Imagine COMMUNICATIONS™

Installation and Operation Manual

CMN-LA™
Loudness Analyzer

August 2012

Revision: C

P061-0008

Publication Information

This publication is designed to assist in the use of the product as it exists on the date of publication of this manual, and may not reflect the product at the current time or an unknown time in the future. This publication does not in any way warrant description accuracy or guarantee the use for the product to which it refers.

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CMN-LA
Loudness Analyzer

Installation and Operation Manual

Revision C

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Contents

About This Manual

This manual details the features, installation procedures, operational procedures, and specifications of the CMN-LA loudness analyzer.

About This Manual provides an overview of this installation and operation manual, describes manual conventions, and tells you where to look for specific information. This section also gives you important information on unpacking and shipping your product.

Intended Audience

This manual is written for engineers, technicians, and operators responsible for the installation, setup, and/or operation of the CMN-LA loudness analyzer.

Finding Specific Information in This Manual

Table P-1 shows the location of specific information in this manual.

Table P-1 Finding Specific Information in this Guide

If you are looking for	Go to
Alarm descriptions	Page 117
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Ethernet setup and configuration	Page 24
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Table P-1 Finding Specific Information in this Guide *(Continued)*

If you are looking for	Go to
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Manual Information

This section provides information about the revision history of the manual, writing conventions used for ease of understanding as well as for navigation throughout the document, and information about obtaining other product manuals.

Revision History

Table P-2 Manual Revision History

Revision	Date	Revision History
A	June 2010	Initial release
B	April 2011	Addition of CMN-AES option
C	August 2012	Addition of SNMP instructions

Writing Conventions

To enhance your understanding, the authors of this manual have adhered to the following text conventions:

Table P-3 Manual Style and Writing Conventions

Term or Convention	Description
Bold	Indicates dialog boxes, property sheets, fields, buttons, check boxes, list boxes, combo boxes, menus, submenus, windows, lists, and selection names
Italics	Indicates email addresses, the names of books or publications, and the first instances of new terms and specialized words that need emphasis
CAPS	Indicates a specific key on the keyboard, such as ENTER, TAB, CTRL, ALT, or DELETE
`Code`	Indicates variables or command-line entries, such as a DOS entry or something you type into a field

Table P-3 Manual Style and Writing Conventions *(Continued)*

Term or Convention	Description
> or →	Indicates the direction of navigation through a hierarchy of menus and windows
hyperlink	Indicates a jump to another location within the electronic document or elsewhere
Internet address	Indicates a jump to a website or URL
	Indicates important information that helps to avoid and troubleshoot problems
To perform a procedure	Indicates the introduction to a procedure or series of procedural steps

Unpacking/Shipping Information

This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble free service.

Unpacking a Product

1. Check equipment for any visible damage that may have occurred during transit.
2. Confirm that you have received all items listed on the packing list.
3. Contact your dealer if any item on the packing list is missing.
4. Contact the carrier if any item is damaged.
5. Remove all packaging material from the product and its associated components before you install the unit.

Product Servicing

CMN-LA modules are not designed for field servicing. All hardware repairs require you to return the modules to the Customer Service center. For more information see ***CMN-LA Service and Support*** on page 16.

Returning a Product

In the unlikely event that your product fails to operate properly, please contact Customer Service to obtain a Return Authorization (RA) number, and then send the unit back for servicing.

Keep at least one set of original packaging, in the event that you need to return a product for servicing. If the original packaging is not available, you can purchase replacement packaging at a modest cost or supply your own packaging as long as it meets the following criteria:

- Withstands the weight of the product
- Holds the product rigid within the packaging

- Leaves at least two inches of space between the product and the container
- Protects the corners of the product

Ship products back to us for servicing prepaid and, if possible, in the original packaging material. If the product is still within the warranty period, we will return the product prepaid after servicing. For more information see ***CMN-LA Service and Support*** on page 16.

Operator's Safety Summary

WARNING: These instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform this installation or any servicing unless you are qualified to do so. Refer all servicing to qualified service personnel.

Ensuring Safety

- The unit should not be exposed to dripping or splashing, and no objects filled with liquids, such as vases, shall be placed on the unit.
- When the unit is to be permanently cabled, connect the protective ground conductor before making any other connections.
- Operate built in units only when they are properly fitted into the system.
- For permanently cabled units without built in fuses, automatic switches, or similar protective facilities, the AC supply line must be fitted with fuses rated to the units.
- Before switching on the unit, ensure that the operating voltage set at the unit matches the line voltage, if appropriate. If a different operating voltage is to be set, use a fuse with the appropriate rating. Refer to the Installation Instructions.
- Units of Protection Class I with an AC supply cable and plug that can be disconnected must be operated only from a power socket with protective ground contact:
  - Do not use an extension cable–it can render the protective ground connection ineffective.
  - Do not intentionally interrupt the protective ground conductor.
  - Do not break the protective ground conductor inside or outside the unit or loosen the protective ground connection; such actions can cause the unit to become electrically hazardous.
- Before opening the unit, isolate it from the AC supply. Then, ensure that
  - Adjustments, part replacements, maintenance, and repairs are carried out by qualified personnel only.
  - Safety regulations and rules are observed to prevent accidents.
  - Only original parts are used to replace parts relevant to safety (for example, the power on/off switches, power transformers, and fuses).
- Replaceable fuses can be hazardous when live. Before replacing a fuse, disconnect the AC power source.
- Use caution when cleaning the equipment; isopropyl alcohol or similar solvents can damage or remove the labels.
- Observe any additional safety instructions specified in this manual.

Explanation of Symbols

These symbols may appear on Harris equipment:

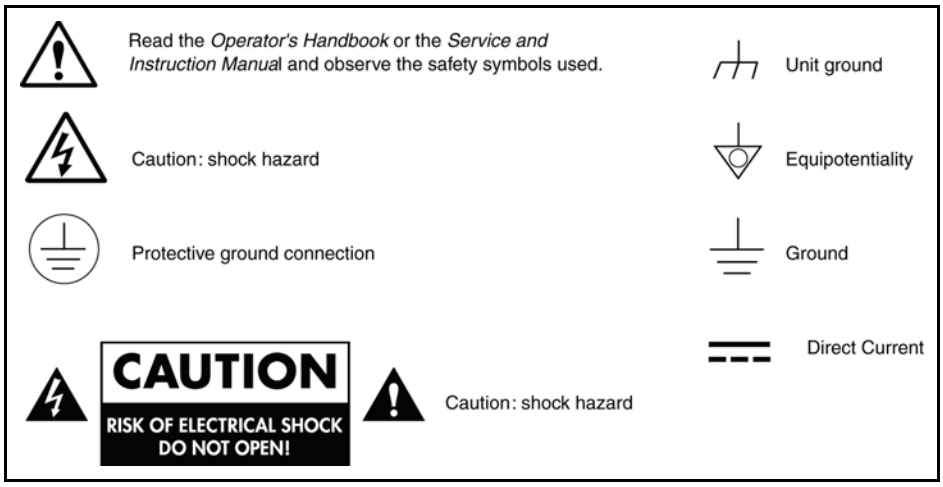


Figure P-1 Safety Symbols Appearing on Harris Equipment

This product manual uses the following safety terms and symbols to identify certain conditions or practices.

Table P-4 Safety Terms and Symbols Appearing in the Product Manual

Symbol	Description
	**WARNING: Identifies conditions or practices that can result in personal injury or loss of life — high voltage is present. Uninsulated dangerous voltage within the product's enclosure may be sufficient to constitute a risk of electric shock to persons.**
	**CAUTION: Identifies conditions or practices that can result in damage to the equipment or other property. Important operating and maintenance (servicing) instructions are included in the literature accompanying the product.**

Certification Labels and Symbol Locations

On Harris equipment, certification labels and symbols are located on the back panel, rear chassis sides, or bottom rear of the chassis. On smaller space-restricted units, most labels and symbols can be found on the bottom rear of the chassis.

Directives and Compliances

This section provides information concerning Harris Corporation compliance with EU Directive 2002/95/EC and EU Directive 2002/96/EC.

Restriction on Hazardous Substances (RoHS) Directive

Directive 2002/95/EC — commonly known as the *European Union (EU) Restriction on Hazardous Substances (RoHS)* — sets limits on the use of certain substances found in electrical and electronic equipment. The intent of this legislation is to reduce the amount of hazardous chemicals that may leach out of landfill sites or otherwise contaminate the environment during end-of-life recycling. The Directive, which took effect on July 1, 2006, refers to the following hazardous substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr-V1)
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDE)

In accordance with this EU Directive, products sold in the European Union will be fully RoHS-compliant and "lead-free." Spare parts supplied for the repair and upgrade of equipment sold before July 1, 2006 are exempt from the legislation. Equipment that complies with the EU directive will be marked with a RoHS-compliant symbol, as shown in **Figure P-2**.

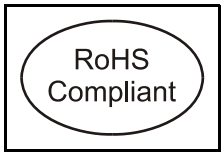


Figure P-2 RoHS Compliance Symbol

Waste from Electrical and Electronic Equipment (WEEE) Directive

The *European Union (EU) Directive 2002/96/EC on Waste from Electrical and Electronic Equipment (WEEE)* deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The objective of the WEEE Directive is to assign the responsibility for the disposal of associated hazardous waste to either the producers or users of these products. As of August 13, 2005, producers or users are required to recycle electrical and electronic equipment at end of its useful life, and must not dispose of the equipment in landfills or by using other unapproved methods. (Some EU member states may have different deadlines.)

In accordance with this EU Directive, companies selling electric or electronic devices in the EU will affix labels indicating that such products must be properly recycled. Contact your local Sales representative for information on returning these products for recycling. Equipment that complies with the EU directive will be marked with a WEEE-compliant symbol, as shown in **Figure P-3**.

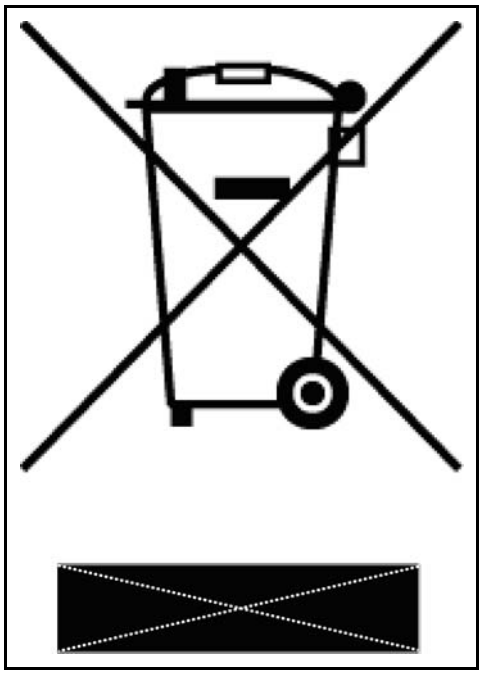


Figure P-3 WEEE Compliance Symbol

1 Introduction

The Harris CMN-LA loudness analyzer unit is the most advanced, versatile, and intuitive loudness analyzer available today. The CMN-LA is available as an SDI-only base version, with upgrades for AES I/O and Dolby decode. The SDI-only base option has two SDI inputs that support 3 Gb-SDI/HD-SDI/SD-SDI standards. The AES I/O option gives 8 AES inputs, 4 AES outputs, and 8 analog outputs. The Dolby decode option can be added to the AES option to implement Dolby decode functionality. With 100% digital signal processing technology; integral, high-resolution, XGA TFT color LCD display; the CMN-LA provides accurate and stable user customizable audio and loudness related analysis windows in coherence with picture (which can be displayed in PIP form). The CMN-LA provides full-screen, quad-screen, or loudness display modes. In addition, the CMN-LA provides overlay display capabilities for picture-in-picture (PIP) functions. Quick setup and parameter changes are possible with direct access to display functions and screen location, 99 presets, context-sensitive shortcut menus, and an intuitive navigation system.

The CMN-LA features extensive audio loudness related alarm capabilities. All real-time signal alarms have user adjustable limits, time stamps from DVITC (LTC with AES I/O option) and an internal clock. Remote interfaces include 10/100Base-T Ethernet and plug and-play USB port (supporting storage and recall of presets). The CMN-LA instruments are digital instruments with all-digital architecture; therefore, no periodic calibration is required.

The CMN-LA seamlessly integrates into any broadcast, post-production, satellite or cable facility, and is the ultimate choice for quality control, troubleshooting, or compliance checking applications.

Product Features

The CMN-LA (SDI-only versions) includes the following standard and optional features.

Standard Features

- Internal speakers for confidence monitoring
- Loudness radar display[1]
- Audio/Loudness trend charts
- Audio metadata extraction
- Two active loop-thru 3Gb/s-SDI/HD-SDI/SD-SDI video inputs with auto detection
- Oversampling for enhanced audio True Peak detection
- All audio inputs are sample rate converted to 48 kHz for measurement
- Dual link (4:4:4) Y, Cb, Cr
- Twelve-button numeric keypad
- Headphone jack
- Alarms with Peak Level Report
- Integral high resolution XGA TFT color LCD with adjustable backlight
- USB port for data transfer
- XGA, High Resolution, output for 4:3 external display (DVI-D)
- 99 user presets
- Illuminated controls and indicators
- Ethernet
- 5 days storage of audio loudness levels with 100 ms resolution

Optional Features

Table 1-1 CMN-LA Optional Features and Descriptions

Option	Description
TVM-WRTY1	Warranty option; adds three years to the standard two-year warranty
CMN-LA-OPT-AES	8 AES inputs, 4 AES outputs and 8 analog outputs
CMN-LA-OPT-DLB	Dolby decoder requires CMN-LA-OPT-AES option
DRC-3	Double rack mount case (short depth)
BLK-1	Blank panel for DRC-3
PTC-3A	Portable case with handle and tilt stand
PTC-3-CC	Padded soft case to hold PTC-3
DRC-2A	Double rack mount case (full depth)
CMN-IN-DRC2	Bracket kit for installation in a DRC-2A

[1] Licensed through TC Electronic®.

Applicable Standards

- **ATSC A/85**: Techniques for Establishing and Maintaining Audio Loudness for Digital Television
- **EBU R 128-2010**: Loudness Normalisation and Permitted Maximum Level of Audio Signals
- **IEC 268-10 Sound system equipment**: Peak programme level meters
- **IEC 268-17 Sound system equipment**: Standard volume indicators
- **ITU-R BS.1770:** Algorithms to measure audio programme loudness and true-peak audio level
- **SMPTE 125M-1995**: Component Video Signal 4:2:2—Bit-Parallel Digital Interface
- **SMPTE 259M-1997**: SDTV Digital Signal/Data—Serial Digital Interface
- **SMPTE 274M-2005**: 1920×1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates
- **SMPTE 276M**: Transmission of AES/EBU Digital Audio Signals Over Coaxial Cable
- **SMPTE 292M-1998**: 1.5 Gb/s Signal/Data Serial Interface
- **SMPTE 296M-2001**: 1280×720 Progressive Image Sample Structure—Analog and Digital Representation and Analog Interface
- **SMPTE 299M -2004**: 24-Bit Digital Audio Format for SMPTE 292M Bit-Serial Interface
- **SMPTE 372M-2002**: Dual Link 292M Interface for 1920×1080 Picture Raster
- **SMPTE 424M-2006**: 3 Gb/s Signal/Data Serial Interface
- **SMPTE 425M-2006**: 3 Gb/s Signal/Data Serial Interface—Source Image Format Mapping

Video Formats Supported

The CMN-LA supports the following video formats:

- 3 Gb/s-SDI
- Dual Link - YCbCr 10 Bit 4:4:4
- Dual Link – RGB and RGB+A, 10 Bit 4:4:4. and 4:4:4:4
- Dual Link – YCbCr and RGB, 12 Bit 4:4:4
- HD-SDI
- SD-SDI

Table 1-2 3 Gb/s Formats

Format	10 bit 4:2:2 YCbCr	10 bit 4:4:4 YCbCr	10 bit 4:4:4:4 YCbCr+A	10 bit 4:4:4 RGB	10 bit 4:4:4:4 RGB+A	12 bit 4:2:2 YCbCr	12 bit 4:4:4 YCbCr	12 bit 4:4:4 RGB
1080i								
1080i/60		•	•	•	•	•	•	•
1080i/59.94		•	•	•	•	•	•	•
1080i/50		•	•	•	•	•	•	•
1080p								

Table 1-2 3 Gb/s Formats *(Continued)*

Format	10 bit 4:2:2 YCbCr	10 bit 4:4:4 YCbCr	10 bit 4:4:4:4 YCbCr+A	10 bit 4:4:4 RGB	10 bit 4:4:4:4 RGB+A	12 bit 4:2:2 YCbCr	12 bit 4:4:4 YCbCr	12 bit 4:4:4 RGB
1080p/60	•							
1080p/59.94	•							
1080p/50	•							
1080p/30		•	•	•	•	•	•	•
1080p/29.97		•	•	•	•	•	•	•
1080p/25		•	•	•	•	•	•	•
1080p/24		•	•	•	•	•	•	•
1080p/23.98		•	•	•	•	•	•	•
1080psF/30		•	•	•	•	•	•	•
1080psF/29.97		•	•	•	•	•	•	•
1080psF/25		•	•	•	•	•	•	•
1080psF/24		•	•	•	•	•	•	•
1080psF/23.98		•	•	•	•	•	•	•
720p								
720p/60		•	•	•	•			
720p/59.94		•	•	•	•			
720p/50		•	•	•	•			
720p/30		•	•	•	•			
720p/29.97		•	•	•	•			
720p/24		•	•	•	•			
720p/23.98		•	•	•	•			

Both Level A and Level B 3 Gb/s formats are supported. When a 3 Gb/s Level A signal is detected, the standard is shown with the letter "A" appended to the format (1080p/59.94 A). When a 3 Gb/s Level B signal is detected, the standard is shown with the letter "B" appended to the format (1080p/59.94 B).

Table 1-3 Dual Link Formats

Format	10 bit 4:2:2 YCbCr	10 bit 4:4:4 YCbCr	10 bit 4:4:4:4 YCbCr+A	10 bit 4:4:4 RGB	10 bit 4:4:4:4 RGB+A	12 bit 4:2:2 YCbCr	12 bit 4:4:4 YCbCr	12 bit 4:4:4 RGB
1080i								
1080i/60		•	•	•	•	•	•	•
1080i/59.94		•	•	•	•	•	•	•
1080i/50		•	•	•	•	•	•	•
1080p								
1080p/60	•							
1080p/59.94	•							
1080p/50	•							
1080p/30		•	•	•	•	•	•	•
1080p/29.97		•	•	•	•	•	•	•
1080p/25		•	•	•	•	•	•	•
1080p/24		•	•	•	•	•	•	•
1080p/23.98		•	•	•	•	•	•	•
1080psF/30		•	•	•	•	•	•	•
1080psF/29.97		•	•	•	•	•	•	•
1080psF/25		•	•	•	•	•	•	•
1080psF/24		•	•	•	•	•	•	•
1080psF/23.98		•	•	•	•	•	•	•

Table 1-4 HD Formats

	10 bit 4:2:2 YCbCr
1080i	
1080I/60	•
1080I/59.94	•
1080I/50	•
1080p	
1080P/30	•
1080P/29.97	•
1080P/25	•
1080P/24	•
1080P/23.98	•
720p	
720p/60	•
720p/59.94	•
720p/50	•
720p/30	•
720p/29.97	•
720p/24	•
720p/23.98	•
Segmented Frame	
1080P/30sF	•
1080P/29.97sF	•
1080P/25sF	•
1080P/24sF	•
1080P/23.98sF	•

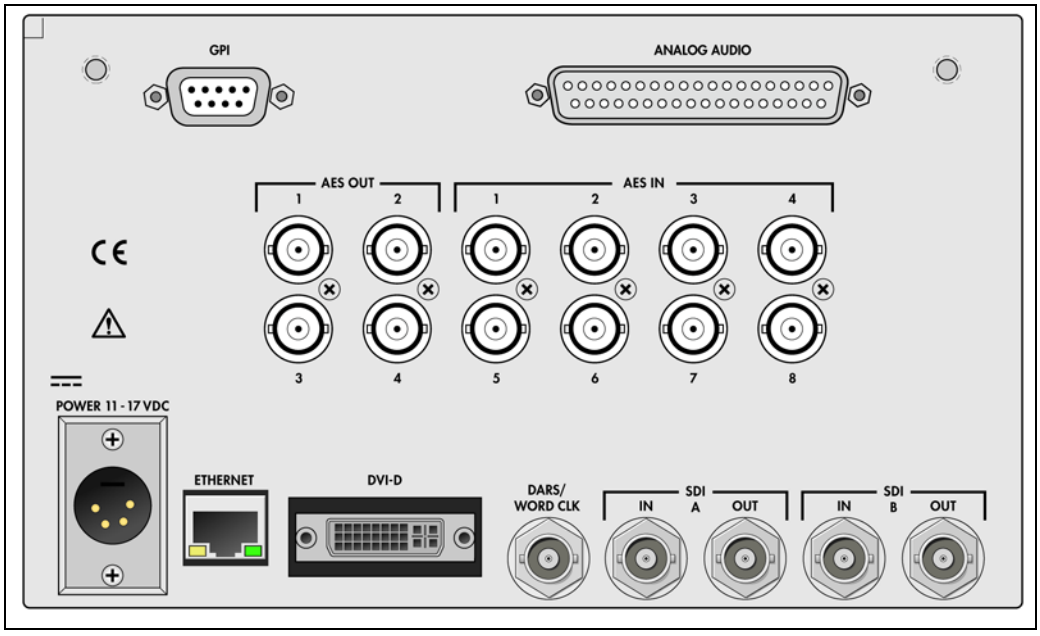
Table 1-5 SD Formats

	10 bit 4:2:2 YCbCr
525/59.94	•
625/50	•

Front Panel and Back Panel Views

Figure 1-1 shows the front and back panel views of the CMN-LA. See **Table 3-1** on page 29 for descriptions of the front panel components. See **Table 2-3** on page 23 for descriptions of the back panel components.

Front View



Back View

Figure 1-1 CMN-LA Front and Back Panels

The CMN-LA can also be controlled by using a web-based control panel. See page 31 for more information on the web-based control panel.

Safety Information

See the ***Operator's Safety Summary*** on page 4 for a list of important safety instructions.

Carefully observe all safety alert symbols for dangers, warnings, and cautions. They alert installers and operators of possible dangers or important information contained in this manual.

Keep in mind, though, that warnings alone do not eliminate hazards, nor are they a substitute for safe operating techniques and proper accident prevention measures.

CMN-LA Service and Support

For service and support, telephone the Harris Customer Service Department at **1-888-534-8246**. If the problem cannot be resolved over the telephone and the instrument must be shipped to Harris for service or repair:

- Obtain a Return Authorization (RA) number from the Harris Customer Service Department.
- Attach a tag to the unit with the following information:
  - Your company name, address, and telephone number
  - The name of the contact person at your company
  - The RA number
  - The unit serial number
  - An explanation of the problem
- To prevent shipping damage, pack the unit the same way Harris had packed it. If possible, use the original packing materials in the original shipping container.
- Ship the unit to the following location:

  Harris Corporation
  Videotek Test and Measurement
  243 Shoemaker Road
  Pottstown, PA 19464-6433

  Attn: RA *xxxx* (where *xxxx* is the RA number)

  Email: BCDService@harris.com

2 Installation

Before your CMN-LA control panel can operate, you must unpack, install, and configure it. This chapter covers those topics specific to physical installation and configuration.

Inspecting the Shipment

Before installing the CMN-LA, inspect the box and the contents. Report any damage to the shipper, and then telephone the Harris Corporation Customer Service Department (see ***CMN-LA Service and Support*** on page 16).

Refer to the enclosed packing sheet for the latest list of items that are supplied with the unit.

The box contains the following:

- One CMN-LA monitor/scope
- One ***CMN-LA Installation and Operation Manual*** on CD
- One 75Ω terminator
- One detachable power cord
- One power supply assembly

Save the box and packing material for any future shipping requirements.

Rack Mounting the CMN-LA

CAUTION: The CMN-LA should not be installed in a DRC-1 case. If installed in a DRC-1 case, the unit will overheat.

When selecting the permanent mounting location for the CMN-LA, make sure that the flow of air to the ventilation holes on the top and sides of the chassis is not obstructed.

Rack mounting the CMN-LA is illustrated in **Figure 2-1** for the DRC-3 rack mount case, and in **Figure 2-2** for the DRC-2A double rack mount case (for installing one or two CMN-LA units). **Table 2-1** lists the parts required to rack mount the CMN-LA into the DRC-3 rack mount case and **Table 2-2** lists the parts required to rack mount the CMN-LA into the DRC-2A double rack mount case.

DRC-3 Rack Mount Installation

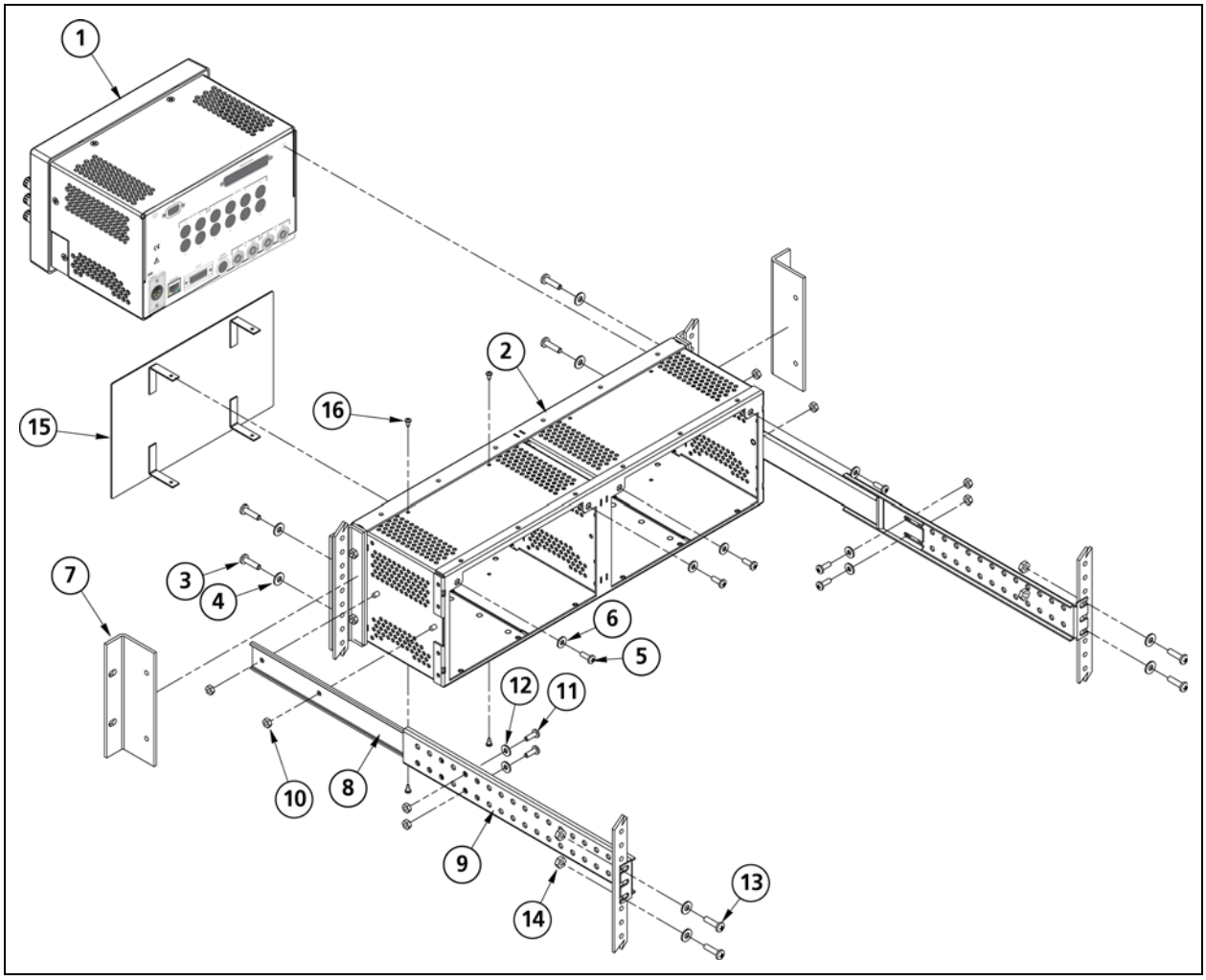


Figure 2-1 Mounting the CMN-LA in a Rack Using the DRC-3

Although only one CMN-LA unit is shown, two CMN-LA units may be mounted into a DRC-3 rack case.

Table 2-1 Parts Required to Rack Mount the CMN-LA Using the DRC-3

Key	Item Number	Qty	Description
1	-	A/R	CMN-LA unit
2	866078	1	DRC-3 rack case
3	831030	4	#10-32×¾-in. Phillips head screws
4	831019	4	Nylon washer, rack mount
5	831064	4	#8-32×½-in. Phillips head screws (CMN mtg)
6	831114	4	#8 Ext. tooth lock washers
7	832125	2	Optional metal rack ears, flush mount
8	832072	2	Metal extension mount
9	832070	2	Metal extension bracket

Table 2-1 Parts Required to Rack Mount the CMN-LA Using the DRC-3 *(Continued)*

Key	Item Number	Qty	Description
10	831119	8	#8-32 kep nuts
11	831064	4	#8-32×½-in. Phillips head screws
12	831118	8	#10 flat washers
13	831030	4	#10-32×¾-in. Phillips head screws
14	831060	4	#10-32 kep nuts
15	832131	1	Optional metal cover plate
16	831180	4	#4-40×¼ self-tapping Phillips head screws

These instructions are for installing units without the optional rack mounting extensions. For installing units with the optional extensions, see ***DRC-3 Rack Mount with Rack Extensions Installation*** *on page 19.*

To mount the CMN-LA into a DRC-3 rack mount without rack extensions

1. Slide the CMN-LA unit (ITEM 1) in the DRC-3 rack case (ITEM 2).
2. Using ¾-in. Phillips head screws (ITEM 3) and lock washers (ITEM 4), secure the CMN-LA unit to the front of the DRC-3 rack case.
3. Using ½-in. Phillips head screws (ITEM 5) and lock washers (ITEM 6), secure the CMN-LA unit to the back of the DRC-3 rack case.
4. If desired, install the optional cover plate:
   - Slide the metal cover plate (ITEM 15) into the desired side of the DRC-3 rack.
   - Using 4 self tapping screws (ITEM 16), secure the cover plate into the DRC-3 rack.

   The installation is complete.

DRC-3 Rack Mount with Rack Extensions Installation

To install the optional flush mount rack ears (ITEM 7), first remove existing rack ears, but do not remove the metal spacers. Using the same hardware, attach the flush mount rack ears.

To mount the CMN-LA into a DRC-3 rack mount with rack extensions

1. Install the extension bracket mounts (ITEM 8) to both sides of the DRC-3 chassis (ITEM 2) using 4 nuts (ITEM 10), as shown in **Figure 2-1**.
2. Install the assembled CMN-LA unit (ITEM 1) in the DRC-3 chassis (ITEM 2) using screws (ITEM 3) and washers (ITEM 4) through the chassis front mounting ears, as shown in **Figure 2-1**.
3. Hold the extension bracket (ITEM 9) in place on each side of chassis, and then loosely install the kep nuts (ITEM 10), screws, (ITEM 11), and washers (ITEM 12) into the proper holes that align with the slots in the metal extension mount (ITEM 8).
4. Install the remaining hardware (ITEMS 12, 13, and 14) through the rack rails and the appropriate slots in the back of the bracket (ITEM 9), and then tighten the hardware.
5. Tighten the hardware (ITEMS 10, 11, and 12) that joins the bracket pairs.
6. If desired, install the optional cover plate.
   - Slide the metal cover plate (ITEM 15) into the desired side of the DRC-3 rack.
   - Using self-tapping screws (ITEM 16), secure the cover plate into the DRC-3 rack.

   The installation is complete.

DRC-2A Rack Mount Installation

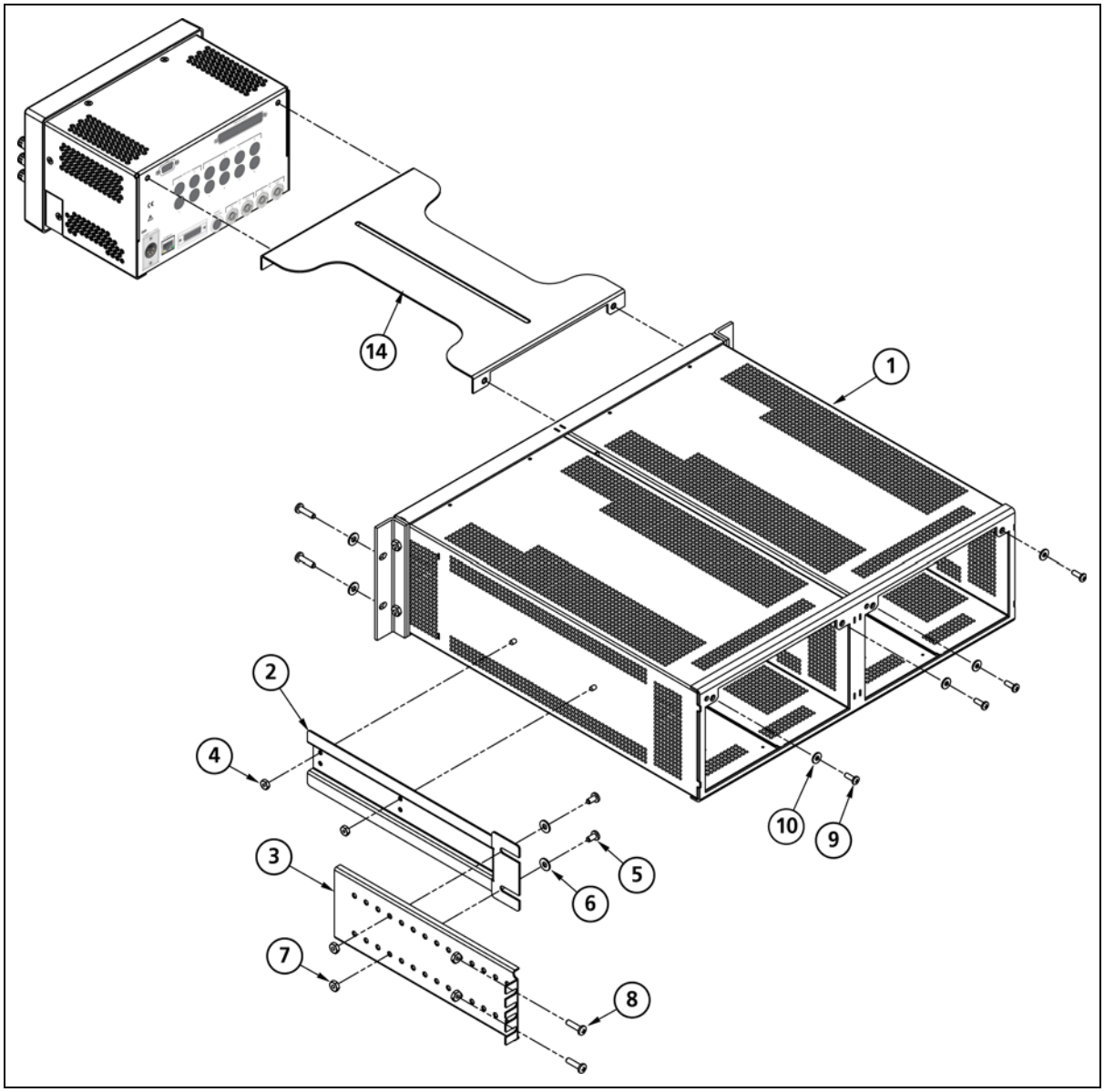


Figure 2-2 Mounting the CMN-LA in a Rack Using the DRC-2A

*See **Figure 2-3** for information about installing the flush mount rack ears.*

Table 2-2 Parts Required to Rack Mount the CMN-LA Using the DRC-2A

Key	Item No.	Qty	Description
1	149111	1 unit	Dual rack case assembly
2	149140	2 (1 each side)	Extension bracket mount
3	149150	2 (1 each side)	Extension bracket
4	043120	4 (2 each side)	#8-32 kep nuts
5	243200	4 (2 each side)	#10-32×3/8 in. Phillips head screws

Table 2-2 Parts Required to Rack Mount the CMN-LA Using the DRC-2A *(Continued)*

Key	Item No.	Qty	Description
6	044040	4 (2 each side)	#10 flat washers
7	044060	8 (4 each side)	#10-32 kep nuts
8	044030	8 (4 each side)	#10-32×¾ in. Phillips head screws
9	243040	4	#8-32×½ in. Phillips head screws
10	043101	4	#8 ext. tooth lock washers
11	045020	4 (2 each side)	Nylon washer, rack mount
12	832122	2	Metal rack ear, flush mount
13	832124	2 (reference)	Metal rack ear spacer
14	866083	1 (optional)	Optional bracket kit for mounting CMN-LA in a DRC-2A dual rack case

To install the optional flush mount rack ears (ITEM 12), first remove existing rack ears. Using the metal spacers (ITEM 13), attach the flush mount rack ears.

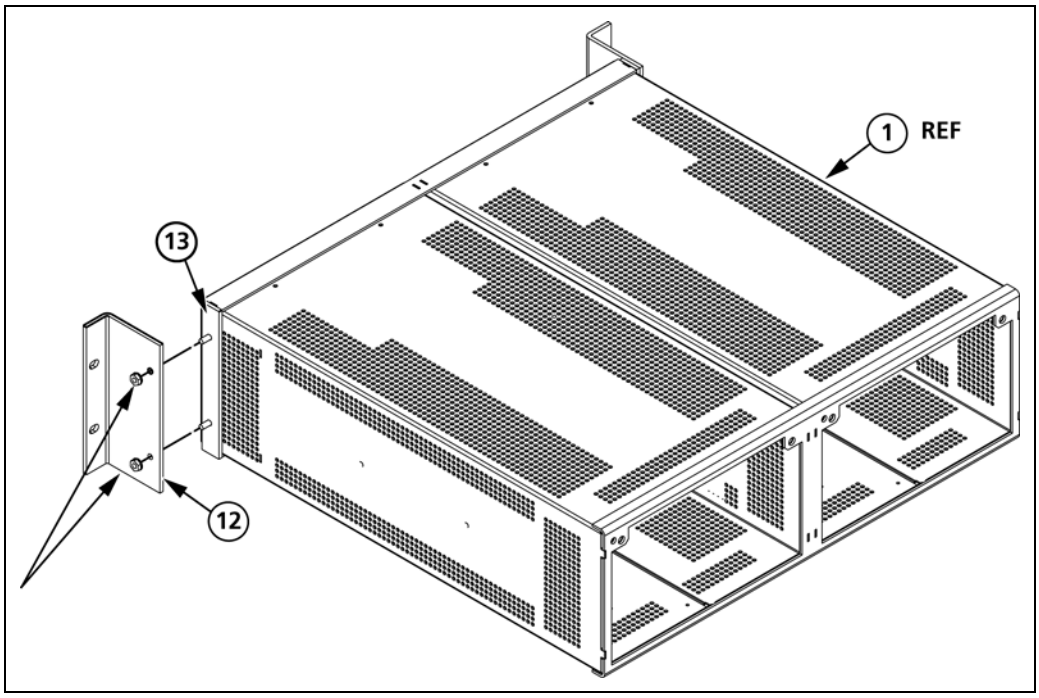


Figure 2-3 Installing Optional Flush Mount Rack Ears

To mount the CMN-LA into a DRC-2A rack mount case, follow these steps:

1. If the optional bracket kit is being used, install the bracket (ITEM 14) to the rear of the CMN-LA unit, as shown in **Figure 2-2**.
2. Install the extension bracket mounts (ITEM 2) to the unit (one on each side) using #8 kep nuts (ITEM 4).
3. Install the assembled unit in a rack using ¾-in. Phillips head screws (ITEM 8) and lock washers (ITEM 11), as shown in **Figure 2-2**.
4. Hold the extension brackets (ITEM 3) in place at the back of the rack, and then attach the brackets to extension bracket mounts (ITEM 2) using Phillips head screws (ITEM 5), flat washers (ITEM 6), and kep nuts (ITEM 7).

5. Install screws (ITEM 8) through the extension brackets (ITEM 3) into the back of the rack rails. Secure using #10 kep nuts (ITEM 7).
6. Tighten all screws and nuts, securing the assembly.
7. Insert the CMN-LA into either front opening of the DRC-2A. Slide the unit into the DRC-2A until it seats fully against the back flanges of the DRC-2A, and the bezel of the CMN-LA is fully seated around the front of the DRC-2A.

Because the CMN-LA is much shorter from front to back, it cannot seat against the back flanges of the DRC-2A. Use the optional bracket kit to provide a back flange for the CMN-LA.

8. Secure the CMN-LA to the DRC-2A rack case using ½-in. Phillips head screws (ITEM 9) and tooth lock washers (ITEM 10).

   The installation is complete.

Connecting the CMN-LA

The back panel connectors are illustrated in **Figure 2-4**, and the function of each connector is described in **Table 2-3**.

