Contents

TeachLogic OA-50 Classroom Audio System

System Overview

Front Panel

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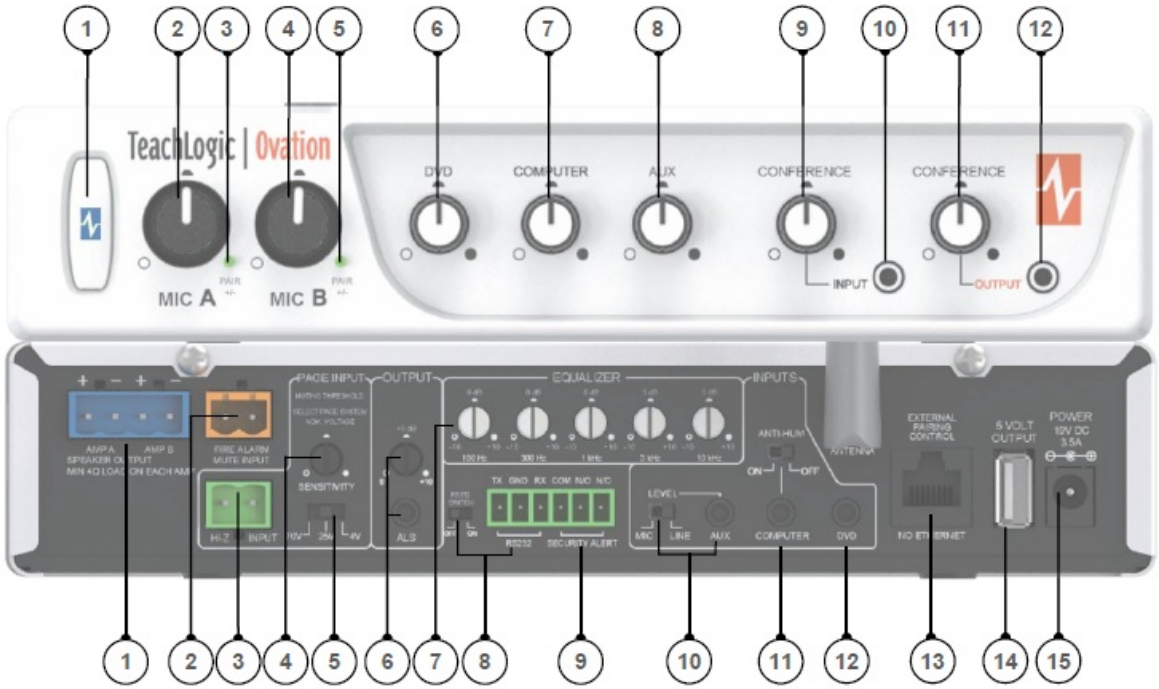
10. Video Conference Input Port (3.5 mm) (Also suitable for Lesson Capture)
11. Video Conference Output Volume Control
12. Video Conference Output Port (3.5 mm)(Also suitable for Lesson Capture)



Back Panel

1. Speaker Output
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4. Page Sensitivity Control
5. Page Input Voltage Selector
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7. Five Band Equalizer Controls
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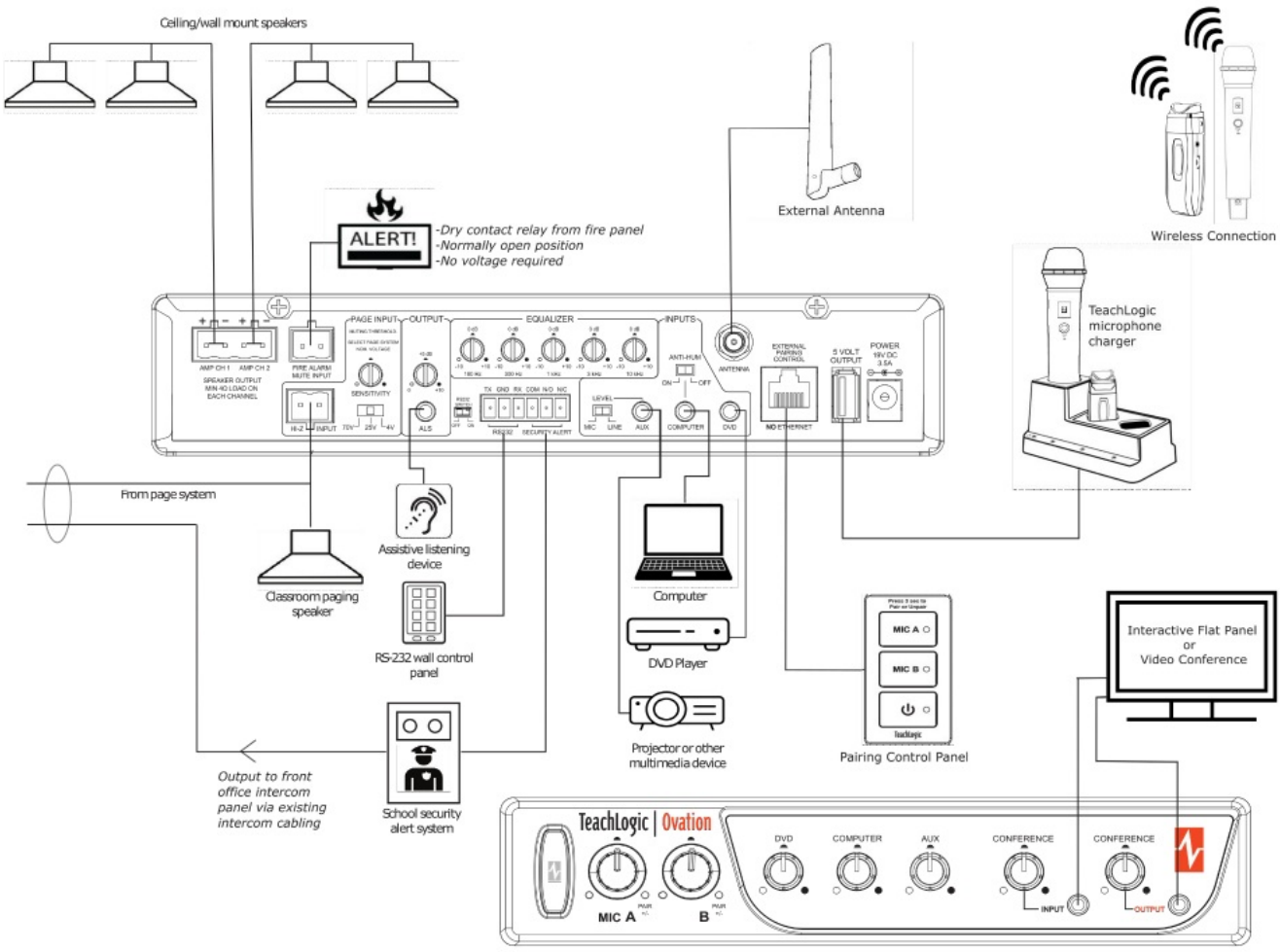
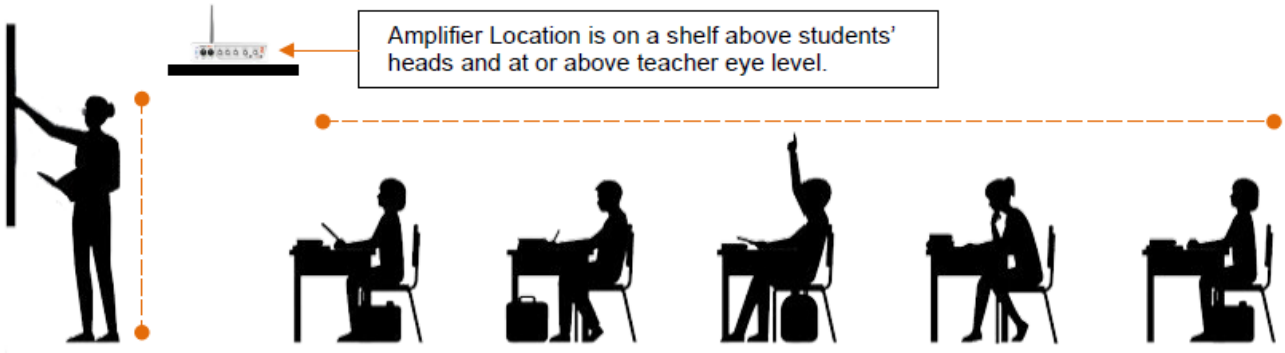


