Aux Sends, and the Stereo Out.

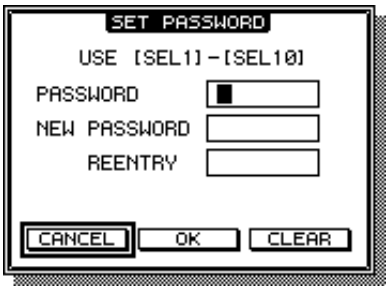
Operation Lock

The 02R96 features the Operation Lock function, which avoids unintentional edits and uses a password to restrict access to panel operation.

1 Use the DISPLAY ACCESS [UTILITY] button to locate the Operation Lock page.



2 Use the cursor buttons to select the PASSWORD button, then press [ENTER].



3 Use the [SEL] buttons to set the password.

Enter a four-letter password using the Channel 1–10 [SEL] buttons (Channel 10 [SEL] button enters "0"). (The factory default password is 1234.)

Enter the current password in the PASSWORD field, and a new password in the NEW PASSWORD field. Enter the new password again in the REENTRY field.

4 Use the cursor buttons to select the OK button, then press [ENTER] to update the password.

If you forget the password, you will be unable to cancel Operation Lock. Be sure to remember the password.

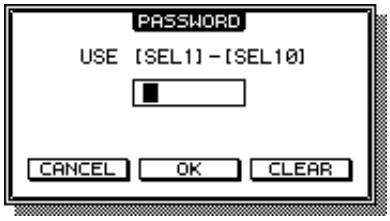
5 Use the buttons in the OPERATION LOCK SAFE section to select certain controls on the panel to exclude from Operation Lock.

Buttons	Controls excluded from Operation Lock
CHANNEL FADER	Channel faders (1–24, STEREO)
CHANNEL ENCODER	Channel Encoders (1–24)
CHANNEL ON	Channel [ON] buttons (1–24, STEREO)
CHANNEL SOLO	Channel [SOLO] buttons (1–24)
CHANNEL SEL	Channel [SEL] buttons (1–24, STEREO)
FADER MODE	All buttons in the FADER MODE section
ENCODER MODE	All buttons in the ENCODER MODE section
AUX SELECT	All buttons in the AUX SELECT section
SCENE MEMORY	All buttons in the SCENE MEMORY section (excluding the [STORE] button)
SELECTED CHANNEL	All controls in the SELECTED CHANNEL section
LAYER	All buttons in the LAYER section
USER DEFINED KEYS	All buttons in the USER DEFINED KEYS section
EFFECTS/PLUGINS	All buttons in the EFFECTS/PLUG-INS section (including the Parameter controls 1–4)
MONITOR	All controls in the MONITOR section
MACHINE CONTROL[1]	All buttons in the MACHINE CONTROL section

1. The Parameter wheel is also excluded from Operation Lock when the [SHUTTLE] or [SCRUB] button is on.

6 Use the cursor buttons to select the OPERATION LOCK button, then press [ENTER].

The Password window appears.



7 Use the [SEL] buttons to enter the password you set in Step 4.

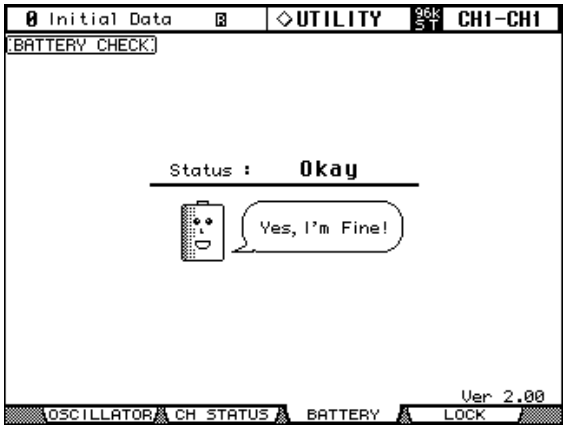
The Operation Lock function is activated.

To cancel Operation Lock, press [ENTER]. The Password window opens again. Enter the same password again, and Operation Lock is cancelled.

Checking the Battery and the System Version

The condition of the internal memory-backup battery can be checked as follows.

1 Use the DISPLAY ACCESS [UTILITY] button to locate the Battery Check page.



If the Status is "Okay," the battery is okay. If the Status is "Getting Low," ask your Yamaha dealer to replace the battery as soon as possible. Do not attempt to replace the battery yourself. Failure to replace a low battery may result in data loss.

Ver x.xx: This description identifies the system version number. Check the current system version number against this description before you update the firmware. Visit the following website to check the latest system version number:
http://www.yamahaproaudio.com/

Initializing the 02R96

The 02R96 can be initialized as follows.

Warning: This procedure will clear all user memories and reset all settings to their initial values. You may want to back up any important data beforehand via MIDI Bulk Dump (see page 195). If you want to reset just the mix settings, recall scene memory #0 instead (see page 163).

1 Turn off the 02R96.

2 While holding down the SCENE MEMORY [STORE] button, turn on the 02R96.

3 When the confirmation message appears, release the SCENE MEMORY [STORE] button, select [INITIALIZE] button, and press [ENTER].

The following message is displayed while initialization is in progress: "Loading Factory Presets & Calibrating the Faders... Do Not Touch the Faders!"

It's important that you do not touch the faders while this message is displayed, as the faders may not be calibrated correctly.

The display returns to normal when initialization is complete.

Initializing the Password

Follow the steps below to initialize the password for the Operation Lock function.

1 Turn off the power to the 02R96.

2 Hold down the SCENE MEMORY[STORE] button, and turn on the power to the 02R96.

3 When a confirmation message appears, release the SCENE MEMORY [STORE] button. Use the cursor buttons to select the PASSWORD button, then press [ENTER].

The password is reset to "1234".

Appendix A: Parameter Lists

USER DEFINED KEYS

#	Function	Display
0	No ASSIGN	No Assign
1	Scene MEM. Recall +1	Scene +1 Recall
2	Scene MEM. Recall –1	Scene –1 Recall
3	Scene MEM. Recall No. XX	Scene XX Recall
4	Effect-1 Lib. Recall +1	Fx1 Lib+1 Recall
5	Effect-1 Lib. Recall –1	Fx1 Lib–1 Recall
6	Effect-1 Lib. Recall No.XX	Fx1 LibXXX RCL.
7	Effect-2 Lib. Recall +1	Fx2 Lib+1 Recall
8	Effect-2 Lib. Recall –1	Fx2 Lib–1 Recall
9	Effect-2 Lib. Recall No.XX	Fx2 LibXXX RCL.
10	Effect-3 Lib. Recall +1	Fx3 Lib+1 Recall
11	Effect-3 Lib. Recall –1	Fx3 Lib–1 Recall
12	Effect-3 Lib. Recall No.XX	Fx3 LibXXX RCL.
13	Effect-4 Lib. Recall +1	Fx4 Lib+1 Recall
14	Effect-4 Lib. Recall –1	Fx4 Lib–1 Recall
15	Effect-4 Lib. Recall No.XX	Fx4 LibXXX RCL.
16	Effect-1 Bypass On/Off	Fx1 Bypass
17	Effect-2 Bypass On/Off	Fx2 Bypass
18	Effect-3 Bypass On/Off	Fx3 Bypass
19	Effect-4 Bypass On/Off	Fx4 Bypass
20	Channel Lib. Recall +1	CH Lib+1 Recall
21	Channel Lib. Recall –1	CH Lib–1 Recall
22	Channel Lib. Recall No. XX	CH LibXXX Recall
23	GATE Lib. Recall +1	Gate Lib+1 RCL.
24	GATE Lib. Recall –1	Gate Lib–1 RCL.
25	GATE Lib. Recall No. XX	Gate LibXXX RCL.
26	COMP Lib. Recall +1	Comp Lib+1 RCL.
27	COMP Lib. Recall –1	Comp Lib–1 RCL.
28	COMP Lib. Recall No. XX	Comp LibXXX RCL.
29	EQ Lib. Recall +1	EQ Lib+1 Recall
30	EQ Lib. Recall –1	EQ Lib–1 Recall
31	EQ Lib. Recall No. XX	EQ LibXXX Recall
32	SURR. MONI MUTE Mute L On/Off	Surr.Mon L Mute
33	SURR. MONI MUTE Mute R On/Off	Surr.Mon R Mute
34	SURR. MONI MUTE Mute Ls On/Off	Surr.Mon Ls Mute
35	SURR. MONI MUTE Mute Rs On/Off	Surr.Mon Rs Mute
36	SURR. MONI MUTE Mute C On/Off	Surr.Mon C Mute
37	SURR. MONI MUTE Mute LFE On/Off	Surr.Mon LFE Mute
38	SURR. MONI ASSIGN X SLOT1 ON/OFF	Surr.ASGNX SL1 ON
39	SURR. MONI ASSIGN X SLOT2 ON/OFF	Surr.ASGNX SL2 ON
40	SURR. MONI ASSIGN X SLOT3 ON/OFF	Surr.ASGNX SL3 ON
41	SURR. MONI ASSIGN X SLOT4 ON/OFF	Surr.ASGNX SL4 ON
42	SURR. MONI BASS MANAGE ON/OFF	Bass Manage ON
43	Input Fader Group Enable A	IN Fader Group A
44	Input Fader Group Enable B	IN Fader Group B
45	Input Fader Group Enable C	IN Fader Group C
46	Input Fader Group Enable D	IN Fader Group D

#	Function	Display
47	Input Fader Group Enable E	IN Fader Group E
48	Input Fader Group Enable F	IN Fader Group F
49	Input Fader Group Enable G	IN Fader Group G
50	Input Fader Group Enable H	IN Fader Group H
51	Input MUTE Group Enable I	IN Mute Group I
52	Input MUTE Group Enable J	IN Mute Group J
53	Input MUTE Group Enable K	IN Mute Group K
54	Input MUTE Group Enable L	IN Mute Group L
55	Input MUTE Group Enable M	IN Mute Group M
56	Input MUTE Group Enable N	IN Mute Group N
57	Input MUTE Group Enable O	IN Mute Group O
58	Input MUTE Group Enable P	IN Mute Group P
59	Output Fader Group Enable Q	OutFader Group Q
60	Output Fader Group Enable R	OutFader Group R
61	Output Fader Group Enable S	OutFader Group S
62	Output Fader Group Enable T	OutFader Group T
63	Output MUTE Group Enable U	Out Mute Group U
64	Output MUTE Group Enable V	Out Mute Group V
65	Output MUTE Group Enable W	Out Mute Group W
66	Output MUTE Group Enable X	Out Mute Group X
67	PEAK HOLD On/Off	Peak Hold
68	OSCILLATOR On/Off	OSC. ON/OFF
69	SOLO Enable	SOLO ENABLE
70	Input Patch Lib. Recall +1	IN Patch Lib+1
71	Input Patch Lib. Recall –1	IN Patch Lib–1
72	Input Patch Lib. Recall No. XX	IN Patch LibXX
73	Output Patch Lib. Recall +1	Out Patch Lib+1
74	Output Patch Lib. Recall –1	Out Patch Lib–1
75	Output Patch Lib. Recall No. XX	Out Patch LibXX
76	Channel Name ID/Short	CH Name ID/Short
77	Port Name ID/Short	PortNameID/Short
78	Automix REC	Automix REC
79	Automix PLAY	Automix PLAY
80	Automix STOP	Automix STOP
81	Automix ABORT	Automix ABORT
82	Automix AUTO REC	Automix AUTOREC
83	Automix ENABLE	Automix ENABLE
84	Automix RETURN	Automix RETURN
85	Automix TAKEOVER	Automix TAKEOVER
86	Automix RELATIVE	Automix RELATIVE
87	Automix TOUCH SENSE	Automix T.SENSE
88	Overwrite FADER	Overwrite FADER
89	Overwrite ON	Overwrite ON
90	Overwrite PAN	Overwrite PAN
91	Overwrite SURROUND	Overwrite SURR.
92	Overwrite EQ	Overwrite EQ
93	Overwrite AUX	Overwrite AUX
94	Overwrite AUX ON	Overwrite AUX ON
95	Track Arming 1 ON/OFF	Track Arming 1
96	Track Arming 2 ON/OFF	Track Arming 2
97	Track Arming 3 ON/OFF	Track Arming 3
98	Track Arming 4 ON/OFF	Track Arming 4
99	Track Arming 5 ON/OFF	Track Arming 5

#	Function	Display
100	Track Arming 6 ON/OFF	Track Arming 6
101	Track Arming 7 ON/OFF	Track Arming 7
102	Track Arming 8 ON/OFF	Track Arming 8
103	Track Arming 9 ON/OFF	Track Arming 9
104	Track Arming 10 ON/OFF	Track Arming 10
105	Track Arming 11 ON/OFF	Track Arming 11
106	Track Arming 12 ON/OFF	Track Arming 12
107	Track Arming 13 ON/OFF	Track Arming 13
108	Track Arming 14 ON/OFF	Track Arming 14
109	Track Arming 15 ON/OFF	Track Arming 15
110	Track Arming 16 ON/OFF	Track Arming 16
111	Track Arming 17 ON/OFF	Track Arming 17
112	Track Arming 18 ON/OFF	Track Arming 18
113	Track Arming 19 ON/OFF	Track Arming 19
114	Track Arming 20 ON/OFF	Track Arming 20
115	Track Arming 21 ON/OFF	Track Arming 21
116	Track Arming 22 ON/OFF	Track Arming 22
117	Track Arming 23 ON/OFF	Track Arming 23
118	Track Arming 24 ON/OFF	Track Arming 24
119	SURR Lib. Recall +1	Surr Lib+1 RCL
120	SURR Lib. Recall –1	Surr Lib–1 RCL
121	SURR Lib. Recall No.XX	Surr LibXX RCL
122	Channel Copy	Channel Copy
123	Channel Paste	Channel Paste
124	Display Back	Display Back
125	Display Forward	Display Forward
126	SURR. MONI MUTE Mute Bs On/Off	Surr.Mon Bs Mute
127	SURR. MONI SNAP TO 85dB SPL	SNAP TO SPL85
128	Bus to ST Lib. Recall +1	BUS To ST LIB+1
129	Bus to ST Lib. Recall –1	BUS To ST LIB–1
130	Bus to ST Lib. Recall No. XX	BUS To ST LIBXX
131	Input Fader Group Assign X	IN Fader Assign X
132	Input Mute Group Assign X	IN Mute Assign X
133	Input EQ Group Assign X	IN EQ Assign x
134	Input COMP Group Assign X	IN COMP Assign x
135	Output Fader Group Assign X	OutFader Assign X
136	Output Mute Group Assign X	Out Mute Assign X
137	Output EQ Group Assign X	Out EQ Assign x
138	Output COMP Group Assign X	Out COMP Assign x
139	Input Mute Group Master X	In Mute Master X
140	Output MUTE Group Master X	Out Mute Master X
141	Automix UPDATE TO END	Amx UPDATE TO END
142	AUX/SOLO LINK Mode On/Off	AUX/SOLO LINK
143	FADER/SOLO RELEASE Mode On/Off	FaderSoloRELEASE
144	Control Room Monitor MONO	C-R MONO
145	Talkback Assign SLOT1	Talkback SLOT1-XX
146	Talkback Assign SLOT2	Talkback SLOT2-XX
147	Talkback Assign SLOT3	Talkback SLOT3-XX
148	Talkback Assign SLOT4	Talkback SLOT4-XX
149	Talkback Assign OMNI OUT	Talkback OMNI-XX
150	Talkback Studio Monitor Out On/Off	Talkback S.Moni
151	User Defined Keys BANK +1	UDEF KEYS BANK+1
152	User Defined Keys BANK –1	UDEF KEYS BANK–1
153	User Defined Keys BANK X	UDEF KEYS BANK X
154	Remote User Defined BANK +1	RMT UDEF BANK+1
155	Remote User Defined BANK –1	RMT UDEF BANK–1
156	Remote User Defined BANK X	RMT UDEF BANK X

#	Function	Display
157	User Assignable Layer BANK +1	USER LAYER BANK+1
158	User Assignable Layer BANK –1	USER LAYER BANK–1
159	User Assignable Layer BANK X	USER LAYER BANK X
160	MIDI NOTE No.XX	MIDI NOTE XXX
161	MIDI Program change No.XX	MIDI PGM XXX
162	MIDI Control Change No.XX	MIDI CC XXX
163	Track Arming All Clear	Track Arming CLR
164	Studio Manager Window Control Close	SM Ctrl Close
165	Studio Manager Window Control Close All	SM Ctrl Close All
166	Studio Manager Window Control Selected Channel	SM Ctrl Sel Ch
167	Studio Manager Window Control Library	SM Ctrl Library
168	Studio Manager Window Control Patch Editor	SM Ctrl Patch
169	Studio Manager Window Control Surround Editor	SM Ctrl Surround
170	Studio Manager Window Control Time Counter	SM Ctrl TimeCount
171	Studio Manager Window Control Effect Editor	SM Ctrl Effect
172	Studio Manager Window Control Meter	SM Ctrl Meter
173	Studio Manager Window Control Layer	SM Ctrl Layer
174	Studio Manager Window Control Master	SM Ctrl Master

USER DEFINED KEYS Initial Assignments

No.	Bank A (Surround Monitor)	Bank B (Scene Recall)	Bank C (Group Enable)	Bank D (Automix)	Bank E (Effect Library)	Bank F (Group Assign)	Bank G (Mute Master)	Bank H (Program Change)
1	SNAP TO SPL 85	Scene 1 Recall	IN Fader Group A	Automix ENABLE	Fx 1 Lib+1 Recall	IN Fader Assign A	IN Mute Master I	MIDI PGM 1
2	No Assign	Scene 2 Recall	IN Fader Group B	Automix REC	Fx 2 Lib+1 Recall	IN Fader Assign B	IN Mute Master J	MIDI PGM 2
3	Surr Lib 0 Recall	Scene 3 Recall	IN Fader Group C	Automix ABORT	Fx 3 Lib+1 Recall	IN Fader Assign C	IN Mute Master K	MIDI PGM 3
4	Surr Lib–1 Recall	Scene 4 Recall	IN Fader Group D	Automix AUTOREC	Fx 4 Lib+1 Recall	IN Fader Assign D	IN Mute Master L	MIDI PGM 4
5	Surr Lib+1 Recall	Scene 5 Recall	IN Fader Group E	Automix RETURN	No Assign	IN Fader Assign E	IN Mute Master M	MIDI PGM 5
6	Surr Mon L Mute	Scene 6 Recall	IN Fader Group F	Automix REL-ATIVE	No Assign	IN Fader Assign F	IN Mute Master N	MIDI PGM 6
7	Surr Mon C Mute	Scene 7 Recall	IN Fader Group G	Automix T.SENSE	No Assign	IN Fader Assign G	IN Mute Master O	MIDI PGM 7
8	Surr Mon R Mute	Scene +1 Recall	IN Fader Group H	Automix TAKEOVER	No Assign	IN Fader Assign H	IN Mute Master P	MIDI PGM 8
9	Bass Man-age ON	Scene 8 Recall	IN Mute Group I	Overwrite FADER	Fx 1 Lib-1 Recall	IN Mute Assign I	OUT Mute Master U	MIDI PGM 9
10	No Assign	Scene 9 Recall	IN Mute Group J	Overwrite ON	Fx 2 Lib-1 Recall	IN Mute Assign J	OUT Mute Master V	MIDI PGM 10
11	No Assign	Scene 10 Recall	IN Mute Group K	Overwrite PAN	Fx 3 Lib-1 Recall	IN Mute Assign K	OUT Mute Master W	MIDI PGM 11
12	No Assign	Scene 11 Recall	IN Mute Group L	Overwrite SURR.	Fx 4 Lib-1 Recall	IN Mute Assign L	OUT Mute Master X	MIDI PGM 12
13	Surr.Mon LFEMute	Scene 12 Recall	IN Mute Group M	Overwrite AUX	No Assign	IN Mute Assign M	No Assign	MIDI PGM 13
14	Surr.Mon Ls Mute	Scene 13 Recall	IN Mute Group N	Overwrite AUX ON	No Assign	IN Mute Assign N	No Assign	MIDI PGM 14
15	Surr.Mon Bs Mute	Scene 14 Recall	IN Mute Group O	Overwrite EQ	No Assign	IN Mute Assign O	No Assign	MIDI PGM 15
16	Surr.Mon Rs Mute	Scene –1 Recall	IN Mute Group P	Automix STOP	No Assign	IN Mute Assign P	No Assign	MIDI PGM 16

Input Patch Parameters

Input Channel Inputs		Input Channel insert Ins		Internal Effects Processor Inputs	
Port ID	**Description**	**Port ID**	**Description**	**Port ID**	**Description**
NONE	NONE	NONE	NONE	NONE	NONE
AD1	AD IN 1	AD1	AD IN 1	AUX1	AUX1
AD2	AD IN 2	AD2	AD IN 2	AUX2	AUX2
AD3	AD IN 3	AD3	AD IN 3	AUX3	AUX3
AD4	AD IN 4	AD4	AD IN 4	AUX4	AUX4
AD5	AD IN 5	AD5	AD IN 5	AUX5	AUX5
AD6	AD IN 6	AD6	AD IN 6	AUX6	AUX6
AD7	AD IN 7	AD7	AD IN 7	AUX7	AUX7
AD8	AD IN 8	AD8	AD IN 8	AUX8	AUX8
AD9	AD IN 9	AD9	AD IN 9	INSCH1	InsertOut-CH1
AD10	AD IN 10	AD10	AD IN 10	INSCH2	InsertOut-CH2
AD11	AD IN 11	AD11	AD IN 11	INSCH3	InsertOut-CH3
AD12	AD IN 12	AD12	AD IN 12	INSCH4	InsertOut-CH4
AD13	AD IN 13	AD13	AD IN 13	INSCH5	InsertOut-CH5
AD14	AD IN 14	AD14	AD IN 14	INSCH6	InsertOut-CH6
AD15	AD IN 15	AD15	AD IN 15	INSCH7	InsertOut-CH7
AD16	AD IN 16	AD16	AD IN 16	INSCH8	InsertOut-CH8
AD17	AD IN 17	AD17	AD IN 17	INSCH9	InsertOut-CH9
AD18	AD IN 18	AD18	AD IN 18	INSCH10	InsertOut-CH10
AD19	AD IN 19	AD19	AD IN 19	INSCH11	InsertOut-CH11
AD20	AD IN 20	AD20	AD IN 20	INSCH12	InsertOut-CH12
AD21	AD IN 21	AD21	AD IN 21	INSCH13	InsertOut-CH13
AD22	AD IN 22	AD22	AD IN 22	INSCH14	InsertOut-CH14
AD23	AD IN 23	AD23	AD IN 23	INSCH15	InsertOut-CH15
AD24	AD IN 24	AD24	AD IN 24	INSCH16	InsertOut-CH16
S1-1	Slot1 CH1 IN	S1-1	Slot1 CH1 IN	INSCH17	InsertOut-CH17
S1-2	Slot1 CH2 IN	S1-2	Slot1 CH2 IN	INSCH18	InsertOut-CH18
S1-3	Slot1 CH3 IN	S1-3	Slot1 CH3 IN	INSCH19	InsertOut-CH19
S1-4	Slot1 CH4 IN	S1-4	Slot1 CH4 IN	INSCH20	InsertOut-CH20
S1-5	Slot1 CH5 IN	S1-5	Slot1 CH5 IN	INSCH21	InsertOut-CH21
S1-6	Slot1 CH6 IN	S1-6	Slot1 CH6 IN	INSCH22	InsertOut-CH22
S1-7	Slot1 CH7 IN	S1-7	Slot1 CH7 IN	INSCH23	InsertOut-CH23
S1-8	Slot1 CH8 IN	S1-8	Slot1 CH8 IN	INSCH24	InsertOut-CH24
S1-9	Slot1 CH9 IN	S1-9	Slot1 CH9 IN	INSCH25	InsertOut-CH25
S1-10	Slot1 CH10 IN	S1-10	Slot1 CH10 IN	INSCH26	InsertOut-CH26
S1-11	Slot1 CH11 IN	S1-11	Slot1 CH11 IN	INSCH27	InsertOut-CH27
S1-12	Slot1 CH12 IN	S1-12	Slot1 CH12 IN	INSCH28	InsertOut-CH28
S1-13	Slot1 CH13 IN	S1-13	Slot1 CH13 IN	INSCH29	InsertOut-CH29
S1-14	Slot1 CH14 IN	S1-14	Slot1 CH14 IN	INSCH30	InsertOut-CH30
S1-15	Slot1 CH15 IN	S1-15	Slot1 CH15 IN	INSCH31	InsertOut-CH31
S1-16	Slot1 CH16 IN	S1-16	Slot1 CH16 IN	INSCH32	InsertOut-CH32
S2-1	Slot2 CH1 IN	S2-1	Slot2 CH1 IN	INSCH33	InsertOut-CH33
S2-2	Slot2 CH2 IN	S2-2	Slot2 CH2 IN	INSCH34	InsertOut-CH34
S2-3	Slot2 CH3 IN	S2-3	Slot2 CH3 IN	INSCH35	InsertOut-CH35
S2-4	Slot2 CH4 IN	S2-4	Slot2 CH4 IN	INSCH36	InsertOut-CH36
S2-5	Slot2 CH5 IN	S2-5	Slot2 CH5 IN	INSCH37	InsertOut-CH37
S2-6	Slot2 CH6 IN	S2-6	Slot2 CH6 IN	INSCH38	InsertOut-CH38
S2-7	Slot2 CH7 IN	S2-7	Slot2 CH7 IN	INSCH39	InsertOut-CH39
S2-8	Slot2 CH8 IN	S2-8	Slot2 CH8 IN	INSCH40	InsertOut-CH40
S2-9	Slot2 CH9 IN	S2-9	Slot2 CH9 IN	INSCH41	InsertOut-CH41
S2-10	Slot2 CH10 IN	S2-10	Slot2 CH10 IN	INSCH42	InsertOut-CH42
S2-11	Slot2 CH11 IN	S2-11	Slot2 CH11 IN	INSCH43	InsertOut-CH43

Input Channel Inputs		Input Channel insert Ins		Internal Effects Processor Inputs	
Port ID	Description	Port ID	Description	Port ID	Description
S2-12	Slot2 CH12 IN	S2-12	Slot2 CH12 IN	INSCH44	InsertOut-CH44
S2-13	Slot2 CH13 IN	S2-13	Slot2 CH13 IN	INSCH45	InsertOut-CH45
S2-14	Slot2 CH14 IN	S2-14	Slot2 CH14 IN	INSCH46	InsertOut-CH46
S2-15	Slot2 CH15 IN	S2-15	Slot2 CH15 IN	INSCH47	InsertOut-CH47
S2-16	Slot2 CH16 IN	S2-16	Slot2 CH16 IN	INSCH48	InsertOut-CH48
S3-1	Slot3 CH1 IN	S3-1	Slot3 CH1 IN	INSCH49	InsertOut-CH49
S3-2	Slot3 CH2 IN	S3-2	Slot3 CH2 IN	INSCH50	InsertOut-CH50
S3-3	Slot3 CH3 IN	S3-3	Slot3 CH3 IN	INSCH51	InsertOut-CH51
S3-4	Slot3 CH4 IN	S3-4	Slot3 CH4 IN	INSCH52	InsertOut-CH52
S3-5	Slot3 CH5 IN	S3-5	Slot3 CH5 IN	INSCH53	InsertOut-CH53
S3-6	Slot3 CH6 IN	S3-6	Slot3 CH6 IN	INSCH54	InsertOut-CH54
S3-7	Slot3 CH7 IN	S3-7	Slot3 CH7 IN	INSCH55	InsertOut-CH55
S3-8	Slot3 CH8 IN	S3-8	Slot3 CH8 IN	INSCH56	InsertOut-CH56
S3-9	Slot3 CH9 IN	S3-9	Slot3 CH9 IN	INSBUS1	InsertOut-BUS1
S3-10	Slot3 CH10 IN	S3-10	Slot3 CH10 IN	INSBUS2	InsertOut-BUS2
S3-11	Slot3 CH11 IN	S3-11	Slot3 CH11 IN	INSBUS3	InsertOut-BUS3
S3-12	Slot3 CH12 IN	S3-12	Slot3 CH12 IN	INSBUS4	InsertOut-BUS4
S3-13	Slot3 CH13 IN	S3-13	Slot3 CH13 IN	INSBUS5	InsertOut-BUS5
S3-14	Slot3 CH14 IN	S3-14	Slot3 CH14 IN	INSBUS6	InsertOut-BUS6
S3-15	Slot3 CH15 IN	S3-15	Slot3 CH15 IN	INSBUS7	InsertOut-BUS7
S3-16	Slot3 CH16 IN	S3-16	Slot3 CH16 IN	INSBUS8	InsertOut-BUS8
S4-1	Slot4 CH1 IN	S4-1	Slot4 CH1 IN	INSAUX1	InsertOut-AUX1
S4-2	Slot4 CH2 IN	S4-2	Slot4 CH2 IN	INSAUX2	InsertOut-AUX2
S4-3	Slot4 CH3 IN	S4-3	Slot4 CH3 IN	INSAUX3	InsertOut-AUX3
S4-4	Slot4 CH4 IN	S4-4	Slot4 CH4 IN	INSAUX4	InsertOut-AUX4
S4-5	Slot4 CH5 IN	S4-5	Slot4 CH5 IN	INSAUX5	InsertOut-AUX5
S4-6	Slot4 CH6 IN	S4-6	Slot4 CH6 IN	INSAUX6	InsertOut-AUX6
S4-7	Slot4 CH7 IN	S4-7	Slot4 CH7 IN	INSAUX7	InsertOut-AUX7
S4-8	Slot4 CH8 IN	S4-8	Slot4 CH8 IN	INSAUX8	InsertOut-AUX8
S4-9	Slot4 CH9 IN	S4-9	Slot4 CH9 IN	INSSTL	InsertOut-STL
S4-10	Slot4 CH10 IN	S4-10	Slot4 CH10 IN	INSSTR	InsertOut-STR
S4-11	Slot4 CH11 IN	S4-11	Slot4 CH11 IN	FX1-1	Effect1 OUT 1
S4-12	Slot4 CH12 IN	S4-12	Slot4 CH12 IN	FX1-2	Effect1 OUT 2
S4-13	Slot4 CH13 IN	S4-13	Slot4 CH13 IN	FX2-1	Effect2 OUT 1
S4-14	Slot4 CH14 IN	S4-14	Slot4 CH14 IN	FX2-2	Effect2 OUT 2
S4-15	Slot4 CH15 IN	S4-15	Slot4 CH15 IN	FX3-1	Effect3 OUT 1
S4-16	Slot4 CH16 IN	S4-16	Slot4 CH16 IN	FX3-2	Effect3 OUT 2
FX1-1	Effect1 OUT 1	FX1-1	Effect1 OUT 1	FX4-1	Effect4 OUT 1
FX1-2	Effect1 OUT 2	FX1-2	Effect1 OUT 2	FX4-2	Effect4 OUT 2
FX1-3	Effect1 OUT 3	FX1-3	Effect1 OUT 3		
FX1-4	Effect1 OUT 4	FX1-4	Effect1 OUT 4		
FX1-5	Effect1 OUT 5	FX1-5	Effect1 OUT 5		
FX1-6	Effect1 OUT 6	FX1-6	Effect1 OUT 6		
FX1-7	Effect1 OUT 7	FX1-7	Effect1 OUT 7		
FX1-8	Effect1 OUT 8	FX1-8	Effect1 OUT 8		
FX2-1	Effect2 OUT 1	FX2-1	Effect2 OUT 1		
FX2-2	Effect2 OUT 2	FX2-2	Effect2 OUT 2		
FX3-1	Effect3 OUT 1	FX3-1	Effect3 OUT 1		
FX3-2	Effect3 OUT 2	FX3-2	Effect3 OUT 2		
FX4-1	Effect4 OUT 1	FX4-1	Effect4 OUT 1		
FX4-2	Effect4 OUT 2	FX4-2	Effect4 OUT 2		
2TD1L	2TR IN Dig.1 L	2TD1L	2TR IN Dig.1 L		
2TD1R	2TR IN Dig.1 R	2TD1R	2TR IN Dig.1 R		

Input Channel Inputs		Input Channel insert Ins	
Port ID	**Description**	**Port ID**	**Description**
2TD2L	2TR IN Dig.2 L	2TD2L	2TR IN Dig.2 L
2TD2R	2TR IN Dig.2 R	2TD2R	2TR IN Dig.2 R
2TD3L	2TR IN Dig.3 L	2TD3L	2TR IN Dig.3 L
2TD3R	2TR IN Dig.3 R	2TD3R	2TR IN Dig.3 R
2TA1L	2TR IN Analog1 L	2TA1L	2TR IN Analog1 L
2TA1R	2TR IN Analog1 R	2TA1R	2TR IN Analog1 R
2TA2L	2TR IN Analog2 L	2TA2L	2TR IN Analog2 L
2TA2R	2TR IN Analog2 R	2TA2R	2TR IN Analog2 R
BUS1	BUS1		
BUS2	BUS2		
BUS3	BUS3		
BUS4	BUS4		
BUS5	BUS5		
BUS6	BUS6		
BUS7	BUS7		
BUS8	BUS8		
AUX1	AUX1		
AUX2	AUX2		
AUX3	AUX3		
AUX4	AUX4		
AUX5	AUX5		
AUX6	AUX6		
AUX7	AUX7		
AUX8	AUX8		

Initial Input Patch Settings

Input channel Inputs

#	Source	#	Source
1	AD01	29	S1-05
2	AD02	30	S1-06
3	AD03	31	S1-07
4	AD04	32	S1-08
5	AD05	33	S2-01
6	AD06	34	S2-02
7	AD07	35	S2-03
8	AD08	36	S2-04
9	AD09	37	S2-05
10	AD10	38	S2-06
11	AD11	39	S2-07
12	AD12	40	S2-08
13	AD13	41	S3-01
14	AD14	42	S3-02
15	AD15	43	S3-03
16	AD16	44	S3-04
17	AD17	45	S3-05
18	AD18	46	S3-06
19	AD19	47	S3-07
20	AD20	48	S3-08
21	AD21	49	S4-01
22	AD22	50	S4-02
23	AD23	51	S4-03
24	AD24	52	S4-04
25	S1-01	53	S4-05
26	S1-02	54	S4-06
27	S1-03	55	S4-07
28	S1-04	56	S4-08

Effects Processors Inputs

#	Source
1-1	AUX1
1-2	NONE
1-3	NONE
1-4	NONE
1-5	NONE
1-6	NONE
1-7	NONE
1-8	NONE
2-1	AUX2
2-2	NONE
3-1	AUX3
3-2	NONE
4-1	AUX4
4-2	NONE

Output Patch Parameters

Output patch parameters are split into two tables. The first table contains parameters for the Slot Outputs, Omni Outs, and Output Channel Insert Ins. The second table, Direct Outs and, 2TR Digital Outputs.

Output Patch Table 1

Slot Outputs		Omni Outs		Output Channel Insert Ins	
Source	**Description**	**Source**	**Description**	**Source**	**Description**
NONE	NONE	NONE	NONE	NONE	NONE
BUS1	BUS1	BUS1	BUS1	AD1	AD IN 1
BUS2	BUS2	BUS2	BUS2	AD2	AD IN 2
BUS3	BUS3	BUS3	BUS3	AD3	AD IN 3
BUS4	BUS4	BUS4	BUS4	AD4	AD IN 4
BUS5	BUS5	BUS5	BUS5	AD5	AD IN 5
BUS6	BUS6	BUS6	BUS6	AD6	AD IN 6
BUS7	BUS7	BUS7	BUS7	AD7	AD IN 7
BUS8	BUS8	BUS8	BUS8	AD8	AD IN 8
AUX1	AUX1	AUX1	AUX1	AD9	AD IN 9
AUX2	AUX2	AUX2	AUX2	AD10	AD IN 10
AUX3	AUX3	AUX3	AUX3	AD11	AD IN 11
AUX4	AUX4	AUX4	AUX4	AD12	AD IN 12
AUX5	AUX5	AUX5	AUX5	AD13	AD IN 13
AUX6	AUX6	AUX6	AUX6	AD14	AD IN 14
AUX7	AUX7	AUX7	AUX7	AD15	AD IN 15
AUX8	AUX8	AUX8	AUX8	AD16	AD IN 16
STEREO-L	STEREO L	STEREO-L	STEREO L	AD17	AD IN 17
STEREO-R	STEREO R	STEREO-R	STEREO R	AD18	AD IN 18
INSCH1	InsertOut-CH1	INSCH1	InsertOut-CH1	AD19	AD IN 19
INSCH2	InsertOut-CH2	INSCH2	InsertOut-CH2	AD20	AD IN 20
INSCH3	InsertOut-CH3	INSCH3	InsertOut-CH3	AD21	AD IN 21
INSCH4	InsertOut-CH4	INSCH4	InsertOut-CH4	AD22	AD IN 22
INSCH5	InsertOut-CH5	INSCH5	InsertOut-CH5	AD23	AD IN 23
INSCH6	InsertOut-CH6	INSCH6	InsertOut-CH6	AD24	AD IN 24
INSCH7	InsertOut-CH7	INSCH7	InsertOut-CH7	S1-1	Slot1 CH1 IN
INSCH8	InsertOut-CH8	INSCH8	InsertOut-CH8	S1-2	Slot1 CH2 IN
INSCH9	InsertOut-CH9	INSCH9	InsertOut-CH9	S1-3	Slot1 CH3 IN
INSCH10	InsertOut-CH10	INSCH10	InsertOut-CH10	S1-4	Slot1 CH4 IN
INSCH11	InsertOut-CH11	INSCH11	InsertOut-CH11	S1-5	Slot1 CH5 IN
INSCH12	InsertOut-CH12	INSCH12	InsertOut-CH12	S1-6	Slot1 CH6 IN
INSCH13	InsertOut-CH13	INSCH13	InsertOut-CH13	S1-7	Slot1 CH7 IN
INSCH14	InsertOut-CH14	INSCH14	InsertOut-CH14	S1-8	Slot1 CH8 IN
INSCH15	InsertOut-CH15	INSCH15	InsertOut-CH15	S1-9	Slot1 CH9 IN
INSCH16	InsertOut-CH16	INSCH16	InsertOut-CH16	S1-10	Slot1 CH10 IN
INSCH17	InsertOut-CH17	INSCH17	InsertOut-CH17	S1-11	Slot1 CH11 IN
INSCH18	InsertOut-CH18	INSCH18	InsertOut-CH18	S1-12	Slot1 CH12 IN
INSCH19	InsertOut-CH19	INSCH19	InsertOut-CH19	S1-13	Slot1 CH13 IN
INSCH20	InsertOut-CH20	INSCH20	InsertOut-CH20	S1-14	Slot1 CH14 IN
INSCH21	InsertOut-CH21	INSCH21	InsertOut-CH21	S1-15	Slot1 CH15 IN
INSCH22	InsertOut-CH22	INSCH22	InsertOut-CH22	S1-16	Slot1 CH16 IN
INSCH23	InsertOut-CH23	INSCH23	InsertOut-CH23	S2-1	Slot2 CH1 IN
INSCH24	InsertOut-CH24	INSCH24	InsertOut-CH24	S2-2	Slot2 CH2 IN
INSCH25	InsertOut-CH25	INSCH25	InsertOut-CH25	S2-3	Slot2 CH3 IN
INSCH26	InsertOut-CH26	INSCH26	InsertOut-CH26	S2-4	Slot2 CH4 IN
INSCH27	InsertOut-CH27	INSCH27	InsertOut-CH27	S2-5	Slot2 CH5 IN

Slot Outputs		Omni Outs		Output Channel Insert Ins	
Source	Description	Source	Description	Source	Description
INSCH28	InsertOut-CH28	INSCH28	InsertOut-CH28	S2-6	Slot2 CH6 IN
INSCH29	InsertOut-CH29	INSCH29	InsertOut-CH29	S2-7	Slot2 CH7 IN
INSCH30	InsertOut-CH30	INSCH30	InsertOut-CH30	S2-8	Slot2 CH8 IN
INSCH31	InsertOut-CH31	INSCH31	InsertOut-CH31	S2-9	Slot2 CH9 IN
INSCH32	InsertOut-CH32	INSCH32	InsertOut-CH32	S2-10	Slot2 CH10 IN
INSCH33	InsertOut-CH33	INSCH33	InsertOut-CH33	S2-11	Slot2 CH11 IN
INSCH34	InsertOut-CH34	INSCH34	InsertOut-CH34	S2-12	Slot2 CH12 IN
INSCH35	InsertOut-CH35	INSCH35	InsertOut-CH35	S2-13	Slot2 CH13 IN
INSCH36	InsertOut-CH36	INSCH36	InsertOut-CH36	S2-14	Slot2 CH14 IN
INSCH37	InsertOut-CH37	INSCH37	InsertOut-CH37	S2-15	Slot2 CH15 IN
INSCH38	InsertOut-CH38	INSCH38	InsertOut-CH38	S2-16	Slot2 CH16 IN
INSCH39	InsertOut-CH39	INSCH39	InsertOut-CH39	S3-1	Slot3 CH1 IN
INSCH40	InsertOut-CH40	INSCH40	InsertOut-CH40	S3-2	Slot3 CH2 IN
INSCH41	InsertOut-CH41	INSCH41	InsertOut-CH41	S3-3	Slot3 CH3 IN
INSCH42	InsertOut-CH42	INSCH42	InsertOut-CH42	S3-4	Slot3 CH4 IN
INSCH43	InsertOut-CH43	INSCH43	InsertOut-CH43	S3-5	Slot3 CH5 IN
INSCH44	InsertOut-CH44	INSCH44	InsertOut-CH44	S3-6	Slot3 CH6 IN
INSCH45	InsertOut-CH45	INSCH45	InsertOut-CH45	S3-7	Slot3 CH7 IN
INSCH46	InsertOut-CH46	INSCH46	InsertOut-CH46	S3-8	Slot3 CH8 IN
INSCH47	InsertOut-CH47	INSCH47	InsertOut-CH47	S3-9	Slot3 CH9 IN
INSCH48	InsertOut-CH48	INSCH48	InsertOut-CH48	S3-10	Slot3 CH10 IN
INSCH49	InsertOut-CH49	INSCH49	InsertOut-CH49	S3-11	Slot3 CH11 IN
INSCH50	InsertOut-CH50	INSCH50	InsertOut-CH50	S3-12	Slot3 CH12 IN
INSCH51	InsertOut-CH51	INSCH51	InsertOut-CH51	S3-13	Slot3 CH13 IN
INSCH52	InsertOut-CH52	INSCH52	InsertOut-CH52	S3-14	Slot3 CH14 IN
INSCH53	InsertOut-CH53	INSCH53	InsertOut-CH53	S3-15	Slot3 CH15 IN
INSCH54	InsertOut-CH54	INSCH54	InsertOut-CH54	S3-16	Slot3 CH16 IN
INSCH55	InsertOut-CH55	INSCH55	InsertOut-CH55	S4-1	Slot4 CH1 IN
INSCH56	InsertOut-CH56	INSCH56	InsertOut-CH56	S4-2	Slot4 CH2 IN
INSBUS1	InsertOut-BUS1	INSBUS1	InsertOut-BUS1	S4-3	Slot4 CH3 IN
INSBUS2	InsertOut-BUS2	INSBUS2	InsertOut-BUS2	S4-4	Slot4 CH4 IN
INSBUS3	InsertOut-BUS3	INSBUS3	InsertOut-BUS3	S4-5	Slot4 CH5 IN
INSBUS4	InsertOut-BUS4	INSBUS4	InsertOut-BUS4	S4-6	Slot4 CH6 IN
INSBUS5	InsertOut-BUS5	INSBUS5	InsertOut-BUS5	S4-7	Slot4 CH7 IN
INSBUS6	InsertOut-BUS6	INSBUS6	InsertOut-BUS6	S4-8	Slot4 CH8 IN
INSBUS7	InsertOut-BUS7	INSBUS7	InsertOut-BUS7	S4-9	Slot4 CH9 IN
INSBUS8	InsertOut-BUS8	INSBUS8	InsertOut-BUS8	S4-10	Slot4 CH10 IN
INSAUX1	InsertOut-AUX1	INSAUX1	InsertOut-AUX1	S4-11	Slot4 CH11 IN
INSAUX2	InsertOut-AUX2	INSAUX2	InsertOut-AUX2	S4-12	Slot4 CH12 IN
INSAUX3	InsertOut-AUX3	INSAUX3	InsertOut-AUX3	S4-13	Slot4 CH13 IN
INSAUX4	InsertOut-AUX4	INSAUX4	InsertOut-AUX4	S4-14	Slot4 CH14 IN
INSAUX5	InsertOut-AUX5	INSAUX5	InsertOut-AUX5	S4-15	Slot4 CH15 IN
INSAUX6	InsertOut-AUX6	INSAUX6	InsertOut-AUX6	S4-16	Slot4 CH16 IN
INSAUX7	InsertOut-AUX7	INSAUX7	InsertOut-AUX7	FX1-1	Effect1 OUT 1
INSAUX8	InsertOut-AUX8	INSAUX8	InsertOut-AUX8	FX1-2	Effect1 OUT 2
INSSTL	InsertOut-STL	INSSTL	InsertOut-STL	FX1-3	Effect1 OUT 3
INSSTR	InsertOut-STR	INSSTR	InsertOut-STR	FX1-4	Effect1 OUT 4
Surr L	Surround Monitor L	Surr L	Surround Monitor L	FX1-5	Effect1 OUT 5
Surr R	Surround Monitor R	Surr R	Surround Monitor R	FX1-6	Effect1 OUT 6
Surr Ls	Surround Monitor Ls	Surr Ls	Surround Monitor Ls	FX1-7	Effect1 OUT 7
Surr Rs	Surround Monitor Rs	Surr Rs	Surround Monitor Rs	FX1-8	Effect1 OUT 8
Surr C	Surround Monitor C	Surr C	Surround Monitor C	FX2-1	Effect2 OUT 1
Surr LFE	Surround Monitor LFE	Surr LFE	Surround Monitor LFE	FX2-2	Effect2 OUT 2

