



## Operation/Reference Guide

# Enova AVX-400

## Cat5 Presentation Switcher



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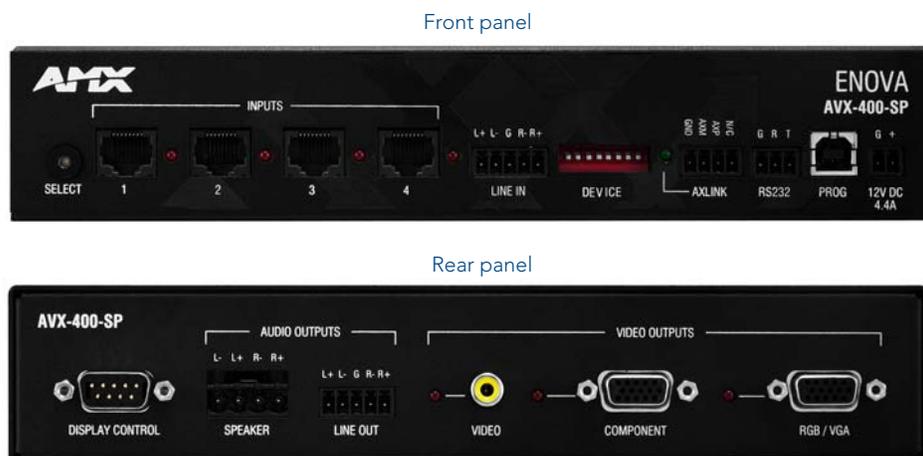
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# Overview

The Enova AVX-400 Cat5 Presentation Switcher (**FG1350-01**) is a four input, multi-format active presentation switcher with auxiliary line level audio input. The AVX-400 (FIG. 1) is a Cat5 switcher with basic projector/display control via RS-232, but with external control of the switcher via RS-232 or AxLink. This presentation switcher incorporates the following:

- External serial or AxLink control
- Projector or display control via RS-232
- Integrated multi-format Cat5 audio/video switcher
- Audio mixer with an auxiliary line input facility
- Audio volume and tone control
- Built-in audio amplifier



**FIG. 1** Enova AVX-400 Cat5 Presentation Switcher (front and rear panels)

The presentation switcher presents the respective output for the VGA/RGB, component, and composite video sources. All sources remain in their native formats and resolutions. The selected video source is presented with its related audio, and mixed with the auxiliary line input. Master volume of the program sound is available for adjustment by external control.

The system is suitable for use within a 1-50m range (3.2'-150'). There is control for video gain and video equalization for each input to compensate for cable length and allow optimization of each source. The switchers contain a stereo 10W per channel built-in audio amplifier with 7-band graphic equalization.

## Specifications

The following table lists the specifications for the presentation switcher:

| AVX-400 Cat5 Presentation Switcher Specifications |  |
|---|--|
| Power   | 12VDC, 4.4A supply<br>See the <i>Power Connector</i> section on page 9 for information about current draw. |
| Audio Amplifier                                   | Stereo 10W per channel with 7-band graphic equalization  |
| Enclosure   | Metal with black matte finish  |

| AVX-400 Cat5 Presentation Switcher Specifications (Cont.) |  |
|---|--|
| Front Panel Components:                                   |  |
| Source Select Button                                      | 1 button for toggling through the 4 inputs with each press   |
| Source Select LED Indicators                              | 4 LED indicators which show which source has been selected   |
| Source Inputs (INPUTS 1-4)                                | 4 RJ-45 connectors for source audio and video  |
| Front Panel Components:                                   |  |
| LINE IN Auxiliary Audio Input                             | 1 3.5mm Phoenix (5-pin) connector for use with external audio equipment such as radio microphones and mixers.  |
| AxLink Device DIP Switches                                | 1 set of 8 DIP switches for setting the address of an AxLink device  |
| AxLink Port   | 1 3.5mm Phoenix (4-pin) connector that provides data to external control devices and allows the AVX-400 to be controlled from a Master. A green AxLink LED indicates the state of the AxLink port.<br><b>Note:</b> The AVX-400-SP cannot be powered by this port or use the port to power other devices.   |
| RS-232 Control Port                                       | 1 3.5mm Phoenix (3-pin) connector that provides data to external control devices and allows the AVX-400 to be controlled from RS232 controller.  |
| Configuration Port (PROG)                                 | 1 type-B USB connector for configuring the switcher via DCS software.  |
| Power Connector   | 1 3.5mm Phoenix (2-pin) connector  |
| Rear Panel Components:                                    |  |
| RS-232 Display Control                                    | 1 male DB9 connector used to control a projector or display from the AVX-400-SP  |
| Audio Amplifier Output                                    | 1 5.0mm Phoenix (4-pin) connector capable of delivering 2x10W into 8 ohm variable stereo audio amplifier.  |
| Line Level Audio Output                                   | 1 3.5mm Phoenix (5-pin) connector provides the mixed audio at Line Level   |
| Composite Output  | 1 RCA (Y) connector for connecting to a display device   |
| VGA/RGB Output  | 1 HD-15 connector for connecting to a display device   |
| Component Output  | 1 HD-15 connector for connecting to a display device. You can use breakout cable CC-HD15M-RCA3M (FG10-2170-03) to connect to 3 x RCA Phono Sockets.  |
| Operating Environment:                                    | Storage Temperature: -10° C to 70° C (14° F to 158° F)<br>Operating Temperature: 0° C to 40° C (32° F to 104° F)<br>Operating Relative Humidity: 5% to 85% non-condensing  |
| Dimensions (HWD):   | 1.75" (4.45cm) x 9" (22.86cm) x 6" (15.24cm) HWD   |
| Weight:   | 2.57 lbs (1.17 kg)   |
| Certifications:   | FCC Class B, CE, and IEC60950  |
| Included Accessories:                                     | <ul style="list-style-type: none"> <li>• 2 5-pin 3.5mm Phoenix connectors, for line-in/out (41-0336)</li> <li>• 1 4-pin 3.5mm Phoenix connector, for AxLink (41-5047)</li> <li>• 2 2-pin 5 mm Phoenix connectors, for speakers (41-0158-SA)</li> <li>• 1 RS-232 3-pin 3.5mm Phoenix connector (41-0338)</li> <li>• 1 PSN4.4, Power Supply, 4.4A, 3.5mm Phoenix, 13.5VDC5 (FG423-45)</li> <li>• Enova AVX-400 Presentation Switcher Installation Guide (93-1350-01)</li> <li>• 1 Suppression Ferrite (04-0018-SA)</li> </ul>      |
| Optional Accessories:                                     | <ul style="list-style-type: none"> <li>• UPX-CN+A Component Universal Transmitter Wallplate (FG1402-52)</li> <li>• UPX-CS+A Composite Universal Transmitter Wallplate (FG1402-50)</li> <li>• UPX-RGB+A RGB Universal Transmitter Wallplate (FG1402-51)</li> <li>• Surface Mount Kit (KA2250-40) with mounting bracket (62-2254-02)</li> <li>• SP-08-AX 8-Button Keypad with AxLink (FG1311-08)</li> <li>• CC-HD15 Male to HD-15 Male cable (FG10-2170-01)</li> <li>• CC-HD15 Male to 3 RCA3 Male cable (FG10-2170-03)</li> </ul> |

# Wiring and Device Connections

## AVX-400 Front and Rear Components

FIG. 2 displays the components on the front panel of the AVX-400.

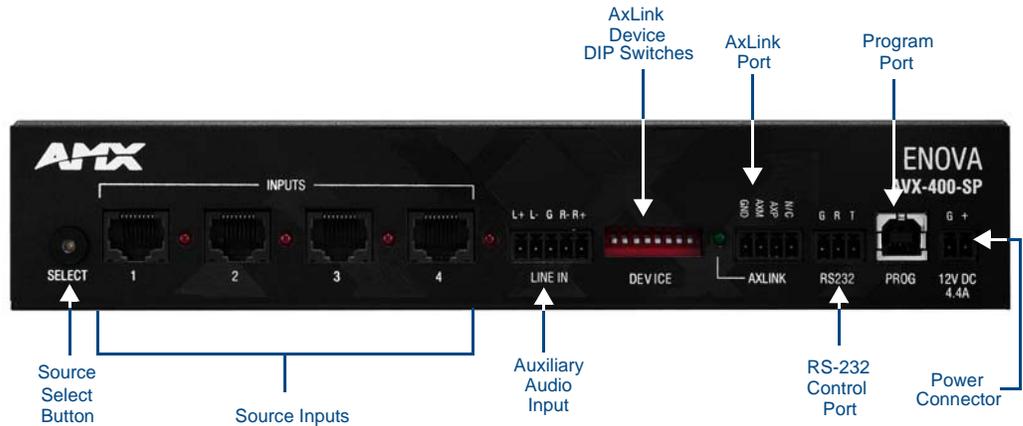


FIG. 2 AVX-400 front panel components

FIG. 3 displays the components on the rear panel of the AVX-400.

