



Operation/Reference Guide

# Tango

Distributed Audio Controllers

DAS-T0804-SIG 8-Source, 4-Zone Audio Controller

DAS-T0808-SIG 8-Source, 8-Zone Audio Controller



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# IMPORTANT SAFETY INSTRUCTIONS



1. Read instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the grounding-type plug. The grounding plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.



11. Only use attachments/accessories specified by the manufacturer.
12. Use only with cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified 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.



**Warning: Shock Hazard** - The lightning flash within an equilateral triangle, intended to alert the user to the presence of un-insulated "Dangerous voltage" within the products enclosure that may be of significant magnitude to constitute a risk of electric shock to persons



**Read Accompanying Documentation** – 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 product.

15. The fuse should only be replaced with a T8AL250V fuse.
16. The RCA, RJ11 and RJ45 Jacks shall only be used for their intended use. Refer to accompanying documentation to insure that they are being used as intended.
17. The spring clip terminals and F-connector on the tuner module should only be used to connect an AM and FM antenna.
18. A grounded power outlet is required for safe operation.
19. The grounded 3 prong power cable will be the mains disconnect and it should remain readily available.
20. To completely disconnect the unit from the AC mains, disconnect the power supply cord plug from the AC receptacle.
21. The main voltage for the AC mains is 120v AC

**Warning** – To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids are placed on the equipment.



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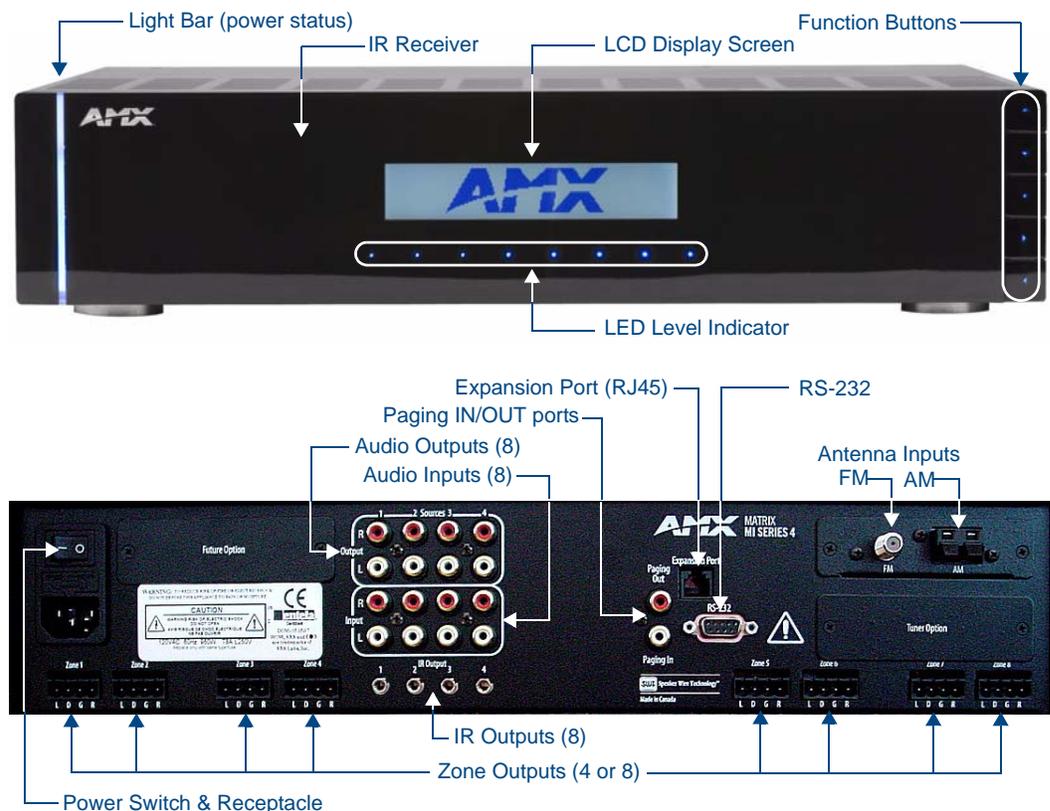
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# Tango Series Audio Controllers

## Overview

The Tango Series of Audio Controllers allow centralized control of common audio equipment for up to 4 or 8 independently controlled audio zones per Controller. Each Tango Controller is capable of controlling the source via Metreau Keypad, RS-232, IP address (via the optional Ethernet Module), SWT Speakers (equipped with IR receivers), or the MIO R-4 AUDIO IR remote control. Other sources such as Satellite Receivers, CD Players, MP3 Players, and any other IR Controlled audio source can be patched into the RCA source inputs on the rear panel (FIG. 1).



**FIG. 1** Tango Audio Controllers

Tango Series Audio Controllers are available in two variations:

- **DAS-T0804-SIG** (FG1103-01) - Tango 8-Source, 4-Zone Audio Controller  
The DAS-T0804-SIG can control 8 sources and distributes audio to 4 rooms/zones.
- **DAS-T0808-SIG** (FG1103-02) - Tango 8-Source, 8-Zone Audio Controller  
The DAS-T0808-SIG can control 8 sources and distributes audio to 8 rooms/zones.

Both Tango Controllers are expandable to 64 zones via Tango Zone Expanders.

## Product Specifications

The following table provides technical specifications for the Tango Audio Controllers. Unless otherwise noted, these specifications apply to both the DAS-T0804-SIG and DAS-T0808-SIG models.

| Tango Audio Controllers Product Specifications |  |
|--|--|
| Models Available:                              | <ul style="list-style-type: none"> <li>• <b>DAS-T0804-SIG</b> Tango 8-Source, 4-Zone Audio Controller (FG1103-01)</li> <li>• <b>DAS-T0808-SIG</b> Tango 8-Source, 8-Zone Audio Controller (FG1103-02)</li> </ul>   |
| Stereo Output:                                 | 25 Watts/CH stereo (20Hz to 20Khz @ .1% THD)   |
| Power:   | 960W max (Actual average usage = 300W)   |
| Zone Support:                                  | DAS-T0804-SIG - Four independent audio Zones.<br>DAS-T0808-SIG - Eight independent audio Zones. <ul style="list-style-type: none"> <li>• Each Zone is protected thermally.</li> <li>• Zone grouping.</li> <li>• Independent Volume, Bass, Treble, Balance and SRS® controls in each zone.</li> </ul> |
| Stereo Amplifiers:                             | <ul style="list-style-type: none"> <li>• 40 Watts/CH stereo amplifiers (20Hz to 20Khz @ .1% THD).</li> <li>• Amplifiers are protected from overload and thermal runaway.</li> </ul>  |
| SRS/WOW®:                                      | Standard SRS/WOW® audio enhancement technology by SRS Labs, on all zones.<br><b>Note:</b> SRS/WOW is a registered trademark of SRS labs, Inc.  |
| Front Panel Components:                        |  |
| • Light Bar                                    | Blue light bar indicates power status.   |
| • LEDs   | Blue LEDs indicate level status.   |
| • Function/Navigation Buttons                  | 5 pushbuttons allow for front panel programming, selection of sources, tuning AM/FM radio stations, or Sirius satellite radio stations (when equipped with the optional Sirius and/or AM/FM Tuner Card).   |
| • IR Receiver                                  | This is where you must aim the remotes from your audio source components so the Controller can learn and emulate those commands.   |
| • LCD Display                                  | Displays information necessary during the programming steps and afterward is the display to indicate information about the source input and zone activity.   |
| Rear Panel Components:                         |  |
| • Power Switch & Receptacle                    | The master power switch will remain in the ON position normally.   |
| • Paging In/Out Ports                          | RCA jacks to connect to Paging devices (any audio input can be used as a paging device). The Paging device connects to the Controller via the "Paging In" connector. The "Paging Out" connector is used to carry the page to Zone Expander(s).   |
| • RJ 45 Port                                   | Ethernet Port for future expansion   |
| • RS-232 Port                                  | DB9 connector allows the Tango Audio Controller to receive Controller Command Messages and provide status messages. This port is intended primarily for troubleshooting purposes.  |
| • AM/FM Antenna Inputs                         | Connections for the AM and FM Antennas.  |
| • Audio Inputs                                 | Stereo Inputs, 47K impedance, buffered.  |
| • Audio Outputs                                | Stereo Looping Outputs, buffered.  |
| • IR Outputs                                   | <ul style="list-style-type: none"> <li>• DAS-T0804-SIG: Four IR 3.5mm mono output jacks.</li> <li>• DAS-T0808-SIG: Eight IR 3.5mm mono output jacks.</li> </ul>  |
| • Zone Outputs                                 | <ul style="list-style-type: none"> <li>• DAS-T0804-SIG: 4 zone output connectors (connect to Metreau keypads)</li> <li>• DAS-T0808-SIG: 8 zone output connectors (connect to Metreau keypads)</li> </ul>   |
| • Expansion Port                               | RJ-11 Port connects main Tango Controller with Tango Zone Expanders.   |
| Dimensions (HWD):<br>(including feet)          | <ul style="list-style-type: none"> <li>• 4" x 17" x 13.5"</li> <li>• 10.16 cm x 43.18 cm x 34.29 cm</li> </ul>   |
| Weight:  | Max. weight with 8 zones - 31 lbs (14.06 kg)   |

| Tango Audio Controllers Product Specifications (Cont.) |   |
|--|---|
| Included Accessories:                                  | <ul style="list-style-type: none"> <li>• DAS-AMFM AM/FM Tuner Module (FG1110-01)</li> <li>• CC-NIRC NetLinx IR Emitter Cable (FG10-000-11)</li> </ul>   |
| Other AMX Equipment:                                   | <ul style="list-style-type: none"> <li>• DAS-KP-LCD-G Flush Mount LCD Keypad (FG1120-0x)</li> <li>• DAS-KP-LCDS-W Surface Mount LCD Keypad (FG1120-12)</li> <li>• DAS-MET-6SRC Metreau 6-Source Audio Keypad (FG1122-01-cc)</li> <li>• DAS-MET-NUM Metreau Numeric Audio Keypad (FG1122-02-cc)</li> <li>• DAS-T0804X-SIG Tango 4-Zone Expander (FG1103-11)</li> <li>• DAS-T0808X-SIG Tango 8-Zone Expander (FG1103-12)</li> <li>• DAS-TAMP4-SIG Tango 4-Channel Amplifier (FG1103-21)</li> <li>• DAS-TAMP8-SIG Tango 8-Channel Amplifier (FG1103-22)</li> <li>• NI-3101-SIG Signature Series NetLinx® Integrated Controller (FG2105-08)</li> <li>• MIO-R1-AUDIO Tango Distributed Audio Remote Control (FG147-04)</li> <li>• DAS-SIRIUS Sirius Satellite Radio Tuner Module (FG1110-02)</li> <li>• DAS-MNET Network Interface Card (FG1101-61)</li> <li>• DAS-LLC Line Level Converter with Speaker Wire Technology (FG1110-05)</li> <li>• DAS-TRMK Rack Mount Kit for Tango Audio Controllers and Zone Expanders (FG1102-60)</li> <li>• DAS-SWTC Ten Speaker Wire Terminal Connectors (FG1110-11)</li> </ul> |



# Installation

## Overview

Tango Series Controllers can be installed in a number of configurations depending on your audio needs. The capacity of a single unit is 8 independent zones and is typically wired with at least one Keypad or DAS-IRRX-SWT Stealth IR Receiver located in each zone. In some cases it is desirable to operate a second set of speakers within the same zone controlled by the same Keypad.



NOTE

*Each audio zone can be configured with either 2 pushbutton keypads (Numeric or Source), or 1 LCD Keypad and 1 pushbutton Keypad, but not 2 LCD keypads.*

Each Tango Controller can power 2 sets of speakers as long as the impedance does not drop below 4 ohms.

A system installation will go much faster and more smoothly if job plans are completed prior to the actual installation. Accurate record keeping will assist not only in the installation but also in training the client in the operation of the system. This will also be a great tool for any future servicing issues that may arise.

We recommend that you make copies of the records, and leave them behind with your client, and put one copy in your client's file.

## Rack-Mounting

Tango Audio Controllers occupy two rack spaces in a standard 19" equipment rack. Rack mounting brackets and screws are located in the accessories box supplied with the Controllers.



WARNING

*Exercise extreme care when lifting or moving Tango Audio Controllers within the rack to avoid injury. It is recommended that you seek the assistance of another person when rack mounting Tango Audio Controllers.*

1. Attach the rack mounting brackets to each side of the Tango Audio Controller using four M4 screws (supplied) for each bracket.



WARNING

*To prevent injury the Tango Audio Controller must be securely attached to the rack in accordance with the installation instructions. ALWAYS use the special rack mount brackets supplied and high quality fixing screws to ensure the Tango Audio Controller is installed in the rack correctly.*

2. Place the Controller in the equipment rack and hold steady.
3. Secure the Controller in the rack using the mounting holes.



WARNING

*DO NOT stand other units directly on top of the Tango Audio Controller when it is rack mounted, as this will place excessive strain on the mounting brackets.*

## Ventilation

Always ensure that the rack enclosure is adequately ventilated.

Sufficient airflow must be achieved (by convection or forced-air cooling) to satisfy the ventilation requirements of all the items of equipment installed within the rack.

## Speaker Wire Technology (SWT)

Speaker Wire Technology (SWT) allows both data and audio signals to travel over the same four conductor wire. This remarkable technology removes the need for control wire since the control and audio signals are shared on the same wire. The reliability and simplicity of this system has been proven for years. AMX Matrix Audio is the only company that offers a “retrofit solution”, one which allows the replacement of volume controls with AMX Matrix Audio keypads and Controllers, giving full control over the sources. Additionally, the versatility of SWT also allows AMX Matrix Audio products to be connected where the control wire has been run separately from the speaker cable.

## Cabling Installation Instructions



CAUTION

*Be sure to check for any wiring restrictions required by the electrical code in your area.*

This installation uses low voltage cabling similar to telephone and alarm wiring, and as such does not commonly have very many restrictions on their installation. However rules may vary in different regions.

### Cable Type

The Tango Controller is cabled using standard 4-conductor speaker cable originating at the Tango Controller, passing through the Keypad, and terminating at the speaker location. AMX generally recommends using a bundled 4-conductor 16-gauge stranded copper wire in a single continuous run.

### Connector Layout (Rear Panel)

FIG. 2 indicates the connector layout on the rear panel of the Tango Audio Controllers:

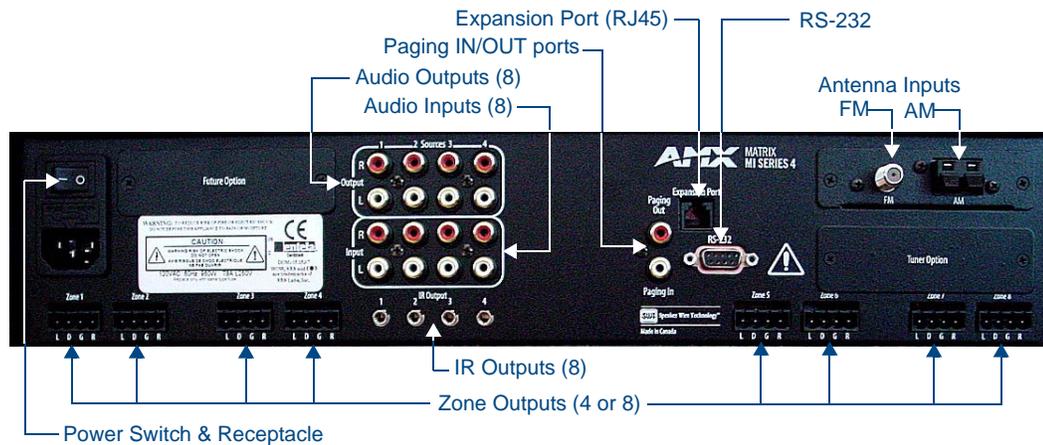
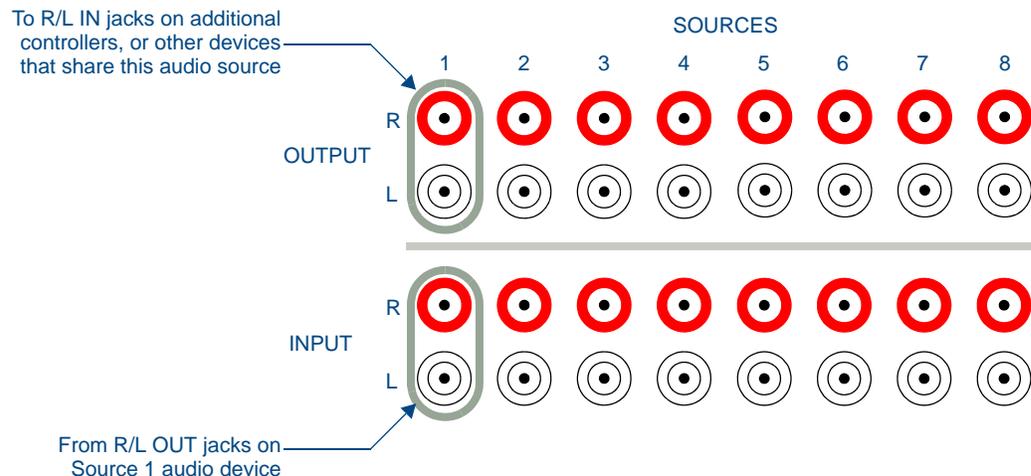


FIG. 2 Tango Audio Controllers - Connector Layout (Rear Panel)

## Connecting Sources (Audio Inputs/Outputs)

Up to eight audio devices can be connected to the Tango Controllers via the *Sources INPUT* and *OUTPUT* RCA connectors on the rear panel (see FIG. 1 on page 1). Industry standard RCA connectors provide line-level input and output connections for devices such as CD, DSS, MP3 players etc.

Each audio input has a corresponding buffered output used to connect the audio sources to additional Tango Controllers or to other devices that share the audio sources (FIG. 3).

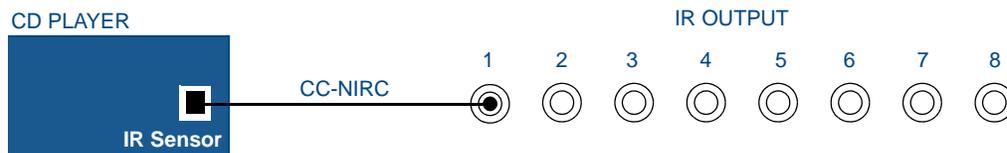


**FIG. 3** Connecting Sources (Audio IN/OUT)

## Connecting IR Outputs

Tango Controllers provide eight 3.5mm mono *IR Output* jacks for CC-NIRC NetLinX IR Emitter Cables (supplied). Commands received by the Tango Controller from the Metreau keypads are processed and sent via the IR Emitter Cable to the controlled device.

CC-NIRC NetLinX IR Emitter Cables attach to the controlled audio device's IR sensor with double-sided tape (included), and connect to the Tango Controller via the IR OUTPUT jacks on the rear panel (FIG. 4).



**FIG. 4** Connecting IR Output to an IR Sensor on a controlled audio device



NOTE

*Tango controllers support RC5 and RC6 IR codes. Codes that fall outside of this range may not function with the Controller.*

## Connecting Zone Outputs

Tango Controllers can be accessed by SWT Metreau keypads (DAS-MET6SRC and DAS-MET-NUM) to provide basic transport control, source selection and volume up and down, as well as enhanced controls including direct access capability, favorite's source selection, zone grouping, alarm clock setting, and Keypad lockout.



NOTE

*The Matrix Numeric (DAS-KP series) and LCD Keypads (DAS-KP-LCD series) are also supported by Tango Controllers.*

### SWT Connectors

SWT cabling follows a specific pinout configuration that is labelled on the Tango Controller, Metreau keypads, and other Matrix devices, as shown in FIG. 5.

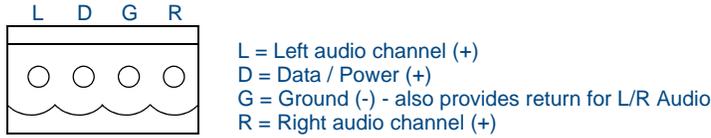


FIG. 5 SWT pinout configuration

### Connecting SWT Keypads to the Tango Controller

Metreau keypads connect to the 4-pin connectors labelled *Zone 1, 2, 3 etc.* on the rear panel (FIG. 6):

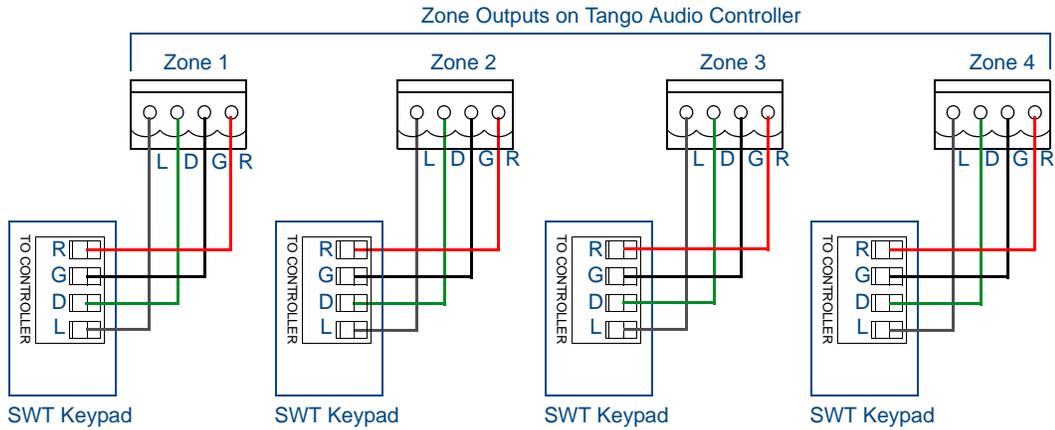


FIG. 6 Connecting Zone Outputs

### Connecting SWT Speakers to SWT Keypads

Connect SWT speakers to the 4-pin connector labelled *TO SPEAKERS* on the rear of the SWY keypads (FIG. 7).

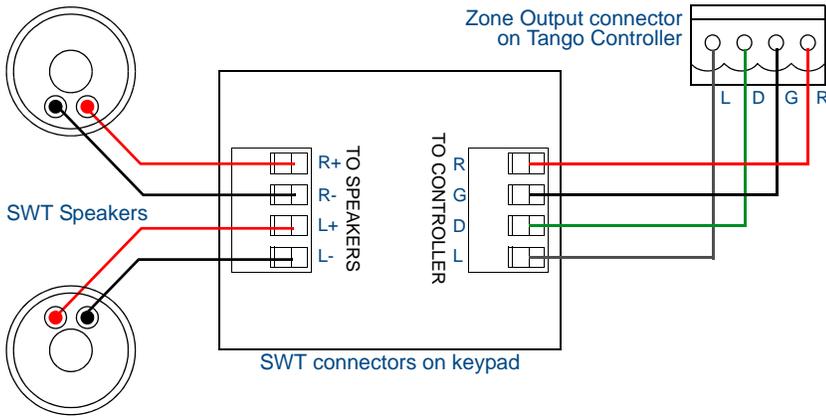
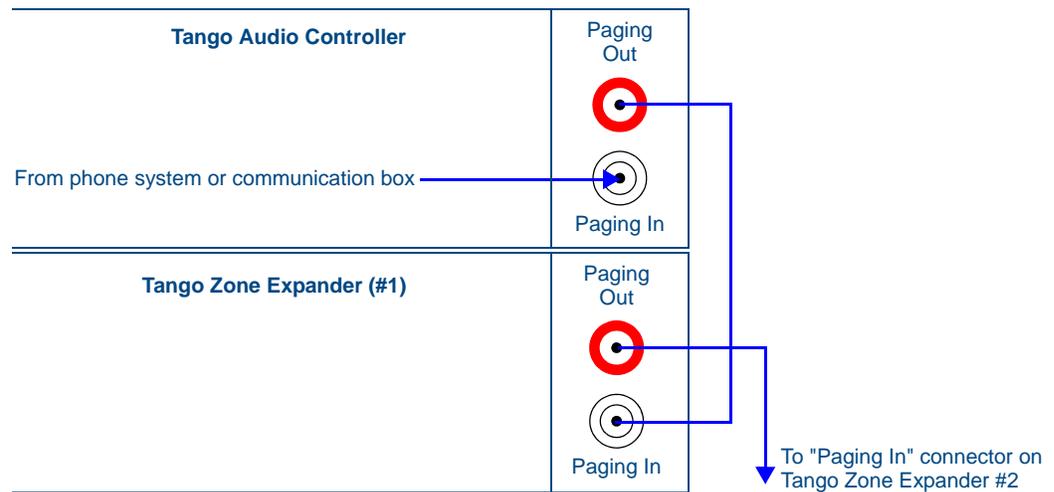


FIG. 7 Connecting SWT keypads and SWT speakers

Refer to the *Metreau Keypads Operation/Reference Guide* for additional details.

## Connecting Paging Inputs/Outputs

Paging Inputs are for Phone Systems or Communications Boxes. If the paging override is used, connect the paging Output connector on the Tango Controller to the Tango Zone Expander (FIG. 8):



**FIG. 8** Connecting Paging Input/Outputs

## Connecting Tango Zone Expanders

Tango Zone Expanders (FIG. 9) are used to expand the number of zones in the system beyond the 8 that are available using the Tango Controller. Each Tango Zone Expander has the capability of offering either 4 or 8 zones per Zone Expander.

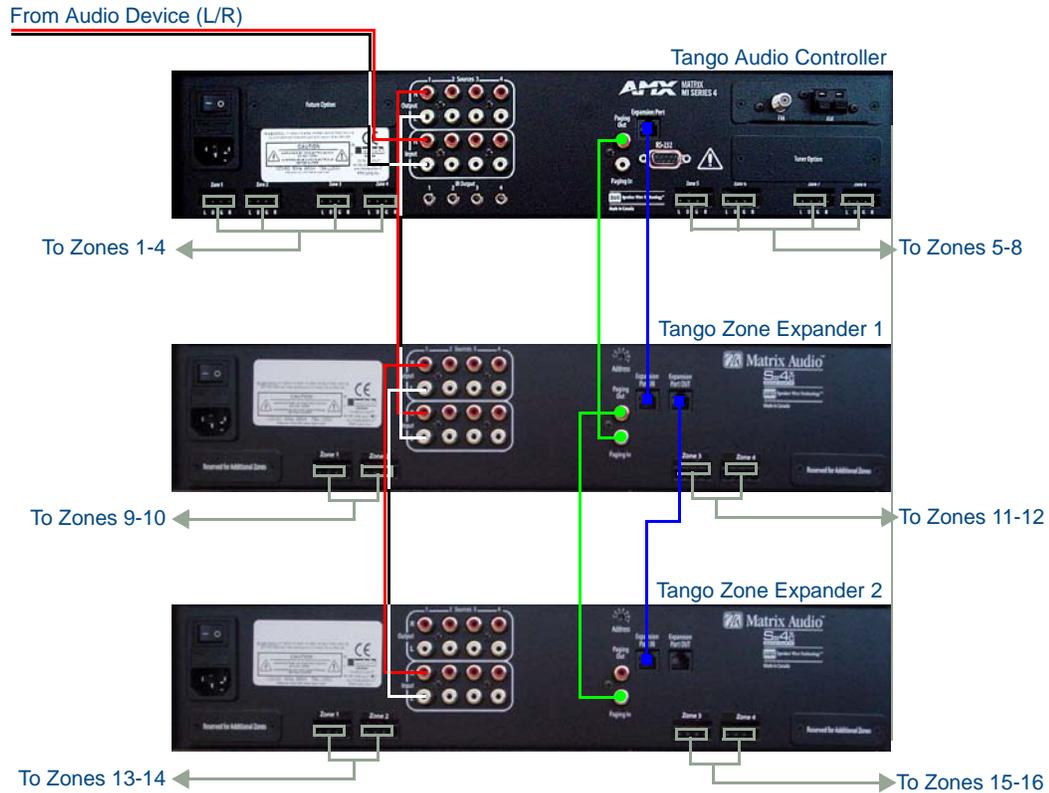


**FIG. 9** Tango Audio Zone Expander

Up to seven Zone Expanders may be used in the system, offering the ability to expand the system to 64 zones. Tango Zone Expanders are available in two variations:

- **DAS-T0804X-SIG** Tango 4-Zone Expander (FG1103-11)
- **DAS-T0808X-SIG** Tango 8-Zone Expander (FG1103-12)

FIG. 10 provides a wiring diagram illustrating the connections between the Tango Audio Controller and multiple Tango Zone Expanders:



**FIG. 10** Connecting the Tango Controller to Zone Expanders

1. Connect the RJ-11 jack labelled "Expansion Out" on the Tango Controller to the RJ-11 jack labelled "Expansion Port In" on the rear panel of the Zone Expander. This connection provides the Tango Controller with the ability to control the Zone Expander (see FIG. 10).
2. Set the Address switch on the rear panel of the Zone Expander to "1" if the Zone Expander services zones 9 – 16, set to "2" for zones 17 – 24 and so on until all seven Zone Expanders are utilized (see FIG. 10). Refer to the *Zone Expander Addressing* section on page 11 for further details.
3. Connect the source inputs. Patch each source from the source output on the Tango controller to the source inputs on the Zone Expander.



