Installation Guide

SonaFlex™ SERIES

SF-16M 16-Channel Digital Matrix Amplifier

Audio Authority®

C ETL US LISTED
Intertek
4002715

FC

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

(b) Operation of an intentional, unintentional, or incidental radiator is subject to the conditions that no harmful interference is caused and that interference 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 incidental radiator.

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

Audio Authority®

WARNING:

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

ATTENTION: RISQUE DE CHOC ELETRIQUE

The lightning flash within an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

The exclamation point symbol within the eight-sided shape alerts users to important operating and maintenance instructions in this booklet.

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- This product must be installed by qualified personnel.
- Do not open the cover—there are no user-serviceable parts inside.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Make sure there is enough space around the unit for cooling. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the grounding-type plug. If the provided plug does not fit into an outlet, consult an electrician for replacement of the obsolete outlet.
- Before plugging the unit into a power socket, please make sure you have selected the correct voltage.
- Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.
- Use only attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

AVERTISSEMENT:

Pour réduire les risques d’incendie ou de choc électrique, ne pas exposer cet appareil à la pluie ni à l’humidité.

ATTENTION: RISQUE DE CHOC ELETRIQUE

L’éclair terminé d’une flèche à l’intérieur d’un triangle indique à l’utilisateur la présence à l’intérieur de l’appareil d’une tension dangereuse non isolée ayant une amplitude suffisante pour provoquer une électrocution.

Le point d’exclamation à l’intérieur d’un triangle indique que des instructions de fonctionnement et d’entretien importantes sont detaillées dans les documents fournis avec l’appareil.

Le point d’exclamation à l’intérieur de l’octagone indique à l’utilisateur que des importantes instructions d’opération et d’entretien sont incluses dans ce document.

- Lire toutes les directives avant de mettre l’appareil en opération.
- Conserver les directives de sécurité et d’utilisation pour future consultation.
- Tenir compte des avertissements.
- Suivre les directives.
- Ce produit doit être installé par un personnel qualifié.
- Afin d’éviter tout risque d’électrocution, ne pas retirer le capot ou la couvercle. Aucune des pieces intérieures n’est réparable par l’utilisateur. Pour toute réparation, s’adresser à un technician d’entretien qualifié.
- Ne pas utiliser cet appareil près de l’eau.
- Nettoyer seulement avec un chiffon sec.
- Assurez-vous que la circulation d’air autour de l’ampli est suffisante. Les ouvertures et fentes dans le chassis sont prévues pour la ventilations de l’appareil. Ces ouvertures ne doivent pas être bloquées. Installer conformement aux directives du manufacturier.
- L’appareil doit être situé loin de sources de chaleur telles que des radiateurs, des registres de chaleur, des fourneaux, ou d’autres appareils produisant de la chaleur.
- Ne pas modifier le dispositif de securité de la fiche ayant une broche de mise à la terre. S’il est impossible d’insérer la fiche dans la prise de courant, contacter un électricien pour remplacer la prise de courant.
- Avant de relier votre SF-16M à la tension secteur, assurez-vous qu’il est réglé sur la tension adéquate.
- Les cordons d’alimentation devraient être disposés de façon à ce qu’on ne puisse pas marcher dessus ou qu’ils soient susceptibles d’être coincés par des articles placés sur ou contre eux. Une attention particulière doit être portée aux fiches, prises de courant, et aux points où ils sortent de l’appareil.
- Utiliser seulement les attachements et accessoires recommandés par le manufacturier.
- Débrancher l’appareil de la prise d’alimentation pendant un orage électrique ou une absence d’utilisation prolongée.
- Confier tout entretien à un personnel de service qualifié.
- Un service d’entretien est necéssaire quand l’appareil ne fonctionne pas normalement en suivant les consignes d’utilisation, quand le cordon d’alimentation ou sa fiche sont endommagés, quand des objets sont tombés dans l’appareil, quand du liquide y a été renversé, ou quand l’appareil a été exposé à la pluie ou à l’eau.

Installation and Operation Guide
SF-16M 16-Channel Digital Matrix Amplifier

Firmware version 1.5.0.

Table Of Contents

Warnings 4
Introduction 6
Panel Descriptions 7
Before You Begin 8
Connections 9
Control Interfaces (Using Ethernet, RS-232 and IR) 13
Operation and Basic Configuration (Front Panel Menu) 17
Advanced Configuration (PC Setup Utility) 22
Flexport Modules (Appendix A) 25
Updating Firmware (Appendix B) 27
Changing the fuse (Appendix C) 27
Serial and Ethernet Commands (Appendix D) 28
Specifications 32
Limited Warranty 32
System Planning and Connection Worksheet 33

Audio Authority®

Lexington, Kentucky www.audioauthority.com 800-322-8346

INTRODUCTION

SONAFLEX
• VIDEOS
• FAQ
• TUTORIALS
audioauthority.com/sonaflex_tips

The SonaFlex™ SF-16M is a unique blend of premium, multi-channel amplification, flexible input options, audio matrix switching, signal processing, and open control capability. Built and designed in the U.S. with A-V integrators in mind, the SF-16M offers a new approach to commercial and residential distributed audio applications. This manual covers basic and some advanced topics, but you can find more articles and video at www.audioauthority.com/sonaflex_tips.

Key Features

- Input matrix switching, signal processing and amplification in one unified system.
- 16 analog RCA inputs, plus two FlexPort™ inputs (two channels each) for a total of 20 mono (10 stereo) inputs.
- Optional Cat 5 FlexPort audio transmitters accept balanced line/mic, XLR, digital SPDIF, or analog RCA audio.
- 16 amplified outputs can be configured as mono, stereo or a combination of stereo and mono.
- Up to four SF-16M units can be linked together to form a 64-output audio matrix (*see page 16.*)
- Class-D amplification provides a conservatively rated 50 watts per channel, *all channels driven* into 8 Ohms - stable at 4 Ohms.
- Linear power supply delivers the warmth and musicality of an analog amplifier, combined with the responsiveness and headroom required for dynamic music content.
- Signal processing tools include high and low shelf filters (bass/treble), high and low pass filters and up to seven bands of parametric equalization per output.
- 10 preset sound scenes (a system-wide snap-shot of all volume and source settings) can be saved and recalled using IR, RS-232, or IP commands.
- 10 output “groups” allow multiple outputs to share commands like volume ramping, muting, and source selection.
- Compatible with virtually any control system using IP, RS-232, or IR – now featuring Control4 SDDP.
- Commonly used settings are accessible via the front panel controls and VFD display; advanced setup is performed via the PC Setup Utility* or IP/Serial commands (*see page 22.*)
- Power saving features include automute and turn off per output channel, and a system trigger input so that power management devices can put the SF-16M in standby when not in use.

FlexPort Cat 5 Audio Inputs

- Four compatible FlexPort audio modules: FPM-U Stereo RCA, FPM-D Digital Coax/Optical Audio, FPM-X Mic/ 1/4” TRS Audio and FPM-B Balanced Audio (*See Appendix A for detailed information.*)
- Provides a mixture of consumer and pro audio sources such as MP3 players, audio streaming devices, microphones, audio mixers, paging microphones and more.
- FlexPort modules can be located up to 500 feet away from the SF-16M giving flexibility in audio source placement.

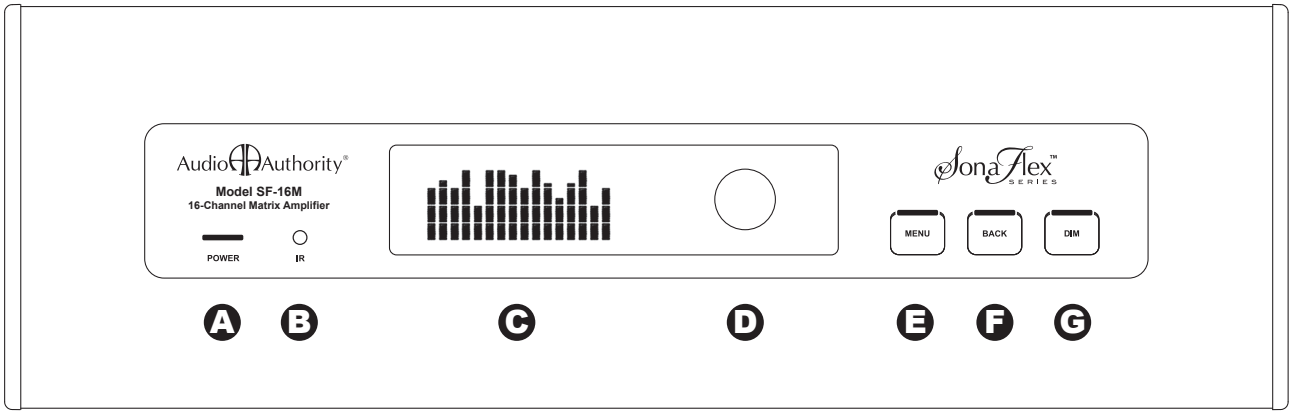
Control Interfaces

- IP (*see page 13*)
- RS-232 serial (*see page 13*)
- Two contact closure inputs to trigger audio overrides and sound scenes (*page 15*)
- Rear panel IR input (3.5 mm jack)
- Front panel IR sensor
- Front panel capacitive touch buttons and knob with vacuum fluorescent screen

SONAFLEX
• VIDEOS
• FAQ
• TUTORIALS
audioauthority.com/sonaflex_tips

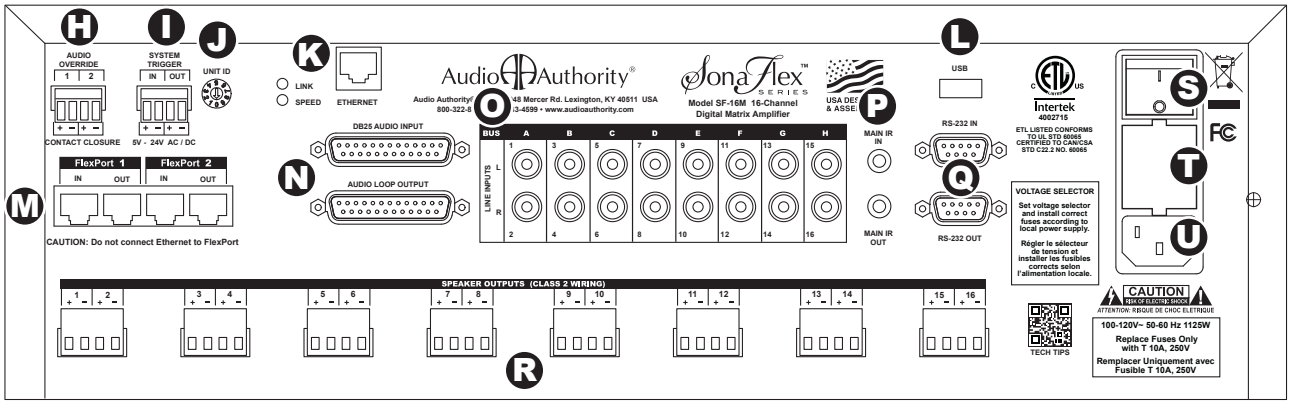
* The PC Setup Utility (free download) allows easy setup, but is not intended as a day-to-day user interface. *See online video tutorials for details*: www.audioauthority.com/sonaflex_tips.

FRONT PANEL DESCRIPTIONS



- **A** Power Light
- **B** IR Receiver
- **C** Display (VFD)
- **D** Control Knob
- **E** Menu Button
- **F** Back Button
- **G** Dim Button

BACK PANEL DESCRIPTIONS



- **H** Audio Override Triggers 1 & 2 (Contact Closures)
- **I** System Trigger In & Out (5V - 24V AC / DC)
- **J** Unit ID Switch for multiple unit operation (*p.16*)
- **K** Ethernet Connector with Link/Speed Indicators
- **L** USB Connector (to update firmware and save settings)
- **M** FlexPort Audio 1 & 2 In/Loop Out (*p.10*)
- **N** DB-25 Audio In/Loop Out (*p.9*)
- **O** RCA Stereo/Mono audio inputs (*p.9*)
- **P** 3.5 mm Main IR In/Loop Out (*p.12*)
- **Q** DB-9 RS-232 In/Loop Out (*p.12*)
- **R** Stereo and/or Mono Speaker level Outputs
- **S** Power Switch
- **T** Fuse Compartment (*p.27*)
- **U** Power Cord Input

BEFORE YOU BEGIN

SONAFLEX
• VIDEOS
• FAQ
• TUTORIALS
audioauthority.com/sonaflex_tips

- Confirm that nothing is missing from your shipping carton. Refer to Carton Contents on page 5.
- Record the serial number (*see rear panel*) in the space provided on the back cover of this manual.
- Activate your warranty and get firmware update notifications: www.audioauthority.com/register.
- Read this instruction manual to become familiar with the configurations and functions of this product.

Essential Steps

1. Choose a control method
   - If you plan to use the front panel for control, continue to step 2 below.
   - If you are using a third party controller skip to page 12.
2. Plan the system (*see worksheet, page 33*)
   - List all of your audio sources
   - Divide the house or building into Zones (*see page 11*)
   - Decide how many speakers each Zone requires
   - Choose stereo pairs and/or mono speaker locations
3. Basic setup (front panel - *see page 17*)
   - Set stereo and mono inputs and outputs
   - Add outputs to Zones (*see page 19*)
   - Enter source and Zone names
4. Connect sources and speakers (*see page 9, 11*)
5. Set up advanced features (*see page 22*)
   - Groups, Sound Scenes, and Overrides
   - Triggers and contact closures
   - FlexPort Transmitters

Carton Contents

- SF-16M Amplifier
- Power Cord
- Rack ears (*see below*)
- Ferrite beads (*see page 15*)
- DB-25 (*see page 9*)
- Phoenix Connectors (x 8) Pre Pack pn:903-154
- User manual

Other Materials You May Need

- Cables: Ethernet, serial, RCA, and speaker
- Infrared receiver
- Third party programmable remote control
- USB 1.1 or USB 2.0 compliant drive (FAT 32)
- PC for advanced setup (Mac or Windows)

Rack Mounting
The SF-16M is designed so that it may be installed either on a shelf or in a standard 19-inch equipment rack. If rack mounting, remove the feet and the cover screws adjacent to the front panel of the unit. Reuse the cover screws to mount the rack adapters supplied with the SF-16M. Be sure to place a spacer under the adapters at every screw location. Secure the SF-16M to the rails of the equipment rack with the screws supplied. Use appropriate chassis supports, such as Middle Atlantic CSA Series, especially when transporting a loaded rack.

