Multimedia 16x16 Matrix Switch
500470

Installation Guide

P/N: 94-000731-B SE-000731-B

Table of Contents

1. Overview

1.1. Description

The MuxLab 500470 Multimedia 16x16 Matrix Switch allows 16 multimedia sources to be switched/distributed to up to 16 local displays and up to 16 remote displays via unshielded twisted pair (UTP) cables, shielded twisted pair (STP) cables for cost-efficient connectivity. Remote displays can be connected up to 330 feet (100 meters) @ 1080p Deep Color via Cat 5e/6 UTP/STP cables. The Multimedia 16x16 Matrix Switch works in conjunction with MuxLab's HDMI Receiver (500451-RX).

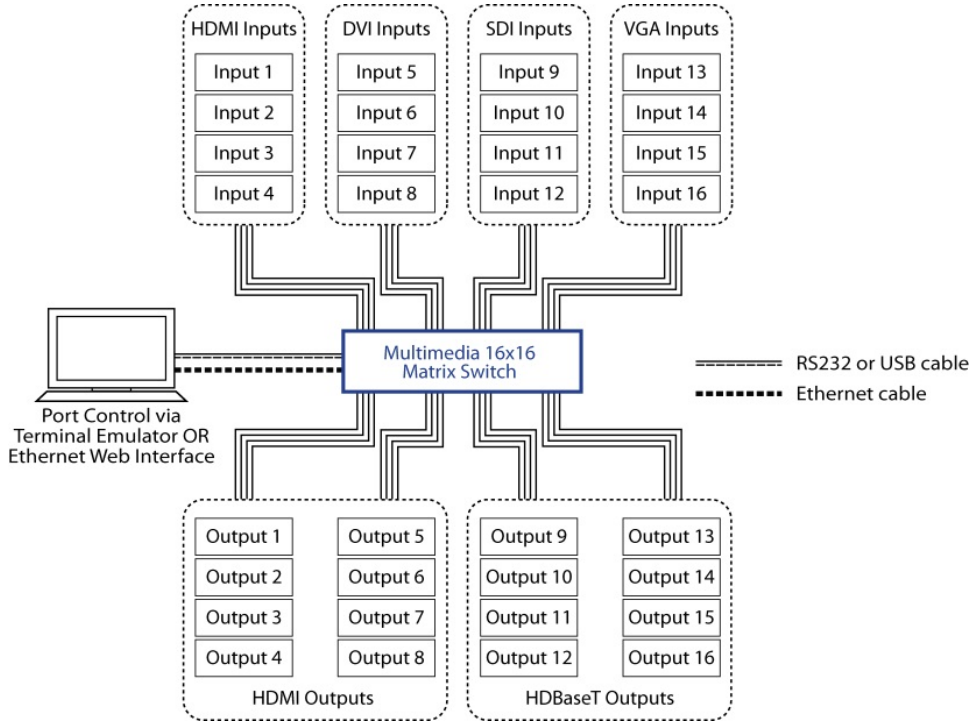


Figure 1: System Overview

Applications include commercial and residential AV systems, classroom projector systems, digital signage, boardroom systems, multi-room systems, classroom training, retail systems, collaborative PC systems, and medical information systems.

1.2. Features

- Single modular RJ45 jacks.
- UTP/STP extension for 1080p Deep Color up to 230 feet (70 meters) via Cat 5e/6 UTP/STP cables.
- HDMI 3D support.
- Seamless integration with MuxLab's HDMI Receiver (500451-RX).
- HDMI, DVI, 3G-SDI, VGA input supported with resolution up to 1080p.
- HDMI and HDBaseT supported output.
- Learning/cloning EDID from any display device.
- Web interface.
- RS232 and USB CDC control.
- Firmware is field upgradable.
- Touch pad on front panel for manual control.
- Device control over HTTP protocol.
- 5U rackmount unit.

2. Technical Specifications

Multimedia 16x16 Matrix Switch Chassis	
Environment	HDMI 1.3A, HDMI 1.4A 3D Support, DVI, 3G-SDI, VGA
Devices	LCD and Plasma TVs, DVD and Blu-Ray players, monitors, projectors, PCs, laptops, home theatre systems, home theater PCs, game consoles.
Transmission	Transparent to the user
Input Slot	4 slots supporting 4-port modular input card HDMI, DVI, 3G-SDI, VGA
Output Slot	4 slots supporting 4-port modular output card HDMI, HDBaseT
Connectivity	Ethernet LAN (RJ45), USB (Type B) and RS232 (DB9)
Maximum Distance	UTP/STP Cat 5e/6 Ouput port: 230 feet (70 meters)
Cables	Cat 5e/6 UTP/STP cables (or better) required for HDBaseT port
Power	AC 100-240 V 50/60 Hz
Power Supply	Dual Redundant Power Supply 100-240 VAC to 12 VDC @ 25A (300 W)
LED Diagnostics	Power (Blue) PSU1 (Green) PSU2 (Green) Fault (Red) LAN (Link (Green) and Activity (Yellow))
Temperature	Operating: 0ºC to 50ºC Storage: -20ºC to 85ºC Humidity: Up to 95% non-condensing
Dimensions	5U Rack Mountable: 450 x 280 x 189 mm
Weight	18 lb (8 kg)
Regulatory	FCC, CE, RoHS, WEEE
Safety	UL, CUL
Warranty	Two (2) years
Order Information	500470 Multimedia 16x16 Matrix Switch with one Power Supply Unit 500478 500478 Replacement Power Supply Unit for 500470

DVI Input Card	
Environment	DVI (Single Link)
Devices	PCs, laptops, home theater PCs
Transmission	Transparent to the user
Connectivity	4-port DVI-D connectors using a 2-port DVI-D dongle
Maximum Distance	DVI: 16 feet (5 meters)
Cables	DVI-D Single Link Cable
LED Diagnostics	None
Temperature	Operating: 0ºC to 50ºC Storage: -20ºC to 85ºC Humidity: Up to 95% non-condensing
Dimensions	160 x 150 x 25 mm
Weight	0.55 lb (0.23 kg)
Regulatory	FCC, CE, RoHS, WEEE
Warranty	Two (2) years
Order Information	500472 4 Channel DVI Input Card

3G-SDI Input Card	
Environment	SDI single link: SD, HD & 3G
Devices	PCs, Camera
Transmission	Transparent to the user
Connectivity	4-port of 2 BNC female connector (input and loopback)
Maximum Distance	SDI: 330 feet (100 meters)
Cables	RG59 Coaxial Cable 75 Ohms
LED Diagnostics	None
Temperature	Operating: 0ºC to 50ºC Storage: -20ºC to 85ºC Humidity: Up to 95% non-condensing
Dimensions	160 x 150 x 25 mm
Weight	0.65 lb (0.30 kg)
Regulatory	FCC, CE, RoHS, WEEE
Warranty	Two (2) years
Order Information	500473 4 Channel 3G SDI Input Card

VGA Input Card	
Environment	VGA
Devices	PCs, laptops, home theater PCs
Transmission	Transparent to the user
Connectivity	4-port DB15-HD connector
Maximum Distance	VGA: 16 feet (5 meters)
Cables	DB15-HD VGA Cable.
Audio	Analog stereo audio supported using VGA/Audio adaptor cable
LED Diagnostics	None
VGA cards per chassis	Two (2) maximum
Temperature	Operating: 0ºC to 50ºC Storage: -20ºC to 85ºC Humidity: Up to 95% non-condensing
Dimensions	160 x 150 x 25 mm
Weight	0.65 lb (0.30 kg)
Regulatory	FCC, CE, RoHS, WEEE
Warranty	Two (2) years
Order Information	500474 4 Channel VGA Input Card

HDBaseT Output Card	
Environment	HDBaseT
Devices	HDBaseT Extender Receiver
Transmission	Transparent to the user
Connectivity	4-port RJ45 connector
Maximum Distance	UTP/STP Cat 5e/6 output port: 230 feet (70 meters)
Cables	Cat 5e/6 UTP/STP cables (or better)
LED Diagnostics	Link (Blue)
Temperature	Operating: 0ºC to 50ºC Storage: -20ºC to 85ºC Humidity: Up to 95% non-condensing
Dimensions	160 x 150 x 25 mm
Weight	0.55 lb (0.23 kg)
Regulatory	FCC, CE, RoHS, WEEE
Warranty	Two (2) years
Order Information	500476 4 Channel HDBaseT Output Card

HDMI Input and Output Card	
Environment	HDMI 1.3A, HDMI 1.4 3D Support
Devices	LCD and Plasma TVs, DVD and Blu-Ray players, monitors, projectors, PCs, laptops, home theatre systems, home theater PCs, game consoles.
Transmission	Transparent to the user
Connectivity	4-port HDMI connectors 4-port 3.5mm stereo audio (-SA version only)
Stereo Audio Out (-SA version only)	Sample rate: 32KHz, 44.1KHz & 48 KHz Bit depth: 16 & 24 Bit Signal type: LPCM
Maximum Distance	HDMI: 16 feet (5 meters)
Cables	HDMI Cable
LED Diagnostics	None
Temperature	Operating: 0ºC to 50ºC Storage: -20ºC to 85ºC Humidity: Up to 95% non-condensing
Dimensions	160 x 150 x 25 mm
Weight	0.55 lb (0.23 kg)
Regulatory	FCC, CE, RoHS, WEEE
Warranty	Two (2) years
Order Information	500471 4 Channel HDMI Input Card 500471-SA 4 Channel HDMI Input Card with Stereo Audio Out 500475 4 Channel HDMI Output Card 500475-SA 4 Channel HDMI Output Card with Stereo Audio Out

3. Installation Procedure

3.1. Parts List

The Multimedia 16x16 Matrix Switch (500470) comes with the following parts:

- Multimedia 16x16 chassis with one power supply
- Quick Reference Support Sheet

Please verify that the following components are present before proceeding:

- USB cable
- RS-232 cable
- AC power cord
- DC power adapter
- DVI to HDMI adapter
- EDID emulator/learner

NOTE: Module cards are sold separately.

3.2. Product Overview

The external connections and connection indicators of the Multimedia 16x16 Matrix Switch are detailed in Figure 2 and Figure 3. Please familiarize yourself with them before installing the unit.

Figure 2: Front Panel

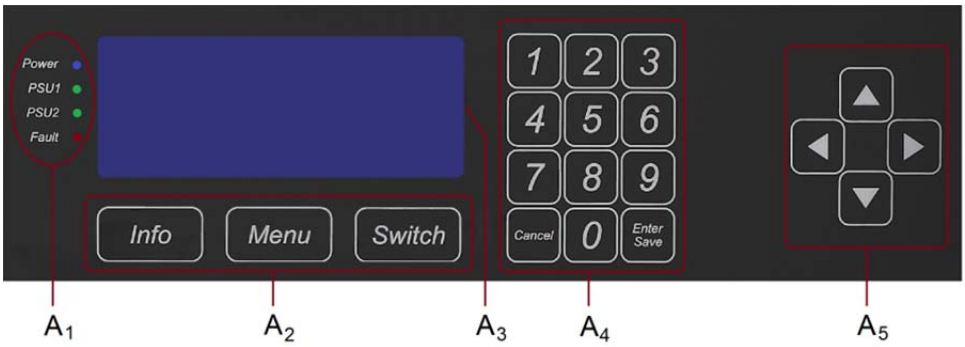


Figure 3: Front Panel Controls

A_1 = Status LEDs (Power, PSU1, PSU2, Fault)
A_2 = Control Buttons
A_3 = LED Display
A_4 = Numeric Keypad
A_5 = Navigational Arrows