Ensure the left and right source connections are properly matched and seated to the left and right terminals of the both the Tango Controller and the Zone Expander. For example, Source 1 Output, on the Tango Controller to Source 1 Input on the Zone Expander).

Continue this procedure until each source is connected.

4. Paging Inputs are for Phone Systems or Communications Boxes. If the paging override is used, connect the paging output loop from the Tango Controller to the Zone Expander (see FIG. 10).
5. Connect the keypads to the Tango Controller and Zone Expander(s). Following the same wiring code you used at each of the keypad locations, plug each SWT connector into the desired Zone Output connectors on the Tango Controller and Zone Expanders (see FIG. 10).
6. SWT Speakers connect to the Tango Controller via the SPEAKERS connector on the SWT keypads. See the *Connecting Zone Outputs* section on page 7 for details.
  - Alternatively, you can terminate the speakers directly to the back of the Controller. Speakers connected directly to the zone output must be common grounded.
  - The minimum impedance for each zone should never be less than 4 ohms



NOTE

Installing more than 2 pairs of speakers on any Zone output is not recommended without installing an external amplifier.

7. On the Main Controller, make the necessary NIC Port connections for the (optional) Network Interface Card and AM/FM Antennas.
8. Connect the power supply and power up the units.



NOTE

Refer to the Tango Zone Expanders Installation Guide for additional details.

## Zone Expander Addressing

Use the 7-position Address switch (FIG. 11) on the rear panel of the Tango Zone Expanders to set the Address for each Expander, according to the values in the following tables:

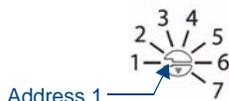


FIG. 11 Zone Expanders - 7-position Address Switch

### DAS-T0808-SIG (8-Zone Controller)

Use the following table when connecting to DAS-T0808-SIG (8-Zone Controller):

| Zone Expander Addressing - Connected to DAS-T0808-SIG (8-Zone Controller) |                                 |                                 |
|---|---------------------------------|---------------------------------|
| Zone Expander #   | DAS-T0804X-SIG (4 Zones)        | DAS-T0804X-SIG (8 Zones)        |
| Zone Expander 1   | Zones 9 – 12: set to Address 1  | Zones 9 – 16: set to Address 1  |
| Zone Expander 2   | Zones 13 – 16: set to Address 2 | Zones 17 – 24: set to Address 2 |
| Zone Expander 3   | Zones 17 – 20: set to Address 3 | Zones 25 – 32: set to Address 3 |
| Zone Expander 4   | Zones 21 – 24: set to Address 4 | Zones 33 – 40: set to Address 4 |
| Zone Expander 5   | Zones 25 – 28: set to Address 5 | Zones 41 – 48: set to Address 5 |
| Zone Expander 6   | Zones 29 – 32: set to Address 6 | Zones 49 – 56: set to Address 6 |
| Zone Expander 7   | Zones 33 – 36: set to Address 7 | Zones 57 – 64: set to Address 7 |

### DAS-T0804-SIG (4-Zone Controller)

Use the following table when connecting to DAS-T0804-SIG (4-Zone Controller):

| Zone Expander Addressing - Connected to DAS-T0804-SIG (4-Zone Controller) |                                 |                                 |
|---|---------------------------------|---------------------------------|
| Zone Expander #   | DAS-T0804X-SIG (4 Zones)        | DAS-T0804X-SIG (8 Zones)        |
| Zone Expander 1   | Zones 5 – 8: set to Address 1   | Zones 5 – 12: set to Address 1  |
| Zone Expander 2   | Zones 9 – 12: set to Address 2  | Zones 13 – 20: set to Address 2 |
| Zone Expander 3   | Zones 13 – 16: set to Address 3 | Zones 21 – 28: set to Address 3 |
| Zone Expander 4   | Zones 17 – 20: set to Address 4 | Zones 29 – 36: set to Address 4 |
| Zone Expander 5   | Zones 21 – 24: set to Address 5 | Zones 37 – 44: set to Address 5 |
| Zone Expander 6   | Zones 25 – 28: set to Address 6 | Zones 45 – 52: set to Address 6 |
| Zone Expander 7   | Zones 29 – 32: set to Address 7 | Zones 53 – 60: set to Address 7 |

## On-Board AM/FM Tuner Module

Tango Controllers come equipped with one DAS-AMFM AM/FM Tuner Module (FG1110-01). Additionally, you can install a second Tuner Module, as an optional accessory.



NOTE

*Refer to the DAS-AMFM Installation Guide for detailed installation instructions.*

The Tuner Modules take up the first (and second if two Tuner Modules are installed) source input on the Tango Controller.

Each source component is selected using the appropriate button on the keypad, remote or other interface which corresponds to one of the Tango Controller's audio device inputs (labeled as: *input 1*, *input 2*, and *input 3* respectively).



NOTE

*Just as a radio is incapable of playing two different stations at the same time, if multiple zones are listening to the same source, they will be listening to the same music. Consider multiple components of the same type (such as the tuner) if different zones wish to listen to different radio stations at the same time.*

### Antenna Installation

- The DAS-AMFM tuner requires a 75ohm F-type connection to receive FM stations. Connect a 75ohm antenna source into the 75ohm antenna input located on the back of the Controller.
- The DAS-AMFM tuner requires an AM antenna loop to receive AM stations. Connect the loop antenna source into the AM antenna input located on the back of the Controller.



NOTE

*Antennas should only be installed indoors.*

Refer to the *Tuner Modules* section on page 39 for details.

## Connecting the RS-232 Serial Port

Tango Audio Controllers provide an RS-232 (DB9) port for receiving RS-232 Controller Commands. Refer to the *RS-232 Controller Command Messages* section on page 61 for a complete listing of supported commands.

- Connector: DB9 Male
- Communications: 9600 Baud, 8 data bits, 1 stop bit, no parity

All messages are sent using ASCII text strings. Every command and status message is terminated with a line feed (0x0A or 10). All messages are case sensitive.

The Tango Audio Controller will respond to the command messages sent by the Host PC and will not send any messages except in this case. If the Host sends a new message before the Controller has responded to the previous message, the Controller will ignore the new message.

The Host should always start its communication with the Controller by sending a "Get Configuration" command to determine the capabilities of the unit it is controlling.

Not all Matrix Controllers support all of the functionality which is specified in the Command Definition.

- Commands must be in UPPERCASE • Valid Commands do not require CR/LF
- Valid Commands are confirmed with "Command Issued"
- Invalid commands are responded to with "ERROR"

### RS-232 Cable

When connecting to the RS-232 port located on the back of the Tango Controller, it is necessary to use a DB9 cable. Tango Controllers utilize DCE protocol therefore no NULL modem adapter is necessary. You may also use a USB to DB9 adapter.

## Connecting a Tango Amplifier

Tango Amplifiers provide extra output power for up to 4 additional speaker pairs driven from one zone.

- The **DAS-TAMP4-SIG** Tango 4-Channel Amplifier (FG1103-21) is a 4-channel amp that supports an additional 2 speaker pairs per unit.
- The **DAS-TAMP8-SIG** Tango 8-Channel Amplifier (FG1103-22) is an 8-channel amp that supports an additional 4 speakers pairs per unit.

Connect the Tango Amplifier to the Audio Controller via the 4-pin connector labelled “**From Controller**” on the rear panel of the Controller. FIG. 12 illustrates the connections between the Tango Audio Controller and Amplifier:



**FIG. 12** Wiring Diagram

Refer to the Tango 4/8 Channel Amplifiers Installation Guide for details.

## MIO-R1 AUDIO Tango Distributed Audio Remote Control

The MIO R-1 AUDIO (**FG147-04**) remote provides custom control features, contained in an elegant handheld device, designed specifically for use with Matrix Distributed Audio Systems using Metreau DAS-MET-6SRC keypads.

The MIO R-1 AUDIO controls up to 8 different devices or Sources.



**FIG. 13** MIO R-1 AUDIO remote controller

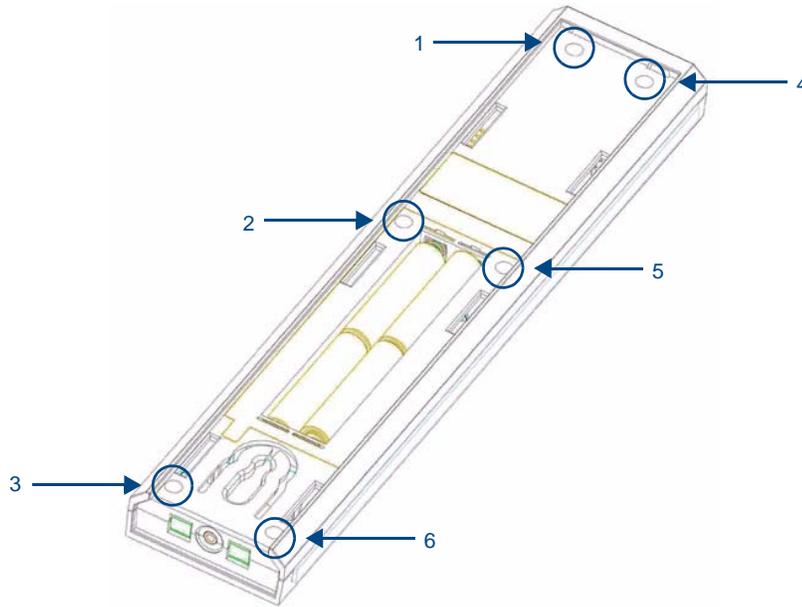
### Specifications

| MIO R-1 AUDIO Specifications |  |
|------------------------------|--|
| Power Requirements:          | 4 AAA Alkaline Batteries (included) - approx. 5 hours battery life   |
| Transmission Frequencies     | AMX 38 KHz/455 KHz IR<br>Note: The Metreau MET-6N keypads only support 38 KHz. When used with MET-6N keypads, the MIO R-1 AUDIO must be set to 38 KHz. |

| <b>MIO R-1 AUDIO Specifications (Cont.)</b>        |  |
|--|--|
| Transmission Range (distance) with MIO IR Receiver | <ul style="list-style-type: none"> <li>• 100 feet at 38KHz</li> <li>• 50 feet at 455KHz</li> </ul>   |
| Transmission Range (angle)                         | <ul style="list-style-type: none"> <li>• 140 degrees (+/-70° from perpendicular) horizontally from an axis extending from the end of the remote.</li> <li>• 40 degrees (+/-20° from perpendicular) vertically from an axis extending from the end of the remote.</li> </ul>  |
| Top Components                                     | <ul style="list-style-type: none"> <li>• LED - blue backlit buttons indicate device is awake</li> <li>• Display (OLED) - 128 x 32 pixels, active area is 29.42mm x 7.98mm</li> <li>• Pushbuttons - the power button is red backlit; the rest are blue backlit buttons. 45 buttons; 9 custom buttons (3 macro and 6 device).</li> </ul>   |
| Rear Component                                     | <ul style="list-style-type: none"> <li>• Programming Port - 2.5 mm stereo female conductor jack</li> <li>• Battery Door</li> </ul>   |
| Dimensions (HWD)                                   | 9.50 x 2.00 x .74 (241.3 mm x 50.8 mm x 18.80 mm)  |
| Weight   | <ul style="list-style-type: none"> <li>• .45 lbs (20 kg) without batteries</li> <li>• .55 lbs (25 kg) with batteries</li> </ul>  |
| Operating Environment:                             | <ul style="list-style-type: none"> <li>• Operating Temperature: 0° to 50° C (32° to 122° F)</li> <li>• Storage Temperature: -10° to 70° C (14° to 158° F)</li> </ul>   |
| Included Accessories:                              | <ul style="list-style-type: none"> <li>• 4 AAA Batteries</li> </ul>  |
| Other AMX Equipment                                | <ul style="list-style-type: none"> <li>• DB-9 extension cable (<b>FG10-727</b>)</li> <li>• Programming Cable - a 3 wire, 2.5 mm stereo jack (<b>FG10-817</b>)</li> <li>• Custom engraving (<b>FG147-01</b>)</li> <li>• MIO-RCC Kit (<b>FG147-03K</b>)</li> <li>• MIO-RCC Charging Base (<b>FG147-02</b>)</li> <li>• MIO-RBP Rechargeable Lithium Ion Battery (<b>FG147-10</b>)</li> <li>• MIO Modero IR Receiver (<b>FG5797-01xx</b>; xx indicates color)</li> </ul> |

### Installing Custom Buttons

1. Flip and turn the MIO R-1 AUDIO so that the buttons are facing away from you and the device is upside down.
2. Holding the device in both hands, place your thumbs on the battery door and push up to slide the battery door free.
3. Unscrew the 6 screw points indicated in FIG. 14.
4. Turn the unit over so the buttons are facing you.
5. Lift the top assembly away from the PCB.
6. If necessary, push out the standard buttons from the front of the top assembly.
7. Drop on your custom button pad and verify the alignment with the guide posts on the PCB.
8. Place the top assembly back down on the PCB and return the unit over, exposing the 6 screw points.
9. Tighten the 6 screw points.
10. Place the battery door back on the device, slide to lock it in place.



**FIG. 14** 6 screwpoints (battery compartment cover removed)

### Inserting Batteries into The MIO R-1 AUDIO

To install your 4 AAA batteries into the MIO R-1 AUDIO:

1. Flip and turn the MIO R-1 AUDIO so that the buttons are facing away from you and the device is upside down.
2. Holding the device in both hands, place your thumbs on the battery door and slide the battery door free.
3. Insert the batteries as indicated inside the battery compartment.
4. Place the battery door back on the device, slide to lock it in place.

### Battery Low Indicator

When the battery charge level is too low to sustain continuous operation, the LCD flashes, "Battery Low" and the device shuts down.

## Programming The MIO R-1 AUDIO Using KeypadBuilder

The MIO R-1 AUDIO comes pre-customized with appropriate labels, which in most cases should not be changed. However, if in your installation you intend to use the MIO R-1 AUDIO with a NetLinx Controller and Metreau AxLink keypads (for more than just Audio), you could customize your buttons in the KeypadBuilder application. The application and documentation are available from [www.amx.com](http://www.amx.com).

There are a select number of Serial Commands the MIO R-1 AUDIO recognizes. For a full list and descriptions, consult the *MIO R-1 AUDIO Operation/Reference Guide*.

The Programming Jack is used for communication between the device and KeypadBuilder. The programming jack uses a three-wire, 2.5 mm stereo jack, you can order the programming cable (FG10-817) from AMX if you do not currently possess one. While loading your configuration file make sure the device is situated as such that the batteries will not fall out. The load will fail if your batteries fall out during the process. **The MIO communicates at 115200 baud rate.**

Refer to the *MIO R-1 AUDIO Operation/Reference Guide* for instructions on using the Programming Jack to load configuration files on the MIO R-1 AUDIO.

## Tone Control & SRS Setting

To access the Tone Control and SRS settings, press the TONE button. This enables the Tone Control Mode with BASS as the first mode selected. There are 3 Tone Control Modes available for adjustment, and 4 SRS options, as follows:

- BASS: Increase / Decrease from -10dB to +10dB (Up/Down NAV buttons)
- Treble: Increase / Decrease from -10dB to +10dB (Up/Down NAV buttons)
- Balance: Left / Right (Up NAV button = right, Down NAV button = left)
- SRS options: BASS Boost, Focus, 3D, WOW

The Source buttons on the Metreau keypad provides visual feedback as to which mode it is currently in. The following sources will light based on the current mode:

- Source 1 = BASS
- Source 2 = Treble
- Source 3 = Balance
- Source 4 = SRS

When first entering Tone Control Mode, BASS mode is active (Source 1 LED is lit). To move from mode to mode, select the Center NAV button. This saves the setting and moves to the next mode.

**Note:** While in each of the modes, press and hold the Center NAV button to return to the default for that mode.

### SRS (Bass Boost, Focus, 3D and WOW) Settings

Use the UP Nav button to cycle through the SRS Settings: BASS Boost, Focus, 3D, WOW (in that order).

Use the Down NAV button to cycle backwards to the previous SRS setting.

- Press and hold the Center NAV button to disengage/clear the SRS settings (none of the SRS modes will be engaged).
- Press the Center NAV button to save SRS Mode & exit from Tone Control set-up.

Only one SRS mode can be engaged per room/zone. Each room/zone, however, can have a different SRS mode.

The Volume LED's are used to provide feedback as to which SRS setting is active:

- No LED = SRS Off
- LED1 = BASS boost
- LED 1&2 =Focus
- LED 1,2&3 =3D
- LED 1,2,3&4 =WOW

Moving from one SRS position to another disengages the original setting i.e. moving from WOW to BASS BOOST, disengages WOW.

### Zone Control

- **To turn a single Zone ON**, press any Source button (or press the Power Button).
- **Note:** If the Power button is pressed, the zone will turn ON and will remember which source was previously ON.
- **To turn a single Zone OFF**, press the Power button.
- **To turn a specific Source ON in all Zones**, press and hold any Source button (the selected source will turn on and play in all zones).
- **To turn a specific Source OFF in all Zones**, press and hold the active Source button.
- **To Turn All Zones OFF (System OFF)**, Press the "OFF" button. All zones will be turned off, and no sources will play.
- **Note:** One minute after an ALL OFF has been performed, the Controller and all Sources will be powered down
- **Note:** Pressing Source Buttons switches between sources and turns the Source On, but does not toggle between ON and OFF.

## Source Control

The source control functionality outlined below represents "suggested" functions. All source control buttons (Up, Down, Left, Right, Center and Center HOLD) can be customized via the Controller Menu for all sources except for the Internal Tuner, which cannot be customized.

### Internal Tuner and Audio Server

|                         |                |                |
|-------------------------|----------------|----------------|
| NAV Button              | Internal Tuner | AUDIO SERVER   |
| NAV Up                  | SEEK UP        | NEXT           |
| NAV Down                | SEEK DOWN      | PREVIOUS       |
| NAV Left                | Prev PRESET    | Prev PAGE      |
| NAV Right               | Next PRESET    | Next PAGE      |
| NAV Center (press)      | AM/FM          | SELECT         |
| NAV Center (press/hold) | Stereo/Mono    | User Defined 1 |

### CD and DVD

|                         |               |        |
|-------------------------|---------------|--------|
| NAV Button              | CD            | DVD    |
| NAV Up                  | Next TRACK    | UP     |
| NAV Down                | Prev TRACK    | DOWN   |
| NAV Left                | Prev DISC     | LEFT   |
| NAV Right               | Next DISC     | Right  |
| NAV Center (press)      | User Defined1 | Select |
| NAV Center (press/hold) | User Defined2 | Menu   |

### Satellite and Other

|                         |                    |                      |
|-------------------------|--------------------|----------------------|
| NAV Button              | External Satellite | Other                |
| NAV Up                  | Next Channel       | User Def UP          |
| NAV Down                | Prev Channel       | User Def DOWN        |
| NAV Left                | Guide Down         | User Def LEFT        |
| NAV Right               | Guide UP           | User Def RIGHT       |
| NAV Center (press)      | Select             | User Def SELECT      |
| NAV Center (press/hold) | Guide              | User Def HOLD SELECT |

### Custom XM

|                         |           |
|-------------------------|-----------|
| NAV Button              | CUSTOM XM |
| NAV Up                  | UP        |
| NAV Down                | DOWN      |
| NAV Left                | LEFT      |
| NAV Right               | RIGHT     |
| NAV Center (press)      | CENTER    |
| NAV Center (press/hold) | CEN hold  |

## Direct Numeric Access

### Tuners

Enter the station identification and press ENTER.

- Strings of 3 to 4 numbers are recognized.
- If a "." (dot) is part of the string, then an FM station is assumed, otherwise an AM station is assumed.

*Example:* 1050 + ENTER= 1050AM, 104.5 + ENTER = 104.5FM

### CD Player / Changer

**To select a specific Disc & Track**, the format is DDD • TTT + ENTER (DDD=Disc, TTT=Track).

*Example:* 11.11 + ENTER = Disc 11, Track 11

**To select a specific track on the current disk**, enter TTT + ENTER (TTT=Track).

*Example:* 3 + ENTER = current disk, Track 3

### Satellite Radio/Video

Enter the station number and press ENTER. Strings of 2 - 4 numbers are recognized.

## Configuration Mode

The configuration mode allows you to set various device features (IR Transmit Mode, Timeout Adjustment, Download Mode, Debug Mode, Battery Type, LED Awake Brightness, and LED Sleep Brightness).

To enter Configuration Mode:

1. Press and hold button #38 and the "." (dot) or button #26 (see FIG. 13). Both buttons must be pressed within 0.1 seconds of each other and held down for 2 seconds. The device indicates you are now in configuration mode.
2. Press button #3 (FAV) when you are finished.



NOTE

*Your settings will not be lost in the event your batteries die or are removed.*

### IR Transmit Mode



NOTE

*Metreau MET-6N keypads support 38KHz only. The MIO R-1 AUDIO must be set to 38KHz if used with MET-6N keypads.*

Pressing button **1** toggles the IR transmission mode between 38KHz (default) and 455KHz. The display indicates the current mode.

### Timeout Adjustment

Press button **2** to change the sleep timeout from the default. Each time "2" is pressed, the sleep timeout raises incrementally. The pre-determined sleep timeouts are: 3 seconds, 6 seconds, 9 seconds, and 12 seconds. The display indicates the selected sleep timeout.

### Download Mode

Pressing button **3** toggles the Download mode OFF and ON. The Download mode must be ON before you can download a file to the MIO R-1 AUDIO device. While the Download mode is ON the device will not go to sleep. A power cycle will return the device to Download OFF.

### Debug Mode

Pressing button **4** toggles development mode between ON and OFF. The display indicates the selected mode. In development mode, the display shows the IR code assigned to buttons when pressed.

This mode is useful to the programmer when determining what IR codes are associated to each mode.

### **Battery Type**

Pressing button **6** toggles the battery type between Normal and Recharge. The display indicates the selected type. The type of battery in the MIO R-1 AUDIO dictates the battery type you need to set.

### **LED Awake Brightness**

Pressing button **7** toggles the Power LED brightness mode from LOW to MED and then HIGH. The display indicates the selected mode.

### **LED Sleep Mode Brightness**

Pressing button **8** toggles the Sleep brightness mode from OFF to LOW and then MED. The Sleep brightness is the state the MIO R-1 AUDIO assumes while in the charging cradle.

### **Additional Documentation**

Refer to the *MIO R-1 AUDIO Remote Operation/Reference Guide* for additional information on MIO R-1 AUDIO functionality, including: Privacy Mode, Presets, Zone Grouping, Favorites, Alarm, and Keypad Lockout.

# System Integration Drawings

## SWT Distributed Audio Systems

### Using Four Conductor Speaker Wire

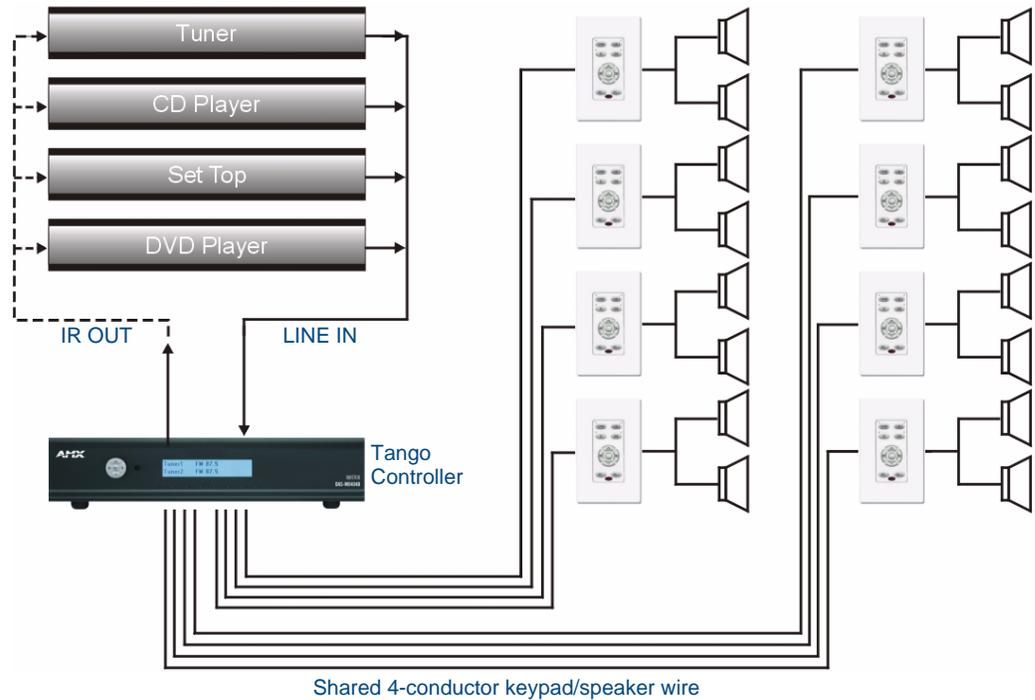


FIG. 15 System Integration Drawing Using Four Conductor Speaker Wire

### Using the Audio Zone Expander

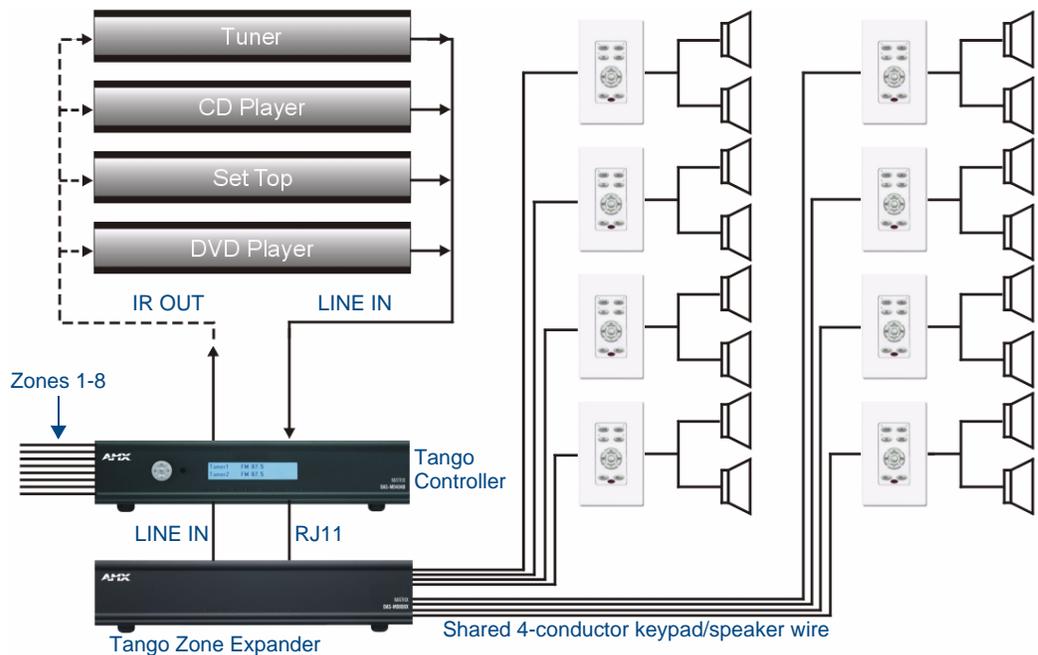


FIG. 16 System Integration Drawing Using the Audio Zone Expander

## RF Interference

Shielded cable is generally not required for audio installations. Although the Tango Controller does generate radio emissions, it uses a digital signaling path during command entry.