Installation Planning

OA-50 Placement

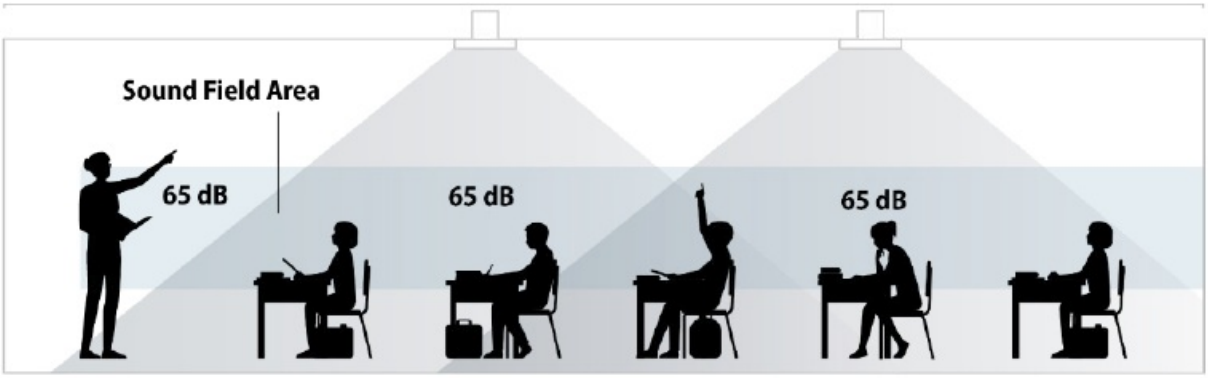
The OA-50 should be placed in an open area with no obstructions between the mic and antenna. Ideally, the amp would be placed on a shelf at eye level (about 5 feet) or higher, above students' heads when seated. A location close to the front of the room or where the teacher spends most of their time would be best for reception.
You should be careful that obstructions such as cubicles, metal filing cabinets, desks, and other large objects are not blocking the antenna or the OA-50 from microphone use locations.



Other Mounting Options

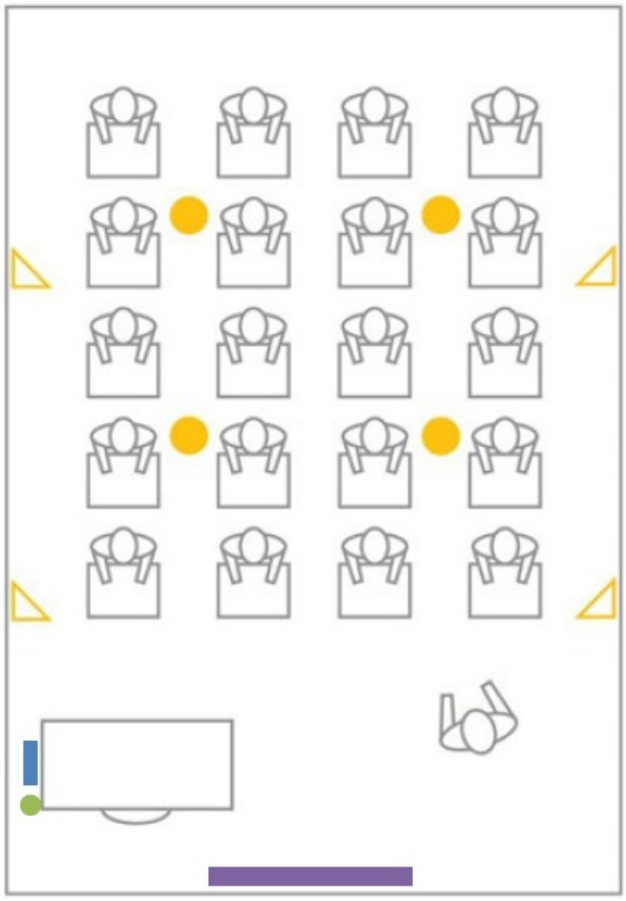
If it is not possible to secure the OA-50 at a sufficient height or in an unobstructed area and you are experiencing poor reception, a remotely mounted magnetic antenna extension cable can be used. This 10ft antenna extension cable can be purchased through TeachLogic (PN: ANT-501).
Please note that according to FCC rules, changing the antenna on the OA-50 must be done by a factory approved installer, not by the customer or end user.