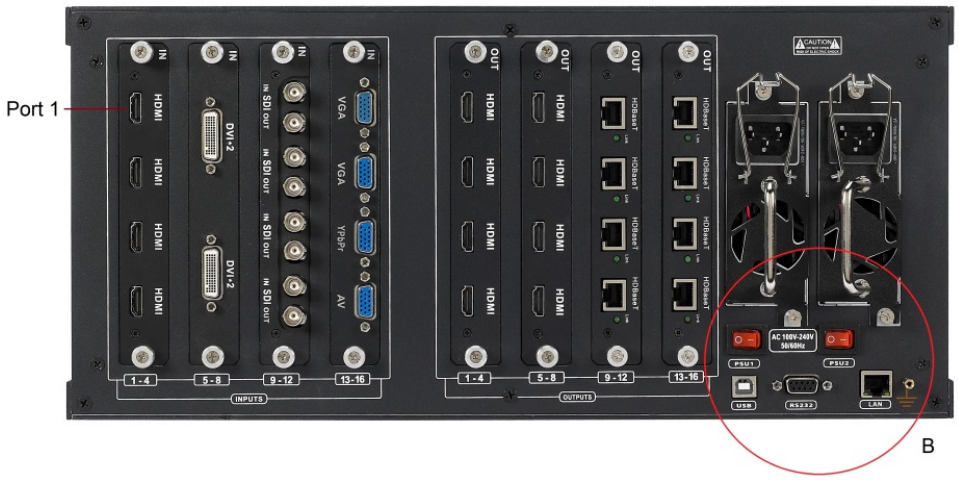


Figure 4: Back Panel

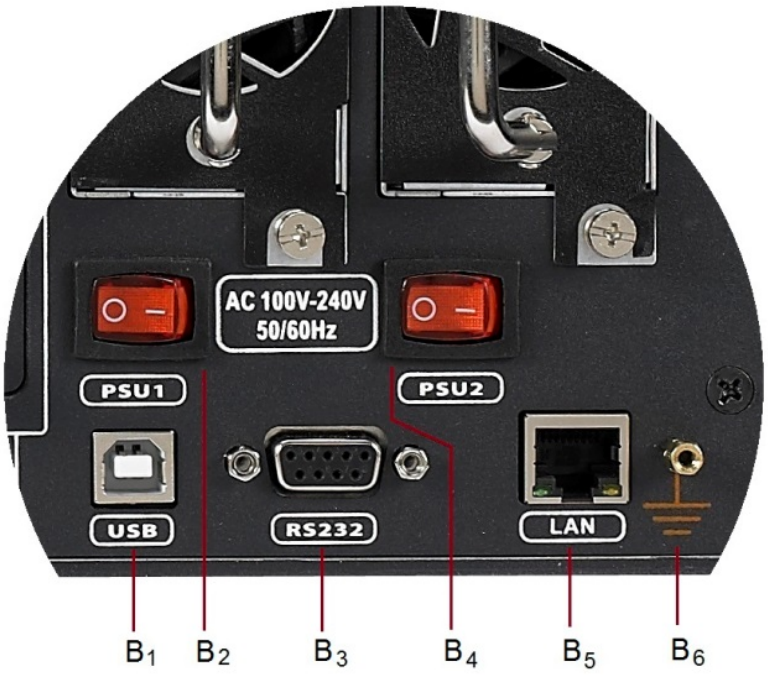


Figure 5: Back Panel Detail B

B_1 = USB Port
B_2 = Power Supply Unit 1 I/O Switch
B_3 = RS232 Port
B_4 = Power Supply Unit 2 I/O Switch
B_5 = Ethernet Port
B_6 = Grounding Connection

Figure 6: Input and Output Card Modules (Sold Separately)

Figure 7: Back Panel with Removable Card Modules

3.3. Pre-Installation Checklist

The Multimedia 16x16 Matrix Switch provides a centralized HDMI switching center via HDMI and UTP/STP cables.

1. The Multimedia 16x16 Matrix Switch can be used in conjunction with MuxLab's UTP/STP HDMI Receiver (500451-RX).

2. The Multimedia 16x16 Matrix Switch is typically installed in a remote telecom room and is connected to multiple video sources and display devices via Cat 5e/6 UTP/STP cables or HDMI cables. If required, a MuxLab Receiver is installed at each display to support the connection to the Matrix Switch via a Cat 5e/6 cable.

3.4. Physical Installation

MuxLab's Multimedia 16x16 Matrix Switch comes with a front mounting bracket for standard 19" rackmount installation. Select the final destination for the product and install the unit using standard rackmount fasteners.

Once located in the rack, secure the unit in place by fastening the front panel to the rack with four screws. An additional four screws may be used to secure the front panel to the rack. See Figure 8 for illustration of completed installation (front view).

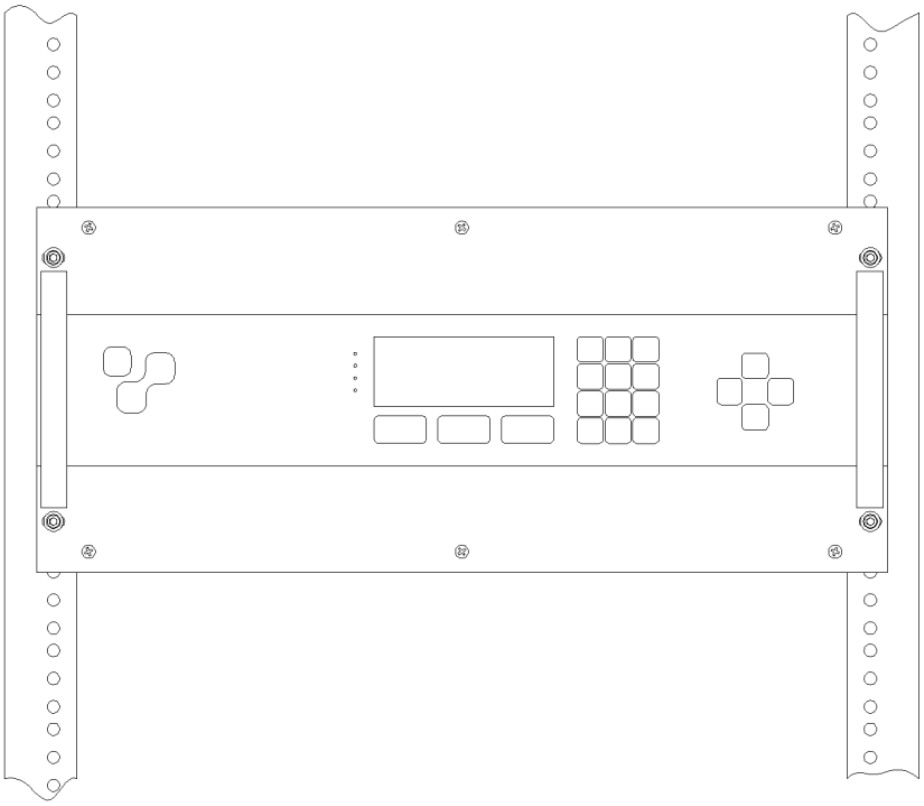


Figure 8: Completed 19" Rackmount Installation

3.5. Installation Procedure

In order to install the product, please follow the steps below:

1. Place the Multimedia 16x16 Matrix Switch in its final location (see Section 3.4 Physical Installation).
2. If another power supply unit is required for redundancy, install it (see Section 3.7 Power Supply Unit Installation).
3. Install the input and output cards modules. Input card modules fit into the four slots on the left side of the back panel, and output card modules fit into the four slots on the center-right side of the back panel (see Section 3.6 Card Module Installation).
4. Connect the source(s) to the Matrix Switch via ports on the input card modules located on the back panel. Ensure that power is turned OFF at the source(s).
5. Connect the display(s) to the Matrix Switch via ports on the output card modules located on the back panel. Ensure that the display(s) are turned OFF. For HDBaseT outputs, MuxLab Receivers must be installed at the displays (see MuxLab *Receiver Installation Guide* for more information).
6. Power up the equipment.

The Matrix Switch is now ready to use. See Section 3.9 Manual Control for instructions on using the Matrix Switch.

3.6. Card Module Installation

To install a card module in the Multimedia 16x16 Matrix Switch, please follow the steps below:

1. Align the card module with the plastic rail found in the given slot at the back of the Matrix Switch.
2. Gently slide the card module into the slot. A hard stop should be felt when the connector interface of the card module is flush with the outside surface of the back panel.
3. Tighten both thumbscrews to secure the card module to the back panel of the Matrix Switch.

   NOTE: Card modules are hot-swappable, meaning that they can be replaced when power on the Matrix Switch is ON. When hot-swapping a card module, follow all standard safety precautions for working with live circuitry.

Figure 9: Card Module Installation

3.7. Power Supply Unit Installation

To install a power supply unit in the Multimedia 16x16 Matrix Switch, please follow the steps below:

1. Holding the power supply unit with both hands (one on the chrome handle and the other on the top clip), align the power supply unit with the sliding rail found in the given power supply slot at the back of the Matrix Switch.
2. Gently slide the power supply unit into the slot. A hard stop should be felt when the power supply unit back surface is flush with the outside surface of the back panel.
3. Tighten both screws at the power supply unit back surface.
4. Plug the power cord into the power supply unit socket and secure it with the clip.

NOTE: Power supply units are hot-swappable, meaning that they can be replaced when power on the Matrix Switch is ON. When hot-swapping a power supply unit, follow all standard safety precautions for working with live circuitry.

Figure 10: Power Supply Unit Installation

3.8. Cloning EDID

In order to clone the EDID of a display, follow the procedure listed below with the cloning kit included with each Multimedia 16x16 Matrix Switch:

1. Power up the EDID Emulator/Learner with the adaptor provided.
2. Plug the DVI to HDMI adaptor to the DVI output of the EDID Emulator/Learner.
3. Plug the HDMI connector to the display device that you wish to clone.
4. Verify that the EDID WR switch is set to “Unlock”.
5. Press the “Read” pushbutton. The “Read” LED should illuminate for approximately 2 seconds.
6. Plug the HDMI connector to the input HDMI port where you want the new EDID applied.
7. Press the “Write” pushbutton. The “Write” LED should illuminate for approximately 2 seconds.

   NOTE: If both LEDs illuminate after performing an operation, this indicates that the operation has failed. Perform the operation again, making sure that the display device you are attempting to clone is powered up.

3.9. Manual Control

The Multimedia 16x16 Matrix Switch may be controlled manually by using the controls located on the front panel.

Navigating the manual control menu is performed by using the Info, Menu, and Switch buttons located on the front panel, just below the display, as well as the numeric keypad and arrows located to the right of the display. (NOTE: The Cancel button on the numeric keypad also returns the user to the previous screen.)

Figure 11 illustrates the navigational layout of the manual control menu. Specific menu screens (depicted by boxes) are described on the following pages.

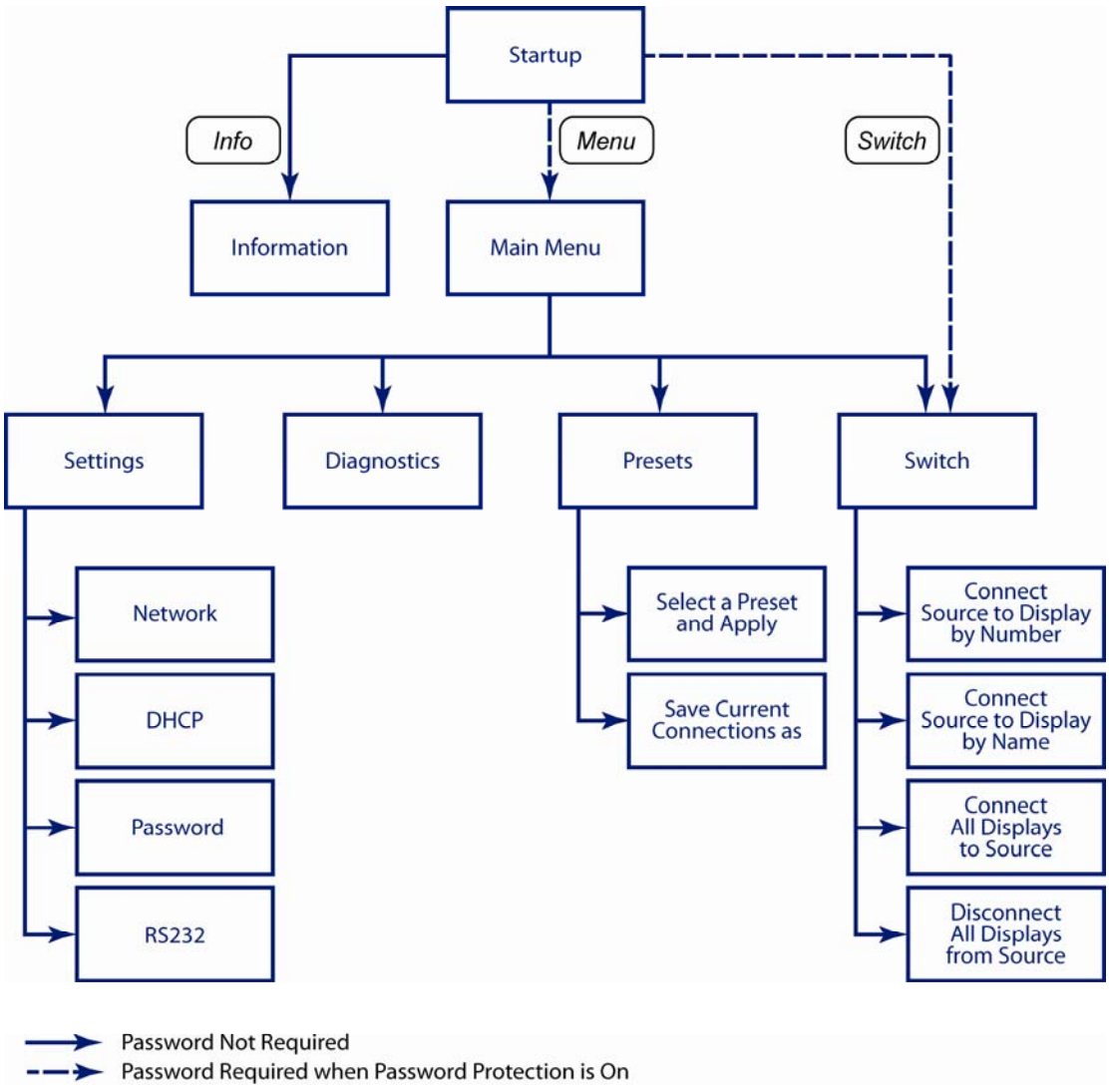


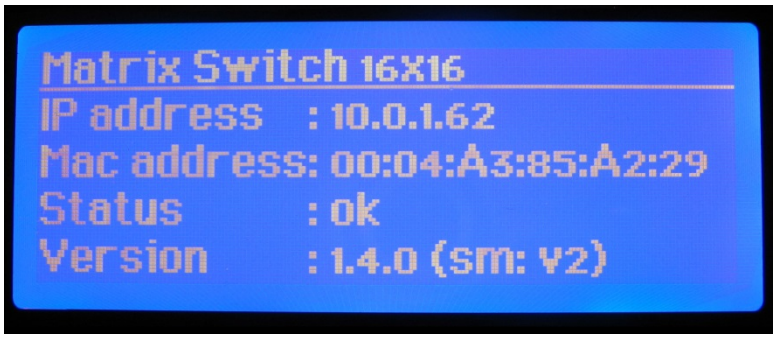
Figure 11: Manual Control Navigation

Startup

The Startup screen is the first screen to appear once the Multimedia 16x16 Matrix Switch is powered up. It displays the MuxLab logo and product name.

