MDS-6A

Integrated Multi-Zone Controller

INSTALLATION MANUAL
AND
USER'S GUIDE

CHANNELPLUS™   • • • • • • • ⋮   MDS-6A

TABLE OF CONTENTS

⚡ **WARNING** ⚠

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). 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 uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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

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

IMPORTANT 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.

Ventilation—The appliances should be situated so that their location or position does not interfere with their proper ventilation. These appliances should never be placed near or over a radiator or heat register. These appliances should not be placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

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

Power Sources—The appliances should be connected to a power supply only of the type described in the operating instructions or as marked on each appliance. If you are not sure of the type of power supply to your home, consult your authorized Channel Plus dealer or local power company.

Grounding or Polarization—These audio products must be connected to a grounding-type alternating-current circuit on a dedicated circuit breaker. This is a safety feature. The green safety wire from the A.C. circuit must be connected.

Water and Moisture—To reduce the risk of electric shock or fire, these appliances should not be used near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

Power Cord Protection—A.C.Power supply circuits should be routed by a certified electrician only, in accordance with the NEC standards.

Telephones—Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning. Do not use a telephone to report a gas leak if the leak is in the vicinity of the Channel Plus electronic equipment because of risk of fire or explosion.

Cleaning—Turn off the circuit breaker to this audio product before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.

Power Lines—An outdoor antenna should be located away from power lines. When installing an outside antenna system, extreme care should be taken to avoid touching power lines or circuits, as contact with them may be fatal.

Outdoor Antenna Grounding—If an outside antenna or cable system is connected to these audio products, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the U.S. National Electrical Code, and Section 54 of the Canadian Electrical Code, provide information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See the grounding diagram (right).

Overloading—Do not overload wall outlets and extension cords, as this could result in fire or electric shock.

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-out 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.

Grounding Diagram

ANTENNA LEAD-IN WIRE

GROUND CLAMPS

ANTENNA LEAD-IN WIRE
(CEC SECTION 54-200)
(NEC SECTION 810-20)

ELECTRIC SERVICE EQUIPMENT

GROUNDING CONDUCTORS
(CEC SECTION 54-200)
(NEC SECTION 810-21)

GROUND CLAMPS

POWER SERVICE GROUNDING ELECTRODE SYSTEM
(CEC SECTION 10-700)
(NEC ARTICLE 250, PART H)

NEC - NATIONAL ELECTRICAL CODE
CEC - CANADIAN ELECTRICAL CODE

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.

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—For added protection for these audio products during an electrical storm, or when they are left unattended and unused for long periods of time, turn off the circuit breaker, and disconnect the antenna or cable system. This will prevent damage to the audio products due to lightning and power-line surges.
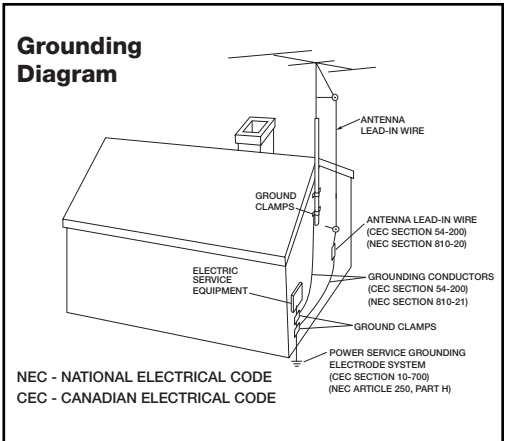
FEDERAL COMMUNICATIONS COMMISSION (FCC) NOTICE:
This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

SECTION 1 - *INTRODUCTION*

1.1 - FEATURE OVERVIEW

6 Sources / 6 Zones

The MDS-6A enables you to independently listen to and control up to six different audio sources (i.e. Tuner, CD, Tape Deck - and the audio signals from your VCR, DVD, and Satellite Receiver) in six distinct listening areas or "zones".

12 Channel x 40 WPC Power Amplifier

The MDS-6A features 12 channels of amplification capable of delivering 40 watts per channel into 8 ohms. The MDS-6A provides more than enough clean, dynamic power to drive a house full of speakers all day long!

