

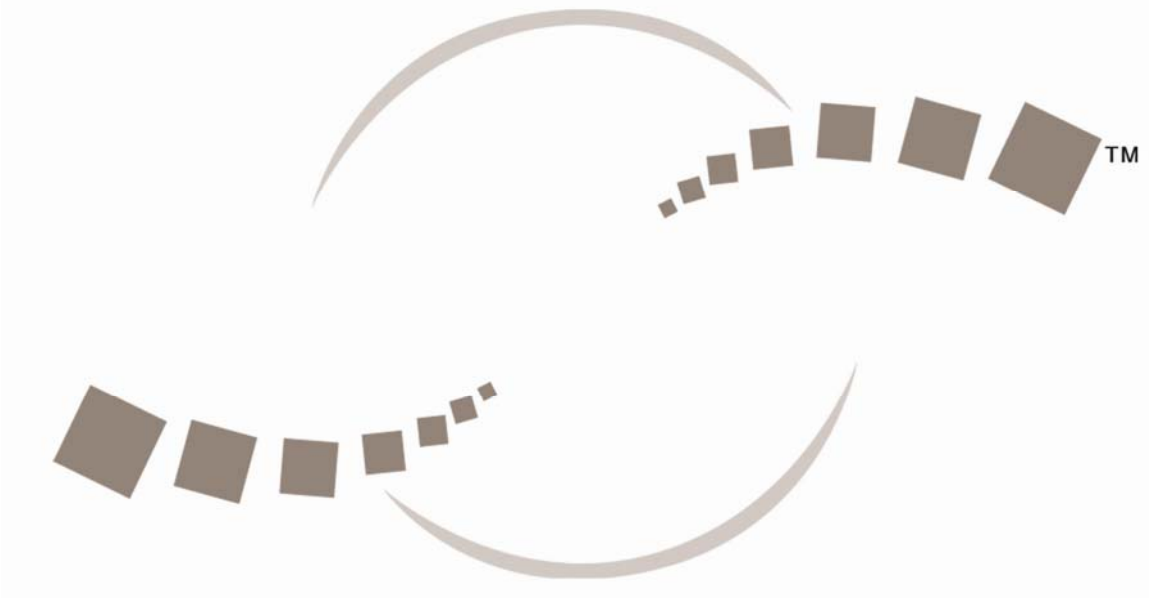
**NETSTREAMS®**

# MUSICA™ MU5066

Multi-Room Audio System

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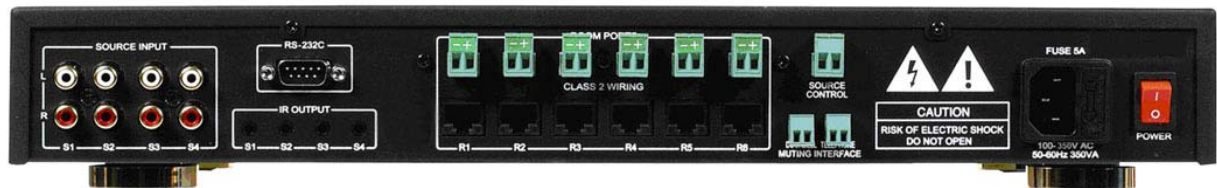
Installation and User's Guide



THIS DOCUMENT WAS WRITTEN AND PREPARED BY  
**NETSTREAMS®**  
**MUSICA™ MU5066 Multi-Room Audio System**



Any Music, from any source, in any room,



any time you want it.

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# IMPORTANT SAFEGUARDS

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER - SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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

POWER CORD NOTICE FOR INTERNATIONAL OPERATION - Please call *NetStreams* Technical Services at (512)977-9393.

## Important Safety Instructions:

1. Read these 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 polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or 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. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.
15. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the appliance and cart combination to overturn.
16. Wall or ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
17. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
18. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through the openings.
19. Servicing-The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

## Precautions:

1. Power – WARNING, BEFORE TURNING ON THE POWER FOR THE FIRST TIME, READ THE FOLLOWING SECTION CAREFULLY. All models are designed for use only with the power supply voltage of the region where they are sold.
2. Voltage Label (Rear Panel) – A label located at the rear panel power connection indicates the AC power input for the unit. The label will read 100-240V AC 50-60Hz 210W Auto-switching.
3. Do Not Plug in the keypad connections while the power switch is switched to the "ON" position.
4. Do Not Touch the NS-MU5066 with wet hands. Do not handle the NS-MU5066 or power cord when your hands are wet or damp. If water or any other liquid enters the NS-MU5066 cabinet, take the NS-MU5066 to qualified service personnel for inspection.
5. Place the NS-MU5066 in a Well - Ventilated Location. Take special care to provide plenty of ventilation on all sides of the NS-MU5066 especially when it is placed in an audio rack. If ventilation is blocked, the NS-MU5066 may over heat and malfunction. Do not expose the NS-MU5066 to direct sun light or heating units as the NS-MU5066 internal components temperature may rise and shorten the life of the components. Avoid damp and dusty places.
6. Care – From time to time you should wipe off the front and side panels and the cabinet with a soft cloth. Do not use rough material, thinners, alcohol or other chemical solvents or cloths since this may damage the finish or remove the panel lettering.

# FEATURES

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*NetStreams' Musica* MU5066 Multi-Room Audio System builds on the award-winning *Musica* product line by introducing several new features for convenience and use, simpler install, with even better audio performance.

## **New MU5066 features include:**

- Discrete channel communication between each *Musica* MU5066 keypad and the *Musica Audio Distribution Center*
- Enhanced IR capabilities for IR learning
- New FM Tuner card (*sold separately*) to add FM Tuner listening to any MU5066 keypad model
- Turn all rooms ON or OFF from any keypad
- 5-band graphic equalizer
- 3D Sound Mode (MU5066KP50 only)
- *NetStreams'* proprietary Shhh! Technology
- Macro Functions on all *Musica* Keypad models (see keypad specifications page 12).
- Control *Musica* from any web browser with new R2EM Module – now offering multiple connections (*sold separately*)
- Advanced RS-232 control for full integration with other control systems
- Blue and White backlighting now offered as standard / Amber and Green on KP25S model only

## **4-Sources / 6-Rooms**

The *Musica* system distributed 4 home-wide sources to 6 rooms and is expandable to 18 rooms of audio with up to 2 additional local sources per room. The system is programmed to select any available audio source, and then to distribute them up to any of the rooms selected. Users can listen to any of the different sources, at the same time, in each separate room. Compensating automatic gain adjustments at the inputs insure that all of the sources are distributed at equal levels.

## **Plug and Play Expansion with the *Audio Port***

Using the optional *Audio Port*, users can plug in local sound sources such as Gaming systems, Computers, CD Players or MP3 players to expand the system at the local room level. You can also add a powered subwoofer in any room, synchronized with the speakers connected to the keypad/amplifier or use the *Musica* keypad/amplifier to control a large power amplifier driving large floor-standing speakers or multiple in-ceiling/in-wall speakers installed in a very large space.

## **Add Local FM Tuner Listening to Any Room with the *NetStreams* Digital FM Tuner Card**

Each *Musica* MU5066 keypad/amplifier features a slot for an optional Digital FM Tuner Card (*sold separately*) so any room can have its' own private FM Tuner listening. The Digital FM Tuner card kit includes a between-stud antenna featuring a RG6 connection for easy connection to a roof-top or attic-mounted antenna.

## **Remote Integrated Digital Amplifiers**

Digitally controlled stereo digital amplifiers are integrated into the keypads and are located within the rooms. With this design, minimizing the lengths of the amplifier-to-speaker cables creates better sound quality. This reduces the distortions and sound deterioration, which are attributed to the length of the cable run. This design also keeps heat away from delicate source components in the main equipment rack or location.

## **5-Band Graphic Equalizer**

All *Musica* MU5066 keypad/amplifiers feature a 5-band graphic equalizer which allows for further customization of the sound quality to suit your tastes. Adjust the level of the sound output in each room at 100Hz, 300Hz, 1 kHz, 3 kHz, and 10 kHz.

## **3D Sound Stage Mode**

The MU5066KP50 keypad/amplifier features a proprietary 3D sound stage to expand the spacious quality of the sound. Particularly beneficial for installations where speakers have been placed very close together, or for smaller rooms, the 3D sound mode improves the sound stage in the listening area.

# FEATURES

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## **NetStreams' Shhh! Technology & Sleep Timer**

*Musica* MU5066 keypads also feature *NetStreams'* proprietary Shhh! Technology, featuring a gentle sleep timer so the volume level of the audio gradually decreases in the room as you drift to sleep, finally shutting off.

## **Add More power to any room with the *NetStreams* MU290 amplifier.**

For an installation where more power is merited (like a larger room or an outdoor area), simply add an optional MU290 2x90 watt amplifier to any keypad in the system. The MU290 amplifier is also bridgeable and up to six amplifiers can be daisy chained to provide for 90W / 200W (bridged) power to up to six pairs of speakers in one room!

## **Simplified Programming – No Laptops Required**

When the settings for each source have been learned into any keypad in any room, they are stored on the *Audio Distribution Center* (ADC). The ADC then “teaches” all the other keypads connected to it. This prevents having to program all the keypads in the system individually, significantly reducing the programming time required to complete the installation. You can also upload all learned IR codes into a laptop to easily download them for your next installation. To achieve this you must use the *Musica* Tools software offered by *NetStreams*. To download this software, please visit the Dealer Resources area on our website at [www.netstreams.com](http://www.netstreams.com).

## **Intelligent Power Control**

When all the rooms are switched off, the main system enters into a power-saving mode. The power-saving mode begins 20 minutes after the last keypad/amplifier in the system has been shut off. The 2-color LED of the front panel indicates the status of the system (Red: Standby Mode, Green: Operating Mode). The Audio Distribution Center controls the power of the sources by means of relay, which offers a dry contact output. A power strip with a dry contact trigger or a home control system with inputs will be needed in order to use this feature effectively.

## **Automatic Muting**

External signals such as doorbell, door phone, telephone, etc. can be detected. When these signals are detected, the main system will enter into the mute mode for 20 seconds so that the doorbell or telephone can be heard when an optional doorbell/phone ring detector is used. (We recommend the use of an ELK 930 doorbell and ring detector from ELK Industries. For more information see [www.elkproducts.com](http://www.elkproducts.com) or call 828-397-4200).

## ***Musica* Network**

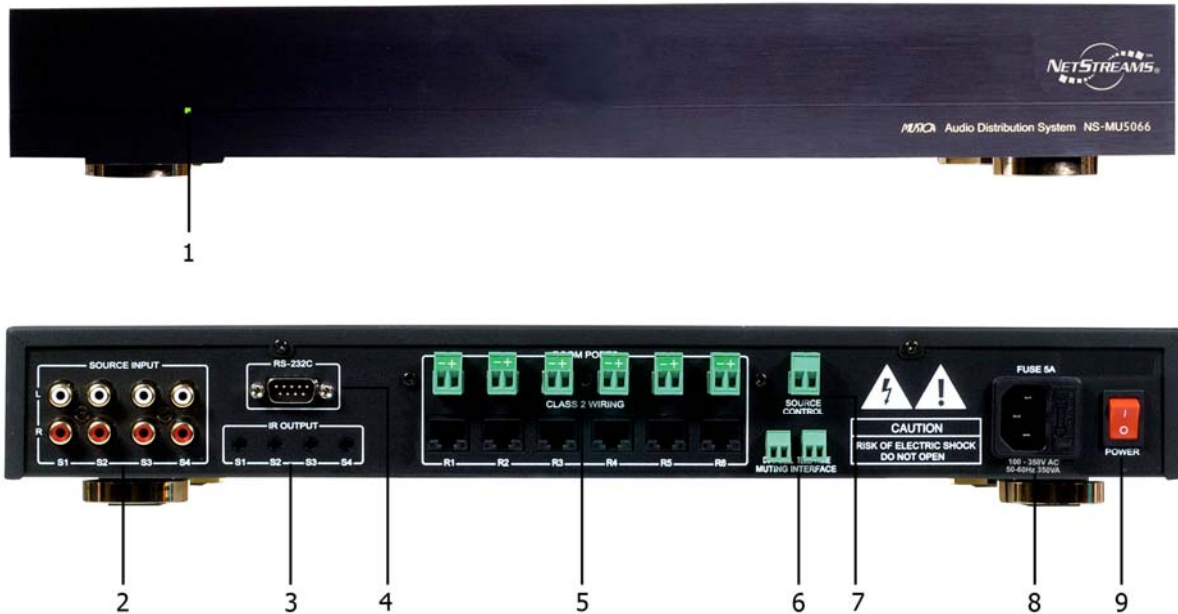
The data communication between the ADC and the room is performed via *Musica's* network. This protocol offers more than 2,000 commands for the *Musica* system.

## **IP Controllable**

With the R2EM web interface, up to 12 rooms can be controlled via a flash-enabled web browser. This will allow the user more features from one device, such as controlling all rooms individually or all rooms simultaneously.