Information

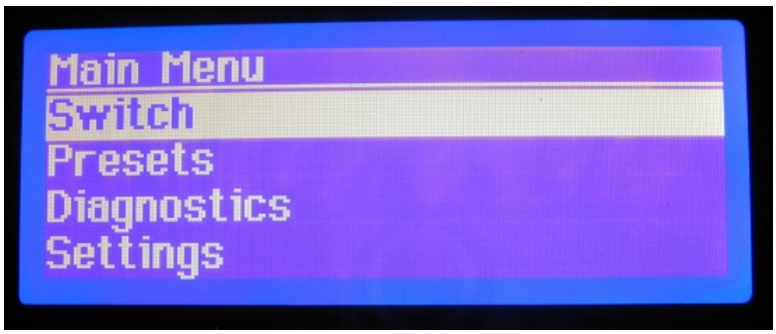
The information screen is reached by pressing the Info button. It displays the name of the device at top, followed by the IP and Mac addresses, device status, and firmware version.



Main Menu

The Main Menu screen is reached by pressing the Menu button. It contains four options:

- Switch
- Presets
- Diagnostics
- Settings



By default, the Switch option is highlighted when the Main Menu screen first displays. NOTE: If password protection is on, pressing the Menu button from the Startup or Information screens will prompt the Password screen to appear. The user must then enter the correct password in order to reach the Main Menu screen.

Switch

The Switch screen by either pressing the Switch button, or by highlighting the Switch entry in the Main Menu screen and pressing the Enter/Save button on the numeric keypad.

The Switch screen contains four options:

- Connect a source to a display by number
- Connect a source to a display by name
- Connect all displays to a source
- Disconnect all displays from a source

By default, the top-most option is highlighted when the Switch screen first displays.

NOTE: If password protection is on, pressing the Switch button from the Startup or Information screens will prompt the Password screen to appear. The user must then enter the correct password in order to reach the Switch screen.

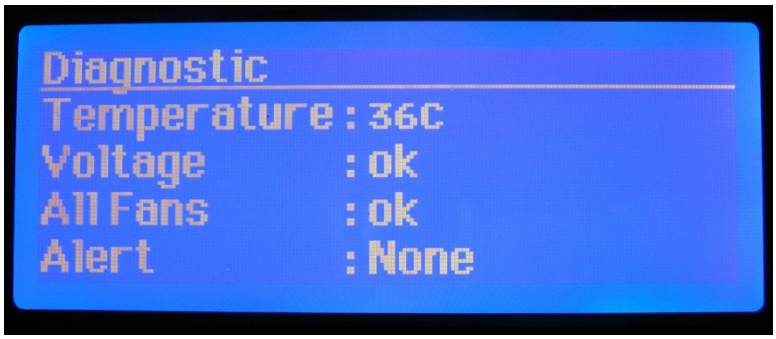
Presets

The Presets screen allows the user to select and apply a pre-existing preset (specific mapping of connections between sources and displays), or to save existing connections as a preset.

Diagnostic

The Diagnostic screen displays four operating conditions:

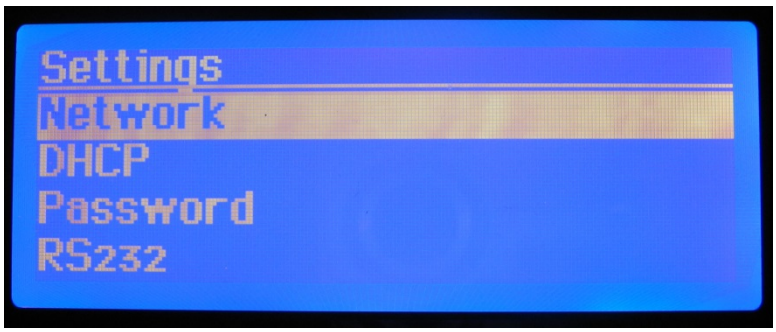
- Internal device temperature
- Voltage status
- Fans status
- Existence of alerts



Settings

The Settings screen allows the user to choose which category of settings to change:

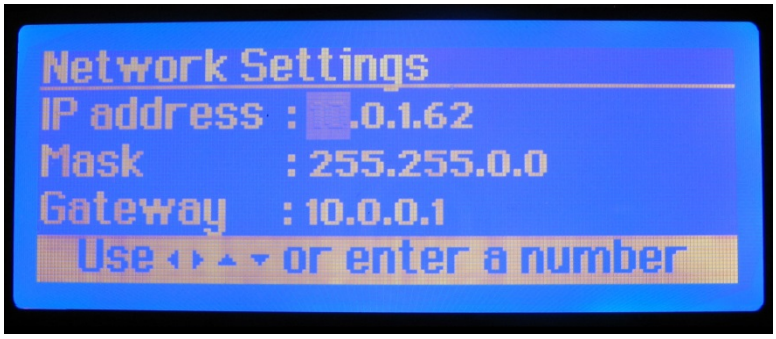
- Network
- DHCP
- Password
- RS232



Network

The Network Settings screen allows the user to change the settings of the network:

- IP Address
- Mask Address
- Gateway Address

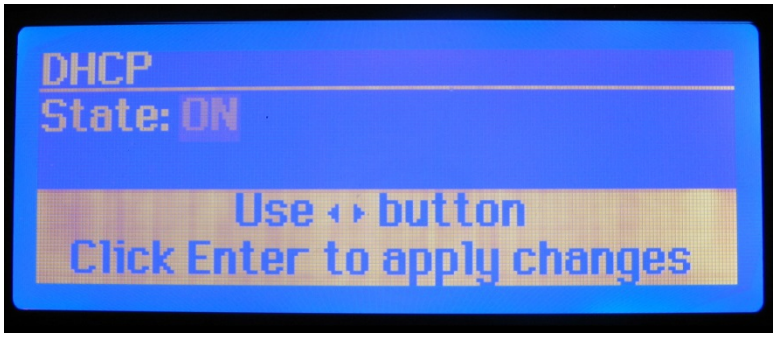


The user navigates the Network Settings screen using the arrow keys, and enters information using the numeric keypad.

NOTE: In order to access the Network Settings screen, DHCP must be disabled (see below). If DHCP is not disabled, the following screen will appear:

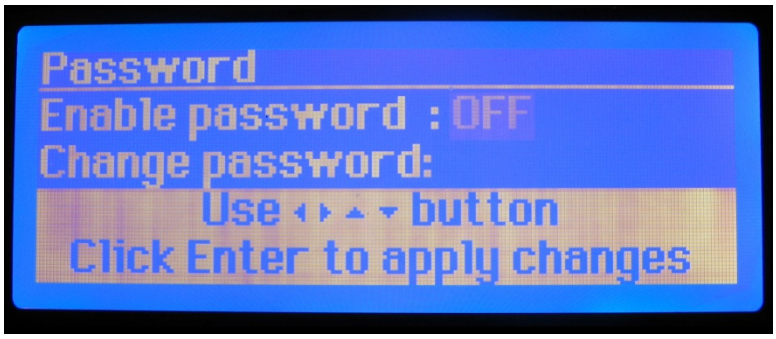
DHCP

The DHCP screen allows the user to set the state of the DHCP (Dynamic Host Configuration Protocol) to ON or OFF.



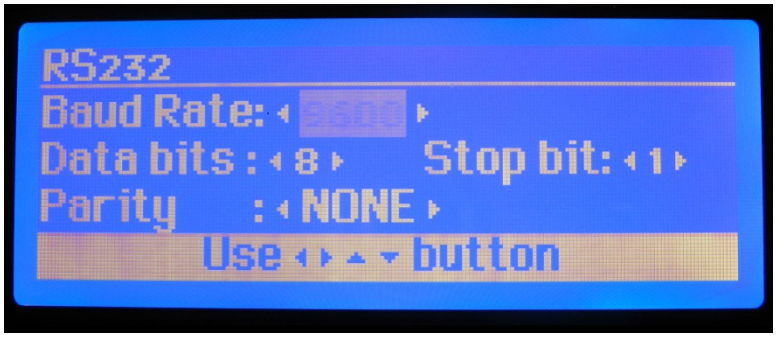
Password

The Password screen allows the user to set password protection on the system to ON or OFF, as well as to change the password (numeric characters only).



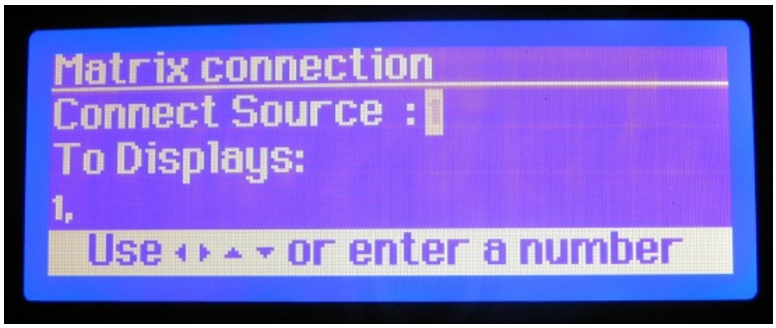
RS232

The RS232 screen allows the user to modify the baud rate, data bits, stop bit, and parity settings of the device.



Connect Source to Displays

The Connect Source to Displays screen allows the user to select which source to connect to which displays(s). The user selects the source and displays by their designated number.

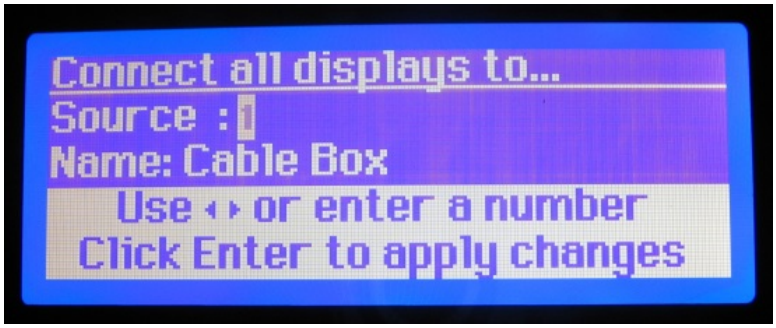


Connect Source by Name

The Connect Source by Name screen allows the user to select which display(s) to connect to which source(s). The user selects displays and sources by their designated name.

Connect All Displays to…

The Connect All Displays to… screen allows the user to connect all displays to a given source. The user simply selects the source, which is displayed both by number and name.



Disconnect All Displays from…

The Disconnect All Displays from… screen allows the user to disconnect all displays from a given source. The user simply selects the source, which is displayed both by number and name

Select a Preset and Apply

The Select a Preset and Apply screen is a two-tier menu that allows the user to select a preset from a list of eight options.

Once selected, the user presses the Enter/Save button on the numeric keypad. The Select a Preset and Apply screen then confirms the selection.

Save Current Connections as…

The Save Current Connections as… screen allows the user to save the current connection scheme to any one of eight pre-existing schemes.