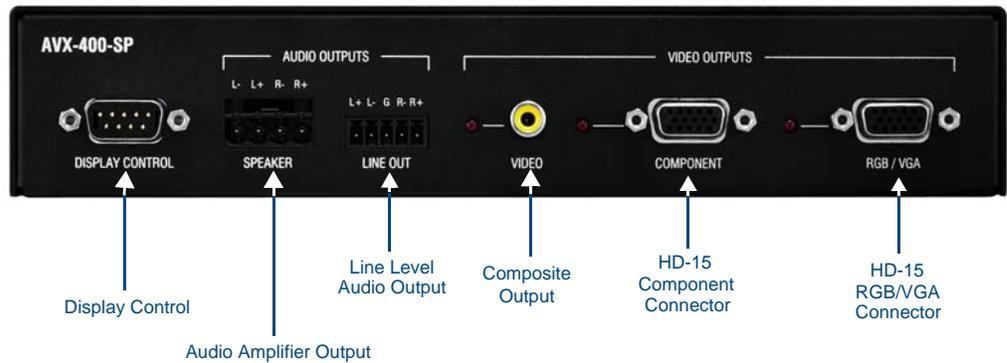


FIG. 3 AVX-400 rear panel components

## Front Panel Components

The following sections describe the options on the front panel of the AVX-400.

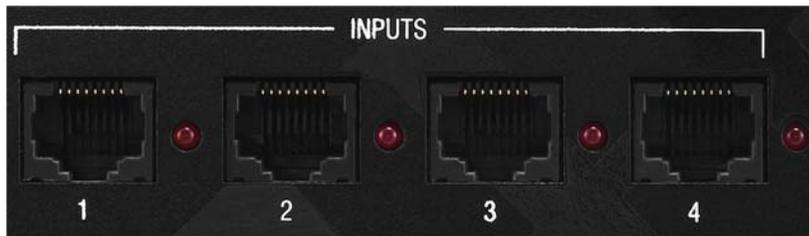
### Source Select Button (SELECT)



**FIG. 4** Source Select button

The AVX-400 includes one source select button you can press repeatedly to select one of the four input sources. When you press the SELECT button, the first input source is selected. Pressing it again selects the next valid input, and so on. The LED indicator beside the selected input turns on to show which source you have selected.

### Source Inputs (INPUTS 1-4)



**FIG. 5** Source Inputs

The Source inputs can accept video from devices such as PCs, DVD players, satellite receivers, and video conference systems. You can use the Source Input ports to connect Cat5/5e/6 cables to the port on a wall input plate which then connects to an input device via composite, component, or RGB/VGA connector. The LED beside each port lights red when its associated port is active.



*Use Cat5/5e/6 cable only for the source input connections. Using Cat5 crossover cable may damage the presentation switcher.*

The following table lists the pinouts, signals, and pairing associated with the Source Input connector.

| Source Input RJ-45 Pinouts and Signals |         |             |           |              |
|--|---------|-------------|-----------|--------------|
| Pin                                    | Signals | Connections | Pairing   | Color        |
| 1                                      | R+      | 1 ----- 1   | 1 ----- 2 | Orange-White |
| 2                                      | R-      | 2 ----- 2   |           | Orange       |
| 3                                      | B+      | 3 ----- 3   | 3 ----- 6 | Green-White  |
| 4                                      | G+      | 4 ----- 4   |           | Blue         |
| 5                                      | G-      | 5 ----- 5   | 4 ----- 5 | Blue-White   |
| 6                                      | B-      | 6 ----- 6   |           | Green        |
| 7                                      | TX+     | 7 ----- 7   | 7 ----- 8 | Brown-White  |
| 8                                      | TX-     | 8 ----- 8   |           | Brown        |

FIG. 6 diagrams the RJ-45 pinouts and signals for the Source Input connector and cable.

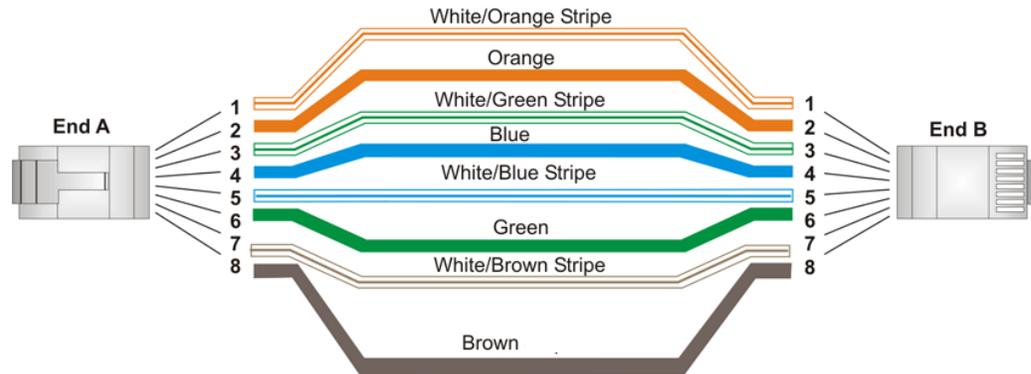


FIG. 6 RJ-45 wiring diagram

When connecting to a wall input plate, use Cat5/5e/6 cable to connect from the source input on the switcher to the RJ-45 connector on the wall input plate (FIG. 7).

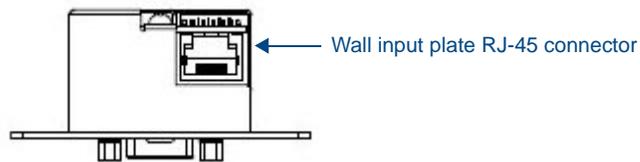


FIG. 7 Wall input plate connector

## LINE IN



FIG. 8 LINE IN Input

The LINE IN input is capable of delivering audio to mix into the program sound. This input is designed for use with external audio equipment such as radio microphones and mixers. Connect the positive and negative terminals for the left and right channels on the source audio input to the labelled wire terminals on the switcher. The center terminal on the switcher accepts a grounding wire. For unbalanced sources, you can use the R+, L+, and Ground connections (FIG. 9). You can connect a microphone to this input using a preamplifier.

Source and destination devices require either balanced (differential) or unbalanced (single-ended) connections. FIG. 9 illustrates options for wiring between sources and input connectors and between output connectors and the destinations. More than one option can be use in the same system.

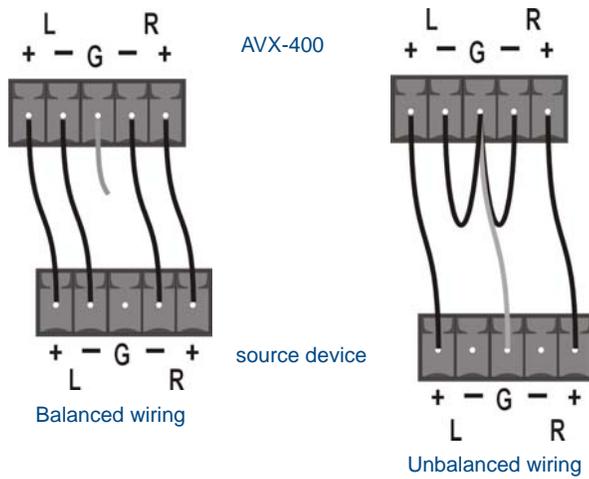


FIG. 9 Stereo 5-terminal wiring

FIG. 10 provides details for wiring from an audio input to a non-5 terminal audio source or destination, such as an RCA connector. Positive and ground wires connect to the source or destination connector.

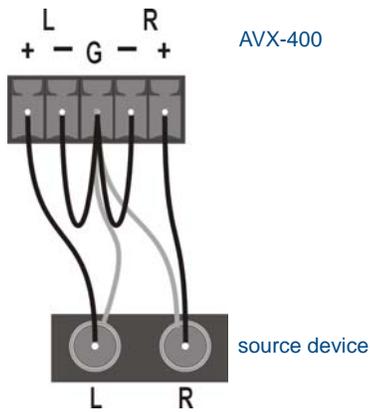


FIG. 10 Non 5-terminal audio source and destination wiring

## AXLINK



FIG. 11 AxLink Port

All AVX-400 units have an AxLink port and adjacent status LED (FIG. 11). This port allows the unit to be controlled from any AxLink Master such as a NetLinx NI Controller. A green LED shows AxLink data activity. When the AxLink port is operating normally, blink patterns include:

- **Off** - No power, or the controller is not functioning properly.
- **1 blink per second** - Normal operation.
- **3 blinks per second** - AxLink bus error. Check all AxLink bus connections.



NOTE

*The AVX-400 cannot be powered by this port or use the port to power other devices.*

To use the 4-pin 3.5 mm mini-Phoenix (female) captive-wire connector for data communication and power transfer, the incoming PWR and GND cable from the 12 VDC-compliant power supply must be connected to the AxLink cable connector going to the Integrated Controller. FIG. 12 shows the wiring diagram. Always use a local power supply to power the Integrated Controller unit.

