



Operating Manual MT700 Stingray Distributed Array Mixer

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MT700 Stingray Distributed Array Mixer Operating Manual

Phoenix Audio Technologies

Please read this manual carefully before using the Phoenix Audio Technologies MT700 Stingray Distributed Array Mixer.

For additional assistance and updates please refer to our website www.phnxaudio.com. To contact Phoenix Audio Technologies support, send an email to support@phnxaudio.com.

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All-In-One Audio Smart Mixer

Complex problem? Simple solution.

People expect a conference room to provide an audio environment that allows them to speak freely and naturally, without having to worry whether others can hear them. At the same time, conferencing space design continues to evolve, and staying ahead of new technologies can get expensive, time-consuming, and reduce user productivity. Organizations need high-quality audio conferencing technology that is both flexible and easy to operate.

The MT700 Stingray Distributed Array Mixer from Phoenix Audio Technologies is an all-in-one smart mixer that responds to rapidly evolving communication trends, conference environments, and connectivity technologies. Used on its own or in tandem with video, the MT700 Stingray Mixer offers a simple solution to the complex requirements of today's professional conferencing spaces.

On the inside, an audio component can be complicated, but on the outside it has to be easy to use. At Phoenix Audio Technologies we specialize in designing and manufacturing high-quality audio solutions that require no specialized training or certification to use or deploy. The MT700 Stingray Mixer's flexible design and proprietary, distributed array technology make it an ideal solution for anyone in any conference room setting.





Using the MT700 Stingray Mixer

The MT700 Stingray Distributed Array Mixer is an eight-channel – four (4) microphone / four (4) line input – automatic DSP (digital signal processing) mixer for installed room applications. Its proprietary daisy-chain protocol allows you to extend the number of supported inputs up to a maximum of 60. The MT700 Stingray is networkable and can be controlled using any device – PC, tablet, smart phone, etc. – residing on the same local area network. The mixer features its own SIP client and supports USB, SIP, and analog communication for use with VoIP, SIP client, and video conferencing codec solutions.

Each MT700 Stingray is equipped with four (4) amplified loudspeaker outputs that can push four (4) 8 Ω Ω loudspeakers with 15 watts of power. You can network up to 15 MT700 Stingray mixers into a single daisy chain with up to 15 individual zones. Additionally, you can assign up to four (4) auxiliary or podium microphone inputs per zone, and play back input using sound reinforcement via the room's loudspeakers. The MT700 Stingray offers proprietary echo-canceling, noisesuppression, distributed-array beamforming, AGC, and automatic mixing technologies from Phoenix Audio Technologies.

Follow these instructions to customize MT700 Stingray options and settings to fit the unique requirements of your conferencing space. Configure the MT700 Stingray using either the keypad directional buttons and corresponding menu selections on the LCD readout, or using a browser on a device connected to the local network. Access the menu screen by pressing the center [ENTER] keypad button. Use the directional buttons to select the microphone and line-out levels screen.

Mixer Settings



To configure the MT700 Stingray Mixer, select from the seven options on the menu-access screen. When ready to make a selection, press either the center [ENTER] keypad button, or the keypad's rightward directional [>] or downward directional [v] button. To return to a previous screen press the leftward directional [<] or upward directional [^] button.

Configuration options

1. Primary/secondary selection



Use this option to identify and select primary and secondary MT700 Stingray Mixer(s) connected in a daisy chain. A primary mixer is the unit connected directly to your intended communication mode – SIP, USB, or analog, for example. Designating a daisy-chain primary mixer automatically opens its connection to your intended communication mode and applies all primary settings to the secondary units that follow. When you

designate a primary unit in the daisy chain, you disconnect from your communication mode any other mixer that precedes it in the chain.

Designating a secondary mixer in a daisy chain automatically deactivates its direct connection to your communication mode and instructs the secondary mixer to inherit all settings assigned to the primary mixer.

If you attempt to connect a mixer that has been added to a daisy chain incorrectly, you receive the error message, "can't be set as secondary."