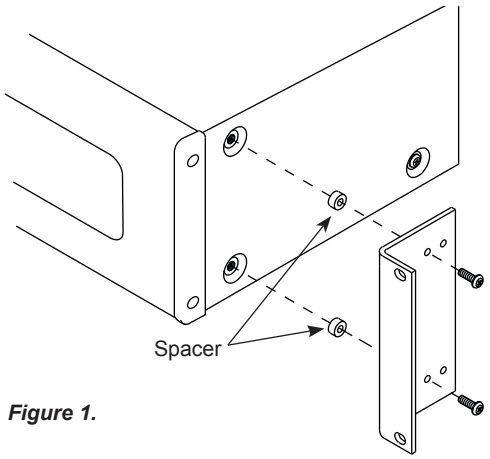


Figure 1.

CONNECTIONS - Source Inputs

RCA Line Inputs

The SF-16M includes 16 RCA audio inputs that can be configured as mono, stereo or a combination of both mono and stereo. *Figure 1* provides examples of all configurations.

NOTE: Specify input configurations using the PC Setup Utility (page 22) or the front panel menu (page 17.)

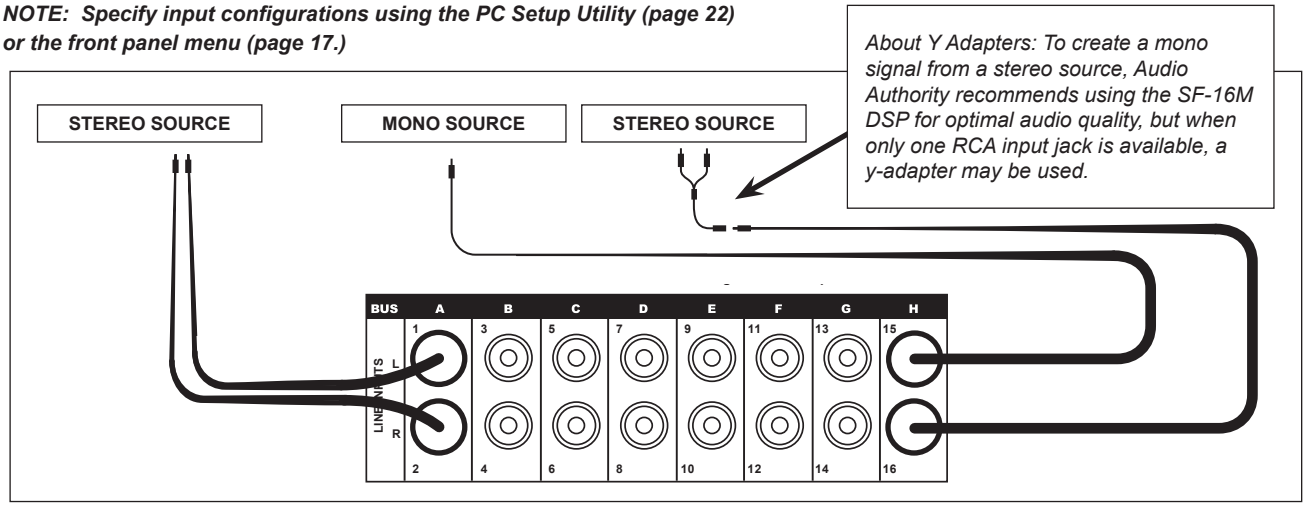


Figure 1. Any Stereo input may be converted to two mono inputs using PC Setup Utility or Front Panel Controls.

DB-25 Audio Connections

SF-16M units may be linked together to create systems up to 64 outputs (*see page 16 for hookup details.*) The DB-25 ports streamline this type of expansion, and also serve as a connection from other Audio Authority matrix systems.

1. **Source audio link between SF-16M units:** When multiple SF-16M units are linked together, the DB-25 audio input receives source audio from the DB-25 audio loop output of the previous SF-16M. The source audio originates from the RCA audio inputs or the DB-25 audio input of the first SF-16M chassis (*Figure 3*).
2. **Direct input from an Audio Authority audio matrix:** The SF-16M may serve as an amplifier for Audio Authority audio matrix switchers such as the ADX-0808/ADX-1616 and the HLX 2278 audio output card (*Figure 4*). In this scenario, the SF-16M receives all audio content from the ADX or HLX and passes the audio through to the amplified outputs. The HLX or ADX provides all of the matrix switching. (*See Figure 3 below.*) If the volume levels will be controlled from the HLX or ADX matrix, turn up all SF-16M outputs to maximum volume (-0dB.)

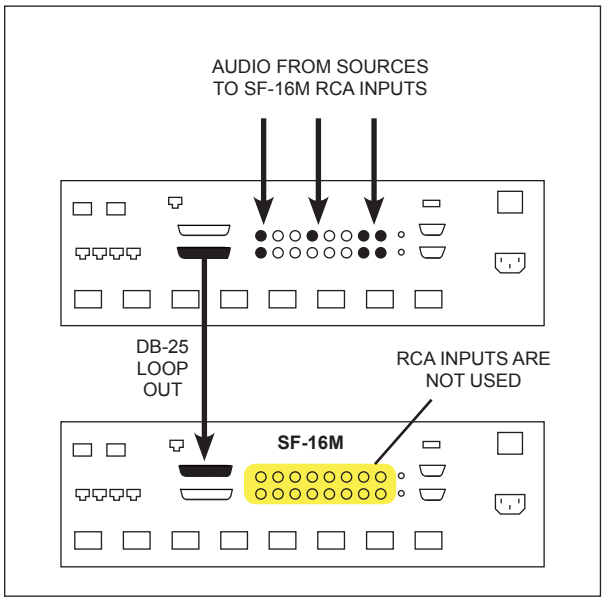


Figure 3.

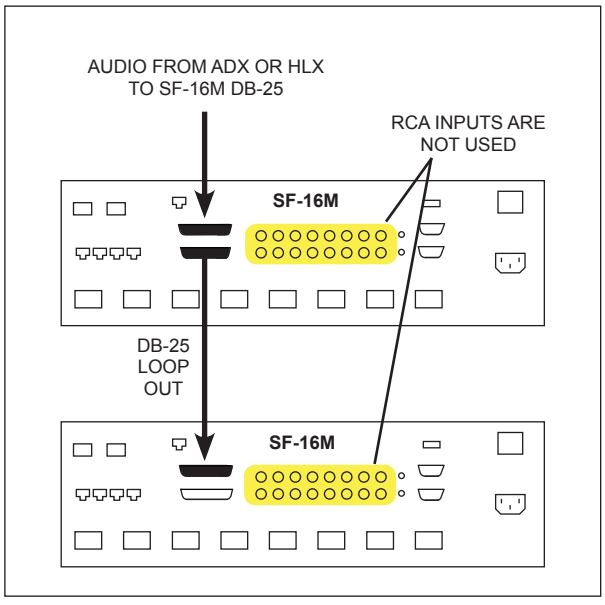


Figure 4.

FlexPort Cat 5 Audio Inputs

The SF-16M includes two FlexPort Cat 5 inputs that accept a variety of pro and consumer audio sources via optional FlexPort audio modules. *See Appendix A for a detailed overview of all FlexPort modules and system configuration*.

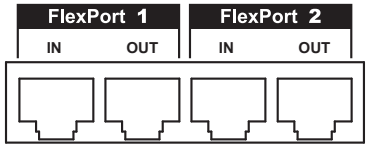
FlexPort module options include:

FPM-B Balanced line/mic with phantom power

FPM-X XLR/ 1/4" TRS with phantom power

FPM-D Digital optical/coax

FPM-U Analog RCA



SF-16M FlexPorts

Figure 5.

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 mono inputs per FlexPort bus)
- **RS-485 data pathway** - provides 2-way communication between the SF-16M and all connected FlexPort modules
- **18V power** - provides power for two FlexPort modules on a single bus

Daisy Chain 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 daisy chained together for a two mono source setup. In daisy chain configurations, it is required to assign one module as "Mono 1" and the other module as "Mono 2" using the dipswitches located on the back of the FlexPort modules. *See Appendix A for more information*. *Figure 6* below illustrates a daisy chain configuration.

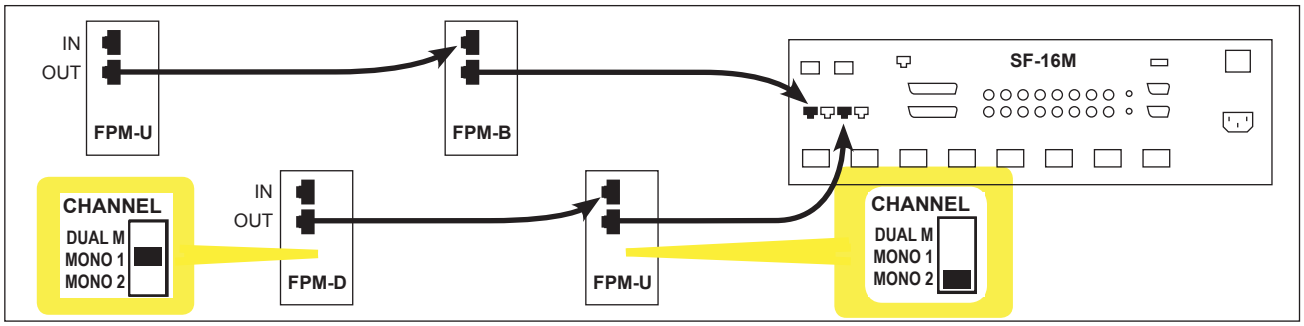


Figure 6.

Single FlexPort Module Connection For One Stereo or Dual Mono Input

When connecting a single FlexPort audio module to a FlexPort bus input (*See Figure 7 below*) it is necessary to configure the audio modules as shown below.

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.

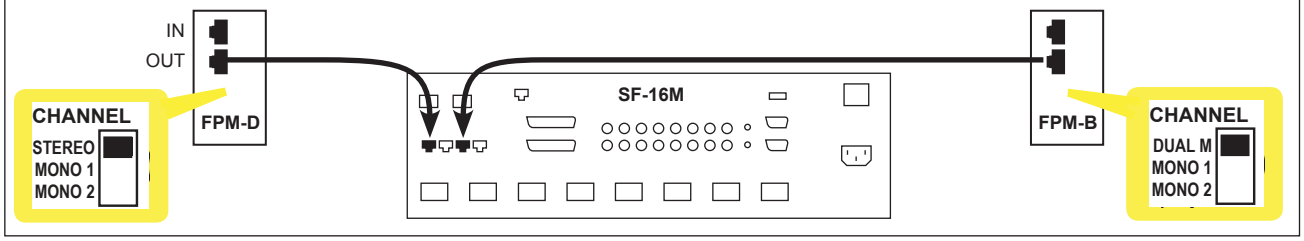


Figure 7.

Speaker Outputs

Factory default for all 16 amplified speaker outputs is mono, 50% and muted. During installation and testing, set all outputs at a reasonable volume. Outputs can be configured as mono, stereo or a combination of both mono and stereo.

Speakers and Impedance

Each amplfier output of the SF-16M can support a 4 Ohm speaker load. In many cases only one speaker is connected per amplifier output, so any single speaker with a 4 - 8 Ohm impedance rating is acceptable for use with the SF-16M. Two 8 Ohm speakers can be connected in parallel onto a single SF-16M amplifier output without sacrificing performance (*Figure 8.*) Do not connect multiple 6 Ohm or 4 Ohm speakers to one SF-16M output, and do not connect multiple speakers wired in series.

Speaker Impedance	8Ω	6Ω	4Ω
Max # of speakers per SF-16 amp output	2	1	1

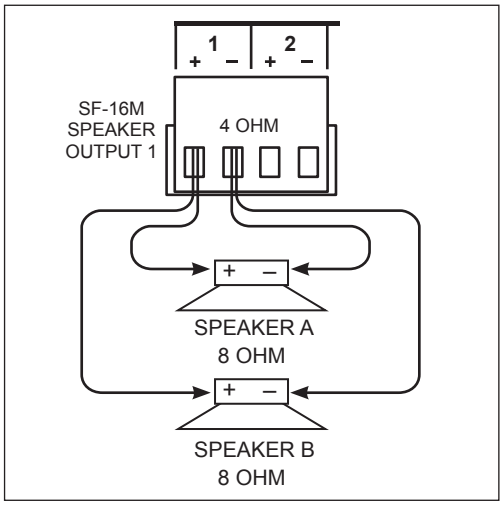


Figure 8. *- Parallel 8 ohm speaker wiring*

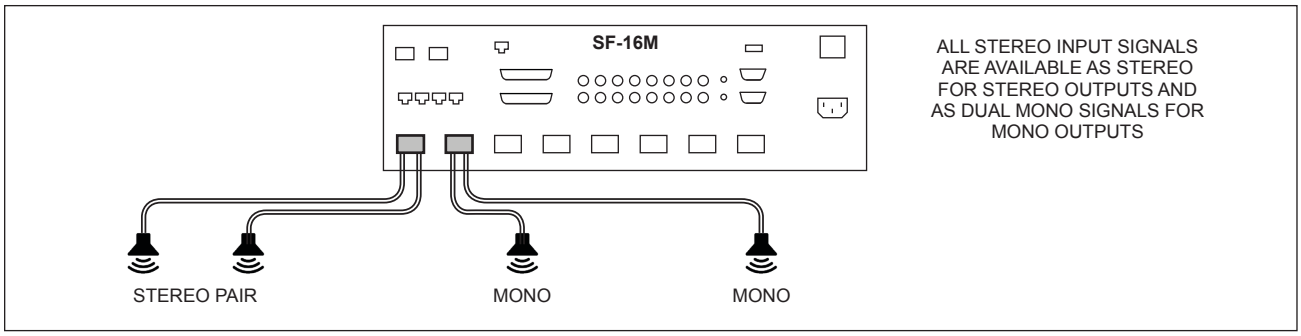


Figure 9.

Mono and Stereo

SonaFlex speaker outputs can be designated mono or stereo as appropriate to their location and use. Most speakers in whole-house audio or commercial audio should be mono, since there is no real sound stage that would justify stereo output. This allows more flexibility in speaker placement, especially in small rooms where two speakers would be excessive. When speakers are used with a TV, stereo may be a good option. SonaFlex Zones can contain both stereo and mono speaker outputs. *See page 20 for more about using Zones*.

