FLEX PORT

Audio Input Transmitters

For Use with SonaFlex™ Matrix Amplifiers

Installation and Operation Guide

AudioAuthority®

Introduction

FlexPort™ Audio Transmitters serve as remote input modules for SonaFlex™ SF-16M Matrix Amplifiers. FlexPort transmitters are available in several different styles. Audio signals are transmitted to an SF-16M via Cat 5e/6/7 cable up to 500 feet and made available to specified amplified outputs, and can be shared with up to three additional SF-16M amplifiers. Each transmitter has a convenient override button.

- Four FlexPort styles available: Stereo RCA, Digital Audio, XLR / TRS, and Balanced Audio
- Provides compatability for a mixture of consumer and pro audio sources such as computers, MP3 players, CD and DVD players, audio streaming devices, performance microphones or paging microphones, and audio mixers
- Up to four FlexPort transmitters may be used with one SF-16M (*See page 4*)
- Convenient Override switch provides a simple user interface at the transmitter location
- Differential balanced line technology eliminates interference, enabling FlexPort transmitters to be located up to 500 feet away from the SF-16M without signal degradation
- Simple connection via one Cat 5/6/7 cable; link two FlexPort transmitters on each SF-16M input

Double the FlexPort Inputs

Normally, one stereo FlexPort transmitter is connected to each of the two SF-16M FlexPort inputs; however, if mono signals are used, two FlexPort transmitters may be daisy-chained on each of the FlexPort bus inputs, doubling the number of possible FlexPort transmitters in one system. There are several ways to configure linked modules. *See page 4*.

About the SonaFlex SF-16M

The SonaFlex SF-16M is a unique blend of multi-channel amplification, flexible input options, audio matrix switching, signal processing and open control capability. Designed and assembled in the U.S. with sound and video integrators in mind, the SF-16M offers better sound with less complexity.

Carton Contents

- FlexPort Audio Input Transmitter (FPM-X, FPM-B, FPM-U, FPM-D)
- Screws for both surface mounting and Decora ring mounting
- Decora® style face plates in white, ivory, almond, and black
- User manual

Other Materials You May Need

- Cat 5/6/7 cable
- Modular RJ-45 connectors
- Audio players, microphones, audio mixers
- Patch cables (optical, RCA, 3.5mm etc.)

Basic Setup Tasks

1. Read this manual to understand FlexPort functions and behavior.
2. Plan your SF-16M system layout and use the setup utility to assign override behavior, and override priority.
3. Install the SF-16M system, including Cat 5e/6/7 wiring for FlexPort transmitters.
4. Assign FlexPort mono/stereo channels, set other dipswitches as needed.
5. Connect Cat 5 bus to FlexPort transmitters, and connect audio sources.
6. Set SF-16M volume levels (adjust gain if necessary).
7. Cycle power on FlexPort transmitters after any change of settings.

   NOTE: If the SF-16M will not be used to control volume, set all SF-16M outputs to -0dB (full volume) and adjust volume in preamplifier.

FlexPort Transmitter Models

FlexPort audio transmitters can be used to provide up to four additional audio inputs (2 channels per FlexPort input) to each SF-16M. FlexPort modules connect via Cat 5 cable to the SF-16M and accept a wide variety of pro and consumer audio sources. FlexPort modules can be located up to 500 feet from the SF-16M and include mounting points for either surface or in-wall mounting in an "open ended" single gang bracket such as Arlington model LV1 or Carlon model SC100RR. Remove unused mounting tabs with pliers before installation.

1. FPM-B Balanced line/mic input with phantom power

• Accepts any 3-wire balanced or 2-wire unbalanced, line or mic level audio input

• "Override" contact closure input for push-to-talk paging mics such as Bogen model MBS1000A

• Override button (defeatable) with backlighting to indicate audio override status

• 15V phantom power (defeatable) for condenser microphones

• Input gain potentiometer

• Input can be assigned as Dual Mono (2 mono channels), Mono 1 or Mono 2 on the FlexPort audio bus

