TeachLogic™
The Voice of Learning.

MAXIM™ III
CLASSROOM AUDIO SYSTEM

INSTALLER AND OPERATIONS MANUAL

Amplifier
Audio Mixer
Infrared Microphone Receiver

thank you

Congratulations on the purchase of your new TeachLogic system. You can be assured that this ffulfills all specifications and was produced to very high quality control standards. TeachLogic incorporates the latest state of the art technology, employs the most advanced manufacturing methodology and uses only premium quality components to assure many years of reliable performance. We appreciate your confidence by your selection of our product. It is TeachLogic's intent to uphold that confidence by providing factory assistance and dealer support.

We hope you will take the time to review this manual to familiarize yourself with the product operation and features. This manual will help you learn to use and gain the maximum benefit of the system.

TeachLogic, LLC
Longmont, Colorado, USA
teachlogic.com

CAUTION !

**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 Personnel

certifications

TeachLogic systems are
manufactured using lead-
free processes and are free
of materials harmful to the
environment. They conform
to the most stringent new
European guidelines for
consumer products (RoHS).

caution

Recycle—Do not dispose re-
chargeable batteries in trash.
Actually it is unlawful to do so
in CA, NY & ME.

Contact: Earth911.com
            1-800-CLEANUP

Save our resources and don't
contaminate.
Go Green

safety instructions

Read Instructions
All safety and operation instructions should be read
before operating this TeachLogic product.

Retain Instructions
Safety and operating instructions should be kept for
future reference.

Water & Moisture
This product should not be operated near water.

Heat Environment
Do not subject this product to excessive heat conditions.

Power Source
This product must be connected to an AC power source
per the voltage input specified and marked on the
power supply.

Power Cord Caution
Power cable should be routed clear of foot traffic and
supported clear of kinking or abrasion.

Object Protection
Locate the operating unit so it will not be subjected to
falling objects or water entry.

Internal Service
User should not attempt to service this product. All
internal service must be accomplished by a qualified
technician.

Electric Shock
Do not adapt or modify the AC power plug thus lifting
the earth ground connection.

Maxim III

system info

Date of Purchase: ―――――――――――――――

Model Number: ―――――――――――――――

Serial Number: ―――――――――――――――

Notes:

contact

If you should encounter some unresolved issue, please contact the TeachLogic customer service department for further assistance.

☎ 1·760·631·7800
✉ support@teachlogic.com
🖥 teachlogic.com

5-year limited warranty

For full warranty details refer to: www.teachlogic.com/warranty
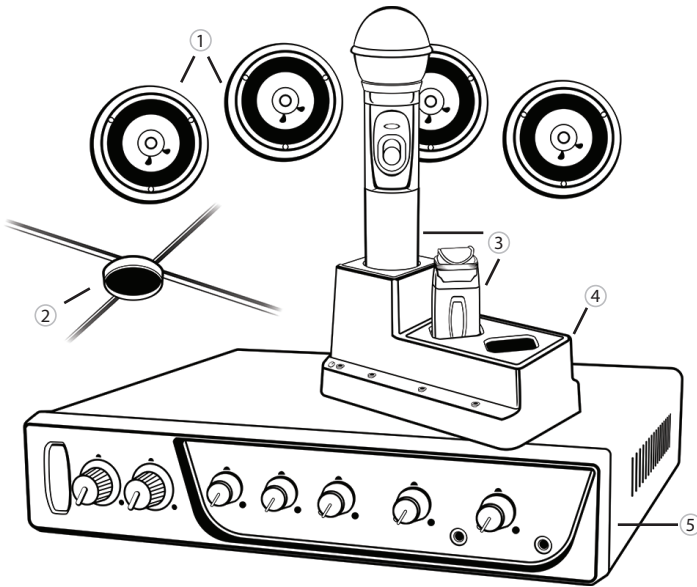
table of contents

Maxim III

Make note of the components planned for installation and setup. A complete Sound Field system will have the components shown below. The quantity and type of components will vary based on your order. Please check your invoice, packing slip, or contact us with any questions about what components you should have.


Sound Field system components

1. Speakers - ceiling or wall mount

2. Ceiling Sensor + 50' sensor cable (RCA)

3. Wireless Microphones (IRT-60 & IRH35)

4. Microphone battery charger (BRC-60 shown)

5. Maxim III Receiver/Amplifier

front of IMA-520 receiver/amplifier

1 Power on/off
2 CH A Microphone Volume Control
3 CH B Microphone Volume Control
4 DVD Volume Control
5 Computer Volume Control
6 Aux Volume Control
7 MP3 Volume Control
8 MP3 Input (3.5mm)
9 Lesson Capture Volume Control
10 Lesson Capture Output (3.5mm)
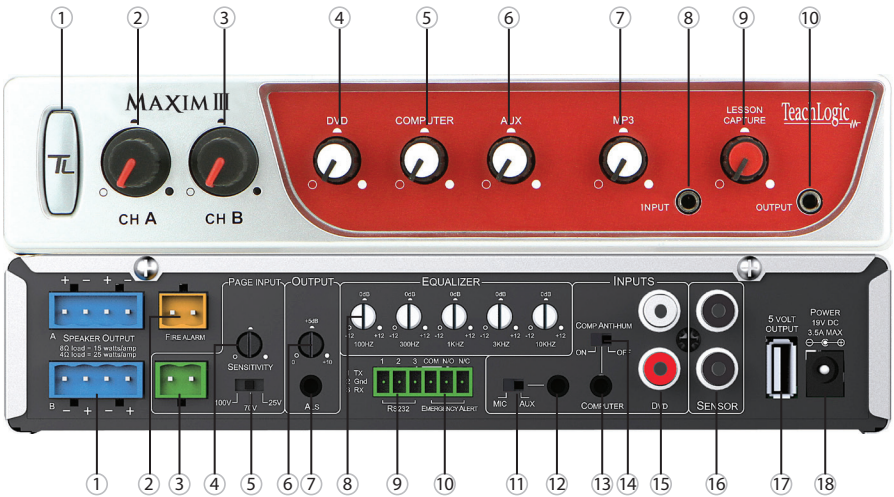
back of IMA-520 receiver/amplifier