SONAFLEX
Mono vs. Stereo
Video Presentation

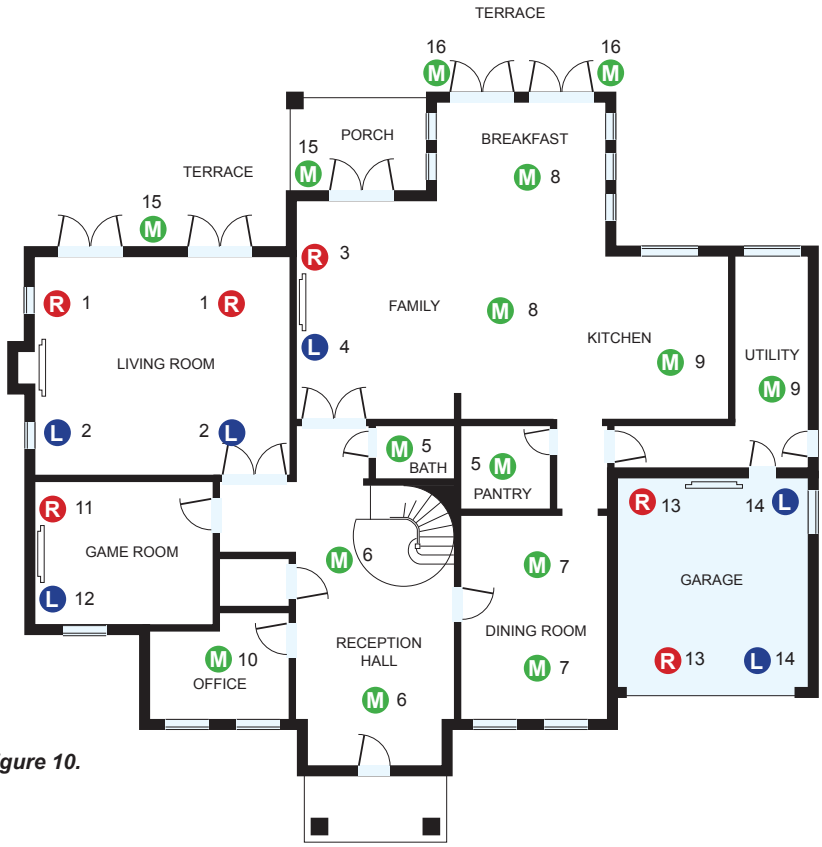


Figure 10.

Third Party Control

If you are using a third party controller, you may use the worksheet on page 33, but you do not need to set up the Zones (*see page 20*). Connect sources and speakers (see page 9, 11) and set up advanced features as needed (*see page 20*). Three methods of system control are possible, listed here in recommended order:

1	Third party serial controller	DB-9 RS-232 port	Most reliable, all functions available, customized
2	Third party telnet controller	RJ-45 Ethernet port	Very reliable, all functions available, customized
3	Third party IR controller	3.5mm IR port	Most functions available, customized

RS-232 Port

The DB-9 RS-232 port of the SF-16M can be connected to virtually any third party RS-232 controller (*Figure 11*). Allows 2-way communications for control and feedback. Download the serial command set from our website.

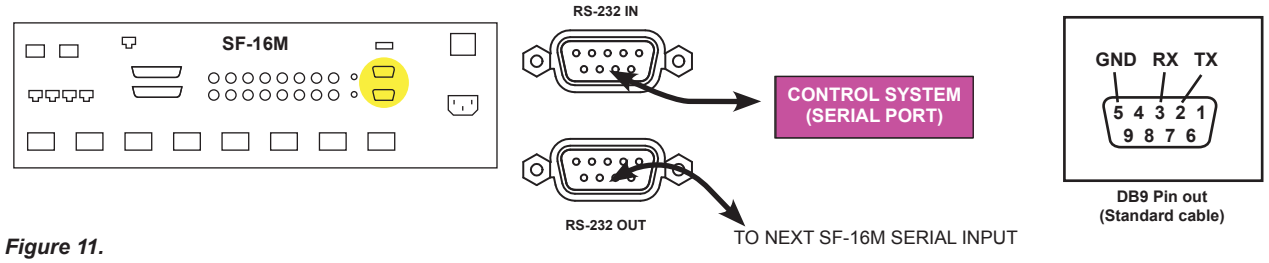


Figure 11.

Ethernet Port

The SF-16M Ethernet port connects to any standard Ethernet router/switch (*Figure 12*). By default DHCP is enabled on the SF-16M. SDDP is enabled for seamless integration with Control4 systems. It is often convenient to turn DHCP on to connect automatically to a DHCP network for initial setup. Once the SF-16M is installed, use a static IP address and turn DHCP off. Download the Ethernet command set from the SF-16M product page on our website.

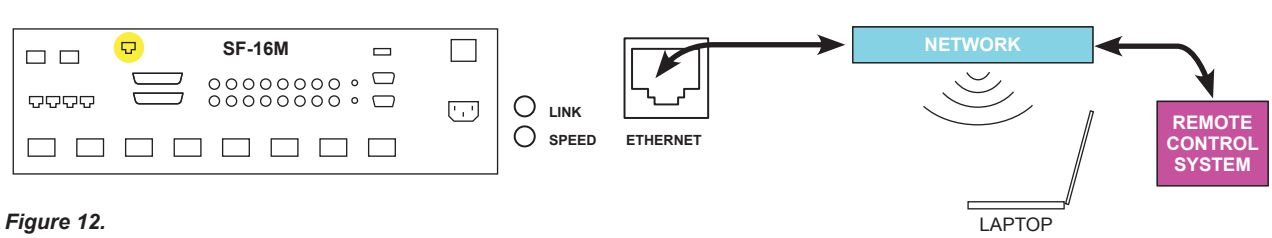


Figure 12.

IR Port

The 3.5mm “Main IR In” connects to any third party IR controller using a mono 3.5mm cable (*Figure 13*). A comprehensive list of available IR commands for the SF-16M is available in spreadsheet format. Download the hexcode/IR command set from the SF-16M product page on our website.

SONAFLEX
IR COMMANDS
audioauthority.com/sonaflex_ir_tips

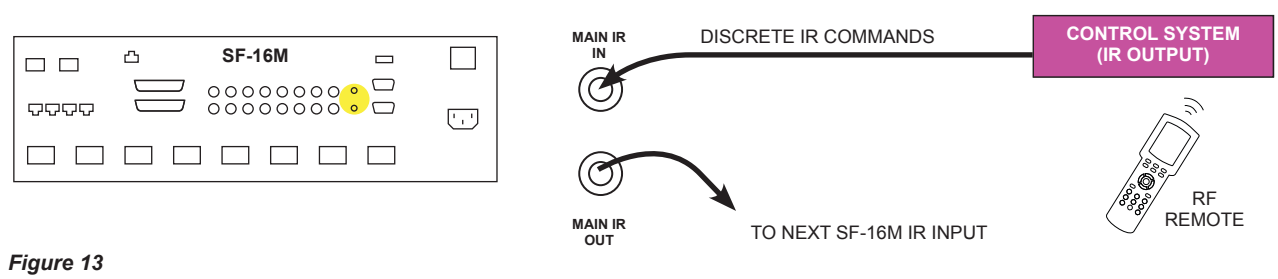


Figure 13

CONTROL INTERFACES

Operate the SF-16M using a professional automation control system. Its open-control architecture allows any third party automation controller to use serial or Ethernet commands to control volume, EQ, switching, overrides, sound scenes, or any other function programmed into the controller. IR controllers are adequate for many basic installations.

Control Interface Capabilities

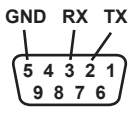
All commands are available on RS-232, but other control methods are limited as shown. The SF-16M PC Setup Utility (not shown) is the best setup method for advanced tasks, but is not intended as a user interface.

	RS-232	Ethernet	Infrared	Front Panel
Source selection per output	X	X	X	X
Output volume, mute & tone control	X	X	X	X
Parametric EQ, hi-pass/low-pass filters	X	X		X
Lock front panel interface	X	X		
Change Ethernet settings	X	X		
Upgrade firmware				X
Group, scene and override creation	X	X		
Group, scene and override control	X	X	X	X

Using Serial and Ethernet
Follow the instructions for the controller of your choice using the serial settings below, and/or Ethernet settings accessible via the SF-16M front panel menu. Commands (*see page 28 and website*), are used for IP or serial control. Control4 SDDP is available for seamless Ethernet integration.

The internal SF-16M telnet server allows two clients to be connected at one time. Each client connection has a time out of 15 minutes; if a client crashes and does not close the connection properly (sending an EOF command) that connection remains busy until it times out. Serial commands are located on our website: www.audioauthority.com/sonaflex_tip2.

Using the RS-232 Port
System controllers and PCs send all setup and control commands as well as receive feedback via the RS-232 serial port. Important: If a PC is connected directly to the SF-16M RS-232 port, use a *standard* serial serial cable (male to female) for RS-232 input, and to loop out to the next SF-16M, if multiple SF-16Ms are included in the system.



DB9 Pin out (Standard cable)	Pin 2, Tx
	Pin 3, Rx
	Pin 5, Ground
	Shell, Ground

Transfer Rate	9600 bps
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None or Off
Character type	ASCII
Connector	DB-9
Electrical Rating	Pins 2 and 3, ±15 VDC

Figure 14.

Using a PC via Ethernet

Connect a computer directly to the SF-16M Ethernet port using a crossover cable, or alternatively use a standard Ethernet hub or switch and a standard patch cable. To use static settings, *see the detailed instructions on page 14*.

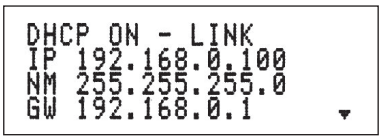
There are two LED indicators next to the Ethernet port on the rear panel that will help identify connection issues:

- Link - The Link LED is steadily lit if a connection is detected and flashes when activity is present.
- Speed - The Speed LED is off for 10 base T, and on for 100 base T.

Using DHCP
DHCP is enabled on the SF-16M by default. If DHCP is enabled on your network, simply connecting the SF-16M to the network with an existing DHCP server enables it to obtain all necessary information. You can enter a static IP and turn DHCP off after initial setup is finished.

Static Addressing Connected Directly to a PC
Assign an IP address to the SF-16M which will not conflict with the PC.

- Windows 7: Control Panel > Network and Sharing Center > Change adapter settings > Local Area Connection (or Wi-Fi adapter) > Details
- Windows XP: control panel > network > local connection properties



SF-16M screen image showing Network Settings with DHCP set to ON, with a link

Change the TCP/IP protocol properties, and set the IP address, gateway, and subnet mask, if they are not already set. This can be arbitrarily done on a direct connection, but a good choice for the settings would be IP address of **192.168.0.1**, subnet mask of **255.255.255.0**, and an empty default gateway. Once these values have been set, use serial commands to set the network settings of the SF-16M in a similar manner, but use a different IP address than that of the computer (for example, 192.168.0.2).

Static Addressing on a Network
The SF-16M must be set to the same settings as the PC except for the IP address, which must be one available on the network. To determine this in Windows, use the DOS prompt (Start->Run->cmd) commands ipconfig and ping. Ipconfig will list the PC's settings, and ping will allow you to test addresses to make sure that nothing else on the network has that address. Enlist the help of a network administrator if you are unfamiliar with setting up a network connection.

Once a connection is established, a Telnet program such as Hyper Terminal, Tera Term, PuTTY etc, must be used to connect to the device. Enter the IP address of the SF-16M and leave the default port (23) to connect. Once connected, standard serial commands can be issued in an identical manner to serial control.

Using an IR Control System

The SF-16M uses a two wire IR circuit. It is imperative that the correct polarity be maintained when connecting third party IR equipment. The 3.5MM pinout is shown in the illustration below (*Figure 15*).

Connect the IR signal from your IR controller directly to the main IR input port on the rear panel. Alternatively, adhere an IR emitter from your infrared system onto the SF-16M front panel receiver.

If the SF-16M IR codes are available from your remote control company, download and/or activate those files. A CCF file containing the latest codes can be downloaded from our website on the SF-16M product page.

Tips for Using Infrared Control

- If you are using standard hand-held IR remote controls, ensure correct operation by avoiding sources of light pollution such as Plasma and LCD TVs, direct sunlight, fluorescent light, etc. Experiment with the physical placement of the IR receiver to avoid interference.
- If a source of interference cannot be eliminated or avoided, use IR receivers that block that type of interference, such as Plasma-proof or LCD-proof receivers.
- The SF-16M back panel IR input provides no power, and therefore requires a connecting block if used with an IR receiver.
- The loop out to another unit or device is compatible with a mono or stereo 3.5mm patch cable.

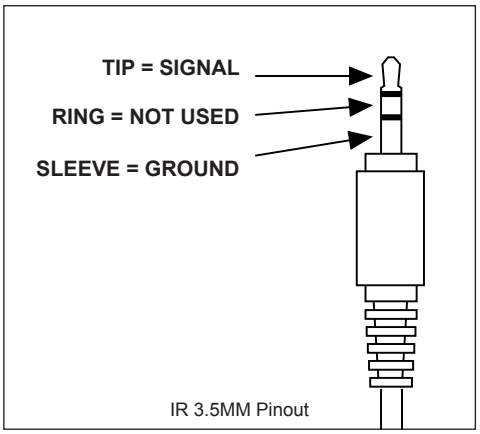


Figure 15.

SF-16M - Audio Override (Contact Closure)

The SF-16M provides two “Audio Override” contact closure inputs, which allow pushbuttons, partition wall contacts, and other contact sensors to trigger the system. Audio override provides a convenient method of temporarily switching to an alternate audio input when a sensor is triggered. Learn more: www.audioauthority.com/sonaflex_tips.

A practical example of this feature is a conference hall with movable partition walls (*Figure 16.)* The speakers in the room normally play background music from a satellite radio receiver. A push-button triggers Override 1 which is programmed to toggle speaker outputs for both rooms between background music and the Microphone 1 input. When the partition closes to create individual rooms, a partition wall contact closure (Override 2 in the example) triggers the SF-16M to switch the speakers in Room B to microphone 2. When the partition wall opens, the SF-16M returns to its default audio input.

