frontrow™
by Boxlight®

UNITY

Classroom and Campus
Audio, Control, and Communication

User Guide

1550-00068/RevB 0725

Contents

Important Safety Instructions

1. Read and keep these instructions.
2. Heed all warnings and follow all instructions.
3. Do not use this apparatus near water.
4. Clean only with dry cloth.
5. **Do not** block any ventilation openings. Install in accordance with the manufacturer's instructions.
6. **Do not** install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
7. **Do not** defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
8. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
9. Only use attachments/accessories specified by the manufacturer.
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
11. To reduce risk of electric shock, unplug the power supply from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
12. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
13. **DO NOT** disassemble the power supply. Return the apparatus to FrontRow for qualified service and repair if required. Incorrect reassembly may result in a risk of electric shock or fire.
14. **DO NOT** expose the power supply to rain, snow, water, gas, oil, etc .
15. **DO NOT** operate the power supply if it has received a sharp blow, been dropped, or otherwise damaged in any way; return the apparatus to FrontRow for qualified service and repair.
16. **DO NOT** expose batteries (battery pack or batteries installed) to excessive heat such as sunshine, fire, or excessive cold.
17. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. The cord MUST be plugged into a grounded outlet. Make sure it is properly wired, in good electrical condition, and wire size is large enough for AC ampere rating of the power supply or charger. To reduce risk of damage to plug and cord when disconnecting the power supply or charger, ALWAYS pull on plug – NEVER on cord.
18. Locate cord so that it will not be stepped on, tripped over, or otherwise subject to damage or stress. **DO NOT** lay extension cord on charger.
19. **DO NOT** operate the power supply with damaged cord or plug - replace them immediately.
20. **IMPORTANT:** Follow all local electrical and building codes. Failure to properly install electrical wiring or heavy equipment can result in injury or death.
21. **IMPORTANT:** If installation cabling in a ceiling plenum space, ensure that all cables are plenum-rated. FrontRow ezRoom speaker, audio, Cat5e, USB, and HDMI cables are plenum-rated. Confirm you ordered the correct parts.

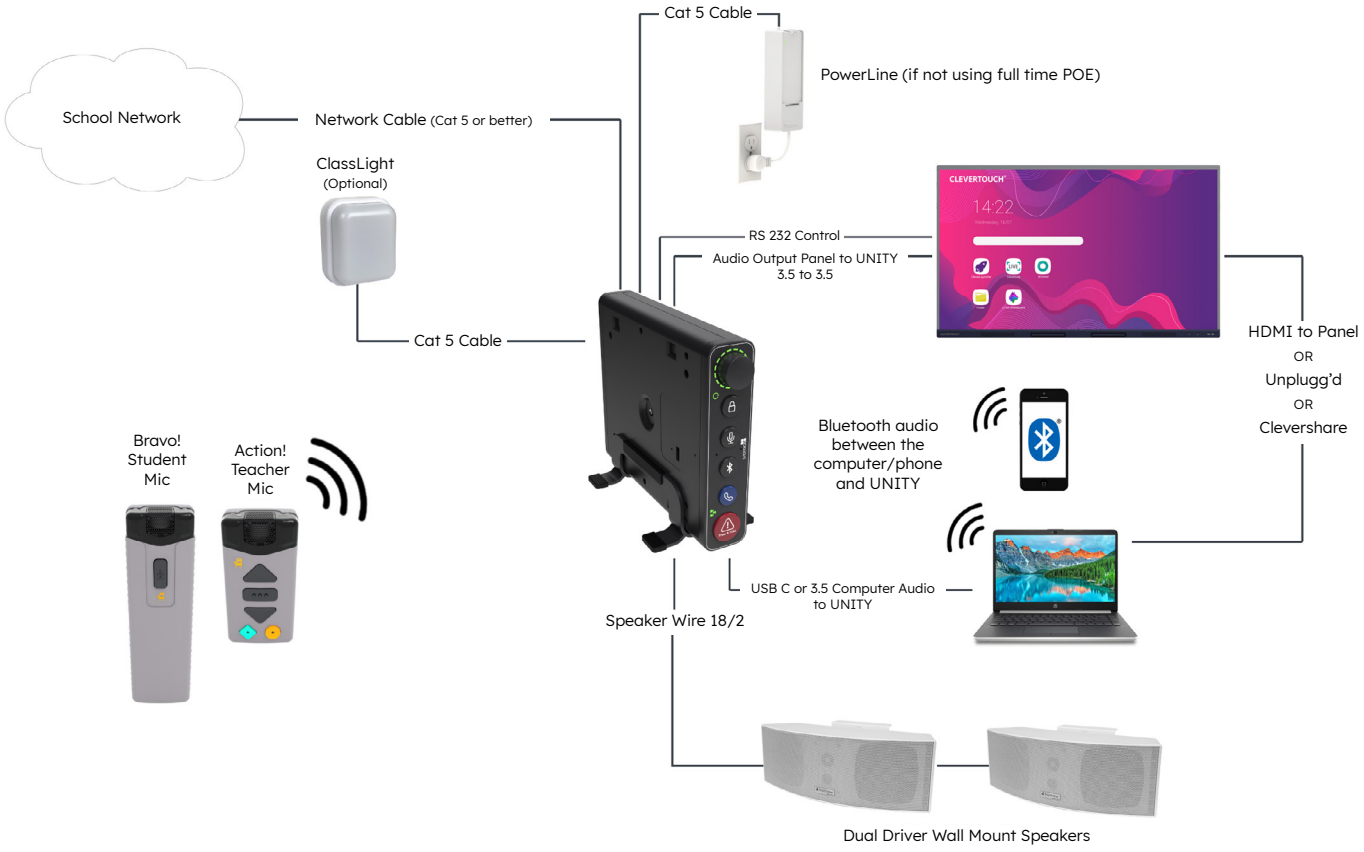
Before You Begin

FrontRow's UNITY is a classroom amplification, teacher voice lift, and control device. UNITY may be installed horizontally or vertically on a shelf, in a cabinet, behind the Interactive Flat Panel or in an ezRoom®. In addition, UNITY can be an integral part of your school's Conductor (Bell, Paging, Intercom and Alerting) system, or serve as a stand-alone classroom amplification, teacher voice lift and control device.

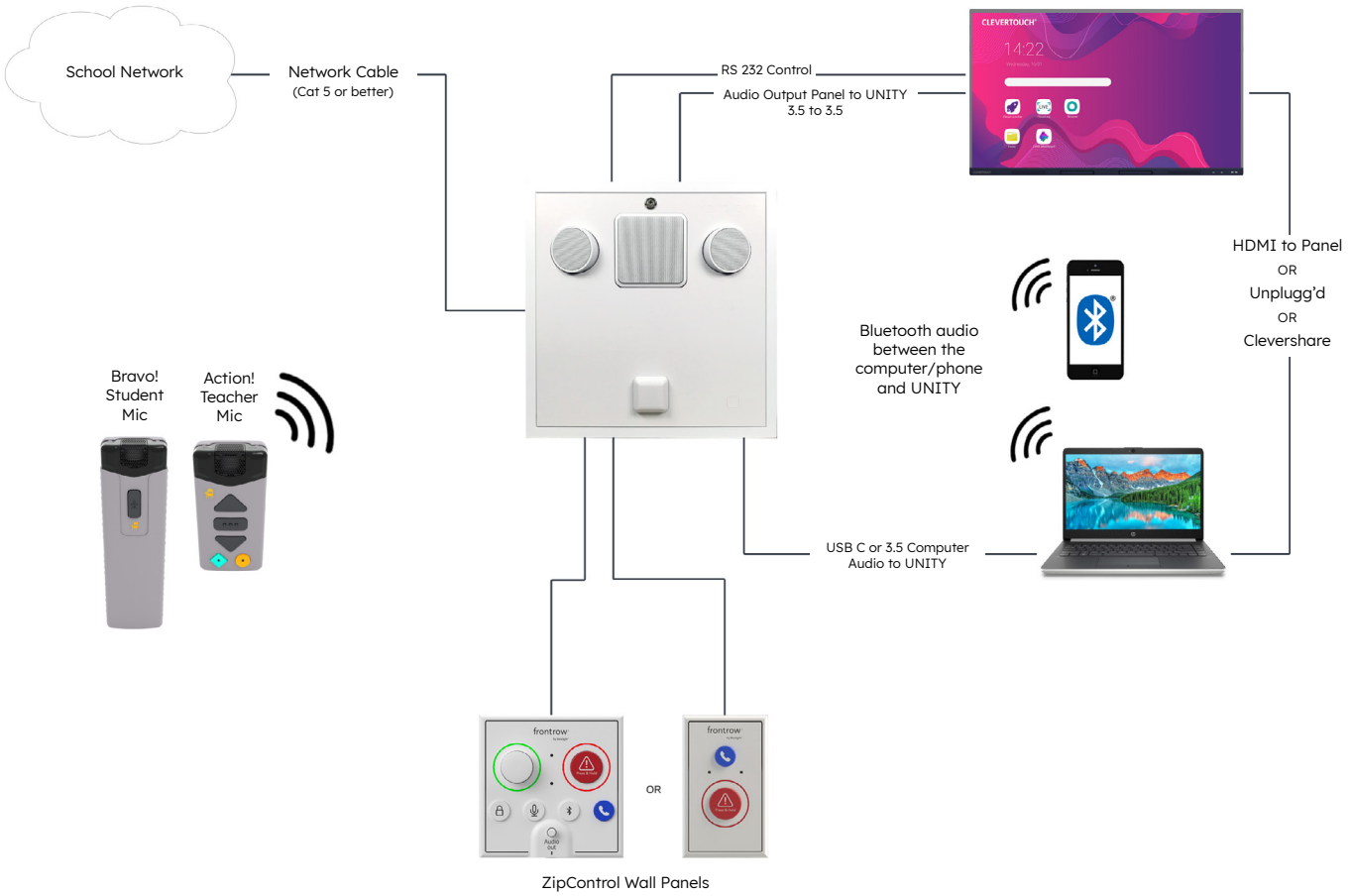
A single UNITY can mix and amplify analog audio, encode/decode streaming audio, auto switch between local classroom audio and network audio, and allow for direct or "pass though" control of serial devices such as a projector. It resides on an IP network allowing it to be accessed remotely and securely to execute its functions.

Visualize your goal, what will your classroom UNITY solution look like? Below you will find two examples.

UNITY – Horizonal or Vertical (Shelf, Cabinet, or Wall Mounted)



TIP: Use the MyFrontRow app to control your Unity from any device, anywhere on campus. Available for Android, Mac, Windows, and iOS.



NOTE: When installing and turning Unity on, if connecting ClassLight make sure it is plugged in before power is supplied. ClassLight is not designed to be "hot-plugged" and unplugged.

Recommended Unit Powerup Sequence

1. Connect all peripherals, including speakers, ClassLight, USB cables etc.
2. Connect network cable.
   Note: If the network provides PoE power, wait 30 seconds before continuing to step 3.
3. If applicable, connect the PowerLine cable.

UNITY, Faceplates and Connections

How to identify your UNITY

UNITY is available in a **Classroom** and **Campus** version. UNITY is designed for classroom audio and voice. UNITY Campus adds support for bells, paging, intercom, and alerts.

NOTE: Each version is available in a horizontal or vertical orientation.

UNITY Campus

Faceplate ID = 02 (Campus Horizontal)

Faceplate ID = 06 (Campus Vertical)

UNITY Classroom

Faceplate ID = 03 (Classroom Horizontal)

Faceplate ID = 07 (Classroom Vertical)

NOTE: The Faceplate ID is shown on the **About** page in the UNITY User Interface.

UNITY Faceplate Common Buttons

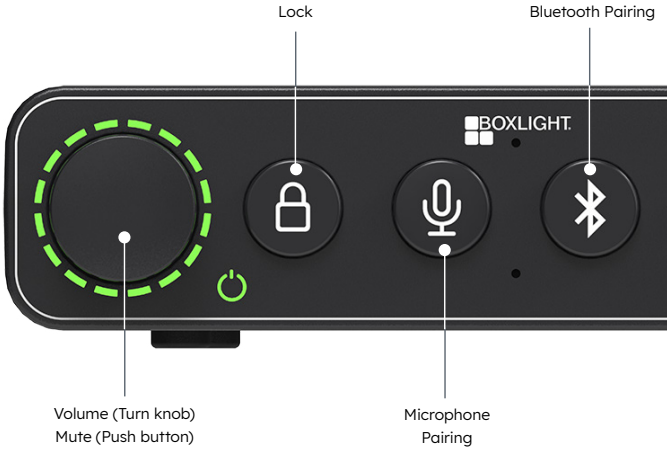
Volume/Mute

- Dual function volume control, right (clockwise) to increase volume, left to decrease volume.
- Press the knob to mute all audio.
- Un-mute by pressing the knob or rotating to the left or right.

Faceplate Locking Feature

Optional feature activated via the UNITY web interface.

- When the lock icon is illuminated, the Volume/Mute control, Microphone, Bluetooth, Diamond and Circle buttons are locked.
- The Intercom and Alert buttons **do not** lock.



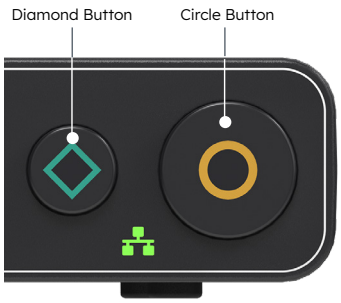
Microphone Pairing

Button initiates paring between the UNITY and the Action! and Bravo! microphones.

Bluetooth Pairing

Button press initiates paring between the UNITY and a Bluetooth audio output device.

Classroom and Conductor specific options



Diamond Button

- Button press, (typically), initiates the same action as the Diamand button on the Action microphone.

Circle Button

- Button press, (typically), initiates the same action as the Circle button on the Action microphone.

Intercom Call Button

- Button press initiates an intercom call to the school office.
- Communication with the office can be “hands-free”.

Alert Button

- Button press (& HOLD for 2 seconds) initiates a school Alert.
- This Alert is unique to your school

UNITY, Faceplate Power and Network Indicators

Active Network connectivity = Green

No Network connectivity = Off

Power Source	Color	Power Line + Network PoE
PowerLine	White	--
PoE+	Amber	White/Amber
PoE++	Green	White/Green

UNITY, Faceplate Security

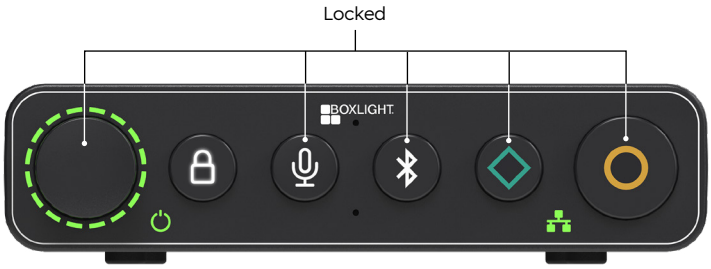
NOTE: By default, this feature is not activated. Contact your audio system administrator to have this activated.

Instructions are based on UNITY's default configuration.

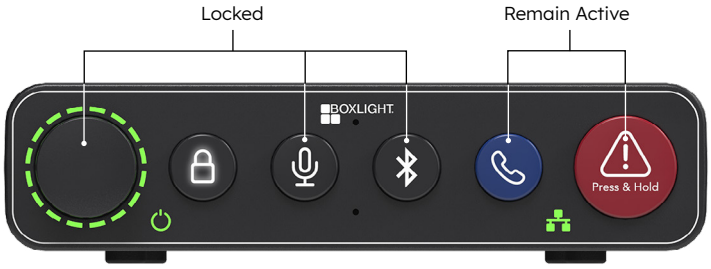
Enabling Front Panel security allows the panel to be locked which locks, (disables), the following buttons:

- Volume knob
- Volume mute
- Mic pairing
- Bluetooth pairing
- "Classroom" faceplate Circle and Diamond

NOTE: The "Campus" faceplate Call and Alert buttons will be active.



Classroom



Campus

Locking/Unlocking UNITY's Faceplate

Locking:

Typically, the faceplate will automatically lock after 60 seconds.
Pressing the Lock button will also lock and unlock the faceplate.