Once selected, the user presses the Enter/Save button on the numeric keypad. The Save Current Connections As screen then confirms the selection.

3.10. Port Control Operation

MuxLab's Multimedia 16x16 Matrix Switch may be controlled in any one of two ways:

1. RS-232 Control
2. USB CDC Control

1. RS-232 Control

The Multimedia 16x16 Matrix Switch features built-in firmware that allows commands from an ASCII terminal to be sent directly to the device via an RS-232 connection. Ensure that the RS-232 cable has the straight-through configuration shown in Figure 12.

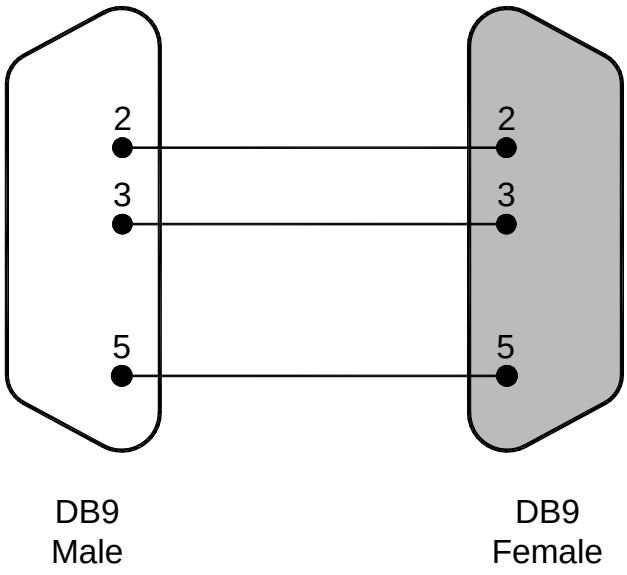


Figure 12: RS-232 Cable Configuration

Please note that the use of USB to RS232 converter cables may result in problems, depending on the quality of the converters.

2. USB CDC Control

Commands from an ASCII terminal may also be sent directly to the device via a USB connection. Maintenance can be performed with a terminal emulator, such as the one available under windows with the ASCII Command set described in the Appendix of this manual.

3.11. USB Driver Setup

When interfacing a MuxLab device with the USB port on Windows XP, Windows 7, or Windows 8 operating systems, a driver setup file will be required. For Linux and Mac OS X operating systems, no driver is necessary.

To install the USB serial driver, download the SC-000032-A USB to serial driver file from the MuxLab website and save it to the local hard drive. NOTE: If the downloaded file is compressed, it will have to be uncompressed before using it.

Plug the USB cable between the device and the PC, and power up the device. The **Found New Hardware** wizard will open (Figure 13). Select **Locate and install driver software (recommended)**.

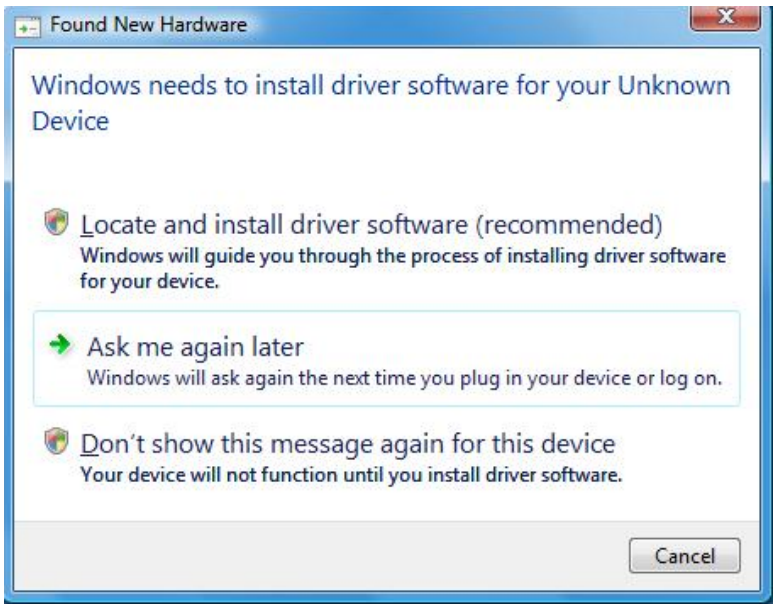


Figure 13: Found New Hardware Wizard

A new dialog box will open (Figure 14). Select **Browse my computer for driver software (advanced)**.

Figure 14: Found New Hardware Dialog Box

Another dialog box will open (Figure 15). Click **Browse** and locate the SC-000032-A USB to serial driver file downloaded earlier. Once found, click **Next**.

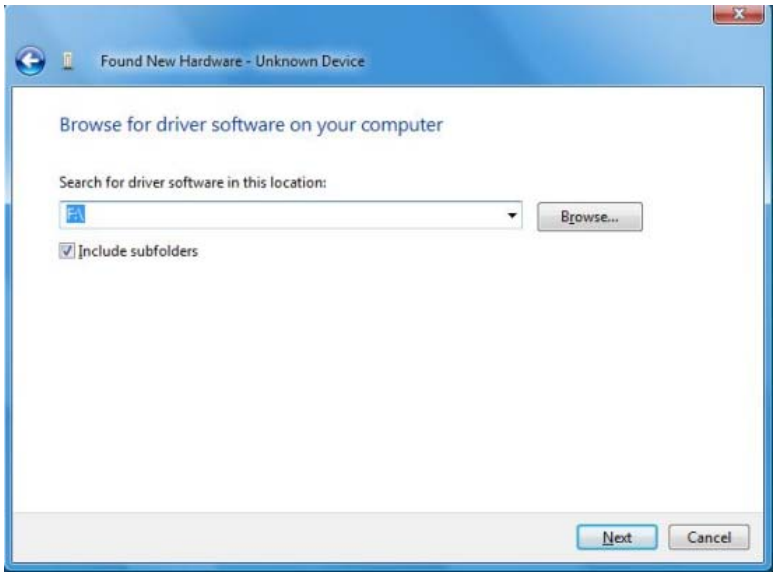


Figure 15: Browsing for Unknown Device

A security window will now appear, indicating that the driver software is unsigned (Figure 16). Select **Install this driver software anyway**.

Figure 16: Windows Security

A window will appear instructing that the software for the driver has been successfully installed (Figure 17). Click **Close**.

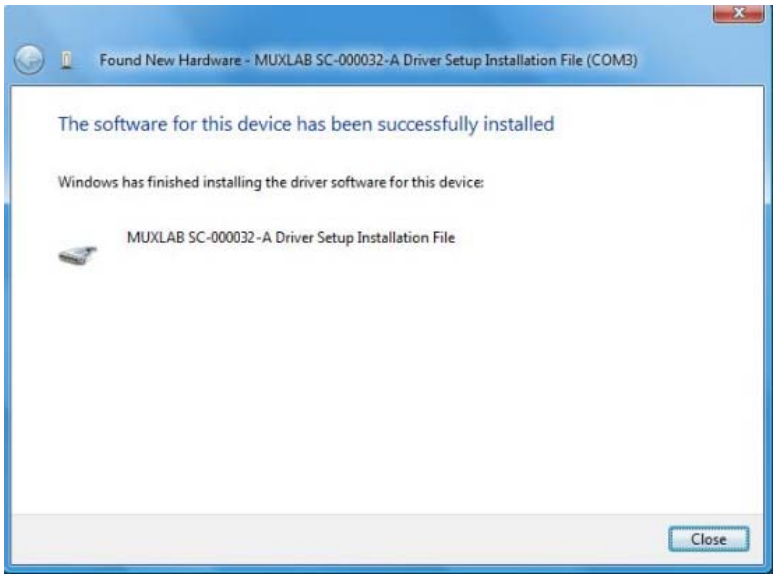


Figure 17: Successful Installation Dialog Box

3.12. Ethernet Web Interface

MuxLab offers users an Ethernet Web interface that provides the same functionality as manual control, with speeds of 10 Mbps or 100 Mbps.

To use the Ethernet Web interface, the Multimedia 16x16 Matrix Switch must first be physically connected to an Ethernet network. To do this, locate the RJ45 Ethernet jack on the back panel of the Matrix Switch, then connect it to an Ethernet network using a straight UTP cable (maximum length: 333 feet [100 meters]). There are two LEDs at the bottom of the RJ45 Ethernet jack: A green LED will go on if a link is detected, and a yellow LED will blink if Ethernet activity is detected.

Once the Matrix Switch has been physically connected to an Ethernet network, go to http://AAA.BBB.CCC.DDD, where AAA.BBB.CCC.DDD is the device IP address. (NOTE: The device IP address can be obtained by pressing the Info button on the front panel.)

The **Login** screen is the first screen to appear (Figure 18).

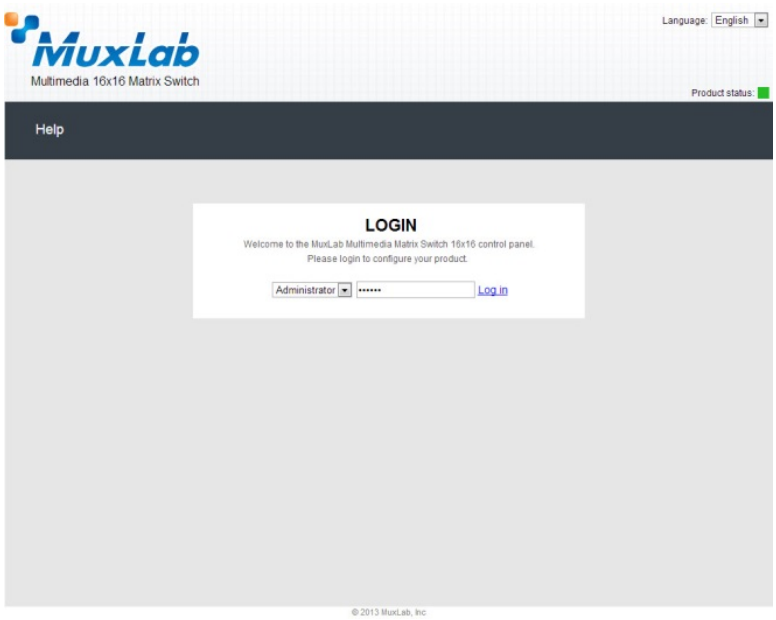


Figure 18: Ethernet Web Interface Login Screen

The default password for administrators is **admin**. The default password for regular users is **user**.

NOTE: Users who have previously logged in and chosen a password, but have subsequently forgotten it, may connect to the device using the RS232 or USB and reset their password using a terminal emulator.

Three items are presented to the user at the top right of every Ethernet Web interface screen:

- Logout option
- Language option
- Product status

The **Logout** hyperlink logs the user out of the system.

The **Language** drop-down list provides the user with three interface languages: English, French, and Spanish. English is used by default.

The **Product status** indicator provides a quick indication of device status by means of a colored box (green, orange, red) to indicate various product statuses:

- Green = Okay
- Orange = Warning
- Red = Error

The user can configure the **Product status** indicator to display different statuses depending on various device conditions (internal temperature, fan speed, etc.). This configuration is performed in the **Alarm** tab of the **Setup** submenu.

After logging in, the main screen appears (Figure 19). It contains three submenus:

(1) Port Management
(2) Setup
(3) Help

(1) Port Management

The **Port Management** submenu (Figure 19) appears after the user has successfully logged in.

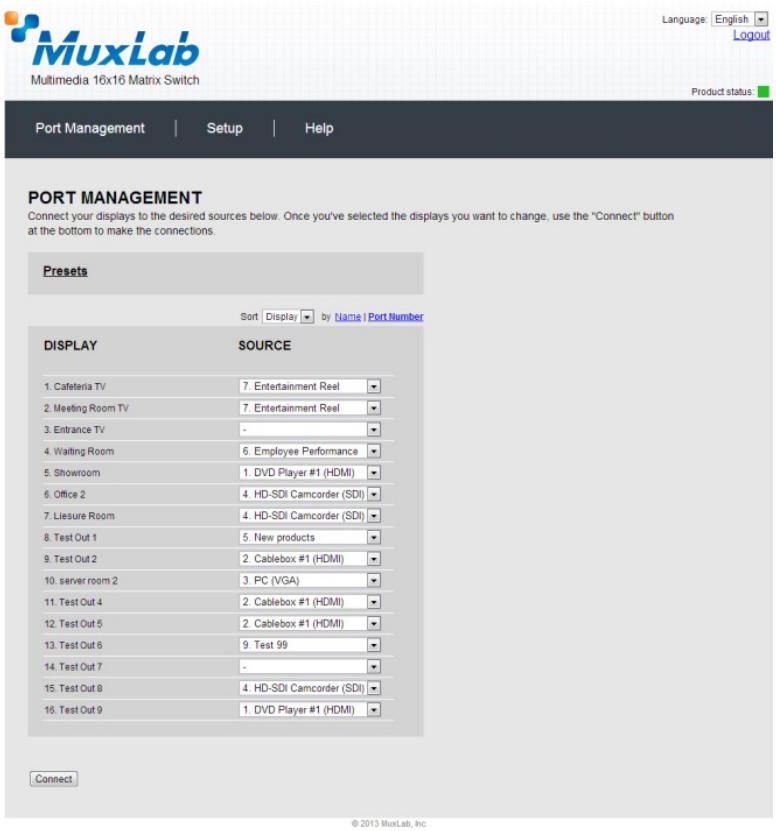


Figure 19: Port Management Submenu

The **Port Management** submenu manages the connection configurations of displays and sources.