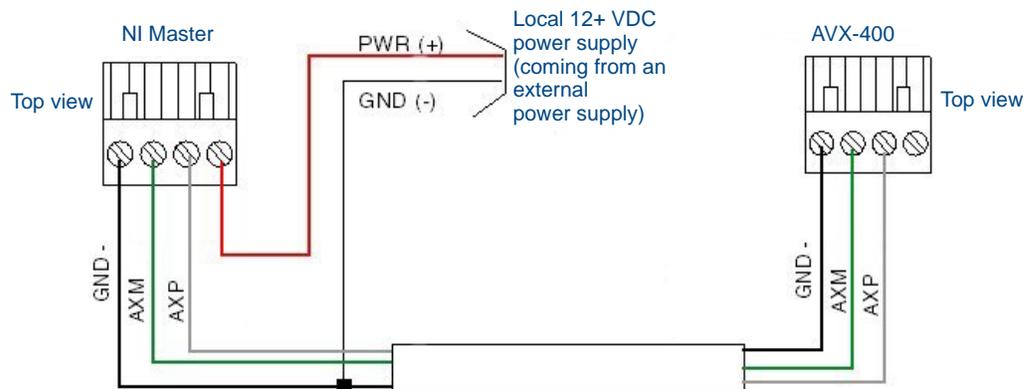


FIG. 12 4-pin mini-Phoenix connector wiring diagram (using external power source)



WARNING

*When you connect an external power supply, do not connect the wire from the PWR terminal (coming from the external device) to the PWR terminal on the Phoenix connector attached to the Controller unit. Make sure to connect **only** the AXM, AXP, and GND wires to the Controller's Phoenix connector when using an external power supply.*

Make sure to connect only the GND wire on the AxLink/PWR connector when using a separate 12 VDC power supply. Do not connect the PWR wire to the AxLink connector's PWR (+) opening.

### DEVICE DIP Switches



**FIG. 13** DEVICE DIP Switches

The 8-position AxLink DEVICE DIP switch sets the AxLink identification number for your AxLink device. Make sure the device number matches the number assigned in the software program. The following table describes the values on the AxLink DEVICE DIP switch.

| AxLink DEVICE DIP Switch Settings |   |   |   |   |    |    |    |     |
|-----------------------------------|---|---|---|---|----|----|----|-----|
| Position                          | 1 | 2 | 3 | 4 | 5  | 6  | 7  | 8   |
| Value                             | 1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 |

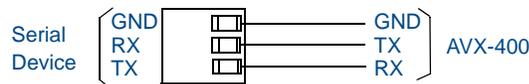
If the device’s value is set to 0 (by positioning all DIP switches to the OFF setting), you can use AxLink serial commands with your AxLink device.

### RS232



**FIG. 14** RS232 control port

The RS232 control port is a bi-directional serial port. The port uses a 3-pin 3.5mm Phoenix connector, and supports 9600 baud communications only. When communicating via RS-232, connect the wiring as shown in FIG. 15.



**FIG. 15** RS-232 wiring

The following table lists the default button commands when you connect an SP-08-AX 8-Button Keypad:

| SP-08-AX 8-Button Keypad Defaults |  |
|-----------------------------------|--|
| Button                            | Default  |
| 1                                 | Switch to Input 1  |
| 2                                 | Switch to Input 2  |
| 3                                 | Switch to Input 3  |
| 4                                 | Switch to Input 4  |
| 5                                 | Increase volume  |
| 6                                 | Decrease volume  |
| 7                                 | Hold for 3 seconds to turn on the programmed projector, and hold 3 seconds again to turn it off. |
| 8                                 | Mute all (video and sound)   |

## Configuration Port (PROG)



**FIG. 16** Configuration port

The AVX-400 contains one low-speed type-B USB connection located on the front of the unit. Use a standard USB cable to establish a connection between the device and your PC's USB port. This connection enables you to program the switcher by using AMX DCS software. See the *AMX DCS Software* section on page 15 for more information.

## Power Connector



**FIG. 17** Power connector

The AVX-400 uses a 12 VDC-compliant power supply to provide power to the switcher through the front 2-pin 3.5 mm mini-Phoenix power connector. Use the power requirements information described in the product's Specifications table to determine the power draw. The incoming PWR and GND cable from the power supply must be connected to the corresponding locations within the power connector.

The AVX current draw with no input plates is 750mA. The following table lists the current draw for each type of input wallplate you can connect to the AVX-400.

| Wallplate Current Draw |       |
|------------------------|-------|
| Component              | 160mA |
| VGA                    | 140mA |
| Composite              | 110mA |

To illustrate, an AVX-400 with 2 VGA wallplates, 1 Component wallplate, and 1 Composite wallplate draws:

$$750 + 140 + 140 + 110 + 160 = 1.3A$$



**NOTE**

*The above equation does not take into account an audio source, which can increase the draw by up to 1A depending on frequency and volume.*



**WARNING**

***This unit should only have one source of incoming power.***

*Using more than one source of power to the Controller can result in damage to the internal components and a possible burn out.*

***Apply power to the unit only after installation is complete.***

## Preparing Captive Wires

You will need a wire stripper and flat-blade screwdriver to prepare and connect the captive wires.



NOTE

*Never pre-tin wires for compression-type connections.*

1. Strip 0.25 inch (6.35 mm) of insulation off all wires.
2. Insert each wire into the appropriate opening on the connector (according to the wiring diagrams and connector types described in this section).
3. Tighten the screws to secure the wire in the connector. Do not tighten the screws excessively doing so may strip the threads and damage the connector.

## Wiring a Power Connection

To use the 2-pin 3.5mm mini-Phoenix connector with a 12 VDC-compliant power supply, the incoming PWR and GND cables from the external source must be connected to their corresponding locations on the connector (FIG. 18). Follow these steps to wire a power connection:

1. Insert the PWR and GND wires on the terminal end of the 2-pin 3.5 mm mini-Phoenix cable. Match the wiring locations of the +/- on both the power supply and the terminal connector.
2. Tighten the clamp to secure the two wires. Do not tighten the screws excessively. Doing so may strip the threads and damage the connector.
3. Verify the connection of the 2-pin 3.5 mm mini-Phoenix to the external 12 VDC-compliant power supply.



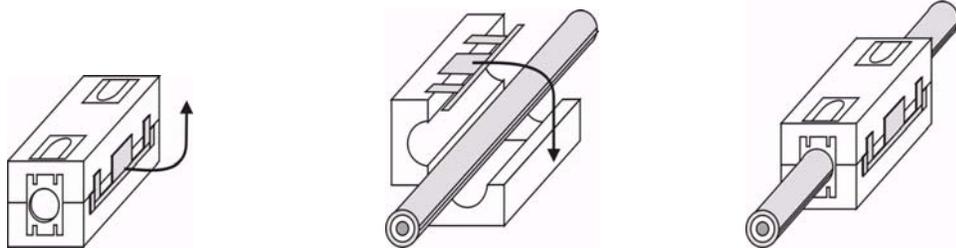
**FIG. 18** 2-pin mini-Phoenix connector wiring diagram (direct power)

## Installing a Suppression Ferrite



NOTE

*If you are in a location with 240V of power, you must clip the supplied Suppression Ferrite around the Power cable (no tools required).*



1. Release the latch to open the plastic enclosure.

2. Insert the power cable and close the enclosure.

3. Installation complete.

**FIG. 19** Installing the Suppression Ferrite

## Rear Panel Components

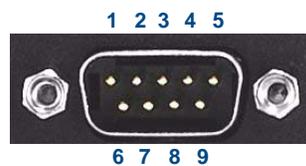
The following sections describe the options on the rear panel of the AVX-400.

### DISPLAY CONTROL



**FIG. 20** DISPLAY CONTROL connector

The DISPLAY CONTROL connector is used for controlling a display device such as a projector or large screen LCD. FIG. 21 shows the connector pinouts for the rear DISPLAY CONTROL connector. The DISPLAY CONTROL port supports most standard RS-232 communication protocols for data transmission. This figure gives a visual representation of the wiring specifications for the DISPLAY CONTROL connector.



#### RS-232 pinouts (male connector)

Pin 2: RX signal

Pin 3: TX signal

Pin 5: GND

**FIG. 21** RS-232 DB9 (male) connector pinouts for the rear Display Control connector

The table below provides information about the connector pins, signal types, and signal functions. This table's wiring specifications are applicable to the rear DISPLAY CONTROL connector on the switcher.

| RS-232 Display Control Wiring Specifications |        |               |        |
|--|--------|---------------|--------|
| Pin  | Signal | Function      | RS-232 |
| 1  |        |               |        |
| 2  | RXD    | Receive data  | X      |
| 3  | TXD    | Transmit data | X      |
| 4  |        |               |        |
| 5  | GND    | Signal ground | X      |
| 6  |        |               |        |
| 7  |        |               |        |
| 8  |        |               |        |
| 9  |        |               |        |

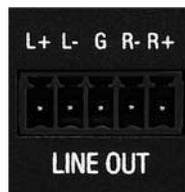
## SPEAKER



**FIG. 22** SPEAKER output

The SPEAKER output is capable of delivering 2x10W into 8 ohm amplified variable stereo audio. The output level can be adjusted by serial or AxLink commands.