1 Speaker Output
2 Fire Alarm Input- contact closure
3 Page Input
4 Page Sensitivity control
5 Page impedence selector
6 ALS gain control
7 ALS Output (3.5mm)
8 Five band digital equalizer ±12 dB
9 RS-232 (Tx,Gnd,Rx) 3-pin
10 Security Alert - contact closure
11 Aux-Mic Input Selector
12 Aux-Mic Input (3.5mm)
13 Computer Input (3.5mm)
14 Computer Anti hum ON/OFF
15 DVD dual Mono Inputs (RCA)
16 Two IR Mic Sensor Inputs (RCA)
17 5 Volt USB output for BRC-60
18 Power Input: 19 VDC 3.4A

Maxim III
system diagram

Ceiling/wall mount speakers

From page system

Classroom paging speaker

Assistive listening device

RS-232 wall control panel

School security alert system

Ceiling sensor(s)

INPUTS

Computer

DVD Player

Projector or other media device

Personal music device

Lesson capture recorder

MAXIM II

CH B

MIC   COMPUTER   AUX   DVD   LESSON CAPTURE

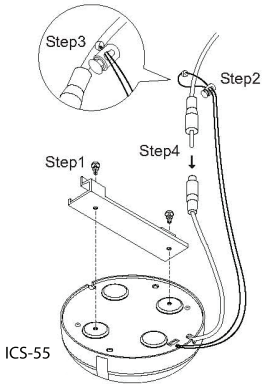INPUT   OUTPUT
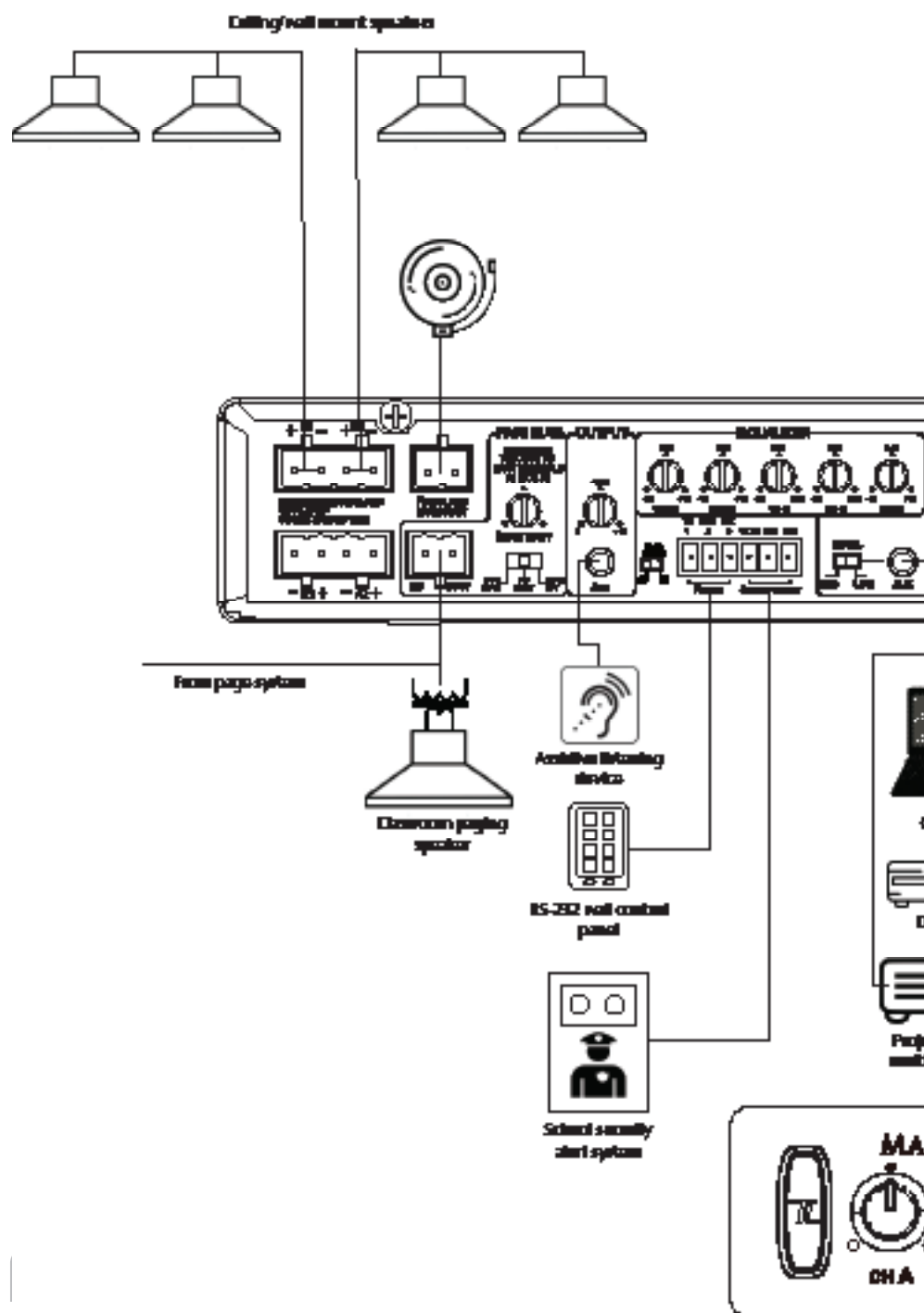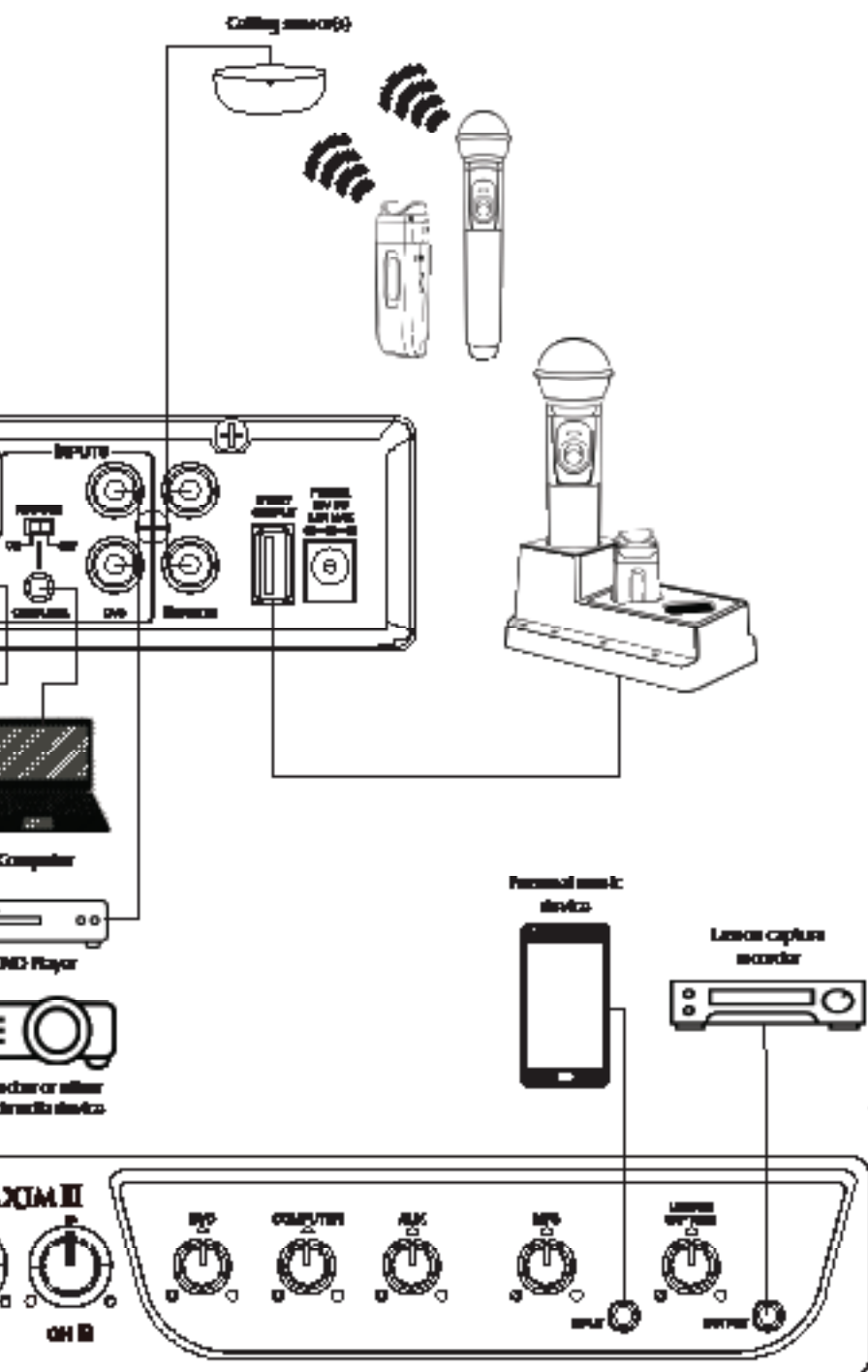
installation