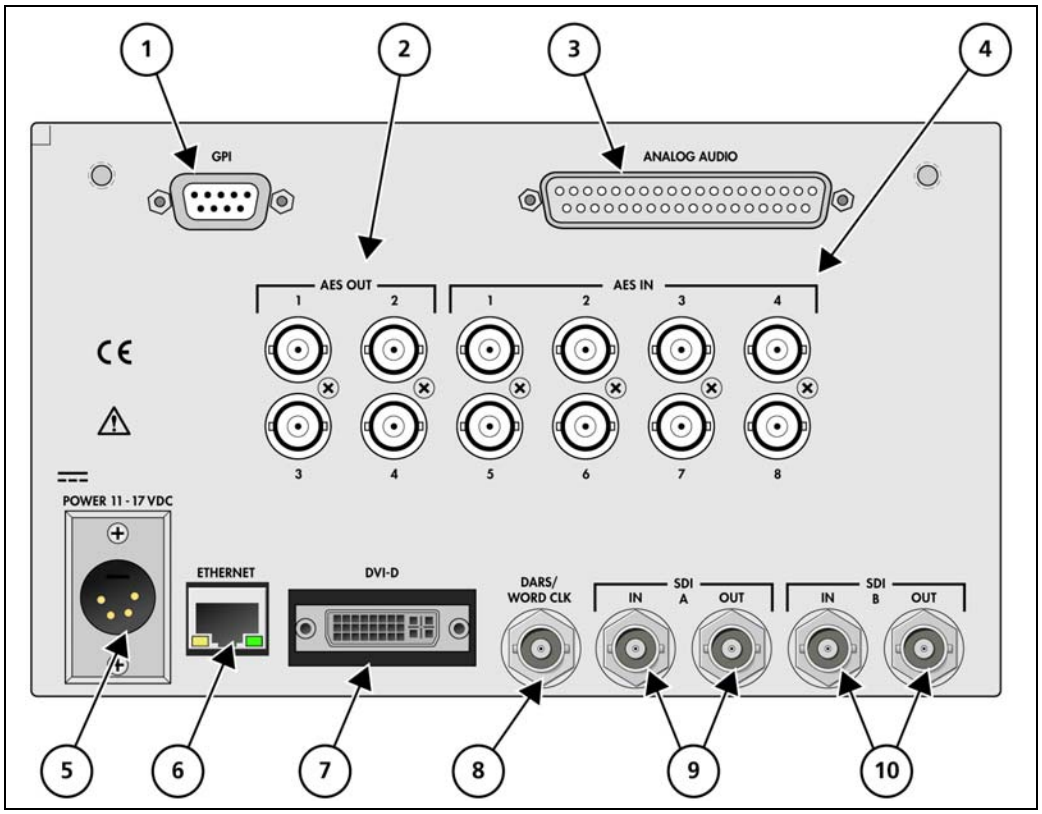


Figure 2-4 CMN-LA Back Panel Connectors

Table 2-3 Description of Back Panel Connectors

Key	Label	Description
1	GPI[1]	9 pin, female, D-sub connector for GPI/LTC input
2	AES OUT[1]	AES output BNC connectors (4 pairs)
3	ANALOG AUDIO[1]	Analog audio outputs (8 channels)
4	AES IN[1]	AES input BNC connectors (8 pairs)
5	PWR 11-17VDC	Power connector[2]
6	ETHERNET	RJ45, female, 10/100Base-T Ethernet connector[2]
7	DVI-D	DVI connector for external monitor[2]
8	DARS/WORD CLK[1]	DARS/WORD CLOCK (used as an audio reference clock)
9	SDI A	Input and output BNC connectors for SDI A
10	SDI B	Input and output BNC connectors for SDI B

[1] Available with AES I/O option only.
[2] See **Appendix A, *Pinouts*** for the connections.

Ethernet Setup

The Ethernet default settings for the CMN-LA are as follows:
IP: 192.168.0.100
Subnet Mask: 255.255.255.0
Gateway: 0.0.0.0

1 Prior to performing the CMN-LA network configuration, obtain TCP/IP addresses from the system administrator or the Internet service provider (ISP). These addresses are a static IP address (unless using Dynamic Host Configuration Protocol [DHCP]), a subnet mask, and an optional gateway IP.

Be sure to record all addresses in the spaces provided below. The gateway address is not needed unless the CMN-LA is routed to an outside network.

Record the addresses:

CMN-LA interface static IP address	
CMN-LA interface subnet mask	
Gateway IP address	

2 Identify a host PC to configure and test the CMN-LA.

3 Choose a dedicated PC connection or network connection method:

- For a dedicated PC connection, connect the host PC with a network card to the "ENET" connector on the back panel of the CMN-LA, using a CAT5 crossover cable (not included). See **Figure 2-5**.

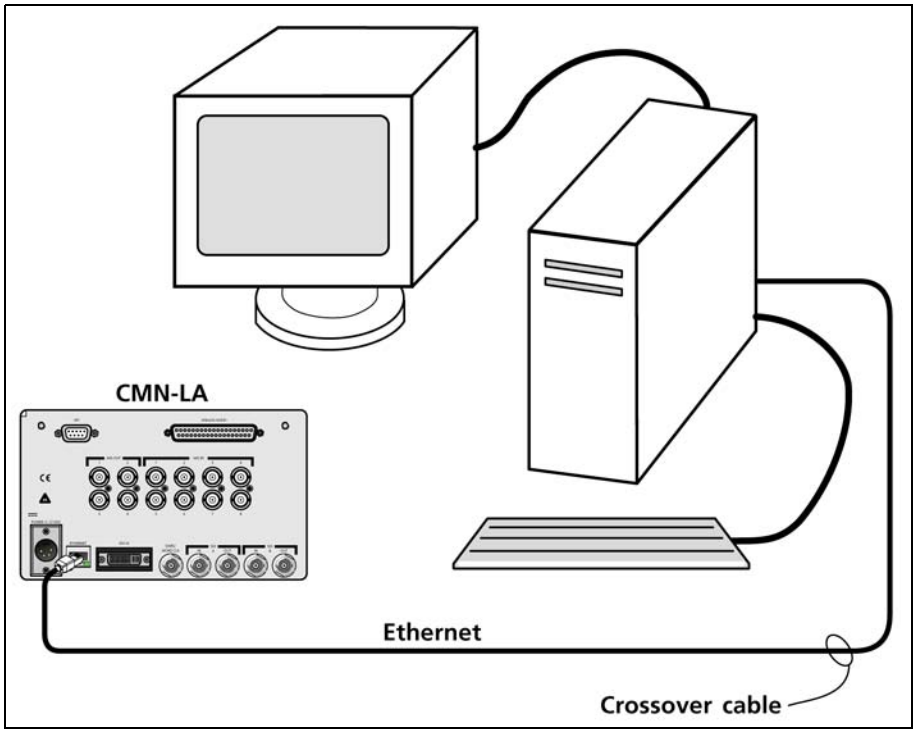


Figure 2-5 CMN-LA Dedicated PC Connection

- For a network connection, connect the network hub to the back panel of the CMN-LA using a CAT5 network cable (not included). See **Figure 2-6**.

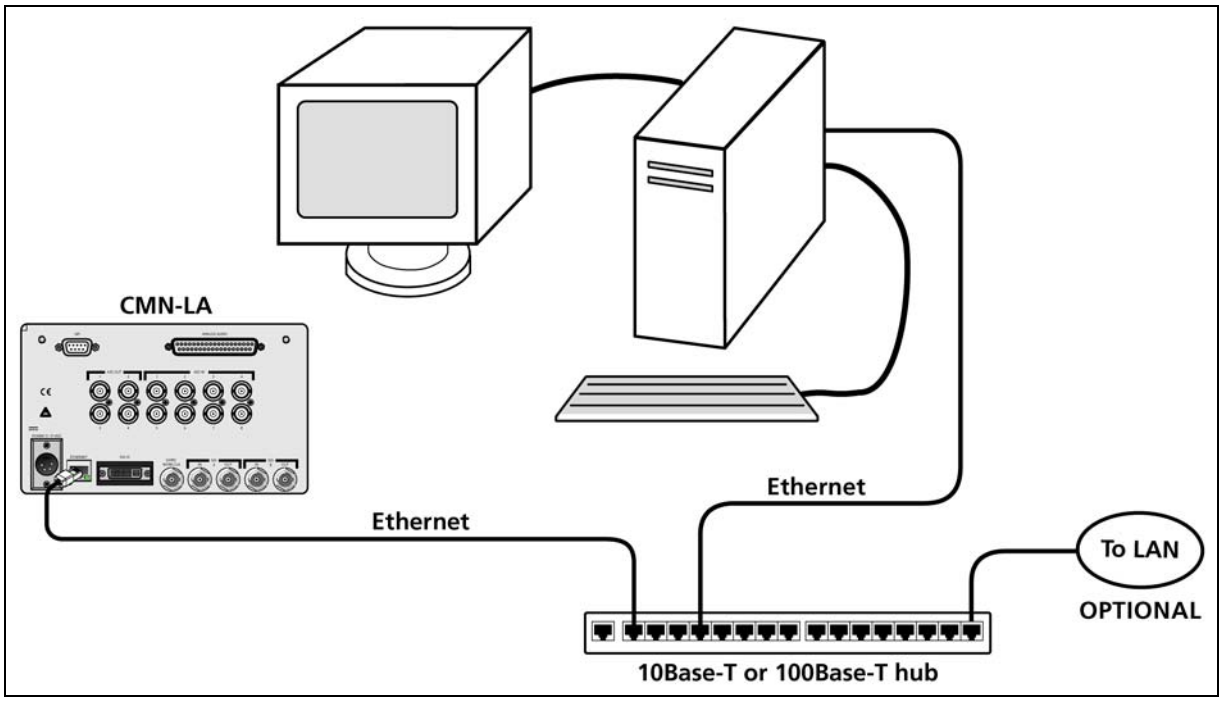


Figure 2-6 CMN-LA Network PC Connection

4 Set up an Ethernet configuration as follows:

a Press the **SETUP** button on the CMN-LA front panel.

b Press the Up/Down arrow button to highlight the Unit Configuration Setup menu, and then press the **ENTER** button to enter the submenu.

c Press the Up/Down arrow button until the **IP CONFIGURATION** selection option is highlighted.

d Press the **ENTER** button or Left/Right arrow button to enter the Ethernet Config selection option.

e If using DHCP:

- Press the Left/Right arrow button to highlight **DHCP**.
- Press the Up/Down arrow button to toggle the state to **ON**.
- Press the Left/Right arrow button to highlight **ACCEPT**, and then press the **ENTER** button.

The IP Address is retrieved from the DHCP server and placed under the appropriate submenu.

f If not using DHCP:

- Press the Left/Right arrow button to select **IP ADDRESS**.
- Press the Up/Down arrow button to change the value selected, and then press the Left/Right arrow button to highlight the next value.
- Repeat for the remainder of the IP address, subnet mask, and gateway. To avoid conflicts, the static IP address, subnet mask, and gateway should be obtained from the system administrator.

g Press the Left/Right arrow button to highlight **ACCEPT**, and then press **ENTER** to accept the entered values.

h Press the **EXIT** button to exit the submenu.

3 General Information

Terms

The following terms are used in this section:

The following terms are used in this section:

- **Loudness Range (LU)**: The program loudness range over the measurement period
- **Max TP (dBTP)**: The maximum true peak value detected across either the 5.1 or Aux channels
- **Dialnorm**: An AC-3 metadata parameter, numerically equal to the absolute value of the DialogLevel, carried in the AC-3 bit stream
- **Momentary Loudness (LKFS)**: Sliding rectangular window of length 400ms, with overlapping output of 100ms
- **Program or Programme (LKFS or LU)**: The continuous loudness average over a period of up to 24 hours
- **Short Term Loudness or Loudness (LKFS or LU)**: The integrated loudness value; Integration times are mode dependent.
- **Target Loudness (LKFS)**: The ideal loudness value
- **Display**: The output at the DVI connector
- **MLT**: Toggle between full screen and multi screen modes

Controlling the CMN-LA

*Pressing and holding certain buttons will activate menus for additional functionality. See **Table 3-1** for more information.*

The CMN-LA is controlled in these ways:

- **Quick Controls**: Controls on the front panel that adjust parameters that are frequently used. See ***Front Panel Controls*** on page 28 for more information about front panel controls.
- **Menu Settings**: Shortcut menus within a function that are used to control the parameters for the individual function.
- **Global Setup Menu Settings**: Setup menu parameters that affect the entire unit (not function-specific). The Setup menu is accessed by pressing the **SETUP** button.
- **Web Interface Control**: A PC, using a web browser, connects to the CMN-LA using the Ethernet IP address.

Front Panel Controls

The front panel controls are illustrated in **Figure 3-1**.

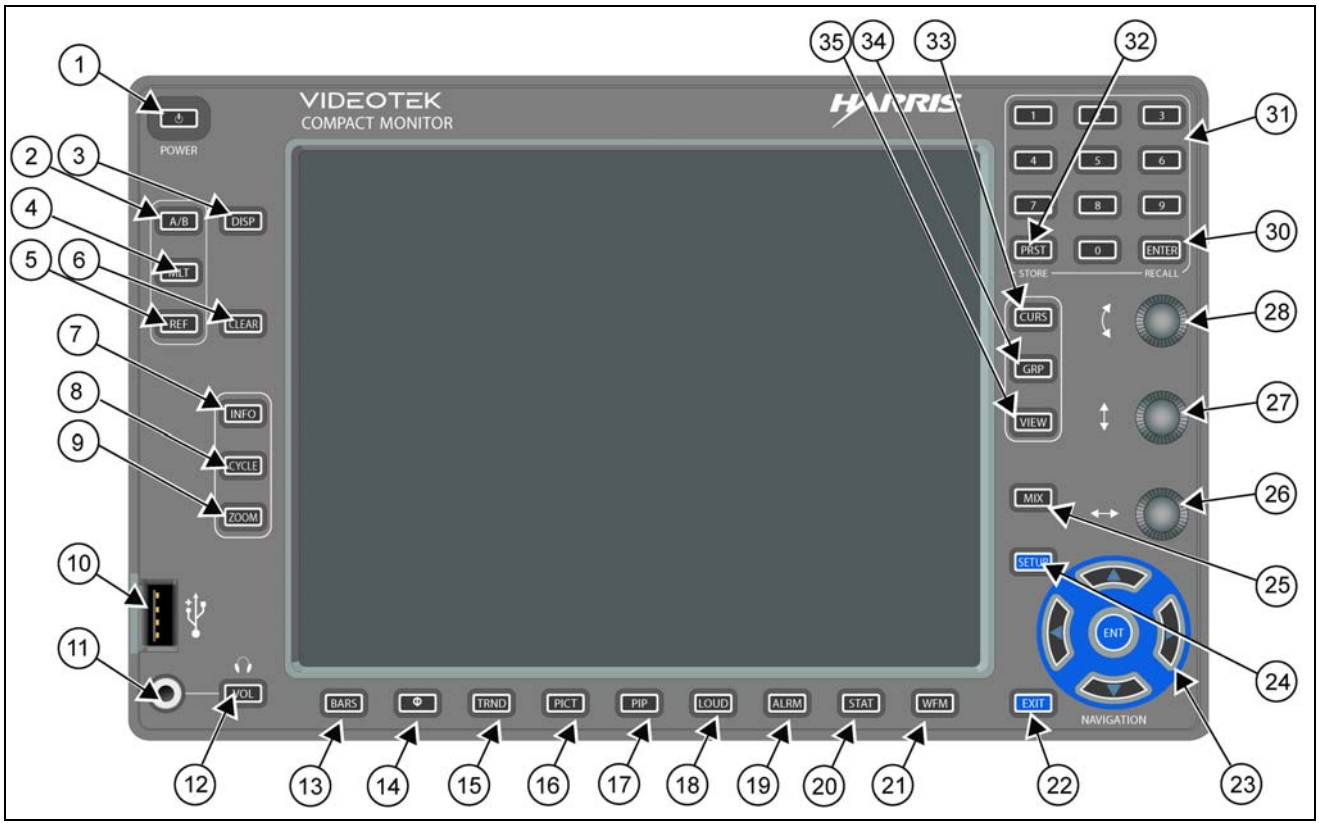


Figure 3-1 CMN-LA Front Panel Controls

The web-based panel controls are illustrated in **Figure 3-2**. See **Chapter 7, *External Control*** on page 125 for information on how to access the web-based controls.

Web-based controls are accessible from a computer that has Java™ Standard Edition Version 6, Update 17 or later installed. (Java can be downloaded at www.java.com.)

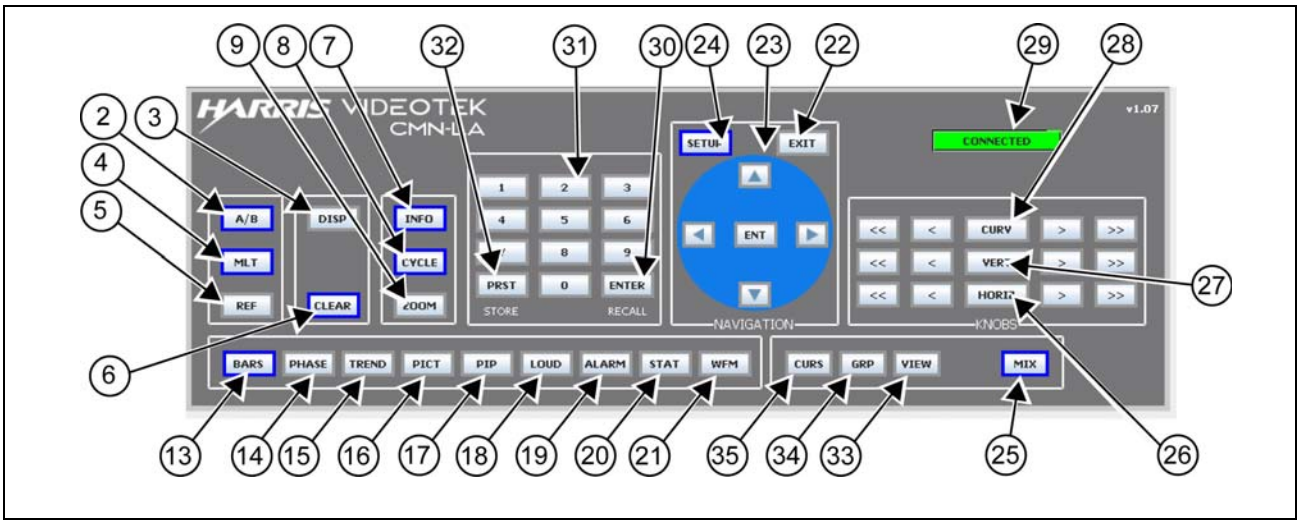


Figure 3-2 CMN-LA Web-Based Panel Controls

Most buttons and text are in a low-tally (low illumination) state; under certain conditions, however, some buttons and text reach a high-tally (high illumination) state, as described in **Table 3-1**. The high and low tally illumination levels can be set in the High Tally and Low Tally selection options of the Unit Configuration Front Panel setup menu selection option.

Multiple buttons may be high tally at the same time. The last control selected is the active control.

On a web-based panel, to invoke a sequence that requires simultaneous button presses, press and hold the PC keyboard's CTRL key while you click the Web RCU buttons.

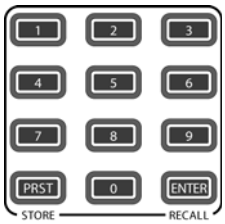
Table 3-1 CMN-LA Front Panel Controls

Key	Label	Description
1 (hard panel only)	POWER	■ Power button; press and release to turn unit power on ■ Press and hold to turn unit power off
2	A/B	SDI input button, press to toggle between SDI input A and SDI input B
3	DISP	■ Display button; press and release to freeze a display ■ Once a display is frozen, press and release to toggle between live and frozen mode
4	MLT	■ Multi-display button; press and release to toggle between a full-display and a multi-display screen ■ Press and hold to access the MLT Setup menu
5	REF (Audio)	External Reference selection button; press and release to toggle between internal and external (DARS or Word Clock) reference
6	CLEAR	■ Clear Display selection button; press and release to clear a display ■ Press and hold to access the Clear Setup menu
7	INFO	Information button, press and release to toggle display of channel mapping information (**INFO** button is high tally when information is displayed)
8	CYCLE	Cycle button; press to select the next display in a group of displays
9	ZOOM	■ Zoom selection button; press and release for zoom selections ■ Press and hold to access the Zoom setup menu.
10 (hard panel only)		USB port (see **Appendix A, *Pinouts*** for the connection)
11 (hard panel only)		Headphone jack
12 (hard panel only)	VOL	■ Volume selection button; press and release to activate the curved knob to adjust headphone and internal speaker audio volume ■ Press and hold to access the headphone and internal speaker channel selection matrix
13	BARS	■ BARS selection button; press and release to select audio level meters ■ Press and hold to access the BARS Setup menu

Table 3-1 CMN-LA Front Panel Controls *(Continued)*

Key	Label	Description
14	ϕ (hard panel) PHASE (soft panel)	■ Phase selection button; press and release for phase display
15	TRND	■ Trending selection button; press and release for audio levels, loudness, or phase data display ■ Press and hold to access the TRND (Trending Chart) Setup menu
16	PICT	■ Picture selection button; press and release for a picture display ■ Press and hold to access the Picture Setup menu
17	PIP	Picture-in-picture selection button; press and release for a thumbnail display of the current picture available with the selected input
18	LOUD	■ Loudness selection button; press and release to select display of ITU 1770 loudness values ■ Press and hold to access the LOUD (Loudness) Setup menu
19	ALRM	■ Alarm selection button; press and release to select Alarm mode ■ Press and hold to access the Alarm Setup menus
20	STAT	■ Audio Status selection button; press and release to select Audio Status display ■ Press and hold to access the STAT Setup menu
21	WFM	■ Waveform selection button; press and release for audio waveform display ■ Press and hold to access the Waveforms Setup menu
22	EXIT	Exit selection button; press and release to leave menu function selections
23	Navigation	Use to navigate menus and select selection options (see page 83 for an explanation of how to operate the navigation items)
24	SETUP	■ Setup button; press and release to access Setup mode ■ Press and release to exit the displayed Setup menu
25	MIX	■ Downmix selection button, press and release to enable headphone/speaker downmix; press again to disable downmix and return to stereo output ■ Press and hold to access the Outputs Setup menu
26	HORIZ (Left/Right arrow knob)	Use to move the PIP display left or right (on the web-based panel, in conjunction with the arrow buttons)
27	VERT (Up/Down arrow knob)	Use to move the PIP display up or down or scroll through the alarm log/status display (on the web-based panel, in conjunction with the arrow buttons)
28	CURV (Curved arrow knob	Use to resize the PIP display, move the cursor through the trending display or adjust the volume (on the web-based panel, in conjunction with the arrow buttons)
(web-based panel)	>>	Use to increase active control in increments of 10
	>	Use to increase active control in increments of 1
	<	Use to decrease active control in increments of 1
	<<	Use to decrease active control in increments of 10

Table 3-1 CMN-LA Front Panel Controls *(Continued)*

Key	Label	Description
29	CONNECTION STATUS (web-based panel only)	Indicates whether the web-based control panel is actively connected to the CMN-LA unit If the Web RCU is disconnected, reconnect by refreshing the page using your web browser's Refresh function; alternatively, leave the web RCU page and select the RCU menu bar link again
30	ENTER/RECALL	■ Recall selection button; press and release (click on web panel) to enable Preset selection ■ Press and release (click on web panel) to accept the contents of displayed dialog boxes ■ When used in conjunction with the **DISP** button, recalls images from the Index of Captures page
31		■ Press to select, store, or delete a selection in the Preset memory bank ■ Press to enter numeric values for certain parameters
32	PRST/STORE	■ Preset selection button; press and release (click on web panel) to enable Preset selection ■ When used in conjunction with the **DISP** button, stores images in the Index of Captures page
33	CURS	Cursor selection button; press and release to select cursor functionality for a trending display
34	GRP	CineSound meter channel groups selection button; press and release to toggle between channels 1-8 and 9-16
35	VIEW	View Adjust selection button; press and release to enable controls to scale or adjust the position of a PIP display

Display Selections

The CMN-LA unit screen display shows data in either a full screen mode, loudness mode (3 display panes), or quad screen mode (4 display panes). The screen display always contains the Main Title Bar, the display, and the status bar. A diagram of the full-screen display is shown in **Figure 3-5** and is described in **Table 3-5**. A diagram of the loudness display is shown in **Figure 3-5** and is described in **Table 3-4**. A diagram of the quad display is shown in **Figure 3-6** and is described in **Table 3-6**.

To toggle between display selection types

Press the **MLT** button. **MLT** is high tally when the quad screen or loudness display is selected.

Main Title Bar

The main title bar is displayed at the top of the screen, and contains the Company name, date and time, icon indictors, most current alarm (alarm background color is yellow when active), and the model name.

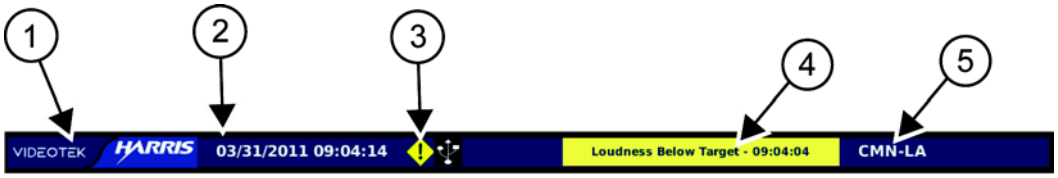


Figure 3-3 Main Title Bar

Table 3-2

Key	Description
1	Company name
2	Current date and time
3	Icon indicators (see **Table 3-3**)
4	Most current alarm indicator
5	Product name

Icon

Icons appear in the main title bar and are shown in a specified order (left to right). **Table 3-3** shows the icons and the condition for the appearance:

Table 3-3 Description of Icons

Icon	Condition
	External USB device connected
	Alarm condition active
	A display capture is frozen in memory.

Status Bar

A status bar is located at the bottom of each display. The status bar indicates specific information about the select display.

Figure 3-4 Main Title Bar

Table 3-4

Key	Description
1	The current input
2	The current video standard and frame rate
3	The current function being viewed

Full Screen Display

The Full Screen display mode shows a full-screen representation of audio bars, picture, trending, loudness, audio status, audio metadata, Dolby metadata, or alarm display for a single input at a time.

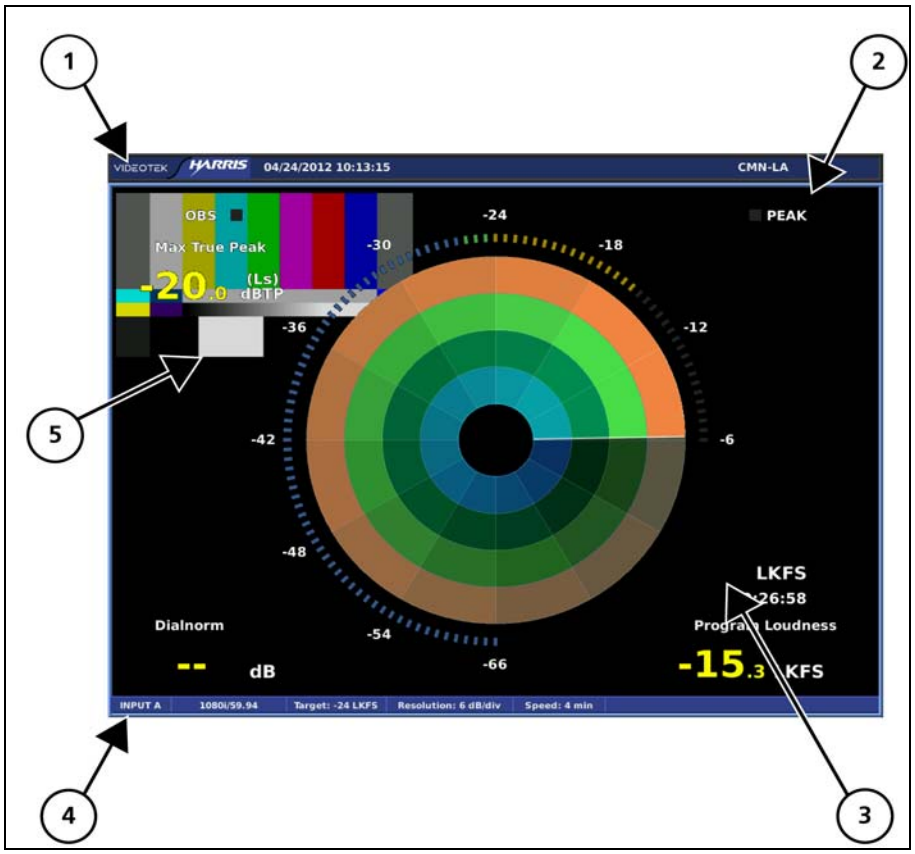


Figure 3-5 Full-Screen Display with PIP Enabled

Table 3-5 Description of Full-Screen Display

Key	Description
1	Main title bar (for the elements of the title bar, see ***Main Title Bar*** on page 31)
2	Specific elements of function display
3	Full screen display
4	Full screen status bar
5	PIP display

Quad Screen Display

The quad screen display mode shows simultaneous display representations of a picture, audio status, trending loudness, or alarms; for one input at a time.

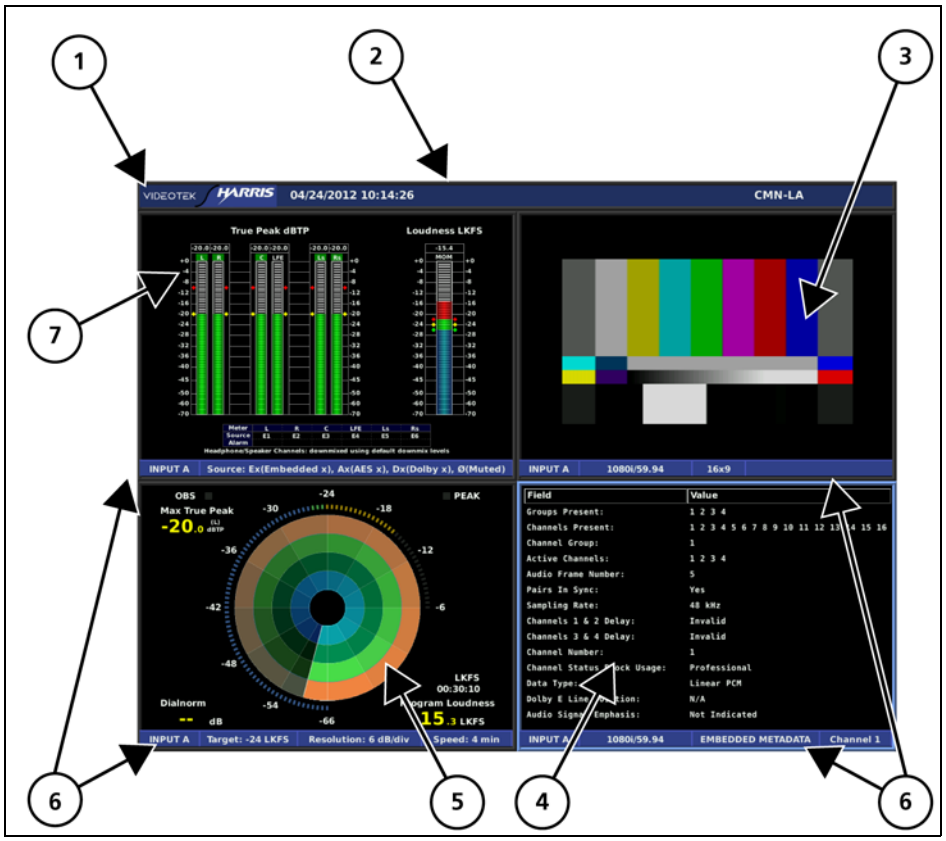


Figure 3-6 Quad Display

Table 3-6 Description of Quad Display

Key	Description
1	Main title bar
2	Display icon area
3	Picture display (can be replaced by the Trending display[1])
4	Status display (can be replaced by the Alarms display[1])
5	Loudness display
6	Pane status bars
7	Audio bars display or phase display

[1] Refer to the appropriate display description for more information. Descriptions of these display types start on page 39.

To directly select specific functions for the display

Press the appropriate function button. Specific functions include Bars, Trending, Picture, Picture-in-Picture (PIP), Loudness, Alarms, and Status. The different function operations are described in detail in **Chapter 4, *Operation***.

When a button is pressed that cannot be used with a selected function, the message FUNCTION NOT ALLOWED briefly appears over the center of the screen.

Setting Up Sleep Mode

To set up Sleep mode

Choose the UNIT CONFIGURATION → DISPLAY SETUP → SLEEP MODE selection option. This menu allows the selection of how much time has to pass without any button presses in order for the unit to enter Sleep mode.

When entering Sleep mode, the instrument turns off all LEDs and the display, but the instrument is still active (that is, alarms still triggered, and so forth).

To exit Sleep mode

Press any function button. The instrument returns to an illuminated state.

Selecting Inputs

To select input A or B

Press the **A/B** button. (Input A is the default selection.) When an input is selected, pressing the input button again will change to the new input from the previous input. High tally indicates input A is selected.

Accessing and Navigating the Setup Menu

To access the global Setup menu

Press the **SETUP** button.

To directly access specific function setup menus

Press and hold the corresponding function button.

To display the pertinent Setup menu

Press and hold the function button.

To navigate the Setup menu

Use the navigation buttons. The navigation buttons are described in **Table 5-1** on page 83.

For more information on the global Setup menu, see **Chapter 5, *Setup Menu Functions***.

Display Images

Capturing a Display

The **DISP** button is used to capture an image of the current monitor display. The **DISP** button is high tally when a capture is performed or recalled. The captured image can be saved and transferred to an external device via a USB flash drive or an Ethernet connection. The Import/Export Setup menu is used to transfer the image to a USB device. A web browser is used to transfer an image using the Ethernet interface. The captured image is saved as a PNG (Portable Network Graphics) formatted file.

To capture a display

Press the **DISP** button.

Only one captured display can be cached in the unit at a time. The frame display remains cached until it is cleared.

To toggle between the captured display and the live display

- Make sure the display is frozen and the **DISP** button is high tally.
- Press the **DISP** button.

Storing a Captured Display

To save a captured display to internal memory

While the captured display is shown, press the **STORE** button. The message STORING CAPTURE briefly appears over the center of the screen.

*The **EXPORT** setup menu selection option can be used to transfer the display capture to a USB device via the File Navigator dialog box. For more information on the File Navigator dialog box, see page 108.*

Recalling a Captured Display

To recall a captured display

While the captured display is shown, press the **RECALL** button. This recalls the captured display from internal memory via the File Navigator dialog box. For more information on the File Navigator dialog box, see page 108.

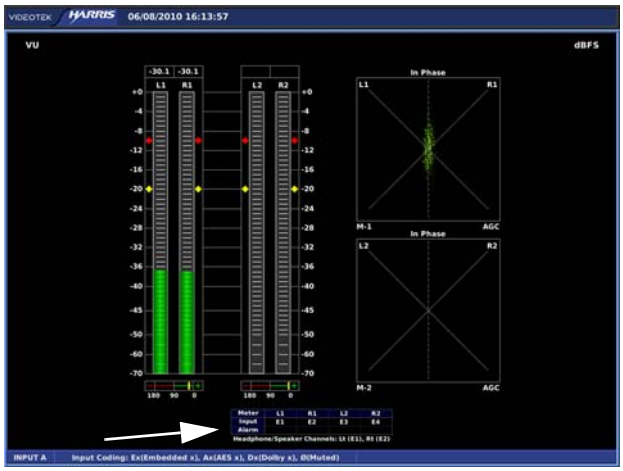
Clearing a Captured Display

To clear a frozen display

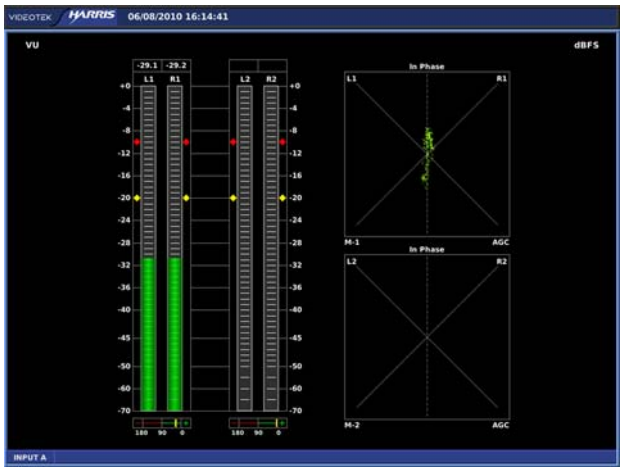
Press the **DISP** button to display the last-captured display. While the captured display is shown, press the **CLEAR** button. Once the frozen display is cleared, a new display capture can be performed.

Displaying Channel Mapping Information

The **INFO** button is used to enable or disable the display of channel mapping information. The **INFO** button is high tally when information is displayed.



Channel Mapping On



Channel Mapping Off

Selecting Display Pane Types

If the display is available in different types, press the **CYCLE** button to move through the available display types in the active display pane.

*In quadrant MLT mode, press the display type button (**BARS**, **TRND**, **PICT**, etc.) to select the desired display. Press the **CYCLE** button to move through the available display types for the selected display.*

The available display types include the following:

- ***Bars Display*** on page 39
- ***Trend Display*** on page 53
- ***Picture Display*** on page 57
- ***Picture-in-Picture (PIP) Display*** on page 58
- ***Loudness Display*** on page 60
- ***Alarm Display*** on page 69
- ***Status Display*** on page 73

4 Operation

This section focuses on the operation of the CMN-LA according to the selected display. See **Figure 3-1** on page 28 for information about the location of the buttons described in this section. See **Chapter 3, *General Information*** for information on how the CMN-LA operates.

Bars Display

The Bars display is used to show a visual image of level, reference, and ballistics detail (vertical display); 5.1, 6.1, and 7.1 channels of surround sound audio (CineSound display); and loudness.

To display the vertical, CineSound, or Loudness bars

Press and release the **BARS** button.

To select a different bars display

Press and release the **CYCLE** button.

To access the bars setup menu

Press and hold the **BARS** button.

To clear the bars setup menu

Press the **SETUP** or the **EXIT** button.

Vertical Bars

The Vertical bars meter displays the level, reference, and ballistics detail in a vertical format. A maximum of sixteen channels display simultaneously. The displays consist of a choice of 2 + 1 lissajous, 4 + 2 lissajous, 6, 8, or 16 channel displays. Audio input channels can be assigned to any meter on the display.

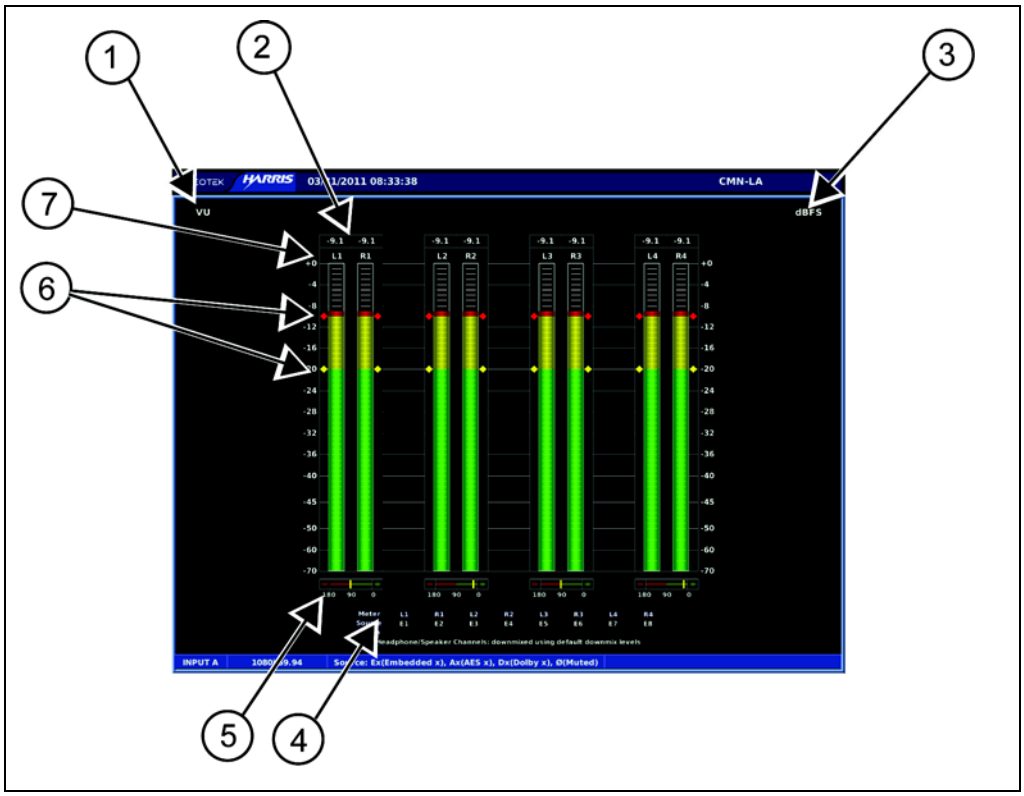


Figure 4-1 Vertical Bars Display

Table 4-1 Description of Full-Screen Display

Key	Field Name	Description
1	Meter response	Displays the selected meter response: ■ VU ■ Peak ■ True Peak ■ VU + Peak ■ VU + True Peak ■ Loudness ■ Custom
2	Meter label	■ Stereo pairs ■ Surround ■ Custom
3	Scale selection	Displays the selected meter scale: ■ Type I ■ Type IIa ■ Type IIb ■ Type I + 8 ■ Nordic ■ DIN 45406 ■ dBFS ■ Zero REF dBFS ■ Custom dB ■ Custom dBFS
4	Status	Displays audio type: ■ Mute ■ AES ■ Embedded Displays audio clip or mute alarm indicators. There is one status column per audio channel.

Table 4-1 Description of Full-Screen Display *(Continued)*

Key	Field Name	Description
5	Phase bars	Phase Meter of the meter pair above it.
6	Level markers	Shows reference and peak levels for the signal; this can be adjusted in the Audio Meter Setup selection options.
7	Numeric readout	Value of bar level or floating peak indicator.

The phase bars are used to monitor the instantaneous phase relationship between two channels of audio. The "+" marking indicates a phase difference of 0 degrees, and the "-" marking indicates a phase difference of 180°. A properly phased stereo pair produces a phase pointer that moves within the green zone, whereas a reversed channel produces a pointer that moves within the red zone. The phase bar can be set to Normal or Reverse in accord with user preferences. The effect of higher damping in a phase meter is to show an averaged rather than a peak value of phase. The Phase Bar Damping factor can be set to FAST, 1 to 10, or SLOW.

The lissajous display appears for two- and four-bar graphs on the right of the audio pane. The lissajous display shows the amplitude and phase relationship between two input signals.

The vertical audio graticule scales change according to the scale selections made in the Setup menu. Some of the markings in the illustrations do not always appear on the display.

Examples of vertical audio display diagrams are shown in **Figure 4-2** through **Figure 4-6**. A 4-bar graph with lissajous display is described in **Table 4-2** and 16-bar graph display is described in **Table 4-3**.