2. Automatic mixer selection



Use this option to select from one of two settings:

- 1) Mix microphone input
- 2) Mix line input

When you select mix microphone input, the DSP processes and "beamforms" – or focuses the voice signal – the microphone input, then adds the line input. All microphone input from primary and secondary mixers in a daisy chain are mixed together, with automatic mixing controlled by the primary mixer. The unit mixes input from any networked secondary mixer(s) and transmits the signal upward in the daisy chain to its primary mixer, The primary mixer mixes in its microphone input automatically and transmits the

final signal to analog, USB, and SIP outputs via its own, unique channel.

When you select mix line input, the DSP processes the line input and disables the mix microphone input automatically. All line inputs from both primary and secondary mixers networked in a daisy chain are mixed together. The unit mixes input from any networked secondary mixer(s) and transmits the signal upward in the daisy chain to its primary mixer. The primary mixer mixes in its line input automatically and transmits the final signal to analog, USB, and SIP outputs.

3. Microphone input setting



Use the microphone input setting to control individual microphone sensitivity within a group of microphones. To help set audio levels, the MT700 Stingray Mixer detects microphone sensitivity and displays it graphically. Use the directional keypad on the LCD screen to select and isolate a microphone. Then listen to the microphone line in using either headphones or a loudspeaker connected through the monitor output or speaker output lines. A mute request from any single microphone mutes all the connected microphones.

4. Line input setting



This option configures the line-input channels, with three choices offering sound-reinforcing capability from which to select: mute, auxiliary or podium.

Choose:

 Podium: to configure a microphone that transmits the user's voice to local loudspeakers and to neutralize room echo. Input is added to the result of the mixing process.

The signal may be played back on local loudspeakers with volume adjusted at the master level.

 Auxiliary: when configuring a media-playback device that does not receive local audio and does not require echo cancellation. Input is added to the result of the mixing process.

The signal may be played back on local loudspeakers and you may program up to (4) four separate volume levels:

- Level of signal sent to far end
- Local loudspeakers primary mixer output 1 and 2
- Local loudspeakers primary mixer output 3 and 4

- Local loudspeakers all secondary mixer output level
- Mute: to silence the line. The line inputs default to mute when mixing is applied to microphone inputs.
- 5. Speaker setting



Use the speaker setting to control the maximum output level transmitted to loudspeakers via the master volume. Also use this option to balance the level of USB, SIP or analog audio inputs.

6. General settings



Configure general settings to:

- Restore the MT700 Stingray Mixer settings to the factory default
- Manually disconnect the dashboard interface to pair a new device

- Program the duration of the display timeout
- Adjust display brightness

Selecting restore factory default prompts you with a message confirming your intention to reset the MT700 Stingray Mixer. Use display brightness to select from one of six brightness levels, which defaults to the highest setting, six. Display timeout allows you to set the length of LCD display-screen illumination to one of four durations:

- o 30 seconds
- o 60 seconds (default)
- o 2 minutes
- o 3 minutes

7. Information

Select information to view the settings assigned to an MT700 Stingray Mixer, including:

- o DSP version
- o IP address
- o MAC address
- Mixed microphone and line-input selections
- Primary or secondary unit status
- $\circ \quad \text{Serial number}$
- o SIP version
- o Unit ID
- Unit name

Four-way bridging

The MT700 Stingray Mixer offers four-way bridging of local, USB, analog and SIP signals. Bridging transmits microphone settings to all interfaces simultaneously while allowing you to adjust loudspeaker levels locally.



Using the Dashboard Interface

Use an IP address assigned to the MT700 Stingray Mixer to access its dashboard interface via a browser on a device connected to the local network. Using a browser to access the dashboard gives you remote access to the Stingray settings. The browser interface also provides access to more precise options and settings that are unavailable via the LCD menu. For optimal performance, assign a static rather than a dynamic IP address so that the IP address remains unchanged. When logging in for the first time, use the default username, "admin" and default password "1234".