A connection configuration is a specific set of mapping instructions between all displays and devices. A saved connection configuration is known as a preset.

The **Port Management** submenu allows the user to make individual connections between specific displays and sources, or wholesale connections between all displays and sources by means of presets. Sources and displays are presented to the user in any one of four ways:

- By source name
- By source number
- By display name
- By display number

Figure 19 illustrates sources and displays presented by display number. The user can make changes to the connection configuration of the device by selecting any option in the drop-down boxes in the **Source** column. Once any change is made, the given row will change color to indicate that a change has taken place. Once all selections have been made, the user clicks on the **Connect** button to apply those selections.

Presets are pre-established connection configurations that are used to apply wholesale mapping instructions between all displays and sources (see Figure 20). The user can load any one of eight presets to the device. Once a preset is selected from the **Preset** drop-down menu, the user clicks on **Load Preset** to show the connection configuration of the given preset. To apply the preset, the user clicks on **Make Connections**.

To modify a given preset, its name must first appear in the **Preset** drop-down menu. The user then makes changes to the connections between displays and sources (any change will result in a highlighted row). Once all changes are made, the user clicks on **Save Preset**. This effectively modifies the connection configuration of the given preset.

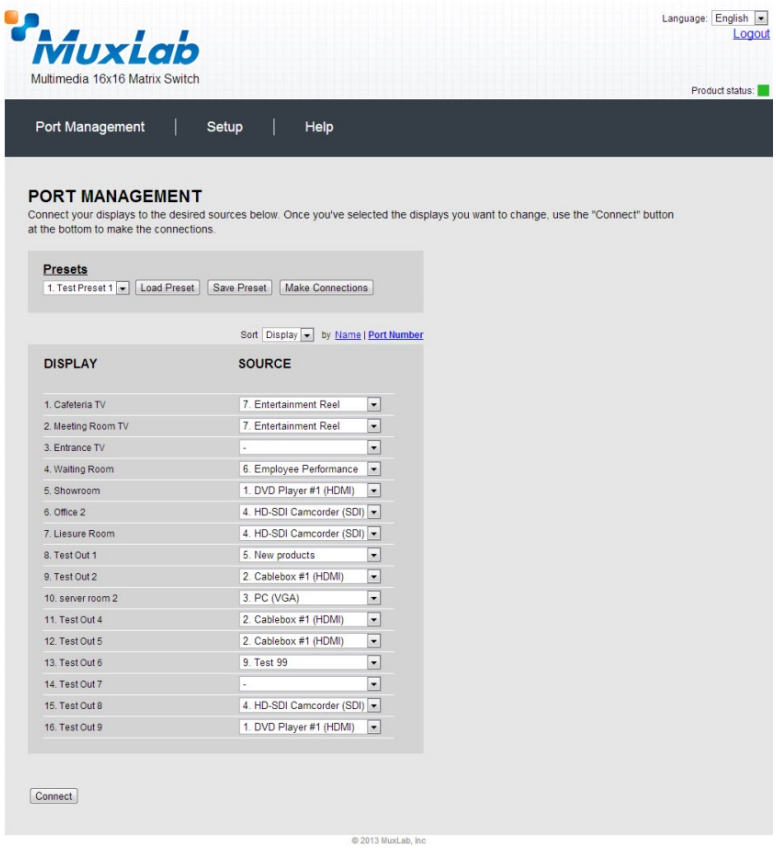


Figure 20: Port Management Submenu – Presets

(2) Setup

The **Setup** submenu (Figure 21) is used to perform the following tasks:

- Modify port names
- Modify present names
- Modify network connections and passwords
- Modify RS232 connections
- Modify alarm settings
- Upgrade firmware

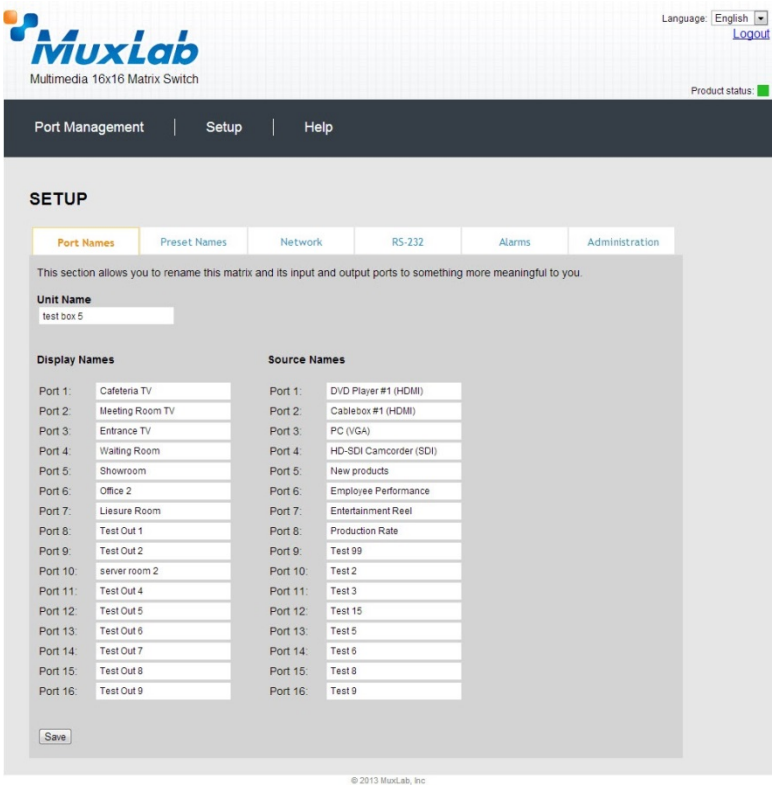


Figure 21: Port Setup Submenu – Port Names

In the **Port Names** tab, the user can modify port names in the **Display Names** and **Source Names** columns, and then click on **Save** to save these modifications. The user can also modify the name of the entire device by changing the text that appears in the **Unit Name** box and clicking on **Save**.

The length of all names is limited to 20 characters each.

In the **Preset Names** tab (Figure 22), the user can modify the names of presets.

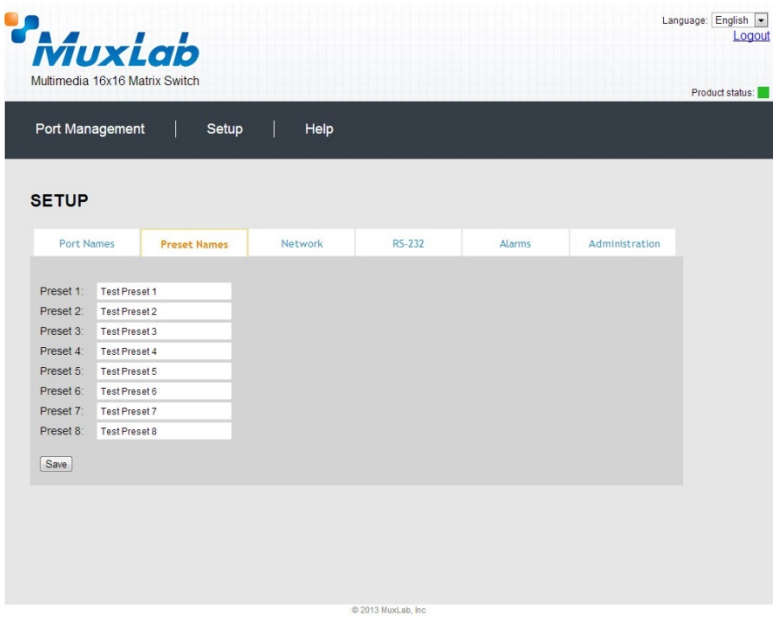


Figure 22: Port Setup Submenu – Preset Names

After preset names are modified, the user clicks on **Save** to save these modifications.

The length of preset names is limited to 20 characters each.

In the **Network** tab (Figure 23), the user can modify network settings and passwords for users and (if applicable) administrators.

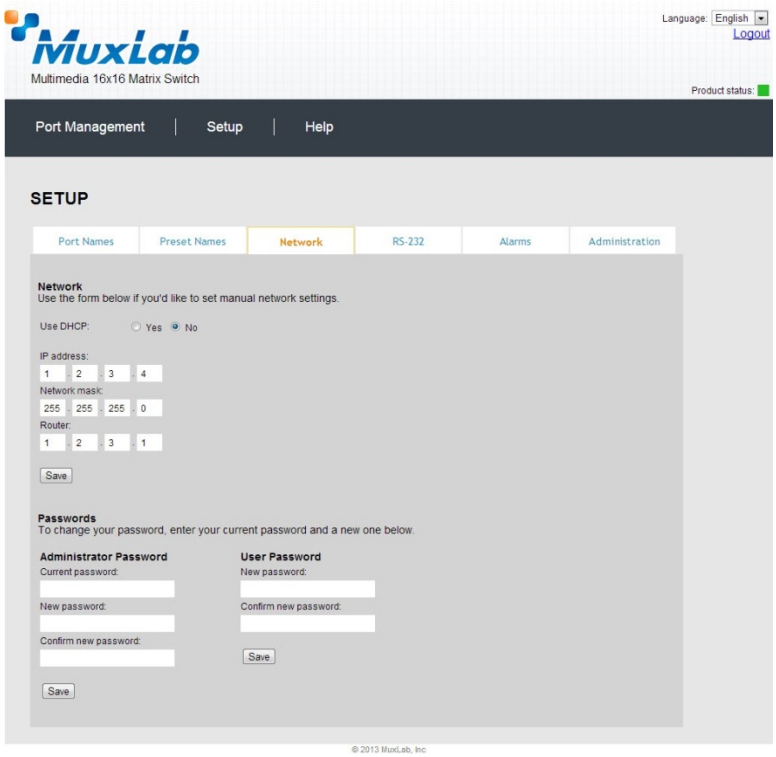


Figure 23: Port Setup Submenu – Network

To implement network modifications, the user makes changes to the **IP address**, **Network mask**, or **Router** fields and then clicks on **Save**. The user also has the option of using DHCP.

To implement password modifications, an administrator makes changes to the **Administrator Password** and/or the **User Password**, and then clicks on the corresponding **Save** button. Regular users can only make changes to the **User Password**.

In the **RS-232** tab (Figure 24), the user can modify RS-232 settings.

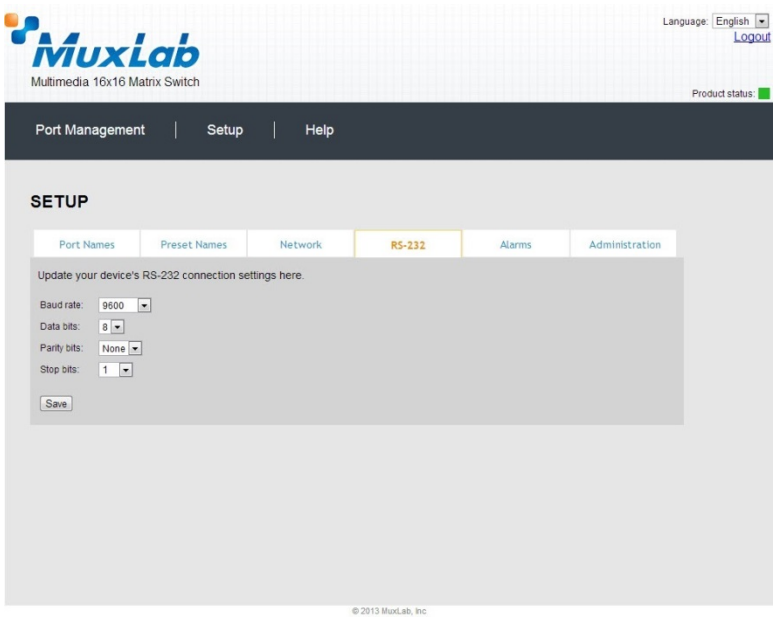


Figure 24: Port Setup Submenu – RS-232

To implement RS-232 modifications, the user selects options in the drop-down boxes for **Baud rate**, **Data bits**, **Parity bits**, or **Stop bits** and then clicks on **Save**.

