



INSTALLATION INSTRUCTIONS

MRKP1 Keypad controller North American Standard

Safety Information

Read Information — All the safety and operating information should be read before the appliance is operated.

Follow Information — All operating and use information should be followed.

Retain Information — The safety and operating information should be retained for future reference.

Heed Warnings — All warnings on the appliance and in the operating instructions should be heeded.

Wall Mounting — Mounting of this appliance should be done only by an authorized installer.

Non-Use Periods — Appliances that are left unattended and unused for long periods of time should be de-energized.

Water — Do not use the apparatus near water.

Cleaning — Unplug the apparatus from the power outlet before cleaning. Use only a dry cloth to clean the apparatus.

Object and Liquid Entry — Never insert objects of any kind through the openings of these appliances, as they may touch dangerous voltage points or short-circuit parts that could result in a fire or electric shock. Care should be taken so that objects do not fall and liquids are not spilled into the appliance through openings in the enclosure.

Servicing — Do not attempt to service these appliances yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring Service — These appliances should be serviced by qualified service personnel when:

- A power supply connection or a plug has been damaged or
- If liquid has been spilled into the appliance or objects have fallen into the appliance or
- The appliance has been exposed to water or moisture or
- The appliance does not appear to operate normally or exhibits a marked change in performance or
- The appliance has been dropped or the enclosure damaged.

Replacement Parts — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards. The Master Control Unit battery should be replaced only after turning the power off and only by an authorized installer.

Safety Check — Upon completion of any service or repairs to this audio product, ask the service technician to perform safety checks to determine that the audio product is in proper operating condition.

Lightning Storms — Unplug this apparatus during lightning storms or when unused for long periods of time.

Attachments and Accessories — Use only attachments/accessories specified by the manufacturer.

Cart, Stand, Tripod, Bracket or Table — Use only with a 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.

Disconnect Device — Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain operable.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by Xantech could void the user's authority to operate the equipment

Caring For the MRKP1

Clean only with a dry soft cloth.

It is important to properly care for your MRKP1 Keypad and Amplifier. Follow these guidelines to ensure your device is preserved and protected.

- Do not expose the MRKP1 to rain, liquids or moisture for an extended period of time.
- Do not expose the MRKP1 to temperature extremes.

Operating Temperatures & Environments

Operating Temperature: 32-104°F (0-40° C)

Humidity: 0-90%

Precautions

The super-bright Organic LED (OLED) display used in this keypad, like many other self-illuminating display technologies, may exhibit image burn-in, where still images or characters become etched onto the display. In non-typical situations when the keypad will be continuously on and the display information will stay constant (not refreshed with new information), it is recommended that the backlight timer feature be activated. This will eliminate the possibility of having imprinted characters on the OLED display. Please see page 16 "INST SETUP PARAMETER" section of this manual for details on Backlight Timer settings.

- Always exercise care when operating the MRKP1 Keypad and Amplifier.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- In the unlikely event that smoke, abnormal noise, or strange odor is present, immediately power the MRKP1 off. Please report the problem to your dealer immediately.

Never attempt to disassemble the MRKP1. You will lose any product warranty on the unit.

1.0 Introduction

Exceptional Performance

The Xantech MRKP1 is a zone controller specifically designed for the MRC88m or MRAUDIO8x8m systems. It provides Source Selection, Volume, Mute and Power control as well as control of all connected sources with its built-in IR receiver. *(NOTE: MRC88m/MRAUDIO8X8m must have Firmware ver. 2.03 or later to work with the MRKP1)*

About the MRC88m System

The Xantech MRC88m System is the next generation in Whole-house Audio/Video Entertainment family of products. This is a revolutionary whole-house audio/video entertainment distribution, audio amplification and control system. The MRC88m System consists of the MRC88m Controller/Amplifier, eight Keypads, or Touch Panels, and eight IR Emitters. When combined with almost any eight IR (or RS232) controlled audio/video source components (CD, DVD, VCR, Satellite, etc.), using the MRC88m System is as easy as pressing a button.

MRKP1 Features

- Fits in recommended North American standard one-gang electrical back boxes.
- Displays three lines of Meta-data
- Simple, Easy to Read OLED Display.
- Includes Screw-less Wall Plates for North American standards.
- Quick Plug and Play Installation – No PC Software Programming Required.
- Hot Swappable – no need to shut down and reset system when upon connection of keypad
- Programmable with Universal Dragon™
- Supports Xantech QuickConfig™
- Built-In IR Receiver for System and Source Control
- Built-in connecting blocks for use with optional Xantech external IR receiver and IR emitters.