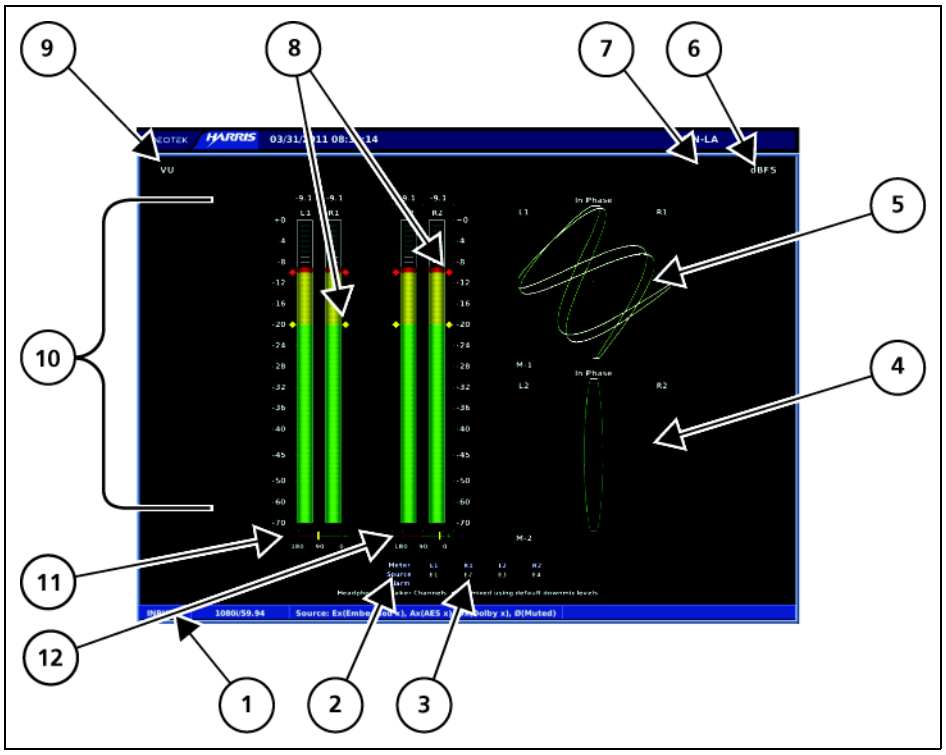


Figure 4-2 Four Bar Graph with Lissajous Display Diagram

Table 4-2 Four Bar Graph with Lissajous Display Diagram

Key	Field Name	Definition
1	Input	Displays selected input (A or B)
2	Status	Displays audio type as one of the following: ■ Muted ■ AES ■ Dolby ■ Embedded Displays audio clip or mute alarm indicators.
3	Channel Number	Shown as one of the following: ■ AES 1-16 ■ Embedded 1-16 ■ Dolby 1-8
4	Lissajous Display (2)	Lissajous of bar graph 2 with labels for R, L, and the number of the meter being monitored
5	Lissajous Display (1)	Lissajous of bar graph 1 with labels for R, L, and the number of the meter being monitored

Table 4-2 Four Bar Graph with Lissajous Display Diagram *(Continued)*

Key	Field Name	Definition
6	Scale Selection	Displays the selected meter scale: ■ Type I ■ Type IIa ■ Type IIb ■ Type I + 8 ■ Nordic ■ DIN 45406 ■ dBFS ■ Zero REF dBFS ■ Custom dB ■ Custom dBFS
7	Zoom indicator	Zoom when zoom is enabled; blank when zoom is disabled
8	Level Markers	Shows reference level (yellow) and peak level (red) for the signal (can be adjusted in the Meter Configuration setup menu)
9	Meter Response	Displays selected meter response: ■ VU ■ Peak ■ True Peak ■ VU + Peak ■ VU + True Peak ■ Custom
10	Audio Graticule (with meter labels)	Shown as stereo pairs (L1, R1, L2 and R2), SMPTE 320M, or custom label
11	Phase Bar (1)	Phase Meter of bar graph 1
12	Phase Bar (2)	Phase Meter of bar graph 2

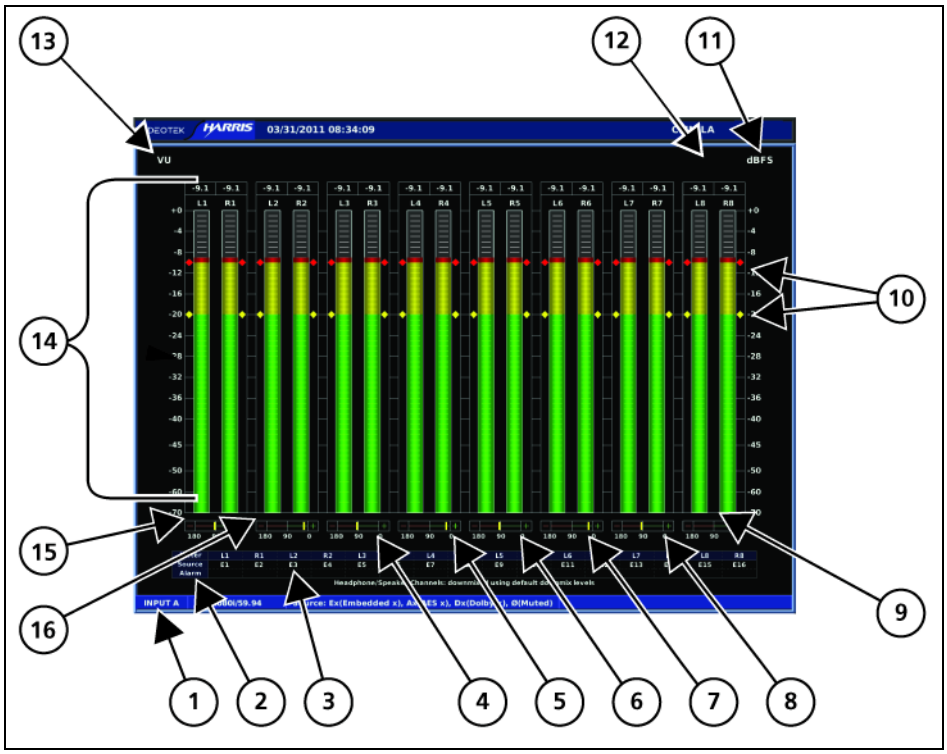


Figure 4-3 Sixteen Bar Graph Display Diagram

Table 4-3 Sixteen Bar Graph Display Diagram

Key	Field Name	Definition
1	Input	Displays selected input (A or B)
2	Status	Displays audio type as ■ Muted ■ AES ■ Dolby ■ Embedded Displays audio clip or mute alarm indicators
3	Channel Number	Shown as ■ AES 1 - 16 ■ Embedded 1-16 ■ Dolby 1 - 8
4	Phase Bar (3)	Phase Meter of bar graph 3
5	Phase Bar (4)	Phase Meter of bar graph 4
6	Phase Bar (5)	Phase Meter of bar graph 5
7	Phase Bar (6)	Phase Meter of bar graph 6
8	Phase Bar (7)	Phase Meter of bar graph 7
9	Phase Bar (8)	Phase Meter of bar graph 8
10	Level Markers	Shows reference level (yellow) and peak level (red) for the signal (can be adjusted in the meter configuration setup menu)

Table 4-3 Sixteen Bar Graph Display Diagram *(Continued)*

Key	Field Name	Definition
11	Scale Selection	Displays the selected meter scale: ■ Type I ■ Type IIa ■ Type IIb ■ Type I + 8 ■ Nordic ■ DIN 45406 ■ dBFS ■ Zero REF dBFS ■ Custom dB ■ Custom dBFS
12	Zoom indicator	Zoom when zoom is enabled; blank when zoom is disabled
13	Alarm Indicator	Current or last alarm indication; current alarms are displayed in a yellow background
14	Meter Response	Displays selected meter response: ■ VU ■ Peak ■ True Peak ■ VU + Peak ■ VU + True Peak ■ Custom
15	Audio Graticule (with meter labels)	Shown as L1, R1, L2, R2, L3, R3, L4, R4, L5, R5, L6, R6, L7, R7, L8, R8, or Custom label
16	Phase Bar (1)	Phase Meter of bar graph 1
17	Phase Bar (2)	Phase Meter of bar graph 2

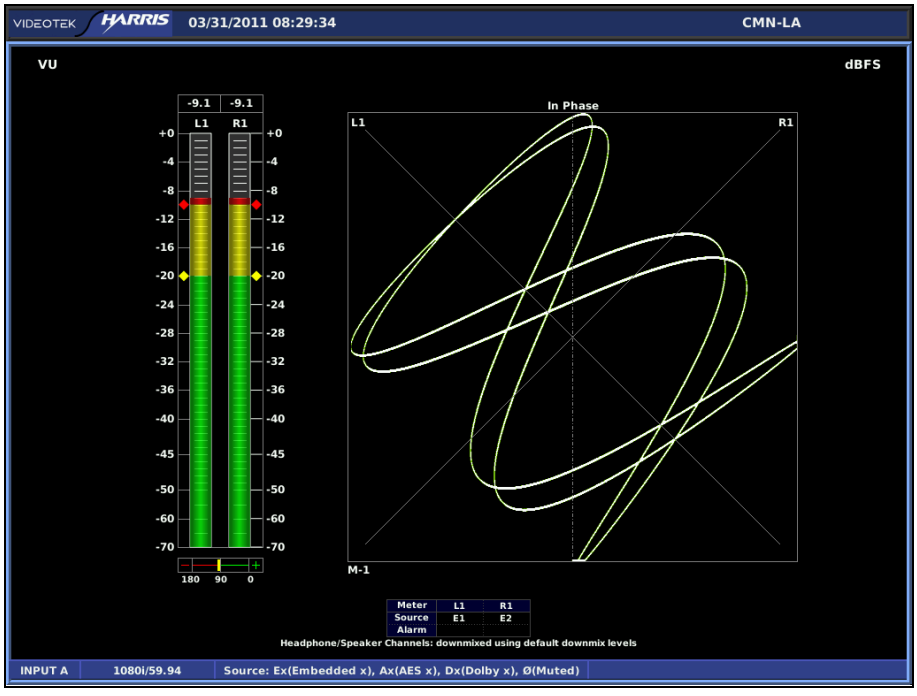


Figure 4-4 Two Bar Graph with Lissajous Display

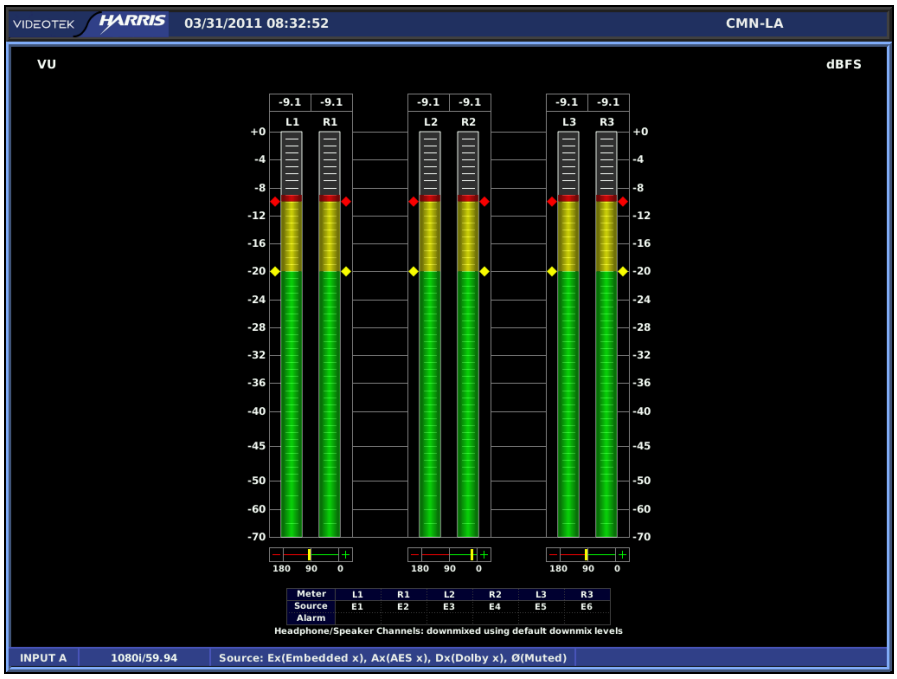


Figure 4-5 Six Bar Graph Display

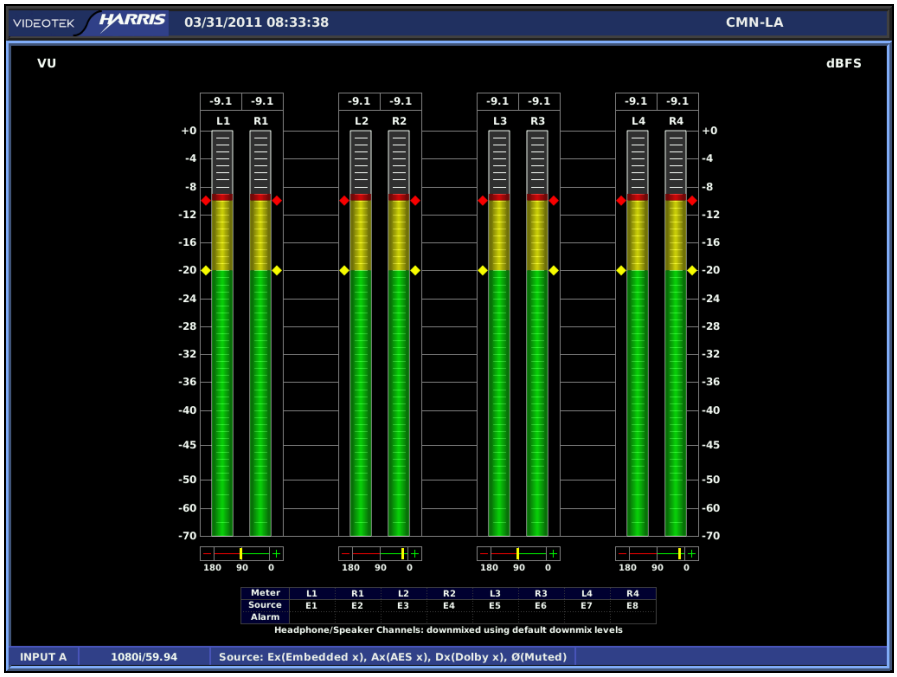


Figure 4-6 Eight Bar Graph Display

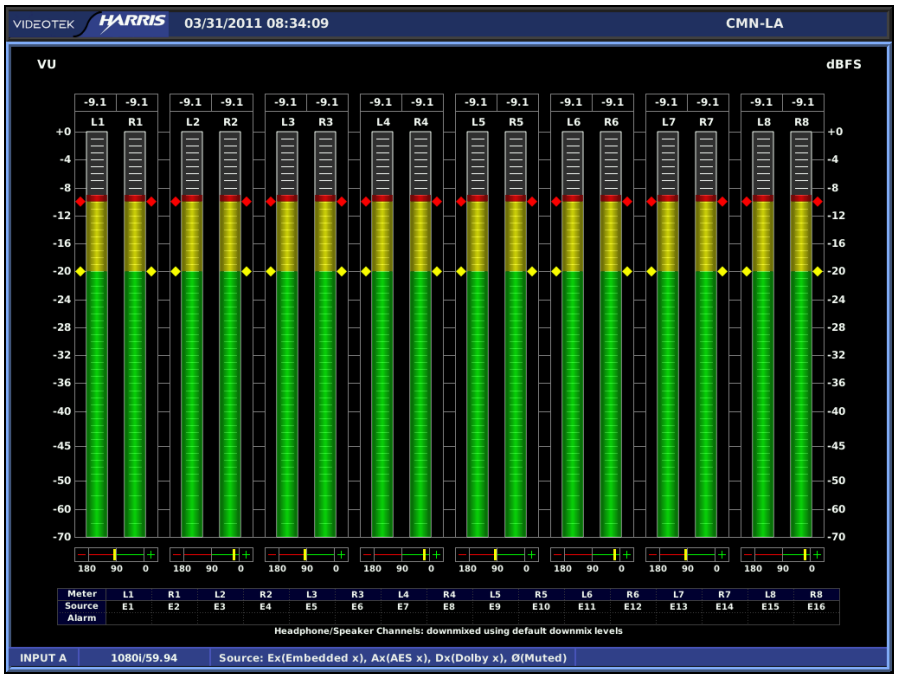


Figure 4-7 Sixteen Bar Graph Display

CineSound® Bars

This unique, audio display provides an intuitive view of 5.1, 6.1, and 7.1 channels of surround sound audio. The default meter movement is from the center outward, but it can be reversed by a selection in the Displays setup menu (see page 98). If required, two additional channels of audio can be viewed next to the CineSound display, thereby providing a total of eight channels on the screen.

An example of a CineSound 5.1 with Aux display is show in **Figure 4-8** and described in **Table 4-4**.

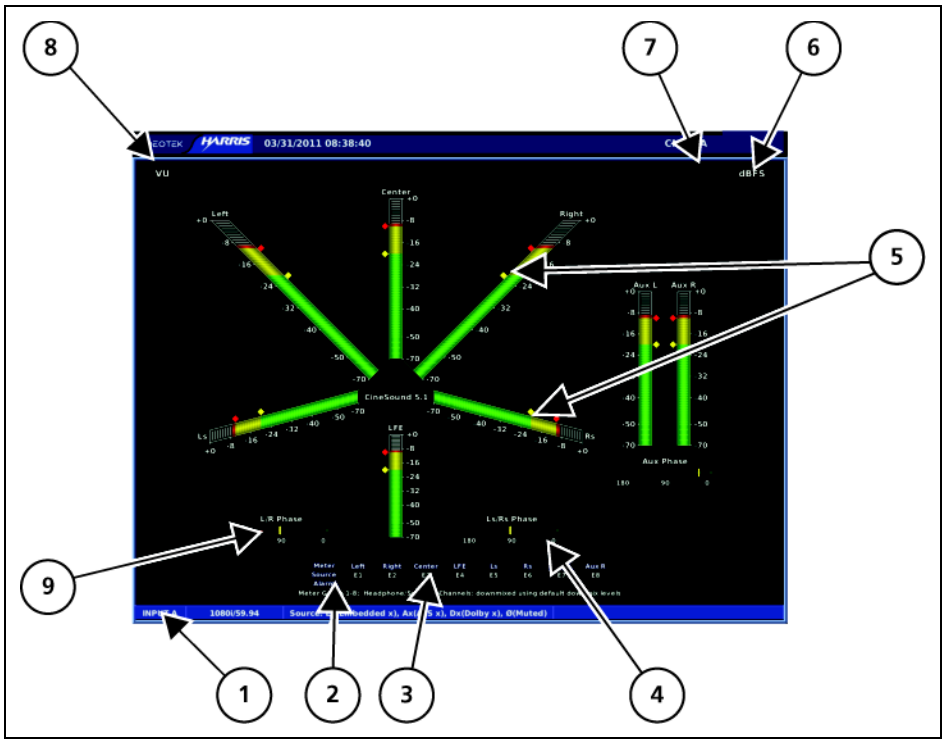


Figure 4-8 CineSound 5.1 with Aux Display

Table 4-4 CineSound 5.1 Display Diagram

Key	Field Name	Definition
1	Input	Displays selected input (A or B)
2	Audio Type	Displays audio type as ■ Muted ■ AES ■ Dolby ■ Embedded Displays audio clip or mute alarm indicators
3	Audio Input[1]	Displayed information is option dependent; shown as 1-16
4	Phase Meter of Surround LR	Displays the Surround LR Phase
5	Level Markers	Shows peak and reference levels for the signal (can be adjusted in the meter configuration setup menu)
6	Scale Selection	Displays the selected meter scale: ■ Type I ■ Type IIa ■ Type IIb ■ Type I + 8 ■ Nordic ■ DIN 45406 ■ dBFS ■ Zero REF dBFS
7	Zoom	Zoom when enabled; blank when disabled

Table 4-4 CineSound 5.1 Display Diagram *(Continued)*

Key	Field Name	Definition
8	Meter Response	Displays selected meter response: ■ VU (normal) ■ Peak ■ True Peak ■ VU + Peak ■ VU + True Peak ■ Loudness ■ Custom
9	Phase Meter of Front LR	Displays the Front LR Phase

[1] See **Table 4-17** for channel mapping.

When the CineSound display is selected, the audio inputs and meter labels follow a SMPTE 320M mapping scheme. The 5.1 mapping scheme is listed in **Table 4-5**.

Table 4-5 CineSound 5.1 Audio Input Mapping

Mapping	CineSound Display Assignment
1	Left
2	Right
3	Center
4	Low Frequency Effects (LFE)
5	Left Surround (LS)
6	Right Surround (RS)
7	Left Aux
8	Right Aux

The audio graticule scales change according to the scale selections made in the Setup menu and the format being displayed. Some of the markings in the illustrations do not appear on the display.

Examples of additional CineSound display diagrams are shown in **Figure 4-9** through **Figure 4-11**.

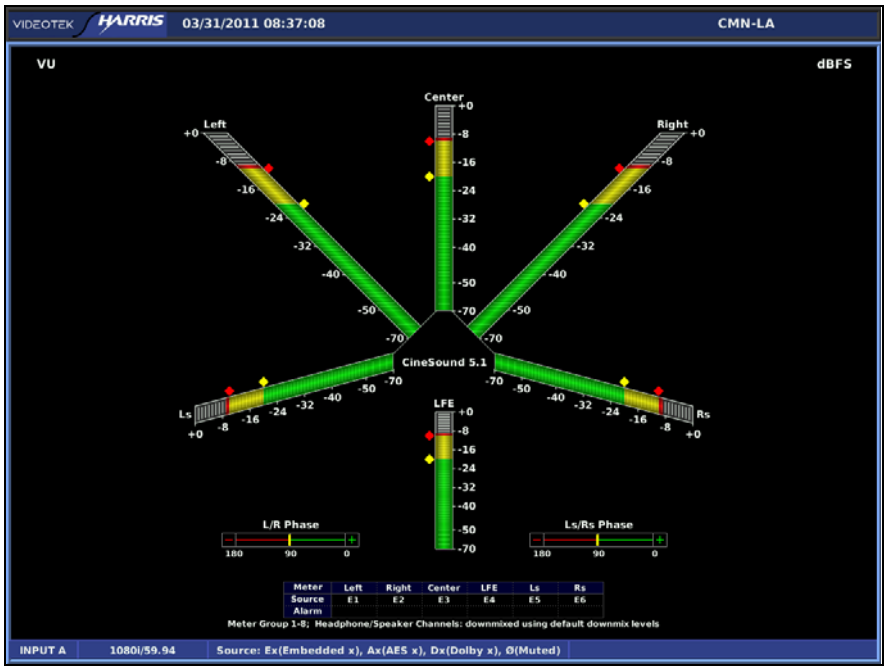


Figure 4-9 CineSound 5.1 Channels Display

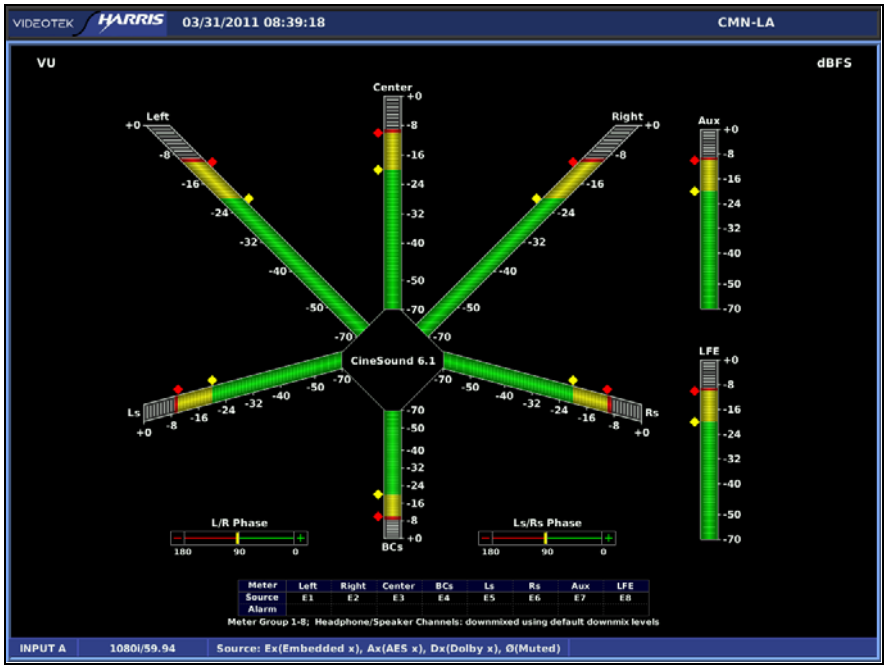


Figure 4-10 CineSound 6.1 Channels Display

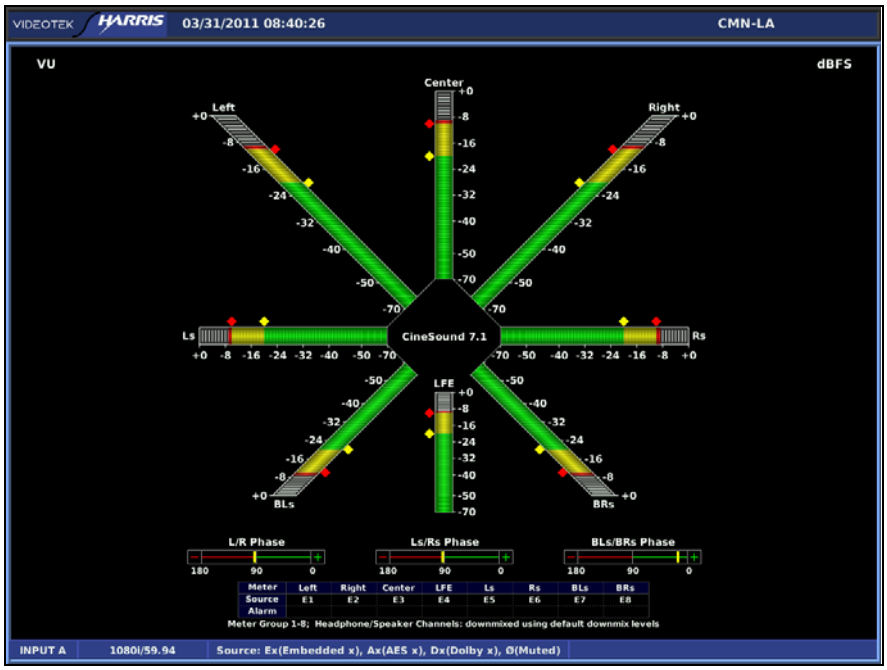


Figure 4-11 CineSound 7.1 Channels Display

Loudness Bars

The Loudness bars display consists of six individual true peak bargraph meters, and loudness bargraph meter of selected channels. The six true peak meters correspond to a 5.1 channel distribution. The ITU-R BS.1770 algorithm is used to calculate bargraph values. The loudness bargraph displays in a scale of Loudness K-Weighted Full Scale (LKFS) or loudness units (LU).

An example of a loudness bar display is show in **Figure 4-12**.

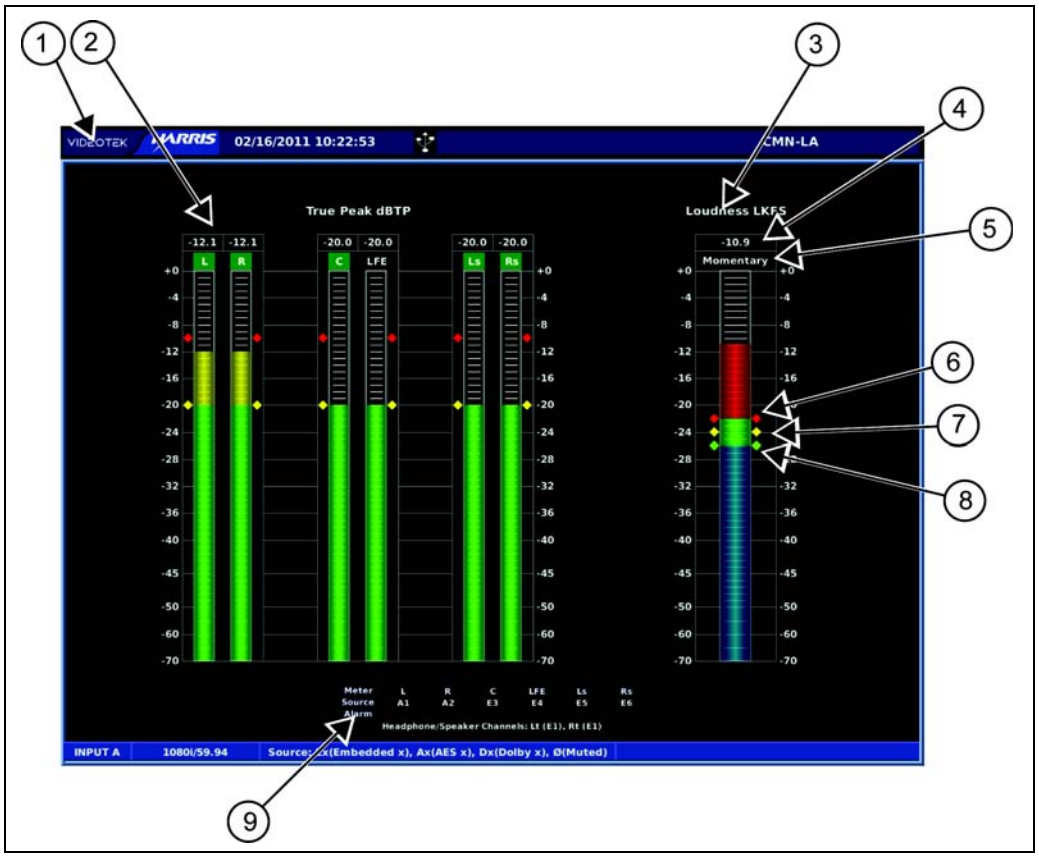


Figure 4-12 Loudness Bars Display Exampley

Table 4-6 Loudness Bars Display Diagram

Key	Field Name	Definition
1	Main title bar	Described fully in ***Main Title Bar*** on page 31
2	Six bar display	Audio Meter Response and Scale The first six audio meters show true peak levels in full dBFS scale (-70 dB to 0 dB)
3	Loudness meter scale	Indicates the scale used by the loudness meter
4	Numeric loudness indicator	Indicates the current loudness
5	Type indicator	Indicates the type of loudness being displayed in the numeric field. Options include: ■ Short term ■ Momentary
6	Loudness Meter High Level Above Target	Indicates high level above target (red diamond)
7	Loudness Meter Target Level	Indicates target level (yellow diamond)
8	Loudness Meter Low Level Below Target	Indicates low level below target (green diamond)
9	Status	Displays audio type as Mute, AES, or Embedded Displays audio clip or mute alarm indicators

Trend Display

The Trend display is a graph of audio levels from 24 hours in the past up to the current time. Trending data is continuously updated.

To access the Trending display

Press and release the **TRND** button.

To select a different Trending display

Press and release the **CYCLE** button.

To access the Trend setup menu

Press and hold the **TRND** button.

To clear the TRND setup menu

Press the **SETUP** or the **EXIT** button.

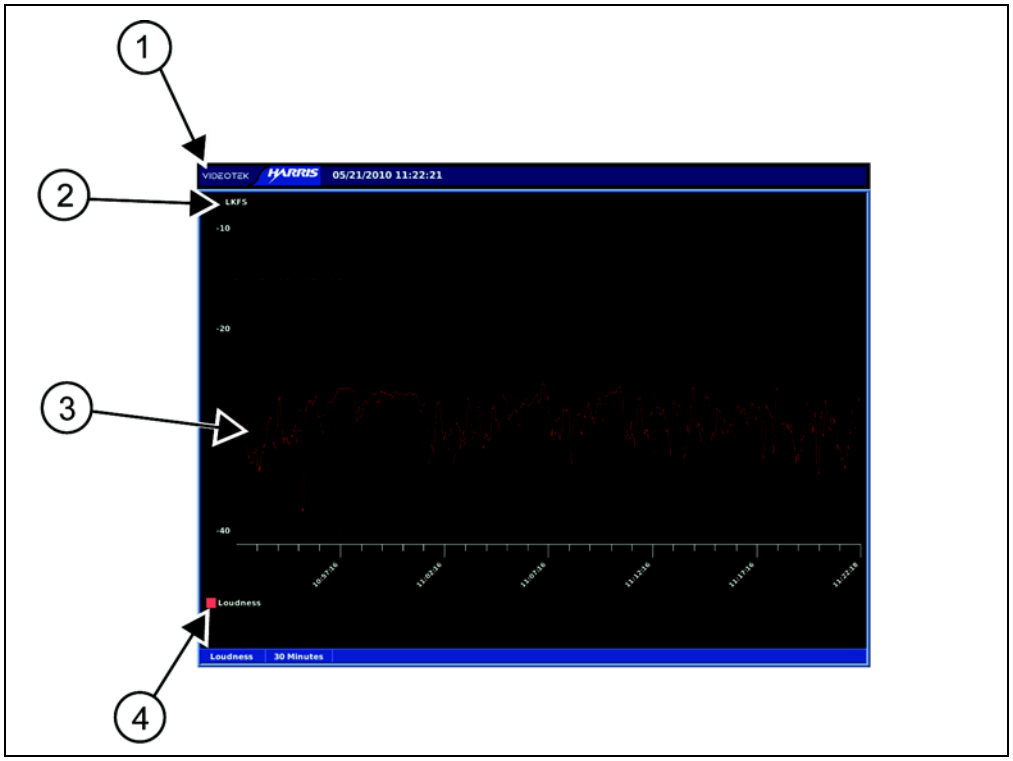


Figure 4-13 Trending Display

Table 4-7 Description of Trending Display

Key	Field Name	Definition
1	Main title bar	See ***Main Title Bar*** on page 31
2	Loudness Meter Scale	Indicates the scale used by the loudness meter
3	Loudness Trending Chart	The trending chart is used to view short-term loudness readings within user-selectable time period. The time can range from 15 seconds to 24 hours. ■ Press the ENT button to Start and Stop the Trending chart. ■ Press and hold the ENT button for five seconds to clear the trending chart.
4	Loudness Meter Source	Indicates the loudness meter is driven by momentary or short term loudness value

When the CMN-LA is in quadrant MLT mode, the Trend display replaces the Picture display.

When the CMN-LA is in Loudness MLT mode, the Trend display is always enabled, and it fills the bottom half of the display.

Figure 4-14 Trending Display in Loudness MLT Mode

When the CMN-LA is powered down and restarted, the previous live trending chart data is discarded.

When Trend display is active and the pane is selected, the following buttons have special meaning:

Press and hold **TRND** to open the Trending Chart setup menu.

- The Group 1 through Group 4 menu selections choose which audio meter pair is displayed as the first, second, third, or fourth set of trending data. See page 103 for a list of selection options.
- The Level menu selection causes the trend chart to display audio levels for up to 4 pairs of audio meters. The legend under the trend chart will indicate which audio meters are mapped to which trending chart lines. The actual audio input is configured in the Meter Mapping setup menu.
- The Phase menu selection causes the trend chart to display inter-channel phase values for up to 4 pairs of audio meters.
- The Loudness menu selection causes the trend chart to display the ITU-R VT.1770 loudness level for the audio inputs.
- The Time Span menu selection selects the length of history shown on the trending chart. See page 103 for a list of Time span values.
- The Loudness Range menu selection selects the upper and lower limits for the range of Loudness levels on the trend chart, when Loudness levels are plotted.

press **CYCLE** to switch the trend chart display from Levels to Phase, or from Phase to Loudness, or from Loudness to Levels.

Figure 4-15 Trending Chart Showing Levels

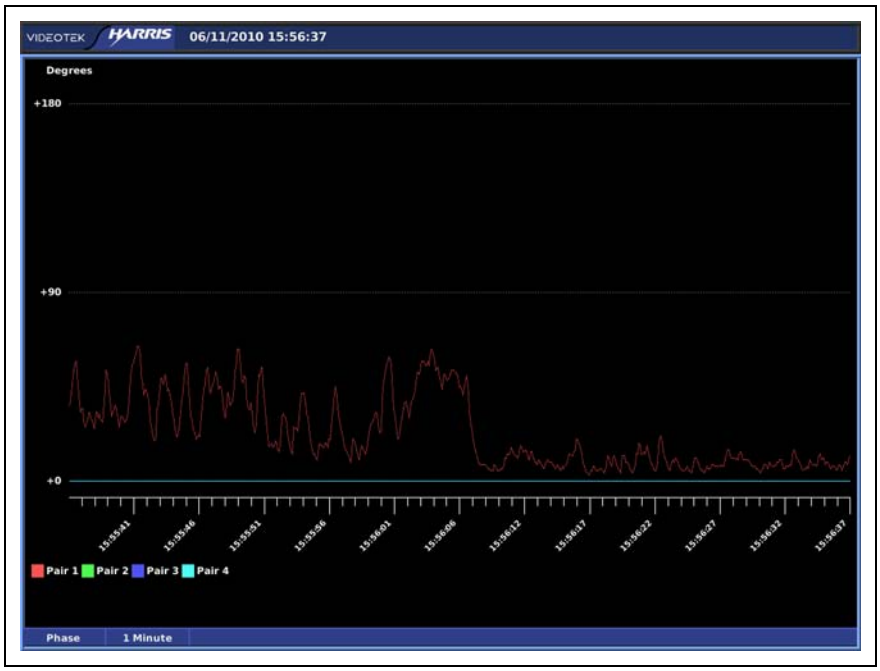


Figure 4-16 Trending Chart Showing Phase

Figure 4-17 Trending Chart Showing Loudness

Press **ZOOM** to change the time span of the trend chart. When the cursor is active, **ZOOM** will zoom in on the historical data around the cursor.

Press **CURS** to toggle the display of a cursor. When the cursor is active, trending data is frozen (it stops updating in real time).

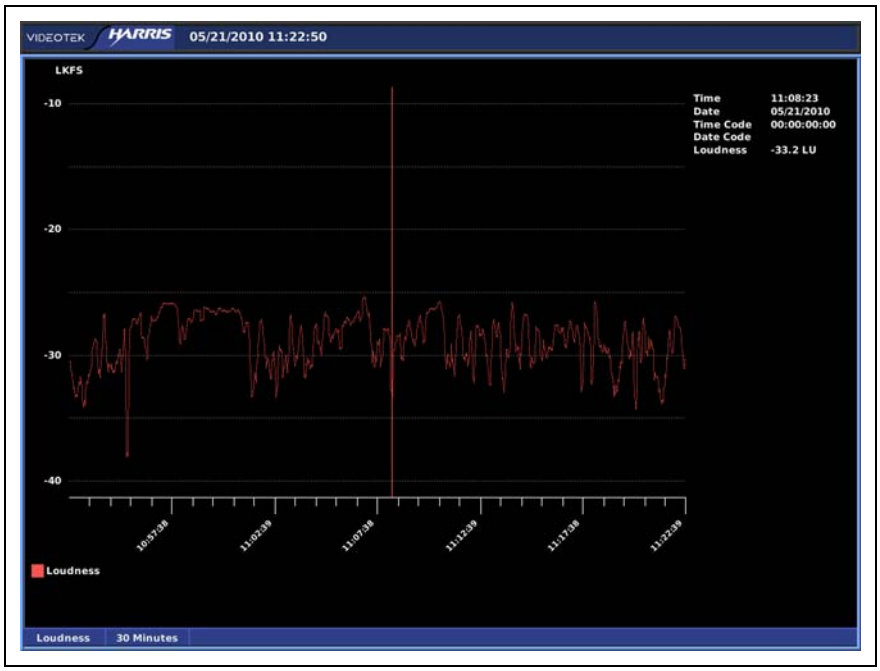


Figure 4-18 Trending Chart Showing Cursor

The cursor position is adjustable with the curved knob. The data values associated with the cursor are shown on the right side of the display.

Picture Display

The Picture Display is used to show the picture of the selected input. A Picture display diagram is shown in **Figure 4-19** and described in **Table 4-8**. Only one picture can be displayed.

To access the Picture display

Press and release the **PICT** button.

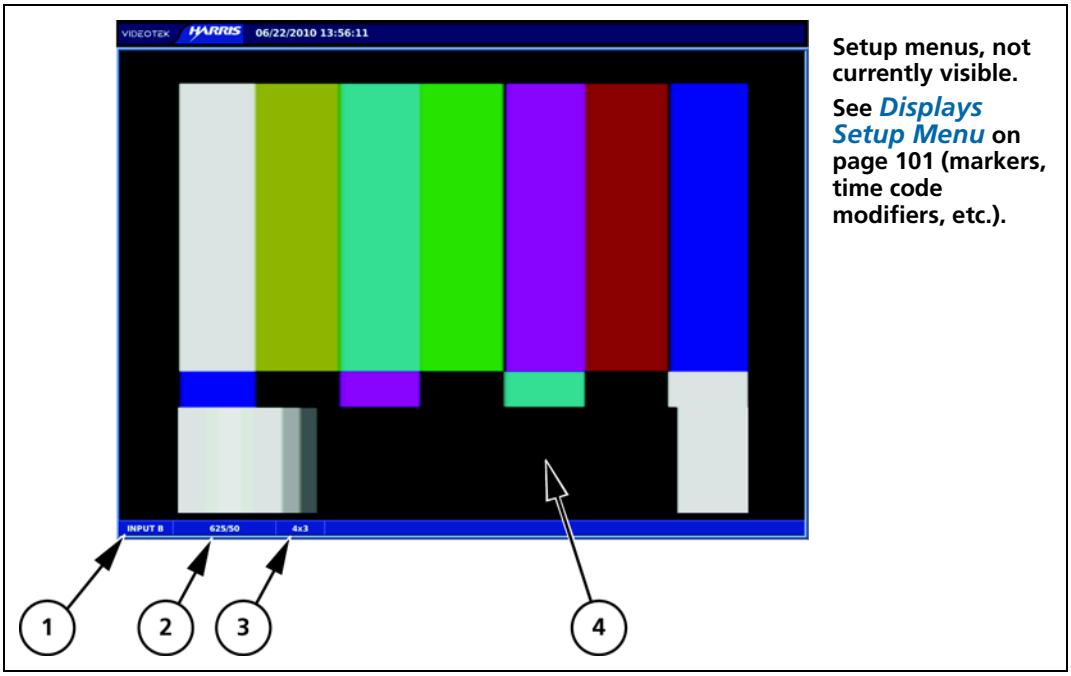
To access the Picture Setup menu

Press and hold the **PICT** button.

To clear the Picture Setup menu

Press the **SETUP** or the **EXIT** button.

*Pictures can be used as thumbnails. For more information, see **Displays Setup Menu** on page 101.*



Setup menus, not currently visible.

See *Displays Setup Menu* on page 101 (markers, time code modifiers, etc.).

Figure 4-19 Picture Display Diagram

Table 4-8 Description of Picture Display Diagram

Key	Field Name	Definition
1	Input	Displays selected input (A or B)
2	Standard	Displays the line rate/frame rate
3	Aspect ratio	Displays the picture aspect ratio
4	Picture	Displays a picture of selected video input

Picture-in-Picture (PIP) Display

The PIP function shows a "thumbnail" of the selected input's picture display, with the selected function display information appearing in the background. The PIP function is available with the Bars, Trending, Loudness, Alarm, and Audio Status functions.

To access the picture-in-picture display

While in the active display, press and release the **PIP** function button.

PIP is available only in full screen display mode.

Figure 4-20 shows the PIP function enabled on a CineSound 5.1 bars display.