# MUSICA AUDIO DISTRIBUTION CENTER GUIDE

## Musica MU5066ADC Audio Distribution Center Components



- 1. LED Lamp**  
Indicates the state of system mode. Red: Standby mode or Green: Operating mode.
- 2. Source Input**  
Provides the inputs from the 4 home-wide sources.
- 3. IR Output**  
Provides outputs for the IR Emitters. IR signals from source remote control will pass through to the main and on to the source components.
- 4. RS-232 Interface**  
Provides an interface between a PC and the NS-MU5066ADC. This interface is also for use when integrating the Musica system with other control products such as Vantage, Creston and AMX.
- 5. Remote Interface**  
These are the remote amplifier connections (using CAT5e & 14/4 or CAT5e 16/4 Siamese cable).
- 6. Doorbell/Telephone Interface**
  - Change Door: When doorbell rings, music mutes for 30 seconds and returns to play mode.
  - Change Phone: When telephone rings, music mutes for 30 seconds and return to play mode.
- 7. Source Pwr. Control Output**  
When all room systems are off, the ADC goes into a standby mode 20 minutes after the last keypad/amplifier has been turned off. The standby mode opens up the relay connected to the control output.
- 8. AC Power Cord**
- 9. ADC Power Switch**  
ADC Power On/Off switch.

**CAUTION:** Do NOT plug in the connections for the keypads to the ADC while the power switch is in the "ON" position!

**CAUTION:** Always make sure that the polarity is correct for the 2-pin Phoenix-type power connections on the keypad and the ADC BEFORE you plug the connector into the keypad and/or into the ADC.

# MUSICA AUDIO DISTRIBUTION CENTER GUIDE

## Specifications for the *Musica MU5066ADC* Audio Distribution Center

Component Type:	Line level Audio Multi Room Controller
Source Inputs:	4, stereo paired
Connector:	Gold-plated RCA Connectors
Input Level:	150mV
Input Impedance:	47KOhms
Connector 1 (Data):	8-pin RJ45 Data Jack EIA/TIA 568A
Connector 2 (Power):	2-pin 5mm Phoenix type
Output Level:	2.0Vrms
IR Source Control Outputs Type:	Infrared LED Flasher
Muting Interface (telephone/doorbell):	(2) 2-pin 3.5mm Phoenix type
Microprocessor:	Advanced RISC Microprocessor
Memory:	Non-Volatile EEPROM, 256K
Power Voltage:	100-240V AC, 50-60Hz
Power Consumption:	200W
Source Power Control Output:	2-pin 5mm Phoenix type
Dimensions:	16.95"(W) x 2.28"(H) x 9.04"(D) 424mm (W) x 57mm (H) x 226mm (D)

Note: The *Musica MU5066ADC* Audio Distribution Center uses the Middle Atlantic ([www.middleatlantic.com](http://www.middleatlantic.com)) shelf for mounting into a standard 19-inch rack (part number RSH4A2S).



All specifications subject to change without notification. All rights reserved. Copyright©2007 *NetStreams*  
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# MUSICA AUDIO DISTRIBUTION CENTER GUIDE

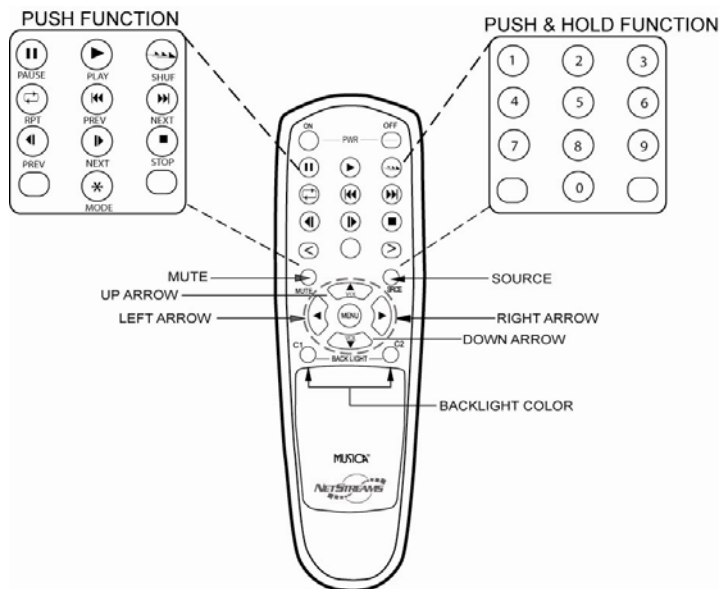
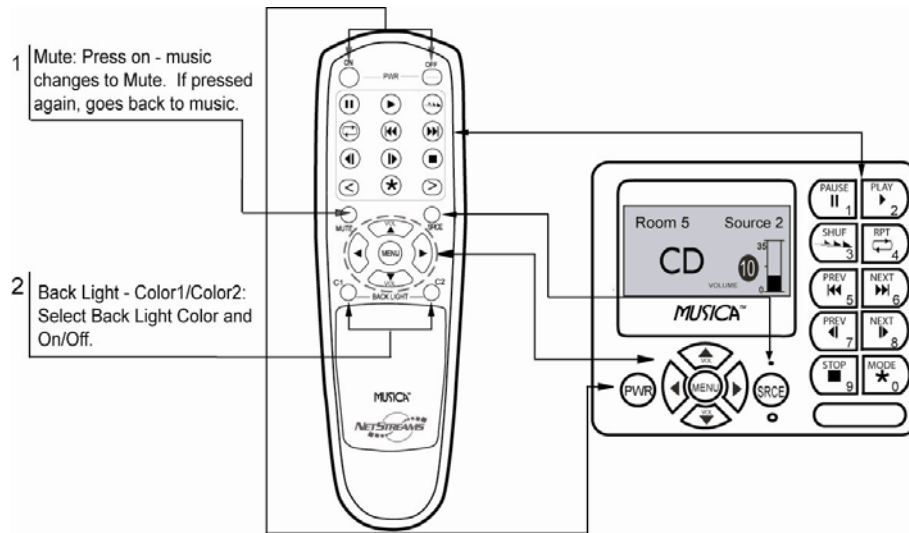
## Remote Control

The ergonomically designed, simple to use *Musica* remote control duplicates all functions of the wall-mounted keypad. The remote control also features a mute button, and discrete power on/off buttons. One *Musica* Remote MU4601RC is included with each *Musica* MU5066ADC Audio Distribution Center. Additional remotes may also be purchased.



### Specifications

Dimension:	5.52"(L) x 1.72"(W) x 1.22"(D)
Buttons:	Room System Buttons and SRC Buttons
Power:	3V DC (Off 2 x 1.5V AAA Batteries)



# MUSICA AUDIO DISTRIBUTION CENTER GUIDE

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## IR Emitter

IR emitters are connected to the *Musica* ADC and run and installed at the house-wide sources. The IR emitters will deliver the IR codes programmed into a *Musica* keypad, and stored in the ADC. Four (4) IR Emitters MU4601IRE are provided with the Audio Distribution Center. Additional IR Emitters may be purchased.



## TIPS:

- Use the supplied IR emitters to transmit the commands from your keypads to your source components.
- An emitter must be connected from the *Musica* ADC to each of your four sources.
- Remove the adhesive backing and stick the emitter directly over the source components IR window. Be sure to wipe the window clean of any finger prints before applying the emitter.
- Keep the source components away from fluorescent light sources as this can interfere with emitters.

# MUSICA KEYPAD AMPLIFER OVERVIEW



The interactive in-wall keypad/amplifier features a wide-screen graphic LCD that aids in easy operation of the system by providing feedback to the user on the status of the system. It responds visually to any press of any button confirming the action to the user. The menu screen uses a “look-and-follow” window-style menu and adds aesthetic value to the user’s living environment. The keypad also features an IR sensor that receives the system’s remote control as well as the original remote controls of the audio sources. This IR sensor also allows for the pass-through of other IR.

## Wide-screen High Resolution Graphic LCD

The wall-mounted keypad uses a large Active View Area 1.41” x 0.78” graphic LCD that displays the state of all sources and rooms and provides instant visual feedback for all commands.



## Remote Digital Amplifier in each Room

The digitally controlled amplifiers are integrated to each keypad and are located within the rooms to ensure superior sound quality. Minimizing the lengths of amplifier-to-speaker cables minimizes the distortions and sound deterioration that can be attributed to the length of the cable in conventional designs. Musica’s architecture places the amplifier in the room where the audio will be played – close to the speaker, achieving maximum wattage, with minimal noise and distortion. The high quality pre-amplifier in the system provides the controls for fine adjustments of balance, loudness and volume in each individual room, while a 5-band graphic equalizer allows for further customization of the sound.

## Simple Source Selection

Using a button labeled SRCE, the sources can be browsed and selected.

## Easy Volume Control

Pressing the UP and DOWN button provides very fine control over the volume with a resolution of 35 steps. When the UP or DOWN buttons are pressed the LCD automatically switches to the volume level view for 1.5 seconds for confirmation of the button presses and then switches back to the previous view.

## Menu-Driven Design

Below is a list of the available pop-up style menus:

- **SOUND** Adjusts the balance and loudness contour of the sound. Also contains the 5-band graphic equalizer for fine tuning of the sound. The KP50 features 3D Sound Mode (ON/OFF).
- **NAME** Stores the name of the audio source by user’s selection (CD, Tape, DVD, Classic, Pop, etc.) Also stores the name of FM Tuner presets when the DFMT Digital FM Tuner Card is inserted and the room name or name of the external (EXT) source (Audio Port).
- **IR** Adjusts the IR Frequency (38 kHz to 56 kHz). Registers the buttons of the source’s remote controls to the keypad.
- **ADJ (Adjust)** Sets the Sleep Timer on the keypad and provides amplifier adjustments for the type of speakers used (8Ohm, 6Ohm, or 4Ohm). Selects the color (green or amber- MU5066KP25S; blue or white – MU5066KP25 & MU5066KP50), adjusts the brightness, timer and the on/off mode of the backlight.

# MUSICA KEYPAD AMPLIFIER OVERVIEW

- **ROOM Accesses** other rooms in the system to turn them ON or OFF and adjust sources.
- **EXT (External Audio)** Controls direction of the audio signal (input/output) of an external component such as a local room audio source when the room is expanded utilizing the Audio Port (EIM). Also allows for the choice of a fixed or variable output, and tuner controls, spacing, sensitivity, as well as deemphasize of the FM tuner card (DFMT).

## Source Functions

The wall-mounted keypad/amplifiers come with a group of buttons designated as a direct user interface to the audio sources. It functions as a control for the 4 different home-wide audio sources. Once the buttons have been programmed, they control the audio source currently selected from that room. When the settings for each source have been learned at any wall-mounted keypad, they are then stored in non-volatile memory in the ADC.

*All settings are then available across all rooms without any additional programming.*

## Room Control and System Status

One room can monitor the state of all other rooms and turn the power of other rooms on or off remotely. The at-a glance display allows easy operation of all rooms from any location in the home. The menu functions of any keypad can be locked out by pressing the sequence 1,2,3,4 at any keypad to prevent unwanted changes being made to the settings for that keypad. To reactivate the menu function, from the remote control or keypad, press 5,6,7,8.

## Plug & Play Expansion

Using the optional *Audio Port*, users can easily add external sound sources and output devices to expand the system at the local room level. When the *Audio Port* is connected, the keypad detects it automatically and displays it in the menu view as a fifth source for that room only. The user can now select it using the **source** button. The sources can now be browsed and selected in the following sequence as an example: TAPE, CD, AUX, TUNER, and EXT.

When an external audio system is connected to the audio output, for maximum flexibility the user can select the integrated digitally controlled amplifier, an external amplifier, or both via the amp selection menu of the keypad.



Audio Port (EIM)  
Trim-plate not included

# MUSICA KEYPAD AMPLIFIER PARTS GUIDE

## MU5066KP Keypad with Digital Amplifier

### 1. LCD

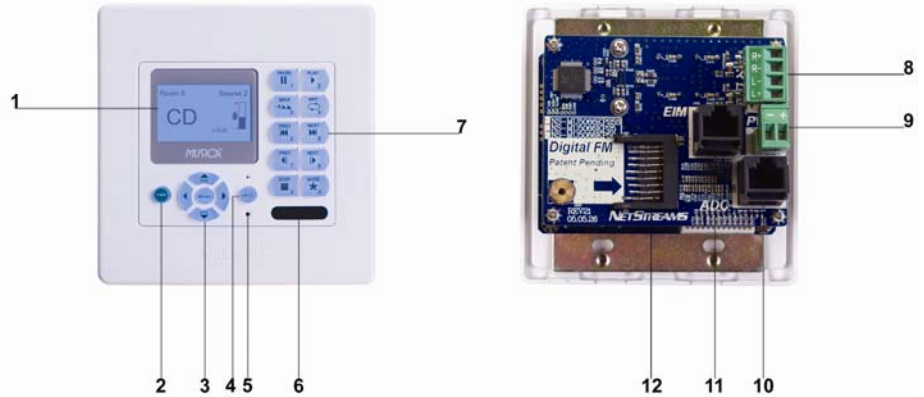
Wide-screen graphic LCD user interface.