The goal of a classroom audio system is to evenly distribute sound throughout the listening area.



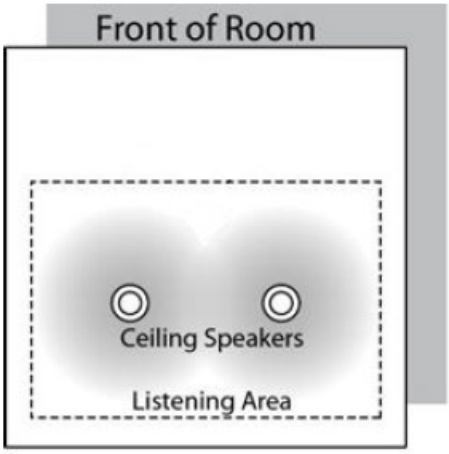
Component Placement

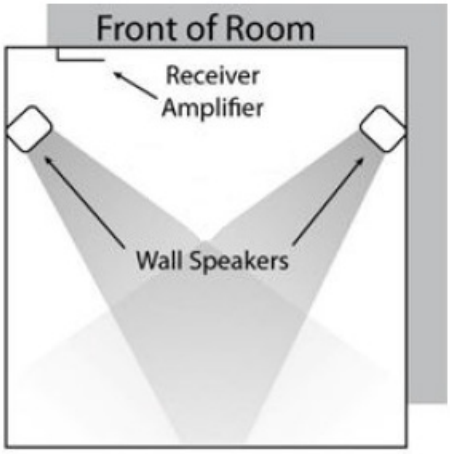
1. Amplifier: Choose location that supports accessibility requirements and wiring constraints for power, speakers, ceiling sensor, and audio devices connecting to the amplifier.
2. Speakers: The OA-50 can power 4 classroom speakers. Mark location for wall mount or ceiling mount and confirm wiring run to the amplifier. Ensure speakers evenly cover the listening area.
3. Integrations/Connections: Confirm location of other systems you plan to connect to the amplifier such as audio devices, flat screens, projectors, intercom connections, and fire alarm, noting how the wiring needs to run.
4. Charger: Confirm microphone charging location for daily use/charging.

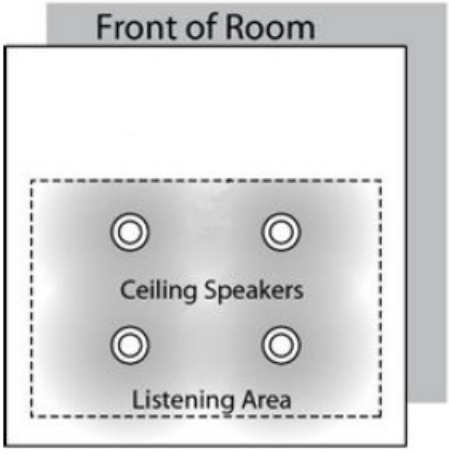


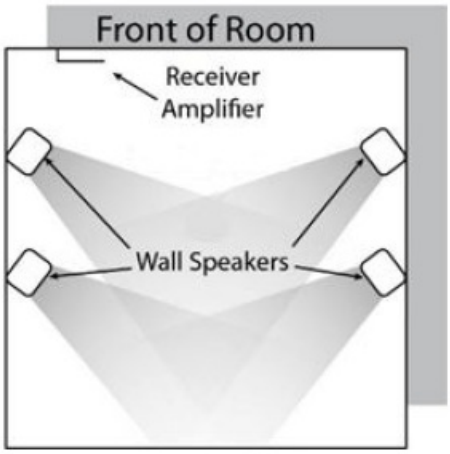
Speaker Installation

Below are examples of room coverage for two and four speaker installations.
Ceiling Speakers: Locate and identify the center most tile in each quadrant.
Wall Speakers: First observe the shape of the room: ceiling height, door locations, windows, mounting surface, and seating area. Ordinary installation would be to locate the speakers on each side wall beginning at the front row of listeners, approximately 6–7 feet above the floor.





