



Maxim™ III

Classroom Audio System

Amplifier | Mixer | Receiver



Installation Manual

Welcome

Congratulations on the purchase of your new Maxim™ III Sound Field system. You can be assured that the Maxim™ III fulfills all specifications and was produced to 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. This manual will help you learn to use and gain the maximum benefit of the Maxim™ III system.

We hope you will take the time to review this manual to familiarize yourself with the product operation and features.

TeachLogic LLC
Longmont, Colorado USA
www.TeachLogic.com

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.

Do not insert any power cable not provided by the manufacturer into the product. Long prongs can penetrate inside electrical components or current charging conductors.

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).

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.

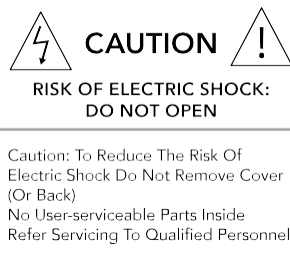
Electric Shock

Do not adapt or modify the AC power plug. Do not remove thus lifting the earth ground connection (3rd prong) or use power supply without a connector to a 3-prong grounded outlet.

CAUTION

Recycle—Do not dispose rechargeable batteries in trash. It is unlawful to do so in numerous states. **Go Green.** Save our resources and don't contaminate.

Contact: Earth911.com
1-800-CLEANUP



System info

Date of Purchase

Model Number

Serial Number

Notes

Contact

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

760-631-7800 | support@teachlogic.com | teachlogic.com

Limited warranty

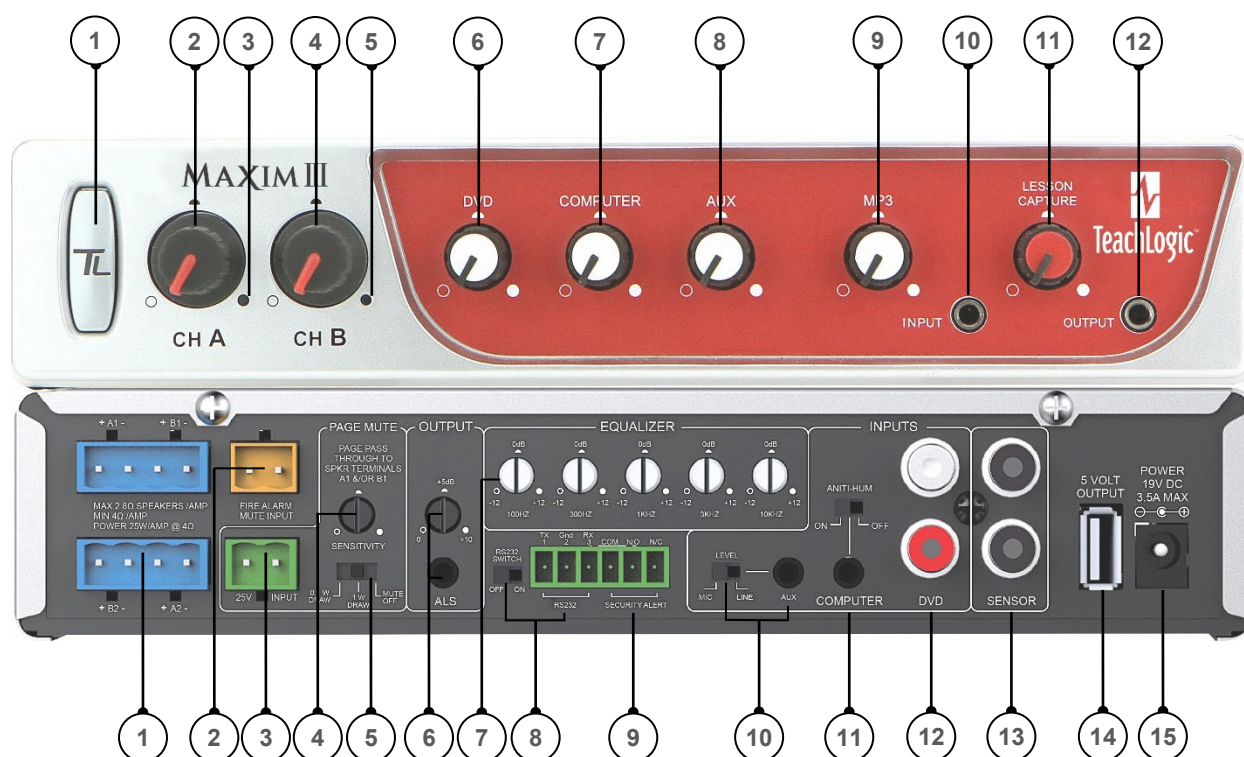
For full warranty details refer to teachlogic.com/warranty.