SONAFLEX
- VIDEOS
- FAQ
- TUTORIALS

audioauthority.com/sonaflex_tips

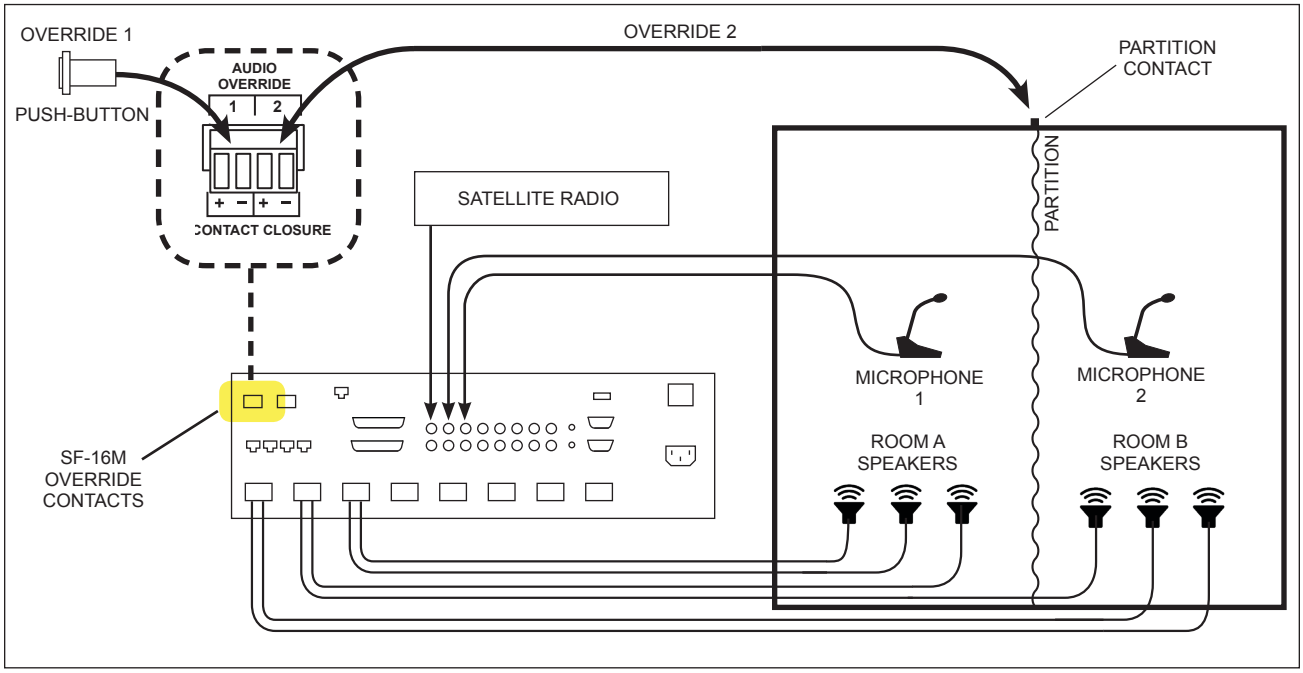


Figure 16.

NOTE: In order for Audio Override to function, all settings must be programmed using the PC Setup Utility. Learn more: www.audioauthority.com/sonaflex_tips.

Standby and System Trigger

By default, the SF-16M enters standby mode when it cannot sense audio on its inputs; it wakes from standby when it receives audio input. The System Trigger contacts on the SF-16M allow equipment such as A-V receivers or power managment devices to put the SF-16M in standby to conserve energy.
To use the System Trigger:

1. Enable “Audio Sense + Trigger” via front panel controls (*see page 18*), PC Setup Utility or serial command (*see page 31.*)
2. Make system trigger connections as illustrated in *Figure 17*.
3. Power the SF-16M, then test the power management system.
4. A high-to-low voltage transition on the trigger input puts the SF-16M into standby mode; a low-to-high voltage transition wakes the unit from standby.

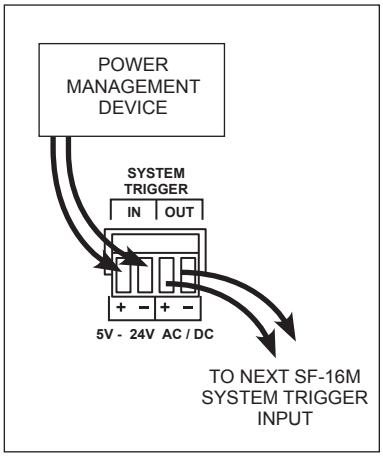


Figure 17. *System trigger (5V-24V AC/DC)*

Ferrite Beads

If System Trigger or Override terminals are used, attach a ferrite bead (included in SF-16M carton) around the wires near the terminal. Apply separate ferrite beads to Override and System Trigger wires.

SF-16M - Connecting Multiple SF-16M Chassis

Up to four SF-16M units can be linked to function as a 64 output system. In *Figure 14*, the maximum number of input channels is 20; 16 inputs via RCA or DB-25, and four shared FlexPort channels. Units are linked using the loop out connections for FlexPort Audio, DB-25 Audio, IR, Serial and System Trigger inputs. Set the Unit ID as shown, incrementing from top to bottom. All SF-16M units can share the Unit 1 FlexPort inputs, as shown, or each unit can have independent FlexPort inputs, increasing the total number of inputs to 32 (four FlexPort channels per SF-16M unit.)

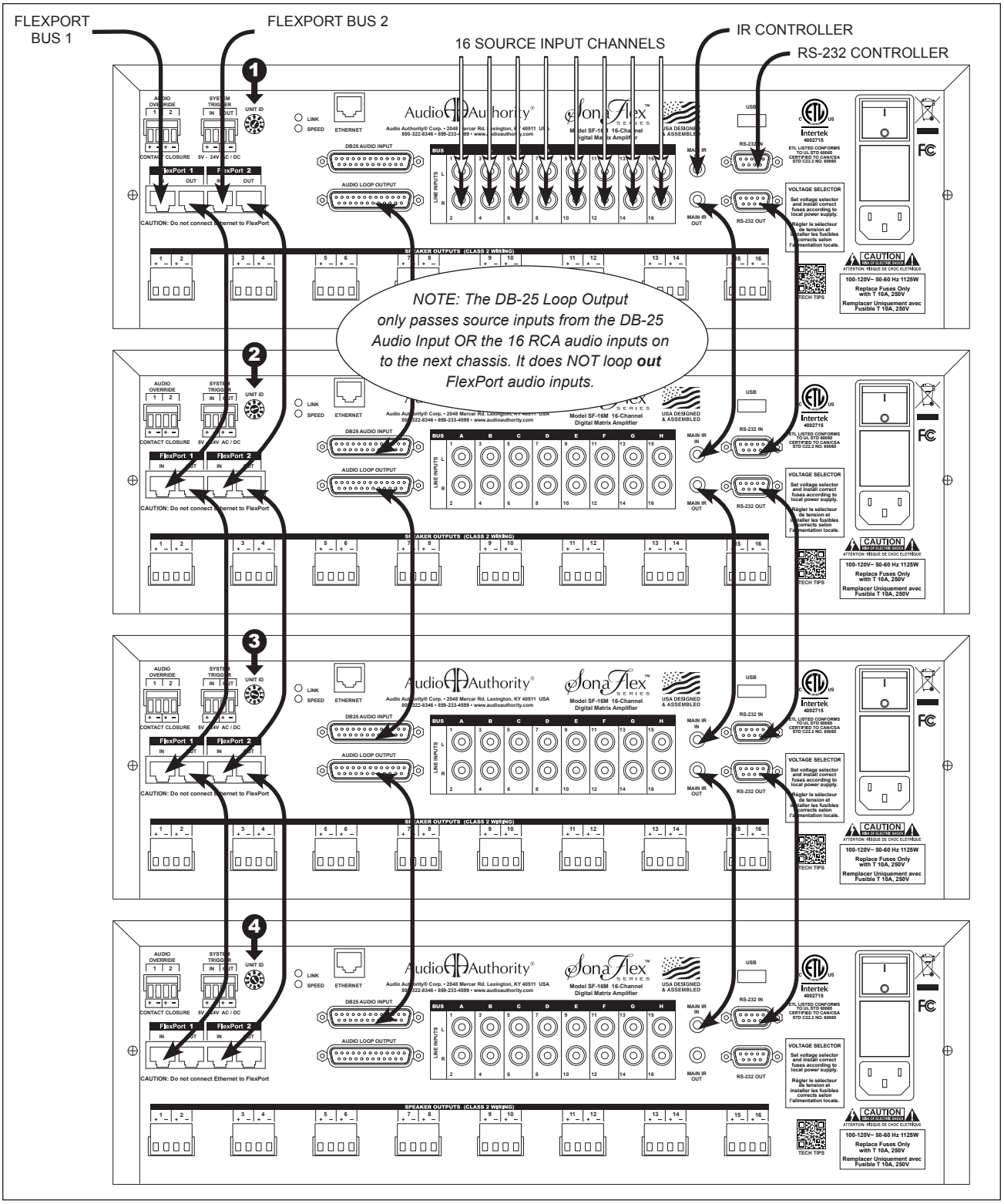


Figure 18.

CONFIGURATION

Perform basic setup via the front panel controls (*Figure 19*); the best way for any advanced configuration is the PC Setup Utility (*see* www.audioauthority.com/sonaflex_tips), but all settings can also be adjusted via Ethernet or serial commands with a program such as Hyper Terminal from a PC.

SONAFLEX
- VIDEOS
- FAQ
- TUTORIALS

audioauthority.com/sonaflex_tips

Using the Front Panel

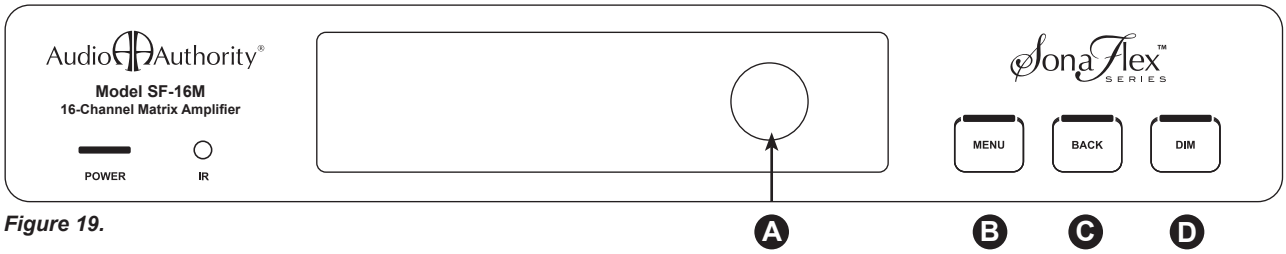


Figure 19.

Multi-Function Knob A
The multi-function knob can scroll (clockwise or counterclockwise) and select or de-select (press in). The open arrow ❯ symbol is displayed when scrolling through menu items. Once an item has been selected (press the knob), the arrow fills in ▶. Turn the knob to adjust the value. Press the knob again to de-select the menu item and scroll to the next item.

Menu Key B
Press the menu key for access to the main menu (*Figure 20*). Zone Control, System Control, Source Setup, Zone Setup, System Setup.

Back Key C
Press Back to return to a previous screen. Pressing the back button repeatedly eventually returns to the top of the main menu.

Dim Key D
Toggles through four brightness levels for the display and key lights. After a set period of time (adjustable using the front panel or the SF-16M PC Setup Utility), the display enters a screen saver mode (dark.)

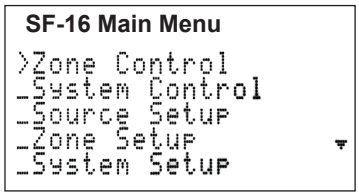


Figure 20.

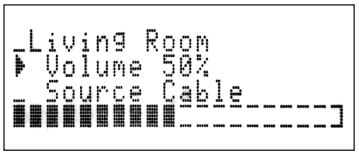


Figure 21.

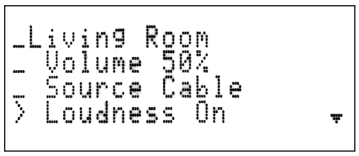


Figure 22.

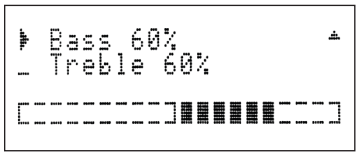


Figure 23.

Main Menu

The main menu contains basic control and setup options. Many commands are available only through serial or Ethernet control. See the serial command list for more information (*page 28*).

Zone Control

Zone Volume Control - The volume bar is available when you select the line (*Figure 21*). This display is a level from 0 to 100%. To set an output to a specific volume, press to select and rotate the knob to increase/decrease, then push the knob. This adjustment only activates after you push the knob.

Zone Source Control - Select a source in the Zone and push the knob to activate.

Zone Loudness Control - Loudness status (*Figure 22*). Loudness is a 5 dB bass and treble boost. It is intended to enhance audio for listening at low volume levels. Loudness uses low shelf and high shelf filters at 200 Hz and 3000 Hz respectively.

Zone Bass and Treble Control - Control Zone bass (*Figure 23*) and treble +/- 100% in a Zone.

> **Tip: Adjusting Levels**
> To change volume levels, bass, treble, etc., select the item and turn the knob to reach the desired level on the bar graph provided. Press the knob again when finished.

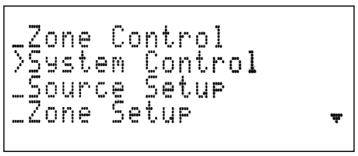


Figure 24.

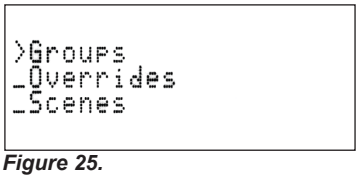


Figure 25.

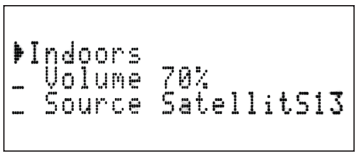


Figure 26.

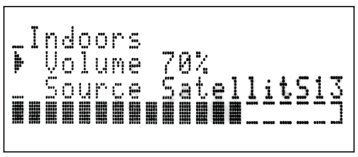


Figure 27.

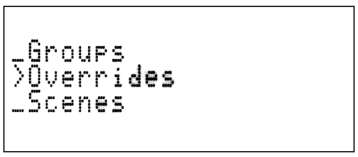


Figure 28.

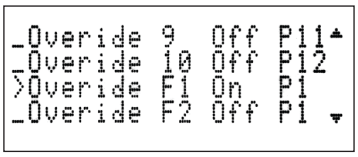


Figure 29.

SONAFLEX
- VIDEOS
- FAQ
- TUTORIALS

audioauthority.com/sonaflex_tips

System Control

Allows control of Groups,Overrides and Sound Scenes (*Figure 24*).

Groups

Groups are a collection of Zones (*Figure 26*) that can be controlled simultaneously using Group volume and Group switching commands, etc. If you have several Zones that are a member of the Group, you can adjust their settings individually, but when a Group command is issued, all member Zones respond (*See page 20 for more details*).

Override

An Override is a command that temporarily switches a number of designated outputs to an input, and when the Override is released, all outputs return to previous inputs.

An Override sets a specified volume level for each output, and if the output is muted or powered off, will unmute or power on appropriately. Output volume levels can be adjusted while an Override is active, but the level will be reset to the override settings next time the Override is activated.

Each Override has a priority setting (*Figure 29*) that dictates whether it effects outputs already in override. Priority 1 is the highest. Example (*Figure 30*): A music source Override with priority 5 would be interrupted by a doorbell Override with priority 4. Once the doorbell Override is released or cancelled, the music source will be re-enabled.

When all Overrides are released, then all outputs return to their original input sources and volume levels that were active before the override.