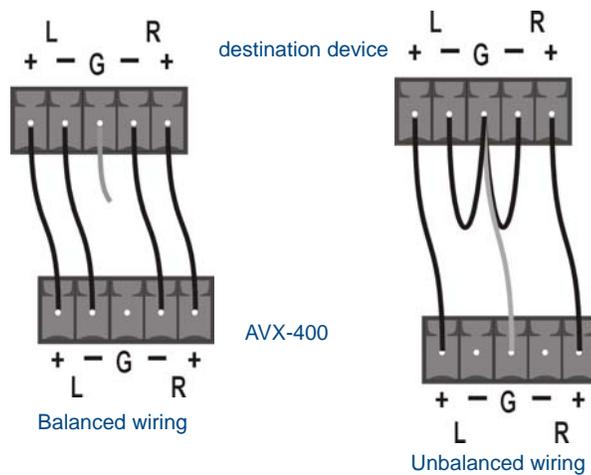
## LINE OUT



**FIG. 23** LINE OUT output

The LINE OUT output provides the mixed program and line input sources at a variable line level output. It is designed for use with external audio equipment such as induction loop systems, recording devices, or video conferencing systems.

Destination devices require either balanced (differential) or unbalanced (single-ended) connections. FIG. 24 illustrates options for wiring between output connectors and the destinations.



**FIG. 24** Stereo 5-terminal wiring

## Composite Output (VIDEO)



**FIG. 25** Composite output

The composite output enables you to use a composite cable (RCA Y) to send video to a display device like a projector. Attach the composite cable to the composite video connector on the rear of the presentation switcher and run the other end of the cable to the Composite connector (normally yellow) on the display device or to a Composite wall input plate. If you connect the port to a wall input plate, use an RJ-45 cable to connect the port on the rear of the wall input plate to one of the source input ports on the front of the switcher.

## HD-15 Output Connectors



**FIG. 26** HD-15 Output connectors

Each AVX-400 has two HD-15 output connectors. The outputs enable you to use an HD-15 to COMPONENT or HD-15 to RGB/VGA cable to send video to a display device such as a projector or large screen monitor. The output device displays video from source input devices routing through the AVX-400-SP. There is one output each for COMPONENT and RGB/VGA sources. The following table lists the pinout configuration for HD-15 connector to RGB/VGA connectors:

| Video Output HD-15 Connector Pinouts |        |                                   |
|--------------------------------------|--------|-----------------------------------|
| Pin                                  | Signal | Function                          |
| 1                                    | Red    | Red signals                       |
| 2                                    | Green  | Green signals                     |
| 3                                    | Blue   | Blue signals                      |
| 4                                    | N/C    |                                   |
| 5                                    |        |                                   |
| 6                                    | RGND   | Red analog ground                 |
| 7                                    | GGND   | Green analog ground               |
| 8                                    | BGND   | Blue analog ground                |
| 9                                    |        |                                   |
| 10                                   | SGND   | Synchronization analog ground     |
| 11                                   |        |                                   |
| 12                                   |        |                                   |
| 13                                   | HSYNC  | Horizontal synchronization signal |
| 14                                   | VSYNC  | Vertical synchronization signal   |
| 15                                   |        |                                   |



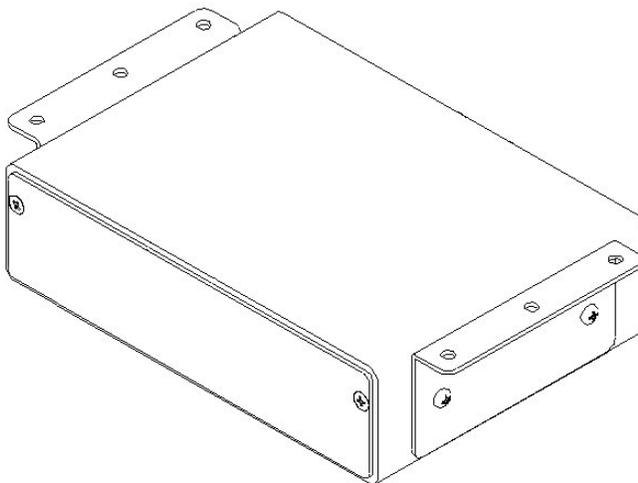
You can use breakout cable CC-HD15M-RCA3M (FG10-2170-03) to connect to 3 x RCA Phono Sockets.

The following table lists the pinout configuration for HD-15 connector to Component connectors:

| HD-15 to Component Pinouts |                  |
|----------------------------|------------------|
| VGA Pin                    | Component Signal |
| 1                          | Pr signal        |
| 2                          | Y signal         |
| 3                          | Pb signal        |
| 4                          |                  |
| 5                          |                  |
| 6                          | Pr - Return      |
| 7                          | Y - Return       |
| 8                          | Pb - Return      |
| 9                          |                  |
| 10                         |                  |
| 11                         |                  |
| 12                         |                  |
| 13                         |                  |
| 14                         |                  |
| 15                         |                  |

## Mounting the Presentation Switcher

The AVX-400 can be mounted onto a flat surface or mounted under a table. Attach the mounting brackets from the optional mount kit (KA2250-40) to the sides of the switcher as shown in FIG. 27 to mount the unit to any flat surface. FIG. 27 displays the mounting brackets set to attach to the underside of a table. To surface-mount the unit, attach the mounting brackets with the flat side toward the bottom of the unit.

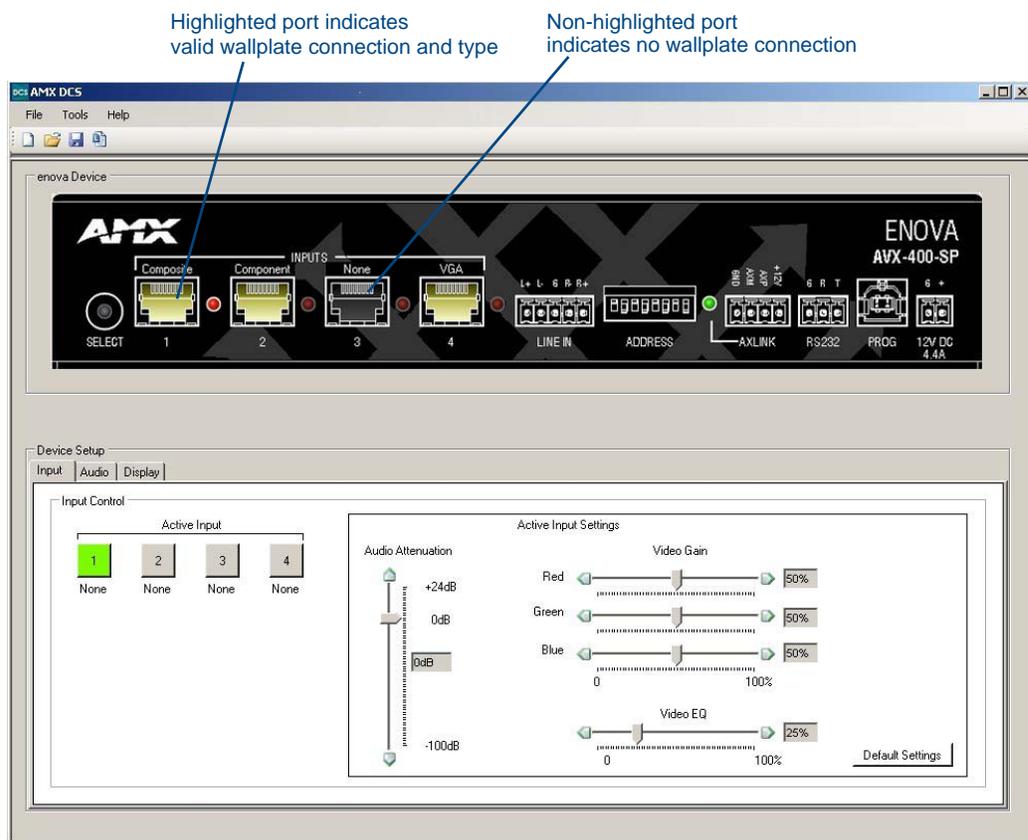


**FIG. 27** AVX-400 presentation switcher with optional mounting brackets.

# Configuration

## AMX DCS Software

You can configure the AVX-400 and its functionality by using AMX DCS software (FIG. 28). The top of the window displays the device image of the front panel of the Enova AVX-400, and displays which inputs are valid by highlighting the source input. Clicking on a highlighted port on the device image changes the active input. The active source input is indicated by the illuminated red LED beside the source input.