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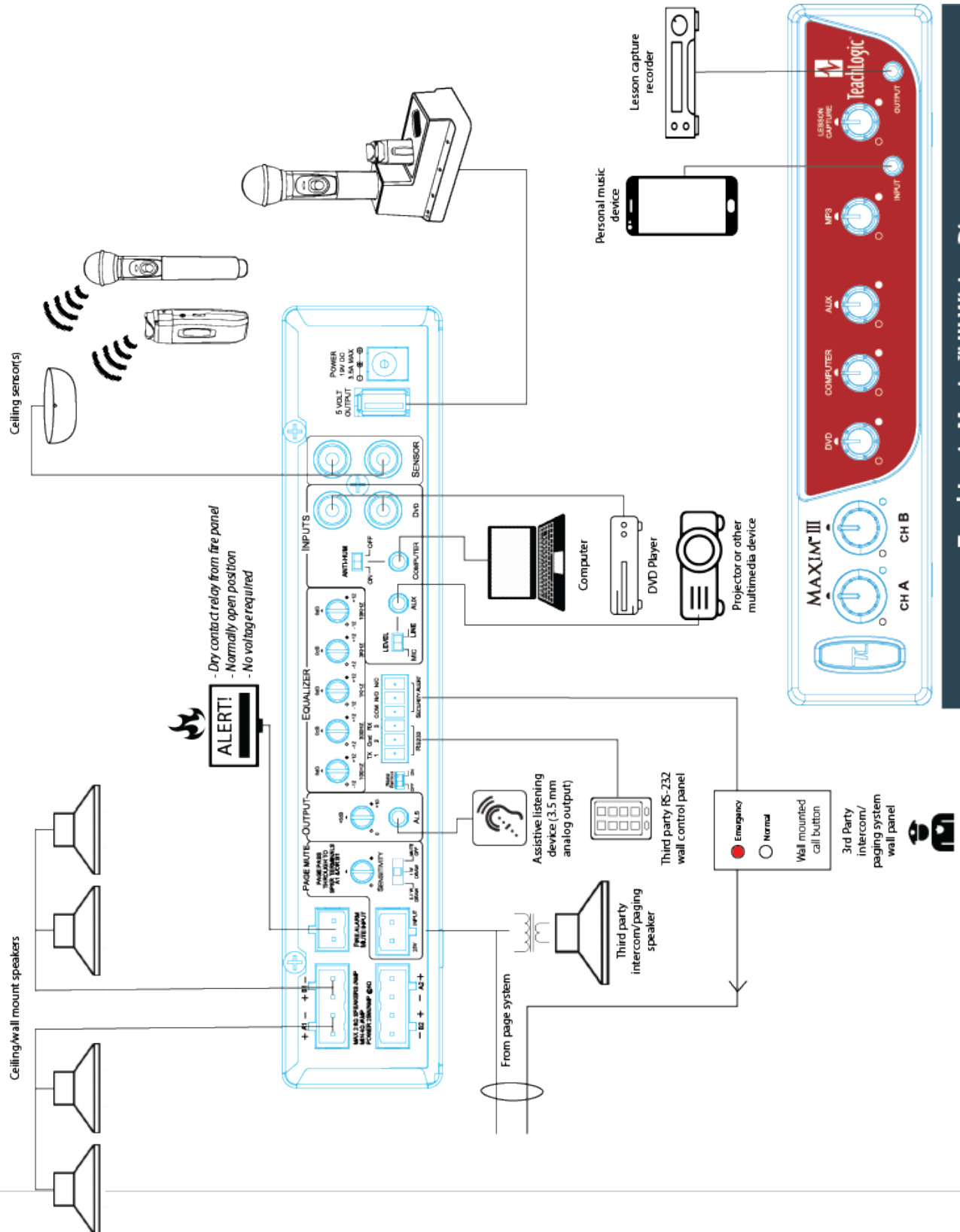
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Front of IMA-520 receiver/amplifier