These emissions have been accommodated for in design and conform to RF emission standards. There are normally no ongoing data communications in the circuit path. Communications only occur at the time a command is issued from a zone. However many other systems do use microprocessor systems where the cabling may be in close proximity such as telephone and security systems, and it is possible for different systems to interfere with each other.

If you face an installation where your cable runs are in parallel to these types of systems you may consider shielded cable to the keypads. In this case ground the drain wire by connecting it to the chassis of the Tango Controller.

## Distribution Wiring

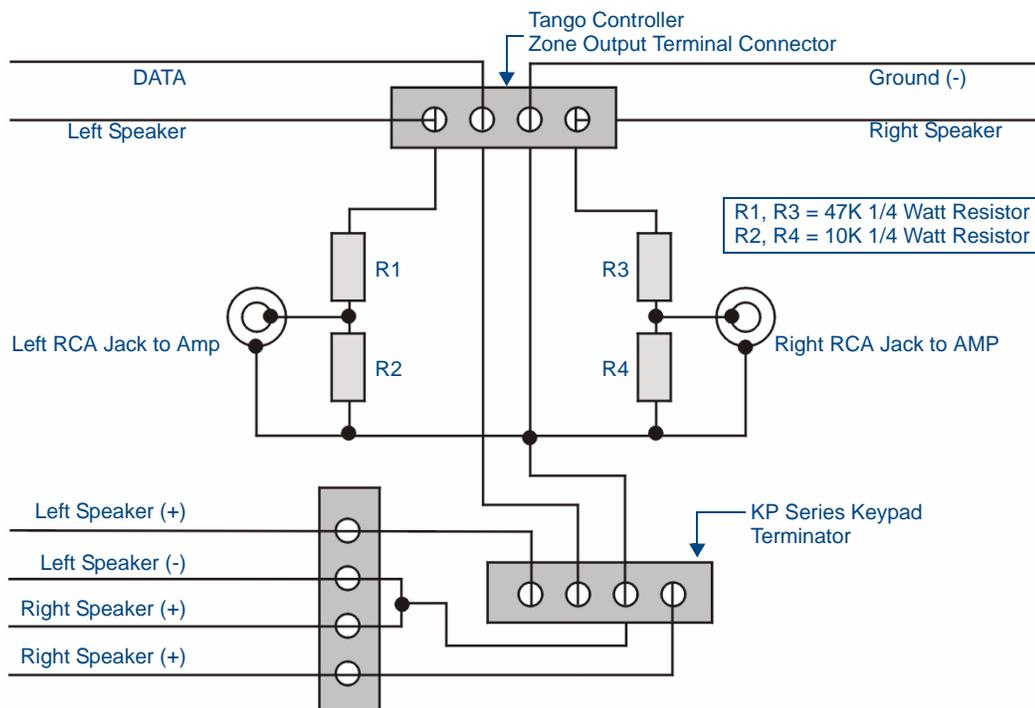
In general, wiring is installed in a single continuous run between the Tango Controller, the Keypad and the speaker location. Other cable routing options such as a home run to a common wiring distribution point, integration with home automation systems, or split zone applications can be significantly different than the general information presented here. These applications are left to the installer's discretion and experience. Examples of common wiring options can be found in the Special Wiring Configurations section of this document.

## SWT - Special Wiring Configurations

### Auxiliary Amplifier Configuration

In some cases you may require more power for a given zone than the Tango Controller, or Carbon XA can provide. You may purchase a DAS-LLC to provide a line level output to incorporate a larger external amplifier, or you can make your own line level converter.

FIG. 17 shows the construction of a simple circuit of discrete components to reduce the "speaker level" output of the Tango Controller to "line level" so that it can drive an auxiliary amplifier.



**FIG. 17** Auxiliary Amplifier Configuration

This amplifier would typically be installed at the equipment rack (head end).

## Remote Amplifier Configuration

In some cases, especially where the distance between the Tango Controller and the zone is unusually long, such as another building on the property i.e. cottage-to-boathouse for example, it is sometimes desirable to have a remote amplifier at the zone end.

You may install a DAS-LLC to accomplish this task or you may build your own. FIG. 18 shows the construction of a simple circuit of discrete components to reduce the Tango Controller output to “line- level” so that it can be fed into an auxiliary amplifier.

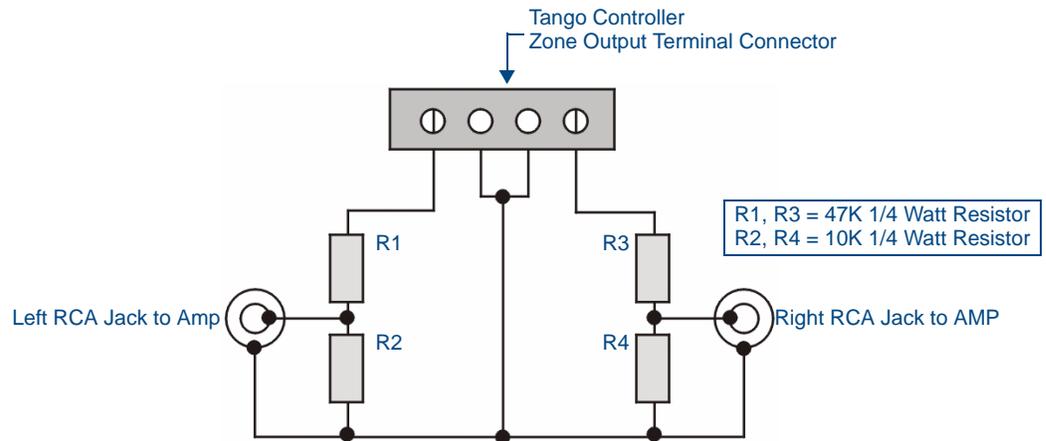


FIG. 18 Remote Amplifier Configuration

## 2 Wire Configurations – Keypad for Control Only

In some retrofit configurations it is not feasible or possible to re-route the speaker cable through the Keypad. In cases such as this, it is possible to run a separate cable pair (CAT- 3 / CAT- 5 / Twisted Pair) cable from the Tango Controller to the Keypad device for control purposes. FIG. 19 shows the connections of the control signal path to the Keypad, and the speaker connections to the Tango Controller.

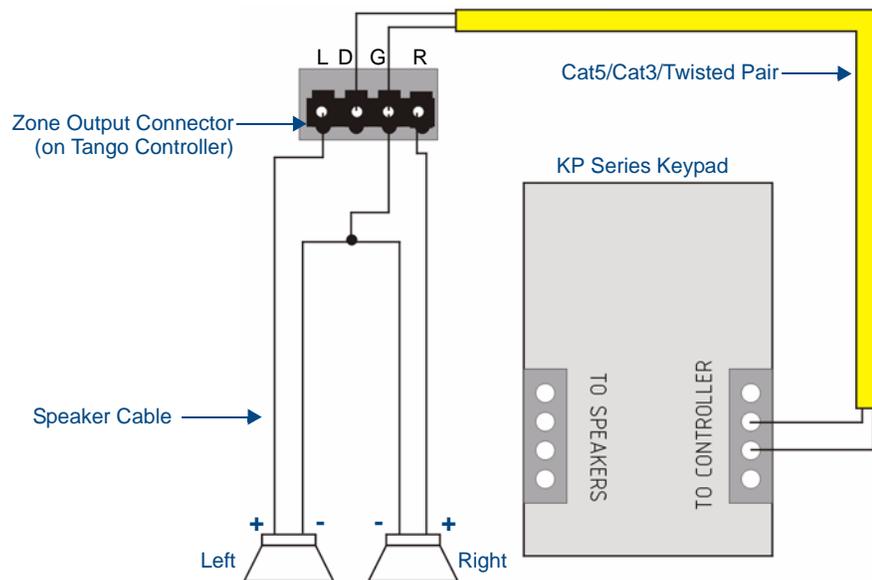
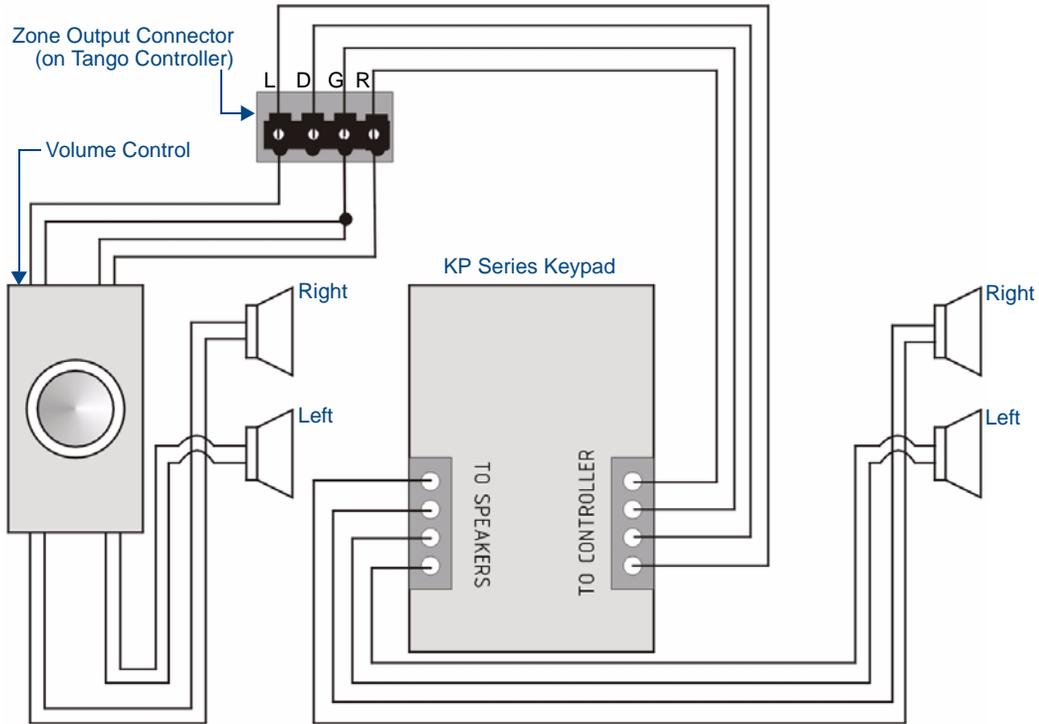


FIG. 19 2 Wire Configurations - Keypad for Control Only

### Split Zone / Analog Volume Control (Option 1) One Keypad

In cases of split zones where more than one set of speakers are driven from the same Keypad (such as a Reading nook off of the master bedroom) it is sometimes desirable to place a volume control in the split zone. FIG. 20 shows the connections to a remote zone, and “Autoformer” volume control device. Inure that impedance setting don’t fall below 4 Ohms.



**FIG. 20** Split Zone / Analog Volume control (Option 2) one Keypad



NOTE

*It is not recommended to install more than 2 pair of speakers per zone.*



NOTE

*If you are installing 2 pairs of speakers in a zone and the speakers are 8Ohms It is not necessary to use an impedance matching autoformer type volume control. A standard stereo volume control will perform properly. The impedance will be approximately 4 Ohms.*



NOTE

*If you are using an impedance matching volume control with 2 pairs of speakers set the impedance matching to the 2X setting.*

# Setup and Configuration

## Overview

Configuration and IR Capture take place on the front panel of the Tango Controller. Setting such as Favorites, Grouping, Bass, and Treble, Balance, SRS, Alarm, and Lockout functions are programmed from within any zone using the zones interface. (i.e. Keypad).

We suggest you read this section carefully in its entirety before starting to program the Tango Controller. This will allow you to obtain a general understanding of what you will see and what to expect when you go through the programming exercise. Programming only becomes a complicated procedure when you are trying to solve all operating issues at the same time.

Careful planning, documentation and experimentation on your part with the sources prior to taking the programming on will allow you to experience an easy and painless installation.

## Source Documentation

Make certain you have all the documentation for each source component. You may need to reference this material to learn the operation of the equipment. The key to successful programming is to understand how each of the source components operates. By determining how you would like the components to function as part of the home audio system, you will spend less time on the programming phase of the installation.

## Key-By-Key Programming

The Tango Controller learns the specific codes for each function, one-at-a time, by recognizing the IR signal generated by the Source Remote Control.

You do not have to program every Function. Keypad programs will be simple, functional and intuitive. From a clients perspective, sometimes less is more.

## Programming Worksheets

Before getting started, please outline how the system is intended to operate. This outline will assist you in setting up the remote training session as well as the Favorite, Grouping and alarm functions. You will find this worksheet will not only help you plan in advance how the Keypad Buttons will perform each function, but they will also assist in the event that IR codes, Favorites or Groupings need to be re-learned or changed. This will reduce the time needed to program/reprogram the Controller and keypads. It will also be your guide should any of the audio devices need to be changed out or upgraded in the future. You will know what the original devices configuration looked like so the keypads can be labeled in the same configuration. Consistency during Keypad programming and clear documentation will reduce frustration and shorten the operational learning curve for your client.



NOTE

*New equipment is rarely shipped with batteries installed in the remote. Be sure you're sources remote is functioning properly before continuing to program the Tango Controller.*

**Tip:** You should take some time to familiarize yourself with the basic operation of the audio devices remote control to better understand the operating characteristics of the device and which functions you wish to program into the Tango Controller. If you can operate and manage the audio device as a standalone unit, it will aid you in determining which functions you want to program into the Controller.

**Technique Tip:** Programming is an interactive exercise between you, the Tango Controller and the audio sources remote control, which may vary from unit to unit. You will learn the techniques to best train the Tango Controller through some trial and error and observation. You may need to modify your programming technique on a remote-by-remote basis. Some remotes may need to be closer to or further away from the receiver. Some may program better with quick key presses and some with long key presses. Some may require a change in distance and angle between the remote and the Tango Controller. If a particular method doesn't seem to be working for you, try to modify your approach to understand the characteristic behavior of the donor device.

## Programming the Tango Controller

### The Programming Panel

The IR learning programming controls are located on the front of the Tango Controller. FIG. 21 shows the front of the Tango Controller with the navigation array to the left of the readout. The array is used to navigate through the programming and setup of the Controller.

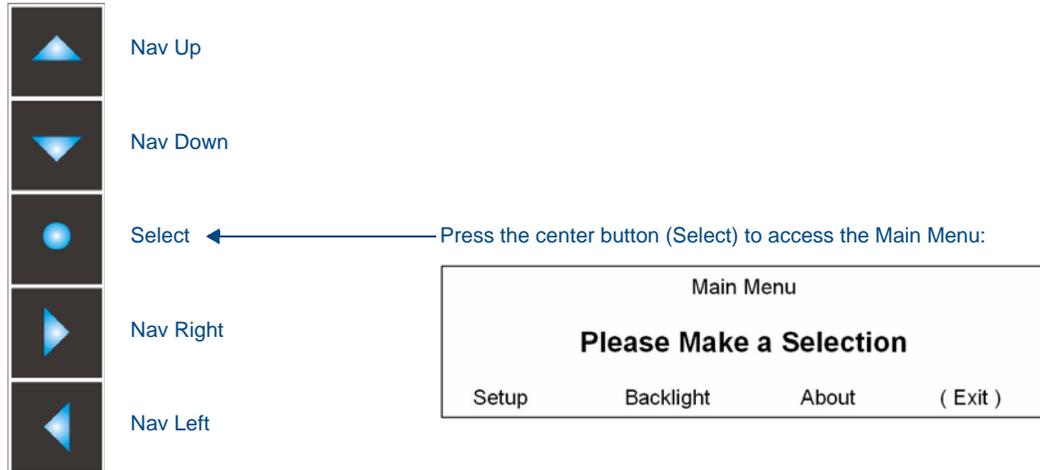


FIG. 21 IR learning programming controls

### Main Menu screen

Press the center navigation button on the front of the Controller to access the Main Menu screen (FIG. 22).

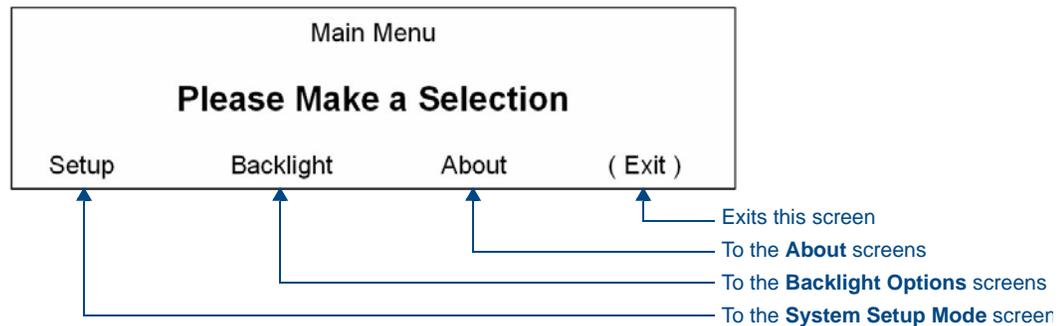


FIG. 22 Main Menu screen options



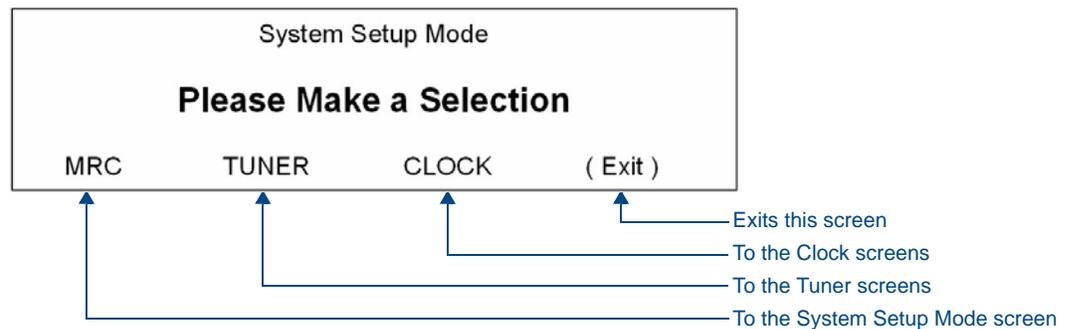
Use the navigation buttons (<< / >>) on the front of the Controller to move from one option to another, and the **SELECT** button to make a selection.

Options on the Main Menu screen include:

- **Setup** - Accesses the System Setup Mode screen
- **Backlight** - Accesses the Backlight Options screen
- **About** - Accesses the About screen
- **Exit** - Exits the Main Menu

## System Setup Mode screen

Select **Setup** from the Main Menu screen to access the **System Setup Mode** screen (FIG. 23):



**FIG. 23** System Setup Mode screen options



NOTE

The acronym "MRC" stands for "Multi Room Controller", and refers to the Matrix Audio Controller.

Options on the *System Setup Mode* screen include:

- **MRC** - Accesses the **MRC Setup Mode** screen, where you can program sources and adjust the input attenuation & output gain for each source, as well as configure Paging.
- **Tuner** - Accesses the **Tuner Setup** screens, where you can set the presets for each tuner detected.



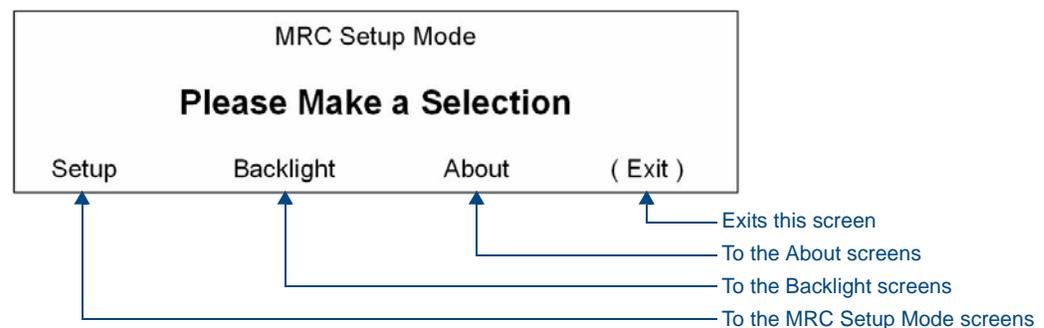
NOTE

"Tuner" will only be displayed if a tuner module(s) is detected on board the Controller.

- **Clock** - Accesses the **Clock Setup Mode** screens, where you can set the time and view the alarms that have been set for each room/zone.
- **Exit** - Exits the *System Setup Mode* screen.

### System Setup - MRC Setup Mode screen

Select **MRC** from the *System Setup Mode* screen (FIG. 23) to access the MRC Setup Mode screen (FIG. 24).



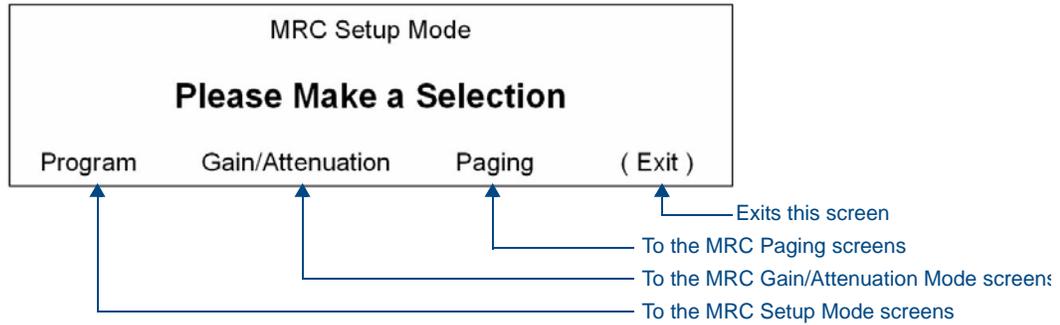
**FIG. 24** MRC Setup Mode screen options

The options on this screen include:

- **Setup** - Accesses the MRC Setup Mode Options screen where you can program sources and adjust the input attenuation & output gain for each source.
- **Backlight** - Accesses the **MRC Backlight** screen.
- **About** - Accesses the **About** screen, which displays the firmware version of the Controller, Zone Expanders and all connected keypads.
- **Exit** - returns to the previous screen.

### MRC Setup Mode Options screen

Select **Setup** in the *MRC Setup Mode* screen (FIG. 24) to access the **MRC Setup Mode Options** screen (FIG. 25).



**FIG. 25** MRC Setup Mode Options screen options

- **Program** - Access the *Program Mode* screen, where you can select and program an IR Source device.
- **Gain/Attenuation** - Access the *Gain* and *Attenuation* screens to adjust the Input Attenuation and Output Gain for each audio source.
- **Paging** - Access the *Paging* screens to set the screen volume and turn Paging ON/OFF in each room/zone.
- **Exit** - returns to the previous screen.



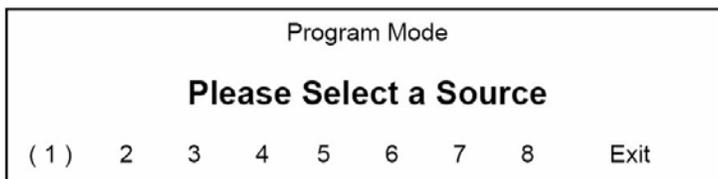
*Each source can be leveled to approximately the same level (via the Gain/Attenuation settings) to insure a smooth transition between source selections.*

## Programming Source Equipment



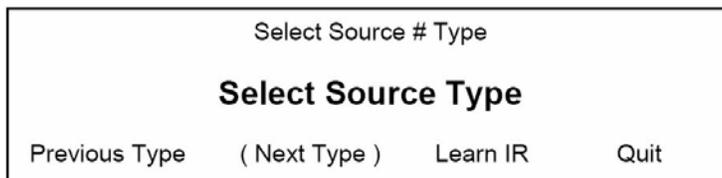
**Placement of the Remote** - The audio source remote should be located about 6 to 12 inches away from the IR port on the Tango Controller. The path between the devices should be unobstructed with a clear line of sight. Fluorescent light fixtures and bright sunlight may interfere with the learning process. When possible use only incandescent lighting during the programming session.

1. Select **Program** from the *MRC Setup Mode Options* screen (FIG. 25) to access the Program Mode screen (FIG. 26), where you can select a source to program.



**FIG. 26** Program Mode (Select a Source)

2. Select a Source to program (1-8). This invokes the **Select Source # Type** screen.



**FIG. 27** MRC Setup Mode - Select Source # Type



NOTE

If the Source Type has not been previously selected, “Select Source Type” is displayed.

- [Quit] returns to the previous screen.
  - Click “Next Type” to scroll through the following available Source Types:
    - Select Source Type
    - TUNER (Tuner)
    - CD (CD)
    - DVD (DVD)
    - SAT (Satellite)
    - AUDIO (Audio Server)
    - OTHER (Other)
    - XM (Custom XM)
3. Select the “Source Type” by clicking “Learn IR” for the particular Source being programmed.

### Learn IR Commands

Refer to the *IR Commands By Source Type* section on page 57 for details.

1. Select **Learn IR** on the *Select Source # Type* screen (FIG. 27) to access the *Learn IR* screen (FIG. 28), with the first IR to be learned for the selected Source Type:

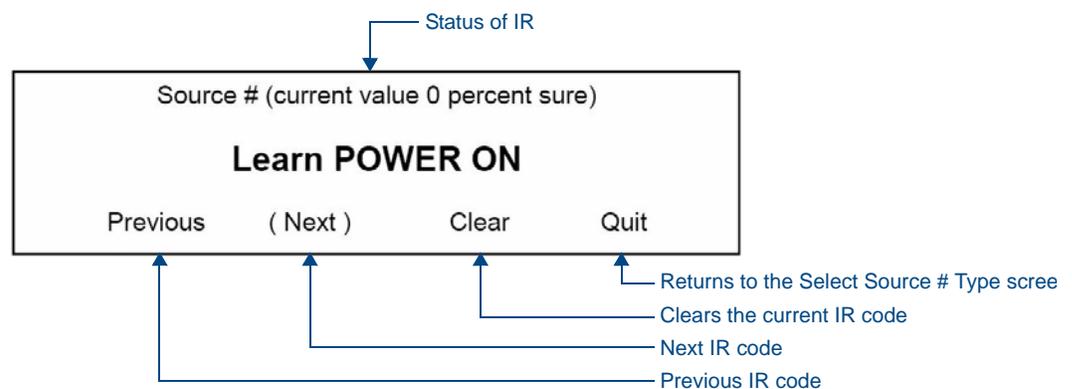


FIG. 28 Learn IR Commands

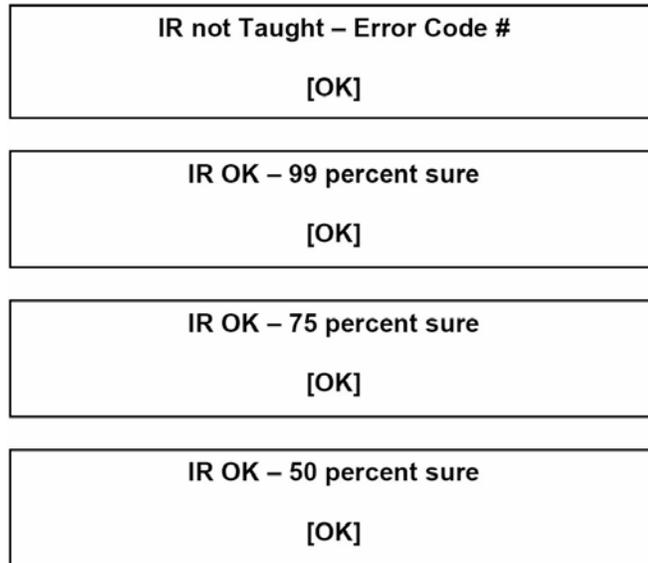
2. Hold the remote approx. 6" - 12" away from the Controller.
3. Point the remote at the IR window.
4. Press and hold the button for 2 seconds on the remote that corresponds to the IR function displayed.