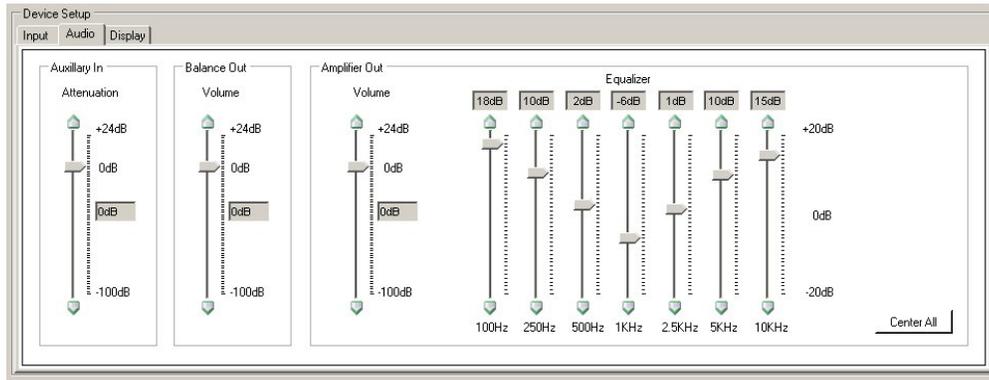


**FIG. 28** AMX DCS main screen

The bottom half of the window features the Device Setup options. The Device Setup area consists of three tabs: Input, Audio and Display. The Input tab (FIG. 28) enables you to select a source input and adjust its audio and video settings. The following options appear on the Input tab:

| Input Tab Options |  |
|-------------------|--|
| Active Input      | Click each button to view the corresponding audio and video settings for the input device.   |
| Audio Attenuation | Use the slider to set the attenuation of the audio for the selected input. You can preset the attenuation between the range of +24dB to -100dB.          |
| Video Gain        | Use the sliders to set the red, blue, and green levels for the video output of the selected input. You can set each individual level between 0 and 100%. |
| Video EQ          | Use the slider to set the equalization of the video for the selected input. You can set the level between 0 and 100%.                                    |
| Default Settings  | Resets the Audio Attenuation, Video Gain, and Video EQ to their default values.  |

The Audio tab (FIG. 29) enables you to adjust its audio in and out settings.

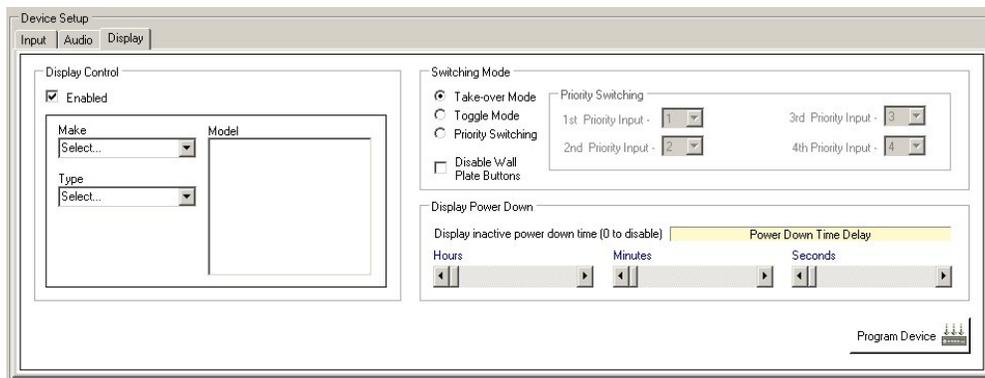


**FIG. 29** Device Setup - Audio tab

The following options appear on the Audio tab:

| Audio Tab Options          |   |
|----------------------------|---|
| Auxiliary In - Attenuation | Use the slider to preset the attenuation of the audio for the auxiliary in device. You can set the attenuation between the range of +24dB to -100dB.  |
| Balance Out - Volume       | Use the slider to preset the volume of the audio for the balance out device. You can set the volume between the range of +24dB to -100dB.   |
| Amplifier Out - Volume     | Use the slider to preset the volume of the audio for the amplifier out device. You can set the volume between the range of +24dB to -100dB.   |
| Amplifier Out - Equalizer  | Use the sliders to set the equalizer settings for the amplifier out device. You can set the levels for the 100Hz, 250Hz, 500Hz, 1KHz, 2.5 KHz, 5KHz, and 10KHz frequencies. You can set each level between the range of +20dB to -20dB. |
| Center All                 | Press this button to reset all Amplifier Out settings to 0dB.   |

The Display tab (FIG. 30) enables you to select a display output and establish input display settings.



**FIG. 30** Device Setup - Display tab

The following options appear on the Display tab:

| Display Tab Options        |   |
|----------------------------|---|
| Enabled                    | Click the check box to enable display control. Display control enables you to select a display to use for the output from your source inputs. Enabling display control makes the options for Make, Type, Model, and Display Power Down available.   |
| Make                       | Select the manufacturer of the device you want to use.  |
| Type                       | Select the type of device you want to use.  |
| Model                      | Select the device model you want to use.  |
| Switching Mode             | Click an option button to indicate the method you want to use to switch between source inputs. You can choose from Take-over Mode, Toggle Mode, and Priority Switching.   |
| Take-over Mode             | With Take-over mode, if you press the button on a wallplate connected to source input 1, then source input 1 becomes the active input. The same applies to source inputs 2, 3, and 4.   |
| Toggle Mode                | With toggle mode, if you press the button on any of the wallplates, then the selected video input changes to the next available input. For example, if you have all four inputs connected to video sources, pressing any button on any wallplate causes the active input to toggle from 1 to 2 to 3 to 4 to 1. If you only have inputs 1, 2, and 3 connected, the toggle sequence will be 1 to 2 to 3 to 1.   |
| Priority Switching         | Enables you to establish a priority order for displaying each input. The input device with the highest priority will always be sent to the output display as long as the input device remains powered on. When the power to the highest priority input device is turned off, the signal from the next active input device appears on the output display. These options are not available unless you select Priority Switching as the Switching Mode. See the <i>Priority Switching</i> section on page 18 for more information. |
| Disable Wall Plate Buttons | Click the check box to disable source input switching via wallplate button. With this option enabled, you cannot change inputs while in take-over or toggle modes, and you cannot power up or power down the display device. This option disables all wallplate button functions.   |
| Display Power Down         | Use the sliders to set the number of hours, minutes, or seconds (or some combination of the three) before the display device powers down. Using the Hours slider disables the Seconds slider. Set the time to 0 to disable power down.  |
| Program Device             | Sends the current configuration to the presentation switcher. You must click this button for any configuration changes to take effect.  |

### Enabling Display Control

Display control enables you to select a display to use for the output from your source inputs. A display can be any type of video output device. After enabling display control, you can select a make, type, and model of display. If your display is not available from the options menus, see the *Device Library Manager* section on page 19 for information on adding your specific device to the device library. Perform these steps to enable display control:

1. Click the **Display** tab on the AMX DCS window.
2. Click the **Enabled** check box to enable display control.
3. Select a **Make**, **Type**, and **Model** display from their respective fields.
4. Click **Program Device** to send the display device's commands to the presentation switcher.

## Priority Switching

Priority switching enables you to establish a priority order for displaying each input device. The input device with the highest priority will always be sent to the output display as long as the input device remains powered on. When the power to the highest priority input device is turned off, the signal from the next active input device appears on the output display.

For example, you have a DVD player set at priority 1, a PC at priority 2, and a VCR at priority 3. If the PC is always powered on, its output is sent to the display provided the DVD player is currently powered off. When the DVD player is powered on, its output is immediately sent to the display. Powering off the DVD player returns the PC's output to the display. The VCR's output is only sent to the display if it is powered on, and the DVD player and PC are both powered off.

Perform these steps to set up priority switching:

1. In the Device Setup area, click the **Display** tab (FIG. 30).
2. Click the **Priority Switching** option button in the Switching Mode section.
3. Use the options menus in the Priority Switching area to indicate the priority order for each input device. The number you select from the drop-down menu is the source input number on the presentation switcher. For example, if you want source input 3 to have the highest priority, select 3 from the first menu.
4. Click **Program Device** to send the new settings to the presentation switcher.