In the **Alarms** tab (Figure 25), the user can modify the settings that dictate when an alarm will be triggered.

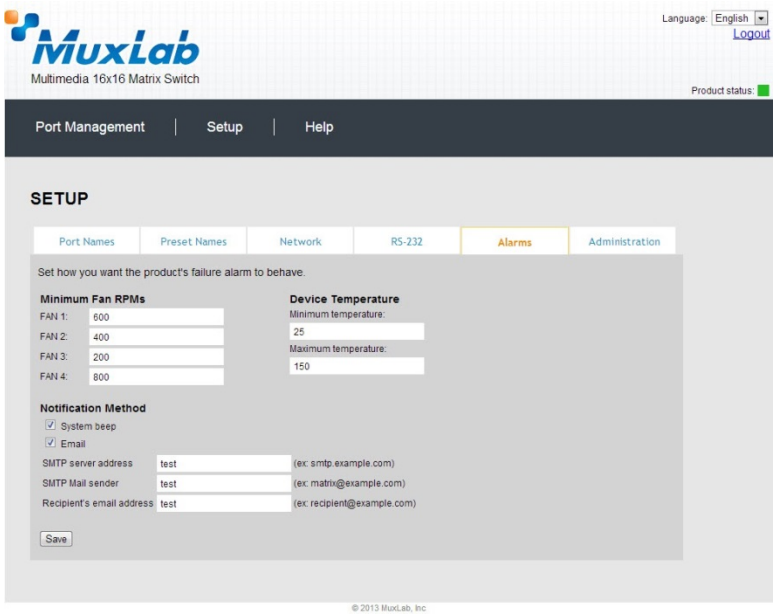


Figure 25: Port Setup Submenu – Alarms

Minimum and maximum temperatures are understood to be in degrees Celsius (°C).

Once all modifications have been made, the user clicks on **Save**.

In the **Administration** tab (Figure 26), the user can modify passwords for users and (if applicable) administrators, select and install new firmware, restore or backup data and reset the unit to factory settings.

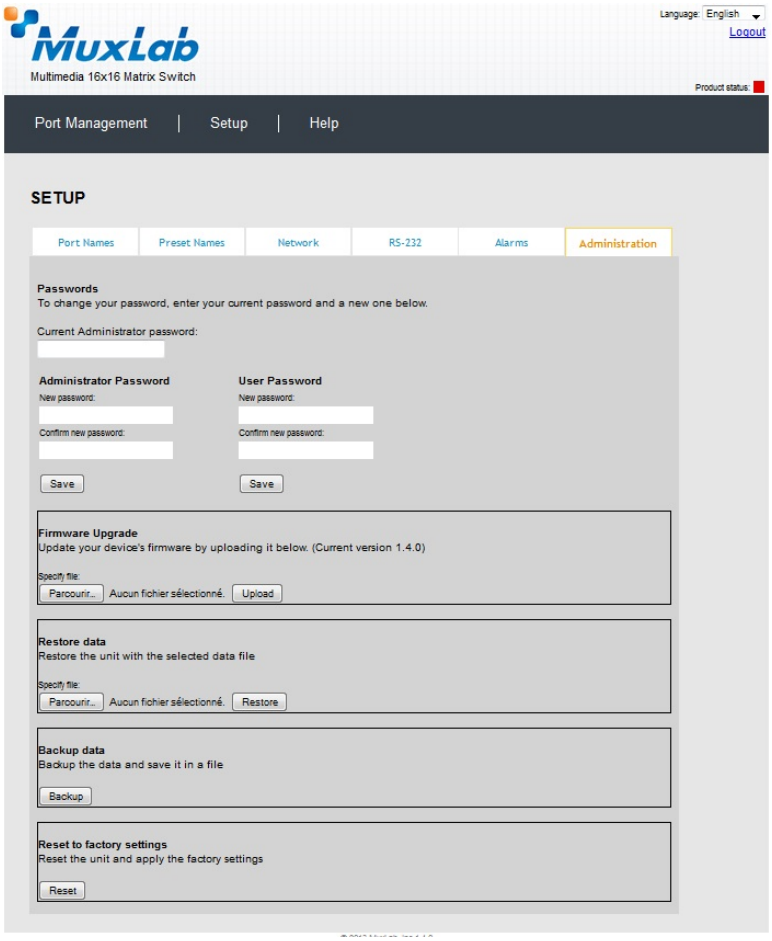


Figure 26: Port Setup Submenu – Administration

To implement password modifications, an administrator makes changes to the **Administrator Password** and/or the **User Password**, and then clicks on the corresponding **Save** button. Regular users can only make changes to the **User Password**.

The file for upgrading the firmware must be located on the PC. The user clicks on **Choose File** to browse for the file, and then installs it by clicking on **Upload**.

It is recommended, before upgrading to a new firmware to do a **Backup** of all the data configurations, such as port names, presets, alarms, network settings etc. And then **Restore** these data after the firmware upgrade.

To do so, click on the "**Backup**" button and you will be asked to save the data configuration file. Then perform the firmware upgrade. After the unit is upgraded, go to the Administration tab, in the "Restore data" section, select the data configuration file previously saved on you PC, then click on the "Restore" button.

And finally, you can reset the unit and apply all the factory settings by clicking on the "Reset" button.

(3) Help

The **Help** submenu (Figure 27) provides the user with contact and support information.

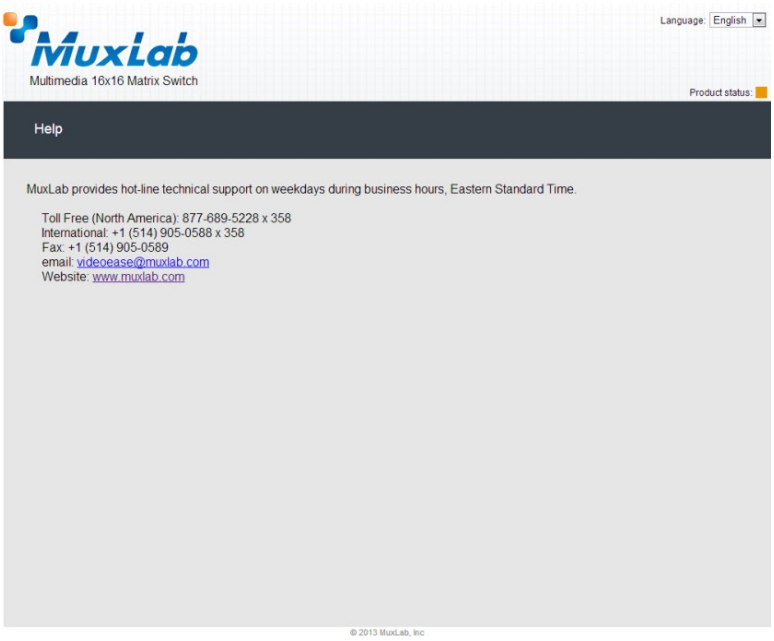


Figure 27: Help Submenu

In addition to three submenu screens, the Ethernet web interface also provides the user with a detailed **Hardware Monitor** screen (Figure 28).

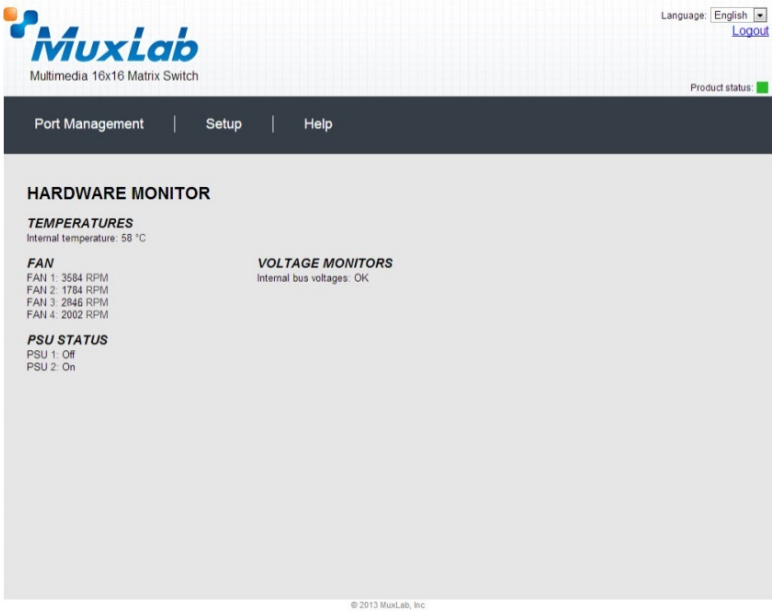


Figure 28: Hardware Monitor Screen

This screen can be accessed by clicking on the **Product status** link at the top right of any Ethernet web interface screen.

4. Troubleshooting

The following table describes some of the problem symptoms, the probable causes and possible solutions. If the information below does not solve the problem, the technical support contact information can be found at the end of this section.

PROBLEM	POSSIBLE SOLUTIONS
No Image	Check the matrix connection status
No Image	Verify that the cables are properly connected
No Image	Verify that the source devices are powered up.
No Image	Verify that the source resolution is 1080p or less.
No Image	Verify that the display supports HDCP.
White Dots in image Flickering Image Choppy Sound	If using an extender, verify that the distance is less than 330 feet (100 meters) for UTP/STP..
Wrong Image Appears	Check matrix connection
Not All Display Devices Work	Check that the display supports the source resolution.

When contacting your nearest MuxLab dealer or MuxLab Technical Support at 877-689-5228 (toll free in North America) or (+1) 514-905-0588 (International), please have the following information ready:

- Unit model number.
- Cabling layout. Please include the model of the HDMI source and receiver, cable length and type.
- Description of problem.
- List of tests performed.

5. Appendix

A. ASCII Command Set

Ensure that the terminal emulation program parameters are set to the following:

BAUD Rate:	9600
Data bits:	8
Stop bits:	1
Parity:	None
Flow control:	None

It should be noted that commands are case sensitive and arguments must be separated by a single space. Commands must be entered in the following way and ended with a carriage return:

Serial/USB Port Commands

1. Alarm

alarm

Description: Display all the alarm settings

Arguments: *<none>*

Example: alarm

Response: **Minimum Fan RPMs:**

- Fan 1: 100

- Fan 2: 100

- Fan 3: 100

- Fan 4: 100

Device Temperatures (Celsius):

- Temp min: 0

- Temp max: 70

Notification Method:

- Beep: ON

- Serial Port: ON

- Email: OFF

Power supply: 1

(or an error message if the command failed)

alarm -f *<fan # or all> <RPM value>*

Description: Set the minimum RPM value for a fan(s) before an alarm is raised

Arguments: *<fan # or all>: 1, 2, 3, 4 or all*
<RPM value>: 0 to 4999

Example: Set the minimum RPM to 150 for all fans before an alarm is raised

alarm –f all 150

Response: **Minimum RPM value(s) for fan(s) applied successfully!**
(or an error message if the command failed)

alarm -p *<# of power supply>*

Description: To indicate if the unit has 1 or 2 power supplies

Arguments: *<# of power supply>: 1 or 2*

Example: Indicate if the unit has 2 power supplies

alarm –p 2

Response: **Power supply information saved successfully !**
(or an error message if the command failed)

alarm -t *<min value> <max value>*

Description: Set the minimum and maximum temperatures value before an alarm is raised

Arguments: *<min vallue>: 0 to 150*
<max value>: 0 to 150

Example: Set the minimum and maximum temperature to respectively 5 and 70 degree celsius, before an alarm is raised

alarm –t 5 70

Response: **Minimum and Maximum temperatures applied successfully !**
(or an error message if the command failed)

alarm -n *<method id> <state>*

Description: Enable/disable a notification method.