Slot Outputs		Omni Outs		Output Channel Insert Ins	
Source	**Description**	**Source**	**Description**	**Source**	**Description**
Surr Ls2	Surround Monitor Ls2	Surr Ls2	Surround Monitor Ls2	FX3-1	Effect3 OUT 1
Surr Rs2	Surround Monitor Rs2	Surr Rs2	Surround Monitor Rs2	FX3-2	Effect3 OUT 2
				FX4-1	Effect4 OUT 1
				FX4-2	Effect4 OUT 2
				2TD1L	2TR IN Dig.1 L
				2TD1R	2TR IN Dig.1 R
				2TD2L	2TR IN Dig.2 L
				2TD2R	2TR IN Dig.2 R
				2TD3L	2TR IN Dig.3 L
				2TD3R	2TR IN Dig.3 R
				2TA1L	2TR IN Analog1 L
				2TA1R	2TR IN Analog1 R
				2TA2L	2TR IN Analog2 L
				2TA2R	2TR IN Analog2 R

Output Patch Table 2

Direct Outs		2TR Digital Outs	
Source	Description	Source	Description
NONE	NONE	NONE	NONE
S1-1	Slot1 CH1 OUT	BUS1	BUS1
S1-2	Slot1 CH2 OUT	BUS2	BUS2
S1-3	Slot1 CH3 OUT	BUS3	BUS3
S1-4	Slot1 CH4 OUT	BUS4	BUS4
S1-5	Slot1 CH5 OUT	BUS5	BUS5
S1-6	Slot1 CH6 OUT	BUS6	BUS6
S1-7	Slot1 CH7 OUT	BUS7	BUS7
S1-8	Slot1 CH8 OUT	BUS8	BUS8
S1-9	Slot1 CH9 OUT	AUX1	AUX1
S1-10	Slot1 CH10 OUT	AUX2	AUX2
S1-11	Slot1 CH11 OUT	AUX3	AUX3
S1-12	Slot1 CH12 OUT	AUX4	AUX4
S1-13	Slot1 CH13 OUT	AUX5	AUX5
S1-14	Slot1 CH14 OUT	AUX6	AUX6
S1-15	Slot1 CH15 OUT	AUX7	AUX7
S1-16	Slot1 CH16 OUT	AUX8	AUX8
S2-1	Slot2 CH1 OUT	STEREO-L	STEREO L
S2-2	Slot2 CH2 OUT	STEREO-R	STEREO R
S2-3	Slot2 CH3 OUT	INSCH1	InsertOut-CH1
S2-4	Slot2 CH4 OUT	INSCH2	InsertOut-CH2
S2-5	Slot2 CH5 OUT	INSCH3	InsertOut-CH3
S2-6	Slot2 CH6 OUT	INSCH4	InsertOut-CH4
S2-7	Slot2 CH7 OUT	INSCH5	InsertOut-CH5
S2-8	Slot2 CH8 OUT	INSCH6	InsertOut-CH6
S2-9	Slot2 CH9 OUT	INSCH7	InsertOut-CH7
S2-10	Slot2 CH10 OUT	INSCH8	InsertOut-CH8
S2-11	Slot2 CH11 OUT	INSCH9	InsertOut-CH9
S2-12	Slot2 CH12 OUT	INSCH10	InsertOut-CH10
S2-13	Slot2 CH13 OUT	INSCH11	InsertOut-CH11
S2-14	Slot2 CH14 OUT	INSCH12	InsertOut-CH12
S2-15	Slot2 CH15 OUT	INSCH13	InsertOut-CH13
S2-16	Slot2 CH16 OUT	INSCH14	InsertOut-CH14
S3-1	Slot3 CH1 OUT	INSCH15	InsertOut-CH15
S3-2	Slot3 CH2 OUT	INSCH16	InsertOut-CH16
S3-3	Slot3 CH3 OUT	INSCH17	InsertOut-CH17
S3-4	Slot3 CH4 OUT	INSCH18	InsertOut-CH18
S3-5	Slot3 CH5 OUT	INSCH19	InsertOut-CH19
S3-6	Slot3 CH6 OUT	INSCH20	InsertOut-CH20
S3-7	Slot3 CH7 OUT	INSCH21	InsertOut-CH21
S3-8	Slot3 CH8 OUT	INSCH22	InsertOut-CH22
S3-9	Slot3 CH9 OUT	INSCH23	InsertOut-CH23
S3-10	Slot3 CH10 OUT	INSCH24	InsertOut-CH24
S3-11	Slot3 CH11 OUT	INSCH25	InsertOut-CH25
S3-12	Slot3 CH12 OUT	INSCH26	InsertOut-CH26
S3-13	Slot3 CH13 OUT	INSCH27	InsertOut-CH27
S3-14	Slot3 CH14 OUT	INSCH28	InsertOut-CH28
S3-15	Slot3 CH15 OUT	INSCH29	InsertOut-CH29
S3-16	Slot3 CH16 OUT	INSCH30	InsertOut-CH30
S4-1	Slot4 CH1 OUT	INSCH31	InsertOut-CH31
S4-2	Slot4 CH2 OUT	INSCH32	InsertOut-CH32
S4-3	Slot4 CH3 OUT	INSCH33	InsertOut-CH33
S4-4	Slot4 CH4 OUT	INSCH34	InsertOut-CH34
S4-5	Slot4 CH5 OUT	INSCH35	InsertOut-CH35
S4-6	Slot4 CH6 OUT	INSCH36	InsertOut-CH36
S4-7	Slot4 CH7 OUT	INSCH37	InsertOut-CH37
S4-8	Slot4 CH8 OUT	INSCH38	InsertOut-CH38
S4-9	Slot4 CH9 OUT	INSCH39	InsertOut-CH39
S4-10	Slot4 CH10 OUT	INSCH40	InsertOut-CH40
S4-11	Slot4 CH11 OUT	INSCH41	InsertOut-CH41
S4-12	Slot4 CH12 OUT	INSCH42	InsertOut-CH42
S4-13	Slot4 CH13 OUT	INSCH43	InsertOut-CH43
S4-14	Slot4 CH14 OUT	INSCH44	InsertOut-CH44
S4-15	Slot4 CH15 OUT	INSCH45	InsertOut-CH45
S4-16	Slot4 CH16 OUT	INSCH46	InsertOut-CH46
OMNI1	OMNI OUT 1	INSCH47	InsertOut-CH47
OMNI2	OMNI OUT 2	INSCH48	InsertOut-CH48
OMNI3	OMNI OUT 3	INSCH49	InsertOut-CH49
OMNI4	OMNI OUT 4	INSCH50	InsertOut-CH50
OMNI5	OMNI OUT 5	INSCH51	InsertOut-CH51
OMNI6	OMNI OUT 6	INSCH52	InsertOut-CH52
OMNI7	OMNI OUT 7	INSCH53	InsertOut-CH53
OMNI8	OMNI OUT 8	INSCH54	InsertOut-CH54
2TD1L	2TR OUT Dig.1 L	INSCH55	InsertOut-CH55
2TD1R	2TR OUT Dig.1 R	INSCH56	InsertOut-CH56
2TD2L	2TR OUT Dig.2 L	INSBUS1	InsertOut-BUS1
2TD2R	2TR OUT Dig.2 R	INSBUS2	InsertOut-BUS2
2TD3L	2TR OUT Dig.3 L	INSBUS3	InsertOut-BUS3
2TD3R	2TR OUT Dig.3 R	INSBUS4	InsertOut-BUS4
		INSBUS5	InsertOut-BUS5
		INSBUS6	InsertOut-BUS6
		INSBUS7	InsertOut-BUS7
		INSBUS8	InsertOut-BUS8
		INSAUX1	InsertOut-AUX1
		INSAUX2	InsertOut-AUX2
		INSAUX3	InsertOut-AUX3
		INSAUX4	InsertOut-AUX4
		INSAUX5	InsertOut-AUX5
		INSAUX6	InsertOut-AUX6
		INSAUX7	InsertOut-AUX7
		INSAUX8	InsertOut-AUX8
		INSSTL	InsertOut-STL
		INSSTR	InsertOut-STR
		CR-L	Control Room L
		CR-R	Control Room R

Initial Output Patch Settings

Slot Outputs

#	Source	#	Source
SLOT1-01	BUS1	SLOT3-01	BUS1
SLOT1-02	BUS2	SLOT3-02	BUS2
SLOT1-03	BUS3	SLOT3-03	BUS3
SLOT1-04	BUS4	SLOT3-04	BUS4
SLOT1-05	BUS5	SLOT3-05	BUS5
SLOT1-06	BUS6	SLOT3-06	BUS6
SLOT1-07	BUS7	SLOT3-07	BUS7
SLOT1-08	BUS8	SLOT3-08	BUS8
SLOT1-09	BUS1	SLOT3-09	BUS1
SLOT1-10	BUS2	SLOT3-10	BUS2
SLOT1-11	BUS3	SLOT3-11	BUS3
SLOT1-12	BUS4	SLOT3-12	BUS4
SLOT1-13	BUS5	SLOT3-13	BUS5
SLOT1-14	BUS6	SLOT3-14	BUS6
SLOT1-15	BUS7	SLOT3-15	BUS7
SLOT1-16	BUS8	SLOT3-16	BUS8
SLOT2-01	BUS1	SLOT4-01	BUS1
SLOT2-02	BUS2	SLOT4-02	BUS2
SLOT2-03	BUS3	SLOT4-03	BUS3
SLOT2-04	BUS4	SLOT4-04	BUS4
SLOT2-05	BUS5	SLOT4-05	BUS5
SLOT2-06	BUS6	SLOT4-06	BUS6
SLOT2-07	BUS7	SLOT4-07	BUS7
SLOT2-08	BUS8	SLOT4-08	BUS8
SLOT2-09	BUS1	SLOT4-09	BUS1
SLOT2-10	BUS2	SLOT4-10	BUS2
SLOT2-11	BUS3	SLOT4-11	BUS3
SLOT2-12	BUS4	SLOT4-12	BUS4
SLOT2-13	BUS5	SLOT4-13	BUS5
SLOT2-14	BUS6	SLOT4-14	BUS6
SLOT2-15	BUS7	SLOT4-15	BUS7
SLOT2-16	BUS8	SLOT4-16	BUS8

Omni Outs

#	Source
1	AUX1
2	AUX2
3	AUX3
4	AUX4
5	AUX5
6	AUX6
7	AUX7
8	AUX8

Direct Outs

#	Destination	#	Destination
1	SLOT1-01	29	SLOT4-05
2	SLOT1-02	30	SLOT4-06
3	SLOT1-03	31	SLOT4-07
4	SLOT1-04	32	SLOT4-08
5	SLOT1-05	33	NONE
6	SLOT1-06	34	NONE
7	SLOT1-07	35	NONE
8	SLOT1-08	36	NONE
9	SLOT2-01	37	NONE
10	SLOT2-02	38	NONE
11	SLOT2-03	39	NONE
12	SLOT2-04	40	NONE
13	SLOT2-05	41	NONE
14	SLOT2-06	42	NONE
15	SLOT2-07	43	NONE
16	SLOT2-08	44	NONE
17	SLOT3-01	45	NONE
18	SLOT3-02	46	NONE
19	SLOT3-03	47	NONE
20	SLOT3-04	48	NONE
21	SLOT3-05	49	NONE
22	SLOT3-06	50	NONE
23	SLOT3-07	51	NONE
24	SLOT3-08	52	NONE
25	SLOT4-01	53	NONE
26	SLOT4-02	54	NONE
27	SLOT4-03	55	NONE
28	SLOT4-04	56	NONE

Initial Input Channel Names

Input Channel ID	Short Name	Long Name
CH01	CH01	CH01
CH02	CH02	CH02
CH03	CH03	CH03
CH04	CH04	CH04
CH05	CH05	CH05
CH06	CH06	CH06
CH07	CH07	CH07
CH08	CH08	CH08
CH09	CH09	CH09
CH10	CH10	CH10
CH11	CH11	CH11
CH12	CH12	CH12
CH13	CH13	CH13
CH14	CH14	CH14
CH15	CH15	CH15
CH16	CH16	CH16
CH17	CH17	CH17
CH18	CH18	CH18
CH19	CH19	CH19
CH20	CH20	CH20
CH21	CH21	CH21
CH22	CH22	CH22
CH23	CH23	CH23
CH24	CH24	CH24
CH25	CH25	CH25
CH26	CH26	CH26
CH27	CH27	CH27
CH28	CH28	CH28
CH29	CH29	CH29
CH30	CH30	CH30
CH31	CH31	CH31
CH32	CH32	CH32
CH33	CH33	CH33
CH34	CH34	CH34
CH35	CH35	CH35
CH36	CH36	CH36
CH37	CH37	CH37
CH38	CH38	CH38
CH39	CH39	CH39
CH40	CH40	CH40
CH41	CH41	CH41
CH42	CH42	CH42
CH43	CH43	CH43
CH44	CH44	CH44
CH45	CH45	CH45
CH46	CH46	CH46
CH47	CH47	CH47
CH48	CH48	CH48
CH49	CH49	CH49
CH50	CH50	CH50
CH51	CH51	CH51
CH52	CH52	CH52
CH53	CH53	CH53
CH54	CH54	CH54
CH55	CH55	CH55
CH56	CH56	CH56

Initial Output Channel Names

Output Channel ID	Short Name	Long Name
BUS1	BUS1	BUS1
BUS2	BUS2	BUS2
BUS3	BUS3	BUS3
BUS4	BUS4	BUS4
BUS5	BUS5	BUS5
BUS6	BUS6	BUS6
BUS7	BUS7	BUS7
BUS8	BUS8	BUS8
AUX1	AUX1	AUX1
AUX2	AUX2	AUX2
AUX3	AUX3	AUX3
AUX4	AUX4	AUX4
AUX5	AUX5	AUX5
AUX6	AUX6	AUX6
AUX7	AUX7	AUX7
AUX8	AUX8	AUX8
ST	ST	STEREO

Initial Input Port Names

Port	PORT ID	Short Name	Long Name
AD1	AD01	AD01	AD IN 1
AD2	AD02	AD02	AD IN 2
AD3	AD03	AD03	AD IN 3
AD4	AD04	AD04	AD IN 4
AD5	AD05	AD05	AD IN 5
AD6	AD06	AD06	AD IN 6
AD7	AD07	AD07	AD IN 7
AD8	AD08	AD08	AD IN 8
AD9	AD09	AD09	AD IN 9
AD10	AD10	AD10	AD IN 10
AD11	AD11	AD11	AD IN 11
AD12	AD12	AD12	AD IN 12
AD13	AD13	AD13	AD IN 13
AD14	AD14	AD14	AD IN 14
AD15	AD15	AD15	AD IN 15
AD16	AD16	AD16	AD IN 16
AD17	AD17	AD17	AD IN 17
AD18	AD18	AD18	AD IN 18
AD19	AD19	AD19	AD IN 19
AD20	AD20	AD20	AD IN 20
AD21	AD21	AD21	AD IN 21
AD22	AD22	AD22	AD IN 22
AD23	AD23	AD23	AD IN 23
AD24	AD24	AD24	AD IN 24
SLOT1-01	S1-1	S1-1	Slot1 CH1 IN
SLOT1-02	S1-2	S1-2	Slot1 CH2 IN
SLOT1-03	S1-3	S1-3	Slot1 CH3 IN
SLOT1-04	S1-4	S1-4	Slot1 CH4 IN
SLOT1-05	S1-5	S1-5	Slot1 CH5 IN
SLOT1-06	S1-6	S1-6	Slot1 CH6 IN
SLOT1-07	S1-7	S1-7	Slot1 CH7 IN
SLOT1-08	S1-8	S1-8	Slot1 CH8 IN
SLOT1-09	S1-9	S1-9	Slot1 CH9 IN
SLOT1-10	S110	S110	Slot1 CH10 IN
SLOT1-11	S111	S111	Slot1 CH11 IN
SLOT1-12	S112	S112	Slot1 CH12 IN
SLOT1-13	S113	S113	Slot1 CH13 IN
SLOT1-14	S114	S114	Slot1 CH14 IN
SLOT1-15	S115	S115	Slot1 CH15 IN
SLOT1-16	S116	S116	Slot1 CH16 IN
SLOT2-01	S2-1	S2-1	Slot2 CH1 IN
SLOT2-02	S2-2	S2-2	Slot2 CH2 IN
SLOT2-03	S2-3	S2-3	Slot2 CH3 IN
SLOT2-04	S2-4	S2-4	Slot2 CH4 IN
SLOT2-05	S2-5	S2-5	Slot2 CH5 IN
SLOT2-06	S2-6	S2-6	Slot2 CH6 IN
SLOT2-07	S2-7	S2-7	Slot2 CH7 IN
SLOT2-08	S2-8	S2-8	Slot2 CH8 IN
SLOT2-09	S2-9	S2-9	Slot2 CH9 IN
SLOT2-10	S210	S210	Slot2 CH10 IN
SLOT2-11	S211	S211	Slot2 CH11 IN
SLOT2-12	S212	S212	Slot2 CH12 IN

Port	PORT ID	Short Name	Long Name
SLOT2-13	S213	S213	Slot2 CH13 IN
SLOT2-14	S214	S214	Slot2 CH14 IN
SLOT2-15	S215	S215	Slot2 CH15 IN
SLOT2-16	S216	S216	Slot2 CH16 IN
SLOT3-01	S3-1	S3-1	Slot3 CH1 IN
SLOT3-02	S3-2	S3-2	Slot3 CH2 IN
SLOT3-03	S3-3	S3-3	Slot3 CH3 IN
SLOT3-04	S3-4	S3-4	Slot3 CH4 IN
SLOT3-05	S3-5	S3-5	Slot3 CH5 IN
SLOT3-06	S3-6	S3-6	Slot3 CH6 IN
SLOT3-07	S3-7	S3-7	Slot3 CH7 IN
SLOT3-08	S3-8	S3-8	Slot3 CH8 IN
SLOT3-09	S3-9	S3-9	Slot3 CH9 IN
SLOT3-10	S310	S310	Slot3 CH10 IN
SLOT3-11	S311	S311	Slot3 CH11 IN
SLOT3-12	S312	S312	Slot3 CH12 IN
SLOT3-13	S313	S313	Slot3 CH13 IN
SLOT3-14	S314	S314	Slot3 CH14 IN
SLOT3-15	S315	S315	Slot3 CH15 IN
SLOT3-16	S316	S316	Slot3 CH16 IN
SLOT4-01	S4-1	S4-1	Slot4 CH1 IN
SLOT4-02	S4-2	S4-2	Slot4 CH2 IN
SLOT4-03	S4-3	S4-3	Slot4 CH3 IN
SLOT4-04	S4-4	S4-4	Slot4 CH4 IN
SLOT4-05	S4-5	S4-5	Slot4 CH5 IN
SLOT4-06	S4-6	S4-6	Slot4 CH6 IN
SLOT4-07	S4-7	S4-7	Slot4 CH7 IN
SLOT4-08	S4-8	S4-8	Slot4 CH8 IN
SLOT4-09	S4-9	S4-9	Slot4 CH9 IN
SLOT4-10	S410	S410	Slot4 CH10 IN
SLOT4-11	S411	S411	Slot4 CH11 IN
SLOT4-12	S412	S412	Slot4 CH12 IN
SLOT4-13	S413	S413	Slot4 CH13 IN
SLOT4-14	S414	S414	Slot4 CH14 IN
SLOT4-15	S415	S415	Slot4 CH15 IN
SLOT4-16	S416	S416	Slot4 CH16 IN
2TD1L	2TD1L	2D1L	2TR IN Dig.1 L
2TD1R	2TD1R	2D1R	2TR IN Dig.1 R
2TD2L	2TD2L	2D2L	2TR IN Dig.2 L
2TD2R	2TD2R	2D2R	2TR IN Dig.2 R
2TD3L	2TD3L	2D3L	2TR IN Dig.3 L
2TD3R	2TD3R	2D3R	2TR IN Dig.3 R
2TA1L	2TA1L	2A1L	2TR IN Analog1 L
2TA1R	2TA1R	2A1R	2TR IN Analog1 R
2TA2L	2TA2L	2A2L	2TR IN Analog2 L
2TA2R	2TA2R	2A2R	2TR IN Analog2 R

Initial Output Port Names

Port	Port ID	Short Name	Long Name
SLOT1-01	S1-1	S1-1	Slot1 CH1 OUT
SLOT1-02	S1-2	S1-2	Slot1 CH2 OUT
SLOT1-03	S1-3	S1-3	Slot1 CH3 OUT
SLOT1-04	S1-4	S1-4	Slot1 CH4 OUT
SLOT1-05	S1-5	S1-5	Slot1 CH5 OUT
SLOT1-06	S1-6	S1-6	Slot1 CH6 OUT
SLOT1-07	S1-7	S1-7	Slot1 CH7 OUT
SLOT1-08	S1-8	S1-8	Slot1 CH8 OUT
SLOT1-09	S1-9	S1-9	Slot1 CH9 OUT
SLOT1-10	S110	S110	Slot1 CH10 OUT
SLOT1-11	S111	S111	Slot1 CH11 OUT
SLOT1-12	S112	S112	Slot1 CH12 OUT
SLOT1-13	S113	S113	Slot1 CH13 OUT
SLOT1-14	S114	S114	Slot1 CH14 OUT
SLOT1-15	S115	S115	Slot1 CH15 OUT
SLOT1-16	S116	S116	Slot1 CH16 OUT
SLOT2-01	S2-1	S2-1	Slot2 CH1 OUT
SLOT2-02	S2-2	S2-2	Slot2 CH2 OUT
SLOT2-03	S2-3	S2-3	Slot2 CH3 OUT
SLOT2-04	S2-4	S2-4	Slot2 CH4 OUT
SLOT2-05	S2-5	S2-5	Slot2 CH5 OUT
SLOT2-06	S2-6	S2-6	Slot2 CH6 OUT
SLOT2-07	S2-7	S2-7	Slot2 CH7 OUT
SLOT2-08	S2-8	S2-8	Slot2 CH8 OUT
SLOT2-09	S2-9	S2-9	Slot2 CH9 OUT
SLOT2-10	S210	S210	Slot2 CH10 OUT
SLOT2-11	S211	S211	Slot2 CH11 OUT
SLOT2-12	S212	S212	Slot2 CH12 OUT
SLOT2-13	S213	S213	Slot2 CH13 OUT
SLOT2-14	S214	S214	Slot2 CH14 OUT
SLOT2-15	S215	S215	Slot2 CH15 OUT
SLOT2-16	S216	S216	Slot2 CH16 OUT
SLOT3-01	S3-1	S3-1	Slot3 CH1 OUT
SLOT3-02	S3-2	S3-2	Slot3 CH2 OUT
SLOT3-03	S3-3	S3-3	Slot3 CH3 OUT
SLOT3-04	S3-4	S3-4	Slot3 CH4 OUT
SLOT3-05	S3-5	S3-5	Slot3 CH5 OUT
SLOT3-06	S3-6	S3-6	Slot3 CH6 OUT
SLOT3-07	S3-7	S3-7	Slot3 CH7 OUT
SLOT3-08	S3-8	S3-8	Slot3 CH8 OUT
SLOT3-09	S3-9	S3-9	Slot3 CH9 OUT
SLOT3-10	S310	S310	Slot3 CH10 OUT
SLOT3-11	S311	S311	Slot3 CH11 OUT
SLOT3-12	S312	S312	Slot3 CH12 OUT
SLOT3-13	S313	S313	Slot3 CH13 OUT
SLOT3-14	S314	S314	Slot3 CH14 OUT
SLOT3-15	S315	S315	Slot3 CH15 OUT
SLOT3-16	S316	S316	Slot3 CH16 OUT
SLOT4-01	S4-1	S4-1	Slot4 CH1 OUT
SLOT4-02	S4-2	S4-2	Slot4 CH2 OUT
SLOT4-03	S4-3	S4-3	Slot4 CH3 OUT
SLOT4-04	S4-4	S4-4	Slot4 CH4 OUT
SLOT4-05	S4-5	S4-5	Slot4 CH5 OUT
SLOT4-06	S4-6	S4-6	Slot4 CH6 OUT
SLOT4-07	S4-7	S4-7	Slot4 CH7 OUT
SLOT4-08	S4-8	S4-8	Slot4 CH8 OUT
SLOT4-09	S4-9	S4-9	Slot4 CH9 OUT
SLOT4-10	S410	S410	Slot4 CH10 OUT
SLOT4-11	S411	S411	Slot4 CH11 OUT
SLOT4-12	S412	S412	Slot4 CH12 OUT
SLOT4-13	S413	S413	Slot4 CH13 OUT
SLOT4-14	S414	S414	Slot4 CH14 OUT
SLOT4-15	S415	S415	Slot4 CH15 OUT
SLOT4-16	S416	S416	Slot4 CH16 OUT
OMNI1	OMNI1	OMN1	OMNI OUT 1
OMNI2	OMNI2	OMN2	OMNI OUT 2
OMNI3	OMNI3	OMN3	OMNI OUT 3
OMNI4	OMNI4	OMN4	OMNI OUT 4
OMNI5	OMNI5	OMN5	OMNI OUT 5
OMNI6	OMNI6	OMN6	OMNI OUT 6
OMNI7	OMNI7	OMN7	OMNI OUT 7
OMNI8	OMNI8	OMN8	OMNI OUT 8
2TD1L	2TD1L	2D1L	2TR OUT Dig. 1L
2TD1R	2TD1R	2D1R	2TR OUT Dig. 1R
2TD2L	2TD2L	2D2L	2TR OUT Dig. 2L
2TD2R	2TD2R	2D2R	2TR OUT Dig. 2R
2TD3L	2TD3L	2D3L	2TR OUT Dig. 3L
2TD3R	2TD3R	2D3R	2TR OUT Dig. 3R

GPI Trigger Source & Target List

INPUT

#	Target
0	NO ASSIGN
1	TALKBACK
2	SLATE
3	DIMMER
4	MONO
5	SMALL
6	SR BUS
7	SR ASSIGN1
8	SR ASSIGN2
9	CR STEREO
10	CR 2TRD1
11	CR 2TRD2
12	CR 2TRD3
13	CR 2TRA1
14	CR 2TRA2
15	CR ASSIGN1
16	CR ASSIGN2
17	SM C-R
18	SM STEREO
19	SM AUX11
20	SM AUX12
21	TALKBACK UNLATCH
22	SLATE UNLATCH
23	DIMMER UNLATCH
24	MONO UNLATCH
25	SMALL UNLATCH
26	SR BUS UNLATCH
27	SR ASGN1 UNLATCH
28	SR ASGN2 UNLATCH
29	CR ST UNLATCH
30	CR 2TRD1 UNLATCH
31	CR 2TRD2 UNLATCH
32	CR 2TRD3 UNLATCH
33	CR 2TRA1 UNLATCH
34	CR 2TRA2 UNLATCH
35	CR ASGN1 UNLATCH
36	CR ASGN2 UNLATCH
37	SD C-R UNLATCH
38	SD ST UNLATCH
39	SD AUX11 UNLATCH
40	SD AUX12 UNLATCH
41	CH1 ON
42	CH2 ON
43	CH3 ON
44	CH4 ON
45	CH5 ON
46	CH6 ON
47	CH7 ON
48	CH8 ON
49	CH9 ON
50	CH10 ON

#	Target
51	CH11 ON
52	CH12 ON
53	CH13 ON
54	CH14 ON
55	CH15 ON
56	CH16 ON
57	CH17 ON
58	CH18 ON
59	CH19 ON
60	CH20 ON
61	CH21 ON
62	CH22 ON
63	CH23 ON
64	CH24 ON
65	CH25 ON
66	CH26 ON
67	CH27 ON
68	CH28 ON
69	CH29 ON
70	CH30 ON
71	CH31 ON
72	CH32 ON
73	CH33 ON
74	CH34 ON
75	CH35 ON
76	CH36 ON
77	CH37 ON
78	CH38 ON
79	CH39 ON
80	CH40 ON
81	CH41 ON
82	CH42 ON
83	CH43 ON
84	CH44 ON
85	CH45 ON
86	CH46 ON
87	CH47 ON
88	CH48 ON
89	CH49 ON
90	CH50 ON
91	CH51 ON
92	CH52 ON
93	CH53 ON
94	CH54 ON
95	CH55 ON
96	CH56 ON
97	AUX1 ON
98	AUX2 ON
99	AUX3 ON
100	AUX4 ON
101	AUX5 ON

#	Target
102	AUX6 ON
103	AUX7 ON
104	AUX8 ON
105	STEREO ON
106	CH1 ON UNLATCH
107	CH2 ON UNLATCH
108	CH3 ON UNLATCH
109	CH4 ON UNLATCH
110	CH5 ON UNLATCH
111	CH6 ON UNLATCH
112	CH7 ON UNLATCH
113	CH8 ON UNLATCH
114	CH9 ON UNLATCH
115	CH10 ON UNLATCH
116	CH11 ON UNLATCH
117	CH12 ON UNLATCH
118	CH13 ON UNLATCH
119	CH14 ON UNLATCH
120	CH15 ON UNLATCH
121	CH16 ON UNLATCH
122	CH17 ON UNLATCH
123	CH18 ON UNLATCH
124	CH19 ON UNLATCH
125	CH20 ON UNLATCH
126	CH21 ON UNLATCH
127	CH22 ON UNLATCH
128	CH23 ON UNLATCH
129	CH24 ON UNLATCH
130	CH25 ON UNLATCH
131	CH26 ON UNLATCH
132	CH27 ON UNLATCH
133	CH28 ON UNLATCH
134	CH29 ON UNLATCH
135	CH30 ON UNLATCH
136	CH31 ON UNLATCH
137	CH32 ON UNLATCH
138	CH33 ON UNLATCH
139	CH34 ON UNLATCH
140	CH35 ON UNLATCH
141	CH36 ON UNLATCH
142	CH37 ON UNLATCH
143	CH38 ON UNLATCH
144	CH39 ON UNLATCH
145	CH40 ON UNLATCH
146	CH41 ON UNLATCH
147	CH42 ON UNLATCH
148	CH43 ON UNLATCH
149	CH44 ON UNLATCH
150	CH45 ON UNLATCH
151	CH46 ON UNLATCH
152	CH47 ON UNLATCH

#	Target
153	CH48 ON UNLATCH
154	CH49 ON UNLATCH
155	CH50 ON UNLATCH
156	CH51 ON UNLATCH
157	CH52 ON UNLATCH
158	CH53 ON UNLATCH
159	CH54 ON UNLATCH
160	CH55 ON UNLATCH
161	CH56 ON UNLATCH
162	BUS1 ON UNLATCH
163	BUS2 ON UNLATCH
164	BUS3 ON UNLATCH
165	BUS4 ON UNLATCH
166	BUS5 ON UNLATCH
167	BUS6 ON UNLATCH
168	BUS7 ON UNLATCH
169	BUS8 ON UNLATCH
170	AUX1 ON UNLATCH
171	AUX2 ON UNLATCH
172	AUX3 ON UNLATCH
173	AUX4 ON UNLATCH
174	AUX5 ON UNLATCH
175	AUX6 ON UNLATCH
176	AUX7 ON UNLATCH
177	AUX8 ON UNLATCH
178	ST ON UNLATCH
179	UDEF1
180	UDEF2
181	UDEF3
182	UDEF4
183	UDEF5
184	UDEF6
185	UDEF7
186	UDEF8
187	UDEF9
188	UDEF10
189	UDEF11
190	UDEF12
191	UDEF13
192	UDEF14
193	UDEF15
194	UDEF16

OUTPUT

#	Target
0	NO ASSIGN
1	CH1 FADER ON
2	CH2 FADER ON
3	CH3 FADER ON
4	CH4 FADER ON
5	CH5 FADER ON
6	CH6 FADER ON
7	CH7 FADER ON
8	CH8 FADER ON
9	CH9 FADER ON
10	CH10 FADER ON
11	CH11 FADER ON
12	CH12 FADER ON
13	CH13 FADER ON
14	CH14 FADER ON
15	CH15 FADER ON
16	CH16 FADER ON
17	CH17 FADER ON
18	CH18 FADER ON
19	CH19 FADER ON
20	CH20 FADER ON
21	CH21 FADER ON
22	CH22 FADER ON
23	CH23 FADER ON
24	CH24 FADER ON
25	CH25 FADER ON
26	CH26 FADER ON
27	CH27 FADER ON
28	CH28 FADER ON
29	CH29 FADER ON
30	CH30 FADER ON
31	CH31 FADER ON
32	CH32 FADER ON
33	CH33 FADER ON
34	CH34 FADER ON
35	CH35 FADER ON
36	CH36 FADER ON
37	CH37 FADER ON
38	CH38 FADER ON
39	CH39 FADER ON
40	CH40 FADER ON
41	CH41 FADER ON
42	CH42 FADER ON
43	CH43 FADER ON
44	CH44 FADER ON
45	CH45 FADER ON
46	CH46 FADER ON
47	CH47 FADER ON
48	CH48 FADER ON
49	CH49 FADER ON
50	CH50 FADER ON
51	CH51 FADER ON
52	CH52 FADER ON
53	CH53 FADER ON
54	CH54 FADER ON
55	CH55 FADER ON
56	CH56 FADER ON
57	BUS1 FADER ON
58	BUS2 FADER ON
59	BUS3 FADER ON
60	BUS4 FADER ON
61	BUS5 FADER ON
62	BUS6 FADER ON
63	BUS7 FADER ON
64	BUS8 FADER ON
65	AUX1 FADER ON
66	AUX2 FADER ON
67	AUX3 FADER ON
68	AUX4 FADER ON
69	AUX5 FADER ON
70	AUX6 FADER ON
71	AUX7 FADER ON
72	AUX8 FADER ON
73	STEREO FADER ON
74	CH1 FADER OFF
75	CH2 FADER OFF
76	CH3 FADER OFF
77	CH4 FADER OFF
78	CH5 FADER OFF
79	CH6 FADER OFF
80	CH7 FADER OFF
81	CH8 FADER OFF
82	CH9 FADER OFF
83	CH10 FADER OFF
84	CH11 FADER OFF
85	CH12 FADER OFF
86	CH13 FADER OFF
87	CH14 FADER OFF
88	CH15 FADER OFF
89	CH16 FADER OFF
90	CH17 FADER OFF
91	CH18 FADER OFF
92	CH19 FADER OFF
93	CH20 FADER OFF
94	CH21 FADER OFF
95	CH22 FADER OFF
96	CH23 FADER OFF
97	CH24 FADER OFF
98	CH25 FADER OFF
99	CH26 FADER OFF
100	CH27 FADER OFF
101	CH28 FADER OFF
102	CH29 FADER OFF
103	CH30 FADER OFF
104	CH31 FADER OFF
105	CH32 FADER OFF
106	CH33 FADER OFF
107	CH34 FADER OFF
108	CH35 FADER OFF
109	CH36 FADER OFF
110	CH37 FADER OFF
111	CH38 FADER OFF
112	CH39 FADER OFF
113	CH40 FADER OFF
114	CH41 FADER OFF
115	CH42 FADER OFF
116	CH43 FADER OFF
117	CH44 FADER OFF
118	CH45 FADER OFF
119	CH46 FADER OFF
120	CH47 FADER OFF
121	CH48 FADER OFF
122	CH49 FADER OFF
123	CH50 FADER OFF
124	CH51 FADER OFF
125	CH52 FADER OFF
126	CH53 FADER OFF
127	CH54 FADER OFF
128	CH55 FADER OFF
129	CH56 FADER OFF
130	BUS1 FADER OFF
131	BUS2 FADER OFF
132	BUS3 FADER OFF
133	BUS4 FADER OFF
134	BUS5 FADER OFF
135	BUS6 FADER OFF
136	BUS7 FADER OFF
137	BUS8 FADER OFF
138	AUX1 FADER OFF
139	AUX2 FADER OFF
140	AUX3 FADER OFF
141	AUX4 FADER OFF
142	AUX5 FADER OFF
143	AUX6 FADER OFF
144	AUX7 FADER OFF
145	AUX8 FADER OFF
146	STEREO FADER OFF
147	CH1 FADER TALLY
148	CH2 FADER TALLY
149	CH3 FADER TALLY
150	CH4 FADER TALLY
151	CH5 FADER TALLY
152	CH6 FADER TALLY
153	CH7 FADER TALLY
154	CH8 FADER TALLY
155	CH9 FADER TALLY
156	CH10 FADER TALLY
157	CH11 FADER TALLY
158	CH12 FADER TALLY
159	CH13 FADER TALLY
160	CH14 FADER TALLY
161	CH15 FADER TALLY
162	CH16 FADER TALLY
163	CH17 FADER TALLY
164	CH18 FADER TALLY
165	CH19 FADER TALLY
166	CH20 FADER TALLY
167	CH21 FADER TALLY
168	CH22 FADER TALLY
169	CH23 FADER TALLY
170	CH24 FADER TALLY
171	CH25 FADER TALLY
172	CH26 FADER TALLY
173	CH27 FADER TALLY
174	CH28 FADER TALLY
175	CH29 FADER TALLY
176	CH30 FADER TALLY
177	CH31 FADER TALLY
178	CH32 FADER TALLY
179	CH33 FADER TALLY
180	CH34 FADER TALLY
181	CH35 FADER TALLY
182	CH36 FADER TALLY
183	CH37 FADER TALLY
184	CH38 FADER TALLY
185	CH39 FADER TALLY
186	CH40 FADER TALLY
187	CH41 FADER TALLY
188	CH42 FADER TALLY
189	CH43 FADER TALLY
190	CH44 FADER TALLY
191	CH45 FADER TALLY
192	CH46 FADER TALLY
193	CH47 FADER TALLY
194	CH48 FADER TALLY
195	CH49 FADER TALLY
196	CH50 FADER TALLY
197	CH51 FADER TALLY
198	CH52 FADER TALLY
199	CH53 FADER TALLY
200	CH54 FADER TALLY
201	CH55 FADER TALLY
202	CH56 FADER TALLY
203	BUS1 FADER TALLY
204	BUS2 FADER TALLY
20.	BUS3 FADER TALLY
206	BUS4 FADER TALLY
207	BUS5 FADER TALLY
208	BUS6 FADER TALLY
209	BUS7 FADER TALLY
210	BUS8 FADER TALLY
211	AUX1 FADER TALLY
212	AUX2 FADER TALLY
213	AUX3 FADER TALLY
214	AUX4 FADER TALLY
215	AUX5 FADER TALLY
216	AUX6 FADER TALLY
217	AUX7 FADER TALLY
218	AUX8 FADER TALLY
219	ST FADER TALLY
220	UDEF1 LATCH
221	UDEF2 LATCH
222	UDEF3 LATCH
223	UDEF4 LATCH
224	UDEF5 LATCH
225	UDEF6 LATCH
226	UDEF7 LATCH
227	UDEF8 LATCH
228	UDEF9 LATCH
229	UDEF10 LATCH
230	UDEF11 LATCH
231	UDEF12 LATCH
232	UDEF13 LATCH
233	UDEF14 LATCH
234	UDEF15 LATCH
235	UDEF16 LATCH
236	UDEF1 UNLATCH
237	UDEF2 UNLATCH
238	UDEF3 UNLATCH
239	UDEF4 UNLATCH
240	UDEF5 UNLATCH
241	UDEF6 UNLATCH
242	UDEF7 UNLATCH
243	UDEF8 UNLATCH
244	UDEF9 UNLATCH
245	UDEF10 UNLATCH
246	UDEF11 UNLATCH
247	UDEF12 UNLATCH
248	UDEF13 UNLATCH
249	UDEF14 UNLATCH
250	UDEF15 UNLATCH
251	UDEF16 UNLATCH
252	REC LAMP
253	POWER ON

User Defined Remote Layer Initial Bank Settings

Bank 1 (GM Vol & Pan)

ID	Name		Controller	Data Format															
	Short	Long		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RM01	GM01	GM-CH01 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B0	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B0	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM02	GM02	GM-CH02 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B1	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B1	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM03	GM03	GM-CH03 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B2	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B2	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM04	GM04	GM-CH04 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B3	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B3	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM05	GM05	GM-CH05 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B4	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B4	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM06	GM06	GM-CH06 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B5	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B5	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM07	GM07	GM-CH07 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B6	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B6	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM08	GM08	GM-CH08 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B7	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B7	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM09	GM09	GM-CH09 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B8	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B8	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM10	GM10	GM-CH10 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B9	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B9	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM11	GM11	GM-CH11 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BA	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BA	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM12	GM12	GM-CH12 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BB	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BB	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM13	GM13	GM-CH13 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BC	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BC	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM14	GM14	GM-CH14 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BD	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BD	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM15	GM15	GM-CH15 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BE	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BE	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM16	GM16	GM-CH16 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BF	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BF	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM17	GM17	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM18	GM18	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM19	GM19	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM20	GM20	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM21	GM21	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM22	GM22	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM23	GM23	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM24	GM24	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP

Bank 2 (GM Vol & Effect 1)

ID	Name		Controller	Data Format															
	Short	Long		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RM01	GM01	GM-CH01 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B0	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B0	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM02	GM02	GM-CH02 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B1	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B1	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM03	GM03	GM-CH03 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B2	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B2	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM04	GM04	GM-CH04 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B3	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B3	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM05	GM05	GM-CH05 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B4	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B4	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM06	GM06	GM-CH06 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B5	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B5	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM07	GM07	GM-CH07 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B6	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B6	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM08	GM08	GM-CH08 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B7	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B7	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM09	GM09	GM-CH09 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B8	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B8	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM10	GM10	GM-CH10 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B9	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B9	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM11	GM11	GM-CH11 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BA	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BA	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM12	GM12	GM-CH12 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BB	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BB	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM13	GM13	GM-CH13 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BC	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BC	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM14	GM14	GM-CH14 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BD	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BD	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM15	GM15	GM-CH15 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BE	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BE	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM16	GM16	GM-CH16 VOL&EFF1	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BF	0C	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BF	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM17	GM17	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM18	GM18	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM19	GM19	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM20	GM20	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM21	GM21	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM22	GM22	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM23	GM23	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM24	GM24	NO ASSIGN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP

Bank 3 (XG Vol & Pan)

ID	Name		Controller	Data Format														
	Short	Long		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RM01	XG01	XG-CH01 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	00	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	00	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM02	XG02	XG-CH02 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	01	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	01	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM03	XG03	XG-CH03 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	02	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	02	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM04	XG04	XG-CH04 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	03	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	03	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM05	XG05	XG-CH05 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	04	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	04	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM06	XG06	XG-CH06 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	05	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	05	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM07	XG07	XG-CH07 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	06	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	06	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM08	XG08	XG-CH08 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	07	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	07	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM09	XG09	XG-CH09 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	08	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	08	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM10	XG10	XG-CH10 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	09	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	09	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM11	XG11	XG-CH11 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	0A	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	0A	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM12	XG12	XG-CH12 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	0B	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	0B	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM13	XG13	XG-CH13 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	0C	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	0C	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM14	XG14	XG-CH14 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	0D	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	0D	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM15	XG15	XG-CH15 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	0E	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	0E	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM16	XG16	XG-CH16 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	0F	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	0F	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM17	XG17	XG-CH17 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	10	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	10	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM18	XG18	XG-CH18 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	11	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	11	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM19	XG19	XG-CH19 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	12	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	12	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM20	XG20	XG-CH20 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	13	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	13	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM21	XG21	XG-CH21 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	14	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	14	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM22	XG22	XG-CH22 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	15	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	15	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM23	XG23	XG-CH23 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	16	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	16	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
RM24	XG24	XG-CH24 VOL&PAN	ON	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	F0	43	10	4C	08	17	0E	ENC	F7	END	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	F0	43	10	4C	08	17	0B	FAD	F7	END	NOP	NOP	NOP	NOP	NOP	NOP

Bank 4 (Nuendo VST Mixer)

ID	Name		Controller	Data Format														
	Short	Long		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RM01	CH1	VST MIXER CH1	ON	B0	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B0	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B0	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM02	CH2	VST MIXER CH2	ON	B1	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B1	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B1	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM03	CH3	VST MIXER CH3	ON	B2	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B2	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B2	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM04	CH4	VST MIXER CH4	ON	B3	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B3	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B3	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM05	CH5	VST MIXER CH5	ON	B4	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B4	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B4	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM06	CH6	VST MIXER CH6	ON	B5	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B5	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B5	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM07	CH7	VST MIXER CH7	ON	B6	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B6	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B6	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM08	CH8	VST MIXER CH8	ON	B7	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B7	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B7	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM09	CH9	VST MIXER CH9	ON	B8	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B8	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B8	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM10	CH10	VST MIXER CH10	ON	B9	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B9	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B9	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM11	CH11	VST MIXER CH11	ON	BA	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BA	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BA	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM12	CH12	VST MIXER CH12	ON	BB	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BB	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BB	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM13	CH13	VST MIXER CH13	ON	BC	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BC	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BC	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM14	CH14	VST MIXER CH14	ON	BD	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BD	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BD	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM15	CH15	VST MIXER CH15	ON	BE	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BE	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BE	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM16	CH16	VST MIXER CH16	ON	BF	40	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	BF	0A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	BF	07	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM17	CH17	VST MIXER CH17	ON	B0	60	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B0	2A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B0	27	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM18	CH18	VST MIXER CH18	ON	B1	60	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B1	2A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B1	27	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM19	CH19	VST MIXER CH19	ON	B2	60	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B2	2A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B2	27	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM20	CH20	VST MIXER CH20	ON	B3	60	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B3	2A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B3	27	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM21	CH21	VST MIXER CH21	ON	B4	60	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B4	2A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B4	27	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM22	CH22	VST MIXER CH22	ON	B5	60	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B5	2A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B5	27	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM23	CH23	VST MIXER CH23	ON	B6	60	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B6	2A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B6	27	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
RM24	CH24	VST MIXER CH24	ON	B7	60	SW	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			ENCODER	B7	2A	ENC	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP
			FADER	B7	27	FAD	END	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP	NOP

Effects Parameters

REVERB HALL, REVERB ROOM, REVERB STAGE, REVERB PLATE

One input, two output hall, room, stage, and plate reverb simulations, all with gates.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
LO. RATIO	0.1–2.4	Low-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left–right reverb spread)
DENSITY	0–100%	Reverb density
E/R DLY	0.0–100.0 ms	Delay between early reflections and reverb
E/R BAL.	0–100%	Balance of early reflections and reverb (0% = all reverb, 100% = all early reflections)
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
GATE LVL	OFF, –60 to 0 dB	Level at which gate kicks in
ATTACK	0–120 ms	Gate opening speed
HOLD	[1]	Gate open time
DECAY	[2]	Gate closing speed

1. 0.02 ms–2.13 s (fs=44.1 kHz), 0.02 ms–1.96 s (fs=48 kHz), 0.01 ms–1.06 s (fs=88.2 kHz), 0.01 ms–981 ms (fs=96 kHz)
2. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz), 3 ms–23.0 s (fs=88.2 kHz), 3 ms–21.1 s (fs=96 kHz)

EARLY REF.