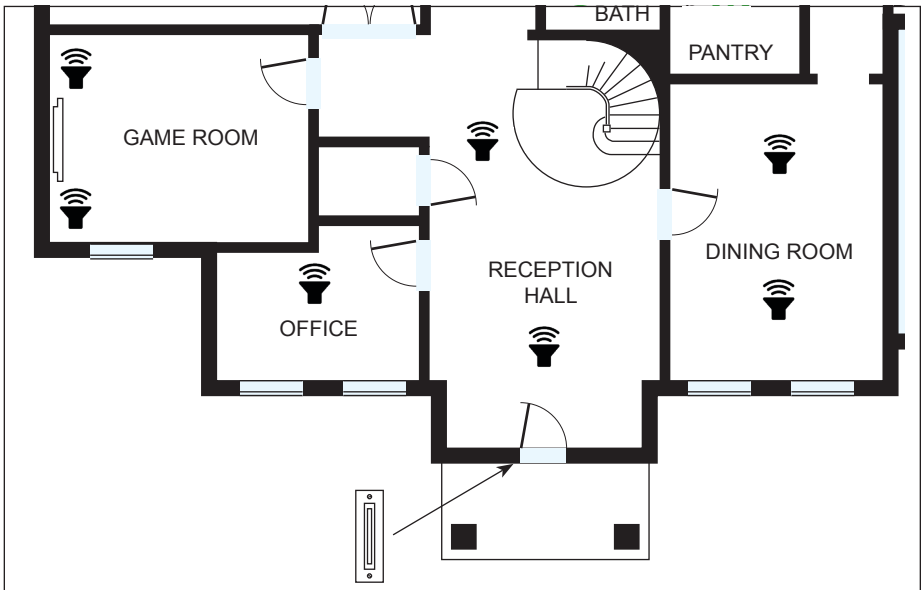


Figure 30.

General Setup Tips

- Each input and output can be set up as stereo or mono, but the easiest way to keep track is by counting each input or output as a numbered channel, 1-16. Use the odd numbered channel to refer to a stereo input (skip the even numbers.)
- Be sure to record input names and stereo or mono status; a worksheet is provided on page 33.
- Do not connect RCA *and* DB-25 input cables at the same time; it may degrade audio quality.
- Audio Override terminals provide a way to trigger an override or a sound scene. Connect a momentary switch, button, or other contact closure. Use the SonaFlex PC Setup Utility to define sound scenes and overrides (*see video tutorials at* audioauthority.com/sonaflex_tips.)
- Observe correct polarity when connecting system trigger input or output (e.g. a preamp out which sends out a +12V signal when on, and 0V when off.)

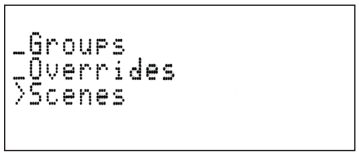


Figure 31.

For Each Member Output, A Sound Scene Preset Remembers:

- Current volume level
- Mute status
- Power status
- Current input

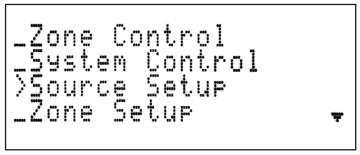


Figure 32.

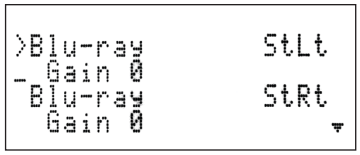


Figure 33.

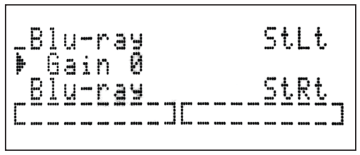


Figure 34.

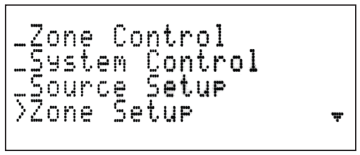


Figure 35.

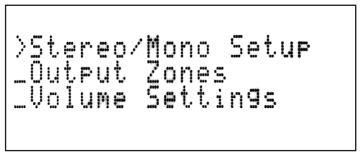


Figure 36.

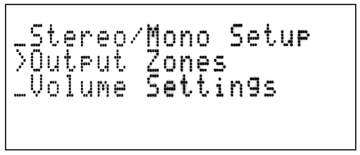


Figure 37.

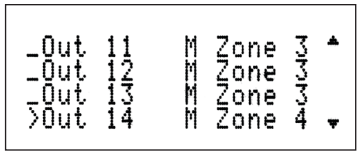


Figure 38.

Scene Presets
A Scene Preset is a “snapshot” of the current state of the system (volume, inputs, mute, and power status). When you recall a Scene Preset these settings return to just the way they were when the preset was saved. Create a Scene Preset by sending a snapshot command (www.audioauthority.com/sonaflex_tip2) via Ethernet or serial. You can also build or edit a scene preset using the PC Setup Utility (*see page 22 and video tutorial.*)

When you send a snapshot command to save a Scene Preset, all outputs are included as members of that Scene, but it is possible to disable outputs from a Scene membership or to add them manually using serial/Ethernet commands or the PC Setup Utility.

Line 1: Scene number and name.

Line 2: Select this line to recall and activate the scene. Status is not indicated here because a scene is not activated and then “released” like an override.

Line 3 and Following: Outputs belonging to the Scene Preset, aka “members”.

Note: A scene “snapshot” command saves the current volume/input, so if you have an override activated, the override input and volume level will be recorded in the scene preset.

Source Setup

Sources
Set source as stereo or mono.

Gain
Set source gain +/- 100%.

How to Adjust Source Input Gain
Adjust input gain so that all input sources are approximately the same volume. Tip: It is usually best to *trim* the “hot” inputs, rather than boost low ones; too much digital gain can sometimes introduce distortion with a hot input signal.

1. Access Source Settings and select the source, then choose the Gain so that you can see level.
2. Connect all outputs to the first source, and if it has a volume control, turn it up to maximum.
3. Look at the live input level; if it is clipping, turn the input device down until it is just barely clipping (shown by an asterisk at the end of the bar).
4. If the level is low, turn up the SF-16M input gain, just until it clips.
5. If the device has no output volume control and it is clipping, turn the gain down.

Zone Setup

Allows Zones to be configured for stereo/mono, and set Zone volume settings.

Stereo/Mono Setup
This shows Zone stereo/mono status. Any output can be mono or stereo. A stereo output pair connects to a stereo input pair or a mono output to stereo input pair. The mono output connects to a “summed” version of the stereo input pair (digitally combined to mono).

How to Create and Use Zones
Zones are designed to simplify front panel control. Do not use Zones if you are using a third-party control system. Each SF-16M can have up to eight Zones if all outputs are stereo, or 16 Zones if all outputs are mono. Using the front panel, assign each speaker output to a Zone as shown in *Figure 38*.

Set Up Zones and Groups

Zones and Groups are useful for front panel control of SonaFlex speaker outputs – they are not compatible with third party controllers, which have their own methods of controlling multiple outputs at once. Each Zone may contain one or many speaker outputs, which can be mono and/or stereo. Zones may not overlap. Groups can contain one or many Zones, and their members can overlap, as shown above in *Figure 39*.

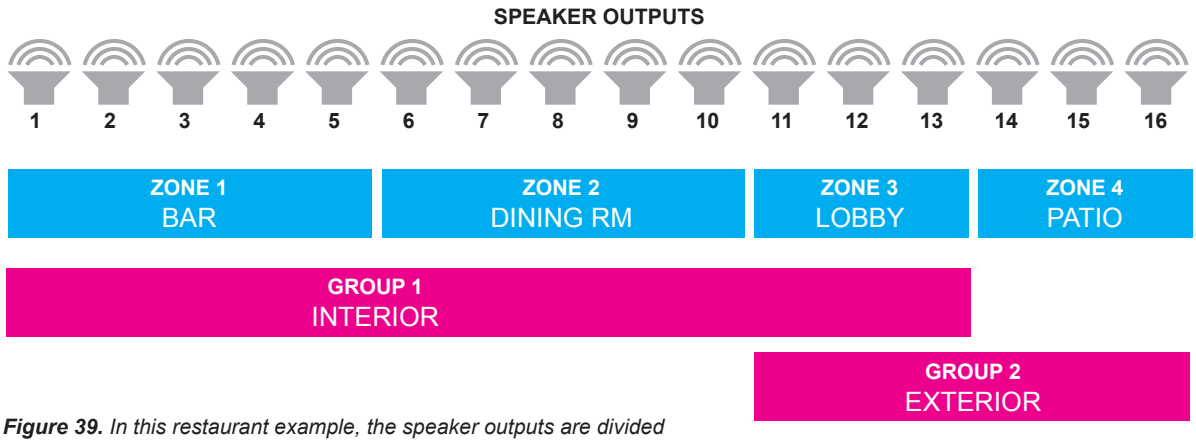


Figure 39. *In this restaurant example, the speaker outputs are divided into Zones, and two Groups include overlapping members.*

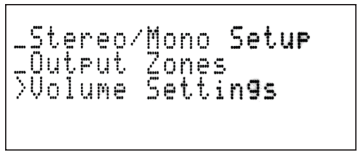


Figure 40.

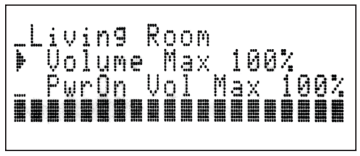


Figure 41.

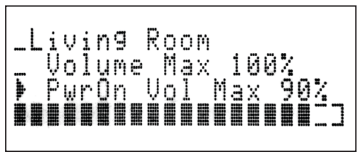


Figure 42.

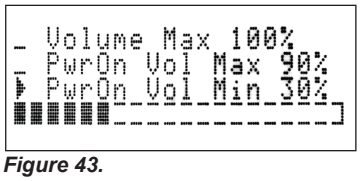


Figure 43.

Volume Settings

Volume Max

Volume Max sets the maximum level that the output can ever be set to (*Figure 41*).

Pwr On Volume Max / Min

Power on volumes take effect when the output is powered off and then back on. If the volume is below the minimum turn on volume, it is raised to the minimum volume; if above, it is turned down to the maximum.

Note: The scale range on the input level detection is 500 mVRMS = 0 dB; therefore an input signal of 500 mVRMS on an output set to 0 dB will have full scale display.

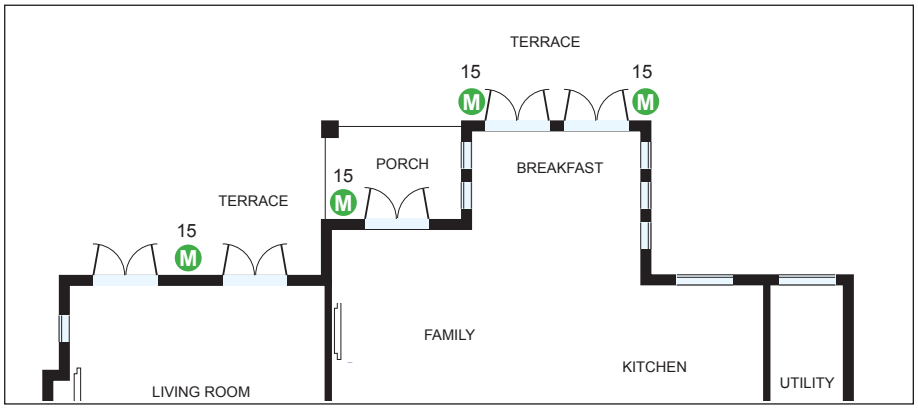


Figure 44. *Set Power On Volume Max to 0% and Power On Volume Min to 0% in this outdoor application to always Power On Zone 15 at a 0% volume level ensuring neighbors will not be disturbed if the Zone is accidentally activated. This application also works for Zones such as a nursery and a home office.*

Figure 45.

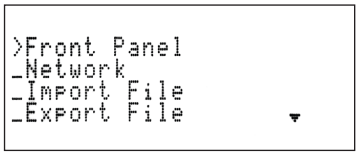


Figure 46.

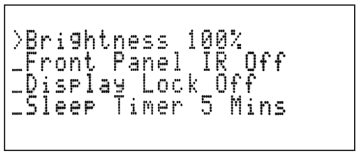


Figure 47.

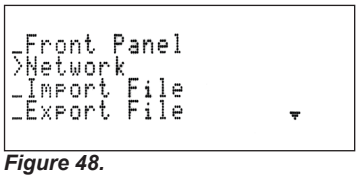


Figure 48.

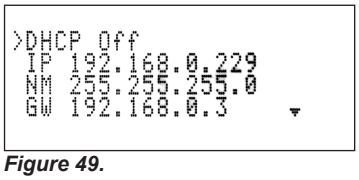


Figure 49.

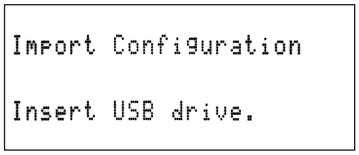


Figure 50.

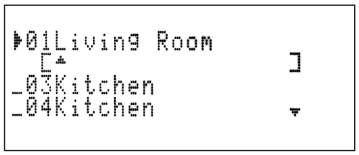


Figure 51.

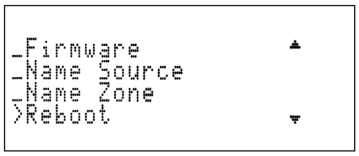


Figure 52.

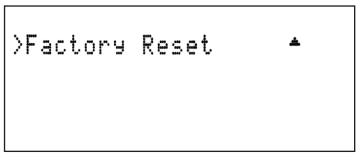


Figure 53.

System Setup

From this menu you can check the status of the system, adjust front panel settings, network status, Update Firmware name sources and Zones, reboot, and reset to factory default. It is often convenient to turn DHCP on to connect automatically to a DHCP network for initial setup. Once the SF-16M is installed, use a static IP address and turn DHCP off.

Front Panel

Brightness - Brightness level of the keys and front panel display. Choose 100%, 75%, 50%, or 25%. Also accessible by the dim button on the keyboard.

Front Panel IR On/Off - Disable / enable front panel IR sensor. If not required for control, leave it off to avoid issues with sunlight or other interference.

Display Lock - Disable / enable the front panel controls.

Sleep Timer - Turns off the front panel display after the front panel keys and knob have not been used for a period of time. Select a time period of 0, 1, 2, or 5 minutes. Select (zero) if the display should remain on. The display is turned off automatically when entering standby unless the sleep timer is set to zero.

Network

This screen displays the status of the network, the native IP address, gateway, subnet mask, and mac address (*Figure 49*). It is often convenient to turn DHCP on to connect automatically to a DHCP network for initial setup. Once the SF-16M is installed, use a static IP address and turn DHCP off. If the network settings have changed but not yet committed, this screen displays a message.

Import File

Import or restore configuration settings from USB drive (*Figure 50*).