Compatible with MCS Zone Controllers and IR Receivers

The MDS-6A's zones can be controlled using MCS-1A Zone Controllers, MCS-2A Programmable Zone Controllers, and/or IR Receivers. Add multiple MCS Controllers and/or IR Receivers for maximum flexibility.

User Feedback to All System Controllers

Unlike other basic multi-zone systems, the MDS-6A receives IR data and transmits feedback to MCS Controllers. These features inform the user of which Source is currently selected, Zone ON/OFF Status, Mute, Do-Not-Disturb, Whole-House Music Status, and more!

MCS Controller RJ-45 Jacks and Removable Speaker Terminals for Easy Connectivity

In addition to the six plug 'n play RJ45 jacks for MCS Controllers and IR Receivers, the MDS-6A features installer-friendly removable speaker terminals which accept up to 14 AWG wire.

6 Source-Specific IR Output Ports Plus 1"ALL" Port

Six source-specific IR output ports enable multiple 'same make/model' components to be used without conflict or interference. An IR ALL port is also provided.

1.1 - FEATURE OVERVIEW - CONT.

Figure 1
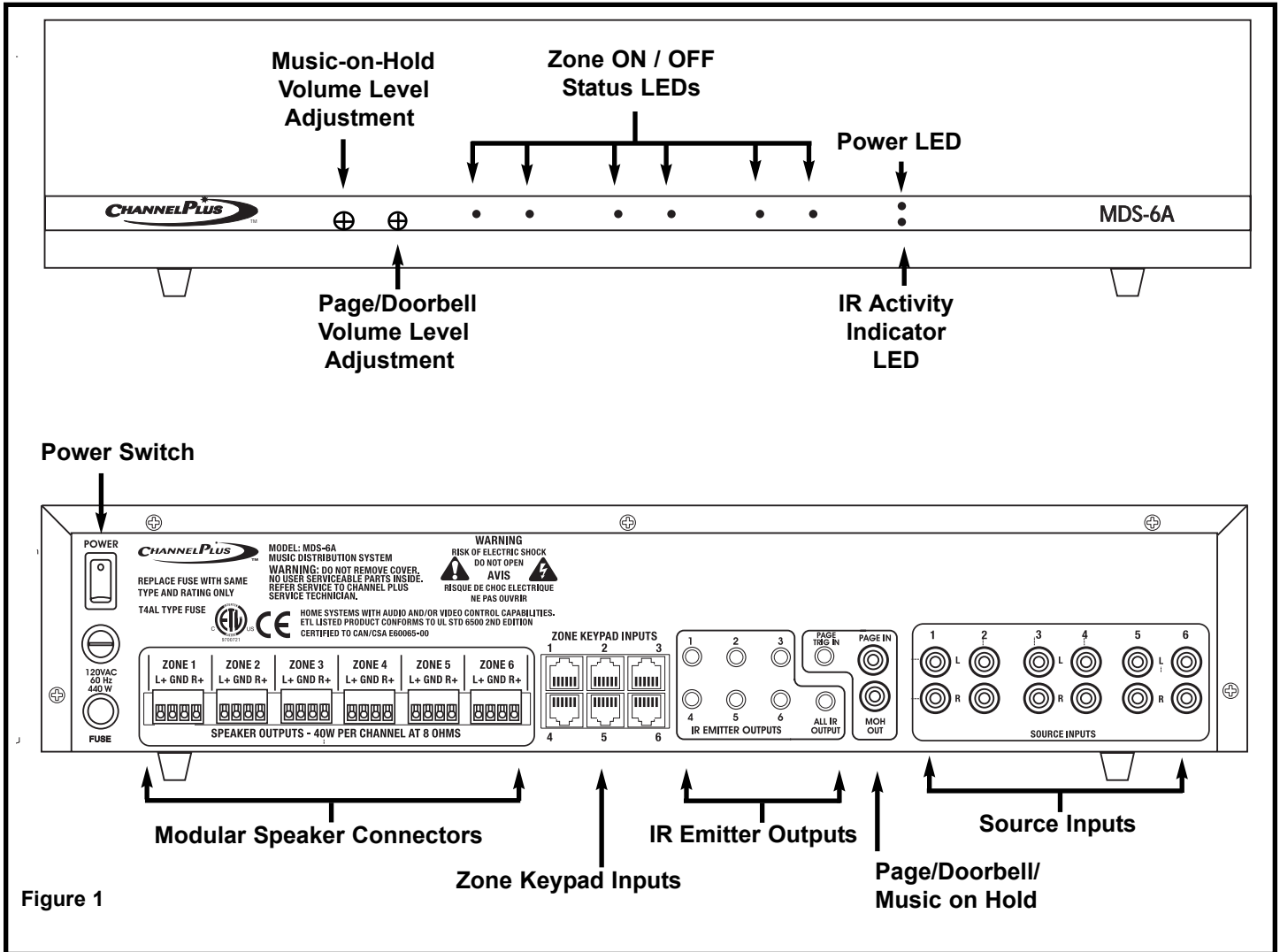
1.2 - MDS-6A SPECIFICATIONS

Source Inputs

INPUT SENSITIVITY...0-2V RMS
INPUT IMPEDANCE...47KOhm

Amplifier Output

MAX. OUTPUT POWER...40W @ 8 Ohms
SPEAKER IMPEDANCE..8 Ohms
FREQUENCY RESPONSE........................20Hz to 20kHz, +/-1dB
THD+NOISE(@1KHz)..0.02%
SIGNAL-TO-NOISE...>95dB
CROSSTALK (ZONE TO ZONE)...>70dB

Music On Hold Output

OUTPUT IMPEDANCE...1KOhm

Page & Doorbell Input

INPUT IMPEDANCE...47KOhms

Chassis Dimensions

L x D x H...17 in. X12.5 in. X 4 in
....43.18 cm. X31.75 cm. X 10.16 cm

Weight

.... 21 Lbs/9.53 Kg

1.3 - MDS-6A FRONT PANEL ADJUSTMENTS

Music-On-Hold Output Gain Adjustment

As shown on page 6, this potentiometer adjusts the gain of the Music-On-Hold signal (Source #1) going to the Music-On-Hold input of a phone system or other communication device.

Page/Doorbell Input Gain Adjustment

Adjusts the input level of the Page and Doorbell signal.