Unlocking:

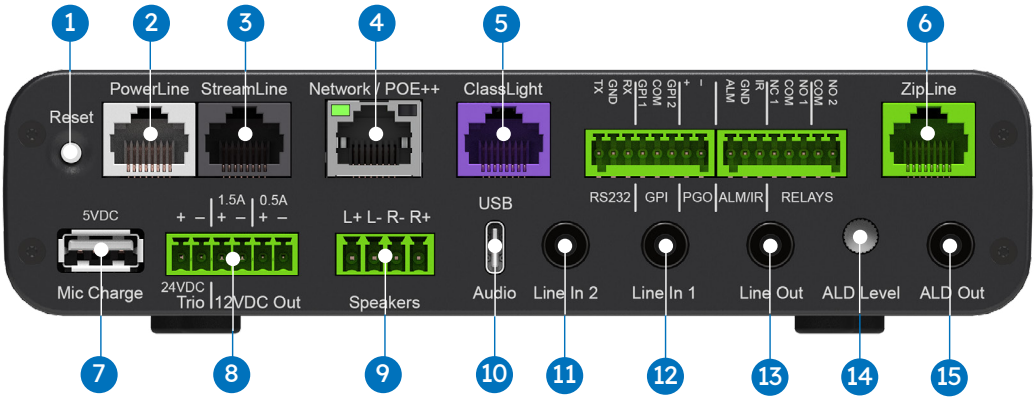
To unlock the faceplate, push the Lock, Microphone and Bluetooth buttons in this order:

1. **Lock** button (The Lock button will blink rapidly)
2. **Microphone** button
3. **Bluetooth** button
4. **Microphone** button
5. **Bluetooth** button
6. **Lock** button (The lock button will go off)

NOTE: The default combination can be changed in the UNITY configuration pages.

Connections (UNITY Back)

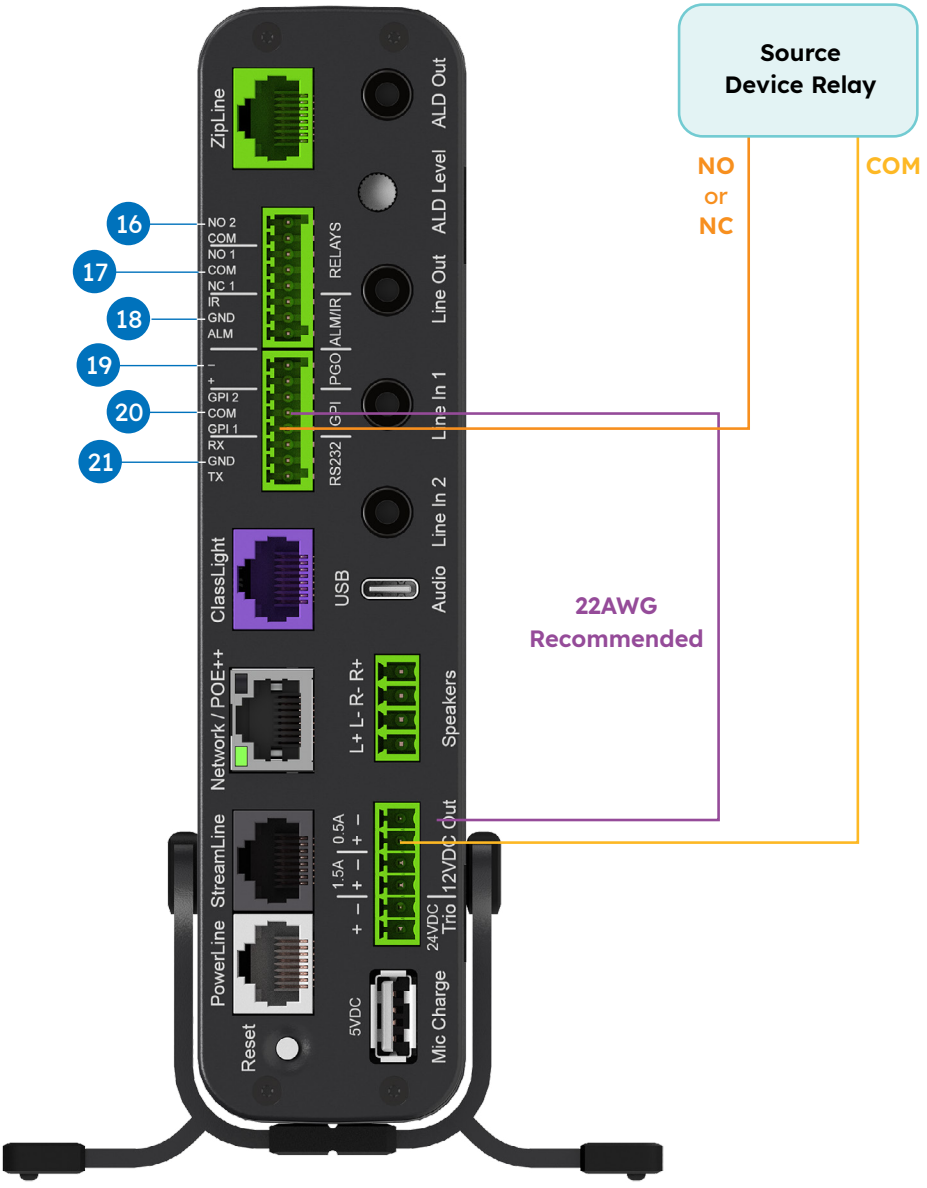
1. **Reset** - Pressing the Reset button for 10 seconds will perform a complete power cycle of the device and any external devices connected to its power sources.
2. **PowerLine** – Connect the PowerLine adapter to supply 90 watts of power to UNITY and ancillary components.
3. **StreamLine** – Not yet active; this is a new technology which will be implemented in a future firmware release.
4. **Network / PoE++** - Connect UNITY to the local IP network.
   - If the network switch is not PoE+ or PoE++ capable, PowerLine must be used.
   - With PoE+ UNITY will run in limited power mode.
   - With PoE++ UNITY will run in full power mode.
5. **ClassLight** – This port is dedicated to the ClassLight. (If using ClassLight, connect this before powering the UNITY).
6. **ZipLine** - At the time of this writing, ZipLine is not yet active; this is a new technology which will be implemented in a future firmware release.
7. **Mic Charge** – Connect a USB A to Micro USB cable to charge your Action! or Bravo! (Teacher or Student) microphone. (Power Only, no data will be transmitted.)
   NOTE: Does not power the Flip Charger.
8. **24VDC / 12VDC Aux Power Out** - Used to power other components. Most often used in ezRoom applications to power the Trio speakers or TB-14.
9. **Speakers** - Terminal to connect speakers. 2 x 8w (8-Ohm), 2 x 16w (4-Ohm).
10. **USB C** – Connect to a computer to play audio through the UNITY and/or to use audio from the UNITY in applications on the computer. (Audio In and Out)
    NOTE: At the time of this writing, the iPhone 15, Google Pixel and Samsung SE devices may supply audio to UNITY using a USB C to USB C cable. USB C to Lightning cable does not work.
11. **Line In 2** – Audio Line In (Stereo 3.5)
12. **Line In 1** – Audio Line In (Stereo 3.5)
13. **Line Out** - Audio output for lesson capture or to send audio to another device. (Stereo 3.5)
14. **ALD Level** – Control the volume level of the ALD mixed audio out.
15. **ALD Out** – Connect an ALD receiver to this port.



16. **Relay 2** - Allows triggering of third party devices, like strobes or door locks. Can only be wired for “Normally Open”.
17. **Relay 1** - Allows triggering of third-party devices, like strobes or door locks. Can be wired for “Normally Open” or “Normally Closed”.
18. **Alarm & IR Blaster:**
    - **Alarm** – Connect to an alarm system to trigger events or mute audio when the alarm is triggered; may also initiate other actions defined by the user.
    - **IR Blaster** – Can be configured to send IR control signals to other devices via an IR emitter cable. (Requires TB18 to be wired inline.)

      NOTE: In some cases, the IR emitter can be removed and directly connected. Contact FrontRow TSG group for assistance.
19. **Page Override** - Page override interface with 20/70/100V analog paging systems. Automatically mutes audio coming from the UNITY system during a paging event; may also initiate other actions defined by the user.
20 **GPI 1 & GPI 2** – General purpose inputs which may be configured to initiate user-defined UNITY Events.
21 **RS232** – Can be configured to control other devices via serial communications.

UNITY GPIs work a little differently. To provide a charge to the contact closure relay connected to the UNITY GPI, you will use the 0.5A 12VDC port on the UNITY (this is similar to the way the Alarm input is wired if the source relay/trigger is not providing power).



Preparing for Configuration

You can reconfigure UNITY at any point if your setup changes or you make a mistake. However, it's best to plan ahead.

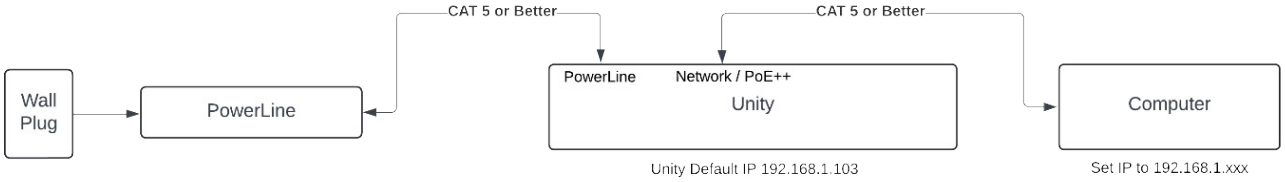
For greatest efficiency, we recommend configuring all of your UNITY systems at the same time while in the office and prior to going to the installation site, but you can also do it room by room at the school if you prefer. The first step is to collect your configuration tools.

1. To configure your UNITY systems, you will need:
   - Your UNITY systems
   - Enough Cat 5e cable to connect between the UNITY and the computer you will use for configuring the device
   - A computer with RJ45 connection and a recommended web browser installed
   - A PowerLine (UNITY power supply) with a network cable – OR – PoE+ / PoE++ Injector, - OR – PoE+ / PoE++ Network Switch
   - A list of IP Addresses and Room names to be used for Unity in each room at the location.
   - The **FrontRow Rollout application** can also be used to push configuration files to one or more UNITY's. (See Appendix F for more information)
2. Connect your configuration setup:

   Using your first UNITY, connect it to your configuration equipment as shown below.

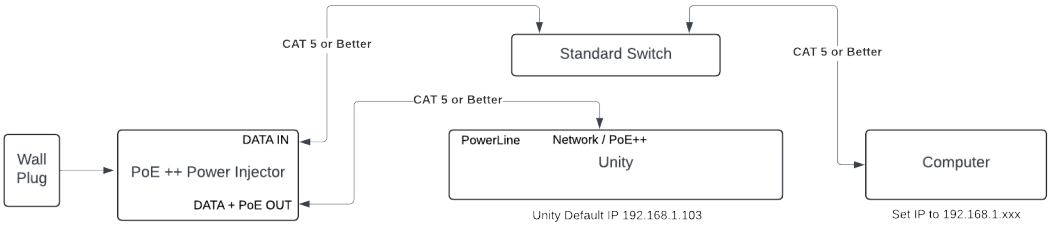
   Option 1: (Computer, UNITY, PowerLine)

   1. Set your computer to a 192.168.1.xxx address. Do not use 192.168.1.103 as that is the default address UNITY uses.
   2. Using a CAT 5 or better network cable and connect your computer to the Network / PoE++ Port on the back of the UNITY.
   3. Using a CAT 5 or better network cable, connect Unit's Powerline port to the actual PowerLine.
   4. Plug the PowerLine into local wall power.



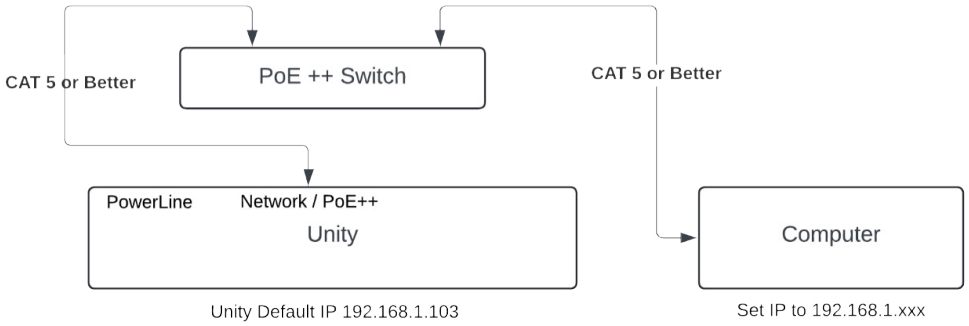
   Option 2: (Computer, UNITY, PoE++ Injector, Switch)

   1. Set your computer to a 192.168.1.xxx address. Do NOT use 192.168.1.103 as that is the default address UNITY uses.
   2. Using a CAT 5 or better network cable, connect your computer to the network switch.
   3. Using a CAT 5 or better network cable, connect the network switch to the IN port on the PoE injector.
   4. Using a CAT 5 or better network cable, connect the OUT port to the Network / PoE ++ Port on the back of the UNITY.
   5. Connect the POE Injector to the local wall power.



Option 3: (Computer, UNITY, PoE++ Switch)

1. Set your computer to a 192.168.1.xxx address. Do not use 192.168.1.103 as that is the default address UNITY uses.
2. Using a CAT 5 or better network cable, connect your computer to the network switch.
3. Using a CAT 5 or better network cable, connect the network switch the Network / PoE ++ Port on the back of the UNITY.



IMPORTANT: Once you have connected your computer to Unity, you will:

1. Connect to the device's web configuration pages.
2. Make any desired changes.
3. Download a copy of your custom configuration.
4. Push that configuration out in a batch process to all other Unity devices that you want to have the same configuration using the Rollout Application. (Or, manually upload one by one).

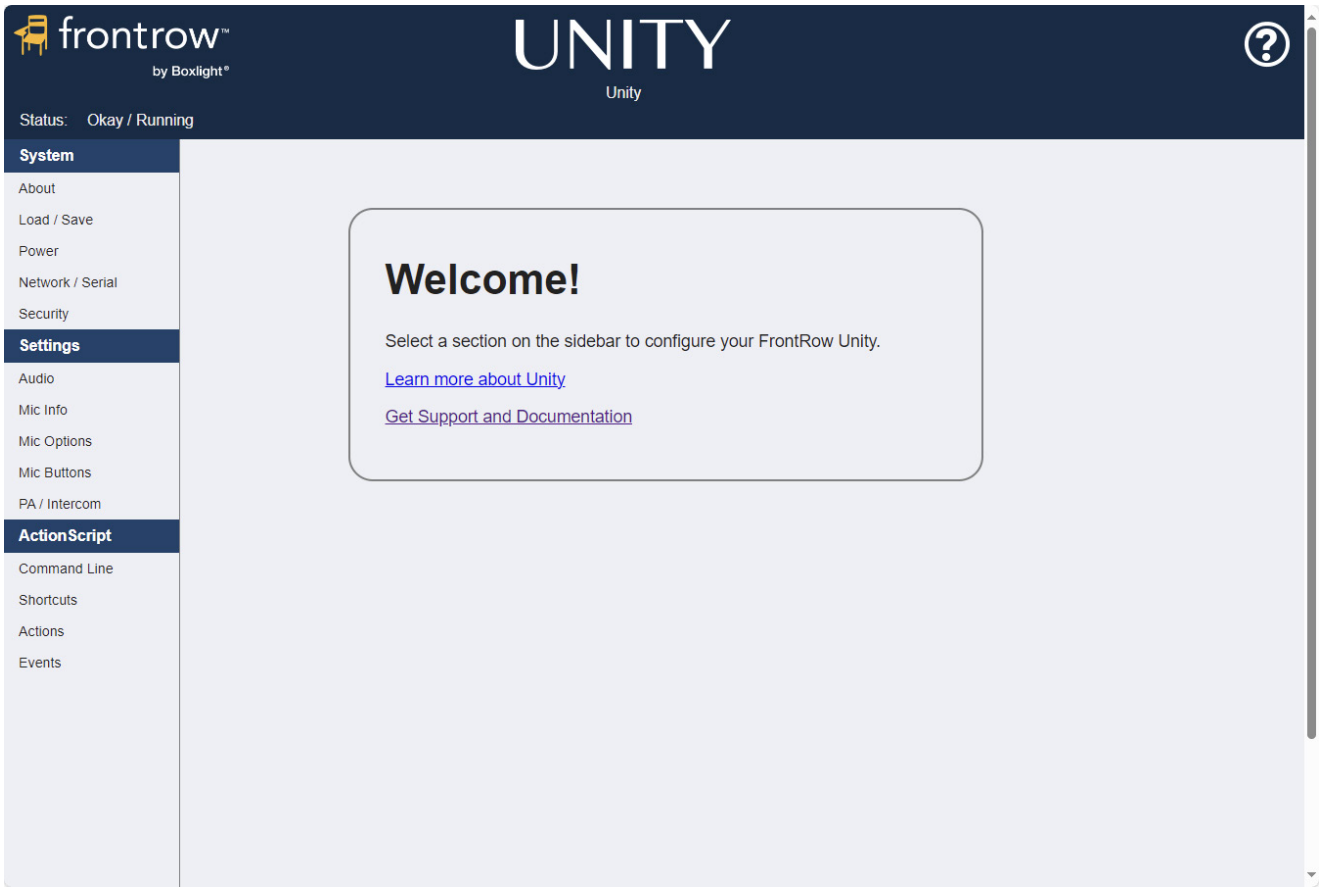
Configuring UNITY

UNITY has several parameters that can be configured to tell it how to communicate with other devices or Conductor installation. While each installation is different most of the default parameters will be appropriate.