MRKP1 Accessories

- KCK1 Keypad Color Kit (contains, North American standard bezels and trim plates in almond, ivory, and black)

Defining Terms

Zone

A Zone is defined as an area of the house that has separate source selection capabilities from all other areas of the house. Typically, a zone is comprised of a single room, but it is possible for a zone to spread across multiple rooms (kitchen/dining room, master bedroom/master bath) or for multiple zones to be contained in one room (game room/bar area or multiple zones in the yard).

Source

A Source is any audio (or audio/video) device that is connected to the MRC88m source input. Any Source can be heard or viewed in any zone in the system.

2.0 System Design Overview/Applications

Notes:

A recommended electrical back box is always required for all installation of this product (see specifications).

This keypad is specifically designed to work with the MRC88m and MRAUDIO8x8m (*Firmware ver. 2.03 or later*). It is NOT designed to work with MRC88, MRAUDIO8x8, MRC44, MRAUDIO4x4, or BXAUDIO4x4.

This keypad is compatible with Zone Linking. However, the Dynamic Zone Linking function can only be initiated with an MRKP2, MRKP2E, or an LCD Touch panels. Static Zone Linking can always be configured through Universal Dragon™.

Planning

Before installing the MRKP1, it is essential to have a detailed and accurate system design. The first step to a good design is to map the system. It is advisable to mark up a copy of the house floor plan with speaker, keypad and equipment locations, etc. Make sure that all locations are decided upon before pre-wiring so that all necessary wiring and installation hardware is in place. It is essential that ALL system components are accounted for prior to the pre-wire stage. After establishing design goals, make a detailed list of all components. Include source equipment, keypad, expansion hubs, local source wall plates, IR emitters, etc.

Pre-Construction

In a pre-construction installation, walls and ceilings are open with no drywall installed. This is desirable and allows the installer greater access than in retrofit applications. Before actually running any wire or cable, take the time to look around each room or area of the house and plan your wire paths for maximum efficiency. Look for routes through uncluttered parts of the stud wall or ceiling that allow you to group all low-voltage (video, speaker wires, CAT-5, telephone, etc.) wires wherever possible. It is a good practice to label both ends of all cables and to protect wires by tying a plastic bag over the ends.

Note: Do not run low-voltage wires closer than 12" from high-voltage wires. If necessary, cross low-voltage wires at a 90° angle to prevent interference.

Retro-Fit Wiring/ Post Construction

Retro-fit installations are more difficult to complete than pre-construction because walls and ceilings are intact. Typically wires must be fished into position through walls, floors and ceilings. Holes must be cut; speakers mounted directly in the ceiling or walls with no electrical back- brackets and keypads and local source wall plates must be mounted in existing drywall.

Pre-Wiring

CAT-5 Wiring between MRC88m and MRKP1

The MRC88m and all associated components are wired using CAT-5 terminated to the T568A or T568B Wiring Standard (Figure 2.1). When pre-wiring the system, run lengths of CAT-5 from the pre-determined MRC88m location to each Keypad or Touch Panel location. The CAT-5 cable routes all Power, Control, Communication, and IR information needed for full system operation.

Important: While there are two wiring standards, it is very important to be consistent to one configuration throughout the entire system. Otherwise, the system will not operate.

Note: Speaker wiring will need to be separately routed from the MRC88m to each zone.