Zone Status LED Indicators

SOLID Indicates the zone is on.
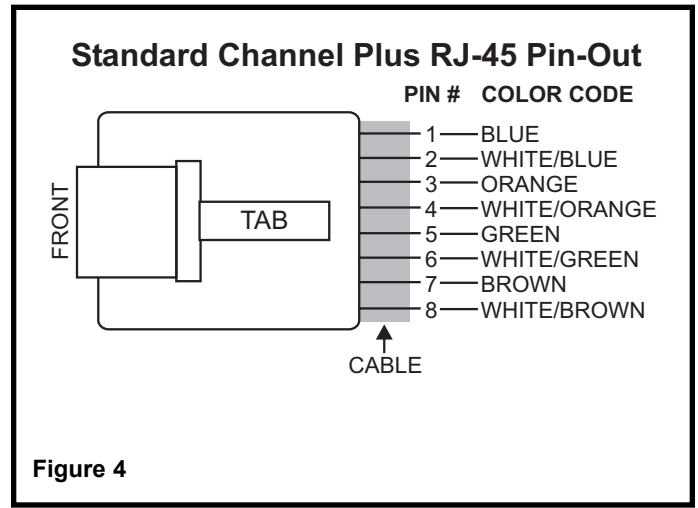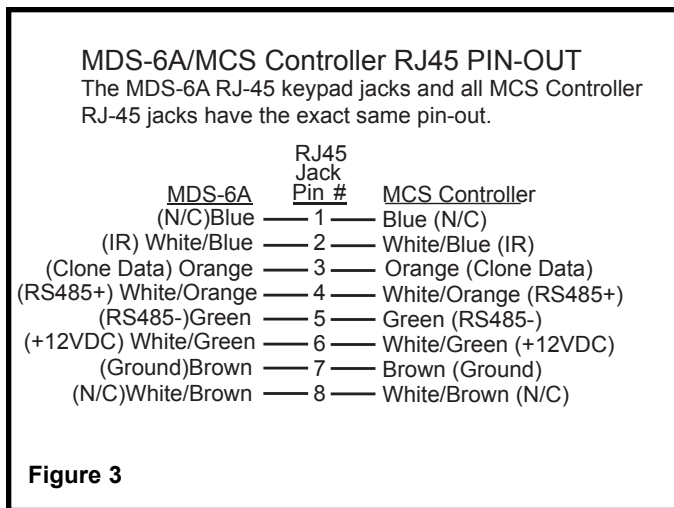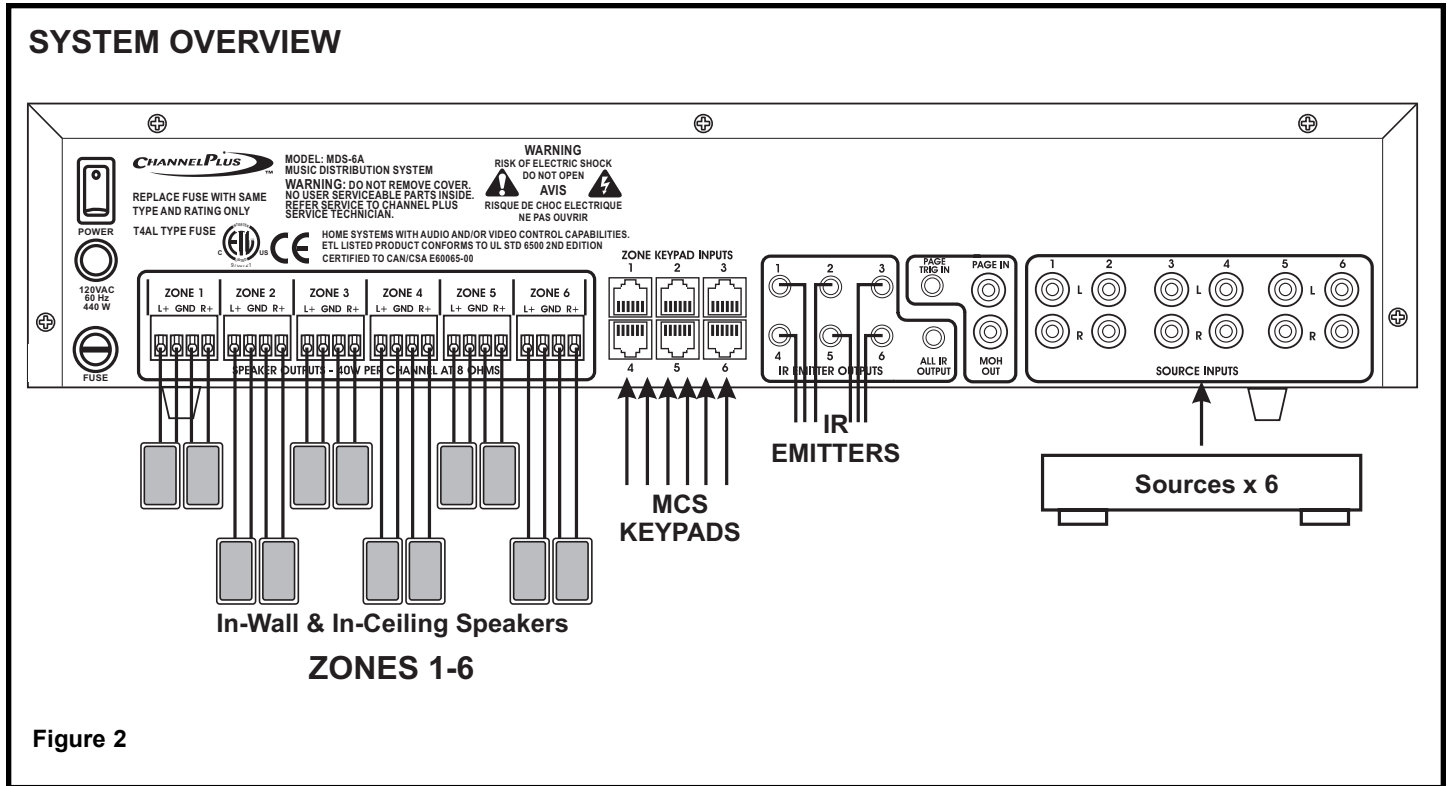
Power LED

Indicates the MDS-6A is powered up.