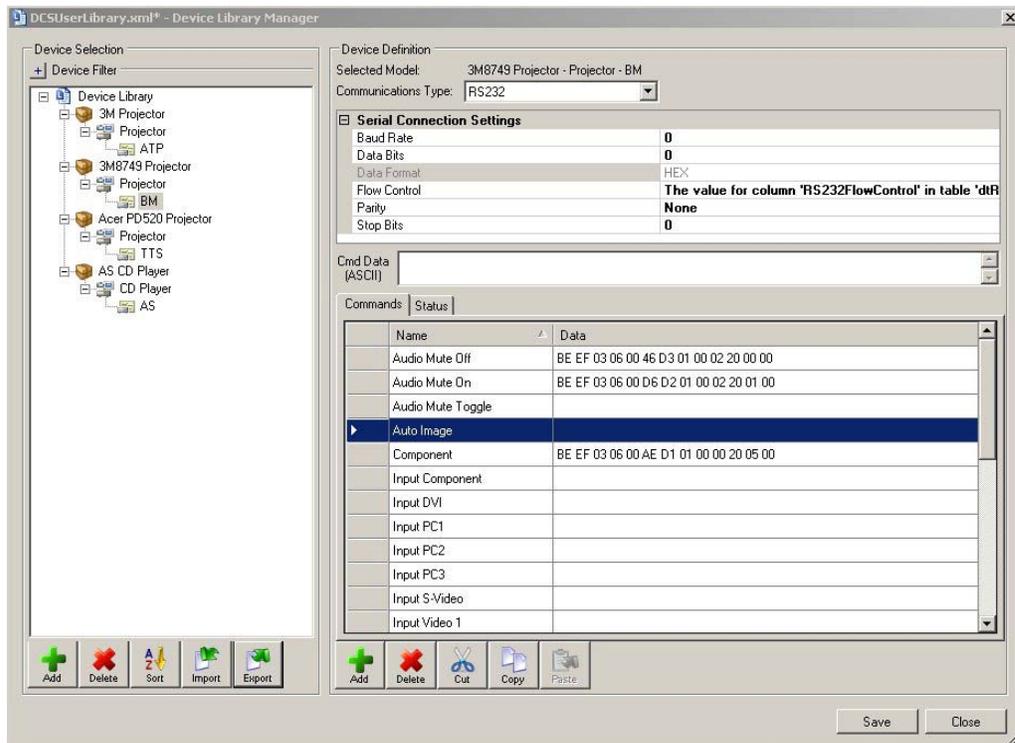
## Setting the Inactive Display Power Down

You can use the DCS software to set an amount of time for a display to be inactive before it shuts down to save power. Perform these steps to set the inactive display power down:

1. Click the **Display** tab on the AMX DCS window.
2. Enable display control. See the *Enabling Display Control* section on page 17 for more information.
3. Use the **Hours**, **Minutes**, and **Seconds** sliders to indicate the amount of time you want the display to be inactive before powering down.
4. Click **Program Device** for the changes to take effect.

## Device Library Manager

The Device Library Manager (FIG. 31) enables you to add, import, and modify information about individual devices you can configure with DCS software. You can modify the device's serial connection settings and provide hexadecimal values, where needed, for executable and status commands. The Device Library Manager is accessible by selecting Device Library Manager from the File menu on the main DCS window.



**FIG. 31** Device Library Manager

The following options appear on the Device Library Manager window

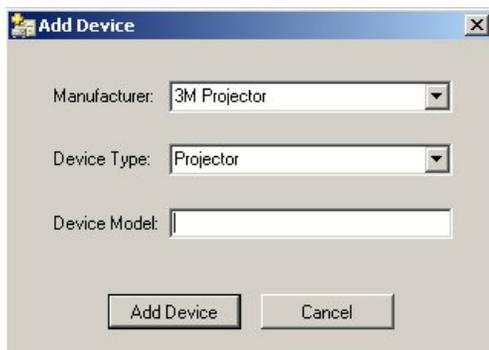
| Device Library Manager Options |   |
|--------------------------------|---|
| Device Selection               |   |
| Device Filter                  | The Device Filter option opens to reveal three filtering options to help narrow your search for a specific device. You can filter by Manufacturer, Device Type, or Communications.  |
| Add                            | Add a new device to the library. The Manufacturer can be a new manufacturer or you can select a previously-defined entry from the drop-down list. Similarly, the Device Type can be a new entry or you can select a previously-defined entry from the drop-down list. Manufacturer and Device Model entries are limited to 20 characters while Device Type is limited to 40 characters. Once the device is added it will be populated and selected in the library tree. |
| Delete                         | Delete the selected device.   |
| Sort                           | Sort the devices alphabetically.  |
| Import                         | Allows you to import Novara or Solecis legacy library files (one-by-one) and add their device definitions to the library. You can also import a previously exported.xml library file.   |
| Export                         | Allows you to select an existing device model from the tree and export its definition to a file in .xml format. This feature allows you to share devices with others. Once exported you can import the definition and add it to the library (assuming it does not already exist).   |

| Device Library Manager Options (Cont.) |   |
|--|---|
| Device Definition                      |   |
| Selected Model                         | The name of the selected device. This information is view-only.   |
| Communications Type                    | The type of connection for the device. A different set of commands can be saved for each communication type. RS-232 and IP communications have a commands and status section whereas Infrared has only a command section. RS-232 is the only option available for the AVX-400 presentation switcher.                                      |
| Serial Connection Settings             | Displays the Baud Rate, Data Bits, Data Format, Flow Control, Parity, and Stop Bits for the device. You can change most of these options, if necessary. You cannot change any field that appears dimmed.  |
| Cmd Data (ASCII)                       | When you select a record from the commands/status table, this field shows the ASCII representation of the data. This information is view-only, however, you can select and copy the information.  |
| Commands                               | Lists the available executable commands for the current device. If the device has a compatible hexadecimal value for an individual command, the hexadecimal value appears in the Data column. You can enter a value for each command in the Data column, if available. Consult the manual included with your device for more information. |
| Status                                 | Lists the available status commands for the current device. If the device has a compatible hexadecimal value for an individual command, the hexadecimal value appears in the Data column. You can enter a value for each command in the Data column, if available. Consult the manual included with your device for more information.     |
| Add                                    | Adds a space for a new command in the above list. You can add the name of the command and its hexadecimal value in the Name and Data fields, respectively.  |
| Delete                                 | Deletes the selected command.   |
| Cut                                    | Removes the selected command from the command list and stores its information on the local clipboard for copying.   |
| Copy                                   | Copies the selected command to the local clipboard for later retrieval.   |
| Paste                                  | Inserts the data on the local clipboard into the selected location.   |

### Adding a Device to the Device Library

If the provided device library does not contain the device you are using, you can add the device to the library manually. Perform the following steps to add a device to the device library:

1. From the File menu, select **Device Manager Library**. The Device Library Manager window opens.
2. In the Device Selection area, click the **Add** button. The Add Device dialog box opens (FIG. 32).



**FIG. 32** Add Device dialog box

3. From the Manufacturer options menu, select a device manufacturer.
4. From the Device Type options menu, select the type of device you want to add.
5. Enter the name of the device in the Device Model field.
6. Click **Add Device** to add the device to the device library.

### Modifying Devices in the Device Library

To modify a device's connection and command information, perform the following steps:

1. Select the device from the Device Selection tree. Its connection and command information appears in the right pane.
2. Change the device's serial connection settings by clicking the individual option and selecting a new value from the available list.
3. For any commands that require programming, click the field under the Data column for the corresponding command, and enter the hexadecimal code required for the command. Consult the manual included with your device for more information.

### Importing a Device Library

1. From the File menu, select **Device Manager Library**. The Device Library Manager window opens.
2. In the Device Selection area, click the **Import** button.
3. Navigate to a directory containing Novara (\*.plr, \*.prp) or Solecis (\*.txt) device libraries and select a library file. The Import Legacy Library dialog box opens (FIG. 33).

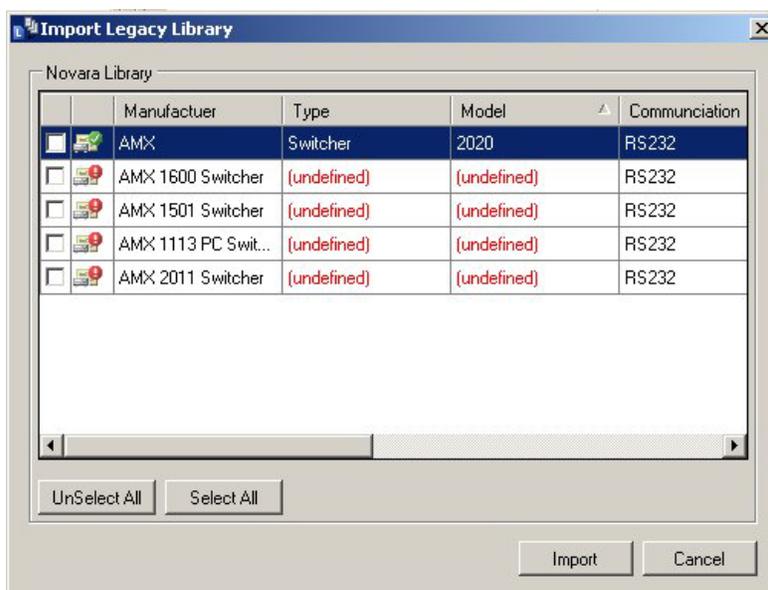


FIG. 33 Import Legacy Library dialog box

4. Select the libraries you want to import, and click **Import**.



NOTE

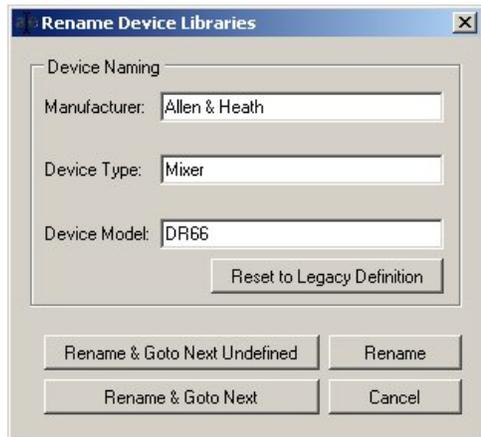
*If any of the fields in the device library are undefined, you must rename the device to define all fields before importing the library. See the Renaming a Device section on page 22 for more information.*

5. Click **OK** to confirm the libraries have been imported. The devices now appear in the Device Selection list.

## Renaming a Device

When importing a device library, if any of the fields in the device library are undefined, you must rename the device to define all fields before importing the library.