• Optional "Mix" setting allows two FlexPort modules to be mixed together on a single FlexPort audio bus (each input must be assigned to a different mono channel)
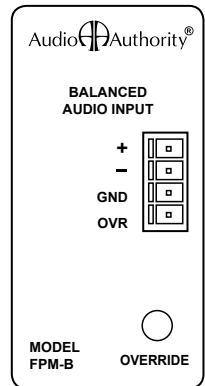
2. FPM-X XLR/ 1/4" TRS input with phantom power

• Accepts any 3-wire balanced or 2-wire unbalanced, line or mic level audio input via a combo XLR / 1/4" TRS input

• Override button (defeatable) with backlighting to indicate audio override status

• 15V phantom power (defeatable) for condenser microphones

• Input gain potentiometer

• Input can be assigned as Dual Mono (2 mono channels), Mono 1 or Mono 2 on the FlexPort audio bus

• Optional "Mix" setting allows two FlexPort modules to be mixed together on a single FlexPort audio bus (each input must be assigned to a different mono channel)
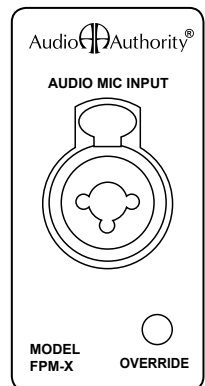
3. FPM-D Digital Coax/Optical Input

• Accepts any digital SPDIF coax or optical audio input (Stereo PCM only)

• Override button (defeatable) with backlighting to indicate audio override status

• Input can be assigned as Stereo (default), Mono 1 or Mono 2 on the FlexPort audio bus

• Optional "Mix" setting allows two FlexPort modules to be mixed together on a single FlexPort audio bus (each input must be assigned to a different mono channel)

• Analog audio output (pass-thru) for applications where a converted analog output is desired
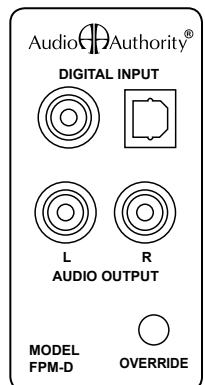
4. FPM-U Analog Audio Input

• Accepts any analog RCA audio input

• Override button (defeatable) with backlighting to indicate audio override status

• Input can be assigned as Stereo (default), Mono 1 or Mono 2 on the FlexPort audio bus

• Optional "Mix" setting allows two FlexPort modules to be mixed together on a single FlexPort audio bus (each input must be assigned to a different mono channel)
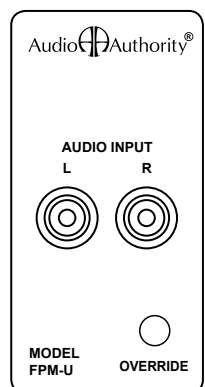
Understanding the FlexPort Audio Bus

Each SF-16M FlexPort input supports:

- **Two channels of audio** - input can be either stereo or two mono channels (allows two FlexPort transmitters per bus)
- **RS-485 data pathway** - provides 2-way communication between the SF-16M and all connected FlexPort modules
- **18V power** - provides power for up to two FlexPort modules on a single bus

FlexPort Override

In addition to the 10 overrides available in the SF-16M, there is an override command for each channel on each FlexPort bus input (*see table*). Each FlexPort override button sends a discrete override command to the SF-16M that can be programmed to connect the associated override channel to any output(s). When used in stereo mode, the Left channel override command connects both left and right to the assigned output(s). FlexPort input channels can be selected independent of an override command. FlexPort channels are numbered 17, 18, 19 and 20 for SF-16M setup.

FlexPort Bus 1	Ch	FlexPort Bus 2	Ch
Left = Override 1	17	Left = Override 3	19
Right = Override 2	18	Right = Override 4	20

FPM-D and FPM-U: These are natively stereo input modules - Dipswitch setting should be "Stereo".