### 2. PWR

Room system power ON/OFF button; whole system ON/OFF.

### 3. Menu

Menu offers total freedom in selecting sound, naming source, adjusting backlight brightness, and allows you to program audio sources from remotes. Automatically returns to basic screen if there is no input for 30 seconds. See menu list on page 13.



### 4. SRCE

Browse the audio sources [S1/S2/S3/S4/EXT\* / FM\*\*] to listen.  
\*if optional *Audio Port* is connected. \*\* With optional DFMT FM tuner card.

### 5. IR Confirmation LED

This LED will flash to confirm the reception of an IR signal from a remote control through the remote sensor.

### 6. Remote Sensor

The REMOTE SENSOR is used to receive commands from an IR remote control. The IR receiver also handles routing IR commands back to head end sources, and to the *Audio Port* if connected.

### 7. Source Control / 10-Key Direct Tuner Access

These buttons provide you with a convenience of controlling 4 audio sources connected to the ADC. They consist of 10 buttons and allow you to register up to 20 commands per audio source.

## KEYPAD CONNECTIONS

### 8. Speaker Output

4 pin 5mm Phoenix type connection.

### 9. Power In

(+27V DC) 2 pin 5mm Phoenix type connection.

### 10. ADC Input

8-pin RJ45 Data Jack EIA/TIA 568A.

### 11. Audio Port (EIM) Input

8-pin RJ45 Data Jack EIA/TIA 568A.

### 12. Digital FM Tuner Card Slot

Insert *NetStreams* Digital FM Tuner Card (DFMT) for local FM Tuner listening (sold separately).

# MUSICA KEYPAD AMPLIFIER MENU LIST

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## Keypad Menu List

### Sound:

Provide control over the sound such as:

Balance and Loudness

Balance: 15 steps from left to right, including center.

Loudness: ON/OFF

5-band graphic equalizer: 100 Hz, 300 Hz, 1 k Hz, 3 k Hz, 10 k Hz.

3D Sound mode: ON/OFF (*MU5066KP50 only*).

### Name:

If you wish to name the sources, NAME menu provides you with a choice of 52 names (see page 16):

In the event that the optional Digital FM Tuner card is inserted, use the Name selection on the menu to name FM Tuner presets.

In the event that the optional Audio Port is connected, use the Name selection on the menu to name the source.

### IR:

You can adjust the IR Frequency for the global source input for IR Learning. Select 38 kHz or 56 kHz

Can register up to 20 (IR) commands per audio source. Source [S1/S2/S3/S4] with Remote or keypad.

Registered buttons are stored in Main system, and they can be used by other rooms.

Create and set Macros for the keypad:

Eight, 4-step macros (for IR Codes **already** learned).

The MU5066KP50 also adds the capability for up to 10 macros per global source.

### Adjust:

You can adjust the amplifier to match the impedance of the speakers used (8Ω/6Ω/4Ω)

You can adjust the brightness and select color.

Bright: Adjust Brightness level from 0% - 100% 9 steps.

Color: Choose Green or Amber. (KP25S only)

Color: Choose Blue or White. (KP25 and KP50 only)

Timer: On/Off Back Light turns off 3,5,10 or 15 minutes after last button press.

You can adjust the Sleep timer for the room. Select 10, 20, or 60 minutes.

### Room:

Control the power (ON/OFF) of all room systems. [R1-R6]

ON: Indicates that a room's system power is on and can be turned off.

OFF: Indicates that a room's system power is off and can be turned on.

Turn ALL ROOMS ON or OFF

Select the source for any room on the system by pressing the SRCE button. (Source will begin playing at the last known volume or the default volume, in the event that the last known volume was less than 15 dB.

### EXT (External Audio):

Defines the output direction of audio signal when the Audio Port (EIM) is connected. This menu is activated either when the Audio Port (EIM) is connected or DFMT is inserted.

ROOM AMP only or

Both ROOM AMP + External AMP (variable output) or

External AMP only (variable output) or

External AMP only (fixed output)

If the keypad has the optional Digital FM Tuner inserted, you can adjust the following:

Tuner Sensitivity: Low / Middle / High

Adjust the spacing for the Tuner Reception: 50 kHz (Europe) / 100 kHz (Europe) / 200 kHz (US, default)

Adjust the Tuner Pre-Emphasis: 50 milliseconds (Europe) / 75 milliseconds (US, default).

# MUSICA KEYPAD AMPLIFIER SPECIFICATIONS

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## Specifications for *Musica MU5066KP* Keypads

### ***Musica MU5066KP25S:***

Output Power:	25 Watts RMS/channel @ 4 ohms with both channels driven, 18 watts RMS/channel @ 8 ohms, 20 – 20 kHz +/- 3 dB
Load Impedance:	8, 6 or 4 ohms (user selectable)
Signal to Noise:	>102dB (A-weighted ref: 1 Vrms, 1 KHz)
Distortion:	0.01% (power output: 1W @ 1 KHz)
Channel Separation:	>94dB
Dynamic Range	96 dB
Level Control Volume:	-70 - 0dB
Backlighting:	Green or Amber (selectable)
Macros	Eight (8), four-step macros

### ***Musica MU5066KP25:***

Output Power:	25 Watts RMS/channel @ 4 ohms with both channels driven, 18 watts RMS/channel @ 8 ohms, 20 – 20 kHz +/- 3 dB
Load Impedance:	8, 6 or 4 ohms (user selectable)
Signal to Noise:	>102dB (A-weighted ref: 1 Vrms, 1 KHz)
Distortion:	0.01% (power output: 1W @ 1 KHz)
Channel Separation:	>94dB
Dynamic Range	96 dB
Level Control Volume:	-70 - 0dB
Backlighting:	Blue or White (selectable)
Macros	Eight (8), four-step macros

### ***Musica MU5066KP50:***

Output Power:	50 Watts RMS/channel @ 6 ohms with both channels driven, 36 watts RMS/channel @ 8 ohms, 20 – 20 kHz +/- 3 dB
Load Impedance:	8, 6 or 4 ohms (user selectable)
Signal to Noise:	>102dB (A-weighted ref: 1 Vrms, 1 KHz)
Distortion:	0.01% (power output: 1W @ 1 KHz)
Channel Separation:	>94dB
Dynamic Range	96 dB
Level Control Volume:	-70 - 0dB
Backlighting:	Blue or White (selectable)
Macros	Ten (10) per source plus Eight (8), four-step macros

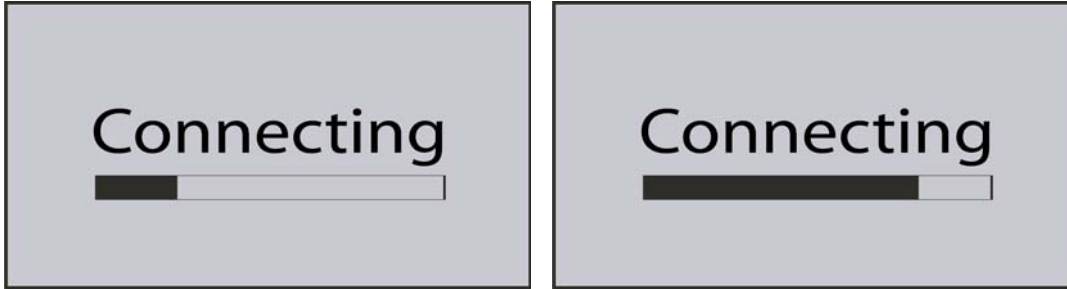
# MUSICA KEYPAD DISPLAY SCREENS

---

## The Musica MU5066KP Display Screens

### 1. The Connection Screen

The first time the MU5066 Keypads are connected to the ADC are powered up, a connection screen with a progress bar will briefly appear as the keypads attempt to communicate with the ADC. This screen will not appear anytime afterwards unless there is trouble with the connection. For more information, see the troubleshooting section of this manual.



The connection screen then quickly is replaced by the initial screen. Subsequent use of the keypad will show the initial screen.

### 2. The Initial Screen

This is the screen that appears after the power is turned on by the POWER key or button. It shows the following information:

- Room Number
- Model Type
- NetStreams logo
- Firmware version

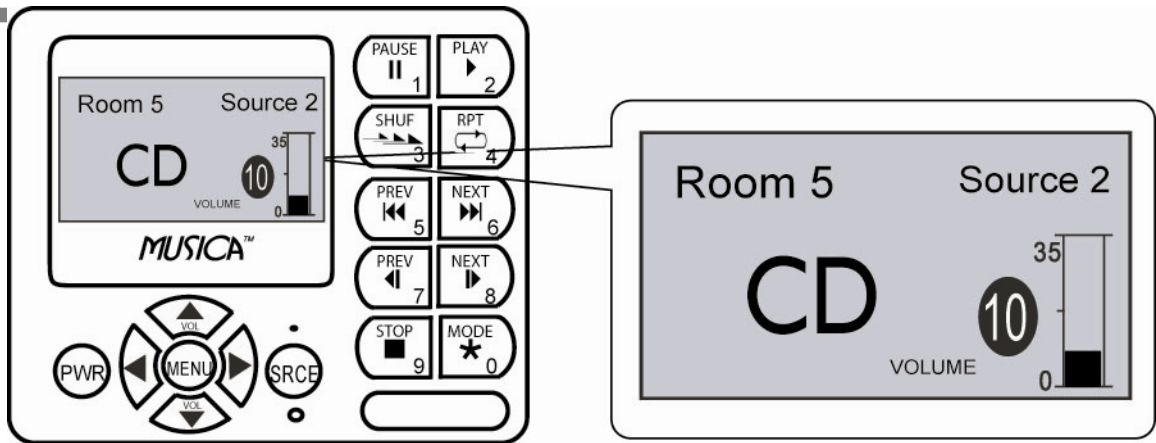


### 3. The Basic Screen

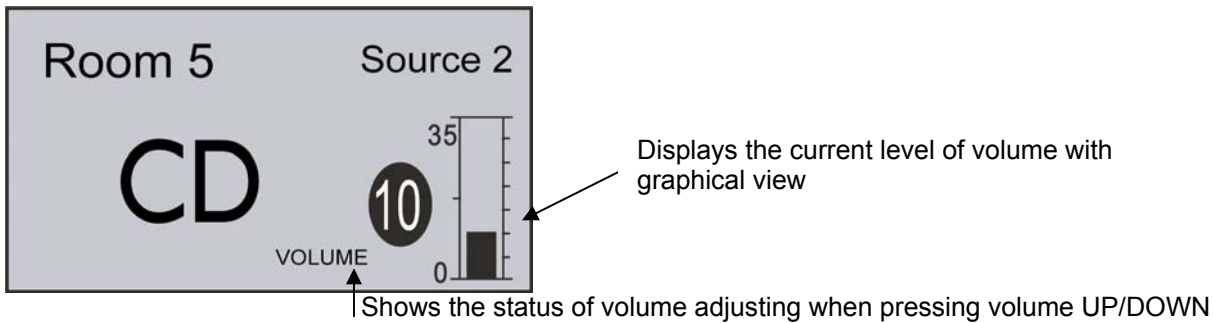
The Initial state of the Basic Screen shows the following information:

- Name of the audio source selected
- Status of Volume and Mute
- Room name

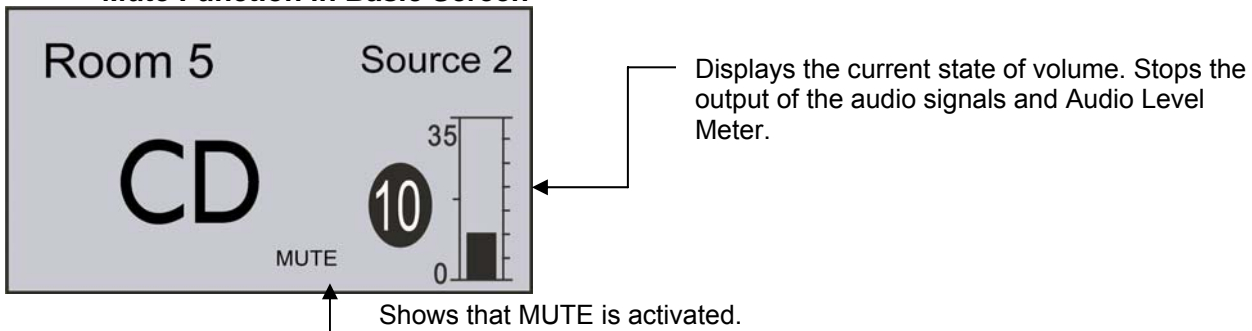
# MUSICA KEYPAD DISPLAY SCREENS



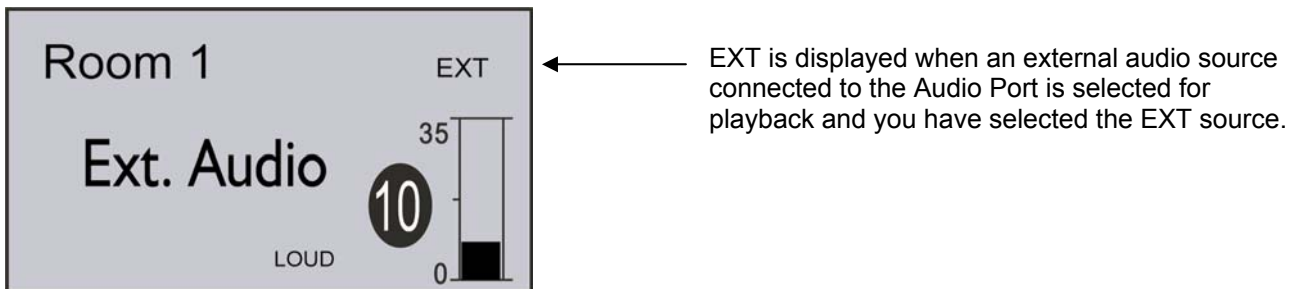
## Volume Up/Down in Basic Screen



## Mute Function in Basic Screen



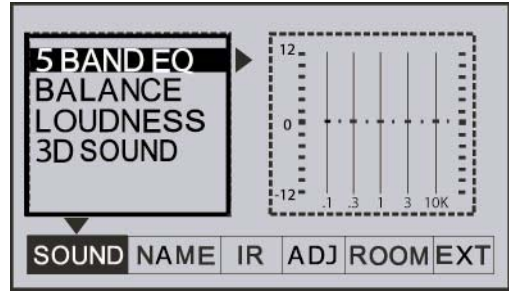
## External AMP Mode View in Basic Screen



# MUSICA KEYPAD DISPLAY SCREENS

## 1. Menu Screen

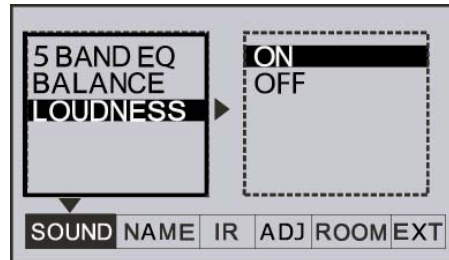
- This screen shows the system settings for the local room.
  - Enter and Exit by MENU key.
  - The Menu screen consists of four sections
    - Main Menu: You can select six menu items for the adjustment or setup.  
SOUND, NAME, IR, ADJ, ROOM, EXT (Audio Port-EIM, FM TUNER)
    - Sub 1 Menu: Select the sub-items for adjustment or setup available for each main menu item.
    - Sub 2 Menu: Adjust or set the value of the selected sub-item.
    - Directional Arrows: Shows the pathway for adjustments or setup.  
Direction Type ◀ (Left), ▶ (Right), ▲ (Up), ▼ (Down).  
*The arrows blink to indicate possible directional path of menu or adjustments and settings available.*
  - Shadowing and solid lines show selected items.
- The basic screen returns automatically after 30 seconds pass without any keypad input.



**4.1 Sound Menus** – The following four figures show the adjustment of Balance, Loudness, 5-Band Equalizer, and 3D Sound Mode (MU5066KP50 only):



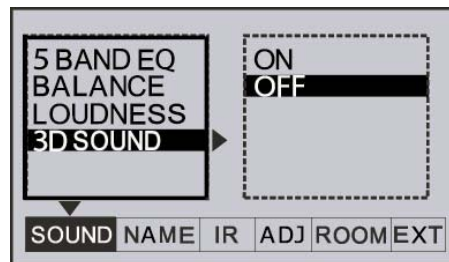
(Balance Adjustment)



(Loudness Adjustment)



(5-Band Graphic Equalizer)

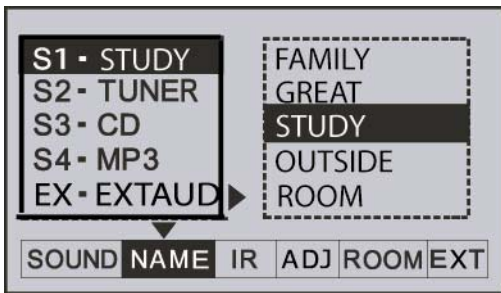


(3D Sound Mode available on KP50 only)

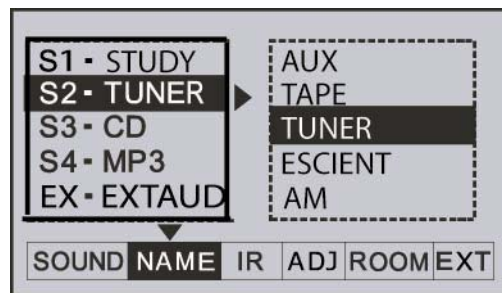
# MUSICA KEYPAD DISPLAY SCREENS

## 4.2 Name Menu:

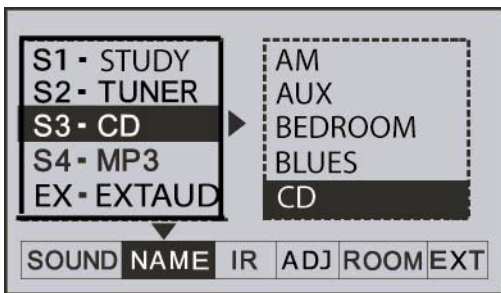
- You can select any of the following names for source names, Audio Port names, Room names, or Tuner preset names (\*requires Digital FM Tuner card):
  - 52 Default names are in the memory of the NS-MU5066 System: CD / AUX / Tape / Tuner / Escient/ AM / FM / MP3 / Blues / Children / Classic / Country / DAD / Dance / DVD / Lights / Internet / Jazz / ReQuest / MOM / XM Radio / POP / R&B / Rap / Radio / Rock / SAT / Xiva / Soul / iPOD / Talk / News / Sirius / Traffic / Weather / Sports / NPR / DSS / M-Server / {Blank} [All presets default] / Ext [Ext. Default] / Master Bed / Bedroom / Kitchen / Dining / Living / Family / Great / Study / Room [All Rooms Default] / Outside
- You can check the current name of each audio source in the Sub 1 Menu.
- Select the new name of an audio source in Sub 2 Menu if desired.
- Note: Each audio source must have its own name. EX: EXT Name is for a local source connected to an Audio Port



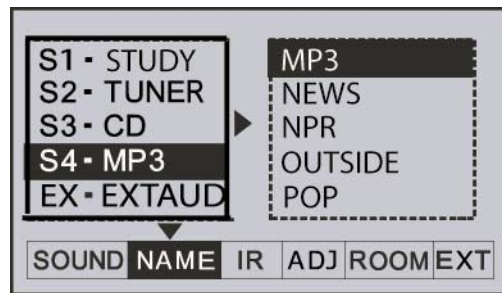
(Naming Source 1)



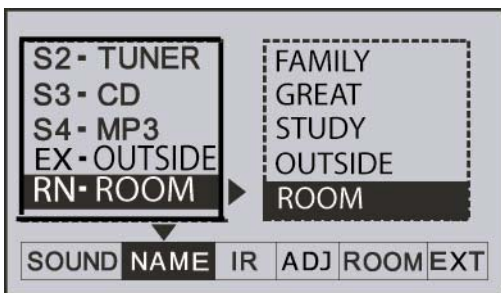
(Naming Source 2)



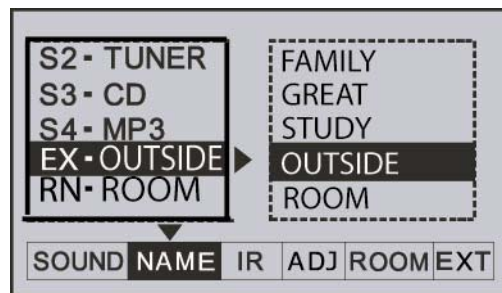
(Naming Source 3)



(Naming Source 4)



(Naming Room in which Keypad resides)



(Naming External Audio Port Source)

### Non Volatile Keypad memory

All variables in the keypad are stored in nonvolatile memory. After adjusting any setting on the keypad to lock in that value, you must turn the keypad off and then back on.

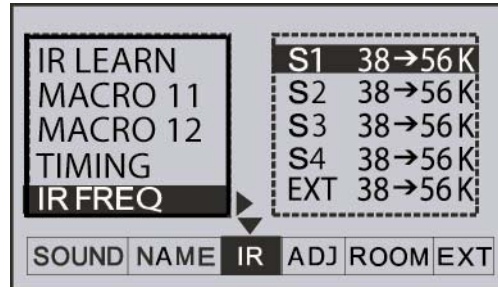
# MUSICA KEYPAD DISPLAY SCREENS

## 4.3 IR Menu:

- Displays the screen for IR Learning.
- Can Register 20 commands for each audio source. (Source 1, 2, 3, 4).
- SRC functions cannot be registered for external audio systems (EXT).
- Also Adjusts the IR Frequency

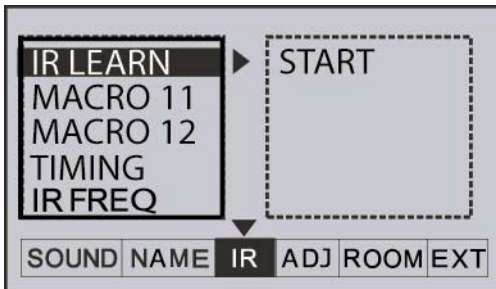
### 4.3.1 Adjusting the IR Frequency for each source:

Select between 38 kHz and 56 kHz per source input.

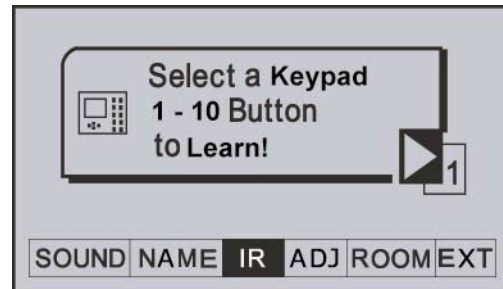


### 4.3.2 Learning IR Codes for sources connected to the ADC:

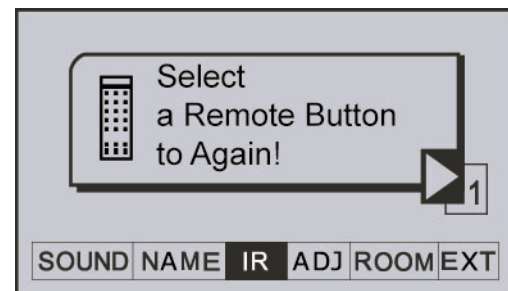
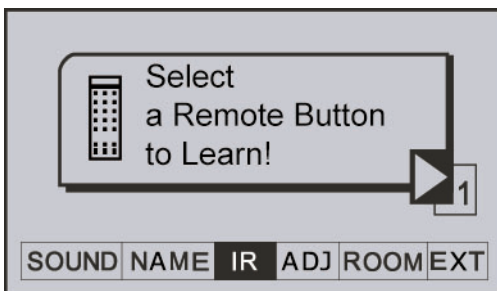
**Step 1:** Press the arrow up key to begin the IR Learning process.



**Step 2:** Select the keypad button for the IR code to be learned



**Step 3:** On the remote control for the source equipment, press the button for the code you want to learn, pointing it at the IR Receiver window on the *Musica* keypad. Then, press the same button on the remote control to confirm the code.



# MUSICA KEYPAD DISPLAY SCREENS

**Step 4:** The results of the registration of the IR code on the button are displayed. **Normal Mode:** Indicates the completion of registration. **Error Mode:** Indicates error during IR code learning

- The previous screen returns automatically after 3 seconds
- Repeat the procedures until all IR codes are learned
- Exit the IR learning menu by pressing the MENU key or the arrow left key.