One input, two output early reflections.

Parameter	Range	Description
TYPE	S-Hall, L-Hall, Random, Revers, Plate, Spring	Type of early reflection simulation
ROOMSIZE	0.1–20.0	Reflection spacing
LIVENESS	0–10	Early reflections decay characteristics (0 = dead, 10 = live)
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
DIFF.	0–10	Reflection diffusion (left–right reflection spread)
DENSITY	0–100%	Reflection density
ER NUM.	1–19	Number of early reflections
FB GAIN	–99 to +99%	Feedback gain
HI. RATIO	0.1–1.0	High-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency

GATE REVERB, REVERSE GATE

One input, two output early reflections with gate, and early reflections with reverse gate.

Parameter	Range	Description
TYPE	Type-A, Type-B	Type of early reflection simulation
ROOMSIZE	0.1–20.0	Reflection spacing
LIVENESS	0–10	Early reflections decay characteristics (0 = dead, 10 = live)
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
DIFF.	0–10	Reflection diffusion (left–right reflection spread)
DENSITY	0–100%	Reflection density
HI. RATIO	0.1–1.0	High-frequency feedback ratio
ER NUM.	1–19	Number of early reflections
FB GAIN	–99 to +99%	Feedback gain
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency

MONO DELAY

One input, one output basic repeat delay.

Parameter	Range	Description
DELAY	0.0–2730.0 ms	Delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI. RATIO	0.1–1.0	High-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine DELAY

1. — 𝅘𝅥𝅯³ 𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅯 𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝 (Max. value depends on tempo setting)

STEREO DELAY

Two input, two output basic stereo delay.

Parameter	Range	Description
DELAY L	0.0–1350.0 ms	Left channel delay time
DELAY R	0.0–1350.0 ms	Right channel delay time
FB. G L	–99 to +99%	Left channel feedback (plus values for normal-phase feedback, minus values for reverse-phase feedback)
FB. G R	–99 to +99%	Right channel feedback (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI. RATIO	0.1–1.0	High-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE L	1	Used in conjunction with TEMPO to determine left channel DELAY
NOTE R	1	Used in conjunction with TEMPO to determine right channel DELAY

1. — 𝅘𝅥𝅯³ 𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅯 𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 (Maximum value depends on the tempo setting)

MOD. DELAY

One input, two output basic repeat delay with modulation.

Parameter	Range	Description
DELAY	0.0–2725.0 ms	Delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI. RATIO	0.1–1.0	High-frequency feedback ratio
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
WAVE	Sine/Tri	Modulation waveform
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
SYNC	OFF/ON	Tempo parameter sync on/off
DLY.NOTE	1	Used in conjunction with TEMPO to determine DELAY
MOD.NOTE	2	Used in conjunction with TEMPO to determine FREQ

1. —— 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅯 𝅘𝅥𝅮𝅘𝅥𝅮𝅘𝅥𝅮³ 𝅘𝅥𝅮. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝 (Maximum value depends on the tempo setting)
2. 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅯 𝅘𝅥𝅮𝅘𝅥𝅮𝅘𝅥𝅮³ 𝅘𝅥𝅮. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝

DELAY LCR

One input, two output 3-tap delay (left, center, right).

Parameter	Range	Description
DELAY L	0.0–2730.0 ms	Left channel delay time
DELAY C	0.0–2730.0 ms	Center channel delay time
DELAY R	0.0–2730.0 ms	Right channel delay time
FB. DLY	0.0–2730.0 ms	Feedback delay time
LEVEL L	–100 to +100%	Left channel delay level
LEVEL C	–100 to +100%	Center channel delay level
LEVEL R	–100 to +100%	Right channel delay level
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI. RATIO	0.1–1.0	High-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE L	1	Used in conjunction with TEMPO to determine DELAY L
NOTE C	1	Used in conjunction with TEMPO to determine DELAY C
NOTE R	1	Used in conjunction with TEMPO to determine DELAY R
NOTE FB	1	Used in conjunction with TEMPO to determine FB. DLY

1. —— 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅯 𝅘𝅥𝅮𝅘𝅥𝅮𝅘𝅥𝅮³ 𝅘𝅥𝅮. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝 (Maximum value depends on the tempo setting)

ECHO

Two input, two output stereo delay with crossed feedback loop.

Parameter	Range	Description
DELAY L	0.0–1350.0 ms	Left channel delay time
DELAY R	0.0–1350.0 ms	Right channel delay time
FB.DLY L	0.0–1350.0 ms	Left channel feedback delay time
FB.DLY R	0.0–1350.0 ms	Right channel feedback delay time
FB. G L	–99 to +99%	Left channel feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
FB. G R	–99 to +99%	Right channel feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
L->R FBG	–99 to +99%	Left to right channel feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
R->L FBG	–99 to +99%	Right to left channel feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI. RATIO	0.1–1.0	High-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE L	1	Used in conjunction with TEMPO to determine DELAY L
NOTE R	1	Used in conjunction with TEMPO to determine DELAY R
NOTE FBL	1	Used in conjunction with TEMPO to determine FB. D L
NOTE FBR	1	Used in conjunction with TEMPO to determine FB. D R

1. 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 (Maximum value depends on the tempo setting)

CHORUS

Two input, two output chorus effect.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
AM DEPTH	0–100%	Amplitude modulation depth
PM DEPTH	0–100%	Pitch modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
LSH F	21.2 Hz–8.00 kHz	Low shelving filter frequency
LSH G	–12 to +12 dB	Low shelving filter gain
EQ F	100 Hz–8.00 kHz	EQ (peaking type) frequency
EQ G	–12 to +12 dB	EQ (peaking type) gain
EQ Q	10.0–0.10	EQ (peaking type) bandwidth
HSH F	50.0 Hz–16.0 kHz	High shelving filter frequency
HSH G	–12 to +12 dB	High shelving filter gain
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1. 𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝

FLANGE

Two input, two output flange effect.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
WAVE	Sine, Tri	Modulation waveform
LSH F	21.2 Hz–8.00 kHz	Low shelving filter frequency
LSH G	–12 to +12 dB	Low shelving filter gain
EQ F	100 Hz–8.00 kHz	EQ (peaking type) frequency
EQ G	–12 to +12 dB	EQ (peaking type) gain
EQ Q	10.0–0.10	EQ (peaking type) bandwidth
HSH F	50.0 Hz–16.0 kHz	High shelving filter frequency
HSH G	–12 to +12 dB	High shelving filter gain
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1.

SYMPHONIC

Two input, two output symphonic effect.

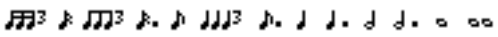
Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
LSH F	21.2 Hz–8.00 kHz	Low shelving filter frequency
LSH G	–12 to +12 dB	Low shelving filter gain
EQ F	100 Hz–8.00 kHz	EQ (peaking type) frequency
EQ G	–12 to +12 dB	EQ (peaking type) gain
EQ Q	10.0–0.10	EQ (peaking type) bandwidth
HSH F	50.0 Hz–16.0 kHz	High shelving filter frequency
HSH G	–12 to +12 dB	High shelving filter gain
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1.

PHASER

Two input, two output 16-stage phaser.

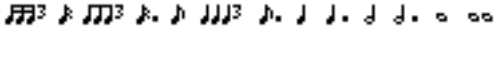
Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
OFFSET	0–100	Lowest phase-shifted frequency offset
PHASE	0.00–354.38 degrees	Left and right modulation phase balance
STAGE	2, 4, 6, 8, 10, 12, 14, 16	Number of phase shift stages
LSH F	21.2 Hz–8.00 kHz	Low shelving filter frequency
LSH G	–12 to +12 dB	Low shelving filter gain
HSH F	50.0 Hz–16.0 kHz	High shelving filter frequency
HSH G	–12 to +12 dB	High shelving filter gain
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1. 

AUTOPAN

Two input, two output autopanner.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
DIR.	1	Panning direction
WAVE	Sine, Tri, Square	Modulation waveform
LSH F	21.2 Hz–8.00 kHz	Low shelving filter frequency
LSH G	–12 to +12 dB	Low shelving filter gain
EQ F	100 Hz–8.00 kHz	EQ (peaking type) frequency
EQ G	–12 to +12 dB	EQ (peaking type) gain
EQ Q	10.0–0.10	EQ (peaking type) bandwidth
HSH F	50.0 Hz–16.0 kHz	High shelving filter frequency
HSH G	–12 to +12 dB	High shelving filter gain
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	2	Used in conjunction with TEMPO to determine FREQ.

1. L<->R, L—>R, L<—R, Turn L, Turn R
2. 

TREMOLO

Two input, two output tremolo effect.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
WAVE	Sine, Tri, Square	Modulation waveform
LSH F	21.2 Hz–8.00 kHz	Low shelving filter frequency
LSH G	–12 to +12 dB	Low shelving filter gain
EQ F	100 Hz–8.00 kHz	EQ (peaking type) frequency
EQ G	–12 to +12 dB	EQ (peaking type) gain
EQ Q	10.0–0.10	EQ (peaking type) bandwidth
HSH F	50.0 Hz–16.0 kHz	High shelving filter frequency
HSH G	–12 to +12 dB	High shelving filter gain
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1. 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅮 𝅘𝅥𝅮𝅘𝅥𝅮𝅘𝅥𝅮³ 𝅘𝅥𝅮. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝

HQ. PITCH

One input, two output high-quality pitch shifter.

Parameter	Range	Description
PITCH	–12 to +12 semitones	Pitch shift
FINE	–50 to +50 cents	Pitch shift fine
DELAY	0.0–1000.0 ms	Delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
MODE	1–10	Pitch shift precision
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine DELAY

1. — 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅮 𝅘𝅥𝅮𝅘𝅥𝅮𝅘𝅥𝅮³ 𝅘𝅥𝅮. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 (Maximum value depends on the tempo setting)

DUAL PITCH

Two input, two output pitch shifter.

Parameter	Range	Description
PITCH 1	–24 to +24 semitones	Channel #1 pitch shift
FINE 1	–50 to +50 cents	Channel #1 pitch shift fine
LEVEL 1	–100 to +100%	Channel #1 level (plus values for normal phase, minus values for reverse phase)
PAN 1	L63 to R63	Channel #1 pan
DELAY 1	0.0–1000.0 ms	Channel #1 delay time
FB. G 1	–99 to +99%	Channel #1 feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
PITCH 2	–24 to +24 semitones	Channel #2 pitch shift
FINE 2	–50 to +50 cents	Channel #2 pitch shift fine
LEVEL 2	–100 to +100%	Channel #2 level (plus values for normal phase, minus values for reverse phase)
PAN 2	L63 to R63	Channel #2 pan
DELAY 2	0.0–1000.0 ms	Channel #2 delay time
FB. G 2	–99 to +99%	Channel #2 feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
MODE	1–10	Pitch shift precision
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE 1	1	Used in conjunction with TEMPO to determine Channel #1 delay
NOTE 2	1	Used in conjunction with TEMPO to determine Channel #2 delay

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ROTARY

One input, two output rotary speaker simulator.

Parameter	Range	Description
ROTATE	STOP, START	Rotation stop, start
SPEED	SLOW, FAST	Rotation speed (see SLOW and FAST parameters)
SLOW	0.05–10.00 Hz	SLOW rotation speed
FAST	0.05–10.00 Hz	FAST rotation speed
DRIVE	0–100	Overdrive level
ACCEL	0–10	Acceleration at speed changes
LOW	0–100	Low-frequency filter
HIGH	0–100	High-frequency filter

RING MOD.

Two input, two output ring modulator.

Parameter	Range	Description
SOURCE	OSC, SELF	Modulation source: oscillator or input signal
OSC FREQ	0.0–5000.0 Hz	Oscillator frequency
FM FREQ.	0.05–40.00 Hz	Oscillator frequency modulation speed
FM DEPTH	0–100%	Oscillator frequency modulation depth
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE FM	1	Used in conjunction with TEMPO to determine FM FREQ

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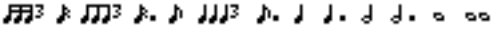
MOD. FILTER

Two input, two output modulation filter.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
PHASE	0.00–354.38 degrees	Left-channel modulation and right-channel modulation phase difference
TYPE	LPF, HPF, BPF	Filter type: low pass, high pass, band pass
OFFSET	0–100	Filter frequency offset
RESO.	0–20	Filter resonance
LEVEL	0–100	Output level
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ

1. 

DISTORTION

One input, two output distortion effect.

Parameter	Range	Description
DST TYPE	DST1, DST2, OVD1, OVD2, CRUNCH	Distortion type (DST = distortion, OVD = overdrive)
DRIVE	0–100	Distortion drive
MASTER	0–100	Master volume
TONE	–10 to +10	Tone
N. GATE	0–20	Noise reduction

AMP SIMULATE

One input, two output guitar amp simulator.

Parameter	Range	Description
AMP TYPE	1	Guitar amp simulation type
DST TYPE	DST1, DST2, OVD1, OVD2, CRUNCH	Distortion type (DST = distortion, OVD = overdrive)
DRIVE	0–100	Distortion drive
MASTER	0–100	Master volume
BASS	0–100	Bass tone control
MIDDLE	0–100	Middle tone control
TREBLE	0–100	High tone control
CAB DEP	0–100%	Speaker cabinet simulation depth
EQ F	100 Hz–8.0 kHz	EQ (peaking type) frequency
EQ G	–12 to +12 dB	EQ (peaking type) gain
EQ Q	10.0–0.10	EQ (peaking type) bandwidth
N. GATE	0–20	Noise reduction

1. STK-M1, STK-M2, THRASH, MIDBST, CMB-PG, CMB-VR, CMB-DX, CMB-TW, MINI, FLAT

DYNA. FILTER

Two input, two output dynamically controlled filter.

Parameter	Range	Description
SOURCE	INPUT, MIDI	Control source: input signal or MIDI Note On velocity
SENSE	0–100	Sensitivity
DIR.	UP, DOWN	Upward or downward frequency change
DECAY	[1]	Filter frequency change decay speed
TYPE	LPF, HPF, BPF	Filter type
OFFSET	0–100	Filter frequency offset
RESO.	0–20	Filter resonance
LEVEL	0–100	Output Level

1. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz), 3 ms–23.0 s (fs=88.2 kHz), 3 ms–21.1 s (fs=96 kHz)

DYNA. FLANGE

Two input, two output dynamically controlled flanger.

Parameter	Range	Description
SOURCE	INPUT, MIDI	Control source: input signal or MIDI Note On velocity
SENSE	0–100	Sensitivity
DIR.	UP, DOWN	Upward or downward frequency change
DECAY	[1]	Decay speed
OFFSET	0–100	Delay time offset
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
LSH F	21.2 Hz–8.00 kHz	Low shelving filter frequency
LSH G	–12 to +12 dB	Low shelving filter gain
EQ F	100 Hz–8.00 kHz	EQ (peaking type) frequency
EQ G	–12 to +12 dB	EQ (peaking type) gain
EQ Q	10.0–0.10	EQ (peaking type) bandwidth
HSH F	50.0 Hz–16.0 kHz	High shelving filter frequency
HSH G	–12 to +12 dB	High shelving filter gain

1. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz), 3 ms–23.0 s (fs=88.2 kHz), 3 ms–21.1 s (fs=96 kHz)

DYNA. PHASER

Two input, two output dynamically controlled phaser.

Parameter	Range	Description
SOURCE	INPUT, MIDI	Control source: input signal or MIDI Note On velocity
SENSE	0–100	Sensitivity
DIR.	UP, DOWN	Upward or downward frequency change
DECAY	[1]	Decay speed
OFFSET	0–100	Lowest phase-shifted frequency offset
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
STAGE	2, 4, 6, 8, 10, 12, 14, 16	Number of phase shift stages
LSH F	21.2 Hz–8.00 kHz	Low shelving filter frequency
LSH G	–12 to +12 dB	Low shelving filter gain
HSH F	50.0 Hz–16.0 kHz	High shelving filter frequency
HSH G	–12 to +12 dB	High shelving filter gain

1. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz), 3 ms–23.0 s (fs=88.2 kHz), 3 ms–21.1 s (fs=96 kHz)

REV+CHORUS

One input, two output reverb and chorus effects in parallel.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
REV/CHO	0–100%	Reverb and chorus balance (0% = all reverb, 100% = all chorus)
FREQ.	0.05–40.00 Hz	Modulation speed
AM DEPTH	0–100%	Amplitude modulation depth
PM DEPTH	0–100%	Pitch modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1.

REV->CHORUS

One input, two output reverb and chorus effects in series.

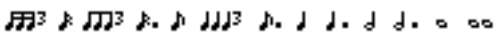
Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
REV.BAL	0–100%	Reverb and chorused reverb balance (0% = all chorused reverb, 100% = all reverb)
FREQ.	0.05–40.00 Hz	Modulation speed
AM DEPTH	0–100%	Amplitude modulation depth
PM DEPTH	0–100%	Pitch modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1.

REV+FLANGE

One input, two output reverb and flanger effects in parallel.

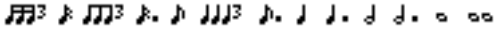
Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
REV/FLG	0–100%	Reverb and flange balance (0% = all reverb, 100% = all flange)
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
WAVE	Sine, Tri	Modulation waveform
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	[1]	Used in conjunction with TEMPO to determine FREQ.

1. 

REV->FLANGE

One input, two output reverb and flanger effects in series.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
REV.BAL	0–100%	Reverb and flanged reverb balance (0% = all flanged reverb, 100% = all reverb)
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
WAVE	Sine, Tri	Modulation waveform
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	[1]	Used in conjunction with TEMPO to determine FREQ.

1. 

REV+SYMPHO.

One input, two output reverb and symphonic effects in parallel.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
REV/SYM	0–100%	Reverb and symphonic balance (0% = all reverb, 100% = all symphonic)
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	[1]	Used in conjunction with TEMPO to determine FREQ.

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REV->SYMPHO.

One input, two output reverb and symphonic effects in series.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
REV.BAL	0–100%	Reverb and symphonic reverb balance (0% = all symphonic reverb, 100% = all reverb)
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD. DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	[1]	Used in conjunction with TEMPO to determine FREQ.

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REV->PAN

One input, two output reverb and autopan effects in parallel.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
REV.BAL	0–100%	Reverb and panned reverb balance (0% = all panned reverb, 100% = all reverb)
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
DIR.	1	Panning direction
WAVE	Sine, Tri, Square	Modulation waveform
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	2	Used in conjunction with TEMPO to determine FREQ.

1. L<–>R, L–>R, L<–R, Turn L, Turn R

2. 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥𝅯 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯³ 𝅘𝅥𝅯. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝

DELAY+ER.

One input, two output delay and early reflections effects in parallel.

Parameter	Range	Description
DELAY L	0.0–1000.0 ms	Left channel delay time
DELAY R	0.0–1000.0 ms	Right channel delay time
FB. DLY	0.0–1000.0 ms	Feedback delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI. RATIO	0.1–1.0	High-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
DLY/ER	0–100%	Delay and early reflections balance (0% = all delay, 100% = all early reflections)
TYPE	S-Hall, L-Hall, Random, Revers, Plate, Spring	Type of early reflection simulation
ROOMSIZE	0.1–20.0	Reflection spacing
LIVENESS	0–10	Early reflections decay characteristics (0 = dead, 10 = live)
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
ER NUM.	1–19	Number of early reflections
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE L	1	Used in conjunction with TEMPO to determine left channel DELAY L
NOTE R	1	Used in conjunction with TEMPO to determine right channel DELAY R
NOTE FB	1	Used in conjunction with TEMPO to determine FB. DLY

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DELAY->ER.

One input, two output delay and early reflections effects in series.

Parameter	Range	Description
DELAY L	0.0–1000.0 ms	Left channel delay time
DELAY R	0.0–1000.0 ms	Right channel delay time
FB. DLY	0.0–1000.0 ms	Feedback delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI. RATIO	0.1–1.0	High-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
DLY.BAL	0–100%	Delay and early reflected delay balance (0% = all early reflected delay, 100% = all delay)
TYPE	S-Hall, L-Hall, Random, Revers, Plate, Spring	Type of early reflection simulation
ROOMSIZE	0.1–20.0	Reflection spacing
LIVENESS	0–10	Early reflections decay characteristics (0 = dead, 10 = live)
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
ER NUM.	1–19	Number of early reflections
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE L	1	Used in conjunction with TEMPO to determine left channel DELAY L
NOTE R	1	Used in conjunction with TEMPO to determine right channel DELAY R
NOTE FB	1	Used in conjunction with TEMPO to determine FB. DLY

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DELAY+REV

One input, two output delay and reverb effects in parallel.

Parameter	Range	Description
DELAY L	0.0–1000.0 ms	Left channel delay time
DELAY R	0.0–1000.0 ms	Right channel delay time
FB. DLY	0.0–1000.0 ms	Feedback delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
DELAY HI	0.1–1.0	Delay high-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
DLY/REV	0–100%	Delay and reverb balance (0% = all delay, 100% = all reverb)
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
REV HI	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE L	1	Used in conjunction with TEMPO to determine left channel DELAY L
NOTE R	1	Used in conjunction with TEMPO to determine right channel DELAY R
NOTE FB	1	Used in conjunction with TEMPO to determine FB. DLY

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DELAY->REV

One input, two output delay and reverb effects in series.

Parameter	Range	Description
DELAY L	0.0–1000.0 ms	Left channel delay time
DELAY R	0.0–1000.0 ms	Right channel delay time
FB. DLY	0.0–1000.0 ms	Feedback delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
DELAY HI	0.1–1.0	Delay high-frequency feedback ratio
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
DLY.BAL	0–100%	Delay and delayed reverb balance (0% = all delayed reverb, 100% = all delay)
REV TIME	0.3–99.0 s	Reverb time
INI. DLY	0.0–500.0 ms	Initial delay before reverb begins
REV HI	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Spread
DENSITY	0–100%	Reverb density
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE L	1	Used in conjunction with TEMPO to determine left channel DELAY L
NOTE R	*1	Used in conjunction with TEMPO to determine right channel DELAY R
NOTE FB	*1	Used in conjunction with TEMPO to determine FB. DLY

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DIST->DELAY

One input, two output distortion and delay effects in series.

Parameter	Range	Description
DST TYPE	DST1, DST2, OVD1, OVD2, CRUNCH	Distortion type (DST = distortion, OVD = overdrive)
DRIVE	0–100	Distortion drive
MASTER	0–100	Master volume
TONE	–10 to +10	Tone control
N. GATE	0–20	Noise reduction
DELAY	0.0–2725.0 ms	Delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI. RATIO	0.1–1.0	High-frequency feedback ratio
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
DLY.BAL	0–100%	Distortion and delay balance (0% = all distortion, 100% = all delayed distortion)
SYNC	OFF/ON	Tempo parameter sync on/off
DLY.NOTE	1	Used in conjunction with TEMPO to determine DELAY
MOD.NOTE	2	Used in conjunction with TEMPO to determine FREQ.

1. —— 𝅘𝅥𝅯³ 𝅘𝅥𝅮³ 𝅘𝅥𝅯 𝅘𝅥𝅮³ 𝅘𝅥𝅯. 𝅘𝅥𝅮 𝅘𝅥𝅰³ 𝅘𝅥𝅮. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝 (Maximum value depends on the tempo setting)
2. 𝅘𝅥𝅯³ 𝅘𝅥𝅯 𝅘𝅥𝅮³ 𝅘𝅥𝅯. 𝅘𝅥𝅮 𝅘𝅥𝅰³ 𝅘𝅥𝅮. 𝅘𝅥 𝅘𝅥. 𝅗𝅥 𝅗𝅥. 𝅝 𝅝𝅝

MULTI FILTER

Two input, two output 3-band multi-filter (24 dB/octave).

Parameter	Range	Description
TYPE 1	HPF, LPF, BPF	Filter 1 type: high pass, low pass, band pass
TYPE 2	HPF, LPF, BPF	Filter 2 type: high pass, low pass, band pass
TYPE 3	HPF, LPF, BPF	Filter 3 type: high pass, low pass, band pass
FREQ. 1	28.0 Hz–16.0 kHz	Filter 1 frequency
FREQ. 2	28.0 Hz–16.0 kHz	Filter 2 frequency
FREQ. 3	28.0 Hz–16.0 kHz	Filter 3 frequency
LEVEL 1	0–100	Filter 1 level
LEVEL 2	0–100	Filter 2 level
LEVEL 3	0–100	Filter 3 level
RESO. 1	0–20	Filter 1 resonance
RESO. 2	0–20	Filter 2 resonance
RESO. 3	0–20	Filter 3 resonance

FREEZE

One input, one output basic sampler.

Parameter	Range	Description
REC MODE	MANUAL, INPUT	In MANUAL mode, recording is started by pressing the REC and PLAY buttons. In INPUT mode, Record-Ready mode is engaged by pressing the REC button, and actual recording is triggered by the input signal.
REC DLY	–1000 to +1000 ms	Recording delay. For plus values, recording starts after the trigger is received. For minus values, recording starts before the trigger is received.
TRG LVL	–60 to 0 dB	Input trigger level (i.e., the signal level required to trigger recording or playback)
TRG MASK	0–1000 ms	Once playback has been triggered, subsequent triggers are ignored for the duration of the TRG MASK time.
PLY MODE	MOMENT, CONTI., INPUT	In MOMENT mode, the sample plays only while the that the PLAY button is pressed. In CONT mode, playback continues once the PLAY button has been pressed. The number of times the sample plays is set using the LOOP NUM parameter. In INPUT mode, playback is triggered by the input signal.
START	[1]	Playback start point in milliseconds
END	[1]	Playback end point in milliseconds
LOOP	[1]	Loop start point in milliseconds
LOOP NUM	0–100	Number of times the sample plays
START [SAMPLE]	0–262000	Playback start point in samples
END [SAMPLE]	0–262000	Playback end point in samples
LOOP [SAMPLE]	0–262000	Loop start point in samples
PITCH	–12 to +12 semitones	Playback pitch shift
FINE	–50 to +50 cents	Playback pitch shift fine
MIDI TRG	OFF, C1–C6, ALL	PLAY button can be triggered by using MIDI Note on/off messages.

1. 0.0–5941.0 ms (fs=44.1 kHz), 0.0 ms–5458.3 ms (fs=48 kHz), 0.0–2970.5 ms (fs=88.2 kHz), 0.0 ms–2729.2 ms (fs=96 kHz)

ST REVERB

Two input, two output stereo reverb.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
REV TYPE	Hall, Room, Stage, Plate	Reverb type
INI. DLY	0.0–100.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
LO. RATIO	0.1–2.4	Low-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left–right reverb spread)
DENSITY	0–100%	Reverb density
E/R BAL.	0–100%	Balance of early reflections and reverb (0% = all reverb, 100% = all early reflections)
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency

REVERB 5.1

One input, six output reverb for 5.1 surround, with surround panning.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
REV TYPE	Hall, Room, Stage, Plate	Reverb type
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left–right reverb spread)
DENSITY	0–100%	Reverb density
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
DIV.	0–100%	Divergence determines how the front center signal is fed to the Left, Right, and Center channels. When set to 0%, it's fed only to the Left and Right channels (i.e., Phantom Center). When set to 50%, it's fed equally to the Left, Right, and Center channels. When set to 100%, it's fed to only the Center channel (i.e., Real Center).
ROOMSIZE	0.1–20.0	Size of simulated room's reverb
POS L/R	L63–R63	Left/right listening position
POS F/R	F63–R63	Front/rear listening position
POS CTRL	OFF, NORMAL, INVERT	[1]
ER L/R	L63–R63	Left/right early reflections position
ER F/R	F63–R63	Front/rear early reflections position
ER LVL	0–100%	Early reflections level
ER CTRL	OFF, NORMAL, INVERT	[1]
REV L/R	L63–R63	Left/right reverb position
REV F/R	F63–R63	Front/rear reverb position
REV LVL	0–100%	Reverb level
REV CTRL	OFF, NORMAL, INVERT	[1]
POS RAD.	0–63	Radius of the panning track at the listening position
ER RAD.	0–63	Radius of the panning track for early reflections
REV RAD.	0–63	Radius of the panning track for reverb

1. When set to NOR, the position can be set by using the Joystick so long as the SELECTED CHANNEL PAN/SURROUND [EFFECT] button's indicator is on. When set to INV, the Joystick will work inversely. When set to OFF, Joystick control is off. The CTRL button on the Effect Edit page works the same as the [EFFECT] button.

OCTA REVERB

Eight input, eight output reverb.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
REV TYPE	Hall, Room, Stage, Plate	Reverb type
INI. DLY	0.0–100.0 ms	Initial delay before reverb begins
HI. RATIO	0.1–1.0	High-frequency reverb time ratio
LO. RATIO	0.1–2.4	Low-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left–right reverb spread)
DENSITY	0–100%	Reverb density
E/R BAL.	0–100%	Balance of early reflections and reverb (0% = all reverb, 100% = all early reflections)
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency

AUTO PAN 5.1

Six input, six output autopanner for 5.1 surround. You can reset to the pan position specified by the OFFSET parameter by pressing the RESET button.

Parameter	Range	Description
SOURCE	OFF, HOLD, INPUT1, INPUT2, INPUT3, INPUT4, INPUT5, INPUT6, MIDI	When set to OFF, the TRIGGER button is used to start autopan. When set to HOLD, autopan runs continuously. When set to INPUT 1–6, the specified channel's input signal triggers autopan. When set to MIDI, a MIDI Note On message can be used to trigger autopan.
TRIG. LVL	–60 to 0 dB	Input trigger level (i.e., the signal level required to trigger panning when SOURCE set to INPUT)
TRG MASK	0–1000 ms	Trigger Mask specifies the time from when a trigger is received until the next trigger will be accepted.
TIME	0.0 s–10.0 s	The time after which autopan starts once it's been triggered
SPEED	0.05 Hz–40.00 Hz	Autopan speed
DIR.	Turn L, Turn R	Autopan direction
OFFSET	–180 to +180 degrees	Pan offset
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency

CHORUS 5.1

Six input, six output chorus for 5.1 surround.

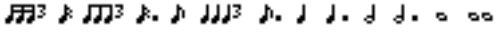
Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
AM DEPTH	0–100%	Amplitude modulation depth
PM DEPTH	0–100%	Pitch modulation depth
MOD. DLY	0.0–400.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1.

FLANGE 5.1

Six input, six output flanger for 5.1 surround.

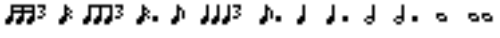
Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD. DLY	0.0–400.0 ms	Modulation delay time
FB. GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
WAVE	Sine, Tri	Modulation waveform
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1. 

SYMPHO 5.1

Six input, six output symphonic effect for 5.1 surround.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD. DLY	0.0–400.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
HPF	THRU, 21.2 Hz–8.00 kHz	High-pass filter cutoff frequency
LPF	50.0 Hz–16.0 kHz, THRU	Low-pass filter cutoff frequency
SYNC	OFF/ON	Tempo parameter sync on/off
NOTE	1	Used in conjunction with TEMPO to determine FREQ.

1. 

M. BAND DYNA.

Two input, two output 3-band dynamics processor, with individual solo and gain reduction metering for each band.

Parameter	Range	Description
LOW GAIN	–96.0 to +12.0 dB	Low band level
MID GAIN	–96.0 to +12.0 dB	Mid band level
HI. GAIN	–96.0 to +12.0 dB	High band level
PRESENCE	–10 to +10	For positive values, the threshold of the high band is lowered and the threshold of the low band is increased. For negative values, the opposite will occur. When set to 0, all three bands are affected the same.
CMP. THRE	–24.0 dB to 0.0 dB	Compressor threshold
CMP. RAT	1:1 to 20:1	Compressor ratio
CMP. ATK	0–120 ms	Compressor attack
CMP. REL	1	Compressor release time
CMP. KNEE	0–5	Compressor knee
LOOKUP	0.0–100.0 ms	Lookup delay
CMP. BYP	ON/OFF	Compressor bypass
L–M XOVR	21.2 Hz–8.00 kHz	Low/mid crossover frequency
M–H XOVR	21.2 Hz–8.00 kHz	Mid/high crossover frequency
SLOPE	–6 dB, –12 dB	Filter slope
CEILING	–6.0 dB to 0.0 dB, OFF	Specifies the maximum output level
EXP. THRE	–54.0 dB to –24.0 dB	Expander threshold
EXP. RAT	1:1 to ∞:1	Expander ratio
EXP. REL	1	Expander release time
EXP. BYP	ON/OFF	Expander bypass
LIM. THRE	–12.0 dB to 0.0 dB	Limiter threshold
LIM. ATK	0–120 ms	Limiter attack
LIM. REL	1	Limiter release time
LIM. BYP	ON/OFF	Limiter bypass
LIM. KNEE	0–5	Limiter knee

1. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz), 3 ms–23.0 s (fs=88.2 kHz), 3 ms–21.1 s (fs=96 kHz)

COMP 5.1

Six input, six output compressor for 5.1 surround, with individual solo for each band, and gain reduction metering of left and right (L+R), left surround and right surround (LS+RS), center (C), or LFE channels.

Parameter	Range	Description
LOW GAIN	–96.0 to +12.0 dB	Low band level
MID GAIN	–96.0 to +12.0 dB	Mid band level
HI. GAIN	–96.0 to +12.0 dB	High band level
PRESENCE	–10 to +10	For positive values, the threshold of the high band is lowered and the threshold of the low band is increased. For negative values, the opposite will occur. When set to 0, all three bands are affected the same.
THRE	–24.0 dB to 0.0 dB	Compressor threshold
RATIO	1:1 to ∞:1	Compressor ratio
ATTACK	0–120 ms	Attack
RELEASE	[1]	Expander release time
KNEE	0–5	Compressor knee
LOOKUP	0.0–100.0 ms	Lookup delay
KEY LINK	[2]	Key-in linking
L–M XOVR	21.2 Hz–8.00 kHz	Low/mid crossover frequency
M–H XOVR	21.2 Hz–8.00 kHz	Mid/high crossover frequency
SLOPE	–6 dB, –12 dB	Filter slope
CEILING	–6.0 dB to 0.0 dB, OFF	Specifies the maximum output level

1. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz), 3 ms–23.0 s (fs=88.2 kHz), 3 ms–21.1 s (fs=96 kHz)
2. 5.1: key-in of all inputs are linked. 5.0: key-in of the L, C, R, LS, and RS are linked (LFE is independent). 3+2: key-in of L, C, and R are linked, and LS and RS are linked. 2+2: key-in of L and R are linked, and LS and RS are linked.

COMPAND 5.1

Six input, six output compander for 5.1 surround, with individual solo for each band, and gain reduction metering of left and right (L+R), left surround and right surround (LS+RS), center (C), or LFE channels.

Parameter	Range	Description
LOW GAIN	–96.0 to +12.0 dB	Low band level
MID GAIN	–96.0 to +12.0 dB	Mid band level
HI. GAIN	–96.0 to +12.0 dB	High band level
PRESENCE	–10 to +10	For positive values, the threshold of the high band is lowered and the threshold of the low band is increased. For negative values, the opposite will occur. When set to 0, all three bands are affected the same.
THRE	–24.0 dB to 0.0 dB	Compressor threshold
RATIO	1:1 to 20:1	Compressor ratio
ATTACK	0–120 ms	Compressor attack
WIDTH	1–90 dB	Width before the expander operates
TYPE	Soft, Hard	Compander type
LOOKUP	0.0–100.0 ms	Lookup delay
KEY LINK	[1]	Key-in linking
L–M XOVR	21.2 Hz–8.00 kHz	Low/mid crossover frequency
M–H XOVR	21.2 Hz–8.00 kHz	Mid/high crossover frequency
SLOPE	–6 dB, –12 dB	Filter slope
CEILING	–6.0 dB to 0.0 dB, OFF	Specifies the maximum output level

1. 5.1: key-in of all inputs are linked. 5.0: key-in of the L, C, R, LS, and RS are linked (LFE is independent). 3+2: key-in of L, C, and R are linked, and LS and RS are linked. 2+2: key-in of L and R are linked, and LS and RS are linked.

Other preset effects (COMP276, COMP276S, COMP260, COMP260S, EQUALIZER601, OPEN-DECK, REV-X HALL, REV-X HALL, REV-X ROOM, REV-X PLATE) are optional Add-On Effects. For more information on these effects, refer to the Owner's Manual that comes with the Add-On Effects package.

Effects and tempo synchronization

Some of the 02R96's effects allow you to synchronize the effect with the tempo. There are two such types of effect; delay-type effects and modulation-type effects. For delay-type effects, the delay time will change according to the tempo. For modulation-type effects, the frequency of the modulation signal will change according to the tempo.

- **Parameters related to tempo synchronization**

  The following five parameters are related to tempo synchronization.

  1) SYNC 2) NOTE 3) TEMPO 4) DELAY 5) FREQ.

  SYNC: ..... This is the on/off switch for tempo synchronization.

  NOTE and TEMPO:..... These are the basic parameters for tempo synchronization.

  DELAY and FREQ.: ..... DELAY is the delay time, and FREQ. is the frequency of the modulation signal. These directly affect the way in which the effect sound will change. DELAY is relevant only for delay-type effects, and FREQ. is relevant only for modulation-type effects.

- **How the parameters are related**

  Tempo synchronization uses TEMPO and NOTE to calculate a value that will be the basis for the tempo, and continues making adjustments so that this tempo basis stays essentially the same as the DELAY (or FREQ.). This means that when TEMPO, NOTE, and DELAY (or FREQ.) are synchronized, and you change any of these values, the other parameters will be re-set in order to maintain the correct relationship. The parameters that are re-set and the calculation method(*a) used are as follows.

  If you turn SYNC on → NOTE will be set

  If you edit DELAY (or FREQ.) → NOTE will be set

  In this case, the NOTE value is calculated as follows.

  NOTE = DELAY (or FREQ.)/(4 x (60/TEMPO))

  If you edit NOTE → DELAY (or FREQ.) will be set

  In this case, the DELAY (or FREQ.) value is calculated as follows.

  DELAY (or FREQ.) = NOTE x 4 x (60/TEMPO)

  If you edit TEMPO → DELAY (or FREQ.) will be set

  In this case, the DELAY (or FREQ.) value is calculated as follows.

  DELAY (or FREQ.) = original DELAY (or FREQ.) x (previous TEMPO/new TEMPO)

  Example 1: When SYNC=ON, DELAY=250 ms, TEMPO=120, you change NOTE from 8th note to quarter note

  DELAY= new NOTE x 4 x (60/TEMPO)
  = (1/4) x 4 x (60/120)
  = 0.5 (sec)
  = 500 ms

  Thus, the DELAY will change from 250 ms to 500 ms.

  Example 2: When SYNC=ON, DELAY=250 ms, NOTE=8th note, you change TEMPO from 120 to 121

  DELAY= original DELAY x (previous TEMPO/new TEMPO)
  = 250 x (120/121)
  = 247.9 (ms)

  Thus, the TEMPO will change from 250 ms to 247.9 ms.

  *a Rounded values are used for the calculation results.

- **Ranges of the NOTE and TEMPO values**

  The ranges of the NOTE and TEMPO values are limited by the ranges of the DELAY or FREQ. values. You cannot set NOTE or TEMPO values that would cause DELAY or FREQ. to exceed their maximum possible values when synchronized to tempo. This limitation also applies even when SYNC is OFF.

- **Special characteristics of the TEMPO parameter**

  The TEMPO parameter has the following characteristics that are unlike other parameters.

  • It is a common value shared by all effects

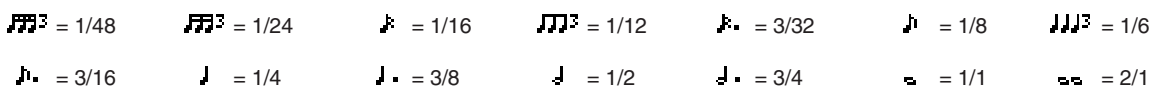
  • You cannot stored it to or recall it from the Effects Library. (You can store it to and recall it from a Scene.)

  This means that the TEMPO value may not necessarily be the same when an effect is recalled as when that effect was stored. Here is an example.

  Store the effect: TEMPO=120 → Change TEMPO to 60 → Recall the effect: TEMPO=60

  Normally when you change the TEMPO, the DELAY (or FREQ.) will be re-set accordingly. However if the DELAY (or FREQ.) were changed, the effect would sound differently when recalled than when it was stored. To prevent the effect from changing in this way between store and recall, the 02R96 does not update the DELAY (or FREQ.) value when an effect is recalled, even if the TEMPO is no longer the same as when that effect was stored.

* The NOTE parameter is calculated based on the following values.