installation planning

1. Amplifer/Receiver: Choose location the based on accessibility requirements and wiring constraints for power, speakers, and audio devices.
2. Ceiling Sensor: Centrally locate on ceiling; maintain line of sight; keep away from direct light and electrical interference.
3. Speakers: Mark location for wall mount vs. ceiling mount, and confirm wiring run to the amplifier. Ensure speakers evenly cover the listening area.
4. Systems Integration: Confirm location of audio devices, page, fire, and/or security alert systems to the amplifier and note how wiring will run.
5. Microphones/Charger: Confirm microphone charging location for daily use/charging.
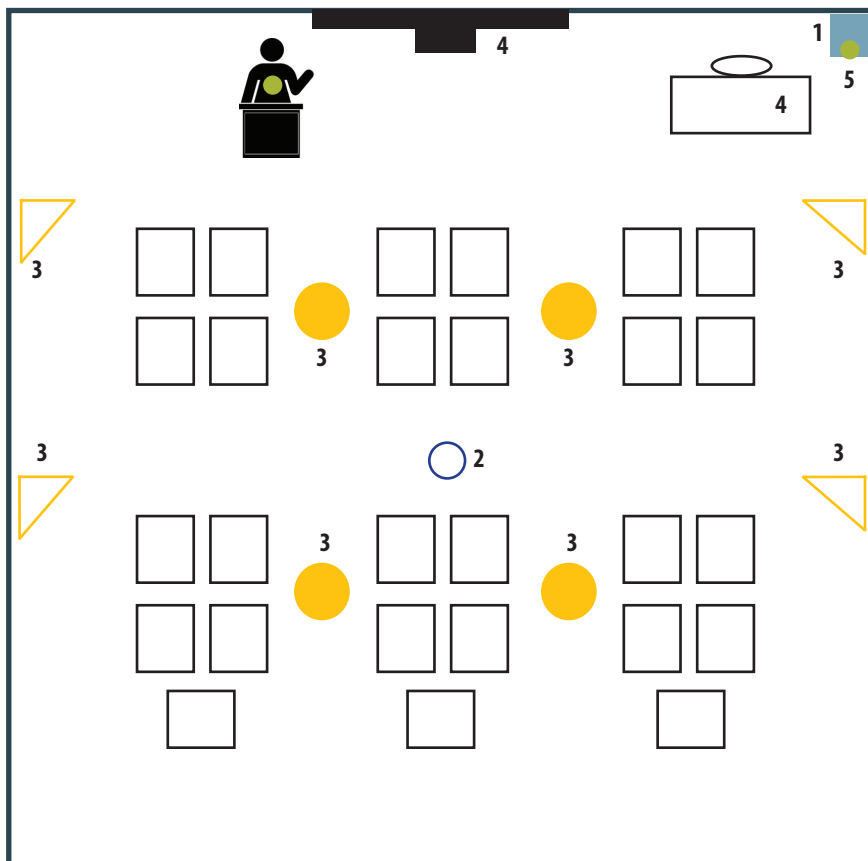
installation of ICS-55 ceiling sensor