IR Activity Indicator LED

WINKING Indicates that IR data is being received from a keypad or IR Receiver in a zone.

SECTION 2 - CONNECTIONS AND SETTINGS
2.1- SYSTEM OVERVIEW

SYSTEM OVERVIEW

Figure 2

MDS-6A/MCS Controller RJ45 PIN-OUT
The MDS-6A RJ-45 keypad jacks and all MCS Controller RJ-45 jacks have the exact same pin-out.

	RJ45 Jack Pin #	
MDS-6A		**MCS Controller**
(N/C)Blue	1	Blue (N/C)
(IR) White/Blue	2	White/Blue (IR)
(Clone Data) Orange	3	Orange (Clone Data)
(RS485+) White/Orange	4	White/Orange (RS485+)
(RS485-)Green	5	Green (RS485-)
(+12VDC) White/Green	6	White/Green (+12VDC)
(Ground)Brown	7	Brown (Ground)
(N/C)White/Brown	8	White/Brown (N/C)

Figure 3

Standard Channel Plus RJ-45 Pin-Out

FRONT   TAB

PIN #	COLOR CODE
1	BLUE
2	WHITE/BLUE
3	ORANGE
4	WHITE/ORANGE
5	GREEN
6	WHITE/GREEN
7	BROWN
8	WHITE/BROWN

CABLE

Figure 4

2.2 - WIRING MCS CONTROLLERS TO THE MDS-6A

System Specs

Each of the MDS-6A's Zone Controller RJ-45 Jacks provides 12VDC/300mA. These Zone Keypad connections are capable of driving a maximum of **TWO** MCS Controllers per zone.
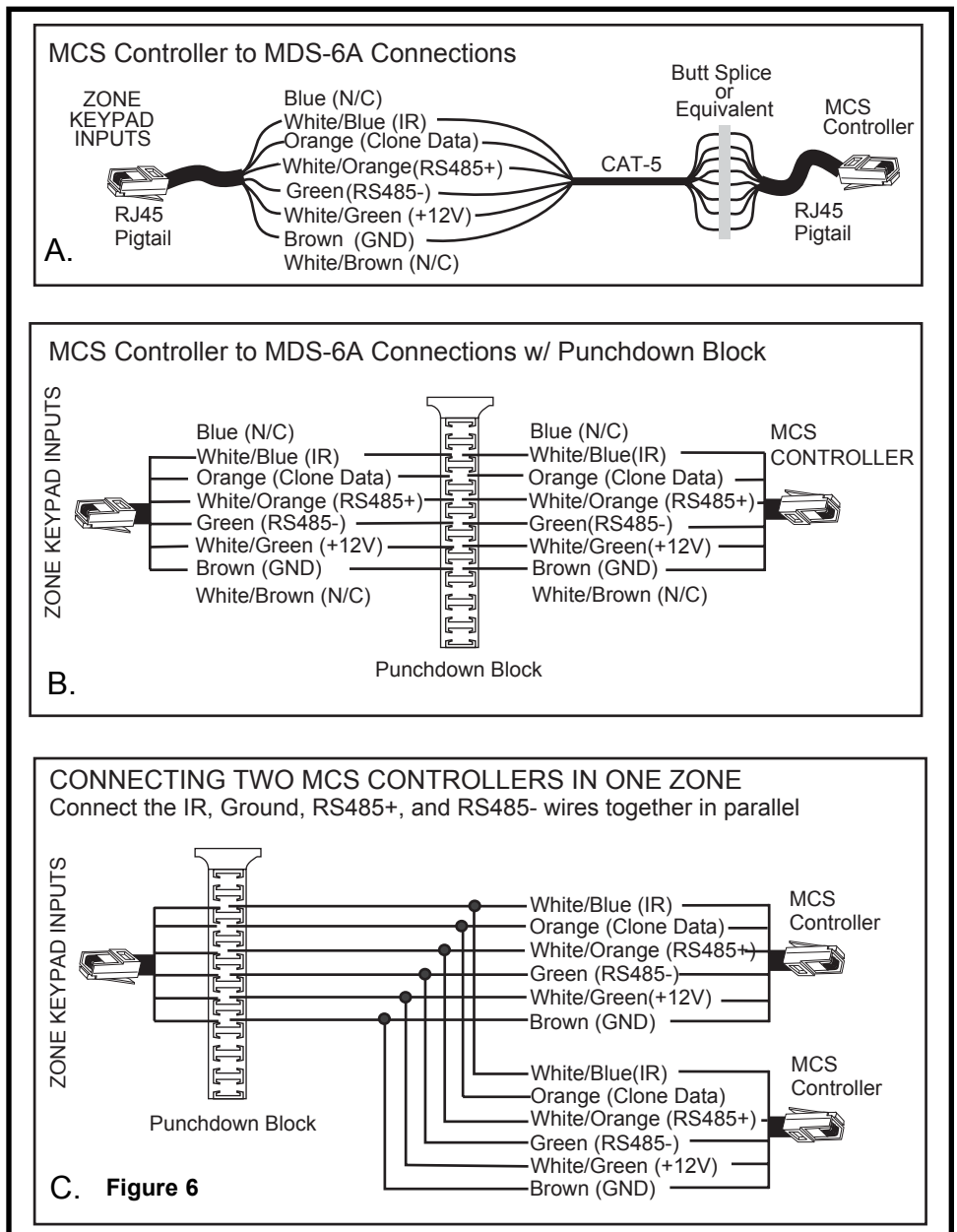
MCS Controller Connections and MDS-6A Wiring