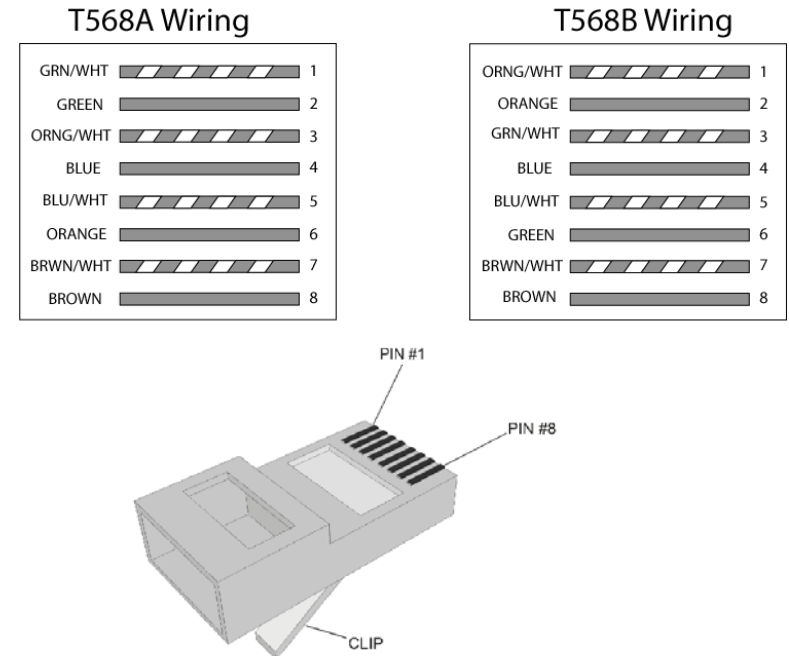


Figure 2.1: T568A and T568B Wiring Standard

MRKP1 – FRONT PANEL

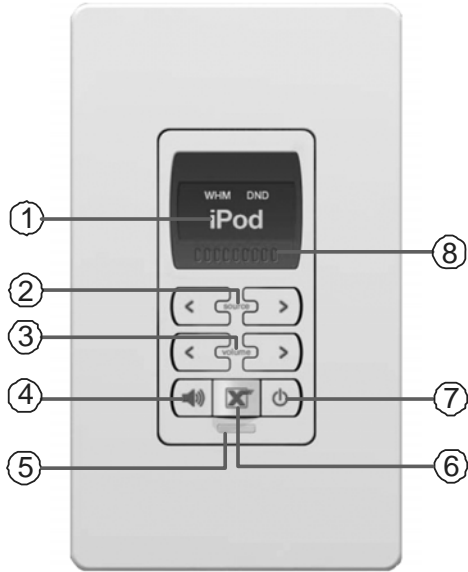


Figure 2.2: Front of MRKP1 Keypad

ITEM	DESCRIPTION
1	Display
2	SOURCE Selection
3	VOLUME Adjustment
4	MUTE Button
5	Infrared (IR) 'Sensor
6	(X) Menu Button
7	POWER Button
8	VOLUME BAR Indicator

MRKP1 – REAR CONNECTORS

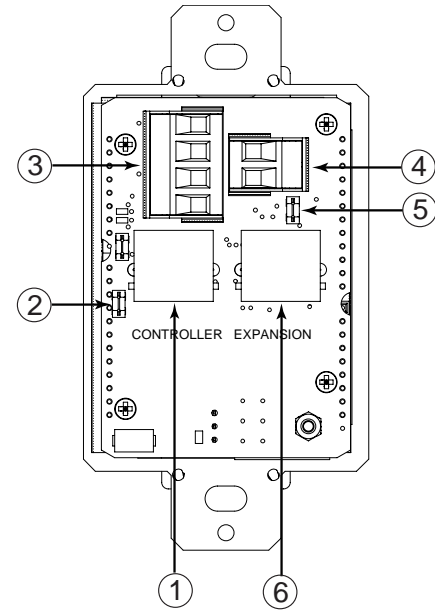


Figure 2.3: Rear connector board of MRKP1 Keypad

ITEM	DESCRIPTION
1	Controller RJ-45 Port
2	Internal IR Sensor Enable/Disable jumper (remove to Disable)
3	External IR Input terminal
4	IR Emitter output
5	RS485 termination
6	Expansion RJ-45 Port

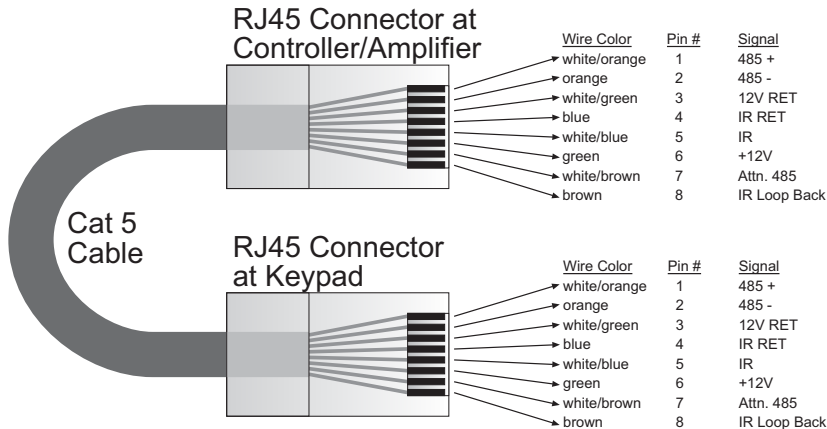
Installation

The MRKP1 is designed to mount in a standard single-gang electrical back-box (J Box – see Specifications sections for details). Typical mounting height is 56-60 inches (1.53 meters) from the floor to the bottom of the frame. This provides optimum viewing for the largest number of people.