Arguments: *<method id>: b (beep), s (serial) or all*
<state>: on or off

Example: Disable the beep notification method

alarm –n b off

Response: **Alarm notifications applied successfully !**
(or an error message if the command failed)

2. Connection

connect -i *<input port #>* **-o** *<output port #>*

Description: Connect a specific input to a specific output

Arguments: *<input port #>: 1 to 16*

<output port #>: 1 to 16

Example: *Connect input 5 to output 10*

connect -i 5 -o 10

Response: **[0,0,0,0,0,0,0,0,0,5,0,0,0,0,0,0]**
(or an error message if the command failed)

connect -i *<input port #>* **-o all**

Description: Connect a specific input to all outputs

Arguments: *<input port #>: 1 to 16*

Example: *Connect input 5 to all outputs*

connect -i 5 -o all

Response: **[5,5,5,5,5,5,5,5,5,5,5,5,5,5,5,5]**
(or an error message if the command failed)

connect -i *<input port #>* **-o** *<from output port #>***..***<to output port #>*

Description: Connect a specific input to a consecutive range of outputs

Arguments: *<input port #>: 1 to 16*
<from output port #>: 1 to 16
<to output port #>: 1 to 16
<from output port #> shall be inferior or equal to <to output port #>

Example: *Connect input 5 to outputs 8, 9, 10, 11, 12 and 13*

connect -i 5 -o 8..13

Response: **[0,0,0,0,0,0,0,5,5,5,5,5,5,0,0,0]**
(or an error message if the command failed)

connect -json "[*<input port #1>,<input port #2>,…, <output port #16>*]"

Description: Make 16 connections/disconnections in one command using json format

Arguments: *<input port #>: 1 to 16 to specify the input port to connect to, or 0 to disconnect it*

Example: *Connect input 5 to outputs 8, 9, 10, and connect input 8 to outputs 1,2 , and disconnect all other outputs.*

connect -json "[8,8,0,0,0,0,0,5,5,5,0,0,0,0,0,0]"

Response: **[8,8,0,0,0,0,0,5,5,5,0,0,0,0,0,0]**
(or an error message if the command failed)

connect -p *<preset #>*

Description: Apply all connections defined in the selected preset #

Arguments: *<preset #>: 1 to 8 to specify the preset to use*

Example: *Apply the connections defined in preset 7*

connect -p 7

Response: **[5,3,0,13,4,0,0,16,0,0,0,0,1,0,3,5]**

(or an error message if the command failed)

3. Disconnection

disconnect -i *<input port #>*

Description: Disconnect a specific input port from all output ports connected to it

Arguments: *<input port #>: 1 to 16*

Example: *Disconnect input 5 from all outputs connected to it*

disconnect -i 5

Response: **[0,3,0,13,4,0,0,16,0,0,0,0,1,0,3,0]**

(or an error message if the command failed)

disconnect -o *<output port #>*

Description: Disconnect a specific output port from the input ports connected to it

Arguments: *<output port #>: 1 to 16*

Example: *Disconnect output 15 from the input connected to it*

disconnect -o 15

Response: **[0,3,0,13,4,0,0,16,0,0,0,0,1,0,0,0]**

(or an error message if the command failed)

disconnect -all

Description: Disconnect all output ports

Arguments: *<none>*

Example: *Disconnect all outputs*

disconnect -all

Response: **[0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0]**

(or an error message if the command failed)

4. Get

get -i *<input port #>*

Description: Get the connection state of a specific input port

Arguments: *<input port #>: 1 to 16*

Example: *Get connection state of input port 5*

get -i 5

Response: **Input 05 connected to: 09**

(or an error message if the command failed)

get -i

Description: Get the connection state of all input ports

Arguments: *<none>*

Example: *Get connection state of all input ports*

get -i

Response: **Input 01 connected to: none**

Input 02 connected to: 16

Input 03 connected to: none

…{and so on}

Input 16 connected to: 10

(or an error message if the command failed)

get -json

Description: Get all the output connection states in json format

Arguments: *<none>*

Example: *Get all output connections states in json format.*

get -json

Response: **[3,7,0,0,11,0,0,5,5,5,0,0,0,0,4,0]**

(or an error message if the command failed)

get -o *<output port #>*

Description: Get the connection state of a specific output port

Arguments: *<output port #>: 1 to 16*

Example: *Get connection state of output port 5*

get -o 5

Response: **Output 05 connected to: 11**

(or an error message if the command failed)

get -o

Description: Get the connection state of all output ports

Arguments: *<none>*

Example: *Get connection state of all output ports*

get -o

Response: **Output 01 connected to: 03**

Output 02 connected to: 07

Output 03 connected to: none

…{and so on}

Output 16 connected to: none

(or an error message if the command failed)

5. Help

help *or* ?

Description: Display all the command list definition available

Arguments: *<none>*

Example: *Display all the command list*

help

?

Response:

connect

connect –i <input port #> -o <output port #> {Connect 1 input port to 1 output port}

connect -i <input port #> -o all {Connect 1 input port to all output port}

connect -i <input port #> -o <from output port #>..<to output port #> {Connect 1 input port to a specific range of output port}

disconnect

disconnect -i <input port #> {Disconnect 1 input port}

disconnect -o <output port #> {Disconnect 1 output port}

disconnect -all {Disconnect all input/output port}

… {and so on}

version

version <no parameters> {Get the current firmware version}

6. Name

name -i *<input port #>* "*<name>*"

Description: Set a name for the selected input port

Arguments: *<input port #>: 1 to 16*
<name>: up to 20 characters

Example: *Set name "My DVD Player" for input port 5*

name -i 5 "My DVD Player"

Response: **Input Names:["Input 1","Input 2","Input 3", "Input 4","My DVD Player","Input 6", "Input 7","Input 8", "Input 9","Input 10", "Input 11","Input 12","Input 13", "Input 14","Input 15","Input 16"]**

(or an error message if the command failed)

name -i

Description: Get a list of all the input port names

Arguments: *<none>*

Example: *Get list of all input port names*

name -i

Response: **Input Names:["Input 1","Input 2","Input 3", "Input 4","My DVD Player","Input 6", "Input 7","Input 8", "Input 9","Input 10", "Input 11","Input 12","Input 13", "Input 14","Input 15","Input 16"]**

(or an error message if the command failed)

name -o *<output port #>* "*<name>*"

Description: Set a name for the selected output port

Arguments: *<output port #>: 1 to 16*
<name>: up to 20 characters

Example: *Set the name "Kitchen TV" for output port 4*

name -o 4 "Kitchen TV"

Response: **Output Names:["Output 1","Output 2", "Output 3","Kitchen TV","Output 5", "Output 6","Output 7","Output 8", "Output 9","Output 10","Output 11", "Output 12","Output 13","Output 14", "Output 15","Output 16"]**

(or an error message if the command failed)

name -o

Description: Get a list of all the output port names

Arguments: *<none>*

Example: *Get list of all output port names*

name -o

Response: **Output Names:["Output 1","Output 2", "Output 3","Kitchen TV","Output 5", "Output 6","Output 7","Output 8", "Output 9","Output 10","Output 11", "Output 12","Output 13","Output 14", "Output 15","Output 16"]**

(or an error message if the command failed)

name -preset *<preset #>* "*<name>*"

Description: Set a name for the selected preset number

Arguments: *<preset #>: 1 to 8*
<name>: up to 20 characters

Example: *Set name "Week-end" for preset 7*

name -preset 7 "Week-end"

Response: **Preset Names:["Preset 1","Preset 2", "Preset 3","Preset 4","Preset 5", "Preset 6","Week-end","Preset 8"]**

(or an error message if the command failed)

name -preset

Description: Get a list of all the preset names

Arguments: *<none>*

Example: Get list of all preset names

name -preset

Response: **Preset Names:["Preset 1","Preset 2", "Preset 3","Preset 4","Preset 5", "Preset 6","Week-end","Preset 8"]**

(or an error message if the command failed)

name -unit "*<name>*"

Description: Set a name for the unit

Arguments: *<name>: up to 20 characters*

Example: *Set the name "MuxLab Switch" for the unit*

name -unit "MuxLab Switch"

Response: **Unit Name:["MuxLab Switch"]**

(or an error message if the command failed)

name -unit

Description: Get the unit name

Arguments: *<none>*

Example: Get the unit name

name -unit

Response: **Unit Name:["MuxLab Switch"]**

(or an error message if the command failed)

7. Network

network

Description: Get the network address values (IP, mask and gateway)

Arguments: *<none>*

Example: *Get network address values*

network

Response: **IP: 10.0.1.101**

MASK: 255.255.0.0

GATEWAY: 10.0.0.1

DHCP: ON

(or an error message if the command failed)

Network –ip *<ip address>*

Description: Set a specific IP address (note that DHCP must be disabled to perform this action)

Arguments: *<ip address>: #.#.#.#*

Example: Set the IP address to 192.25.80.13

Network –ip 192.25.80.13

Response: **IP: 192.25.80.13**

MASK: 255.255.0.0

GATEWAY: 10.0.0.1

DHCP: OFF

(or an error message if the command failed)

Network –m *<mask address>*

Description: Set a specific mask address (note that DHCP must be disabled to perform this action)

Arguments: *<mask address>: #.#.#.#*

Example: Set the mask address to 255.255.255.0

Network –m 255.255.255.0

Response: **IP: 192.25.80.13**

MASK: 255.255.255.0

GATEWAY: 10.0.0.1

DHCP: OFF

(or an error message if the command failed)

Network –g *<gateway address>*

Description: Set a specific gateway address (note that DHCP must be disabled to perform this action)

Arguments: *<gateway address>: #.#.#.#*

Example: Set the gateway address to 10.101.1.5

Network –g 10.101.1.5

Response: **IP: 192.25.80.13**

MASK: 255.255.255.0

GATEWAY: 10.101.1.5

DHCP: OFF

(or an error message if the command failed)

Network –dhcp *<dhcp state>*

Description: Enable/disable DHCP feature

Arguments: *<dhcp state>: on or off*

Example: Enable the DHCP feature

Network –dhcp on

Response: **IP: 10.0.1.101**

MASK: 255.255.0.0

GATEWAY: 10.101.1.5

DHCP: ON

(or an error message if the command failed)

8. Password

password -panel *<password # >*

Description: Set the front panel password

Arguments: *<password # >: 4 digits*

Example: *Set the front panel password to 1234*

password -panel 1234

Response: **password panel set successfully**

(or an error message if the command failed)

password -panel *<password state>*

Description: Set the front panel password state

Arguments: *<password state >: on or off*

Example: *Enable the front panel password*
password -panel on

Response: **password panel ON**

(or an error message if the command failed)

password -wadmin *<web admin password>*

Description: Set the web server 'Admin' password

Arguments: *<web admin password>: alphanumeric (max. length 20)*

Example: *Change the web admin password to new123*
password -wadmin new123

Response: **Web server Admin password set successfully**
(or an error message if the command failed)

password -wuser *<web user password>*

Description: Set the web server 'User' password

Arguments: *<web user password>: alphanumeric (max. length 20)*

Example: *Change the web user password to new123*
password -wuser new123

Response: **Web server User password set successfully**
(or an error message if the command failed)

9. Preset

preset -s *<preset #>*

Description: Save the current connection in the selected preset

Arguments: *<preset #>: 1 to 8*

Example: *Save current connection in preset 5*
preset -s 5

Response: **preset 5 saved successfully**
(or an error message if the command failed)

10. Reset

reset -f

Description: Reset the unit and restore it to its factory settings

Arguments: *<none>*

Example: *Reset unit and restore it to factory settings*
reset -f

Response: "Clearing flash memory...
Rebooting..."
(or an error message if the command failed)

11. Serial port

serial

Description: Get all RS-232 settings

Arguments: *<none>*

Example: Get all RS-232 settings

serail

Response: **Baud Rate: 9600**

Data bits: 8

Stop bit: 1

Parity: NONE

(or an error message if the command failed)

serial -b *<baud rate>*

Description: Set the RS-232 baud rate

Arguments: *<baud rate>: 9600, 19200, 38400, 57600 or 115200*

Example: *Set the RS-232 baud rate to 115200*

serial –b 115200

Response: **Baud Rate: 115200**

Data bits: 8

Stop bit: 1

Parity: NONE

(or an error message if the command failed)

serial -o *<data bits> <parity> <stop bits>*

Description: Modify other RS-232 settings

Arguments: *<data bits>: 7 or 8*

<parity>: e, o or n (i.e: even, odd, none)

<stop bits>: 1 or 2

Example: Set the RS-232 settings to 8 data bits, no parity and 1 stop bit

serial –o 8 n 1

Response: **Baud Rate: 115200**

Data bits: 8

Stop bit: 1

Parity: NONE

(or an error message if the command failed)

serial –b *<baud rate>* **-o** *<data bits> <parity> <stop bits>*

Description: Modify all RS-232 settings

Arguments: *<baud rate>: 9600, 19200, 38400, 57600 or 115200*

<data bits>: 7 or 8

<parity>: e, o or n (i.e: even, odd, none)

<stop bits>: 1 or 2

Example: Set the RS-232 settings to a baud rate of 9600, 8 data bits, no parity and 1 stop bit

serial –b 9600 –o 8 n 1

Response: **Baud Rate: 9600**

Data bits: 8

Stop bit: 1

Parity: NONE

(or an error message if the command failed)

12. Status

status

Description: Display the unit status

Arguments: *<none>*

Example: *Display the unit status*

status

Response: **Temperature: 28 Celsius**

Voltage monitors: Ok

FANs:

- Fan 1: 2600 RPM

- Fan 2: 3200 RPM

- Fan 3: 2610 RPM

- Fan 4: 3300 RPM

Power supply:

- PSU 1: ON

- PSU 2: OFF

(or an error message if the command failed)

13. Version

version

Description: Get the current firmware version

Arguments: *<none>*

Example: *Get current firmware version*

version

Response: **Master firmware version: 1.4.0**

Secondary micro version: 2

(or an error message if the command failed)

B. IP Control Commands

1. Notice

This section is provided for informational purposes only, and should only be used by software developers with a thorough understanding of the HTTP and JSON specifications.