The device setup screen shows all MT700 Stingray Mixers connected to the primary mixer's IP address. Select a mixer to modify its name, assign primary or secondary status, and edit primary parameters.

Use the primary parameters to adjust microphone sensitivity and loudspeaker master volume level, set line-input balance and volume levels, and designate podium or auxiliary input.



Microphone Mixer Utility

Microphone mixer settings control input from up to four microphones and four lines in. Each microphone input produces a single, beamforming audio output with noise cancellation, echo cancellation, and automatic gain control.



Microphone Mixer Settings

To function properly, all microphones in use must be the same model. Use the browser dashboard interface to select from a broader menu of settings, which enables greater control and precision.

EDIT MICROPHONE SENSITIVITY	\otimes
Volume 22 dB	
•	

• Microphone Tab – Adjust microphone sensitivity for all microphones attached to MT700 Stingray Mixer microphone inputs. This master control applies one sensitivity setting to all microphone inputs. There is no sensitivity setting for individual microphones.



- Speaker Tab Use this setting to bridge multiple devices that have different volume input levels. Level the loudspeaker output by balancing signals from individual USB, SIP and analog inputs. Then use the master volume slider to adjust the overall loudspeaker output level.
- Line Tab Each line input has its own, individual control and may be set to mute, podium or auxiliary. Hardware plugged into these lines is not beamformed, though the signal receives all other DSP processing.



- The podium setting assigns priority status to the line and applies voice lift, which broadcasts the user's voice through any connected loudspeakers. Several processing effects improve the quality of the audio input transmitted over this line, including:
 - Noise cancellation
 - Echo cancellation
 - Automatic gain control

Also use this setting to balance the local loudspeakers, and adjust secondary and send-out levels.



- Use the auxiliary setting when audio input does not require noise cancellation, echo cancellation, or automatic gain control. The auxiliary setting is for media input like music, presentations with audio, or movie clips, whose audio is transmitted directly to the local loudspeakers
- The mute setting silences the line

DODIUM	ALLY LLADY	NOT SET
FODIOM	NOXIEIARI	NOT SET

• The message "not set" indicates that a line is disabled



Line Mixer Settings

Select line mixer when receiving a line-level microphone signal from a pre-amplified source. Settings are similar to those for the microphone mixer. The line mixer setting applies to inputs: noise cancellation, echo cancellation, and automatic gain control. The line mixer limits the total number of line inputs to four (4) and disables the microphone inputs.

Speaker Tab – Use the master-volume slider to adjust the loudspeaker output level and control overall volume. Level the audio by balancing loudspeaker output received from USB, SIP and analog inputs.

Line Tabs – Each line input has its own setting. Select podium, auxiliary or mixer. The message "not set" indicates that a line is not functional.

The line mixer setting concentrates a voice signal using beamforming technology. Unless you use the mixer setting, a signal is not beamformed.

EDIT LINE 1 SE	ENSITIVITY	6
PODIUM	AUXILIARY	NOT SET
•		 Local Speakers 1+2 0 dB Local Speakers 3+4 -48 dB Secondary Level -48 dB Send-Out Level -48 dB

• Use the podium setting to assign priority status to this line and apply voice lift, which broadcasts the user's voice through the connected loudspeakers. This setting adjusts the balance of the local loudspeakers, secondary levels, and send-out level.



• Use the auxiliary setting for audio input that does not require noise cancellation, echo cancellation, or automatic gain control. This setting is for media input like music,



presentations with sound, or movie clips, and transmits audio directly to local loudspeaker output.

• Use the mixer setting to beamform the line input. To beamform a signal you must be using more than one line in. Additionally, all connected microphones must be the same model.

To select a podium microphone or auxiliary input you must use the line mixer on an MT700 Stingray Mixer that is set to primary.

Expanded Audio Coverage with Daisy Chaining

Daisy chaining offers a flexible solution that enables you to adjust audio coverage to match the configuration of your variable-sized conference room, without rewiring or reconfiguring the existing audio equipment in place. It is a convenient way to adapt to changes in a conferencing space.