The ideal location for the ceiling sensor is in the center of the room's ceiling. The ideal installation is flush mounted on a white, reflective ceiling like the acoustic drop-down style. This will ensure 360º coverage and will minimize the transmission distance for more reliable performance.

power "on" LED

Green light indicates that the sensor is receiving power from the receiver.

Installation 1 ------ Attach to T-bar Rail

Step3
Step2
Step1
Step4
ICS-55
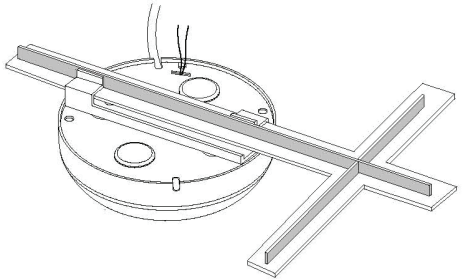
Installation 2 ------ Attach to wood surface

Step3
Step2
Step4
Step1
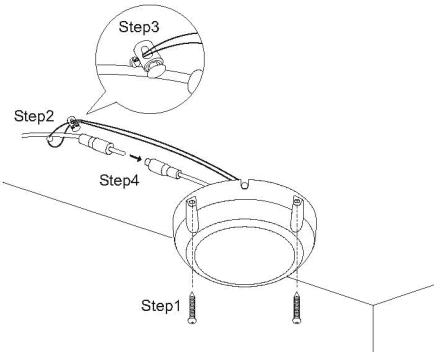
Installation 3 ------ Attach to concrete surface

Step1
Step3
Step5
Step4
ICS-55
Step2
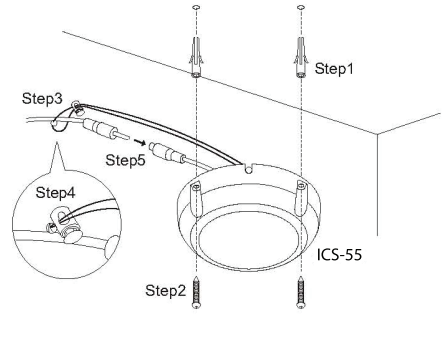
FINAL STEP: Route sensor's cable to desired amplifier location and plug into one of the two sensor inputs

installation

installation of speakers

The IMA-520 (and IMA-524) has two channels of amplified audio, rated for a minimum 4-ohm speaker load. There are two blue Phoenix style speaker connectors on the back panel, each providing two pairs of speaker terminals. The top connector provides connection to both channels as does the bottom connector. Each is wired in parallel to the other as shown below. These are the acceptable wiring methods.

Parallel

Channel A
Max 2, 8-ohm speakers in parallel

Channel B
Max 2, 8-ohm speakers in parallel

Home run
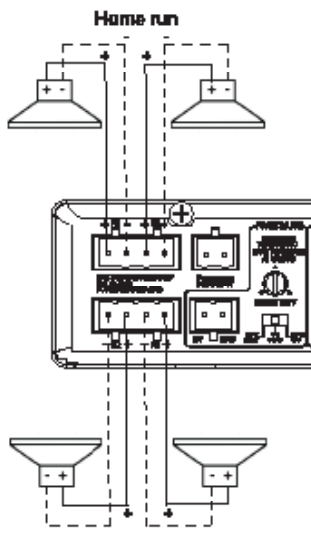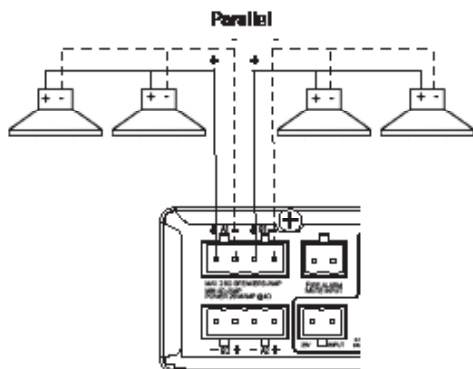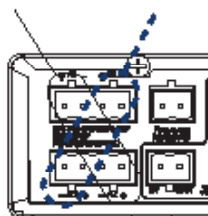
INCORRECT!
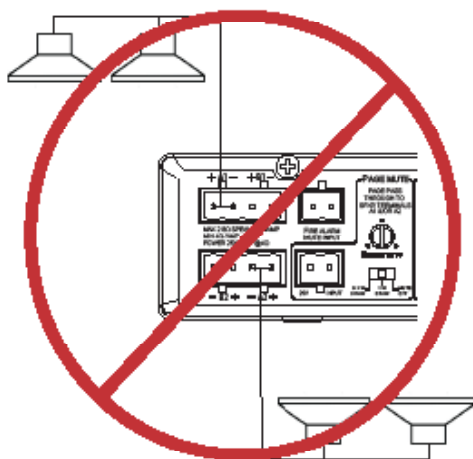
SP-628 ceiling speakers