Preset EQ Parameters

#	Title		Parameter			
			LOW	L-MID	H-MID	HIGH
01	Bass Drum 1		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+3.5 dB	–3.5 dB	0.0 dB	+4.0 dB
		F	100 Hz	265 Hz	1.06 kHz	5.30 kHz
		Q	1.2	10	0.9	—
02	Bass Drum 2		PEAKING	PEAKING	PEAKING	LPF
		G	+8.0 dB	–7.0 dB	+6.0 dB	ON
		F	80 Hz	400 Hz	2.50 kHz	12.5 kHz
		Q	1.4	4.5	2.2	—
03	Snare Drum 1		PEAKING	PEAKING	PEAKING	H.SHELF
		G	–0.5 dB	0.0 dB	+3.0 dB	+4.5 dB
		F	132 Hz	1.00 kHz	3.15 kHz	5.00 kHz
		Q	1.2	4.5	0.11	—
04	Snare Drum 2		L.SHELF	PEAKING	PEAKING	PEAKING
		G	+1.5 dB	–8.5 dB	+2.5 dB	+4.0 dB
		F	180 Hz	335 Hz	2.36 kHz	4.00 kHz
		Q	—	10	0.7	0.1
05	Tom-tom 1		PEAKING	PEAKING	PEAKING	PEAKING
		G	+2.0 dB	–7.5 dB	+2.0 dB	+1.0 dB
		F	212 Hz	670 Hz	4.50 kHz	6.30 kHz
		Q	1.4	10	1.2	0.28
06	Cymbal		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–2.0 dB	0.0 dB	0.0 dB	+3.0 dB
		F	106 Hz	425 Hz	1.06 kHz	13.2 kHz
		Q	—	8	0.9	—
07	High Hat		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–4.0 dB	–2.5 dB	+1.0 dB	+0.5 dB
		F	95 Hz	425 Hz	2.80 kHz	7.50 kHz
		Q	—	0.5	1	—
08	Percussion		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–4.5 dB	0.0 dB	+2.0 dB	0.0 dB
		F	100 Hz	400 Hz	2.80 kHz	17.0 kHz
		Q	—	4.5	0.56	—
09	E. Bass 1		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–7.5 dB	+4.5 dB	+2.5 dB	0.0 dB
		F	35.5 Hz	112 Hz	2.00 kHz	4.00 kHz
		Q	—	5	4.5	—
10	E. Bass 2		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+3.0 dB	0.0 dB	+2.5 dB	+0.5 dB
		F	112 Hz	112 Hz	2.24 kHz	4.00 kHz
		Q	0.1	5	6.3	—
11	Syn. Bass 1		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+3.5 dB	+8.5 dB	0.0 dB	0.0 dB
		F	85 Hz	950 Hz	4.00 kHz	12.5 kHz
		Q	0.1	8	4.5	—
12	Syn. Bass 2		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+2.5 dB	0.0 dB	+1.5 dB	0.0 dB
		F	125 Hz	180 Hz	1.12 kHz	12.5 kHz
		Q	1.6	8	2.2	—

#	Title		Parameter			
			LOW	L-MID	H-MID	HIGH
13	Piano 1		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–6.0 dB	0.0 dB	+2.0 dB	+4.0 dB
		F	95 Hz	950 Hz	3.15 kHz	7.50 kHz
		Q	—	8	0.9	—
14	Piano 2		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+3.5 dB	–8.5 dB	+1.5 dB	+3.0 dB
		F	224 Hz	600 Hz	3.15 kHz	5.30 kHz
		Q	5.6	10	0.7	—
15	E. G. Clean		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+2.0 dB	–5.5 dB	+0.5 dB	+2.5 dB
		F	265 Hz	400 Hz	1.32 kHz	4.50 kHz
		Q	0.18	10	6.3	—
16	E. G. Crunch 1		PEAKING	PEAKING	PEAKING	PEAKING
		G	+4.5 dB	0.0 dB	+4.0 dB	+2.0 dB
		F	140 Hz	1.00 kHz	1.90 kHz	5.60 kHz
		Q	8	4.5	0.63	9
17	E. G. Crunch 2		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+2.5 dB	+1.5 dB	+2.5 dB	0.0 dB
		F	125 Hz	450 Hz	3.35 kHz	19.0 kHz
		Q	8	0.4	0.16	—
18	E. G. Dist. 1		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	+5.0 dB	0.0 dB	+3.5 dB	0.0 dB
		F	355 Hz	950 Hz	3.35 kHz	12.5 kHz
		Q	—	9	10	—
19	E. G. Dist. 2		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	+6.0 dB	–8.5 dB	+4.5 dB	+4.0 dB
		F	315 Hz	1.06 kHz	4.25 kHz	12.5 kHz
		Q	—	10	4	—
20	A. G. Stroke 1		PEAKING	PEAKING	PEAKING	H.SHELF
		G	–2.0 dB	0.0 dB	+1.0 dB	+4.0 dB
		F	106 Hz	1.00 kHz	1.90 kHz	5.30 kHz
		Q	0.9	4.5	3.5	—
21	A. G. Stroke 2		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–3.5 dB	–2.0 dB	0.0 dB	+2.0 dB
		F	300 Hz	750 Hz	2.00 kHz	3.55 kHz
		Q	—	9	4.5	—
22	A. G. Arpeg. 1		L.SHELF	PEAKING	PEAKING	PEAKING
		G	–0.5 dB	0.0 dB	0.0 dB	+2.0 dB
		F	224 Hz	1.00 kHz	4.00 kHz	6.70 kHz
		Q	—	4.5	4.5	0.12
23	A. G. Arpeg. 2		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	0.0 dB	–5.5 dB	0.0 dB	+4.0 dB
		F	180 Hz	355 Hz	4.00 kHz	4.25 kHz
		Q	—	7	4.5	—
24	Brass Sec.		PEAKING	PEAKING	PEAKING	PEAKING
		G	–2.0 dB	–1.0 dB	+1.5 dB	+3.0 dB
		F	90 Hz	850 Hz	2.12 kHz	4.50 kHz
		Q	2.8	2	0.7	7

#	Title	Parameter				
			LOW	L-MID	H-MID	HIGH
25	Male Vocal 1		PEAKING	PEAKING	PEAKING	PEAKING
		G	–0.5 dB	0.0 dB	+2.0 dB	+3.5 dB
		F	190 Hz	1.00 kHz	2.00 kHz	6.70 kHz
		Q	0.11	4.5	0.56	0.11
26	Male Vocal 2		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+2.0 dB	–5.0 dB	–2.5 dB	+4.0 dB
		F	170 Hz	236 Hz	2.65 kHz	6.70 kHz
		Q	0.11	10	5.6	—
27	Female Vo. 1		PEAKING	PEAKING	PEAKING	PEAKING
		G	–1.0 dB	+1.0 dB	+1.5 dB	+2.0 dB
		F	118 Hz	400 Hz	2.65 kHz	6.00 kHz
		Q	0.18	0.45	0.56	0.14
28	Female Vo. 2		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–7.0 dB	+1.5 dB	+1.5 dB	+2.5 dB
		F	112 Hz	335 Hz	2.00 kHz	6.70 kHz
		Q	—	0.16	0.2	—
29	Chorus & Harmo		PEAKING	PEAKING	PEAKING	PEAKING
		G	–2.0 dB	–1.0 dB	+1.5 dB	+3.0 dB
		F	90 Hz	850 Hz	2.12 kHz	4.50 kHz
		Q	2.8	2	0.7	7
30	Total EQ 1		PEAKING	PEAKING	PEAKING	H.SHELF
		G	–0.5 dB	0.0 dB	+3.0 dB	+6.5 dB
		F	95 Hz	950 Hz	2.12 kHz	16.0 kHz
		Q	7	2.2	5.6	—
31	Total EQ 2		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+4.0 dB	+1.5 dB	+2.0 dB	+6.0 dB
		F	95 Hz	750 Hz	1.80 kHz	18.0 kHz
		Q	7	2.8	5.6	—
32	Total EQ 3		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	+1.5 dB	+0.5 dB	+2.0 dB	+4.0 dB
		F	67 Hz	850 Hz	1.90 kHz	15.0 kHz
		Q	—	0.28	0.7	—
33	Bass Drum 3		PEAKING	PEAKING	PEAKING	PEAKING
		G	+3.5 dB	–10.0 dB	+3.5 dB	0.0 dB
		F	118 Hz	315 Hz	4.25 kHz	20.0 kHz
		Q	2	10	0.4	0.4
34	Snare Drum 3		L.SHELF	PEAKING	PEAKING	PEAKING
		G	0.0 dB	+2.0 dB	+3.5 dB	0.0 dB
		F	224 Hz	560 Hz	4.25 kHz	4.00 kHz
		Q	—	4.5	2.8	0.1
35	Tom-tom 2		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–9.0 dB	+1.5 dB	+2.0 dB	0.0 dB
		F	90 Hz	212 Hz	5.30 kHz	17.0 kHz
		Q	—	4.5	1.2	—

#	Title	Parameter				
			LOW	L-MID	H-MID	HIGH
36	Piano 3		PEAKING	PEAKING	PEAKING	H.SHELF
		G	+4.5 dB	–13.0 dB	+4.5 dB	+2.5 dB
		F	100 Hz	475 Hz	2.36 kHz	10.0 kHz
		Q	8	10	9	—
37	Piano Low		PEAKING	PEAKING	PEAKING	H.SHELF
		G	–5.5 dB	+1.5 dB	+6.0 dB	0.0 dB
		F	190 Hz	400 Hz	6.70 kHz	12.5 kHz
		Q	10	6.3	2.2	—
38	Piano High		PEAKING	PEAKING	PEAKING	PEAKING
		G	–5.5 dB	+1.5 dB	+5.0 dB	+3.0 dB
		F	190 Hz	400 Hz	6.70 kHz	5.60 kHz
		Q	10	6.3	2.2	0.1
39	Fine-EQ Cass		L.SHELF	PEAKING	PEAKING	H.SHELF
		G	–1.5 dB	0.0 dB	+1.0 dB	+3.0 dB
		F	75 Hz	1.00 kHz	4.00 kHz	12.5 kHz
		Q	—	4.5	1.8	—
40	Narrator		PEAKING	PEAKING	PEAKING	H.SHELF
		G	–4.0 dB	–1.0 dB	+2.0 dB	0.0 dB
		F	106 Hz	710 Hz	2.50 kHz	10.0 kHz
		Q	4	7	0.63	—

Preset Gate Parameters

(fs = 44.1 kHz)

#	Title	Type	Parameter	Value
1	Gate	GATE	Threshold (dB)	–26
			Range (dB)	–56
			Attack (ms)	0
			Hold (ms)	2.56
			Decay (ms)	331
2	Ducking	DUCKING	Threshold (dB)	–19
			Range (dB)	–22
			Attack (ms)	93
			Hold (ms)	1.20 S
			Decay (ms)	6.32 S
3	A. Dr. BD	GATE	Threshold (dB)	–11
			Range (dB)	–53
			Attack (ms)	0
			Hold (ms)	1.93
			Decay (ms)	400
4	A. Dr. SN	GATE	Threshold (dB)	–8
			Range (dB)	–23
			Attack (ms)	1
			Hold (ms)	0.63
			Decay (ms)	238

Preset Compressor Parameters (fs = 44.1 kHz)

#	Title	Type	Parameter	Value
1	**Comp**	COMP	Threshold (dB)	–8
			Ratio (:1)	2.5
			Attack (ms)	60
			Out gain (dB)	0.0
			Knee	2
			Release (ms)	250
2	**Expand**	EXPAND	Threshold (dB)	–23
			Ratio (:1)	1.7
			Attack (ms)	1
			Out gain (dB)	3.5
			Knee	2
			Release (ms)	70
3	**Compander (H)**	COMPAND-H	Threshold (dB)	–10
			Ratio (:1)	3.5
			Attack (ms)	1
			Out gain (dB)	0.0
			Width (dB)	6
			Release (ms)	250
4	**Compander (S)**	COMPAND-S	Threshold (dB)	–8
			Ratio (:1)	4
			Attack (ms)	25
			Out gain (dB)	0.0
			Width (dB)	24
			Release (ms)	180
5	**A. Dr. BD**	COMP	Threshold (dB)	–24
			Ratio (:1)	3
			Attack (ms)	9
			Out gain (dB)	5.5
			Knee	2
			Release (ms)	58
6	**A. Dr. BD**	COMPAND-H	Threshold (dB)	–11
			Ratio (:1)	3.5
			Attack (ms)	1
			Out gain (dB)	–1.5
			Width (dB)	7
			Release (ms)	192
7	**A. Dr. SN**	COMP	Threshold (dB)	–17
			Ratio (:1)	2.5
			Attack (ms)	8
			Out gain (dB)	3.5
			Knee	2
			Release (ms)	12
8	**A. Dr. SN**	EXPAND	Threshold (dB)	–23
			Ratio (:1)	2
			Attack (ms)	0
			Out gain (dB)	0.5
			Knee	2
			Release (ms)	151
9	**A. Dr. SN**	COMPAND-S	Threshold (dB)	–8
			Ratio (:1)	1.7
			Attack (ms)	11
			Out gain (dB)	0.0
			Width (dB)	10
			Release (ms)	128

#	Title	Type	Parameter	Value
10	**A. Dr. Tom**	EXPAND	Threshold (dB)	–20
			Ratio (:1)	2
			Attack (ms)	2
			Out gain (dB)	5.0
			Knee	2
			Release (ms)	749
11	**A. Dr. OverTop**	COMPAND-S	Threshold (dB)	–24
			Ratio (:1)	2
			Attack (ms)	38
			Out gain (dB)	–3.5
			Width (dB)	54
			Release (ms)	842
12	**E. B. Finger**	COMP	Threshold (dB)	–12
			Ratio (:1)	2
			Attack (ms)	15
			Out gain (dB)	4.5
			Knee	2
			Release (ms)	470
13	**E. B. Slap**	COMP	Threshold (dB)	–12
			Ratio (:1)	1.7
			Attack (ms)	6
			Out gain (dB)	4.0
			Knee	hard
			Release (ms)	133
14	**Syn. Bass**	COMP	Threshold (dB)	–10
			Ratio (:1)	3.5
			Attack (ms)	9
			Out gain (dB)	3.0
			Knee	hard
			Release (ms)	250
15	**Piano1**	COMP	Threshold (dB)	–9
			Ratio (:1)	2.5
			Attack (ms)	17
			Out gain (dB)	1.0
			Knee	hard
			Release (ms)	238
16	**Piano2**	COMP	Threshold (dB)	–18
			Ratio (:1)	3.5
			Attack (ms)	7
			Out gain (dB)	6.0
			Knee	2
			Release (ms)	174
17	**E. Guitar**	COMP	Threshold (dB)	–8
			Ratio (:1)	3.5
			Attack (ms)	7
			Out gain (dB)	2.5
			Knee	4
			Release (ms)	261
18	**A. Guitar**	COMP	Threshold (dB)	–10
			Ratio (:1)	2.5
			Attack (ms)	5
			Out gain (dB)	1.5
			Knee	2
			Release (ms)	238

#	Title	Type	Parameter	Value
19	**Strings1**	COMP	Threshold (dB)	–11
			Ratio (:1)	2
			Attack (ms)	33
			Out gain (dB)	1.5
			Knee	2
			Release (ms)	749
20	**Strings2**	COMP	Threshold (dB)	–12
			Ratio (:1)	1.5
			Attack (ms)	93
			Out gain (dB)	1.5
			Knee	4
			Release (ms)	1.35 S
21	**Strings3**	COMP	Threshold (dB)	–17
			Ratio (:1)	1.5
			Attack (ms)	76
			Out gain (dB)	2.5
			Knee	2
			Release (ms)	186
22	**BrassSection**	COMP	Threshold (dB)	–18
			Ratio (:1)	1.7
			Attack (ms)	18
			Out gain (dB)	4.0
			Knee	1
			Release (ms)	226
23	**Syn. Pad**	COMP	Threshold (dB)	–13
			Ratio (:1)	2
			Attack (ms)	58
			Out gain (dB)	2.0
			Knee	1
			Release (ms)	238
24	**SamplingPerc**	COMPAND-S	Threshold (dB)	–18
			Ratio (:1)	1.7
			Attack (ms)	8
			Out gain (dB)	–2.5
			Width (dB)	18
			Release (ms)	238
25	**Sampling BD**	COMP	Threshold (dB)	–14
			Ratio (:1)	2
			Attack (ms)	2
			Out gain (dB)	3.5
			Knee	4
			Release (ms)	35
26	**Sampling SN**	COMP	Threshold (dB)	–18
			Ratio (:1)	4
			Attack (ms)	8
			Out gain (dB)	8.0
			Knee	hard
			Release (ms)	354
27	**Hip Comp**	COMPAND-S	Threshold (dB)	–23
			Ratio (:1)	20
			Attack (ms)	15
			Out gain (dB)	0.0
			Width (dB)	15
			Release (ms)	163

#	Title	Type	Parameter	Value
28	**Solo Vocal1**	COMP	Threshold (dB)	–20
			Ratio (:1)	2.5
			Attack (ms)	31
			Out gain (dB)	2.0
			Knee	1
			Release (ms)	342
29	**Solo Vocal2**	COMP	Threshold (dB)	–8
			Ratio (:1)	2.5
			Attack (ms)	26
			Out gain (dB)	1.5
			Knee	3
			Release (ms)	331
30	**Chorus**	COMP	Threshold (dB)	–9
			Ratio (:1)	1.7
			Attack (ms)	39
			Out gain (dB)	2.5
			Knee	2
			Release (ms)	226
31	**Click Erase**	EXPAND	Threshold (dB)	–33
			Ratio (:1)	2
			Attack (ms)	1
			Out gain (dB)	2.0
			Knee	2
			Release (ms)	284
32	**Announcer**	COMPAND-H	Threshold (dB)	–14
			Ratio (:1)	2.5
			Attack (ms)	1
			Out gain (dB)	–2.5
			Width (dB)	18
			Release (ms)	180
33	**Limiter1**	COMPAND-S	Threshold (dB)	–9
			Ratio (:1)	3
			Attack (ms)	20
			Out gain (dB)	–3.0
			Width (dB)	90
			Release (ms)	3.90 s
34	**Limiter2**	COMP	Threshold (dB)	0
			Ratio (:1)	∞
			Attack (ms)	0
			Out gain (dB)	0.0
			Knee	hard
			Release (ms)	319
35	**Total Comp1**	COMP	Threshold (dB)	–18
			Ratio (:1)	3.5
			Attack (ms)	94
			Out gain (dB)	2.5
			Knee	hard
			Release (ms)	447
36	**Total Comp2**	COMP	Threshold (dB)	–16
			Ratio (:1)	6
			Attack (ms)	11
			Out gain (dB)	6.0
			Knee	1
			Release (ms)	180

Dynamics Parameters

The dynamics effects for each channel strip include a Gate section (only for Input Channels) and a Comp section. The Gate section includes Gate and Ducking types. The Comp section includes Compressor, Expander, Compander Hard (COMP. (H)), and Compander Soft (COMP. (S)) types.

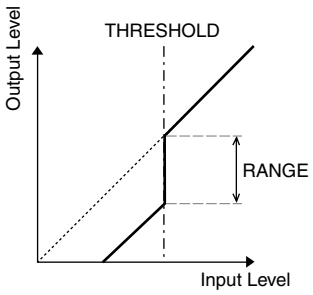
GATE Section (Only for Input Channels)

GATE

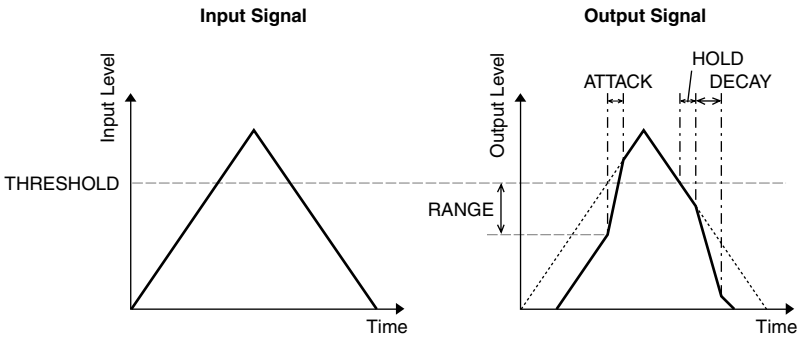
A gate attenuates signals below a set THRESHOLD level by a specified amount (RANGE).

Parameter	Range	Description
THRESHOLD (dB)	–54.0 to 0.0 (541 points)	This determines the level at which the gate effect is applied.
RANGE (dB)	–70 to 0 (71 points)	This determines the amount of attenuation when the gate closes.
ATTACK (ms)	0–120 (121 points)	This determines how fast the gate opens when the signal exceeds the threshold level.
HOLD (ms)	44.1kHz: 0.02 ms – 2.13 sec 48kHz: 0.02 ms – 1.96 sec 88.2kHz: 0.01 ms – 1.06 sec 96kHz: 0.01 ms – 981 ms (160 points)	This determines how long the gate stays open once the trigger signal has fallen below the threshold.
DECAY (ms)	44.1kHz: 6 ms – 46.0 sec 48kHz: 5 ms – 42.3 sec 88.2kHz: 3 ms – 23.0 sec 96kHz: 3 ms – 21.1 sec (160 points)	This determines how fast the gate closes once the hold time has expired. The value is expressed as the duration required for the level to change by 6 dB.

I/O Characteristics



Time Series Analysis

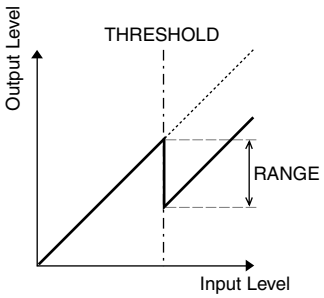


DUCKING

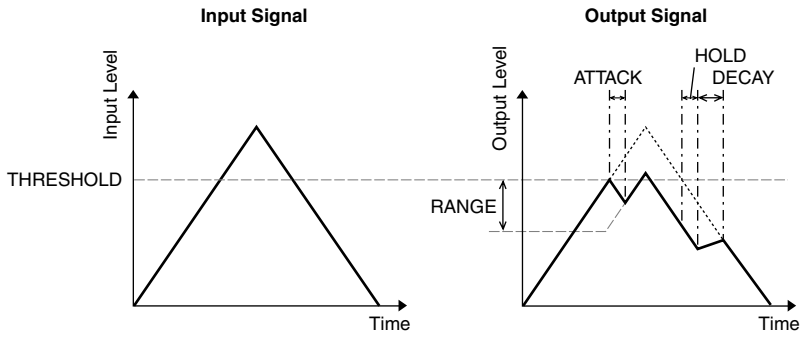
Ducking is commonly used for voice-over applications in which the background music level is reduced automatically when an announcer speaks. When the KEY IN source signal level exceeds the specified THRESHOLD, the output level is attenuated by a specified amount (RANGE).

Parameter	Range	Description
THRESHOLD (dB)	–54.0 to 0.0 (541 points)	This determines the level of trigger signal (KEY IN) required to activate ducking.
RANGE (dB)	–70 to 0 (71 points)	This determines the amount of attenuation when ducking is activated.
ATTACK (ms)	0–120 (121 points)	This determines how soon the signal is ducked once the ducker has been triggered.
HOLD (ms)	44.1kHz: 0.02 ms – 2.13 sec 48kHz: 0.02 ms – 1.96 sec 88.2kHz: 0.01 ms – 1.06 sec 96kHz: 0.01 ms – 981 ms (160 points)	This determines how long ducking remains active once the trigger signal has fallen below the THRESHOLD level.
DECAY (ms)	44.1kHz: 6 ms – 46.0 sec 48kHz: 5 ms – 42.3 sec 88.2kHz: 3 ms – 23.0 sec 96kHz: 3 ms – 21.1 sec (160 points)	This determines how soon the ducker returns to its normal gain once the trigger signal level drops below the threshold. The value is expressed as the duration required for the level to change by 6 dB.

I/O Characteristics



Time Series Analysis



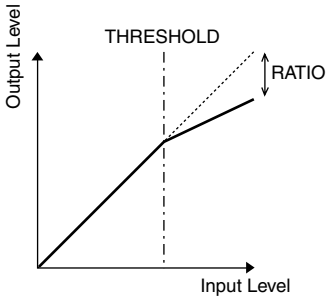
COMP Section

COMP

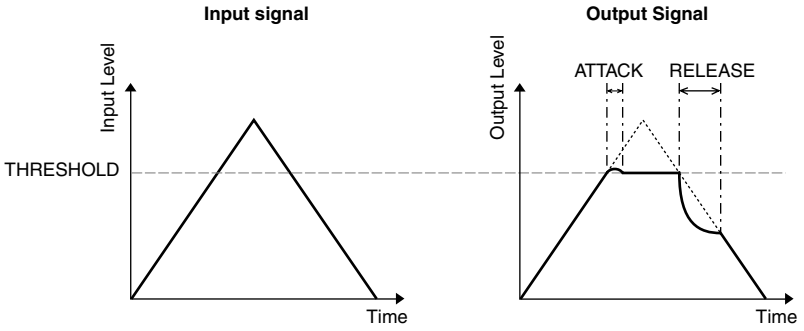
The COMP processor attenuates signals above a specified THRESHOLD by a specified RATIO. The COMP processor can also be used as a limiter, which, with a RATIO of ∞:1, reduces the level to the threshold. This means that the limiter's output level never actually exceeds the threshold.

Parameter	Range	Description
THRESHOLD (dB)	–54.0 to 0.0 (541 points)	This determines the level of input signal required to trigger the compressor.
RATIO	1.0:1, 1.1:1, 1.3:1, 1.5:1, 1.7:1, 2.0:1, 2.5:1, 3.0:1, 3.5:1, 4.0:1, 5.0:1, 6.0:1, 8.0:1, 10:1, 20:1, ∞:1 (16 points)	This determines the amount of compression, that is, the change in output signal level relative to change in input signal level.
ATTACK (ms)	0–120 (121 points)	This determines how soon the signal will be compressed once the compressor has been triggered.
RELEASE (ms)	44.1kHz: 6 ms – 46.0 sec 48kHz: 5 ms – 42.3 sec 88.2kHz: 3 ms – 23.0 sec 96kHz: 3 ms – 21.1 sec (160 points)	This determines how soon the compressor returns to its normal gain once the trigger signal level drops below the threshold. The value is expressed as the duration required for the level to change by 6 dB.
OUT GAIN (dB)	0.0 to +18.0 (180 points)	This sets the compressor's output signal level.
KNEE	Hard, 1–5 (6 points)	This determines how compression is applied at the threshold. For higher knee settings, compression is applied gradually as the signal exceeds the specified threshold, creating a more natural sound.

I/O Characteristics (KNEE=hard, OUT GAIN=0.0dB)



Time Series Analysis (RATIO=∞:1)

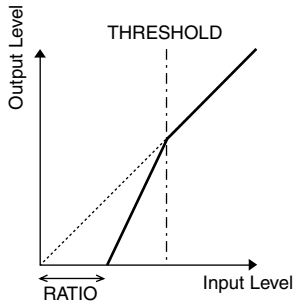


EXPAND

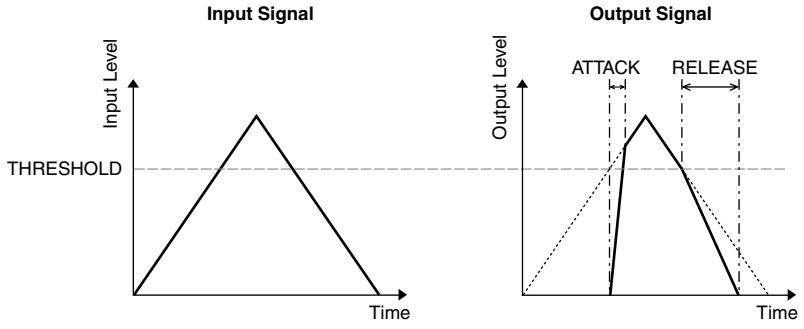
An expander attenuates signals below a specified THRESHOLD by a specified RATIO.

Parameter	Range	Description
THRESHOLD (dB)	–54.0 to 0.0 (541 points)	This determines the level of input signal required to trigger the expander.
RATIO	1.0:1, 1.1:1, 1.3:1, 1.5:1, 1.7:1, 2.0:1, 2.5:1, 3.0:1, 3.5:1, 4.0:1, 5.0:1, 6.0:1, 8.0:1, 10:1, 20:1, ∞:1 (16 points)	This determines the amount of expansion.
ATTACK (ms)	0–120 (121 points)	This determines how soon the expander returns to its normal gain once the trigger signal level exceeds the threshold.
RELEASE (ms)	44.1kHz: 6 ms – 46.0 sec 48kHz: 5 ms – 42.3 sec 88.2kHz: 3 ms – 23.0 sec 96kHz: 3 ms – 21.1 sec (160 points)	This determines how soon the signal is expanded once the signal level drops below the threshold. The value is expressed as the duration required for the level to change by 6 dB.
OUT GAIN (dB)	0.0 to +18.0 (180 points)	This sets the expander's output signal level.
KNEE	Hard, 1–5 (6 points)	This determines how expansion is applied at the threshold. For higher knee settings, expansion is applied gradually as the signal falls below the specified threshold, creating a more natural sound.

I/O Characteristics (KNEE=hard, OUT GAIN=0.0dB)

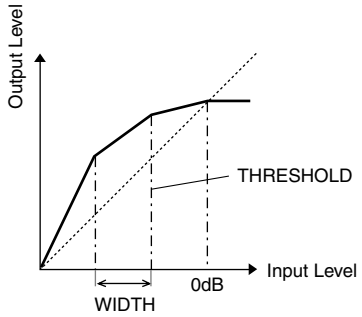


Time Series Analysis (RATIO=∞:1)



COMPANDER HARD (H)
COMPANDER SOFT (S)

The hard and soft companders combine the effects of the compressor, expander and limiter.



The companders function differently at the following levels:

① 0 dB and higher.....Functions as a limiter.

② Exceeding the threshold .....Functions as a compressor.

③ Below the threshold and width.....Functions as an expander.

The hard compander has an expansion ratio of 5:1, while the soft compander has an expansion ratio of 1.5:1. The expander is essentially turned off when the width is set to maximum. The compressor has a fixed knee setting of 2.

* The gain is automatically adjusted according to the ratio and threshold values, and can be increased by up to 18 dB.
* The OUT GAIN parameter enables you to compensate for the overall level change caused by the compression and expansion processes.

Parameter	Range	Description
THRESHOLD (dB)	–54.0 to 0.0 (541 points)	This determines the level at which compression is applied.
RATIO	1.0:1, 1.1:1, 1.3:1, 1.5:1, 1.7:1, 2.0:1, 2.5:1, 3.0:1, 3.5:1, 4.0:1, 5.0:1, 6.0:1, 8.0:1, 10:1, 20:1, (15 points)	This determines the amount of compression.
ATTACK (ms)	0–120 (121 points)	This determines how soon the signal is compressed or expanded once the compander has been triggered.
RELEASE (ms)	44.1kHz: 6 ms – 46.0 sec 48kHz: 5 ms – 42.3 sec 88.2kHz: 3 ms – 23.0 sec 96kHz: 3 ms – 21.1 sec (160 points)	This determines how soon the compressor or expander returns to the normal gain once the trigger signal level drops below or exceeds the threshold respectively. The value is expressed as the duration required for the level to change by 6 dB.
OUT GAIN (dB)	–18.0 to 0.0 (180 points)	This sets the compander's output signal level.
WIDTH (dB)	0–90 (91 points)	This determines how far below the threshold expansion will be applied. The expander is activated when the level drops below the threshold and width.

Appendix B: Specifications

General Spec

Number of scene memories		99
Sampling Frequency	**Internal**	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
	External	Normal rate: 44.1 kHz–10% to 48 kHz+6%
		Double rate: 88.2 kHz–10% to 96 kHz+6%
Signal Delay		Less than 2.0 ms CH INPUT to STEREO OUT (fs=48 kHz)
		Less than 1.1 ms CH INPUT to STEREO OUT (fs=96 kHz)
Fader		100 mm motorized with touch sense × 25
Fader Resolution		+10 to –138, –∞dB input faders (10bit fader data)
		0 to –138, –∞dB master fader (10bit fader data)
Total Harmonic Distortion[1] (CH INPUT to STEREO OUT) (Input Gain=Min.)	fs=48 kHz	Less than 0.05% 20 Hz to 20 kHz @ +14 dB into 600 Ω Less than 0.01% 1 kHz @ +18 dB into 600 Ω
	fs=96 kHz	Less than 0.05% 20 Hz to 40 kHz @ +14 dB into 600 Ω Less than 0.01% 1 kHz @ +18 dB into 600 Ω
Frequency Response (CH INPUT to STEREO OUT)		20 Hz–20 kHz, 0.5, –1.5 dB @ +4 dB into 600 Ω (fs=48 kHz)
		20 Hz–40 kHz, 0.5, –1.5 dB @ +4 dB into 600 Ω (fs=96 kHz)
Dynamic Range (maximum level to noise level)		110 dB typ. DA Converter (STEREO OUT)
		105 dB typ. AD+DA (to STEREO OUT) @ fs=48 kHz
		105 dB typ. AD+DA (to STEREO OUT) @ fs=96 kHz
Hum & Noise[2] (20 Hz–20 kHz) Rs=150 Ω Input Gain=Max. Input Pad =0 dB		–128 dB Equivalent Input Noise
		–92 dB residual output noise. STEREO OUT (STEREO OUT off)
		–92 dB (96 dB S/N) STEREO OUT (STEREO fader at nominal level and all CH INPUT faders at minimum level)
		–64 dB (68 dB S/N) STEREO OUTPUT (STEREO fader at nominal level and one CH INPUT fader at nominal level)
Maximum Voltage Gain		74 dB CH INPUT (CH1–24) to STEREO OUT/OMNI (BUS) OUT
		74 dB CH INPUT (CH1–24) to OMNI (AUX) OUT (via pre input fader)
		74 dB CH INPUT (CH1–24) to CONTROL ROOM MONITOR OUT (via STEREO bus)
Crosstalk (@ 1 kHz) Input Gain=Min.		–80 dB adjacent input channels (CH1–24)
		–80 dB input to output
AD Input (1–16: A/B)	**Phantom switch**	+48 V DC is supplied to A (XLR-3-31 type) input
	Pad switch	0/26 dB attenuation
	Gain control	44 dB (–60 to –16), detented
	Peak indicator	LED (red) turns on when post HA level reaches 3 dB below clipping
	Signal indicator	LED (green) turns on when post HA level reaches 20 dB below nominal
	Insert	I/O (pre AD converter)
	Insert switch	on/off
	AD converter	24-bit linear, 128-times oversampling (fs=48 kHz)
AD Input (17–24)	**Gain control**	44 dB (–34 to +10), detented
	Peak indicator	LED (red) turns on when post HA level reaches 3 dB below clipping
	Signal indicator	LED (green) turns on when post HA level reaches 20 dB below nominal
	AD converter	24-bit linear, 128-times oversampling (fs=48 kHz)
Analog Input (2TR IN ANALOG 1, 2)	**AD converter**	24-bit linear, 128-times oversampling (fs=48 kHz)
Option Input (SLOT 1–4)	**Available cards**	Optional digital interface cards (MY16, MY8, MY4 series)
Digital Input (2TR IN DIGITAL 1–3)	**SRC**	On/off (1:3 and 3:1 maximum input to output sample rate ratio)

Input Channel CH1–56	**Input patch**	—
	Phase	Normal/reverse
	Gate-type[3]	On/off
		Key in: 12 ch Group (1–12, 13–24, 25–36, 37–48, 49–56)/AUX1–8
	Comp-type[4]	On/off
		Key in: self /Stereo Link
		Pre EQ/pre fader/post fader
	Attenuator	–96.0 to +12.0 dB (0.1 dB step)
	EQ	4-band PEQ[5]
		On/off
	Delay	0–43400 samples
	On/off	—
	Fader	100 mm motorized (INPUT/AUX1–8)
	Aux send	On/off
		AUX1–8; pre fader/post fader
	Solo	On/off
		Pre fader/after pan
	Pan	127 positions (Left= 1–63, Center, Right= 1–63)
	Surround pan	127 × 127 positions
	LFE level	–∞, –96 dB to +10 dB (256 step)
	Routing	STEREO, BUS1–8, DIRECT OUT
	Direct out	Pre EQ/pre fader/post fader
	Metering	Displayed on LCD
		Peak hold on/off
TALKBACK	**Level control**	Analog rotary potentiometer
	AD converter	24-bit linear, 128-times oversampling
	Talkback select	Built-in microphone/AD IN 1–16
	On/off	—
OSCILLATOR	**Level**	0 to –96 dB (1 dB step)
	On/off	—
	Waveform	Sine 100 Hz, sine 1 kHz, sine 10 kHz, pink noise, burst noise
	Routing	BUS1–8, AUX1–8, STEREO L, R
STEREO OUT	**DA converter**	24-bit linear, 128-times oversampling
OMNI OUT 1–8	**Output patch**	SURROUND MONITOR, STEREO, BUS1–8, AUX1–8, DIRECT OUT 1–56, INSERT OUT (CH1–56, BUS1–8, AUX1–8, STEREO)
	DA converter	24-bit linear, 128-times oversampling
CONTROL ROOM MONITOR OUT	**Monitor select**	STEREO, 2TR IN DIGITAL 1, 2TR IN DIGITAL 2, 2TR IN DIGITAL 3, 2TR I N ANALOG 1, 2TR IN ANALOG 2, ASSIGN 1, 2 (BUS 1–8/AUX 1–8)
	Mono	On/off
	Dimmer	On/off
	DA converter	24-bit linear, 128-times oversampling
	Level control	Analog rotary potentiometer
	Phones level	Analog rotary potentiometer
STUDIO MONITOR OUT	**Monitor select**	CONTROL ROOM, STEREO, AUX 7, AUX 8, TALKBACK
	DA converter	24-bit linear, 128-times oversampling
	Level control	Analog rotary potentiometer
2TR OUT DIGITAL 1–3	**Dither**	On/off
		Word length 16, 20, 24-bit
	Output patch	STEREO, BUS1–8, AUX 1–8, DIRECT OUT 1–56, INSERT OUT, CONTROL ROOM
Option Output (SLOT 1–4)	**Available card**	Optional digital interface card (MY16, MY8, MY4 series)
	Output patch	SURROUND MONITOR, STEREO, BUS1–8, AUX1–8, DIRECT OUT 1–56, INSERT OUT (CH1–56, BUS1–8, AUX1–8, STEREO)
	Dither	On/off
		Word length 16/20/24-bit

STEREO	**Comp-type**[4]	On/off
		Pre EQ/pre fader/post fader
	Attenuator	–96.0 to +12.0 dB (0.1 dB step)
	EQ	4-band PEQ[5]
		On/off
	On/off	—
	Fader	100 mm motorized
	Balance	127 positions (Left=1–63, Center, Right=1–63)
	Delay	0–43400 samples
	Metering	Displayed on LCD
		Peak hold on/off
BUS1–8	**Comp-type**[4]	On/off
		Pre EQ/pre fader/post fader
	Attenuator	–96.0 to +12.0 dB (0.1 dB step)
	EQ	4-band PEQ[5]
		On/off
	On/off	—
	Fader	100 mm motorized
	Delay	0–43400 samples
	Bus to stereo	Level (–∞, –130 dB to 0 dB)
		On/off
		Pan: 127 positions (Left=1–63, Center, Right=1–63)
	Metering	Displayed on LCD
		Peak hold on/off
AUX1–8	**Comp-type**[4]	On/off
		Pre EQ/pre fader/post fader
	Attenuator	–96.0 to +12.0 dB (0.1 dB step)
	EQ	4-band PEQ[5]
		On/off
	On/off	—
	Fader	100 mm motorized
	Delay	0–43400 samples
	Metering	Displayed on LCD
		Peak hold on/off
SURROUND MONITOR	**Mute**	On/off
	Solo	On/off
	Source	BUS1–8, SLOT 1–4
	Monitor to C-R	On/off
	Oscillator	Pink noise/500–2 kHz/1 kHz/50 Hz
	Monitor matrix	6.1→6.1, 6.1→5.1, 6.1→3-1, 6.1→ST, 5.1→5.1, 5.1→3-1, 5.1→ST, 3.1→3.1, 3.1→ST
	Bass management	5 presets
	Monitor alignment	ATT (–12.0 dB to 12 dB 0.1 dB step), Delay (0–30.0 msec 0.02 msec step)
INTERNAL EFFECTS (EFFECT 1–4)	**Bypass**	On/off
	In/out	8-in, 8-out (EFFECT1): depends on effects type
		2-in, 2-out (EFFECT2–4): depends on effects type
	Effect-in from	AUX1–8/INSERT OUT/effect-out
	Effect-out to	Input patch/effect-in
Power Requirements	**U.S./Canada**	120 V, 60 Hz 200 W
	Other	220–240 V, 50/60 Hz 200 W
Dimensions	**(H x D x W)**	239 x 697 x 667 mm (9.4" x 27.4" x 26.3")
Net weight		34 kg (75 lbs)
Operating free-air temperature range		10–35°C (50–95°F)
Storage temperature range		–20 to 60°C (–4 to 140°F)

Supplied Accessories	AC Cable CD-ROM (Studio Manager)
Options	Digital interface card (MY16, MY8, MY4 series) PEAK METER BRIDGE: MB02R96 SIDE PANEL: SP02R96

1. Total harmonic distortion is measured with a 6 dB/octave filter @ 80 kHz.
2. Hum & Noise are measured with a 6 dB/octave filter @ 12.7 kHz; equivalent to a 20 kHz filter with infinite dB/octave attenuation.
3. See "Gate Parameters" on page 294.
4. See "Comp Parameters" on page 295.
5. See "EQ Parameters" on page 294.

EQ Parameters

	LOW/HPF	L-MID	H-MID	HIGH /LPF
Q	0.1–10.0 (41 points) low shelving HPF	0.1–10.0 (41 points)		0.1–10.0 (41 points) high shelving LPF
F	21.2 Hz–20 kHz (1/12 oct step)			
G	±18 dB (0.1 dB step) HPF: on/off	±18 dB (0.1 dB step)		±18 dB (0.1 dB step) LPF: on/off

Gate Parameters

Gate	**Threshold**	–54 dB to 0 dB (0.1 dB step)
	Range	–70 dB to 0 dB (1 dB step)
	Attack	0 ms–120 ms (1 ms step)
	Hold	0.02 ms–1.96 s (216 points) @ 48 kHz
		0.02 ms–2.13 s (216 points) @ 44.1 kHz
		0.01 ms–981 ms (216 points) @ 96 kHz
		0.01 ms–1.06 s (216 points) @ 88.2 kHz
	Decay	5 ms–42.3 s (160 points) @ 48 kHz
		6 ms–46.0 s (160 points) @ 44.1 kHz
		3 ms–21.1 s (160 points) @ 96 kHz
		3 ms–23.0 s (160 points) @ 88.2 kHz
Ducking	**Threshold**	–54 dB to 0 dB (0.1 dB step)
	Range	–70 dB to 0 dB (1 dB step)
	Attack	0 ms–120 ms (1 ms step)
	Hold	0.02 ms–1.96 s (216 points) @ 48 kHz
		0.02 ms–2.13 s (216 points) @ 44.1 kHz
		0.01 ms–981 ms (216 points) @ 96 kHz
		0.01 ms–1.06 s (216 points) @ 88.2 kHz
	Decay	5 ms–42.3 s (160 points) @ 48 kHz
		6 ms–46.0 s (160 points) @ 44.1 kHz
		3 ms–21.1 s (160 points) @ 96 kHz
		3 ms–23.0 s (160 points) @ 88.2 kHz

Comp Parameters

Compressor	**Threshold**	–54 dB to 0 dB (0.1 dB step)
	Ratio (x :1)	x=1, 1.1, 1.3, 1.5, 1.7, 2, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 20, ∞ (16 points)
	Out gain	0 dB to +18 dB (0.1 dB step)
	Knee	Hard, 1, 2, 3, 4, 5 (6 step)
	Attack	0 ms–120 ms (1 ms step)
	Release	5 ms–42.3 s (160 points) @ 48 kHz
		6 ms–46.0 s (160 points) @ 44.1 kHz
		3 ms–21.1 s (160 points) @ 96 kHz
		3 ms–23.0 s (160 points) @ 88.2 kHz
Expander	**Threshold**	–54 dB to 0 dB (0.1 dB step)
	Ratio (x :1)	x=1, 1.1, 1.3, 1.5, 1.7, 2, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 20, ∞ (16 points)
	Out gain	0 dB to +18 dB (0.1 dB step)
	Knee	Hard, 1, 2, 3, 4, 5 (6 points)
	Attack	0 ms–120 ms (1 ms step)
	Release	5 ms–42.3 s (160 points) @ 48 kHz
		6 ms–46.0 s (160 points) @ 44.1 kHz
		3 ms–21.1 s (160 points) @ 96 kHz
		3 ms–23.0 s (160 points) @ 88.2 kHz
Compander H	**Threshold**	–54 dB to 0 dB (0.1 dB step)
	Ratio (x :1)	x=1, 1.1, 1.3, 1.5, 1.7, 2, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 20 (15 points)
	Out gain	–18 dB to 0 dB (0.1 dB step)
	Width	1 dB–90 dB (1 dB step)
	Attack	0 ms–120 ms (1 ms step)
	Release	5 ms–42.3 s (160 points) @ 48 kHz
		6 ms–46.0 s (160 points) @ 44.1 kHz
		3 ms–21.1 s (160 points) @ 96 kHz
		3 ms–23.0 s (160 points) @ 88.2 kHz
Compander S	**Threshold**	–54 dB to 0 dB (0.1 dB step)
	Ratio (x :1)	x=1, 1.1, 1.3, 1.5, 1.7, 2, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 20 (15 points)
	Out gain	–18 dB to 0 dB (0.1 dB step)
	Width	1 dB–90 dB (1 dB step)
	Attack	0 ms–120 ms (1 ms step)
	Release	5 ms–42.3 s (160 points) @ 48 kHz
		6 ms–46.0 s (160 points) @ 44.1 kHz
		3 ms–21.1 s (160 points) @ 96 kHz
		3 ms–23.0 s (160 points) @ 88.2 kHz

Libraries

Effect library (EFFECT 1–4)	Presets	61 (EFFECT 2–4: 53)[1]
	User memories	67
Compressor library	Presets	36
	User memories	92
Gate library	Presets	4
	User memories	124
EQ library	Presets	40
	User memories	160
Channel library	Presets	2
	User memories	127
Surround Monitor library	Presets	1
	User memories	32
Input patch library	Presets	1
	User memories	32
Output patch library	Presets	1
	User memories	32
Bus to Stereo library	Presets	1
	User memories	32

1. Effects #53–61 are Add-On Effects.

Analog Input Spec

Input	PAD	GAIN	Actual Load Impedance	For Use With Nominal	Input level			Connector
					Sensitivity[1]	Nominal	Max. before clip	
INPUT A/B 1–16	0	–60 dB	3k Ω	50–600 Ω Mics & 600 Ω Lines	–70 dB (0.245 mV)	–60 dB (0.775 mV)	–46 dB (3.88 mV)	A: XLR-3-31 type (Balanced)[2] B: Phone jack (TRS) (Balanced)[3]
		–16 dB			–26 dB (38.8 mV)	–16 dB (0.123 V)	–2 dB (616 mV)	
	26				0 dB (775 mV)	+10 dB (2.45 V)	+24 dB (12.28 V)	
INPUT 17–24	—	–34 dB	4K Ω	600 Ω Lines	–44 dB (4.89 mV)	–34 dB (15.5 mV)	–20 dB (77.5 mV)	Phone jack (TRS) (Balanced)[3]
		+10 dB			0 dB (775 mV)	+10 dB (2.45 V)	+24 dB (12.28 V)	
INSERT IN 1–16	—		10K Ω	600 Ω Lines	–6 dB (388 mV)	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone jack (TRS)[4]
2TR IN ANALOG 1 [L, R]	—		10K Ω	600 Ω Lines	+4 dB (1.23 V)	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone jack (TRS) (Balanced)[3]
2TR IN ANALOG 2 [L, R]	—		10K Ω	600 Ω Lines	–10 dBV (0.316 V)	–10 dBV (0.316 V)	+4 dBV (1.58 V)	Phono (Unbalanced)

1. Sensitivity is the lowest level that will produce an output of +4 dB (1.23 V) or the nominal output level when the unit is set to maximum gain. (All faders and level controls are maximum position.)
2. XLR-3-31 type connectors are balanced (1=GND, 2=HOT, 3=COLD).
3. Phone jacks are balanced (Tip=HOT, Ring=COLD, Sleeve=GND).
4. Phone jacks are wired: Tip=OUT, Ring=IN, Sleeve=GND

In these specifications, when dB represents a specific voltage, 0 dB is referenced to 0.775 Vrms.
For 2TR IN ANALOG 2 levels, 0 dBV is referenced to 1.00 Vrms.
All input AD converters (except INSERT I/O 1–16) are 24-bit linear, 128-times oversampling.
+48 V DC (phantom power) is supplied to CH INPUT (1–16) XLR type connectors via individual switches.

Analog Output Spec

Output	Actual Source Impedance	For Use With Nominal	GAIN SW[1]	Output level		Connector
				Nominal	Max. before clip	
STEREO OUT [L, R]	600 Ω	10k Ω Lines	—	–10 dBV (0.316 V)	+4 dBV (1.58 V)	Phono (Unbalanced)
	75 Ω	600 Ω Lines	—	+4 dB (1.23 V)	+18 dB (6.16 V)	XLR-3-32 type (Balanced)[2]
STUDIO MONITOR OUT [L, R]	150 Ω	10k Ω Lines	—	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack (TRS) (Balanced)[3]
C-R MONITOR OUT [L, R]	150 Ω	10k Ω Lines	—	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack (TRS) (Balanced)[3]
OMNI OUT 1–8	150 Ω	10k Ω Lines	+18 dB (default)	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack (TRS) (Balanced)[3]
			+4 dB	–10 dB (0.245 V)	+4 dB (1.23 V)	
INSERT OUT 1–16	600 Ω	10k Ω Lines	—	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack (TRS)[4]
PHONES	100 Ω	8 Ω Phones	—	4 mW	25 mW	Stereo Phone Jack (TRS) (Unbalanced)[5]
		40 Ω Phones	—	12 mW	75 mW	

1. The maximum output level of each OMNI OUT can be set internally.
2. XLR-3-32 type connectors are balanced (1=GND, 2=HOT, 3=COLD).
3. Phone jacks are balanced (Tip=HOT, Ring=COLD, Sleeve=GND).
4. Phone jacks are wired: Tip=OUT, Ring=IN, Sleeve=GND
5. PHONES stereo phone jack is unbalanced (Tip=LEFT, Ring=RIGHT, Sleeve=GND).

