

Quick Start Guide

*SonaFlex*TM
SERIES


SF-16M 16-Channel Digital Matrix Amplifier



Audio  Authority[®]

WARNING:

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




CAUTION
RISK OF ELECTRIC SHOCK

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.




CAUTION
RISK OF ELECTRIC SHOCK

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 détaillées dans les documents fournis avec l'appareil.



Le point d'exclamation à l'intérieur de l'octogone 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 pièces intérieures n'est réparable par l'utilisateur. Pour toute réparation, s'adresser à un technicien 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 châssis sont prévues pour la ventilation de l'appareil. Ces ouvertures ne doivent pas être bloquées. Installer conformément aux directives du fabricant.
- 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 sécurité 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 fabricant.
- 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 nécessaire 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.

INTRODUCTION

The SonaFlex™ SF-16M is designed and built in the U.S. with A-V integrators in mind. This quick start guide covers basic topics, but you can find more articles and videos at www.audioauthority.com/sonaflex_tips.

Key Features

- 50 watts RMS@8Ω per channel.
- 16 source inputs, 16 outputs.
- Inputs and outputs can be configured stereo or mono.
- Four FlexPort inputs.
- Full matrix switching.
- Third party IR, RS-232, or Ethernet control.
- Cat 5 inputs for FlexPort audio transmitters.
- Hybrid digital and analog amplifier design.
- Volume, EQ, bass, treble, and loudness adjustments per output.

Carton Contents

- SF-16M Amplifier
- Power cord
- Rack ears (see Figure 1)
- Ferrite beads (see website)
- DB-25 cable (see website)
- Phoenix Connection (x 8) Pre Pack pn:903-154
- Quick start manual

Note: Please retain the original packing material in case the unit must be returned. If you find any items are missing, contact Audio Authority® immediately. Have the model number and invoice available for reference when you call.

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.

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 6
2. Make a system plan (see *worksheet, page 11*)
 - List all of your audio sources
 - Divide the house or building into zones (see *page 10*)
 - Decide how many speakers each zone requires
 - Choose stereo pairs and/or mono speaker locations
3. Basic setup (front panel - see *page 5*)
 - Set stereo and mono inputs and outputs
 - Add outputs to Zones (see *page 10*)
 - Enter source and Zone names
4. Connect sources and speakers (see *page 4*)
5. Set up advanced features (see *page 8*)
 - Groups, Sound Scenes, and Overrides
 - Triggers and contact closures
 - FlexPort Transmitters

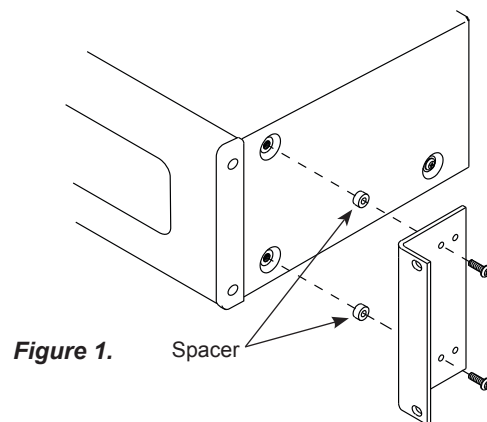


Figure 1.



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.

Connections



SONAFLEX
Mono vs. Stereo
Video Presentation

Source 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 or the front panel menu.