Export File

Export configuration settings for archiving onto USB drive.

Firmware

This screen displays the unit number, the system firmware and bootloader, and the input board firmware and bootloader versions. To update firmware load the new version onto a USB drive, insert the drive into the USB port, and select update firmware.

Zone and Source Naming

When creating or editing source or Zone names, the menu key also toggles the cursor display between numeric, uppercase, lowercase and blank space. The Dim and Back keys move the cursor left and right respectively (*Figure 51*).

Reboot

Allows power cycling of unit when required (firmware updates etc.).

Factory Reset

If you need to clear all the settings in the SF-16M and return it to default values, use the Factory Reset command (*Figure 53*). The only way to restore custom settings is if you have an archive saved on a USB drive or computer hard disk.

Advanced Configuration Using the PC Setup Utility

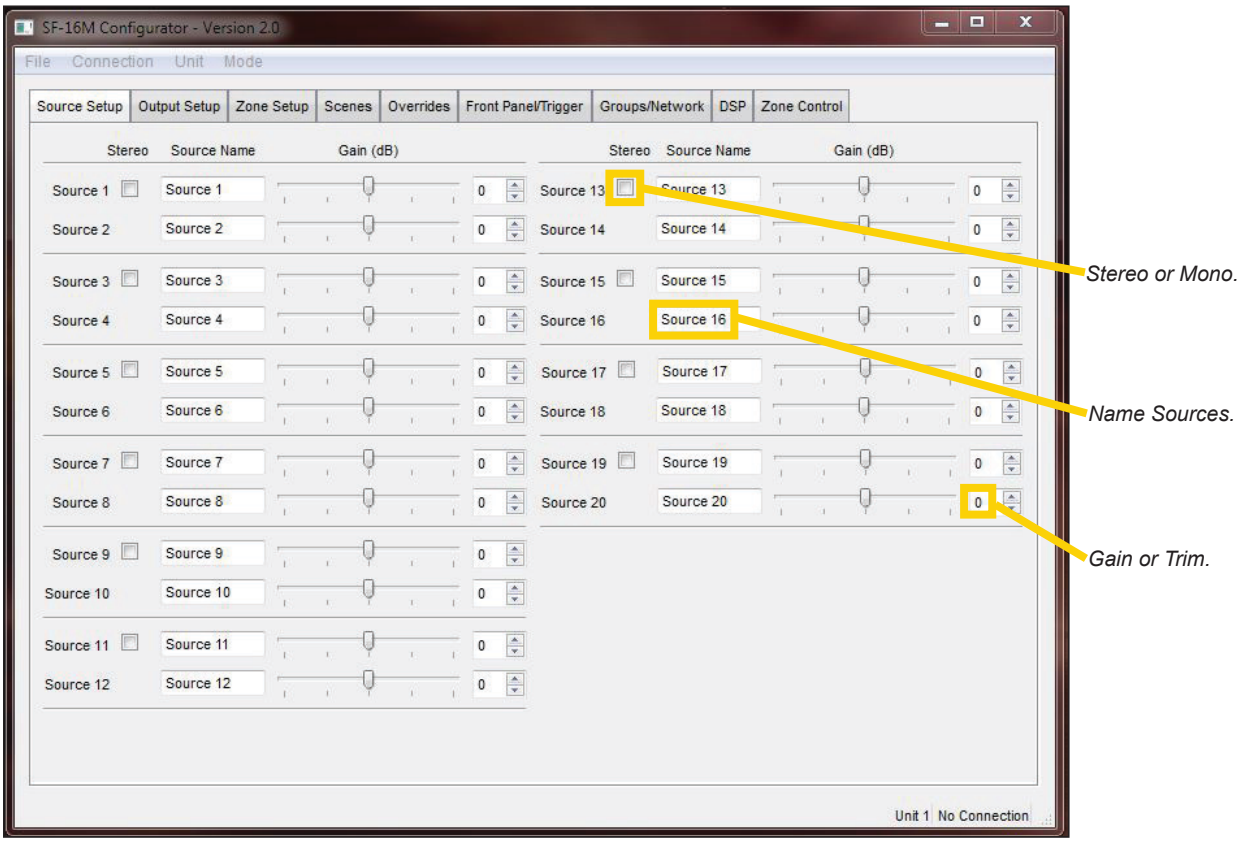


Figure 54. *SF-16M Source Setup*

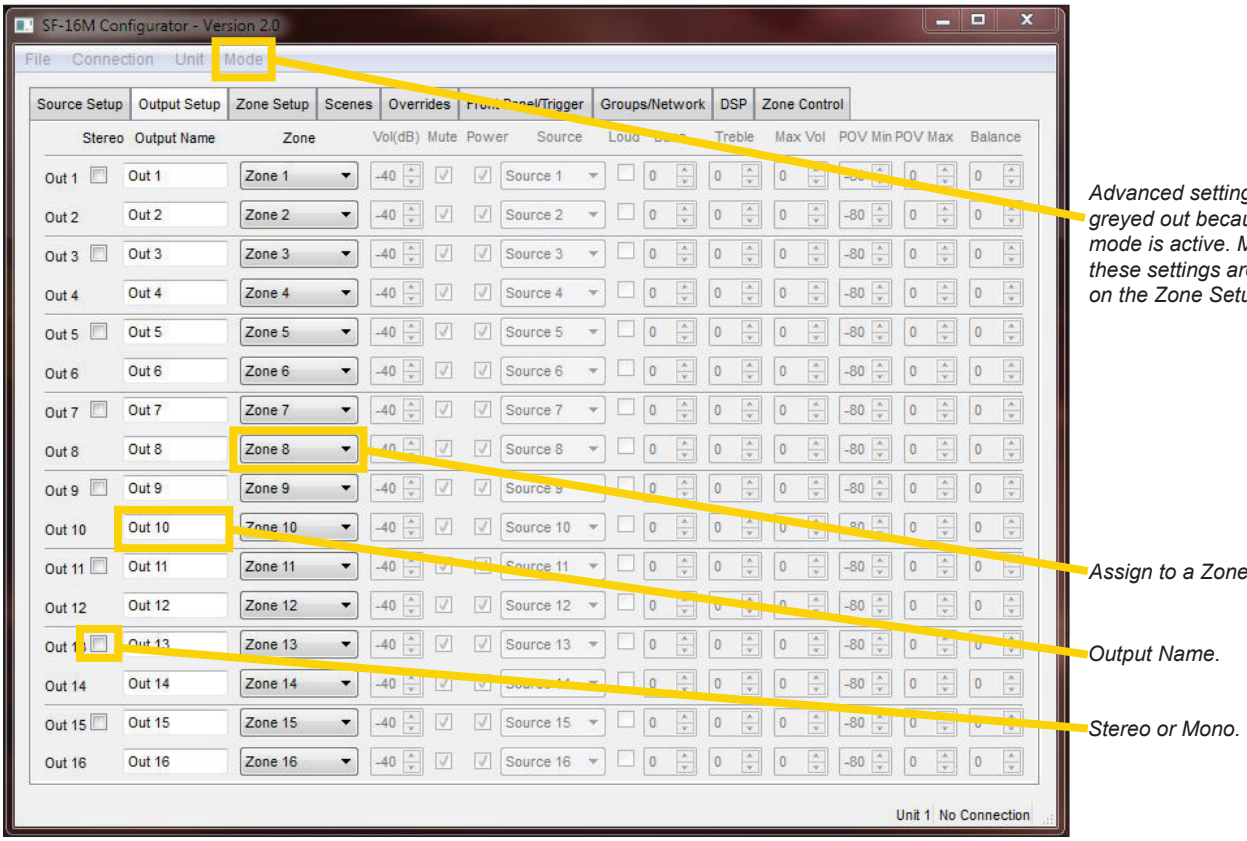


Figure 55. *SF-16M Output Setup*

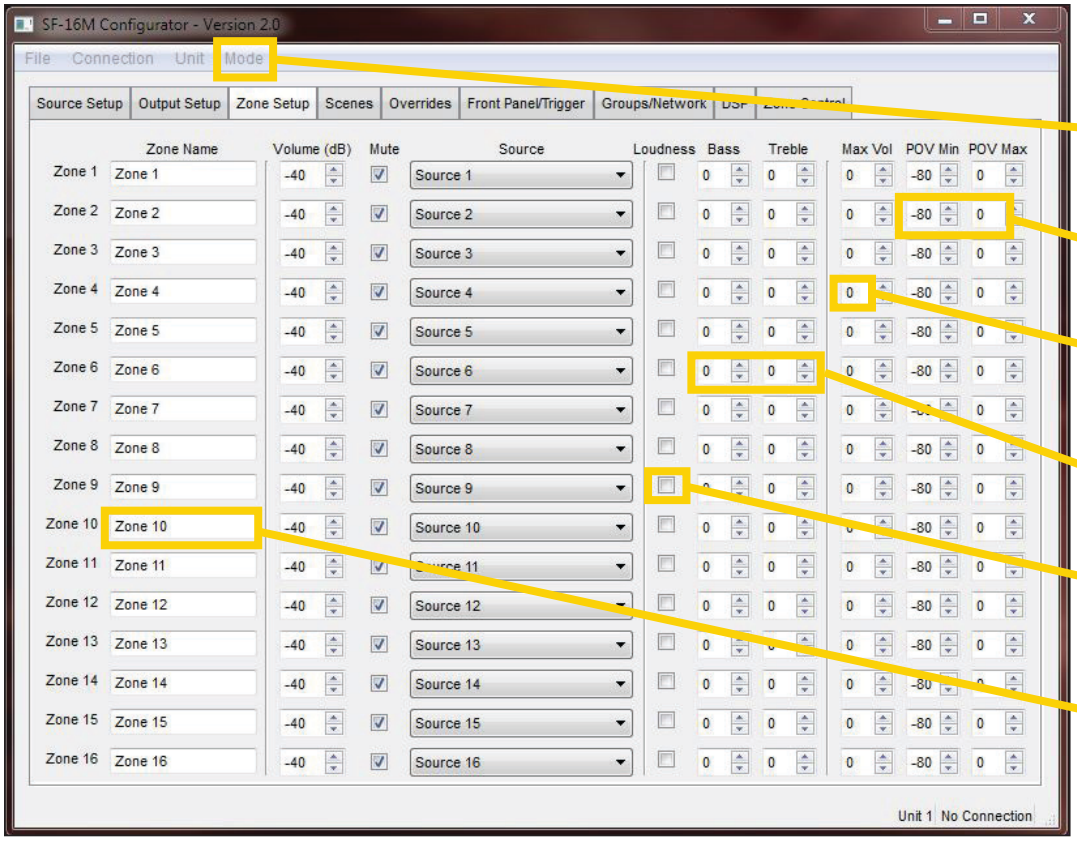


Figure 56. *SF-16M Zone Setup (available in Basic Mode)*

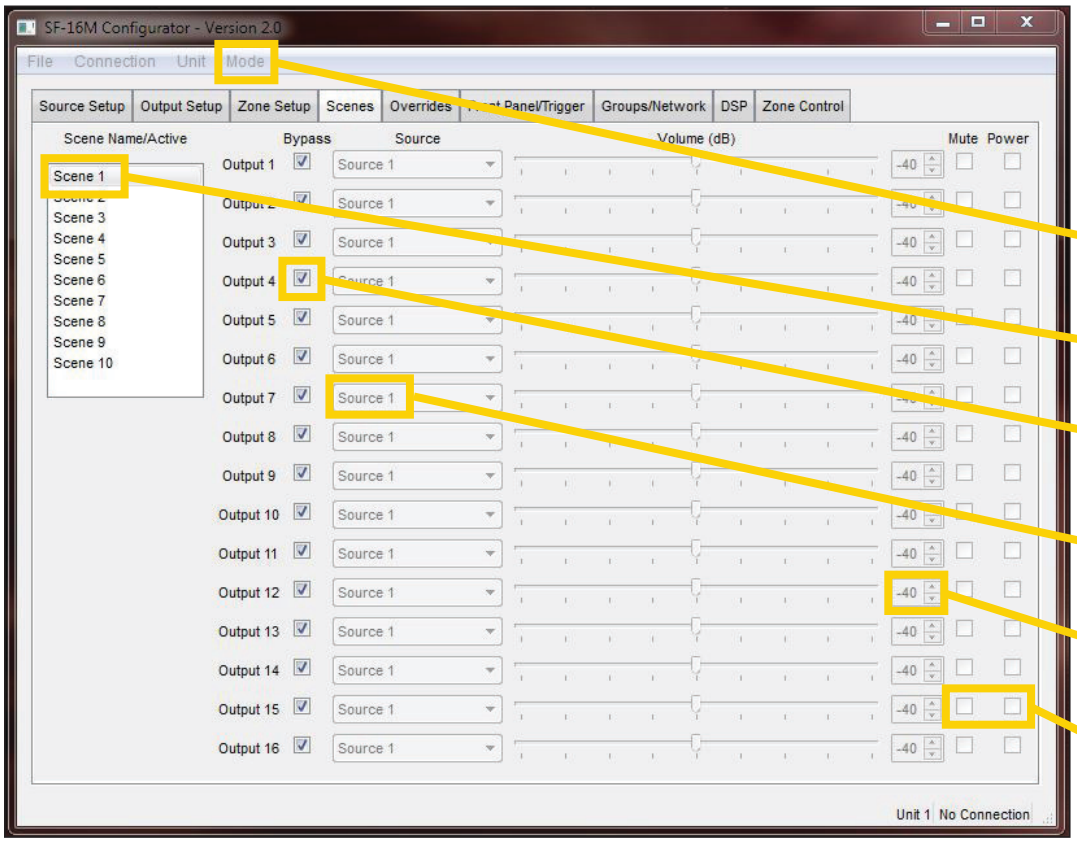
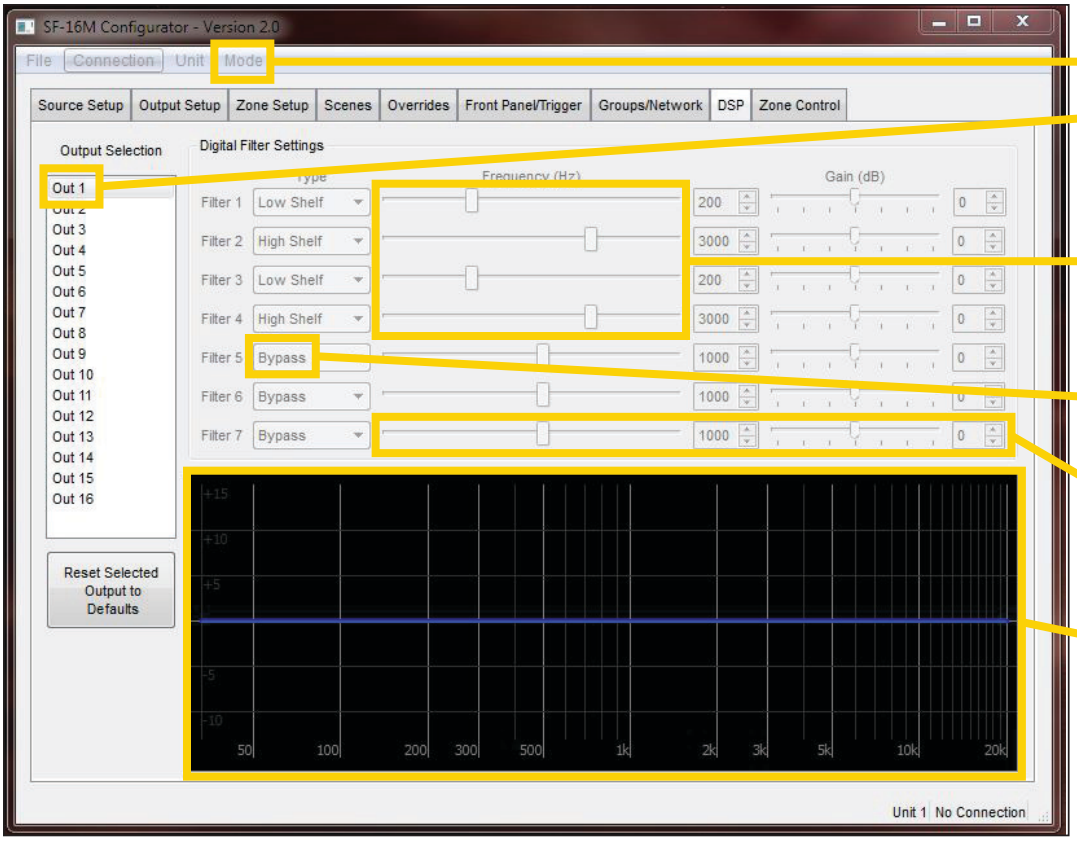


Figure 57. *SF-16M Scenes*



Advanced DSP is available only in Advanced Mode.