- | | |
|---|---|
| 1. Power Button/ "TL" Indicator LED | 7. Computer Input Volume Control |
| 2. Channel A Microphone Volume Control | 8. Aux Input Volume Control |
| 3. Channel B Connectivity Indicator LED | 9. MP3 Volume Control |
| 4. Channel B Microphone Volume Control | 10. MP3 Input Port (3.5 mm) |
| 5. Channel B Connectivity Indicator LED | 11. Lesson Capture Volume Control |
| 6. DVD Volume Control | 12. Lesson Capture Output Port (3.5 mm) |

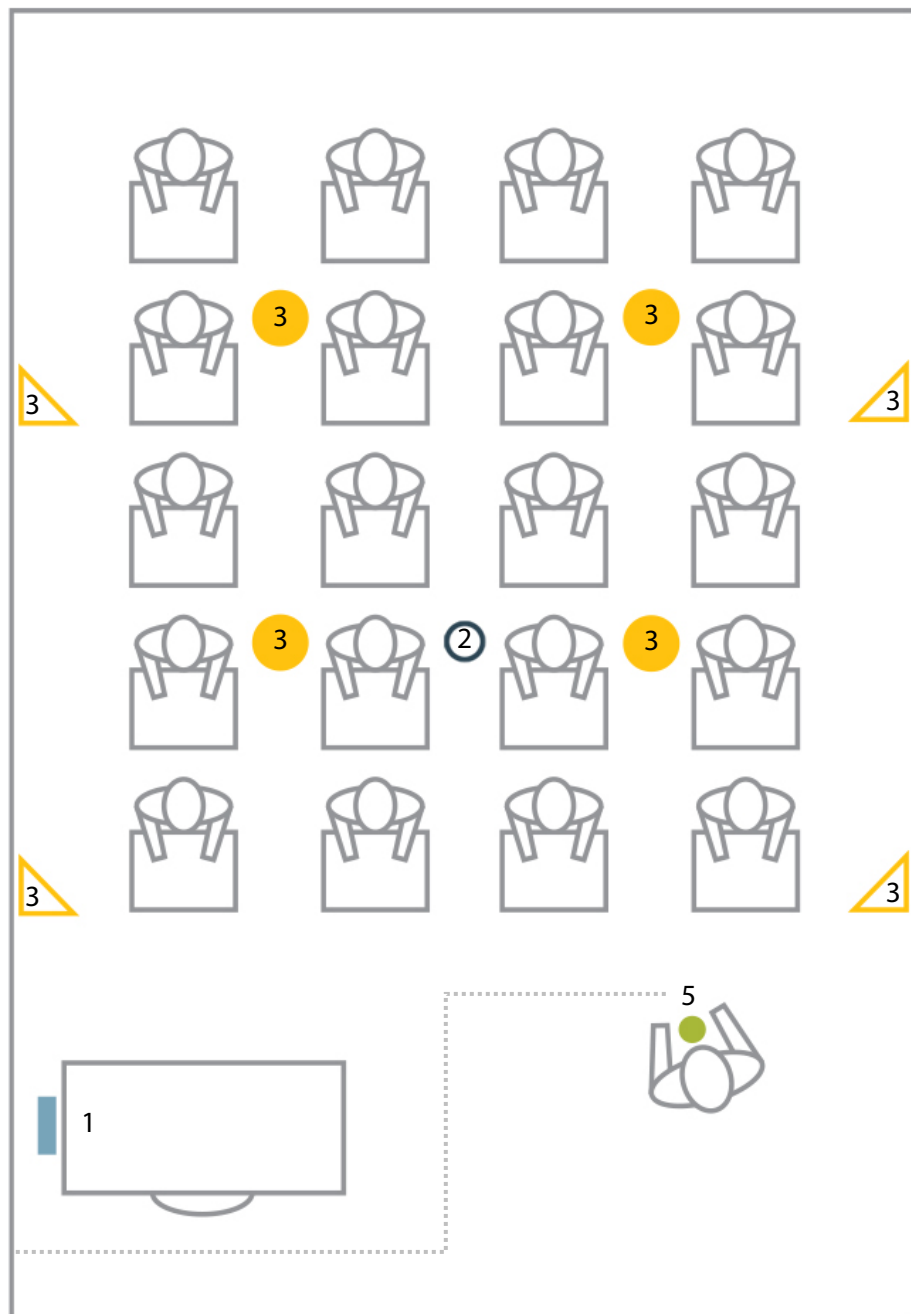
**Back of IMA-520 receiver/amplifier**

- | | |
|---------------------------------------|---|
| 1. Speaker Output | 9. Security Alert Interface |
| 2. Fire Alarm Mute Input | 10. Aux-Mic Input (3.5 mm) & Aux-Mic Input Selector |
| 3. Page Input | 11. Computer Input (3.5 mm) / Computer Anti-Hum ON/OFF Switch |
| 4. Page Sensitivity Control | 12. DVD Dual Mono Inputs (RCA) |
| 5. Page Input Impedance Selector | 13. Two IR Ceiling Sensor Inputs (RCA) |