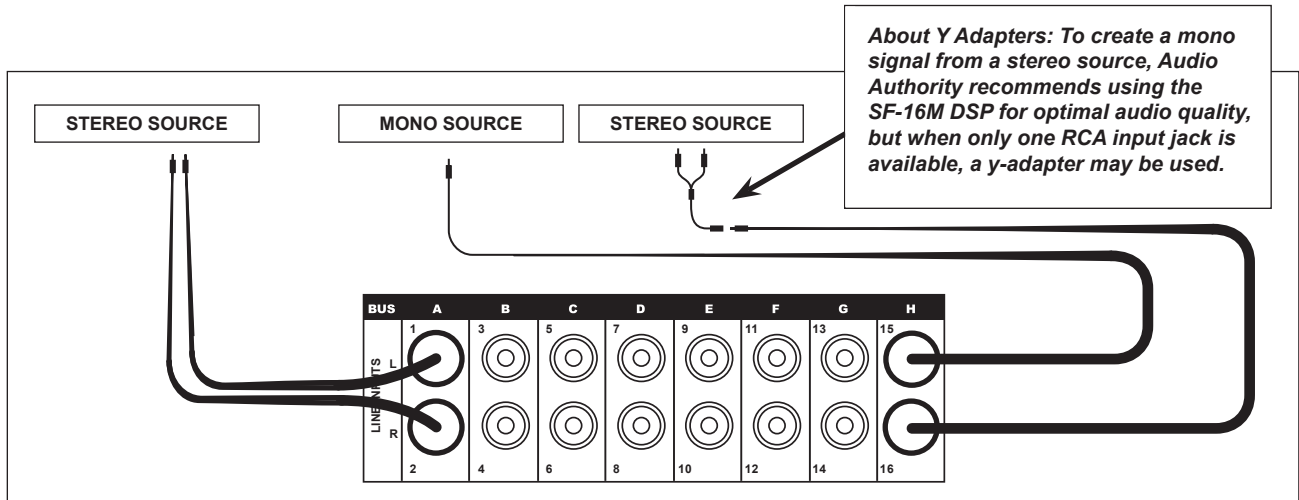


Figure 1. Any Stereo input may be converted to two mono inputs using PC Setup Utility or Front Panel Controls.

Speaker Outputs/Zones

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.

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

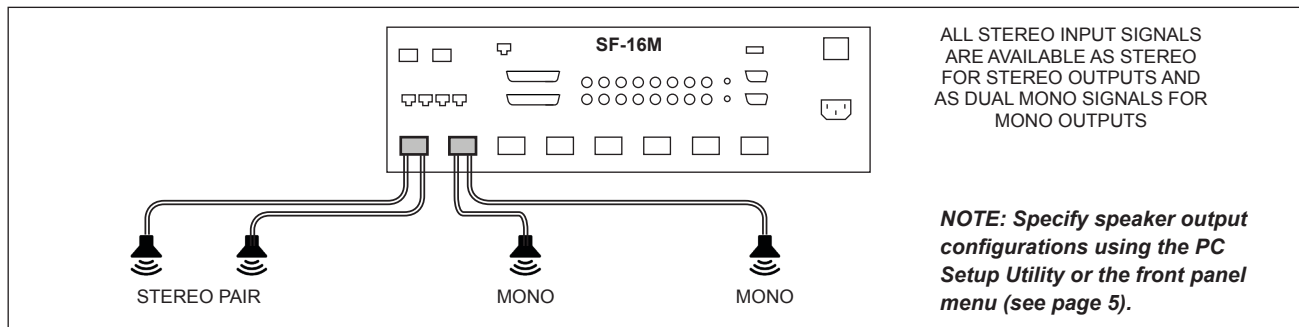


Figure 2.

PC Setup Utility

You can use the PC Setup Utility to perform all setup tasks. For more detail, see video tutorials at www.audioauthority.com/sonaflex_tip4.



audioauthority.com/sonaflex_tip4

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- Parametric EQ per zone
- Sound Scenes
- Output Groups
- Overrides
- Source naming and gain adjustments.
- Zone naming
- Select mono and stereo for inputs and outputs
- Set turn on volume levels