NOTE

“Clear” is used to clear an IR that has been previously learned. Only learn the IR codes that apply to the particular Source Remote.

- If the IR displayed is not used by the Source Remote, select **Next** to move to the next IR to be learned
5. The Programming screen will display one of the following messages, indicating the accuracy of the IR code received (FIG. 29):
- **IR not taught – Error Code #** (command was not received, was incomplete or could not be learned)
  - **IR OK – 99 percent sure** (More than 2 commands were received)
  - **IR OK – 75 percent sure** (2 commands were received)
  - **IR OK – 50 percent sure** (1 command received)

**FIG. 29** IR Commands - Messages

Notes:

- Select **[OK]** to proceed to the next IR code to be learned.
- Some remotes may only send 1 command, in this case the accuracy of the IR learned will never be better than “50 percent sure”, however, the IR will work correctly.
- Once all IR codes have been learned, you will be returned to the *Program Mode* screen where they can either select another source to program, or “Exit” program mode.
- If “**IR Not Taught – Error Code #**” is received, try re-learning the IR. In most cases, the IR will be re-learned correctly.

## Setting Gain/Attenuation

Audio Sources tend to have varying output levels. The Tango Controller gives the installer the ability to raise and lower the output gain of the audio source. The installer may attenuate the source input from 0db to -12db and may also increase output gain of the source from 0db to +18db.

Each of the source input and output adjustments are separate, allowing considerable setup flexibility.

After performing the following setup the audio level should be consistent when selecting the various audio sources at the Keypad.

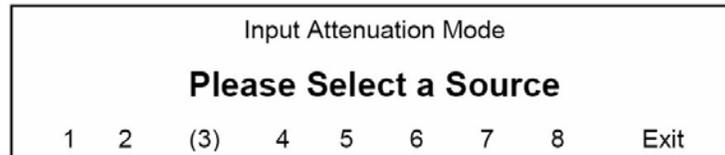
### Adjusting Input Attenuation

1. From the *MRC Setup Mode Options* screen (FIG. 25), select **Gain/Attenuation** to access the *MRC Gain/Attenuation Mode* screen (FIG. 30).

**FIG. 30** MRC Gain/Attenuation Mode screen

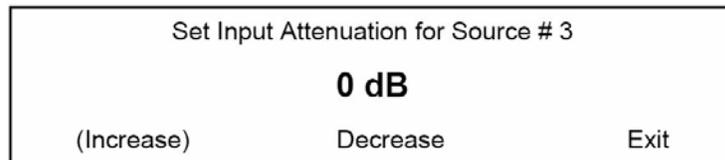
*Matrix on-board (Built-in) Tuner (s) have pre-established gain/attenuation settings. You can not change the gain when the source is an on-board tuner.*

2. Select **Input Attenuation**. This invokes the *Input Attenuation Mode* screen (FIG. 31):



**FIG. 31** Input Attenuation Mode screen

3. Select a source (1-8) to be adjusted for input attenuation. This selection invokes the *Set Input Attenuation For Source #* screen (FIG. 32):



**FIG. 32** Set Input Attenuation for Source # screen

4. Select **Increase** and **Decrease** to adjust the input attenuation for the selected device.

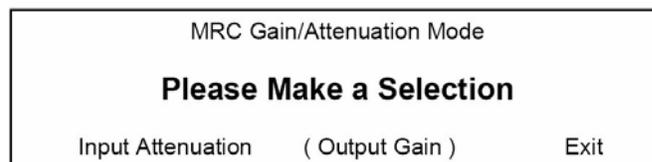


*Increasing attenuation will have the effect of dropping the sound level, while decreasing the attenuation will raise the sound level. Input Attenuation can be adjusted in increments of 3dB as follows: 0, -3, -6, -9, -12.*

5. Select **Exit** to adjust the input attenuation for another source:

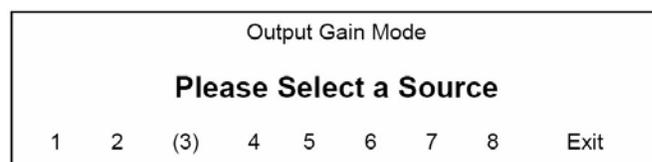
### Adjusting Output Gain

1. From the *MRC Gain/Attenuation Mode* screen, select “**Output Gain**” (FIG. 33):



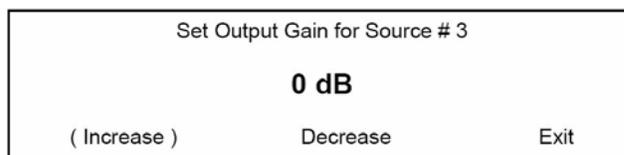
**FIG. 33** MRC Gain/Attenuation Mode - Output Gain

2. The **Output Gain Mode** screen is displayed. Select the source to be adjusted for “Output Gain” (FIG. 34).



**FIG. 34** Output Gain Mode - Exit

3. The following screen is displayed (FIG. 35):



**FIG. 35** Set Output Gain for Source # 3

**Notes:**

- Increasing Output Gain will have the effect of increasing the sound level, while decreasing the Output Gain will lower the sound level
- Output Gain can be adjusted in increments of 3dB as follows:  
0, +3, +6, +9, +12, +15, +18

4. Select “**Exit**” to set Output Gain for another source.

## Paging

Select **Paging** from the *MRC Setup Mode Options* screen (FIG. 25) to access the *MRC Paging Mode* screen (FIG. 30).

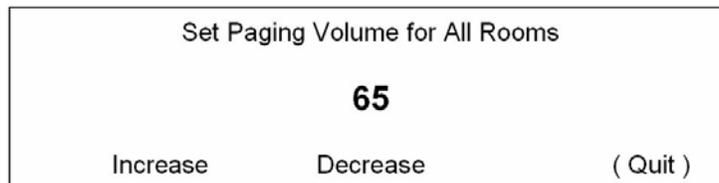


**FIG. 36** MRC Paging Mode screen

The options on the *MRC Paging Mode* screen (**Page Volume**, **Room Control**) allow you to set the page volume and specify which rooms/zones should be paged.

### Setting Paging Volume

1. Select **Page Volume** to access the *Set Paging Volume For All Rooms* screen (FIG. 37), where the volume level for paging can be adjusted for all rooms.



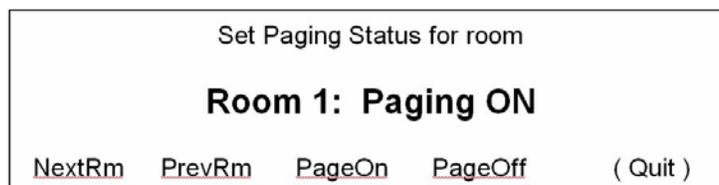
**FIG. 37** Set Paging Volume For All Rooms screen

- Vol. level = **0 – 100**
- Default volume = **65**

2. Select **Increase** or **Decrease** to change the volume level as desired.

### Room Control Settings

1. Select **Room Control** from the *MRC Setup Mode Options* screen (FIG. 25) to access the *Set Paging Status For Room* screen (FIG. 38), where you can set the paging status of each room/zone.



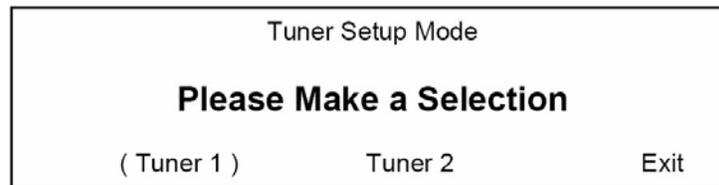
**FIG. 38** Set Paging Status For Room screen

- The default status for all rooms is “**Paging ON**”
  - Select **NextRm** to view/change the status of the next room.
  - Select **PrevRm** to view/change the status of the previous room.
2. Once a room has been selected, select **PageOn / PageOff** to change the status for that particular room.

## System Setup - Tuner Setup Mode screen

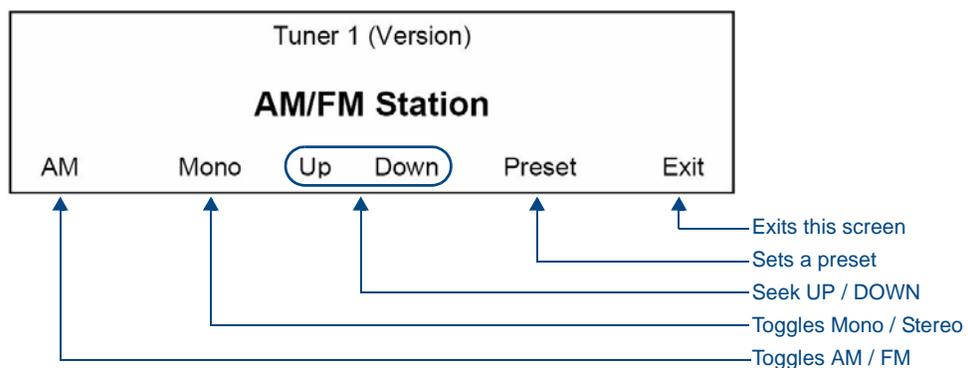
When Tuner modules are installed (up to two tuner modules are available per Controller), they are dynamically detected and displayed on the *System Setup Mode* screen.

Select **Tuner** from the *System Setup Mode* screen (FIG. 23) to access the **Tuner Setup Mode** screen (FIG. 39). If there are two Tuner modules detected, "Tuner 1" and "Tuner 2" will be displayed on this screen, otherwise only **Tuner 1** is indicated here.



**FIG. 39** Tuner Setup Mode screen options

Select one of the tuners and the **Tuner (#) Options** screen is displayed (FIG. 40):



**FIG. 40** Tuner (#) Options screen

### Selecting AM/FM

The AM / FM selection option on the **Tuner (#) Options** screen (FIG. 40) works as a toggle:

- Select **AM** and press the Nav. Center button (on the Controller), it will change to **FM**.
- Press Nav. Center again, and it changes back to **AM**.

### Selecting Stereo/Mono

The Mono / Stereo option on the **Tuner (#) Options** screen (FIG. 40) also works as a toggle:

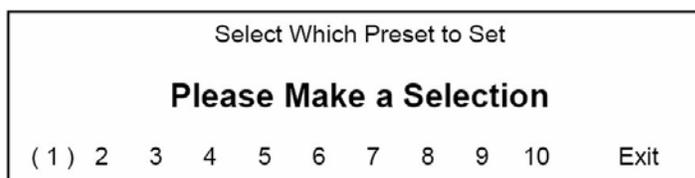
- Select **Mono** and press Nav. Center, it will change to **Stereo**.
- Press Nav. Center again, and it changes back to **Mono**.

### Seeking

Use the **Up** and **Down** selections on the **Tuner (#) Options** screen (FIG. 40) to seek up or down to a desired station.

### Setting Presets

Once a desired station is tuned, select **Preset** on the **Tuner (#) Options** screen (FIG. 40) to save the station as a preset. This selection invokes the **Select Which Preset To Save** screen (FIG. 41):



**FIG. 41** Select Which Preset To Set screen

Select a Preset (1-10) to associate with the currently tuned station.

## System Setup - Clock Setup Mode screen

Select **Clock** from the *System Setup Mode* screen (FIG. 23) to access the **Clock Setup Mode** screen (FIG. 42):

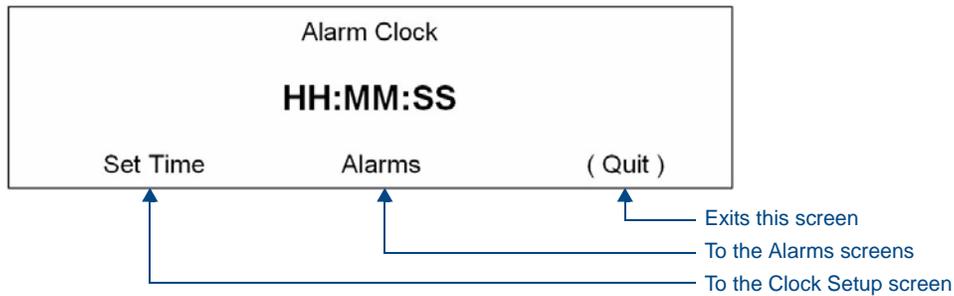


FIG. 42 Clock Setup Mode screen

### Setting System Time

In order for Alarms to work, a System Time must be set at the Controller.

1. Select **Set Time** in the *Clock Setup Mode* screen (FIG. 42) to access the **Clock Setup** screen that displays the current Time, Date, and Day (FIG. 43):

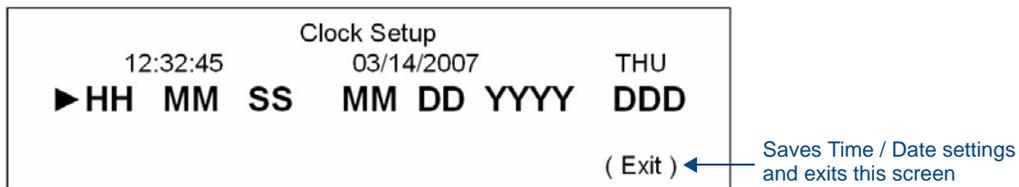


FIG. 43 Clock Setup screen

2. Select **HH** (hour) by using the Navigation buttons (<< / >>) on the front of the Controller. An arrow is displayed in front of HH, as shown in FIG. 43.
3. Use the UP/DOWN Navigation buttons to increase/ decrease the hours (1 - 24).
4. Proceed to **MM** (minute) & **SS** (second) in the same manner (01 - 60).

### Setting System Date

1. In the *Clock Setup* screen (FIG. 43), select **MM** (month) by using the Navigation buttons (<< / >>) on the front of the Controller. An arrow is displayed in front of MM.
2. Using the UP/DOWN Navigation buttons, increase/ decrease the month.
3. Proceed to **DD** (date) & **YYYY** (year) in the same manner.

### Setting the Day of the week

1. In the *Clock Setup* screen (FIG. 43), select **DDD** (day) by using the Navigation buttons (<< / >>) on the front of the Controller. An arrow is displayed in front of DDD.
2. Using the UP/DOWN Navigation buttons, increase/ decrease the day of the week (MON – SUN).

When finished setting the Time, Date & Day, **Exit** the screen.

### Viewing Alarms

Alarms set at individual keypads can be viewed from the front of the Controller.

1. Select **“Alarms”** from the Clock Setup Mode screen (FIG. 42).
2. If there are no alarms set for any zone/room, the following will be displayed (FIG. 44).



FIG. 44 No Alarms

- If an alarm has been set for any room/zone, the room number, source number and alarm time are displayed (FIG. 45):

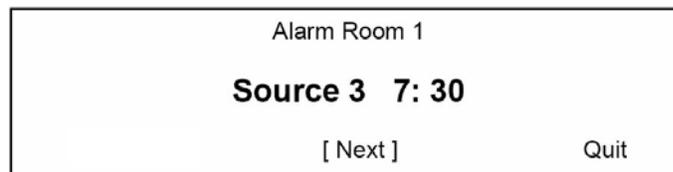


FIG. 45 Example: Alarm Room 1

- “Next” will scroll forward through all set Alarms.

## Backlight Options

Select **Backlight** from the Main Menu screen to access the Backlight Options screen (FIG. 46). Use the Backlight options to control when, and how bright the backlight will appear on the Controller’s LCD screen.

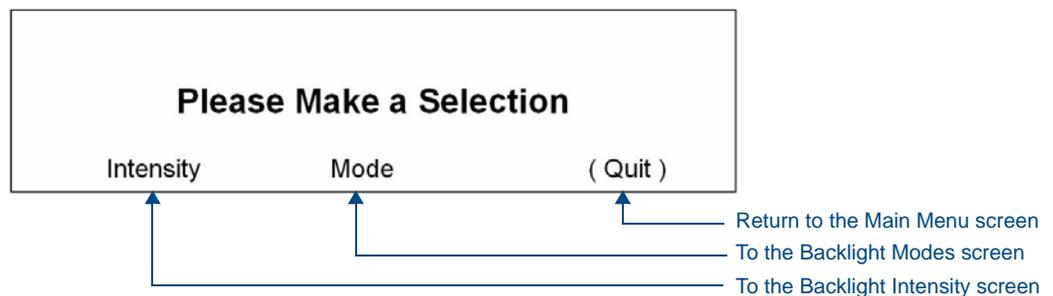


FIG. 46 Backlight Options screen

The options on this screen include:

- Intensity** - Sets the intensity of the Controller’s LCD screen (Backlight)
- Mode** - Sets the Backlight Mode
- Quit** - returns to the previous screen

### Backlight - Intensity

Select **Intensity** to access the Backlight Intensity options screen (FIG. 47), where you can set the intensity of the Controller’s LCD screen:

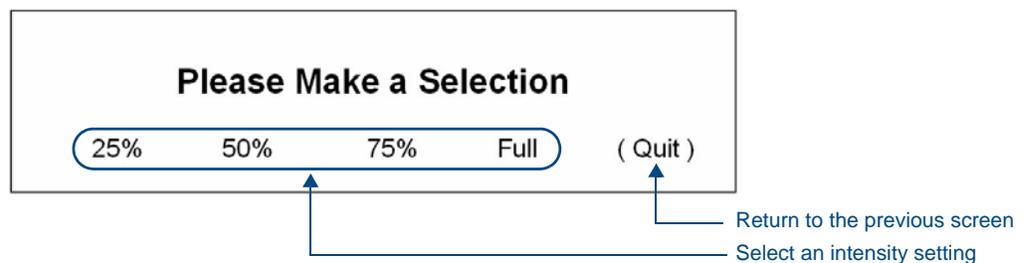


FIG. 47 Backlight Intensity options screen

To change the backlight intensity, select the option (i.e. 25%, 50%, 75% or Full), the backlight will dim to the selected value.

- When you return to the Backlight Intensity options screen, the selected intensity setting will appear in brackets.
- To exit the screen, select **Quit**.

### Backlight - Mode

Select **Mode** to access the Backlight Mode options screen (FIG. 48):



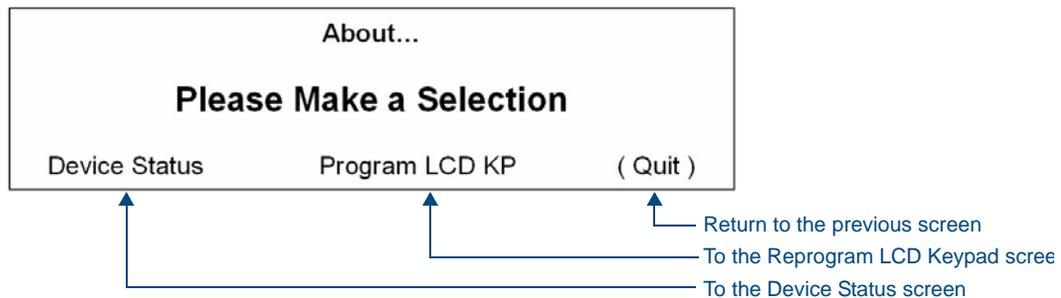
**FIG. 48** Backlight Mode options screen

To change the backlight Mode, select the option (i.e. *Auto On*, *Always On*, or *Always Off*).

- **Auto On** (*default*): The backlight will remain on when accessing and using the Setup/Programming Menus from the front of the Controller. 30 seconds after exiting the Menus, the backlight will turn off.
- **Always On**: backlight remains on at all times
- **Always Off**: backlight remains off at all times, even when accessing the Setup/Programming Menus.
  - When you return to this screen, the option chosen will appear in brackets.
  - To exit the screen, select **Quit**.

### About Options screen

Select **About** from the Main Menu screen (FIG. 22) to display the About Options screen (FIG. 49):



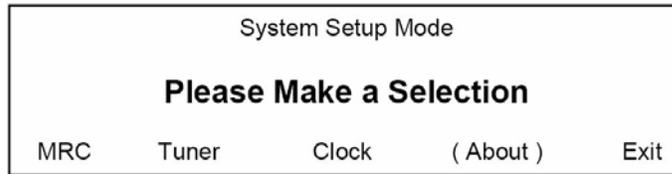
**FIG. 49** About options screen

### Device Status

The Device Status menu displays the software version for the following components (where applicable):

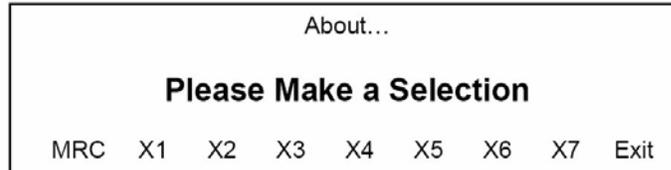
- Multi Room Controller (MRC)
- Expansion Units 1 – 7 (X1 – X7)
- All Main Keypads & Aux Keypads connected to the main Controller
- All Main Keypads & Aux Keypads connected to each Zone Expander

1. From the *System Setup Mode* screen, select **About** (FIG. 50):



**FIG. 50** System Setup Mode - About

2. The following screen is displayed (FIG. 51):



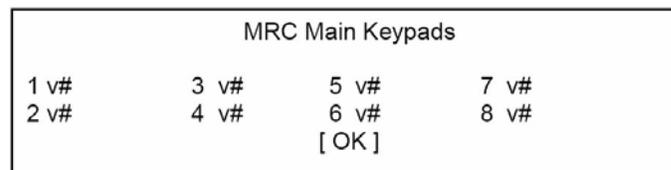
**FIG. 51** About - Make a Selection

3. Select **MRC** to view the software version of the Main Controller and keypads. The following screen is displayed (FIG. 52):



**FIG. 52** About MRC #

- Select **Quit** to return to the *About* screen, where another unit can be selected.
- Select **Main Keypads** to view the software version of the Main Keypads. The following screen is displayed (FIG. 53):

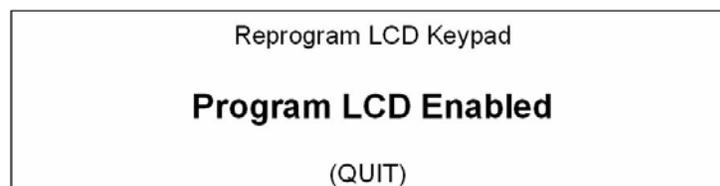


**FIG. 53** MRC Main Keypads

- “**OK**” returns you to the *About MRC* screen.

### Program LCD KP

Select **Program LCD KP** to display the *Reprogram LCD Keypad* screen (FIG. 54).



**FIG. 54** Reprogram LCD Keypad screen

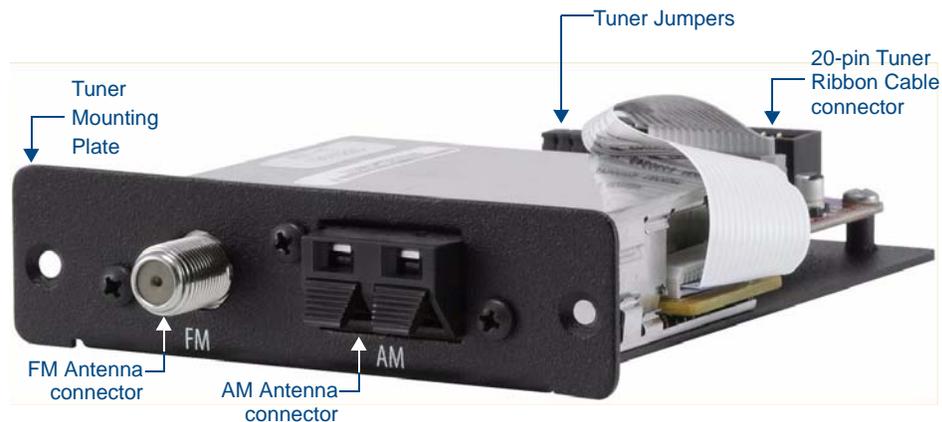
This option puts the Controller in the correct mode to allow LCD Keypads to be programmed. The communication on the I2C bus will be stopped so that the programming of the LCD keypads is not interrupted. Once the LCD KP has been programmed, select **QUIT** to exit the screen. Communication on the I2C bus will resume.



# Tuner Modules

## DAS-AMFM Tuner

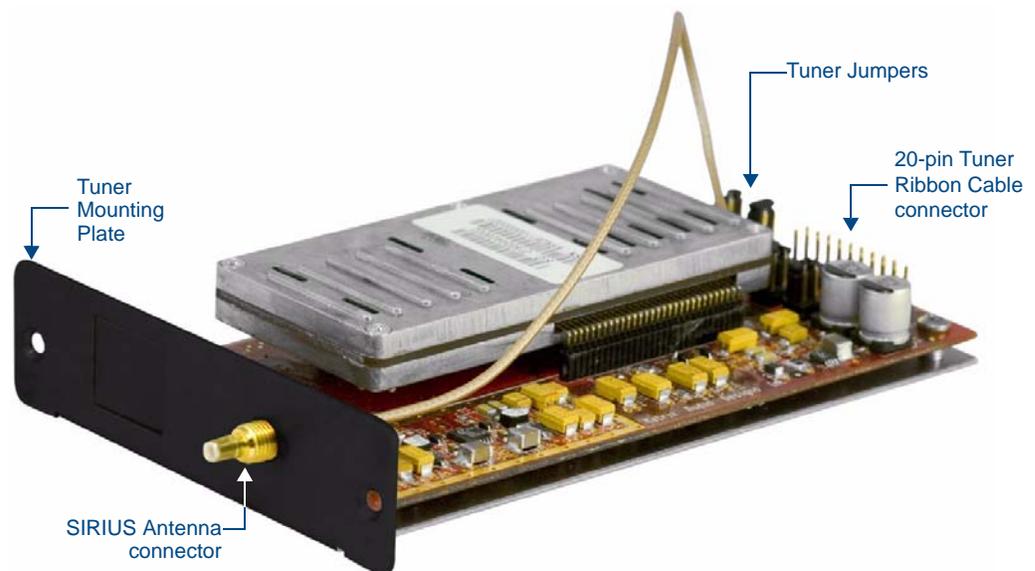
Add AM/FM Radio functionality to your Mi Series or Tango system with the DAS-AMFM AM/FM Tuner Module (**FG1110-01**).



**FIG. 55** DAS-AMFM Satellite Radio Tuner Module

## DAS-SIRIUS Tuner

Add Sirius satellite radio functionality to your AMX Distributed Audio system with the DAS-SIRIUS Satellite Radio Tuner Module (**FG1110-02**).



**FIG. 56** DAS-SIRIUS Satellite Radio Tuner Module



*"SIRIUS", the SIRIUS dog logo, and channel names and logos are trademarks of SIRIUS Satellite Radio Inc. All rights reserved.*

- The DAS-AMFM and DAS-SIRIUS Tuner Modules can be used with both Mi-Series and Tango Audio Controllers.

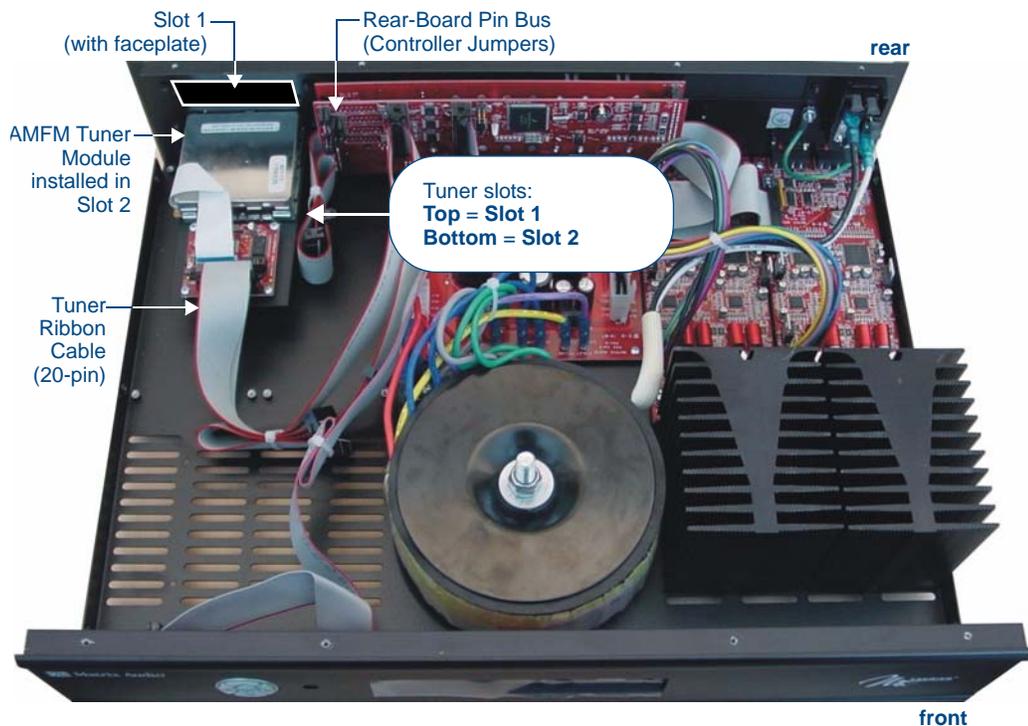
- All Mi-Series and Tango Audio Controllers come equipped with a DAS-AMFM AM/FM Tuner Module. Since Mi-Series and Tango Audio Controllers support 2 Tuner Modules in any combination, the DAS-SIRIUS Module can either be installed in addition to the DAS-AMFM Module, or the DAS-AMFM Module can be removed to allow 2 DAS-SIRIUS Modules.
- Each Tuner Module uses 1 source input on the Audio Controller.