STEREO OUT [L, R], 0 dBV is referenced to 1.00 Vrms.
In these specifications, when dB represents a specific voltage, 0 dB is referenced to 0.775 Vrms.
All output DA converters (except INSERT OUT 1–16) are 24-bit, 128-times oversampling.

Digital Input Spec

Input		Format	Data length	Level	Connector
2TR IN DIGITAL	1	AES/EBU	24-bit	RS422	XLR-3-31 type (Balanced)[1]
	2	IEC-60958	24-bit	0.5 Vpp/75 Ω	RCA pin jack
	3	IEC-60958	24-bit	0.5 Vpp/75 Ω	RCA pin jack
CASCADE IN		—	—	RS422	D-SUB Half Pitch Connector 68P (Female)

1. XLR-3-31 type connectors are balanced (1=GND, 2=HOT, 3=COLD).

Digital Output Spec

Output		Format	Data length	Level	Connector
2TR OUT DIGITAL	1	AES/EBU[1] Professional use	24-bit[2]	RS422	XLR-3-32 type (Balanced)[3]
	2	IEC-60958[4] Consumer use	24-bit[2]	0.5V pp/75 Ω	RCA pin jack
	3	IEC-60958[4] Consumer use	24-bit[2]	0.5V pp/75 Ω	RCA pin jack
CASCADE OUT		—	—	RS422	D-SUB Half Pitch Connector 68P (Female)

1. Channel status of 2TR OUT DIGITAL 1
   Type: 2 audio channels
   Emphasis: NO
   Sampling rate: depends on the internal configuration

2. Dither: word length 16/20/24 bit

3. XLR-3-32 type connectors are balanced (1=GND, 2=HOT, 3=COLD).

4. Channel status of 2TR OUT DIGITAL 2, 3
   Type: 2 audio channels
   Category code: 2 channel PCM encoder/decoder
   Copy prohibit: NO
   Emphasis: NO
   Clock accuracy: Level II (1000 ppm)
   Sampling rate: depends on the internal configuration

I/O Slot Spec (1–4)

Each I/O SLOT accepts a digital interface card. Only SLOT #1 has a serial interface.

Card Name	Function	Input	Output	Number of available cards
MY16-AT	ADAT	16 IN	16OUT (depends on output patch)[1]	4
MY8-AT	ADAT	8 IN	8 OUT (depends on output patch)[1]	4
MY16-TD	TASCAM	16 IN	16 OUT (depends on output patch)[1]	4
MY8-TD	TASCAM	8 IN	8 OUT (depends on output patch)[1]	4
MY16-AE	AES/EBU	16 IN	16 OUT (depends on output patch)[1]	4
MY8-AE	AES/EBU	8 IN	8 OUT (depends on output patch)[1]	4
MY8-AEB	AES/EBU	8 IN	8 OUT (depends on output patch)[1]	4
MY4-AD	ANALOG IN	4 IN	—	4
MY8-AD	ANALOG IN	8 IN	—	4
MY4-DA	ANALOG OUT	—	4 OUT (depends on output patch)[1]	4
MY8-AD24	ANALOG IN	8 IN	—	4
MY8-AD96	ANALOG IN	8 IN	—	4
MY8-DA96	ANALOG OUT	—	8 OUT (depends on output patch)[1]	4
MY8-AE96S	AES/EBU	8 IN	8 OUT (depends on output patch)[1]	2
MY8-AE96	AES/EBU	8 IN	8 OUT (depends on output patch)[1]	4
MY8-mLAN	mLAN	8 IN	8 OUT (depends on output patch)[1]	4
MY16-mLAN	mLAN	16 IN	16 OUT (depends on output patch)[1]	3
Waves Y56K	Effect & I/O	8 IN	8 OUT (depends on output patch)[1]	2
Waves Y96K	Effect & I/O	8 IN	8 OUT (depends on output patch)[1]	2
Apogee AP8AD	ANALOG IN	8 IN	—	2
Apogee AP8DA	ANALOG OUT	—	8 OUT (depends on output patch)[1]	2

1. See the Digital I/O chapter.
Details depend on each interface card.

Control I/O Spec

I/O Port		Format	Level	Connector in Console
TO HOST	**Serial**	—	RS422	Mini DIN Connector 8P
	USB	USB 1.1	0 V–3.3 V	B type USB connector
MIDI	**IN**	MIDI	—	DIN Connector 5P
	OUT	MIDI	—	DIN Connector 5P
	THRU	MIDI	—	DIN Connector 5P
TIME CODE IN	**MTC**	MIDI	—	DIN Connector 5P
	SMPTE	SMPTE	Nominal –10 dB/10k Ω	XLR-3-31 type (Balanced)[1]
WORD CLOCK	**IN**	—	TTL/75 Ω (ON/OFF)[2]	BNC Connector
	OUT	—	TTL/75 Ω	BNC Connector
CONTROL		—	—	D-SUB Connector 25P (Female)
METER		—	RS422	D-SUB Connector 15P (Female)

1. XLR-3-31 type connectors are balanced (1=GND, 2=HOT, 3=COLD).
2. This switch is on the rear panel.

Connector Pin Assignments

CASCADE IN

Pin	Signal	Pin	Signal
1	GND	35	GND
2	INPUT 1-2(+)	36	INPUT 1-2(–)
3	INPUT 3-4(+)	37	INPUT 3-4(–)
4	INPUT 5-6(+)	38	INPUT 5-6(–)
5	INPUT 7-8(+)	39	INPUT 7-8(–)
6	INPUT 9-10(+)	40	INPUT 9-10(–)
7	INPUT 11-12(+)	41	INPUT 11-12(–)
8	INPUT 13-14(+)	42	INPUT 13-14(–)
9	INPUT 15-16(+)	43	INPUT 15-16(–)
10	DTR IN(+)	44	DTR IN(–)
11	RTS OUT(+)	45	RTS OUT(–)
12	GND	46	GND
13	WORD CLOCK IN(+)	47	WORD CLOCK IN(–)
14	WORD CLOCK OUT(+)	48	WORD CLOCK OUT(–)
15	CONTROL IN(+)	49	CONTROL IN(–)
16	CONTROL OUT(+)	50	CONTROL OUT(–)
17	GND	51	ID6 IN
18	GND	52	ID6 OUT
19	INPUT 17-18(+)	53	INPUT 17-18(–)
20	INPUT 19-20(+)	54	INPUT 19-20(–)
21	INPUT 21-22(+)	55	INPUT 21-22(–)
22	INPUT 23-24(+)	56	INPUT 23-24(–)
23	RESERVED	57	RESERVED
24	RESERVED	58	RESERVED
25	RESERVED	59	RESERVED
26	RESERVED	60	RESERVED
27	ID0 IN	61	ID1 IN
28	ID2 IN	62	ID3 IN
29	ID4 IN	63	ID5 IN
30	ID0 OUT	64	ID1 OUT
31	ID2 OUT	65	ID3 OUT
32	ID4 OUT	66	ID5 OUT
33	MSB IN	67	2CH/LINE IN
34	FG	68	FG

CASCADE OUT

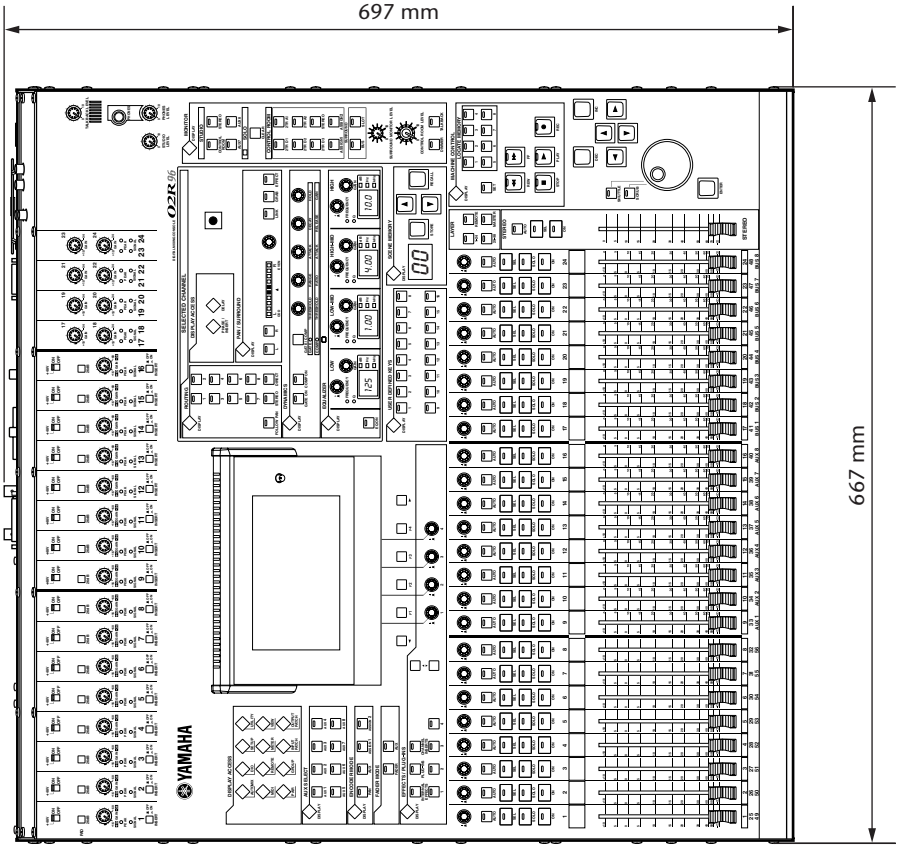
Pin	Signal	Pin	Signal
1	GND	35	GND
2	OUTPUT 1-2(+)	36	OUTPUT 1-2(–)
3	OUTPUT 3-4(+)	37	OUTPUT 3-4(–)
4	OUTPUT 5-6(+)	38	OUTPUT 5-6(–)
5	OUTPUT 7-8(+)	39	OUTPUT 7-8(–)
6	OUTPUT 9-10(+)	40	OUTPUT 9-10(–)
7	OUTPUT 11-12(+)	41	OUTPUT 11-12(–)
8	OUTPUT 13-14(+)	42	OUTPUT 13-14(–)
9	OUTPUT 15-16(+)	43	OUTPUT 15-16(–)
10	DTR OUT(+)	44	DTR OUT(–)
11	RTS IN(+)	45	RTS IN(–)
12	GND	46	GND
13	WORD CLOCK OUT(+)	47	WORD CLOCK OUT(–)
14	WORD CLOCK IN(+)	48	WORD CLOCK IN(–)
15	CONTROL OUT(+)	49	CONTROL OUT(–)
16	CONTROL IN(+)	50	CONTROL IN(–)
17	GND	51	ID6 OUT
18	GND	52	ID6 IN
19	OUTPUT 17-18(+)	53	OUTPUT 17-18(–)
20	OUTPUT 19-20(+)	54	OUTPUT 19-20(–)
21	OUTPUT 21-22(+)	55	OUTPUT 21-22(–)
22	OUTPUT 23-24(+)	56	OUTPUT 23-24(–)
23	RESERVED	57	RESERVED
24	RESERVED	58	RESERVED
25	RESERVED	59	RESERVED
26	RESERVED	60	RESERVED
27	ID0 OUT	61	ID1 OUT
28	ID2 OUT	62	ID3 OUT
29	ID4 OUT	63	ID5 OUT
30	ID0 IN	64	ID1 IN
31	ID2 IN	65	ID3 IN
32	ID4 IN	66	ID5 IN
33	MSB OUT	67	2CH/LINE OUT
34	FG	68	FG

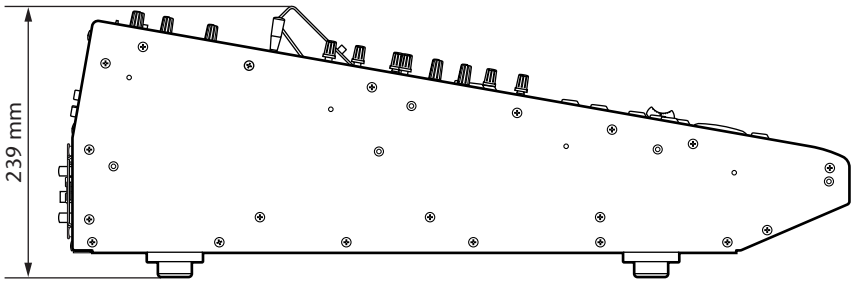
CONTROL Port

Pin	Signal	Pin	Signal	Pin	Signal
1	GPO0	10	GPI1	19	GND
2	GPO2	11	N.C.	20	GND
3	GPO4	12	SMODE[1]	21	+5V
4	GPO6	13	SPARE[1]	22	GPI0
5	GND	14	GPO1	23	N.C.
6	GND	15	GPO3	24	SOLO[1]
7	GND	16	GPO5	25	MAS/SLV[1]
8	GND	17	GPO7		
9	+5V	18	GND		

1. For 02R SOLO control.

Dimensions





Specifications and external appearance subject to change without notice.

For European Model

Purchaser/User Information specified in EN55103-1 and EN55103-2.
Inrush Current: 70 A
Conformed Environment: E1, E2, E3 and E4

Appendix C: MIDI

Scene Memory to Program Change Table

Program Change #	Initial Scene #	User Scene #
1	01	
2	02	
3	03	
4	04	
5	05	
6	06	
7	07	
8	08	
9	09	
10	10	
11	11	
12	12	
13	13	
14	14	
15	15	
16	16	
17	17	
18	18	
19	19	
20	20	
21	21	
22	22	
23	23	
24	24	
25	25	
26	26	
27	27	
28	28	
29	29	
30	30	
31	31	
32	32	
33	33	
34	34	
35	35	
36	36	
37	37	
38	38	
39	39	
40	40	
41	41	
42	42	
43	43	

Program Change #	Initial Scene #	User Scene #
44	44	
45	45	
46	46	
47	47	
48	48	
49	49	
50	50	
51	51	
52	52	
53	53	
54	54	
55	55	
56	56	
57	57	
58	58	
59	59	
60	60	
61	61	
62	62	
63	63	
64	64	
65	65	
66	66	
67	67	
68	68	
69	69	
70	70	
71	71	
72	72	
73	73	
74	74	
75	75	
76	76	
77	77	
78	78	
79	79	
80	80	
81	81	
82	82	
83	83	
84	84	
85	85	
86	86	

Program Change#	Initial Scene #	User Scene #
87	87	
88	88	
89	89	
90	90	
91	91	
92	92	
93	93	
94	94	
95	95	
96	96	
97	97	
98	98	
99	99	
100	00	
101	—	
102	—	
103	—	
104	—	
105	—	
106	—	
107	—	
108	—	
109	—	
110	—	
111	—	
112	—	
113	—	
114	—	
115	—	
116	—	
117	—	
118	—	
119	—	
120	—	
121	—	
122	—	
123	—	
124	—	
125	—	
126	—	
127	—	
128	—	

Initial Parameter to Control Change Table

CHANNEL1

#	HIGH	MID	LOW
0	NO ASSIGN		
1	FADER H	CHANNEL	INPUT1
2	FADER H	CHANNEL	INPUT2
3	FADER H	CHANNEL	INPUT3
4	FADER H	CHANNEL	INPUT4
5	FADER H	CHANNEL	INPUT5
6	FADER H	CHANNEL	INPUT6
7	FADER H	CHANNEL	INPUT7
8	FADER H	CHANNEL	INPUT8
9	FADER H	CHANNEL	INPUT9
10	FADER H	CHANNEL	INPUT10
11	FADER H	CHANNEL	INPUT11
12	FADER H	CHANNEL	INPUT12
13	FADER H	CHANNEL	INPUT13
14	FADER H	CHANNEL	INPUT14
15	FADER H	CHANNEL	INPUT15
16	FADER H	CHANNEL	INPUT16
17	FADER H	CHANNEL	INPUT17
18	FADER H	CHANNEL	INPUT18
19	FADER H	CHANNEL	INPUT19
20	FADER H	CHANNEL	INPUT20
21	FADER H	CHANNEL	INPUT21
22	FADER H	CHANNEL	INPUT22
23	FADER H	CHANNEL	INPUT23
24	FADER H	CHANNEL	INPUT24
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	FADER H	MASTER	STEREO
31	ON	MASTER	STEREO
32	NO ASSIGN		
33	FADER L	CHANNEL	INPUT1
34	FADER L	CHANNEL	INPUT2
35	FADER L	CHANNEL	INPUT3
36	FADER L	CHANNEL	INPUT4
37	FADER L	CHANNEL	INPUT5
38	FADER L	CHANNEL	INPUT6
39	FADER L	CHANNEL	INPUT7
40	FADER L	CHANNEL	INPUT8
41	FADER L	CHANNEL	INPUT9
42	FADER L	CHANNEL	INPUT10
43	FADER L	CHANNEL	INPUT11
44	FADER L	CHANNEL	INPUT12
45	FADER L	CHANNEL	INPUT13
46	FADER L	CHANNEL	INPUT14
47	FADER L	CHANNEL	INPUT15
48	FADER L	CHANNEL	INPUT16
49	FADER L	CHANNEL	INPUT17
50	FADER L	CHANNEL	INPUT18
51	FADER L	CHANNEL	INPUT19
52	FADER L	CHANNEL	INPUT20
53	FADER L	CHANNEL	INPUT21
54	FADER L	CHANNEL	INPUT22
55	FADER L	CHANNEL	INPUT23
56	FADER L	CHANNEL	INPUT24

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	FADER L	MASTER	STEREO
63	BALANCE	MASTER	STEREO
64	ON	CHANNEL	INPUT1
65	ON	CHANNEL	INPUT2
66	ON	CHANNEL	INPUT3
67	ON	CHANNEL	INPUT4
68	ON	CHANNEL	INPUT5
69	ON	CHANNEL	INPUT6
70	ON	CHANNEL	INPUT7
71	ON	CHANNEL	INPUT8
72	ON	CHANNEL	INPUT9
73	ON	CHANNEL	INPUT10
74	ON	CHANNEL	INPUT11
75	ON	CHANNEL	INPUT12
76	ON	CHANNEL	INPUT13
77	ON	CHANNEL	INPUT14
78	ON	CHANNEL	INPUT15
79	ON	CHANNEL	INPUT16
80	ON	CHANNEL	INPUT17
81	ON	CHANNEL	INPUT18
82	ON	CHANNEL	INPUT19
83	ON	CHANNEL	INPUT20
84	ON	CHANNEL	INPUT21
85	ON	CHANNEL	INPUT22
86	ON	CHANNEL	INPUT23
87	ON	CHANNEL	INPUT24
88	NO ASSIGN		
89	PAN	CHANNEL	INPUT1
90	PAN	CHANNEL	INPUT2
91	PAN	CHANNEL	INPUT3
92	PAN	CHANNEL	INPUT4
93	PAN	CHANNEL	INPUT5
94	PAN	CHANNEL	INPUT6
95	PAN	CHANNEL	INPUT7
102	PAN	CHANNEL	INPUT8
103	PAN	CHANNEL	INPUT9
104	PAN	CHANNEL	INPUT10
105	PAN	CHANNEL	INPUT11
106	PAN	CHANNEL	INPUT12
107	PAN	CHANNEL	INPUT13
108	PAN	CHANNEL	INPUT14
109	PAN	CHANNEL	INPUT15
110	PAN	CHANNEL	INPUT16
111	PAN	CHANNEL	INPUT17
112	PAN	CHANNEL	INPUT18
113	PAN	CHANNEL	INPUT19
114	PAN	CHANNEL	INPUT20
115	PAN	CHANNEL	INPUT21
116	PAN	CHANNEL	INPUT22
117	PAN	CHANNEL	INPUT23
118	PAN	CHANNEL	INPUT24
119	NO ASSIGN		

CHANNEL2

#	HIGH	MID	LOW
0	NO ASSIGN		
1	FADER H	CHANNEL	INPUT25
2	FADER H	CHANNEL	INPUT26
3	FADER H	CHANNEL	INPUT27
4	FADER H	CHANNEL	INPUT28
5	FADER H	CHANNEL	INPUT29
6	FADER H	CHANNEL	INPUT30
7	FADER H	CHANNEL	INPUT31
8	FADER H	CHANNEL	INPUT32
9	FADER H	CHANNEL	INPUT33
10	FADER H	CHANNEL	INPUT34
11	FADER H	CHANNEL	INPUT35
12	FADER H	CHANNEL	INPUT36
13	FADER H	CHANNEL	INPUT37
14	FADER H	CHANNEL	INPUT38
15	FADER H	CHANNEL	INPUT39
16	FADER H	CHANNEL	INPUT40
17	FADER H	CHANNEL	INPUT41
18	FADER H	CHANNEL	INPUT42
19	FADER H	CHANNEL	INPUT43
20	FADER H	CHANNEL	INPUT44
21	FADER H	CHANNEL	INPUT45
22	FADER H	CHANNEL	INPUT46
23	FADER H	CHANNEL	INPUT47
24	FADER H	CHANNEL	INPUT48
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	FADER L	CHANNEL	INPUT25
34	FADER L	CHANNEL	INPUT26
35	FADER L	CHANNEL	INPUT27
36	FADER L	CHANNEL	INPUT28
37	FADER L	CHANNEL	INPUT29
38	FADER L	CHANNEL	INPUT30
39	FADER L	CHANNEL	INPUT31
40	FADER L	CHANNEL	INPUT32
41	FADER L	CHANNEL	INPUT33
42	FADER L	CHANNEL	INPUT34
43	FADER L	CHANNEL	INPUT35
44	FADER L	CHANNEL	INPUT36
45	FADER L	CHANNEL	INPUT37
46	FADER L	CHANNEL	INPUT38
47	FADER L	CHANNEL	INPUT39
48	FADER L	CHANNEL	INPUT40
49	FADER L	CHANNEL	INPUT41
50	FADER L	CHANNEL	INPUT42
51	FADER L	CHANNEL	INPUT43
52	FADER L	CHANNEL	INPUT44
53	FADER L	CHANNEL	INPUT45
54	FADER L	CHANNEL	INPUT46
55	FADER L	CHANNEL	INPUT47
56	FADER L	CHANNEL	INPUT48

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	ON	CHANNEL	INPUT25
65	ON	CHANNEL	INPUT26
66	ON	CHANNEL	INPUT27
67	ON	CHANNEL	INPUT28
68	ON	CHANNEL	INPUT29
69	ON	CHANNEL	INPUT30
70	ON	CHANNEL	INPUT31
71	ON	CHANNEL	INPUT32
72	ON	CHANNEL	INPUT33
73	ON	CHANNEL	INPUT34
74	ON	CHANNEL	INPUT35
75	ON	CHANNEL	INPUT36
76	ON	CHANNEL	INPUT37
77	ON	CHANNEL	INPUT38
78	ON	CHANNEL	INPUT39
79	ON	CHANNEL	INPUT40
80	ON	CHANNEL	INPUT41
81	ON	CHANNEL	INPUT42
82	ON	CHANNEL	INPUT43
83	ON	CHANNEL	INPUT44
84	ON	CHANNEL	INPUT45
85	ON	CHANNEL	INPUT46
86	ON	CHANNEL	INPUT47
87	ON	CHANNEL	INPUT48
88	NO ASSIGN		
89	PAN	CHANNEL	INPUT25
90	PAN	CHANNEL	INPUT26
91	PAN	CHANNEL	INPUT27
92	PAN	CHANNEL	INPUT28
93	PAN	CHANNEL	INPUT29
94	PAN	CHANNEL	INPUT30
95	PAN	CHANNEL	INPUT31
102	PAN	CHANNEL	INPUT32
103	PAN	CHANNEL	INPUT33
104	PAN	CHANNEL	INPUT34
105	PAN	CHANNEL	INPUT35
106	PAN	CHANNEL	INPUT36
107	PAN	CHANNEL	INPUT37
108	PAN	CHANNEL	INPUT38
109	PAN	CHANNEL	INPUT39
110	PAN	CHANNEL	INPUT40
111	PAN	CHANNEL	INPUT41
112	PAN	CHANNEL	INPUT42
113	PAN	CHANNEL	INPUT43
114	PAN	CHANNEL	INPUT44
115	PAN	CHANNEL	INPUT45
116	PAN	CHANNEL	INPUT46
117	PAN	CHANNEL	INPUT47
118	PAN	CHANNEL	INPUT48
119	NO ASSIGN		

CHANNEL3

#	HIGH	MID	LOW
0	NO ASSIGN		
1	FADER H	CHANNEL	INPUT49
2	FADER H	CHANNEL	INPUT50
3	FADER H	CHANNEL	INPUT51
4	FADER H	CHANNEL	INPUT52
5	FADER H	CHANNEL	INPUT53
6	FADER H	CHANNEL	INPUT54
7	FADER H	CHANNEL	INPUT55
8	FADER H	CHANNEL	INPUT56
9	FADER H	MASTER	BUS1
10	FADER H	MASTER	BUS2
11	FADER H	MASTER	BUS3
12	FADER H	MASTER	BUS4
13	FADER H	MASTER	BUS5
14	FADER H	MASTER	BUS6
15	FADER H	MASTER	BUS7
16	FADER H	MASTER	BUS8
17	FADER H	MASTER	AUX1
18	FADER H	MASTER	AUX2
19	FADER H	MASTER	AUX3
20	FADER H	MASTER	AUX4
21	FADER H	MASTER	AUX5
22	FADER H	MASTER	AUX6
23	FADER H	MASTER	AUX7
24	FADER H	MASTER	AUX8
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	FADER L	CHANNEL	INPUT49
34	FADER L	CHANNEL	INPUT50
35	FADER L	CHANNEL	INPUT51
36	FADER L	CHANNEL	INPUT52
37	FADER L	CHANNEL	INPUT53
38	FADER L	CHANNEL	INPUT54
39	FADER L	CHANNEL	INPUT55
40	FADER L	CHANNEL	INPUT56
41	FADER L	MASTER	BUS1
42	FADER L	MASTER	BUS2
43	FADER L	MASTER	BUS3
44	FADER L	MASTER	BUS4
45	FADER L	MASTER	BUS5
46	FADER L	MASTER	BUS6
47	FADER L	MASTER	BUS7
48	FADER L	MASTER	BUS8
49	FADER L	MASTER	AUX1
50	FADER L	MASTER	AUX2
51	FADER L	MASTER	AUX3
52	FADER L	MASTER	AUX4
53	FADER L	MASTER	AUX5
54	FADER L	MASTER	AUX6
55	FADER L	MASTER	AUX7
56	FADER L	MASTER	AUX8

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	ON	CHANNEL	INPUT49
65	ON	CHANNEL	INPUT50
66	ON	CHANNEL	INPUT51
67	ON	CHANNEL	INPUT52
68	ON	CHANNEL	INPUT53
69	ON	CHANNEL	INPUT54
70	ON	CHANNEL	INPUT55
71	ON	CHANNEL	INPUT56
72	ON	MASTER	BUS1
73	ON	MASTER	BUS2
74	ON	MASTER	BUS3
75	ON	MASTER	BUS4
76	ON	MASTER	BUS5
77	ON	MASTER	BUS6
78	ON	MASTER	BUS7
79	ON	MASTER	BUS8
80	ON	MASTER	AUX1
81	ON	MASTER	AUX2
82	ON	MASTER	AUX3
83	ON	MASTER	AUX4
84	ON	MASTER	AUX5
85	ON	MASTER	AUX6
86	ON	MASTER	AUX7
87	ON	MASTER	AUX8
88	NO ASSIGN		
89	PAN	CHANNEL	INPUT49
90	PAN	CHANNEL	INPUT50
91	PAN	CHANNEL	INPUT51
92	PAN	CHANNEL	INPUT52
93	PAN	CHANNEL	INPUT53
94	PAN	CHANNEL	INPUT54
95	PAN	CHANNEL	INPUT55
102	PAN	CHANNEL	INPUT56
103	NO ASSIGN		
104	NO ASSIGN		
105	NO ASSIGN		
106	NO ASSIGN		
107	NO ASSIGN		
108	NO ASSIGN		
109	NO ASSIGN		
110	NO ASSIGN		
111	NO ASSIGN		
112	NO ASSIGN		
113	NO ASSIGN		
114	NO ASSIGN		
115	NO ASSIGN		
116	NO ASSIGN		
117	NO ASSIGN		
118	NO ASSIGN		
119	NO ASSIGN		

CHANNEL4

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G LOW H	INPUT1
2	EQ	G LOW H	INPUT2
3	EQ	G LOW H	INPUT3
4	EQ	G LOW H	INPUT4
5	EQ	G LOW H	INPUT5
6	EQ	G LOW H	INPUT6
7	EQ	G LOW H	INPUT7
8	EQ	G LOW H	INPUT8
9	EQ	G LOW H	INPUT9
10	EQ	G LOW H	INPUT10
11	EQ	G LOW H	INPUT11
12	EQ	G LOW H	INPUT12
13	EQ	G LOW H	INPUT13
14	EQ	G LOW H	INPUT14
15	EQ	G LOW H	INPUT15
16	EQ	G LOW H	INPUT16
17	EQ	G LOW H	INPUT17
18	EQ	G LOW H	INPUT18
19	EQ	G LOW H	INPUT19
20	EQ	G LOW H	INPUT20
21	EQ	G LOW H	INPUT21
22	EQ	G LOW H	INPUT22
23	EQ	G LOW H	INPUT23
24	EQ	G LOW H	INPUT24
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G LOW L	INPUT1
34	EQ	G LOW L	INPUT2
35	EQ	G LOW L	INPUT3
36	EQ	G LOW L	INPUT4
37	EQ	G LOW L	INPUT5
38	EQ	G LOW L	INPUT6
39	EQ	G LOW L	INPUT7
40	EQ	G LOW L	INPUT8
41	EQ	G LOW L	INPUT9
42	EQ	G LOW L	INPUT10
43	EQ	G LOW L	INPUT11
44	EQ	G LOW L	INPUT12
45	EQ	G LOW L	INPUT13
46	EQ	G LOW L	INPUT14
47	EQ	G LOW L	INPUT15
48	EQ	G LOW L	INPUT16
49	EQ	G LOW L	INPUT17
50	EQ	G LOW L	INPUT18
51	EQ	G LOW L	INPUT19
52	EQ	G LOW L	INPUT20
53	EQ	G LOW L	INPUT21
54	EQ	G LOW L	INPUT22
55	EQ	G LOW L	INPUT23
56	EQ	G LOW L	INPUT24

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F LOW	INPUT1
65	EQ	F LOW	INPUT2
66	EQ	F LOW	INPUT3
67	EQ	F LOW	INPUT4
68	EQ	F LOW	INPUT5
69	EQ	F LOW	INPUT6
70	EQ	F LOW	INPUT7
71	EQ	F LOW	INPUT8
72	EQ	F LOW	INPUT9
73	EQ	F LOW	INPUT10
74	EQ	F LOW	INPUT11
75	EQ	F LOW	INPUT12
76	EQ	F LOW	INPUT13
77	EQ	F LOW	INPUT14
78	EQ	F LOW	INPUT15
79	EQ	F LOW	INPUT16
80	EQ	F LOW	INPUT17
81	EQ	F LOW	INPUT18
82	EQ	F LOW	INPUT19
83	EQ	F LOW	INPUT20
84	EQ	F LOW	INPUT21
85	EQ	F LOW	INPUT22
86	EQ	F LOW	INPUT23
87	EQ	F LOW	INPUT24
88	NO ASSIGN		
89	EQ	Q LOW	INPUT1
90	EQ	Q LOW	INPUT2
91	EQ	Q LOW	INPUT3
92	EQ	Q LOW	INPUT4
93	EQ	Q LOW	INPUT5
94	EQ	Q LOW	INPUT6
95	EQ	Q LOW	INPUT7
102	EQ	Q LOW	INPUT8
103	EQ	Q LOW	INPUT9
104	EQ	Q LOW	INPUT10
105	EQ	Q LOW	INPUT11
106	EQ	Q LOW	INPUT12
107	EQ	Q LOW	INPUT13
108	EQ	Q LOW	INPUT14
109	EQ	Q LOW	INPUT15
110	EQ	Q LOW	INPUT16
111	EQ	Q LOW	INPUT17
112	EQ	Q LOW	INPUT18
113	EQ	Q LOW	INPUT19
114	EQ	Q LOW	INPUT20
115	EQ	Q LOW	INPUT21
116	EQ	Q LOW	INPUT22
117	EQ	Q LOW	INPUT23
118	EQ	Q LOW	INPUT24
119	NO ASSIGN		

CHANNEL5

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G LOW H	INPUT25
2	EQ	G LOW H	INPUT26
3	EQ	G LOW H	INPUT27
4	EQ	G LOW H	INPUT28
5	EQ	G LOW H	INPUT29
6	EQ	G LOW H	INPUT30
7	EQ	G LOW H	INPUT31
8	EQ	G LOW H	INPUT32
9	EQ	G LOW H	INPUT33
10	EQ	G LOW H	INPUT34
11	EQ	G LOW H	INPUT35
12	EQ	G LOW H	INPUT36
13	EQ	G LOW H	INPUT37
14	EQ	G LOW H	INPUT38
15	EQ	G LOW H	INPUT39
16	EQ	G LOW H	INPUT40
17	EQ	G LOW H	INPUT41
18	EQ	G LOW H	INPUT42
19	EQ	G LOW H	INPUT43
20	EQ	G LOW H	INPUT44
21	EQ	G LOW H	INPUT45
22	EQ	G LOW H	INPUT46
23	EQ	G LOW H	INPUT47
24	EQ	G LOW H	INPUT48
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G LOW L	INPUT24
34	EQ	G LOW L	INPUT25
35	EQ	G LOW L	INPUT26
36	EQ	G LOW L	INPUT27
37	EQ	G LOW L	INPUT28
38	EQ	G LOW L	INPUT29
39	EQ	G LOW L	INPUT30
40	EQ	G LOW L	INPUT31
41	EQ	G LOW L	INPUT32
42	EQ	G LOW L	INPUT33
43	EQ	G LOW L	INPUT34
44	EQ	G LOW L	INPUT35
45	EQ	G LOW L	INPUT36
46	EQ	G LOW L	INPUT37
47	EQ	G LOW L	INPUT38
48	EQ	G LOW L	INPUT39
49	EQ	G LOW L	INPUT40
50	EQ	G LOW L	INPUT41
51	EQ	G LOW L	INPUT42
52	EQ	G LOW L	INPUT43
53	EQ	G LOW L	INPUT44
54	EQ	G LOW L	INPUT45
55	EQ	G LOW L	INPUT46
56	EQ	G LOW L	INPUT47

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F LOW	INPUT25
65	EQ	F LOW	INPUT26
66	EQ	F LOW	INPUT27
67	EQ	F LOW	INPUT28
68	EQ	F LOW	INPUT29
69	EQ	F LOW	INPUT30
70	EQ	F LOW	INPUT31
71	EQ	F LOW	INPUT32
72	EQ	F LOW	INPUT33
73	EQ	F LOW	INPUT34
74	EQ	F LOW	INPUT35
75	EQ	F LOW	INPUT36
76	EQ	F LOW	INPUT37
77	EQ	F LOW	INPUT38
78	EQ	F LOW	INPUT39
79	EQ	F LOW	INPUT40
80	EQ	F LOW	INPUT41
81	EQ	F LOW	INPUT42
82	EQ	F LOW	INPUT43
83	EQ	F LOW	INPUT44
84	EQ	F LOW	INPUT45
85	EQ	F LOW	INPUT46
86	EQ	F LOW	INPUT47
87	EQ	F LOW	INPUT48
88	NO ASSIGN		
89	EQ	Q LOW	INPUT25
90	EQ	Q LOW	INPUT26
91	EQ	Q LOW	INPUT27
92	EQ	Q LOW	INPUT28
93	EQ	Q LOW	INPUT29
94	EQ	Q LOW	INPUT30
95	EQ	Q LOW	INPUT31
102	EQ	Q LOW	INPUT32
103	EQ	Q LOW	INPUT33
104	EQ	Q LOW	INPUT34
105	EQ	Q LOW	INPUT35
106	EQ	Q LOW	INPUT36
107	EQ	Q LOW	INPUT37
108	EQ	Q LOW	INPUT38
109	EQ	Q LOW	INPUT39
110	EQ	Q LOW	INPUT40
111	EQ	Q LOW	INPUT41
112	EQ	Q LOW	INPUT42
113	EQ	Q LOW	INPUT43
114	EQ	Q LOW	INPUT44
115	EQ	Q LOW	INPUT45
116	EQ	Q LOW	INPUT46
117	EQ	Q LOW	INPUT47
118	EQ	Q LOW	INPUT48
119	NO ASSIGN		

CHANNEL6

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G LOW H	INPUT49
2	EQ	G LOW H	INPUT50
3	EQ	G LOW H	INPUT51
4	EQ	G LOW H	INPUT52
5	EQ	G LOW H	INPUT53
6	EQ	G LOW H	INPUT54
7	EQ	G LOW H	INPUT55
8	EQ	G LOW H	INPUT56
9	EQ	G LO-MID H	INPUT1
10	EQ	G LO-MID H	INPUT2
11	EQ	G LO-MID H	INPUT3
12	EQ	G LO-MID H	INPUT4
13	EQ	G LO-MID H	INPUT5
14	EQ	G LO-MID H	INPUT6
15	EQ	G LO-MID H	INPUT7
16	EQ	G LO-MID H	INPUT8
17	EQ	G LO-MID H	INPUT9
18	EQ	G LO-MID H	INPUT10
19	EQ	G LO-MID H	INPUT11
20	EQ	G LO-MID H	INPUT12
21	EQ	G LO-MID H	INPUT13
22	EQ	G LO-MID H	INPUT14
23	EQ	G LO-MID H	INPUT15
24	EQ	G LO-MID H	INPUT16
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G LOW	INPUT49
34	EQ	G LOW	INPUT50
35	EQ	G LOW	INPUT51
36	EQ	G LOW	INPUT52
37	EQ	G LOW	INPUT53
38	EQ	G LOW	INPUT54
39	EQ	G LOW	INPUT55
40	EQ	G LOW	INPUT56
41	EQ	G LO-MID L	INPUT1
42	EQ	G LO-MID L	INPUT2
43	EQ	G LO-MID L	INPUT3
44	EQ	G LO-MID L	INPUT4
45	EQ	G LO-MID L	INPUT5
46	EQ	G LO-MID L	INPUT6
47	EQ	G LO-MID L	INPUT7
48	EQ	G LO-MID L	INPUT8
49	EQ	G LO-MID L	INPUT9
50	EQ	G LO-MID L	INPUT10
51	EQ	G LO-MID L	INPUT11
52	EQ	G LO-MID L	INPUT12
53	EQ	G LO-MID L	INPUT13
54	EQ	G LO-MID L	INPUT14
55	EQ	G LO-MID L	INPUT15
56	EQ	G LO-MID L	INPUT16

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F LOW	INPUT49
65	EQ	F LOW	INPUT50
66	EQ	F LOW	INPUT51
67	EQ	F LOW	INPUT52
68	EQ	F LOW	INPUT53
69	EQ	F LOW	INPUT54
70	EQ	F LOW	INPUT55
71	EQ	F LOW	INPUT56
72	EQ	F LO-MID	INPUT1
73	EQ	F LO-MID	INPUT2
74	EQ	F LO-MID	INPUT3
75	EQ	F LO-MID	INPUT4
76	EQ	F LO-MID	INPUT5
77	EQ	F LO-MID	INPUT6
78	EQ	F LO-MID	INPUT7
79	EQ	F LO-MID	INPUT8
80	EQ	F LO-MID	INPUT9
81	EQ	F LO-MID	INPUT10
82	EQ	F LO-MID	INPUT11
83	EQ	F LO-MID	INPUT12
84	EQ	F LO-MID	INPUT13
85	EQ	F LO-MID	INPUT14
86	EQ	F LO-MID	INPUT15
87	EQ	F LO-MID	INPUT16
88	NO ASSIGN		
89	EQ	Q LOW	INPUT49
90	EQ	Q LOW	INPUT50
91	EQ	Q LOW	INPUT51
92	EQ	Q LOW	INPUT52
93	EQ	Q LOW	INPUT53
94	EQ	Q LOW	INPUT54
95	EQ	Q LOW	INPUT55
102	EQ	Q LOW	INPUT56
103	EQ	Q LO-MID	INPUT1
104	EQ	Q LO-MID	INPUT2
105	EQ	Q LO-MID	INPUT3
106	EQ	Q LO-MID	INPUT4
107	EQ	Q LO-MID	INPUT5
108	EQ	Q LO-MID	INPUT6
109	EQ	Q LO-MID	INPUT7
110	EQ	Q LO-MID	INPUT8
111	EQ	Q LO-MID	INPUT9
112	EQ	Q LO-MID	INPUT10
113	EQ	Q LO-MID	INPUT11
114	EQ	Q LO-MID	INPUT12
115	EQ	Q LO-MID	INPUT13
116	EQ	Q LO-MID	INPUT14
117	EQ	Q LO-MID	INPUT15
118	EQ	Q LO-MID	INPUT16
119	NO ASSIGN		

CHANNEL7

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G LO-MID H	INPUT17
2	EQ	G LO-MID H	INPUT18
3	EQ	G LO-MID H	INPUT19
4	EQ	G LO-MID H	INPUT20
5	EQ	G LO-MID H	INPUT21
6	EQ	G LO-MID H	INPUT22
7	EQ	G LO-MID H	INPUT23
8	EQ	G LO-MID H	INPUT24
9	EQ	G LO-MID H	INPUT25
10	EQ	G LO-MID H	INPUT26
11	EQ	G LO-MID H	INPUT27
12	EQ	G LO-MID H	INPUT28
13	EQ	G LO-MID H	INPUT29
14	EQ	G LO-MID H	INPUT30
15	EQ	G LO-MID H	INPUT31
16	EQ	G LO-MID H	INPUT32
17	EQ	G LO-MID H	INPUT33
18	EQ	G LO-MID H	INPUT34
19	EQ	G LO-MID H	INPUT35
20	EQ	G LO-MID H	INPUT36
21	EQ	G LO-MID H	INPUT37
22	EQ	G LO-MID H	INPUT38
23	EQ	G LO-MID H	INPUT39
24	EQ	G LO-MID H	INPUT40
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G LO-MID L	INPUT17
34	EQ	G LO-MID L	INPUT18
35	EQ	G LO-MID L	INPUT19
36	EQ	G LO-MID L	INPUT20
37	EQ	G LO-MID L	INPUT21
38	EQ	G LO-MID L	INPUT22
39	EQ	G LO-MID L	INPUT23
40	EQ	G LO-MID L	INPUT24
41	EQ	G LO-MID L	INPUT25
42	EQ	G LO-MID L	INPUT26
43	EQ	G LO-MID L	INPUT27
44	EQ	G LO-MID L	INPUT28
45	EQ	G LO-MID L	INPUT29
46	EQ	G LO-MID L	INPUT30
47	EQ	G LO-MID L	INPUT31
48	EQ	G LO-MID L	INPUT32
49	EQ	G LO-MID L	INPUT33
50	EQ	G LO-MID L	INPUT34
51	EQ	G LO-MID L	INPUT35
52	EQ	G LO-MID L	INPUT36
53	EQ	G LO-MID L	INPUT37
54	EQ	G LO-MID L	INPUT38
55	EQ	G LO-MID L	INPUT39
56	EQ	G LO-MID L	INPUT40

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F LO-MID	INPUT17
65	EQ	F LO-MID	INPUT18
66	EQ	F LO-MID	INPUT19
67	EQ	F LO-MID	INPUT20
68	EQ	F LO-MID	INPUT21
69	EQ	F LO-MID	INPUT22
70	EQ	F LO-MID	INPUT23
71	EQ	F LO-MID	INPUT24
72	EQ	F LO-MID	INPUT25
73	EQ	F LO-MID	INPUT26
74	EQ	F LO-MID	INPUT27
75	EQ	F LO-MID	INPUT28
76	EQ	F LO-MID	INPUT29
77	EQ	F LO-MID	INPUT30
78	EQ	F LO-MID	INPUT31
79	EQ	F LO-MID	INPUT32
80	EQ	F LO-MID	INPUT33
81	EQ	F LO-MID	INPUT34
82	EQ	F LO-MID	INPUT35
83	EQ	F LO-MID	INPUT36
84	EQ	F LO-MID	INPUT37
85	EQ	F LO-MID	INPUT38
86	EQ	F LO-MID	INPUT39
87	EQ	F LO-MID	INPUT40
88	NO ASSIGN		
89	EQ	Q LO-MID	INPUT17
90	EQ	Q LO-MID	INPUT18
91	EQ	Q LO-MID	INPUT19
92	EQ	Q LO-MID	INPUT20
93	EQ	Q LO-MID	INPUT21
94	EQ	Q LO-MID	INPUT22
95	EQ	Q LO-MID	INPUT23
102	EQ	Q LO-MID	INPUT24
103	EQ	Q LO-MID	INPUT25
104	EQ	Q LO-MID	INPUT26
105	EQ	Q LO-MID	INPUT27
106	EQ	Q LO-MID	INPUT28
107	EQ	Q LO-MID	INPUT29
108	EQ	Q LO-MID	INPUT30
109	EQ	Q LO-MID	INPUT31
110	EQ	Q LO-MID	INPUT32
111	EQ	Q LO-MID	INPUT33
112	EQ	Q LO-MID	INPUT34
113	EQ	Q LO-MID	INPUT35
114	EQ	Q LO-MID	INPUT36
115	EQ	Q LO-MID	INPUT37
116	EQ	Q LO-MID	INPUT38
117	EQ	Q LO-MID	INPUT39
118	EQ	Q LO-MID	INPUT40
119	NO ASSIGN		