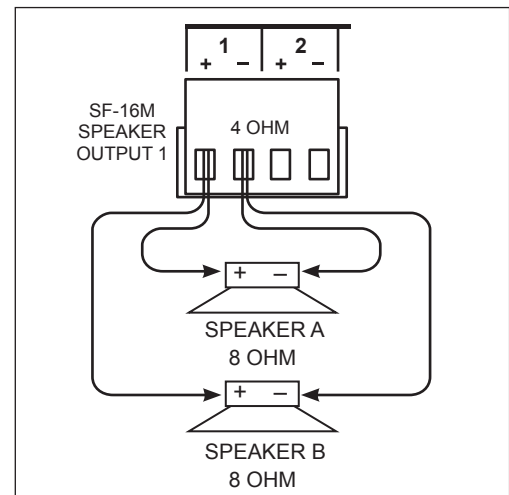


Figure 3. - Parallel 8 ohm speaker wiring

Using the Front Panel

Basic setup and control are available via the front panel menu and controls (Figure 4). If you are using a third party controller, skip to page 6. If you need to use advanced features, see page 8.

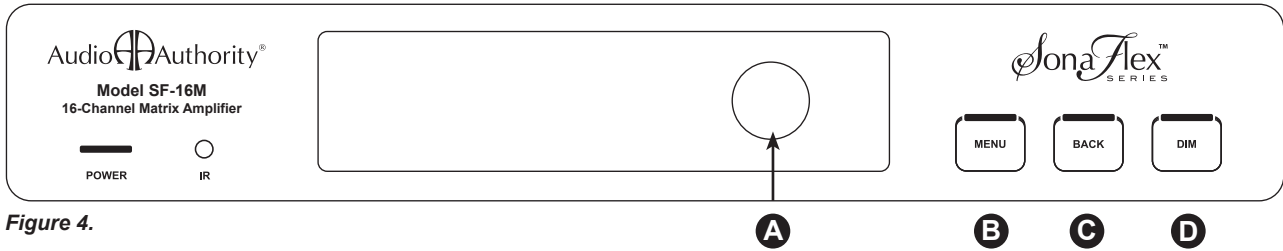


Figure 4.

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.)

Front Panel Control

The first two items in the main menu (Figure 5) allow control of the SF-16M.

Zone Control - Choose a source, adjust volume, bass, treble, and loudness.

System Control - Use Group commands, activate Overrides and Sound Scenes.

```

SF-16M Main Menu
>Zone Control
-System Control
-Source Setup
-Zone Setup
>System Setup
    
```

Figure 5.

Setup Menu

Zone Setup - Choose stereo or mono status for each output (Figure 6), and assign outputs to Zones (Figure 7). Set turn-on volume limits (maximum and minimum).

```

>Stereo/Mono Setup
-Output Zones
-Volume Settings
    
```

Figure 6

Zone and Source Naming - When editing source or zone names, the Menu button also toggles the cursor display between numeric, uppercase, lowercase and blank space (Figure 8). The Dim and Back buttons move the cursor left and right respectively.

```

-Bathroom M Living ▲
-Bathroom2M Living R
>Bedroom1 S Living R
Bedroom1 S Living ▼
    
```

Figure 7.

Source Setup - Choose mono or stereo for each source, and trim gain levels as needed (Figure 9).

```

▶01Living Room
  ▲
-03Kitchen
-04Kitchen ▼
    
```

Figure 8.

System Setup - In System Setup you can change front panel display behavior, view network settings, import and export configuration files, update firmware, name sources and Zones, reboot, and reset to factory defaults.

```

-Blu-ray StLt
▶Gain 0
Blu-ray StRt
[-----][-----]
    
```

Figure 9.

Third Party Control

If you are using a third party controller, you may use the worksheet on page 11, but you do not need to set up the Zones (see page 10). Connect sources and speakers (see page 4) and set up advanced features as needed (see page 8). 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 IP 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 10). Allows 2-way communications for control and feedback. Download the serial command set from our website.