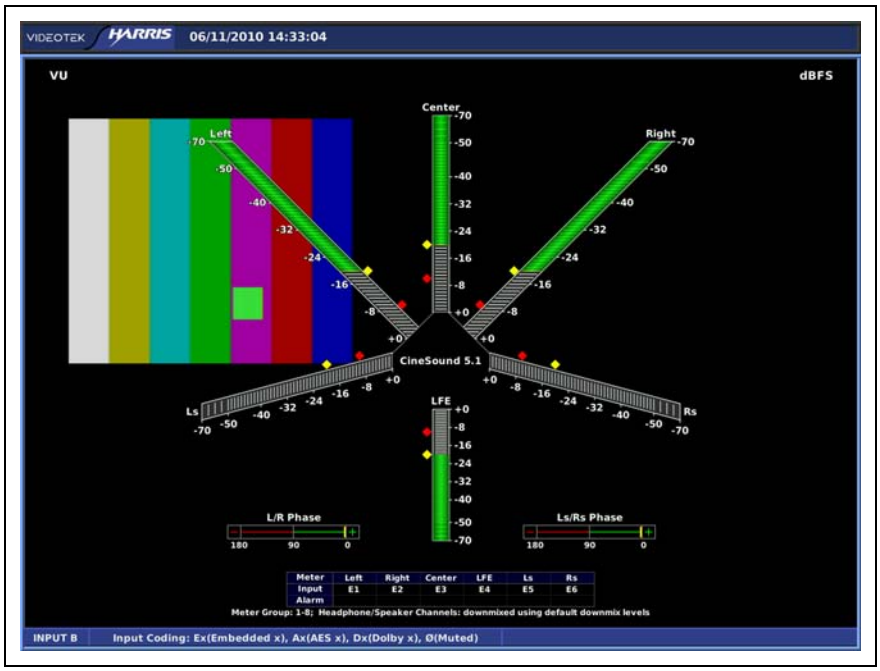


Figure 4-20 Sample PIP Display

Moving a PIP

To move a PIP

Make sure the **PIP** function button and the **VIEW** button are in high tally. Use the Up/Down and Left/Right arrow knobs to reposition the PIP on the display.

Scaling a PIP

To scale a PIP display's size

Make sure the **PIP** function button and the **VIEW** button are in high tally. Use the curved arrow knob to resize the PIP on the display.

Removing a PIP

To remove a PIP from the display

Make sure the **PIP** function button is in high tally, and then press the **PIP** function button.

The display disappears from the screen.

Function Focus

When a PIP is active, function focus can be selected by pressing either the active pane's button or the PIP button. For example, in the TRND pane, make sure the TRND function button tally is high and the PIP tally is low before attempting to access TRND functions by pressing the TRND button. PIP will now have low tally even though it is still active.

Loudness Display

The Loudness display is used to show a visual representation of the following:

- Loudness history
- Short term loudness
- Long-term statistical loudness descriptor values
- Short term loudness in bar, integrated and maximum loudness in numeric format

To access the Loudness display

Press and release the **LOUD** button.

To select a different Loudness display

Press and release the **CYCLE** button.

To access the Loudness setup menu

Press and hold the **LOUD** button.

To clear the Loudness setup menu

Press the **SETUP** or the **EXIT** button.

Loudness Radar Display

The loudness radar display[1] shows loudness history, short term loudness, and long-term statistical loudness descriptor values. The loudness radar visualizes the history of loudness over time. The outer ring (curved bar graph) displays the current loudness. The display also shows Program Loudness and Loudness range for long-term loudness. A real-time clock runs in the display to show the program time since measurement was started. The loudness is continuously measured and the data is continuously collected.

[1] Licensed through TC Electronic®.

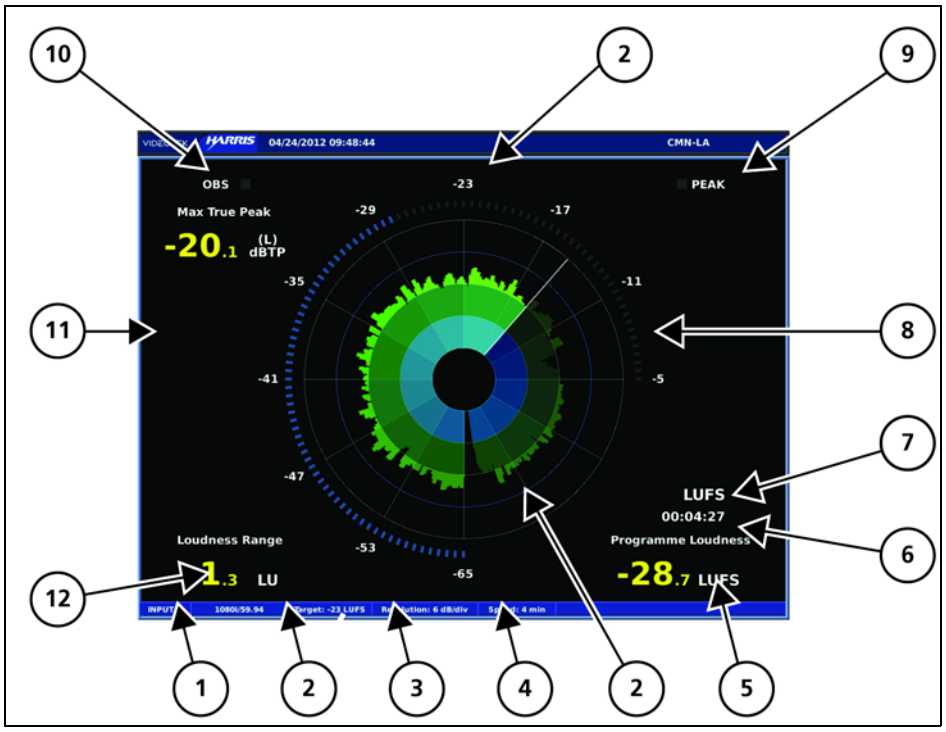


Figure 4-21 Loudness Radar Display Diagram (Full Screen Mode

Table 4-9 Description of Loudness Radar Display Diagram

Key	Field Name	Definition
1	Input	Displays selected input (A or B)
2	Target loudness	Target Loudness value
3	Radar resolution	Difference between rings
4	Radar speed	Amount of time for one complete revolution of the Radar display
5	Program loudness	Integrated program loudness
6	Clock	Time since last reset
7	Loudness scale (LKFS or LU)	Readings referenced to full scale or target value
8	Current loudness	Momentary loudness
9	Peak indicator	Lights when peak level of any of the channels exceeds the threshold
10	OBS indicator	Indicates anamolous behavior in input channels
11	Channel mapping indicators	Source mapping of input
12	Loudness range indicator	Negative one half of the Loudness Range

When the unit runs in quadrant MLT mode, the Radar display sits in the lower left quadrant.

When the Radar display is active and the pane is highlighted, the display can be operated with the following buttons:

- Press the **INFO** button to enable or disable the loudness channel mapping table.
- Press the **CLEAR** button to reset the radar display.

The Radar display is also controlled by the following menu selections:

- DISPLAY → LOUDNESS → RADAR DISPLAY
  - The LKFS or LU menu selection allows the user to select loudness scale, LKFS, or LU.
  - The Radar Resolution menu selection sets the difference in loudness between neighboring concentric circles in the radar (see page 104 for a range of values). Choose low numbers when targeting a platform with a low dynamic range tolerance. The display can zoom in or out with this setting.
  - The Radar Speed menu selection controls how much time each radar revolution takes (see page 104 for a range of values). With this setting, the display can zoom in or out on the time scale.
  - The Peak Indicator menu selection sets the level at which the Peak indicator lights up. The indicator shows whether any channel exceeds the true-peak threshold or not.
  - The OBS Indicator menu selection sets the conditions for the indicator to light up. The indicator shows certain inter-channel anomalies.

- LOUDNESS CONFIGURATION
  - The Target Loudness selection is indicated at the 12 o'clock reading on the outer ring, and is the same as the light blue circle in the radar.
  - The Low Level Below Target menu selection determines where the shift occurs between green (ideal) and blue (low) on the outer (short term) ring. It indicates to the engineer that level is now at risk of being below the noise floor.
  - The High Level Above Target selection determines where the shift occurs between green (ideal) and red (high) on the outer (short term) ring. It indicates that the audio level is at risk of being above the peak threshold.
- LOUDNESS MAPPING

  The menu shows the index of the audio meter at which individual loudness channel (L, R, C, Ls, and Rs) is mapped.

Comprehensive Loudness Display

The Comprehensive Loudness Display shows short term loudness in bar, integrated and maximum loudness in numeric format, loudness history in trending chart, and True Peak in per-channel bar and its maximum value in numeric format. The display consists of three panes: vertical bar, numeric readout, and trending chart. Each pane can be highlighted and controlled.

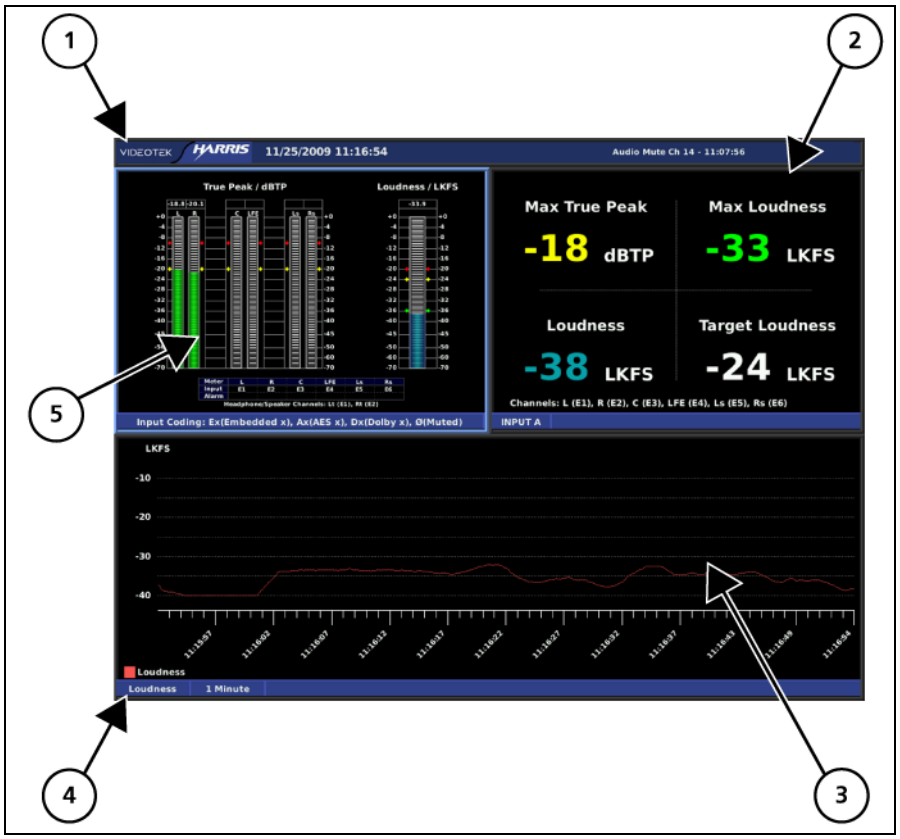


Figure 4-22 Comprehensive Loudness Display[1]

Table 4-10 Description of Comprehensive Display

Key	Field Name	Definition
1	Main title bar	For the elements of the title bar, see ***Main Title Bar*** on page 31
2	Loudness numeric readout display	See **Table 4-11** on page 65
3	Trending chart	See **Table 4-7** on page 54
4	Status bar	See ***Status Bar*** on page 32
5	Vertical bar display	See ***Vertical Bars*** on page 39

To directly select specific functions for the display

Press the appropriate function button. Specific functions include Vertical Bars, Trending, and Loudness. The different function operations are described in detail in **Chapter 4, *Operation***.

When a button is pressed that cannot be used with a selected function, the message FUNCTION NOT ALLOWED briefly appears over the center of the screen.

To adjust the Target Loudness and Integration Time global parameters

Press the **SETUP** button, and then navigate to the Loudness Configuration menu.

To control the comprehensive loudness display

When Comprehensive Loudness Display is active, press the **BARS**, **TRND**, or **LOUD** button to highlight each pane.

[1] Select SETUP→ DISPLAYS → MLT → LOUDNESS DISPLAY to activate this mode.

When the Vertical Bar pane is highlighted, the meter can be controlled with the following buttons:

- Press the **INFO** button to enable or disable the status readout.
- Press the **ZOOM** button to zoom in closer to and back out from the reference level.
- Press and hold the **BARS** button to open the following settings:
  - The LKFS or LU menu selection allows selection of the loudness scale. The user can customize the top and bottom of each scale.
  - The Zoom Range menu selection is the scale used in the ZOOM mode.
  - The Peak Hold Time menu selection controls how long the floating peak holds.
  - The Status Readout menu selection enables/disables the status readout.

    When the Numeric Readout pane is highlighted, press the **INFO** button to enable or disable the loudness channel mapping readout.

When highlighted, the Trending Chart pane may also be controlled. Refer ***Trend Display*** *on page 53 for more information.*

- Press the **LOUD** button and then the **CYCLE** button to activate the Loudness Numeric display.

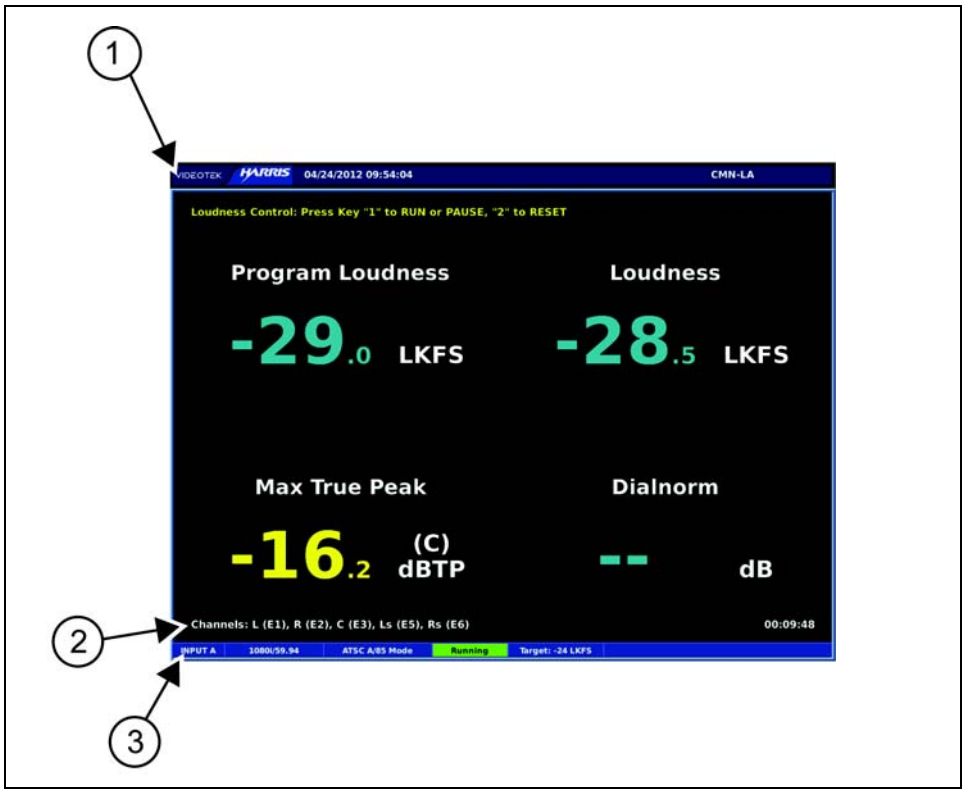


Figure 4-23 Loudness Numeric Display

Table 4-11 Description of Loudness Numeric Display

Key	Field Name	Description
1	Main title bar	For the elements of the title bar, see ***Main Title Bar*** on page 31
2	Audio Type and Loudness Channel Mapping	The audio type is displayed as Analog, AES or Embedded. The loudness channel mapping is displayed as loudness/surround channel label with audio input channel.
3	Input	Displays user-configurable source IDs for input

The Loudness Numeric display is also available in normal quadrant mode. When LOUD is selected, the CYCLE button switches between Radar and Loudness Numeric display.

When in comprehensive loudness display mode, Radar cannot be selected.

ATSC A/85 Loudness Mode

The display in ATSC A/85 loudness mode shows selections that follow ATSC recommended practice A/85. Up to four measurements (as controlled from the menus) can be displayed.

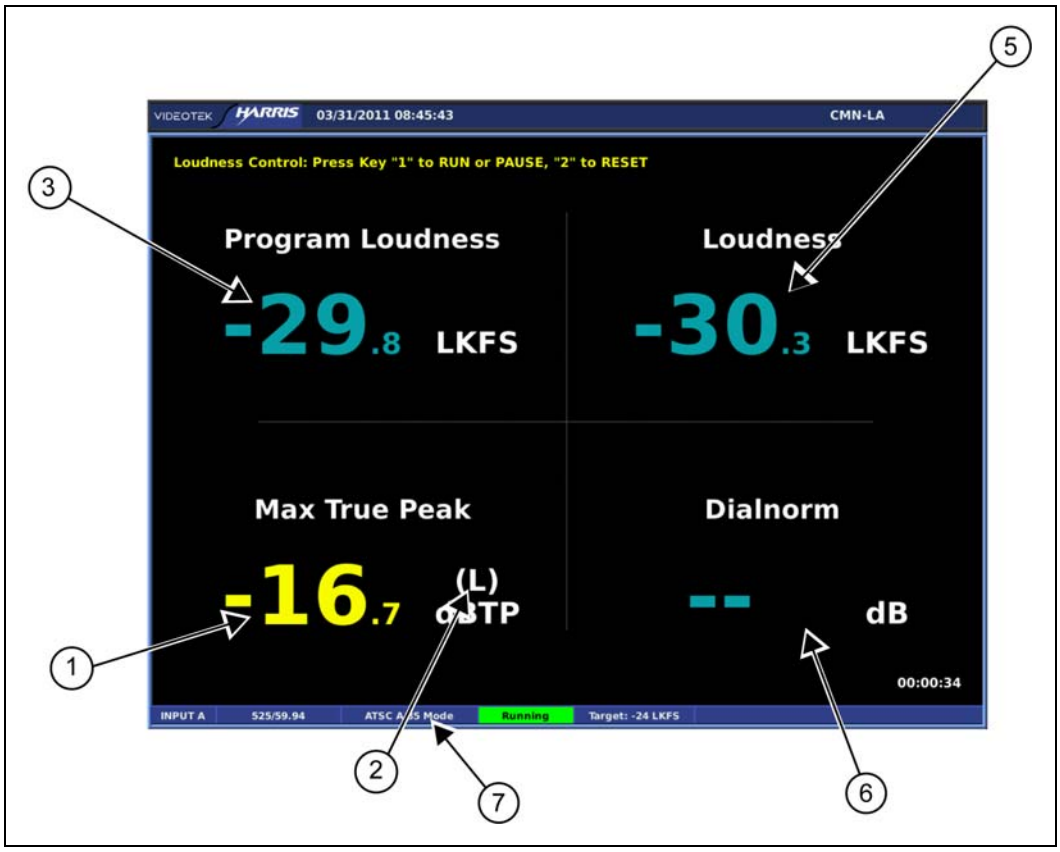


Figure 4-24 Display in ATSC A/85 Loudness Mode

Table 4-12 ATSC A/85 Display Information Descriptions

Key	Field Name	Description
1	Maximum true peak	Measured in dBTP
2	Channel	Displays Left, Right, Center, Left Surround, Right Surround where maximum true peak was detected
3	Program loudness	Measured in LKFS or LU
4	Integrated loudness	Measured in LKFS or LU
5	Momentary loudness	Represented as 0 to -70 LKFS
6	Dialnorm	A value as extracted from Dolby VANC metadata. "--" Indicates that no dialnorm value was found.
7	Mode indicator	ATSC A/85

EBU R 128 Loudness Mode

The display in EBU R 128 loudness mode shows selections that follow EBU recommendation R 128.

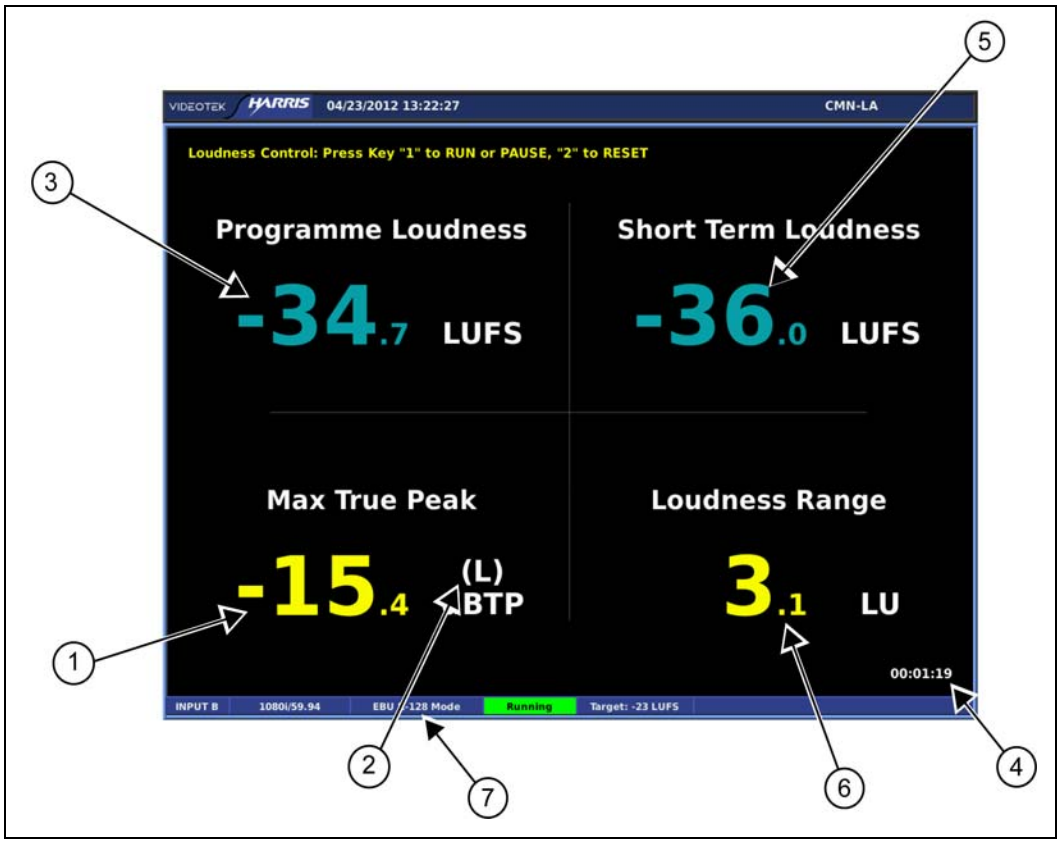


Figure 4-25 Display in EBU R 128 Loudness Mode

Table 4-13 EBU R 128 Display Information Descriptions

Key	Field Name	Description
1	Maximum true peak	Measured in dBTP
2	Channel	Left, Right, Center, Left Surround, or Right Surround where maximum true peak was detected
3	Programme loudness	(in LKFS or LU)
4	Clock	Time since last reset
5	Momentary loudness	Represented as 0 to -70 LKFS
6	Loudness range	Measured in LU
7	Mode indicator	EBU R-128

Custom Loudness Mode

The display in custom loudness mode shows selections that match a user's in-house standards.

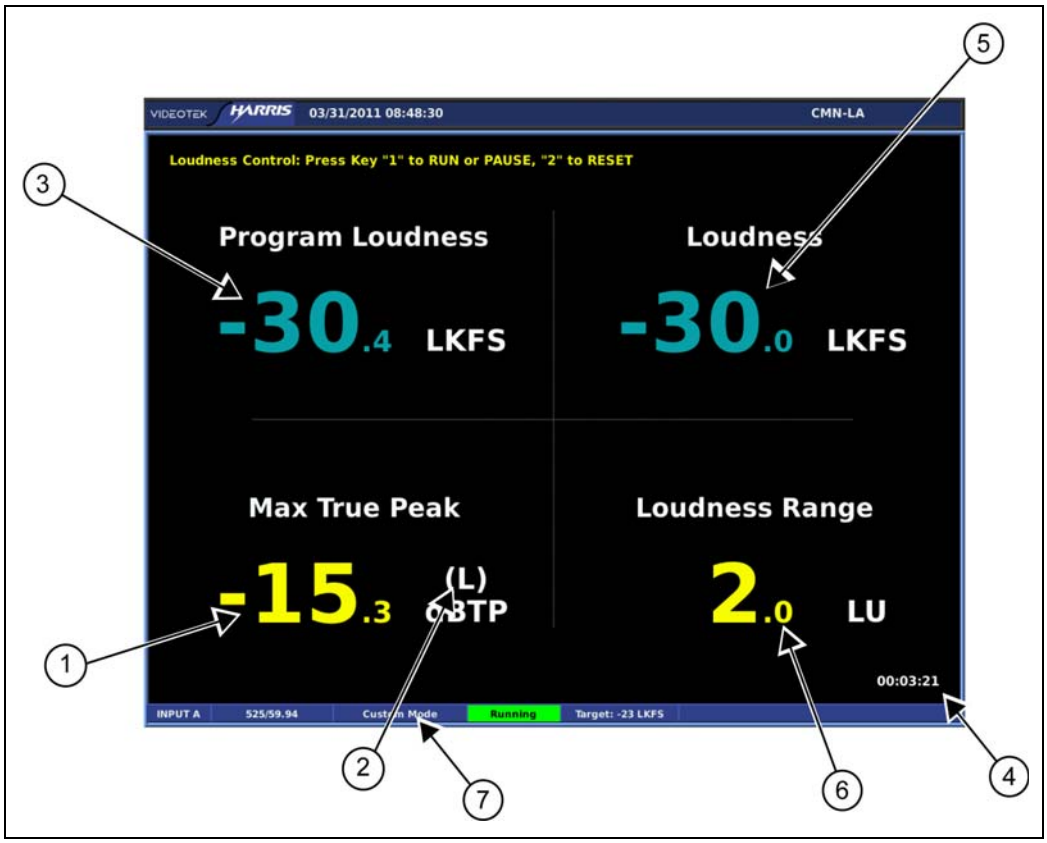


Figure 4-26 Display in Custom Loudness Mode

Table 4-14 Custom Display Information Descriptions

Key		Description
1	Maximum true peak	Measured in dBTP
2	Channel	Left, Right, Center, Left Surround, or Right Surround where maximum true peak was detected
3	Program loudness	Measured in LKFS or LU *If the absolute gating value is changed and the CLR button is pressed, the program loudness will default to the absolute gate value.*
4	Clock	Time since last reset
5	Momentary loudness	Represented as 0 to -70 LKFS
6	Loudness range	Measured in LU
7	Mode indicator	Custom

Alarm Display

To access the alarm display

Press and release the **ALRM** button.

To access the Alarm Setup menu

Press and hold the **ALRM** button.

To clear the Alarm Setup menu

Press the **SETUP** or the **EXIT** button.

The default alarm display is the Alarm Log. For information on individual alarms, see **Chapter 6, *Alarm Descriptions***.

Alarm Log Display

The Alarm Log display lists all the alarms, the date, time, time code, duration, and peak value. The alarm list begins with the most recent alarm and can hold a maximum of 100 alarms.

The Alarm Log display is the default alarm display. The Alarm Status display is accessed via the Setup > Displays > Alarms menu.

An Alarm Log display diagram is shown in **Figure 4-27** and described in **Table 4-15**. The diagram illustrates the general location for the various alarm fields.

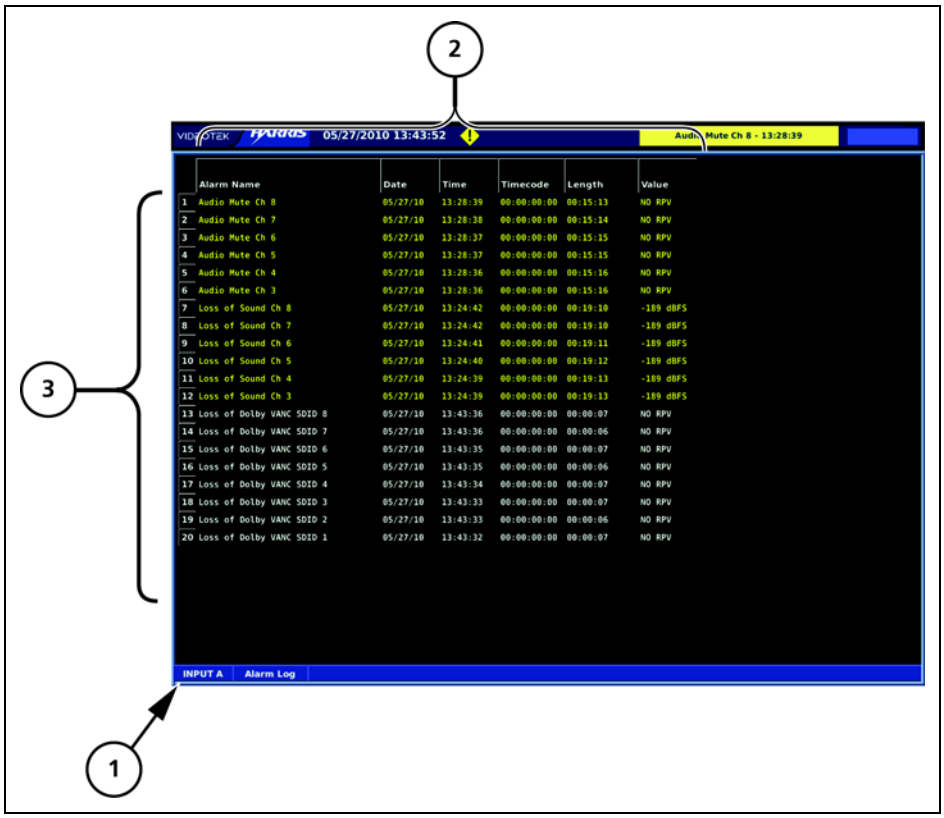


Figure 4-27 Alarm Log Display Diagram

Table 4-15 Description of Alarm Log Display Diagram

Key	Field Name	Definition
1	Input	Displays selected input (A or B)
2	Column Labels	Displays the following labels: ■ # (for the number in the alarm list) ■ ALARM NAME ■ DATE ■ TIME ■ TIMECODE ■ LENGTH (Duration) ■ PEAK VALUE[1]
3	Alarm List	Displays the list of alarms from the most recent alarm to the last recorded alarm (a maximum of 100 alarms can be logged)

[1] Certain alarm parameters do not have a level measurement that can report a peak value. This is indicated when NO RPV (No Report Peak Value) appears in the PEAK VALUE column.

When an alarm is first registered, it appears on the alarm display and is highlighted in yellow. If the alarm is short term (that is, two seconds or less), the alarm text is not highlighted after approximately two seconds. If the alarm continues longer than two seconds, the text remains yellow and the alarm duration is incremented. When the next alarm occurs, the previous alarm moves down one position.

The CMN-LA unit has enough memory for 100 alarms. When 100 different alarm events have occurred, alarm number 100 is dropped and the most recent alarm is tagged as 01.

To scroll through the alarm list

Use the Up/Down navigation buttons or the Up/Down arrow knob.

To erase the current group of alarms

Press the **CLEAR** button.

A GPI output dry contact closure can be used to alert other devices when an alarm occurs.

Alarm Status Display

The Alarm Status screen lists all the alarms, the state of each alarm setting, the current alarm limit selection (if applicable), the current alarm duration (if applicable), and the Accumulated alarm column.

To access the alarm status display

Press the **ALRM** button, and then press the **CYCLE** button.

To access the Alarm Setup menu

Press and hold the **ALRM** button.

To clear the Alarm Setup menu

Press the **SETUP** or the **EXIT** button.

An alarm status display diagram is shown in **Figure 4-28**. The diagram illustrates the general location for the various alarm status display fields.

Alarm Name	Enable	Lower Limit	Upper Limit	Threshold	Duration	Total Alarms
Peak Audio Ch 1	On		-10 dBFS		2 Seconds	0
Peak Audio Ch 2	On		-10 dBFS		2 Seconds	0
Peak Audio Ch 3	On		-10 dBFS		2 Seconds	0
Peak Audio Ch 4	On		-10 dBFS		2 Seconds	0
Peak Audio Ch 5	On		-10 dBFS		2 Seconds	0
Peak Audio Ch 6	On		-10 dBFS		2 Seconds	0
Peak Audio Ch 7	On		-10 dBFS		2 Seconds	0
Peak Audio Ch 8	On		-10 dBFS		2 Seconds	0
Peak Audio Ch 9	Off		-10 dBFS		2 Seconds	0
Peak Audio Ch 10	Off		-10 dBFS		2 Seconds	0
Peak Audio Ch 11	Off		-10 dBFS		2 Seconds	0
Peak Audio Ch 12	Off		-10 dBFS		2 Seconds	0
Peak Audio Ch 13	Off		-10 dBFS		2 Seconds	0
Peak Audio Ch 14	Off		-10 dBFS		2 Seconds	0
Peak Audio Ch 15	Off		-10 dBFS		2 Seconds	0
Peak Audio Ch 16	Off		-10 dBFS		2 Seconds	0
Audio Phase Pair 1	Off			178 Degrees	2 Seconds	0
Audio Phase Pair 2	Off			178 Degrees	2 Seconds	0
Audio Phase Pair 3	Off			178 Degrees	2 Seconds	0
Audio Phase Pair 4	Off			178 Degrees	2 Seconds	0
Audio Phase Pair 5	Off			178 Degrees	2 Seconds	0
Audio Phase Pair 6	Off			178 Degrees	2 Seconds	0
Audio Phase Pair 7	Off			178 Degrees	2 Seconds	0
Audio Phase Pair 8	Off			178 Degrees	2 Seconds	0
Loss of Sound Ch 1	On		-60 dBFS		2 Seconds	0

Figure 4-28 Alarm Status Display Diagram

The alarm status screen contains detailed information concerning alarm status indicators. This information is separated into columns sorted by alarm name, whether or not the alarm is enabled, lower and upper limits, thresholds, duration, and total number of alarms. The alarm name text can appear in a colored state. The colored states are:

- **White**: indicates alarm is not enabled.
- **Green**: indicates alarm is enabled and not exceeding alarm limits.
- **Red**: indicates the alarm is enabled and exceeding an alarm limits.

There is a two-second persistence for any alarm name color change.

To scroll through the Alarm Status list
Use the Up/Down navigation buttons or the Up/Down arrow knob.

Meter-Based Alarms

To access the Alarms Setup menu
Press and hold the **ALRM** button. If necessary, use the Up/Down navigation buttons to access the Meter-Based Alarms menu selections.

To show the available Meter-Based Alarm menu selections
Press the **ENT** navigation button.

For more information on the global Meter-Based Alarms Setup menu, see page 118.

Loudness Alarms

To access the Alarms Setup menu
Press and hold the **ALRM** button to access the Alarms Setup menu. If necessary, use the Up/Down navigation buttons to access the Loudness Alarms menu selections.

To show the available Loudness Alarm menu selections
Press the **ENT** navigation button.

For more information on the global Loudness Alarms Setup menu, see page 121.

Dolby Alarms

To access the Alarms Setup menu
Press and hold the **ALRM** button to access the Alarms Setup menu. If necessary, use the Up/Down navigation buttons to access the Dolby Alarms menu selections.

To show the available Dolby Alarm menu selections
Press the **ENT** navigation button.

For more information on the global Dolby Alarms Setup menu, see page 122.

Time Code Alarms

To access the Alarms Setup menu
Press and hold the **ALRM** button. If necessary, use the Up/Down navigation buttons to select the Time Code Alarms menu selections.

To show the available Time Code Alarm selection options
Press the **ENT** navigation button.

For more information on the global Time Code Alarms Setup menu, see page 123.

Status Display

The Status display is used to show a visual representation of audio status.

To access the audio status display

Press and release the **STAT** button.

To select a different status display
Press and release the **CYCLE** button.

To access the Status setup menu
Press and hold the **STAT** button.

To clear the Status setup menu
Press the **SETUP** or the **EXIT** button.

Audio Status Pane

The Audio Status Pane is a text-based screen that indicates the status of the meter-mapped channels.

The elapsed time from last reset is displayed in the bottom right corner of the status pane, and the currently selected meter ballistic is displayed in the bottom left corner of the status pane.

Press the **CLEAR** button to clear the statistics and reset the elapsed time to 00:00:00.

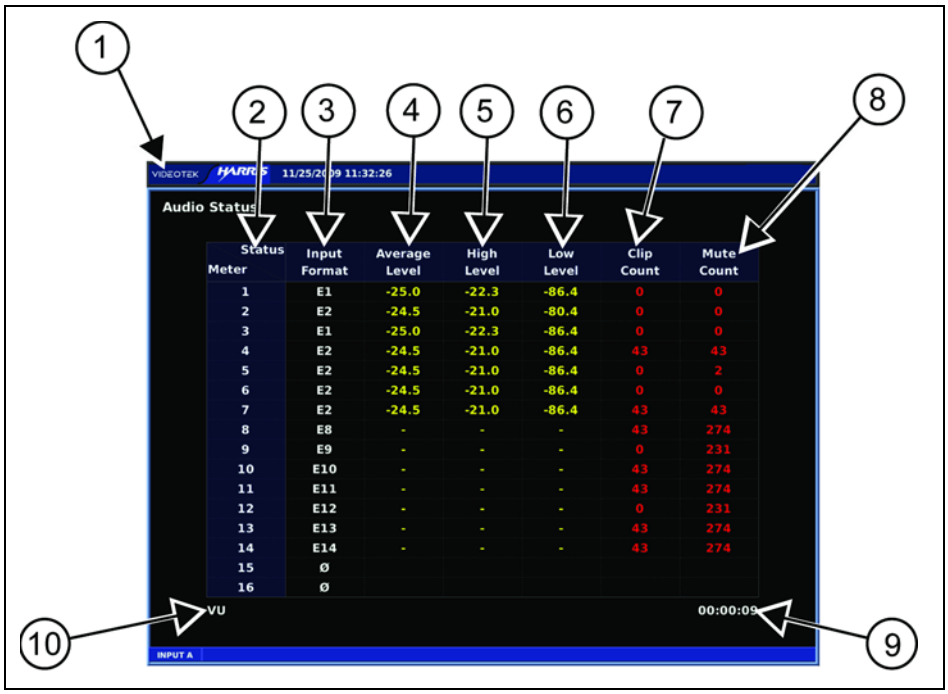


Figure 4-29 Audio Status Pane (Full Display Mode)

Table 4-16 Description of Audio Status Pane Items

Key	Field Name	Definition
1	Main title bar	See ***Main Title Bar*** on page 31
2	Status meter	Lists all the audio meters
3	Input format	Lists the source assigned to each meter
4	Average level	Indicates the average audio level since the last reset
5	High level	Indicates the peak audio level since the last reset
6	Low level	Indicates the lowest audio level since the last reset
7	Clip count	Indicates the number of times the audio has clipped since the last reset
8	Mute count	Indicates the number of times audio has muted since the last reset
9	Time	The elapsed time from last reset
10	Meter Response	Displays selected meter response: VU, Peak, True Peak, VU + Peak, VU + True Peak, Loudness, Custom

Dolby Metadata

The Dolby Metadata display is a text-based screen that displays the Dolby metadata field name and a text string for the current value of the Dolby metadata parameter. Dolby E VANC metadata is available in all versions. Decoded Dolby metadata is only available if the Dolby option is installed.

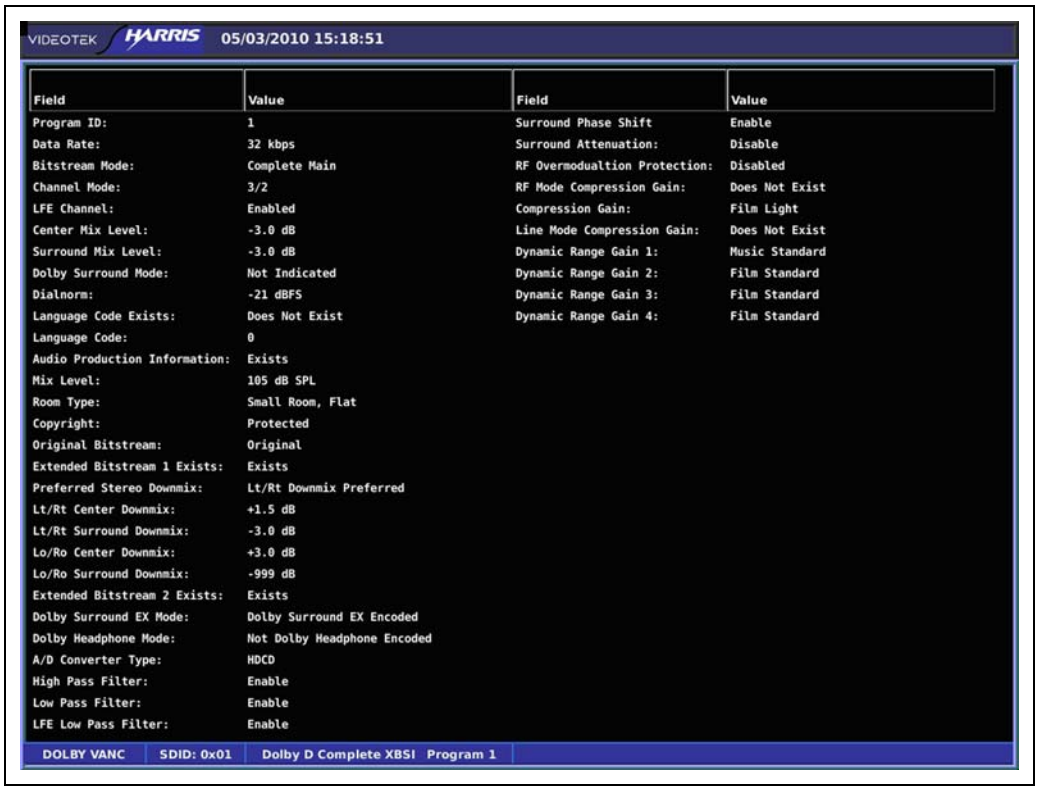


Figure 4-30 Dolby E VANC Metadata Display

The Dolby E VANC display shows parameters which are extracted from an ancillary data packet which is embedded in the vertical ancillary data space in the SDI input signal. The Dolby E VANC packets are identified by DID 0x45 and SDID 0x01 - 0x09. Only one ancillary data packet can be can be extracted and displayed at a time, so the SDID is selected with a menu. Press and hold the **STAT** button to open the menu for selecting the SDID to be displayed.

Within each Dolby E VANC data packet, 4 to 18 payloads are present, depending on the program configuration. The different types of payloads are listed in **Table 4-17**.

Table 4-17 Payload Types

Payload Type	Number of Payloads
Dolby E Complete	1
Dolby E Essential	1
Dolby D Complete or Dolby D Complete XBSI	1 - 8
Dolby D Essential	1 - 8

Either Dolby D Complete or Dolby D Complete XBSI (extended bit stream information) format parameters will be present, but not both at the same time. One complete set of parameters is present for each program, and the number of programs depends on the program configuration.