Route the CAT-5 cable from the MRC88m into the back of the electrical back-box, terminate it with an RJ-45 connector after it is passed through the electrical back-box. Connect them to the appropriate RJ-45 connector on the rear of the MRKP1 (“CONTROLLER” for connecting to MRC88m, or “EXTENSION” if connecting to an extension keypad). If using an IR Receiver, strip the ends of three conductors of the IR receiver’s cable and insert into the appropriate terminals of the IR Input terminal block shown in Figure 3.2.

Once connections are made, mount the MRKP1 in to the electrical back-box using the two provided screws. Mount the Trim Plate Bracket as shown in the Figure 2.5 on next page, and then snap the Screw-less Trim Plate in place.

Figure 2.4: MRC88m – MRKP1 Pin-out diagram for Cat-5 cable (T568B configuration)



Note: Do not mount the MRKP1 in the same electrical back- box as high voltage devices such as electrical outlets or switches.

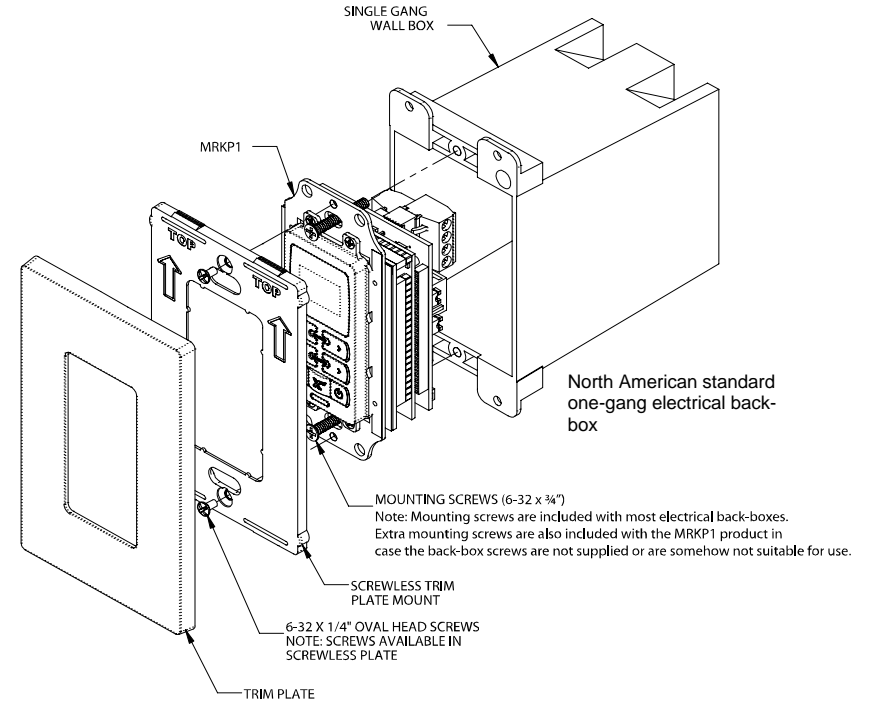


Figure 2.5: MRKP1 Keypad Installation

3. Connections

MRKP1 to MRC88m and Expansion Keypads

Each RJ-45 connector under each PREAMP OUT (1 – 8) is considered a “Zone port”. This Zone port interfaces with MRKP1 Keypad through CAT-5 cables. These connectors carry command/control information between the keypad and the MRC88m. Connect CAT-5 cables terminated to an RJ-45 connector from each Keypad to the corresponding RJ45 connector of the MRC88m as shown below. (See Specifications section for maximum length of Cat-5 cables)