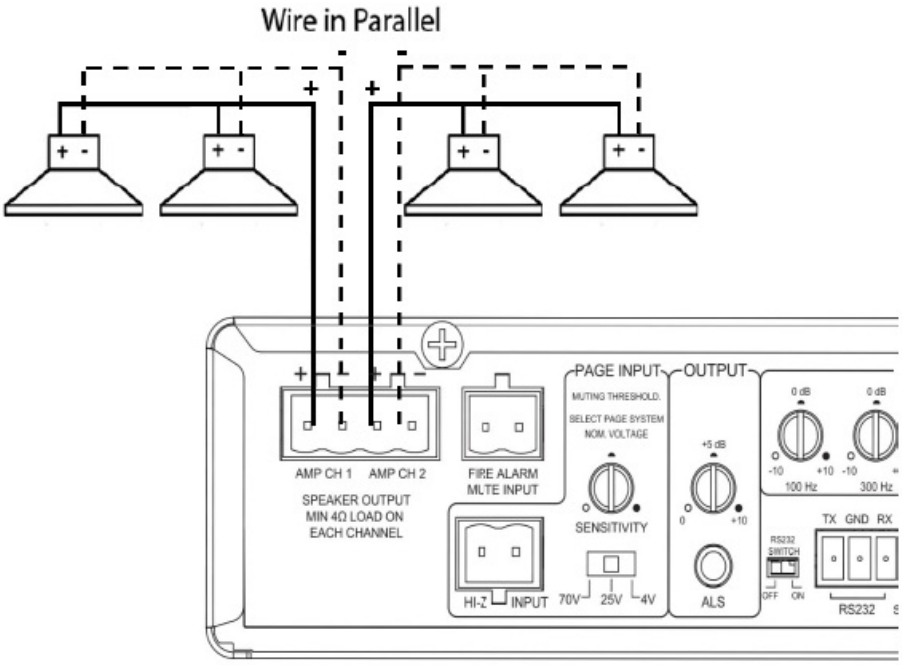




Connection of Speakers

The OA-50 has two channels of amplified audio, rated for a minimum 4-ohm speaker load (two 8-ohm speakers each, connected in parallel provide 4 ohms impedance).

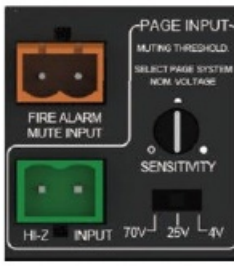
There is one blue phoenix style speaker connector on the back panel, providing two pairs of speaker terminals.



Page Input

Page Mute

System behavior for Page Mute

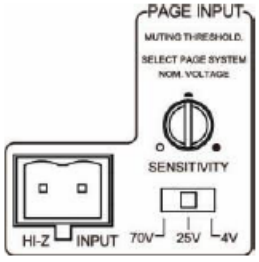


Page Muting causes the amplifier to silence the microphones and audio sources connected to the amplifier when a page signal is detected on the Page Input terminal. When muted, the only audio allowed to pass through is from the paging system, i.e. Page-Pass-Through Function (PPT).
The amplifier can integrate with constant voltage analog paging systems (70V and 25V) as well as low power VOIP amplifiers (as low as 1/8 watt).
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 a cable from the paging system driving its speakers 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 (4V, 25V, or 70V).
5. Set the Page Mute slide switch to the appropriate setting.
6. With the TeachLogic amplifier turned ON, send a page to test the mute function.
7. Adjust the sensitivity control to ensure the amplifier 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 smoothly to their prior volume (before mute).

Table 1. Impedance of Page Input interface and Sensitivity for Page Mute function

Switch Position	Nominal Impedance /Power Draw	Maximum Sensitivity (minimum threshold for muting)	Minimum Sensitivity
4V	>50 kΩ / 0.01 W	50 mV	700 mV
25V	>50 kΩ / 0.01 W	500 mV	4.6 V
70V	>50 kΩ / 0.01 W	1.2 V	12.6 V



Page Pass Through
Page-Pass-Through is a feature that passes an audio paging signal through the amplifier and to the connected loudspeakers. This may be switched on or off by a side panel switch. See Table 2.

IMPORTANT:
The system does not pass-through paging audio signal to the speakers when the amplifier is powered off (or no power is available).

PPT on ALS output
The amplifier routes the paging input signal by passing it through to the assistive listening system (ALS) output

(and Conference Output) so that students using ALS products will hear broadcast paging announcements.

Table 2.

	LEFT SWITCH	CENTER-LEFT	CENTER-RIGHT	RIGHT SWITCH
POSITION	ANTENNA	SECURITY ALERT # OF PULSES	PAGING PASS THROUGH TO SPEAKERS	CONFERENCE ECHO GUARD
UP	EXTERNAL	1	OFF	ON
DOWN	INTERNAL	4	ON	OFF

Fire Alarm Mute Input
The 2-pin orange Phoenix connector labelled Fire Alarm Mute Input provides a connection to mute the TeachLogic amplifier.

SYSTEM BEHAVIOR

- 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.
- Audio resumes at original volume 11 seconds after closure ceases being detected.

CONNECTION

- This feature requires a contact closure from the Fire Alarm Panel and the TeachLogic terminal is for a normally open connection.
- Fire alarm system connects to a 2-pin Phoenix connector on back of amplifier.
- Refer to fire alarm system manual or manufacture’s spec to confirm proper wire connection.

KEY SPECS

- Dry contact closure
- Connect to normally open circuit
- No voltage required

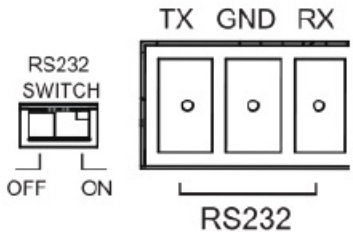
RS-232 Control and Anti-Hum Feature

RS-232 Control Feature

The RS-232 control feature allows the user to remotely adjust the volume (or gain) of all the audio sources connected to the amplifier. Such control may be exercised from a separate wall panel controller or other device. The third-party RS-232 device is connected via three wires to the back panel connector shown to the right: TX/Gnd/RX.

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** website. Use the search function to find the RS-232 page.

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:

1. Connect the control panel wires to the provided 3-pin Phoenix connector.
2. Turn RS232 SWITCH to ON position. This will disable the function of the input volume/gain control knobs on the front of the amplifier.