Access UNITY

Open a web browser on your laptop; in the URL field, type the IPv4 address of the desired UNITY (default 192.168.1.103), press enter. Note that the default address should be changed when configuring UNITY for the school's IP addressing scheme.

The browser will display UNITY's web interface:



SYSTEM SECTION

ABOUT

Device Information

The Name field allows you to enter a name for the UNITY system. The name you choose should contain meaningful information, e.g. classroom number. Strong naming conventions allow the person accessing the device remotely to better understand the location of the UNITY system.

Additionally, the page displays information on:

- Model (can change depending on the installed faceplate)
- Voice (enabled/disabled)
- Conductor (enabled/disabled)
- Faceplate (ID) *See appendix*
- ClassLight (count)
- Power
- MAC Address
- Firmware version
- Firmware build (date)
- Hardware version
- Serial Number

NOTE: When UNITY is equipped with the Classroom faceplate, the Model and Faceplate fields display different values.

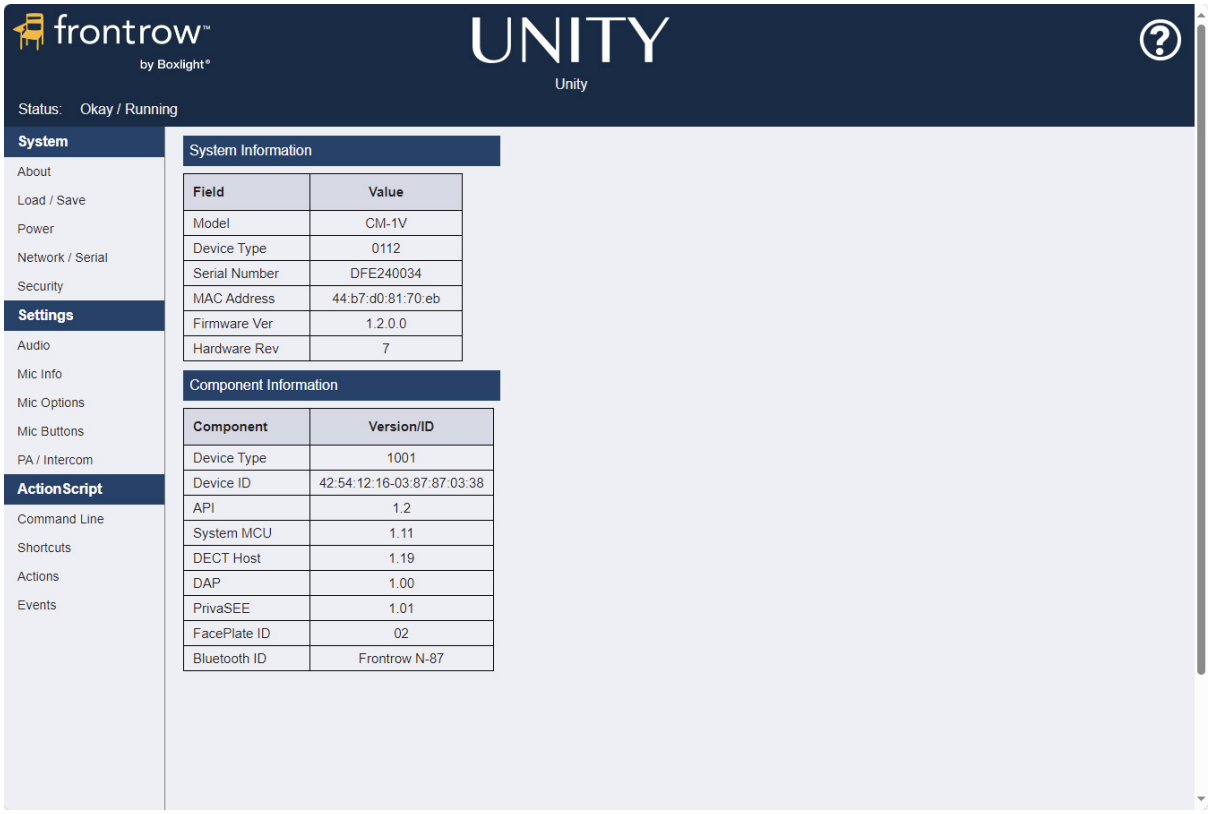
System & Component Details

The About page also displays a link to the **System & Component Details** page shown below. This page includes additional information about UNITY's internal components. This is often needed when contacting us for support.

Bluetooth ID

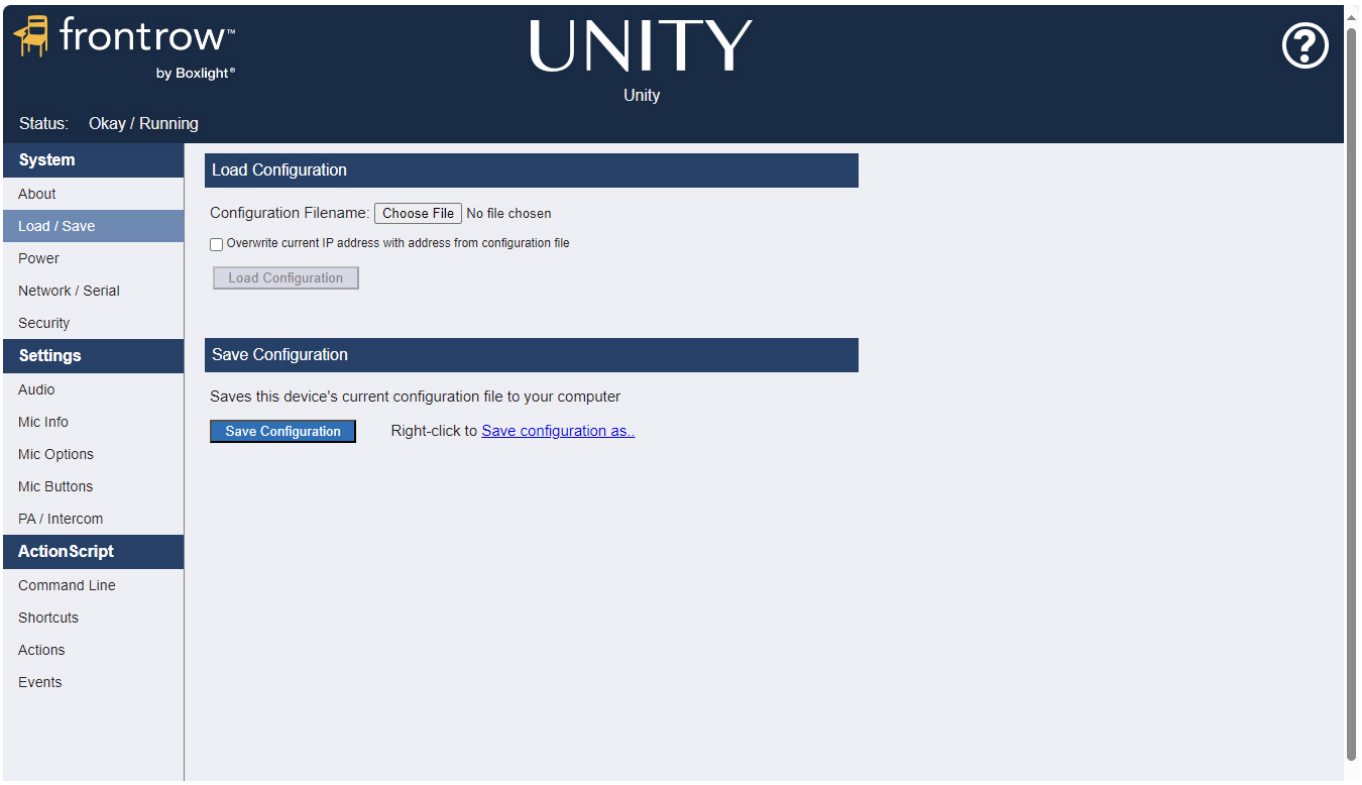
The Component Information section also includes the Bluetooth ID assigned to your UNITY. Knowing this information will ensure you are connecting your Bluetooth device to the correct UNITY.

The Bluetooth ID assigned to your UNITY may not be changed. However, you may want to rename the ID in your Bluetooth device. Example "Room 20".



LOAD/SAVE

The set of configuration parameters created in UNITY's web interface can be saved in a file for use with other UNITY systems. In this section you would "save" a configuration file or "load" a file from a location on your computer. In some cases, certain parameters may still need to be changed after loading a configuration file (e.g., the IP address).



Load Configuration

Browse for a previously saved UNITY configuration file and load it on this device.

ONLY use configuration files created with UNITY for UNITY. FrontRow configuration files are not interchangeable, (e.g., Smart Receiver, CM 900). You will get an error message if you attempt to load an incompatible file.

NOTE: There is a check box that will allow UNITY to overwrite the current IP with the IP address of the configuration file. If your configuration file includes a desired static or DHCP address setting, you will want to check this box when uploading the configuration file.

NOTE: if you allow the network address settings to be changed, your browser will need to be manually pointed at the new address.

Save Configuration

Save the configuration file from this device for use on other UNITY systems. Both the button and the link will download the file, however the link can be used, via the browser's ability, to assign a specific name to the downloaded file.

Bulk Configuration

FrontRow offers the ability to upload configuration files to multiple UNITY systems on the same network using FrontRow's Rollout application. (See Appendix F for more information)

POWER

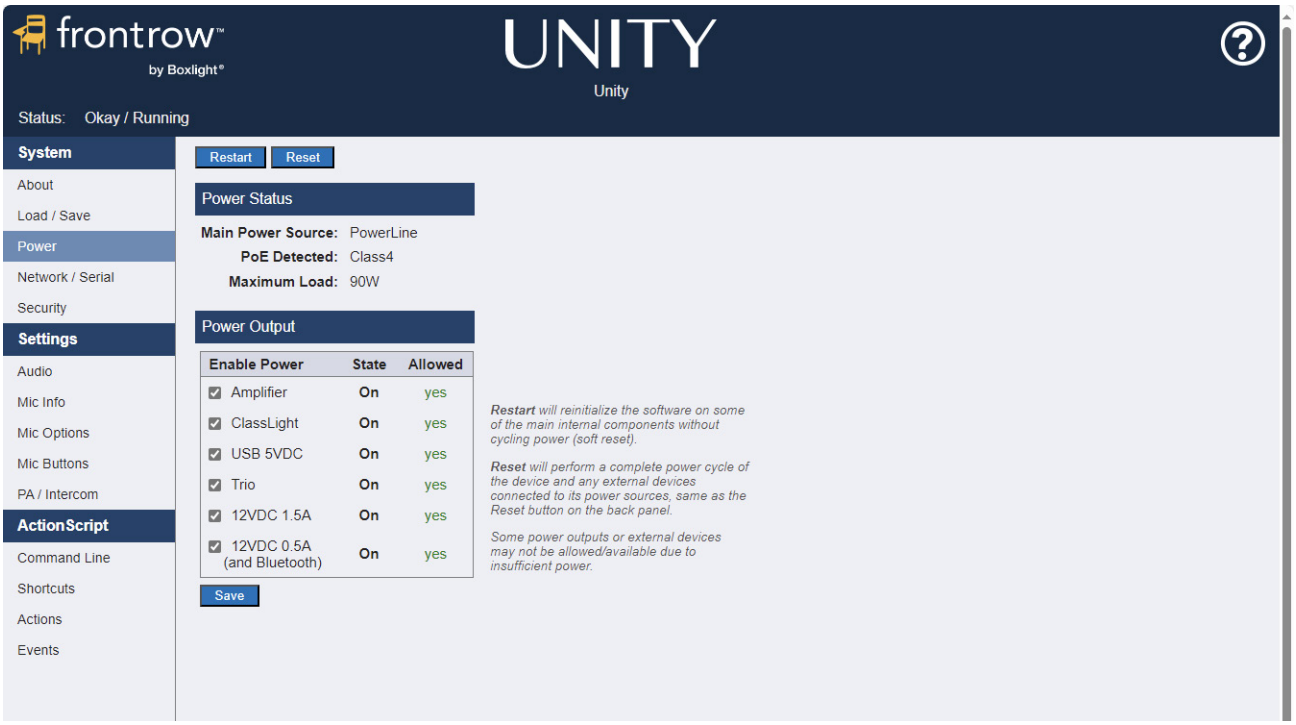
Power Status

The **Power Status** section displays:

- Main Power Source: (Shows PowerLine or PoE)
- PoE detected (Class Type, only active if Main Power Source is “PoE”)
  See Appendix C: Power Status - PoE Power Classes & Available UNITY Features
- Maximum Load (power in watts)

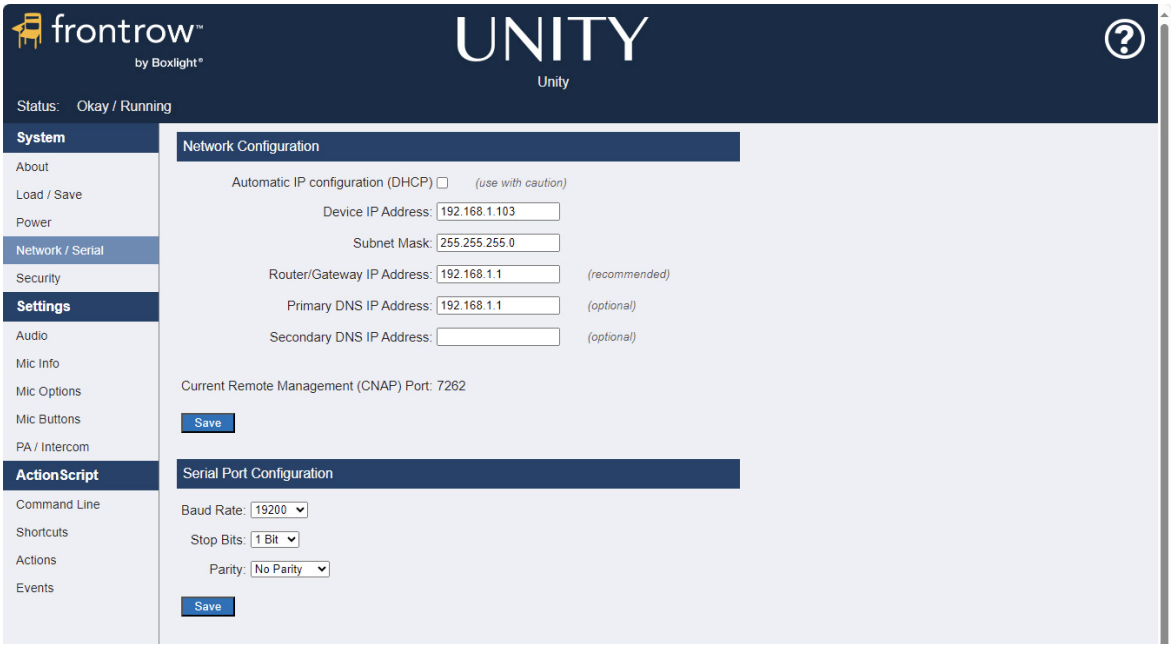
Power Output

The **Power Output** section displays the features available based on the power source connected to UNITY. The user may also manually disable additional features which are normally allowed.
See Appendix C: Power Status - PoE Power Classes & Available UNITY Features



NETWORK/SERIAL

The Network/Serial page allows the IP address of UNITY to be set to the school's network as well as changing the default Serial Port Configuration. (Note that the Serial configuration controls how UNITY will communicate with other devices and must match the requirements for the device being controlled. This may require expert knowledge.)