1. Determine the listening area.
2. Divide listening area into quadrants
3. Locate and identify the center most tile in each quadrant
4. Lay ceiling tile face down on clean flat surface
5. Lay tile bridge on ceiling tile and center it
6. Trace and cut the large hole
7. Strip the speaker cable ends, approx. ½"
8. Route speaker wire from speaker opening to amplifier
9. Reinstall ceiling tile with tile bridge in place above the hole
10. Pull speaker cable back down through speaker hole
11. With a pointed tool or paper clip, lift up and remove speaker grille
12. Connect speaker cable to speaker terminals
13. Observe speaker polarity, connect wires to (+) and (-) terminals respectively
14. With the mounting clamps folded back, position speaker into speaker hole
15. With a #2 Phillips screwdriver, tighten the mounting clamps
16. Reinstall speaker grille and remove any soil or fingerprints
17. Repeat these steps for other speakers

SP-2000 wall mount speakers

1. Determine the mounting surface and location based on the seating area
2. Ordinary installation is to locate the speakers on each side wall. The first set should be in line with the front row of listeners
3. Mount the speakers 6–7 ft above the floor
4. Install the mounting brackets in the vertical (up/down) orientation
5. Mount brackets using the appropriate hardware
6. Insert speaker with the tweeter in upper position
7. Secure speaker in bracket with the hand fasteners
8. Orient each speaker toward the center of that half of the listening area
9. Strip speaker cable ends ½" and connect to speaker
10. Observe speaker polarity: Connect (+) wire (with printed writing) to (+) terminal and (-) wire (unprinted & textured) to the (-) terminal
11. Route speaker cable to the receiver/amplifier in a safe, least visible, tidy manner

final connection of the system

- Ensure amplifier is in final location
- Ensure speaker and sensor cables are neatly routed
- Cut the speaker wire to the appropriate length
- Strip about 3/8" off the end of each speaker wire.
- Twist the wire and if you have a soldering iron, tin the wire ends
- Unplug the phoenix connector, insert (+) wire (with printed writing) into either outside (+) terminal. Plug the other (-) wire into center (-).
- Tighten set screws.
- Repeat for other pair and insert plug firmly into speaker receptacle
- Plug amplifier power supply into AC outlet

page mute/page pass through

Effective for shipments after 4/1/19 of new units; serial numbers beginning with A19 and later (letter or number is A, B, C… and number is 19, 20, …). For older units see notes at the end of this section.

New units: A paging system may be connected to the Maxim III. The panel labeling is based on a 25-volt paging input signal.

The Page Input impedance switch has three labeled positions (based on power draw at 25V):
• 0.1W DRAW
• 1.0W DRAW
• MUTE OFF

MUTE OFF disconnects the page input from the Maxim III. The other two settings select transformer taps inside the Maxim III for the speakers connected to the top left and lower right connections. These two connections are labeled A1 and A2 in Diagram A below.

ADVISORY: These two speaker terminals are internally wired in parallel. DO NOT connect more than two 8-ohm speakers to either or both of these terminals such that the total load is less than 4 ohms.

System behavior for Page Mute

When a signal of adequate level (voltage) is sensed on the page mute input terminal, all other audio inputs to the Maxim III are muted to allow the building-wide page to be heard. The muting is applied to wireless microphones as well as computer, DVD, and all other line inputs.
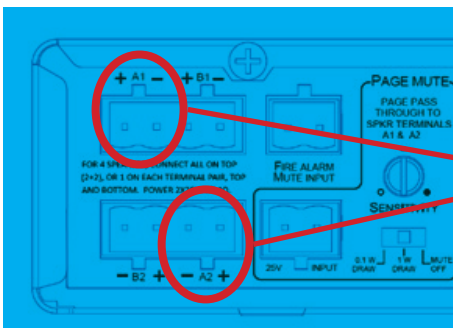
Diagram A

These two terminals (Channel A) are provided the page audio from Page Mute input.

New Models:

Switch Setting:	0.1W DRAW	1W DRAW	MUTE OFF
Impedance	5000Ω	620Ω	Open circuit
Power Draw at 25V	0.1W	1.0W	0W
Power Draw at 70V	1.0W	7.9W	0W

Older Models:

Switch Setting:	100V	70V	25V
Impedance	5000Ω	620Ω	115Ω
Power Draw at 25V	0.1W	1.0W	5.3W
Power Draw at 70V	1.0W	7.9W	42W

Connecting the system:

1. Unplug the 2 pin green Phoenix connector
2. Connect the speaker cable from the paging system to the 2 pin Phoenix connector of the Page input
3. Reconnect the 2 pin green Phoenix connector
4. Determine the signal level of the paging system (25v, 70v, or 100v)
5. Set the slide switch to the appropriate speaker level setting
6. With the TeachLogic amplifier turned ON, send a page signal through the page input
7. Adjust the sensitivity control to ensure the Maxim III senses the page signal noting that some pages with quiet voices will require greater sensitivity settings. The system will maintain its mute until about 11 seconds after the page signal falls below the threshold for sensing. Thereupon, the wireless mics are unmuted and other audio levels are ramped up gradually to their prior volume (before mute).
8. In the event of a loss of AC power, the TeachLogic amplifier will continue to pass the page on to 2 of the speaker connections as outlined on the following diagram. Only the upper left and lower right speaker outputs will pass page without power.

fire alarm input

The 2 pin orange Phoenix connector labelled Fire Alarm, was designed to provide an emergency mute of the TeachLogic amplifier. When interfaced to the fire alarm panel relay contact output, all audio devices (microphones, dvd, etc.) will turn SILENT. In the event of a fire, this will help to lower the overall decibel levels and help students and staff hear the audible fire alarm tones/instruction within the classroom. This feature only requires a contact closure from the Fire Alarm Panel.