Installing/removing Tuner Modules requires removing the cover from the Audio Controller, removing the Tuner Option cover plate from the rear panel of the Controller, installing the Tuner Module, and setting Jumpers on both the Tuner Module to specify each Tuner as either TUNER 1 or TUNER 2, and on the rear board pin-bus of the Audio Controller to enable/disable Tuner 1 and 2.



*Disconnect all power sources before opening the chassis. Failure to disconnect power before performing this installation may cause injury or death.*

FIG. 57 provides orientation for the various internal components that must be accessed to install the Tuner and set the Jumpers.



**FIG. 57** Audio Controller - Internal view



*Make sure to discharge all static electricity from your body before touching any components of the tuner modules or the audio controller. Failure to do so may lead to permanent damage to the tuner or controller.*

## Setting the Jumpers

Mi-Series and Tango Audio Controllers come equipped with one DAS-AMFM Tuner Module, installed into Slot 2 (see FIG. 57). Mi-Series and Tango Audio Controllers support 2 Tuner Modules in any combination, this document describes installing the DAS-AMFM Tuner Module into Slot 1, leaving the factory-installed DAS-AMFM Tuner Module in Slot 2.



*Because of the location of the Jumpers in the Controller and on the Tuner Module, it may be easier to make all jumper settings before installing the Tuner Module in the Controller.*

## Audio Controller Jumpers - Location

Examine the configuration of the jumpers on the left-side Rear-Board Pin Bus, as seen when viewing the rear board from the front of the Controller (FIG. 58).

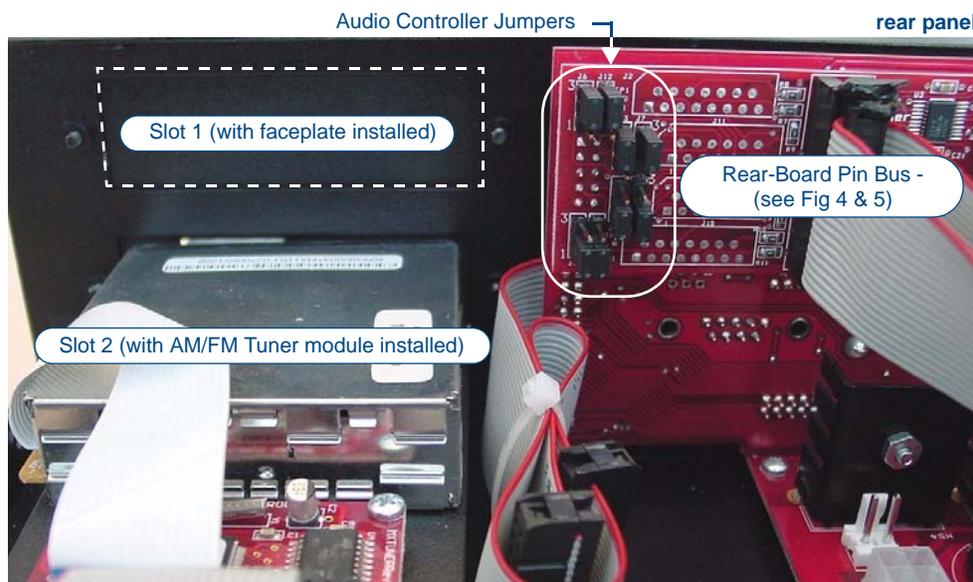


FIG. 58 Audio Controller - Rear-Board Pin Bus / Jumpers

### Audio Controller Jumpers - ON/OFF Settings

- ON position = pins 3 and 2 jumpered (with pin 1 exposed).
- OFF position = pins 2 and 1 jumpered (with pin 3 exposed).

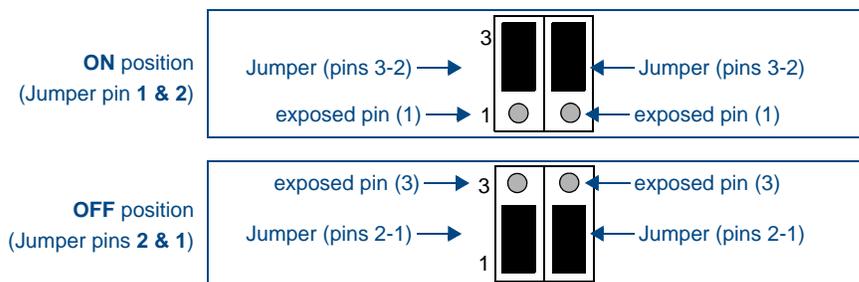


FIG. 59 Controller Jumper Settings

### Audio Controller Jumpers - Dual Tuner Setting

If two tuner modules are to be used, the Audio Controller jumpers should all be set to ON, as shown in FIG. 60:

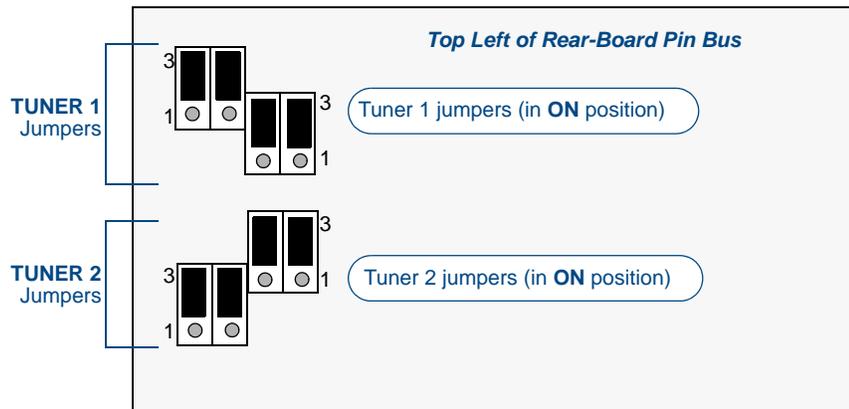


FIG. 60 Audio Controller Jumper Configuration (Dual Tuners)

Move the TUNER 2 jumpers to the ON position by connecting the top 2 sets of pins (pins 3-2) and leaving the bottom pins (pin 1) exposed.

### DAS-AMFM Tuner Module Jumpers

There are jumpers on the DAS-AMFM Tuner Module that must be set to differentiate Tuner 1 from Tuner 2 in the Controller.

The instructions for setting these jumpers differ based on the color of the “Interface Board” (*red or green*), as described below:

#### Red Interface Boards

Examine the configuration of the jumpers located on the Tuner Modules, to the right of the 20-pin ribbon cable connector (as seen when viewing the installed modules from the front of the controller).

- Note that there are two rows of 5 pins as shown in FIG. 61.
- With only a single tuner, all pins are jumpered.



FIG. 61 Tuner Module Jumper Configuration (Red Interface Boards)

#### Green Interface Boards

Examine the configuration of the jumpers located on the Tuner Modules, to the right of the 20-pin ribbon cable connector (as seen when viewing the installed modules from the front of the controller). Note that there are two rows of 5 pins (FIG. 62).

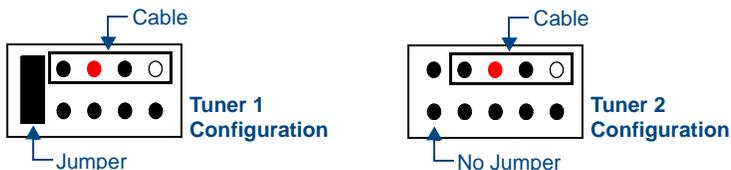
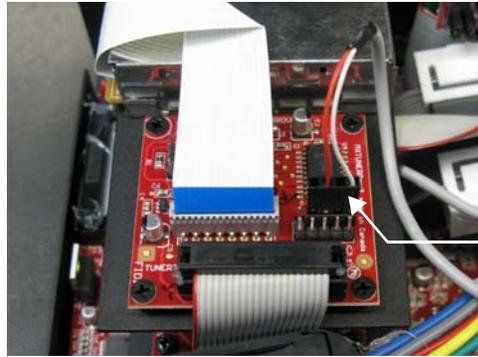


FIG. 62 Tuner Module Jumper Configuration (Green Interface Boards)

Remove all jumpers from the new tuner, and attach the 2-wire (red and white) end of the cable included with your kit to the pins (FIG. 63):



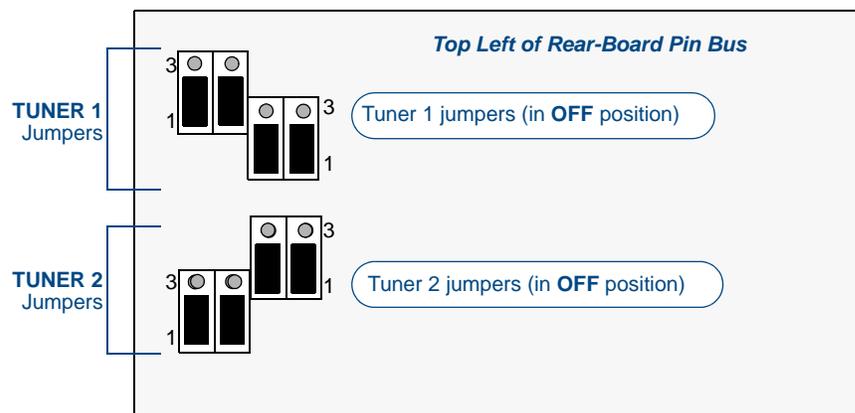
Note the position of the Red and White wires relative to the connector

**FIG. 63** Audio Controller - 2-wire end of cable connected to the tuner assembly.

## Removing the Pre-Installed DAS-AMFM Tuner Module

Mi Series Audio Controllers include one DAS-AMFM Tuner Module as a standard accessory. Since each tuner module uses one source input on the audio controller, in some cases it may be desirable to remove the tuner module in order to use that source input for other purposes.

1. Remove the cover from the controller.
2. Carefully remove the ribbon cable from the tuner module.
3. Remove the screws from the Tuner module cover plate at the right top corner of the rear panel and slide the tuner module out of the chassis.
4. Place all jumpers in the “Off” position (FIG. 64).



**FIG. 64** Audio Controller Jumper Configuration (Dual Tuners)

5. Replace the unit cover.

## Installing a Second DAS-AMFM Tuner Module

The following steps describe installing a second DAS-AMFM tuner module into Slot 1 (in addition to the DAS-AMFM module that comes pre-installed in Slot 2). In these instructions, the second tuner is referred to as "Tuner 2".

1. Remove the cover from the controller.
2. With the back of the unit facing you, remove the screws from the Tuner Option cover plate at the right top corner of the rear panel (FIG. 65) and remove the plate. Retain the screws, as they will be used to install the tuner module.

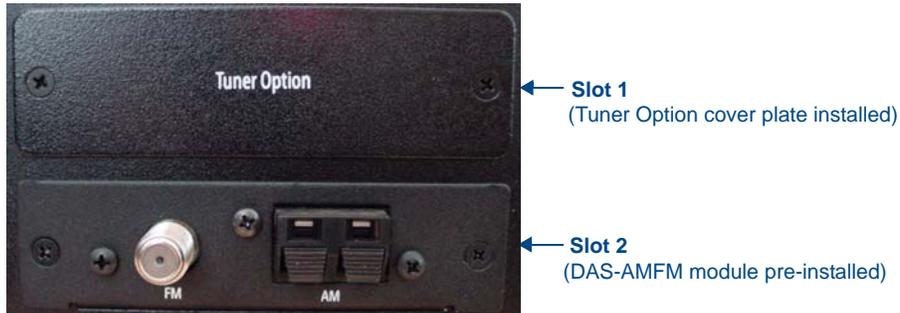


FIG. 65 Rear Panel - Tuner Slots 1 and 2

3. Carefully insert the second DAS-AMFM tuner module into Slot 1, with the electronics facing up, and use the screws that attached the Tuner Option cover plate to secure the tuner to the controller.



*Be careful not to damage the ribbon cable on the top of the Tuner module.*

4. Place the Rear Panel connector at the end of the ribbon cable (FIG. 66) on the rear board pin-bus, keeping the red stripe at the top.

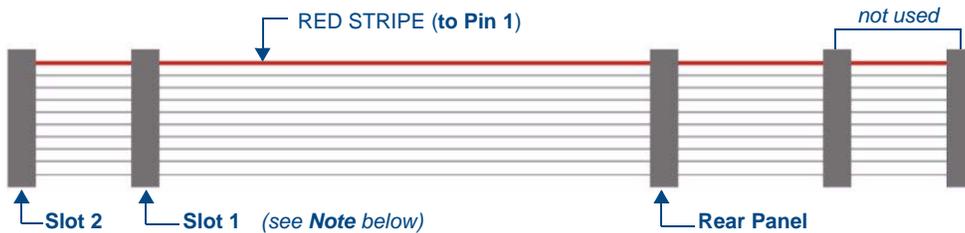


FIG. 66 Tuner Ribbon Cable

5. Connect the "Slot 1" connector on the ribbon cable to the Tuner 2 module (FIG. 67). The ribbon cable must be oriented so that the red stripe is connected to Pin 1 on the connector.

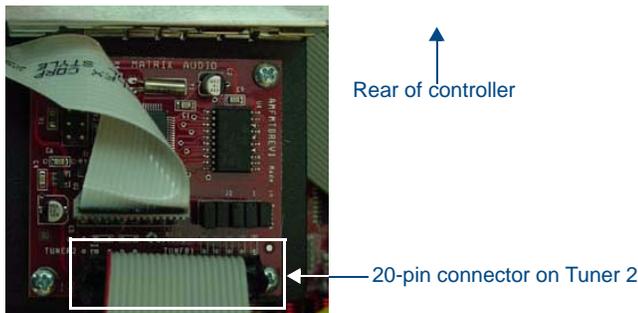
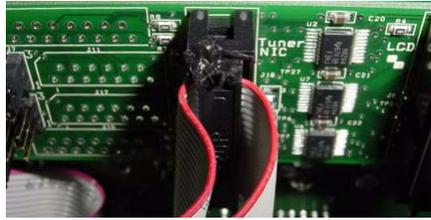


FIG. 67 Tuner 2 Module Connection

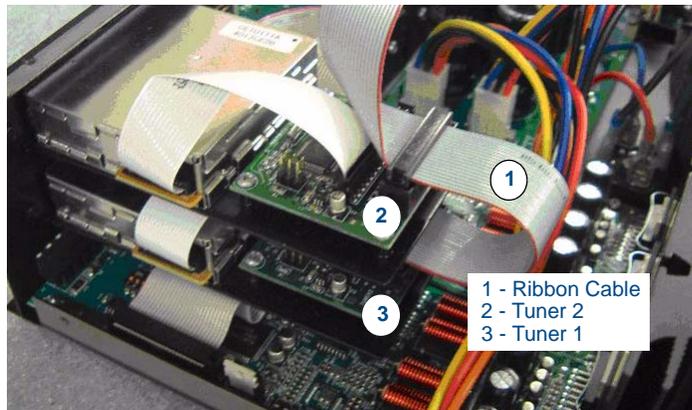
Verify that both ends of the cable are securely plugged into their respective boards through the 20-pin connectors (FIG. 68).



**FIG. 68** 20-Pin Connector and Ribbon Cable

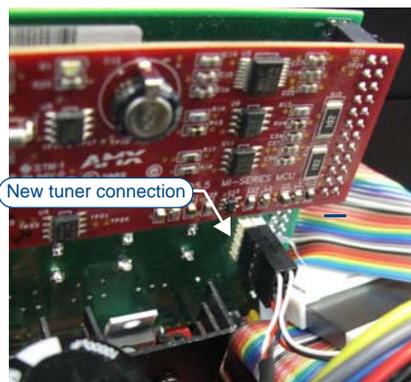
6. Replace the two screws that were removed when the Tuner Option cover plate was removed to secure the faceplate of the DAS-AMFM to the controller.

FIG. 69 provides a view of the inside of the controller, with two tuners installed.



**FIG. 69** Dual Tuner Cable Connection

- While it is recommended that you use the Slot 2 connector on the ribbon cable to connect the Tuner installed in Slot 2 (in this case, the DAS-AMFM Tuner), the ribbon cable itself does not determine which Tuner is Tuner 1 and Tuner 2.
  - This determination is set by the jumper settings on each Tuner Module (see “Dual Tuner Installation Instructions” above).
  - Therefore, it is not required that the connections indicated in FIG. 66 are followed exactly, as long as the Tuner Jumper Settings are set correctly for each Tuner Module installed.
7. *On units with green Interface Boards only:* Connect the supplied cable from the tuner to the Interface Board as shown in FIG. 70.



**FIG. 70** Connection of the cable to the left-side pins on the back of the interface board.



**NOTE**

*The 3-wire end connects to the open pins on the Interface Board with the white wire pointed up.*

- Use the supplied cable ties to secure the cable loosely as illustrated in FIG. 71:

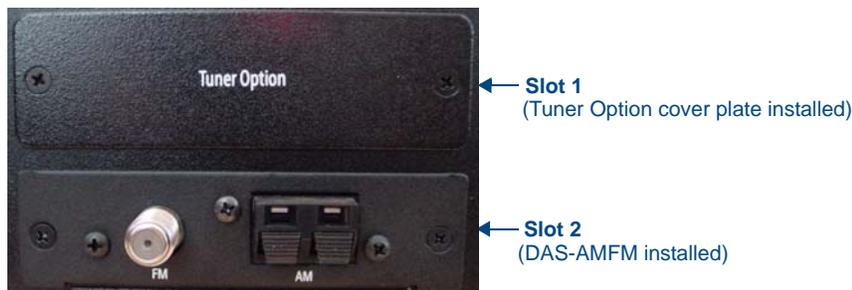


**FIG. 71** Cable Routing

## Installing the DAS-SIRIUS Tuner Module

The DAS-SIRIUS Tuner is typically installed into **Slot 1** (see FIG. 57):

- Remove the cover from the Audio Controller chassis.
- Remove the cover plate (labelled “Tuner Option”) on the rear panel (FIG. 65) to expose Slot 1.



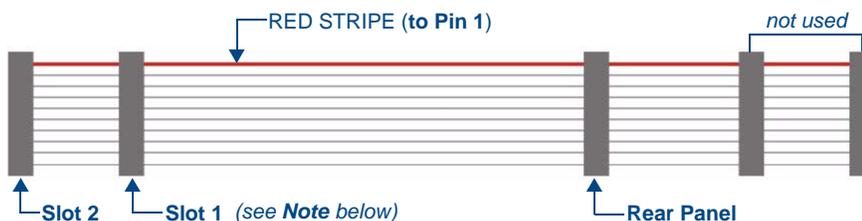
**FIG. 72** Rear Panel - Tuner Slots 1 and 2

- Carefully insert the DAS-SIRIUS Tuner Module into the Controller (electronics facing up), and replace the cover plate screws to secure the Module to the Controller.



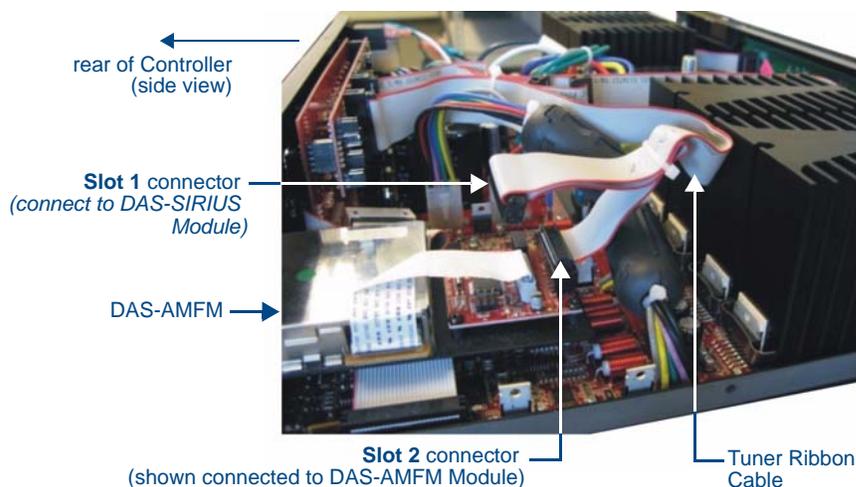
*Be careful not to damage the white ribbon cable on the top of the Tuner Module.*

- The *Rear Panel* connector at the end of the Tuner Ribbon Cable is connected to the Controller’s rear board pin-bus (see FIG. 57).
- Keep the Tuner Ribbon Cable oriented so that the red stripe is always on top, in order to preserve the orientation of the pins on the Tuner connectors. The red stripe on the ribbon cable indicates Pin 1 (FIG. 73):



**FIG. 73** Tuner Ribbon Cable

- Connect the **Slot 1** connector on the ribbon cable to the 20-pin Tuner Ribbon Cable connector on the DAS-SIRIUS Module (FIG. 74).



**FIG. 74** Tuner 1 / 2 Module Connections (side view of Controller)

*Verify that all of the 20-pin connectors of the Tuner Ribbon Cable are securely plugged into their respective boards.*



NOTE

*While it is recommended that you use the Slot 2 connector on the ribbon cable to connect the Tuner installed in Slot 2 (in this case, the DAS-AMFM Tuner), the ribbon cable itself does not determine which Tuner is Tuner 1 and Tuner 2. This determination is set by the jumper settings on each Tuner Module (see "Tuner 1 Jumper Settings" and "Tuner 2 Jumper Settings" above). Therefore, it is not required that the connections indicated in FIG. 10 are followed exactly, as long as the Tuner Jumper Settings are set correctly for each installed Tuner Module.*

The Controller should only be powered back on once all Tuners are installed and the cover is replaced on the chassis.

### Connecting and Positioning the SIRIUS Antenna

1. Connect the provided SIRIUS Antenna to the DAS-SIRIUS (see FIG. 56 on page 39).
2. Verify the Signal strength
  - a. Access the programming menus via the front of the Controller.
  - b. Select Setup\SIRIUS.
  - c. Select "Status".
  - d. Select "SAT" to determine the Satellite Signal Strength. Ensure the signal strength is at a minimum of "weak". Adjustments may need to be made to the position of the Antenna in order to get a better signal.

## Activating Your SIRIUS Subscription

SIRIUS Satellite Radio is a subscription service. In order to use your DAS-SIRIUS module, you will have to activate your SIRIUS subscription.



NOTE

*Until you have activated your subscription, you will only be able to tune to channels 0 and 184.*

1. Once you have installed the DAS-SIRIUS module, you can activate your SIRIUS subscription by phone: Call 1.888.539.SIRIUS (7474).
2. You will be asked for a "Sirius ID". This ID can be found in several places:
  - If using a Matrix LCD keypad, select channel "0" to display the Sirius ID.
  - If using either a Metreau or Matrix tactile keypad with the optional numeric keypad, select channel "0". The Sirius ID will be displayed on the LCD display on the front of the Controller.
  - If using either a Metreau or Matrix tactile keypad without the optional numeric keypad, access the programming menus via the front of the Controller by pressing the centre Nav button on the Controller: Select Setup\SIRIUS, then select "ID" from the SIRIUS menu, and the SIRIUS ID will be displayed.

# AMX Duet Module Interface Specifications

## Port Mapping

This module uses multiple virtual devices in order distinguish events for one zone from another or to distinguish one input source from another.

- *Input Sources* use ports **1 - 8**.
- *Rooms/Zones* use ports **1 - 64**.

| Mi-Series & Tango Controllers - Port Mapping |   |           |                       |  |
|--|---|-----------|-----------------------|--|
| Virtual Device                               | Channels  | Levels    | Control               | Feedback                                       |
| 41001:1:0                                    | All   | All       | All                   | All  |
| 41001:2:0 - 41001:8:0 (inputs)               | 1,3,9,21,22,23,27,28,40,44,45,46,47,48,49,81,82,225,226,255,301,303 | none      | ?BAND<br>?XCH<br>XCH- | BAND-<br>XCH-<br>TUNE_MODE-<br>TUNERPRESETSAVE |
| 41001:2:0 - 41001:64:0 (rooms)               | 24,25,26,164,165,166,167,168,169,196,199,302,304,305,306            | 1,2,3,4,8 | ?INPUT<br>INPUT-      | INPUT-   |

## Channels

The UI module controls the Mi-Series or Tango Controller via channel events (NetLinX commands *pulse*, *on*, and *off*) sent to the COMM module. The channels supported by the COMM module are listed below. These channels are associated with the virtual device(s) and are independent of the channels associated with the touch panel device. Depending on how the device is programmed each source has its own set of applicable commands/channels (see the *Input Source Types* section on page 56).

An asterisk ( \* ) indicates an extension to the standard API.

| Mi-Series & Tango Controllers - Channels |   |
|--|---|
| Channel                                  | Description   |
| 1  | PULSE: Play   |
| 3  | PULSE: Pause  |
| 9  | PULSE: Cycle Source Power   |
| 21                                       | PULSE: Enter Button   |
| 22                                       | PULSE: Next Station Preset  |
| 23                                       | PULSE: Previous Station Preset                                    |
| 24                                       | ON: Ramp Volume Up – used for feedback also<br>OFF: Stop Ramping  |
| 25                                       | ON: Ramp Volume Down – use for feedback also<br>OFF: Stop Ramping |
| 26                                       | PULSE: Cycle Volume Mute  |
| 27                                       | PULSE: Set Source Power On  |
| 28                                       | PULSE: Set Source Power Off                                       |
| 40                                       | PULSE: Cycle Tuner Band   |
| 44                                       | PULSE: Menu Button  |
| 45                                       | PULSE: Move Menu Cursor Up  |
| 46                                       | PULSE: Move Menu Cursor Down                                      |
| 47                                       | PULSE: Move Menu Cursor Left                                      |
| 48                                       | PULSE: Move Menu Cursor Right                                     |
| 49                                       | PULSE: Select Menu Item   |

| Tango Controllers - Channels (Cont.) |   |
|--------------------------------------|---|
| Channel                              | Description   |
| 81                                   | PULSE: Back Button  |
| 82                                   | PULSE: Forward Button   |
| 164                                  | PULSE: Increment Balance  |
| 165                                  | PULSE: Decrement Balance  |
| 166                                  | PULSE: Increment Bass   |
| 167                                  | PULSE: Decrement Bass   |
| 168                                  | PULSE: Increment Treble   |
| 169                                  | PULSE: Decrement Treble   |
| 196                                  | PULSE: Cycle Input Source   |
| 199                                  | ON: Set Volume Mute On – used for feedback also<br>OFF: Set Volume Mute Off     |
| 225                                  | PULSE: Increment Station  |
| 226                                  | PULSE: Decrement Station  |
| 251                                  | ON: Device is Online – used for feedback only<br>OFF: Device is not Online      |
| 252                                  | ON: Data is Initialized – use for feedback only<br>OFF: Data is not Initialized |
| 255                                  | ON: Set source power on – used for feedback also<br>OFF: Set source power off   |
| *301                                 | ON: Tuner in Seek Mode<br>OFF: Tuner Seek Mode off                              |
| *302                                 | ON: Lock Keypad<br>OFF: UnLock Keypad   |
| *303                                 | ON: Stereo Tuner mode<br>OFF: Mono Tuner mode                                   |
| *304                                 | ON: Room Privacy On<br>OFF: Room Privacy Off                                    |
| *305                                 | ON: Page Enable<br>OFF: Page Disable  |
| *306                                 | ON: Page Mute On<br>OFF: Page Mute Off  |

## Levels

The UI module controls the Tango Controllers via level events (NetLinx command SEND\_LEVEL) sent to the COMM module.