CHANNEL8

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G LO-MID H	INPUT41
2	EQ	G LO-MID H	INPUT42
3	EQ	G LO-MID H	INPUT43
4	EQ	G LO-MID H	INPUT44
5	EQ	G LO-MID H	INPUT45
6	EQ	G LO-MID H	INPUT46
7	EQ	G LO-MID H	INPUT47
8	EQ	G LO-MID H	INPUT48
9	EQ	G LO-MID H	INPUT49
10	EQ	G LO-MID H	INPUT50
11	EQ	G LO-MID H	INPUT51
12	EQ	G LO-MID H	INPUT52
13	EQ	G LO-MID H	INPUT53
14	EQ	G LO-MID H	INPUT54
15	EQ	G LO-MID H	INPUT55
16	EQ	G LO-MID H	INPUT56
17	EQ	G HI-MID H	INPUT1
18	EQ	G HI-MID H	INPUT2
19	EQ	G HI-MID H	INPUT3
20	EQ	G HI-MID H	INPUT4
21	EQ	G HI-MID H	INPUT5
22	EQ	G HI-MID H	INPUT6
23	EQ	G HI-MID H	INPUT7
24	EQ	G HI-MID H	INPUT8
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G LO-MID L	INPUT41
34	EQ	G LO-MID L	INPUT42
35	EQ	G LO-MID L	INPUT43
36	EQ	G LO-MID L	INPUT44
37	EQ	G LO-MID L	INPUT45
38	EQ	G LO-MID L	INPUT46
39	EQ	G LO-MID L	INPUT47
40	EQ	G LO-MID L	INPUT48
41	EQ	G LO-MID L	INPUT49
42	EQ	G LO-MID L	INPUT50
43	EQ	G LO-MID L	INPUT51
44	EQ	G LO-MID L	INPUT52
45	EQ	G LO-MID L	INPUT53
46	EQ	G LO-MID L	INPUT54
47	EQ	G LO-MID L	INPUT55
48	EQ	G LO-MID L	INPUT56
49	EQ	G HI-MID L	INPUT1
50	EQ	G HI-MID L	INPUT2
51	EQ	G HI-MID L	INPUT3
52	EQ	G HI-MID L	INPUT4
53	EQ	G HI-MID L	INPUT5
54	EQ	G HI-MID L	INPUT6
55	EQ	G HI-MID L	INPUT7
56	EQ	G HI-MID L	INPUT8

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F LO-MID	INPUT41
65	EQ	F LO-MID	INPUT42
66	EQ	F LO-MID	INPUT43
67	EQ	F LO-MID	INPUT44
68	EQ	F LO-MID	INPUT45
69	EQ	F LO-MID	INPUT46
70	EQ	F LO-MID	INPUT47
71	EQ	F LO-MID	INPUT48
72	EQ	F LO-MID	INPUT49
73	EQ	F LO-MID	INPUT50
74	EQ	F LO-MID	INPUT51
75	EQ	F LO-MID	INPUT52
76	EQ	F LO-MID	INPUT53
77	EQ	F LO-MID	INPUT54
78	EQ	F LO-MID	INPUT55
79	EQ	F LO-MID	INPUT56
80	EQ	F HI-MID	INPUT1
81	EQ	F HI-MID	INPUT2
82	EQ	F HI-MID	INPUT3
83	EQ	F HI-MID	INPUT4
84	EQ	F HI-MID	INPUT5
85	EQ	F HI-MID	INPUT6
86	EQ	F HI-MID	INPUT7
87	EQ	F HI-MID	INPUT8
88	NO ASSIGN		
89	EQ	Q LO-MID	INPUT41
90	EQ	Q LO-MID	INPUT42
91	EQ	Q LO-MID	INPUT43
92	EQ	Q LO-MID	INPUT44
93	EQ	Q LO-MID	INPUT45
94	EQ	Q LO-MID	INPUT46
95	EQ	Q LO-MID	INPUT47
102	EQ	Q LO-MID	INPUT48
103	EQ	Q LO-MID	INPUT49
104	EQ	Q LO-MID	INPUT50
105	EQ	Q LO-MID	INPUT51
106	EQ	Q LO-MID	INPUT52
107	EQ	Q LO-MID	INPUT53
108	EQ	Q LO-MID	INPUT54
109	EQ	Q LO-MID	INPUT55
110	EQ	Q LO-MID	INPUT56
111	EQ	Q HI-MID	INPUT1
112	EQ	Q HI-MID	INPUT2
113	EQ	Q HI-MID	INPUT3
114	EQ	Q HI-MID	INPUT4
115	EQ	Q HI-MID	INPUT5
116	EQ	Q HI-MID	INPUT6
117	EQ	Q HI-MID	INPUT7
118	EQ	Q HI-MID	INPUT8
119	NO ASSIGN		

CHANNEL9

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G HI-MID H	INPUT9
2	EQ	G HI-MID H	INPUT10
3	EQ	G HI-MID H	INPUT11
4	EQ	G HI-MID H	INPUT12
5	EQ	G HI-MID H	INPUT13
6	EQ	G HI-MID H	INPUT14
7	EQ	G HI-MID H	INPUT15
8	EQ	G HI-MID H	INPUT16
9	EQ	G HI-MID H	INPUT17
10	EQ	G HI-MID H	INPUT18
11	EQ	G HI-MID H	INPUT19
12	EQ	G HI-MID H	INPUT20
13	EQ	G HI-MID H	INPUT21
14	EQ	G HI-MID H	INPUT22
15	EQ	G HI-MID H	INPUT23
16	EQ	G HI-MID H	INPUT24
17	EQ	G HI-MID H	INPUT25
18	EQ	G HI-MID H	INPUT26
19	EQ	G HI-MID H	INPUT27
20	EQ	G HI-MID H	INPUT28
21	EQ	G HI-MID H	INPUT29
22	EQ	G HI-MID H	INPUT30
23	EQ	G HI-MID H	INPUT31
24	EQ	G HI-MID H	INPUT32
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G HI-MID L	INPUT9
34	EQ	G HI-MID L	INPUT10
35	EQ	G HI-MID L	INPUT11
36	EQ	G HI-MID L	INPUT12
37	EQ	G HI-MID L	INPUT13
38	EQ	G HI-MID L	INPUT14
39	EQ	G HI-MID L	INPUT15
40	EQ	G HI-MID L	INPUT16
41	EQ	G HI-MID L	INPUT17
42	EQ	G HI-MID L	INPUT18
43	EQ	G HI-MID L	INPUT19
44	EQ	G HI-MID L	INPUT20
45	EQ	G HI-MID L	INPUT21
46	EQ	G HI-MID L	INPUT22
47	EQ	G HI-MID L	INPUT23
48	EQ	G HI-MID L	INPUT24
49	EQ	G HI-MID L	INPUT25
50	EQ	G HI-MID L	INPUT26
51	EQ	G HI-MID L	INPUT27
52	EQ	G HI-MID L	INPUT28
53	EQ	G HI-MID L	INPUT29
54	EQ	G HI-MID L	INPUT30
55	EQ	G HI-MID L	INPUT31
56	EQ	G HI-MID L	INPUT32

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F HI-MID	INPUT9
65	EQ	F HI-MID	INPUT10
66	EQ	F HI-MID	INPUT11
67	EQ	F HI-MID	INPUT12
68	EQ	F HI-MID	INPUT13
69	EQ	F HI-MID	INPUT14
70	EQ	F HI-MID	INPUT15
71	EQ	F HI-MID	INPUT16
72	EQ	F HI-MID	INPUT17
73	EQ	F HI-MID	INPUT18
74	EQ	F HI-MID	INPUT19
75	EQ	F HI-MID	INPUT20
76	EQ	F HI-MID	INPUT21
77	EQ	F HI-MID	INPUT22
78	EQ	F HI-MID	INPUT23
79	EQ	F HI-MID	INPUT24
80	EQ	F HI-MID	INPUT25
81	EQ	F HI-MID	INPUT26
82	EQ	F HI-MID	INPUT27
83	EQ	F HI-MID	INPUT28
84	EQ	F HI-MID	INPUT29
85	EQ	F HI-MID	INPUT30
86	EQ	F HI-MID	INPUT31
87	EQ	F HI-MID	INPUT32
88	NO ASSIGN		
89	EQ	Q HI-MID	INPUT9
90	EQ	Q HI-MID	INPUT10
91	EQ	Q HI-MID	INPUT11
92	EQ	Q HI-MID	INPUT12
93	EQ	Q HI-MID	INPUT13
94	EQ	Q HI-MID	INPUT14
95	EQ	Q HI-MID	INPUT15
102	EQ	Q HI-MID	INPUT16
103	EQ	Q HI-MID	INPUT17
104	EQ	Q HI-MID	INPUT18
105	EQ	Q HI-MID	INPUT19
106	EQ	Q HI-MID	INPUT20
107	EQ	Q HI-MID	INPUT21
108	EQ	Q HI-MID	INPUT22
109	EQ	Q HI-MID	INPUT23
110	EQ	Q HI-MID	INPUT24
111	EQ	Q HI-MID	INPUT25
112	EQ	Q HI-MID	INPUT26
113	EQ	Q HI-MID	INPUT27
114	EQ	Q HI-MID	INPUT28
115	EQ	Q HI-MID	INPUT29
116	EQ	Q HI-MID	INPUT30
117	EQ	Q HI-MID	INPUT31
118	EQ	Q HI-MID	INPUT32
119	NO ASSIGN		

CHANNEL10

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G HI-MID H	INPUT33
2	EQ	G HI-MID H	INPUT34
3	EQ	G HI-MID H	INPUT35
4	EQ	G HI-MID H	INPUT36
5	EQ	G HI-MID H	INPUT37
6	EQ	G HI-MID H	INPUT38
7	EQ	G HI-MID H	INPUT39
8	EQ	G HI-MID H	INPUT40
9	EQ	G HI-MID H	INPUT41
10	EQ	G HI-MID H	INPUT42
11	EQ	G HI-MID H	INPUT43
12	EQ	G HI-MID H	INPUT44
13	EQ	G HI-MID H	INPUT45
14	EQ	G HI-MID H	INPUT46
15	EQ	G HI-MID H	INPUT47
16	EQ	G HI-MID H	INPUT48
17	EQ	G HI-MID H	INPUT49
18	EQ	G HI-MID H	INPUT50
19	EQ	G HI-MID H	INPUT51
20	EQ	G HI-MID H	INPUT52
21	EQ	G HI-MID H	INPUT53
22	EQ	G HI-MID H	INPUT54
23	EQ	G HI-MID H	INPUT55
24	EQ	G HI-MID H	INPUT56
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G HI-MID L	INPUT33
34	EQ	G HI-MID L	INPUT34
35	EQ	G HI-MID L	INPUT35
36	EQ	G HI-MID L	INPUT36
37	EQ	G HI-MID L	INPUT37
38	EQ	G HI-MID L	INPUT38
39	EQ	G HI-MID L	INPUT39
40	EQ	G HI-MID L	INPUT40
41	EQ	G HI-MID L	INPUT41
42	EQ	G HI-MID L	INPUT42
43	EQ	G HI-MID L	INPUT43
44	EQ	G HI-MID L	INPUT44
45	EQ	G HI-MID L	INPUT45
46	EQ	G HI-MID L	INPUT46
47	EQ	G HI-MID L	INPUT47
48	EQ	G HI-MID L	INPUT48
49	EQ	G HI-MID L	INPUT49
50	EQ	G HI-MID L	INPUT50
51	EQ	G HI-MID L	INPUT51
52	EQ	G HI-MID L	INPUT52
53	EQ	G HI-MID L	INPUT53
54	EQ	G HI-MID L	INPUT54
55	EQ	G HI-MID L	INPUT55
56	EQ	G HI-MID L	INPUT56

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F HI-MID	INPUT33
65	EQ	F HI-MID	INPUT34
66	EQ	F HI-MID	INPUT35
67	EQ	F HI-MID	INPUT36
68	EQ	F HI-MID	INPUT37
69	EQ	F HI-MID	INPUT38
70	EQ	F HI-MID	INPUT39
71	EQ	F HI-MID	INPUT40
72	EQ	F HI-MID	INPUT41
73	EQ	F HI-MID	INPUT42
74	EQ	F HI-MID	INPUT43
75	EQ	F HI-MID	INPUT44
76	EQ	F HI-MID	INPUT45
77	EQ	F HI-MID	INPUT46
78	EQ	F HI-MID	INPUT47
79	EQ	F HI-MID	INPUT48
80	EQ	F HI-MID	INPUT49
81	EQ	F HI-MID	INPUT50
82	EQ	F HI-MID	INPUT51
83	EQ	F HI-MID	INPUT52
84	EQ	F HI-MID	INPUT53
85	EQ	F HI-MID	INPUT54
86	EQ	F HI-MID	INPUT55
87	EQ	F HI-MID	INPUT56
88	NO ASSIGN		
89	EQ	Q HI-MID	INPUT33
90	EQ	Q HI-MID	INPUT34
91	EQ	Q HI-MID	INPUT35
92	EQ	Q HI-MID	INPUT36
93	EQ	Q HI-MID	INPUT37
94	EQ	Q HI-MID	INPUT38
95	EQ	Q HI-MID	INPUT39
102	EQ	Q HI-MID	INPUT40
103	EQ	Q HI-MID	INPUT41
104	EQ	Q HI-MID	INPUT42
105	EQ	Q HI-MID	INPUT43
106	EQ	Q HI-MID	INPUT44
107	EQ	Q HI-MID	INPUT45
108	EQ	Q HI-MID	INPUT46
109	EQ	Q HI-MID	INPUT47
110	EQ	Q HI-MID	INPUT48
111	EQ	Q HI-MID	INPUT49
112	EQ	Q HI-MID	INPUT50
113	EQ	Q HI-MID	INPUT51
114	EQ	Q HI-MID	INPUT52
115	EQ	Q HI-MID	INPUT53
116	EQ	Q HI-MID	INPUT54
117	EQ	Q HI-MID	INPUT55
118	EQ	Q HI-MID	INPUT56
119	NO ASSIGN		

CHANNEL11

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G HIGH H	INPUT1
2	EQ	G HIGH H	INPUT2
3	EQ	G HIGH H	INPUT3
4	EQ	G HIGH H	INPUT4
5	EQ	G HIGH H	INPUT5
6	EQ	G HIGH H	INPUT6
7	EQ	G HIGH H	INPUT7
8	EQ	G HIGH H	INPUT8
9	EQ	G HIGH H	INPUT9
10	EQ	G HIGH H	INPUT10
11	EQ	G HIGH H	INPUT11
12	EQ	G HIGH H	INPUT12
13	EQ	G HIGH H	INPUT13
14	EQ	G HIGH H	INPUT14
15	EQ	G HIGH H	INPUT15
16	EQ	G HIGH H	INPUT16
17	EQ	G HIGH H	INPUT17
18	EQ	G HIGH H	INPUT18
19	EQ	G HIGH H	INPUT19
20	EQ	G HIGH H	INPUT20
21	EQ	G HIGH H	INPUT21
22	EQ	G HIGH H	INPUT22
23	EQ	G HIGH H	INPUT23
24	EQ	G HIGH H	INPUT24
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G HIGH L	INPUT1
34	EQ	G HIGH L	INPUT2
35	EQ	G HIGH L	INPUT3
36	EQ	G HIGH L	INPUT4
37	EQ	G HIGH L	INPUT5
38	EQ	G HIGH L	INPUT6
39	EQ	G HIGH L	INPUT7
40	EQ	G HIGH L	INPUT8
41	EQ	G HIGH L	INPUT9
42	EQ	G HIGH L	INPUT10
43	EQ	G HIGH L	INPUT11
44	EQ	G HIGH L	INPUT12
45	EQ	G HIGH L	INPUT13
46	EQ	G HIGH L	INPUT14
47	EQ	G HIGH L	INPUT15
48	EQ	G HIGH L	INPUT16
49	EQ	G HIGH L	INPUT17
50	EQ	G HIGH L	INPUT18
51	EQ	G HIGH L	INPUT19
52	EQ	G HIGH L	INPUT20
53	EQ	G HIGH L	INPUT21
54	EQ	G HIGH L	INPUT22
55	EQ	G HIGH L	INPUT23
56	EQ	G HIGH L	INPUT24

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F HIGH	INPUT1
65	EQ	F HIGH	INPUT2
66	EQ	F HIGH	INPUT3
67	EQ	F HIGH	INPUT4
68	EQ	F HIGH	INPUT5
69	EQ	F HIGH	INPUT6
70	EQ	F HIGH	INPUT7
71	EQ	F HIGH	INPUT8
72	EQ	F HIGH	INPUT9
73	EQ	F HIGH	INPUT10
74	EQ	F HIGH	INPUT11
75	EQ	F HIGH	INPUT12
76	EQ	F HIGH	INPUT13
77	EQ	F HIGH	INPUT14
78	EQ	F HIGH	INPUT15
79	EQ	F HIGH	INPUT16
80	EQ	F HIGH	INPUT17
81	EQ	F HIGH	INPUT18
82	EQ	F HIGH	INPUT19
83	EQ	F HIGH	INPUT20
84	EQ	F HIGH	INPUT21
85	EQ	F HIGH	INPUT22
86	EQ	F HIGH	INPUT23
87	EQ	F HIGH	INPUT24
88	NO ASSIGN		
89	EQ	Q HIGH	INPUT1
90	EQ	Q HIGH	INPUT2
91	EQ	Q HIGH	INPUT3
92	EQ	Q HIGH	INPUT4
93	EQ	Q HIGH	INPUT5
94	EQ	Q HIGH	INPUT6
95	EQ	Q HIGH	INPUT7
102	EQ	Q HIGH	INPUT8
103	EQ	Q HIGH	INPUT9
104	EQ	Q HIGH	INPUT10
105	EQ	Q HIGH	INPUT11
106	EQ	Q HIGH	INPUT12
107	EQ	Q HIGH	INPUT13
108	EQ	Q HIGH	INPUT14
109	EQ	Q HIGH	INPUT15
110	EQ	Q HIGH	INPUT16
111	EQ	Q HIGH	INPUT17
112	EQ	Q HIGH	INPUT18
113	EQ	Q HIGH	INPUT19
114	EQ	Q HIGH	INPUT20
115	EQ	Q HIGH	INPUT21
116	EQ	Q HIGH	INPUT22
117	EQ	Q HIGH	INPUT23
118	EQ	Q HIGH	INPUT24
119	NO ASSIGN		

CHANNEL12

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G HIGH H	INPUT25
2	EQ	G HIGH H	INPUT26
3	EQ	G HIGH H	INPUT27
4	EQ	G HIGH H	INPUT28
5	EQ	G HIGH H	INPUT29
6	EQ	G HIGH H	INPUT30
7	EQ	G HIGH H	INPUT31
8	EQ	G HIGH H	INPUT32
9	EQ	G HIGH H	INPUT33
10	EQ	G HIGH H	INPUT34
11	EQ	G HIGH H	INPUT35
12	EQ	G HIGH H	INPUT36
13	EQ	G HIGH H	INPUT37
14	EQ	G HIGH H	INPUT38
15	EQ	G HIGH H	INPUT39
16	EQ	G HIGH H	INPUT40
17	EQ	G HIGH H	INPUT41
18	EQ	G HIGH H	INPUT42
19	EQ	G HIGH H	INPUT43
20	EQ	G HIGH H	INPUT44
21	EQ	G HIGH H	INPUT45
22	EQ	G HIGH H	INPUT46
23	EQ	G HIGH H	INPUT47
24	EQ	G HIGH H	INPUT48
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G HIGH L	INPUT25
34	EQ	G HIGH L	INPUT26
35	EQ	G HIGH L	INPUT27
36	EQ	G HIGH L	INPUT28
37	EQ	G HIGH L	INPUT29
38	EQ	G HIGH L	INPUT30
39	EQ	G HIGH L	INPUT31
40	EQ	G HIGH L	INPUT32
41	EQ	G HIGH L	INPUT33
42	EQ	G HIGH L	INPUT34
43	EQ	G HIGH L	INPUT35
44	EQ	G HIGH L	INPUT36
45	EQ	G HIGH L	INPUT37
46	EQ	G HIGH L	INPUT38
47	EQ	G HIGH L	INPUT39
48	EQ	G HIGH L	INPUT40
49	EQ	G HIGH L	INPUT41
50	EQ	G HIGH L	INPUT42
51	EQ	G HIGH L	INPUT43
52	EQ	G HIGH L	INPUT44
53	EQ	G HIGH L	INPUT45
54	EQ	G HIGH L	INPUT46
55	EQ	G HIGH L	INPUT47
56	EQ	G HIGH L	INPUT48

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F HIGH	INPUT25
65	EQ	F HIGH	INPUT26
66	EQ	F HIGH	INPUT27
67	EQ	F HIGH	INPUT28
68	EQ	F HIGH	INPUT29
69	EQ	F HIGH	INPUT30
70	EQ	F HIGH	INPUT31
71	EQ	F HIGH	INPUT32
72	EQ	F HIGH	INPUT33
73	EQ	F HIGH	INPUT34
74	EQ	F HIGH	INPUT35
75	EQ	F HIGH	INPUT36
76	EQ	F HIGH	INPUT37
77	EQ	F HIGH	INPUT38
78	EQ	F HIGH	INPUT39
79	EQ	F HIGH	INPUT40
80	EQ	F HIGH	INPUT41
81	EQ	F HIGH	INPUT42
82	EQ	F HIGH	INPUT43
83	EQ	F HIGH	INPUT44
84	EQ	F HIGH	INPUT45
85	EQ	F HIGH	INPUT46
86	EQ	F HIGH	INPUT47
87	EQ	F HIGH	INPUT48
88	NO ASSIGN		
89	EQ	Q HIGH	INPUT25
90	EQ	Q HIGH	INPUT26
91	EQ	Q HIGH	INPUT27
92	EQ	Q HIGH	INPUT28
93	EQ	Q HIGH	INPUT29
94	EQ	Q HIGH	INPUT30
95	EQ	Q HIGH	INPUT31
102	EQ	Q HIGH	INPUT32
103	EQ	Q HIGH	INPUT33
104	EQ	Q HIGH	INPUT34
105	EQ	Q HIGH	INPUT35
106	EQ	Q HIGH	INPUT36
107	EQ	Q HIGH	INPUT37
108	EQ	Q HIGH	INPUT38
109	EQ	Q HIGH	INPUT39
110	EQ	Q HIGH	INPUT40
111	EQ	Q HIGH	INPUT41
112	EQ	Q HIGH	INPUT42
113	EQ	Q HIGH	INPUT43
114	EQ	Q HIGH	INPUT44
115	EQ	Q HIGH	INPUT45
116	EQ	Q HIGH	INPUT46
117	EQ	Q HIGH	INPUT47
118	EQ	Q HIGH	INPUT48
119	NO ASSIGN		

CHANNEL13

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	G HIGH H	INPUT49
2	EQ	G HIGH H	INPUT50
3	EQ	G HIGH H	INPUT51
4	EQ	G HIGH H	INPUT52
5	EQ	G HIGH H	INPUT53
6	EQ	G HIGH H	INPUT54
7	EQ	G HIGH H	INPUT55
8	EQ	G HIGH H	INPUT56
9	EQ	ATT H	INPUT1
10	EQ	ATT H	INPUT2
11	EQ	ATT H	INPUT3
12	EQ	ATT H	INPUT4
13	EQ	ATT H	INPUT5
14	EQ	ATT H	INPUT6
15	EQ	ATT H	INPUT7
16	EQ	ATT H	INPUT8
17	EQ	ATT H	INPUT9
18	EQ	ATT H	INPUT10
19	EQ	ATT H	INPUT11
20	EQ	ATT H	INPUT12
21	EQ	ATT H	INPUT13
22	EQ	ATT H	INPUT14
23	EQ	ATT H	INPUT15
24	EQ	ATT H	INPUT16
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	G HIGH L	INPUT49
34	EQ	G HIGH L	INPUT50
35	EQ	G HIGH L	INPUT51
36	EQ	G HIGH L	INPUT52
37	EQ	G HIGH L	INPUT53
38	EQ	G HIGH L	INPUT54
39	EQ	G HIGH L	INPUT55
40	EQ	G HIGH L	INPUT56
41	EQ	ATT L	INPUT1
42	EQ	ATT L	INPUT2
43	EQ	ATT L	INPUT3
44	EQ	ATT L	INPUT4
45	EQ	ATT L	INPUT5
46	EQ	ATT L	INPUT6
47	EQ	ATT L	INPUT7
48	EQ	ATT L	INPUT8
49	EQ	ATT L	INPUT9
50	EQ	ATT L	INPUT10
51	EQ	ATT L	INPUT11
52	EQ	ATT L	INPUT12
53	EQ	ATT L	INPUT13
54	EQ	ATT L	INPUT14
55	EQ	ATT L	INPUT15
56	EQ	ATT L	INPUT16

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	F HIGH	INPUT49
65	EQ	F HIGH	INPUT50
66	EQ	F HIGH	INPUT51
67	EQ	F HIGH	INPUT52
68	EQ	F HIGH	INPUT53
69	EQ	F HIGH	INPUT54
70	EQ	F HIGH	INPUT55
71	EQ	F HIGH	INPUT56
72	EQ	HPF ON	INPUT1
73	EQ	HPF ON	INPUT2
74	EQ	HPF ON	INPUT3
75	EQ	HPF ON	INPUT4
76	EQ	HPF ON	INPUT5
77	EQ	HPF ON	INPUT6
78	EQ	HPF ON	INPUT7
79	EQ	HPF ON	INPUT8
80	EQ	HPF ON	INPUT9
81	EQ	HPF ON	INPUT10
82	EQ	HPF ON	INPUT11
83	EQ	HPF ON	INPUT12
84	EQ	HPF ON	INPUT13
85	EQ	HPF ON	INPUT14
86	EQ	HPF ON	INPUT15
87	EQ	HPF ON	INPUT16
88	NO ASSIGN		
89	EQ	Q HIGH	INPUT49
90	EQ	Q HIGH	INPUT50
91	EQ	Q HIGH	INPUT51
92	EQ	Q HIGH	INPUT52
93	EQ	Q HIGH	INPUT53
94	EQ	Q HIGH	INPUT54
95	EQ	Q HIGH	INPUT55
102	EQ	Q HIGH	INPUT56
103	EQ	LPF ON	INPUT1
104	EQ	LPF ON	INPUT2
105	EQ	LPF ON	INPUT3
106	EQ	LPF ON	INPUT4
107	EQ	LPF ON	INPUT5
108	EQ	LPF ON	INPUT6
109	EQ	LPF ON	INPUT7
110	EQ	LPF ON	INPUT8
111	EQ	LPF ON	INPUT9
112	EQ	LPF ON	INPUT10
113	EQ	LPF ON	INPUT11
114	EQ	LPF ON	INPUT12
115	EQ	LPF ON	INPUT13
116	EQ	LPF ON	INPUT14
117	EQ	LPF ON	INPUT15
118	EQ	LPF ON	INPUT16
119	NO ASSIGN		

CHANNEL14

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	ATT H	INPUT17
2	EQ	ATT H	INPUT18
3	EQ	ATT H	INPUT19
4	EQ	ATT H	INPUT20
5	EQ	ATT H	INPUT21
6	EQ	ATT H	INPUT22
7	EQ	ATT H	INPUT23
8	EQ	ATT H	INPUT24
9	EQ	ATT H	INPUT25
10	EQ	ATT H	INPUT26
11	EQ	ATT H	INPUT27
12	EQ	ATT H	INPUT28
13	EQ	ATT H	INPUT29
14	EQ	ATT H	INPUT30
15	EQ	ATT H	INPUT31
16	EQ	ATT H	INPUT32
17	EQ	ATT H	INPUT33
18	EQ	ATT H	INPUT34
19	EQ	ATT H	INPUT35
20	EQ	ATT H	INPUT36
21	EQ	ATT H	INPUT37
22	EQ	ATT H	INPUT38
23	EQ	ATT H	INPUT39
24	EQ	ATT H	INPUT40
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	ATT L	INPUT17
34	EQ	ATT L	INPUT18
35	EQ	ATT L	INPUT19
36	EQ	ATT L	INPUT20
37	EQ	ATT L	INPUT21
38	EQ	ATT L	INPUT22
39	EQ	ATT L	INPUT23
40	EQ	ATT L	INPUT24
41	EQ	ATT L	INPUT25
42	EQ	ATT L	INPUT26
43	EQ	ATT L	INPUT27
44	EQ	ATT L	INPUT28
45	EQ	ATT L	INPUT29
46	EQ	ATT L	INPUT30
47	EQ	ATT L	INPUT31
48	EQ	ATT L	INPUT32
49	EQ	ATT L	INPUT33
50	EQ	ATT L	INPUT34
51	EQ	ATT L	INPUT35
52	EQ	ATT L	INPUT36
53	EQ	ATT L	INPUT37
54	EQ	ATT L	INPUT38
55	EQ	ATT L	INPUT39
56	EQ	ATT L	INPUT40

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	HPF ON	INPUT17
65	EQ	HPF ON	INPUT18
66	EQ	HPF ON	INPUT19
67	EQ	HPF ON	INPUT20
68	EQ	HPF ON	INPUT21
69	EQ	HPF ON	INPUT22
70	EQ	HPF ON	INPUT23
71	EQ	HPF ON	INPUT24
72	EQ	HPF ON	INPUT25
73	EQ	HPF ON	INPUT26
74	EQ	HPF ON	INPUT27
75	EQ	HPF ON	INPUT28
76	EQ	HPF ON	INPUT29
77	EQ	HPF ON	INPUT30
78	EQ	HPF ON	INPUT31
79	EQ	HPF ON	INPUT32
80	EQ	HPF ON	INPUT33
81	EQ	HPF ON	INPUT34
82	EQ	HPF ON	INPUT35
83	EQ	HPF ON	INPUT36
84	EQ	HPF ON	INPUT37
85	EQ	HPF ON	INPUT38
86	EQ	HPF ON	INPUT39
87	EQ	HPF ON	INPUT40
88	NO ASSIGN		
89	EQ	LPF ON	INPUT17
90	EQ	LPF ON	INPUT18
91	EQ	LPF ON	INPUT19
92	EQ	LPF ON	INPUT20
93	EQ	LPF ON	INPUT21
94	EQ	LPF ON	INPUT22
95	EQ	LPF ON	INPUT23
102	EQ	LPF ON	INPUT24
103	EQ	LPF ON	INPUT25
104	EQ	LPF ON	INPUT26
105	EQ	LPF ON	INPUT27
106	EQ	LPF ON	INPUT28
107	EQ	LPF ON	INPUT29
108	EQ	LPF ON	INPUT30
109	EQ	LPF ON	INPUT31
110	EQ	LPF ON	INPUT32
111	EQ	LPF ON	INPUT33
112	EQ	LPF ON	INPUT34
113	EQ	LPF ON	INPUT35
114	EQ	LPF ON	INPUT36
115	EQ	LPF ON	INPUT37
116	EQ	LPF ON	INPUT38
117	EQ	LPF ON	INPUT39
118	EQ	LPF ON	INPUT40
119	NO ASSIGN		

CHANNEL15

#	HIGH	MID	LOW
0	NO ASSIGN		
1	EQ	ATT H	INPUT41
2	EQ	ATT H	INPUT42
3	EQ	ATT H	INPUT43
4	EQ	ATT H	INPUT44
5	EQ	ATT H	INPUT45
6	EQ	ATT H	INPUT46
7	EQ	ATT H	INPUT47
8	EQ	ATT H	INPUT48
9	EQ	ATT H	INPUT49
10	EQ	ATT H	INPUT50
11	EQ	ATT H	INPUT51
12	EQ	ATT H	INPUT52
13	EQ	ATT H	INPUT53
14	EQ	ATT H	INPUT54
15	EQ	ATT H	INPUT55
16	EQ	ATT H	INPUT56
17	NO ASSIGN		
18	NO ASSIGN		
19	NO ASSIGN		
20	NO ASSIGN		
21	NO ASSIGN		
22	NO ASSIGN		
23	NO ASSIGN		
24	NO ASSIGN		
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	EQ	ATT L	INPUT41
34	EQ	ATT L	INPUT42
35	EQ	ATT L	INPUT43
36	EQ	ATT L	INPUT44
37	EQ	ATT L	INPUT45
38	EQ	ATT L	INPUT46
39	EQ	ATT L	INPUT47
40	EQ	ATT L	INPUT48
41	EQ	ATT L	INPUT49
42	EQ	ATT L	INPUT50
43	EQ	ATT L	INPUT51
44	EQ	ATT L	INPUT52
45	EQ	ATT L	INPUT53
46	EQ	ATT L	INPUT54
47	EQ	ATT L	INPUT55
48	EQ	ATT L	INPUT56
49	NO ASSIGN		
50	NO ASSIGN		
51	NO ASSIGN		
52	NO ASSIGN		
53	NO ASSIGN		
54	NO ASSIGN		
55	NO ASSIGN		
56	NO ASSIGN		

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	HPF ON	INPUT41
65	EQ	HPF ON	INPUT42
66	EQ	HPF ON	INPUT43
67	EQ	HPF ON	INPUT44
68	EQ	HPF ON	INPUT45
69	EQ	HPF ON	INPUT46
70	EQ	HPF ON	INPUT47
71	EQ	HPF ON	INPUT48
72	EQ	HPF ON	INPUT49
73	EQ	HPF ON	INPUT50
74	EQ	HPF ON	INPUT51
75	EQ	HPF ON	INPUT52
76	EQ	HPF ON	INPUT53
77	EQ	HPF ON	INPUT54
78	EQ	HPF ON	INPUT55
79	EQ	HPF ON	INPUT56
80	EQ	ON	INPUT1
81	EQ	ON	INPUT2
82	EQ	ON	INPUT3
83	EQ	ON	INPUT4
84	EQ	ON	INPUT5
85	EQ	ON	INPUT6
86	EQ	ON	INPUT7
87	EQ	ON	INPUT8
88	NO ASSIGN		
89	EQ	LPF ON	INPUT41
90	EQ	LPF ON	INPUT42
91	EQ	LPF ON	INPUT43
92	EQ	LPF ON	INPUT44
93	EQ	LPF ON	INPUT45
94	EQ	LPF ON	INPUT46
95	EQ	LPF ON	INPUT47
102	EQ	LPF ON	INPUT48
103	EQ	LPF ON	INPUT49
104	EQ	LPF ON	INPUT50
105	EQ	LPF ON	INPUT51
106	EQ	LPF ON	INPUT52
107	EQ	LPF ON	INPUT53
108	EQ	LPF ON	INPUT54
109	EQ	LPF ON	INPUT55
110	EQ	LPF ON	INPUT56
111	EQ	ON	INPUT9
112	EQ	ON	INPUT10
113	EQ	ON	INPUT11
114	EQ	ON	INPUT12
115	EQ	ON	INPUT13
116	EQ	ON	INPUT14
117	EQ	ON	INPUT15
118	EQ	ON	INPUT16
119	NO ASSIGN		

CHANNEL16

#	HIGH	MID	LOW
0	NO ASSIGN		
1	NO ASSIGN		
2	NO ASSIGN		
3	NO ASSIGN		
4	NO ASSIGN		
5	NO ASSIGN		
6	NO ASSIGN		
7	NO ASSIGN		
8	NO ASSIGN		
9	NO ASSIGN		
10	NO ASSIGN		
11	NO ASSIGN		
12	NO ASSIGN		
13	NO ASSIGN		
14	NO ASSIGN		
15	NO ASSIGN		
16	NO ASSIGN		
17	NO ASSIGN		
18	NO ASSIGN		
19	NO ASSIGN		
20	NO ASSIGN		
21	NO ASSIGN		
22	NO ASSIGN		
23	NO ASSIGN		
24	NO ASSIGN		
25	NO ASSIGN		
26	NO ASSIGN		
27	NO ASSIGN		
28	NO ASSIGN		
29	NO ASSIGN		
30	NO ASSIGN		
31	NO ASSIGN		
32	NO ASSIGN		
33	NO ASSIGN		
34	NO ASSIGN		
35	NO ASSIGN		
36	NO ASSIGN		
37	NO ASSIGN		
38	NO ASSIGN		
39	NO ASSIGN		
40	NO ASSIGN		
41	NO ASSIGN		
42	NO ASSIGN		
43	NO ASSIGN		
44	NO ASSIGN		
45	NO ASSIGN		
46	NO ASSIGN		
47	NO ASSIGN		
48	NO ASSIGN		
49	NO ASSIGN		
50	NO ASSIGN		
51	NO ASSIGN		
52	NO ASSIGN		
53	NO ASSIGN		
54	NO ASSIGN		
55	NO ASSIGN		
56	NO ASSIGN		

#	HIGH	MID	LOW
57	NO ASSIGN		
58	NO ASSIGN		
59	NO ASSIGN		
60	NO ASSIGN		
61	NO ASSIGN		
62	NO ASSIGN		
63	NO ASSIGN		
64	EQ	ON	INPUT17
65	EQ	ON	INPUT18
66	EQ	ON	INPUT19
67	EQ	ON	INPUT20
68	EQ	ON	INPUT21
69	EQ	ON	INPUT22
70	EQ	ON	INPUT23
71	EQ	ON	INPUT24
72	EQ	ON	INPUT25
73	EQ	ON	INPUT26
74	EQ	ON	INPUT27
75	EQ	ON	INPUT28
76	EQ	ON	INPUT29
77	EQ	ON	INPUT30
78	EQ	ON	INPUT31
79	EQ	ON	INPUT32
80	EQ	ON	INPUT33
81	EQ	ON	INPUT34
82	EQ	ON	INPUT35
83	EQ	ON	INPUT36
84	EQ	ON	INPUT37
85	EQ	ON	INPUT38
86	EQ	ON	INPUT39
87	EQ	ON	INPUT40
88	NO ASSIGN		
89	EQ	ON	INPUT41
90	EQ	ON	INPUT42
91	EQ	ON	INPUT43
92	EQ	ON	INPUT44
93	EQ	ON	INPUT45
94	EQ	ON	INPUT46
95	EQ	ON	INPUT47
102	EQ	ON	INPUT48
103	EQ	ON	INPUT49
104	EQ	ON	INPUT50
105	EQ	ON	INPUT51
106	EQ	ON	INPUT52
107	EQ	ON	INPUT53
108	EQ	ON	INPUT54
109	EQ	ON	INPUT55
110	EQ	ON	INPUT56
111	NO ASSIGN		
112	NO ASSIGN		
113	NO ASSIGN		
114	NO ASSIGN		
115	NO ASSIGN		
116	NO ASSIGN		
117	NO ASSIGN		
118	NO ASSIGN		
119	NO ASSIGN		

MIDI Data Format

In the following tables, "tx" means that transmission from the 02R96 is possible, and "rx" means that receiving messages at the 02R96 is possible.

1. CHANNEL MESSAGE

Command	rx/tx	function
8n NOTE OFF	rx	Control the internal effects
9n NOTE ON	rx	Control the internal effects
Bn CONTROL CHANGE	rx/tx	Control parameters
Cn PROGRAM CHANGE	rx/tx	Switch scene memories

2. SYSTEM COMMON MESSAGE

Command	rx/tx	function
F1 MIDI TIME CODE QUARTER FRAME	rx	Used when TIME REFERENCE is MTC.
F2 SONG POSITION POINTER	rx	Used when TIME REFERENCE is MIDI CLOCK.

3. SYSTEM REALTIME MESSAGE

Command	rx/tx	function
F8 TIMING CLOCK	rx	MIDI clock
FA START	rx*	Start automix (from the beginning)
FB CONTINUE	rx*	Start automix (from the middle)
FC STOP	rx*	Stop automix
FE ACTIVE SENSING	rx	Check MIDI cable connections
FF SYSTEM RESET	rx	Clear running status

* Received only when the AUTOMIX TIME REFERENCE setting is set to MIDI CLOCK.

4. EXCLUSIVE MESSAGE

The 02R96 can correctly process Exclusive Messges of a length of F0 through F7 of 4096 bytes or shorter.

4.1 Real Time System Exclusive

Command	rx/tx	function
F0 7F dd 06 ... F7 MMC COMMAND	tx	MMC command
F0 7F dd 07 ... F7 MMC RESPONSE	rx	MMC response
F0 7F dd 01 ... F7 MIDI TIME CODE	rx	Used when TIME REFERENCE is MTC.

4.2 System Exclusive Message

4.2.1 Bulk Dump

Command	rx/tx	function
F0 43 0n 7E ... F7 BULK DUMP DATA	rx/tx	BULK DUMP DATA
F0 43 2n 7E ... F7 BULK DUMP REQUEST	rx/tx	BULK DUMP REQUEST

The following data types of bulk dump are used on the 02R96.

Data name	rx/tx	function
'm'	rx/tx	Scene memory & request (compressed data)
'S'	rx/tx	Setup memory & request
'L'	rx/tx	User defined layer & request
'I'	rx/tx	User defined plug-in & request
'V'	rx/tx	User defined key & request
'U'	rx/tx	User assignable layer & request
'C'	rx/tx	Control change table & request
'P'	rx/tx	Program change table & request
'Q'	rx/tx	Equalizer library & request
'Y'	rx/tx	Compressor library & request
'G'	rx/tx	Gate library & request
'E'	rx/tx	Effect library & request
'H'	rx/tx	Channel library & request
'R'	rx/tx	Input patch library & request
'O'	rx/tx	Output patch library & request
'J'	rx/tx	Bus to stereo library & request
'K'	rx/tx	Surround monitor library & request
'a'	rx/tx	Automix & request (compressed data)
'N'	rx/tx	Plug-in effect card & request

4.2.2 PARAMTER CHANGE

Command	rx/tx	function
F0 43 1n 3E 0B ... F7 RARAMETER CHANGE	rx/tx	02R96-specific parameter change
F0 43 3n 3E 0B ... F7 PARAMETER REQUEST	rx/tx	02R96-specific parameter request
F0 43 1n 3E 7F ... F7 PARAMETER CHANGE	rx/tx	General purpose digital mixer parameter change
F0 43 3n 3E 7F ... F7 PARAMETER REQUEST	rx/tx	General purpose digital mixer parameter request

The following data types of parameter change are used by the 02R96.

Type (HEX)	rx/tx	function
1 (01)	rx/tx	Edit buffer
2 (02)	rx/tx	Patch data
3 (03)	rx/tx	Setup memory
4 (04)	rx/tx	Backup memory
16 (10)	rx/tx	Function (recall, store, title, clear)
17 (11)	rx	Function (pair)
18 (12)	rx	Function (effect)
19 (13)	rx/tx	Sort table data
20 (14)	rx/tx	Function (attribute, link)
32 (20)	rx	Key remote
33 (21)	rx/tx	Remote meter
34 (22)	rx/tx	Remote time counter
35 (23)	rx/tx	Automix status

Format Details

1. NOTE OFF (8n)

Reception

If [OTHER ECHO] is ON, these message are echoed.
If the [Rx CH] matches, these messages are received and used to control effects.

STATUS	1000nnnn	8n	Note off message
DATA	0nnnnnnn	nn	Note number
	0vvvvvvv	vv	Velocity (ignored)

2. NOTE ON (9n)

Reception

If [OTHER ECHO] is ON, these messages are echoed.
If the [Rx CH] matches, these messages are received and used to control effects.

STATUS	1001nnnn	9n	Note on message
DATA	0nnnnnnn	nn	Note number
	0vvvvvvv	vv	Velocity (1-127:on, 0:off)

3. CONTROL CHANGE (Bn)

Reception

If [Control Change ECHO] is ON, these messages are echoed.
If [TABLE] is selected, these message are received if [Control Change Rx] is ON, and will control parameters according to the [Control assign table] settings.
The parameters that can be set are defined in the Control Change Assign Parameter List.
If [NRPN] is selected, these messages are received if [Control Change Rx] is ON and the [Rx CH] matches, and will control the parameter that is specified by the four messages NRPN control number (62h, 63h) and Data Entry control number (06h, 26h). Parameter settings are defined in the Control Change Assign Parameter List.

Transmission

If [TABLE] is selected, operating a parameter specified in the [Control assign table] will cause these messages to be transmitted if [Control Change Tx] is ON. The parameters that can be specified are defined in the Control Change Assign Parameter List.
If [NRPN] is selected, operating a specified parameter will cause data to be transmitted on the [Tx CH] if [Control Change Tx] is ON, using the four messages NRPN control number (62h, 63h) and Data Entry control number (06h, 26h). Parameter settings are defined in the Control Change Assign Parameter List.

This data cannot be transmitted via Program Change to Studio Manager since there is no guarantee that the contents of the tables will match. (Parameter Change messages will always be used.)

If [TABLE] is selected

STATUS	1011nnnn	Bn	Control change
DATA	0nnnnnnn	nn	Control number (0-95, 102-119)
	0vvvvvvv	vv	Control Value (0-127)

Formula for converting Control values into parameter data:

```
paramSteps=  paramMax - paramMin + 1;
add=         paramWidth / paramSteps;
mod=         paramWidth - add * paramSteps;
curValue=    parm * add + mod / 2;
```

(1) When the assigned parameter can be set in 128 steps or less:
paramWidth = 127; rxValue = Control value;

(2) When the assigned parameter can be set in 128 through 16383 steps:
paramWidth = 16383;

(2-1) When both High and Low data are received:
rxValue = Control value (High) * 128 + Control value (Low);

(2-2) When only Low data is received:
rxValue = (curValue & 16256) + Control value (Low);

(2-3) When only High data is received:
rxValue = Control value (High) * 128 + (curValue & 127);

(3) When the assigned parameter can be set in 16384 through 2097151 steps:
paramWidth = 2097151;

(3-1) When High, Middle, and Low data are received:
rxValue = Control value (High) * 16384 + Control value (Middle) * 128 + Control value (Low);

(3-2) When only Low data is received:
rxValue = (curValue & 2097024) + Control value (Low);

(3-3) When only Middle data is received:
rxValue = (curValue & 2080895) + Control value (Middle) * 128;

(3-4) When only High data is received:
rxValue = (curValue & 16383) + Control value (High) * 16384;

(3-5) When Middle and Low data are received:
rxValue = (curValue & 2080768) + Control value (Middle) * 128 + Control value (Low);

(3-6) When High and Low data are received:
rxValue = (curValue & 16256) + Control value (High) * 16384 + Control value (Low);

(3-7) When High and Middle data are received:

```
rxValue = (curValue & 127) + Control value (High) * 16384 + Control value (Middle) * 128;
if ( rxValue > paramWidth)
rxValue = paramWidth;
param = ( rxValue - mod / 2) / add;
```

If [NRPN] is selected

STATUS	1011nnnn	Bn	Control changeDATA
	01100010	62	NRPN LSB
	0vvvvvvv	vv	LSB of parameter number
STATUS	1011nnnn	Bn	Control change*1
DATA	01100011	63	NRPN MSB
	0vvvvvvv	vv	MSB of parameter number
STATUS	1011nnnn	Bn	Control change*1
DATA	00000110	06	MSB of data entry
	0vvvvvvv	vv	MSB of parameter data
STATUS	1011nnnn	Bn	Control change*1
DATA	00100110	26	LSB of data entry
	0vvvvvvv	vv	LSB of parameter data

*1) The second and subsequent STATUS need not be added during transmission. Reception must be implemented so that reception occurs whether or not STATUS is present.