FPM-B and FPM-X: These are natively mono input modules - If one mono source input is desired on both FlexPort bus audio channels, the dipswitch setting should be set to "Dual M" for dual mono.
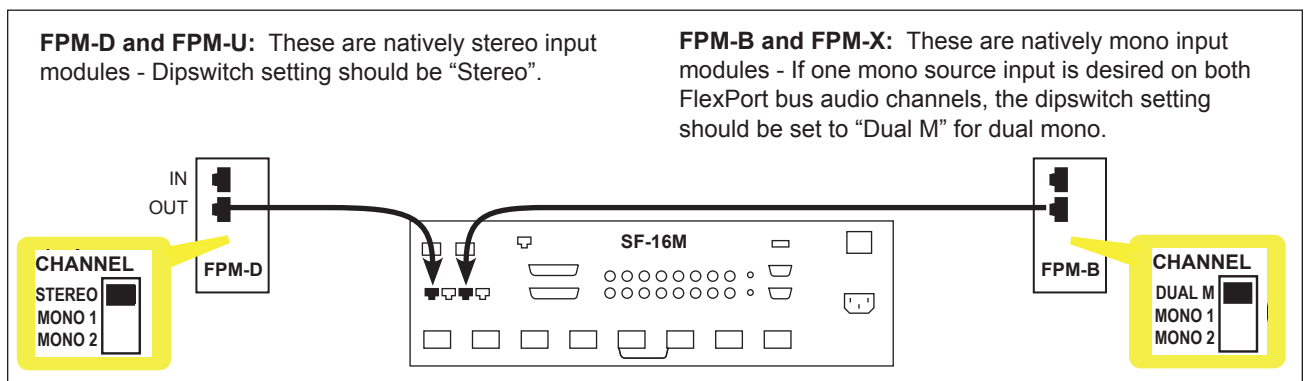
Figure 1. Basic FlexPort connection for each bus input. One stereo (or dual mono) source per bus input.

Link FlexPort Modules For Two Mono Inputs Per Bus

All FlexPort audio modules feature a FlexPort Bus In and Out, so any two modules may be linked together for a two source (mono) setup. In linked configurations, it is required to assign one module as "Mono 1" and the other module as "Mono 2" using the channel assign switches located on the back of the FlexPort transmitters. Stereo FlexPort transmitters can assign the left or right channel to be active on the bus. When using a linked configuration for stereo sources, combine the stereo channels into mono before connecting them to a FlexPort transmitter.
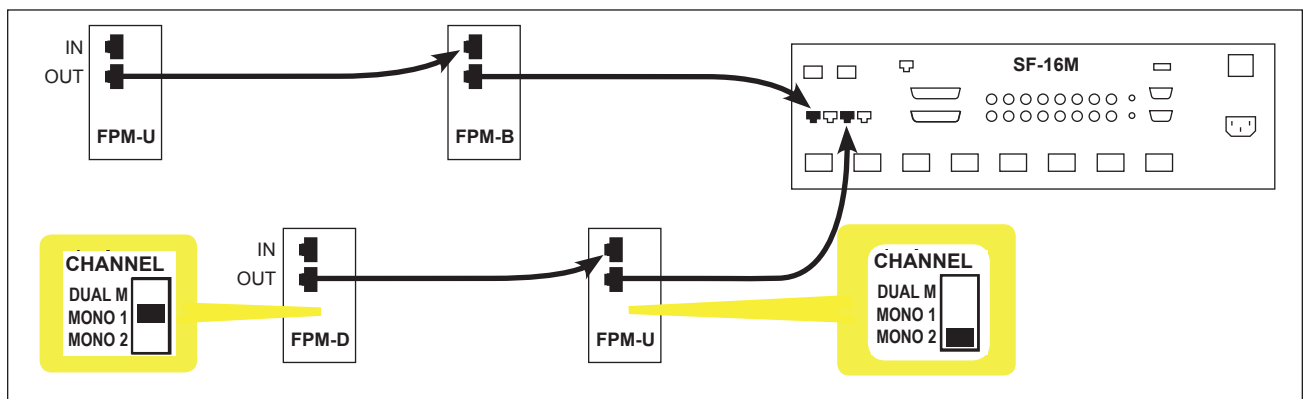

Figure 2. Link connection for four mono FlexPort transmitters in a system.

Assign each FlexPort transmitter to a different mono channel on each bus run. Both channels can be connected, but only one of the channels will be transmitted on the FlexPort bus.