RS-232 feature

The RS-232 feature allows the user to remotely operate the line level media inputs via a convenient wall panel controller.

Audio levels very often need to be adjusted when switching from computer audio to DVD players and other audio sources. Such operations as level UP, DOWN and MUTE are easily accomplished via a typical eight button controller, as shown here.

This allows the receiver/amplifier to be placed in an area or compartment that is not easily accesssed by the user. Codes that are required for this setup are also available below or from the TeachLogic website.
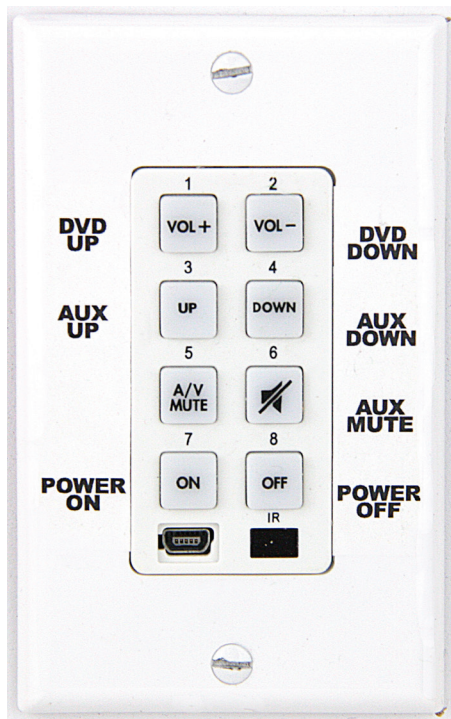
RS-232 codes

Baud Rate : 9600   Maxim III
Parity Bit : NONE
Data Bit : 8
Stop Bit : 1   TL COMMAND - Maxim III

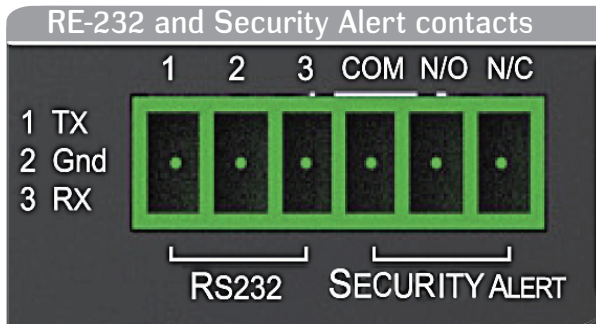| Product Function	ASCII command	HEX command String	
POWER ON	Power:ON	4c 69 6e 6b 78 3a 50 6f 77 65 72 3a 4f 4e	0D
POWER OFF	Power:OFF	4c 69 6e 6b 78 3a 50 6f 77 65 72 3a 4f 46 46	0D
Gain DVD UP	Gain:AUX:UP	4c 69 6e 6b 78 3a 47 61 69 6e 3a 41 55 58 3a 55 50	0D
Gain DVD DOWN	Gain:AUX:DOWN	4c 69 6e 6b 78 3a 47 61 69 6e 3a 41 55 58 3a 44 4f 57 4e	0D
Gain DVD MUTE	Gain:AUX:MUTE	4c 69 6e 6b 78 3a 47 61 69 6e 3a 41 55 58 3a 4d 55 54 45	0D
Gain Computer UP	Gain:DVDh:UP	4c 69 6e 6b 78 3a 47 61 69 6e 3a 44 56 44 3a 55 50	0D
Gain Computer DOWN	Gain:DVD:DOWN	4c 69 6e 6b 78 3a 47 61 69 6e 3a 44 56 44 3a 44 4f 57 4e	0D
Gain Computer MUTE	Gain:DVD:MUTE	4c 69 6e 6b 78 3a 47 61 69 6e 3a 44 56 44 3a 4d 55 54 45	0D
Gain MP3 UP	Gain:MP3:UP	4c 69 6e 6b 78 3a 47 61 69 6e 3a 4d 50 33 3a 55 50	0D
Gain MP3 DOWN	Gain:MP3:DOWN	4c 69 6e 6b 78 3a 47 61 69 6e 3a 4d 50 33 3a 44 4f 57 4e	0D
Gain MP3 MUTE	Gain:MP3:MUTE	4c 69 6e 6b 78 3a 47 61 69 6e 3a 4d 50 33 3a 4d 55 54 45	0D
Gain AUX UP	Gain:MiC:UP	4c 69 6e 6b 78 3a 47 61 69 6e 3a 4d 69 43 3a 55 50	0D
Gain AUX DOWN	Gain:MiC:DOWN	4c 69 6e 6b 78 3a 47 61 69 6e 3a 4d 69 43 3a 44 4f 57 4e	0D
Gain AUX MUTE	Gain:MiC:MUTE	4c 69 6e 6b 78 3a 47 61 69 6e 3a 4d 69 43 3a 4d 55 54 45	0D
CH A MUTE	CH:A:MUTE	4c 69 6e 6b 78 3a 43 48 3a 41 3a 4d 55 54 45	0D
CH B MUTE	CH:B:MUTE	4c 69 6e 6b 78 3a 43 48 3a 42 3a 4d 55 54 45	0D

RE-232 and Security Alert contacts

```
        1     2     3   COM  N/O  N/C
1 TX
2 Gnd
3 RX

              RS232      SECURITY ALERT
```

security alert feature

Effective for shipments after this date of new or reprogrammed units. Serial numbers beginning with A19 and later (letter or number is A, B, C… and number is 19, 20, …).