- The levels supported by the COMM module are listed below.
- These levels are associated with the virtual device(s) and are independent of the levels associated with the touch panel device.
- An '\*' indicates an extension to the standard API.

| Mi-Series & Tango Controllers - Levels |                                   |
|--|-----------------------------------|
| Level                                  | Description                       |
| 1                                      | Volume Level (range 0...255)      |
| 2                                      | Balance Level (range 0...255)     |
| 3                                      | Bass Level (range 0...255)        |
| 4                                      | Treble Level (range 0...255)      |
| *8                                     | Page Volume Level (range 0...255) |

## Command Control

The UI module controls the Tango Controllers via command events (NetLinx command SEND\_COMMAND) sent to the COMM module.

- The commands supported by the COMM module are listed below.
- Not all sources will work with all the commands listed below. Depending on how the device is programmed each source has it's own set of applicable commands/channels (see the *Input Source Types* section on page 56).

| Mi-Series & Tango Controllers - Command Control |   |
|---|---|
| Command   | Description   |
| <b>?BAND</b>                                    | <p>Get the currently selected tuner band.</p> <p>This query should be issued on the port matching the source number you want to query.</p> <p>Syntax:<br/>?BAND</p> <p>Replies with BAND- &lt;band&gt;</p> <p>Example:<br/>?BAND</p>  |
| <b>?DEBUG</b>                                   | <p>Request the state of the module debug feature.</p> <p>Syntax:<br/>?DEBUG</p> <p>This query should be issued on port 1.</p> <p>Replies with DEBUG- &lt;value&gt;</p> <p>Example:<br/>?DEBUG</p>   |
| <b>DEBUG</b>                                    | <p>Set the state of debugging messages in the module.</p> <p>Syntax:<br/>DEBUG- &lt;value&gt;</p> <p>This command should be issued on port 1.</p> <p>&lt;value&gt;:</p> <ul style="list-style-type: none"> <li>• 1 = set only error messages on</li> <li>• 2 = set error and warning messages on</li> <li>• 3 = set error, warning &amp; info messages on</li> <li>• 4 = set all messages on</li> </ul> <p>Example:<br/>DEBUG-1</p> |

| Mi-Series & Tango Controllers - Command Control (Cont.) |  |
|---|--|
| Command   | Description  |
| <b>?FWVERSION</b>                                       | <p>Get the device's firmware version.</p> <p>Syntax:<br/>?FWVERSION</p> <p>This query should be issued on port 1.</p> <p>Replies with FWVERSION-&lt;version&gt;</p> <p>Example:<br/>?FWVERSION</p>   |
| <b>?INPUT</b>   | <p>Get the currently selected input source.</p> <p>Syntax:<br/>?INPUT</p> <p>This query should be issued on the port matching the room number you want to query.</p> <p>Replies with INPUT-&lt;source&gt;, &lt;number&gt;</p> <p>Example:<br/>?INPUT</p>   |
| <b>INPUT</b>  | <p>Set the current input source.</p> <p>Syntax:<br/>INPUT-&lt;source&gt;, &lt;number&gt;</p> <p>This command should be issued on the port matching the room/zone you want to affect.</p> <p>The &lt;source&gt; parameter is not used by the module due to the device protocol and you may use it only as a place holder.</p> <p>The module will select the input according to the &lt;number&gt; parameter.</p> <p>&lt;source&gt; : INTERNAL TUNER,EXTERNAL TUNER, CD, DVD, SATELLITE, DELPHI XM, AUDIO SERVER, OTHER</p> <p>&lt;number&gt; : 1...8 = valid input source number<br/>0 = disconnect</p> <p>Example:<br/>INPUT-INTERNAL TUNER,1 (connect to input 1)<br/>INPUT-INTERNAL TUNER,0 (disconnect)</p> |
| <b>PASSBACK</b>   | <p>Enable or disable response reporting from the device.</p> <p>Syntax:<br/>PASSBACK-&lt;state&gt;</p> <p>When enabled device responses will be sent as strings to the virtual device.</p> <p>This command should be issued on port 1.</p> <p><b>Note:</b> By default, this is set to off at startup.</p> <p>&lt;state&gt; : 0 = Off (default)<br/>1 = On</p> <p>Example:<br/>PASSBACK-0</p>   |
| <b>PASSTHRU</b>   | <p>Allows user the capability of sending commands directly to whatever unit is attached with minimal processing by the Duet module.</p> <p>Syntax:<br/>PASSTHRU-&lt;string&gt;</p> <p>User must be aware of the protocol implemented by the unit to use this command. This gives the user access to features that may not be directly supported by the module.</p> <p>This command should be issued on port 1.</p> <p>&lt;string&gt; : string to send to unit</p> <p>Example:<br/>PASSTHRU-MSSC1,0</p>   |

| Mi-Series & Tango Controllers - Command Control (Cont.) |   |
|---|---|
| Command   | Description   |
| <b>?PROPERTY</b>  | <p>Get the value of a property &lt;key&gt;.</p> <p>Syntax:<br/>?PROPERTY-&lt;key&gt;</p> <p>If the value is not initialized, an empty string is returned.</p> <p>This query should be issued on port 1.</p> <p>&lt;key&gt; : SourceX (where X=1...8) = tells you what the source is programmed as on the actual device.<br/>RoomsAvailable = # of rooms in the system<br/>SourcesAvailable= # of sources available</p> <p>Example:<br/>?PROPERTY-Source2<br/>?PROPERTY-RoomsAvailable</p> |
| <b>REINIT</b>   | <p>Re-initializes the communication link and data.</p> <p>Syntax:<br/>REINIT</p> <p>This command should be issued on port 1.</p> <p><b>Note:</b> This command deletes any messages waiting to go out to the device.</p> <p>Example:<br/>REINIT</p>  |
| <b>TUNERPRESETSAVE</b>                                  | <p>Saves a tuner preset.</p> <p>Syntax:<br/>TUNERPRESETSAVE-&lt;preset&gt;,&lt;freq&gt;</p> <p>This command should be issued on the port matching the input number.</p> <p>To clear a preset use a space character as frequency.</p> <p>Replies with TUNERPRESETSAVE-&lt;preset&gt;,&lt;freq&gt;</p> <p>&lt;preset&gt; : 1...8 = valid preset range<br/>&lt;freq&gt; : string = new frequency (or space to clear)</p> <p>Example:<br/>TUNERPRESETSAVE-1,106.5</p>                         |
| <b>?VERSION</b>   | <p>Query for the current version number of the Duet module.</p> <p>Syntax:<br/>?VERSION</p> <p>This query should be issued on port 1.</p>   |
| <b>?XCH</b>   | <p>Get the current tuner station.</p> <p>Syntax:<br/>?XCH</p> <p>This query should be issued on the port matching the input number you want to query.</p> <p>Example:<br/>?XCH</p>  |
| <b>XCH</b>  | <p>Set the current tuner station.</p> <p>Syntax:<br/>XCH-&lt;station&gt;</p> <p>This command should be issued on the port matching the input number you want to query.</p> <p>&lt;station&gt;: string</p> <p>Example:<br/>XCH-101.1 (for FM stations)<br/>XCH-550 (for AM stations)</p>   |

## Command Feedback

The COMM module provides feedback to the User Interface module for receiver changes via command events.



NOTE

*Feedback is only provided when there is a state change. If no state change resulted from the command sent in, then no feedback will be returned.*

The commands supported are listed below.

| Mi-Series & Tango Controllers - Command Feedback |  |
|--|--|
| Command  | Description  |
| <b>BAND</b>                                      | <p>Returns the current tuner band.</p> <p>Syntax:<br/>                     BAND-&lt;band&gt;</p> <p>This reply is received on the port matching the source number.</p> <p>&lt;band&gt; : FM<br/>                     AM<br/>                     INVALID</p> <p>Example:<br/>                     BAND-FM</p>  |
| <b>DEBUG</b>                                     | <p>Returns the state of debugging messages in the UI module and the Comm module.</p> <p>Syntax:<br/>                     DEBUG-&lt;value&gt;</p> <p>This reply is received on port 1.</p> <p>&lt;value&gt; : 1 = set only error messages on<br/>                     2 = set error and warning messages on<br/>                     3 = set error, warning and info messages on<br/>                     4 = set all messages on</p> <p>Example:<br/>                     DEBUG-1</p>  |
| <b>FWVERSION</b>                                 | <p>Returns the device's firmware version.</p> <p>Syntax:<br/>                     FWVERSION-&lt;version&gt;</p> <p>This reply is received on port 1.</p> <p>&lt;version&gt; : firmware version number</p> <p>Example:<br/>                     FWVERSION-501</p>   |
| <b>INPUT</b>                                     | <p>Returns the currently selected input source.</p> <p>Syntax:<br/>                     INPUT-&lt;source&gt; ,&lt;number&gt;</p> <p>This reply is received on the port matching the room number.</p> <p>&lt;source&gt; : INTERNAL TUNER,EXTERNAL TUNER, CD, DVD,<br/>                     SATELLITE, DELPHI XM, AUDIO SERVER, OTHER,<br/>                     NONE, INVALID</p> <p>&lt;number&gt; : 1..8 = valid input source number<br/>                     0 = disconnected</p> <p>Example:<br/>                     INPUT-INTERNAL TUNER,1<br/>                     INPUT-NONE,0</p> |

| Mi-Series & Tango Controllers - Command Feedback (Cont.) |  |
|--|--|
| Command  | Description  |
| <b>PRODUCT_ID</b>  | <p>Reports the current product ID.</p> <p>Syntax:<br/> PRODUCT_ID-&lt;val&gt;</p> <p>This reply is received on port 1 after the module is re-initialized.</p> <p>&lt;val&gt;: string</p> <p>Example:<br/> PRODUCT_ID-M104</p>  |
| <b>PROPERTY</b>  | <p>Feedback on the value of property &lt;key&gt;.</p> <p>Syntax:<br/> PROPERTY-&lt;key&gt;,&lt;value&gt;</p> <p>This reply is received on port 1.</p> <p><b>Note:</b> <i>An empty string is returned if the property has no value.</i></p> <p>&lt;key&gt; : RoomsAvailable, SourcesAvailable, SourceX<br/> where X=1...8</p> <p>&lt;value&gt; : string</p> <p>Example:<br/> PROPERTY-Source3,CD<br/> PROPERTY-Source4,Audio Server</p> |
| <b>TUNE_MODE</b>   | <p>Reports the current tuner tune mode.</p> <p>Syntax:<br/> TUNE_MODE-&lt;val&gt;</p> <p>This reply is received on the port matching the source number and is only reported if the source is an internal tuner.</p> <p>&lt;val&gt;: 0 = Tune<br/> 1 = Seek</p> <p>Example:<br/> TUNE_MODE-0</p>  |
| <b>TUNERPRESETSAVE</b>                                   | <p>Reports the current setting for a preset.</p> <p>Syntax:<br/> TUNERPRESETSAVE-&lt;preset&gt;,&lt;freq&gt;</p> <p>This reply is received on the port matching the source number.</p> <p>&lt;preset&gt;: 1...8 = valid preset range<br/> &lt;freq&gt; : string = frequency</p> <p>Example:<br/> TUNERPRESETSAVE-1,106.5</p>   |
| <b>VERSION</b>   | <p>Reports the version number of the module.</p> <p>Syntax:<br/> VERSION-&lt;version&gt;</p> <p>This reply is received on port 1.</p> <p>&lt;version&gt; : xx.yy.zz = module version number</p> <p>Example:<br/> VERSION-1.0.0</p>   |
| <b>XCH</b>   | <p>Returns the current tuner station.</p> <p>Syntax:<br/> XCH-&lt;station&gt;</p> <p>This reply is received on the port matching the source number and is only reported if the source is an internal tuner.</p> <p>&lt;station&gt; : string</p> <p>Example:<br/> XCH-101.1</p>   |

## Input Source Types

| Source Commands Referenced by Source Type |                  |             |             |                    |              |             |                  |
|---|------------------|-------------|-------------|--------------------|--------------|-------------|------------------|
| Other                                     | External Tuner   | CD Player   | DVD Player  | Satellite Receiver | Audio Server | Delphi XM   | Internal Tuner   |
|   | 225,226          | 45,46,47,48 | 45,46,47,48 | 45,46,47,48        | 45,46,47,48  |             | 225,226          |
|   |                  |             |             |                    |              |             | 301              |
|   | 40               | 1,3         | 21,49       | 21,49              | 1,3          |             | 40               |
|   | 303              |             | 44          | 44                 |              |             | 303              |
| 22,23                                     | 22,23            | 22,23       |             | 22,23              | 22,23        | 22,23       | 22,23            |
| 9,27,28,255                               | 9,27,28,255      | 9,27,28,255 | 9,27,28,255 | 9,27,28,255        | 9,27,28,255  | 9,27,28,255 | 9,27,28,255      |
|   | TUNER PRESETSAVE |             |             |                    |              |             | TUNER PRESETSAVE |



*For more detailed information on the Duet Module Interface Specification, including Device and Protocol notes, refer to the "Duet Module Interface Specification for Matrix Audio Tango Series" document, available for download from the InConcert section of the [www.amx.com](http://www.amx.com) website.*

# IR Commands By Source Type

## Overview

The following table lists all available Source Types and the IR to be learned for each:

| Learn IR by Source Type   |  |                                |                        |  |
|---------------------------|--|--------------------------------|------------------------|--|
| Source Type               | Learn IR commands  | Nav. Button Functions & Result |                        |  |
| <b>Select Source Type</b> | N/A  | N/A                            |                        |  |
| <b>TUNER (Tuner)</b>      | POWER ON   | Nav. UP                        | = Seek UP              |  |
|                           | POWER OFF  | Nav. DOWN                      | = Seek DOWN            |  |
|                           | SEEK + (kp UP)   | Nav LEFT                       | = Prev. Preset         |  |
|                           | SEEK – (kp DOWN)   | Nav. RIGHT                     | = Next Preset          |  |
|                           | BAND (kp CENTRE)   | Nav. CENTER                    | = AM/FM (toggle)       |  |
|                           | MO/ST (kp Cen Hold)  | Press & Hold CENTER            | = Stereo/Mono (toggle) |  |
|                           | Direct Access:<br>START DIRECT<br>END DIRECT<br>0-9  |                                |                        |  |
|                           | <b>NOTE:</b> You may SKIP the Direct Access functions if they do not pertain to the source you are programming |                                |                        |  |
| <b>CD (CD)</b>            | POWER ON   | Nav. UP                        | = Next Track           |  |
|                           | POWER OFF  | Nav. DOWN                      | = Previous Track       |  |
|                           | PLAY   | Nav LEFT                       | = Previous DISC        |  |
|                           | PAUSE  | Nav. RIGHT                     | = Next DISC            |  |
|                           | TRACK + (kp UP)  | Nav. CENTER                    | = User Defined1        |  |
|                           | TRACK – (kp DOWN)  | Press & Hold CENTER            | = User Defined2        |  |
|                           | DISC – (kp LEFT)   |                                |                        |  |
|                           | DISC + (kp RIGHT)  |                                |                        |  |
|                           | UDEF1 (kp CENTRE)  |                                |                        |  |
|                           | UDEF2 (kp CEN hold)  |                                |                        |  |
|                           | Direct Access:<br>DISC<br>END DISC<br>TRACK<br>END TRACK<br>0-9, (10+)   |                                |                        |  |

| Learn IR by Source Type (Cont.) |  |                                |
|---------------------------------|--|--------------------------------|
| Source Type                     | Learn IR commands  | Nav. Button Functions & Result |
| <b>DVD (DVD)</b>                | POWER ON   | Nav. UP = UP                   |
|                                 | POWER OFF  | Nav. DOWN = DOWN               |
|                                 | PLAY   | Nav LEFT = LEFT                |
|                                 | PAUSE  | Nav. RIGHT = RIGHT             |
|                                 | UP (kp UP)   | Nav. CENTER = Select           |
|                                 | DOWN (kp DOWN)   | Press & Hold CENTER = Menu     |
|                                 | LEFT (kp LEFT)   |                                |
|                                 | RIGHT (kp RIGHT)   |                                |
|                                 | SELECT (kp CENTRE)   |                                |
|                                 | MENU (kp CEN hold)   |                                |
|                                 | Direct Access:   |                                |
|                                 | DISC   |                                |
|                                 | END DISC   |                                |
|                                 | TRACK  |                                |
|                                 | END TRACK  |                                |
|                                 | 0-9  |                                |
|                                 | <b>NOTE:</b> You may SKIP the Direct Access functions if they do not pertain to the source you are programming |                                |
| <b>SAT (Satellite)</b>          | POWER ON   | Nav. UP = Next Channel         |
|                                 | POWER OFF  | Nav. DOWN = Previous Channel   |
|                                 | CH + (kp UP)   | Nav LEFT = Guide Down          |
|                                 | CH – (kp DOWN)   | Nav. RIGHT = Guide Up          |
|                                 | GUIDE – (kp LEFT)  | Nav. CENTER = Select           |
|                                 | GUIDE + (kp RIGHT)   | Press & Hold CENTER = Guide    |
|                                 | SELECT (kp CENTRE)   |                                |
|                                 | GUIDE (kp CEN hold)  |                                |
|                                 | Direct Access:   |                                |
|                                 | START DIRECT   |                                |
|                                 | END DIRECT   |                                |
|                                 | 0-9  |                                |
|                                 | <b>NOTE:</b> You may SKIP the Direct Access functions if they do not pertain to the source you are programming |                                |

| Learn IR by Source Type (Cont.)   |                      |                                      |
|---|----------------------|--------------------------------------|
| Source Type   | Learn IR commands    | Nav. Button Functions & Result       |
| <b>AUDIO<br/>(Audio Server)</b>   | POWER ON             | Nav. UP = next                       |
|   | POWER OFF            | Nav. DOWN = previous                 |
|   | PLAY                 | Nav LEFT = previous Page             |
|   | PAUSE                | Nav. RIGHT = next Page               |
|   | NEXT (kp UP)         | Nav. CENTER = Select                 |
|   | PREV (kp DOWN)       | Press & Hold CENTER = user defined   |
|   | PAGE – (kp LEFT)     |                                      |
|   | PAGE + (kp RIGHT)    |                                      |
|   | SELECT (kp CENTRE)   |                                      |
|   | UDEF1 (kp CEN hold)  |                                      |
|   | Direct Access:       |                                      |
|   | PAGE                 |                                      |
|   | END PAGE             |                                      |
|   | TRACK                |                                      |
|   | END TRACK            |                                      |
|   | 0-9                  |                                      |
| <i><b>NOTE:</b> You may SKIP the Direct Access functions if they do not pertain to the source you are programming</i> |                      |                                      |
| <b>OTHER (Other)</b>  | POWER ON             | Nav. UP = User Defined UP            |
|   | POWER OFF            | Nav. DOWN = User Defined DOWN        |
|   | PLAY                 | Nav LEFT = User Defined LEFT         |
|   | UP (kp UP)           | Nav. RIGHT = User Defined RIGHT      |
|   | DOWN (kp DOWN)       | Nav. CENTER = User Defined 1         |
|   | LEFT (kp LEFT)       | Press & Hold CENTER = User Defined 2 |
|   | RIGHT (kp RIGHT)     |                                      |
|   | SELECT (kp CENTRE)   |                                      |
|   | HOLD C (kp CEN hold) |                                      |
|   | Direct Access:       |                                      |
|   | DISC                 |                                      |
|   | END DISC             |                                      |
|   | TRACK                |                                      |
|   | END TRACK            |                                      |
|   | 0-9                  |                                      |
| <i><b>NOTE:</b> You may SKIP the Direct Access functions if they do not pertain to the source you are programming</i> |                      |                                      |

| Learn IR by Source Type (Cont.) |                       |                                |                            |
|---------------------------------|-----------------------|--------------------------------|----------------------------|
| Source Type                     | Learn IR commands     | Nav. Button Functions & Result |                            |
| <b>XM (Custom XM)</b>           | POWER ON              | Nav. UP                        | = User Defined UP          |
|                                 | POWER OFF             | Nav. DOWN                      | = User Defined DOWN        |
|                                 | UP (kp UP)            | Nav LEFT                       | = User Defined LEFT        |
|                                 | DOWN (kp DOWN)        | Nav. RIGHT                     | = User Defined RIGHT       |
|                                 | LEFT (kp LEFT)        | Nav. CENTER                    | = User Defined SELECT      |
|                                 | RIGHT (kp RIGHT)      | Press & Hold CENTER            | = User Defined HOLD SELECT |
|                                 | SELECT (kp CENTRE)    |                                |                            |
|                                 | HOLD C (kp CEN hold)  |                                |                            |
|                                 | Direct Access:<br>0-9 |                                |                            |
| <b>Matrix Onboard Tuner</b>     | N/A                   | Nav. UP                        | = SEEK UP                  |
|                                 |                       | Nav. DOWN                      | = SEEK DOWN                |
|                                 |                       | Nav LEFT                       | = Previous PRESET          |
|                                 |                       | Nav. RIGHT                     | = Next PRESET              |
|                                 |                       | Nav. CENTER                    | = AM/FM (toggle)           |
|                                 |                       | Press & Hold CENTER            | = Stereo/Mono (toggle)     |

# Serial Control Strings

## General Information

### Serial Port Communication

**Communication Settings:** 9600 Baud, 8 data bits, 1 stop bit, No parity

### Network Communication

**Communication Settings:** The default operation of the network card is DHCP mode. This means that the Network Card will automatically attempt to locate a DHCP server and acquire an IP address from it. If this fails, it will revert to Static IP mode.

The default static IP settings are:

- IP Address: 192.168.1.20
- Subnet Mask: 255.255.255.0

**Network Commands:** All network communication is done over UDP/IP. All telegrams (both client and MRC) are broadcast over the local network's broadcast address on port 5009, the broadcast address would be 255.255.255.255:5009.

- Network commands must be prefixed by "CMRC000000000000".
- For communication with multiple controllers on the same network, please call Technical Support.

### General Control Information

The Matrix Distributed Audio, multi-room audio control systems can be externally controlled by sending ASCII text command strings to the Bi-Directional RS-232 serial interface or network interface. Every command must be terminated with a line feed (0x0A). All messages are case-sensitive.

The MRC will respond to command messages with a status response message once the command has been executed. In the event that an MRC status changes, the MRC will also send unsolicited status messages (v7.05 and higher).

**Unsolicited Status Messages:** The MRC will send the following unsolicited status messages when a status has changed:

- MVL
- MBS
- MTR
- MSC
- MASON
- MASOFF
- MASOFF0
- MSR
- MGL
- MBAL
- MPRV
- MRGS
- MFAV
- MLOT
- MPRS
- MSST
- CALM
- RSST
- RSCI
- RSCT

## Command Messages

| Command Messages |   |  |
|------------------|---|--|
| <b>MVER</b>      | Get Firmware Version  | Firmware Version Status:<br>"MVERMxxx"<br>where:<br>'xxx' denotes the current firmware version.<br>- or -<br>ERR   |
| <b>MGCF</b>      | Get Configuration   | Configuration Status:<br>"MCFrr,s,zz,c"<br>where:<br>1) 'rr' is the number of rooms connected, valid values are 2-64<br>2) 's' is the number of sources connected, valid values are 4,6,8<br>3) 'zz' is the number of zones available, valid values are 1 or 'rr'/2<br>4) 'c' is the clock available status, where:<br>0 : no clock installed<br>1 : clock module is present<br>- or -<br>ERR    |
| <b>FNIC</b>      | Get Number of IIC devices   | Num IIC Devices Status:<br>"FNICxx"<br>where:<br>'xx' denotes the number of IIC devices available in the MRC.<br>- or -<br>ERR   |
| <b>FGICx</b>     | Get IIC Device Status<br>where:<br>'x' is the IIC device index, valid values range from 1 to the number of available IIC devices as reported in the 'Num IIC Devices Status'. | IIC Device Status:<br>"FSICxx,aaa,vvvv,pppp,dddd"<br>where:<br>1) 'xx' is the IIC device index, valid values range from 1 to the number of IIC devices as denoted in the 'Num IIC Devices Status'<br>2) 'aaa' is the device ID<br>3) 'vvvv' is the version<br>4) 'pppp' is the product ID<br>5) 'dddd' is a descriptive string for the device, the string is of variable length<br>- or -<br>ERR |

| Command Messages (Cont.) |  |   |
|--------------------------|--|---|
| <b>AMX</b>               | AMX Beacon Poll<br>(Note: v7 or higher only)   | AMX Beacon Response:<br>AMXB <-UUID=v> <-SDKClass=w><br><-Make=x><-Model=y> <-Revision=z><br>where:<br>1) 'v' = 'MATRIX-CTRL'<br>2) 'w' is 'DCTRL'<br>3) 'x' is 'AMX'<br>4) 'y' is 'MI-4', 'MI-6', OR 'MI-8' depending on controller hardware<br>5) 'z' denotes the current firmware version<br>- or -<br>ERR |
| <b>MGBD</b>              | Get Baud Rate<br>(Note: v7 or higher only)   | Baud Rate Status:<br>"BAUDxxxx"<br>where:<br>'xxxx' is the current Baud Rate.<br>- or -<br>ERR  |
| <b>BDHI</b>              | Set Baud Rate to 9600<br>(Note: v7 or higher only)   | Baud Rate Status:<br>"BAUDxxxx"<br>where:<br>'xxxx' is the current Baud Rate.<br>- or -<br>ERR  |
| <b>BDLO</b>              | Set Baud Rate to 4800<br>(Note: v7 or higher only)   | Baud Rate Status:<br>"BAUDxxxx"<br>where:<br>'xxxx' is the current Baud Rate.<br>- or -<br>ERR  |
| <b>MSVlr,v</b>           | Set Volume, where:<br>1) 'r' is the desired room, (1-64)<br>2) 'v' is the desired volume level, (0-20):<br>101: Mute<br>0..70: 0..-70 dB | Volume Status:<br>"MVLr,v"<br>where:<br>1) 'r' denotes the room(1-64)<br>2) 'v' denotes the volume setting:<br>101 : Mute<br>0..100: 0..-100 dB<br>- or -<br>ERR  |
| <b>MGVlr</b>             | Get Volume, where:<br>'r' is the desired room, (1-64)  | Volume Status:<br>"MVLr,v"<br>where:<br>1) 'r' denotes the room (1-64)<br>2) 'v' denotes the volume setting:<br>101: Mute<br>0..100 : 0..-100 dB<br>- or -<br>ERR   |

| Command Messages (Cont.) |  |   |
|--------------------------|--|---|
| <b>MSBSr,b</b>           | Set Bass, where:<br>1) 'r' is the desired room, (1-64)<br>2) 'b' is the desired bass level, (0-20):<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB     | Bass Status:<br>"MBSr,b"<br>where:<br>1) 'rr' denotes the room, valid values: 1-64<br>2) 'bb' denotes the bass level:<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB<br><br>- or -<br>ERR   |
| <b>MGBSr</b>             | Get Bass, where:<br>'r' is the desired room, (1-64)  | Bass Status:<br>"MBSr,b"<br>where:<br>1) 'rr' denotes the room, valid values: 1-64<br>2) 'bb' denotes the bass level:<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB<br><br>- or -<br>ERR   |
| <b>MSTRr,t</b>           | Set Treble, where:<br>1) 'r' is the desired room, (1-64)<br>2) 't' is the desired treble level, (0-20):<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB | Treble Status:<br>"MTRr,t"<br>where:<br>1) 'r' denotes the room, valid values: 1-64<br>2) 't' denotes the treble level<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB<br><br>- or -<br>ERR  |
| <b>MGTRr</b>             | Get Treble, where:<br>'r' is the desired room, (1-64)  | Treble Status:<br>"MTRr,t"<br>where:<br>1) 'r' denotes the room, valid values: 1-64<br>2) 't' denotes the treble level:<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB<br><br>- or -<br>ERR |
| <b>MSAAs</b>             | Source All On Command, where:<br>'s' is the desired source (1-8)<br>(Note: v7.02 or higher only)   | Source All On Occurred:<br>"MSAONs"<br>where:<br>'s' denotes the source 1-8<br><br>- or -<br>ERR  |