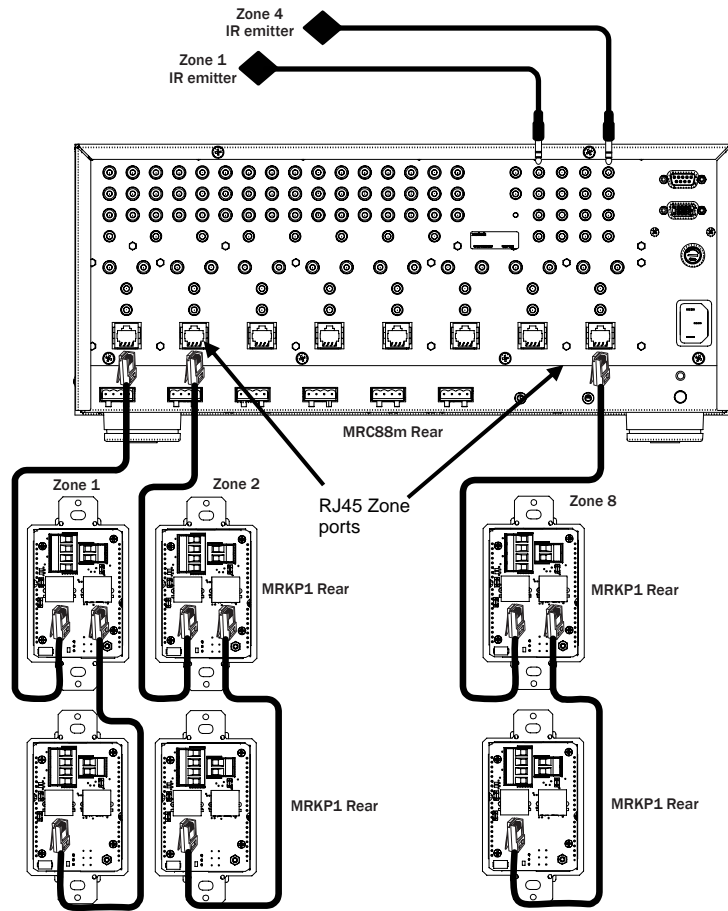


Figure 3.0: MRKP1 to MRC88m with expansion keypads

Note: Four keypads maximum per zone. Remove termination jumper on all keypads except for the last keypad (see item #5 on Fig 2.3). Each expansion keypad must each have its own unique address. (see Inst. Setup Menu on Section 4 of this manual)

Internal IR Receiver

The internal IR receiver is located beneath the center of the keypad’s face plate. The internal IR receiver receives IR commands for the MRKP1 and for the MRC88m. It will also pass-thru IR remote control commands to audio sources, via an emitter, to each of the sources connected to the MRC88m. The internal IR receiver is interference friendly. However, some optically noisy environments may require the use of an external IR receiver. (See Figure 3.2 for details on using an external IR receiver)

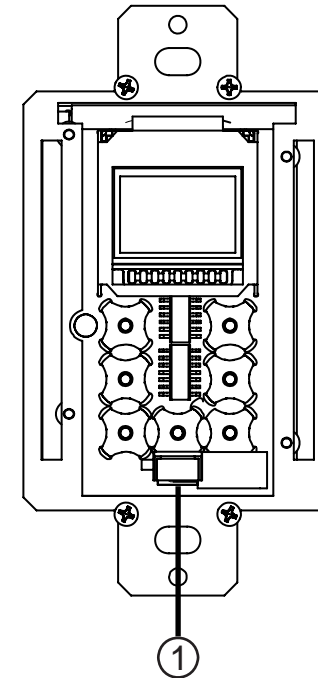


Figure 3.1: Internal IR Receiver and

Compatible Handheld remotes

The MRKP1’s minimal design necessitated the presence of a minimum number of buttons. As a result, a handheld remote controller, such as a Xantech RC68 or MREM is required for accessing other control functions of the source such as navigation, menu, and transport controls. Other programmable Xantech remotes such as XTR39 can also be used. The list of RC68 codes is available at www.xantech.com/Controls/KeypadsRemotes/Remotes/MREM, in the Products page, under “MREM Code List”.

(Note: RC68 commands may not be used with projects created in Quick Config™)

External IR Receiver Connections

Use an external Xantech IR Receiver in cases where a hand-held remote needs to be pointed somewhere other than at the MRKP1 or in cases where additional interference requires the use of a different type of IR receiver or IR receiver mounting location. Typical IR Receiver locations are near a TV or other equipment such as a Local Source (DVD Player, A/V Receiver,...etc.). A CAT-5 cable can be used to extend the IR receiver's wire, if necessary. Refer to the bottom of the Specifications section (page 20) for wiring instruction when using CAT-5 cable to extend the IR signal.

By default, the MRKP1 External and Internal IR receivers are both active. Having both active, in some cases, can cause issues with IR signal reflection and/or multiple processing of the same IR command. Therefore, in such specific cases it is advisable to disable the Internal IR when using an external IR receiver (*Internal IR can be disabled by removing jumper clip on item #2 of Figure 2.3*).