Network Configuration

Automatic IP Configuration, (DHCP) - Use this setting to have UNITY request an IP address from a DHCP server; ***this is not the recommended setting*** and should be enabled only if the IT department has a DHCP server online and has set up static (fixed) IP address reservations for FrontRow devices; otherwise manually enter the IP address reserved for the device in the IP Address field.

It is highly recommended that static IP addresses be used.

Device IP Address - The field displays the IP address for the device. If not in DHCP mode, the desired static IP address may be changed by entering a new one. The default address is 192.168.1.103 but should be changed to avoid conflict with other new FrontRow devices on the network. You must use the address provided by the IT department and ensure that each device has a unique address.

IP Subnet Mask - Provided by the IT department. If used as part of a Conductor system, the subnet mask must be 255.255.255.0.

Router IP Address - Required when this device is in a network in which router switches determine connectivity across subnets. Provided by the IT department.

Primary DNS IP Address - (optional) Nameserver address provided by the IT department. Rarely used with this device, only enter an IP address here if specifically requested by the IT department.

Secondary DNS IP Address - (optional) Nameserver address provided by the IT department. Only enter an IP address here if specifically requested by the IT department.

Current Remote Management (CNAP) Port - Under rare conditions, it may be necessary to change the network communication ports used by other devices and software to communicate with this device. If such a change is necessary, please direct your browser to the /cfg/advanced.htm page for this device and refer to the help there.

Serial Port Configuration

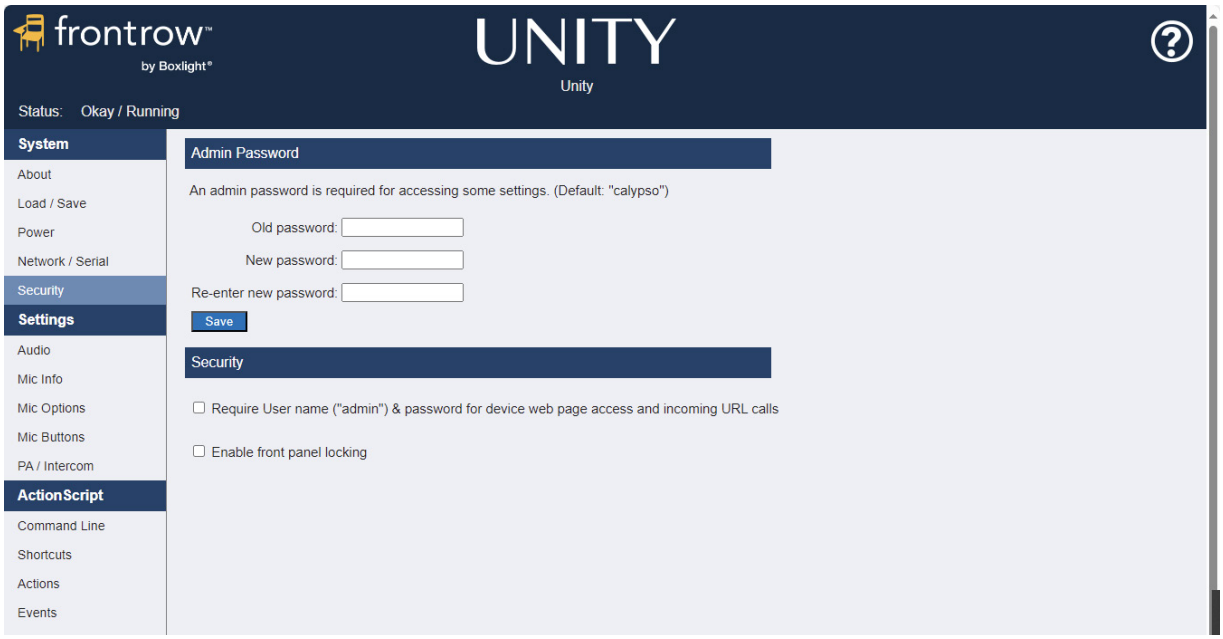
Baud Rate - Specifies the data speed at which this device should communicate with the attached serial device; while 9600 and 19200 are typical for projectors, data speeds vary by manufacturer.

Stop Bits - Specified by the manufacturer of the connected serial device, but is typically **1**.

Parity - Specified by the manufacturer but is typically **None**.

SECURITY

By default, UNITY security is disabled, meaning anyone with the IP address of the device may access the user interface.



Admin Password

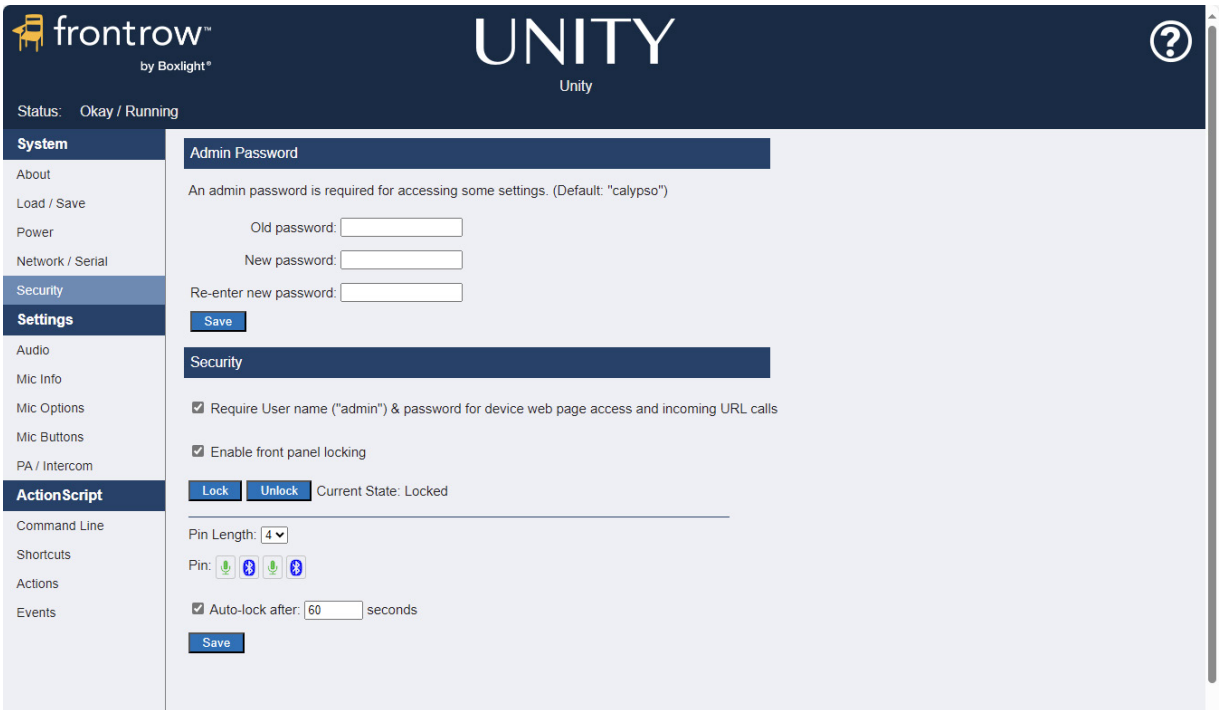
If the school would like to activate UNITY security to the web interface, we recommend changing the default password, (The default password is **calypso**).

Security

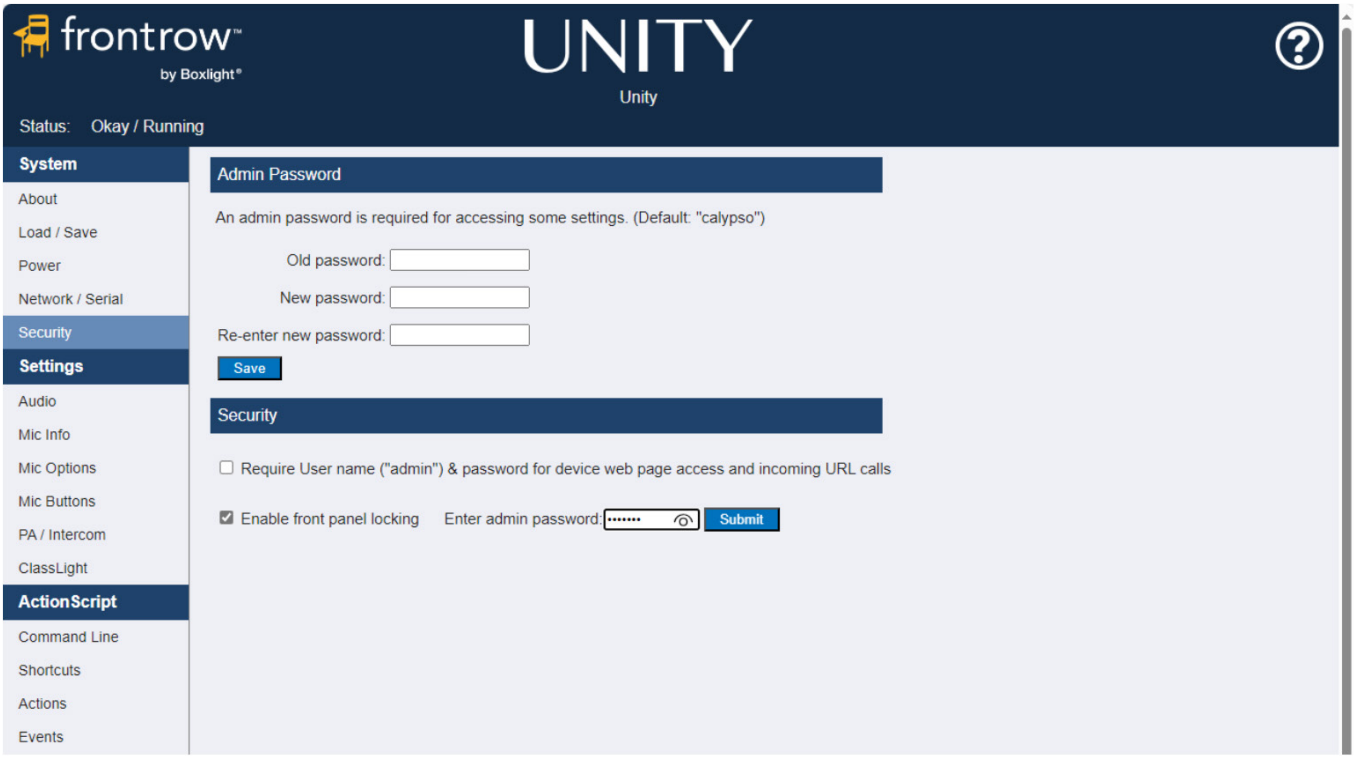
UNITY's Security section allows the user interface to be locked by default requiring a password to access the device via the web pages. Selecting the Require option will prompt for a username (admin) and password.

Additionally, security may be added to UNITY's front panel (faceplate) by checking the Enable front panel locking. Changing this will require a password (the same password as above).

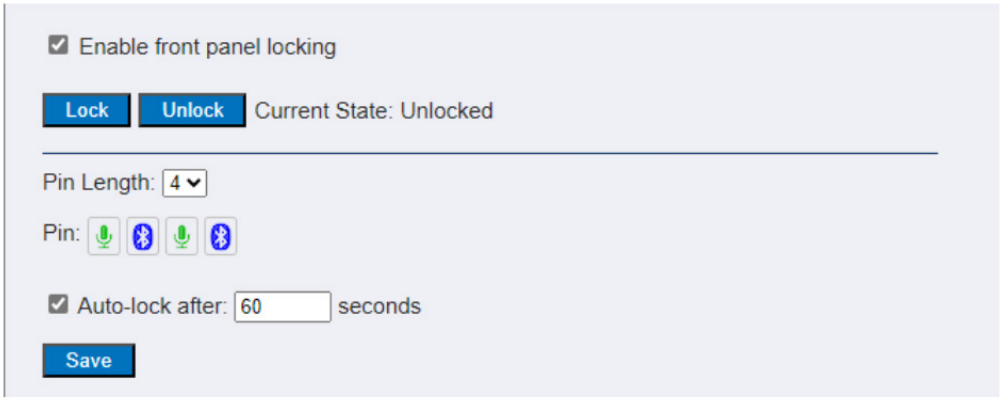
NOTE: Enabling this option will add additional items to this page, as shown below.



Enabling UNITY Faceplate Security



Check “Enable front panel locking”, type the admin password and click the **Submit** button.



Once front panel locking is enabled, UNITY’s user interface will present buttons allowing the front panel to be locked or unlocked. The user interface also displays the current state of the front panel.

Additionally, the interface presents the following:

Pin Length – The Pin Length can be 2 through 6 button presses. The default setting is 4.

Pin – Based on the Pin Length, the UI will display the appropriate number of icons. Clicking the Icon will toggle between the Mic and Bluetooth icons. Click each icon until the screen displays the desired Pin.

Auto-lock check box – Checking this box will automatically lock the front panel after the number of seconds shown on the screen.

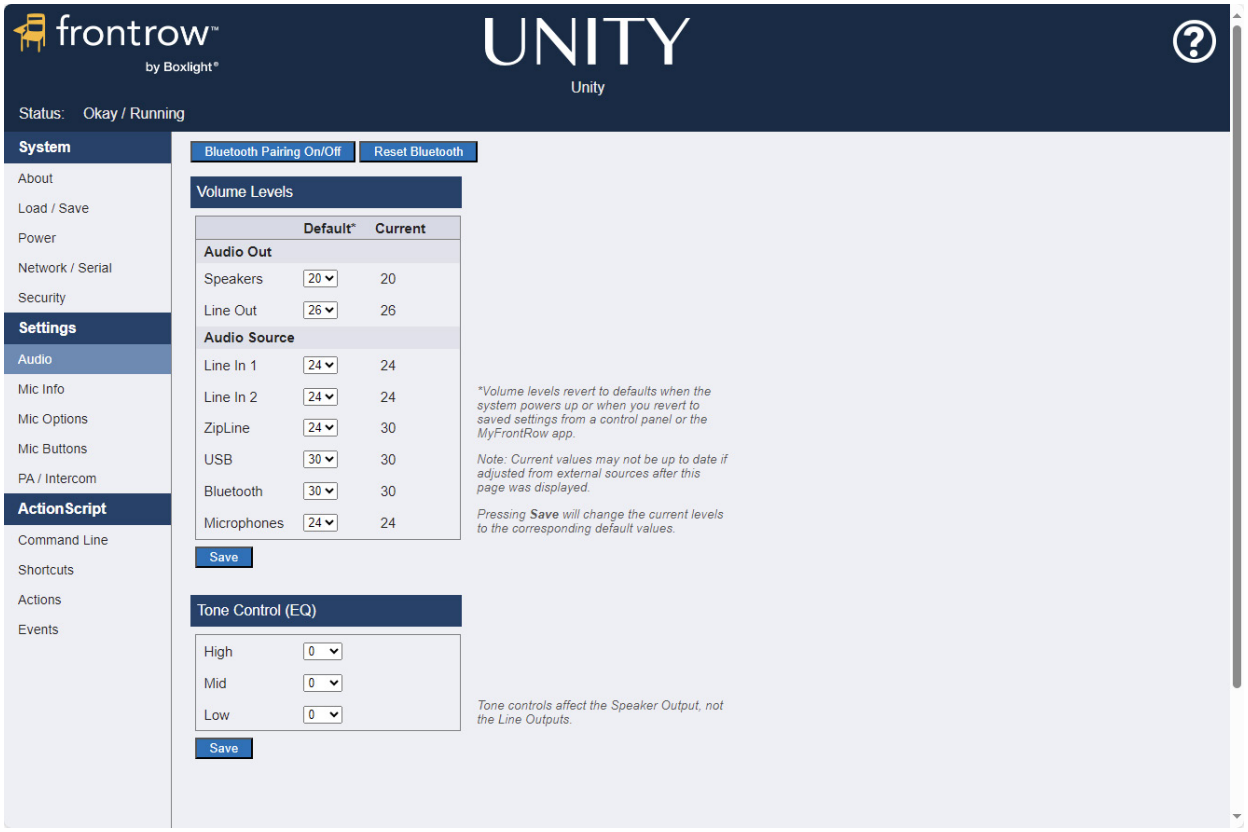
Seconds field – Type the number of seconds in the field

Save button – Clicking the save button will save all changes made to the fields described above, (Those below the horizontal line in the web page).