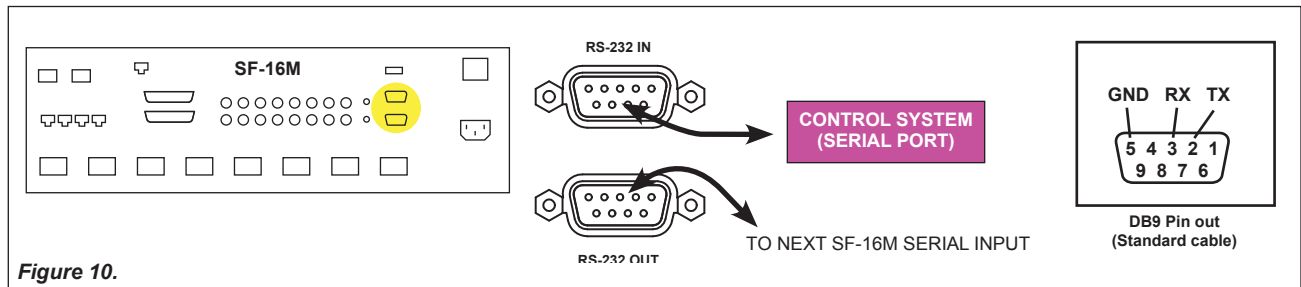


Figure 10.

Ethernet Port

The SF-16M Ethernet port connects to any standard Ethernet router/switch (Figure 11). 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.

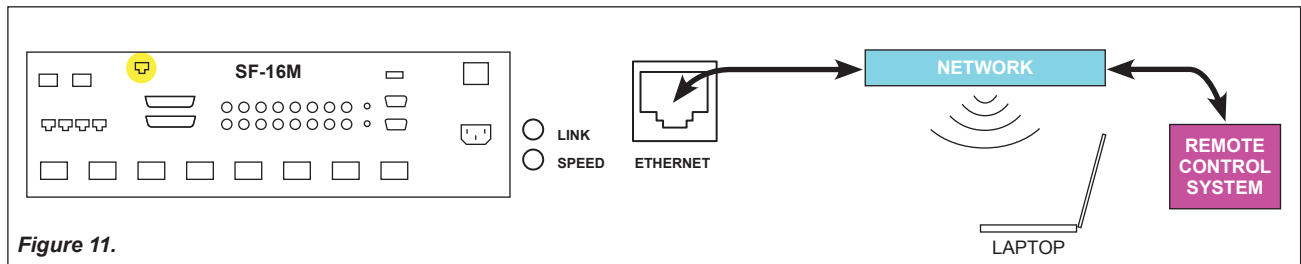


Figure 11.

IR Port

The 3.5mm “Main IR In” connects to any third party IR controller using a mono 3.5mm cable (Figure 12). 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.

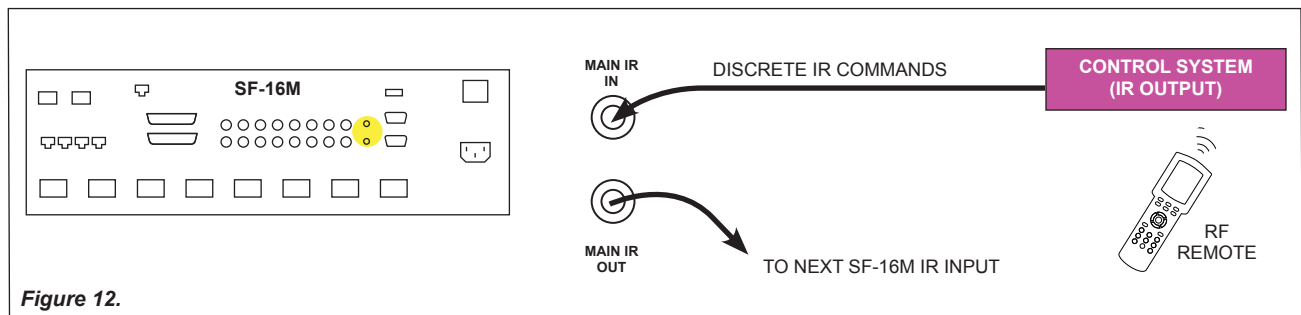


Figure 12.