1.   CAT-5 should be used for all MCS Controller wire runs (max 500ft).

2.   MCS Controller wire runs can be terminated directly to RJ45 connectors and then plugged into the MDS-6A.

3.   Use RJ45-to-Pigtails Interface Cables and a point-to-point punchdown block to facilitate the termination of MCS Controller wire runs. Use of a punchdown block eliminates crimping and pinout errors while providing a neat, on-wall wire management solution.

IMPORTANT NOTE
MCS Controllers and IR Receivers

Each ZONE KEYPAD INPUT RJ45 jack on the MDS-6A provides **12VDC/300mA**.

You may choose to load each of the MDS-6A's ZONE KEYPAD INPUTS with any combination of MCS Controllers and/or IR Receivers as long as the **TOTAL CURRENT CONSUMPTION DOES NOT EXCEED 300mA.**

MCS Controller (w/ IRTUBE) = 125mA
Additional IR Receivers = 10mA

MCS Controller to MDS-6A Connections

ZONE KEYPAD INPUTS

Blue (N/C)
White/Blue (IR)
Orange (Clone Data)
White/Orange(RS485+)
Green (RS485-)
White/Green (+12V)
Brown (GND)
White/Brown (N/C)

RJ45 Pigtail

CAT-5

Butt Splice or Equivalent

MCS Controller

RJ45 Pigtail

A.

MCS Controller to MDS-6A Connections w/ Punchdown Block

ZONE KEYPAD INPUTS

Blue (N/C)
White/Blue (IR)
Orange (Clone Data)
White/Orange (RS485+)
Green (RS485-)
White/Green (+12V)
Brown (GND)
White/Brown (N/C)

Blue (N/C)
White/Blue(IR)
Orange (Clone Data)
White/Orange (RS485+)
Green(RS485-)
White/Green(+12V)
Brown (GND)
White/Brown (N/C)

MCS CONTROLLER

Punchdown Block

B.

CONNECTING TWO MCS CONTROLLERS IN ONE ZONE
Connect the IR, Ground, RS485+, and RS485- wires together in parallel

ZONE KEYPAD INPUTS

White/Blue (IR)
Orange (Clone Data)
White/Orange (RS485+)
Green (RS485-)
White/Green(+12V)
Brown (GND)

MCS Controller

White/Blue(IR)
Orange (Clone Data)
White/Orange (RS485+)
Green (RS485-)
White/Green (+12V)
Brown (GND)

MCS Controller

Punchdown Block

C.   **Figure 6**

2.2 - WIRING MCS CONTROLLERS - CONT.