SETTINGS SECTION

AUDIO

The Audio page allows access to various audio output and input (source) settings, including the Line In connections and Bluetooth, as well as Tone Control (EQ) settings. These can be modified and saved.



Volume Levels

Volume Levels display the current volume level as well as the default volume level for each item.

UNITY will always return to the default level after the device has been rebooted. Using the UNITY volume knob, or sending Action Script commands, will change the current level values (but not the default values).

Example: The “current” level for Speakers could be higher or lower than the “default” level since the volume can be controlled with the Volume knob.

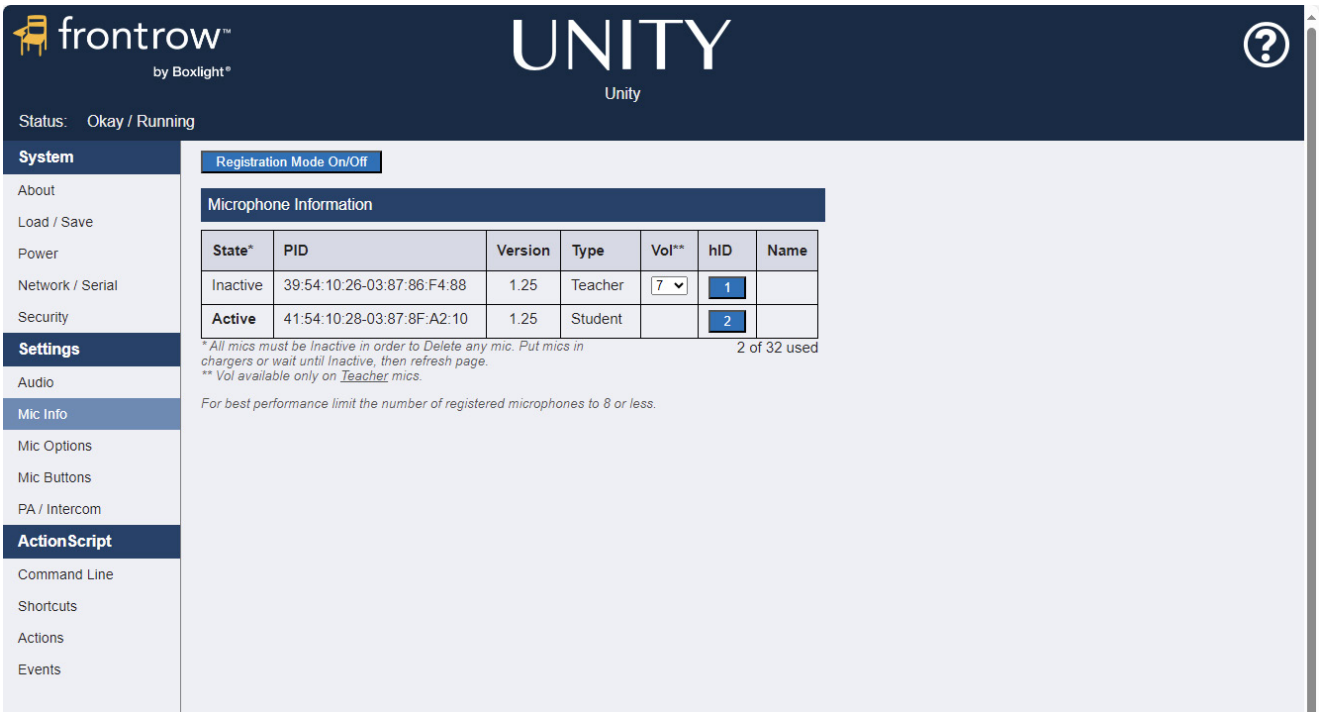
Tone Control (EQ)

Overall sound can be adjusted using UNITY’s Tone Control.

NOTE: Volume or Tone Control settings will be immediately applied with the respective Save button. Saving values here will change both the current and default values.

MIC INFO

The Mic Info page allows you to put the UNITY in microphone registration (pairing) mode. In addition, this page will display each microphone currently registered with UNITY and indicate whether the microphone is currently active.



Registration Mode On/Off

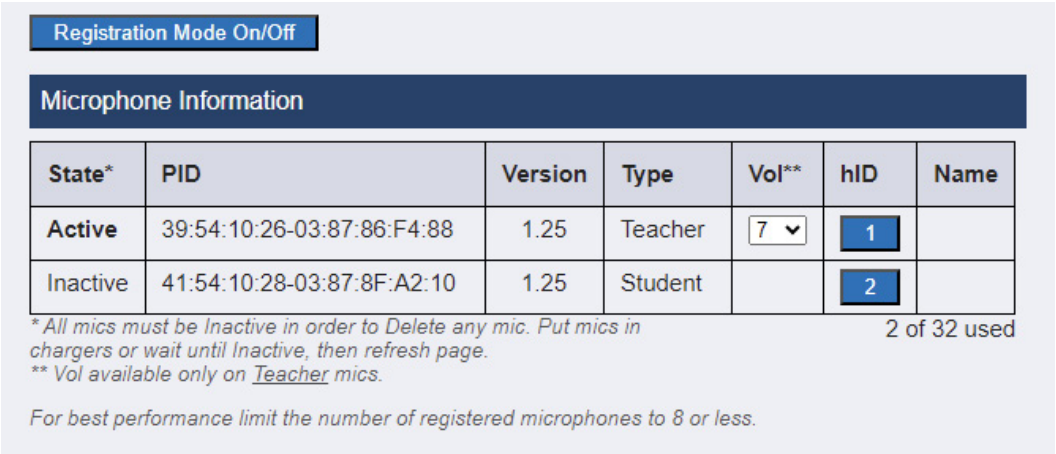
To put UNITY in microphone registration (pairing) mode, press the "Registration Mode On/Off" button in the page. Pressing the button a second time will take UNITY out of registration mode.

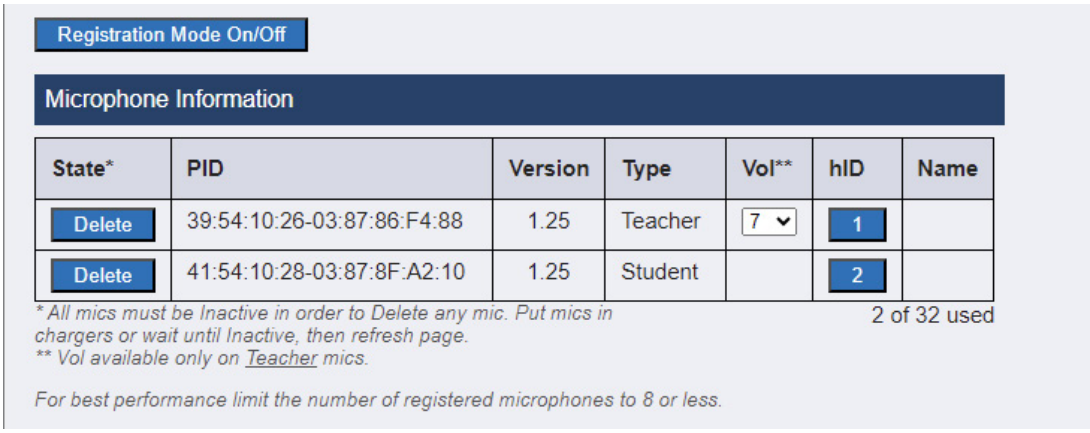
NOTE: When UNITY is in registration mode, the microphone button on UNITY's faceplate will blink. If a ClassLight is also connected, it will blink green.

Microphone Information

The microphone section of this page displays a list of all paired microphones. Additional information includes:

- **State:**
  - If a single microphone is active, the State column will display Active or Inactive based on the current state of the microphone.
  - If all microphones are inactive, the State column will display a Delete button. Pressing the Delete button will remove that microphone from the UNITY (unregister). (The microphone would need to be registered again to work with that UNITY.)





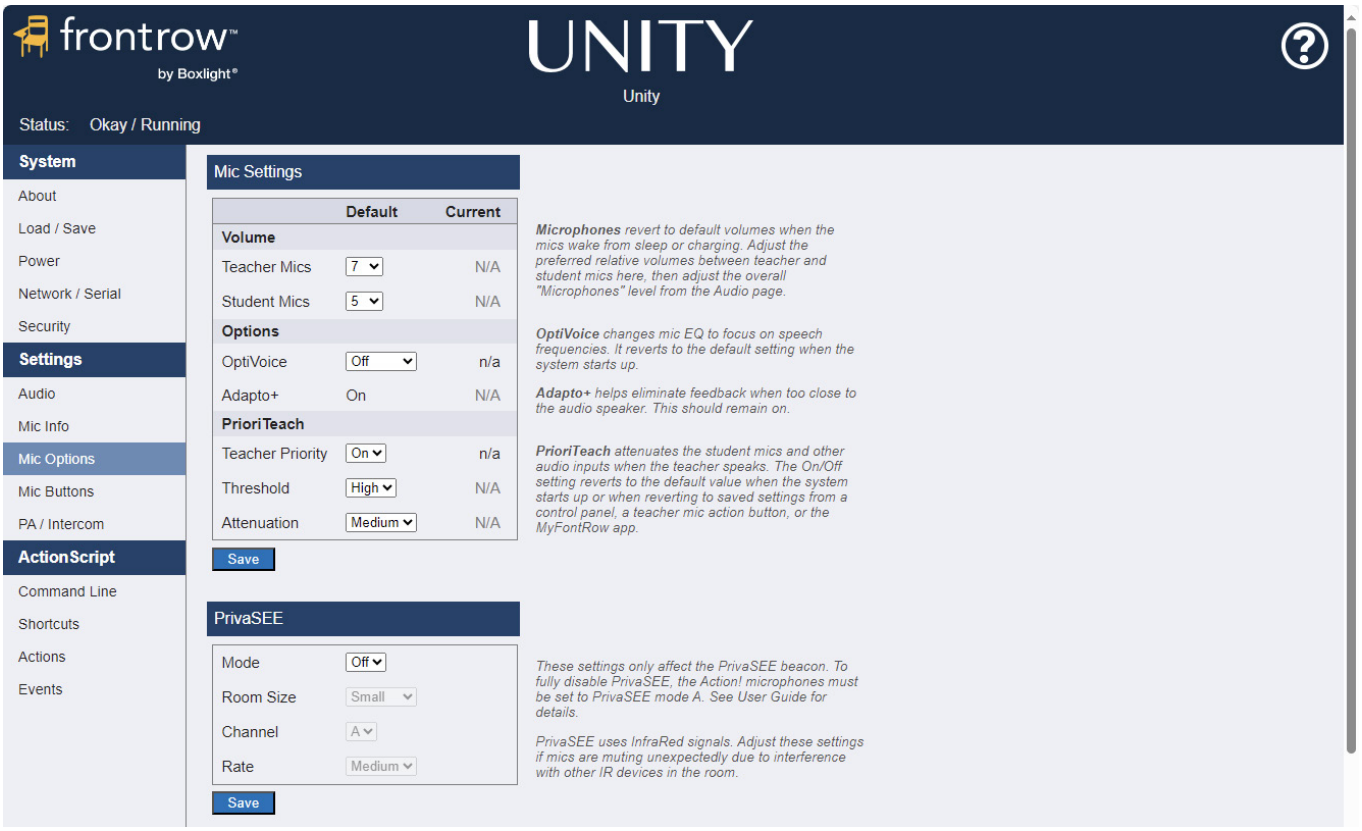
- **PID:** This value is a unique identifier assigned to each microphone. It can be useful to support personnel.
- **Version:** Displays the version of firmware running on the microphone.
- **Type:** Displays the type of microphone; Teacher = Action! Mic, Student = Bravo! Mic.
- **Volume:** Only available on the Teacher microphone, this drop-menu sets the volume level of that Teacher mic.
  - In the default configuration, pressing the up or down buttons on the front of the mic can raise or lower the volume level of all the active mics. This is separate from the individual volume setting here.
  - Placing the mic back in the charging cradle or plugging it into the charging cable will reset the mic level shown here back to the default volume (set on the Mic Options page).
- **hID:** This Handheld ID provides an assigned number to the microphone when paired and is used to communicate between the UNITY and the microphone. Especially helpful when more than one microphone is paired with the UNITY.
  - Pressing the numbered button in the hID column will cause the associated microphone to blink and beep for 3 seconds, allowing you to find the microphone.
  - This feature works even if the mic is not active.
    NOTE: This feature is disabled when the microphone is being charged.
- **Name:** This field is not editable in the UNITY interface. It currently requires a separate Rollout application to change the name.

General Notes

- All mics must be inactive in order to delete any mic. Put mics in chargers or wait until inactive or enable, then disable Registration Mode. Doing this will disconnect the mic from the base unit. Refresh the page. The Delete button will be available in the State column, then refresh page.
- Volume is available only on Teacher mics.
- For best performance, limit the number of registered microphones to 8 or less.
- A total of four microphones may be active at the same time.
  Note: At least one microphone must be a teacher “Action” microphone.

MIC OPTIONS

The mic options page allows features to be turned on or off.



Mic Settings

Volume

Microphones revert to the default volumes defined here when the mics wake from sleep or charging. Adjust the preferred relative volumes between teacher and student mics here, then adjust the overall “Microphones” level from the Audio page.

Click in the down arrow field to modify the default value for both the teacher and student microphones. Be certain to click the Save button to store the new values.

FrontRow factory settings:

- Teacher Mics – 7
- Student Mics – 5

Options

OptiVoice changes mic EQ to focus on speech intelligibility. It reverts to the default setting defined here when the system starts up.

Adapto+ helps eliminate feedback when too close to the audio speaker. This should always be on. (If special circumstances require it to be turned off, contact FrontRow support.)

PrioriTeach

PrioriTeach automatically attenuates the student mics and other audio inputs when the teacher speaks into an Action! Mic. The On/Off setting reverts to the default value defined here when the system starts up or when reverting to saved settings from a control panel, a teacher mic action button, or the MyFontRow app. The Threshold setting controls how loud the teacher must speak (over background noise) to activate the change. The Attenuation controls how quiet the non-teacher audio should be when PrioriTeach is activated—a higher setting means a lower volume for non-teacher audio.

FrontRow factory settings:

- OptiVoice – Off
- Adapto+ - On
- Teacher Priority – On
- Threshold – High
- Attenuation – Medium

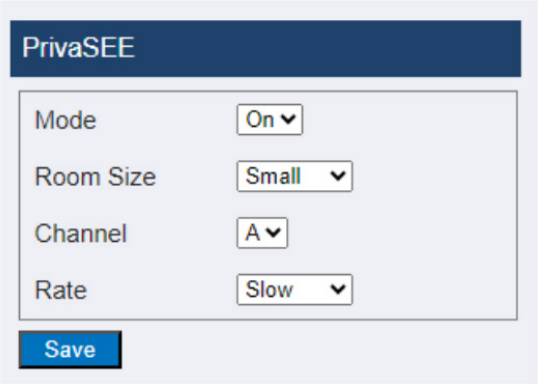
PrivaSEE

PrivaSee uses InfraRed signals between the Action (teacher) Mic and the ClassLight to track whether they are in the same room, i.e., within "InfraRed" line of sight. If the Action Mic is not able to communicate with the ClassLight, audio from the Action Mic will automatically be muted.

NOTE: Due to InfraRed interference common in many classrooms, PrivaSEE is disabled by default from the FrontRow factory. To enable PrivaSEE, open the back of the microphone and change the PrivaSEE setting to Mode B. Then test using the interactive flat panel and walking in and out of the room to make sure the microphone automatically mutes as expected. Adjust the settings on this page if needed.