| 6. ALS Output (3.5 mm) & Gain Control | 14. 5 Volt USB Output for BRC-60 |
| 7. Five Band Digital Equalizer | 15. Power Input: 19 V DC 3.4 A |
| 8. RS-232 Input & OFF/ON Switch | |



Installation planning

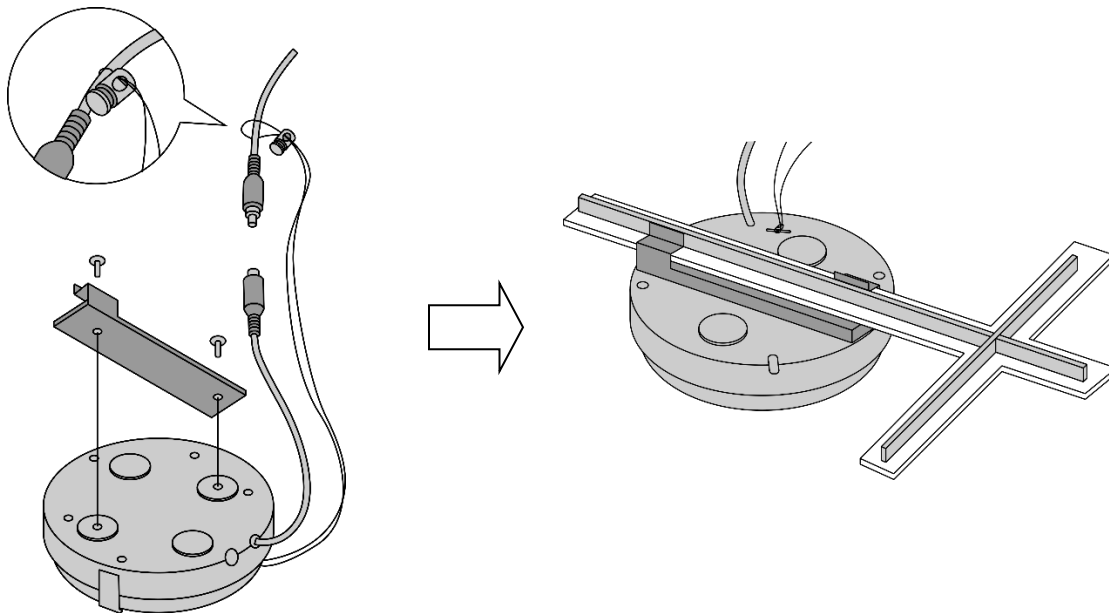
1. **Amplifier/Receiver:**
Choose location that supports accessibility requirements and wiring constraints for power, speakers, ceiling sensor, and audio devices connecting to the amplifier.
2. **Ceiling Sensor:** Locate in the center of the ceiling; maintain line of sight; keep away from direct light 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. **Integrations/Connections:**
Confirm location of other systems you plan to connect to the amplifier such as audio devices, intercom connections, fire alarm, noting how the wiring needs to run.
5. **Microphones/Charger:**
Confirm microphone charging location for daily use/charging.