The Maxim III security alert feature, when triggered by an IRT-60 sapphire mic on Channel A, creates a relay contact closure or opening. The back panel connection is a normally closed and normally open terminal paired with the common terminal.

Note: the wireless channel B does not trigger security alert.

The Maxim III may be set to provide either 4- or 1-pulse signal at the relay. This new feature allows the user to change from 1 to 4 pulses, or 4 to 1 pulse. Different monitoring systems may require one or the other.

The steps below describe how to select either the 1-pulse or 4-pulse mode and how to determine/confirm the Maxim III's selected mode.

Ordinarily, the Maxim III will arrive new with the 4-pulse mode selected by default. Installers should nevertheless confirm the mode upon installation if the security alert feature will be employed. Once set, the mode is active and should remain set until such time as it is manually changed as detailed below.

The output on the amplifier is a three pin COM, N/O, N/C contact closure labeled "SECURITY ALERT".

Maxim III
integration

security alert features

To check the mode

Note the LED color on the power button at the TL logo.
- If power state is ON (Blue LED at power button), press once to set power state OFF (Red LED).
- If Red, then you may start the process.

1. Press and hold the power button (in Red state) for the entire process.
2. After 4 seconds, the LED will change colors.
3. Note the number of RED flashes AFTER the GREEN flash.

If one RED after GREEN, then mode is 1-pulse mode. (This will repeat 3 times.)

G R G R G R

If four RED after GREEN, then mode is 4-pulse mode. (This will occur 1 time.)

G R R R R

The important part of the sequence is the number of red flashes that follow one green flash.

To change the mode

Whether mode is 1-pulse or 4-pulse, the steps below will change it to the other mode.
1. If power state is ON (Blue LED at power button), press once to set power state OFF (Red LED). If Red, then you may start the mode switching process.
2. Locate the RS-232 on/off switch on the back panel.
3. Press and hold the front panel power button (in Red state) for the duration of the mode switching process.
4. Move the RS-232 switch from ON to OFF and back again FIVE times. Then release the front panel power button.

Using the previous process, **check the mode** to confirm that the Maxim III is in the desired 1-pulse or 4-pulse mode. If not, repeat the steps above to **change the mode**. The process requires 5 full cycles of the RS-232 switch while the power button in Red OFF state is held in.

Power button

RS-232 switch

5 times
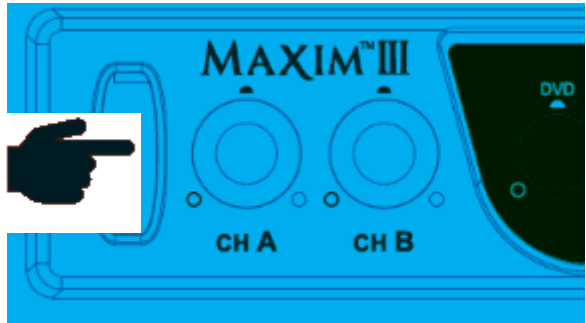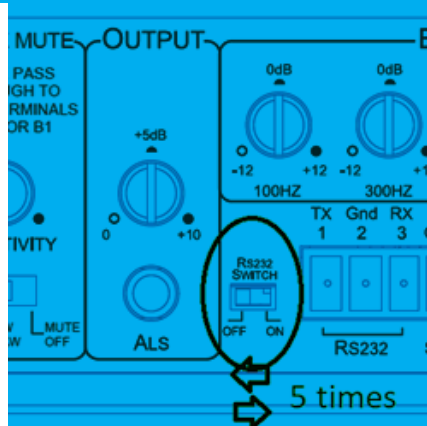
security alert activation test

1. Ensure the amplifier is powered on and a solid blue light appears on the power button.
2. Ensure the ceiling sensor is attached to the amplifier. The sensor's green LED should be illuminated.
3. Power on the IRT-60 Sapphire microphone that uses Ch. A. The power button should be solid blue.
4. While watching the amplifier power button, press and hold the IRT-60 PRIORITY button for 4-5 seconds.
5. The amplifier power button will change from solid blue to flashing green when the signal is received.
6. Verify the signal is relayed to the school's security system.

Configuration

initial setup

Now that the system is installed and connected, turn the system "ON" and test its performance. The testing will be done using an IR transmitter (Sapphire or Handheld) to confirm good connectivity.

system operation

AMPLIFIER
- Turn the Maxim III on by pushing the power button. A solid blue LED indicates amplifier is powered ON.
- Confirm there's power to the ceiling sensor: A green LED on edge of sensor should be illuminated
- Set all gain/volume dials to mid scale (12 o'clock position)

IRT-60 (SAPPHIRE) MICROPHONE SETUP
- Confirm "Ch A" volume dial is at mid scale (12 o'clock position)
- Slide gain/volume control switch on Sapphire to "Normal" setting.
- Press and hold power button until the LED light illuminates.
- Observe Sapphire power LED. Solid blue indicates power is on and mic is transmitting.
- Observe amplifier Ch A indicator LED. It should be green, indicating a connection between the microphone and ceiling sensor.