First introduced with the FrontRow ELEVATE system, PrivaSEE assisted teachers as they transition from IR to radio wave voice transmission. In other words, teachers were accustomed to leaving the room with the microphone on their person. Audio from the microphone would no longer be played through the speakers.

Using and Enabling PrivaSEE



If your school wishes to use PrivaSEE, FrontRow recommends testing several classrooms to ensure there are no other IR devices in the classrooms that will interfere with UNITY and the Action Mic.

To enable PrivaSee, you must turn the feature on in the UNITY user interface. To begin make the following changes:

Mode – controls the PrivaSEE beacon; can be set either "Off" or "On". (Other settings are only relevant if "On")
Room Size – controls the strength of the beacon; can be set to "Small", "Medium" or "Large"
Channel - controls the IR channel being used to aid in avoiding interference; Try different channels if encountering undesired automatic muting of the microphone.
Rate – controls the frequency of the beacon signal, which can also aid in avoiding interference; can be set to "Slow", "Medium" or "Fast".

If you wish to enable PrivaSEE on your UNITY system, please contact the FrontRow Technical Services Group for details.

MIC BUTTONS

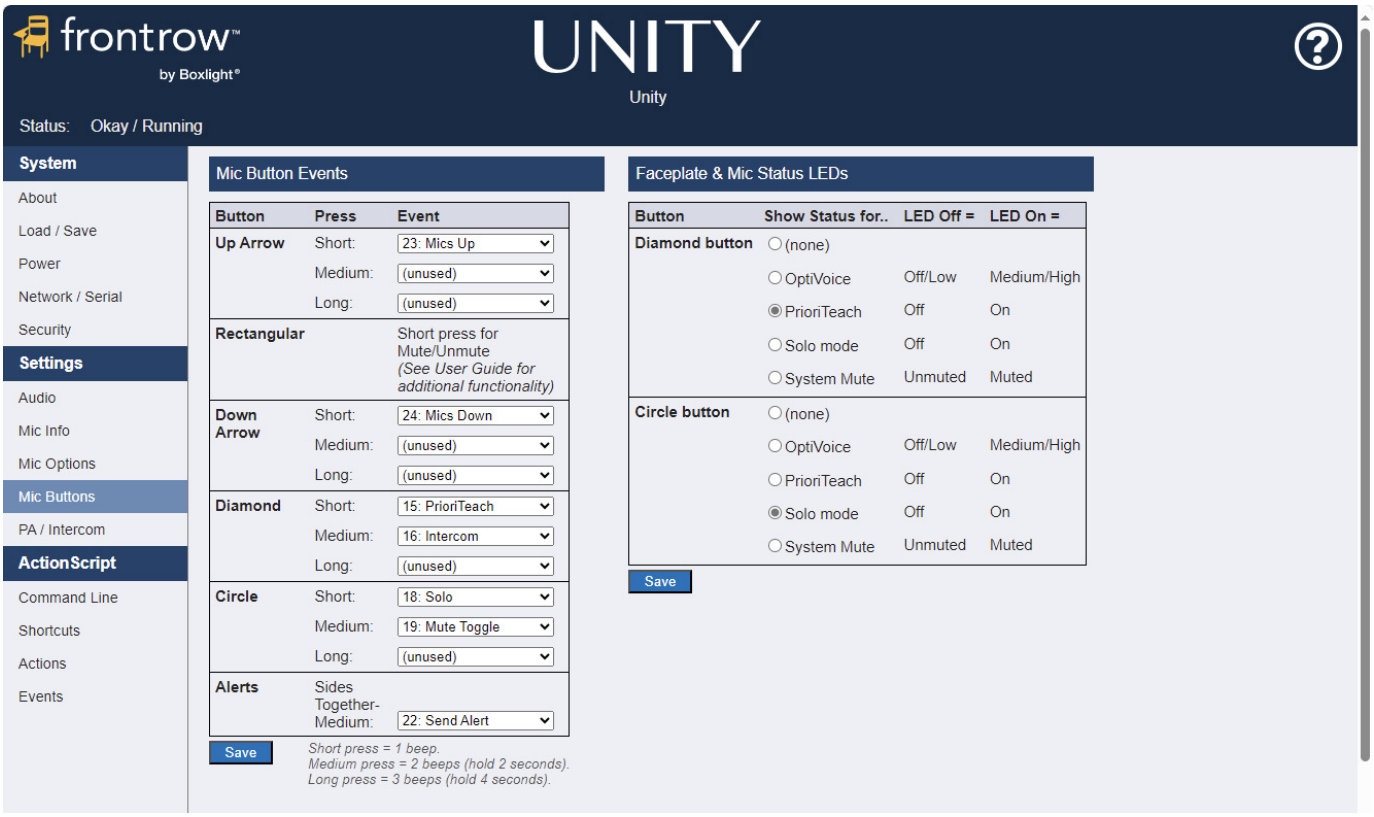
The Mic Buttons page allows you to modify what actions can be invoked using the buttons on the teacher (Action!) microphone. There is a direct correlation between Mic button Events and the Events created in the Action Script section of UNITY.

For best results, create any Actions and Events before modifying Mic button Events settings.

Microphone Button Events

The Up Arrow, Down Arrow, Diamond and Circle buttons each allow three unique events based on how long the button is pressed.

- Short press = 1 beep.
- Medium press = 2 beeps (hold 2 seconds).
- Long press = 3 beeps (hold 4 seconds).



Unique Microphone button presses may be customized to fit your needs. The table below displays the factory defaults. Note that a leading number indicates the number of the Event which will be invoked (e.g., "23: Mics Up" indicates Event 23).

Button	Press	Event
Up Arrow	Short	23: Mics Up
	Medium	(unused)
	Long	(unused)
Rectangular	Short	Mutes/Unmutes the system (cannot be changed)
Down Arrow	Short	24: Mics Down
	Medium	(unused)
	Long	(unused)
Diamond	Short	15: PrioriTeach
	Medium	16: Intercom
	Long	(unused)
Circle	Short	18: Solo
	Medium	19: Mute Toggle
	Long	(unused)
Alerts	Sides Together-Medium	22: Send Alert

To change a microphone button event, select the **Event** drop arrow field that corresponds to the button and press-length you wish to change. Be certain to click the **Save** button to keep your changes.

NOTE: The faceplate **Call** and **Alert** buttons only provide a single type of press (short for Call, medium for Alert).

Faceplate & Mic Status LED's

This section of the page allows you to set the status LED for the Diamond and Circle buttons on the teacher microphone. If the UNITY is using a Classroom faceplate, it will affect the same buttons there as well. This can help you keep track of whether a feature is currently enabled or not.

The table below shows the factory defaults.

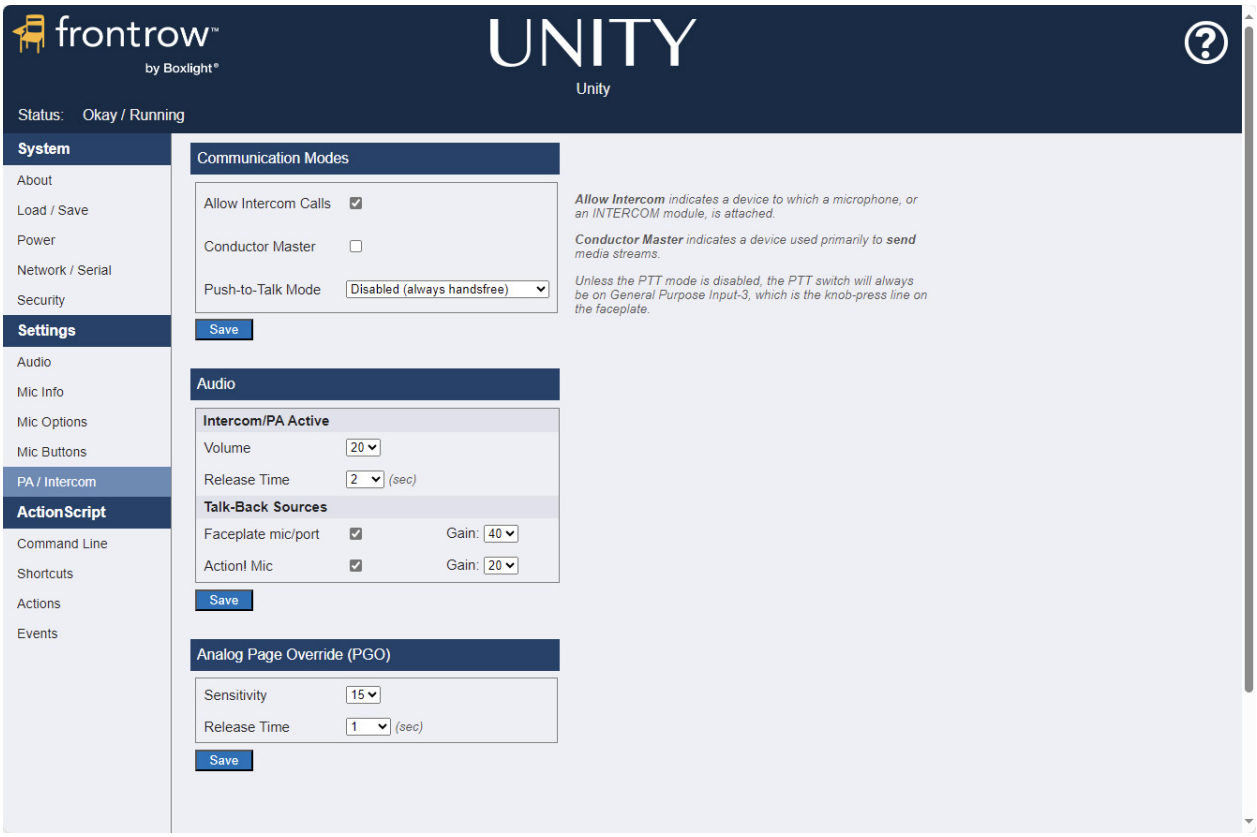
Button	Show Status for...	LED Off	LED On
Diamond Button	PrioriTeach	Off	On
Circle Button	Solo Mode	Off	On

NOTE: With the default factory settings, the teacher, (Action!) mic Diamond and Circle buttons will mirror the faceplate.

To modify Diamond or Circle button feedback, select the appropriate radio button. Click the **Save** button.

PA/INTERCOM

These settings are for use when installed with the Conductor IP-based Paging, Intercom and Bell system or with a 25V, 70V, or 100V analog paging system.



Communication Modes (Applies to **Campus UNITY** only)

Allow Intercom Calls – Placing a "check" in this field, tells the Conductor server that this UNITY is part of the intercom system. **NOTE:** This is selected by default when using the UNITY Campus default configuration.

Conductor Master – Placing a "check" in this field, tells the Conductor server that this UNITY has a microphone and is allowed to initiate pages. This should be set only when this UNITY is part of a Conductor admin station, not when it is a standard system in a classroom.

Push-to-Talk Mode – This feature activates when a Conductor intercom session is running. It allows the user to control when audio from that UNITY can be heard on the other end.

Unless the PTT mode is disabled, the PTT switch will always be set to use the knob-press on the faceplate.

Push-to-Talk Mode allows UNITY to be configured in one of five ways:

- **Disabled (always handsfree)** - Audio from the in-room microphone can be heard in the front office with no action from the user in the room. This is the default setting.
- **After Push (initially handsfree)** - Audio from the in-room microphone can be heard in the front office with no action from the user in the room until the button is pushed. Thereafter, the user must push the button in the room to activate the microphone.
- **Answer Only (handsfree after)** – This feature is designed for classroom privacy. When an Intercom call is initiated from the Office, the classroom will not be heard until the Volume/Mute button is pressed. Once pressed, the Intercom call will continue hands free.
- **Intercom Only (handsfree for PA)** – Grayed (not available) unless UNITY is set as a Conductor Master.
- **Always (never handsfree)** - Audio from the in-room microphone will not be heard until and unless the user in the room is pushing the button.

Audio (Applies to **Campus UNITY** only)

Intercom/PA Active

Volume - The volume of incoming audio from Conductor (pages, bells and intercom). When a UNITY receives Conductor audio, it will switch the speaker to this volume (to make sure the audio is heard in the room). Once the Conductor audio ends, it will return to the previous audio level (i.e., it does not affect the volume of the local in-room audio).

Release Time - The amount of time it takes for the local (in-room) audio to return to normal volume after an incoming audio stream from Conductor ends.

Talk-Back Sources - Controls which of the in-room intercom microphones will be used to send audio back to the front office. Also controls the gain for each such microphone.

Faceplate mic/port – Check the box to make this microphone active. Set the gain to increase or decrease the microphone level. (Default = 40)

Action! Mic – Check the box to make this microphone active. Set the gain to increase or decrease the microphone level. (Default = 20)

Analog Page Override (PGO)

Typically used for Classroom UNITY configuration in conjunction with 25V, 70V and 100V analog paging systems. By default, UNITY will mute all audio in the room when an announcement is made over the facility's paging system. Analog page override requires a connection to the facility's PA system. For information about connecting the page override function to the PA system, see Appendix C.

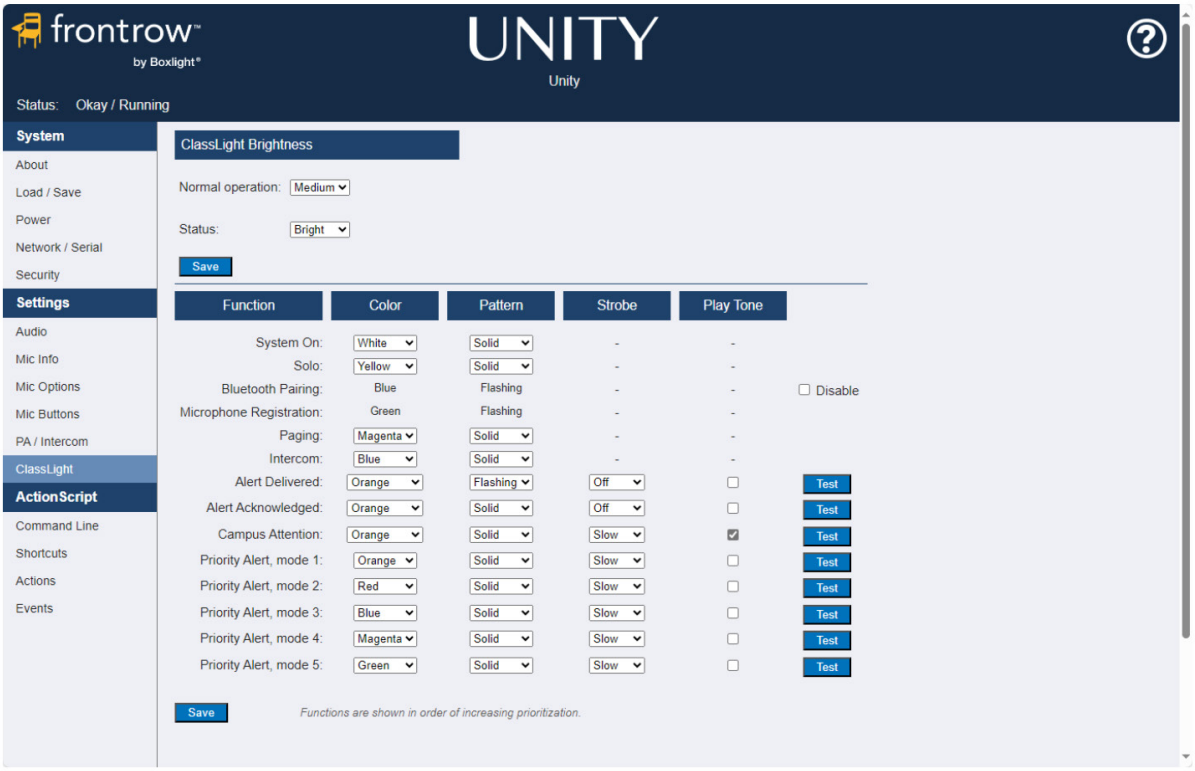
Sensitivity - Determines how easily the page override will trigger based on the detected voltage of the paging system. If UNITY does not detect a page, increase the sensitivity. If UNITY triggers when there is no page, but voltage is detected, decrease the sensitivity.

Release Time - The amount of time it takes for the local (in-room) audio to return to normal volume after the audio from the paging system ends.