The line number that the ancillary data packet is embedded on is displayed on the Dolby E Complete payload display.

Available payloads are selected by pressing the right and left navigation buttons.

When quadrant MLT mode is enabled, pressing the up or down navigation button, or turning the vertical knob, scrolls the list of parameters up and down.

When full screen mode is enabled, all parameters are shown on screen and scrolling is disabled.

Audio Metadata

The Audio Metadata display shows the embedded audio metadata field name and the current value of the embedded metadata parameter.

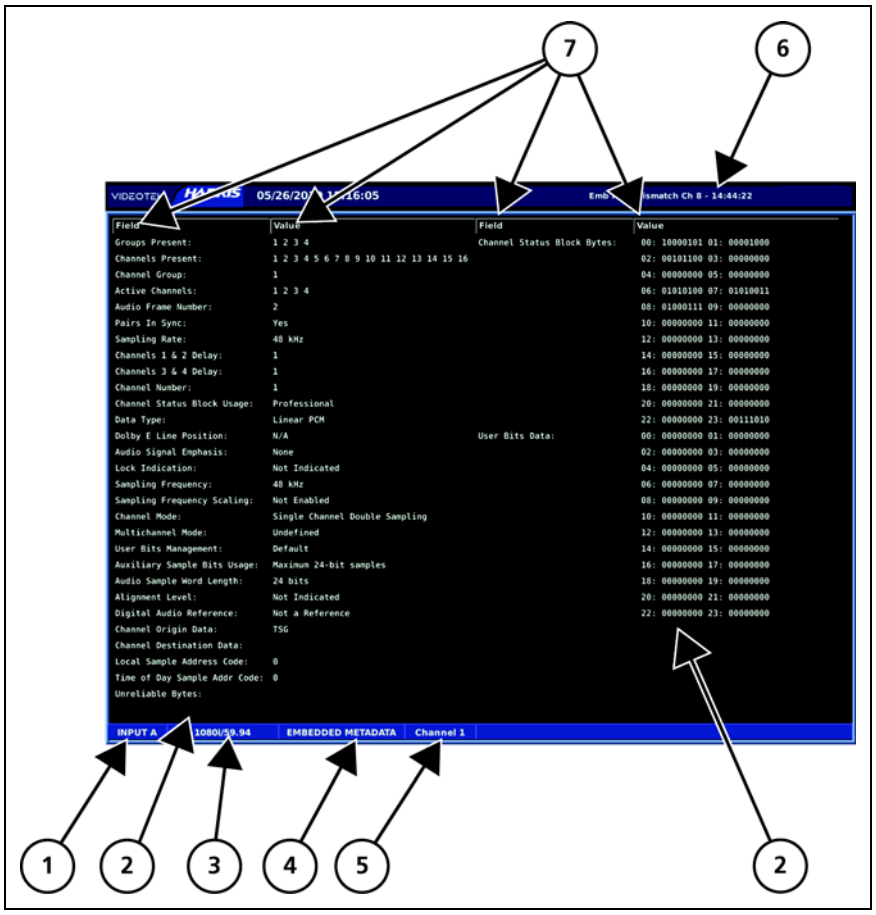


Figure 4-31 HD Embedded Audio Metadata Display

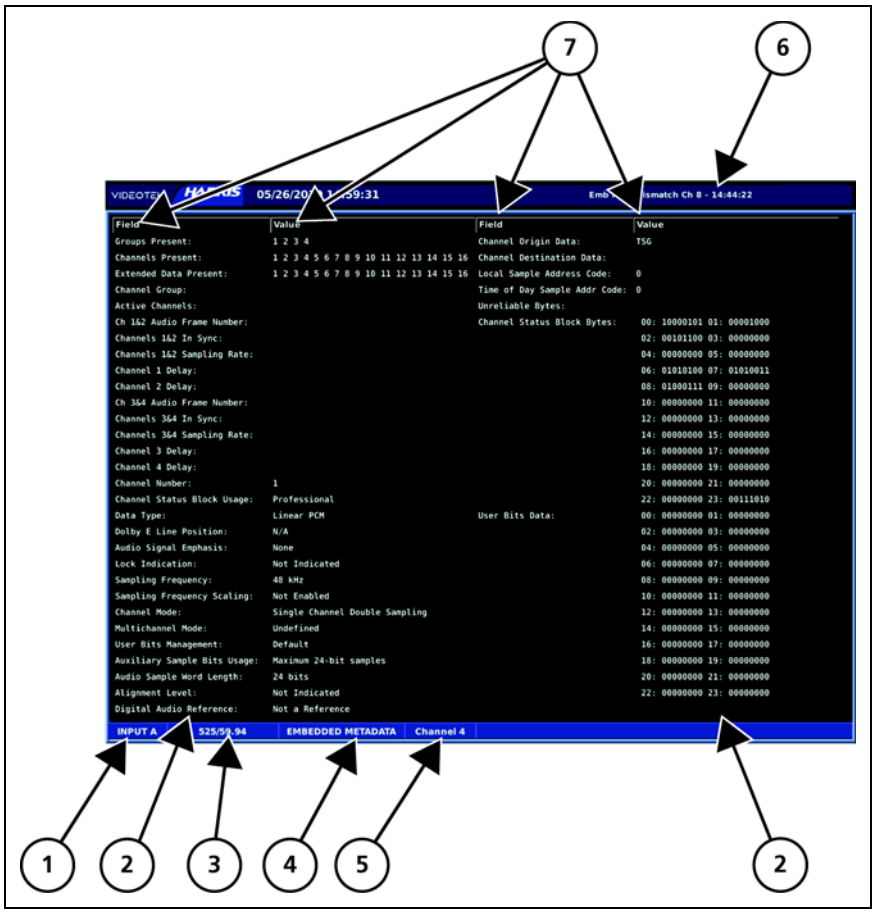


Figure 4-32 SD Embedded Audio Metadata Display

Table 4-18 Description of Audio Metadata Display

Key	Field Name	Definition
1	Input	Displays selected input (A or B)
2	Description	Field descriptor value
3	Standard	Displays the line rate/frame rate
4	Embedded Metadata	Text description of the audio metadata type
5	Channel	Embedded audio channel selected for display; the range is 1 - 16
6	Alarm Indicator	Current or last alarm indication; current alarms are displayed in a yellow background
7	Field Name	Field descriptor column heading

The Embedded Audio Metadata display shows which audio groups and channels are present in the SDI input signal. It also displays information from Embedded audio control packets (if present), and the decoded channels status bits. It also displays raw binary data for the 192 bits of channel status and user bits data, formatted as 24 8-bit binary words. The bits are displayed in the order received, with word 00 MSB being the first bit received to word 23 LSB the last bit received.

The embedded channel for display is selected by pressing the left and right navigation buttons to select channels 1 - 16.

When the currently selected channel contains Dolby E encoded data samples, the Dolby E line position parameter displays the first line on which Dolby E data is embedded.

When quadrant MLT mode is enabled, pressing the up or down navigation button, or turning the vertical knob, scrolls the list of parameters up and down.

When full screen mode is enabled, all parameters are shown on screen and scrolling is disabled.

When the input video format is SD, Extended Data packet presence is indicated.

AES Audio Metadata

The AES Audio Metadata display shows which audio pairs and channels are present. It also displays the decoded channel status bits. It also displays raw binary data for the 192 bits of channel status and user bits data, formatted as 24 8-bit binary words. The bits are displayed in the order received, with word 00 MSB being the first bit received to word 23 LSB the last bit received.

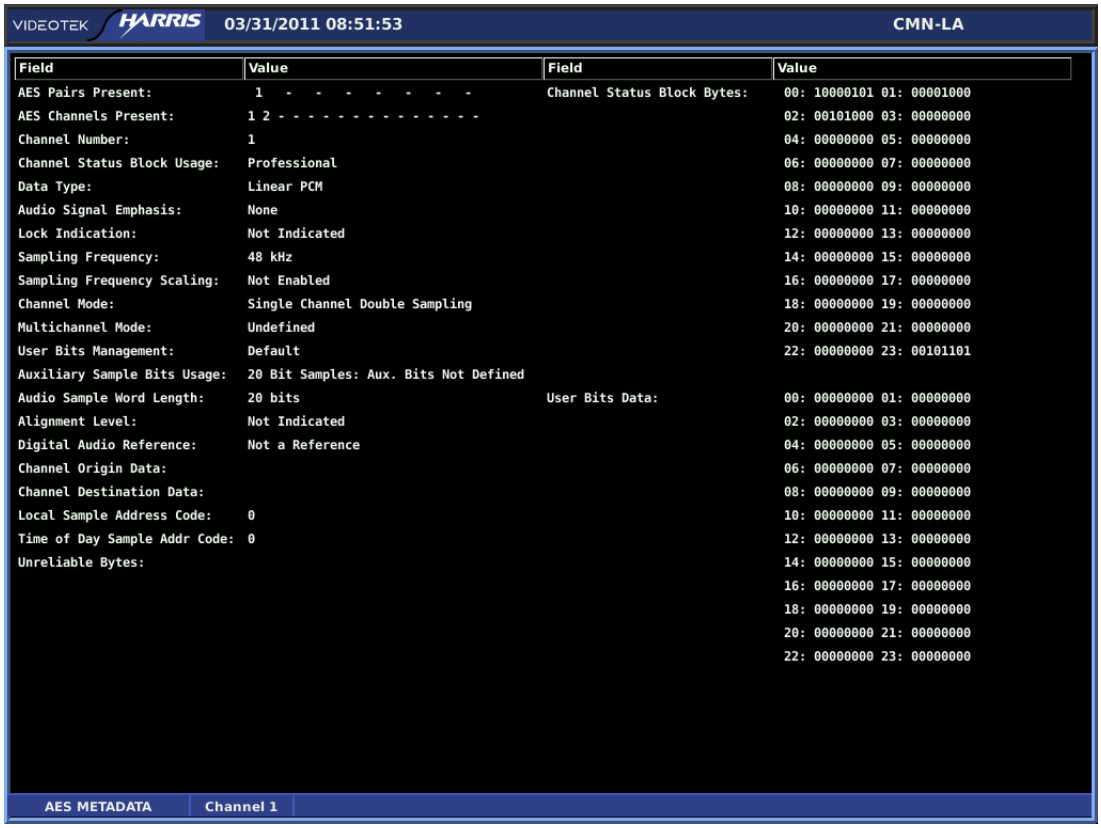


Figure 4-33 AES Audio Metadata Screen

Audio Input Matrix Pane

This display shows a grid of input channels for the currently selected SDI input and all AES input pairs. The color of the input channel block indicates the input data type as either PCM audio, Dolby D, Dolby E, or no signal present.

A text field below the input grid indicates if an audio reference signal is present or not, and if present, whether the reference is a DARS or Word Clock signal.

The Dolby E Frame text field indicates the first Line number containing embedded Dolby E data if Dolby E data is present on the selected SDI input. If the Dolby Decoder option is installed, the line number indicates the position of embedded data for the channel pair currently selected for Dolby decoding.

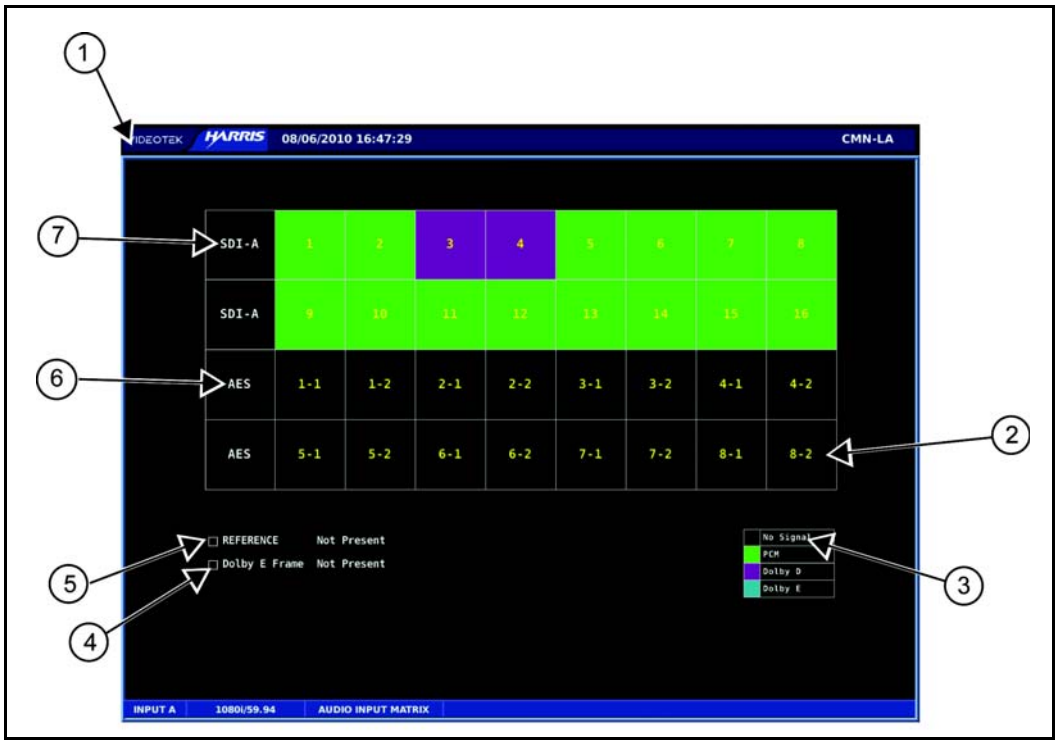


Figure 4-34 Audio Input Matrix (Full Display Mode)

Table 4-19 Description of Audio Input Matrix Display

Key	Field Name	Definition
1	Main title bar	See ***Main Title Bar*** on page 31
2	Audio channel	Each square indicates an audio channel
3	Key	Indicates what the various colors mean
4	Dolby E	Indicates presence and position of Dolby E frame
5	Reference	Indicates presence and type of reference
6	AES audio	Indicates 16 channels of AES audio
7	Embedded audio	Indicates 16 channels of embedded audio

Audio Spectrum Pane

This display shows full octave or 1/3 octave meter bars indicating the level from 0 to -70 dB for frequency bands ranging from 25 Hz to 20kHz. Full octave mode displays 10 frequency bands, and 1/3 octave mode displays 30 frequency bands.

A text fields on the bottom status bar indicate the input channel selected for display, and the center frequency of the bands.

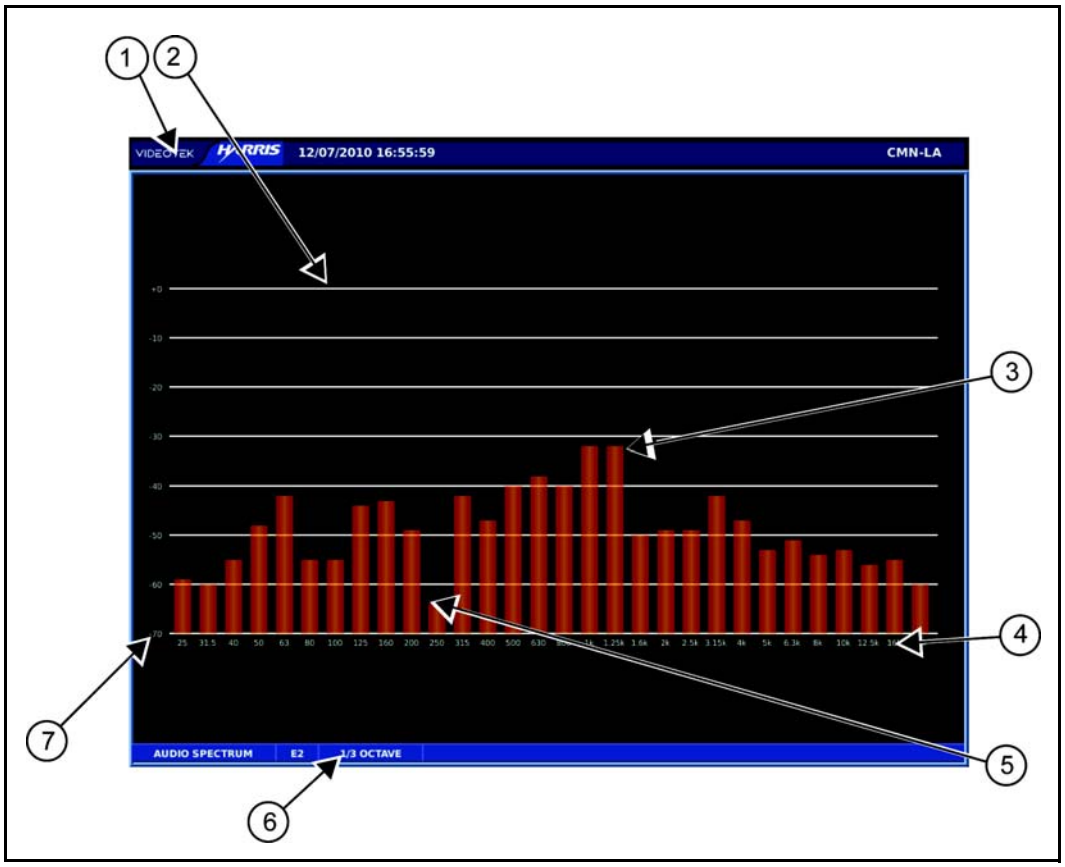


Figure 4-35 One Third Octave Spectrum Pane (Full Display Mode)

When the unit runs in quadrant MLT mode, the Spectrum display sits in the lower left quadrant.

Table 4-20 Description of Octave Display

Key	Field Name	Definition
1	Main title bar	See ***Main Title Bar*** on page 31
2	Top of scale	Indicates the point beyond which nothing will be indicated
3	Peak	High point of audio
4	Frequency	Center frequency of bar
5	Low	Low point of audio
6	Range	Indicates Octave or 1/3 Octave
7	Spectrum scale	Numbers that show display range

Audio Waveform Pane

The Audio Waveform display is a graph of audio amplitude over a fixed 50 ms time period. The vertical amplitude is menu selectable with a maximum amplitude of 0 dB, -10 dB, -20 dB, or -40 dB. The audio waveforms for up to 2 meters can be displayed. Audio input channels are mapped to audio meters, and any of the 16 audio meters can be selected for the audio waveform display. The legend field on the lower left corner shows the currently selected audio input type and channel for the 2 audio waveform displays.

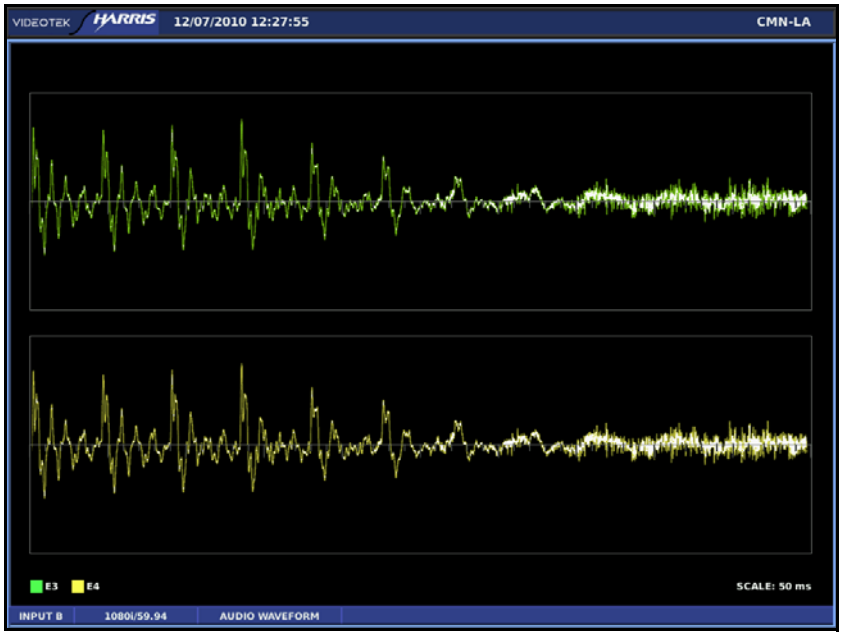


Figure 4-36 Audio Waveform Pane (Full Display Mode)

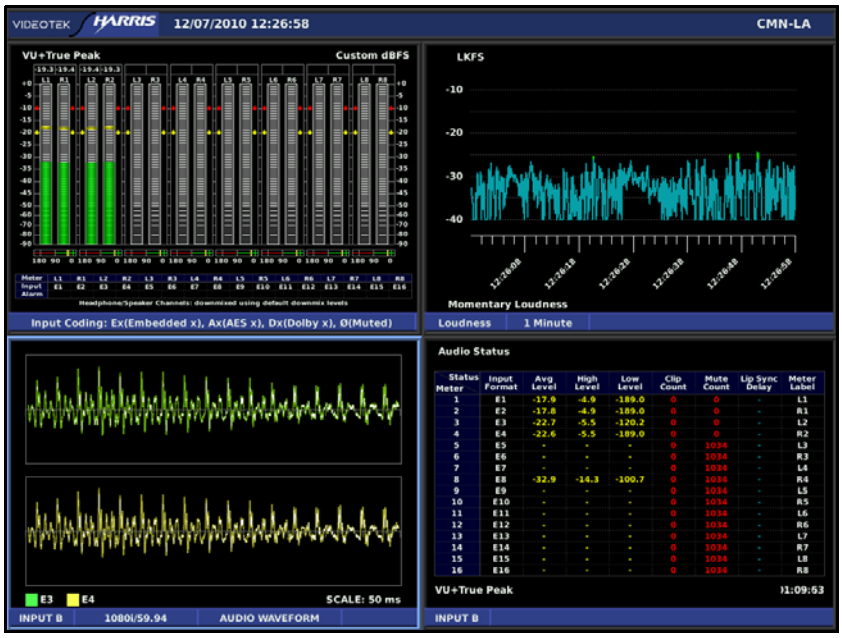


Figure 4-37 Audio Waveform Pane (Quadrant MLT Mode[1])

[1] Select SETUP → DISPLAYS → MLT → QUADRANT DISPLAY to activate this mode.

5 Setup Menu Functions

Navigating the Setup Menu

The setup position knobs and navigation buttons are described in **Table 5-1**. See **Figure 3-1** on page 28 for the location of these knobs and buttons.

To access the global Setup menu

Press the **SETUP** button.

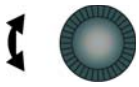
To navigate the Setup menu

Use the setup position knobs or the **SETUP**, **UP**, **DOWN**, **LEFT**, **RIGHT**, **ENT**, and **EXIT** buttons.

Table 5-1 Setup Position Knobs and Navigation Button Functions

Button/Knob	Function
	Press to exit the Setup menu.
	Press to enter or exit the Setup menu.
	Press to select a menu item, or open a menu or submenu.
	Press to move up in a menu or submenu tree.
	Press to move right to the next submenu.
	Press to move out of a submenu.
	Press to move down in a menu or submenu.

Table 5-1 Setup Position Knobs and Navigation Button Functions *(Continued)*

Button/Knob	Function
	Rotate to set numeric values for certain parameters. Press to set parameter to default value.

Setup Menus and Alarm Tables

The following tables make up the global setup menu. An asterisk (*) is shown next to the default menu selections. The Setup menu items are listed in **Table 5-2** with their corresponding Table and Description location pages.

Table 5-2 Setup Menu Tables

Selection	Page
Loudness Mapping	Page 85
Meter Mapping	Page 85
Loudness Display	page 86
Time Code Source	Page 91
Dolby	page 92
Reference Clock	page 94
Outputs	Page 95
Meter Configuration	Page 98
Displays	Page 101
Enable Dual Link A-B	page 107
Import/Export	Page 108
Clear	Page 109
Unit Configuration	Page 111
About	Page 116
Alarms	Alarm setup tables and corresponding descriptions appear in **Chapter 6**.

Meter Mapping Setup Menu

The Meter Mapping setup menu enables mapping of audio meters to specific audio channels.

Menu Selections

Table 5-3 Meter Mapping Setup Menu

Selection Option	Selection Option
Meter 1 •• 16	AES 1 •• 16
	Embedded 1 •• 16
	Dolby 1 •• 8
	Dolby Downmix L
	Dolby Downmix R
	Mute

Menu Selection Descriptions

- **Meter 1 •• Meter 16**: Each audio meter selection may be mapped to AES audio channel 1 to 16, Dolby channel 1 to 8, embedded audio channel 1 to 16, Dolby dowmix left or right, or set to Mute.

Loudness Mapping Setup Menu

The Loudness Mapping setup menu enables mapping of specific audio meters to loudness channels.

Menu Selections

Table 5-4 Loudness Mapping Setup Menu

Selection Option	Selection Option
Left	Disabled
	Meter 1 •• Meter 16
Right	Disabled
	Meter 1 •• Meter 16
Center	Disabled
	Meter 1 •• Meter 16
LFE (True Peak Display only)	Disabled
	Meter 1 •• Meter 16

Table 5-4 Loudness Mapping Setup Menu *(Continued)*

Selection Option	Selection Option
Left Surround	Disabled
	Meter 1 •• Meter 16
Right Surround	Disabled
	Meter 1 •• Meter 16

Menu Selection Descriptions

- **Meter 1 •• Meter 16**: Each loudness mapping selection may be disabled, or mapped to audio meter selection 1 to 16

Loudness Display Setup Menu

The Loudness Display setup menu configures the loudness displays.

Menu Selections

Table 5-5 Loudness Display Setup Menu

Selection Option	Selection Option	Selection Option	Selection Option	Selection Option
Mode	ATSC A/85			
	EBU R-128			
	ARIB TR-B32			
	Custom			
Units	LU			
	LKFS/LUFS			
Loudness	ATSC A/85 Mode	Source	Momentary Loudness*	
			Short Term Loudness	
		LU Scale	Top	0 to 24 LU (24* LU)
			Bottom	-50 to -10 LU (-46* LU)
		LKFS Scale	Top	-20 to 0 LKFS (0* LKFS)
			Bottom	-70 to -30 LKFS (-70* LKFS)

Table 5-5 Loudness Display Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option	Selection Option
	EBU R-128 Mode	Source	Momentary loudness	
			Short Term Loudness	
		Scale	EBU +9	
			EBU +18	
			Full Scale	
	ARIB TR-B32	Source	Momentary loudness	
			Short Term Loudness	
		Scale	EBU +9	
			EBU +18	
			Full Scale	
	Custom Mode	Source	Momentary Loudness*	
			Short Term Loudness	
		LU Scale	Top	0 to 24 LU (23* LU)
			Bottom	-50 to -10 LU (-47* LU)
		LKFS Scale	Top	-20 to 0 LKFS (0* LKFS)
			Bottom	-70 to -30 LKFS (-70* LKFS)
	Zoom Range	4 to 20 LU (default 10)		

Table 5-5 Loudness Display Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option	Selection Option
ATSC A/85 Setup	Program	Use Relative Gating (Off*)		
		Relative Gating	-20 to -6 Rel (-8 Rel*)	
	Loudness Integration Time	1-60 seconds (10 Seconds*)		
	Max Hold Time	1-60 seconds, Infinite*		
	Range	Relative Gating Active		
		Relative Gating	-20 Rel Fixed	
	Target Loudness	Level	-31 to -1 LKFS (-24 LKFS*)	
		High Level Above Target	1 to 10 LU (2 LU*)	
		Low Level Below Target	1 to 10 LU (2 LU*)	
	Absolute Gating	-70* to -50 LKFS		
	Dolby VANC SDID	1* to 9		
	Dolby Program	1* to 8		
EBU R-128 Setup	Program	Relative Gating Active		
		Relative Gating	-10 Rel Fixed	
	Short Term Integration	3 Seconds Fixed		
	Max Hold Time	1-60 seconds, Infinite*		
	Range	Relative Gating Active		
		Relative Gating	-20 Rel Fixed	
	Target Loudness	Level	-23 LUFS Fixed	
		High Level Above Target	1* to 10 LU	
		Low Level Below Target	1* to 10 LU	
	Absolute Gating	-70 LKFS Fixed		

Table 5-5 Loudness Display Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option	Selection Option
ARIB TR-B32	Program	Use Relative Gating		
		Relative Gating	-10 Rel Default	
	Short Term Integration	3 Seconds Fixed		
	Max Hold Time	1-60 seconds, Infinite*		
	Range	Use Relative Gating		
		Relative Gating	-20 Fixed	
	Target Loudness	Level	-24 LKFS Fixed	
		High Level Above Target	1* to 10	
		Low Level Below Target	1* to 10	
	Absolute Gating	-70 LKFS Fixed		
Custom Setup	Program	Use Relative Gating (On*)		
		Relative Gating	-20 to -6 Rel (-8 Rel*)	
	Loudness Integration Time	1-60 seconds (3 Seconds*)		
	Max Hold Time	1-60 seconds, Infinite*		
	Range	Use Relative Gating (On*)		
		Relative Gating	-22 to -18 Rel (-20 Rel*)	
	Target Loudness	Level	-31 to -1 LKFS (-23 LKFS*)	
		High Level Above Target	1* to 10 LU	
		Low Level Below Target	1* to 10 LU	
	Absolute Gating	-70* to -50 LKFS		

- **Mode**: This selection is used to choose the display mode. Options are ATSC A/85, EBU R-128, ARIB TR-B32, and Custom.
- **Units**: This selection is used to choose the units to be displayed, either LU or LKFS.
- **Loudness Bar**: Choose one of the following:
  - **ATSC A/85 Mode**: You can set the following:
    - **Source**: Choose from Momentary Loudness (Default) or Short Term Loudness.
    - **LU Scale**: You can configure the top (0 to 24 LU with a default of 24), and Bottom (-50 to -10 LU with a default of -46).

        - **LKFS Scale**: You can configure the Top (with a range of -20 to 0 LKFS and a Default of 0) and bottom (with a range of -70 to -30 LKFS and a Default of -70).
    - **EBU R-128 Mode**: You can set the following:
        - **Source**: Choose from Momentary Loudness or Short Term Loudness (Default).
        - **Scale**: Chooose one of EBU +9, EBU +18, or Full Scale.
    - **ARIB TR-B32 Mode**: You can set the following:
        - **Source**: Choose from Momentary Loudness or Short Term (Default) Loudness.
        - **Scale**: Chooose one of EBU +9, EBU +18, or Full Scale.
    - **Custom Mode**: You can set the following:
        - **Source**: Choose from Momentary Loudness (Default) or Short Term Loudness.
        - **LU Scale**: You can configure the top (0 to 24 LU with a Default of 23) and the Bottom (-50 to -10 LU with a Default -47).
        - **LKFS Scale**: You can configure the top (-20 to 0 LKFS with a Default of 0) and the bottom (-70 to -30 LKFS with a Default of -70)
    - **Zoom Range**: Choose a range of 4 to 20 LU with a default of 10.
- **ATSC A/85 Setup**: Make the following settings:
    - **Program**: This setting allows you to choose whether to use Relative Gating (it defaults to Off), and if you do select relative gating, the amount, across a range from -20 to -6 Rel, with a default of -10.
    - **Loudness Integration Time** has a range of 1-60 seconds (10 Seconds Default)
    - **Max Hold Time** has a range of 1-60 seconds, with a default of Infinite.
    - **Range** is fixed to -20 Rel.
    - **Target Loudness**: Determines the ideal volume range.
        - **Level** has a range of -31 to -1 LKFS and a default of -24 LKFS.
        - **High Level Above Target** has a range of 1 to 10 LU and a default of 2 LU.
        - **Low Level Below Target** has a range of 1 to 10 LU and a default of 2 LU.
    - **Absolute Gating**: Selects the lowest level that will be included in measurements, with a range from -70 to -50 LKFS with a default -70 LKFS.
    - **Dolby VANC SDID**: 1 to 9 (Default to 1)
    - **Dolby Program**: 1 to 8 (Default to 1)
- **EBU R-128 Setup**: Make the following settings:
    - **Program**: This setting is fixed to -10 Rel.
    - **Short Term Integration**: 3 Seconds Fixed
    - **Max Hold Time** has a range of 1-60 seconds, with a default of Infinite.
    - **Range** is fixed to -20 Rel.
    - **Target Loudness**: -23 LKFS Fixed
        - **High Level Above Target** has a range of 1 to 10 LU and a default of 1 LU.
        - **Low Level Below Target** has a range of 1 to 10 LU and a default of 1 LU.
    - **Absolute Gating**: -70 LKFS Fixed
- **ARIB TR-B32 Setup**: Make the following settings:
    - **Program**: This setting is fixed to -10 Rel.
    - **Short Term Integration**: 3 Seconds Fixed
    - **Max Hold Time** has a range of 1-60 seconds, with a default of Infinite.
    - **Range** is fixed to -20 Rel.
    - **Target Loudness**: -24 LKFS Fixed

- **High Level Above Target** has a range of 1 to 10 LU and a default of 1 LU.
- **Low Level Below Target** has a range of 1 to 10 LU and a default of 1 LU.

- **Absolute Gating**: -70 LKFS Fixed

- **Custom Setup**: Make the following settings:
  - **Program**: This setting allows you to choose whether to use Relative Gating (it defaults to Off), and if you do select relative gating, the amount, across a range from -20 to -6 Rel, with a default of -10.
  - **Loudness Integration Time** has a range of 1-60 seconds (10 Seconds Default)
  - **Max Hold Time** has a range of 1-60 seconds, with a default of Infinite.
  - **Range** is only active when Relative Gating Active is On and has a range of -22 to -18 Rel with a default of -20.
  - **Target Loudness**: Determines the ideal volume range.
    - **Level** has a range of -31 to -1 LKFS and a default of -24 LKFS.
    - **High Level Above Target** has a range of 1 to 10 LU and a default of 1 LU.
    - **Low Level Below Target** has a range of 1 to 10 LU and a default of 1 LU.
  - **Absolute Gating**: Select from -70 (the default) to -50 LKFS.

Time Code Source Setup Menu

The Time Code Source setup menu is used to determine the time code source for each format. The CMN-LA can read Ancillary Time Code and Digital Vertical Interval Time Code based on the format selected. With the AES option installed, LTC can also be used.

Menu Selections

Table 5-6 Time Code Source Setup Menu

Selection Option	Selection Option
LTC	
ANC LTC	
ANC DVITC 0	
ANC DVITC 1	
DVITC*	
DVITC Line 525	Line 10 to 30 (Line 14*)
DVITC Line 625	Line 6 to 30 (Line 14*)
Binary Group for Date	0 - 7 (6*)

Menu Selection Descriptions

- **LTC**: Longitudinal Time Code
- **ANC LTC**: Ancillary Longitudinal Time Code
- **ANC DVITC 0**: Ancillary Digital Vertical Interval Time Code 0
- **ANC DVITC 1**: Ancillary Digital Vertical Interval Time Code 1

- **DVITC**: Digital Vertical Interval Time Code. This is the default setting.

  DVITC is monitored on selected lines. After DVITC is selected, adjust the line selection in the DVITC LINE 525 or DVITC LINE 625 submenus to the selected line.
- **Binary Group for Date**: This selection allows the setup of the date as binary coded decimal digits, as per SMPTE 12M-1-2008.

Table 5-7 Binary Group Flag Assignments

BGF2	BGF1	BGF0	Time Address Reference	Binary Group
0	0	0	Unspecified	Unspecified
1	0	1	Unspecified	8-bit codes
2	1	0	Clock time	Unspecified
3	1	1	Reserved	Reserved
4	0	0	Unspecified	Date and time zone
5	0	1	Unspecified	Page/line
6	1	0	Clock time	Date and time zone
7	1	1	Clock time	Page/line

Dolby Setup Menu

The Dolby setup menu is used to select the source for the Dolby decoder, whether dfialnorm is applied, the downmix format, and Dynamic Range Control.

Menu Selections

Table 5-8 Time Code Source Setup Menu

Selection Option	Selection Option	Selection Option
Input	Embedded Pair 1* to 8	
	AES Pair 1 to 8	
Dolby Input Format	Autodetect *	
	Dolby E Only	
	Dolby D Only	
Pulldown Mode		
AES Channel Select	Channel 1, 2 *	
Downmix Select	Program Select	Pgm 1* to 8
	Lt/Rt*	
	Lo/Ro	
	Mono	
	Mute	
Downmix DRC Mode	Line*	
	RF	

Table 5-8 Time Code Source Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option
Dolby D DRC Mode	Line *	
	RF	
	Custom	
	Bypass	

Table 5-8 Time Code Source Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option
Dolby D Listen Mode	Full*	
	EX	
	3 Stereo	
	Phantom	
	Stereo	
	Mono	
Pro Logic		
Dolby E Dialnorm	Disable*	
	All Pgm Enabled	
	Pgm 1 Enabled	

- **Input**: This selection is used to choose the Dolby input. Options include Embedded Pair 1 to 8, and AES Pair 1 to 8. The input defaults to Embedded Pair 1.
- **Dolby Input Format**: This selection is used to choose between Autodetect (default) , Dolby E Only, and Dolby D Only.
- **Pulldown Mode**: This selection activates pulldown mode.
- **AES Channel Select**: This selection is used to choose Channel 1or Channel 2, which is the default.
- **Downmix Select**: This selection is used to choose between Program Select (with further options of Pgm 1 (default) to 8, Lt/Rt (Default), Lo/Ro, Mono, and Mute.
- **Downmix DRC Mode**: This selection chooses between Line (default) and RF.
- **Dolby D DRC Mode**: This selection is used to select b etween Line (default), RF, Custom, and Bypass.
- **Dolby D Listen Mode**: This selection is used to choose between Full (default) , EX, 3 Stereo, Phantom, Stereo, Mono.
- **Pro Logic**: This selection is used to activate or deactivate pro logic.
- **Dolby E Dialnorm**: This selection is used to choose between Disable (default), All Pgm Enabled, Pgm 1 Enabled.

Reference Clock Menu

The Reference Clock setup menu is used to determine the reference for the AES outputs.

Menu Selections

Table 5-9 Reference Clock Setup Menu

Selection Option	Selection Option
Video Input	
DARS/Word Clock*	

Outputs Setup Menu

The Outputs setup menu is used to enable the headphone or internal speaker settings.

Menu Selections

Table 5-10 Outputs Setup Menu

Selection Option	Selection Option	Selection Option	Selection Option
Analog	Global Settings	Source	Mute
			(Meters 1-8)
			(Meters 9-16)
		Level	-60 to 0 dB
		Delay	0 to 300 ms
		Sample Rate Converted	Off
			On
	Output 1 •• Output 8	Mute	
		Use Local Settings	
		Source	SDI 1 ••16
			AES 1 ••16
			Dolby 1 •• 8
		Level	-60 to 0 dB
		Delay	0 to 300 ms
		Sample Rate Converted	Off
			On
AES	Global Settings	Source	Mute
			(Meters 1-8)
			(Meters 9-16)
		Delay	0 to 300 ms
		Sample Rate Converted	Off
			On
	Output 1 •• Output 8	Mute	
		Use Local Settings	
		Source	SDI 1 ••16
			AES 1 ••16
			Dolby 1 •• 8
		Delay	0 to 300 ms
		Sample Rate Converted	Off
			On

Table 5-10 Outputs Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option
Headphones/Internal Speaker	Left Source	AES 1 •• 16	
		Embed 1 •• 16	
		Dolby 1 •• 8	
		Dolby Downmix L	
		Dolby Downmix R	
		Mute	
	Right Source	AES 1 •• 16	
		Embedded 1 •• 16	
		Dolby 1 •• 8	
		Dolby Downmix L	
		Dolby Downmix R	
		Mute	
	Level	-60 to 0 dB (-20 dB*)	
	Delay	0* to 300 ms	
	Enable Internal Speakers*		
	Downmix	Dolby E VANC program	1 - 8
		Dolby E VANC metadata*	
		Default Downmix	
		Default Center Downmix Level	-3.0 dB*
			-4.5 dB
			-6.0 dB
		Default Surround Downmix Level	-3.0 dB*
			-6.0 dB
			-Inf dB

Menu Selection Descriptions

- **Analog** has global settings, and settings for each of the eight outputs.
  - **Global Settings** are made to all inputs.
    - **Source:** Mute, (Meters 1-8),(Meters 9-16).
    - **Level:** Select across a range from -60 to 0 dB.
    - **Delay:** Can be set from 0 to 300 ms.
    - **Sample Rate Converted:** Options are Off and On.
  - **Output 1–8**: You can make the following settings for each output:
    - **Mute**
    - **Use Local Settings**: Individual channels can deviate from the Global Settings
    - **Source**: Choose from SDI 1–16, AES 1–16, and Dolby 1–8.
    - **Level:** Select across a range from -60 to 0 dB.

        - **Delay:** Can be set from 0 to 300 ms.
        - **Sample Rate Converted:** Options are Off and On.
- **AES** has global settings, and settings for each of the eight outputs.
    - **Global Settings** are made to all inputs.
        - **Source:** Mute, (Meters 1-8),(Meters 9-16).
        - **Delay:** Can be set from 0 to 300 ms.
        - **Sample Rate Converted:** Options are Off and On.
    - **Output 1–8**: You can make the following settings for each output:
        - **Mute**
        - **Use Local Settings**: Individual channels can deviate from the Global Settings
        - **Source**: Choose from SDI 1–16, AES 1–16, and Dolby 1–8.
        - **Delay:** Can be set from 0 to 300 ms.
        - **Sample Rate Converted:** Options are Off and On.
- **Headphones/Speaker**: This selection is used to enable either the headphones or the speakers source. By default, the headphones are enabled. To enable the speakers, the **Enable internal Speakers** menu must be selected.
    - **Left Source**: This selection is used to select a16 channel for output to the left speaker or headphone. Mapping of the channels for output monitoring is independent from the mapping of input channels to meter bars.
    - **Right Source**: This selection is used to select a 16 channel for output to the right speaker or headphone. Mapping of the channels for output monitoring is independent from the mapping of input channels to meter bars.
    - **Level**: This selection is used to sets the attenuation level for the internal speakers and headphones. Level can also be adjusted by pressing the **VOL** button and turning the curved knob.
    - **Enable Internal Speakers**: This selection is used to select the internal speakers.
    - **Downmix**: This selection is used to select which center downmix level and surround downmix level parameters should be used if downmix is enabled with the **MIX** button.

      If Dolby E VANC metadata is selected and present, the Dolby E VANC program parameter selects from which program in the Dolby E VANC metadata will be used to extract the center downmix level and the surround downmix level.

      If Dolby E VANC metadata is not present or the Default Downmix is selected, the default center downmix level and default surround downmix level will be used. The channels selection for the downmix corresponds to the loudness mapping (with the exception of the LFE, which is not included in the downmix).

Meter Configuration Setup Menu

The Meter Configuration Setup menu is used to select the response, ballistics, markers, scale, labels, offset, and other meter features.