Choose an Output.

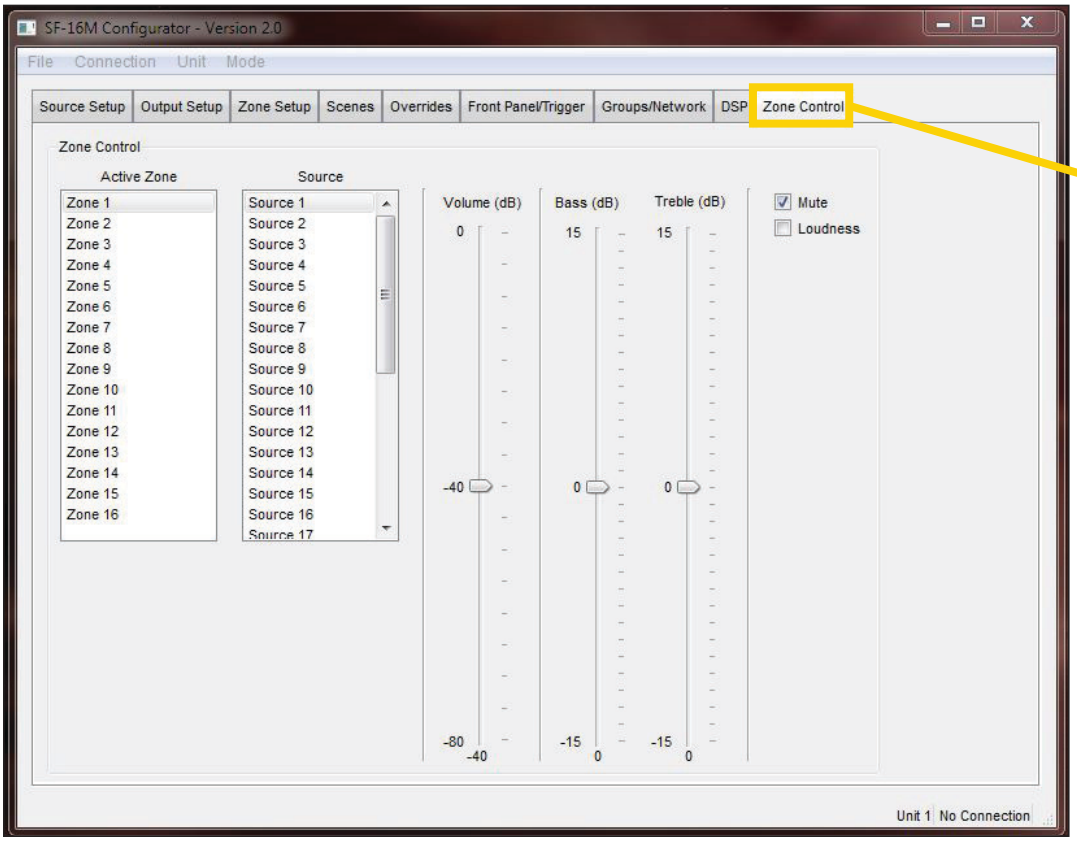
Filters 1-4 should not be modified if Bass and Treble are needed.

Choose a filter (Bypass = inactive).

Set frequency and gain for each filter.

Graph shows combined results of all filters.

Figure 58. *DSP*



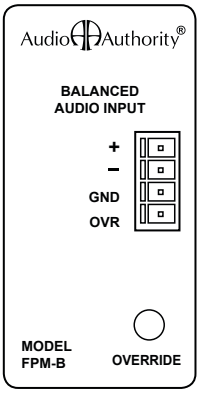
Zone Control tab is convenient for testing.

Figure 59. *SF-16M Zone Control*

Appendix A: FlexPort Audio Modules

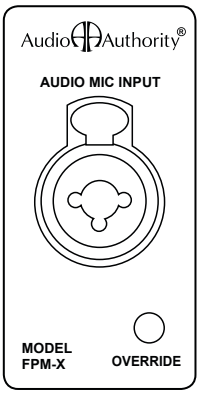
FlexPort audio modules provide up to four additional audio inputs (2 per FlexPort input) to each SF-16M. FlexPort modules connect via Cat 5 cable to the SF-16M and accept a wide variety of pro and consumer audio sources. All FlexPort modules can be located up to 500 feet from the SF-16M and include mounting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

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



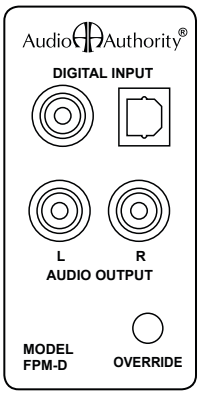
- Accepts any 3-wire balanced line or mic level audio input
- “Override” contact closure input for push-to-talk paging mics such as Bogen model MBS1000A
- Override button (defeatable) with backlighting to indicate audio override status
- 15V phantom power (defeatable) for condenser microphones
- Input 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 (both inputs must be assigned to a mono channel)

2. FPM-X XLR/ 1/4” TRS input with phantom power



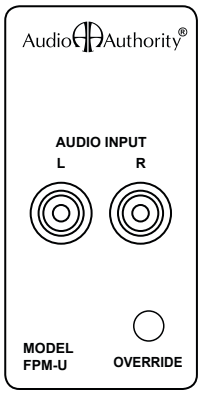
- Accepts any 3-wire balanced line or mic level audio input via a combo XLR/ 1/4” TRS input
- Override button (defeatable) with backlighting to indicate audio override status
- 15V phantom power (defeatable) for condenser microphones
- Input gain potentiometer
- Input can be assigned as Dual Mono (2 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 (both inputs must be assigned to a 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 (both inputs must be assigned to a 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 (both inputs must be assigned to a mono channel)

FPM Rear Panel Connections and Settings

FlexPort RJ-45 Pinout
Not an Ethernet Port! It is recommended that all FlexPort bus Cat 5 wiring be configured using the EIA-568B standard pinout. Audio Authority cannot guarantee correct operation using any other wiring configuration. *Figure A-3 below shows both EIA-568B and FlexPort RJ-45 pinouts.*

FPM-B and FPM-X

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

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

Ⓒ **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)

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

Mix On/Off - Allows two daisy chained FlexPort modules to mix together upon override

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 daisy chain configuration

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

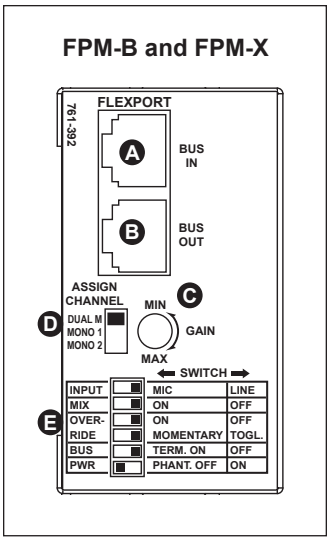


Figure A-1.

FPM-D and FPM-U

Ⓖ **FlexPort Bus In** - Connects via Cat 5 to the FlexPort "Bus Out" of another FPM in daisy chain scenarios

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

Ⓗ **Input Gain** - Used to increase or decrease input signal level prior to being sent to the SF-16M

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

Ⓙ **Mix On/Off** - Allows two daisy chained FlexPort modules to mix together upon override

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 daisy chain configuration

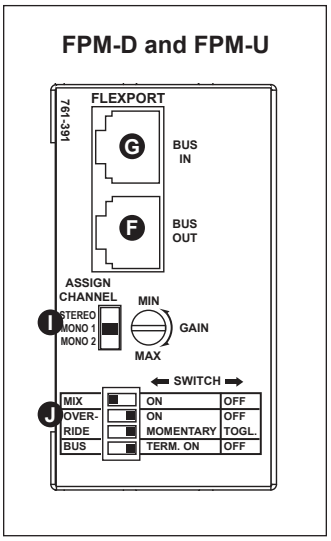


Figure A-2.

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

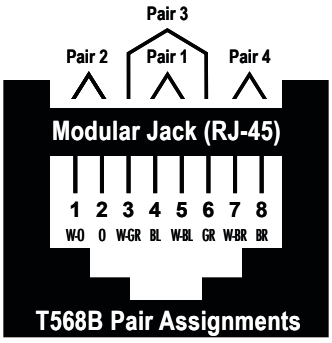


Figure A-3.

FlexPort Module “Override” Button

The purpose of the front panel override button is to switch designated SF-16M outputs to a FPM input. Learn more: www.audioauthority.com/sonaflex_tips. A typical example is an audio mixer, connected to a FPM-X in a conference room. When the override button is pressed, designated outputs switch over to the audio mixer for the duration of the override. When the override button is pressed again, all affected outputs will switch back to the input source prior to override. Audio override is based on two key settings:

SONAFLEX
- **VIDEOS**
- **FAQ**
- **TUTORIALS**

audioauthority.com/sonaflex_tips

1. FPM dipswitch settings, previously configured above.
2. SF-16M audio override settings, programmed using the SF-16M PC Setup Utility (see the online video Override tutorial).

Audio Override with “Mix” Option Enabled
In some cases it may be desired to mix two FPM module inputs together upon audio override. An example would be a classroom where both a microphone and an audio presentation need to be heard simultaneously. To acheive this function, first daisy chain two FPM modules and wire back to the SF-16M. Set one FPM as “Mono 1”, and set the other as “Mono 2”. Both FPM’s must have the “Mix” dipswitch set to On.

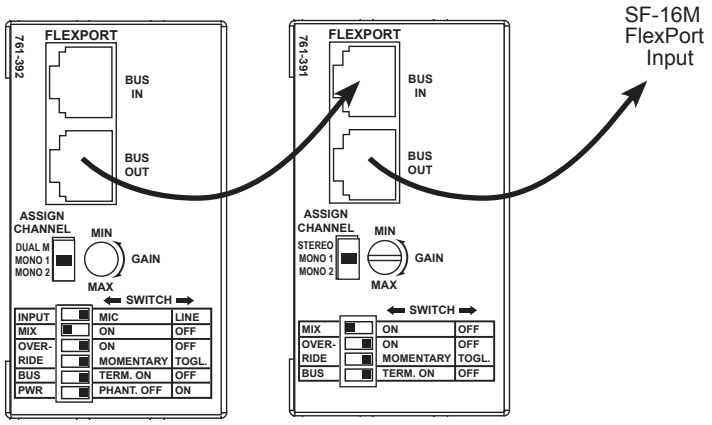


Figure A-4.

Appendix B: Firmware Update Procedure

The latest version of firmware is available from our website on the SF-16M product page. Learn more: www.audioauthority.com/sonaflex_tips.

SONAFLEX
DOWNLOAD FIRMWARE

audioauthority.com/sonaflex_tips

1. Copy the latest firmware file onto a USB drive.
2. Insert the drive in the USB port on the rear panel of the SF-16M.
3. Press the menu key and navigate to the firmware update menu item.
4. Follow the prompts and select the firmware file.
5. After a short delay the SF-16M reboots and performs the firmware update.
6. Once the update has finished, the SF-16M reboots and resumes operation with the new firmware version.

Appendix C: Changing the Power Fuse

Before changing the fuse, find and correct the excessive impedance load or wiring short that caused the fuse failure.

- Remove the power cord.
- Carefully remove the fuse cover using a flat blade screwdriver.
- Inspect both fuses to determine which one is blown.
- Slide out spare fuse compartment as shown and remove a spare fuse.
- Replace the blown fuse with a spare fuse, or a fuse of the same value.
- Orient the fuse cover so that the arrow points toward the correct voltage for your region as shown to the right.

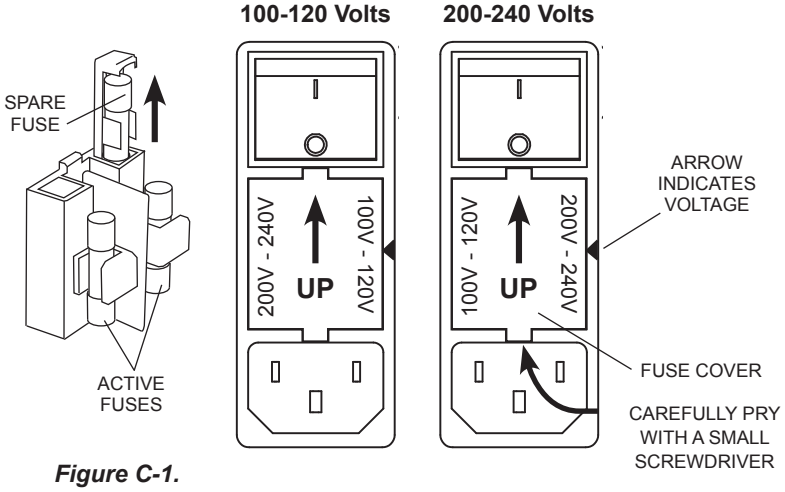


Figure C-1.

