



### Box Contents

- (1) SmartAudio 12 Matrix Switcher (SSA-4012-00)
- (1) Installation Kit (075-0173-xx)
  - (2) 1U Rack Mounting Brackets (071-0603-xx)
  - (4) Flat Phillips Screws for Brackets - M3 x 8 mm (039-0017-xx)
  - (2) 6-pin Screw Down Plug-in Connector (028-9352-xx)
- (1) AC Power cord - 6 ft (064-0079-xx)
- (1) Quick Reference Guide (this document)

### Required System Components

- (1) Savant® Smart or Pro Host

### Specifications

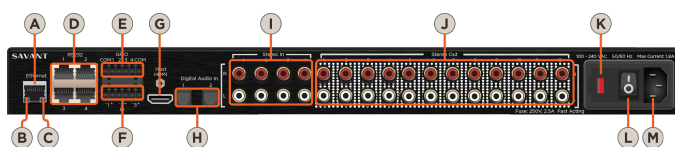
Environmental	
Temperature	32° to 104° F (0° to 40° C)
Humidity	10% to 90% Relative Humidity (non-condensing)
Cooling	3 cubic feet per minute (CFM) recommended.
Maximum BTU	61 BTU/hr
Dimensions and Weight	
Height	1.71 in (4.34 cm)
Width	17.30 in (43.94 cm)
Depth	8.69 in (22.08 cm)
Weight	Net: 5.25 lb (2.38 kg) Shipping: 7.8 lb (3.54 kg)
Rack Space	1U
Power	
Input Power	100-240V AC 1.8A 50/60 Hz
Maximum Power	18 watt
Stereo Preamp Parameters	
Total Harmonic Distortion+Noise (THD+N)	<0.005%, 20Hz - 20KHz, -100dB@1kHz
Dynamic Range	115dB
Signal-to-Noise Ratio (SNR)	>105dB
Frequency Response	20Hz - 20kHz +0dB +/-0.1dB
Output Impedance	50 ohms
Crosstalk	<-80dB
Supported Sample Rates	44.1 kHz/48 kHz/96 kHz/192 kHz at 16-bit or 24-bit resolution
Compliance	
Safety and Emissions	FCC Part 15   CE Mark   C-Tick   S Mark
RoHS	Compliant
Minimum Supported Release	
Savant OS	da Vinci 6.0.1

### Front Panel



- A** Reset button (hole)  
Insert pin into hole and hold for 5 seconds while powered On to clear network settings. **Status** LED will blink rapidly when reset is complete.
- B** Power LED  
**Green:** System has adequate power and is operating normally.  
**Red:** System is in standby mode.  
**Off:** System is not receiving power.
- C** Status  
**Green:** SSA-4012 is operating normally.  
**Green Flashing:** Controller has a DHCP or static IP Address. Connecting to host.  
**Off:** Unit is rebooting  
**Red:** Firmware update has failed and unit will be rebooted.  
**Red Flashing:** No IP Address/Connecting to Network.  
**Amber:** Firmware update in process.  
**Amber Flashing:** Matrix has a link-local IP Address and is connecting to the host. This applies to controllers that are not connected to an active router and may be connected directly to a host.  
**Hardware Failure**  
If the Controller experiences a hardware failure, the **Status** LED indication will be interrupted every 3 seconds with a solid **Red** indication. For example, if the LED is flashing **Green** when a hardware failure occurs, the LED will flash **Green**, solid **Red**, etc., in 3 second intervals.
- D** RS-232 LED  
**Green:** RS-232 serial port activity.  
**Off:** No RS-232 serial port activity.
- E** GPIO LED  
**Green:** GPIO port activity.  
**Off:** No GPIO port activity.
- F** On/Off button (hole)  
Insert pin into hole for about 5 seconds to place into standby mode. The **Power** LED turns **Red**. Insert the pin again for about 1 second to take system out of standby mode. The I/O power switch on the back of Controller must be On (I) to enable this function. To turn the power off for the entire system, use the switch on the rear panel.
- G** HDMI LED  
**Green:** External host is connected to the Host HDMI port.  
**Off:** External host is not connected to the Host HDMI port.
- H** IR LED  
**Green:** IR port signal activity.  
**Off:** No IR port activity.