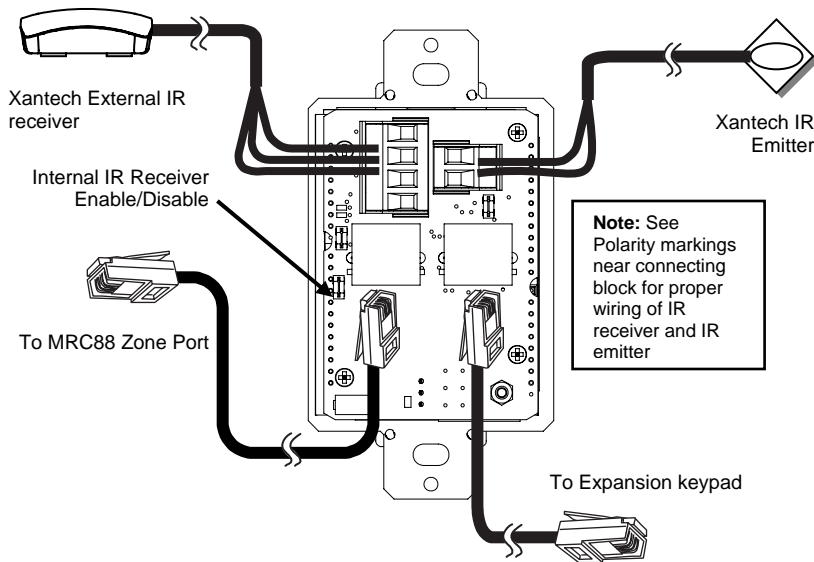


Figure 3.2: MRKP1 to External IR Connections

4. MRKP1 Main Setup Menu

To access the Main Setup Menu,

1. Press and hold down the "X" key for at least 3 seconds.
2. Once the Main Setup Menu is displayed on the screen, use the "SOURCE <" and "SOURCE >" buttons to highlight the category to be changed.
3. Press the "X" button to choose the category.
4. Use the "SOURCE <" and "SOURCE >" buttons to highlight the parameter to be changed.
5. Use the "VOLUME UP" and "VOLUME DN" buttons to change the parameters. (For further details see diagram on Figure 4.1)

The Main Setup Menu consists of the following categories:

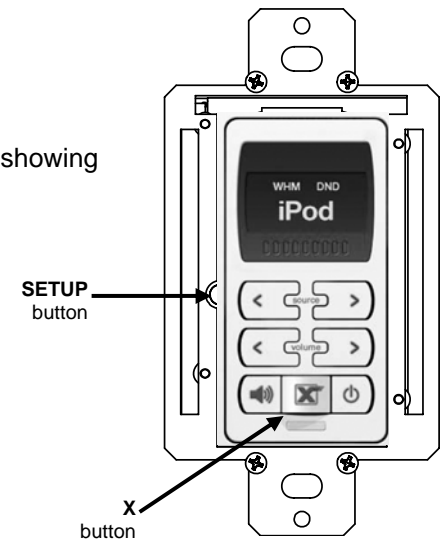
KP INFO - displays information about the unit (Model number, Keypad Address, and Version number)

USER SETUP – allows adjustments of BALANCE, BASS, TREBLE, and BACKLIGHT Color.

INST SETUP – Allows installer to configure the unit for initial setup and other options. **NOTE:** *The INST SETUP category can only be accessed by pressing the hidden "SETUP" button and the "X" button at the same time. A Q-tip with cotton tip removed, or similar, is recommended for use when pressing this hidden switch (see Figure 4.0 below)*

EXIT – Leave the Main Setup Menu and go back to normal display mode.

Figure 4.0: Trim plate removed showing SETUP Button location



SETUP button

X button

USER SETUP PARAMETERS

BALANCE

Adjust audio output level on the right or left channel. The settings can be adjusted from “-31” to “0” (middle) to “+31”

TREBLE

Adjust the higher frequency range of audio output. The settings can be adjusted from “-14” to “0” (middle) to “+14”

BASS

Adjust the lower frequency range of audio output. The settings can be adjusted from “-14” to “0” (middle) to “+14”

BL COLOR

Gives option to change the Text color and keypad backlighting to Blue or Green.

GO HOME (Return to Main Setup Menu)

After configuring the above parameters, user can choose to SAVE, NO SAVE, or RESTORE the settings above.

INST SETUP PARAMETERS

QUICK CONFIG

Launches Xantech Quick Config. Function. Press “X” to start process. Refer to the Dragon Quick Config manual for details on setting up Quick Config.

KP ADDR (Keypad address)

Assigns a different keypad address for each keypad when using multiple keypads in one zone.

OLED BRIGHT (Display Brightness)

Adjust the display brightness to DIM, MEDIUM, or BRIGHT.

LED BRIGHT (Button and Volume LED Brightness)

Adjust the button backlight brightness to DIM, MEDIUM, or BRIGHT.