Anti-Hum Feature

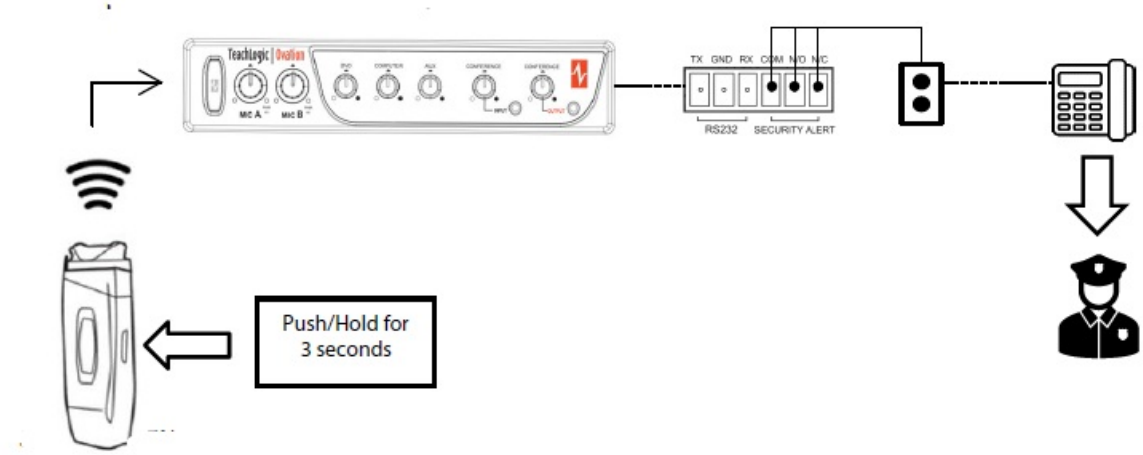
The rear panel input port labeled “Computer” has a switchable feature to eliminate or reduce hum sounds often present when computers are connected to external amplifiers. The hum is known as a ground loop hum and may be present if the computer and amplifier have electrical grounding differences. The telltale characteristic is that it is 60 hertz (a somewhat low tone.) Inside the amplifier is a ground isolating balun that may reduce or eliminate the hum when switched ON. If not needed, it is getter the leave switched OFF as the sound quality for the connected device will be slightly better in this case.

Security Alert Feature

The Security Alert feature allows a user with a TeachLogic wireless microphone to summon help or indicate to administration personnel of an urgent situation in the room of that user.

CONNECTION

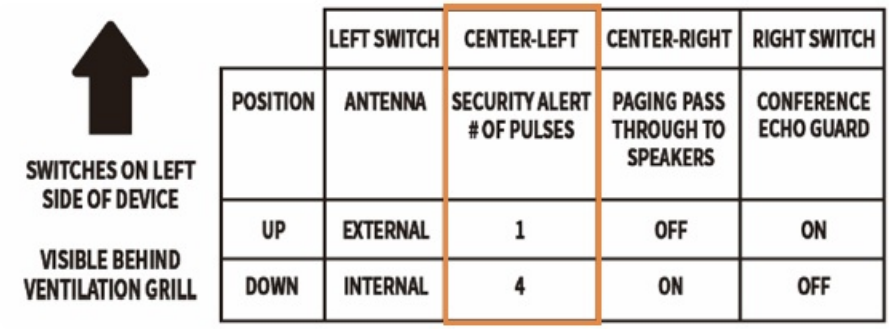
Uses wire from paging manufacturer's wall-mounted call button panel to connect to amplifier via 3-pin Phoenix connector: COM | NORMALLY OPEN | NORMALLY CLOSED



SYSTEM BEHAVIOR

- When the OM-10 Pendant Mic "Talk Over" button is pushed/held for 5 seconds, it sends a signal to the ceiling sensor which passes through the amp to the security alert interface (an electric relay).
- The relay contacts opens or close (depending on the normal status) to pass the signal through the paging system as if the paging system's wall-mounted button was being pressed.
- The amplifier functions normally during the alert, e.g. there is no change to audio input/output volume change nor does the system produce any sound

Setting Security Alert pulses with slide switch
The pulse change can be made with a dedicated switch to select either 1-pulse or 4-pulse mode as required by different security systems. Reference the label on the bottom of the amplifier for the settings.



	LEFT SWITCH	CENTER-LEFT	CENTER-RIGHT	RIGHT SWITCH
POSITION	ANTENNA	SECURITY ALERT # OF PULSES	PAGING PASS THROUGH TO SPEAKERS	CONFERENCE ECHO GUARD
UP	EXTERNAL	1	OFF	ON
DOWN	INTERNAL	4	ON	OFF

Security Alert

SLIDE SWITCHES

Testing the Security Alert function

To test security alert, you will need an OM-10 (Ovation™) pendant microphone.

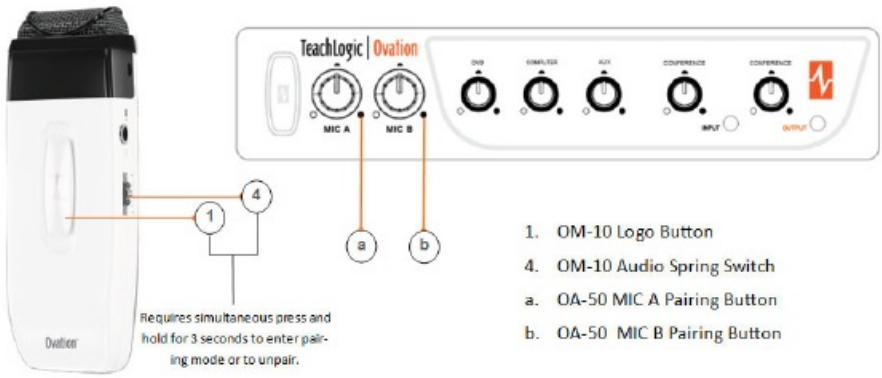
1. Turn on an OM-10 pendant microphone by tapping the logo button once.
   Your OM-10 pendant microphone must be on and connected to your OA-50. Once the TeachLogic logo button is illuminated solid blue (indicating a connection), locate the AUDIO VOLUME spring switch on the side of the microphone.
2. While looking at the amplifier's power button, press & hold the microphone's AUDIO VOLUME spring switch for 3 seconds after which time the amplifier's power button and microphone's logo button will rapidly flash green. There will be an audible clicking sound from the amplifier when flashing.