MCS Controller DIP Switch Configuration

When connecting MCS Controllers to the MDS-6A, all dip switches on all MCS Controllers should be configured to reflect their correct Zone ID.

Figure 7	DIP SWITCH #			
MDS-6A ZONE	1	2	3	4
1	#1 OFF=Back Light ON	ON	ON	ON
2		OFF	ON	ON
3		ON	OFF	ON
4	#1 ON=Back Light OFF	OFF	OFF	ON
5		ON	ON	OFF
6		OFF	ON	OFF

NOTE: If more than one MCS Controller is to be installed in a single zone, all wiring should be paralleled (as illustrated in Figure 6C on the previous page) and both MCS Controllers should be assigned the same Zone ID.

2.3 - SOURCE AND IR CONNECTIONS

Source and IR Connections

The MDS-6A has six pairs of line-level audio inputs for the connection of up to six audio sources.

Each audio source has a corresponding source-specific IR output for the connection of IR emitters. Source-specific IR outputs allow multiple sources of the same make and model to be controlled independently.

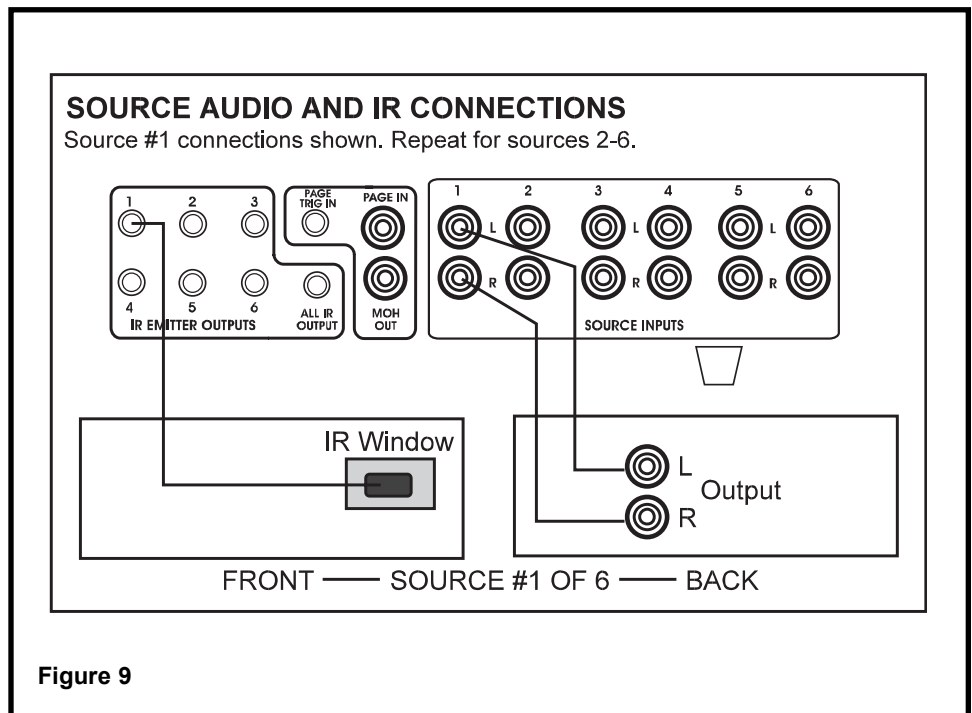The MDS-6A also has an IR ALL port that can be used to control other system components.

SOURCE AUDIO AND IR CONNECTIONS
Source #1 connections shown. Repeat for sources 2-6.