Connect up to 15 MT700 Stingray Mixers in a daisy chain using the two (2) RJ45 ports located on the back of the mixer labeled LINK DOWN and LINK UP. For best results, use only CAT6 or CAT7 shielded cables.



If your conferencing space requires a daisy chain comprised of two or more mixers, use a secondary mixer's LINK UP port to connect to a preceding mixer's LINK DOWN port. In this way you can daisy chain up to 15 mixers comprised of one (1) primary unit chained to as many as 14 secondary units. MT700 Stingray Mixer settings default to secondary status and no programming is required for a secondary mixer that is properly connected in a daisy chain.

When designating a primary mixer in a daisy chain, connect the primary mixer directly to a communication mode – USB, SIP or analog. Use LINK DOWN to connect the primary mixer to a secondary mixer, or to connect a secondary mixer to the next secondary mixer in its chain. Use LINK UP to connect a secondary mixer to another secondary mixer or to a primary mixer that precedes it in its chain. When you change the status of an MT700 Stingray Mixer from secondary to primary, any subsequent secondary mixers automatically inherit the settings assigned to its primary mixer.

The MT700 Stingray Mixer allows you to connect up to four (4) microphones or four (4) line-level inputs, as well as four (4) loudspeakers. When serving a larger conferencing space, daisy chaining together up to 15 total mixers enables you to connect a maximum of 60 microphones and 60 loudspeakers.



In the illustrations that follow, each numeral represents a single MT700 Stingray Mixer. To configure a large room like the one represented here, program primary settings into the first mixer, and leave mixers 2, 3, 4, and 5 set to secondary (default). For the audio algorithms to properly functioning, all connected microphones to the microphone mixer inputs must be the same make and model.



Use either the LCD menu and directional pad (see p. 8) or browser dashboard interface (see p. 16) to select primary or secondary mixer status. Before assigning primary status to an MT700 Stingray Mixer, first connect the mixer to an intended communication mode – SIP, USB, or analog – then pre-select its primary settings, and use the browser dashboard interface to access the admin settings and name the mixer.

Rooms also may be split or combined using the browser dashboard interface or by creating a custom solution using the Phoenix Audio Technologies API. For more information, see the Resources tab at http://www.phnxaudio.com/stingray/mt700.

How to Create Zones

To establish a daisy chain correctly, first you must understand and plan your MT700 Stingray Mixer daisy-chain configuration. The order in which you place an MT700 Stingray Mixer in a chain affects whether the unit is connected to other mixers in the chain, or is split off into a separate zone.



For example, in an office that has five large conference rooms with walls that may be opened to combine rooms into a single, large conferencing space, you may configure a daisy chain that enables you to control each room individually, or you may group mixers together to create one or more zones. Depending on the requirements of your conference, you may configure the zones in a variety of ways.



 In this illustration, five (5) MT700 Stingray Mixers are grouped into three (3) zones, referred to here as Zones A, B, and C. Zone A is assigned to rooms 1 and 2. Zone B is assigned to rooms 3 and 4. Zone C is assigned to room 5 only. Configure the first primary mixer for room 1, and a secondary mixer without primary settings for room 2. Next, configure a primary mixer for room 3, and a secondary mixer without primary settings for room 4. Finally, configure the mixer for room 5 as a primary mixer and connect no secondary mixer(s). Each secondary mixer inherits the settings of its assigned primary mixer.



2. In this illustration, room 1 is isolated as Zone A, and rooms 2 through 5 are grouped together to form Zone B. To convert to this configuration from the configuration represented in illustration 1, switch the MT700 Stingray Mixer for room 2 to primary status, and the mixers for rooms 3 and 5 to secondary status. Leave the mixer for room 1 set to primary.



3. In this illustration, room 1 remains isolated as Zone A, rooms 2 and 3 are grouped together to form Zone B, and rooms 4 and 5 are grouped together to form Zone C. To establish Zone C, set the mixer for room 4 to primary status.