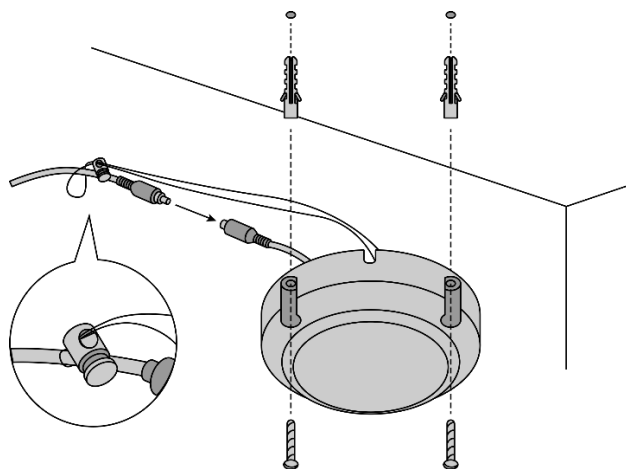
Installation of Ceiling Sensor (ICS-55)

The ideal mounting location 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 360° coverage and will minimize the transmission distance for more reliable performance.

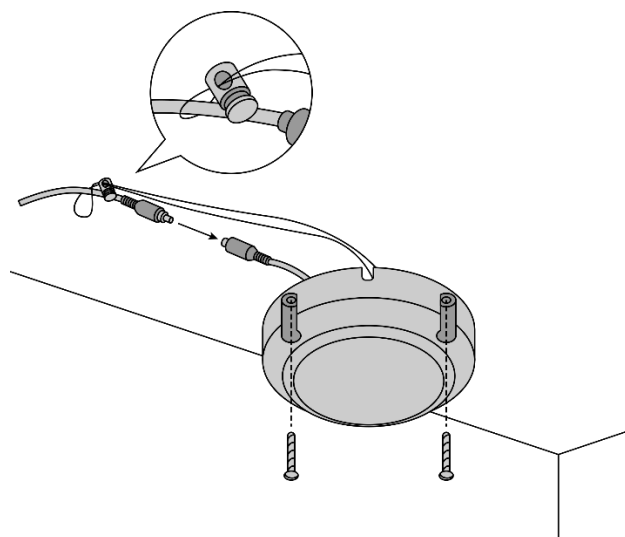
Installation 1 – Attach to T-bar tail



Installation 2 – Concrete or Drywall Surface



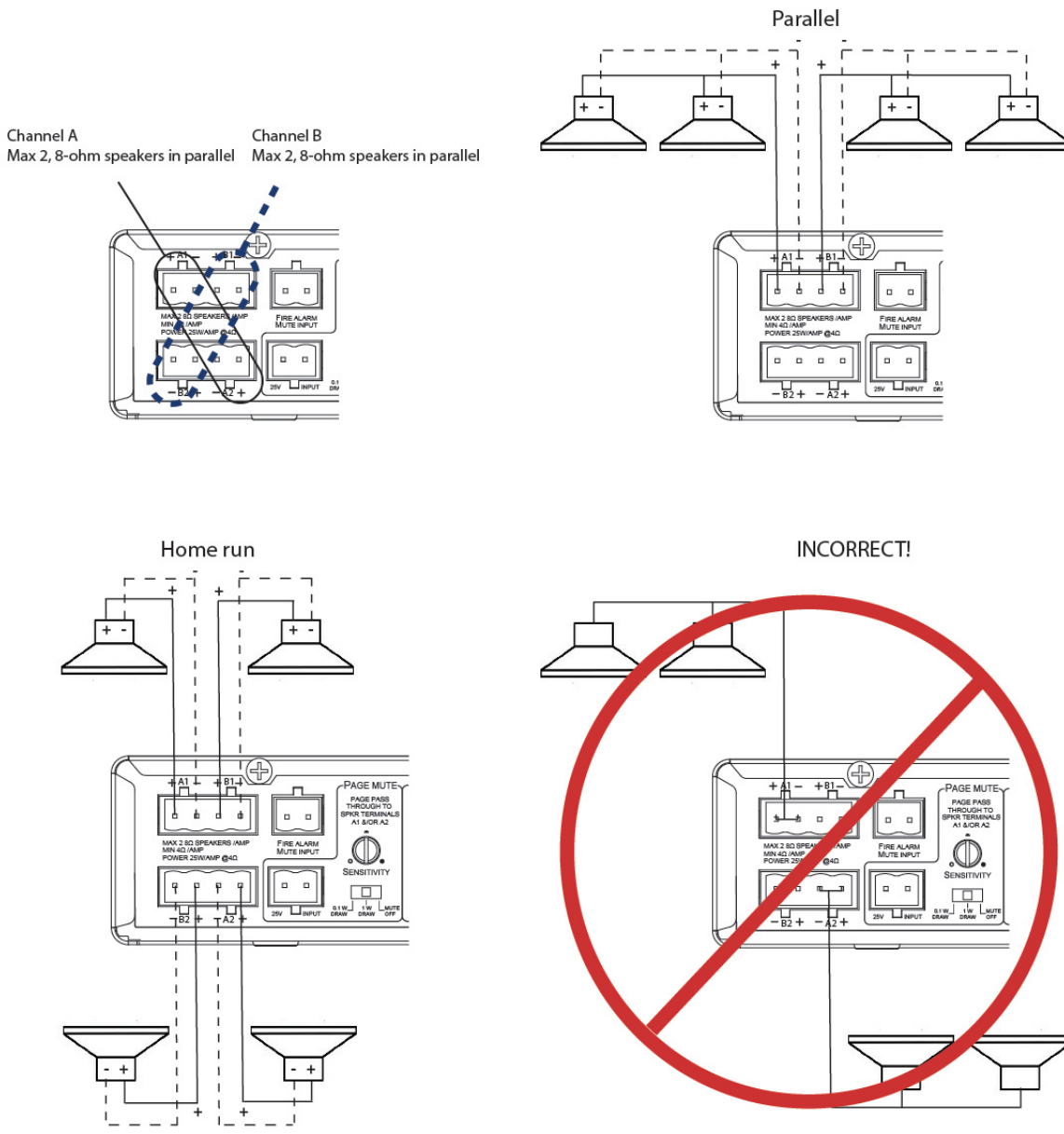
Installation 3 – Wood Surface



FINAL STEP: Route sensor cable to amplifier and plug into one of the amplifier's two sensor inputs. An illuminated green LED will indicate that the sensor is receiving power from the amplifier.

Connection of speakers

The IMA-520 has two channels of amplified audio, rated for a minimum 4-ohm speaker load (two 8-ohm speakers each). 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. **For speaker installation instructions**, please refer to the installation manual included in the speaker packaging.



ADVISORY: The speaker terminals A1 and A2 are internally wired in parallel. DO NOT connect more than two 8-ohm speakers to either or both terminals such that the total load is less than 4 ohms. The same hold true for B1 and B2.