1. Import a device library that contains undefined fields.
2. Right-click the device with undefined fields, and select **Rename Device(s)**. The Rename Device Libraries dialog box opens (FIG. 34).



**FIG. 34** Rename Device Libraries dialog box

3. Enter the appropriate information in the undefined fields.
4. Click **Rename**. The Rename Device Libraries dialog box closes, and you can now import the device library.

## Updating Firmware

AMX DCS software provides a simple interface for updating your AVX-400 with the latest available version of firmware. You must use a .bin file to upgrade the firmware through AMX DCS software. The latest firmware files can be found at the Tech Center at [www.amx.com](http://www.amx.com).

You can access the Firmware Update tool by selecting **Enova Firmware Update** from the File menu in the DCS software. Selecting this option opens the Enova Firmware Update window (FIG. 35)

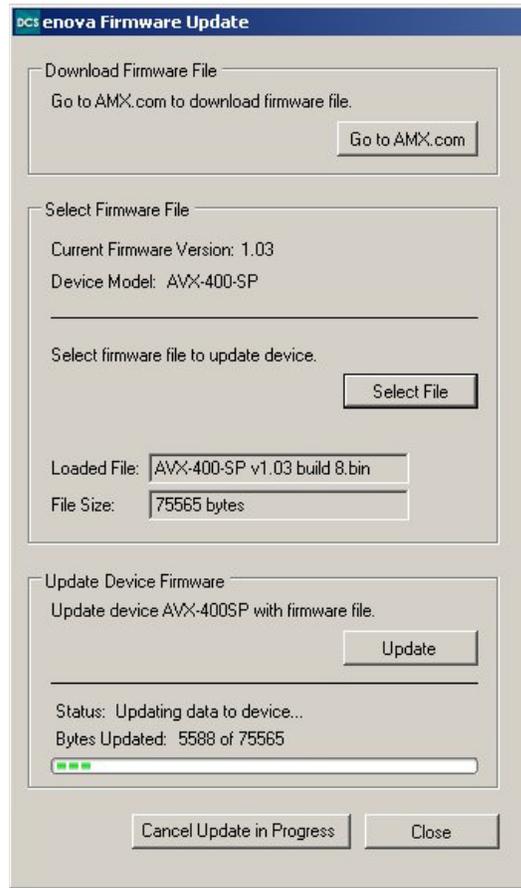


FIG. 35 Enova Firmware Update window

The following options appear on this window:

| Enova Firmware Update Window Options |  |
|--------------------------------------|--|
| Go to AMX.com                        | Click to open a browser and navigate to AMX.com. At AMX.com, you can download the latest firmware for the device.                          |
| Current Firmware Version             | Displays the current firmware version for the device. This information is view-only.   |
| Device Model                         | The device model of the unit you are updating. This information is view-only.  |
| Select File                          | Click to browse and locate the latest firmware file on a local or network drive.   |
| Loaded File                          | The latest firmware file. This information only appears after you select firmware file to use for updating. This information is view-only. |
| File Size                            | The size of the loaded firmware file. This information is view-only.   |
| Update                               | Click to begin updating the firmware for the device.   |
| Status                               | The current state of the firmware update process. This information is view-only.   |
| Bytes Updated                        | The current number of bytes of data that have been updated. This information is view-only.   |
| Cancel Update in Progress            | Click to cancel the current firmware update. This button is only active when a firmware update is in progress.                             |
| Close                                | Closes the window.   |

Perform these steps to update the firmware for your device:

1. From the File menu, select **Enova Firmware Update**. The Enova Firmware Update window opens (FIG. 35).
2. Click **Go to AMX.com**. A web browser opens and navigates to www.amx.com.
3. Click **Tech Center** on the main page at AMX.com.
4. Locate and download the latest firmware version (.bin) for your device. Make note of the location to which you save the firmware file. When the download is complete, return to the Enova Firmware update window.
5. Click **Select File**, navigate to the location the firmware file was saved, and select the file.
6. Click **Update**. The firmware for the device is updated with the latest version.
7. Click **Close** to close the window and return to the AMX DCS window.

# Programming

## AxLink Channels

Each AxLink device contains 255 channels numbered 1-255. The AxLink channels for the AVX-400-SP are defined in the table below.

| AxLink Channels |   |
|-----------------|---|
| Channel         | Description                                       |
| 24              | Amplifier volume up when the channel is on.       |
| 25              | Amplifier volume down when the channel is on.     |
| 26              | Amplifier mute toggles when the channel turns on. |
| 124             | Balanced volume up when the channel is on.        |
| 125             | Balanced volume down when the channel is on.      |
| 126             | Balanced mute toggles when the channel turns on.  |
| 200             | Balanced mute when the channel is on.             |
| 210             | Video mute toggles when the channel turns on.     |
| 211             | Video mute when the channel is on.                |

## AxLink Levels

Each AxLink device contains 8 levels numbered 1-8. Levels are a means of applying a value to a physical element on the device. The AxLink Levels for the AVX-400-SP are defined in the table below.

| AxLink Levels |                             |
|---------------|-----------------------------|
| Level         | Description                 |
| 1             | Amplifier volume            |
| 2             | Balanced volume             |
| 3             | Input 1 attenuation         |
| 4             | Input 2 attenuation         |
| 5             | Input 3 attenuation         |
| 6             | Input 4 attenuation         |
| 7             | Auxiliary input attenuation |

## AxLink Commands

The following table lists the AxLink commands for the AVX-400:

| AxLink Commands   |   |
|---|---|
| <b>CI101</b><br>Sets the active input to input 1.           | Syntax:<br>SEND_COMMAND " ' CI101 ' "   |
| <b>CI201</b><br>Sets the active input to input 2.           | Syntax:<br>SEND_COMMAND " ' CI201 ' "   |
| <b>CI301</b><br>Sets the active input to input 3.           | Syntax:<br>SEND_COMMAND " ' CI301 ' "   |
| <b>CI401</b><br>Sets the active input to input 4.           | Syntax:<br>SEND_COMMAND " ' CI401 ' "   |
| <b>DOF</b><br>Turns off the display                         | Syntax:<br>SEND_COMMAND " ' DOF ' "   |
| <b>DON</b><br>Turns on the display                          | Syntax:<br>SEND_COMMAND " ' DON ' "   |
| <b>?DST</b><br>Queries the display status                   | Returns the current display status.<br>Syntax:<br>SEND_COMMAND " ' ?DST ' "<br>Sample Output:<br>"DST-<A B C D E>"<br>A = power: (0=unknown, 1=on, 2=off, 3=warming, 4=cooling)<br>B = input: (0=unknown, 1=PC, 2=component, 3=composite)<br>C = lamp time: (0=unknown)<br>D = filter time: (0=unknown)<br>E = temperature: (0=unknown) |
| <b>?GCT</b><br>Queries the connected input types            | Returns the connected input types.<br>Syntax:<br>SEND_COMMAND " ' ?GCT ' "<br>Sample Output:<br>"GCT-<A B C D>"<br>ABCD are inputs 1-4.<br>0=No connection<br>1=PC<br>2=COMPONENT<br>3=COMPOSITE  |
| <b>?INPUT-1</b><br>Queries the current active source input. | Returns the current active source input.<br>Syntax:<br>SEND_COMMAND " ' ?INPUT-1 ' "<br>Sample Output:<br>"SWITCH-LALLI<x>O1" where <x> is the source input number.   |
| <b>SSW</b><br>Simulates pressing the select switch.         | Pressing the source select button activates the next valid source input. This command simulates a single pressing of the source select button on the presentation switcher.<br>Syntax:<br>SEND_COMMAND " ' SSW ' "  |

## Serial Commands

The following table lists the serial commands for the AVX-400. All commands are followed by a carriage return.