4. In this example, rooms 1 and 2 are grouped to form Zone A, room 3 is isolated to form Zone B, and rooms 4 and 5 are grouped together to form Zone C. To configure the zones in this way, set the MT700 Stingray Mixer for room 2 to secondary, the mixer for room 3 to primary, and leave the mixers for rooms 4 and 5 set to primary and secondary status, respectively.

The illustrations are examples only. By following the basic principles outlined here you can customize your daisy chain to accommodate the unique configuration of your conferencing space.

When daisy chaining more than one MT700 Stingray Mixer to cover multiple rooms, follow these guidelines:

- 1. The mixer in the first, primary position controls all other secondary mixers in the chain.
- 2. When splitting apart chained mixers, primary/secondary status is reassigned in sequential order beginning at the top of the chain. For example, mixers assigned to rooms 1, 3 and 5 all have been pre-configured with primary settings. When you split the chain, mixers assigned to rooms 1 and 2 become a zone, mixers assigned to rooms 3 and 4 become a second zone, and the mixer assigned to room 5 becomes a third zone.
- 3. Chained secondary mixers inherit the settings of the assigned primary mixer. Avoid configuring primary settings on any secondary mixer unless you intend to use the mixer in a standalone or primary capacity.

Zoning Quick Reference

Mixer set to primary

- Assigns primary status to an MT700 Stingray Mixer connected in a daisy chain
- Automatically activates the mixer's connection to your intended communication mode USB, SIP or analog
- Automatically applies all primary settings to the secondary units that follow
- Disconnects from the communication mode any other mixers that precede it in the chain
- Deactivates the daisy chain from any subsequent primary mixer onward, when an additional primary mixer is designated in the chain
- Enables podium- and auxiliary-line channel settings

Mixer set to secondary

- Inherits all settings assigned from the primary mixer in the daisy chain
- Automatically deactivates its direct connection to the communication mode
- Disables line-channel processing features associated with podium and auxiliary settings, but processes ordinary line input normally

Assigning secondary status to an MT700 Stingray Mixer does not erase automatically any primary settings previously programmed into it. When you assign primary status to an MT700 Stingray Mixer then later switch its status to secondary, the secondary mixer automatically inherits all settings programmed into the primary mixer. When you reassign primary status to an MT700 Stingray Mixer, the mixer reverts to the primary settings programmed previously.

For additional details on daisy chaining and using the browser dashboard interface, please visit www.phnxaudio.com.



Setting Up The SIP Client

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Limited Manufacturer's Warranty

This limited warranty gives you specific legal rights and you may also have other rights, which vary from state to state. The limited warranty can also be found online at http://www.phnxaudio.com/warranty/limitedwarranty.pdf or in the documentation we provide with the product. We warrant that during the warranty period, the product will be free from mechanical, electrical, and software defects in materials and workmanship. We limit the duration and remedies of all implied warranties, including without limitation the warranties of merchantability and fitness for a particular purpose to the duration of this express limited warranty. Some states do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you. Our responsibility for the defective product is limited as described below in this limited warranty statement.

In order to obtain warranty coverage: (1) you must have proof of your properly obtained limited warranty pursuant to Section 1 of this limited warranty; (2) an excluded event must not have occurred with respect to the mechanical, electrical, or software defect, malfunction, or other failure in the product and/or its part(s); and (3) you must obtain a return authorization number and other return shipping information from us to allow you to ship the product and/or part of the product back to us.

As part of these limited warranty services, we will offer: (a) phone and e-mail support (see contact information in Section No. 6 below); (b) free software upgrades for the purchased product, if applicable; and (c) no costs for any of the replacement parts or labor needed to make the product function as warranted. No other services or repair work are included in this limited warranty other than the repairs and services expressly described in this Section No. 4.