SF-16M Menu Tree

Root Menu	First Menu Subset	Second Menu Subset	
Zone Control	Zone	Volume	
		Source	
		Loudness	
		Bass	
		Treble	
System Control	Groups*	Group 1-10	
		Volume	
	Overrides*	Source	
		1-14 ON/OFF, Priority	
Source Setup (Including Flexport)	Sources 1-20 Gain		
			Stereo/Mono
			All Stereo
			All Mono
Zone Setup	Stereo/Mono Setup	Outputs 1-16	
	Output Zones	Output 1-16	
		All to one Zone	
	Volume Settings	Zone	
		Volume Maximum	
		Power ON Volume Maximum	
		Power ON Volume Minimum	
System Setup	Front Panel	Brightness*	
		Front Panel IR	
		Display Lock*	
		Sleep Timer*	
	Network*	DHCP (Dynamic Host Configuration Protocol)	
		IP (Internet Protocol)	
		NM (Netmask)	
		GW (Gateway)	
		MAC Address	
		SDDP (Simple Device Discovery Protocol; Control4)	
	Import File	Export File	
		Firmware	
		Name Source	
		Name Zone	
		Reboot	
		Factory Reset	

Figure 13. SF-16M Menu Tree

* See page 8 for more advanced feature details.

Advanced Features

Many of the advanced features are used only with third party controllers. The PC Setup Utility is the most efficient way to set up SF-16M advanced features, and provides an easy way to save an archive of each configuration to work on off-site, or for backup. *For more detail, see video tutorials at www.audioauthority.com/sonaflex_tip4.* The following settings can only be configured using Ethernet/serial commands or the PC Setup Utility (*not front panel controls*):



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Advanced DSP (EQ)

Set a filter type for each zone.

- Bypass (B) no filter (default setting)
- High Pass (HP)
- Low Pass (LP)
- High Shelf (HS)
- Low Shelf (LS)
- Parametric (P)

Frequency attenuation

- 1 Hz - 20KHz

Gain adjustments

- -15 db and +15db

Balance

Network Settings

- DHCP ON/OFF (default OFF)
- SDDP ON/OFF (default ON)
- Static IP Address (default 10.10.10.1)
- Netmask (default 0.0.0.0)
- Gateway (default 0.0.0.0)

System Trigger

- Audio Sense / Audio Sense + Trigger

Contact Closure

- Select Contact 1 or 2
- Select Mode (Momentary / Toggle)
- Select Type (Audio Override / Scene Preset)
- Select Audio Override (1-10) or Scene (1-10)

*Groups

- Group Naming (1-10)
- Select Zones to include in each of 10 Groups.

*Scenes

- Scene Naming (1-10)
- ON/OFF select (default OFF)
- Volume level
- Source selection
- Power (ON/OFF)
- Mute ON/OFF (default OFF)

*Overrides

- ON/OFF select (default OFF)
- Zone selection (1-16)
- Source selection (1-16) or Flexport (1-4)
- Volume level (default = 0)
- Priority (1-10) or Flexport (1-4)

Sleep Timer

- 1,2 or 5 minutes
- OFF (default OFF)

Display Brightness

- Adjust 0 - 100 (default 100%)