4. PROGRAM CHANGE (Cn)

Reception

If [Program Change ECHO] is ON, these messages are echoed.
If [Program Change RX] is ON and the [Rx CH] matches, these messages will be received. However if [OMNI] is ON, they will be received regardless of the channel. When a message is received, a Scene Memory will be recalled according to the settings of the [Program Change Table].

Transmission

If [Program Change TX] is ON, this message is transmitted according to the settings of the [Program Change Table] on the [Tx CH] channel when a scene memory is recalled.
If the recalled scene has been assigned to more than one program number, the lowest-numbered program number will be transmitted. Transmission to Studio Manager using Program Change messages will not be performed since there is no guarantee that the contents of the tables will match. (Parameter Changes will always be used.)

STATUS	1100nnnn	Cn	Program change
DATA	0nnnnnnn	nn	Program number (0-127)

5 MIDI TIME CODE QUARTER FRAME(F1)

Reception

This is echoed if [OTHER COMMANDS ECHO] is ON.
Automix synchronizes this if the data is received at the port specified by the TIME REFERENCE setting.

STATUS	1100nnnn	F1	Quarter frame message
DATA	0tttdddd	td	Type & data

6. SONG POSITION POINTER (F2)

Reception

If this is received when the automix TIME REFERENCE setting is MIDI CLOCK, the automix will move to the song position that was received.

STATUS	11110010	F2	Song position pointer
DATA	0vvvvvvv	vv	Song position LSB
	0vvvvvvv	vv	Song position MSB

7. TIMING CLOCK (F8)

Reception

If the automix TIME REFERENCE setting is MIDI CLOCK, this message is used to synchronize automix. It is also used to control effects. This message is transmitted 24 times per quarter note.

STATUS	11111000	F8	Timing clock

8. START (FA)

Reception

This message is received if the automix TIME REFERENCE setting is MIDI CLOCK, and will start the automix. In actuality, automix will start when the next TIMING CLOCK is received after receiving the START message.

STATUS	11111010	FA	Start

9. CONTINUE (FB)

Reception

This message is received if the automix TIME REFERENCE setting is MIDI CLOCK, and will cause automix to start from the current song position. In actuality, automix will start when the next TIMING CLOCK is received after receiving the CONTINUE message.

STATUS	11111011	FB	Continue

10. STOP (FC)

Reception

This message is received if the automix TIME REFERENCE setting is MIDI CLOCK, and will cause automix to stop.

STATUS	11111100	FC	Stop

11. ACTIVE SENSING (FE)

Reception

Once this message has been received, the failure to receive any message for an interval of 400 ms or longer will cause MIDI transmission to be initialized, such as by clearing the Running Status.

STATUS	11111110 FE	Active sensing

12. SYSTEM RESET (FF)

Reception

When this message is received, MIDI communications will be cleared, e.g., by clearing the Running Status.

STATUS	11111111 FF	System reset

13. SYSTEM EXCLUSIVE MESSAGE (F0)

13.1 MIDI TIME CODE (FULL MESSAGE)

The Automix synchronizes these messages when they are received at a port specified by the TIME REFERENCE setting.

13.2 MIDI MACHINE CONTROL (MMC)

These messages are transmitted when the Machine Control section of the 02R96 is operated.

13.3 BULK DUMP

This message sends or receives the contents of various memories stored within the 02R96.
The basic format is as follows.

For DUMP DATA

```
F0 43 0n 7E cc cc <Model ID> tt mm mm [Data ...]
cs F7
```

For DUMP REQUEST

```
F0 43 2n 7E <Model ID> tt mm mm F7
```

n	Device Number
cc cc	DATA COUNT (the number of bytes that follow this, ending before the checksum)
<Model ID>	Model ID (for 02R96, 4C 4D 20 20 38 43 35 34)
tt	DATA TYPE
mm mm	DATA NUMBER
cs	CHECK SUM

A unique header (Model ID) is used to determine whether the device is a 02R96.
CHECK SUM is obtained by adding the bytes that follow BYTE COUNT (LOW) and end before CHECK SUM, taking the binary compliment of this sum, and then setting bit 7 to 0.
CHECK SUM = (-sum)&0x7F
The 02R96 can transmit and receive BULK data only if the size of a MIDI packet (F0 - F7) is 4096 bytes or smaller.
If large data consists of multiple MIDI packets, they can be transferred sequentially.

Reception

This message is received if [Bulk RX] is ON and the [Rx CH] matches the device number included in the SUB STATUS.
When a bulk dump is received, it is immediately written into the specified memory.
When a bulk dump request is received, a bulk dump is immediately transmitted.

Transmission

This message is transmitted on the [Tx CH] by key operations in the [MIDI]-[BULK DUMP] screen.
A bulk dump is transmitted on the [Rx CH] in response to a bulk dump request.
The data area is handled by converting seven words of 8-bit data into eight words of 7-bit data.

Conversion from actual data into bulk data

```
d[0~6]: actual data
b[0~7]: bulk data
b[0] = 0;
for( I=0; I<7; I++){
    if( d[I]&0x80){
        b[0] |= 1<<(6-I);
    }
    b[I+1] = d[I]&0x7F;
}
```

Restoration from bulk data into actual data

```
d[0~6]: actual data
b[0~7]: bulk data
for( I=0; I<7; I++){
    b[0] <<= 1;
    d[I] = b[I+1]+(0x80&b[0]);
}
```

13.3.1 Scene memory bulk dump format (compressed data)

The 02R96 can transmit and receive scene memories in compressed form.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01101101	6D	'm'
	0mmmmmmm	mh	m=0-99, 256, 8192 (Scene0-99, EDIT BUFFER, UNDO)
	0mmmmmmm	ml	Receive is effective 1-99, 256, 8192
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Scene data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.2 Scene memory bulk dump request format (compressed data)

The second and third bytes of the DATA NAME indicate the scene number that is being requested. If this is 256, the data of the Edit Buffer will be bulk-dumped. If this is 8192, the data of the Undo Buffer will be bulk-dumped.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01101101	6D	'm'
	0mmmmmmm	mh	m=0-99, 256, 8192 (Scene0-99, EDIT BUFFER, UNDO)
	0mmmmmmm	ml	

EOX	11110111	F7	End of exclusive

13.3.3 Setup memory bulk dump format

Of the setup memory of the 02R96, this bulk-dumps data other than the User defined layer, User define plug-in, User defined keys, User assignable layer, Control change table, and Program change table.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010011	53	'S'
	00000010	02	
	00000000	00	No.256 = Current
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Setup data of block[bb]
		:	
		:	
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.4 Setup memory bulk dump request format

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010011	53	'S'
	00000010	02	
	00000000	00	No.256 = Current
EOX	11110111	F7	End of exclusive

13.3.5 User defined layer bulk dump format

The second and third bytes of the DATA NAME indicate the bank number.
Be aware that the state of the transmission destination will (in some cases) change if the same bank is being used.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001100	4C	'L'
	00000000	00	
	0bbbbbbb	bb	b=0-3 (bank no.1-4)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	User defined layer data of block[bb]
		:	
		:	
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.6 User defined layer bulk dump request format

The second and third bytes of the DATA NAME indicate the bank number.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME			
	01001100	4C	'L'
	00000000	00	
	0bbbbbbb	bb	b=0-3 (bank no.1-4)
EOX	11110111	F7	End of exclusive

13.3.7 User defined plug-in bulk dump format

The second and third bytes of the DATA NAME indicate the bank number.
Be aware that the state of the transmission destination will (in some cases) change if the same bank is being used.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001001	49	'I'
	00000000	00	
	0bbbbbbb	bb	b=0-7 (bank no.1-8)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	User define plug-in data of block[bb]
		:	
		:	
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.8 User defined plug-in bulk dump request format

The second and third bytes of the DATA NAME indicate the bank number.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001001	49	'I'
	00000000	00	
	0bbbbbbb	bb	b=0-7 (bank no.1-8)
EOX	11110111	F7	End of exclusive

13.3.9 User defined keys bulk dump format

The second and third bytes of the DATA NAME indicate the bank number.
Be aware that the state of the transmission destination will (in some cases) change if the same bank is being used.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010110	56	'V'
	00000000	00	
	0bbbbbbb	bb	b=0-7 (bank no.A-H)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	User defined key data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.10 User defined keys bulk dump request format

The second and third bytes of the DATA NAME indicate the bank number.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010110	56	'V'
	00000000	00	
	0bbbbbbb	bb	b=0-7 (bank no.A-H)
EOX	11110111	F7	End of exclusive

13.3.11 User assignable layer bulk dump format

The second and third bytes of the DATA NAME indicate the bank number.
Be aware that the state of the transmission destination will (in some cases) change if the same bank is being used.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010101	55	'U'
	00000000	00	
	0bbbbbbb	bb	b=0-3 (bank no.1-4)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	User assignable layer data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.12 User assignable layer bulk dump request format

The second and third bytes of the DATA NAME indicate the bank number.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010101	55	'U'
	00000000	00	
	0bbbbbbb	bb	b=0-3 (bank no.1-4)
EOX	11110111	F7	End of exclusive

13.3.13 Control change table bulk dump format

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'

	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01000011	43	'C'
	00000010	02	
	00000000	00	No.256 = Current
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Control change table data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.14 Control change table bulk dump request format

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01000011	43	'C'
	00000010	02	
	00000000	00	No.256 = Current
EOX	11110111	F7	End of exclusive

13.3.15 Program change table bulk dump format

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010000	50	'P'
	00000010	02	
	00000000	00	No.256 = Current
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Program change table data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.16 Program change table bulk dump request format

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010000	50	'P'
	00000010	02	
	00000000	00	No.256 = Current
EOX	11110111	F7	End of exclusive

13.3.17 Equalizer library bulk dump format

The second and third bytes of the DATA NAME indicate the bank number.
0:Library no.1 - 199:Library no.200, 256:CH1 - 311:CH56, 384:BUS1 - 391:BUS8, 512:AUX1 - 519:AUX8, 768:STEREO L - 769:STEREO R, 8192:UNDO
256 and up are data for the corresponding channel of the edit buffer (excluding UNDO).
For reception by the 02R96, only the user area is valid. (40-199, 256-)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010001	51	'Q'
	0mmmmmmm	mh	0-199 (EQ Library no.1-200),
	0mmmmmmm	ml	256- (Channel current data)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	EQ Library data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.18 Equalizer library bulk dump request format

The second and third bytes of the DATA NAME indicate the bank number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010001	51	'Q'
	0mmmmmmm	mh	0-199 (EQ Library no.1-200),
	0mmmmmmm	ml	256- (Channel current data)
EOX	11110111	F7	End of exclusive

13.3.19 Compressor library bulk dump format

The second and third bytes of the DATA NAME indicate the library number.
0:Library no.1 - 127:Library no.128, 256:CH1 - 351:CH96, 384:BUS1 - 391:BUS8, 512:AUX1 - 523:AUX12, 640:MATRIX1L - 647:MATRIX4R, 768:STEREO L - 769:STEREO R, 8192:UNDO
256 and following are data for the corresponding channel of the edit buffer. For reception by the 02R96, only the user area is valid. (36-127, 256-)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01011001	59	'Y'
	0mmmmmmm	mh	0-127 (COMP Library no.1-128),
	0mmmmmmm	ml	256- (Channel current data)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	COMP Library data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.20 Compressor library bulk dump request format

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01011001	59	'Y'
	0mmmmmmm	mh	0-127 (COMP Library no.1-128),
	0mmmmmmm	ml	256- (Channel current data)
EOX	11110111	F7	End of exclusive

13.3.21 Gate library bulk dump format

The second and third bytes of the DATA NAME indicate the library number.
0:Library no.1 - 127:Library no.128, 256:CH1 - 311:CH56, 8192:UNDO
256 and following are data for the corresponding channel of the edit buffer. For reception by the 02R96, only the user area is valid. (4-127, 256-)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01000111	47	'G'
	0mmmmmmm	mh	0-127 (GATE Library no.1-128),
	0mmmmmmm	ml	256-351 (Channel current data)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	GATE Library data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.22 Gate library bulk dump request format

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01000111	47	'G'
	0mmmmmmm	mh	0-127 (GATE Library no.1-128),
	0mmmmmmm	ml	256-351 (Channel current data)
EOX	11110111	F7	End of exclusive

13.3.23 Effect library bulk dump format

The second and third bytes of the DATA NAME indicate the library number.
0:Library no.1 - 127:Library no.128, 256:Effect1 - 259:Effect4, 8192:UNDO
256-263 are the data for the corresponding area of the edit buffer.
For reception by the 02R96, only the user area is valid. (61-127, 256-263)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01000101	45	'E'
	0mmmmmmm	mh	0-127 (Effect Library no.1-128),
	0mmmmmmm	ml	256-259 (Effect1-4 current)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Effect Library data of block[bb]
	:		
	:		
	0ddddddd	de	

CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.24 Effect library bulk dump request format

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01000101	45	'E'
	0mmmmmmm	mh	0-127 (Effect Library no.1-128),
	0mmmmmmm	ml	256-259 (Effect1-4 current)
EOX	11110111	F7	End of exclusive

13.3.25 Channel library bulk dump format

The second and third bytes of the DATA NAME indicate the library number.
0:Library no.0 - 128:Library no.128, 256:CH1 - 311:CH56, 384:BUS1 - 391:BUS8, 512:AUX1 - 519:AUX8, 768:STEREO L - 769:STEREO R, 8192:UNDO
256 and following are data for the corresponding channel of the edit buffer. For reception by the 02R96, only the user area is valid. (2-128,256-)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001000	48	'H'
	0mmmmmmm	mh	0-128 (Channel Library no.0-128),
	0mmmmmmm	ml	256- (Current data)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Channel Library data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.26 Channel library bulk dump request format

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001000	48	'H'
	0mmmmmmm	mh	0-128 (Channel Library no.0-128),
	0mmmmmmm	ml	256- (Current data)
EOX	11110111	F7	End of exclusive

13.3.27 Input patch library bulk dump format

The second and third bytes of the DATA NAME indicate the library number.
0:Library no.0 - 32:Library no.32, 256:Current data, 8192:UNDO
For reception by the 02R96, only the user area is valid. (1-32,256)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010010	52	'R'
	0mmmmmmm	mh	0-32 (Input patch Library no.0-32),
	0mmmmmmm	ml	256 (Current data)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Input patch Library data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.28 Input patch library bulk dump request format

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01010010	52	'R'
	0mmmmmmm	mh	0-32 (Input patch Library no.0-32),
	0mmmmmmm	ml	256 (Current data)
EOX	11110111	F7	End of exclusive

13.3.29 Output patch library bulk dump format

The second and third bytes of the DATA NAME indicate the library number.
0:Library no.0 - 32:Library no.32, 256:Current data, 8192:UNDO
For reception by the 02R96, only the user area is valid. (1-32,256)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)

FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001111	4F	'O'
	0mmmmmmm	mh	0-32 (Output patch Library no.0-32),
	0mmmmmmm	ml	256 (Current data)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Output patch Library data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.30 Output patch library bulk dump request format

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001111	4F	'O'
	0mmmmmmm	mh	0-32 (Output patch Library no.0-32),
	0mmmmmmm	ml	256 (Current data)
EOX	11110111	F7	End of exclusive

13.3.31 Bus to stereo library bulk dump format

The second and third bytes of the DATA NAME indicate the library number.
0:Library no.0 - 32:Library no.32, 256:Current data, 8192:UNDO
For reception by the 02R96, only the user area is valid. (1-32,256)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001010	4A	'J'
	0mmmmmmm	mh	0-32 (Bus to stereo Library no.0-32),
	0mmmmmmm	ml	256 (Current data)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Bus to stereo Library data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.32 Bus to stereo library bulk dump request format

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001010	4A	'J'
	0mmmmmmm	mh	0-32 (Bus to stereo Library no.0-32),
	0mmmmmmm	ml	256 (Current data)
EOX	11110111	F7	End of exclusive

13.3.33 Surround monitor library bulk dump format

The second and third bytes of the DATA NAME indicate the library number.
0:Library no.0 - 32:Library no.32, 256:Current data, 8192:UNDO
For reception by the 02R96, only the user area is valid. (1-32,256)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001011	4B	'K'
	0mmmmmmm	mh	0-32 (Surround Monitor Library no.0-32),
	0mmmmmmm	ml	256 (Current data)
BLOCK INFO.	0ttttttt	tt	total block number (minimum number is 0)
	0bbbbbbb	bb	current block number (0-total block number)
DATA	0ddddddd	ds	Surround Monitor Library data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.34 Surround monitor library bulk dump request format

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump

	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001011	4B	'K'
	0mmmmmmm	mh	0-32 (Surround Monitor Library no.0-32),
	0mmmmmmm	ml	256 (Current data)
EOX	11110111	F7	End of exclusive

13.3.35 Automix bulk dump format (compressed data)

The second byte of the DATA NAME indicates the library number.
0:Library no.1 - 15:Library no.16, 256:Current automix data

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01100001	61	'a'
	0mmmmmmm	mh	0-15 (Automix no.1-16), 256 (Current data)
	0mmmmmmm	ml	BLOCK INFO.
	0bbbbbbb	bh	current block number (0-total block number)
	0bbbbbbb	bl	
	0ttttttt	th	total block number (minimum number is 0)
	0ttttttt	tl	
DATA	0ddddddd	ds	Automix memory data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.36 Automix bulk dump request format (compressed data)

The second and third bytes of the DATA NAME indicate the library number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01100001	61	'a'
	0mmmmmmm	mh	0-15 (Automix no.1-16), 256 (Current data)
	0mmmmmmm	ml	
EOX	11110111	F7	End of exclusive

13.3.37 Plug-in effect card bulk dump format

The second byte of the DATA NAME indicates the slot number.
0:SLOT 3 - 1:SLOT 4
The data is not received if the Developer ID and Product ID are different than the card that is installed in the slot.
The data is not transmitted if a valid plug-in effect card is not installed.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0000nnnn	0n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
COUNT HIGH	0ccccccc	ch	data count = ch * 128 + cl
COUNT LOW	0ccccccc	cl	
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001110	4E	'N'
	0mmmmmmm	mh	m=0-1 (SLOT 2-3)
	0mmmmmmm	ml	BLOCK INFO.
	0bbbbbbb	bh	current block number (0-total block number)
	0bbbbbbb	bl	
	0ttttttt	th	total block number (minimum number is 0)
	0ttttttt	tl	
	0000iiii	0i	Developer id (High)
	0000iiii	0i	Developer id (Low)
	0000jjjj	0j	Product id (High)
	0000jjjj	0j	Product id (Low)
DATA	0ddddddd	ds	Plug-in Effect card memory data of block[bb]
	:		
	:		
	0ddddddd	de	
CHECK SUM	0eeeeeee	ee	ee= (Invert ('L'+...+de)+1)&0x7F
EOX	11110111	F7	End of exclusive

13.3.38 Plug-in effect card bulk dump request format

The second and third bytes of the DATA NAME indicate the slot number. (See above)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0010nnnn	2n	n=0-15 (Device number=MIDI Channel)
FORMAT No.	01111110	7E	Universal bulk dump
	01001100	4C	'L'
	01001101	4D	'M'
	00100000	20	' '
	00100000	20	' '
	00111000	38	'8'
	01000011	43	'C'
	00110101	35	'5'
	00110100	34	'4'
DATA NAME	01001110	4E	'N'
	0mmmmmmm	mh	m=0-1 (SLOT 2-3)
	0mmmmmmm	ml	
EOX	11110111	F7	End of exclusive

13.4 PARAMETER CHANGE

Reception

If [Parameter change ECHO] is ON, these messages are echoed.
If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. A specific parameter is controlled when a Parameter Change is received. When a Parameter Request is received, the current value of the specified parameter will be transmitted as a Parameter Change with the Device Number set to [Rx CH].

Transmission

If [Parameter change TX] is ON and you operate a parameter for which Control Change transmission is not enabled, a parameter change will be transmitted with [Tx CH] as the Device Number.
As a response to a Parameter Request, a parameter change will be transmitted with [Rx CH] as the Device Number.

13.4.1 Parameter change basic format (02R96-specific)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn	1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	00001011	0B	02R96
ADDRESS	0ttttttt	tt	Data type
	0eeeeeee	ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp	pp	Parameter no.
	0ccccccc	cc	Channel no.
DATA *)	0ddddddd	dd	data
	:		
	:		
EOX	11110111	F7	End of exclusive

*) For parameters with a data size of 2 or more, data for that size will be transmitted.

13.4.2 Parameter Change basic format (Universal format)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn	1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	01111111	7F	Universal
ADDRESS	0ttttttt	tt	Data type
	0eeeeeee	ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp	pp	Parameter no.
	0ccccccc	cc	Channel no.
DATA *)	0ddddddd	dd	data
	:		
	:		
EOX	11110111	F7	End of exclusive

*) For parameters with a data size of 2 or more, data for that size will be transmitted.

13.4.3 Parameter request basic format (02R96-specific)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn	3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	00001011	0B	02R96
ADDRESS	0ttttttt	tt	Data type
	0eeeeeee	ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp	pp	Parameter no.
	0ccccccc	cc	Channel no.
EOX	11110111	F7	End of exclusive

13.4.4 Parameter request basic format (Universal format)

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn	3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	01111111	7F	Universal
ADDRESS	0ttttttt	tt	Data type
	0eeeeeee	ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp	pp	Parameter no.
	0ccccccc	cc	Channel no.
EOX	11110111	F7	End of exclusive

13.4.5 Parameter Address

Consult your dealer for parameter address details.

13.4.6 Parameter change (Edit buffer)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the specified parameter will be controlled.

Transmission

If [Parameter change TX] is ON and a parameter that is not assigned in the [Control Assign Table] is changed, the Parameter Change messages are transmitted on [Tx CH] device number channel.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn	1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	01111111	7F	Universal
ADDRESS	00000001	01	Edit Buffer
	0eeeeeee	ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp	pp	Parameter no.
	0ccccccc	cc	Channel no.
DATA	0ddddddd	dd	data
	:		
	:		
EOX	11110111	F7	End of exclusive

13.4.7 Parameter request (Edit buffer)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the value of the specified parameter will be transmitted as a Parameter change.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn	3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	01111111	7F	Universal
ADDRESS	00000001	01	Edit Buffer
	0eeeeeee	ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp	pp	Parameter no.
	0ccccccc	cc	Channel no.
EOX	11110111	F7	End of exclusive

13.4.8 Parameter change (Patch data)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the specified parameter will be controlled.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn	1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	00001011	0B	02R96
ADDRESS	00000010	02	Patch data
	0eeeeeee	ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp	pp	Parameter no.
	0ccccccc	cc	Channel no.
DATA	0ddddddd	dd	data
	:		
	:		
EOX	11110111	F7	End of exclusive

13.4.9 Parameter request (Patch data)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the value of the specified parameter will be transmitted as a Parameter change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn 3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00000010 02	Patch data
	0eeeeeee ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp pp	Parameter no.
	0ccccccc cc	Channel no.
EOX	11110111 F7	End of exclusive

13.4.10 Parameter change (Setup memory)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the specified parameter will be controlled.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00000011 03	Setup data
	0eeeeeee ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp pp	Parameter no.
	0ccccccc cc	Channel no.
DATA	0ddddddd dd	data
	:	
	:	
EOX	11110111 F7	End of exclusive

13.4.11 Parameter request (Setup memory)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the value of the specified parameter will be transmitted as a Parameter change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn 3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00000011 03	Setup data
	0eeeeeee ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp pp	Parameter no.
	0ccccccc cc	Channel no.
EOX	11110111 F7	End of exclusive

13.4.12 Parameter change (Backup memory)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the specified parameter will be controlled.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00000100 04	Backup data
	0eeeeeee ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp pp	Parameter no.
	0ccccccc cc	Channel no.
DATA	0ddddddd dd	data
	:	
	:	
EOX	11110111 F7	End of exclusive

13.4.13 Parameter request (Backup memory)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the value of the specified parameter will be transmitted as a Parameter change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn 3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00000100 04	Backup data
	0eeeeeee ee	Element no. (If 'ee' is 0, 'ee' is expanded to two bytes)
	0ppppppp pp	Parameter no.
	0ccccccc cc	Channel no.
EOX	11110111 F7	End of exclusive

13.4.14 Parameter change (Function call Library: store / recall)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the specified memory/library will be stored/recalled.

Transmission

If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010000 10	Function call
	00ffffff ff	function
	0mmmmmmm mh	number High
	0mmmmmmm ml	number Low
DATA	0ccccccc ch	channel High
	0ccccccc cl	channel Low
EOX	11110111 F7	End of exclusive

function		number	channel*1)	rx/tx
SCENE RECALL	0x00	0-99, 8192	256	rx/tx*2)
EQ LIB RECALL	0x01	1-200, 8192	0-513	rx/tx
GATE LIB RECALL	0x02	1-128, 8192	0-95	rx/tx
COMP LIB RECALL	0x03	1-128, 8192	0-513	rx/tx
EFF LIB RECALL	0x04	1-128, 8192	0-3	rx/tx
CHANNEL LIB RECALL	0x06	0-128, 8192	0-513	rx/tx
INPATCH LIB RECALL	0x07	0-32, 8192	256	rx/tx
OUTPATCH LIB RECALL	0x08	0-32, 8192	256	rx/tx
Bus to Stereo LIB RECALL	0x09	0-32, 8192	256	rx/tx
Surround Monitor LIB RECALL	0x0A	0-32, 8192	256	rx/tx
AUTOMIX LIB RECALL	0x0B	1-16	256	rx/tx
SCENE STORE	0x20	1-99	256, 16383	rx/tx
EQ LIB STORE	0x21	41-200	0-513, 16383	rx/tx
GATE LIB STORE	0x22	5-128	0-95, 16383	
COMP LIB STORE	0x23	37-128	0-513, 16383	rx/tx
EFF LIB STORE	0x24	xx*3)-128	0-3, 16383	rx/tx
CHANNEL LIB STORE	0x26	2-128	0-513, 16383	rx/tx
INPATCH LIB STORE	0x27	1-32	256, 16383	rx/tx
OUTPATCH LIB STORE	0x28	1-32	256, 16383	rx/tx

function		number	channel*1)	rx/tx
Bus to Stereo LIB STORE	0x29	1-32	256, 16383	rx/tx
Surround Monitor LIB STORE	0x2A	1-32	256, 16383	rx/tx
AUTOMIX LIB STORE	0x2B	1-16	256, 16383	rx/tx

*1) 0:CH1 - 55:CH56, 128:BUS1 - 135:BUS8, 256:AUX1 - 263:AUX8, 512:STEREO L - 513:STEREO R
Use 256 if the recall destination or store source is a single data item.
Effect is 0:Effect1 - 3:Effect4
If the store destination is 16383 (0x3FFF), this indicates that the library data has been changed by a external cause (such as bulk reception) (only transmitted by the 02R96)
*2) This is also transmitted when a program that is not assigned in the [Program Change Table] is recalled. (Normally, it is transmitted by Program Change messages.)
*3) Varies with the firmware version.

13.4.15 Parameter change (Function call: title)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the title of the specified memory/library will be changed.

Transmission

In response to a request, a Parameter Change message will be transmitted on the [Rx CH].
If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010000 10	Function call
	0100ffff 4f	title
	0mmmmmmm mh	number High
	0mmmmmmm ml	number Low
DATA	0ddddddd dd	title 1
	:	
	:	
	:	
	0ddddddd dd	title x (depend on the library)
EOX	11110111 F7	End of exclusive

function		number	size
SCENE LIB TITLE	0x40	0-99,256 (0:response only)	16
EQ LIB TITLE	0x41	1-200 (1-40:response only)	16
GATE LIB TITLE	0x42	1-128 (1-4:response only)	16
COMP LIB TITLE	0x43	1-128 (1-36:response only)	16
EFF LIB TITLE	0x44	1-128 (1-xx(*):response only)	16
CHANNEL LIB TITLE	0x46	0-128 (0-1:response only)	16
INPATCH LIB TITLE	0x47	0-32 (0:response only)	16
OUTPATCH LIB TITLE	0x48	0-32 (0:response only)	16
Bus to Stereo LIB TITLE	0x49	0-32 (0:response only)	16
Surround Monitor LIB TITLE	0x4A	0-32 (0:response only)	16
AUTOMIX LIB TITLE	0x4B	1-16	16

* Varies with the firmware version.

13.4.16 Parameter request (Function call: title)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, a Parameter Change message will be transmitted on the [Rx CH].
Refer to the above table for the Functions and Numbers.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn 3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010000 10	Function call
	0100ffff 4f	
TITLE	0mmmmmmm mh	number High
	0mmmmmmm ml	number Low
EOX	11110111 F7	End of exclusive

13.4.17 Parameter change (Function call: scene/library clear)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the specified memory/library will be cleared.

Transmission

If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010000 10	Function call
	0110ffff 6f	clear function
	0mmmmmmm mh	number High
	0mmmmmmm ml	number Low
EOX	11110111 F7	End of exclusive

function		number
SCENE LIB CLEAR	0x60	1-99
EQ LIB CLEAR	0x61	41-200
GATE LIB CLEAR	0x62	5-128
COMP LIB CLEAR	0x63	37-128
EFF LIB CLEAR	0x64	xx(*)-128
CHANNEL LIB CLEAR	0x66	2-128
INPATCH LIB CLEAR	0x67	1-32
OUTPATCH LIB CLEAR	0x68	1-32
Bus to Stereo LIB CLEAR	0x69	1-32
Surround Monitor LIB CLEAR	0x6A	1-32
AUTOMIX LIB CLEAR	0x6B	1-16

* Varies with the firmware version.

13.4.18 Parameter change (Function call: pair)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, pairing will be enabled/disabled for the specified channel. (Otherwise, these messages are reserved for future use.)

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010001 11	Function call Pair
	0000ffff 0f	function
	0sssssss sh	Source channel H
	0sssssss sl	Source channel L
DATA	0ddddddd dh	Destination channel H
	0ddddddd dl	Destination channel L
EOX	11110111 F7	End of exclusive

function		channel
PAIR ON with COPY	0x00	*1)
PAIR ON with RESET BOTH	0x01	*1)
PAIR OFF	0x02	*1)

*1) 0:CH1 - 95:CH96, 128:BUS1 - 135:BUS8, 256:AUX1 - 267:AUX12

- In the case of PAIR, you must specify channels for which pairing is possible.
- In the case of PAIR ON with COPY, you must specify Source Channel as the copy source, and Destination Channel as the copy destination.

13.4.19 Parameter change (Function call: effect)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the corresponding effect's function activates (depending on the effect type).

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010010 12	Function call Effect Event
	0000ffff 0f	function
	00000000 00	
	0ppppppp pp	Release:0, Press:1
DATA	00000000 00	
	0eeeeeee ee	Effect number (0:Effect1 - 3:Effect4)
EOX	11110111 F7	End of exclusive

function		channel
Freeze Play button	0x00	0:Effect1 - 3:Effect4
Freeze Record button	0x01	0:Effect1 - 3:Effect4
Auto Pan 5.1 Trigger Button	0x02	0:Effect1 - 3:Effect4
Auto Pan 5.1 Reset Button	0x03	0:Effect1 - 3:Effect4

- This does not activate when the effect type is different.

13.4.20 Parameter Change (Sort table data)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
The Scene memory Sort table is updated as soon as the messages are received.
If Studio Manager performs a scene memory sort, it will transmit this data to the 02R96.

Transmission

When scene memory sort is executed on the 02R96, the memory sort table will be transmitted to Studio Manager.
Studio Manager will sort the memories according to this data.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00010011 13	Library sort table
	0000ffff 0f	Library type
DATA	0ddddddd ds	Data
	:	
	:	
	0ddddddd de	Data
EOX	11110111 F7	End of exclusive

8-7 conversion is performed on the data area in the same way as for bulk.

13.4.21 Parameter Request (Sort table data)

Reception

This is received if [Parameter change RX] is ON and the [Rx CH] matches the device number included in the SUB STATUS.
This is echoed if [Parameter change ECHO] is ON.
Sort table data is transmitted as Parameter Change messages on the [Rx CH] channel.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn 3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00010011 13	Library sort table
	0000ffff 0f	Library type
EOX	11110111 F7	End of exclusive

13.4.22 Parameter change (Function call: attribute)

Reception

This is received if [Parameter change RX] is ON and the [Rx CH] matches the device number included in the SUB STATUS.
This is echoed if [Parameter change ECHO] is ON.
When this is received, the attribute of the specified memory/library will be changed.

Transmission

In response to a request, a Parameter Change message will be transmitted on the [Rx CH].
If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010100 14	Function call
	0000ffff 0f	attribute
	0mmmmmmm mh	number High
	0mmmmmmm ml	number Low
DATA	0ttttttt th	attribute (protect:0x0001, normal:0x0000)
	0ttttttt tl	
EOX	11110111 F7	End of exclusive

function		number
SCENE LIB ATTRIBUTE	0x00	0-99 (0:response only)
AUTOMIX LIB ATTRIBUTE	0x0B	1-16

13.4.23 Parameter request (Function call: attribute)

Reception

This is received if [Parameter change RX] is ON and the [Rx CH] matches the device number included in the SUB STATUS. This is echoed if [Parameter change ECHO] is ON.
When this is received, a Parameter Change message will be transmitted on the [Rx CH].
Refer to the above table for the Functions and Numbers.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn 3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010100 14	Function call
	0000ffff 0f	
ATTRIBUTE	0mmmmmmm mh	number High
	0mmmmmmm ml	number Low
EOX	11110111 F7	End of exclusive

13.4.24 Parameter change (Function call: link)

Reception

This is received if [Parameter change RX] is ON and the [Rx CH] matches the device number included in the SUB STATUS. This is echoed if [Parameter change ECHO] is ON.
When this is received, the patch link data of the specified scene will be modified.

Transmission

In response to a request, a Parameter Change message will be transmitted on the [Rx CH].
If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010100 14	Function call
	0010ffff 2f	link
	0mmmmmmm mh	number High
	0mmmmmmm ml	number Low

DATA	0iiiiiii ih	inpatch
	0iiiiiii il	
	0ooooooo oh	outpatch
	0ooooooo ol	
EOX	11110111 F7	End of exclusive

function		number
SCENE LIB LINK	0x20	0-99 (0:response only)

13.4.25 Parameter request (Function call: link)

Reception

This is received if [Parameter change RX] is ON and the [Rx CH] matches the device number included in the SUB STATUS. This is echoed if [Parameter change ECHO] is ON.
When this is received, a Parameter Change message will be transmitted on the [Rx CH].
Refer to the above table for the Functions and Numbers.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn 3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	01111111 7F	Universal
ADDRESS	00010100 14	Function call
	0010ffff 2f	link
	0mmmmmmm mh	number High
	0mmmmmmm ml	number Low
EOX	11110111 F7	End of exclusive

13.4.26 Parameter change (Key remote)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the same processing that is executed when the key specified by Address is pressed (released).

Transmission

If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00100000 20	Key remote
	0kkkkkkk kk	Key address H
	0kkkkkkk kk	Key address M
	0kkkkkkk kk	Key address L
DATA	0ppppppp pp	Release:0, Press:1
EOX	11110111 F7	End of exclusive

13.4.27 Parameter change (Remote meter)

When transmission is enabled by receiving a Request of Remote meter, the specified meter information is transmitted every 50 msec for 10 seconds. When you want to transmit meter information continuously, a Request must be transmitted continuously within every 10 seconds.

Reception

This is echoed if [Parameter change ECHO] is ON.

Transmission

When transmission has been enabled by a Request, the parameter specified by Address will be transmitted on the [Rx CH] channel at 50 msec intervals for a duration of 10 seconds.
Transmission will be disabled if the power is turned off and on again, or if the PORT setting is changed.
If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00100001 21	Remote meter
	0mmmmmmm mm	ADDRESS UL
	0mmmmmmm mm	ADDRESS LU
	0mmmmmmm mm	ADDRESS LL
DATA	0ddddddd dd	data1 H
	0ddddddd dd	Data1 L
	:	
	:	
EOX	11110111 F7	End of exclusive

13.4.28 Parameter request (Remote meter)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, data of the specified address is transmitted on the [Rx CH] at intervals of 50 msec as a rule, for a period of 10 seconds.
If Address UL= 0x7F is received, transmission of all meter data will be halted immediately. (disable)

Transmission

If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn 3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00100001 21	Remote meter
	0mmmmmmm mm	ADDRESS UL
	0mmmmmmm mm	ADDRESS LU
	mmmmmmm mm	ADDRESS LL
	0ccccccc ch	Count H
	0ccccccc cl	Count L
EOX	11110111 F7	End of exclusive

13.4.29 Parameter change (Remote time counter)

When transmission is enabled by receiving a Request of Remote Time Counter, the Time Counter data is transmitted every 50 msec for 10 seconds. When you want to transmit Counter information continuously, a Request must be transmitted within every 10 seconds.

Reception

This is echoed if [Parameter change ECHO] is ON.

Transmission

When transmission is enabled by receiving a Request, the Time Counter information is transmitted on [RxCH] channel every 50 msec for 10 seconds.
Transmission will be disabled if the power is turned off and on again, or if the PORT setting is changed.
If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000 F0	System exclusive message
ID No.	01000011 43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn 1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110 3E	MODEL ID (digital mixer)
MODEL ID	00001011 0B	02R96
ADDRESS	00100010 22	Remote Time counter
	0000tttt 0t	0:Time code, 1:Measure.Beat.Clock
	0ddddddd dd	Hour / Measure H
	0ddddddd dd	Minute / Measure L
DATA	0ddddddd dd	Second / Beat
	0ddddddd dd	Frame / Clock
EOX	11110111 F7	End of exclusive

13.4.30 Parameter request (Remote time counter)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When this is received, the Time Counter information is transmitted on the [Rx CH] channel every 50 msec for 10 seconds.
When the second byte of Address is received on 0x7F, data transmission will be halted immediately. (disable)

Transmission

If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn	3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	00001011	0B	02R96
ADDRESS	00100010	22	Remote Time counter
	0ddddddd	dd	0:Transmission request, 0x7F:Transmission stop request
EOX	11110111	F7	End of exclusive

13.4.31 Parameter change (Automix status)

When transmission is enabled by receiving a Request of Automix status, the Automix Status data is transmitted every second for 10 seconds. When you want to transmit the Automix Status information continuously, the Request must be transmitted continuously minimum within 10 seconds interval. The data is transmitted continuously while the transmission is enabled, even when the Automix Status on the 02R96 has been changed.

Reception

This is echoed if [Parameter change ECHO] is ON.

Transmission

When the transmission is set to enable by receiving a Request. The Automix Status data is transmitted on the [Rx CH] channel every second for 10 seconds. The data is transmitted continuously while the transmission is enabled, even when the Automix Status on the 02R96 has been changed. Transmission will be disabled if the power is turned off and on again, or if the PORT setting is changed.
If [Parameter change ECHO] is ON, this message will be retransmitted without change.

STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0001nnnn	1n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	00001011	0B	02R96
ADDRESS	00100011	23	Automix status
	00000000	00	
	0000dddd	0d	Automix status H
	0000dddd	0d	Automix status L
EOX	11110111	F7	End of exclusive

13.4.32 Parameter request (Automix status)

Reception

If [Parameter change RX] is ON and the [Rx CH] matches the Device Number included in the SUB STATUS, these messages are received. If [Parameter change ECHO] is ON, these messages are echoed.
When the data is received, the Automix Status data is transmitted on the [Rx CH] every second for 10 seconds.
When the second byte of Address is received on 0x7F, data transmission will be halted immediately (disable).

Transmission

If [Parameter change ECHO] is ON, this message will be retransmitted without change.

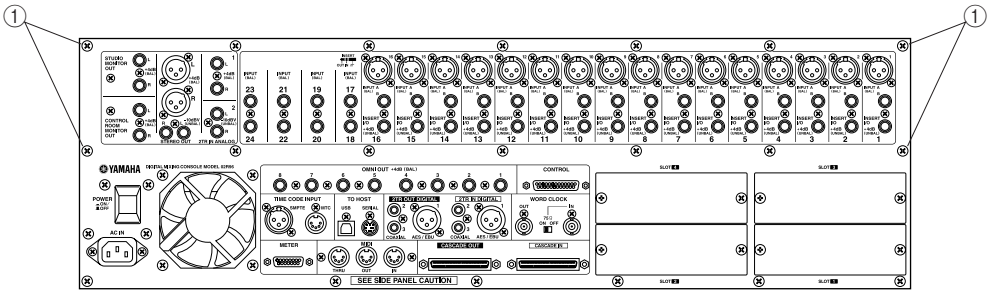
STATUS	11110000	F0	System exclusive message
ID No.	01000011	43	Manufacture's ID number (YAMAHA)
SUB STATUS	0011nnnn	3n	n=0-15 (Device number=MIDI Channel)
GROUP ID	00111110	3E	MODEL ID (digital mixer)
MODEL ID	00001011	0B	02R96
ADDRESS	00100011	23	Automix status
	0ddddddd	dd	0:Transmission request, 0x7F:Transmission stop request
EOX	11110111	F7	End of exclusive

Appendix D: Options

MB02R96 Peak Meter Bridge

Installation

1 **Unscrew the four fixing screws ① on the 02R96 rear panel to which the meter bridge will be attached.**



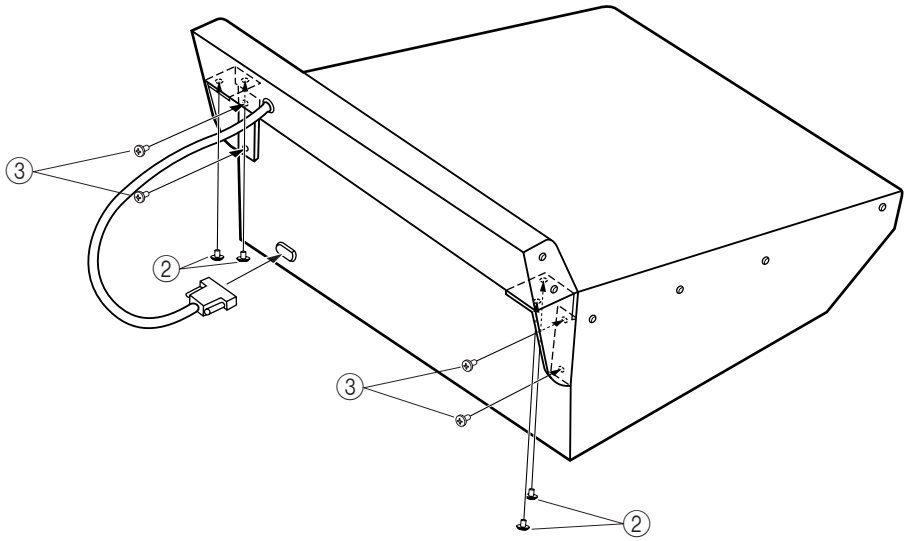
2 **Using the four supplied 8 mm screws ②, attach the brackets to the meter bridge, as shown below.**

3 **Align the meter bridge with the 02R96, and, using two of the supplied 12 mm screws ③, screw in the top two fixing screws, but don't tighten them fully.**

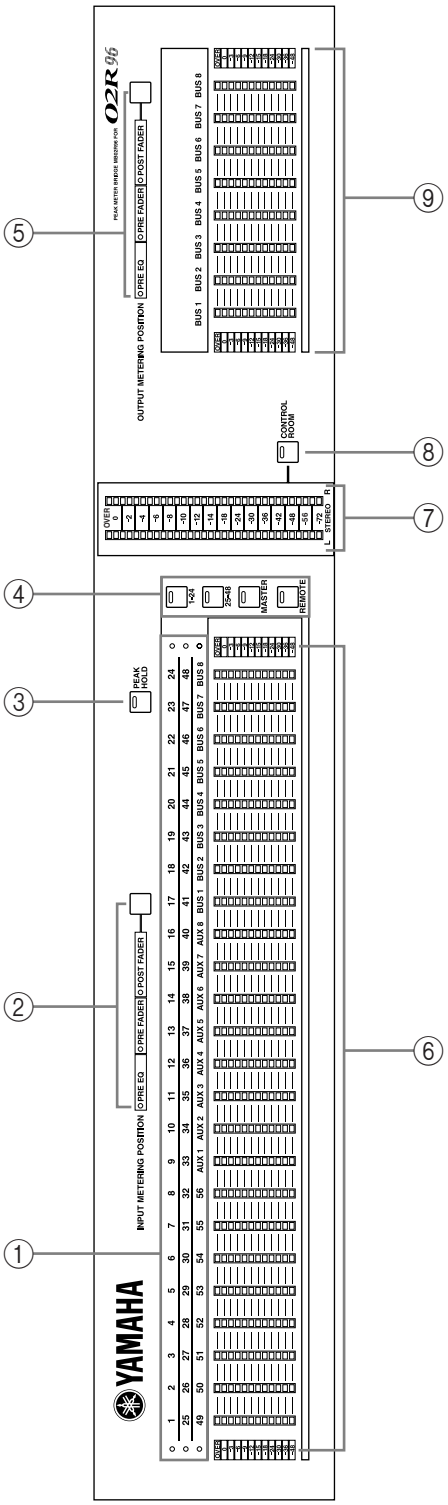
4 **Screw in the bottom two screws ③ and tighten them fully.**

5 **Fully tighten the top two screws ③.**

6 **Connect the meter bridge cable to the 02R96's METER port.**



Meter Bridge Controls



① Channel indicators

These indicators show which channels are currently being metered: Input Channels 1–24, 25–48, or 49–56 and Aux Sends 1–8 and Bus Outs 1–8.