| Command Messages (Cont.) |  |  |
|--------------------------|--|--|
| <b>MSAOs</b>             | Source All Off Command, where:<br>'s' is the desired source (0-8)<br><i>Use '0' for system all off.</i><br><i>(Note: v7.02 or higher only)</i>   | Source All Off Occurred:<br>"MASOFFs,b8,b7,b6,b5,b4,b3,b2,b1"<br>where:<br>1)'s' denotes the source<br>2) Bitmask denotes the zones that have been turned off<br>- or -<br>System All Off Occurred:<br>"MASOFF0"<br>denotes all zones have been turned off.<br>- or -<br>ERR |
| <b>MSSCr,s</b>           | Select Source, where:<br>1) 'r' is the desired room, (1-64)<br>2) 's' is the desired source, (0-8):<br>0: no source selected<br>1-8: for sources 1 to 8<br><i>After turning on a zone, set the volume to an appropriate volume to un-mute.</i> | Source Status:<br>"MSCr,s"<br>where:<br>1)'r' denotes the room: 1-64<br>2)'s' denotes the source: 0-8,<br>0: no source selected<br>1-8: for sources 1 to 8 selected<br>- or -<br>ERR   |
| <b>MGSCr</b>             | Get Source, where:<br>'r' is the desired room, (1-64)  | Source Status:<br>"MSCr,s"<br>where:<br>1)'r' denotes the room: 1-64<br>2)'s' denotes the source: 0-8,<br>0: no source selected<br>1-8: for sources 1 to 8 selected<br>- or -<br>ERR   |
| <b>MSSRr,s</b>           | Select SRS, where:<br>1) 'r' is the desired room, (1-64)<br>2) 's' is the SRS state, valid values are:<br>0: Off<br>1: Bass Boost<br>2: SRS 3D<br>3: Focus<br>4: WOW   | SRS Status:<br>"MSRr,s"<br>where:<br>1) 'r' denotes the room:1-64<br>2) 's' denotes the SRS state, values are:<br>0: Off<br>1: Bass Boost<br>2: SRS 3D<br>3: Focus<br>4: WOW<br>5: SRS not Available<br>- or -<br>ERR  |

| Command Messages (Cont.) |  |  |
|--------------------------|--|--|
| <b>MSRr</b>              | Get SRS, where:<br>'r' is the desired room, (1-64)   | SRS Status:<br>"MSRr,s"<br>where:<br>1) 'r' denotes the room:1-64<br>2) 's' denotes the SRS state, values are:<br>0: Off<br>1: Bass Boost<br>2: SRS 3D<br>3: Focus<br>4: WOW<br>5: SRS not Available<br><br>- or -<br>ERR  |
| <b>MSGLs,i,o</b>         | Set Gain Level, where:<br>1) 's' is the desired source<br>2) 'i' is the desired input gain, (0-4):<br>0: 0 dB<br>1: -3 dB<br>2: -6 dB<br>3: -9 dB<br>4: -12 dB<br>3) 'o' is the desired output gain, (0-6):<br>0: 0 dB<br>1: +3 dB<br>2: +6 dB<br>3: +9 dB<br>4: + 12 dB<br>5: + 15 dB<br>6: + 18 dB | Gain Status:<br>"MGLs,i,o"<br>where:<br>1) 's' denotes the source<br>2) 'i' denotes the input gain, values are:<br>0: 0 dB<br>1: -3 dB<br>2: -6 dB<br>3: -9 dB<br>4: -12 dB<br>3) 'o' denotes the output gain, values are:<br>0: 0 dB<br>1: +3 dB<br>2: +6 dB<br>3: +9 dB<br>4: + 12 dB<br>5: + 15 dB<br>6: + 18 dB<br><br>- or -<br>ERR |
| <b>MGGLs</b>             | Get Gain Level, where:<br>'s' is the desired source (1-8)  | Gain Status:<br>"MGLs,i,o"<br>where:<br>1) 's' denotes the source<br>2) 'i' denotes the input gain, values are:<br>0: 0 dB<br>1: -3 dB<br>2: -6 dB<br>3: -9 dB<br>4: -12 dB<br>3) 'o' denotes the output gain, values are:<br>0: 0 dB<br>1: +3 dB<br>2: +6 dB<br>3: +9 dB<br>4: + 12 dB<br>5: + 15 dB<br>6: + 18 dB<br><br>- or -<br>ERR |

| Command Messages (Cont.) |   |   |
|--------------------------|---|---|
| <b>MSPGr,s</b>           | Set Paging, where:<br>1) 'r' is the desired room, (1-64)<br>2) 's' is the Paging state, valid values are:<br>0: Off<br>1: On<br><i>(Note: v7 or higher only)</i>                        | Paging Status:<br>"MPGr,s"<br>where:<br>1) 'r' denotes the room1-64<br>2) 's' denotes the Paging state, values are:<br>0: Off<br>1: On<br>- or -<br>ERR                           |
| <b>MGPGr</b>             | Get Paging, where:<br>'r' is the desired room, (1-64)<br><i>(Note: v7 or higher only)</i>   | Paging Status:<br>"MPGr,s"<br>where:<br>1) 'r' denotes the room1-64<br>2) 's' denotes the Paging state, values are:<br>0: Off<br>1: On<br>- or -<br>ERR                           |
| <b>MSPVr,v</b>           | Set Paging Volume, where:<br>1) 'r' is the desired room, (1-64)<br>2) 'v' is the desired volume level, (0-70,101):<br>101: Mute<br>0..70: 0..-70 dB<br><i>(Note: v7 or higher only)</i> | Paging Volume Status:<br>"MPGr,s"<br>where:<br>1) 'r' denotes the room 1-64<br>2) 'v' denotes the volume setting, values are:<br>101: Mute<br>100..0: -100..0 dB<br>- or -<br>ERR |
| <b>MGPVr</b>             | Get Paging Volume, where:<br>'r' is the desired room, (1-64)<br><i>(Note: v7 or higher only)</i>  | Paging Volume Status:<br>"MPGr,s"<br>where:<br>1) 'r' denotes the room 1-64<br>2) 'v' denotes the volume setting, values are:<br>101: Mute<br>100..0: -100..0 dB<br>- or -<br>ERR |

| Command Messages (Cont.) |   |   |
|--------------------------|---|---|
| <p><b>MGSTr</b></p>      | <p>Get General Status, where:<br/>'r' is the desired room, (1-64)</p> | <p>General Room Status:<br/>"MGSTr,v,b,t,s,r,z,l,p"<br/>where:<br/>1) 'r' denotes the room 1-64<br/>2) 'v' denotes the volume setting, values are:<br/>101: Mute<br/>100..0: -100..0 dB<br/>3) 'b' denotes the bass level, values are:<br/>0: level<br/>1..10: -10..-1 dB<br/>11..20: 1..10 dB<br/>4) 't' denotes the treble level, values are:<br/>0: level<br/>1..10: -10..-1 dB<br/>11..20: 1..10 dB<br/>5) 's' denotes the source, values are 1-8<br/>6) 'r' denotes the SRS state, values are:<br/>0: Off<br/>1: Bass Boost<br/>2: SRS 3D<br/>3: Focus<br/>4: WOW<br/>5: SRS not available for this room<br/>7) 'z' denotes the zone, valid values are:<br/>0: not connected to a zone<br/>1..32: zone ID<br/>8) 'l' denotes the balance, valid values are:<br/>0: balanced equally<br/>1..10: 100% ... 10% Left<br/>11..20: 10% ... 100% Right<br/>9) 'p' denotes the privacy status, values are:<br/>0: Off<br/>1: On<br/>- or -<br/>ERR</p> |

| Command Messages (Cont.) |  |   |
|--------------------------|--|---|
| <b>MSSTs,x</b>           | <p>Set Source State, where:</p> <p>1) 's' is the desired source, (1-8)</p> <p>2) 'x' is the desired state, (0-2)</p> <p>2: Pause<br/>1: On<br/>0: Off</p> <p>This command does not support internal Sirius Tuner (1-2).</p>  | <p>Source State Status:<br/>"MSSTs,p[variable]"</p> <p>where:</p> <p>1) 's' is the source, valid values are 1-8</p> <p>2) 'p' is the source state, valid values are:<br/>0: Off<br/>1: On<br/>2: Paused</p> <p>3) [variable] is a data string which varies with the type of source:<br/>0: undefined - p where:<br/>1: AM/FM Tuner - b,m,ffff where:<br/>'b' is the band:<br/>1 = AM, 2 = FM<br/>'m' is the mono/stereo status:<br/>1 = mono, 0 = stereo<br/>'f' is the currently tuned frequency (if it is known)</p> <p>2: CD Changer<br/>3: DVD Player<br/>4: Satellite Receiver<br/>5: Audio Server<br/>6: Other 1<br/>20: Internal AM/FM Tuner-<br/>b,m,s,ffff<br/>where:<br/>'b' is the band:<br/>1 = AM, 2 = FM<br/>'m' is the mono/stereo status:<br/>1 = mono, 0 = stereo<br/>'s' is the seek/tune status:<br/>1 = seek, 0 = tune<br/>'f' is the currently tuned frequency</p> <p>- or -<br/>ERR</p> |
| <b>MCMDs,x, y</b>        | <p>Send Source Command, where:</p> <p>1) 's' is the desired source, (1-8)</p> <p>2) 'x' is the desired command index</p> <p>3) 'y' is the play option for the Sirius internal tuner only. Other source types will ignore. (1=play, 0=browse)</p> <p>Refer to <i>MCMD - Command Codes</i> on page 79 for details.</p> | <p>ACK<br/>or<br/>Sirius Channel Number (Sirius Type Only)<br/>"RSCHs'x'y'z"</p> <p>where:</p> <p>1) 's' is the Sirius number (1-2)</p> <p>2) 'x' is the Category number (0-99)</p> <p>3) 'y' is the Channel number (3 digits)</p> <p>4) 'z' is the Service ID (3 digits)</p> <p>- or -<br/>ERR</p>   |

| Command Messages (Cont.) |   |   |
|--------------------------|---|---|
| <b>MSBLr,x</b>           | Set Room Balance, where:<br>1) 'r' is the desired room, (1-64)<br>2) 'x' is the balance value, (0-20):<br>0: balanced evenly<br>1..10: Full Left..10% Left<br>11..20: 10% Right .. Full Right | Room Balance Status:<br>"MBALr,x"<br>where:<br>1) 'rr' denotes the room 1-64<br>2) 'x' denotes the balance, values are:<br>0: balanced evenly<br>1..10: 100% ... 10% Left<br>11..20: 10% .. 100% Right<br><br>- or -<br>ERR |
| <b>MGBLr</b>             | Get Room Balance, where:<br>'r' is the desired room, (1-64)   | Room Balance Status:<br>"MBALr,x"<br>where:<br>1) 'rr' denotes the room 1-64<br>2) 'x' denotes the balance, values are:<br>0: balanced evenly<br>1..10: 100% ... 10% Left<br>11..20: 10% .. 100% Right<br><br>- or -<br>ERR |
| <b>MSPRr,x</b>           | Set Room Privacy, where:<br>1) 'r' is the desired room, (1-64)<br>2) 'x' is the desired privacy state, (0-1)<br>0: Off<br>1: On   | Privacy Status:<br>"MPRVr,x"<br>where:<br>1) 'r' denotes the room 1-64<br>2) 'x' denotes the privacy status, values are:<br>0: Off<br>1: On<br><br>- or -<br>ERR  |
| <b>MGPRr</b>             | Get Room Privacy, where:<br>'r' is the desired room, (1-64)   | Privacy Status:<br>"MPRVr,x"<br>where:<br>1) 'r' denotes the room 1-64<br>2) 'x' denotes the privacy status, values are:<br>0: Off<br>1: On<br><br>- or -<br>ERR  |

| Command Messages (Cont.)                       |   |  |
|--|---|--|
| <b>MSRGs,b8,b7,<br/>b6,b5,b4,b3,<br/>b2,b1</b> | <p>Create Room Grouping, where:</p> <ol style="list-style-type: none"> <li>1) 's' is the source which to associate the rooms, (1-8)</li> <li>2) 'b8'...'b1' is a binary room selection bitmap where all rooms to be grouped have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1.</li> </ol> <p>Eg:<br/>Use 'MSRG2,0,0,0,0,0,0,3,255'<br/>to group zones 1-10 to source 2</p> <p><i>Note: A room grouping will be considered invalid if there are not at least two rooms selected for the group.</i></p> | <p>Room Grouping Status:<br/>"MRGSz,s,b8,b7,b6,b5,b4,b3,b2,b1"<br/>where:</p> <ol style="list-style-type: none"> <li>1) 'z' is the zone ID, valid values are:<br/>0: no zone ID - all rooms in selection are not in a grouping<br/>1..32: zone ID</li> <li>2) 's' is the source the rooms are currently associated with</li> <li>3) 'b8'...'b1' is a binary room selection bitmap where all rooms to be grouped have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1.</li> </ol> <p><i>Note: If none of the bits are set in the room selection bitmap, then the room grouping has been removed.</i></p> <p>- or -<br/>ERR</p> |
| <b>MARGg,r</b>                                 | <p>Add Room to Group, where:</p> <ol style="list-style-type: none"> <li>1) 'g' is any room already in the group, (1-64)</li> <li>2) 'r' is the room, (1-64)</li> </ol>  | <p>Room Grouping Status:<br/>"MRGSz,s,b8,b7,b6,b5,b4,b3,b2,b1"<br/>where:</p> <ol style="list-style-type: none"> <li>1) 'z' is the zone ID, valid values are:<br/>0: no zone ID - all rooms in selection are not in a grouping<br/>1..32: zone ID</li> <li>2) 's' is the source the rooms are currently associated with</li> <li>3) 'b8'...'b1' is a binary room selection bitmap where all rooms to be grouped have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1.</li> </ol> <p><i>Note: If none of the bits are set in the room selection bitmap, then the room grouping has been removed.</i></p> <p>- or -<br/>ERR</p> |

| Command Messages (Cont.)    |   |  |
|-----------------------------|---|--|
| <b>MRRGr</b>                | <p>Remove Room from Group, where:<br/>'r' is the room to remove, (1-64)<br/><i>Note: The Room Grouping will be removed if less than 2 rooms are associated with the given source.</i></p> | <p>Room Grouping Status:<br/>"MRGSz,s,b8,b7,b6,b5,b4,b3,b2,b1"<br/>where:<br/>1) 'z' is the zone ID, valid values are:<br/>0: no zone ID - all rooms in selection are not in a grouping<br/>1..32: zone ID<br/>2) 's' is the source the rooms are currently associated with<br/>3) 'b8'...'b1' is a binary room selection bitmap where all rooms to be grouped have a binary 1 in the room position.<br/>The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1.<br/><i>Note: If none of the bits are set in the room selection bitmap, then the room grouping has been removed.</i><br/>- or -<br/>ERR</p>   |
| <b>MDRG</b><br><b>MDRGz</b> | <p>Dissolve all Room Groupings<br/>Dissolve room groupings and turn all zones off.<br/>1) if 'z' is used, the zone 'z' will remain on</p>   | <p>ACK<br/>- or -<br/>ERR</p>  |
| <b>MGRGr</b>                | <p>Get Room Grouping, where:<br/>'r' is any room in the grouping, (1-64)</p>  | <p>Room Grouping Status:<br/>"MRGSz,s,b8,b7,b6,b5,b4,b3,b2,b1"<br/>where:<br/>1) 'z' is the zone ID, valid values are:<br/>0 : no zone ID - all rooms in selection are not in a grouping<br/>1..32 : zone ID<br/>2) 's' is the source the rooms are currently associated with<br/>3) 'b8'...'b1' is a binary room selection bitmap where all rooms to be grouped have a binary 1 in the room position.<br/>The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1.<br/><i>Note: If none of the bits are set in the room selection bitmap, then the room grouping has been removed.</i><br/>- or -<br/>ERR</p> |
| <b>MIGVr,i</b>              | <p>Increment the Volume for a Room Grouping, where:<br/>1) 'r' is any room in the grouping, (1-64)<br/>2) 'i' is the increment value or 0 for system default</p>                          | <p>Volume Status:<br/>"MVLr,v"<br/>where:<br/>1) 'r' denotes the room in the group, values are 1-64<br/>2) 'v' denotes the volume setting, values are:<br/>101: Mute<br/>0..100: 0..-100 dB<br/>- or -<br/>ERR</p>   |

| Command Messages (Cont.) |   |   |
|--------------------------|---|---|
| <b>MDGVr,i</b>           | Decrement the Volume for a Room Grouping, where:<br>1) 'r' is any room in the grouping<br>2) 'i' is the decrement value or 0 for system default   | Volume Status:<br>"MVLr,v"<br>where:<br>1) 'r' denotes the room in the group, values are 1-64<br>2) 'v' denotes the volume setting, values are:<br>101: Mute<br>0..100: 0..-100 dB<br>- or -<br>ERR   |
| <b>MSGVr,v</b>           | Set the Volume for a Room Grouping, where:<br>1) 'r' is any room in the grouping<br>2) 'v' is the desired volume level, (0-70, 101):<br>101: Mute<br>0..70: 0..-70 dB   | Volume Status<br>"MVLr,v"<br>where:<br>1) 'r' denotes the room in the group, values are 1-64<br>2) 'v' denotes the volume setting, values are:<br>101: Mute<br>0..100: 0..-100 dB<br>- or -<br>ERR  |
| <b>MGRSs</b>             | Get the Rooms currently listening to a source, where:<br>'s' is the desired source, (1-8)   | Room Map on Selected Source Status:<br>"MGRSs,b8,b7,b6,b5,b4,b3,b2,b1"<br>where:<br>1) 's' is the source who the rooms are listening to<br>2) 'b8'...'b1' is a binary room selection bitmap where all rooms listening to 's' have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1<br>- or -<br>ERR |
| <b>MSFVr,s,f</b>         | Set the favorite, where:<br>1) 'r' is the desired room, (1-64)<br>2) 's' is the desired source, (1-8)<br>3) 'f' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data will clear the favorite. | Favorite Status<br>"MFAVr,s,f"<br>where:<br>1) 'r' is the room, values from [1..64]<br>2) 's' is the source, values are 1-8<br>3) 'f' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data is returned if the favorite is not set<br>- or -<br>ERR                              |

| Command Messages (Cont.) |   |   |
|--------------------------|---|---|
| <b>MGFVr,s</b>           | Get the favorite, where:<br>1) 'r' is the desired room, (1-64)<br>2) 's' is the desired source, valid values are 1-8  | Favorite Status:<br>"MFAVr,s,f"<br>where:<br>1) 'r' is the room, values from [1..64]<br>2) 's' is the source, values are 1-8<br>3) 'f' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data is returned if the favorite is not set<br><br>- or -<br>ERR   |
| <b>MSLor</b>             | Lock out the keypad in a room, where:<br>'r' is the room to lock out, (1-64)  | Keypad Lock Out Status:<br>"MLOTb8,b7,b6,b5,b4,b3,b2,b1"<br>where:<br>'b8'...'b1' is a binary room selection bitmap where all rooms blocked out have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1<br><br>- or -<br>ERR  |
| <b>MCLor</b>             | Clear the keypad lock out in a room, where:<br>'r' is the room to clear the lock out in, (1-64)   | Keypad Lock Out Status:<br>"MLOTb8,b7,b6,b5,b4,b3,b2,b1"<br>where:<br>'b8'...'b1' is a binary room selection bitmap where all rooms blocked out have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1<br><br>- or -<br>ERR  |
| <b>MGLO</b>              | Get the keypad lock out status for the system.  | Keypad Lock Out Status:<br>"MLOTb8,b7,b6,b5,b4,b3,b2,b1"<br>where:<br>'b8'...'b1' is a binary room selection bitmap where all rooms blocked out have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1<br><br>- or -<br>ERR  |
| <b>MSPSs,n,p</b>         | Set the preset, where:<br>1) 's' is the desired source, (1-8)<br>2) 'n' is the desired preset, (1-10)<br>3) 'p' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data will clear the preset. | Preset Status:<br>"MPRSs,n,p"<br>where:<br>1) 's' is the source, valid values are 1-8<br>2) 'n' is the preset, valid values are 1-10<br>3) 'p' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data is returned if no preset is set.<br><br>- or -<br>ERR |

| Command Messages (Cont.) |  |  |
|--------------------------|--|--|
| <b>MGPSs,n</b>           | Get the preset, where:<br>1) 's' is the desired source, (1-8)<br>2) 'n' is the desired preset, (1-10)  | Preset Status:<br>"MPRSs,n,p"<br>where:<br>1) 's' is the source, valid values are 1-8<br>2) 'n' is the preset, valid values are 1-10<br>3) 'p' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data is returned if no preset is set<br>- or -<br>ERR |
| <b>MRPSs,n</b>           | Recall (go to ) the preset, where:<br>1) 's' is the desired source, (1-8)<br>2) 'n' is the desired preset, (1-10)<br>(Note: v7 or higher only) | Preset Status:<br>"MPRSs,n,p"<br>where:<br>1) 's' is the source, valid values are 1-8<br>2) 'n' is the preset, valid values are 1-10<br>3) 'p' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data is returned if no preset is set<br>- or -<br>ERR |
| <b>MSTPs</b>             | Get the source type, where:<br>'s' is the desired source, valid values are 1-8   | Source type Status:<br>"MSTPs,t"<br>where:<br>1) 's' is the source, valid values are 1-8<br>2) 't' is the source type, valid values are:<br>0: undefined<br>1: AM/FM Tuner<br>2: CD Changer<br>3: DVD Player<br>4: Satellite Receiver<br>5: Audio Server<br>6: Other<br>8: Internal Sirius tuner<br>20: Internal AM/FM Tuner<br>- or -<br>ERR                |

| Command Messages (Cont.) |  |  |
|--------------------------|--|--|
| <b>MSSDs,d</b>           | <p>Send Source Direct Data, where:</p> <ol style="list-style-type: none"> <li>1) 's' is the desired source, valid values are 1-8</li> <li>2) 'd' is the direct tuning string, the meaning of the data depends on the source type:<br/><i>Note: The source type can be determined using MSTP command.</i></li> </ol> <p>0: <b>undefined</b> – direct data is not processed.</p> <p>1: <b>AM/FM Tuner</b> – station frequency; if FM then there will be a '.' in the frequency string (eg. 103.1).</p> <p>2: <b>CD Changer</b> – disk and track, in the format 'ddd.ttt' where 'ddd' is the disk and 'ttt' is the track.</p> <p>3: <b>DVD Player</b> – disk and track, in the format 'ddd.ttt' where 'ddd' is the disk and 'ttt' is the track.</p> <p>4: <b>Satellite Receiver</b> – 'ssss' where 'ssss' is the station number.</p> <p>5: <b>Audio Server</b> - disk and track, in the format 'ddd.ttt' where 'ddd' is the album and 'ttt' is the title.</p> <p>6: <b>Other</b> – direct data sent as received.</p> <p>7: <b>Custom XM</b> – 'sss' for channel.</p> <p>8: <b>Internal Sirius Tuner</b> – 'ccc.ssss' where 'ccc' is Category and 'ssss' is channel number.</p> <p>20: <b>Internal AM/FM Tuner</b>– station frequency; if FM then there will be a '.' in the frequency string (eg. 103.1).</p> | <p>Source Status (other than internal Sirius tuner):</p> <p>"MSSTs,p[variable]"</p> <p>where:</p> <ol style="list-style-type: none"> <li>1) 's' is the source, valid values are 1-8</li> <li>2) 'p' is the source state, valid values are:               <ul style="list-style-type: none"> <li>0: Off</li> <li>1: On</li> <li>2: Paused</li> </ul> </li> <li>3) [variable] is a data string which varies with the type of source:               <ul style="list-style-type: none"> <li>0: undefined - p where:                   <ul style="list-style-type: none"> <li>1: AM/FM Tuner - b,m,ffff where:                       <ul style="list-style-type: none"> <li>'b' is the band: 1 = AM, 2 = FM</li> <li>'m' is the mono/stereo status:                           <ul style="list-style-type: none"> <li>1 = mono, 0 = stereo</li> </ul> </li> <li>'f' is the currently tuned frequency (if it is known)</li> </ul> </li> <li>2: CD Changer</li> <li>3: DVD Player</li> <li>4: Satellite Receiver</li> <li>5: Audio Server</li> <li>6: Other</li> <li>20: Internal AM/FM Tuner - b,m,s,ffff where:                       <ul style="list-style-type: none"> <li>'b' is the band: 1 = AM, 2 = FM</li> <li>'m' is the mono/stereo status:                           <ul style="list-style-type: none"> <li>1 = mono, 0 = stereo</li> </ul> </li> <li>'s' is the seek/tune status:                           <ul style="list-style-type: none"> <li>'1' = seek, '0' = tune</li> </ul> </li> <li>'f' is the currently tuned frequency</li> </ul> </li> </ul> </li> </ul> <p>- or -</p> <p>Sirius Radio Channel Number Status:</p> <p>"RSClx'y's'z'c't'a'p"</p> <p>where:</p> <ol style="list-style-type: none"> <li>1) 'x' is the Sirius number (1-2)</li> <li>2) 'y' is the Channel number (3 digits)</li> <li>3) 's' is the Service ID (3 digits)</li> <li>4) 'z' (0=play, 1=no play)</li> <li>5) 'c' is the Channel Name (36 characters max)</li> <li>6) 't' is the Title (36 characters max)</li> <li>7) 'a' is the Artist (0-36 characters max)</li> <li>8) 'p' is the Composer (36 char Max)</li> </ol> <p>- or -</p> <p>ERR</p> </li></ol> |

| Command Messages (Cont.) |  |   |
|--------------------------|--|---|
| <b>MGSSs</b>             | Get Source Status, where:<br>'s' is the desired source, (1-8)  | Source Status:<br>"MSSTs,p[variable]"<br>where:<br>1) 's' is the source, valid values are 1-8<br>2) 'p' is the source state, valid values are:<br>0: Off<br>1: On<br>2: Paused<br>3) [variable] is a data string which varies with the type of source:<br>0: undefined - p where:<br>1: AM/FM Tuner - b,m,ffff where:<br>'b' is the band: 1 = AM, 2 = FM<br>'m' is the mono/stereo status:<br>1 = mono, 0 = stereo<br>'f' is the currently tuned frequency (if it is known)<br>2: CD Changer<br>3: DVD Player<br>4: Satellite Receiver<br>5: Audio Server<br>6: Other<br>20: Internal AM/FM Tuner - b,m,s,ffff where:<br>'b' is the band: 1 = AM, 2 = FM<br>'m' is the mono/stereo status:<br>1 = mono, 0 = stereo<br>'s' is the seek/tune status:<br>'1' = seek, '0' = tune<br>'f' is the currently tuned frequency<br><br>- or -<br>ERR |
| <b>CSSTh,m,s</b>         | Set the Clock Time, where:<br>1) 'h' is the desired hour, (0-23)<br>2) 'm' is the desired minute, (0-59)<br>3) 's' is the desired second, (0-59)   | Clock Status:<br>"RCSTh,m,s"<br><br>- or -<br>ERR   |
| <b>CGST</b>              | Get the Clock Time.  | Clock Status:<br>"RCSTh,m,s"<br><br>- or -<br>ERR   |
| <b>CSALr,s,v,h,m</b>     | Set the Clock Alarm, where:<br>1) 'r' is the desired room, (1-64)<br>2) 's' is the desired source, (1-8)<br>3) 'v' is the desired volume, (0-70, 101)<br>"101: Mute<br>"0..70: 0..-70 dB<br>4) 'h' is the desired hour, (0-23)<br>5) 'm' is the desired minute, (0-59) | Alarm Status:<br>"CALMr,s,v,h,m"<br><br>- or -<br>ERR   |
| <b>CCALr</b>             | Clear the Clock Alarm, where 'r' is the desired room. (0-64).<br>• 0: clear the alarm for all rooms<br>• 1-64: clear the alarm for the specified room  | Alarm Status:<br>"CALMr,0,0,0,0"<br>See "CSALr,s,v,h,m" (above)<br><br>- or -<br>ERR  |

| Command Messages (Cont.) |   |   |
|--------------------------|---|---|
| <b>CGALr</b>             | Get the Clock Alarm, where<br>'r' is the desired room (1-64)  | Alarm Status:<br>"CALMr,s,v,h,m"<br>See "CSALr,s,v,h,m" (page 77)<br>- or -<br>ERR  |
| <b>MV++r</b>             | Increment Volume, where:<br>'r' is the desired room, (1-64)   | Volume Status:<br>"MVLr,v"<br>where:<br>'r' is the desired room which is on<br>'v' is the updated volume level<br>- or -<br>ERR   |
| <b>MV--r</b>             | Decrement Volume, where:<br>'r' is the desired room, (1-64)   | Volume Status:<br>"MVLr,v"<br>where:<br>'r' is the desired room which is on<br>'v' is the updated volume level<br>- or -<br>ERR   |
| <b>SGSTx,y</b>           | Get General Sirius Status, where:<br>1) 'x' = Sirius No. (1-2)<br>2) 'y' = status index(2,4,6,7):<br>2: Antenna connection<br>4: Activation Status<br>6: Satellite Signal Level<br>7: Terrestrial Signal level<br>(Note: v7 or higher only) | General Sirius Radio Status:<br>"RSSTx,y,z"<br>where:<br>1) 'x' is the Sirius number (1-2)<br>2) 'y' is the Sirius Status Index (2,4,6,7)<br>3) 'z' is the Status Message<br>Refer to <i>Status Codes for SIRIUS Tuner</i> on page 79 for details.<br>- or -<br>ERR   |
| <b>SGID</b>              | Get Sirius Radio ID, where<br>'x' = Sirius number (1-2)<br>(Note: v7 or higher only)  | Sirius Radio ID Status:<br>"RSIDx, n"<br>where:<br>1) 'x' is the Sirius tuner no.<br>2) 'n' is 12 digits Sirius tuner ID number<br>- or -<br>ERR  |
| <b>SGClx</b>             | Get Sirius Channel Information, where<br>'x' = Sirius number (1-2)<br>(Note: v7 or higher only)   | Sirius Channel information:<br>"RSCl x'y's'z'c't'a'p"<br>where:<br>1) 'x' is the Sirius tuner no. (1 or 2)<br>2) 'y' is the Channel number (3 digits)<br>3) 's' is the Service ID (3 digits)<br>4) 'z' is play option (0:play, 1:no play)<br>5) 'c' is the Channel Name (36 char max)<br>6) 't' is the Title (36 char max)<br>7) 'a' is the Artist (36 char max)<br>8) 'p' is the Composer (36 char max)<br>- or -<br>ERR |

| Command Messages (Cont.) |   |  |
|--------------------------|---|--|
| <b>SGCTx</b>             | Get Sirius Category Information, where<br>1) 'x' = Sirius number (1-2)<br>(Note: v7 or higher only) | Sirius Category information:<br>"RSCTx'y'z"<br>where:<br>1) 'x' is the Sirius number (1-2)<br>2) 'y' is the Category number (0-99)<br>3) 'z' is the Category name (eg. Pop)<br>- or -<br>ERR |