Page Mute/Page Pass Through

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.

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 selector has three labeled switch positions (based on power draw at 25 V):

- 0.1 W DRAW (5000 Ω impedance)
- 1.0 W DRAW (620 Ω impedance)
- 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.

New Models:

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

Older Models:

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

Connecting the system:

Before connecting, the installer is responsible for determining that the TeachLogic amplifier impedance is compatible with the paging 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 (25 v, 70 v, or 100 v)
5. Set the slide switch to the appropriate speaker level setting
6. With the TeachLogic amplifier turned ON, send a page to test the mute function.
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 two of the speaker connections as outlined on the following Diagram A. **Only the upper left and lower right speaker outputs will pass page without power.**

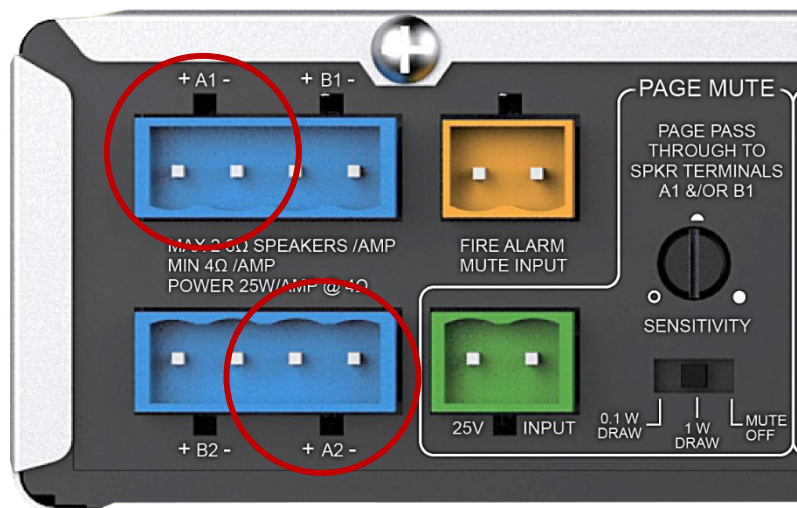


Diagram A

These two terminals (Channel A) are provided the page audio.