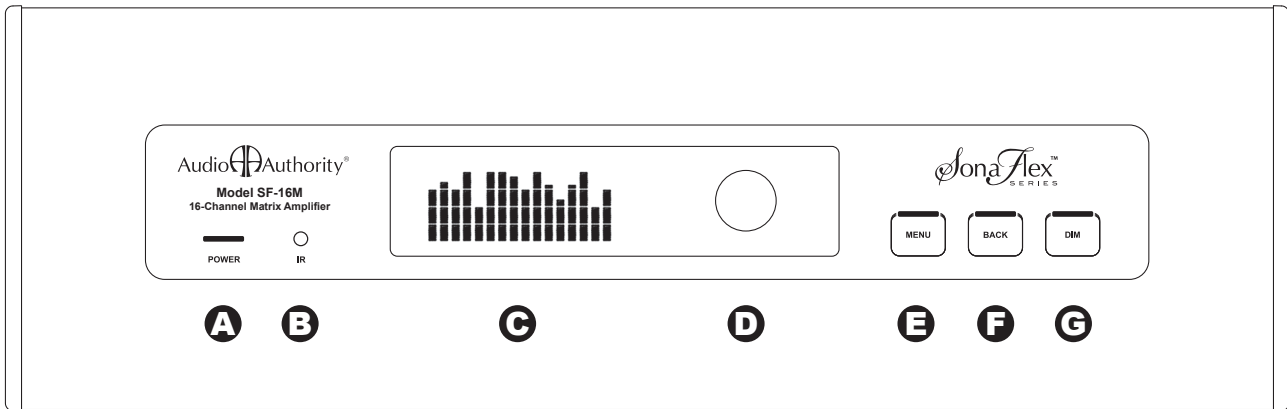
Lockouts

- Front panel controls
- Front panel IR

**These advanced features may not be compatible with third party controllers.*

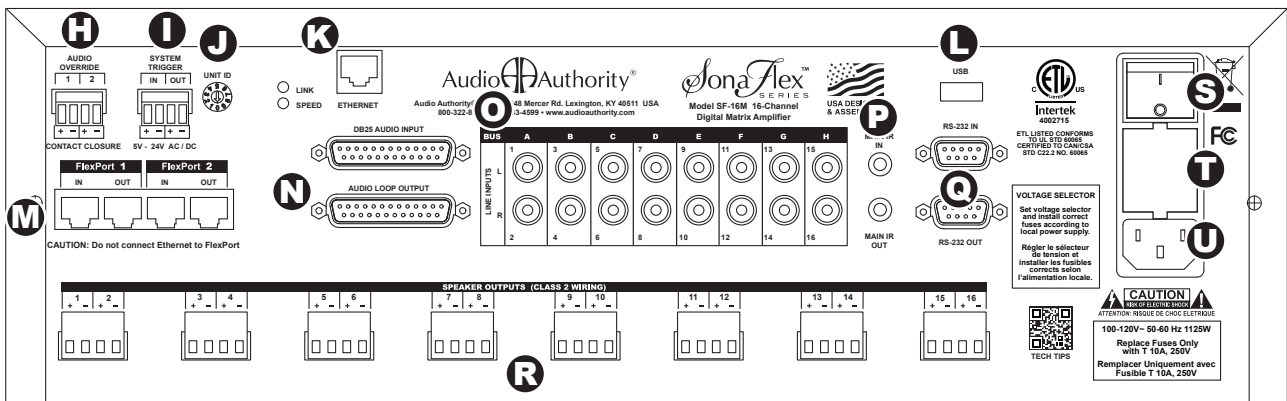
Model SF-16M

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
- K** Ethernet connector with Link/Speed indicators
- L** USB connector (to update firmware and save settings)
- M** FlexPort transmitter 1 & 2 In/Loop Out
- N** DB-25 Input/Loop Output
- O** RCA stereo/mono audio inputs
- P** 3.5 mm Main IR In/Loop Out
- Q** DB-9 RS-232 In/Loop Out
- R** Stereo and/or Mono speaker level outputs
- S** Power switch
- T** Fuse compartment
- U** Power cord Input

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 in *Figure 14*.