CLASSLIGHT

While the ClassLight is not a requirement to use UNITY, it is a great addition to your Classroom or Campus configured UNITY.

The most obvious feature of the ClassLight is the light itself. The ClassLight provides information about the UNITY system. Some examples: system is on (displays white), system is ready to register a microphone (displays flashing green), system is in Bluetooth pairing mode (displays flashing blue). In addition, the ClassLight is required for the UNITY's PrivaSEE function.

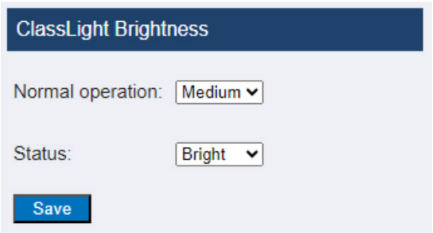


While ClassLight is customizable, the following information is based on UNITY's default settings when the ClassLight is installed.

ClassLight Brightness

ClassLight provides brightness levels for **Normal operation** and **Status.** These levels include:

- Off
- Dim
- Medium
- Bright



Normal operation pertains to general system changes. As an example; putting the Action microphone into Solo mode. The ClassLight will display Yellow with medium brightness.

Status pertains more to Campus related items. As an example; Priority Alert: Mode 1

ClassLight can be set to display seven (7) colors. The colors may be displayed as solid or flashing. The alert and priority status settings can also allow ClassLight to display a slow, fast or double-blink strobe effect. These are generally only used in combination with a UNITY Campus faceplate and Conductor.

Colors	Patterns	Colors	Patterns
Red	Solid	Green	
Orange	Flashing	Blue	
Yellow	Colors (Will alternate with the first color)	Magenta	
		White	

ClassLight and UNITY Classroom

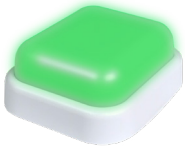
The following features are ClassLight's default settings for the UNITY Classroom.

System On
- Color – White
- Pattern – Solid

Solo
(The Action Microphone active, all other audio is muted.)
- Color – Yellow
- Pattern – Solid

Bluetooth Pairing
- Color – Blue
- Pattern – Flashing

Microphone Registration
- Color – Green
- Pattern – Flashing



ClassLight and UNITY Campus

ClassLight with UNITY Campus provide the same settings as UNITY Classroom, it also includes the following.

NOTE: Remember colors and patterns may be modified on the ClassLight page in the UNITY user interface.

Paging/Bell Ring
- Color – Magenta
- Pattern – Solid

Intercom
- Color – Blue
- Pattern – Solid

Alert Delivered
- Color – Orange
- Pattern – Flashing

Alert Acknowledged
- Color – Orange
- Pattern – Solid

Campus Attention
- Color – Orange
- Pattern – Solid
- Strobe – Slow
- Play Tone – On

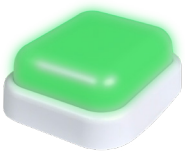
Priority Alert, Mode 1
- Color – Orange
- Pattern – Solid
- Strobe – Slow

Priority Alert, Mode 2
- Color – Red
- Pattern – Solid
- Strobe – Slow

Priority Alert, Mode 3
- Color – Blue
- Pattern – Solid
- Strobe – Slow

Priority Alert, Mode 4
- Color – Magenta
- Pattern – Solid
- Strobe – Slow

Priority Alert, Mode 5
- Color – Green
- Pattern – Solid
- Strobe – Slow



ACTION SCRIPT SECTION

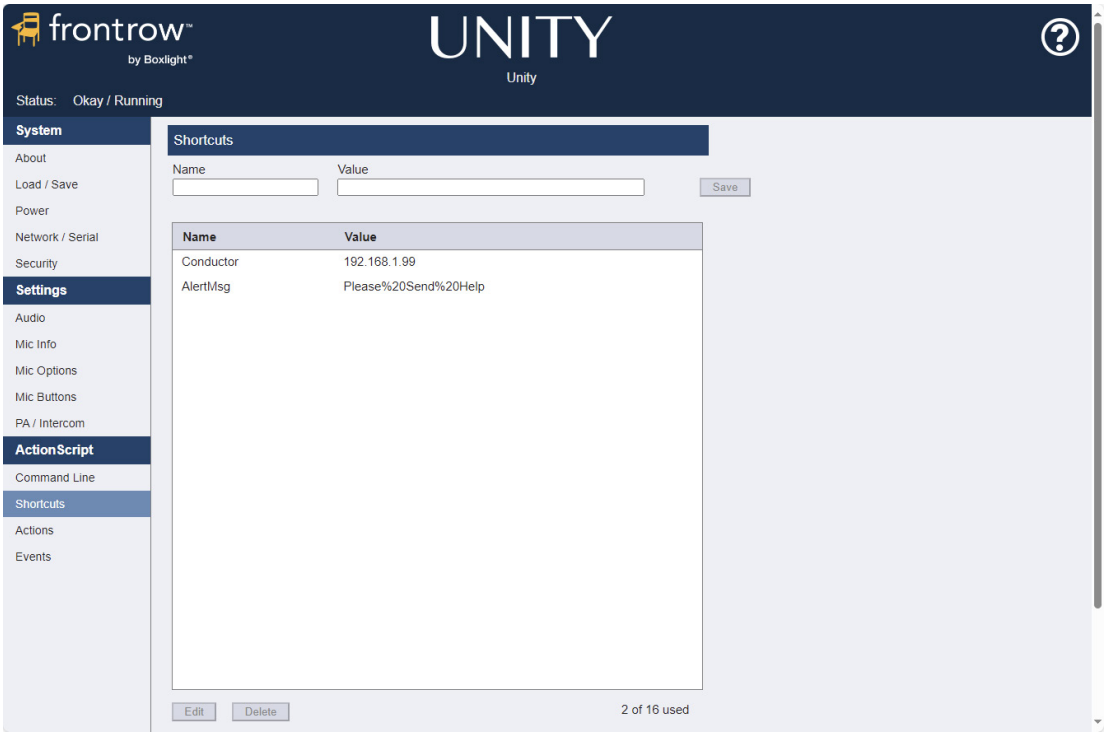
UNITY has the ability to be controlled remotely and to control other devices. This is done using **Action Script** (also referred to as "CACL"). Details on some of the more important commands available can be found in Appendix A: Control Commands for UNITY.

COMMAND LINE

Use this section to test commands sent to a device in order to verify that it performs the action desired. Use the drop-down list to select examples of FrontRow command protocols.

SHORTCUTS

Shortcuts are name substitutions. Defining Shortcuts makes deployment of multiple FrontRow devices of the same type easier. For example, Shortcuts can be used in defining actions that require the IP addresses of the devices you'll control. This means that your configuration file can be written as a template with IP addresses explicitly defined in only one place (the Shortcut), needing to be changed only once rather than repeatedly throughout your Actions. This saves a tremendous amount of labor as you re-use the configuration file to control new devices from room to room.

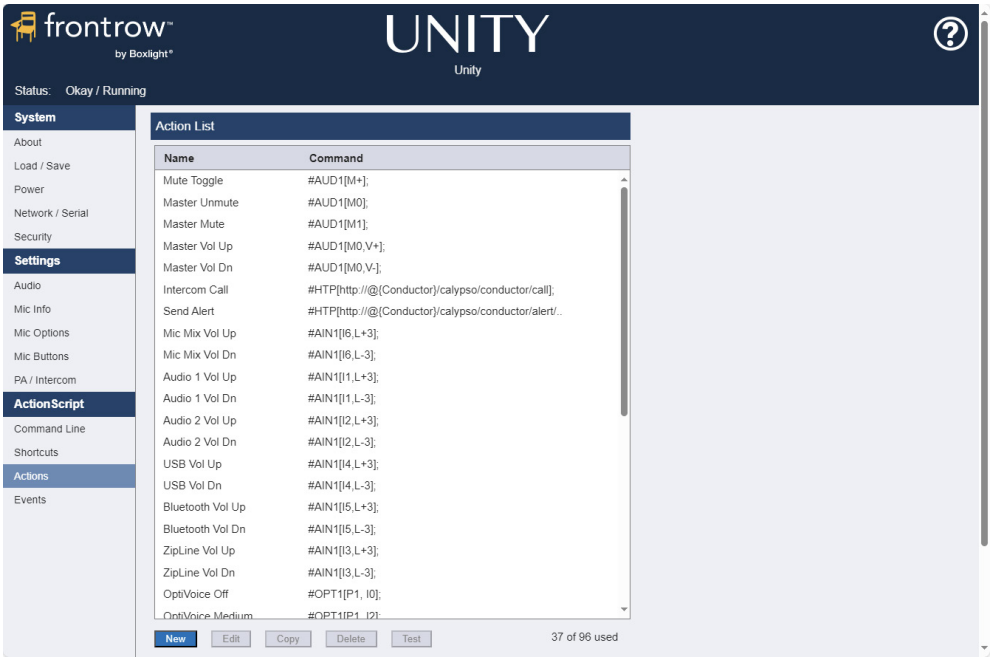


ACTIONS

Actions are specific instructions that are sent to specific devices, (e.g. to turn on a flat-screen panel or change inputs on a projector). Once defined, you will link them to various Events which can be triggered in a variety of ways. By default, a number of standard Actions are already defined for use with common Events.

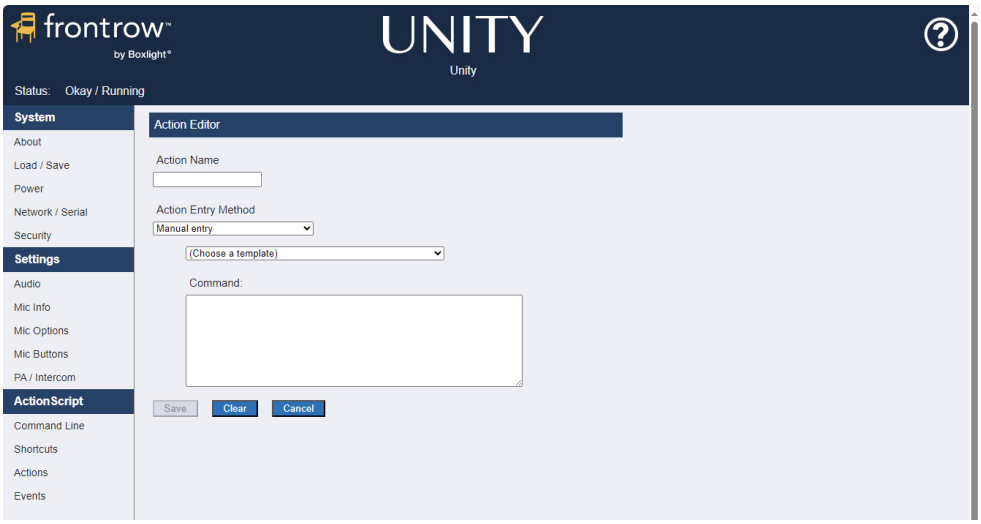
To create an Action:

1. Click **New**
2. Name the Action
3. Enter the action string or Command



Actions can be created using several methods:

1. Using a wizard
   - Select an **Action Type** wizard using the **Action Entry Method** drop-down list.
   - Using the wizard's prompts, enter the syntax necessary to build the specific action.
2. Using a template
   - Select the **Manual entry** method from the **Action Entry Method** list, then select a template from the second drop-down list.
   - Edit the syntax necessary to build the specific action (e.g. IP address)
3. Enter manually
   - Type the necessary command text directly into the "**Command:**" window. This is useful for those commands that don't have a wizard or template available.



EVENTS

With your collection of Actions defined, you can now specify what Events will cause one or more of those Actions to be executed. Events can be triggered in a variety of ways: FrontRow Control panels, a FrontRow push button, Action! Microphone, or from various trigger states such as a GPI closure.

UNITY offers 30 total Events. Event numbers 1 through 22 are associated with specific triggering actions. For example, the first four Events have the trigger for each event assigned to a specific GPI open/close. By default, a number of Events have been configured for commonly desired functionality, such as having the volume change when the faceplate knob is rotated.

To Modify or create an Event:

One or more actions may be assigned to each event, which can be modified as needed. The default configuration may include the following Events which are defined to use appropriate Actions:

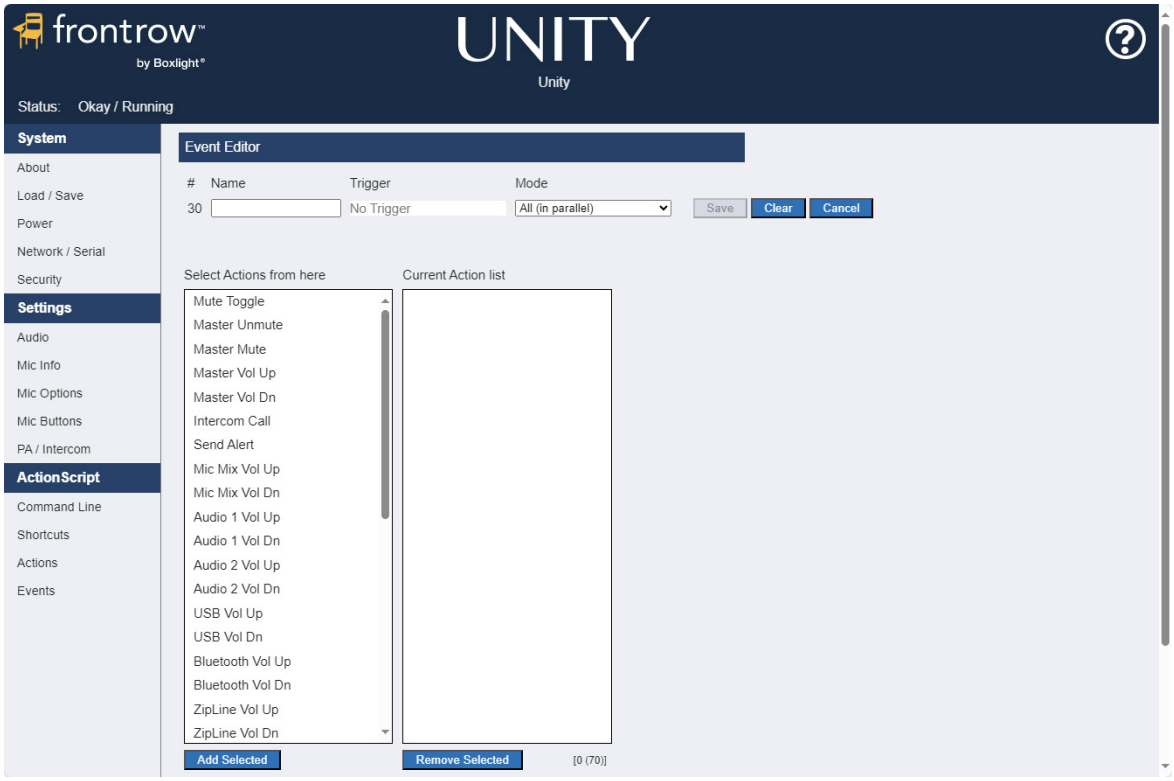
#	Name	Mic	Trigger	Action List
6	Main Mute Toggle		Knob Press	Mute Toggle, ALD+USB Mute Tog
7	Main Volume Down		Knob left turn	Master Vol Dn
8	Main Volume Up		Knob right turn	Master Vol Up
11	Master Unmute		PGO off	Master Unmute, ALD+USB Unmute
12	Master Mute		PGO on	Master Mute, ALD+USB Mute
15	PrioriTeach	✓	Diamond-short	PrioriTeach
16	Intercom	✓	Diamond-medium	Intercom Call
18	Solo	✓	Circle-short	Solo
19	Mute Toggle	✓	Circle-medium	Mute Toggl, ALD+USB Mute Tog
21	Intercom Call		Intercom btn	Intercom Call
22	Send Alert	✓	Alert btn	Send Alert
23	Mics Up	✓	No Trigger	Mic Mix Vol Up
24	Mics Down	✓	No Trigger	Mic Mix Vol Dn

Note that the “Mic” column indicates whether the event is also associated with a microphone button press.

You will need to plan which trigger you want to use. It is not required to use one of the built-in triggers. If a built-in trigger is not required, Events 23 through 30 should be used.