Fire Alarm Mute Input

The 2-pin orange Phoenix connector labelled Fire Alarm provides an emergency mute of the TeachLogic amplifier. When interfaced to the fire alarm panel relay contact output, all audio inputs (microphones, DVD, etc.) will MUTE. 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 requires a contact closure from the Fire Alarm Panel and the TeachLogic terminal is for a normally open connection.

When there is continuity between the terminals (closed condition) muting will occur and will continue for 10-15 seconds after contacts are open.



RS-232 feature

The RS-232 feature allows the user to remotely operate the line level media inputs via a separate wall panel controller. The RS-232 connector is connected via three wires to the back panel connector shown to the right.

This allows the receiver/amplifier to be placed in an area or compartment that is not easily accessed by the user.

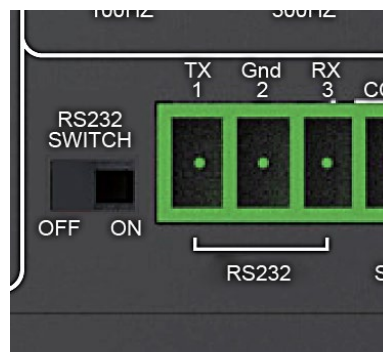
Codes that are required for this setup are available on the teachlogic.com/resources page under “Application Notes” or directly at <https://TeachLogic.com/TeachLogic-app-notes-rs-232-control/>.

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. Shown here is a *Cables To Go* controller.

Connecting the control panel:

Connect the control panel wires to the provided 3-pin Phoenix connector.

Turn RS232 SWITCH to ON position. This will disable the function of the input volume/gain control knobs on the front of the amplifier.



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 as shown to the right.



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

Pulse mode:

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".

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.

4. Release the power button.

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. (Figure 3 below)
4. Move the RS-232 switch from ON to OFF and back again FIVE times. Then release the front panel power button. (Figure 4 below)

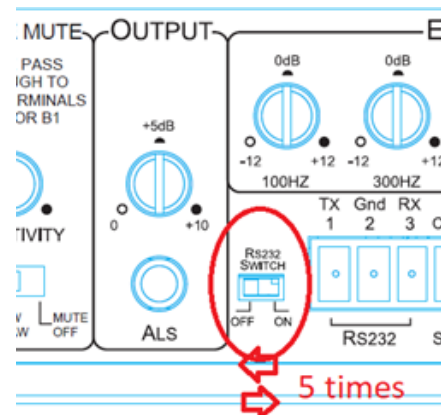
The process requires 5 full cycles of the RS-232 switch while the power button in Red OFF state is held in.

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**.

Press/hold power button



Cycle RS-232 Switch 5 times



Final 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 Microphone (Sapphire™ or Handheld) to confirm good connectivity.

AMPLIFIER

- Connect power supply to amplifier, then plug into outlet.
- Turn the Maxim™ III ON by pushing the power button. The “TL” illuminates solid blue when the amplifier is powered ON.
- Confirm there is power to the IR ceiling sensor: A green LED on edge of sensor should be illuminated that indicates it is receiving power.
- 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 mic 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.
- If using two IRT-60 microphones in the same room, one must be changed to channel B to avoid interference. Watch the how-to video on teachlogic.com/resources.

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 collarbone and observe the speaker volume in the room 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 levels and lack of feedback 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 and ready to use.
- Observe amplifier Ch B indicator LED. It should be green, indicating a connection between the microphone and IR ceiling sensor.
- Hold the microphone about 3 inches from the mouth, above chin level and perform voice test.
- Raise the volume on “Ch B” until feedback begins, then reduce volume to eliminate all feedback.
- Walk around the room while talking into the microphone to confirm good connectivity and sound under/in front of each speaker without feedback.

Once complete, charge microphones so they are ready for use.