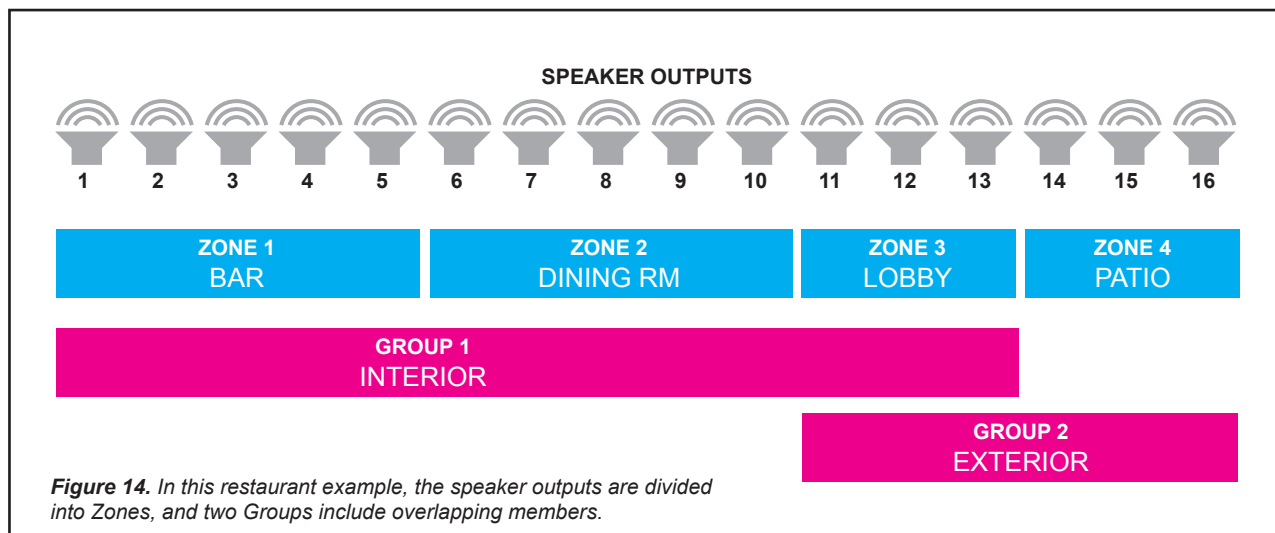


Figure 14. In this restaurant example, the speaker outputs are divided into Zones, and two Groups include overlapping members.

How to Create and Use Zones

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 15*. You can also use the PC Setup Utility V2.0 to create zones.

How to Create and Use Groups

Use the PC Setup Utility to create Groups and add Zones as members of each Group. Group volume and source selection controls are found in the System Control menu.

```
_Out 11 M Zone 3 ▲  
_Out 12 M Zone 3  
_Out 13 M Zone 3  
>Out 14 M Zone 4 ▼
```

Figure 15.

Firmware Update Procedure

The latest version of firmware is available from our website on the SF-16M product page. www.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 pause 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.

SYSTEM CONNECTION AND PLANNING WORKSHEET

Unit #: 1 2 3 4

Source Inputs:

1	L	Mono <input type="checkbox"/>
2	R	
3	L	Mono <input type="checkbox"/>
4	R	
5	L	Mono <input type="checkbox"/>
6	R	
7	L	Mono <input type="checkbox"/>
8	R	

9	L	Mono <input type="checkbox"/>
10	R	
11	L	Mono <input type="checkbox"/>
12	R	
13	L	Mono <input type="checkbox"/>
14	R	
15	L	Mono <input type="checkbox"/>
16	R	

FlexPort Inputs:

1	17	L	Mono <input type="checkbox"/>
	18	R	

2	19	L	Mono <input type="checkbox"/>
	20	R	

Speaker Outputs:

	Zone		
1		L	Mono <input type="checkbox"/>
2		R	
3		L	Mono <input type="checkbox"/>
4		R	
5		L	Mono <input type="checkbox"/>
6		R	
7		L	Mono <input type="checkbox"/>
8		R	

	Zone		
9		L	Mono <input type="checkbox"/>
10		R	
11		L	Mono <input type="checkbox"/>
12		R	
13		L	Mono <input type="checkbox"/>
14		R	
15		L	Mono <input type="checkbox"/>
16		R	

Zones:

1
2
3
4
5
6
7
8

9
10
11
12
13
14
15
16

Note: Zones are not compatible with third-party controllers. Zones with no members do not appear on front panel.

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 _____



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