Rear Panel Connections and Settings

FPM-B and FPM-X

Ⓐ **FlexPort Bus In** - Connects via Cat 5 to the FlexPort "Bus Out" of another FPM in linked scenarios

Ⓑ **FlexPort Bus Out** - Connects via Cat 5 to a SF-16M "FlexPort In" *or in linked configurations* to the "Bus In" of an additional FPM (See **Ⓓ** for audio settings when linking)

Ⓒ **Input Gain** - Increase or decrease input signal level prior to being sent to the SF-16M

Ⓓ **Assign Channel** - The input source can be assigned as: Dual Mono (input is assigned to both FlexPort channels), Mono 1 (FlexPort bus channel 1) or Mono 2 (channel 2)

Ⓔ **DIP Switch Settings:**

Input Mic/Line - Sets input gain as mic or line level

Mix On/Off - Mix two channels into a mono channel. Allows two linked FlexPort modules to mix together upon override. Also combines left and right on one stereo transmitter.

Override On/Off - Enables or Disables override button on the front panel

Momentary/Toggle - Sets the override button to respond as a momentary or toggle switch

Bus Termination On/Off - Turn on if the FPM is the last module in a linked configuration

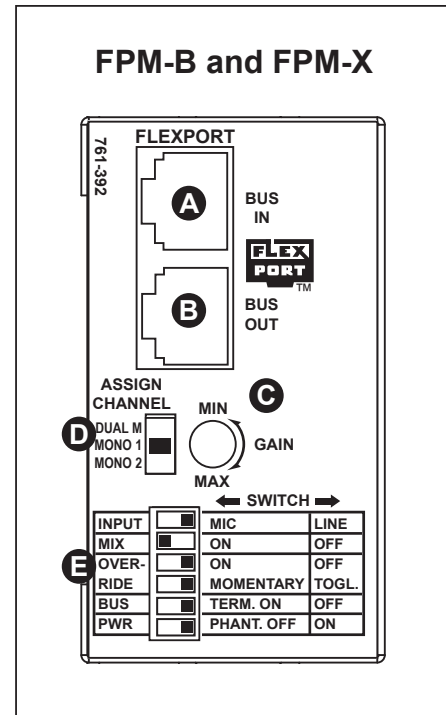**Phantom Power On/Off** - Turn on for phantom powered microphones

Figure 3.

FPM-D and FPM-U

Ⓖ **FlexPort Bus In** - Connects via Cat 5 from the FlexPort "Bus Out" of another FPM in linked scenarios

Ⓕ **FlexPort Bus Out** - Connects via Cat 5 to a SF-16M "FlexPort In" *or in linked configurations* to the "Bus In" of an additional FPM (See **Ⓘ** for audio settings when linking)

Ⓗ **Assign Channel Switch** - The input source can be assigned as: Stereo (default), Mono 1 (FlexPort bus channel 1) or Mono 2 (channel 2)

Ⓘ **DIP Switch Settings:**

Mix On/Off - Mix two channels into a mono channel. Allows two linked FlexPort modules to mix together upon override. Also combines left and right on one stereo transmitter.

Override On/Off - Enables or Disables override button on the front panel

Momentary/Toggle - Sets the override button to respond as a momentary or toggle switch