| Serial Commands  |   |
|--|---|
| <b>AMT</b><br>Toggle amplifier mute                                | Syntax:<br>AMT  |
| <b>ASM</b><br>Turns on the amplifier mute                          | Syntax:<br>ASM  |
| <b>ATA</b><br>Set the auxiliary input attenuation                  | Sets the auxiliary input attenuation to the specified level.<br>Syntax:<br>ATA=<attenuation><br>Variable:<br>attenuation = the attenuation setting between -100 and 24<br>Example:<br>ATA=12  |
| <b>ATI</b><br>Set source input attenuation                         | Sets the attenuation for a source input to a specific level.<br>Syntax:<br>ATI<input>=<attenuation><br>Variable:<br>input = source input (1-4)<br>attenuation = the attenuation setting between -100 and 24<br>Example:<br>ATI3=12<br>Sets the attenuation on source input 3 to 12. |
| <b>ATT?</b><br>Queries for the attenuation levels for each channel | Returns the attenuation level for all channels.<br>Syntax:<br>ATT?  |
| <b>AUM</b><br>Turns off the amplifier mute                         | Syntax:<br>AUM  |
| <b>BGN</b><br>Sets the blue gain level for a source input          | Syntax:<br>BGN<input>=<gain><br>Variable:<br>input = source input (1-4)<br>gain = the blue gain level setting between 0 and 100<br>Example:<br>BGN2=50<br>Sets the blue gain level on source input 2 to 50%.  |
| <b>BMT</b><br>Toggle the balanced mute                             | Syntax:<br>BMT  |
| <b>BSM</b><br>Turns on the balanced mute                           | Syntax:<br>BSM  |
| <b>BUM</b><br>Turns off the balanced mute                          | Syntax:<br>BUM  |

| Serial Commands (Cont.)                                    |   |
|--|---|
| <b>DOF</b><br>Turns off the display                        | Syntax:<br>DOF  |
| <b>DON</b><br>Turns on the display                         | Syntax:<br>DON  |
| <b>DST?</b><br>Queries the display status                  | Returns the current display status.<br>Syntax:<br>DST?<br>Sample Output:<br>"DST->A B C D E"<br>A = power: (0=unknown, 1=on, 2=off, 3=warming, 4=cooling)<br>B = input: (0=unknown, 1=PC, 2=component, 3=composite)<br>C = lamp time: (0=unknown)<br>D = filter time: (0=unknown)<br>E = temperature: (0=unknown) |
| <b>FWV?</b><br>Queries the firmware version                | Returns the current firmware version.<br>Syntax:<br>FWV?  |
| <b>GCT?</b><br>Queries the connected input types           | Returns the connected input types.<br>Syntax:<br>GCT?<br>Sample Output:<br>"GCT-<A B C D>"<br>ABCD are inputs 1-4.<br>0 = No connection<br>1 = PC<br>2 = COMPONENT<br>3 = COMPOSITE   |
| <b>GGN</b><br>Sets the green gain level for a source input | Syntax:<br>GGN<input>=<gain><br>Variable:<br>input = source input (1-4)<br>gain = the green gain level setting between 0 and 100<br>Example:<br>GGN1=25<br>Sets the green gain level on source input 1 to 25%.  |
| <b>INP</b><br>Set the current source input                 | Activates the indicated source input.<br>Syntax:<br>INP<input><br>Variable:<br>input = source input (1-4)<br>Example:<br>INP1<br>Activates source input 1.  |
| <b>INP?</b><br>Queries the current active source input     | Returns the current source input.<br>Syntax:<br>INP?  |

| Serial Commands (Cont.)  |  |
|--|--|
| <b>MUT</b><br>Toggles the audio/<br>video mute                 | Syntax:<br>MUT   |
| <b>RGN</b><br>Sets the red gain<br>level for a source<br>input | Syntax:<br>RGN<input>=<gain><br>Variable:<br>input = source input (1-4)<br>gain = the red gain level setting between 0 and 100<br>Example:<br>RGN3=75<br>Sets the red gain level on source input 3 to 75%.   |
| <b>SMT</b><br>Turns on the<br>audio/video mute                 | Syntax:<br>SMT   |
| <b>SSW</b><br>Simulates<br>pressing the<br>select switch       | Pressing the source select button activates the next valid source input. This command simulates a single pressing of the source select button on the presentation switcher.<br>Syntax:<br>SSW  |
| <b>TON</b><br>Set tone band to<br>specific setting             | Set an individual tone band to a specified level.<br>Syntax:<br>TON<band>=<level><br>Variable:<br>band = tone band (1-7): (1=100Hz, 2=250Hz, 3=500Hz, 4=1KHz, 5=2.5 KHz, 6=5KHz, 7=10KHz)<br>level = the decibel level setting between -20 and 20<br>Example:<br>TON4=-6<br>Sets the 1KHz tone band to -6dB. |
| <b>TON?</b><br>Queries the<br>current tone band<br>settings    | Returns the current tone band settings.<br>Syntax:<br>?TON<br>Sample Output:<br>1=18dB<br>2=10dB<br>3=2dB<br>4=-6dB<br>5=1dB<br>6=10dB<br>7=15dB   |
| <b>TON+</b><br>Increase the tone<br>band by 0.5dB              | The specified tone band increases by 0.5dB.<br>Syntax:<br>TON<band>+<br>Variable:<br>band = tone band (1-7): (1=100Hz, 2=250Hz, 3=500Hz, 4=1KHz, 5=2.5 KHz, 6=5KHz, 7=10KHz)<br>Example:<br>TON3+<br>Increases the 500Hz tone band by 0.5dB.   |

| Serial Commands (Cont.)   |  |
|---|--|
| <p><b>TON-</b><br/>Decrease the tone band by 0.5dB</p>              | <p>The specified tone band decreases by 0.5dB.</p> <p>Syntax:<br/>TON&lt;band&gt;-</p> <p>Variable:<br/>band = tone band (1-7): (1=100Hz, 2=250Hz, 3=500Hz, 4=1KHz, 5=2.5 KHz, 6=5KHz, 7=10KHz)</p> <p>Example:<br/>TON6 -</p> <p>Decreases the 5KHz tone band by 0.5dB.</p> |
| <p><b>UMT</b><br/>Turns off the audio/video mute</p>                | <p>Syntax:<br/>UMT</p>   |
| <p><b>VEQ</b><br/>Sets the video EQ for the source input</p>        | <p>Syntax:<br/>VEQ&lt;input&gt;=&lt;eq&gt;</p> <p>Variable:<br/>input = source input (1-4)<br/>eq = the EQ level setting between 0 and 100</p> <p>Example:<br/>VEQ4=25</p> <p>Sets the EQ level on source input 4 to 25%.</p>  |
| <p><b>VEQ?</b><br/>Queries the video EQ values for all inputs</p>   | <p>Returns all video EQ values for all source inputs.</p> <p>Syntax:<br/>VEQ?</p> <p>Sample Output:<br/>1=25<br/>2=35<br/>3=50<br/>4=0</p>   |
| <p><b>VGN?</b><br/>Queries the video gain values for all inputs</p> | <p>Returns the video gain values for all source inputs.</p> <p>Syntax:<br/>VGN?</p>  |
| <p><b>VLA</b><br/>Set amp volume</p>                                | <p>Sets the amp volume to a specified setting in decibels.</p> <p>Syntax:<br/>VLA=&lt;volume&gt;</p> <p>Variable:<br/>volume = the amp volume level setting between -100 and 24dB</p> <p>Example:<br/>VLA=20</p> <p>Sets the balance out volume level to 20dB.</p>           |
| <p><b>VLA+</b><br/>Increase amp volume by 0.5dB</p>                 | <p>Syntax:<br/>VLA+</p>  |
| <p><b>VLA-</b><br/>Decrease amp volume by 0.5dB</p>                 | <p>Syntax:<br/>VLA-</p>  |

| Serial Commands (Cont.)   |  |
|---|--|
| <b>VLB</b><br>Set balance out volume                                  | Sets the balance out volume to a specified setting in decibels.<br>Syntax:<br>VLB=<volume><br>Variable:<br>volume = the balance out volume level setting between -100 and 24dB<br>Example:<br>VLB=11<br>Sets the balance out volume level to 11dB. |
| <b>VLB+</b><br>Increase balance out volume by 0.5dB                   | Syntax:<br>VLB+  |
| <b>VLB-</b><br>Decrease balance out volume by 0.5dB                   | Syntax:<br>VLB-  |
| <b>VMT</b><br>Toggle video mute                                       | Syntax:<br>VMT   |
| <b>VOL</b><br>Sets amp and balance out volume                         | Sets amp and balance out volume to the same setting.<br>Syntax:<br>VOL=<volume><br>Variable:<br>volume = the volume level setting between -100 and 24dB<br>Example:<br>VOL=5<br>Sets the volume level to 5dB.                                      |
| <b>VOL?</b><br>Queries the current amp and balance out volume levels. | Returns the current volume levels.<br>Syntax:<br>VOL?<br>Sample Output:<br>A=20dB<br>B=11dB  |
| <b>VOL+</b><br>Increases the volume by 0.5dB                          | Syntax:<br>VOL+  |
| <b>VOL-</b><br>Decreases the volume by 0.5dB                          | Syntax:<br>VOL-  |
| <b>VSM</b><br>Turns on the video mute                                 | Syntax:<br>VSM   |
| <b>VUM</b><br>Turns off the video mute                                | Syntax:<br>VUM   |







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