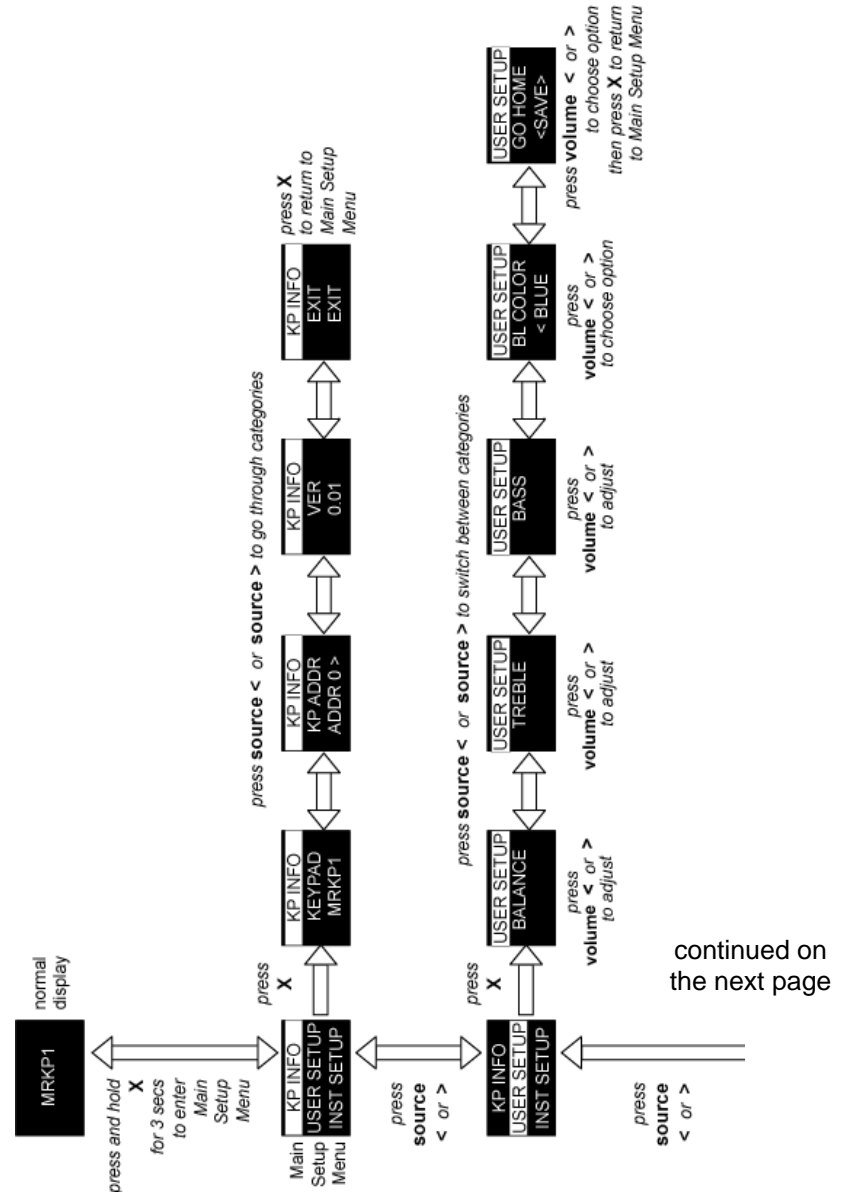
BL TMR VAL (Backlight Timer Value)

Adjust the time when the backlight will turn off for energy savings when there is no activity. Setting are “ON” (always on), “30 SEC (turns off after 30 sec), and “1 MIN” (turns off after 1 minute). This feature is highly recommended on non-typical setups where the display will be constantly on with a still (non-changing) image on the display. In these rare cases, activating this feature will prevent image “burn in”.

GO HOME (Return to Main Setup Menu)

After configuring the above parameters, user can choose to “SAVE”, “NO SAVE”, or “RESTORE” the settings above.