② INPUT METERING POSITION button & indicators

This button is used to set the metering position for Input Channels to pre-EQ, pre-fader, or post-fader. It works in unison with the PRE EQ, PRE FADER, and POST FADER buttons for Input Channels on the Meter pages. The indicators show the current setting.

③ PEAK HOLD button

This button is used to turn the Peak Hold function on and off. Its indicator lights up when Peak Hold is on. It works in unison with the PEAK HOLD buttons on the Meter pages.

④ LAYER buttons

These button are used to select Layers for metering. The button indicator for the currently selected Layer lights up. If the Meter Follow Layer preference is on (see page 231), these Layers are selected automatically when the LAYER buttons on the 02R96 are pressed.

⑤ OUTPUT METERING POSITION button & indicators

This button is used to set the metering position for Output Channels to pre-EQ, pre-fader, or post-fader. It works in unison with the PRE EQ, PRE FADER, and POST FADER buttons for Output Channels on the Meter pages. The indicators show the current setting.

⑥ Meters

These 12-segment LED meters display the signals levels of the channels on the currently selected Layer.

⑦ STEREO meters

These 32-segment meters display the signal levels of the Stereo Out.

⑧ CONTROL ROOM button

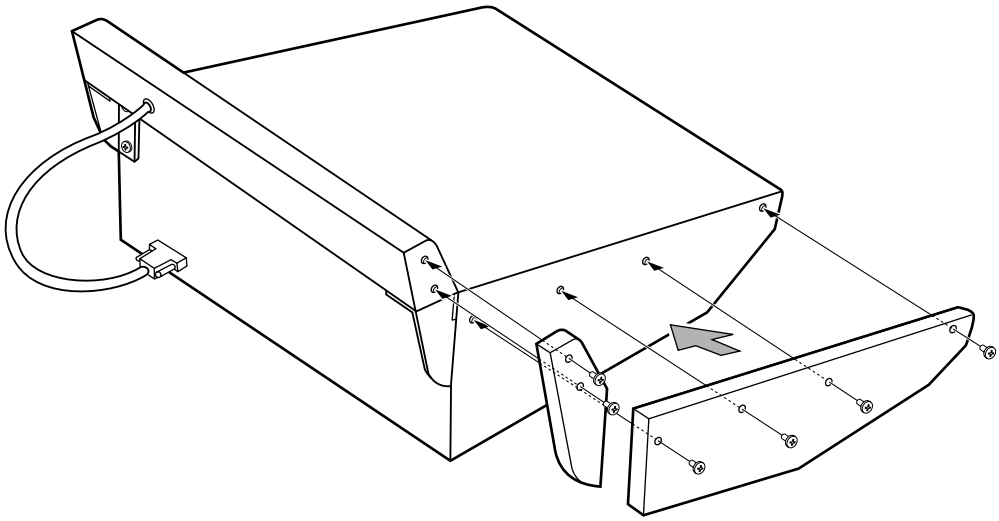
This button is used to display the level of the Control Room signal on the STEREO meters. Its indicator lights up when the STEREO meters are displaying Control Room levels.

⑨ BUS meters

These 12-segment LED meters display Bus Out signal levels.

SP02R96 Wooden Side Panels

Attach the side panels as shown below.



Index

Symbols

+48V ON/OFF switches 20

Numerics

1–24 button 30
25–48 button 30
2TR I/O
  channel status 62
  dithering outputs 62
  patching digital outputs 70
  patching direct outs 70
  patching inputs 66
  sampling rate conversion 58
2TR IN ANALOG 1 +4 dB (BAL) 39
2TR IN ANALOG 2 –10 dBV (UNBAL) 39
2TR IN DIGITAL AES/EBU 1 41
2TR IN DIGITAL COAXIAL 2 & 3 41
2TR OUT DIGITAL AES/EBU 1 40
2TR OUT DIGITAL COAXIAL 2 & 3 40
2TR OUT DIGITAL OUT PATCH page 70
3-1 surround mode 85
5.1 surround mode 85
6.1 surround mode 85
96 kHz, 88.2 kHz, 48 kHz, 44.1 kHz, selecting 56

A

Absolute mode, automix 173
AC IN connector 42
AD inputs
  connectors 38
  in detail 53
  patching 66
  patching output channel insert ins 69
  summary 20
  talkback 142
Adat I/O card 59
Add-On Effects 157
AES/EBU I/O card 59
ALT LAYER 52
AMP SIMULATE 267
Analog I/O & the AD input section chapter 53
Architecture
  channels 16
  I/O 16
ASSIGN 1 & 2 buttons, control room 36
ASSIGN 1 & 2 buttons, encoder mode 22
Assigning
  control changes 194
  parameters to encoders 51
  program changes 193
  see also Routing
  targets to the remote layer 219
  user defined keys 229
ATTACK control 27
Attenuating
  cascade inputs 65
  channel signals 110
AUTO buttons
  about 20
  in detail 174
  Pro Tools 201
  STEREO 30
  using 179
Auto channel select 49
Auto Channel Select preference 230
Auto Direct Out On preference 231
Auto DYNAMICS Display preference 230
Auto EQ Edit In preference 233
Auto EQUALIZER Display preference 230
Auto Inc TC Capture preference 233
AUTO PAN 5.1 277
Auto PAN/SURROUND Display preference 230
Auto ROUTING Display preference 230
Auto scene memory update 163
Auto SOLO Display preference 230
Auto WORD CLOCK Display preference 230
Automix
  about 170
  absolute mode 173
  AUTO buttons 174
  cascading consoles 63
  copying events 185
  deleting events 188
  duplicating events 188
  erasing events 185
  EVENT EDIT page 188
  EVENT JOB page 185
  event list 188
  FADER EDIT pages 175
  features 17
  inserting events 188
  library 151
  MAIN page 171
  MEMORY page 175
  merging events 185
  motors on/off 176
  moving events 185
  offline editing 185
  overwrite parameters 173
  parameter recording 182
  playback 184
  protecting memories 151
  punching individual parameters 183
  recording 179
  relative mode 173
  rerecording 181
  return mode 172
  storing via bulk dump 195
  takeover mode 172
  time signature map 178
  timecode offset 171
  timecode source 177
  touch sense in/out 176
  undo 174
  update to end 171
  what's recorded 170
AUTOMIX button 23
Automix chapter 170
AUTOMIX MAIN page 171
AUTOMIX MEMORY page 175
AUTOMIX page 151
Automix Store Undo preference 233
AUTOPAN 264
AUX 1–8 buttons 21
AUX 7 button, studio 35
AUX 8 button, studio 35
AUX button, encoder mode 22
AUX FADER VIEW page 132
AUX PAN CH pages 103
AUX SELECT section
  about 21
  Pro Tools 202
  using 98
AUX SEND CH pages 99
Aux sends
  attenuating 110
  automix 170
  channel library 144
  compressors 116
  Copying channel fader positions 104
  delay 120
  EQ 111
  Excluding certain channels 104
  fixed mode 98
  follow surround pan 124
  grouping faders 126
  grouping mutes 128
  inserts 115
  link pan to input channels 103
  master level setting 106
  metering 109
  Mix minus 104
  muting 105
  naming 134
  pairing 123
  pan modes 103
  panning 103
  patching to 2TR digital outputs 70
  patching to effects 67
  patching to input channels 66
  patching to omni outs 69
  patching to slot outputs 68
  pre/post fader 98
  scene recall safe 167
  setting levels 99
  soloing 121
  variable mode 98
  viewing fader settings 130
  viewing parameter settings 129
  viewing settings 101
Aux sends chapter 98
AUX, fader mode 22

B

Balance, stereo out 94
Bars, time signature map 178
BASS MANAGEMENT 140
Battery check 237
BATTERY CHECK page 237
BI-DIRECTIONAL, cascade setting 65
Bulk dump 195
BULK DUMP page 195
BUS button 36
BUS FADER VIEW page 132
Bus outs
- attenuating 110
- automix 170
- bus to stereo library 147
- channel library 144
- compressors 116
- delay 120
- EQ 111
- grouping faders 126
- grouping mutes 128
- inserts 115
- level setting 96
- metering 109
- muting 96
- naming 134
- pairing 123
- patching to 2TR digital outputs 70
- patching to input channels 66
- patching to omni outs 69
- patching to slot outputs 68
- routing to 82
- routing to stereo out 97
- scene recall safe 167
- soloing 121
- viewing fader settings 130
- viewing parameter settings 129

Bus outs chapter 95
BUS TO STEREO LIBRARY page 147
BUS TO STEREO page 97
Bypassing effects 156

C

Cascade COMM Link preference 231
CASCADE IN page 65
CASCADE IN port 41
CASCADE IN port pin assignments 300
CASCADE OUT page 65
CASCADE OUT port 41
CASCADE OUT port pin assignments 300
Cascading consoles
- about 63
- attenuating cascade inputs 65
- hookup examples 64
- linked functions 63
- master setting 65
- turning off cascade outputs 65

Category, channel status 62
CH DIRECT OUT DESTINATION pages 70
CH EQUALIZER LIBRARY page 150
CH FADER EDIT pages 175
CH FADER VIEW page 131
CH GATE EDIT page 74
CH PARAMETER VIEW page 129
CH SURROUND EDIT page 88
Channel Copy Parameter preference 232
Channel display mode, Pro Tools 200
Channel ID preference 232
CHANNEL INSERTS button 24
CHANNEL LIBRARY page 144
Channel names, assigning 134
Channel Short Name preference 232
Channel status monitor 62
CHANNEL STATUS MONITOR page 62
Channel strips
- about 20
- Pro Tools 201
- selecting layers 47
- user defined remote layer 220

CHORUS 262
CHORUS 5.1 277
CLEAR button 35
Clear Edit Channel after REC preference 233
Clearing library memories 143
Clearing scene memories 165
Combination effects 154
Common channel functions chapter 107
COMP 5.1 280
COMP EDIT page 118
COMP indicator 27
COMP LIBRARY page 149
COMP ON button 27
COMPAND 5.1 280
Compander 116
Compressors
- grouping input channels 77
- grouping output channels 119
- library 149
- order 116
- parameter table 295
- presets 116
- using 116

Confirmation messages 46
Contrast control 25
CONTROL CHANGE ASSIGN TABLE page 194
Control changes
- assignments 194
- echoing 192
- omni 192
- receive enable 192
- storing assignments via bulk dump 195
- transmit enable 192

CONTROL port 41
CONTROL port pin assignments 300
Control room
- dimmer level 137
- monitoring 136
- patching to 2TR digital outputs 70
- setup 137

CONTROL ROOM button 34
CONTROL ROOM LEVEL control 36
CONTROL ROOM MONITOR OUT +4 dB (BAL) 39
CONTROL ROOM SETUP page 137
Control surface
- features 18
- illustration 19

Control surface & rear panel chapter 19
Cooling fan 42
Copy Initial Fader preference 233
Copy, channel status 62
Copying automix events 185
Cubase SX 219
Current scene display 44
Currently selected channel
- display 44
- name display 44
- selecting 48

Currently selected page
- page number display 44
- selecting 45
- title display 44

Cursor buttons 33

D

Data entry section
- about 33
- Pro Tools 208

DAW
- MIDI port setup 191
- *see also*Pro Tools

DAW CONTROL 224
DEC button 33
DECAY control 27
DEL, title edit window 46
DELAY button 27
Delay effects 153
DELAY LCR 261
DELAY SCALE 120
DELAY+ER. 272
DELAY+REV 273
DELAY->ER. 273
DELAY->REV 274
Delaying channel signals 120
Deleting automix events 188
Digital I/O & cascading chapter 55
Dimensions 301
DIMMER button 36
Dimmer level, control room 137
Dimmer level, talkback 142
DIO button 23
DIO Warning preference 231
DIRECT button 26
Direct outs
- patching 70
- routing to 82

Display
- about 25
- confirmation messages 46
- in detail 44
- parameter boxes 45
- parameter windows 46
- Pro Tools 199

DISPLAY ACCESS section 23
DISPLAY ACCESS section, SELECTED CHANNEL section 27
Display Brightness preference 232
DISPLAY buttons
  AUX SELECT 21
  DYNAMICS 27
  EFFECTS/PLUG-INS 24
  ENCODER MODE 22
  EQUALIZER 29
  MACHINE CONTROL 32
  MONITOR 34
  PAN/SURROUND 28
  ROUTING 26
  SCENE MEMORY 31
  USER DEFINED KEYS 31
DIST->DELAY 274
DISTORTION 267
DITHER page 62
Dithering digital outputs 62
DIV (divergence) 89
Double channel 61
Double speed 61
Drop Out Time preference 234
DUAL PITCH 266
Ducking, input channels 74
Duplicating automix events 188
DYNA. FILTER 268
DYNA. FLANGE 268
DYNA. PHASER 268
Dynamic effects 154
DYNAMICS section
  about 27
  compressors 118
  gates 74
Dynamics. *See* Gates and Compressors

E

EARLY REF. 259
ECHO 262
Edit buffer 162
Edit indicators
  display 44
  SCENE MEMORY section 162
Editing
  automix events 185
  compressors 116
  effects 156
  gates 74
  library memory titles 143
  plug-ins 160
  scene memory titles 165
EFFECT 1–4 INPUT/OUTPUT METER page 109
EFFECT button 28
EFFECT EDIT page 156
EFFECT INPUT PATCH pages 67
EFFECT LIBRARY page 146
Effects
  about 153
  automix 170
  bypassing 156
  editing 156
  features 17
  library 146
  metering 109
  parameter tables 259
  patching inputs 67
  patching output channel insert ins 69
  patching outputs 66
  presets 153
  tempo 156
EFFECTS/PLUG-INS 1–4 buttons 24
EFFECTS/PLUG-INS section
  about 24
  editing effects 156
  editing plug-ins 160
  Pro Tools 203
ÉIÅ 185
Emphasis, channel status 62
ENCODER MODE ASSIGN page 51
ENCODER MODE section
  about 22
  Pro Tools 202
  using 50
Encoder modes, selecting 50
Encoders
  about 20
  assignable parameter list 52
  assigning parameters 51
  automix punch in/out 183
  panning input channels 83
  patching inputs & outputs 72
  Pro Tools 201
  selecting encoder modes 50
  setting aux send levels 99
  user defined remote layer 220
ENTER button 33
EQ
  automix 170
  EQUALIZER EDIT page 113
  features 17
  frequency 112
  gain 112
  grouping input channels 76
  grouping output channels 114
  library 150
  presets 111
  Q 112
  using 111
EQ displays 29
EQ GAIN controls 29
EQ ON button 29
EQUALIZER EDIT page 113
EQUALIZER section
  about 29
  using 112
Erasing automix events 185
EVENT EDIT page 188
Event editing 185
EVENT JOB page 185
Event list, automix 188
Expander 116

F

F1–F4 buttons
  about 25
  editing effects 157
  editing plug-ins 161
  Pro Tools 199
FADER button 22
Fader edit mode 173
FADER MODE section
  about 22
  Pro Tools 202
  using 49
Fader REC Accuracy preference 234
Fader Touch Sense preference 232
Faders
  about 21
  auto channel select 49
  automix punch in/out 183
  aux send master levels 106
  bus out levels 96
  fader edit mode 173
  Group Master 80, 127
  grouping input channels 79
  grouping output channels 126
  input channel levels 79
  motors on/off 176
  Pro Tools 202
  selecting fader modes 49
  setting aux send levels 99
  STEREO 30
  stereo out level 93
  touch sense in/out, automix 176
  touch sense select 49
  user defined remote layer 220
Fading scenes 166
Fast Meter Fall Time preference 231
Features 16
FF button 32
Fixed mode, aux sends 98
FLANGE 263
FLANGE 5.1 278
FOLLOW PAN button 26
FOLLOW SURROUND 67
Follow surround pan, aux sends 124
Frame Jump Error preference 234
Frame rate, automix 177
FREQUENCY controls 29
FREQUENCY indicators 29
FX 153

G

GAIN control, dynamics 27
GAIN controls, AD inputs 20
Gang mode
  aux send pan 103
  input channel pan 84
GATE indicator 27
GATE LIBRARY page 148
GATE ON button 27
GATE REVERB 260
GATE/COMP button 27

Gates
library 148
parameter table 294
presets 74
using 74
General DAW 219
Global Fade Time 167
Global Paste 168
GLOBAL PASTE DESTINATION SCENE page 169
GLOBAL PASTE SOURCE CH SELECT page 168
GLOBAL RECALL SAFE 167
GPI 225
REC LAMP 227
GPI SETUP page 225
GR meters
compressors 119
gates 75
GRAB button 28
Grounding screw 42
GROUP button 23
Group Master 79, 80, 127, 129
Grouping
features 17
input channel compressors 77
input channel EQs 76
input channel faders 79
input channel mutes 78
output channel compressors 119
output channel EQs 114
output channel faders 126
output channel mutes 128
Guitar effects 154

H

HIGH EQ 111
HIGHER SAMPLE RATE DATA TRANSFER FORMAT page 61
HIGH-MID EQ 111
HOLD control 27
Horizontal pairing 123
HQ. PITCH 265

I

IEEE1394 59
INC button 33
Individual mode
aux send pan 103
input channel pan 84
Initial Data Nominal preference 231
Initializing the 02R96 237
Input & output patching chapter 66
INPUT A & B (BAL) connectors 38
INPUT CH AUX VIEW pages 101
INPUT CH DELAY pages 120
INPUT CH FADE TIME pages 166
INPUT CH FADER GROUP page 79
INPUT CH INSERT IN PATCH pages 67
INPUT CH METER page 108
INPUT CH MUTE GROUP page 78
INPUT CH PAIR pages 124
INPUT CH PAN pages 84
INPUT CH ROUTING pages 82
INPUT CH SURROUND pages 89
INPUT CHANNEL NAME page 134
Input channels
attenuating 110
automix 170
channel library 144
compressors 116
delay 120
EQ 111
gating 74
grouping compressors 77
grouping EQs 76
grouping faders 79
grouping mutes 78
inserts 115
level setting 79
metering 108
muting 77
naming 134
pairing 123
panning 83
patching 66
reversing phase 73
selecting layers 47
soloing 121
viewing fader settings 130
viewing parameter settings 129
Input channels chapter 73
INPUT COMP LINK page 77
INPUT EQUALIZER LINK page 76
INPUT FADER GROUP MASTER page 79, 81
INPUT FADER MASTER 80
INPUT MUTE MASTER 78
INPUT PATCH button 24
INPUT PATCH LIBRARY page 145
INPUT PATCH pages 66
Input patching 66
INPUT PORT NAME page 71
Input port naming 71
INS, title edit window 46
Insert assign/edit display mode, Pro Tools 200
INSERT I/O +4dB (UNBAL) connectors 38
INSERT ON/OFF switches 20
Insert Time Link preference 234
Inserting automix events 188
Inserts
AD insert on/off switches 20
order 116
patching input channel insert ins 67
patching insert outs to effects inputs 67
patching insert outs to omni outs 69
patching insert outs to slot outputs 68
patching output channel insert ins 69
patching outs to 2TR digital outputs 70
using 115
Installing I/O cards 60
Internal effects & plug-ins chapter 153
INTERNAL EFFECTS button 24
Internal timecode source 177
Internet, yamaha web site 5
Inverse gang mode
aux send pan 103
input channel pan 84
Inverting input channel phase 73

J

Joystick
about 29
panning input channels 83
reverb 5.1 effect 276
surround pan 87
Joystick Auto Grab preference 231

K

Keyin source 75

L

L button 28
Last solo mode 122
LAYER section
about 30
selecting layers 47
Layers
encoder modes 50
fader modes 49
selecting 47
selecting channels 48
Learn function
user defined plug-ins 160
user defined remote layer 220
Left Tab Scroll button 25
LFE 88
Libraries
about 143
automix 151, 170
bus to stereo 147
channel 144
compressor 149
effects 146
EQ 150
gate 148
input patch 145
output patch 145
specifications 296
storing via bulk dump 195
surround monitor 152
using 143
Libraries chapter 143
LINK button 28
Link Capture & Locate Memory preference 233
LISTEN, solo 122
LOCATE MEMORY 1–8 buttons 32
LOCATE MEMORY page 224
Lock Time preference 234
Long channel names, assigning 134
Long port names 71

LOW EQ 111
LOW-MID EQ 111

M

M. BAND DYNA. 279
MACHINE CONFIGURATION page 222
MACHINE CONTROL 224
Machine control
about 222
locator 224
machine configuration 222
scrub & shuttle 223
setting locate memories 224
transport buttons 223
MACHINE CONTROL section
about 32
LOCATE MEMORY 224
Pro Tools 207
Macintosh
configuring for Pro Tools 196
MIDI port setup 191
USB driver 190
MASTER button 30
Master layer, selecting 47
MASTER METER page 109
MASTER PARAMETER VIEW page 130
MB02R96 peak meter bridge 335
Measures, time signature map 178
Merging automix events 185
METER button 23
Meter display mode, Pro tools 201
Meter Follow Layer preference 231
METER port 41
Meter, time signature map 178
Metering
effects 109
input channels 108
metering position 107
output channels 109
stereo out 109
METERING POSITION page 107
MIDI
bulk dump 195
control change messages 194
data format 319
features 18
I/O ports 190
MIDI SETUP page 192
parameter change messages 194
port setup 191
ports 41
program change messages 193
supported messages 190
MIDI button 23
MIDI chapter 190
MIDI clock
automix timecode source 177
Tap tempo, effects 156
MIDI SETUP page 192
MIDI Warning preference 231
MIDI/TO HOST SETUP page 191
mini YGDAI. *See* Slots
Mix minus 104
Mix solo mode 122
Mix Update Confirmation preference 233
Mixdown, solo status 121
mLAN I/O card 59
MMC. *See* Machine control
MOD. DELAY 261
MOD. FILTER 267
Modulation-based effects 154
MONITOR ALIGNMENT 141
MONITOR MATRIX 139
MONITOR section 34
Monitoring
configuring surround monitoring 139
control room 136
control room setup 137
studio 137
surround 138
Monitoring & talkback chapter 136
MONO DELAY 260
Motors on/off 176
Moving automix events 185
MS decoding 125
MS microphone 91
MTC TIME CODE INPUT connector 40
MTC, timecode source 177
MULTI FILTER 275
Multi-effects 153
Muting
automix 170
aux sends 105
bus outs 96
Group Master 79, 129
grouping input channels 78
grouping output channels 128
input channels 77
stereo out 93

N

Name Input Auto Copy 71
Naming channels 134
Naming library memories 143
Naming scene memories 164
NEVER LATCH TALKBACK 142
Nominal Pan preference 231

O

OCTA REVERB 277
Offline editing 185
Offsetting automix timecode 171
OMNI OUT +4dB (BAL) 40
OMNI OUT PATCH page 69
Omni outs
about 54
patching 69
patching direct outs 70
Omni, MIDI 192
OMS
configuring for Pro Tools 197
installing for Pro Tools 196
ON buttons
channel strips 21
Pro Tools 201
see also Grouping
see also Muting
STEREO 30
user defined remote layer 220
Operating basics chapter 43
Operation Lock 235
OPERATION LOCK page 235
Options 5
Order, inserts/compressors 116
Oscillator 234
OSCILLATOR page 234
Other functions chapter 228
OUTPUT CHANNEL NAME page 135
Output channels
attenuating 110
compressors 116
delay 120
EQ 111
grouping compressors 119
grouping EQs 114
grouping faders 126
grouping mutes 128
inserts 115
library 144
metering 109
naming 134
pairing 123
selecting master layer 47
soloing 121
viewing fader settings 130
viewing parameter settings 129
OUTPUT COMP LINK page 119
OUTPUT DELAY page 120
OUTPUT EQUALIZER LINK page 114
OUTPUT FADE TIME page 166
OUTPUT FADER GROUP MASTER page 127
OUTPUT FADER GROUP page 126
OUTPUT FADER MASTER 127
OUTPUT INSERT IN PATCH page 69
OUTPUT MUTE GROUP page 128
OUTPUT MUTE MASTER 128
OUTPUT PAIR page 124
OUTPUT PATCH button 24
OUTPUT PATCH LIBRARY page 145
Output patching 68
OUTPUT PORT NAME page 71
Output port naming 71
Overwrite parameters 173

P

Package contents 5
PAD switches 20
Pages
page number display 44
page tab scroll arrows 45
selecting 45
tabs 45
title display 44
PAIR button 23

Pair Confirmation preference 231
Pairing channels
features 17
pan modes 84
using 123
PAN button 22
PAN control 28
PAN display 28
PAN/SURROUND section
about 28
joystick and surround pan 87
panning input channels 83
Panner 217
Panning
automix 170
aux sends 103
input channels 83
modes 84
Parameter boxes 45
Parameter change messages 194
Parameter controls 1–4 25
Parameter Up/Down buttons 24
Parameter wheel 33
Parameter windows 46
Patch Confirmation preference 231
PATCH LINK 165
Patch link 165
Patch select window 71
Patching
2TR digital outputs 70
direct outs 70
effects inputs 67
features 17
input channel insert ins 67
input channels 66
input library 145
inputs 66
omni outs 69
output channel insert ins 69
output library 145
outputs 68
patch select window 71
scene memory links 165
slot outputs 68
surround monitor 141
with the encoders 72
Patterns 88
PC
configuring for Pro Tools 196
MIDI port setup 191
USB driver 190
Peak hold 107
PEAK indicators 20
Phantom power switches 20
Phase, input channel phase reverse 73
PHASE/INSERT button
about 27
reversing phase 73
PHASER 264
Phone jacks 37
PHONES jack 34
PHONES LEVEL control 34
Phono connectors 37
Picture of control surface 19
PLAY button 32
PLAY button, automix 174
Playing back an automix 184
PLUG-IN EDIT page 160
PLUG-IN SETUP page 159
Plug-ins
about 158
configuring 159
editing 160
MIDI port setup 191
storing via bulk dump 195
PLUG-INS button 24
Port ID preference 232
Port IDs 71
Port names 71
Port Short Name preference 232
Position, compressors 118
Post/pre. *See* Pre/post
Power cord 43
POWER switch 42
Powering up the 02R96 43
Pre/post
aux sends 98
metering 107
solo 122
PREFERENCES1 page 230
PREFERENCES2 page 232
PREFERENCES3 page 233
Presets
compressors 116
effects 153
EQ 111
gates 74
Pro Tools
Panner 217
Pro tools
arming parameters for automation 217
assigning inserts/plug-ins 212
automation 216
AUX SELECT section 202
bypassing plug-ins 214
channel display mode 200
channel strips 201
configuring 197
configuring Macintosh computers 196
configuring sends as pre or post 210
configuring the 02R96 197
configuring Windows computers 196
control surface operation 199
data entry section 208
display 199
editing plug-ins 213
EFFECTS/PLUG-INS section 203
ENCODER MODE section 202
FADER MODE section 202
flip mode 211
insert assign/edit display mode 200
MACHINE CONTROL section 207
making fine adjustments to the selected region 215
meter display mode 201
muting channels 209
muting sends 210
navigating the edit window 214
OMS 196
panning channels 209
panning sends 210
resetting faders, sends, & panpots 214
scrub & shuttle 215
selecting channels 209
setting channel levels 209
setting send levels 210
setting the automation mode 216
soloing channels 210
trim mode 217
USER DEFINED KEYS section 206
viewing send destinations 210
zooming 215
Pro tools remote layer chapter 196
PROGRAM CHANGE ASSIGN TABLE page 193
Program changes
assignments 193
echoing 192
omni 192
receive enable 192
storing assignments via bulk dump 195
transmit enable 192
Protecting automix memories 151
Protecting scene memories 165
Punch in/out, individual parameters 183

Q

Q controls 29
Q indicators 29
Q, EQ 112

R

R button 28
RANGE control 27
RATIO control 27
RCA connectors 37
Read-only memories 143
Rear panel 37
REC button 32
REC LAMP 227
RECALL button 31
Recall Confirmation preference 231
RECALL SAFE page 167
Recalling
library memories 143
scene memories 164
Receive channel 192
Receive Full Frame Message preference 233
Recording an automix 179
Recording, solo status 121
Relative mode, automix 173
RELEASE control 27

REMOTE button, DISPLAY ACCESS 23
REMOTE button, LAYER 30
Remote control chapter 219
Remote layer
about 219
assigning targets 219
MIDI port setup 191
Pro Tools 196
selecting 47
REMOTE page 219
REMOTE page, Pro Tools 199
REMOTE page, user defined 220, 221
Requesting bulk dump 195
Rerecording an automix 181
Return mode, automix 172
REV+CHORUS 269
REV+FLANGE 270
REV+SYMPHO. 271
REV->CHORUS 269
REV->FLANGE 270
REV->PAN 272
REV->SYMPHO. 271
REVERB 5.1 276
Reverb effects 153
REVERB HALL 259
REVERB PLATE 259
REVERB ROOM 259
REVERB STAGE 259
REVERSE GATE 260
Reversing input channel phase 73
REW button 32
Right Tab Scroll button 25
RING MOD. 266
ROTARY 266
ROUTING 1–8 buttons 26
Routing input channels 82
ROUTING section
about 26
using 82
Routing ST Pair Link preference 231

S

Safe channels, automix 176
Safe channels, scene memories 167
Safe channels, solo 121
Sampling rate
2TR IN SRC 58
display 44
setting 56
slot SRC 61
SAMPLING RATE CONVERTER page 58
Scene down button 31
Scene MEM Auto Update preference 231
Scene memories
about 162
auto scene memory update 163
automix 170
cascading consoles 63
current scene display 44
edit buffer 162
edit indicator 162
fading scenes 166
memory #0 163
MIDI program changes 193
protecting 165
recalling 164
safe channels 167
sorting 168
storing 164
storing via bulk dump 195
undo memory 163
what's stored 162
Scene memories chapter 162
SCENE MEMORY page 165
SCENE MEMORY section
about 31
display 31
using 164
SCENE MEMORY SORT page 168
Scene up button 31
Scroll arrows, pages 45
SCRUB button 33
SEL buttons
input channels 20
pairing channels 123
Pro Tools 201
selecting channels 48
STEREO 48
SEL MODE, solo 122
SELECTED CHANNEL section 26
Selecting
auto channel select 49
channels 48
encoder modes 50
fader modes 49
layers 47
pages 45
touch sense select 49
SERIAL TO HOST port 40
MIDI 190
timecode source 177
SET button 32
SET SPL85 139
Setting levels
aux send masters 106
aux sends 99
bus outs 96
input channels 79
stereo out 93
SETUP button 23
Shadow memories 163
SHIFT LOCK, title edit window 46
Short channel names 134
Short port names 71
Show Compact Size preference 233
SHUTTLE button 33
SIGNAL indicators 20
SLOT button 36
SLOT OUTPUT PATCH pages 68
Slots
about 42, 59
available cards 59
channel status 62
dithering outputs 62
double channel 61
double speed 61
installing cards 60
MIDI 190
patching direct outs 70
patching inputs 66
patching output channel insert ins 69
patching outputs 68
timecode source 177
SMPTE TIME CODE INPUT connector 40
Solo
cascading consoles 63
configuring 121
safe channels 122
sel mode 122
status 121
trim 122
using 121
Solo Bus to Studio Out preference 231
SOLO buttons
about 21
Pro Tools 201
using 121
SOLO indicator 35
SOLO SETUP page 121
SOLO TRIM 122
Soloing channels 121
Sonic Spec 16
Sorting scene memories 168
SP02R96 wooden side panels 337
SPEAKER SETUP 139
Specifications 291
SRC. *See* Sampling rate
STATUS, solo 121
STEREO 2TR A1 button 35
STEREO 2TR A2 button 35
STEREO 2TR D1 button 35
STEREO 2TR D2 button 35
STEREO 2TR D3 button 35
STEREO button, control room 35
STEREO button, routing 26
STEREO button, studio 35
STEREO DELAY 260
STEREO fader 30
STEREO FADER VIEW page 133
Stereo link, compressors 118
Stereo link, gates 75
Stereo link, surround pan 89
STEREO METER page 109
Stereo out
attenuating 110
automix 170
balance 94
channel library 144
compressors 116
delay 120
EQ 111
grouping faders 126
grouping mutes 128
inserts 115
level setting 93
metering 109

muting 93
naming 134
patching to 2TR digital outputs 70
patching to omni outs 69
patching to slot outputs 68
routing to 82
scene recall safe 167
viewing fader settings 130
viewing parameter settings 129
STEREO OUT +4 dB (BAL) 39
STEREO OUT –10 dBV (UNBAL) 39
Stereo out chapter 92
STEREO section 30
STOP button 32
STOP button, automix 174
STORE button 31
Store Confirmation preference 230
Storing
library memories 143
scene memories 164
STUDIO LEVEL control 34
Studio manager port setup 191
STUDIO MONITOR OUT +4 dB (BAL) 39
Studio monitoring 137
SURROUND BUS SETUP page 87
SURROUND MODE SELECT page 85
SURROUND MONITOR LEVEL control 36
SURROUND MONITOR LIBRARY 152
SURROUND MONITOR page 138
SURROUND MONITOR PATCH page 141
SURROUND MONITOR SETUP page 139
Surround monitoring 138
configuring 139
library 152
patching slot inputs 141
patching to omni outs 69
patching to slot outputs 68
Surround pan
automix 170
aux send pan 124
channel page 89
edit page 88
features 18
joystick 87
selecting modes 85
using 85
Switching on the 02R96 43
SYMPHO 5.1 278
SYMPHONIC 263

T

Tabs, pages 45
Takeover mode, automix 172
Talkback
AD inputs 142
dimmer level 142
mic 34
setup 142
using 142
TALKBACK button 36
TALKBACK LEVEL control 34
TALKBACK SETUP page 142
Tascam I/O card 59
TC Drop Warning preference 231
Tempo, effects 156
Terminating wordclocks 57
THRESHOLD control 27
TIME REFERENCE page 177
Time signature map, automix 178
TIME SIGNATURE page 178
Timecode
automix source 177
capturing, automix 188
capturing, locate memories 224
capturing, setting memories 224
display 171
offset 171
Title edit window 46
Titling library memories 143
Titling scene memories 164
TO END 171
Touch Sense Edit In All preference 233
Touch sense in/out, automix 176
Touch sense select 49
Transmit channel 192
Transmitting bulk dump 195
Transport. *See* Data entry section
TREMOLO 265
Turning channels on or off. *See* Muting
Turning on the 02R96 43
Type I/II EQ 113

U

Undo automix 174
Undo scene memory 163
UPDATE 171
USB TO HOST port 40
drivers 190
MIDI 190
timecode source 177
USER ASSIGNABLE LAYER 228
USER DEFINED KEY ASSIGN page 229
USER DEFINED KEYS 1–16 31
USER DEFINED KEYS section
about 31
Pro Tools 206
using 229
User defined layer
automix 170
configuring 220
storing via bulk dump 195
using 221
User defined plug-ins
about 158
automix 170
configuring 159
editing 160
storing via bulk dump 195
UTILITY button 23

V

Variable mode, aux sends 98
Vertical pairing 123
VIEW button 23
Viewing channel fader settings
input channels 130
output channels 130
Viewing channel parameter settings
input channels 129
output channels 129

W

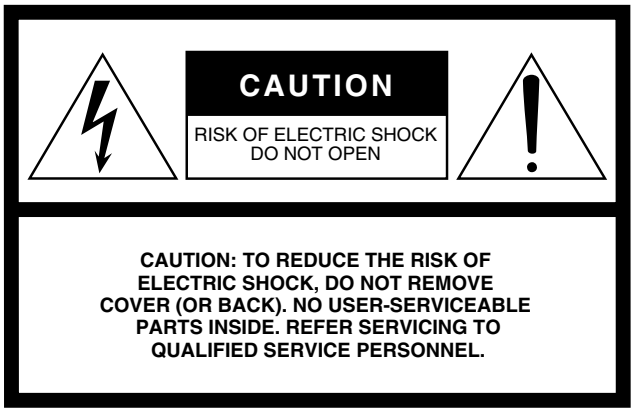
Waves Y56K plug-ins effects card 158
Web site 5
Welcome chapter 16
Windows
configuring for Pro Tools 196
MIDI port setup 191
USB driver 190
WORD CLOCK 75Ω ON/OFF termination switch 41
WORD CLOCK IN connector 41
WORD CLOCK OUT connector 41
WORD CLOCK SELECT page 56
Wordclocks
about 55
connections 55
selecting the source 56
terminating 57

X

XLR connectors 37

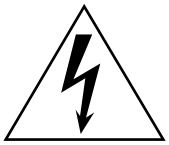
Y

Y56K plug-ins effects card 158
Yamaha web site 5
YGDAI. *See* Slots



The above warning is located on the top, side, or rear of the unit.

Explanation of Graphical Symbols



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

IMPORTANT SAFETY INSTRUCTIONS

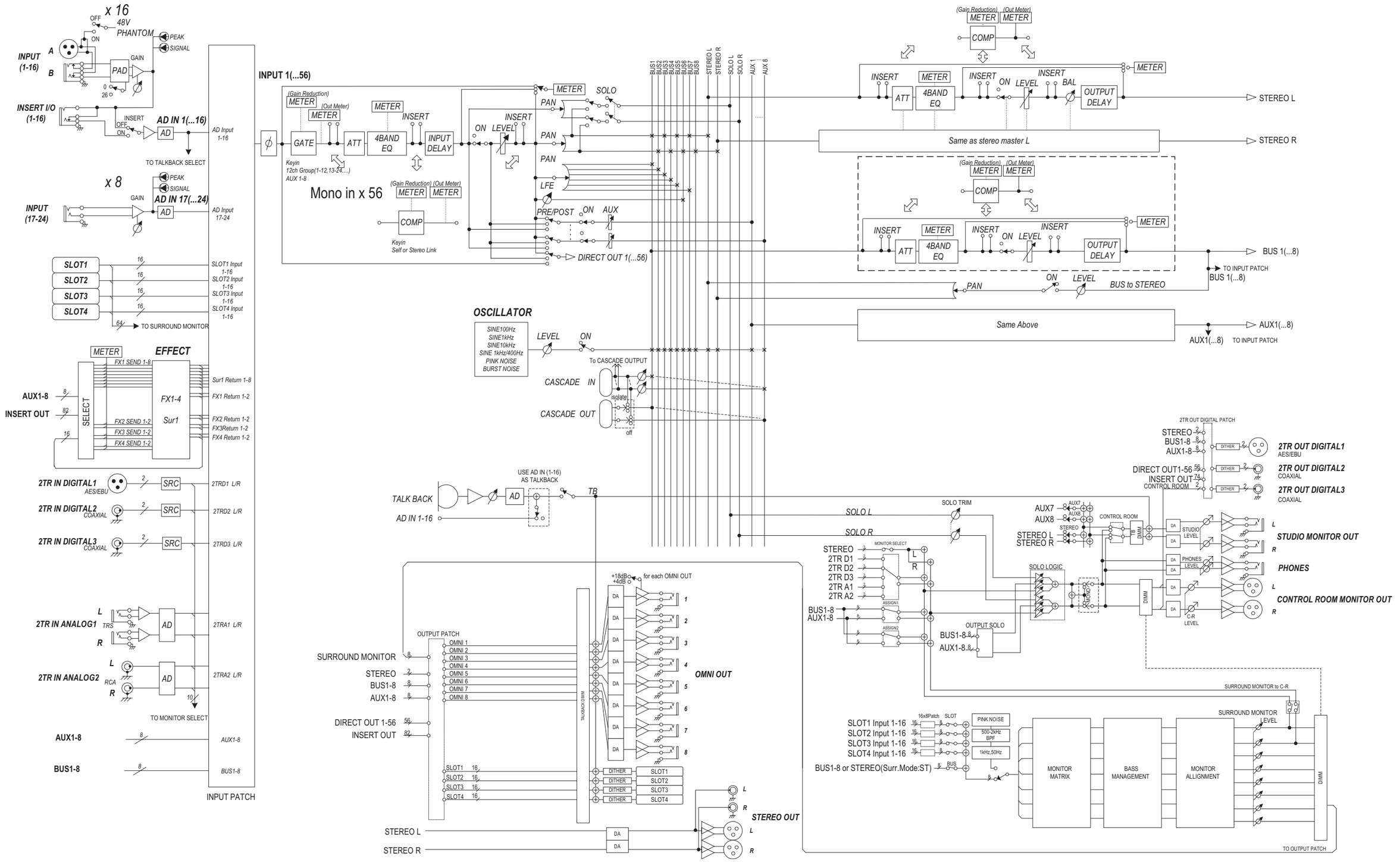
1 **Read these instructions.**
2 **Keep these instructions.**
3 **Heed all warnings.**
4 **Follow all instructions.**
5 **Do not use this apparatus near water.**
6 **Clean only with dry cloth.**
7 **Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.**
8 **Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.**
9 **Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.**
10 **Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.**
11 **Only use attachments/accessories specified by the manufacturer.**
12 **Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.**

13 **Unplug this apparatus during lightning storms or when unused for long periods of time.**
14 **Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.**

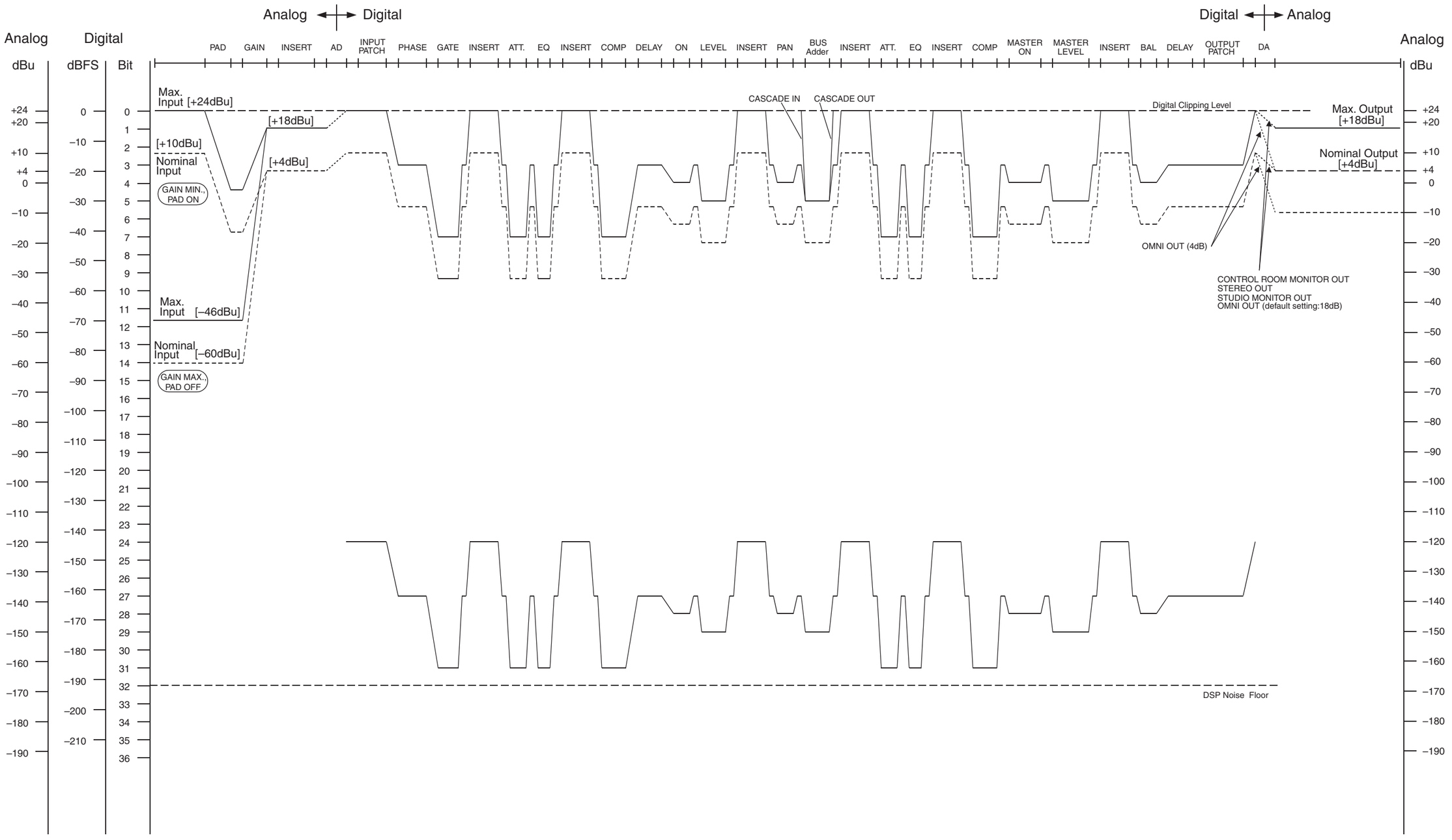
WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

(UL60065_03)

02R96 Block Diagram



02R96 Level Diagram



[0dBu = 0.775Vrms]
[0dBFS = Full Scale]

YAMAHA [Digital Mixing Console-Internal Parameters] **Date: 20 Mar. 2002**

Model: 02R96

MIDI Implementation Chart

Version: 1.0

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1–16 1–16	1–16 1–16	Memorized
Mode	Default Messages Altered	X X **********	OMNI off/OMNI on X X	Memorized
Note Number	True Voice	X **********	0–127 X	
Velocity	Note On Note Off	X X	O O	Effect Control
After	Key's Ch's	X X	X X	
Pitch Bend		X	X	
Control Change	0-95,102-119	O	O	Assignable
Prog Change	:True#	0–127 **********	0–127 0–99	Assignable
System Exclusive		O	O	*1
System Common	:Song Pos :Song Sel :Tune	X X X	O X X	Automix
System Real Time	:Clock :Commands	X X	O O	Automix, Effect Control
Aux Messages	:Local ON/OFF :All Notes OFF :Active Sense :Reset	X X X X	X X O O	
Notes		MTC quarter frame message is recognized (MTC IN & MIDI IN). *1: Bulk Dump/Request, Parameter Change/Request, and MMC. For MIDI Remote, ALL messages can be transmitted.		

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO O: Yes

Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO X: No

For details of products, please contact your nearest Yamaha representative or the authorized distributor listed below.

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