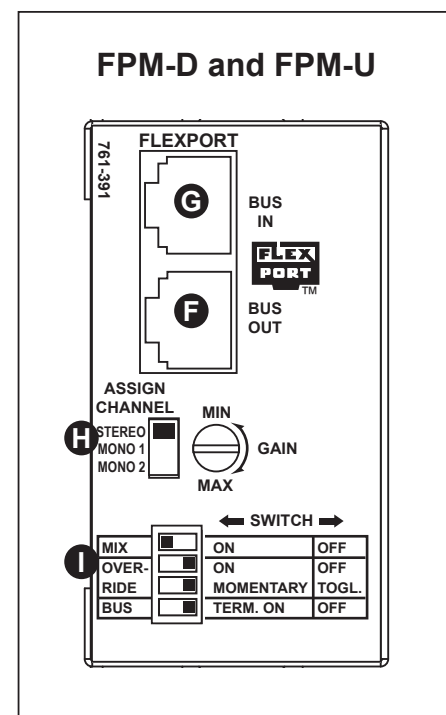**Bus Termination On/Off** - Turn on if the FPM is the last module in a linked configuration
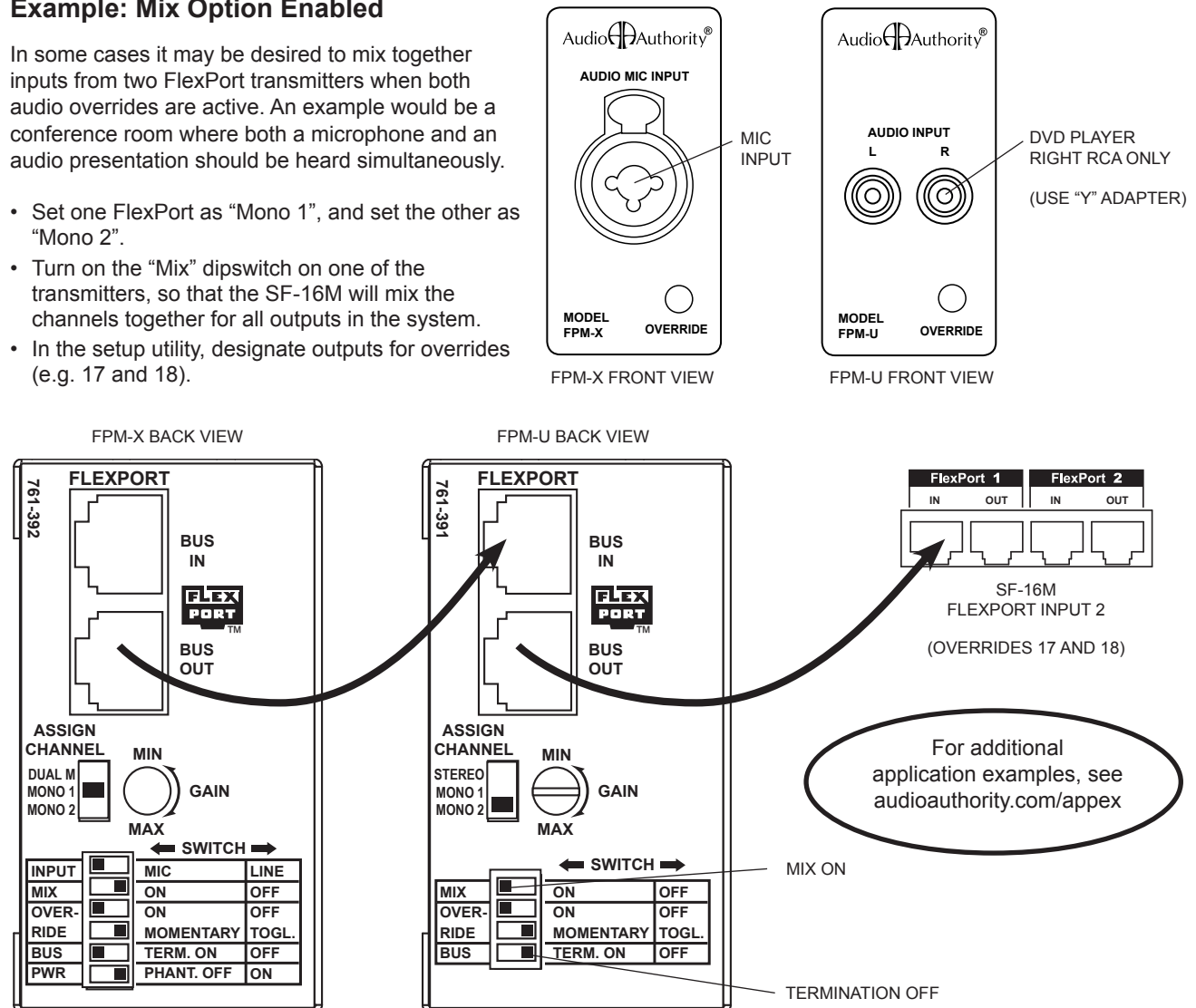

Figure 4.

FlexPort Override Button

The override button on a FlexPort front panel is used to switch designated SF-16M outputs to a FlexPort input. When the override button is pressed, it triggers a programmable override event (*see setup utility*). A typical application would be an audio mixer, connected to an FPM-X in a conference room. Normally background music is playing from a source connected to the SF-16M. When the override button is pressed, designated outputs switch from background music to the audio mixer for the duration of the override. When the override button is pressed again, (in Toggle mode) all affected outputs switch back to the background music source. When two FlexPort transmitters share a single bus, they must be set to operate independently, or to mix their signals, as shown in the example below.