Note: Next steps are best performed with a second person as the listener
- Stand under or in front of a speaker.
- Hold the microphone with the top at your colorbone and check the volume by speaking in a natural voice.
- Raise the volume on Ch A until feedback begins, then reduce volume to an acceptable level and until indications of feedback have stopped.
- Walk around the room while talking into microphone to confirm good connectivity and sound under/in front of each speaker.

IRH-35 HANDHELD MICROPHONE SETUP
- Confirm "Ch B" volume control is set to mid scale (12 o'clock position)
- Power on microphone using ON/OFF switch
- Observe LED above mic switch. Solid green indicates power is on a ready to use.
- Observe amplifier Ch B indicator LED. It should be green, indicating a connection between the microphone and ceiling sensor.
- Hold the microphone with the top at chin level and perform voice test.
- Raise the volume on "Ch B" until feedback begins, then reduce volume to an acceptable level.
- Walk around the room while talking into microphone to confirm good connectivity and sound under/in front of each speaker without feedback.

troubleshooting

Problem	Solution
System is turned "on" but there is no sound	• Verify AC power; the Blue LED lights when turned "on" ·Check if system has been unplugged ·Check circuit breaker ·Call maintenance for assistance

System has power but no sound	• Turn "on" microphone/ transmitter
	• Ensure the power light is on (colors indicate charge level)
	RED: Low battery
	BLUE: full battery
	Note: blinking blue means it has been muted. Press once to unmute.
	• Check for IR transmission, Signal presence (green LED on Ch A or Ch B depending on the microphone used)
	• Check the green LED on the ceiling sensor
	• If sensor LED is not lit:
	    - Sensor has been disconnected, or
	    - Power output to sensor has failed (Sensor or amplifier may need to be replaced)

Voice is distorted and/ or signal drop-out occurs	• Verify that the diodes on transmitter or sensor are not being covered • Verify there is no obstruction between transmitter and sensor • Ensure there is no direct sunlight on sensor

contact

If your problem persists and this guide has not resolved the issue, contact our customer service department for additional assistance.

(760) 631-7800
support@teachlogic.com

Maxim III (IMA-520) specs.

Receiver Input	Infrared FM
Modulation	FM Wide-band
Reception Frequencies	Ch. A: 2.08 MHz | Ch. B: 2.54 MHz
Infrared Wavelength	850 nm
Pilot Signal	32.768 KHz
De-emphasis	50 µs
Frequency Response	50 Hz - 13KHz, ± 3dB
S/N Ratio	›65 dB
THD	‹1% @1KHz
Nominal Deviation	± 10 KHz
Maximum Deviation	± 25 KHz
External Sensor Input	Two, RCA
Aux Inputs	Four line level inputs for DVD, Computer, Aux and MP3
	Switchable computer anti-hum circuit
	Aux input (Microphone or Line level)
Line Output	One Lesson Capture Output, 3.5mm with Gain Control, Front Panel
	One ALS Output, 3.5mm with gain control, Rear Panel
Equalization	Five Band ±12dB
Security Alert Output	N/O, N/C contact closures
RS-232	Wall panel control of line input levels
Fire Alarm Input	Fire Alarm Panel - Contact Closure
Power Output	Two Amplifiers, 50 watts total (RMS), 25 watts ea. 4Ω
Speaker Impedance	4 ohm min, per channel
Output Connection	One Phoenix Connector, ch A & B
Power Supply	19VDC /3.4A / 65W CE,CSA & UL Listed
Dimensions	8 ½" W x 1 ¾" H x 7 ½" D
Weight	2 lb. 4 oz.
Enclosure	Steel

power supply (AC-36) specs.

Type	Regulated Switching Power Supply
Input Voltage	100–240 volts AC, 47–63Hz
Output Voltage	19 volts DC, 3.43A
Power Output	65 watts Max.

Sapphire transmitter (IRT-60) specs.

Transmitting Diodes	Six
Operating Range	60 Ft. Line of Sight
Battery Discharge Indicator	
Blue	Full
Purple	Medium
Red	Low
Flashing Red	Very Low Battery
Battery Used	Lithium-ion (3.7V / 620mAh)
Battery Life	Approx. 8-9 Hrs/Charge
External Power Charger	DC +5V, Micro USB Connector
Transmission Angle	Conical
User Controls	
Power Switch (push)	On/Off
Mute Switch (push)	On/Off momentary push
Mic Switch (3 position)	Normal, -3dB, -6dB
Aux. Vol./Gain	Increase, Decrease
Priority	Lower levels of all audio but Ch. A mic
Security Alert	4 second hold of priority button
External Aux. Input	3.5mm Line Level
Dimensions	3 ⅝" H x 1¼" W x ¾" D
Weight	1.4 oz. Including battery

Handheld transmitter (IRH-35) specs.

2 Channel Switchable	Field Switchable
Transmitting Diodes	Ten
Modulation	FM Wide-Band
Pilot tone Frequency	32.768 KHz
Peak Deviation	± 25KHz
Operating Range	60 Ft.
Power Switch (Slide)	On/Off
BAttery type	2 AA NiMH
Battery Charge Level (LED)	Green (Useable Charge)
	Red (Needs Charging)
Battery Life	Approx. 7 Hr./Charge
Dimensions	2 ⅛" Dia. Head,
	1 ⁷⁄₁₆" Dia. Body, 9 ⅝" H
Weight	10.3 oz. w/ Battery

drop-in battery charger (BRC-60) spec

Charging Port	2 Sapphire, 1 Handheld
Red LED	Battery being charged
Green LED	Battery fully charged
Power Supply	5 VDC, 1 Amp
Dimensions	6 ⅜" L x 3 ⅜" W x 3 ⅜" H
Weight	6.3 oz.

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