2. Introduction

The Multimedia 16x16 Matrix Switch can be controlled using basic IP commands. These commands are based on the JSON format and are sent and received in standard TCP/IP packets. To learn more about JSON, visit
http://www.json.org.

Only four types of JSON arrays are used to control the product:

Array of a single integer:	[2]
Array of multiple integers:	[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16]
Array of a single string:	[“A Name”]
Array of multiple strings:	[“Name 1”, “Name 2”, “Name 3”, “Name 4”]

Any other notation is not permitted. Also, “null” values are not permitted. Use 0 instead.

3. Basic Usage

All read and write operations are performed via HTTP GET and HTTP POST commands, respectively. While you can perform a GET at any time, a POST command will require prior authentication.

4. Basic Authentication

Authentication is performed in two simple steps:

1. *Obtain a Session ID*

   Perform a **GET** request on **/var/session.json** to obtain a new session ID. The return value will be a JSON array of a single integer, for example **[12345]**. From then on, simply append the session to any new IP requests to use this session, e.g., **GET /var/conn.json?sid=12345**

2. *Obtain Credentials for that Session ID*

   There are three permission levels that can be used to read/modify properties. These are:

   0 – Guest: Can read all values. Cannot write or make changes.
   1 – User: Same as Guest, but can change matrix video connections.
   2 – Admin: Can perform any command without restriction.

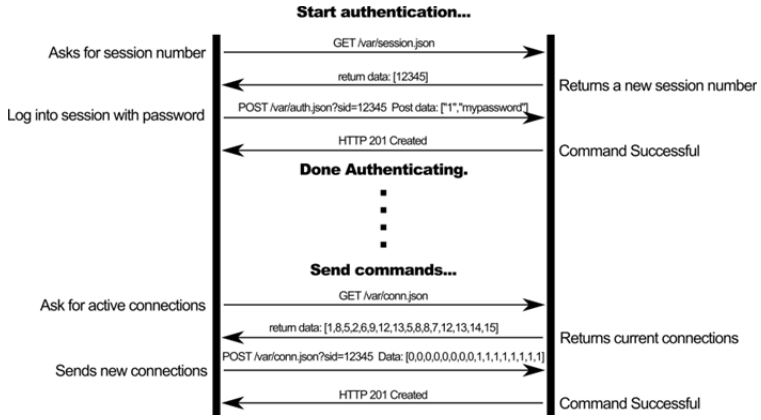
   To obtain credentials, you will need to POST an array of two strings to **/var/auth.json**: the userlevel, and the password associated to that user. For example:

   POST /var/auth.json?sid=12345

   POST data: **[“2”, “mypassword”]**

If successful, you will receive an **HTTP 201 Created** response.

Sessions will automatically close after 5 minutes of inactivity. They may also be closed at any time by a **GET /var/logout.json**.



5. GET Commands

URL	Response
/var/conn.json	Array of 16 integers. Contains 16 items for the 16 displays. Each number is the source connected to the associated display. 0 means a display is disconnected. In the example below, Display 1 is disconnected, Display 2 is connected to Source 3, etc. Example: [0,3,2,4,1,1,2,3,12,13,14,15,16,12,1,1]
/var/pre1.json **/var/pre2.json** **/var/pre3.json** **/var/pre4.json** **/var/pre5.json** **/var/pre6.json** **/var/pre7.json** **/var/pre8.json**	Array of 16 integers. Provide the connections state of the corresponding preset. Contains 16 items for the 16 displays. Each number is the source connected to the associated display. 0 means a display is disconnected. In the example below, Display 1 is disconnected, Display 2 is connected to Source 3, etc. Example: [0,3,2,4,1,1,2,3,12,13,14,15,16,12,1,1]
/var/boxname.json	Array of a single string. Contains the name of the box. Example: [“Classroom B Matrix”]
/var/sources.json	Array of 16 strings. Contains the names of all 16 input ports. Example: [“Cable Box”, “Satellite Receiver”, “Demo Reel”, …]
/var/displays.json	Array of 16 strings. Contains the names of all 16 output ports. Example: [“Conference Room”, “Cafeteria”, …]
/var/presetnames.json	Array of 8 strings. Contains the names of all 8 presets Example: [“Preset 1”, “Preset 2”, “week end”, …]
/var/dhcp.json	Array of a single integer. Indicate if dhcp is ON ([1]) or OFF ([0]) Example: [1]
/var/tempalarms.json	Array of 2 integers. Contains the Min. and Max. temperature of the unit before an alarm is raised Example: [5,70]
/var/fanalarm.json	Array of 4 integers. Contains minimum RPM of the four internal fans before an alarm is raised Example: [100,100,100,100]
/var/auth.json	Array of a single integer. Contains an integer representing the current user level, from 0 to 2. Example: [2]
/var/session.json	Array of a single integer. Represents a new session ID Example: [3847534]
/var/logout.json	None. Destroys current session.
/var/mon_temp.json	Array of a single integer. Contains an integer representing the temperature inside the matrix, in degrees Celsius. Example: [26]
/var/mon_fans.json	Array of 4 integers. Contains the speeds of the four internal fans inside the matrix, in RPM. Example: [1390,1390,520,520]
/var/mon_status.json	Array of a single integer. Represents the matrix status. 0 => Ok; 1 => fault; 2 => critical Example: [1]
/var/mon_voltages.json	Array of a single integer. Represents the voltage status. 1 => Ok; 0 => fault Example: [1]
/var/mon_psu.json	Array of a 2 integer. Represents the 2 power supplies status. 1 => ON; 0 => OFF Example: [1,0]
/var/serial.json	Array of 4 integers. Contains the current serial port settings: baud rate, data bits(7 or 8), parity (0=>Even; 1=>Odd; 4=>None) ,stop bits (0=>1 stop bit; 2=>2 stop bits) Example: [9600,8,4,0]
/var/ip.json	Array of 4 integers. Contains the saved IP address (Not the current IP address being used) Example: [10,0,101,96]
/var/netmask.json	Array of 4 integers. Contains the saved mask address (Not the current mask address being used) Example: [255,255,0,0]
/var/router.json	Array of 4 integers. Contains the saved gateway address (Not the current one being used) Example: [10,0,1,1]
/var/alarmflags.json	Array of 8 integers. Contains the alarm configuration: beep, email, serial feedback, dual power supply. 0=>OFF and 1=> ON (the last 4 integer are not used) Example: [1,0,1,1,0,0,0,0]
/var/fwVersion.json	Array of 2 strings. Contains master firmware version and the secondary micro version Example: [“1.4.0”, “2”]

6. POST Commands

POST commands will always return 1 of 5 HTTP headers:

HTTP 201 Created	Command was successful
HTTP 400 Bad Request	Received argument was malformed
HTTP 403 Forbidden	User does not have sufficient privileges
HTTP 404 Not Found	URL is incorrect
HTTP 501 Not Implemented	URL does not support receiving POST data

URL	Argument
/var/conn.json	Array of connections. (Same as GET above) Example: [0,1,2,3,4,5,6,3,12,13,14,15,16,12,1,1]
/var/pre1.json **/var/pre2.json** **/var/pre3.json** **/var/pre4.json** **/var/pre5.json** **/var/pre6.json** **/var/pre7.json** **/var/pre8.json**	Array of connections for a preset (Same as GET above) Example: [0,1,2,3,4,5,6,3,12,13,14,15,16,12,1,1]
/var/boxname.json	Array of a single string. Contains the name of the box, limited to 20 characters Example: [“Classroom B Matrix”]
/var/sources.json	Array of 16 strings. Contains the names of all 16 input ports. Example: [“Cable Box”, “Satellite Receiver”, “Demo Reel”, …]
/var/displays.json	Array of 16 strings. Contains the names of all 16 output ports. Example: [“Conference Room”, “Cafeteria”, …]
/var/presetnames.json	Array of 8 strings. Contains the names of all 8 presets to be set Example: [“Preset 1”, “Preset 2”, “week end”, …]
/var/auth.json	Array of 2 strings. Contains a single digit string representing the user level requested, and a second string representing the password. Example: [“2”, “myAdminPassword”]
/var/serial.json	Array of 4 integers. Set the following serial port settings: baud rate, data bits(7 or 8), parity (0=>Even; 1=>Odd; 4=>None) ,stop bits (0=>1 stop bit; 2=>2 stop bits) Example: [9600,8,4,0]
/var/ip.json	Array of 4 integers. Set the IP address Example: [10,0,101,96] **WARNING! This request will actually take effect after the DHCP request will be sent**
/var/netmask.json	Array of 4 integers. Set the mask address Example: [255,255,0,0] **WARNING! This request will actually take effect after the DHCP request will be sent**
/var/router.json	Array of 4 integers. Set the gateway address Example: [10,0,1,1] **WARNING! This request will actually take effect after the DHCP request will be sent**
/var/dhcp.json	Array of a single integer. Set the DHCP state ON ([1]) or OFF ([0]) Example: [1]
/var/fanalarm.json	Array of 4 integers. Set the minimum RPM of the four internal fans before an alarm is raised Example: [100,100,100,100]
/var/tempalarms.json	Array of 2 integers. Set the Min. and Max. temperature of the unit before an alarm is raised Example: [5,70]
/var/alarmflags.json	Array of 8 integers. Set the alarm configuration: beep, email, serial feedback, dual power supply. 0=>OFF and 1=> ON (the last 4 integer are not used) Example: [1,0,1,1,0,0,0,0]
var/pass_admin.json	Array of 2 strings. Set the web administrator password Example: [“old **admin** password”, “new admin password”]
var/pass_user.json	Array of 2 strings. Set the web user password Example: [“old **admin** password”, “new **user** password”]
var/reset	Reset the unit to factory settings

6. Product Warranty Policy

Items Under Warranty - Company Policy

MuxLab guarantees its products to be free of defects in manufacturing and workmanship for the warranty period from the date of purchase. If this product fails to give satisfactory performance during this warranty period, MuxLab will either repair or replace this product at no additional charge, except as set forth below. Repair and replacement parts will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of MuxLab. This limited warranty does not include repair services for damage to the product resulting from accident, disaster, misuse, abuse, or unauthorized modifications or normal decay of battery driven devices. Batteries, if included with the product, are not covered under this warranty.

Limited warranty service can be obtained by delivering the product during the warranty period to the authorized MuxLab dealer from whom you purchased the product, or by sending it to MuxLab. MuxLab will not accept any such product for repair without a Return Material Authorization number (RMA#) issued by its Customer Service Department and a proof of purchase date. If this product is delivered to MuxLab by mail, you agree to assume risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or equivalent.

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IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER, YOUR SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED FOR ABOVE. IN NO EVENT SHALL MuxLab BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOSS OF PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR INABILITY TO USE THIS PRODUCT, EVEN IF MUXLAB OR AN AUTHORIZED MuxLab DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES; NOR WILL MUXLAB BE LIABLE FOR ANY CLAIM BY ANY OTHER PARTY. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

Warranty Periods

Any product found to be defective within three (3) months of invoice, including one (1) month shelf life, may be returned for replacement by a new unit or a satisfactory repair within one (1) month of receiving any returned product. The customer must provide MuxLab with the serial number and proof of purchase of the defective unit being returned. All R.M.A.'s issued are subject to inspection by MuxLab, and will be returned to customer if not properly package – units must be returned in original container or equivalent. MuxLab will not accept any such product for repair without an authorization for its Technical Support department and without a return authorization number issued by MuxLab Customer Service department. For credit & replace R.M.A., customer will be liable to pay replacement invoice if defective products are not returned.
Product more than six months old, including shelf life.

The defective unit must be returned prepaid to MuxLab and then the unit will be repaired or if repair is not possible, replaced by an equivalent unit and returned to the customer within one (1) month of receiving any returned product. There is no charge for repair (parts and labor) during the full warranty period.

Items Defective and not under Warranty

For products which are no longer under warranty the policy is repair and return. An amount of 25% of the products published list price at the time of purchase will be charged. Customer must issue a purchase order to cover the cost of repair.
Each unit will be returned to the customer within one (1) month from receipt of the unit by MuxLab. The defective unit must be returned prepaid to MuxLab. The repaired unit will be returned to the customer FOB MuxLab. The repaired unit has a 90 day warranty.

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