Override behavior is based on two key settings:

1. FlexPort dip switch settings (*see page 5*).
2. SF-16M audio override settings, programmed using the SF-16M PC configuration utility (*see the setup utility manual for more information on audio override settings*).

Example: Mix Option Enabled

In some cases it may be desired to mix together inputs from two FlexPort transmitters when both audio overrides are active. An example would be a conference room where both a microphone and an audio presentation should be heard simultaneously.

- Set one FlexPort as "Mono 1", and set the other as "Mono 2".
- Turn on the "Mix" dipswitch on one of the transmitters, so that the SF-16M will mix the channels together for all outputs in the system.
- In the setup utility, designate outputs for overrides (e.g. 17 and 18).


Figure 5. In this example, a microphone is connected to an FPM-X transmitter, and DVD player audio outputs are connected to an FPM-U transmitter. Both FlexPort transmitters are on the same Cat 5 bus run. Both transmitters have the Override switch on and one transmitter has the Mix switch on. When the override switch is active on the Mix transmitter, the audio from both transmitters is mixed by the SF-16M for output to all speakers in the conference room.

NOTE: In this case, the overrides for both transmitters (17 and 18) are programmed to perform the same action, so the override may be triggered or cancelled from either transmitter.

Connecting to the SF-16M

FlexPort Transmitters connect directly to SF-16M inputs, or via other FlexPort Transmitter bus inputs (linked). One or both FlexPort bus inputs may be shared with up to three SF-16M amplifiers using the FlexPort bus output jacks. Alternatively, each SF-16M amplifier in a system can have its own independent FlexPort transmitters that are only available to the local SF-16M outputs.


SF-16M FlexPorts
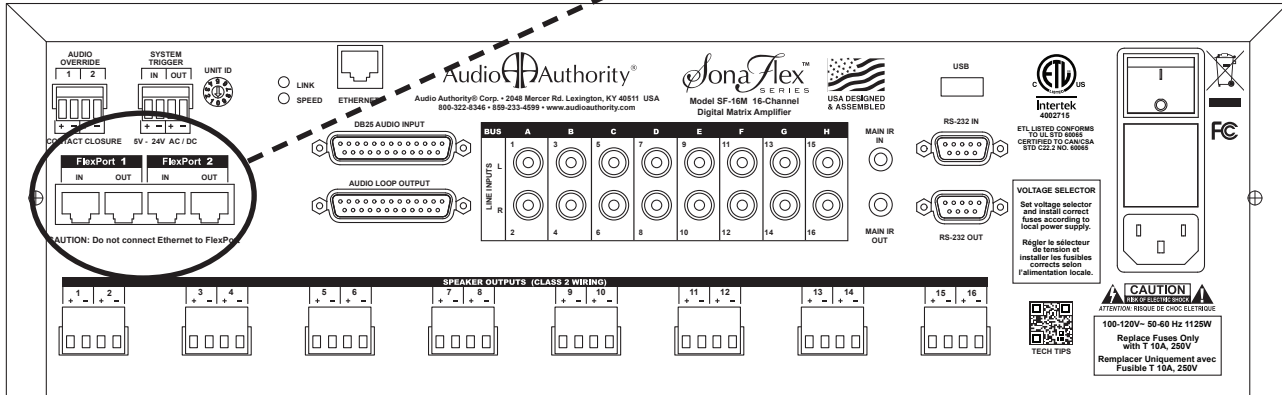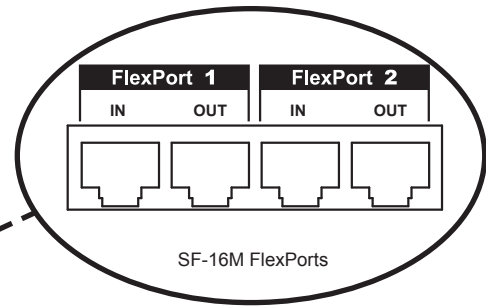
Category Cable Fabrication and FlexPort RJ-45 Pinout

It is recommended that all FlexPort bus wiring be configured using the EIA-568B standard pinout. Audio Authority cannot guarantee correct operation using any other wiring configuration. Pre-made network cables or site-fabricated cables may be used (EIA-562A or B standard). E-Z Cat 5 cable plugs are recommended. Always test Category cables with a network cable tester, not simply a continuity tester; cables must be paired correctly for proper functionality.