Final Setup
Now that the system is installed and connected, turn the system "ON" and test its performance. The testing will be done using a DECT Ovation Microphone (Pendant or Handheld) to confirm good connectivity.
AMPLIFIER

- Connect power supply to amplifier, then plug into outlet.
- Turn the amplifier ON by pushing the power button. The logo button illuminates solid blue when the amplifier is powered ON.
- Set all gain/volume dials to mid-scale (12 o'clock position)

OM-10 PENDANT MICROPHONE SETUP

- Confirm “MIC A” volume dial is at mid-scale (12 o’clock position)
- Slide the MIC VOLUME control switch on OM-10 to “Normal” setting.
- Tap mic power/ logo button once, the light will illuminate.
- Observe microphone logo button light. Solid yellow indicates power is on and mic is unpaired. Solid blue indicates power is on and mic is connected.
- Observe amplifier MIC A pairing button/ indicator light. It should be green, indicating a connection between the microphone and amplifier.
- If not already paired:
- Press the AUDIO VOLUME spring switch on the left side of your mic and the logo button at the same time and hold both for 3 seconds.
- This will initiate the pairing mode for your microphone, and it will begin to fast-flash green. It will stay in this pairing mode for 1 minute or until paired.
- During this time, press and hold the pairing button on the OA-50 next to the MIC channel you want to pair with (or on the OP-10 wall panel if installed) for 3 seconds.
- This pairing button will illuminate and start fast-flashing green indicating it has entered the pairing mode. It will stay in this pairing mode for 1 minute.
- While both units are in pairing mode, they will find each other and become paired. Once the pairing has been established, the mic logo button will turn solid blue and the OA-50 pairing button will change to solid green. Your mic is now paired and connected, ready to be used with your TeachLogic system.



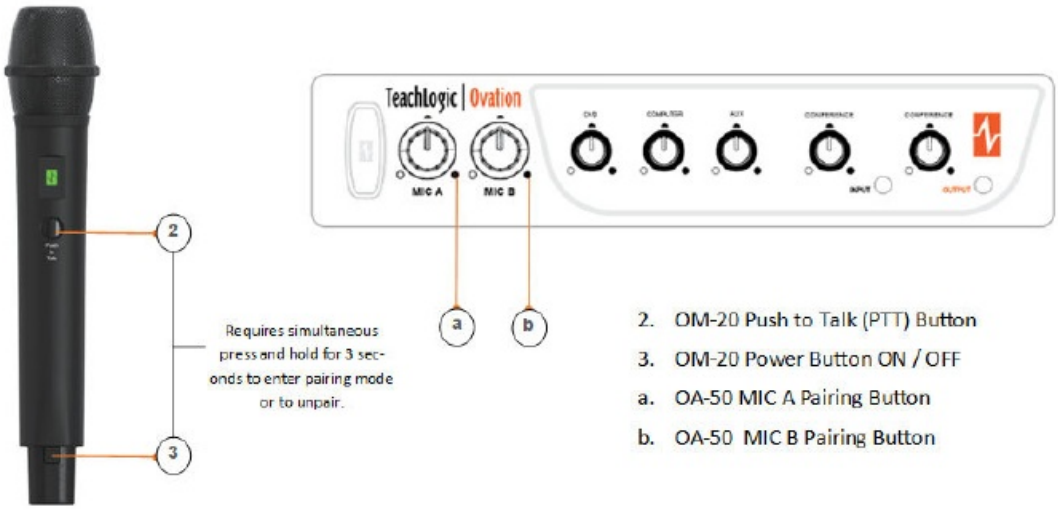
If using two OM-10 microphones in the same room, one must be paired to the MIC B channel to avoid interference. Watch the how-to video on teachlogic.com/resources

Final Setup

IRH-35 HANDHELD MICROPHONE SETUP

- Confirm “MIC B” volume control is set to mid-scale (12 o’clock position)
- Power on microphone by tapping the ON/OFF button.
- Observe light in the logo window. Solid yellow indicates power is on and mic is unpaired. Solid blue indicates power is on and mic is connected.
- Observe amplifier MIC B indicator light. It should be green, indicating a connection between the microphone and amplifier.
- If not already paired:
    - Press both the center PTT button below the logo window and the power button at the same time and hold both for 3 seconds.

- This will initiate the pairing mode for your microphone, and it will begin fast-flashing green. It will stay in this pairing mode for 1 minute or until paired.
- During this time, press and hold the pairing button on the OA-50 next to the MIC channel you want to pair with (or on the OP-10 wall panel if installed) for 3 seconds.
- This pairing button will illuminate and start fast-flashing green indicating it has entered the pairing mode. It will stay in this pairing mode for 1 minute.
- While both units are in pairing mode, they will find each other and become paired. Once the pairing has been established, the mic logo button will turn solid blue and the OA-50 pairing button will change to solid green. Your mic is now paired and connected, ready to be used with your TeachLogic system.



Note: Next steps should be 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 MIC 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.
- Repeat the above steps for MIC B.