Menu Selections

Table 5-11 Meter Configuration Setup Menu

Selection Option	Selection Option	Selection Option	Selection Option
Vertical Bar	2 Channels		
	4 Channels		
	6 Channels		
	8 Channels		
	16 Channels*		
	Lissajous Setup	Persistence	0* to 99%
			Infinite
		Attack	1 to 99% (50%*)
			100%=Maximum
		Automatic Gain Control	
		Plot	Soundstage
			X-Y
CineSound	Cinesound 5.1		
	Cinesound 5.1 + Aux		
	Cinesound 6.1		
	Cinesound 7.1		
	CineSound Direction	Outward*	
		Inward	
Response	VU*		
	Peak		
	True Peak		
	VU + Peak		
	VU + True Peak		
	Custom		
	Custom Attack	0* to 20 ms	
	Custom Decay	0.3 to 5.0 seconds (1.5 seconds*)	
Reference Level	-22 dBFS to -8 dBFS (-20 dBFS *)		

Table 5-11 Meter Configuration Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option
Peak Program Level	Type I	1 dB to 11 dB (8 dB*)	
	Type IIa	1 dB to 11 dB (8 dB*)	
	Type IIb	1 dB to 11 dB (8 dB*)	
	Type I + 8	1 dB to 19 dB (8 dB*)	
	Nordic	1 dB to 11 dB (6 dB*)	
	DIN 45406	1 dB to 13 dB (8 dB*)	
	dBFS	1 dB to 21 dB (10 dB*)	
	Zero Ref dBFS	1 dB to 21 dB (8 dB*)	
	Custom dBFS	1 dB to 21 dB (10 dB*)	
	Custom dB	1 dB to 21 dB (9 dB*)	
Scale	Type I		
	Type IIa		
	Type IIb		
	Type I + 8		
	Nordic		
	DIN 45406		
	dBFS*		
	Zero Ref dBFS		
	Custom dBFS		
	Custom dB		
	Custom dBFS Top	-20 to 0* dBFS	
	Custom dBFS Bottom	-40* to -90 dBFS	
	Custom dB Top	0 to 20 dB (10 dB*)	
	Custom dB Bottom	-70 to -20 dB (-30 dB*)	
Zoom	Center at Reference Level*		
	Center at dB Level	-60 to 20 dB (0 dB*)	
	Zoom Range	4 to 20 dB (10 dB*)	
Meter Labels	Stereo Pairs*		
	SMPTE 320M B		
	Custom Labels 1-8	Channel 1 •• Channel 8	Edit (6 characters)
	Custom Labels 9-16	Channel 9 •• Channel 16	Edit (6 characters)

Table 5-11 Meter Configuration Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option
Phase Bar Setup	Polarity	Normal*	
		Reverse	
	Damping	Fast	
		1 to 10 (5*)	
		Slow	
Audio Markers	Enable		
	Position	-50 to 12 dB (0*)	
Peak Hold Time	Off*		
	1 to 10 seconds		
	Infinite		
LFE Offset	None*		
	-10 dB		
AES Validity Bit			

Menu Selection Descriptions

- **Vertical Bars**: This selection is used to set up the vertical bars display. The default selection is 16 channels.
  - **2 Channels**: This selection is used to set a 2-channel + 1 lissajous display.
  - **4 Channels**: This selection is used to set a 4-channel + 2 lissajous display.
  - **8 Channels**: This selection is used to set an 8-channel display.
  - **16 Channels**. This selection is used to set a 16-channel display.
  - **Lissajous setup:** This selection is used to set up the display amplitude and phase relationships between two input signals. Options are Persistence, Attack, AGC, and Plot.
    - **Persistence**: This selection is used to determine how long a data point (pixel) remains on the display. The range of Persistence is 0% to Infinite. The default selection is 0%.
    - **Attack**: This selection is the initial intensity that the data point (pixel) appears in the display. The range of Attack is 1% to Maximum. The default selection is 50%.
    - **Automatic Gain Control**: This selection is used to keep the display visible from very small levels to very high levels.
    - **Plot**: This selection is used to select one of two types of Lissajous displays. The soundstage selection displays a Lissajous that is rotated so that the in-phase signals appear on the vertical axis and out of phase signals appear on the horizontal axis. X-Y displays a Lissajous with the left channel mapped to the vertical axis, and the right channel mapped to the horizontal axis.

- **CineSound**: This selection allows the display of CineSound 5.1 with two phase bars; CineSound 5.1 + 2 Aux channels with three phase bars; CineSound 6.1 with two phase bars, or CineSound 7.1 with three phase bars. The CineSound direction can be set to move from the center outward or from the outside edge in toward the center. The default meter movement is from the center outward.
- **Response**: This selection is used to display the selected meter response. Options are VU, Peak, True Peak, VU + Peak, VU + True Peak, Custom, Custom Attack, and Custom Decay. The default selection is VU.
- **Reference Level**: This selection is used to set the reference level on the meters for a digital signal. The range is from -8 dBFS to -22 dBFS. The default selection is -20 dBFS. Content below this setting is green. Content above this setting is yellow.
- **Peak Program Level**: This selection is used to adjust the position of the peak marker on an Audio meter display. Value is the number of dB above the reference level. Content above this value is red.
- **Scale**: This selection is used to determine the type of scale that appears on the Audio meter display. Custom dBFS and Custom dB can customize the top and bottom of the dBFS or dB scales.
- **Zoom**: This selection is used to set the Zoom modes. Selections are Center at Reference Level, Center at dB level, and Zoom Range. The Center at dB level has a range from -60 dB to +20 dB; the default selection is 0 dB. The Zoom range is from 4 dB to 20 dB; the default selection is 10 dB.
- **Meter Labels**: This selection is used to select the audio mapping scheme for the selected input. Only the Vertical Bar Meter Labels can be customized. When the CineSound display is selected, the audio inputs follow a SMPTE 320M mapping scheme. For vertical meters only, the SMPTE 320M meter label-mapping scheme can be changed to a stereo pair-mapping scheme.
- **Phase Bar Setup**: This selection monitors the instantaneous phase relationship between two audio channels. A properly phased stereo pair produces a phase pointer (yellow mark framed in black) that moves within the green zone, whereas a reversed channel produces a pointer that moves within the red zone. The phase bar polarity can be set to Normal or Reverse. The Phase Bar Damping can be set from FAST, 1 to 10, and SLOW.
- **Audio Markers**: This selection is used to place adjustable markers in the audio meters. Adjustable markers can be placed in audio meters to show specific critical levels.
- **Peak Hold Time**: This selection is a user-selectable duration value of Off, 1 to 10 seconds, or Infinite. The duration only applies to the hold time of the PEAK value, not the attack or decay time. The default selection is Off.
- **LFE Offset**: This selection adjusts the LFE by –10 dB when enabled. LFE Offset only occurs when CineSound is displayed.
- **AES Validity Bit**: Indicates whether V-bit is expected in the audio samples or not.

Displays Setup Menu

The Displays Setup menu is used to set the display output information for vertical bars. CineSound, trending charts, pictures, loudness, Dolby, alarms, and quadrant MLT.

Menu Selections

Table 5-12 Displays Setup Menu

Selection Option	Selection Option	Selection Option	Selection Option
Picture	Markers	Center	
		Safe Title	Off*
			Box
			Corners
		Safe Action	Off*
			Box
			Corners
		Clean Aperture	Off*
			Box
			Corners
		Custom Markers	Off*
			Box
			Corners
		Custom Position	1 to 49% (20%*)
		Custom Length	3 to 47% (5%*)
	Anamorphic		
	Time Code	Enable	
		Show LTC	
		Position	Top*
			Center
			Bottom
	Brightness	0 to 100% (50%*)	
	Contrast	0 to 200% (100%*)	
	Color	Blue*	
		Red*	
		Green*	
	VBI Mask		
	Native		
	Delay	Enable	
		H Position	Format Specific
		V Position	Format Specific
	Delay Mode Blanking		

Table 5-12 Displays Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option
Trending Chart	Group 1	Off	
		Meter Pair 1 - 8 (1*)	
	Group 2	Off	
		Meter Pair 1 - 8 (2*)	
	Group 3	Off	
		Meter Pair 1 - 8 (3*)	
	Group 4	Off	
		Meter Pair 1 - 8 (4*)	
	Levels		
	Phase		
	Loudness*		
	Time Span	15 seconds	
		30 seconds	
		1 minute*	
		10 minutes	
		30 minutes	
		1 hour	
		2 hours	
		4 hours	
		6 hours	
		8 hours	
		24 hours	
	Time Legend	Internal Clock *	
		Time Code	
	Loudness Source	Momentary Loudness*	
		Short Term Loudness	
	Loudness Range	Upper Limit	-30 to 0 LKFS (-10 LKFS*)
		Lower Limit	-70 to -40 LKFS (-40 LKFS*)
Spectrum Analyzer	Input Source	Meter 1* to 16	
	Frenquency Bands	Full Octave*	
		1/3 Octave	

Table 5-12 Displays Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option
Audio Waveform	Waveform 1	Meter 1* to 16	
		off	
	Waveform 2	Meter 1 to 16 (Meter 2*)	
		off	
	Scale	-40 to 0* dBFS	
	Intensity	0% to 100% (72%*)	
	Contrast	0% to 100% (31%*)	
	Persistence	0% to 100% (0%*)	
	Attack	1% to 99%, Maximum (6%*)	
Radar Display	LKFS*		
	LU		
	Radar Resolution	3 dB/div	
		4 dB/div	
		6 dB/div*	
		8 dB/div	
		10 dB/div	
		12 dB/div	
	Radar Speed	1 min	
		4 min*	
		12 min	
		30 min	
		1 hr	
		2 hr	
		4 hr	
		12 hr	
		24 hr	
	Peak Indicator	Off*	
		-12 to +3 dBFS	
	OBS Indicator	Off*	
		Stereo or 5.1 integrity	
		Stereo Integrity	
		5.1 integrity	
Audio Metadata	Embedded		
	AES		

Table 5-12 Displays Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	Selection Option
Dolby metadata	Dolby Decoded*		
	Dolby E VANC		
	Dolby VANC SDID	1* to 9	
Alarms	Alarm Log*		
	Alarm Status		
MLT	Quadrant Display*		
	Loudness Display		

Menu Selection Descriptions

- **Picture**: This selection is used to set up the picture display.
  - **Markers**: There are several markers available to be indicated in a picture.
    - **Center** is equal to 50% of the picture height and 50% of the picture width.
    - **Safe Title** is equal to 80% of the picture height and 80% of the picture width.
    - **Safe Action** is equal to 90% of the picture height and 90% of the picture width.
    - **Clean Aperture** shows the limits for the active pixel area. Brackets appear on the picture or a box surrounds the picture to show these limits.
    - **Custom** (**Corners**) and **Custom** (**Box**) allows the setup of customized markers for a picture display.
    - **Custom Position** is used in conjunction with the **Custom Corners and Custom Box** selections. It allows the adjustment of the custom corner or box size.
    - **Custom Length** is used in conjunction with the **Custom Corners** selection option. It allows the adjustment of the corner lengths.
  - **Anamorphic**: This selection is used to stretch source aspect ratio to an aspect ratio that fills the screen (for example, SD squeezed horizontally 16×9 to 4×3 DVD source). The anamorphic selection is not available in 16×9 source aspect ratio.
  - **Time Code**: This selection is used to display the time code; that is, the time that is associated with each video frame. Time Code is keyed over the picture on the right side. The Position selection option is used for the vertical placement of the time code at the top, center, and bottom (beyond safe action areas).
  - **Brightness**: This selection is used to make the picture brightness lighter or darker. The brightness range is from 0% (for the darkest picture) to 100% (for the brightest picture). The default picture brightness is 50%.
  - **Contrast**: This selection is used to increase the overall difference between the lightest and darkest colors. The contrast range is from 0% (for no difference between the lightest and darkest colors) to 200% (for the most amount of difference between the lightest and darkest colors). The default picture contrast is 100%.
  - **Color**: This selection is used to change the picture color gun selection. When all three colors are deselected, the picture display changes to monochrome.
    - **Green**: Green is a setup feature that is used to show the green color component of the input video. Use the Green feature to set the Saturation and Hue by matching the intensity of all green bars when a SMPTE split field color bar signal is applied.

- **Blue**: Blue is a setup feature that is used to show the blue color component of the input video. Use the Blue feature to set the Saturation and Hue by matching the intensity of all blue bars when a SMPTE split field color bar signal is applied.
- **Red**: Red is a setup feature that is used to show the red color component of the input video. Use the Red feature to set the Saturation and Hue by matching the intensity of all red bars when a SMPTE split field color bar signal is applied.

- **VBI Mask**: The VBI (Vertical Blanking Interval) Mask selection option is used to mask non-active lines. With VBI Mask set to ON, only active lines will be shown on the picture portion of the display.
- **Native**: When This selection is enabled, it displays the SD picture as a one-for-one pixel mapping. When Native mode is not checked, the SD picture fills the screen.

The Native mode menu item only appears when an SD format is detected.

- **Delay**: This selection is used to view the horizontal and vertical blanking areas of the video signal. Delay enables and disables the delay mode. Delay Position displays the amount of vertical and horizontal delay. Using the Delay position, turn the Up/Down and Right/Left knobs to position the picture. The Delay feature is not affected by the Native mode selection.

- **Trending Chart**
  - **Group 1**: This selection is used to choose which audio meter pair is displayed as the first set of trending data.
  - **Group 2**: This selection is used to choose which audio meter pair is displayed as the second set of trending data.
  - **Group 3**: This selection is used to choose which audio meter pair is displayed as the third set of trending data.
  - **Group 4**: This selection is used to choose which audio meter pair is displayed as the fourth set of trending data.
  - **Levels**: This selection is used to cause the trend chart to display audio levels for up to four pairs of audio meters. The legend under the trend chart will indicate which audio meters are mapped to which trending chart lines. The actual audio input is configured in the Meter Mapping setup menu.
  - **Phase**: This selection is used to cause the trend chart to display inter-channel phase values for up to 4 pairs of audio meters.
  - **Loudness**: This selection is used to cause the trend chart to display the ITU 1770 loudness level for the audio inputs.
  - **Time Legend**: Determines the clock source.
  - **Timescale Timespan**: This selection is used to choose the length of history shown on the trending chart. Time span values are 24 hours, 8 hours, 6 hours, 4 hours, 2 hours, 1 hour, 30 minutes, 10 minutes, 1 minute, 30 seconds, and 15 seconds.
  - **Loudness Range**: This selection is used to choose the upper and lower limits for the range of Loudness levels on the trend chart, when Loudness levels are plotted.
  - **Spectrum Analyzer**: Determines the Input Source, choosing from Meter 1 to 16 and defaulting to meter 1; and whether the frequency band is a full octave (default) or 1/3 Octave.
  - **Audio Waveform**: Configures Waveform 1 and 2, which can display one of Meters 1-16. Waveform 1 defaults to meter 1, and Waveform 2 defaults to meter 2. Both meters display the same configurable settings for scale (-40 to 0 dBFS), Intensity (0% to 100%), Contrast (0% to 100%), Persistence (0% to 100%), and Attack (1% to 99%).

- **Radar Display**: This selection is used to choose loudness history, short term loudness, and long-term statistical loudness descriptor values in a radar-shaped display format.
  - **LKFS**: This selection allows the user to select Loudness K-weighted Full Scale.
  - **LU**: This selection allows the user to select Loudness Units.
  - **Radar Resolution**: This selection sets the difference in loudness between neighboring concentric circles in the radar between 3 and 12 dB. Choose low numbers when targeting a platform with a low dynamic range tolerance. The display can zoom in or out with this setting.
  - **Radar Speed**: This selection controls how much time each radar revolution takes. Select from 1 minute to 24 hours. With this setting, the display can zoom in or out on the time scale.
  - **Peak Indicator**: This selection sets the level at which the Peak indicator lights up. The indicator shows whether any channel exceeds the true-peak threshold or not.
  - **OBS Indicator:** This selection sets the conditions for the indicator to light up. The indicator shows certain inter-channel anomalies.
- **Audio Metadata**: Choose either Embedded or AES.
- **Dolby Metadata**: This selection is used to enable the Dolby VANC SDID on the Status display.
- **Alarms**: This selection is used to enable the Alarm Log or the Alarm Status display. The default selection is Alarm Log.
- **MLT**: This selection allows the user to select the configuration for the quadrant MLT mode.
  - **Quadrant Display**: This selection enables a four-pane display view (as illustrated in **Figure 3-6** on page 35). The view will show the bars, trending, picture, loudness, and status displays. Displays in this view can be changed by pressing the appropriate function button, and a user can press the **CYCLE** button to cycle through the different display options.
  - **Loudness Display**: This selection enables a three-pane display view for the Comprehensive Loudness display view (as illustrated in **Figure 4-22** on page 63). The view will show the bars, trending, and loudness displays. Displays in this view are set and cannot be changed.

Alarms Setup Menu

For information on alarm setup and descriptions, see **Chapter 6**.

Enable Dual Link A-B Setup Menu

Selecting Enable Dual Link A-B forces Input A to link with Input B to display 1080i and 1080p dual link video formats. Refer to *SMPTE 372M-2002: Dual Link 292M Interface for 1920×1080 Picture Raster,* for information on dual link formats.

Import/Export Setup Menu

The Import/Export Setup menu is used to allow import and export of display captures stored on a USB device.

*The File Navigation screen appears only when a USB drive is attached to the CMN-LA unit. See **File Navigator** for more information.*

Menu Selections

Table 5-13 Import/Export Setup Menu

Selection Option
File Navigator Screen

File Navigator

The File Navigator dialog box does not appear if a USB removable drive is not connected to the USB port on the unit.

The File Navigator dialog box, shown in **Figure 5-1**, is used to control the presets and frame captures for the CMN-LA. Any stored preset or frame capture can be stored onto the USB removable drive. In addition, any preset or frame capture stored on the USB drive can be stored in the CMN-LA's internal memory.

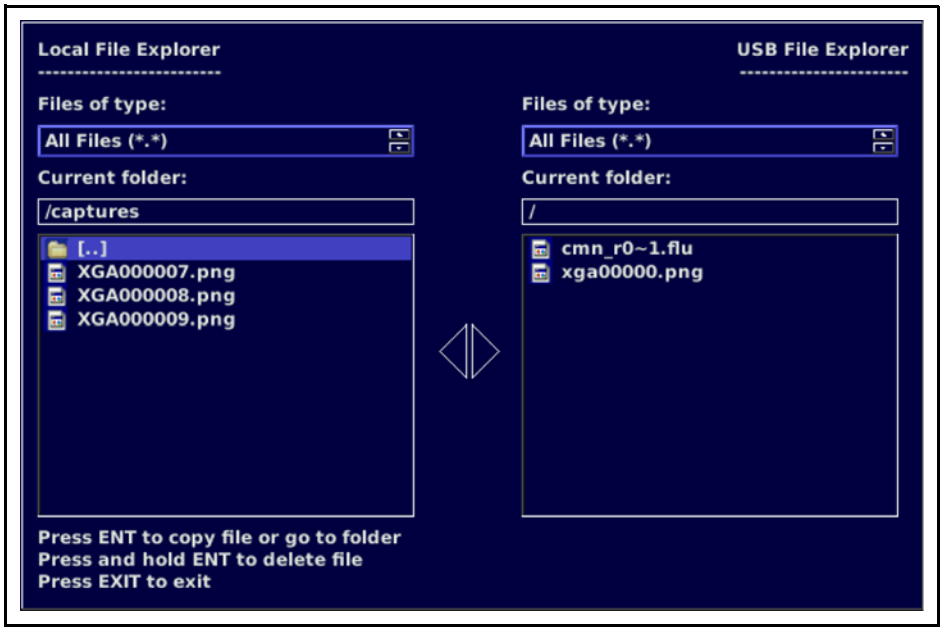


Figure 5-1 File Navigator Dialog Box

Local File Explorer

The left column of the File Navigator dialog box, labeled as Local File Explorer, shows what is available to be transferred to the USB drive. The stored presets are located in the PRESETS folder, and the frame captures are located in the CAPTURES folder.

To move between folders and files
Use the navigation buttons.

To enter a folder
Press the **ENT** button.

USB File Explorer

The right column of the File Navigator dialog box, labeled as USB File Explorer, shows what is stored on the USB memory device. The stored presets and captures on the USB drive are shown in this column.

To copy a file to the USB drive or internal memory
- Select a preset or capture
- Press the **ENT** button.

To delete a file
Press and hold the **ENT** button to delete the file.

To exit the File Navigator dialog box
Press the **EXIT** button.

Clear Setup Menu

The Clear Setup menu is associated with all unit operations that allow an instantaneous clear of the active function.

Menu Selections

Table 5-14 Clear Setup Menu

Selection Option
DISP Captures
Audio Peak Hold
Radar Meter
Audio Status
Alarm Log
Alarm Error Count
Persistence
Loudness Integration

Menu Selection Descriptions

- **DISP Captures**: This selection is used to clear a display capture from the CMN-LA unit's memory.
- **Audio Peak Hold**: This selection is used to clear the peak audio hold.

- **Radar Meter**: This selection is used to clear the radar meter.
- **Audio Status**: This selection is used to clear the audio status.
- **Alarm Log**: This selection is used to clear the alarm log.
- **Alarm Error Count**: This selection is used to clear an alarm status.
- **Persistence**: Not implemented.
- **Loudness Integration**: This selection is used to clear the loudness integration.

Unit Configuration Setup Menu

Menu Selections

Table 5-15 Unit Configuration Setup Menu

Selection Option	Selection Option	Selection Option	
Display Setup	Input Color	Blue	
		Green	
		Cyan	
		Red	
		Magenta	
		Brown	
		Gray	
		Dark Gray	
		Light Blue	
		Light Green*	
		Light Cyan	
		Light Red	
		Light Magenta	
		Yellow	
		White	
	Graticule Color	Blue	
		Green	
		Cyan	
		Red	
		Magenta	
		Brown	
		Gray	
		Dark Gray	
		Light Blue	
		Light Green	
		Light Cyan	
		Light Red	
		Light Magenta	
		Yellow	
		White*	

Table 5-15 Unit Configuration Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	
	Cursor Color	Blue	
		Green	
		Cyan	
		Red	
		Magenta	
		Brown	
		Gray	
		Dark gray	
		Light blue	
		Light green	
		Light cyan	
		Light red*	
		Light magenta	
		Yellow	
		White	
	Sleep Mode	Off*	
		1 to 60 minutes	
	Monochrome Display		
Graticule Intensity	1 to 100% (50%*)		
Cursor Intensity	1 to 100%*		
Front Panel	High Tally	35 to 100% (80%*)	
	Low Tally	0 to 10% (5%*)	
	LCD Backlight Level	Low	
		High*	
GPIO	Input Function	Input 1	Select A
			Select B
			User GPI Alarm 1
			No Action*
			Run/Stop Program Loudness
		Input 2	Select A
			Select B
			User GPI Alarm 2
			No Action*
			Clear Program Loudness

Table 5-15 Unit Configuration Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option	
		Input 3	Recall Preset 1
			Recall Preset 2
			User GPI Alarm 3
			No Action*
		Input 4	Recall Preset 3
			Recall Preset 4
			User GPI Alarm 4
			No Action*
	Output Function	Polarity	Normally Open*
			Normally Closed
			Follow Input A
			Follow Input B
			Follow Alarms*
IP Configuration	Ethernet Config Screen		
Logs	Naming Convention	Serial Number	
		Custom	
	Custom Name		
System Time	Enter New Time Screen		
Show Clock*			
Flash Update From USB	File Navigator Screen		
Feature Upgrade From USB	File Navigator Screen		

Menu Selection Descriptions

- **Display Setup**: The Display Setup selection options are used to configure the display colors, sleep mode, and monochrome display.
  - **Input Color**: This selection is used to select the color for the various displays. Color selections are blue, green, cyan, red, magenta, brown, gray, dark gray, light blue, light green, light cyan, light red, light magenta, yellow, and white. The default selection is light green. Use the curved arrow knob to scroll through the available color selections.
  - **Graticule Color**: This selection is used to select the color for the graticule display items. Color selections are blue, green, cyan, red, magenta, brown, gray, dark gray, light blue, light green, light cyan, light red, light magenta, yellow, and white. The default selection is white. Use the curved arrow knob to scroll through the available color selections (you will see the colors change on the display screen).

- **Cursor Color**: This selection is used to select the color for the cursor display items. Color selections are blue, green, cyan, red, magenta, brown, gray, dark gray, light blue, light green, light cyan, light red, light magenta, yellow, and white. The default selection is light red. Use the curved arrow knob to scroll through the available color selections (you will see the colors change on the display screen).
- **Sleep Mode**: This selection is used to turn off all LEDs and the display after there is no activity for the specified duration. In Sleep mode the CMN-LA is still active (that is, alarms still triggered, etc.) The time it takes for Sleep mode to activate can range from 1 to 60 minutes.
- **Monochrome Display**: This selection is used to provide a black-and-white display output.

- **Graticule Intensity**: This selection is used to raise or lower the brightness of the displayed graticule. The range of graticule intensity is 1% to 100%. The default selection is 50%.
- **Cursor Intensity**: This selection is used to raise or lower the brightness of the displayed cursor. The range cursor intensity is 1% to 100%. The default selection is 100%.
- **Front Panel**: This selection is used to raise or lower the brightness levels of the front panel function buttons, and to select the intensity of the display background.
  - **High Tally**: This selection is used to set the brightness of the High Tally state. The range of button contrast is 35% to 100%. The default selection is 80%.
  - **Low Tally**: This selection allows for setting the brightness of the buttons in a low tally state. The range of brightness is 0% to 10%. The default selection is 5%.
  - **LCD Backlight Level**: This selection allows for setting a low- or high-intensity level of the LCD display backlight. The default selection is High.

- **GPIO**: Choose Normally Open (default value) or Normally Closed for the GPIO output.You can further define the functions of the various GPI inputs and outputs.
  - **Input 1**: can select input A or B for SDI input, or can trigger User GPI alarm 1, or can toggle run and stop program loudness, though the default is No Action.
  - **Input 2**: can select input A or B for SDI input, or can trigger User GPI alarm 2, or can clear program loudness, though the default value is No Action.
  - **Input 3**: can recall Preset 1 or 2, or can trigger User GPI alarm 3, though the default value is No Action.
  - **Input 4**: can recall Preset 3 or 4, or can trigger User GPI alarm 4, though the default value is No Action.
  - **Polarity**: Choose Normally Open (default value) or Normally Closed. Setup you can choose Follow Input A or B or the default value of Follow Alarms.
- **IP Configuration**: This selection is used to configure the CMN-LA for Ethernet communication. The Ethernet interface provides a high-speed communication link to the third party applications (such as web browser) over standard LAN and Internet networks. The interface conforms to industry Ethernet standards:
  - Connection via a standard RJ45 socket
  - Automatic detection and switching between 10Base-T and 100Base-T
  - TCP/IP stack is fully compliant with RFC2500, "Internet Official Protocol Standards"
  - Fully compliant with IEEE 802.3 Ethernet standard

  The interface can accept a static IP address, or it can obtain an IP address dynamically from a DHCP server. The IP Address, Subnet Mask, Gateway Address, DHCP enable, and Port are programmable from the unit's IP Config menu. The settings are performed in the IP Configuration screen.

- **DHCP**: The Dynamic Host Configuration Protocol (DHCP) function is used to have the CMN-LA automatically configure an IP Address, Subnet Mask, and Gateway every time the unit is powered on. The IP Address is dynamic and could change each time the CMN-LA is powered on. DHCP Enable is set to OFF by default.
- **IP Address**: The IP Address is used to select a static IP address (unless DHCP will be used). The IP address must not be the same address as another instrument or PC on the network. Network conflicts will occur if two devices have the same IP address. See the System Administrator to determine a static IP address that will avoid conflicts.
- **Subnet Mask**: The Subnet Mask is used to configure the Subnet Mask on a network if DHCP is not enabled. If DHCP is not used to automatically detect the Subnet Mask on a network, the Subnet Mask must be manually configured. Unlike the IP address, the Subnet Mask must be the same Subnet Mask as the network Subnet Mask. See the System Administrator to determine the Subnet Mask.
- **Gateway**: The Gateway is the network address that provides access to an outside network. Use the Gateway submenu to configure the Gateway on a network if DHCP is not enabled. If DHCP is not used to automatically detect the Gateway on a network, the Gateway must be manually configured. Unlike the IP address, the Gateway must be the same Gateway address as the network Gateway address. See the System Administrator to determine the Gateway address.

- **Logs**: This configures the file names for the daily loudness logs, which are available for download from the Web page interface.
  - **Naming Convention:** Options are Serial Number, which uses the device's hard-coded serial number as part of the file name, and Custom, which opens a dialog box where you can enter a string of text for the file name.
- **System Time**: This selection allows the setup of the clock display's date and time.
- **Show Clock**: This selection allows the display of the system clock.
- **Flash Update from USB**: This selection is used in coordination with a USB memory stick to update the unit.
  - Attach the USB stick into the unit.
  - Select **Flash Update from USB** in the Unit Configuration setup menu.
  - Use the File Navigator to select the FLU file.
  - Press the **ENT** button to proceed into flash update mode. Flash update status is shown on the front panel screen.

    When complete, "FLASH UPDATE COMPLETE" appears on the screen.
  - Cycle the power to continue normal operation.

Presets are lost when performing a flash update. Ensure that the presets are saved on USB before flashing.
This menu item does not appear if a USB memory device is not installed.

- **Feature Upgrade from USB**: This selection is used in coordination with a USB memory stick containing the feature file for the device to update the unit.
  - Attach the USB stick into the unit.
  - Select **Feature Update from USB** in the Unit Configuration setup menu.
  - Use the File Navigator to select the update file.
  - Press the **ENT** button to proceed into feature upgrade mode.

    When complete, the screen blanks and the unit reboots.

- In the Unit Configuration setup menu, select **ABOUT** to verify the option was installed successfully.

The serial number on the device must match the serial number on the feature file. The message "INSERT USB DEVICE WITH FEATURE UPGRADE" appears when the serial number of the device does not match the serial number on the feature file.

About Menu

This selection allows the display of the About screen (see **Figure 5-2**).

Menu Selections

Table 5-16 About Menu

Selection Option	Selection Option
About	About display screen

Menu Selection Descriptions

The About screen contains information specific to the CMN-LA, such as model, serial number, options, revision levels, IP address, and MAC address.

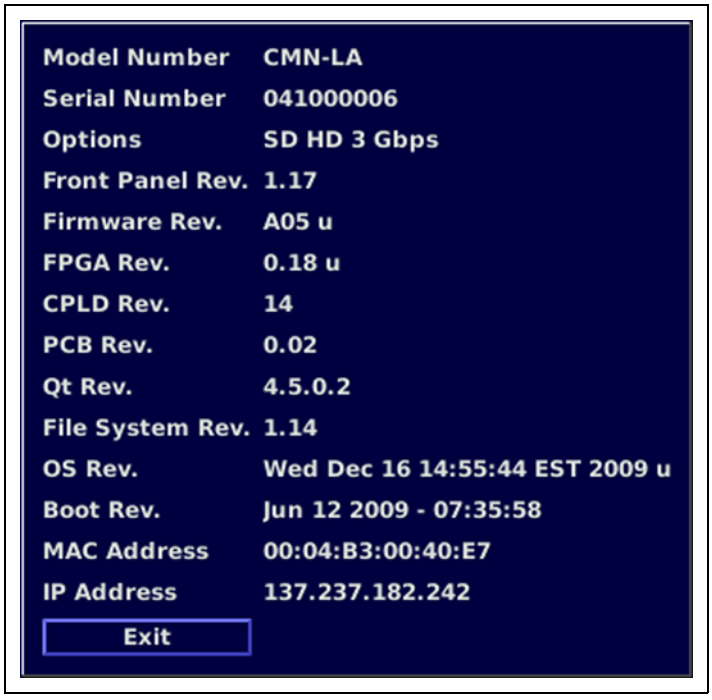


Figure 5-2 About Display Screen

To exit the About display screen
Press the **EXIT** navigation button.

6 Alarm Descriptions

The CMN-LA alarms monitor video and audio signals, time code errors, and GPI errors.

Limits are selected in the Setup menu by choosing a value using the curved arrow knob or the Up/Down navigation buttons.

Sensitivity and Duration are two general terms used in the alarm menus.

- Sensitivity is set by Consecutive Errored Samples (CES). When setting amplitude limits, a noise spike can exceed the limit while the video amplitude can be within the limit. With the CES set to a low number, a spike is detected and an alarm is displayed. Set the CES to a higher number to ignore the fast spike. Each CES occurs at 37ns intervals for SD and 13.5ns for HD. Use this as a guideline to select the appropriate CES value.

  Not all alarms have CES associated with them; in such cases, use the duration to increase or decrease the general sensitivity.
- Duration is used to determine how long an error must persist before it is reported. Set the duration to 0 to cause an error to be displayed as soon as the CES value is met.

Alarm Setup Menus

The Alarm Setup menu items, along with their corresponding Table and Description page locations are listed in **Table 6-1**. An asterisk (*) is shown next to the default menu selections.

Table 6-1 Alarms Setup Menu

Selection	Page
Meter-based alarms setup	Page 118
Loudness alarms setup	Page 121
Dolby alarms setup	Page 122
Time code alarms setup	Page 123
GPI alarms setup	page 124

See page 83 for information on how to navigate through the Setup menus.

Meter-Based Alarms Setup Menu

Menu Selections

Table 6-2 Meter-Based Alarms Setup Menu

Selection Option	Selection Option	Selection Option
Peak Audio	Enable Channel 1 •• Enable Channel 16	
	Level	-30 to 0 dBFS (-10 dBFS*)
	Duration	0 to 60 seconds (2 seconds*)
Loss of Sound	Enable Channel 1 •• Enable Channel 16	
	Level	-60* to 0 dBFS
	Duration	0 to 60 seconds (2 seconds*)
Loss of Embedded Data	Enable Group 1 Pair 1 •• Enable Group 1 Pair 2	
	Enable Group 2 Pair 1 •• Enable Group 2 Pair 2	
	Enable Group 3 Pair 1 •• Enable Group 3 Pair 2	
	Enable Group 4 Pair 1 •• Enable Group 4 Pair 2	
	Duration	0 to 60 seconds (2 seconds*)
Loss of AES Data	Enable Pair 1 •• Enable Pair 8	
	Duration	0 to 60 seconds (2 seconds*)
Embedded Frequency Mismatch	Enable Channel 1 •• Enable Channel 16	
	Duration	0 to 60 seconds (2 seconds*)
Embedded CRC	Enable Channel 1 •• Enable Channel 16	
	Duration	0 to 60 seconds (2 seconds*)
AES CRC	Enable Channel 1 •• Enable Channel 16	
	Duration	0 to 60 seconds (2 seconds*)

Table 6-2 Meter-Based Alarms Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option
Continuous Tone	Enable Channel 1 •• Enable Channel 16	
	Threshold	1* to 20 db
	Duration	0 to 60 seconds (2 seconds*)
Digital Clip	Enable Channel 1 •• Enable Channel 16	
	Sensitivity	1 to 100 CES (50 CES*)
	Duration	0 to 60 seconds (2 seconds*)
Digital Mute	Enable Channel 1 •• Enable Channel 16	
	Sensitivity	1 to 100 CES (50 CES*)
	Duration	0 to 60 seconds (2 seconds*)
Embedded V-Bit	Enable Group 1 Pair 1 •• Enable Group 1 Pair 2	
	Enable Group 2 Pair 1 •• Enable Group 2 Pair 2	
	Enable Group 3 Pair 1 •• Enable Group 3 Pair 2	
	Enable Group 4 Pair 1 •• Enable Group 4 Pair 2	
	Duration	0 to 60 seconds (2 seconds*)
AES V-Bit	Enable Pair 1 •• Enable Pair 8	
	Duration	0 to 60 seconds (2 seconds*)
Low Audio	Enable Channel 1 •• Enable Channel 16	
	Level	-60* to 0 dBFS
	Duration	0 to 60 seconds (2 seconds*)
BCH (HD-SDI only)	Enable	
	Duration	0 to 60 seconds (2 seconds*)

Table 6-2 Meter-Based Alarms Setup Menu *(Continued)*

Selection Option	Selection Option	Selection Option
Phase	Enable Pair 1 •• Enable Pair 8	
	Value	0° to 178°*
	Duration	0 to 60 seconds (2 seconds*)
AES/EBU Phase	Enable Input 1 •• Enable Input 8	
	Ref	DARS/Word Clock*
		AES Input Pair Pair 1 •• AES Input Pair 8
	Threshold	5%* or 25%
	Duration	0 to 60 seconds (2 seconds*)

Menu Selection Descriptions

- **Peak Audio**: The Peak Audio alarm occurs when the peak audio level exceeds the adjustable limit for a period in excess of the duration setting. The limit can be set from -30 dBFS to 0 dBFS, in 1 dB increments.
- **Loss of Sound**: The Loss of Sound alarm occurs when the peak amplitude falls below an adjustable limit for a period in excess of the duration setting. This alarm is valid for the displayed input (EBU or embedded). The audio range is -60 dBFS to 0 dBFS, in 1 dB increments. The range point is global and is independent of the scale type or input format.
- **Loss of Embedded Data**: The Loss of Embedded Data alarm monitors the embedded data stream. The alarm occurs when a loss of embedded data is detected for a period in excess of the duration setting.
- **Embedded Frequency Mismatch**: The Embedded Frequency Mismatch alarm occurs when the sampling rate value in the embedded control packet does not match the sampling frequency decoded from the channel status bits from embedded audio data packets. Both packets must contain valid sampling frequencies (32 kHz, 44.1 kHz, or 48 kHz) for the values to be compared. If either packet contains an undefined or reserved value, the alarm is logged false. For SD video sources, if the audio control packet is not present, the alarm is logged false.
- **Continuous Tone**: The Continuous Tone alarm occurs when a continuous sound level is present for a period in excess of the duration setting.
- **Digital Clip**: The Clip alarm occurs when the audio is at a maximum level for a period in excess of the duration setting. The Clip indicator appears in the table below the audio meters when a Clip alarm occurs. For the CMN-LA, the accuracy of the audio clip alarm is 0.1 dB.
- **Digital Mute**: The Mute alarm occurs when the audio sample is "0" for a period in excess of the duration settings. The Mute indicator appears in the table below the audio meters when a Mute alarm occurs.
- **V-Bit**: The V-Bit alarm occurs when the V-Bit is detected as "1" in the embedded audio source for the specified duration.

- **Low Audio**: The Low Audio alarm occurs when the peak audio sample does not exceed the adjustable digital level for a period of time in excess of the duration setting. The peak audio sample is an absolute measurement of the audio sample and represents the true audio peak. It is not averaged over time, and can be enabled per channel.
- **BCH**: The BCH alarm occurs when errors are detected in an HD embedded audio packet
- **Phase**: The Phase alarm occurs when the phase difference between any audio pair (L and R) exceeds an adjustable range for a period in excess of the duration setting. The range is 0 to 178 degrees, in 1 degree increments. The range is a global setting. If eight channels (four pairs) are displayed, the setting is valid for all pairs.
- **AES/EBU Phase**: You can enable Inputs 1 through 8. Under Ref, you have choices of DARS/Word Clock (the default setting) or AES Input Pairs 1 through 8. The Threshold can be either 5% (the default setting) or 25%, and the duration can range from 0 to 60 seconds, with a default of 2 seconds.

Loudness Alarms Setup Menu

Menu Selections

Table 6-3 Loudness Alarms Setup Menu

Selection Option	Selection Option	Selection Option
High level above target	Enable	
	Duration	0 to 60 seconds (2 seconds*)
Low level below target	Enable	
	Duration	0 to 60 seconds (2 seconds*)

Menu Selection Descriptions

- **High Level Above Target**: The High Level Above Target alarm occurs when the loudness level is higher than the range of values above the target value for the desired loudness level.
- **Low Level Below Target**: The Low Level Below Target alarm occurs when the loudness level is lower than the range of values below the target value for the desired loudness level.

Dolby Alarms Setup Menu

Menu Selections

Table 6-4 Dolby Alarms Setup Menu

Selection Option	Selection Option	Selection Option
Loss of VANC data	SDID 1 •• SDID 9	
	Duration	0 to 60 seconds (2 seconds*)
Dolby E position	Pair 1 •• Pair 8	
	Maximum	12 - 63* lines
	Minimum	8* -32 lines
	Duration	0 to 60 seconds (2 seconds*)
Format Change	Enable	
	Dolby E Format	
	Dolby D Format	
Dialnorm	Program 1 •• Program 8	
	Maximum	-1* to -31 dB
	Minimum	-1 to -31* dB
	Duration	0 to 60 seconds (2 seconds*)

Menu Selection Descriptions

- **Loss of VANC data**: The Loss of VANC data alarm occurs when Dolby E VANC ancillary data packets are not present. Dolby E VANC packets are identified by DID: 0x45 and SDID: 0x01 - 0x09. This alarm is enabled by SDID value.
- **Dolby E position**: The Dolby E position alarm occurs when the line number of the first embedded audio data packet containing Dolby E data is outside the range selected by the minimum and maximum line parameters for the duration selected. This alarm is enabled by embedded input pair.
- **Dialnorm**: The Dialnorm alarm occurs when the Dolby E VANC metadata dialnorm value for the enabled program falls outside selected minimum and maximum values for the duration. The dialnorm value from the Dolby D Essential payload is the specific dialnorm value used for this alarm. This alarm is enabled by program.

Time Code Alarms Setup Menu

Menu Selections

Table 6-5 Time Code Alarms Setup Menu

Selection Option	Selection Option	Selection Option
LTC Loss of Time Code	Enable	
	Duration	0 to 600 seconds (240 seconds*)
LTC Time Code Continuity		
LTC/DVITC Compare	Enable	
	Threshold	1* to 30 frames
	Duration	0 to 600 seconds (240 seconds*)
DVITC Loss of Time Code	Enable	
	Duration	0 to 600 seconds (240 seconds*)
D-VITC Line	Enable	
	Line Number - 525/59.94	Line 10 to Line 30 (Line 14*)
	Line 625 - 625/50	Line 6 to Line 30 lines (Line 14*)
	Duration	0 to 600 seconds (240 seconds*)
D-VITC Continuity		
D-VITC CRC	Enable	
	Duration	0 to 600 seconds (240 seconds*)

Menu Selection Descriptions

- **DVITC Loss of Time Code**: The DVITC Loss of Time Code alarm occurs when no DVITC Time Code in the video signal is detected for a period in excess of the duration setting.
- **D-VITC Line**: The D-VITC Line alarm is used to select the line number on which the D-VITC time code is detected for the "D-VITC Continuity" and "D-VITC CRC" fields. When time code is not detected on the selected line number, the alarm activates.
- **D-VITC Continuity**: The D-VITC Continuity alarm occurs when a break or interruption in the digital vertical interval time code (VITC) frames occur for a period in excess of the duration setting.
- **D-VITC CRC**: The D-VITC CRC alarm occurs when the cyclic redundancy check (CRC) within the digital vertical interval time code field does not correlate with the calculated CRC for a period in excess of the duration setting.