IR Window

L Output
R

FRONT —— SOURCE #1 OF 6 —— BACK

Figure 9

SECTION 3 - *TROUBLESHOOTING*
3.1 - MCS CONTROLLER OPERATION

SYMPTOM	POSSIBLE CAUSE	POSSIBLE SOLUTION
• MCS Controller totally inoperative (no functions, no LEDs).	1. +12V and/or GND wires are not terminated correctly. 2. Max number of keypads per Zone or MDS-6A exceeded	1. Confirm connections 2. Confirm load
• MCS Controller controls MDS-6A & sources, but LEDs won't correctly track sources.	1. RS485+/- wires are terminated incorrectly 2. MCS Controller dip switches are incorrect	1. Confirm connections 2. Confirm MCS Controller dip switch settings
• MCS Controller LEDs are lit, but will not control MDS-6A or sources.	1. IR (PIN 2) and/or GND (PIN 7) not connected	1. Confirm connections
• MCS Controller LEDs are lit, controls MDS-6A, but won't control sources.	1. MCS-2A Controller not programmed 2. IR emitters not connected properly	1. Program MCS-2A Controller 2. Ensure that IR emitters are connected to source and connected to the correct IR outputs
• MCS Controller controls wrong zone.	1. MCS Controller connected to incorrect Zone Input	1. Connect to correct Zone Input
• MCS Controller's MUTE button turns Yellow/No Paging or Whole-House Music features	1. Zone is in Do-Not-Disturb	1. Press and hold VOL DOWN then press MUTE on MCS Controller to turn off the DND feature.

3.2 - INFRARED

SYMPTOM	POSSIBLE CAUSE	POSSIBLE SOLUTION
• No IR pass-through from IR Receiver.	1. IR Receiver not connected	1. Confirm IR Receiver Connection
• Activity LED on MDS-6A flickers constantly or continuously lit.	1. IR flooding	1a. Shade IR window with hand. If LEDs cease to flicker or go off, flooding due to ambient light may be the cause. 1b. Move IR Receiver away from light source, or cover inside of IR window with a small piece of plain white paper. If IR activity LEDs remain lit, inductive interference is another possible cause. 1c. Check proximity to light dimmers or high-voltage lines.
	2. Incorrect termination of +12VDC and/or IR Send wires	2. Confirm connections. It is possible that the +12VDC is inadvertently connected to the IR Send wire.

3.3 - AUDIO SOURCE CONTROL

• No Source Control w/ MCS-2A	1. IR emitters are plugged into the wrong ports	1. Confirm IR port connections
	2. MCS-2A Controller not programmed	2. Program MCS-2A Controller
• No Audio when Source is selected	1. Audio source not turned on	1. Ensure source is powered up and playing audio.
	2. Zone is in MUTE	2. Press "**MUTE**" on MCS Controller

NOTES:

NOTES:

Limited Warranty

Linear LLC warrants this product to be free from defects in material and workmanship for 2 years. The time period will be measured using the date code labeled on the product. Linear LLC is not responsible for damage to the product resulting from the buyer's improper handling, stocking or warehousing of the product. Any implied warranty arising from the sale of the product including implied warranties of merchantability and fitness for purpose are limited. Linear LLC shall not be responsible for any losses, damages or expenses, whether direct, consequential, or incidental arising from the use or the inability to use the product. Some states and countries do not allow limitations or how long an implied warranty lasts or the exclusion or limitation or incidental or consequential damages, so the above exclusions may not apply. The Linear LLC warranty gives specific legal rights in addition to other rights, which may exist and vary from state to state and country to country.

The warranty is limited to repair or replacement of products returned, freight prepaid, to Linear LLC, there is NO PROVISION FOR LABOR COST OR OTHER REIMBURSEMENTS OF ANY KIND.

1. Failures due to product abuse, such as negligence, improper use, and electrical surge including damage from lightning, water damage or other damage due to natural disasters are not covered by the warranty. The most common form of product abuse is surge damage caused by lightning.
2. The warranty shall also be voided by any tampering with the date code, labels or other markings on the product.
3. Products that are damaged in transit to Linear LLC due to improper packaging or by the carrier (shipping company) will not be covered under the warranty. If the product was damaged or lost by the carrier, it is the sender's responsibility to create a claim against the carrier.
4. The user is responsible for all labor costs associated with removing, reinstalling and returning the product to Linear LLC.

Linear LLC, at its option, will repair or replace the defective product. Replacements will be made from B-Stock, if an exact replacement is not available, Linear LLC, at its option, will select the nearest equivalent product. The user is responsible for freight charges to Linear LLC. Linear LLC will return warranted repaired or replacements by UPS Ground or an equivalent service. A customer may pay the additional costs for second-day or next-day service.

All products returned for warranty service require a Return Product Authorization Number (RPA#). Contact Linear Technical Services at 1-800-999-5225 for an RPA# and other important details.

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