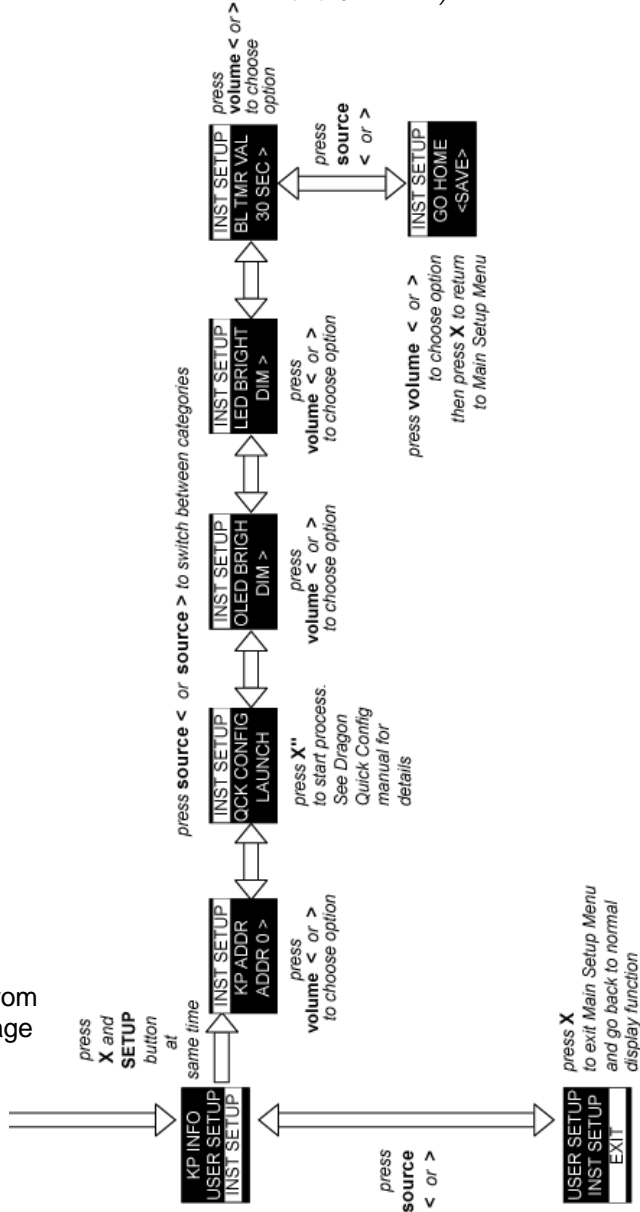
Fig. 4.1 Main Setup Menu Diagram (continued on next page)
(MRC88m/MRAUDIO8X8m require Firmware Ver. 2.03 or later to work with the MRKP1)



continued on the next page

Fig. 4.1 Main Setup Menu Diagram (continued from previous page)
 (MRC88m / MRAUDIO8X8m require Firmware Ver. 2.03 or later to work with the MRKP1)

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5. Troubleshooting

Symptom	Possible Cause	Solution
MRKP1 does not power up	1. RJ-45 plug crimped incorrectly; or wiring pin-out of RJ-45 reversed.	Verify wiring pin-out and RJ-45 crimp. Correct by re-crimping RJ-45 to CAT-5 cable.
	2. Break in CAT-5 between Zone and "Head-End".	Check RJ-45 to RJ-45 connections with cable tester or voltmeter.
No control or IR sources	1. Wiring: Incorrect wiring between MRKP1 and MRC88m.	Verify and correct wiring.
	2. IR emitter defective at source.	Replace IR emitter.
Intermittent IR source control	IR flooding	Check to see if ambient light is shining on built in IR receiver or in direct line with plasma TV noise. If the IR emitter is flashing when IR is not being sent, IR flooding is likely cause. Disable the built-in IR Receiver. Consider use of an external IR Receiver (see Fig 2.2 and 3.2).

6. Specifications

MRKP1 basic dimensions and cable lengths	
Front panel dimensions	4.7" height x 2.9" width x 0.35" thick 119.4mm height x 75.7mm width x 8.9mm thick
Typical wall hole size	4.0" (101.6mm) x 2.25" (57.5mm) width square hole when using Standard North American single-gang back box or bracket.
Unit Depth in-wall	1.7" (43.2mm) depth when using one-gang electrical back box or bracket
Max length Cat-5 Cable with 1 keypad	152 meters (500 feet) total per zone
Max length Cat-5 cable with 1 keypad and 1 expansion keypad	77 meters (250 feet) total per zone
Max length Cat-5 cable with 1 keypad and 3 expansion keypads	38 meters (125 feet) total per zone
Operating Temperatures & Environments	Operating Temperature: 32-104°F (0-40° C) Humidity: 0-90%
Compatible Electrical back-boxes	
North American Standard one-gang electrical back boxes	4.0" (101.6mm) x 2.25" (57.5mm) width x 3" (76.2mm) depth

Extending external IR receiver connection with 3-wire cable		Extending external IR receiver connection with Cat-5 cable using all 8 conductors	
Size (AWG)	Maximum allowable length (feet)		
24	150	Use 4 striped wires for GND	
22	300	Use 2 solid wires for IR signal	
20	1000	Use 2 solid wires for +12V	
18	2000		

Xantech Limited Warranty

Xantech Corporation (“Xantech”) warrants this product to be free defects in materials and workmanship for a period of two years from the date of documented purchase by the original consumer. Any products returned to Xantech and found to be defective by Xantech within the warranty period will be repaired or replaced, at Xantech’s option, at no charge. Xantech will not be responsible for the actual cost of the installation or removal of the product, nor for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights. You may have additional legal rights that vary from state to state.

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Xantech Corporation

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