GPI Alarms Setup Menu

Menu Selections

Table 6-6 Time Code Alarms Setup Menu

Selection Option
GPI 1 Alarm Enable •• GPI 4 Alarm Enable

Menu Selection Descriptions

- **GPI 1 Alarm Enable •• GPI 4 Alarm Enable:** Enables the selected GPI alarm.

Alarm Log

The Alarm Log selection option enables the Alarm Log display. The Alarm Log display lists all the alarms, the date, time, time code, duration, and peak value. The alarm list begins with the most recent alarm and can hold a maximum of 100 alarms.

An Alarm Log display diagram is shown in Figure 4-27 on page 70 and described in **Table 4-15** on page 70. The diagram illustrates the general location for the various alarm fields.

When an alarm is first registered, it appears on the Alarm Log display and is highlighted in yellow. If the alarm is short term (that is, two seconds or less), the alarm text is not highlighted after approximately two seconds. If the alarm continues longer than two seconds, the text remains yellow and the alarm duration is incremented. When the next alarm occurs, the previous alarm moves down one position.

Alarm Status

The alarm status screen contains detailed information concerning alarm status indicators. This information is separated into columns sorted by alarm name, whether or not the alarm is enabled, lower and upper limits, thresholds, and duration, and total number of alarms. The alarm name text can appear in a colored state. The colored states are as follows:

- **White**: indicates alarm is not enabled.
- **Green**: indicates alarm is enabled and not exceeding alarm limits.
- **Red**: indicates the alarm is enabled and exceeding an alarm limits.

There is a two-second persistence for any Alarm Name color change.

Use the same navigation buttons to scroll through the alarm status list as for the alarm log list (see page 70).

An alarm status display diagram is shown in Figure 4-28 on page 71. The diagram illustrates the general location for the various alarm status display fields.

7 External Control

Microsoft® Internet Explorer version 6 or later is the recommended browser.

Browser Interface

The website for each unit is accessed by pointing the web browser at the CMN-LA IP address. Before the default web screen appears, a user ID and password must be entered.

- User ID: **admin**
- Password: **Harris**

*The user ID **admin** is the default user ID and **Harris** is the default password. These are set at the factory but can be changed by the user via the Accounts web page. Keep in mind, though that once the user ID and password have been changed, the only way to reset the unit to the default user ID and its default password is to send the unit back to the factory for repairs.*

Once the user ID and password have been entered, the web page opens, showing a list of captures that have been stored in the CMN-LA's internal memory. Use the web page to view the files or save them to disk. (See ***Display Images*** on page 37 for information). A sample web page is shown in **Figure 7-1**.

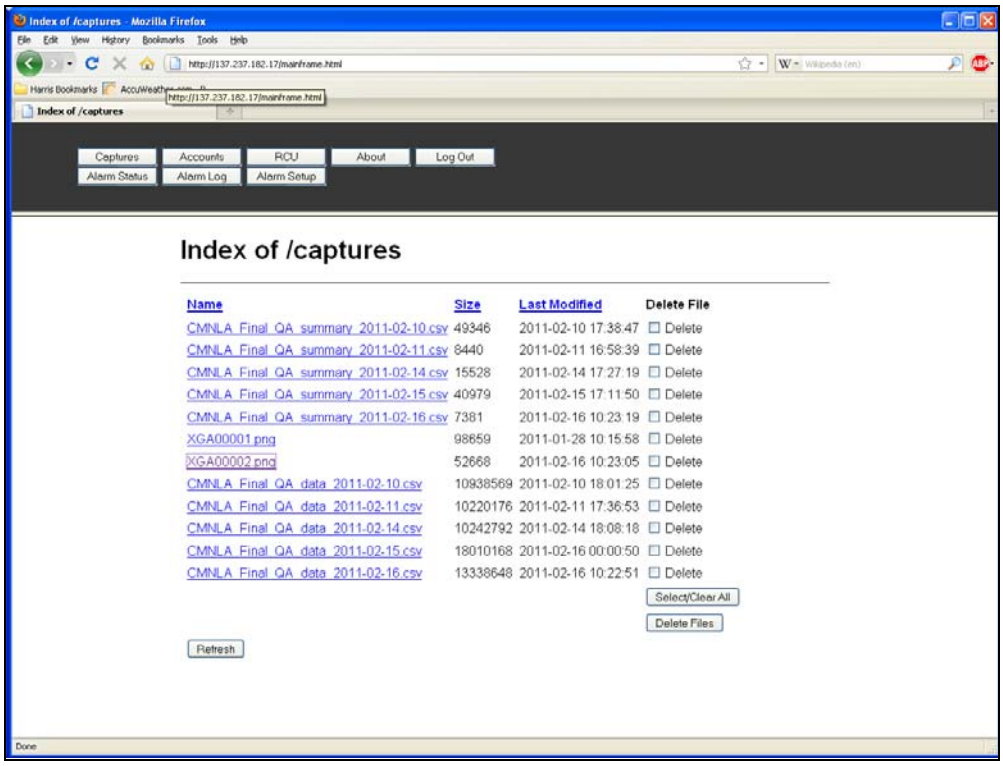


Figure 7-1 Sample Web Remote Display

Accessing the Web-Based Control Panel

Access the web browser as described on page 125. Once the Index of Captures/Web Remote Display page opens, click the **RCU** button to access the web-based control panel.

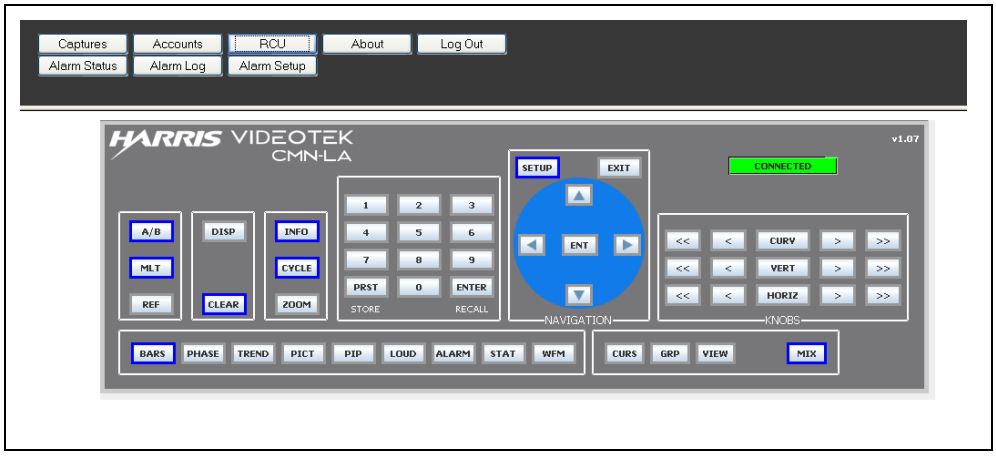


Figure 7-2 Web-Based Control Panel

The CMN-LA unit allows access to one controller at a time. If the unit receives a request for another Web RCU session while previously established control session exists, the request will be granted after the previously established session is terminated.
A Web RCU session that was terminated due to conflict with another control session can be re-established by repeating the logon procedure.

Accessing the Index of Captures

Click the **CAPTURES** button on the web-based control panel to access the Index of Captures page.

To open a file capture

Click the file capture name, and then follow the on-screen instructions.

To display an updated list of captures

Click the **Refresh** button.

*The Index of Captures window does not refresh automatically. If you store one or more captured displays but do not see it on the Index of Captures, click **Refresh** to see the updated index.*

To save a file capture

Click the file capture name, and then follow the on-screen instructions.

To delete a single file capture

Click the **Delete** check box to the right of the file capture name, and then click the **Delete Files** button.

To delete a list of file captures

1. Click the **Select/Clear All** button.

   The **Delete** check box to the right of each file capture is automatically selected. (Click the individual check mark to deselect files as desired.)

2. Click the **Delete Files** button.

   The file captures are removed from the Index of Captures list.

Managing User Accounts

The CMN-LA allows user accounts to be added or edited at the User, System, or Administrator levels. Both User and System level accounts are allowed general control of the unit.

Only operators at the Administrator level can manage accounts.

Adding Accounts

To add a new user account

1 Click the **Accounts** button on the web-based control panel.

The Accounts Display page opens.

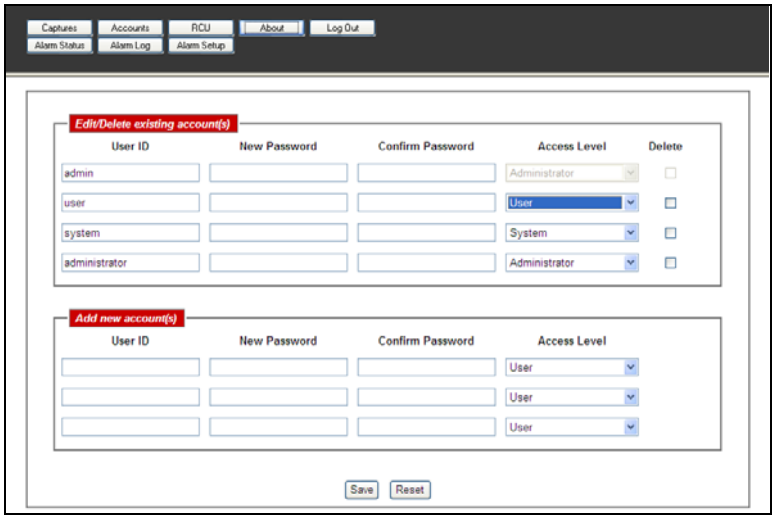


Figure 7-3 Accounts Display Page

2 In the **Add new account(s)** box, enter the following information:

- A unique identifier for the new account in the User ID text box.
- A password for the new account (confirm the password by entering it again in the **Confirm Password** text box).
- An access level of User, System, or Administrator from the **Access Level** drop-down list box.

3 Click **Save** to accept the new account, or click **Reset** to clear the previously entered information and start again.

Editing Accounts

To edit password and access level information

1 Click the **Accounts** button on the web-based control panel.

The Accounts Display page opens.

2 In the **Edit/Delete existing account(s)** box, locate the unique identifier in the User ID text box for the account to be edited.

3 Change one or more of the following fields as appropriate:

- Change a password for the existing account by entering a new password in the **New Password** text box.

  Confirm the password by entering it again in the **Confirm Password** text box.
- Change the user access level by making a different selection at the **Access Level** drop-down list box.

4 Click **Save** to accept the account changes, or click **Reset** to restore the original information and start again.

Deleting Accounts

To delete a user account

1 Click the **Accounts** button on the web-based control panel.

The Accounts Display page opens.

2 In the **Edit/Delete existing account(s)** box, locate the unique identifier in the User ID text box for the account to be deleted.

3 Click the **Delete** check box to the right of the account to be deleted.

4 Click **Save**.

The account is deleted.

Monitoring Alarms

You can use the web-based control panel to monitor active alarms on the CMN-LA.

You can view an alarm log.

The Alarm Setup page provides remote access to alarm configuration options.

Viewing Alarm Status

To view alarm status

1 Click the **Alarm Status** button on the web-based control panel.

The Alarm Status page opens.

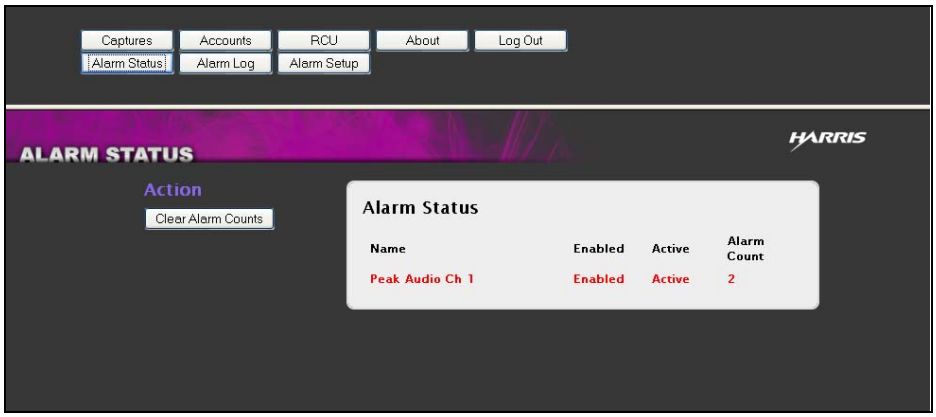


Figure 7-4 Alarm Status Display Page

The alarm status screen contains detailed information concerning alarm status indicators. This information is separated into columns sorted by alarm name,whether the alarm is enabled and active, and total instance number of alarms. This page shows only active alarms.

To clear the Alarm Status display, click **Clear Alarrm Counts**.

Viewing Alarm Logs

To view the alarm log

1 Click the **Alarm Log** button on the web-based control panel.
The Alarm Log Display page opens.

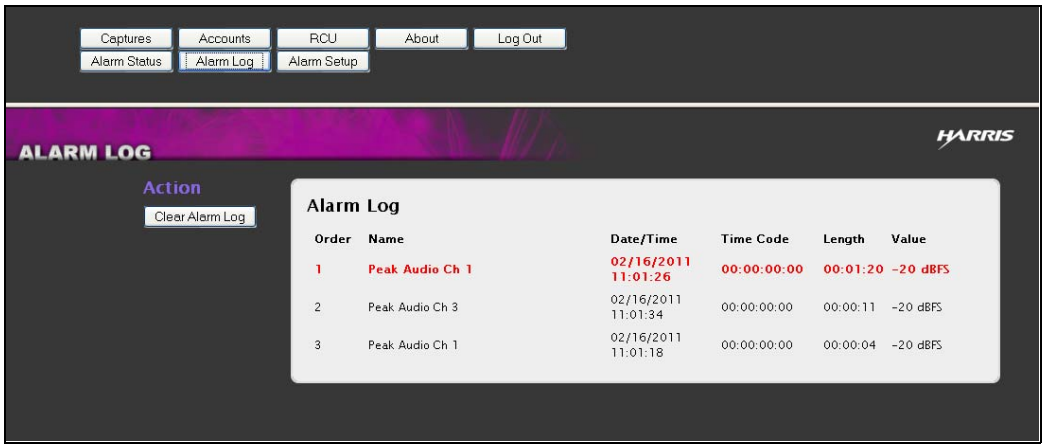


Figure 7-5 Alarm Log Display Page

The Alarm Log display lists all the alarms, the date, time, time code, duration, and peak value. The alarm list begins with the most recent alarm and can hold a maximum of 100 alarms.

When an alarm is first registered, it appears on the Alarm Log display and is highlighted in red. If the alarm is short term (that is, two seconds or less), the alarm text is not highlighted after approximately two seconds. If the alarm continues longer than two seconds, the text remains red and the alarm duration is incremented. When the next alarm occurs, the previous alarm moves down one position.

Changing Alarm Settings

To access alarm settings

1 Click the **Alarm Setup** button on the web-based control panel.
The Alarm SetupDisplay page opens.

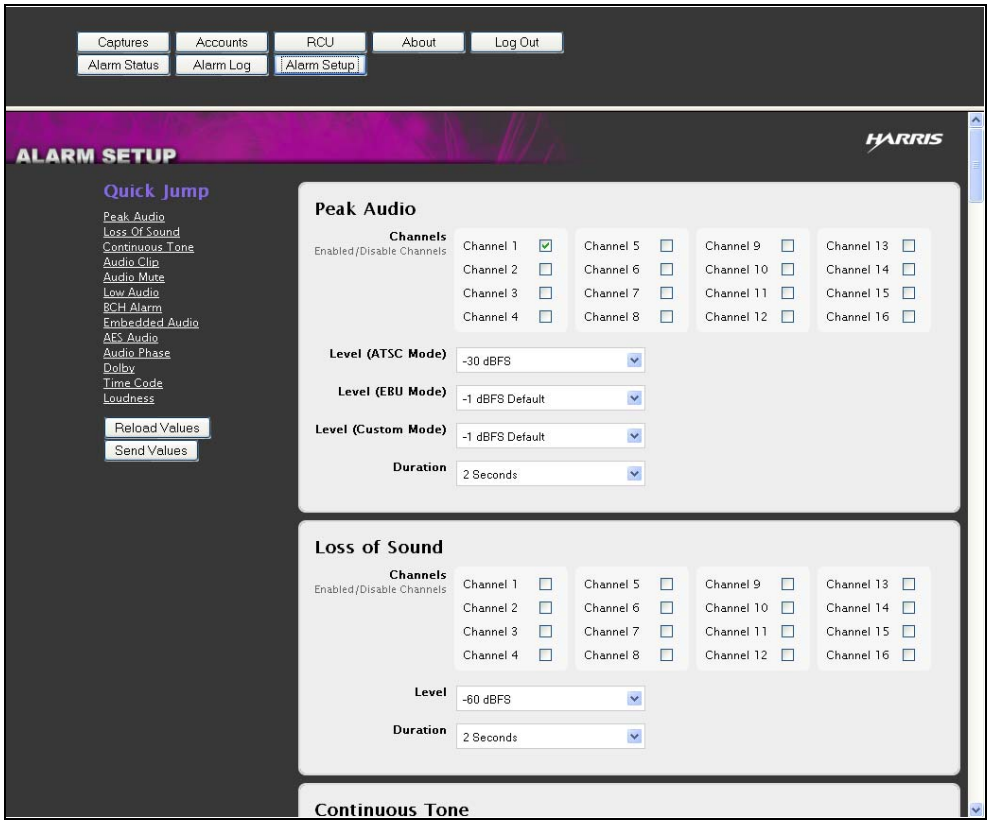


Figure 7-6 Alarm Setup Display Page

In the **Alarm Setup** box, alarms are organized similarly to how they are organized on the panel itself. See ***Alarm Descriptions*** on page 117 for a complete list of alarm settings.

Viewing About Settings

The CMN-LA About screen shows information about software and hardware versions, network information, etc. as described in ***About Menu*** on page 116. On the About screen, you can also load new software and license keys, and download a MIB from the device for SNMP control and monitoring purposes.

Viewing About Settings

To view the About settings

1 Click the **About** button on the web-based control panel.
The About Display page opens.

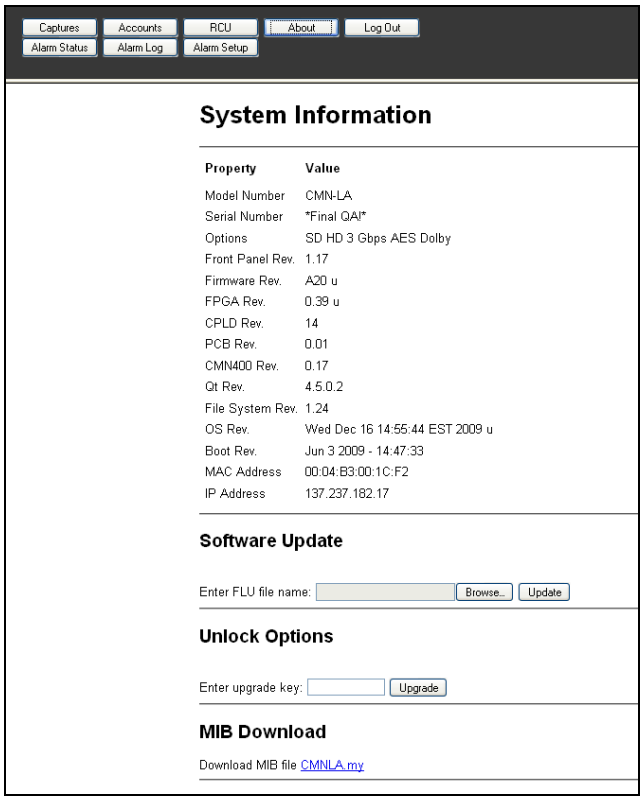


Figure 7-7 About Display Page

Upgrading Software

To Upgrade Software

1. Download the appropriate software package from the Harris website, or retrieve it from Customer Service, and save it so that it is locally available to the CMN-LA device.
2. Click the **About** button on the web-based control panel.

   The About Display page opens.
3. Click **Browse**.

   A navigation window opens.
4. Navigate to the location of the software package, and then click OK.
5. Click Update.

   The CMN-LA device goes offline while the software update takes place. When the update is complete, the device returns to an online state.

Unlocking Software Options

Software options are keyed to your hardware. Prior to unlocking a software option you must provide Customer Service with the serial number of the device to receive the option. Customer Service will provide the software key.

To unlock a software option

1. Click the **About** button on the web-based control panel.

The About Display page opens.

2 Provide Customer Service with the serial number of the CMN-LA device.

Customer service will provide a software key. If possible, save this key on a local PC. Copying and pasting software keys using standard Windows functionality eliminates many data entry errors.

3 Paste the software key in the **Enter upgrade key** field, and then click **Upgrade**.

The CMN-LA responds by unlocking certain control parameters associated with the key.

Downloading MIB Files

CMN-LA can operate as an SNMP managed device. In order to do so, you can download a MIB file for use in a SNMP client application.

To download a MIB from the CMN-LA

1 Click the **About** button on the web-based control panel.

The About Display page opens.

2 Click the link beside **Download MIB file**.

A **Save as** dialog box opens.

3 Browse to a convenient location where the SNMP client application can retrieve the MIB, and then click **Save**.

8 Troubleshooting

CAUTION: These instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform this installation or any servicing unless you are qualified to do so. Refer all servicing to qualified service personnel.

When power is applied to the unit, the display shows the startup screen for about 45 seconds.

Initial Checks

If the CMN-LA is not functioning properly, first verify the following:

- The CMN-LA is connected to a power source (11-17 VDC).
- All cables are correctly connected (see ***Connecting the CMN-LA*** on page 23).

Initial difficulties with operation or display can be due to improper setup. Review the Setup menus (see ***Setup Menu Functions*** on page 83) to ensure that the proper adjustments have been made for the signal requirements.

Restarting

If a problem persists after the cables are correctly connected and the unit is set up, restart the unit by doing the following:

1. Push and hold the **SETUP** button, Up/Down knob, and Left/Right knob for a minimum of five seconds until the SYSTEM RESET message appears on the display.
2. Press and hold the **ENT** button to reset the unit's configuration. All front panel and Setup menu selections will be reset to the factory default settings.
3. Press and hold the **PRST** button to restart the unit.

   The unit reboots. All front panel and Setup menu selections are reset to the factory default settings.

Problems, Causes, and Solutions

Table 8-1 CMN-LA: Problems, Causes, and Solutions

Problem/Symptom	Possible Cause	Solution or Explanation
Unit does not turn on when power button is pressed.	No AC power is present.	Connect the AC power.
No display on external XGA monitor.	The monitor is not plugged in or powered up.	Check to see that the monitor is plugged in and powered up.
Display on external XGA monitor is not centered.	The XGA monitor is not correctly adjusted.	Use the monitor controls to center the display.
No sound on headphone output.	The headphone volume is set too low or the output is set to "Mute" in the Audio Mapping Matrix.	Adjust the headphone volume or select the proper channel to be monitored in the Audio Mapping Matrix.
No communications on Ethernet port.	The IP address is incorrect.	Provide the correct IP address in setup menu.
	Incorrect Ethernet cable	For a direct connection, use a crossover cable. For a network connection, use a standard Ethernet cable.

If the problem still exists after troubleshooting the CMN-LA, see ***CMN-LA Service and Support*** on page 16 for further instructions.

9 Specifications

Specifications are subject to change without notice.

Inputs

Table 9-1 3 Gb/s-SDI Input Specifications

Item	Specification
Input type	2 active looping inputs
Input connector type	BNC female
Input impedance	75Ω nominal
Signal source amplitude	800 mV nominal
Signal source DC offset	±0.5 V
Input return loss	≤-10 dB, 1.485 GHz - 2.97 GHz
Cable EQ	≥80 M Belden 1694A

Table 9-2 HD-SDI Input Specifications

Item	Specification
Input type	2 active looping inputs
Input connector type	BNC female
Input impedance	75Ω nominal
Signal source amplitude	800 mV nominal
Signal source DC offset	±0.5 V
Input return loss	≤-15 dB 270 MHz-1.485 GHz
Cable EQ	≥100 M Belden 8281

Table 9-3 SD-SDI Input Specifications

Item	Specification
Input type	2 active looping inputs
Input connector type	BNC female
Input impedance	75Ω nominal

Table 9-3 SD-SDI Input Specifications *(Continued)*

Item	Specification
Signal source amplitude	800 mV nominal
Signal source DC offset	±0.5 V
Input return loss	≤-25 dB 5 MHz-270 MHz
Cable EQ	≥300 M Belden 8281

Table 9-4 AES/EBU Input Specifications

Item	Specification
Audio formats	AES/EBU (optional), embedded audio
AES input connector type	8 BNC female
AES input inpedance	75 ohms nominal
AES input return loss	≥25 dB, 0.1 to 6 MHz (unbalanced)
AES input level	0.2 to 2 V
AES input sample rate	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz (audio inputs are sample rate converted to 48 kHz)
Meter accuracy over frequency	±0.1 dB from 20 Hz to 19 kHz with 0 to -40 dBFS sine wave input, except for within 7 Hz of some submultiples of the 240 kHz oversampling frequency

Outputs

Table 9-5 3 Gb/s-SDI, HD-SDI, SD-SDI, Output Specifications

Item	Specification
Output impedance	75Ω
Output return loss	≤-15 dB,5 MHz to 1.485 GHz ≤-10 dB, 1.485 GHz to 3 GHz
Output signal level	800 mV ± 10%
Output DC offset	0.0 V ± 0.5 V

Table 9-6 DVI Output Specifications

Item	Specification
Output connector	DVI-I connector supporting DVI-D
Output resolution	1024×768 (XGA)
Digital levels	Per DDWG DVI rev 1
Pixel rate	65 Mp/s

Table 9-7 Analog Monitoring Output Specifications (Headphone)

Item	Specification
Number / connector	One stereo output, one 3.5 mm (1/8 in.) headphone jack
Load impedance	16Ω nominal
Maximum output level	40 mW RMS
Total harmonic distortion + noise (THD+N)	≤-65 dB

Table 9-8 AES/EBU Output Specifications

Item	Specification
Output type	AES outputs are derived from embedded, AES, or Dolby® audio inputs
Output connector type	BNC female (x4)
Output impedance	75Ω nominal
Signal amplitude	1V nominal
Output return loss	≥-25dB .1 to 6MHz

Table 9-9 Analog Output Specifications

Item	Specification
Output type	Eight monophonic or four stereo channels, balanced or unbalanced, follows selected audio input
Output level	■ +24 dBu max ■ +6 to –50 dB adjustable ■ For digital audio, -20 dBFS produces a +4 dBu analog output level
Output connector	37-pin D-sub, male
Impedance	10Ω unbalanced or 20Ω balanced, nominal
Signal to noise	100 dB (relative to signal level out of +24 dBu), typical
Analog Output Frequency Response with Digital Inputs	±0.1 dB
Analog Output SNR with Digital Inputs	≥100 dB
Analog Output THD and Noise With Digital Inputs	.02%
Crosstalk	≤-80 dB

Control

Table 9-10 Control Specifications

Item	Specification
GPI	Four total with two input and two preset recall selections or individually user configured as alarm input
GPO	1 alarm, user configured
Connector	9-pin D-sub, female
Input impedance	10 k ohms returned to +3.3 VDC
Alarm output	Relay closure
Maximum relay current	100 mA @ 50 VDC
Peripheral interface	USB 2.0 supporting storage devices
Connector	USB 2.0, Type A, female

Display

Table 9-11 Time Code Specifications

Item	Specification
Input	■ Ancillary Time Code (HD only) ■ DVITC extracted from SD inputs ■ (optional) LTC via back-panel connector
Display	Displayed directly

Communication Interfaces

Table 9-12 Communication Interfaces Specifications

Item	Specification
Ethernet	1 Ethernet port RJ-45 10/100 Base-T connector
USB	1 USB 2.0 host port
LTC/GPIO	1 LTC/GPIO connector 9-pin female D-sub (optional)

Ethernet

Table 9-13 Ethernet Specifications

Item	Specification
Standard	10/100 Base-T conforms to IEEE802.3
Connector	RJ-45
Performance metric	Transfer a captured frame to a PC in 30 sec, dedicated LAN

Power Requirements

Table 9-14 Power Requirements Specifications

Item	Specification
Power connector	15 VDC nominal 11 VDC minimum, 17 VDC maximum
Power consumption	25 W nominal
Over-voltage protection	±50 VDC nominal

Mechanical

Table 9-15 Mechanical Specifications

Item	Specification
Dimensions	
Height	5.22 in. (13.26 cm)
Width	8.46 in. (21.49 cm)
Depth	5.8 in. (14.73 cm)
Weight	5.0 lb (2.27 kg)

Environmental

Table 9-16 Environmental Specifications

Item	Specification
Operating temperature	32° to 122° F (0° to +50°C)
Storage temperature	-22° to 149° F (-30° to +65°C)
Humidity (non condensing)	Operating: 20% to 80% Non-operating: 5% to 90%

Table 9-16 Environmental Specifications *(Continued)*

Item	Specification
Transportation	24 in. (9.5 cm) impact drop survivable in original factory packaging
Altitude	Operating: to 6562 ft. (2000m)
Pollution Degree	Pollution Degree 2

Accessories and Options

Table 9-17 Standard Accessories

Item	Specification
Standard accessories	■ ***CMN-LA Installation and Operation Manual*** on CD ■ One power cord ■ One power supply assembly ■ Breakout connector for LTC/GPI

Table 9-18 Optional Accessories

Item	Specification
TVM-WRTY1	Full extended warranty plan; adds three years to the standard two-year warranty, including a one-year extension on the LCD display warranty
CMN-LA-OPT-AES	8 AES inputs, 4AES outputs and 8 analog outputs
CMN-LA-OPT-DLB	Dolby decoder requires CMN-LA-OPT-AES option
DRC-3	Double rack mount case
BLK-1	Blank panel for DRC-3
PTC-3A	Portable case with handle and tilt stand
PTC-3-CC	Padded soft case to hold PTC-3
CMN-IN-DRC2	Bracket kit to mount a CMN-LA in a DRC-2A

A Pinouts

Ethernet RJ45 Connector

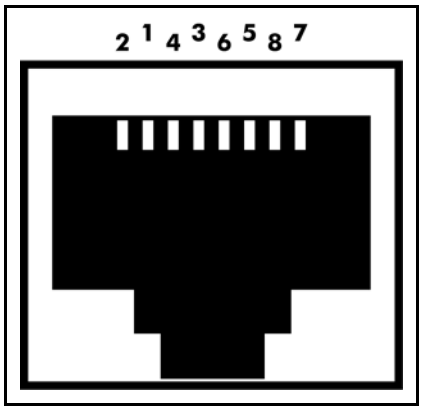


Figure A-1 Ethernet RJ45 Connector

Table A-1 Ethernet RJ45 Connector Pinouts

Pinout	Signal	Pinout	Signal
1	TX+	5	N.C.
2	TX-	6	RX-
3	RX+	7	N.C.
4	N.C.	8	N.C.

DVI-D Out Connector

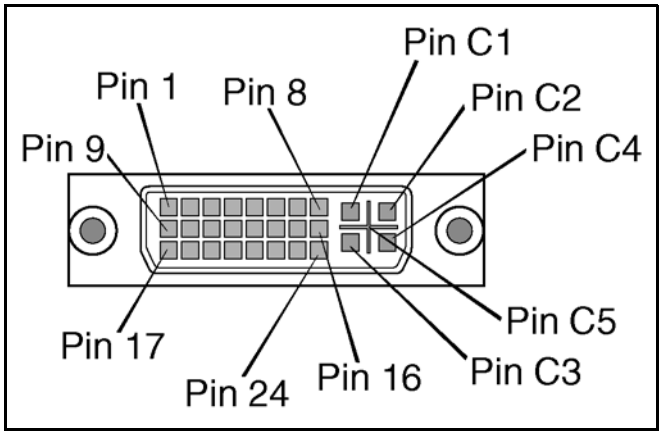


Figure A-2 DVI-D Out Connector

This DVI-D connector is only compatible with digital monitors. Analog outputs are not used.

Table A-2 Pinouts for DVI-D Out Connector

Pinout	Signal	Pinout	Signal
1	TMDS data 2-	16	Hot plug detect
2	TMDS data 2+	17	TMDS data 0-
3	TMDS data 2/4 shield	18	TMDS data 0+
4	TMDS data 4-	19	TMDS data 0/5 shield
5	TMDS data 4+	20	TMDS data 5-
6	DDC clock	21	TMDS data 5+
7	DDC data	22	TMDS clock shield
8	Not used	23	TMDS clock+
9	TMDS data 1-	24	TMDS clock-
10	TMDS data 1+	C1	Not used
11	TMDS data 1/3 shield	C2	Not used
12	TMDS data 3-	C3	Not used
13	TMDS data 3+	C4	Not used
14	+5v power	C5	Not used
15	Ground (return for +5v, hsync, and vsync)		

Power Connector

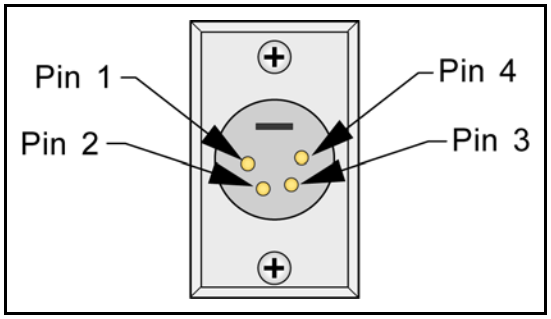


Figure A-3 Power Connector

Table A-3 Power Connector Pinouts

Pinout	Signal	Pinout	Signal
1	GND	3	N.C.
2	N.C.	4	Power

Analog Audio Connector

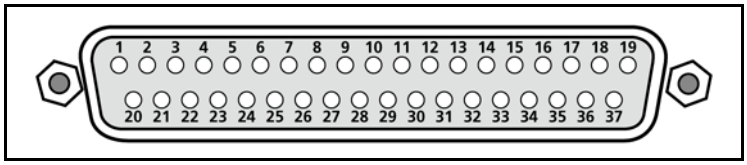


Figure A-4 Analog Audio Connector

Table A-4 Analog Audio Connector Pinouts

Pinout	Signal	Pinout	Signal
1	GND	20	GND
2	GND	21	GND
3	GND	22	GND
4	GND	23	GND
5	GND	24	GND
6	GND	25	GND
7	GND	26	GND
8	GND	27	GND
9	GND	28	GND
10	GND	29	Analog output 1 +
11	Analog output 1 –	30	Analog output 2 +
12	Analog output 2 –	31	Analog output 3 +
13	Analog output 3 –	32	Analog output 4 +
14	Analog output 4 –	33	Analog output 5 +
15	Analog output 5 –	34	Analog output 6 +
16	Analog output 6 –	35	Analog output 7 +
17	Analog output 7 –	36	Analog output 8 +
18	Analog output 8 –	37	GND
19	GND		

GPI Connector

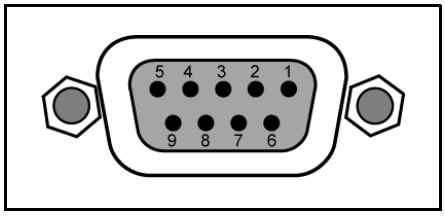


Figure A-5 GPI Connector

Table A-5 GPI Connector Pinouts

Pinout	Signal
1	GPI output #1
2	GPI input #2
3	GPI input #4
4	GND
5	LTC low in

Pinout	Signal
6	GPI input #1
7	GPI input #3
8	Return for GPI output #1
9	LTC high in

B Log File Contents

The CMN-LA has three types of capture files: data, alarms, and summary files.

- A data file represents an entire day's worth of raw loudness values. Entries are recorded at a 100 ms rate for both program 1 and program 2.
- An alarm file represents an entire day's worth of alarm events. Alarm events are written to the log as they occur. Menu options control how the box operates if the number of alarms exceeds the storage capabilities of the device.
- A summary file represents a snapshot event of loudness measurements and settings. You can manually trigger an event by pressing the CLR button. An event is automatically triggered 24 hours after the last clear event.

A new log file is created when the system time rolls over to the next day.

Naming Conventions

CMNLA_<field string>_<type>_<date>_.csv where:

<field string> is either the serial number of the unit or a 9-character custom string

<type> is either "alarms", "data", or "summary"

<date> is the date that the file was created in the format of "YYYY-MM-DD"

The names of these files are determined in the Setup menu and use the serial number of the unit or a custom string and the date.

File Type Contents and Samples

Data File Contents

Table B-1 Data File Contents

Column Header	Description
File Sequence Number	An incremental number used to identify the order that the samples were collected
Time Stamp	Associated system time that the sample was taken
Time Code	Associated time code that the sample was taken
Program 1 Raw Data	Raw program 1 data for the current sample period in LKFS
Program 2 Raw Data	Raw program 2 data for the current sample period in LKFS

Sample Data File

Table B-2 Sample Data File

File Sequence Number	Time Stamp	Time Code	Raw Data
5424	13:43:02.4	00:00:00:00	-28.6
5425	13:43:02.5	00:00:00:00	-25.1
5426	13:43:02.6	00:00:00:00	-23.8
5427	13:43:02.7	00:00:00:00	-24
5428	13:43:02.8	00:00:00:00	-24.4
5429	13:43:02.9	00:00:00:00	-24.3
5430	13:43:03.0	00:00:00:00	-24.4
5431	13:43:03.1	00:00:00:00	-25.9
5432	13:43:03.2	00:00:00:00	-24.9
5433	13:43:03.3	00:00:00:00	-26.2
5434	13:43:03.4	00:00:00:00	-31.4
5435	13:43:03.5	00:00:00:00	-23.9

Format Time Stamp column as custom hh:mm:ss.0 for time stamp to display correctly.

Summary File Contents

Table B-3 Summary File Contents

Column Header	Description
Start Date	Associated system date when this measurement began
Start Time	Associated system time when this measurement began
End Date	Associated system date when this measurement ended
End Time	Associated system time when this measurement ended
Start Time Code	Associated time code value when this measurement began
End Time Code	Associated time code value when this measurement ended
Mode	The current loudness mode of the device
Prg 1 Loudness Value	The measured program loudness value over the indicated time
Max Loudness 1 Value	The maximum integrated loudness detected
Loudness Range 1 Value	The calculated loudness range
Loudness 1 Mapping	The input source to loudness channel mapping associated with the indicated program
Prg 2 Loudness Value	The measured program loudness value over the indicated time
Max Loudness 2 Value	The maximum integrated loudness detected
Loudness Range 2 Value	The calculated loudness range
Loudness 2 Mapping	The input source to loudness channel mapping associated with the indicated program
Dialnorm Value	The extracted VANC Dialnorm value
Prg Loudness Relative Gating	*
Prg Loudness Gating Threshold	*
Loudness Integration Time	*
Loudness Range Relative Gating	*
Loudness Range Gating Threshold	*
Target Loudness	*
Absolute Gating	*
Dialnorm SDID	*
Dialnorm Program	*

*The associated parameter values as entered through the menu systems.

C SNMP Agent and Logs

The SNMP Agent

The agent is an implementation of the snmpd daemon that is part of the NET-SNMP 5.x distribution.

SNMP Agent Formats

There are two formats:

Snmpv1 supports the following SNMP commands:

- Get
- Getnext
- Set
- Trap

Snmpv2c supports the following SNMP commands:

- Get
- Getnext
- Getbulk
- Set
- Notification

Range and Community Levels

There are three supported community levels: Administration, System, and User. To access SNMP data from an SNMP client, a community string is required. Each community level has an associated string. These strings can be found in the MIB file that can be downloaded from the Web server of the CMN-LA. See ***Downloading MIB Files*** on page 133 for details.

The community strings can be found as comments at the top of the MIB file. The community strings are case-sensitive. Note that these strings are fixed in the system and cannot be changed by the user.

Administration Level

Read/write access to all objects in the following branches:

1.3.6.1.2

1.3.6.1.4

1.3.6.1.6

1.3.6.1.4.1.10039 (Videotek enterprise ID)

System Level

Read/write access to all objects in the following branches:

1.3.6.1.2.1.1 (system)

1.3.6.1.2.1.2 (interfaces)

1.3.6.1.2.1.4 (ip)

1.3.6.1.2.1.6 (tcp)

1.3.6.1.6.3 (snmpModules)

1.3.6.1.4.1.10039.1.300 (vtCMNSeries)

User Level

Read/write access to all objects in the following branches

1.3.6.1.2.1.1 (system)

1.3.6.1.4.1.10039.1.300 (vtCMNSeries)

Behavior

Conforms to RFC1157 (snmpv1) and RFC1902 (snmpv2c).

SNMP Configuration Save

Setting OID "versionSavePersistent" = 1 (1.3.6.1.4.1.2021.100.13.0) of the UCD-SNMP-MIB saves the current SNMP configuration to nonvolatile storage. The saved SNMP configuration is loaded at reset.

Traps and Notifications

Conforms to RFC1157 (Traps) and RFC1902 (Notifications).

MIB

The MIB is a description of the OIDs supported by the CMN series SNMP agent. The MIB is a file available for download from the Web server of the device. See ***Downloading MIB Files*** on page 133 for details.

Format SMIv2 subset of ASN.1; RFC1902, RFC1903, and RFC1904.

Range

SNMP Enterprise ID

The Videotek Enterprise ID is 10039. The full MIB tree is:

iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).10039

The CMN SERIES MIB branch will be called vtCMNSeries and will be at 1.3.6.1.4.1.10039.1.300.