Appendix D:

Serial and Ethernet Command List

See www.audioauthority.com/sonaflex_tips. for instructions.

Command	*Structure*	*Example*	*Reply*	*Description*
Source Select				
Switch an output to a source input	[CO###I##]	[CO1I2]	(CO1I2)	Output 1 is connected to source input 2
Switch all outputs to one source input	[CXI##]	[CXI4]	(CXI4)	Switch all outputs to one source input
Volume				
Output volume up one step	[VO##U]	[VO3U]	(VO3R-20)	Output 3 volume increased one step to -20 dB
Output volume down one step	[VO##D]	[VO3D]	(VO3R-21)	Output 3 volume decreased one step to -21 dB
Set Output volume level	[VO##R##]	[VO1R-10]	(VO1R-10)	Output 1 volume is -10 dB, Range: -80 to 0 dB
Mute				
Output mute	[VMO##]	[VMO1]	(VMO1)	Output 1 is muted
Output unmute	[VUMO##]	[VUMO3]	(VUMO3)	Unmute output 3 and set to previous volume level
Output mute toggle	[VMTO##]	[VMTO2]	(VMO2) or (VUMO2)	Output 2 is muted or output 2 is returns to previous volume level
Balance				
Balance one step to the left	[BO##LU]	[BO5LU]	(BO5L40)	Output 5 balance adjusted to the left, now +40
Balance one step to the right	[BO##RU]	[BO5RU]	(BO5L39)	Output 5 balance adjusted to the right, now +39
Balance to the center	[BO##R0] or [BO##L0]	[BO1R0] or [BO1L0]	(BO1R0) or (BO1L0)	Output 1 balance is centered
Set balance level left	[BO##L##]	[BO7L+70]	(BO7L+70)	Output 7 balance is left +70 Range: 0 to +80, 0 = center
Set balance level right	[BO##R##]	[BO7R+25]	(BO7R+25)	Output 7 balance is right +25 Range: 0 to +80, 0 = center
Lowpass Mode				
Set to lowpass mode	[EO##M4]	[EO2M4]	(EO2M4)	Output 2 is in lowpass mode and mono (subwoofer)
Set lowpass crossover frequency	[EO##LP##]	[EO2LP115]	(EO2LP115)	Lowpass filter for output 2 is now 115 Hz Range: 40 Hz to 240 Hz
Tone Mode (Bass & Treble)				
Set to tone mode	[EO##M3]	[EO2M3]	(EO2M3)	Output 2 is switched to tone mode (bass/treble)
Bass up one step	[TO##BU]	[TO##BU]	(TO16B10T0)	Output 16 bass level increased to +10 dB
Bass down one step	[TO##BD]	[TO16BD]	(TO16B9T0)	Output 16 bass level decreased to +9 dB
Treble up one step	[TO##TU]	[TO8TU]	(TO8B9T1)	Output 8 treble level increased to +1 dB
Treble down one step	[TO##TD]	[TO8TD]	(TO8B9T0)	Output 8 treble level decreased to 0 dB
Set bass/treble level	[TO##B##T##]	[TO2B-3T9]	(TO2B-3T9)	Output 2 bass is -3 dB and treble is +9 dB
Set bass/treble level	[TO##B##T##]	[TO2B0T0]	(TO2B0T0)	Output 2 bass/treble = flat Range: -12 to +12 dB, 0 = flat

ZQ Mode (10-Band EQ)				
Set to ZQ mode	[EO##M1]	[EO4M1]	(EO4M1)	Output 4 is switched to ZQ mode
ZQ band up one step	[EO##B##U]	[EO3B1U]	(EO3B1L6)	Output 3, EQ band 1 increased to +6 dB
ZQ band down one step	[EO##B##D]	[EO3B1D]	(EO3B1L5)	Output 3, EQ band 1 decreased to +5 dB
Set ZQ band level	[EO##B##L##]	[EO12B2L-4]	(EO12B2L-4)	Output 12, EQ band 2 is set to -4 dB
Set ZQ band level	[EO##B##L##]	[EO12B2L0]	(EO12B2L0)	Output 12, EQ band 2 is set to unity gain (0) Range: -10 to +10 per band, 0 = flat
Save ZQ settings to EQ preset	[EO##STP##]	[EO5STP2]	(EO5STP2)	Save output 5 ZQ setting to preset #2 (Output must be in ZQ mode) 10 presets available
EQ Preset Mode (Global EQ Presets)				
Bypass filter	[U#O##B#BYPASS]	[U1O1B1]	(U1O1B1)	Bypass the EQ filter on unit 1 output 1
Enable highpass filter	[U#O##B#HPF#####]	[U1O1B1HPF80]	(U1O1B1HPF80)	Enable an 80 Hz highpass filter on unit 1 output 1
Enable highshelf filter	[U#O##B#HS##F#####]	[U1O1B1HS1000F10000]	(U1O1B1HS1000F10000)	Enable a 1KHz - 10KHz highshelf filter on unit 1 output 1
Enable lowpass filter	[U#O##B#LPF#####]	[U1O1B1LPF80]	(U1O1B1LPF80)	Enable an 80 Hz lowpass filter on unit 1 output 1
Enable lowshelf filter	[U#O##B#LS##F#####]	[U1O1B1LS30F800]	(U1O1B1LS30F800)	Enable a 30Hz - 800Hz lowshelf filter on unit 1 output 1
Enable peaking filter boost	[U#O##B#P##F#####]	[U1O1B1P8F250]	(U1O1B1P8F250)	Enable a peaking filter boost of 8dB at 250Hz on unit 1 output 1
Override				
Audio Override				
Turn on an audio override	[U#AO##A#]	[U1AO1A1]	(U1AO1A1)	Members of audio override 1, unit 1, are selected and override turned on (A = 0 off, 1 on, 2 toggle)
Add an output to an audio override and set the volume	[U#AO##O##V##A]	[U1AO1O16V-75A]	(U1AO1O16V-75A)	Add output 16 to audio override 1 at -75dB
Connect an input to an audio override	[U#AO##I##]	[U1AO1I8]	(U1AO1I8)	Input 8 on unit 1 is connected when audio override 1 is turned on
Set an audio override priority	[U#AO##P##]	[U1AO1P2]	(U1AO1P2)	Set priority level of audio override 1, on unit 1, to 2. (priority 1 is the highest)
Query an audio override	[U#AO##Q]	[UAO1Q]	(UAO1Q)	Query unit 1, audio override 1 (displays membership, levels, input, and priority)
Remove an output from an audio override	[U#AO##O##R]	[U1AO1O16R]	(U1AO1O16R)	Remove output 16 from audio override 1 on unit 1 (This output will be ignored by the override when it is activated)
Remove all members from all overrides	[U#AOR]	[U1AOR]	(U1AOR)	Clear the membership status of all overrides on unit 1
Flexport Override				
Turn on a Flex Port audio override	[U#FPO#A#]	[U1FPO1A1]	(U1FPO1A1)	Members of audio override on unit 1, Flex Port 1, are selected and override turned on (A = 0 off, 1 on, 2 toggle)
Add an output to a Flex Port audio override and set the volume	[U#FPO#O##V##A]	[U1FPO1O8V-75A]	(U1FPO1O8V-75A)	Add output 8 to Flex Port 1 audio override at -75dB
Set a Flex Port priority	[U#FPO#P#]	[U1FPO1P2]	(U1FPO1P2)	Set priority level of Flex Port 1 audio override, on unit 1, to 2. (Overrides of the same priority will override each other)
Query a Flex Port audio override	[U#FPO#Q]	[U1FPO1Q]	(U1FPO1Q)	Query unit 1, Flex Port 1 audio override (displays membership, levels, input, and priority)

Remove an output from a Flex Port audio override	[U#FPO#O##R]	[U1FPO1O16R]	(U1FPO1O16R)	Remove output 16 from Flex Port 1 audio override on unit 1 (This output will be ignored by the override when it is activated)
Remove all members from all Flex Port overrides	[U#FPOR]	[U1FPOR]	(U1FPOR)	Clear the membership status of all Flex Port overrides on unit 1
Query				
Query all settings	[U#XQ]	[U1XQ]	(U1XQ)	Query all settings for unit 1. (Note that while displaying the settings the unit will be unresponsive.)
Query all square brackets	[U#XQSB]	[U1XQSB]	[U1XQSB]	Query all settings for unit 1, but return them in square brackets. (This would allow one to copy/paste the settings into a text file for editing. Note that the unit will be unresponsive while displaying the settings. WARNING - if you have units looped out, this could cause them to act on any unit unspecific commands).
Sound Scene Presets				
Add an output to a scene preset and set the volume	[U#SP##O##I##V##A]	[U1SP1O16I2V-75A]	(U1SP1O16I2V-75A)	Add output 16 to scene preset 1, set the volume level to -75dB
All units load scene preset	[SP##LOAD]	[SP1LOAD]	(SP1LOAD)	Activate scene preset 1 on all units
Load scene preset	[U#SP##LOAD]	[U1SP1LOAD]	(U1SP1LOAD)	Activate scene preset 1 on unit 1
Set mute on or off for a scene preset output	[U#SP##O##M#]	[U1SP1O16M1]	(U1SP1O16M1)	Set unit 1, scene preset 1, output 16 to mute (0 off, 1 on, 2 toggle)
All units name scene preset	[SP##N"@"]	[SP1N"Whole House Music"]	(SP1N"Whole House Music")	Global scene preset 1 named Whole House Music
Name a scene preset	[U#SP##N"@"]	[U1SP2N"Ball Game!"]	(U1SP2N"Ball Game!")	Name scene preset 2 "Ball Game!" on Unit 1
Power off an output in a scene preset	[U#SP##O##P#]	[U1SP2O8P0]	(U1SP2O8P0)	Power off output 8 when unit 1, scene preset 2, is selected (0 off, 1 on, 2 toggle)
Query a scene preset	[U#SP##Q]	[U1SP2Q]	(U1SP2Q)	Query unit 1 scene preset 2 (lists all members, their settings, and the name of the preset)
Remove an output from a scene preset	[U#SP##O##R]	[U1SP2O16R]	(U1SP2O16R)	Remove output 16 from unit 1 scene preset 2
Remove all outputs from all scene presets on one unit	[U#SPR]	[U1SPR]	(U1SPR)	Remove all outputs from all scene presets on unit 1
Allow or prohibit scene snapshot (remote save)	[SPRS#]	[SPRS1]	(SPRS1)	Remotely save scene presets on (0 off, 1 on, 2 toggle)
Save a scene snapshot of all outputs on all units (remote save)	[SP##SAVE]	[SP10SAVE]	(SP10SAVE)	The current output levels, input levels, mute and power status of all outputs is saved as scene preset 10
Save a scene snapshot of all outputs on one unit (remote save)	[U#SP##SAVE]	[U1SP10SAVE]	(U1SP10SAVE)	Save unit 1's current output levels, input levels, and mute status of scene preset 10

Standby				
Standby, all units	[SBY#]	[SBY1]	(SBY1)	Place all units in standby (0 off, 1 on, 2 toggle) (Turning on standby causes all outputs to be disabled, the DSP to stop running, and the screen to be turned off)
Standby, one unit	[U#SBY#]	[U1SBY0]	(U1SBY0)	Turn standby off on unit 1 (0 off, 1 on, 2 toggle)
Toggle standby, one unit	[U#TRIG#]	[U1TRIG2]	(U1TRIG2)	Toggle standby for unit 1 (0 off, 1 on, 2 toggle)
State				
Load system state from memory, one unit	[U#LOAD]	[U1LOAD]	(U1LOAD)	Load unit 1 system state from memory
Reset to factory default, one unit	[U#RESET]	[U1RESET]	(U1RESET)	Reset unit 1 to factory defaults
Save	[U#SAVE]	[U1SAVE]	(U1SAVE)	Save the system state of Unit 1 to memory. (There is an auto-save that saves the state 60 seconds after the last change)

SF-16M Specifications Updated July 15, 2013.

Power Per Channel (All Channels Driven):	50W @ 8 Ohms
Frequency Response:	20Hz to 20kHz, +/- 0.55 dB into 8 Ohms
Full Power Bandwidth:	20Hz to 20kHz
S/N Ratio:	96dB
Channel Separation:	70dB (channel to channel @1kHz)
THD+N:	<0.3% @ full power output
IMD:	<0.5% @ full power output
Input Sensitivity:	0.5Vrms
Input Impedance:	20k Ohms
Audio Clock Frequency:	96KHz
Output Clock Frequency:	385KHz
Output Protection:	Short Circuit, Over-Temperature, Overload
Line Voltage & Frequency:	100-120VAC 50-60Hz
Power Consumption:	1125W continuous, 1280W for 2 minutes
Maximum Current Draw:	10A RMS
Heat Output:	1109BTU/Hr. maximum
Dimensions (H x W x D):	5.22” x 16.60” x 14”
Net Weight:	41 lb.
Shipping Weight:	49 lb.
Approvals	FCC, ETL
Warranty:	Three years, parts and labor

Limited Warranty

If this product fails due to defects in materials or workmanship within three 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.

SF-16M Serial Number _____

Date of Purchase / Installation _____

SYSTEM CONNECTION AND PLANNING WORKSHEET

Unit #: 1 2 3 4

Source Inputs:

1	L	Mono ❑		9	L	Mono ❑	
2	R			10	R		
3	L	Mono ❑		11	L	Mono ❑	
4	R			12	R		
5	L	Mono ❑		13	L	Mono ❑	
6	R			14	R		
7	L	Mono ❑		15	L	Mono ❑	
8	R			16	R		

FlexPort Inputs:

1	17	L	Mono ❑	**2**	19	L	Mono ❑
	18	R			20	R	

Speaker Outputs:	**Zone**			**Speaker Outputs:**	**Zone**		
1		L	Mono ❑	9		L	Mono ❑
2		R		10		R	
3		L	Mono ❑	11		L	Mono ❑
4		R		12		R	
5		L	Mono ❑	13		L	Mono ❑
6		R		14		R	
7		L	Mono ❑	15		L	Mono ❑
8		R		16		R	

Zones: (*Do not use Zones with third party controllers - see page X.*)

1	9
2	10
3	11
4	12
5	13
6	14
7	15
8	16

SONAFLEX
- **VIDEOS**
- **FAQ**
- **TUTORIALS**

audioauthority.com/sonaflex_tips

Audio Authority®

2048 Mercer Road, Lexington, Kentucky 40511-1071
800-322-8346 • 859-233-4599 • Fax: 859-233-4510
www.audioauthority.com • support@audioauthority.com

v 1.5.0
752-607B
20150617