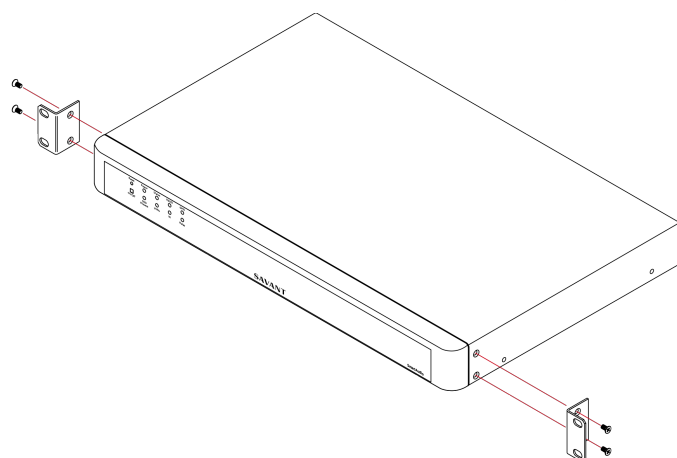
## Rear Panel



<b>A</b> Ethernet	8-pin RJ-45 female. 10/100 Base-T auto-negotiating port with Link/Activity LEDs.
<b>B</b> Link/Activity LED	<b>Green:</b> Ethernet link is established. <b>Green Flashing:</b> Ethernet activity is occurring. <b>Off:</b> Ethernet link is not established.
<b>C</b> Ethernet Speed LED	<b>Green:</b> 10 Mbps data rate <b>Off:</b> 100 Mbps data rate
<b>D</b> RS-232/ RS-422/ RS-485	8-pin RJ-45 female. Used to transmit and receive serial binary data to and from serial controllable devices. Ports 1-4 RS-232/RS-422/RS-485 - CTS/RTS handshaking. CTS/RTS Handshaking availability based on component profile. See <a href="#">RS-232/422/485 Connections</a> for pinouts.
<b>E</b> GPIO	6-pin Screw Down Plug-in Connector. See <a href="#">GPIO Wiring</a> for pinouts.  <b>GPIO Input:</b> When configured as an input, the processor will look for a low (<0.8V DC) or a high (>2.4V DC) state. Minimum 0V DC / Maximum 12V DC  <b>GPIO Output:</b> When configured as an output, the port provides a binary output of 0-12V DC 150mA max.
<b>F</b> IR	6-pin Screw Down Plug-in Connector. Used to send IR signals to control devices with an IR input or IR receiver via an IR flasher (5V tolerant only). See <a href="#">IR Wiring</a> for important precautions regarding IR functionality before making any connections.
<b>G</b> Host HDMI	19-pin type A HDMI female digital video/audio input: Supports HDMI and DVI/D (requires adapter-not included) Limited to 185 MHz pixel clock. Used for receiving up to 4 PCM streams (iTunes®) from a Pro Host. This is not available on the Smart Host.
<b>H</b> Digital Audio In	TosLink (Optical) digital audio inputs (2).
<b>I</b> Stereo In	RCA line-level analog audio inputs (4 Right & 4 Left)
<b>J</b> Stereo Out	RCA line-level analog audio outputs (12 Right & 12 Left)
<b>K</b> Fuse	250V 2.5A fast acting field replaceable.
<b>L</b> I/O (power switch)	<b>I</b> (On): Powers On the controller. <b>O</b> (Off): Powers Off the controller.
<b>M</b> Power Input	100-240V AC 1.8A 50/60 Hz

## Rack Installation

Both SmartAudio Matrixes can be mounted in a 1U rack style enclosure and is compatible with all standard 19-inch National Electrical Manufacturers Association (NEMA) rack mounts. Rack ears are included that need to be attached prior to placing in a rack.