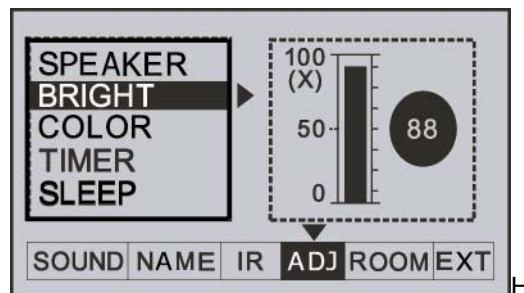


## 4.4 Adjust (ADJ) Menu Screens—to learn how to program macros in the keypads, please refer to pages 22 - 24.

4.4.1 Adjusting the amplifier to better match the impedance of the speakers:

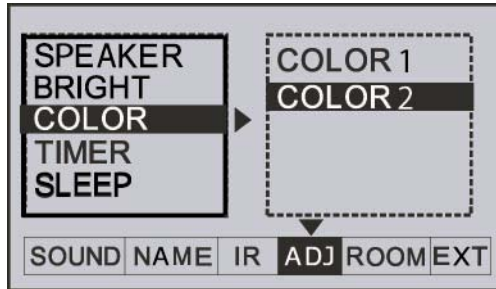


4.4.2 Adjusting the Brightness level of the LCD screen (0% to 100% in 9 step increments):



# MUSICA KEYPAD DISPLAY SCREENS

## 4.4.3 Adjusting the Color of the backlight



\*Note: The MU5066KP25S keypad features amber or green backlighting

## 4.4.4 Adjusting the Backlight Time out settings



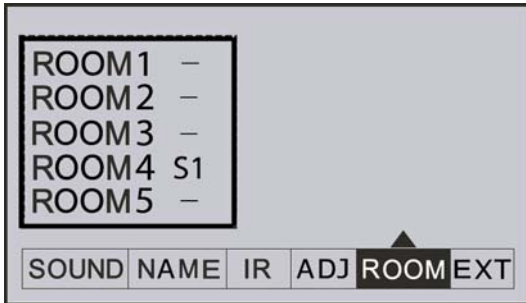
## 4.4.5 Adjusting the Sleep Timer settings:



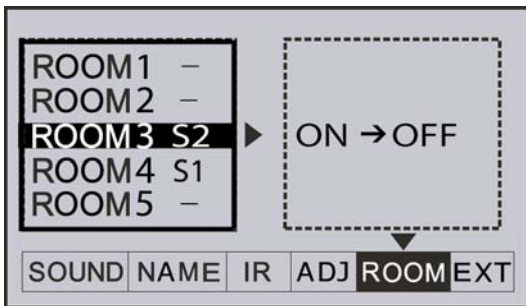
# MUSICA KEYPAD DISPLAY SCREENS

## 4.5 Room Menu Screens:

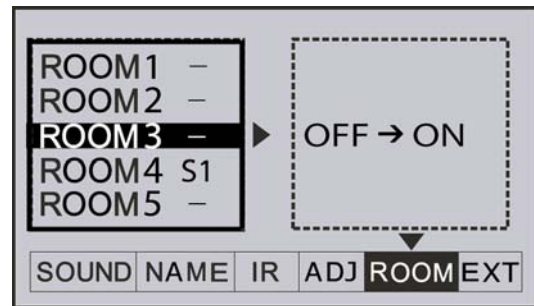
- View other rooms and see what source they're listening to.
- Change a source in another room by selecting the room and then hitting the source key.
- Turn off another room by selecting the room from the menu and hitting the right arrow button.
- Turn ALL ROOMS ON by first selecting a source and then pressing and holding the SRCE button for 2 seconds. The volume will return to the last known state or 15, whichever is the higher volume.
- Turn ALL ROOMS OFF by pressing and holding the power button for 2 seconds.



(Viewing sources playing in each room)



(Turning room 3 off from another room)

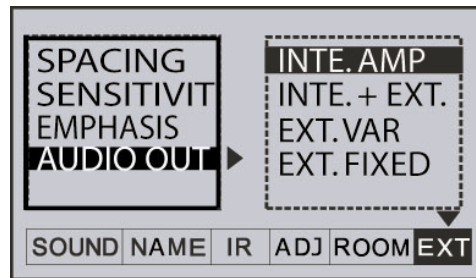
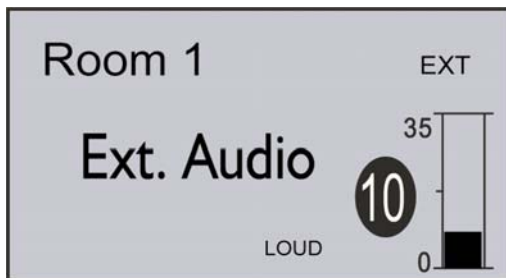


(Turning room 3 on from another room)

# MUSICA KEYPAD DISPLAY SCREENS

## 4.6 EXT (External Input / Output) Menu Screens (*Audio Port or DFMT must be connected*):

- Defines the direction of the audio signal when the Audio Port (EIM) is in use.
- ROOM: Only the amplifier in the keypad will be used.
- ROOM + EXT: Uses both the keypad amp and external amp.
- EXT VAR: Passes the audio signal into the external amplifier or audio system at line level at a variable output.
- EXT FIXED: Passes the audio signal into the external amplifier or audio system at line level at a fixed output.
- This menu is only available if the Audio Port is connected
- All ADC controls are available for use with the Audio Port; SRCE control is not supported in this mode.



EXT will indicate when the external source has been selected.

## 4.7 Locking & Unlocking the menu

- Press the "Menu" button, then the "1, 2, 3, 4" keys on the keypad to lock the menu.
- Press the "Menu" button, then "5, 6, 7, 8" on the remote control or keypad to unlock the menu.

## 4.8 Locking & Unlocking the keypad

- Press the "Menu" button, then the "0, 7, 8, 9" keys on the keypad to lock the keypad
- Press the "Menu" button, then the "0, 7, 8, 9" keys on the keypad to unlock the keypad.



# MUSICA KEYPAD DISPLAY SCREENS

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## 4.9 Programming Macros

All *Musica* MU5066 keypads have the capability to program two individual macros per input source to begin programming:

1. Completely learn the IR codes into all source buttons on all four source pages (FM tuner excluded).
2. Select source S1 through S4 to build the macro for that device.
3. Push the menu button and scroll with the right arrow to the "IR" location on menu bar.
4. Scroll with the up arrow to "Macro 11" or "Macro 12".
5. Scroll with the right arrow to highlight "Start"
6. "Press a source button! For step 1" will appear on the LCD screen.
7. Press the desired source button (0 through 9) for step 1.
8. Press the desired source button (0 through 9) for step 2.
9. Press the desired source button (0 through 9) for step 3.
10. Press the desired source button (0 through 9) for step 4.
11. Macros can contain 2, 3, or 4 steps.

To exit macro programming mode, push the **menu button** or the arrow left button or wait for keypad to time-out and return to the source display.

**Time delays can be added to the steps which have been programmed. To do so:**

1. Push the **menu button** and scroll with the right arrow to "IR" location on menu bar.
2. Scroll with up arrow to "Timing".
3. Scroll with right arrow to enter the timing selection window. In this window you may select "500MSEC, 1 SEC, or 2 SEC".
4. To make a selection, scroll with up arrow or down arrow to highlight the selection needed. This selection is applied to all steps in Macro 1 and Macro 2 for this source. Each source can receive the time delay necessary.

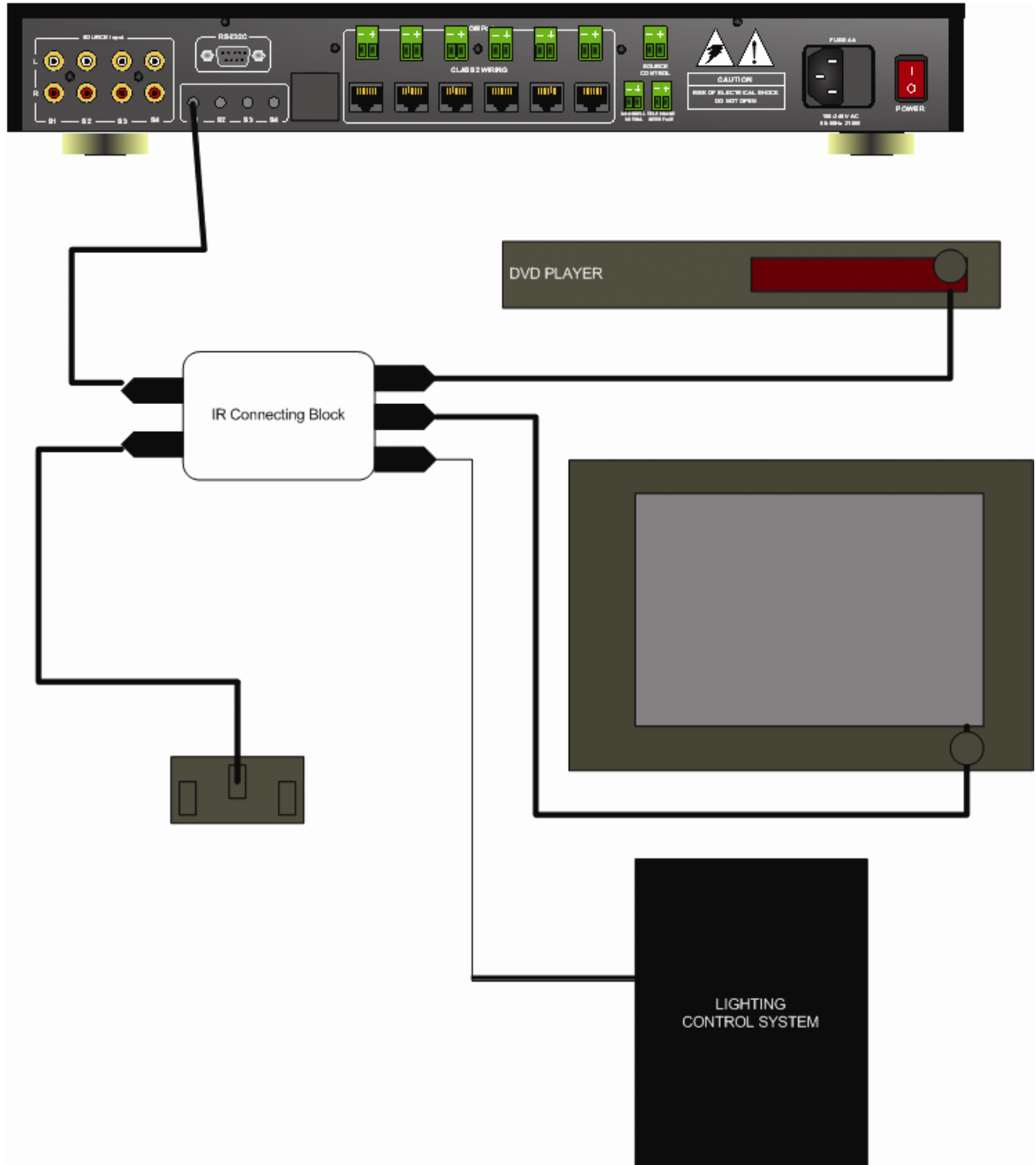
To exit the Timing programming mode, push the menu button or wait for keypad to time-out and return to the source display.

# MUSICA KEYPAD DISPLAY SCREENS

## 4.9 Programming Macros continued

The *Musica* MU5066KP50 also has the capability for an additional 10 macros per global source. These macros will work with any IR controlled equipment.

This is particularly useful when you have an IR connecting block to multiple pieces of equipment off of 1 global source. One example may be a DVD Player, TV and an R-based lighting control system connected as such:



**NOTE:** This will not work if there are two of the same sources connected to the IR connecting block.

**NOTE:** All products connected to the IR connecting block must be transmitting IR on the same frequency!

# MUSICA KEYPAD DISPLAY SCREENS

---

## 4.9 Programming Macros continued

### To program in the IR codes for the equipment:

1. First, make sure you're on a global source input selected on the MU5066KP50 keypad.
2. Select IR from the Menu screen and hit the arrow pointing right.
3. Press the keypad button to start learning the IR code.
4. Point the Remote Control for the source equipment at the IR window on the *Musica* MU5066KP50 keypad and press the command you want to learn.
5. Repeat step 3 to verify the command.
6. Upon verification, the LCD screen will display "Step 1 Complete". **Push the right arrow for the second IR command.**
7. Repeat up to 10 IR commands per global source.

# MUSICA SINGLE / MULTI-ZONE OPERATION MODES

The *Musica* MU5066 keypads feature two operations modes which can be selected from the menu on the MU5066 keypad: Single-Zone and Multi-Zone modes.

**The Multi-Zone mode is the default mode** and allows for the keypad to access global sources connected to the Audio Distribution Center.

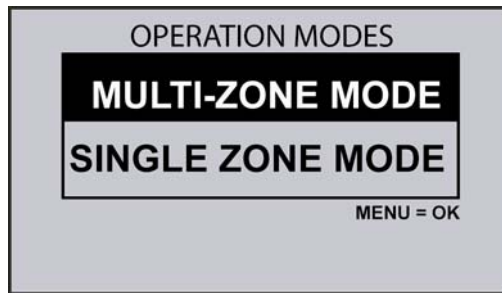
**The Single-Zone operations mode** allows for the keypad to be used in a room without an Audio Distribution Center. To do this, you will need the *NetStreams* PL228 plug-in power supply (sold separately) to power the keypad. The single-zone mode will allow playback of FM tuner in that zone (when Digital FM Tuner card is inserted) and a local source (when Audio Port is connected to the keypad).

**\*\*If upon connecting the keypad and powering it up the keypad can not find the Audio Distribution Center, the keypad will default to single zone mode.**

**\*\*If the “No Connection Check the Cable” message is displayed, disconnect power, hold the SRCE button down and then turn power on. This will cause the keypad to enter operation mode menu.**

**To Change the Multi-Zone Mode, do the following:**

1. On the MU5066 keypad, press the **MENU** key and then press the number keys “**1, 3, 5, and 7**”.
2. The Multi-Zone Mode Menu will appear. Use the arrow up / down key to select either “Multi-Zone Mode” or “Single Zone Mode”.