Troubleshooting

Problem	Solution
System will not power “ON”	<p>Verify AC power; the power button will illuminate to Blue when turned ON</p> <p>Check if system has been unplugged; reconnect to power outlet or use another device to ascertain power available at outlet</p> <p>Check circuit breaker</p> <p>Call maintenance for assistance</p>
System is turned “ON” but there is no sound or System is in standby and does not “wake up”	<p>Turn “ON” microphone/ transmitter; the power button will illuminate to Blue when turned ON</p> <p>If the power button is illuminated red, the battery is low</p> <p>Ensure the mic is not muted (blinking light indicates it is muted)</p> <p>Ensure gain/volume control knob on amplifier/receiver is turned up to mid scale (12 o'clock position)</p> <p>On amplifier/receiver, ensure a green LED is illuminated just below Ch A or Ch B knob (depending on the microphone used).</p> <p>If no LED is illuminated:</p> <ul style="list-style-type: none"> • Check the green LED on the ceiling sensor <p>If sensor LED is not lit:</p> <ul style="list-style-type: none"> • 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	<p>Verify that the sensor is not being covered</p> <p>Verify there is no obstruction between microphone and sensor</p> <p>Ensure there is no direct sunlight on sensor</p> <p>Ensure no other IR mics in room are turned on</p> <p>If sensor is mounted on a dark surface or without a flush ceiling surface, reception can be hampered.</p>

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, 2 wireless mic channels
Modulation	Wide-band FM
Reception Frequencies	Ch. A: 2.08 MHz Ch. B: 2.54 MHz
Deviation	10 kHz Nominal, 25 kHz Maximum
De-emphasis	50 μ s
Tone Signal	32.768 kHz
Infrared Wavelength	850 nm
External Sensor Input	2, RCA, powered ports
Connectivity Coverage	1,600 sq ft per sensor, up to 2 sensors supported
Total Harmonic Distortion	<1% @ 1 kHz
Frequency Response	20 H - 20 kHz, \pm 3 dB
Aux line level Inputs	4: 1 dual RCA, 3.5mm
Anti-hum balun	present on 1 Aux input for computer
Wired Mic input	1 aux input switchable to mic input
Line Output	Lesson Capture: 3.5 mm with gain control - front panel ALS: 3.5 mm with gain control - rear panel
Page Input	2-pin Phoenix; 25 V or 70 V normal
Page Input Sensitivity	3.6 V min
Security Alert	Contact closure (COM, N/O, N/C)
Fire Alarm	Contact closure by fire panel mutes audio
Amplifier Output Power	50 W RMS, 2 x 25 W channels
Output Impedance	4 Ω minimum
Equalization	5-band, \pm 12 dB
S/N Ratio	>65 dB
Speaker Connection	4-pin Phoenix connectors
Charger Output	5 V DC, USB
Power Supply	19 V DC / 6.3 A; CE, CSA and UL listed
Dimensions	8.5" W x 1.75" H x 7.5" D
Weight	2 lb 4 oz

Power Supply (AC-36) specs

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

Sapphire (IRT-60) microphone/transmitter specs

Transmission Carrier	Infrared
Transmission Frequencies	2.08 MHz & 2.54 MHz
Channel Selection	Field Switchable
Transmitting Diodes	Six
Wavelength	850 nm
Modulation	FM Wide-Band
Frequency Response	100 Hz - 10 KHz
Pilotone Frequency	32.768 KHz
Peak Deviation	± 25 KHz
Dynamic Range	95.5 dB @ 2.8% THD
Operating Range	60 Ft. line of sight
Latency (mic to speakers)	0.87 ms
Battery Used	Lithium-ion polymer (3.7V / 620mAh)
Battery Life	8 Hrs/Charge
External Power Charger	5V DC Micro USB Connector
Transmission Angle	180° Conical
User Controls	
Power (On/Off)	Press & Hold
Mute Switch (On/Off)	Momentary Press (blinks when muted)
Add'l Mic Gain Control	Normal, -3dB, -6dB
Audio Source Vol./Gain	Increase, Decrease
Channel Select	(A or B) in battery compartment
External Mic/Aux Input	3.5 mm Line Level
Dimensions (H x W x D)	3.5" x 1.25" x 0.75"
Weight	1.4 oz including battery

Handheld (IRT-35) microphone/transmitter specs

Transmission Carrier	Infrared
Transmission Frequencies	2.08 MHz & 2.54 MHz
Channel Selection	Field Switchable
Transmitting Diodes	Ten
Wavelength	850 nm
Modulation	FM Wide-Band
Pilotone Frequency	32.768 KHz
Peak Deviation	± 25 KHz
Operating Range	50 ft. line of sight
Power Switch (Slide)	On/Off
Battery Charge Level (LED)	Green: Full Orange: Medium Red: Low
Battery Life	Approx. 7 Hr./Charge
Dimensions	2.125" dia. (Head), 1.4375" dia. (Body), 9.625" H
Weight	10.3 oz. w/ Battery



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