## Wiring and Connections

### RS-232/422/485 Connections

SmartAudio (SSA-4012)



### RS-232 Wiring

Pin 1: -----	Pin 5: RXD (RS-232)
Pin 2: -----	Pin 6: TXD (RS-232)
Pin 3: -----	Pin 7: CTS (RS-232)
Pin 4: GND (RS-232)	Pin 8: RTS (RS-232)

- Pins 7 & 8 are only required for CTS/RTS handshaking.

- Wire coloring is included to identify the pins used for this connection. Colors shown do not represent any wiring standard.

**IMPORTANT!** When wiring to this port, DO NOT connect any wires within the cable that are not required for communication.

### Note:

CTS/RTS handshaking is supported for flow control based on the profile used in the configuration.

### RS-422/RS-485 Wiring

Pin 1: RS+ (RS-422/485)	Pin 5: -----
Pin 2: RS- (RS-422/485)	Pin 6: TX- (RS-422/485)
Pin 3: TX+ (RS-422/485)	Pin 7: -----
Pin 4: GND (RS-422/485)	Pin 8: -----

- Wire coloring is included to identify the pins used for this connection. Colors shown do not represent any wiring standard.

**IMPORTANT!** When wiring to this port, DO NOT connect any wires within the cable that are not required for communication.

### RJ-45 to DB9 Adapters

Savant offers RJ-45 to DB9 adapters in a variety of configurations that can be used for RS-232/422/485 control.

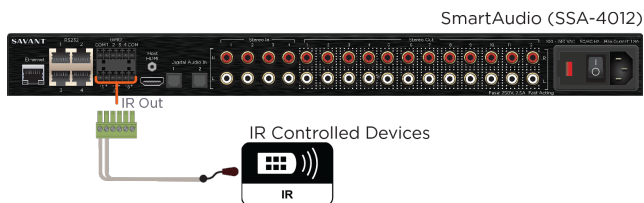
Refer to the [RS-232 Conversion to DB9 and RS-422/485 Pinout Application Note](#) located on the [Savant Community](#) for more information on RJ-45 to DB9 adapters.

**⚠ IMPORTANT! When using RJ-45 to DB9 adapters not supplied by Savant:**

- Ensure that any wires required for communication/control are terminated within the adapter.
- Ensure that all wires NOT required for communication/control are NOT terminated in the connector.
- Ensure that the unused wires in the connector are cut to prevent them shorting out, as they are still terminated in the RJ-45 connector on the controller side.

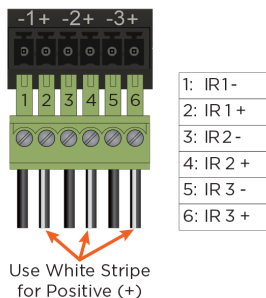
### IR Wiring

IR connections are made using 6-pin Screw Down Plug-in Connectors supplied with the matrix. The wire slips into the hole and locks with a screw located at the top of the connector.



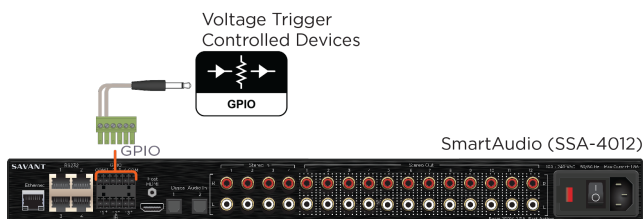
**⚠ IMPORTANT! IR Wiring Precautions**

- Ensure that all IR emitters are within 15 feet (4.6 meters) from the controllers location.
- Use of 3rd party flashing IR emitters with Talk Back is not recommended. These types of emitters can draw voltage away from the IR signal that can degrade IR performance.