CMN SERIES MIB

The CMN SERIES MIB table will be added to the "vtRelease" table, as:

```
vtRelease                    OBJECT IDENTIFIER ::= { videotekMIB 1 }
vtCMNSeries                  OBJECT IDENTIFIER ::= { vtRelease 300 }
vtCMNSeriesv1                OBJECT IDENTIFIER ::= { vtCMNSeries 1 }
vtCMNLAMain                  OBJECT IDENTIFIER ::= { vtCMNSeriesv1 1 }
vtCMNLAAlarmStatus           OBJECT IDENTIFIER ::= { vtCMNSeriesv1 2 }
vtCMNSeriesSWIPS             OBJECT IDENTIFIER ::= { vtCMNSeriesv1 4 }

vtCMNLAInputs                OBJECT IDENTIFIER ::= { vtCMNLAMain 1 }
vtCMNLAOutputs               OBJECT IDENTIFIER ::= { vtCMNLAMain 2 }
vtCMNLATimeCode              OBJECT IDENTIFIER ::= { vtCMNLAMain 3 }
vtCMNLADisplays              OBJECT IDENTIFIER ::= { vtCMNLAMain 4 }
vtCMNLAClear                 OBJECT IDENTIFIER ::= { vtCMNLAMain 5 }
vtCMNLASetup                 OBJECT IDENTIFIER ::= { vtCMNLAMain 6 }
vtCMNLAAlarms                OBJECT IDENTIFIER ::= { vtCMNLAMain 7 }
vtCMNLARCU                   OBJECT IDENTIFIER ::= { vtCMNLAMain 8 }

vtCMNLAMeterDisplay          OBJECT IDENTIFIER ::= { vtCMNLADisplays 1 }
vtCMNLAPictureDisplay        OBJECT IDENTIFIER ::= { vtCMNLADisplays 2 }
vtCMNLATrendingDisplay       OBJECT IDENTIFIER ::= { vtCMNLADisplays 3 }
vtCMNLALoudnessDisplay       OBJECT IDENTIFIER ::= { vtCMNLADisplays 4 }
vtCMNLADolbyMetaDisplay      OBJECT IDENTIFIER ::= { vtCMNLADisplays 5 }
vtCMNLAAlarmsDisplay         OBJECT IDENTIFIER ::= { vtCMNLADisplays 6 }
vtCMNLAMLTDisplay            OBJECT IDENTIFIER ::= { vtCMNLADisplays 7 }

vtCMNLAGPIO                  OBJECT IDENTIFIER ::= { vtCMNLASetup 1 }
```

```
vtCMNLADolby                    OBJECT IDENTIFIER ::= { vtCMNLASetup 2 }

vtCMNLAMeterAlarms              OBJECT IDENTIFIER ::= { vtCMNLAAlarms 1 }
vtCMNLALoudnessAlarms           OBJECT IDENTIFIER ::= { vtCMNLAAlarms 2 }
vtCMNLADolbyAlarms              OBJECT IDENTIFIER ::= { vtCMNLAAlarms 3 }
vtCMNLATimeCodeAlarms           OBJECT IDENTIFIER ::= { vtCMNLAAlarms 4 }
```

Behavior Conforms to snmpv1 and snmpv2c as supported by NET-SNMP 5.x.

Detailed SNMP Trap Configuration

Adding a New Trap Target

This section details how to configure SNMP traps. The SNMP client must have administrator privileges to create, delete, or change trap target characteristics. Entries must be created in two tables to set up a new trap target address:

1. Create a new row in the snmpTargetAddrTable by sending a createAndWait command (5) to a new instance (index) of snmpTargetAddrRowStatus (1.3.6.1.6.3.12.1.2.1.9).
2. Fill in the following fields in table snmpTargetAddrTable (1.3.6.1.6.3.12.1.2):
   - snmpTargetAddrTDomain (1.3.6.1.6.3.12.1.2.1.2.index) is set to snmpUDPDomain or 1.3.6.1.6.1
   - snmpTargetAddrTAddress (1.3.6.1.6.3.12.1.2.1.3.index) is target IP address (including port, normally 00)
   - snmpTargetAddrTimeout (1.3.6.1.6.3.12.1.2.1.4.index) is set to 1500
   - snmpTargetAddrRetryCount (1.3.6.1.6.3.12.1.2.1.5.index) is set to 3
   - snmpTargetAddrTagList (1.3.6.1.6.3.12.1.2.1.6.index) is set to "cmnTrap"
   - snmpTargetAddrParams (1.3.6.1.6.3.12.1.2.1.7.index) is set to "v1CMNSystemParams" or "v2cCMNSystemParams"
   - snmpTargetAddrStorageType (1.3.6.1.6.3.12.1.2.1.8.index) is set to nonVolatile or 3
   - snmpTargetAddrRowStatus (1.3.6.1.6.3.12.1.2.1.9.index) is set to active or 1
3. Set versionSavePersistentData.0 (1.3.6.1.4.1.2021.100.13.0) to a 1 to save the target address entry.

   versionSavePersistentData is a one-shot in that it returns to 0 as soon as the save is completed. This is located in UCD-SNMP-MIB.my. If this step is not performed, the target address changes will not be retained between power cycles.

Changing an Existing Trap Target

1. Set the desired field at the desired index in the above tables.

   The change will overwrite the existing value at the specified index.

2. Set versionSavePersistentData.0 (1.3.6.1.4.1.2021.100.13.0) to a 1 to save the target address entry.

   versionSavePersistentData is a one-shot in that it returns to 0 as soon as the save is completed. This is located in UCD-SNMP-MIB.my. If this step is not performed, the target address changes will not be retained between power cycles

Disabling Trap Targets

1 snmpTargetAddrRowStatus (1.3.6.1.6.3.12.1.2.1.9.index) - set to notInService or 2.
To reactivate, change back to active or 1.

2 Set versionSavePersistentData.0 (1.3.6.1.4.1.2021.100.13.0) to a 1 to save the target address entry.
versionSavePersistentData is a one-shot in that it returns to 0 as soon as the save is completed. This is located in UCD-SNMP-MIB.my. If this step is not performed, the target address changes will not be retained between power cycles

Deleting Trap Targets

1 snmpTargetAddrRowStatus (1.3.6.1.6.3.12.1.2.1.9.index) - set to destroy or 6.
The instance will be permanently removed from both the snmpTargetAddrRowStatus.

2 Set versionSavePersistentData.0 (1.3.6.1.4.1.2021.100.13.0) to a 1 to save the target address entry.
versionSavePersistentData is a one-shot in that it returns to 0 as soon as the save is completed. This is located in UCD-SNMP-MIB.my. If this step is not performed, the target address changes will not be retained between power cycles

CMN SERIES Alarm Status Table

This table implements a circular read-only buffer of 1000 alarms generated by the device. An NMS (Network Management System) can use this table to collect alarms that may have not been received as traps. It is the responsibility of the NMS to keep track of already collected alarms. This generally requires collecting the entire alarm table and ignoring entries that previously collected or received as traps. The astSequence column is useful for determining whether a row has already been collected or received since it is unique to each alarm instance. This table can be ignored if alarms will be handled only as traps.

An alarm consists of the following columns:

Table C-1 Alarm Status

OID Name	Type	Description
astAlarmID	Integer 0..99	The row index of the table. See **Table C-2**.
astAlarmIndex	Gauge32	Alarm description index. See**Table C-2**.
astStartDate	Octet String (size 4)	Alarm trigger date. See ***Alarm Date (astStartDate)*** on page 165.
astStartTime	Octet String (size 4)	Alarm trigger time. See ***Alarm Time (astStartTime)*** on page 165
astTimeCode	Octet String (size 4)	Timecode, if present, at which the alarm was triggered. See ***Time Code*** on page 165.
astDuration	Gauge32	Number of seconds the alarm was triggered. This is only useful on the trailing edge (clearing) of the alarm (astHappening = 1).
astHappening	Gauge32	Indicates alarm edge. Leading (triggering) is 0 and trailing (clearing) is 1.
astTriggered	Gauge32	Not used.

Table C-1 Alarm Status *(Continued)*

OID Name	Type	Description
astCaptured	Gauge32	Contains the display freeze sequence number for this alarm. Zero if the alarm is not configured for alarm capture.
astPeakValue	Octet String (size 4)	Whole numeric part of the reported peak value. See astPeakIndex for more information. See ***Reported Peak Value*** on page 166.
astPeakIndex	Octet String (size 4)	Decimal part of the reported peak value. Also contains the description index. See ***Reported Peak Value*** on page 166.
astSequence	Gauge32	Device unique ID of this entry.
astInput	Gauge32	Indicates the source input (A, B) on which the alarm occurred. See ***Source Input*** on page 167.

Alarm Description

Table C-2 lists the alarm descriptions for the indexes found in the alarm's astAlarmIndex column.

Table C-2 Alarm IDs

Index	Description
0	PEAK_AUDIO_1
1	PEAK_AUDIO_2
2	PEAK_AUDIO_3
3	PEAK_AUDIO_4
4	PEAK_AUDIO_5
5	PEAK_AUDIO_6
6	PEAK_AUDIO_7
7	PEAK_AUDIO_8
8	PEAK_AUDIO_9
9	PEAK_AUDIO_10
10	PEAK_AUDIO_11
11	PEAK_AUDIO_12
12	PEAK_AUDIO_13
13	PEAK_AUDIO_14
14	PEAK_AUDIO_15
15	PEAK_AUDIO_16
16	AUDIO_PHASE_P1
17	AUDIO_PHASE_P2
18	AUDIO_PHASE_P3
19	AUDIO_PHASE_P4

Table C-2 Alarm IDs *(Continued)*

Index	Description
20	AUDIO_PHASE_P5
21	AUDIO_PHASE_P6
22	AUDIO_PHASE_P7
23	AUDIO_PHASE_P8
24	LOSS_OF_SOUND_1
25	LOSS_OF_SOUND_2
26	LOSS_OF_SOUND_3
27	LOSS_OF_SOUND_4
28	LOSS_OF_SOUND_5
29	LOSS_OF_SOUND_6
30	LOSS_OF_SOUND_7
31	LOSS_OF_SOUND_8
32	LOSS_OF_SOUND_9
33	LOSS_OF_SOUND_10
34	LOSS_OF_SOUND_11
35	LOSS_OF_SOUND_12
36	LOSS_OF_SOUND_13
37	LOSS_OF_SOUND_14
38	LOSS_OF_SOUND_15
39	LOSS_OF_SOUND_16
40	LOSS_OF_EMBEDDED_DATA_G1_P1
41	LOSS_OF_EMBEDDED_DATA_G1_P2
42	LOSS_OF_EMBEDDED_DATA_G2_P1
43	LOSS_OF_EMBEDDED_DATA_G2_P2
44	LOSS_OF_EMBEDDED_DATA_G3_P1
45	LOSS_OF_EMBEDDED_DATA_G3_P2
46	LOSS_OF_EMBEDDED_DATA_G4_P1
47	LOSS_OF_EMBEDDED_DATA_G4_P2
48	EMBEDDED_FREQ_MISMATCH_1
49	EMBEDDED_FREQ_MISMATCH_2
50	EMBEDDED_FREQ_MISMATCH_3
51	EMBEDDED_FREQ_MISMATCH_4
52	EMBEDDED_FREQ_MISMATCH_5
53	EMBEDDED_FREQ_MISMATCH_6
54	EMBEDDED_FREQ_MISMATCH_7

Table C-2 Alarm IDs *(Continued)*

Index	Description
55	EMBEDDED_FREQ_MISMATCH_8
56	EMBEDDED_FREQ_MISMATCH_9
57	EMBEDDED_FREQ_MISMATCH_10
58	EMBEDDED_FREQ_MISMATCH_11
59	EMBEDDED_FREQ_MISMATCH_12
60	EMBEDDED_FREQ_MISMATCH_13
61	EMBEDDED_FREQ_MISMATCH_14
62	EMBEDDED_FREQ_MISMATCH_15
63	EMBEDDED_FREQ_MISMATCH_16
64	CONTINUOUS_TONE_1
65	CONTINUOUS_TONE_2
66	CONTINUOUS_TONE_3
67	CONTINUOUS_TONE_4
68	CONTINUOUS_TONE_5
69	CONTINUOUS_TONE_6
70	CONTINUOUS_TONE_7
71	CONTINUOUS_TONE_8
72	CONTINUOUS_TONE_9
73	CONTINUOUS_TONE_10
74	CONTINUOUS_TONE_11
75	CONTINUOUS_TONE_12
76	CONTINUOUS_TONE_13
77	CONTINUOUS_TONE_14
78	CONTINUOUS_TONE_15
79	CONTINUOUS_TONE_16
80	AUDIO_CLIP_1
81	AUDIO_CLIP_2
82	AUDIO_CLIP_3
83	AUDIO_CLIP_4
84	AUDIO_CLIP_5
85	AUDIO_CLIP_6
86	AUDIO_CLIP_7
87	AUDIO_CLIP_8
88	AUDIO_CLIP_9
89	AUDIO_CLIP_10

Table C-2 Alarm IDs *(Continued)*

Index	Description
90	AUDIO_CLIP_11
91	AUDIO_CLIP_12
92	AUDIO_CLIP_13
93	AUDIO_CLIP_14
94	AUDIO_CLIP_15
95	AUDIO_CLIP_16
96	AUDIO_MUTE_1
97	AUDIO_MUTE_2
98	AUDIO_MUTE_3
99	AUDIO_MUTE_4
100	AUDIO_MUTE_5
101	AUDIO_MUTE_6
102	AUDIO_MUTE_7
103	AUDIO_MUTE_8
104	AUDIO_MUTE_9
105	AUDIO_MUTE_10
106	AUDIO_MUTE_11
107	AUDIO_MUTE_12
108	AUDIO_MUTE_13
109	AUDIO_MUTE_14
110	AUDIO_MUTE_15
111	AUDIO_MUTE_16
112	EMBEDDED_VBIT_DATA_G1_P1
113	EMBEDDED_VBIT_DATA_G1_P2
114	EMBEDDED_VBIT_DATA_G2_P1
115	EMBEDDED_VBIT_DATA_G2_P2
116	EMBEDDED_VBIT_DATA_G3_P1
117	EMBEDDED_VBIT_DATA_G3_P2
118	EMBEDDED_VBIT_DATA_G4_P1
119	EMBEDDED_VBIT_DATA_G4_P2
120	LOW_AUDIO_1
121	LOW_AUDIO_2
122	LOW_AUDIO_3
123	LOW_AUDIO_4
124	LOW_AUDIO_5

Table C-2 Alarm IDs *(Continued)*

Index	Description
125	LOW_AUDIO_6
126	LOW_AUDIO_7
127	LOW_AUDIO_8
128	LOW_AUDIO_9
129	LOW_AUDIO_10
130	LOW_AUDIO_11
131	LOW_AUDIO_12
132	LOW_AUDIO_13
133	LOW_AUDIO_14
134	LOW_AUDIO_15
135	LOW_AUDIO_16
136	LOUDNESS_ABOVE_TARGET
137	LOUDNESS_BELOW_TARGET
138	LOSS_OF_AES_1
139	LOSS_OF_AES_2
140	LOSS_OF_AES_3
141	LOSS_OF_AES_4
142	LOSS_OF_AES_5
143	LOSS_OF_AES_6
144	LOSS_OF_AES_7
145	LOSS_OF_AES_8
146	AES_VBIT_1
147	AES_VBIT_2
148	AES_VBIT_3
149	AES_VBIT_4
150	AES_VBIT_5
151	AES_VBIT_6
152	AES_VBIT_7
153	AES_VBIT_8
154	CRC_EMBEDDED_1
155	CRC_EMBEDDED_2
156	CRC_EMBEDDED_3
157	CRC_EMBEDDED_4
158	CRC_EMBEDDED_5
159	CRC_EMBEDDED_6

Table C-2 Alarm IDs *(Continued)*

Index	Description
160	CRC_EMBEDDED_7
161	CRC_EMBEDDED_8
162	CRC_EMBEDDED_9
163	CRC_EMBEDDED_10
164	CRC_EMBEDDED_11
165	CRC_EMBEDDED_12
166	CRC_EMBEDDED_13
167	CRC_EMBEDDED_14
168	CRC_EMBEDDED_15
169	CRC_EMBEDDED_16
170	CRC_AES_1
171	CRC_AES_2
172	CRC_AES_3
173	CRC_AES_4
174	CRC_AES_5
175	CRC_AES_6
176	CRC_AES_7
177	CRC_AES_8
178	CRC_AES_9
179	CRC_AES_10
180	CRC_AES_11
181	CRC_AES_12
182	CRC_AES_13
183	CRC_AES_14
184	CRC_AES_15
185	CRC_AES_16
186	LOSS_OF_DOLBY_VANC_SDID_01
187	LOSS_OF_DOLBY_VANC_SDID_02
188	LOSS_OF_DOLBY_VANC_SDID_03
189	LOSS_OF_DOLBY_VANC_SDID_04
190	LOSS_OF_DOLBY_VANC_SDID_05
191	LOSS_OF_DOLBY_VANC_SDID_06
192	LOSS_OF_DOLBY_VANC_SDID_07
193	LOSS_OF_DOLBY_VANC_SDID_08
194	LOSS_OF_DOLBY_VANC_SDID_09

Table C-2 Alarm IDs *(Continued)*

Index	Description
195	DOLBY_E_POS_PAIR1
196	DOLBY_E_POS_PAIR2
197	DOLBY_E_POS_PAIR3
198	DOLBY_E_POS_PAIR4
199	DOLBY_E_POS_PAIR5
200	DOLBY_E_POS_PAIR6
201	DOLBY_E_POS_PAIR7
202	DOLBY_E_POS_PAIR8
203	DOLBY_FORMAT_CHANGE
204	DOLBY_VANC_DIALNORM_LEVEL_PROG1
205	DOLBY_VANC_DIALNORM_LEVEL_PROG2
206	DOLBY_VANC_DIALNORM_LEVEL_PROG3
207	DOLBY_VANC_DIALNORM_LEVEL_PROG4
208	DOLBY_VANC_DIALNORM_LEVEL_PROG5
209	DOLBY_VANC_DIALNORM_LEVEL_PROG6
210	DOLBY_VANC_DIALNORM_LEVEL_PROG7
211	DOLBY_VANC_DIALNORM_LEVEL_PROG8
212	DOLBY_552_DIALNORM_LEVEL_PROG1
213	DOLBY_552_DIALNORM_LEVEL_PROG2
214	DOLBY_552_DIALNORM_LEVEL_PROG3
215	DOLBY_552_DIALNORM_LEVEL_PROG4
216	DOLBY_552_DIALNORM_LEVEL_PROG5
217	DOLBY_552_DIALNORM_LEVEL_PROG6
218	DOLBY_552_DIALNORM_LEVEL_PROG7
219	DOLBY_552_DIALNORM_LEVEL_PROG8
220	BCH
221	LTC_LOSS_OF_TIME_CODE
222	LTC_TIME_CODE_CONTINUITY
223	LTC_DVITC_TIME_CODE_SYNC
224	DVITC_LOSS_OF_TIME_CODE
225	DVITC_LINE
226	DVITC_CONTINUITY
227	DVITC_CRC
228	USER_GPI_1

Table C-2 Alarm IDs *(Continued)*

Index	Description
229	USER_GPI_2
230	USER_GPI_3
231	USER_GPI_4

Alarm Date (astStartDate)

The alarm date column (astAlarmDate) of an alarm is decoded as follows:

Table C-3 Alatm Date (astStartDate)

Byte	Contents	Range
4-3	Year	0..9999
2	Month	1..12
1 (least significant)	Day	1..31

Alarm Time (astStartTime)

The alarm time column (astAlarmTime) is decoded as follows:

Table C-4 Alarm Time (astStartTime)

Byte	Format Change Dig	0
4	Seconds	0..59
3	Minutes	0..59
2	Hours	0..23
1 (least significant)	Unused	NA

Time Code

The time code column (astTimeCode) is decoded as follows:

Table C-5 Time Code

Byte	Contents	Range
4	Hours	0..23
3	Minutes	0..59
2	Seconds	0..59
1 (least significant)	Frames	0..29 NTSC/525 0..24 PAL/625

Reported Peak Value

Use astPeakValue and astPeakIndex to decode the reported peak value. The digits for the left side of the decimal are found in the astPeakValue. For values that have a decimal part, append the fractional part found in astPeakIndex byte 2.

Table C-6 astPeakValue

Byte	Contents	Range
4	Digit 4	0..9
3	Digit 3	0..9
2	Digit 2	0..9
1 (least significant)	Digit 1	0..9

Table C-7 astPeakIndex

Byte	Contents	Range
4	0 NO RPV 1 mV 2 UNITS 3 IRE 4 dB 5 dBu 6 dBFS 7 deg 8 uS 9 mV or IRE 10 Lines 11 uS	0..8
3	0 PAL 1 NTSC	0..1
2	Digits for decimal part	0..99
1 (least significant)	UNUSED	NA

Notes:

If astPeakIndex (byte 4) = 0, there is no reported peak value. Ignore all other fields in astPeakIndex and astPeakValue.

If astPeakIndex (byte 4) = 11, append a decimal point to the digits in astPeakValue and append astPeakIndex (byte 2). This forms a peak value of type float.

If astPeakIndex (byte 4) = 9, the description string depends on astPeakIndex (byte 3). If astPeakIndex (byte 3) = 0, the description = "mV", if astPeakIndex (byte 3) = 1, the description = "IRE".

For example, the following astPeakIndex and astPeakValue OIDs decode into "23.3 IRE".

Table C-8 Example astPeakValue

Byte 4	Byte 3	Byte 2	Byte 1
0x00	0x00	0x00	0x17

Table C-9 Example astPeakIndex

Byte 4	Byte 3	Byte 2	Byte 1
0x03	0x01	0x03	0x00

Source Input

The device's source input column is decoded as follows:

Table C-10

Index	Input Description
0	Indicates source input A
1	Indicates source input B

Trap and Notifications

In addition to the alarm status table, the agent also supports SNMPv1 traps. This can be configured as defined in RFC1157 (Traps) using "cmnTrap" for snmpTargetAddrTagList and "v2cCMNSystemParams" for snmpTargetAddrParams

Alarm Status Table Management

An OID is available to assist in the management of the Alarm Status Table, astAlarmIDStart. Since the Alarm Status Table is a circular queue, it is possible that Alarm IDs can wrap around when the table has completely filled, placing newer alarms at the top of the table, When reading alarm status starting from row 0 under this scenario, more recent alarms will be read before older alarms. To assist in the location of the oldest alarms (at the "head" of the circular queue), astAlarmIDStart will always contain the ID of the oldest alarm.

Table C-11 Alarm Status Table

OID name	Type	R/W	Values/Range	Unit	Default
astAlarmIDStart	Integer	R	Min: 0		
Max: 999	----	0			

MIB Definition File

The MIB file is located on the CMN-LA web server. See ***Downloading MIB Files*** on page 133 for details.

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E Glossary

601. An international standard (ITU-R BT.601) for component digital television. It defines the sampling systems, matrix values, and filter characteristics for digital television.

8 VSB. Vestigial sideband modulation with 8 discrete amplitude levels.

16 VSB. Vestigial sideband modulation with 16 discrete amplitude levels.

Advanced Television Systems Committee (ATSC). The parent organization that developed, tested and described the form and function of the US digital television formats.

AES/EBU. A digital audio standard established jointly by the Audio Engineering Society (AES) and the European Broadcasting Union (EBU).

Artifacts. Unwanted visible effects in the picture created by disturbances in the transmission or image processing, such as edge crawl or "hanging dots" in analog pictures, or "pixilation" in digital pictures.

Aspect Ratio. The ratio of horizontal to vertical dimensions. A square has an aspect of 1:1 since the horizontal and vertical measurements are always equal. Current television screen aspect ratios are 4:3 and 16:9.

Asynchronous Serial Interface (ASI). A transmission method adopted by the DVB, and called DVB-ASI. The transmission method allows for the transport of varying data payloads in a constant data stream. The DVB-ASI transport stream rate is 270 Mb/s.

Audio Breakaway. Routing video and accompanying audio in separate signal paths.

Audio-Follow. Routing video and accompanying audio together in the same signal path.

Auto Trans. Automatic transition; the execution of a single wipe or fade from current picture to another picture by way of an automatic device.

Bandwidth. The range of frequencies used to transmit information such as picture and sound.

Baseband Video. An unmodulated video signal.

Black. Also color black, blackburst. A composite color video signal that has the composite sync, reference burst, and a black video signal.

Blanking Processor. A circuit which removes sync, burst and blanking from the program video and then replaces it with sync, burst and blanking from the reference input. The process ensures constant sync and burst levels on program video.

Border. An electronically-generated picture member which is used in wipes to separate the two video sources used in the wipe. It is of even thickness and has color produced by the matte generator.

Broadcast Legal. Encoding video signal parameters to conform to prescribed limits for broadcast. Encoding rules vary by NTSC, PAL, country and broadcast facility.

BTSC. Broadcast Television Standards Committee. A US standard for stereo audio encoding in NTSC broadcast television.

CAV. Component Analog Video

CDP. Caption Distribution Packet

CES. Consecutive Errored Samples

Composite Video. A single video signal that includes all color video and timing information. A composite signal includes luminance, chrominance, blanking pulses, sync pulses and color burst information.

Chrominance. The color portion of a video signal that represents the saturation and hue. Black, gray and white have no chrominance; color signals have both chrominance and luminance.

CH. Chroma

Chrominance/Luminance Delay. A measurement that indicates the amount to which chrominance and luminance are aligned with respect to each other. A low C/L delay figure can minimize the effects of ghosts or color offset on the received picture.

C/L Delay. Chrominance/Luminance Delay

Clipping. The electronic process of shearing off the peaks of either the white or black excursions of a video signal for limiting purposes. Clipping is often performed prior to modulation to limit the signal.

CMRR. Common Mode Rejection Ratio

Color Burst. The portion of a color video signal which contains a short sample of the color subcarrier. It is used as a color synchronization signal to establish a reference for the color information following it and is used by a color monitor to decode the color portion of a video signal. The color burst acts as both amplitude and phase reference for color hue and intensity. The color oscillator of a color television receiver is phase locked to the color burst.

Composite Sync. A signal consisting of horizontal sync pulses, vertical sync pulses and equalizing pulses only.

CRC. Cyclical Redundancy Check

Crosspoint. An electronic switch, usually controlled by a button on the panel. Control logic will allow for only one crosspoint, for each bus, to be switched "ON" on at a time.

D/A. Conversion of digital to analog signals.

DA. Distribution Amplifier

Data Element. An item of data as represented before encoding and after decoding.

Decoded Stream. The decoded reconstruction of a compressed bit stream.

Decibel (dB). A logarithmic measure of the ratio between two powers, voltages, currents, sound intensities, etc. Signal-to-noise ratios are expressed in decibels.

Default. A factory preset value or condition.

Demodulator. A receiver, such as for television broadcast, cable, and closed circuit applications. A TV demodulator receives and processes off-air or cable RF signals and provides baseband video and audio outputs.

DHCP. Dynamic Host Configuration Protocol

DID. Data identifier

Differential Gain. A measurement that specifies how much the chrominance gain is affected by the luminance level. Expressed as a percentage showing the largest amplitude change between any two levels, it indicates how much color saturation variance occurs when the luminance level changes.

Differential Phase. A peak-to-peak measurement that specifies the extent to which the chrominance phase is affected by the luminance level. Expressed in degrees of subcarrier phase, it indicates how much hue shift occurs with luminance level changes.

Digital Video Broadcasting (DVB). A specific project office of the European Broadcast Union. This group has produced a set of digital broadcasting standards.

DSK. Down Stream Key, a keyer which is electronically located after (or down stream from) all other functions of a switcher. The key resulting will appear to be on top of all other pictures from the switcher.

DVITC, D-VITC. Digital Vertical Interval Time Code. Timecode information stored on specific lines in the vertical blanking interval of a television signal.

EAV. End of Active Video in component digital systems.

EBU. European Broadcasting Union

Editor. A device or system which controls video tape recorders, video switchers, and other related devices in order to electronically splice segments of recorded video into a finished production.

EDH. Error Detection and Handling. A recommended practice defined in SMPTE RP 165. A system to generate and then detect video data errors in serial digital video systems.

Effects Keyer. A keyer which is electronically located in the mix/wipe generator portion of a switcher. The resulting key would appear under the down stream key.

EIA Rack Space or Unit. A specific size as designated by the Electronics Industry Association. The rack unit is 19 inches wide, and is 1.75 inches tall. A device which requires 3 EIA rack units is 19 inches wide and 5.25 inches (3x1.75 = 5.25) tall.

Elementary Stream (ES). A generic term for one of the coded video, audio or other variable length bit streams which are packetized to form MPEG-2 transport streams. Consists of compressed data from a single source (audio, video, data, etc.). One elementary stream is carried in a sequence of PES packets with one and only one stream ID.

Embedded Audio. Digital audio information multiplexed onto a serial digital data stream. Up to sixteen channels can be multiplexed on a single stream of 601 video, minimizing cabling and routing requirement.

ENG. Electronic News Gathering

Encoded Clip Softness. In the encoded legalization process, "softness," as applied to encoded clips, refers to the processing of the video at the point of the clip. The clips are applied in YCbCr color space. The clip point is either an immediate limit (no softness) or will have a range of values leading to the clip point, all reduced to smooth the clip point to a less immediate limit (softness).

Encoded Legalization. Limiting of the luminance and color difference signals such that, once encoded into a composite video signal, the resultant encoded video does not violate the maximum or minimum signal levels as defined by the specific encoding rules. NTSC and PAL video plus various users of these types of video have many varied rules for maximum and minimum encoding limits. Encoded legalization usually calculates first the encoded luminance value and then the corresponding chroma value to make legalization judgements.

Encoded Video. A combined single video signal that is constructed from either separate GRB or luminance and two color difference video signals. NTSC, PAL, and SECAM are all examples of encoded video.

Envelope Detection. An RF signal detection technique that does not respond to phase variations in the carrier signal, enabling measurement of a transmitter's incidental phase. When used together with synchronous detection, envelope detection helps isolate either video and/or RF as the causes of phase distortion.

External Key Input. This is an alternate source for key cut. This is usually a separate external input to a switcher

Fade-thru-Black. A production technique which is a two step process. The first step will fade the program video to black. The second step will fade from black to the video selected on the preview bus. This is usually used in major scene transitions.

Fade-to-Black. A production technique which simply fades the program video to black and program audio to silent. This is used to end programs and to escape from embarrassing pictures or sounds.

Field. A picture or picture portion which is produced within one cycle of vertical synchronization. In interlaced systems, a full picture or frame requires two consecutive fields.

FM Trap. A circuit designed to minimize potential interference from strong FM signals in receiving equipment, such as a TV demodulator. For example, an FM trap can attenuate signals between 88-108 MHz to reduce interference on NTSC television channel 6.

Frame. A single full resolution picture as viewed in either a video or film system. In the case of interlaced video, two consecutive fields provide all of the information of one frame. In non-interlaced systems, one cycle of vertical synchronization produces a frame. A 60 Hz interlaced system, produces 30 frames of video in one second. A 60 Hz progressive (or non-interlaced) system, produces 60 frames of video in one second. Common frame rates are 24 (film) 25, 29.97, 30, 50, 59.94 and 60.

Frame Synchronizer. An electronic device that synchronizes two or more video signals. Using one input as a reference, it locks a second signal to the reference.

Frame Store. An electronic method of capturing and storing a single frame of video.

Gamma. This term applies to the linearity of the change from black to white. Gamma controls adjust the gray or 50% point of the video either up or down, with the effect of changing the gray level of the video.

Gamut. The whole or total of whatever is being addressed. In color space, gamut refers to all colors which are included in a particularly defined color group, such as 601 gamut.

Genlock (Generator Lock). A method of synchronization involving the generation of a video signal that is time and phase locked with another signal.

GPI. General Purpose Interface

Headend. In a cable TV system, the facilities where program sources (satellite, terrestrial, VTR, local) are received and remodulated for distribution through a cable plant.

High Definition Television (HDTV). High definition television has a resolution of approximately twice that of conventional television in both the horizontal (H) and vertical (V) dimensions and a picture aspect ratio (H to V) of 16:9.

High Level. A range of allowed picture parameters defined by the MPEG-2 video coding specification which corresponds to high definition television.

HRC. Harmonically-Related Carrier

Hue. Color tint

ICPM. Incidental Carrier Phase Modulation. A measurement of picture carrier phase distortion (affected by the video signal level) that occurs in the transmitter.

Installation Categories. Categories of measurements that occur on circuits attached or not attached to a live electrical supply outlet. Installation Categories are as follows:

- Category I is for measurements that occur on circuits not attached to a live electrical supply outlet (115/230 VAC). The voltages come from secondary power sources. The secondary power source includes circuits energized by low-voltage sources and electronics such as batteries.
- Category II is for measurements that occur on circuits attached to a live electrical supply outlet (115/230 VAC).
- Category III is for measurements that occur on equipment permanently connected to the building. The distribution level equipment are usually fixed installations and circuit breakers.
- Category IV is for measurements that occur at the main electrical power supply.

IP. Internet Protocol

IRC. Incrementally-Related Carrier

I.R.E. Refers to the Institute of Radio Engineers, and is used as a unit of measurement. In NTSC television, 1 volt of signal equals 140 IRE units.

ISP. Internet Service Provider

Jitter. A deformation of a signal affected by poor synchronization.

Key. An effect in television where a selected portion of background video is removed and replaced with another video.

Key Cut. In a key effect, this is the video which designates the portion of background video which is removed.

Key Fill. In a key effect, this is the video which is used to replace the portion of background video which was removed. This may be the same video as the Key Cut video.

Key Invert. In a key effect, this is an electronic action which reverses the polarity of the key cut signal. It makes black appear as white, and white appear as black.

Key Mask. In a key effect, it uses a wipe pattern from the wipe pattern generator to restrict the key cut from removing video in a portion of the screen. This requires the use of the wipe pattern generator and the Mask/Preset Size controls.

Key Source. Another term which is the same as key cut.

Legalization. The modification of serial digital video to conform to analog color space rules, as required by users.

LCD. Liquid Crystal Display

LED. Light-Emitting Diode

LFE. Low Frequency Effects

Lissajous. A display of the amplitude and phase relationships between two input signals.

LKFS. Loudness K-Weighted Full Scale

LS. Left Surround

LSB. Least significant bit

LTC. Longitudinal Time Code, A SMPTE timecode standard usually recorded onto the linear audio track of a VTR.

LU. Loudness units

Luminance. The degree of brightness (black and white portion of the video signal) at any given point in the video image. A video signal is comprised of luminance, chrominance and sync. If luminance is high, the picture is bright and if low the picture is dark. Changing the chrominance does not affect the brightness of the picture.

Main Level. A range of allowed picture parameters defined by the MPEG-2 video coding specification with maximum resolution equivalent to standard definition television.

Main Profile. A subset of the syntax of the MPEG-2 video coding specification that is supported over a large range of applications. Applications include, MP@HL (Main profile at high level) and MP@ML (Main profile at main level).

Mask/Preset Size. Uses the wipe pattern generator in the keyer portion of the effects generator. This is used to adjust the size of a preset pattern or for adjusting the size of a mask to block a portion of the key cut (source) from use in the keyer.

Matte Generator. An internal generator which can make any color, is used for border color and may be used for key fill. It is identical to the Color Background Generator, but simply used in other areas of the switcher.

Mbps. Megabits Per Second

MSB. Most significant bit

mV. Millivolts

M/E. Mix/Effects System

MP@HL. Main profile at high level

MP@ML. Main profile at main level

MPEG. Refers to standards developed by the ISO/IEC JTC1/SC29 WG11, Moving Picture Experts Group.

MPEG-2. Refers to ISO/IEC standards 13818-1 (Systems), 13818-2 (Video), 13818-3 (Audio), and 13818-4 (Compliance).

Multi-Level Effects. Applies to any effects generator which can do more than one effect at a time. Typically, a multi level switcher can produce a Key and a Background transition in the same effects generator at one time.

NTSC. National Television Systems Committee, the color television system used in the United States, Canada, Mexico and Japan.

NVRAM. Nonvolatile RAM

Packet Identifier (PID). A unique integer value used to associate elementary streams of a program in a single or multi-program transport stream.

Packet. A packet consists of a header followed by a number of contiguous bytes from an elementary data stream. It is a layer in the system coding syntax.

Packetized Elementary Stream (PES). The data structure used to carry elementary stream data. The packets consist of a header followed by payload data, and a stream is a series of packets which form an elementary stream and have a single stream identification.

PAL. Phase Alternation Line; the standard color television system in many European and other countries.

Passive Looping. Video and audio signals routed through components, even if power is removed. Signals are not amplified or processed, maintaining transparency.

Pedestal Level. An offset used in a video system to separate the active video from the blanking level by maintaining the black level above the blanking level by a small amount.

PIP. Picture in picture

Pixel. A Picture cell or Picture element representing one sample of picture information, such as an individual sample of R, G, B, luminance or chrominance.

Pollution Degree. A measurement of the foreign materials such as conductive dust, gas, and moisture between the internal areas of the product and the outside environment. Pollution Degrees are 1,2 3, and 4.

- Pollution Degree 1 describes conditions where no pollution occurs or only dry, nonconductive pollution occurs. This is normal for equipment located in clean rooms. The pollution classified under Pollution Degree 1 has no environmental influence.
- Pollution Degree 2 describes conditions where dry, nonconductive pollution occurs. This is normal in an office environment. Temporary conductivity caused by condensation may occur when the unit is not in service.
- Pollution Degree 3 describes conditions where conductive pollution occurs, or dry, nonconductive pollution occurs due to condensation. Rooms that cannot maintain the moisture or temperature fall into this category. The location can only protect from outside weather conditions such as direct sunlight, rain, snow, and wind. Industrial areas can fall under Pollution Degree 3.
- Pollution Degree 4 describes pollution that generates persistent conductivity through conductive dust, rain, or snow. Pollution Degree 4 is for outdoor locations.

Preset. Refers to establishing any condition prior to use on the Program output. This term is used in reference to wipe patterns and is often interchanged with Preview.

Preview. The video output channel used to view the intended Program results prior to the execution of the next transition.

PRO Audio. A transmitted audio channel for talent cueing via Interrupt Foldback (IFB) to ENG vans and remote applications. Some demodulators support PRO audio monitoring.

Program. A transport stream combination of a video stream and one or more audio and data streams associated with that video stream. In analog terms, "Program" refers to the Base Band video and audio produced by the final output of a switcher.

Program Association Table (PAT). A list of all programs that are in the ATSC data stream.

Program Map Table (PMT). A listing of all elementary streams that comprise a complete (television) program.

Program Clock Reference (PCR). This is a time reference signal that is placed in MPEG streams for the purpose of time coordinating various data streams.

Program and System Information Protocol (PSIP). Information sent out as part of an ATSC transport stream which lists all of the video, audio, data and program information contained in the stream. This is the "TV guide" for a given stream.

Progressive Scanning. Also non-interlaced. A system of video scanning where lines of a picture are transmitted consecutively, such as with VGA monitor displays.

Push-push Toggle Switch. An electro-mechanical device which, when pushed, alternates the condition of the switch. Push once, it's off, push again, it's on.

Quadrature Output. An output in a television demodulator used for measuring Incidental Carrier Phase Modulation (ICPM) in a transmitter.

QPSK. Quadrature Phase Shift Keying, typically used by satellite downlinks.

QAM. Quadrature Amplitude Modulation, the technique used by cable TV systems (64-QAM and 256-QAM) to remodulate signals for distribution in a cable plant.

GRB Legalization. Limiting of luminance and color difference video signals such that, once transcoded into GRB component video signals, the resultant video does not violate the maximum or minimum signal levels as defined by component video level rules. Typically, the maximum value for R, G, or B is 700 mV, and the absolute minimum value for any of these signals is 0 mV.

Reclocking. The process of regenerating digital data with a clock recovered from the input data.

Resolution. A measure of the finest detail that can be seen, or resolved, in a reproduced image.

RS. Right Surround

RS-422. Recommended Standard number 422, an E.I.A. standard which describes a type of data interchange. Television products use this standard as its communication format between the electronics frame and editors, control panel and computers. An RS-422 line may be extended up to 1,000 feet (304m).

Sampling. Process by which an analog signal is sampled to convert the analog signal to digital.

SAP. Secondary Audio Program, used in television broadcast for second language broadcasting, simulcasting, and separate audio programming.

Saturation. Color intensity

SAW Filter. Surface Acoustic Wave filter

SDID. Secondary data identifier

Segment Error Rate (SER). A calculated average of uncorrected transport stream packets vs. total packets as accumulated over a designated period of time.

Signal to Noise Ratio -Analog (SNR). A measurement of the noise level in a signal expressed in dB (decibels) as a ratio of between the audio or video signal's maximum peak-to-peak signal voltage and the measured voltage of noise present when the signal is removed. Higher SNR figures indicate that any noise introduced by system components will not be perceived in the picture and sound output signals.

Signal to Noise Ratio-8VSB (SNR). As applies to 8VSB transmissions, this is a calculated average power of the ideal signal divided by the actual demodulated signal power.

SMPTE. Society of Motion Picture and Television Engineers

Standard Definition Television (SDTV). This term is used to signify a digital television system in which the quality is approximately equivalent to that of NTSC. This equivalent quality may be achieved from pictures originated at the 4:2:2 level of ITU-R BT.601 and subjected to processing as part of the bit rate compression. The results should be such that when judged across a representative sample of program material, subjective equivalence with NTSC is achieved. The displayed picture may be either the traditional 4:3 or the wide-screen 16:9 aspect ratio.

STL. Studio Transmitter Link

Synchronous Detection. A common detection technique used in television demodulators that removes quadrature distortion, enabling comparison of transmitter output with video input signal.

S-Video. Also Y/C. Transmits luminance and color portions separately via multiple wires, thus avoiding the color encoding process and resulting loss of picture quality.

Tally. A system used to light lamps and indicate usage. Most production switchers have an internal tally system to indicate selected functions, and which selected functions are currently involved with Program.

TCP. Transmission Control Protocol

Telecine. A device used to convert film to video; movie film is digitally sampled and converted to video frame by frame in real-time.

TCXO. Temperature Compensated Crystal Oscillator

THD. Total Harmonic Distortion

Transport Stream-ATSC (TS). Consists of the following: (1) Packets: 188 bytes - fixed length with descriptive data, (2) Carries several programs, (3) has a PID which identifies the type of TS packet (video, audio, other), and (4) carries descriptive information about the program.

UHF. Ultra High Frequency

Unity Gain. An electronic term indicating that a signal will be neither amplified or attenuated. One volt of signal level in results in one volt of signal level out.

Vector. A measure that has two individual properties: magnitude and direction.

Vector Clip. A special encoded clip version that limits only the Cb and Cr input video signals and does not affect (nor is it affected by) the luminance component. This color-only clip limits the maximum vector excursions as viewed in an encoded state and is intended for users who wish to prevent encoded vectors from ever exceeding the perimeter circle of an encoded vector display.

VHF. Very High Frequency

VITC. Vertical Interval Time Code, a method for recording on to video tape the timecode address for each video frame inserted in the vertical interval.

Waveform. A visual representation of a signal in the shape of a wave that plots amplitude versus time.

White Level. The brightest part of a video signal, corresponding to approximately 1.0 Volt.

White Balance. An electronic process used to calibrate the picture for accurate color display in different lighting conditions.

Wipe. A special effect in which two pictures from different video sources are displayed on one screen. Production switchers and special effects generators provide numerous wipe patterns varying from simple horizontal and vertical wipes to multi-shaped, multi-colored arrangements.

XGA. High resolution 1024×768 non-interlaced (progressive) display monitor

XVGA. Extended Video Graphics Adapter

YPbPr. CAV format composed of luminance (Y) and two color difference signals (Pb and Pr)

Y/C. Also S-video. Describes the separation of video signal luminance and chrominance components.

Zero Carrier Pulse (chopper). In a TV demodulator, removes the carrier in the vertical interval for a short period, enabling depth of field measurement.

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