FlexPort Pinout:
(EIA-568B)

Pin 1: RS-485A
Pin 2: RS-485B
Pin 3: Audio Left +
Pin 4: Audio Right +
Pin 5: Audio Right –
Pin 6: Audio Left –
Pin 7: 18V
Pin 8: Ground
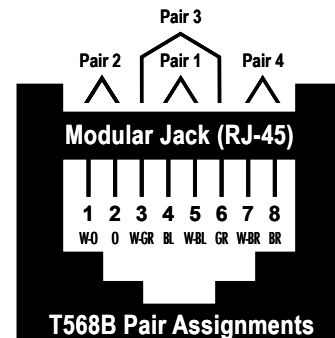
Troubleshooting Guide

Low volume	Check the mic/line dipswitch (FPM-X or FPM-B) when using a mixer or other line level source. The factory default setting is line level. If volume is still low, adjust the GAIN pot.
Poor sound quality	Make sure two transmitters linked on one bus are set to Mono 1 and Mono 2.
Override button does not function	Make sure Termination is on. For link, turn off Termination for the transmitter farthest from the SF-16M. Override must be set up using the setup utility; designate input, output, and priority.
No mic power	For microphones that accept phantom power, turn PWR Phant. ON.
Only one channel plays from stereo source	Check the CH. ASSIGN switch. If using linked configuration with stereo sources, use a stereo to mono adapter to hear both channels in mono.
Override button does not stay on when pushed	Turn off MOMENTARY/TOGL. dipswitch to activate the toggle function.

FlexPort Transmitter Specifications

S/N Ratio:	96dB
Channel Separation:	70dB(channel to channel @1kHz)
Input Sensitivity:	0.5Vrms
Input Z Impedance:	FPM-U: 20k Ohms, FPM-D: 75 Ohms, FPM-X and FPM-B: 2k Ohms
Accepted Bit Rates (FPM-D)	44.1, 48, or 96KHz
Dimensions (H x W x D):	4 x 1.65 x 3.65 including mounting tabs; 2.8 x 1.65 x 3.65 without tabs (inches)
Net Weight:	9.5 oz. (270g)
Shipping Weight:	12 oz. (340g)
Approvals	FCC
Warranty:	Two years, parts and labor

Limited Warranty

If this product fails due to defects in materials or workmanship within two years from the date of the original sale to the end-user, Audio Authority guarantees that we will repair or replace the defective product at no cost. Freight charges for the replacement unit will be paid by Audio Authority (Ground service only). A copy of the invoice from an Authorized Re-seller showing the item number, serial number, and date of purchase (proof-of-purchase) must be submitted with the defective unit to constitute a valid in-warranty claim.

Units that fail after the warranty period has expired may be returned to the factory for repair at a nominal charge, if not damaged beyond the point of repair. All freight charges for out-of-warranty returns for repair are the responsibility of the customer. Units returned for repair must have a Customer Return Authorization Number assigned by the factory.

This is a limited warranty and is not applicable for products which, in our opinion, have been damaged, altered, abused, misused, or improperly installed. Audio Authority makes no other warranties either expressed or implied, including limitation warranties as to merchantability or fitness for a particular purpose. Additionally, there are no allowances or credits available for service work or installation performed in the field by the end user.

This product has been tested by an accredited laboratory and meets theprovisions of FCC 47 CFR Part 15.

(b) Operation of an intentional, unintentional, or incidental radiator issubject to the conditions that no harmful interference is caused and thatinterference must be accepted that may be caused by the operation of an authorized radio station, by another intentional or unintentional radiator,by industrial, scientific and medical (ISM) equipment, or by an incidentalradiator.

(c) The operator of a radio frequency device shall be required to ceaseoperating the device upon notification by a Commission representative thatthe device is causing harmful interference. Operation shall not resume untilthe condition causing the harmful interference has been corrected.