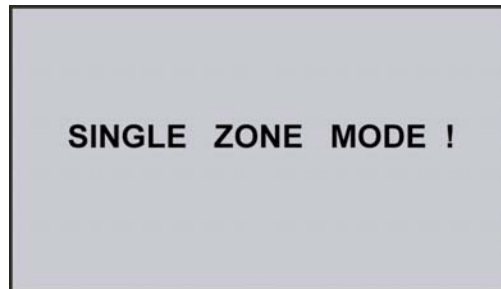


Multi-Zone Mode / Multi-Zone (default)



Single-Zone Mode

3. Press the **MENU** key again.
4. The MU5066 keypad will restart and reset itself to the mode you have chosen. The mode you have selected will appear on the before the *NetStreams* splash screen appears on the LCD screen upon restart.



**NOTE:** The Single-Zone mode will only allow the keypad to select from up to two sources – the local source connected to the Audio Port and the local FM Tuner (Digital FM Tuner Card required).

**NOTE:** The Single-Zone mode can not transmit IR codes, since there is no communication with the Audio Distribution Center.

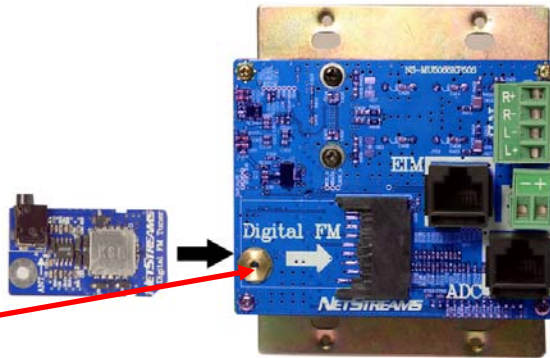
# MUSICA DIGITAL FM TUNER CARD

The *Musica* MU5066 keypads also feature an expansion slot for a *Musica* Digital FM Tuner Card (sold separately) for FM Tuner listening in the local room in which the keypad is installed.

## 5.1 Inserting the MU5066DFMT Digital FM Tuner Card into the socket on the keypad:

The Digital FM Tuner (DFMT) slides into the slot on the back of any MU5066 Keypad with the NetStreams Logo on the tuner card facing up.

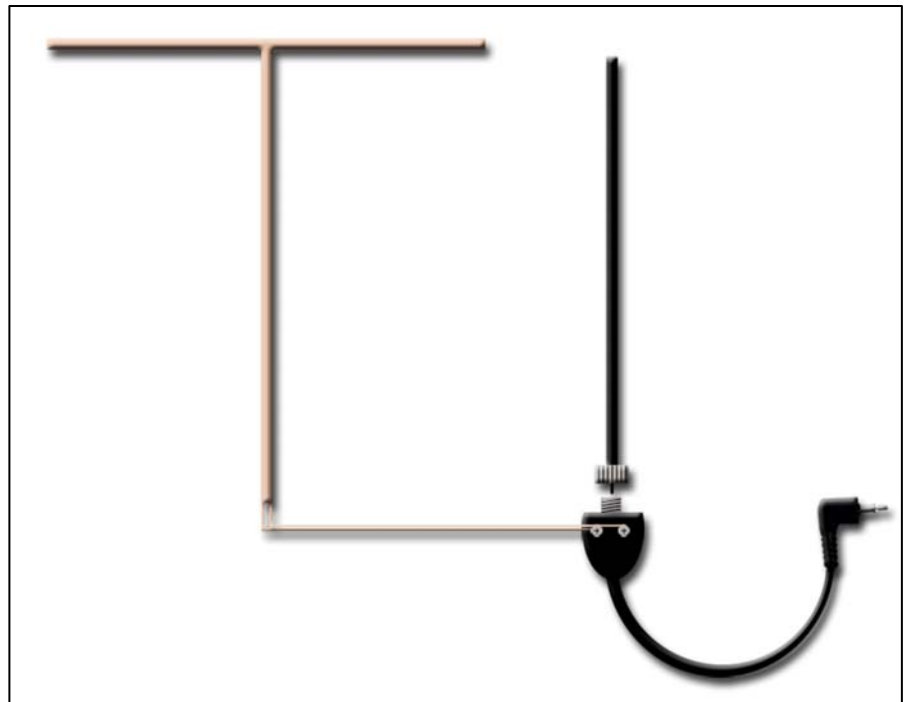
Use the thumb screw to secure the tuner card once in place.



## 5.2 Installing the FM Antenna:

The *Musica* MU5066DFMT includes a dipole FM Antenna for mounting in-between studs in the wall, as well as a RG6 connection for connecting to an aftermarket FM antenna. **For best reception, NetStreams recommends the use of a Coax connection from an FM antenna mounted in the attic or roof.**

The 3.5mm jack on the FM antenna connects to the 3.5mm jack on the PCB board of the keypad itself. Then use either the dipole antenna (included) OR the RG6 connection from an antenna in the attic or structured cable box.

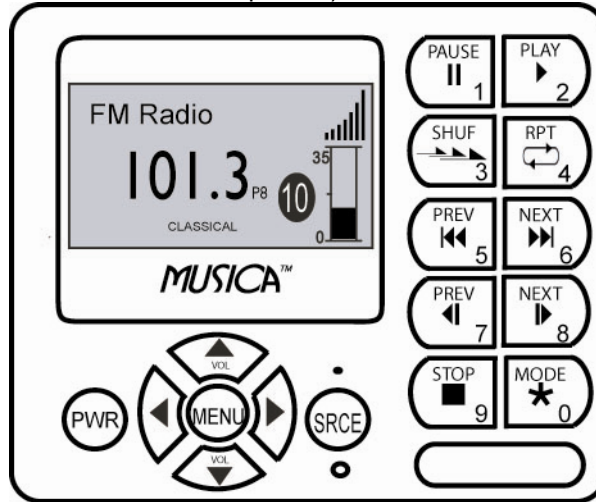


# MUSICA DIGITAL FM TUNER CARD

## 5.3 Programming FM Station Presets:

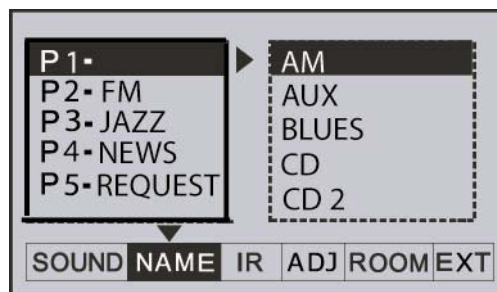
Once the Digital FM Tuner card is inserted in the keypad, you can program in up to 8 FM Station presets for easy selection. To do this, tune to the station you want to program in, then press and hold the MODE key on the keypad until the "P" starts flashing. Once that happens, press and hold the corresponding hard key numbered for that preset.

(e.g. If you would like to have FM 101.3 as your preset station number 1, first tune to 101.3, then press and hold the MODE key till the "P" starts flashing, then press and hold the hard key labeled 1 until the LCD menu confirms storage of that station as a preset.)



## 5.4 Naming the FM Station Presets:

- You can select the name of the audio source from the predefined name set.
  - Default names are in the memory of the NS-MU5066 System. Refer to page 16.
    - You can check the current name of each audio source in the Sub 1 Menu.
- Select the new name of an audio source in Sub 2 Menu if desired.
- **Note:** Each FM preset can have its own name.

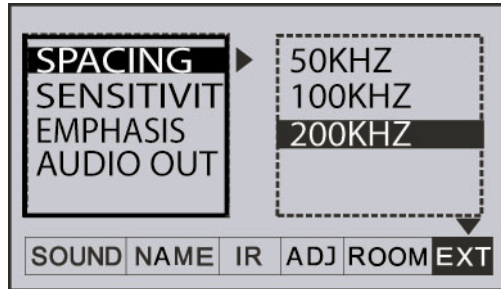


# MUSICA DIGITAL FM TUNER CARD

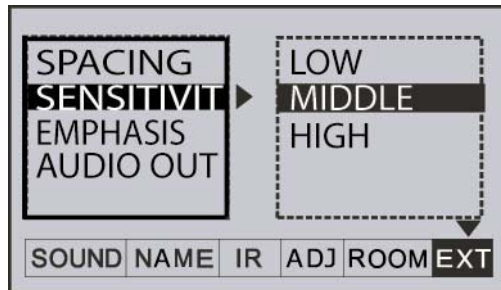
## 5.5 EXT Menu Display Screens - Adjusting the settings for the FM Tuner

Once the *Musica* Digital FM Tuner card is inserted, additional adjustment screens will appear in the EXT menu on the *Musica* 5066 keypad. The screens allow you to adjust the following:

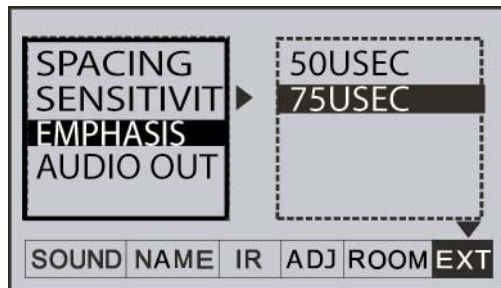
- Adjustment of the spacing between frequencies:
  - 50 kHz (Europe) OR
  - 100 kHz (Europe) OR
  - 200 kHz (USA, **default**)



- Adjustment of the sensitivity of the tuner reception (particularly useful when seeking or scanning through stations):
  - LOW: signal strength does not have to be strong for it to stop on a station
  - MIDDLE: strong signal strength required
  - HIGH: signal strength has to be higher before it will stop on a station.



- Signal De-emphasis Adjustment
  - 50 microseconds (Europe, other country)
  - 75 microseconds (USA, **default**)



# AUDIO PORT



**MiniJack:**

Stereo input to allow audio sources such as MP3, CD player, walkman etc..., to be added to the system in a local room

or

**IR Output**

IR Output for the local source

**Audio In:**

In addition to the 4 main sources, the Audio Port allows you to add a local source. Now have your own source in your room.

When an external audio source is connected to AUDIO IN the keypad automatically detects it and displays the information in the MENU window.

**Audio Out:**

Select **AMPLIFIER CONFIGURATION** by the **EXT** menu.

1. ROOM AMP only
2. Both ROOM AMP and EXTERNAL AMP
3. EXTERNAL AMP only

Note: The ADC is variable and is controlled with the volume commands.



# MU290 POWER AMPLIFIER

If more power is required (especially for larger rooms or outdoor zones), the MU290 power amplifier is the perfect complement to your *Musica* system. The MU290 provides 90W of stereo power (200W bridged) and features two RJ45 (EIM) ports which connect to the EIM port on the back of the MU5066 keypad. Up to 6 MU290 power amplifiers can be daisy chained to provide 90 Watts of stereo power to up to 6 pairs of speakers in one zone, or, when bridged, 200 watts of power.

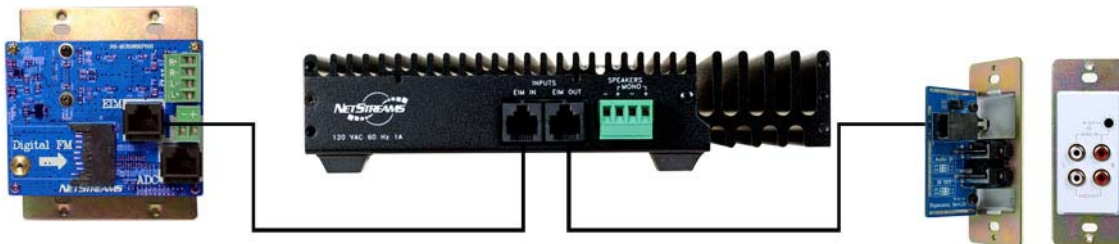
## MU290 Specifications:

Output Power:	70 Watts/channel @ 8 ohms; 200 Watts/channel @ 8 ohms (bridged); 100 Watts/channel @ 4 ohms, 20 – 20 kHz +0, - 0.5 dB, 1 W
Power Bandwidth:	5 Hz – 100 kHz (+3, -3 dB)
THD + N:	>98 dB
Input Impedance:	10k Ohms
Input Connector:	RJ45 (EIA), EIA 568a
Output Connectors:	RJ45 (EIM), EIA 568a; 4-pin Phoenix connector (speaker output)
Controls:	Power On/Off; Channel Gain
Dimensions (W x H x D)	8.2" X 1.75" x 10.2" (205mm x 44 mm x 255mm)