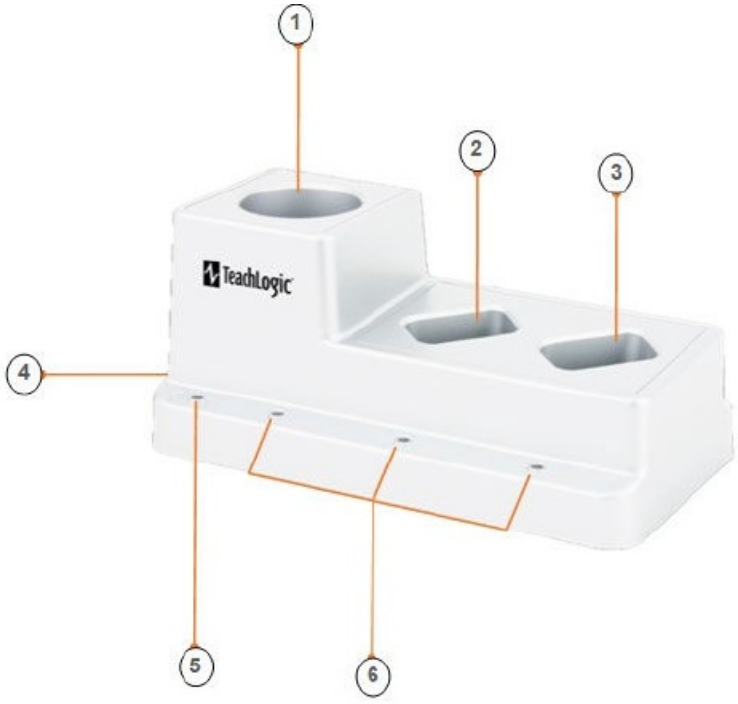
HOW TO CHARGE YOUR MICROPHONES

- Battery Life: The Ovation microphones have a battery life of approximately 8 hours of active use on a full charge. If your mic battery is low, it will display a solid red light when it has 10% battery life remaining. When critically low (last 5% of battery life) the logo light will blink red. Both indicate that it is time to charge your mic.
- Battery Replacement: If you notice your mic is no longer holding a sufficient charge, it may be time to replace your battery. For instructions on how to replace your battery visit: **tinyurl.com/TLbattery**
  Note: Instructions for battery replacement are the same for both the Sapphire and Ovation Microphones.
- There are two ways to charge your Ovation mics, either use the TeachLogic Charging Stand (OC-20) or use the TeachLogic micro-USB charging block and cable (BRC-15 for Pendant mic or BRC-25 for Handheld mic). Refer to the below diagrams along with the following instructions.

- If using the Charging Stand (OC-20), ensure your mic is facing forward and gently lower it into the charging port. Gently press down on the mic until it clicks into place and the mic logo button begins to blink green. The charging dock indicator light will slowly blink blue under the mic that is charging, indicating that the OC-20 is providing charging power to the mic.
- It is very important to ensure that the mic is properly lined up in the charging port before exerting any “plug in” force. Very little force is needed when the mic is lined up properly. Forcing the mic into a charger when misaligned can break either the mic, the charger, or both.
- Within a few hours, the mic will be fully charged and the logo button on the mic will be solid green to indicate this. Sixteen hours after starting charging, the charger will stop providing power and the slow blinking blue light on the OC-20 charger will turn off. One hour later, the mic will power off automatically. This feature provides users with an instantly-on microphone each weekday except for Mondays; on this day, user should power the mic on with tap to microphone power button.
- You can also charge your mics with a separate USB charging cable by inserting the cable’s plug into the charging port on the bottom of your mic. If using this method, do not leave the cable plugged in for more than two days at a time or you will risk shortening your battery’s life. If able, unplug it when fully charged, which should take no more than six hours.

Note: The microphone will be powered on anytime it is connected to charging power, but it cannot be used to transmit audio while charging.

1. OC-20 USB-C Charging Dock
2. OM-10 Micro-USB Charging Dock
3. OM-10 Micro-USB Charging Dock
4. Micro-USB Power Port for OC-20
5. OC-20 Power Indicator Light
6. Charging Dock Indicator Lights



If using the TeachLogic BRC-15’s micro-USB charging cable, ensure the charger is oriented correctly before you

insert the cable's plug into the charging port
It is helpful to add a distinguishing mark on your charger plug to indicate the correct orientation for plugging it in (white side up).

Troubleshooting

Power Button / Logo Indicator Operation
The main power button on the amplifier's front panel has multiple indications as shown in the table below.

Red Solid	Off Note that power is still supplied to USB port on back panel.
Red Blinking	Muted by Fire Alarm Mute Input
Blue Solid	On
Blue Blinking	Page received and audio sources muted
Blue Slow Blinking	In Standby (or "Sleep") mode. See below
Purple Solid	In Talkover mode. All line inputs are lowered in volume ("ducked") to allow micro phones to be better heard. "Talkover" mode can be triggered by pressing the spri ng switch on the left side of the OM-10 pendant mic.
Yellow Blinking (3x)	Radio subsystem reset. Requires 6 sec power button press (when blue) to reset. Note that both pair lights (pictured in "System Diagram" on page 5 as #3 and #5 on the front panel) will also flash green 3x
Green Blinking	Security Alert activated. Also indicates whether in Security Alert 1- or 4- pulse m ode. (See section above)

System Standby Function
Standby Mode is a feature that reduces power consumption after the amplifier has not been used to amplify audio signal for a period of two hours. After entering the automatic standby mode, the amplifier displays a slow blinking blue light at power button.

Normal ON mode may be resumed by

1. speaking into a microphone that is on,
2. sending an audio signal into one of the line inputs (such as a projector or flat panel audio signal), or
3. pressing the power button once.

It may take a few seconds for the normal mode to resume after one of these actions is taken. A page signal can also “wake” the amplifier, but to hear the full first page of a morning, be sure to wake it first with one of the methods above, or the initial several seconds may be missed if there are no other paging speakers provided to deliver the page audio.