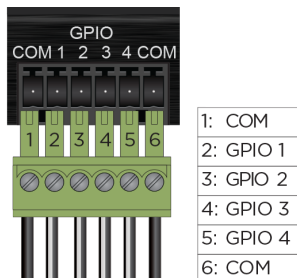


### GPIO Wiring

General Purpose Input/Outputs (GPIO) are binary I/O ports used on Savant controllers to trigger an action within the system. Events can control a device, such as turning on an amplifier (output) or detecting a state change for a device (input) to perform a workflow. Pins 1-4 are used for input or output depending on configuration.



### GPIO Pinout



### Source Audio Connections

Savant recommends the use of shielded RCA interconnects between the matrix and connected analog devices to maintain a high level of audio performance

When making connections, label the cables with the source and destination. This will make modifications and troubleshooting easier.

### Network Requirements

Savant requires the use of business class/commercial grade network equipment throughout the network to ensure the reliability of communication between devices. These higher quality components also allow for more accurate troubleshooting when needed.

Connect all Savant devices to the same local area network (LAN) or subnet as the host. Savant recommends not implementing any type of traffic or packet shaping in your network topology for the Savant devices as this may interfere with performance.

### Network Configuration

To ensure that the IP Address will not change due to a power outage, a static IP Address or DHCP reservation should be configured. Savant recommends using DHCP reservation within the router. By using this method, static IP Addresses for all devices can be managed from a single UI avoiding the need to access devices individually.

Setting DHCP reservation varies from router to router. Refer to the documentation for the router on how to configure DHCP reservation.

### Network Changes

The SSA-4012 requires rebooting after connecting to a new network, changing routers, or if the IP Address range is changed in the current router. If the SSA-4012 is not rebooted after making network changes, the controller will not sense the changes made to the network or IP settings. The **Status** LED will start to blink twice and reports will be logged within System Monitor.

### To reboot the controller perform one of the following steps.

- **Reset Network Settings via Front Panel Button**  
See [Front Panel](#) item A.
- **Cycle Power**
  1. Disconnect the controller from the AC power source.
  2. Wait 15 seconds and then reconnect.
- **Hot Plug the Ethernet (LAN) Connection**
  1. Disconnect the Ethernet (LAN) connection from the controller.
  2. Wait 15 seconds and then reconnect.

## Checking and Replacing the Fuse

**⚠️ ELECTRIC SHOCK HAZARD:** Disconnect the unit from AC power by removing the power cord from the AC outlet and the unit before replacing the fuse.

**⚠️ IMPORTANT:** The orientation of the cartridge within the unit and location of the fuse within the cartridge are crucial to proper operation. Make note of the orientation of the cartridge and the fuse location within the cartridge before removing.

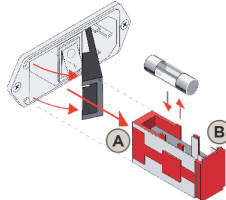
1. Disconnect the unit from AC power by removing the power cord.
2. Open the fuse cover on the AC power input using a flat head screwdriver or similar thin flat head tool. This will allow access to the fuse cartridge.
3. Using a flat head screwdriver or similar thin flat head tool, gently loosen the cartridge and pull the cartridge out of the unit slowly. As the cartridge is removed, make note of the orientation as it is important to proper operation.

### Tip:

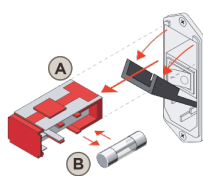
Mark the chassis and fuse holder with a marker in order to align when replacing.

4. Remove the old fuse from the cartridge and discard.
5. Gently place the new fuse in the cartridge and place the cartridge part way into the receptacle aligning it as defined in the diagram.

Horizontal Installation



Vertical Installation



(A) Connection Pins Towards Unit

(B) Open Side of Cartridge Towards Power Switch

6. Gently press on the cartridge the rest of the way until it seats into the terminals at the rear of the slot.

**Note:** If any resistance is encountered during seating the cartridge, DO NOT apply more pressure. Stop pressing on the cartridge, remove it, verify the orientation, and repeat step.

## Additional Documentation

Refer to the following documents located on the **Savant Community** for additional information.

- SmartAudio Matrix SSA-40xx Deployment Guide