## MU290 connection to MU5066 keypad:

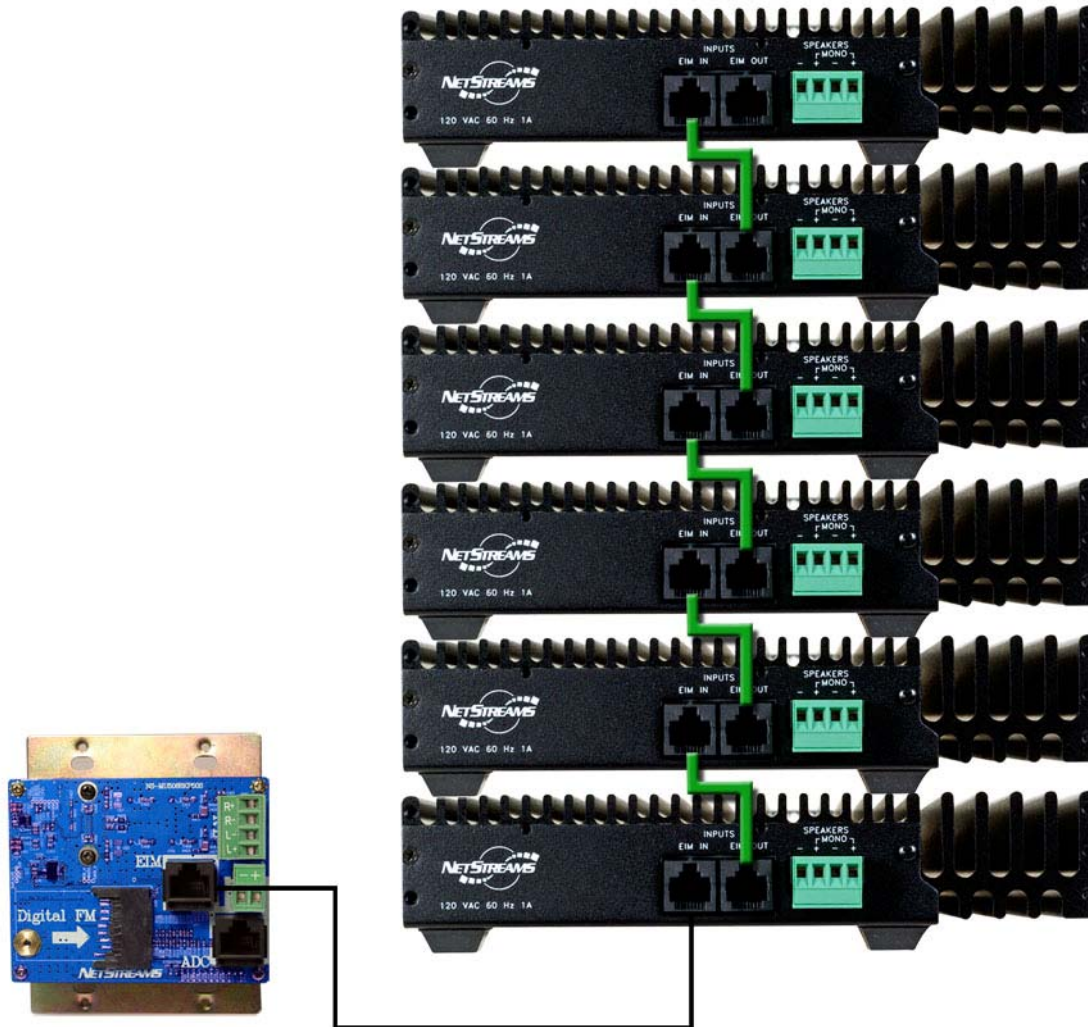


## MU290 connected to keypad and EIM out of Audio Port (for local source output):



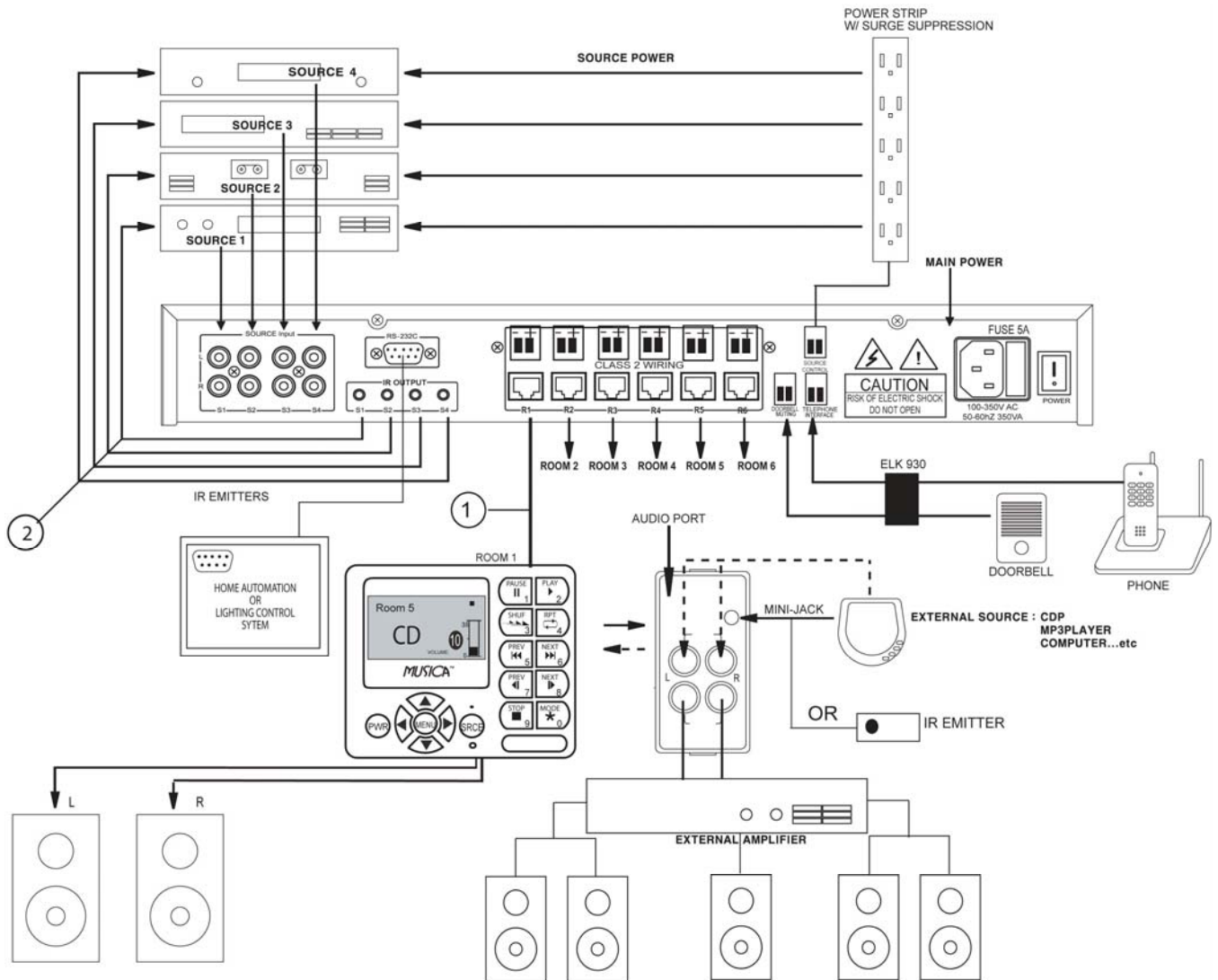
# MU290 POWER AMPLIFIER

6 MU290's in daisy chain configuration:



**NOTE:** Make sure the RJ45 Terminator (included) is plugged into the EIM output on the last MU290 amplifier in the chain.

# MUSICA WIRING DIAGRAMS



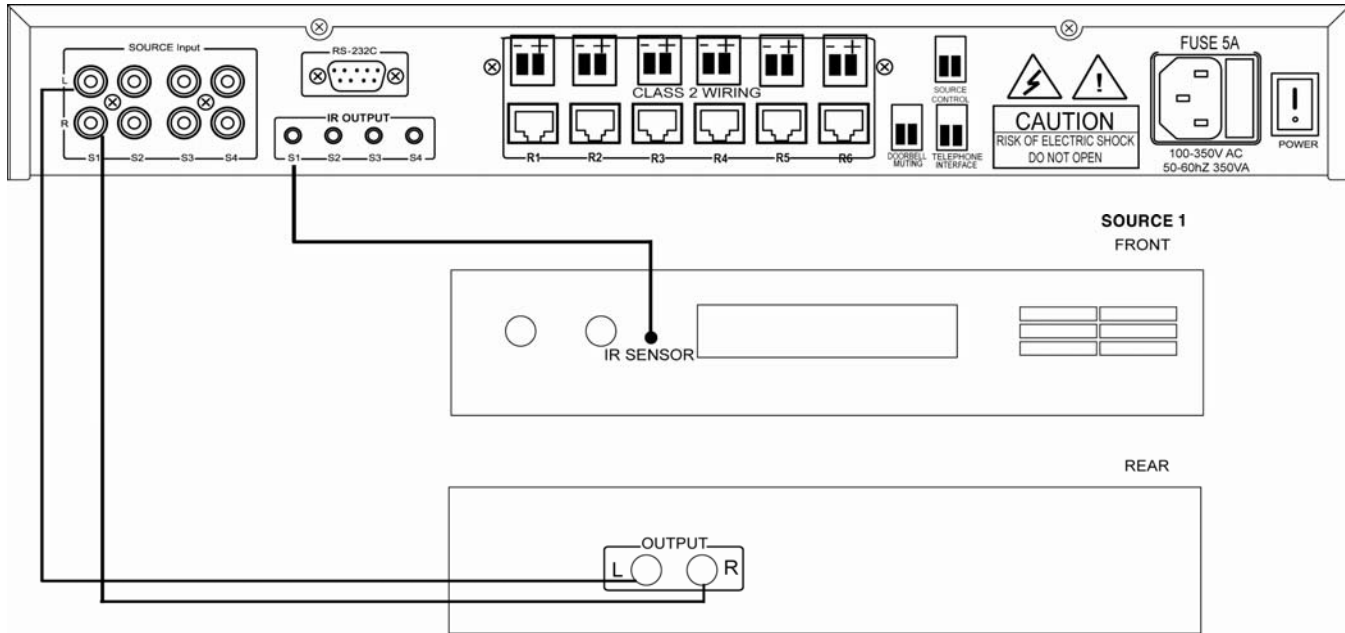
## Wiring the System

Run CAT5e & 14/4 or CAT5e & 16/4 Siamese cable (as outlined in EIA/CEA 2030) between each *Musica* keypad and the *Musica* ADC.

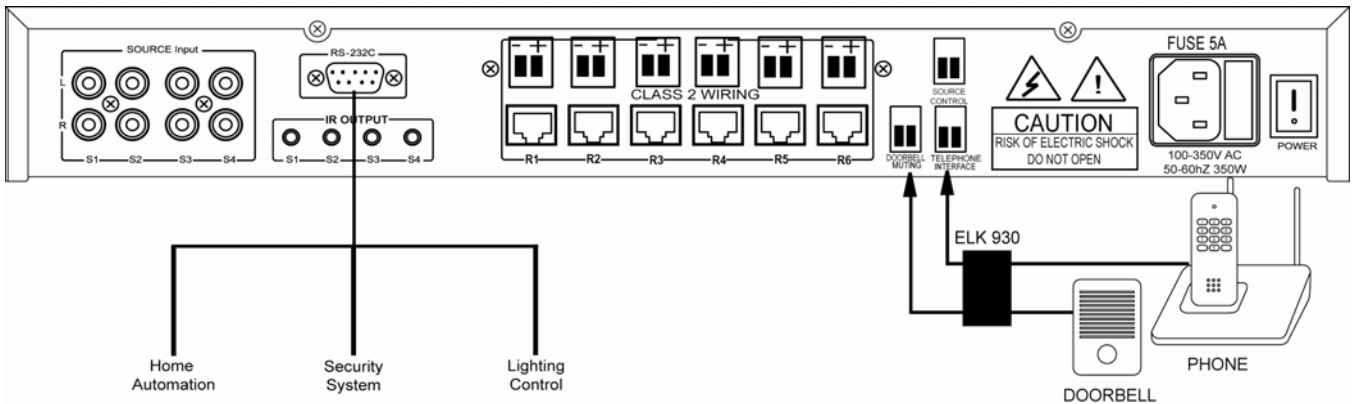
1. Run a CAT5e cable between each *Musica* keypad/amplifier and *Musica* Audio Port (EIM) installed.
2. IR Emitters run from the Audio Distribution Center to the house-wide sources.