Specifications

Problem	Solution
System will not power “ON”	Verify AC power; the power button will illuminate Blue when turned ON Check if system has been unplugged; reconnect to power outlet or use another device to ascertain power available at outlet Check circuit breaker
System is turned “ON” but there is no sound	Turn “ON” microphone/ transmitter; the logo power button will illuminate to solid Blue when turned ON If the mic power button is illuminated red, the battery is low If the mic power button is illuminated yellow, the mic is not paired to the amplifier. Follow pairing instructions above in “Final Setup” section. Ensure the mic is not muted (blinking blue light on mic indicates it is muted) On amplifier/receiver, ensure a green light is illuminated just below MIC A or MIC B knob (depending on the microphone used). **If no light is illuminated:** • Re-pair mic to amplifier (there should be a solid blue light on microphone, solid green light on amp)
System is in standby and does not “wake up” or **system goes into standby while playing non-mic audio**	The mic must be paired to wake up the amplifier. Ensure gain/volume control knob on amplifier/receiver is turned up to mid-scale (12 o’clock position) or greater, if required. Ensure the audio volume on your external device (computer, interactive display, projector, cell phone, etc.) is set sufficiently high. Then adjust the volume down to an appropriate level on the TeachLogic system. If the volume on the external device is set too low, the signal may not be strong enough to keep the TeachLogic system awake.
Mic signal drop-out occurs or voice is distorted	Verify that the amplifier antenna is not being covered Verify there is no obstruction or metal object between microphone and antenna Place amplifier at higher location or consider antenna extension cable available from TeachLogic (P/N: ANT-501)
Volume knobs on front of amplifier are not working	If not using an external control panel, ensure the switch on the back of your amplifier labeled “RS232” is the “OFF” position.

Ovation Amplifier™ (OA-50)

- **RADIO**
  - Receiver Input DECT 6.0 Radio, 2 mic channels.
  - Modulation DQPSK (Differential Quadrature Phase Shift Keying).

- Reception Frequencies 1.92-1.93 Ghz DECT 6.0.
- Frequency Planning Automatic; actively avoids interference for high density use; 60 talk channels.
- Antenna Options Full diversity; back panel or 10’ extension with magnetic mount to remote external.
- Mic Pairing Controls Front panel and remote, with optional OP-10 remote panel.
- Connectivity Coverage 2000 sq ft.

- **AUDIO**
  - Amplifier Output Power 50 W RMS at 4Ω, 2 x 24.5 W channels.
  - Total Harmonic Distortion < 0.1% @ 1 kHz.
  - Frequency Response 15 Hz – 22 kHz, ± 3 dB.
  - Line Level Inputs 4: 3.5 mm.
  - Anti-Hum isolation balun Switchable (off/on) at computer input
  - Equalization 5-band, ±10 dB.
  - S/N Ratio 70 dB
- **INTERFACES**
  - Wired Mic Input 1 aux input switchable to dynamic mic
  - Line Outputs Conferencing: 3.5 mm with gain control – front panel Assistive
  - Listening System: 3.5 mm with gain control – rear panel
  - Page Input 2-pin phoenix; 4 V, 25 V or 70 V nominal; fully isolated.
  - Page Input Sensitivity 50 mV to 12.6V. VOIP page integration Interfaces with all VOIP system at analog level with highly sensitive low power page interface.
  - Security Alert Contact closing/opening, 1 or 4 pulse selectable.
  - Fire Alarm Contact closure by fire panel mutes audio.
- **OTHER**
  - Charger Output 5 Vdc, 1 A, USB-A
  - Power Supply 19 Vdc / 3.5 A CE, CSA and UL Listed
  - Dimensions 213 x 196 x 43mm (8.5 x 7.5 x 1.75”)
  - Weight 0.79 kg (1.75 lb)

Pendant (OM-10) microphone/transmitter specs

- Wireless Technology Radio, DECT 6.0
- Frequency Band 1.92-1.93 GHz (USA, Canada)
- Interference Avoidance Dynamic Frequency Hopping
- Number of Channels 60 talk channels
- Antenna System Diversity, 2 antennae
- Max RF power 20 dBm (100 mW)
- Operating Range 91m (300’) open space
- Frequency resp., mic 50Hz – 12,720 Hz
- Frequency resp., line in 50Hz – 15,000 Hz
- Latency 15 ms, fixed
- Pairing 1:1 fixed pairing, auto-reconnect to paired receiver
- Audio Input 3.5mm port for line level audio or external electret condenser mic: auto-detection
- Audio Distortion <0.8% THD, calc with 11 harmonics
- Mic bias, external 1.6 Vdc

- Battery Chemistry Lithium polymer
- Battery life >8 hours
- Battery management Managed entirely onboard mic
- External Power Charger 5 Vdc micro USB connector; or OC-20 charger, cable not
- supplied. Cable and supply orderable as BRC-16.
- Weight 40g (1.4 oz) with battery
- Dimensions 92 x 30 x 22mm (3.60 x 1.17 x 0.87 inch)
- Handheld (OM-20) microphone/transmitter specs
- Wireless Technology Radio, DECT 6.0
- Frequency Band 1.92-1.93 GHz (USA, Canada)
- Interference Avoidance Dynamic Frequency Hopping
- Number of Channels 60 talk channels
- Antenna System Diversity, 2 antennae
- Max RF power 20 dBm 100 mW
- Operating Range 91m (300') open space
- Frequency response 50Hz – 12,280 Hz
- Latency 15 ms, fixed
- Pairing 1:1 fixed pairing, auto-reconnect to paired receiver
- Audio Distortion <0.5% THD
- Battery Lithium Ion, 14500 package, 3.7 Vdc
- Battery life 8 hours
- Battery management Managed entirely onboard mic
- External Power Charger 5 Vdc USB-C Connector; or OC-20 charger, cable not supplied.
- Cable and supply orderable as BRC-25.
- Weight 204 g (7 oz) with battery
- Dimensions 259 x 48mm (10.2" x 1.9") max DIA
- Mid-section DIA 35mm (1.4")

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Frequently Asked Questions

- **Q: Can I use any power cable with the product?**
  A: No, only use the power cable provided by the manufacturer to avoid potential damage to the product.
- **Q: What should I do if I encounter an issue with the product?**
  A: Contact TeachLogic customer service department at 760-631-7800 or email support@teachtogic.com for further assistance.

Documents / Resources

	TeachLogic OA-50 Classroom Audio System [pdf] Instruction Manual OA-50, OA-50 Classroom Audio System, OA-50, Classroom Audio System, Audio System

References

- Sign in to your account
- User Manual