1. Who may use this limited warranty?

Phoenix Audio Technologies, located at address 16 Goodyear, Suite 120, Irvine, California 92618 ("we", "us", "our", or its derivations) extends this two- (2-) year limited product warranty (this "limited warranty") only to the consumer who originally purchases the product to which this limited warranty applies ("you", "your"). It does not extend to any subsequent owner or other transferee of the product. It does not cover anyone not located in the United States at the time coverage is sought under this limited warranty. To obtain coverage under this limited warranty, you must: (a) purchase the product which this limited warranty covers (and provide us with a

sales receipt or other evidence acceptable to us showing your purchase); (b) provide us with the serial number of the product for which you purchased the warranty; and (c) provide us with information about you, if we request it. This limited warranty is expressly conditioned upon and valid only upon the satisfaction of the foregoing requirements of (a) through (c), and our receipt of any and all required payments in connection with the foregoing requirements of (a) through (c).

2. What does this limited warranty cover?

This limited warranty covers mechanical, electrical, or software defects in materials and workmanship of the product purchased by you from us (the "product") for the Warranty Period as defined below, and this limited warranty is specific to the product for which you purchased this limited warranty.

3. What does this limited warranty not cover?

This limited warranty does not cover any damage ("excluded events") due to: (a) incidental events (e.g., coffee spills, water damage, damage resulting from dropping the product, or fire damage); (b) transportation; (c) storage; (d) improper use; (e) failure to follow the product instructions or to perform any preventive maintenance; (f) modifications; (g) unauthorized repair; (h) normal wear and tear; (i) misuse; (j) external causes such as accidents, abuse, or other actions or events beyond our reasonable control; or (k) damages or repairs that, in our opinion, result from similar events. This limited warranty does not cover incidentals, general customer dissatisfaction (such as in the case of "buyer's remorse"), lost peripherals (e.g., misplaced cables or power supplies needed to use the product), or any damage not caused by a mechanical, electrical, or software defect.

4. What will we do under this limited warranty/what are your remedies?

In the event of a mechanical, electrical, or software defect, malfunction, or other failure of the product not, in our opinion, the result of excluded events, we will remedy the failure or defect without charge to you. We can choose to:

• Repair the product or defective, malfunctioning, or otherwise failing parts in the product

within a reasonable time as solely determined by us; OR

- Replace the product or defective, malfunctioning, or otherwise failing parts in the product within a reasonable time as solely determined by us.
- 5. What is the period of coverage?

This limited warranty begins on the date of your purchase of the product and lasts for two (2) years, subject to the requirements described in Section No. 1, subsections (a) through (c) of this limited warranty (the "Warranty Period"). The Warranty Period is not extended if we repair or replace the product. We may change the availability of this limited warranty at our discretion, but any changes will not cover periods before the chance went into effect.

6. How do you obtain limited warranty service?

To obtain limited warranty service, you must call (818) 937-4774 or email our customer service department at support@phnxaudio.com during the Warranty Period. No limited warranty service will be provided without satisfying the requirements described in Section No. 1, subsections (a) through (c) of this limited warranty.

7. Limitation of liability

Except for the express warranties contained in this limited warranty statement, no other warranty, express or implied, including warranties of merchantability or fitness for any particular use, applies to the product. The remedies described above are your sole and exclusive remedies and our entire liability for any breach of this limited warranty. Our liability shall under no circumstances exceed the actual amount paid by you for the defective product, nor shall we under any circumstances be liable for any consequential, incidental, special or punitive damages or losses, whether direct or indirect. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

8. What can you do in case of a dispute with us?

Any controversy or claim arising out of or relating in any way to this purchase or attempted purchase of this limited warranty directly from us shall be brought on an individual, and not on a class-action basis, shall be exclusively subject to binding arbitration, which shall be administered

by the American Arbitration Association, and decided by one (1) arbitrator, and judgment upon the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. By purchasing this limited warranty, you further agree that the arbitrator, and not any federal, state, or local court or agency shall have exclusive authority to resolve any controversies, claims, or other disputes arising out of or relating to the interpretation, applicability, enforceability or formation of this limited warranty. By purchasing this limited warranty, you understand and agree that you are waiving and hereby waive your rights to maintain other available resolution processes, such as a court action or administrative proceeding, to settle any disputes between you and us.

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