### Status Codes for SIRIUS Tuner

| Status Codes for SIRIUS Tuner   |  |                                     |
|---------------------------------|--|-------------------------------------|
| Status Index (y)                | Status Message (z)   | Notes                               |
| 2 = Antenna Connection          | 0 = Antenna Connected<br>1 = Antenna Disconnected  |                                     |
| 4 = Activation Status           | Bit 0 = Individualized (0=No, 1=Yes)<br>Bit 1 = Enabled (0=No, 1=Yes)<br>Bit 2 = Activated (0=No, 1=Yes)<br>Bit 3-7 = For Future Use | 8 bit message<br>Example: 0000 0111 |
| 6 = Satellite Signal Strength   | 0 = No Signal<br>1 = Weak Signal<br>2 = Good Signal<br>3 = Excellent Signal  |                                     |
| 7 = Terrestrial Signal Strength | 0 = No Signal<br>1 = Weak Signal<br>2 = Good Signal<br>3 = Excellent Signal  |                                     |

### MCMD - Command Codes

The following table provides Source Command Codes Referenced by Source Type and Command Index:

| MCMD - Command Codes |              |              |               |                                      |        |                    |             |             |
|----------------------|--------------|--------------|---------------|--------------------------------------|--------|--------------------|-------------|-------------|
| Source Type          | 1            | 2            | 3             | 4                                    | 5      | 6                  | 7           | 8           |
| Internal Tuner       | Seek Down    | Seek Up      | Stop Seek     | Seek/Tune Toggle<br>(Mi-Series only) | Band   | Mono/Stereo Toggle |             | Next Preset |
| Internal Sirius      | Prev Channel | Next Channel | Prev Category | Prev Category                        | Next   |                    | Prev Preset | Next Preset |
| AM/FM Tuner          | Seek Down    | Seek Up      |               |                                      | Band   | Mono/Stereo Toggle |             | Next Preset |
| CD Changer           | Prev Track   | Next Track   | Prev Disc     | Next Disc                            | Play   |                    |             | Next Preset |
| DVD Player           | Nav Down     | Nav Up       | Nav Left      | Nav Right                            | Select | Menu               |             | Next Preset |
| Satellite            | Channel Down | Channel Up   |               |                                      | Select | Guide              |             | Next Preset |
| Audio Server         | Previous     | Next         | Previous Page | Next Page                            | Play   |                    |             | Next Preset |
| Other                | Previous     | Next         | Left          | Right                                | SEL    | SEL+Hold           | Prev Preset | Next Preset |
| Custom XM            | UP           | Down         | Left          | Right                                | SEL    | SEL+Hold           | Prev Preset | Next Preset |

## Status Messages

| Status Messages   |  |
|---|--|
| <b>ERR</b>  | Error  |
| <b>ACK</b>  | Acknowledge Status   |
| <b>PON</b>  | Power On Status<br><i>Note: Not used</i>   |
| <b>POFF</b>   | Power Off Status<br><i>Note: Not used</i>  |
| <b>MVERx</b>  | Firmware Version Status, where 'x' is the current firmware version (4 digits)  |
| <b>MCFr,s,z,c</b>   | Configuration Status, where:<br>1) 'r' is the number of rooms connected, (2-64)<br>2) 's' is the number of sources connected, (4,6, or 8)<br>3) 'z' is the number of groups available, (r/2)<br>4) 'c' is the clock available status, (0-1) where:<br>0: no clock installed<br>1: clock module is present  |
| <b>FNICxx</b>   | Num IIC Devices Status, where 'xx' denotes the number of IIC devices available in the MRC  |
| <b>FSICx,a,v,p,d</b>  | IIC Device Status, where:<br>1) 'x' is the IIC device index, valid values range from 1 to the number of IIC devices as denoted in the 'Num IIC Devices Status'<br>2) 'a' is the device ID (3 digits)<br>3) 'v' is the version (4 digits)<br>4) 'p' is the product ID (4 digits)<br>5) 'd' is a descriptive string for the device, the string is of variable length |
| <b>AMXB</b><br><-UUID=v><br><-SDKClass=w><br><-Make=x><br><-Model=y><br><-Revision=z> | AMX Beacon Response, where<br>1) 'v' = 'MATRIX-CTRL'<br>2) 'w' is 'DCTRL'<br>3) 'x' is 'AMX'<br>4) 'y' is 'MI-4', 'MI-6', OR 'MI-8' depending on controller hardware<br>5) 'z' denotes the current firmware version<br><i>(Note: v7.02 or higher only)</i>   |
| <b>BAUD:x</b>   | Baud Rate Status, where,<br>'x' is the current Baud Rate (4 digits)<br><i>(Note: v7 or higher only)</i>  |
| <b>MVLr,v</b>   | Volume Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 'v' denotes the volume setting, (0-70, 101)<br>101: Mute<br>0..70: 0..-70 dB  |
| <b>MBSr,b</b>   | Bass Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 'b' denotes the bass level, (0-20)<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB   |
| <b>MTRr,t</b>   | Treble Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 't' denotes the bass level, (0-20)<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB   |

| Status Messages (Cont.)                |  |
|--|--|
| <b>MSCr,s</b>                          | Source Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 's' denotes the source, valid values are:<br>0: no source selected<br>1-8: for sources 1 to 8 selected  |
| <b>MSAONs</b>                          | Source All On Occurred, where:<br>'s' denotes the source (1-8)<br>(Note: v7.02 or higher only)   |
| <b>MASOFFs,b8,b7,b6,b5,b4,b3,b2,b1</b> | Source All Off, where:<br>1) 's' denotes the source<br>2) Bitmask denotes the zones that have been turned off<br>(Note: v7.02 or higher only)  |
| <b>MASOFF0</b>                         | System All Off Occurred:<br>All zones have been turned off.<br>(Note: v7.02 or higher only)  |
| <b>MSRr,s</b>                          | SRS Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 's' denotes the SRS state, (0-5)<br>0: Off<br>1: Bass Boost<br>2: SRS 3D<br>3: Focus<br>4: WOW<br>5: SRS not Available   |
| <b>MGLs,i,o</b>                        | Gain Status, where:<br>• 's' denotes the source<br>• 'i' denotes the input gain, valid values are:<br>0: 0 dB<br>1: -3 dB<br>2: -6 dB<br>3: -9 dB<br>4: -12 dB<br>• 'o' denotes the output gain, valid values are:<br>0: 0 dB<br>1: +3 dB<br>2: +6 dB<br>3: +9 dB<br>4: +12 dB<br>5: +15 dB<br>6: +18 dB |
| <b>MPGr,s</b>                          | Paging Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 's' denotes the Paging state, (0-1)<br>0: Off<br>1: On<br>(Note: v7 or higher only)   |
| <b>MPVr,v</b>                          | Paging Volume Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 'v' denotes the volume setting, (0-70)<br>101: Mute<br>70..0: -70..0 dB<br>(Note: v7 or higher only)   |

| Status Messages (Cont.)                |  |
|--|--|
| <b>MBALr,x</b>                         | Balance Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 'x' denotes the balance, (0-20)<br>0: balanced evenly<br>1..10: 100% ... 10% Left<br>11..20: 10% .. 100% Right   |
| <b>MPRVr,x</b>                         | Privacy Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 'x' denotes the privacy status, (0-1)<br>0: Off<br>1: On   |
| <b>MGSTR,v,bb,t,s,r,z,l,p</b>          | General Status, where:<br>1) 'r' denotes the room, (1-64)<br>2) 'v' denotes the volume setting, (0-70, 101)<br>101 : Mute<br>70..0 : -70..0 dB<br>3) 'b' denotes the bass level, (0-20)<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB<br>4) 't' denotes the treble level, (0-20)<br>0: level<br>1..10: -10..-1 dB<br>11..20: 1..10 dB<br>5) 's' denotes the source, (1-8)<br>6) 'r' denotes the SRS state, (0-5)<br>0: Off<br>1: Bass Boost<br>2: SRS 3D<br>3: Focus<br>4: WOW<br>5: SRS not available for this room<br>7) 'z' denotes the Group ID, (0-32)<br>0: not connected to a zone<br>1..32: zone ID<br>8) 'l' denotes the balance, (0-20)<br>0: balanced equally<br>1..10: 100% ... 10% Left<br>11..20: 10% ... 100% Right<br>9) 'p' denotes the privacy status, (0-1)<br>0: Off<br>1: On |
| <b>MRGSz,s,b8,b7,b6,b5,b4,b3,b2,b1</b> | Room Grouping Status, where:<br>1) 'z' is the group ID, (0-32)<br>0: no group ID - all rooms in selection are not in a grouping<br>1-32: group ID<br>2) 's' is the source the rooms are currently associated with<br>3) 'b8'...'b1' is a binary room selection bitmap where all rooms to be grouped have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1.<br><i>Note: If none of the bits are set in the room selection bitmap, then the room grouping has been removed.</i>  |
| <b>MGRSs,b8,b7,b6,b5,b4,b3,b2,b1</b>   | Source Grouping Status, where:<br>1) 's' is the source who the rooms are listening to<br>2) 'b8'...'b1' is a binary room selection bitmap where all rooms listening to 's' have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1.  |

| Status Messages (Cont.)            |  |
|------------------------------------|--|
| <b>MFAVr,s,f</b>                   | <p>Favorite Status, where:</p> <ol style="list-style-type: none"> <li>1) 'r' is the room, (1-64)</li> <li>2) 's' is the source, valid values are 1-8</li> <li>3) 'f' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data is returned if the favorite is not set.</li> </ol>   |
| <b>MLOTb8,b7,b6,b5,b4,b3,b2,b1</b> | <p>Lock Out Status, where:</p> <p>'b8'...'b1' is a binary room selection bitmap where all rooms blocked out have a binary 1 in the room position. The most significant bit in 'b8' is for room 64 and the least significant bit in 'b1' is for room 1.</p>   |
| <b>MPRSs,n,p</b>                   | <p>Preset Status, where:</p> <ol style="list-style-type: none"> <li>1) 's' is the source, valid values are 1-8</li> <li>2) 'n' is the preset, valid values are 1-10</li> <li>3) 'p' is the direct tuning string; it can be from 0 to 7 characters long and is translated as specified in the 'Send Source Direct Data' command: Zero length data is returned if no preset is set</li> </ol>  |
| <b>MSTPs,t</b>                     | <p>Source Type Status, where:</p> <ol style="list-style-type: none"> <li>1) 's' is the source, valid values are 1-8</li> <li>2) 't' is the source type, valid values are: <ul style="list-style-type: none"> <li>0: undefined</li> <li>1: AM/FM Tuner</li> <li>2: CD Changer</li> <li>3: DVD Player</li> <li>4: Satellite Receiver</li> <li>5: Audio Server</li> <li>6: Other 1</li> <li>20: Internal AM/FM Tuner</li> </ul> </li> </ol>   |
| <b>MSSTs,p,x</b>                   | <p>Source Status, where:</p> <ol style="list-style-type: none"> <li>1) 's' is the source, (1-8)</li> <li>2) 'p' is the source state, (0-5) <ul style="list-style-type: none"> <li>0: Off</li> <li>1: On</li> <li>2: Paused</li> <li>3: Mute off (Sirius module only)</li> <li>4: Mute on (Sirius module only)</li> <li>5: Sleep on (Sirius module only)</li> </ul> </li> <li>3) 'x' is a variable length data string that varies with the type of source: <ul style="list-style-type: none"> <li>0: undefined - p where: <ul style="list-style-type: none"> <li>1: AM/FM Tuner - b,m,f where: <ul style="list-style-type: none"> <li>'b' is the band: 1 = AM, 2 = FM</li> <li>'m' is the mono/stereo status: 1 = mono, 0 = stereo</li> <li>'f' is the currently tuned frequency (if it is known) (5 digits max)</li> </ul> </li> <li>2: CD Changer - none</li> <li>3: DVD Player - none</li> <li>4: Satellite Receiver - none</li> <li>5: Audio Server - none</li> <li>6: Other 1 - none</li> <li>7: Custom XM - none</li> <li>8: Internal Sirius Tuner - none</li> <li>20: Internal AM/FM Tuner- b,m,s,ffff where: <ul style="list-style-type: none"> <li>'b' is the band: 1 = AM, 2 = FM</li> <li>'m' is the mono/stereo status: 1 = mono, 0 = stereo</li> <li>'s' is the seek/tune status: '1' = seek, '0' = tune</li> <li>'f' is the currently tuned frequency (5 digits max)</li> </ul> </li> </ul> </li> </ul> </li> </ol> |

| Status Messages (Cont.)    |   |
|----------------------------|---|
| <b>CSTv,h,m,s</b>          | <p>Clock Status, where:</p> <ol style="list-style-type: none"> <li>1) 'v' is the clock version</li> <li>2) 'h' is the hour, valid values are from 0-23</li> <li>3) 'm' is the minute, valid values are from 0-59</li> <li>4) 's' is the second, valid values are from 0-59</li> </ol>   |
| <b>CALMr,s,v,h,m</b>       | <p>Alarm Status, where:</p> <ol style="list-style-type: none"> <li>1) 'r' is the room, (0-64)<br/>0: all zones have no alarm set</li> <li>2) 's' is the source, (0-8)<br/>0: no alarm is set<br/>1-8: alarm is set for the corresponding source</li> <li>3) 'v' is the volume, (0-70, 101)<br/>101 : Mute<br/>70..0 : -70..0 dB</li> <li>4) 'h' is the hour, (0-23)</li> <li>5) 'm' is the minute, (0-59)</li> </ol>  |
| <b>RSSTx,y,z</b>           | <p>General Sirius Radio Status, where:</p> <ol style="list-style-type: none"> <li>1) 'x' is the Sirius number (1-2)</li> <li>2) 'y' is the Sirius Status Index (0-7)</li> <li>3) 'z' is the Status Message</li> </ol> <p>Refer to <i>Status Codes for SIRIUS Tuner</i> on page 79 for more info.</p>  |
| <b>RSIDx,y</b>             | <p>Sirius Radio ID Status, where:</p> <ol style="list-style-type: none"> <li>1) 'x' is the Sirius number (1-2)</li> <li>2) 'y' is the Sirius Radio ID String (36 char max)</li> </ol>   |
| <b>RSClx`y`s`z`c`t`a`p</b> | <p>Sirius Radio Channel Status, where:</p> <ol style="list-style-type: none"> <li>1) 'x' is the Sirius number (1-2)</li> <li>2) 'y' is the Channel number (3 digits)</li> <li>3) 's' is the Service ID (3 digits)</li> <li>4) 'z' (0=play, 1=no play)</li> <li>5) 'c' is the Channel Name (36 characters max)</li> <li>6) 't' is the Title (36 characters max)</li> <li>7) 'a' is the Artist (36 characters max)</li> <li>8) 'p' is the Composer (36 characters max)</li> </ol> <p><i>Note: Because commas can be used in each description, each variable is separated with an accent (`) symbol.</i></p> |
| <b>RSCTx`y`z</b>           | <p>Sirius Radio Category Status, where:</p> <ol style="list-style-type: none"> <li>1) 'x' is the Sirius number (1-2)</li> <li>2) 'y' is the Category number (0-99)</li> <li>3) 'z' is the Category name (eg. Pop)</li> </ol>  |
| <b>RSCHs,x,y,z</b>         | <p>Sirius Radio Channel Number Status, where:</p> <ol style="list-style-type: none"> <li>1) 's' is the Sirius number (1-2)</li> <li>2) 'x' is the Category number (0-99)</li> <li>3) 'y' is the Channel number (3 digits)</li> <li>4) 'z' is the Service ID (3 digits)</li> </ol>   |

# Troubleshooting

## Overview

| Symptom   | Possible Causes  | Section  |
|---|--|--|
| Everything is dead                                      | Power  | Power  |
| All keypads are dead<br>(No lights)                     | Power-cabling between MRC and keypad incorrect.<br>Keypad connections reversed.                                | Power<br>Keypad cabling                            |
| Some keypads ok, some dead.                             | Cabling between MRC & keypad shorted. Keypad connections reversed. Defective keypad. Defective cable.          | Keypad Cabling.<br>Restart system.                 |
| Sources don't work manually or automatically            | Power  | Power  |
| Sources and keypads work but no sound in zone.          | Speakers not connected. Problem between keypad and speakers. Problem with speakers. Volume too low.            | Keypad Cabling<br>Source Cabling                   |
| Sources and keypads work but no sound in zone.          | RCA cables from source inserted into the source outputs.   | Source Cabling                                     |
| Sources work manually but keypads don't control device. | Device programming incomplete. Infrared emitter lead missing. Infrared emitter lead connected to wrong device. | Programming.<br>Source cabling.<br>Restart system. |
| Sources power off when selected.                        | Program error in ON/ OFF function.   | Programming  |
| Sources don't start playing when selected.              | Program error in device select function.   | Programming  |

## Power Connections

Tracking down problems that are power related are somewhat easy because the unit either powers up or it doesn't. If it does not, there are several things to check.

1. Check to make sure you are attached to a functioning live electrical circuit. If the branch circuit is dead check the breaker or there may be a light switch controlling the power to the outlet. If it's on a switched circuit try to obtain power elsewhere.
2. Ensure that both ends of each power cord are firmly seated in all of the source components.
3. If you're plugged into power strips, check them for operation as well. Be aware these often have mini-breakers on them and you should check to ensure that power is functioning in EACH outlet. It is not uncommon for the inexpensive power strips to fail at one plug-in but not the others.
4. There is a power switch located at the rear of the Controller, check to see that it is in the ON or (1) position.
5. There is a fuse beside the power switch at the back of the Controller. Remove the fuse and inspect it to see that it is intact. If you have an ohm meter, test for continuity across the fuse (sometimes they look good, but they're really broken near one of the ends). If you are using a power bar they often have mini-breakers on them, and you should check to ensure that all is well. The fuse in the rear of the Unit is a **T8AL250v**.

## Source Unit Connections

Problems in source cabling can often be traced to symptoms where the source cannot be heard in any zone and/or when the source doesn't seem to respond to keypad commands.

1. Ensure that the source component's LINE OUT connections are connected to the Controller's LINE IN connections for the correct device. These can sometimes be mismatched.
2. Take a look at the source component to ensure that MUTE functions have not accidentally been activated.

3. Check to see that the IR emitter lead is securely fastened to the IR receiver on the source component and that you have the lead plugged into the appropriate IR output jack. These can sometimes be mismatched. When a keypad command is received and communicated to the source device, there is a LED that lights on the front of the Controller indicating the processing of the command. If the LED does not light with a keypad press, then it is possible that the device has not been programmed. If the LED does light, there may be a problem with the IR emitter lead.

When testing IR problems, it is helpful to carry a blinking emitter or a test emitter to ensure that the commands are being sent to the source. Techniques you can use to help isolate a sources problem include swapping the source with another on the Controller to see if the problem stays with the Controller or follows the movement of the source. Also try swapping IR emitter leads.

## Zone Connection Problems

If there is wall power and both the source components and the Controller seem to be powering up OK, but one or more of the zones are not working, there may be a problem at the individual zone or with the cabling connecting to the zone. Begin by checking each zone keypad for functionality by pressing the desired source button. The LED should light red next to the source on the KP-4e keypads or should “wake up” with a screen menu on the touch panel keypad.

### Dead Zones

There is power and the source devices and the Tango Controller seem to be powering up OK, but one or more of the zones are not working.

Check each zones keypad for functionality by pressing the desired source button. The LED should light Red next to the source.

### LED Does Not light

You are not getting power and command connectivity to the zone. Check other zones and select each source to determine if this is specific to the source or the room in general. If the problem is in a particular room then there may be an issue with cabling to your speakers or it may be the keypad itself. If you get similar results for a particular source in multiple zones then there may be an issue with the source equipment and you should check to see that the selected source is ‘playing’. If every other zone is ok, check to make sure cables to the speakers are secure and that you have tried to increase the volume level in the zone.

Possible Causes:

- Zone connectors at Tango Controller are not secure.
- Connector at Keypad to Tango Controller is not secure.
- Wiring standard not followed. Make certain the center two wires are in the same orientation at the Tango Controller and the keypad. They may have been inadvertently reversed during the installation.
- Input and output connectors on keypad are reversed.
- Keypad not recognized by system. Restart system.

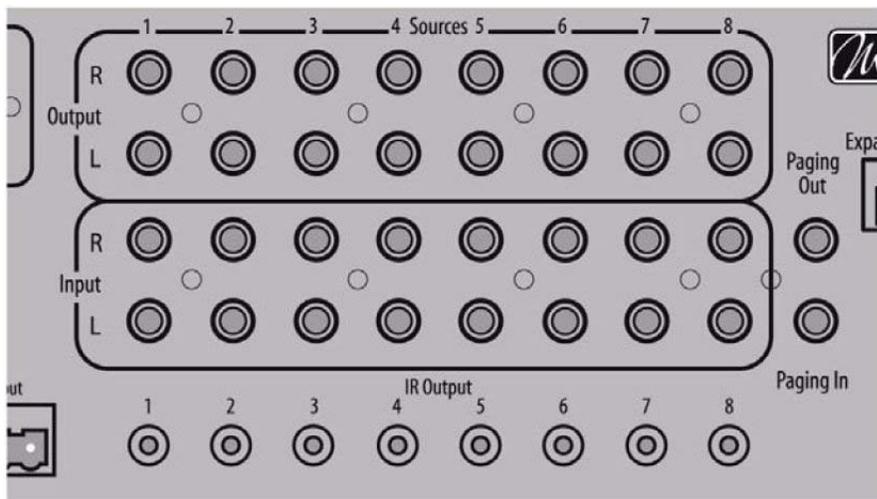
### Source Connections

Problems in source cabling display some of the following characteristics.

- The source cannot be heard in any zone.
- The source doesn’t seem to respond to keypad commands.

Check the Following:

Ensure that the sources LINE OUT connections are connected to the Tango Controllers LINE IN connections for the correct device. Check to see that the IR emitter lead is securely fastened to the IR receiver on the audio source and that you have the lead plugged into the appropriate IR output jack (FIG. 75).



**FIG. 75** Rear View – Source in/out – IR Out

When a keypad command is received and communicated to the source device, there is a LED that lights on the front of the Tango Controller indicating the processing of the command. If the LED does not light with a keypad press, then it is possible that the device has not been programmed. If the LED does light, there may be a problem with the infrared emitter lead.

**Tip:** For Testing, when you are having IR problems, it is helpful to carry a blinking emitter or a test emitter to ensure that the commands are being sent to the source. Techniques you can use to help isolate a sources problem include swapping the source with another on the Tango Controller to see if the problem stays with the Controller or follows the movement of the source. Also try swapping IR emitter leads. Take a look at the source to ensure that no MUTE functions have been accidentally activated.



NOTE

*If you connect a keypad while the Controller is on you must restart the Controller for that keypad to become active.*

## No Keypad Activity (At All)

You are not getting power and command connectivity to the zone. Some of the possible causes are:

1. Zone connectors at the Controller are not secure.
2. Connector in the wall at keypad to Controller is not secure.
3. Wiring and connection directions not followed. Make certain the center two wires (DATA and GROUND) are in the same orientation at the Controller and the keypad.
4. Connectors on keypad from Controller and speakers are reversed.
5. Keypad not recognized by system. Restart system.

## Keypad Lights, No Sound

Power and command connectivity are getting to the zone. Check other zones and select each source to determine if this is specific to the source or the room in general. If the problem is in a particular room then there may be an issue with cabling to the speakers or it may be the keypad itself. If you get similar results for a particular source in multiple zones then there may be an issue with the source equipment and you should check to see that the selected source is 'playing'. If every other zone is OK, check to make sure cables to the speakers are secure and that you have tried to increase the volume level in the zone.

## Programming

Programming is an exercise unique to almost every installation and the most difficult to troubleshoot. Most common problems occur while teaching the Tango Controller to recognize and recreate the Infrared signals that controls the Audio Source Device.

Technique and the flexibility to change your approach in programming will ultimately allow you to succeed. Typically the position and duration of the key press on the source remote during the training exercise influence the success of the training routine.

Try to vary your approach in training. Try to get a little closer to the IR detector or a little further away. Try approaches like short bursts from the source remote by tapping the key, as well as a longer burst by holding the key down. Watch and wait for a confirmation of a good signal from the Tango Controller (99%, 75% or 50% sure). Be patient, it may take an extra second or two longer to get a confirmation than you may expect especially on a short tap. Ensure the appropriate device has been selected from the programming screen. If the execution of the IR function is skipping more than one track when you press the up or down on the navigation key, it is possible that the Tango Controller has been trained to send multiple instances of that particular code. Retrain the command and try a shorter single tap on the source remote.





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