# MUSICA WIRING DIAGRAMS

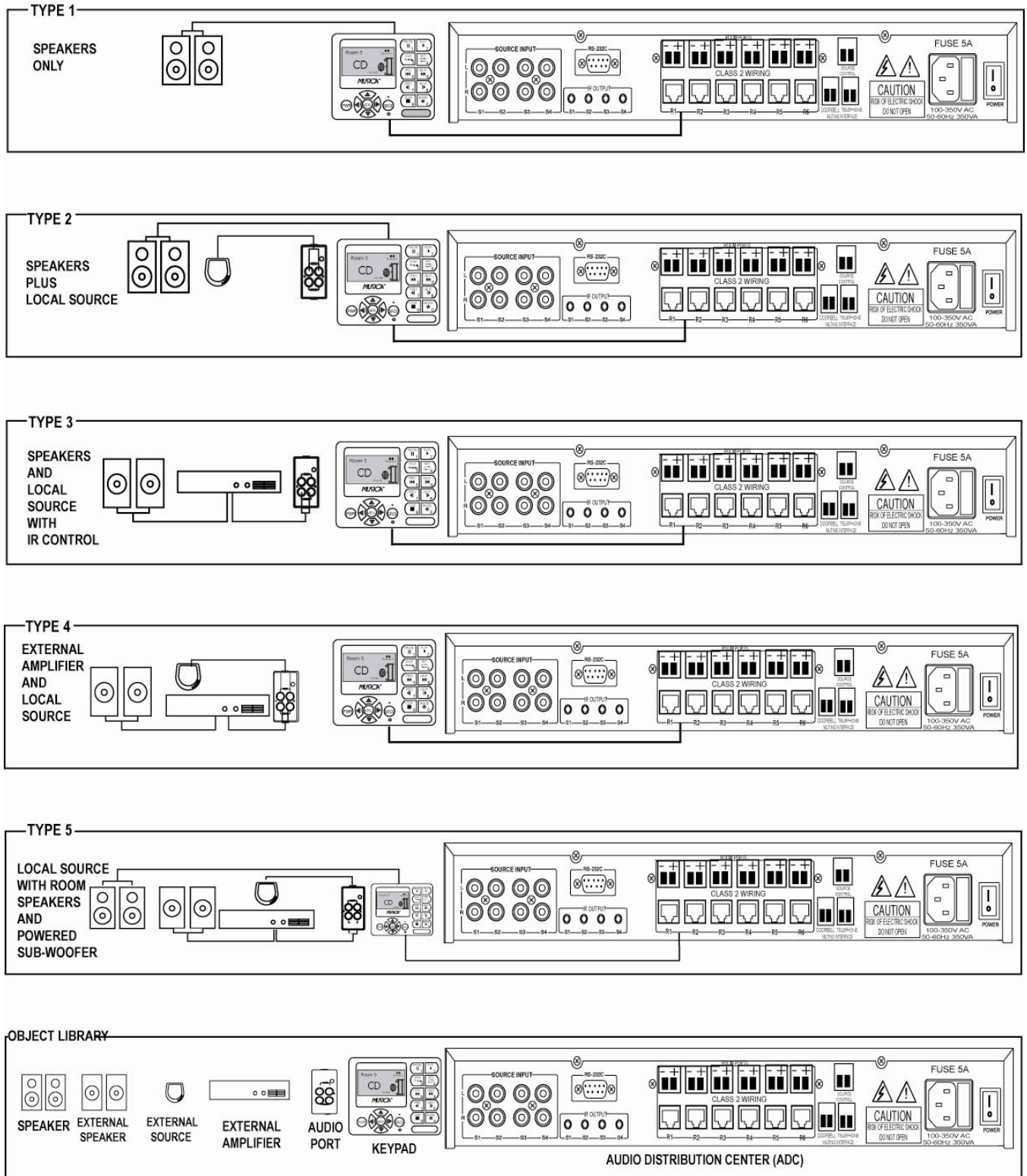
## Wiring for Source Components



## Wiring for RS-232 and Doorbell/Telephone Sensors

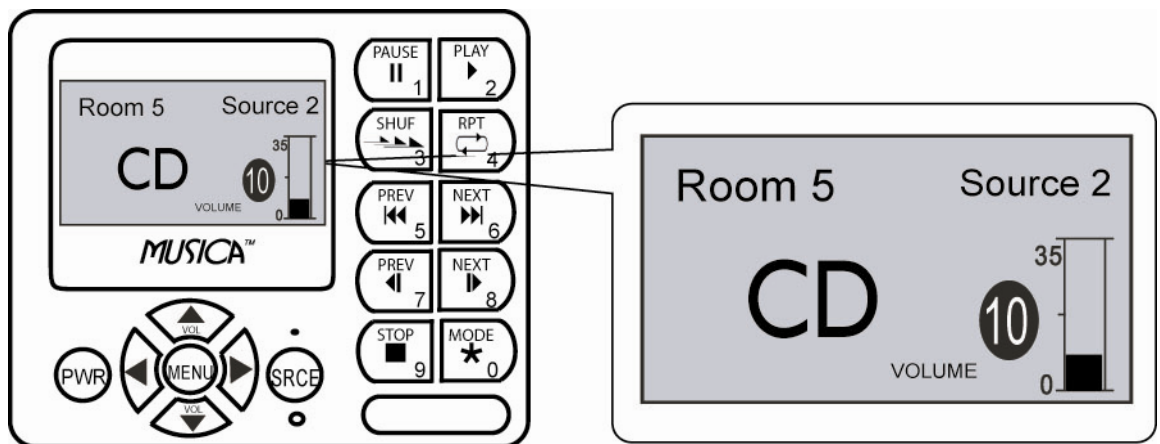
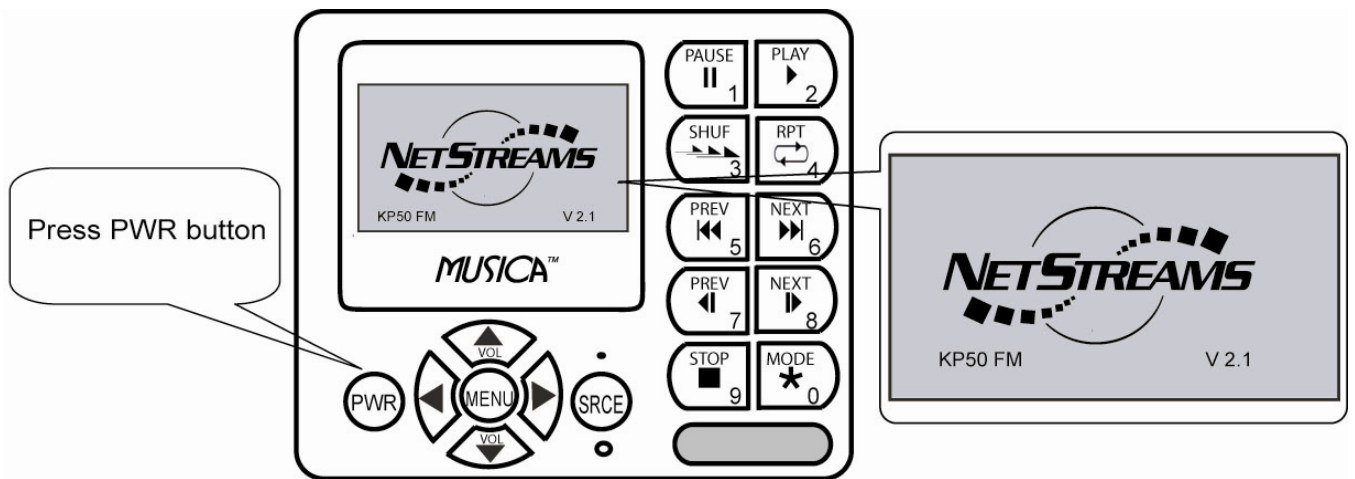


# MUSICA POSSIBLE CONFIGURATIONS



# HOW TO OPERATE THE SYSTEM

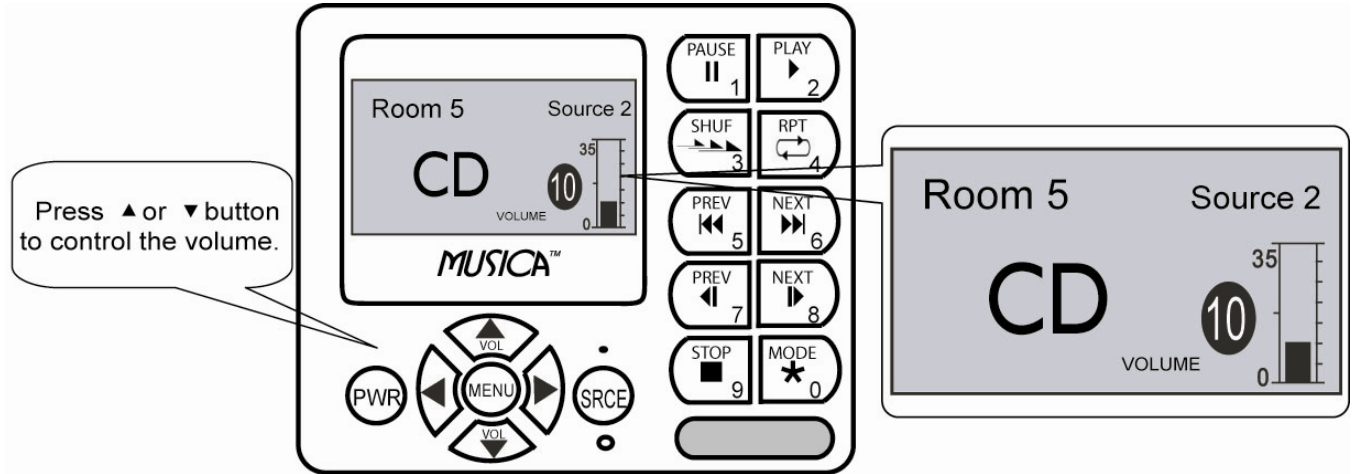
Balloon indicated the operation in the room system or remote control



Basic Screen: Displays the room and source selected, and the volume level.

# HOW TO CONTROL THE VOLUME

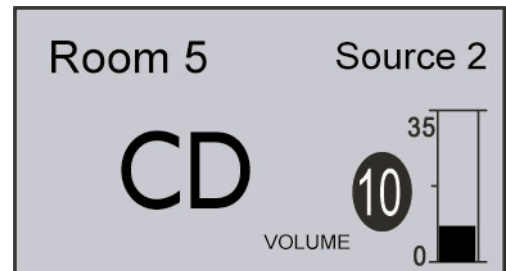
- A. Press ▲ button to turn up the volume, or ▼ button to turn down the volume.
- B. Keep pressing the button until the desired volume level is achieved.



- C. If volume level is "0", it shows system in mute state. It is released by using ▲ button.



Mute State Window



Volume Setting Window

**Note:**

-- Volume setting window changes back to the Level window in 1 second in the absence of button presses.

-- Then default volume level is set to 10 when power is first applied.



Level Window

# HOW TO SELECT A SOURCE FOR PLAYBACK

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Press the "SRCE" button to scroll through global and local sources.

# TROUBLESHOOTING

## “Check the Cable” Message appears on the MU5066 keypad upon power up:

Upon first power up, if the “Check the Cable” message appears, this indicates that the something is wrong with the CAT5 cable termination or the CAT5 cable itself.

**Step 1:** Turn OFF the power on the Audio Distribution Center

**Step 2:** Test your CAT5 cable connection at both ends with a cable tester and reterminate the cable.

### Pin Out for 568a

1	Green/White
2	Green
3	Orange/White
4	Blue
5	Blue/White
6	Orange
7	Brown/White
8	Brown



**Step 3:** Plug the CAT5 cable back into both the MU5066 keypad and the ADC.

**Step 4:** Turn the Audio Distribution Center power back on. The Keypad will try to reconnect to the ADC and the “Connecting” screen will appear again.



# TROUBLESHOOTING

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**Upon First Power Up, the keypad does nothing and there is no backlight on the LCD window on the keypad:**

If this happens, the polarity may be incorrect for the power connection from the ADC to the keypad. You'll be able to hear the relay clicking on the ADC, which means that 1 of the keypads is connected backwards. To remedy this:

**Step 1:** Turn OFF the power on the Audio Distribution Center

**Step 2:** Check all of the 2-pin Phoenix connectors on the ADC and the keypad for the correct polarity, paying attention to the silkscreen on the back of the ADC and on the PCB board of the keypad.

**Step 3:** Re-connect the 2-pin Phoenix (power) connectors on the ADC and the keypad(s).

**Step 4:** Turn the ADC Power ON.

**I can't learn the IR Codes on the MU5066 keypad:**

There could be several things to check for.

**First**, check to make sure that the IR Emitter output connection is using the port with the same number as the source connected to the Audio Distribution Center. For example, a source connected by RCA analog to "Audio Input 1" on the ADC should have the IR Emitter running from "IR Out 1" on the ADC.

If that's ok, then consult the owner's manual for the source equipment to double check that the IR codes are transmitting at the correct frequency. The default IR setting for the *Musica* system is 38 kHz, however if the source connected to the input takes IR codes that are transmitting at 56 kHz, you will need to change the IR FREQ setting for that source input from the Menu on the MU5066 keypad (see the IR section of the Menu).

**Some source manufacturer's remote controls transmits IR codes in reverse polarity. Try learning the IR codes to the keypad by pointing the remote control at the keypad once to learn the code, then point it away and press the same button again, then point it back at the keypad to verify the IR code learned.**





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