In case you need additional Events but have used all the non-Trigger Events, you may also use Events associated with a trigger but leave the trigger disabled (uncheck the **Trigger Active** checkbox). Disabled triggers show as gray in the Event list.

Clicking the **New** button will open the first unused Event with no Actions assigned to it.



Creating an Event

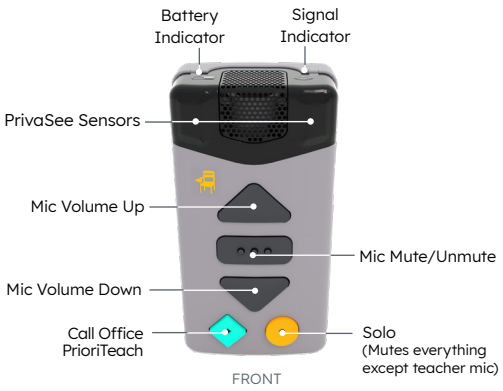
1. Select the Event you want to edit; click on **Edit**.
2. Type a name for the event in the **Name** field.
3. In the **Select Actions from here** field, select the action you want to use.
4. Click the **Add Selected** button at the bottom of the field.
5. The action will appear in the **Current Actions** field.
   a. To remove an action from the Current Actions field, select the action then, click the **Remove Selected** button.
   b. To change the order of the Current Actions, click on the drag icon of an Action and move it up or down then release.
6. Select the *Mode* in which the Actions should be executed:
   - **All (in parallel)** - The Actions will be executed as quickly as possible without any attempt to run them in a particular order.
   - **Each (in order)** - The Actions will be executed in the order specified, not moving to the next Action until the current one is considered complete.
   - **One per call (in sequence)** - This will execute the Actions in the given order except it will execute them one at a time per Event invocation. This can be used, for example, to emulate a toggle function for a given button: the first time the button is pressed, the first action will be executed; on the next button press, the second action will be executed; on the third press it will go back to the first action, etc. This can be used for power on / power off situations, or cycling between PTZ camera presets, etc.
7. To complete the Event, click the **Save** button.

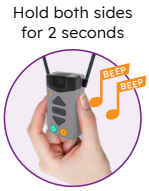
NOTE: The save button is located in the upper portion of the screen, NOT the bottom of the page.

Microphones

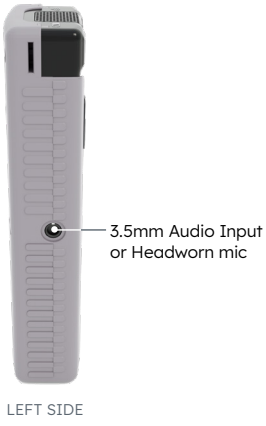
Understanding the buttons and inputs on your Action! and Bravo! (teacher and student) microphones will allow you to have the best possible experience. Please take a moment to review the information below. (Note that the button actions shown below represent default settings. Some of them may be different for your location.)

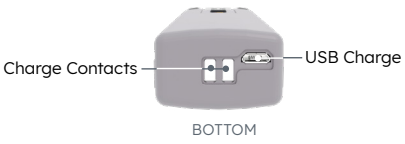
Action! Teacher Microphone





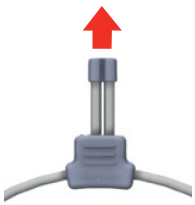
Bravo! Student Microphone



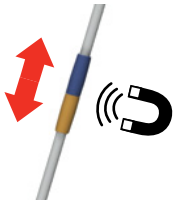


Adjusting Lanyard

Pull or push lanyard to adjust length



Pull to separate magnetic lanyard clip

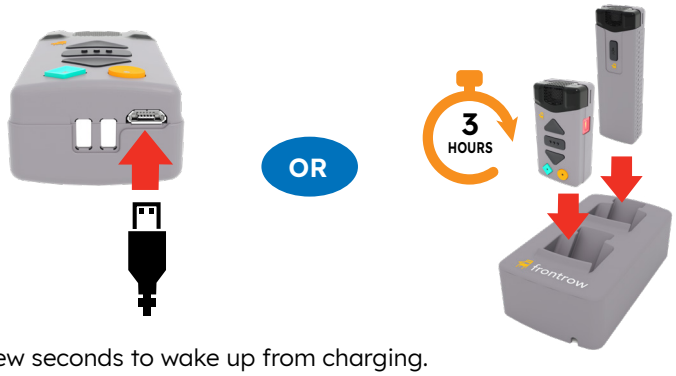


Change wearing options

*For best compatibility and performance, use only FrontRow-supplied headset and lapel microphones.

Microphone Status and Charging

To get the best experience with your Teacher and Student microphones, you will want to charge them daily. Your microphone may be charged using a USB Micro cable or the Fip Charger cradle.



NOTE: The mic may take a few seconds to wake up from charging.

The current status of both the teacher and student microphones are shown via the LED's on the top of the microphones.

Signal Status
Green = Unmuted
Amber = Muted
Amber (slow pulse) = Not connected
Amber (short flash) = Out of range

ACTION! TEACHER MIC

Battery Status
Green (slow pulse) = Fully charged
Green = Charging
Red = Low battery

BRAVO! STUDENT MIC

NOTE: With microphone firmware 1.31 and later (Releasing Jan 2025), the microphone is nearly always "ready" in the charger for a faster wake time (there will be a delay when initially inserted into the charger). The battery status indicator may cycle between charging and fully charged after the microphone has been at full charge for a few hours. This is normal.

Battery Management & Summer Storage

The Action! and Bravo! Mic batteries should last at least 2 years with normal use, and they have a 2-year warranty.

Charge the microphones each night during the school year by placing the mics in the FlipCharger or connecting to a power source using the included USB cable.

For summer storage, you have several options:

Quickest:

- Place Mic in the chargers and leave plugged in.
- Leave the ezRooms powered on.

Energy Saving:

- Mic Shut Down: Press the Mute button and hold for approximately 8 seconds. You will hear a single beep, double beep, triple beep, then a long beep. The LED will turn red, and the microphone will shut off. **Note:** The microphone will need to be placed in the charger to turn on.
- Turn off the ezRooms by unplugging the power and turning off PoE (if using).

DO NOT leave the mics on a desk or elsewhere for the entire summer without turning them OFF. This will slowly drain the battery below the recommended level and may reduce the life of the battery.

Mics and batteries should always be stored in a cool dry place.

Registering (pairing) the Teacher Microphone

Your Action! (teacher) and Bravo! (student) Microphones are preregistered to your UNITY. If you need to re-pair your microphone or you want to “team teach” in another room, follow the instructions to pair your Action! Microphone to that additional UNITY.

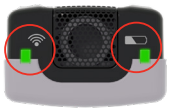
1. Charge Microphones - Place mics in the charger until Battery LED is slowly pulsing green (or has been charging for at least 15 minutes).


TOP

2. Press the Microphone button on the UNITY faceplate. The button will flash. If applicable the ClassLight will flash green.


3. Activate Mic
   - Remove the mic from the charger, and wait until it wakes up
   - Press the Mute button for 4 seconds until you hear a triple-beep, then let go. Both LEDs will flash green.

   NOTE: With microphone firmware 1.31 and later (Releasing Jan 2025), the microphone is nearly always "ready" in the charger for a faster wake time (there will be a delay when initially inserted into the charger). The battery status indicator may cycle between charging and fully charged after the microphone has been at full charge for a few hours. This is normal.


TOP

4. Ready! - Registration takes a few seconds. When complete, the button (and the ClassLight) will stop flashing, and the mic will beep again. The mic is now ready for use.
5. Repeat steps 2-4 for additional mics, or when moving a mic to another room.

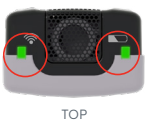
Registering (pairing) the Student Microphone

Your Action (teacher) and Bravo! (student) Microphones are preregistered to your UNITY. If you need to re-pair your microphone or you want to “team teach” in another room, follow the instructions to pair your Bravo! microphone.

1. Charge Microphones - Place mics in the charger until Battery LED is slowly pulsing green (or has been charging for at least 15 minutes).

2. Press the Microphone button on the UNITY faceplate. The button will flash. If applicable the ClassLight will flash green.


3. Activate Mic
   - Remove the mic from the charger, and wait until it wakes up.
   - Press the Mute button for 4 seconds until you hear a triple-beep, then let go. Both LEDs will flash green.

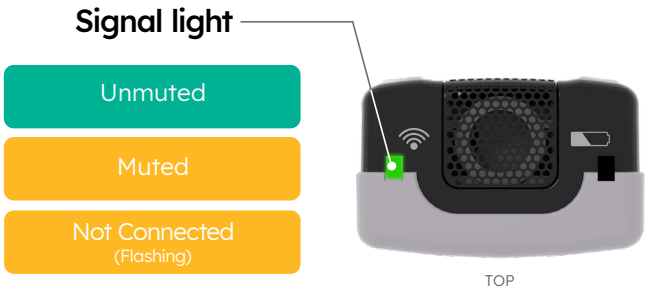

TOP

4. Ready! - Registration takes a few seconds. When complete, the button (and the ClassLight) will stop flashing, and the mic will beep again. The mic is now ready for use.
5. Repeat steps 2-4 for additional mics, or when moving a mic to another room.

Using the Microphone

Of all the classroom technology, the FrontRow microphones are the easiest to use.

1. Remove microphone from charger or unplug the USB cable.
2. Press the mute button, listen for the beep. The signal light will turn green.
3. Place the microphone around your neck and adjust the microphone roughly 6 inches from your chin.
4. Speak at normal conversation volume levels. With your FrontRow microphone hanging from your neck, your "Teacher Voice" is not required.



Private Conversations

UNITY and Action! and Bravo!, (Teacher and Student), Microphones create a very powerful system with a very good range.

If you wish to have a private conversation with a student inside the room, mute your Action!, (Teacher), microphone by pressing the mute button. Press it again to un-mute.

If you want to have a private conversation with a student outside of the classroom. Be certain to mute the microphone or remove the microphone when leaving it in the classroom. To enable microphones to automatically mute when you leave the classroom, activate the **PrivaSEE** feature and test the room for proper function.

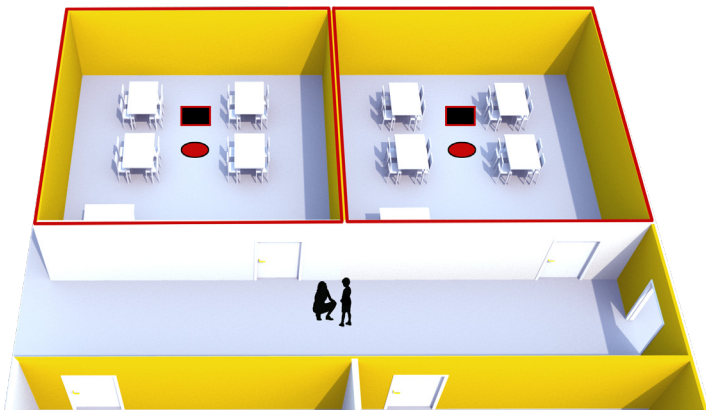
PrivaSEE

PrivaSEE allows teachers to leave the room without worrying about the mic transmitting their conversations or bathroom breaks to the class. Like other DECT-based systems, the ELEVATE system uses RF signals to transmit from the mic to the Base Station. RF signals go through walls and can be picked up from an area much larger than the room. To solve this problem, FrontRow has invented **PrivaSEE**.

IR (infrared) sensors in the mic pick up an IR signal from the ClassLight about once per second. If the mic doesn't get the signal for about 5 seconds, it will automatically mute. The mic ignores IR from Base Stations it is not registered with, so the teacher will not even transmit back to their class from another classroom!

Microphones can be registered with one Base Station (PrivaSEEMode B). This is the default state.

If you need to turn off PrivaSEE, for example if you have several glass-walled rooms facing each other an the PrivaSEE IR signals are interfering with each other between classrooms, then switch the microphones to PrivaSEE Mode A. PrivaSEE Mode A turns PrivaSEE off, so that the mic will not automatically mute when the teacher leaves the classroom area. Be sure to let teachers know if you turn this off! They will have to mute the mic themselves or they may be transmitting from outside their classroom.



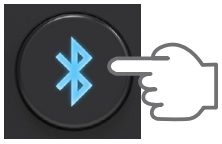
Bluetooth®

UNITY supports 3.5mm audio jacks and USB C audio inputs. But Bluetooth has certainly taken over as a convenient method of sharing audio. Note that the Bluetooth connection on UNITY is one-way and only allows audio to be sent to UNITY to play over its speakers. You cannot use Bluetooth speakers to play audio from UNITY.

Bluetooth Pairing

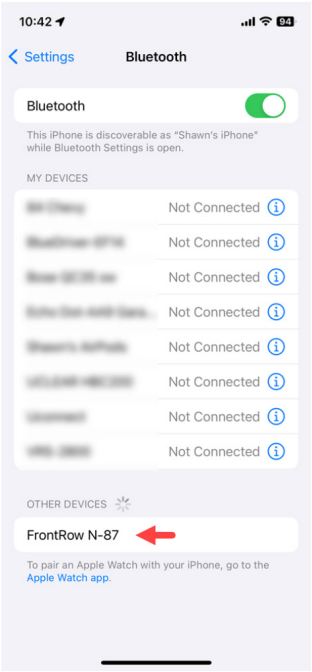
Read the following instructions on connecting your Bluetooth audio device to your UNITY.

1. Press the Bluetooth button on UNITY.



2. The Bluetooth button will flash.
   - If installed in the room, the ClassLight will flash blue.

3. Open your connecting device. Select **FrontRow N-##**. (Each device ID will be unique.)
   NOTE: You may rename the connection in your Bluetooth device.



Playing Bluetooth Audio

Your Bluetooth device must be paired with the UNITY you wish to play from.

1. Open your Bluetooth device's Bluetooth settings.
2. Connect to the UNITY in your location.
3. Play your favorite audio.
4. Once paired, the button (and the ClassLight) will stop flashing.

NOTE: You may want/need to increase the volume on your Bluetooth device.

Appendix A: Control Commands for UNITY

The following are some of the more frequently used commands within Actions or sent over the network. For the complete guide to all such commands, refer to the Calypso Action Control Language (CACL) reference manual found in the Guides & Resources section of the FrontRow web site.

(Note that the reference manual covers all CACL commands and parameters. However, no devices, including UNITY, support every command in that document.)

Action/Network Commands

Unity Volume Command				
Syntax: #AUDn[Mute,Volume];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
n	Required	Constant	1	Denotes the sub-device. Since Unity has only one sub device, this is always 1
Mute	Optional	Variant	M*value* where value is 0, 1, or +	Audio mute: • Off/playing (0); • On/silent (1); or • toggle (+)
Volume	Optional	Variant	V*value* where value is an integer from 1 to 100, +, or -. The + or - may be followed by a single digit (1-9) indicating the change in volume steps to be made. If no digit is entered, the volume will increase by one.	Sets the audio volume to: • the percentage of maximum volume corresponding to the integer used; • an increase in volume (+) by n steps (+n); or • a decrease in volume (-) by n steps (-n)

Examples:
Unmute and increase volume: #AUD1[M0,V+];
Unmute and decrease volume by 2 steps: #AUD1[M0,V-2];
Set volume to 10% of maximum: #AUD1[V10];
Mute: #AUD1[M1];
Unmute: #AUD1[M0];
Toggle mute: #AUD1[M+];
Query current settings (returns value of input, mute, and volume (as pct)): #AUD1[ ];

Unity Audio Input Level Command				
Syntax: #AINn[Input,Level];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
n	Required	Constant	1	Denotes the sub-device. Since Unity has only one sub device, this is always 1
Input	Required	Variant	I*value* where value is an integer from 1 to 6 which specifies the input line being controlled.	Input: 1 = Line In 1 2 = Line In 2 3 = ZipLine 4 = USB audio 5 = Bluetooth audio 6 = Mic mix
Level	Optional	Variant	L*value* where value is an integer from 1 to 100, +, or -. The + or - may be followed by a single digit (1-9) indicating the change in audio level steps to be made . If no digit is entered, the level will change by one step.	Sets the audio volume to: • the percentage of maximum volume corresponding to the integer used; • an increase in level (+) by n steps (+n); or • a decrease in level (-) by n steps (-n)

Examples:
Increase audio input level for Line In 1: #AIN 1[I1,L+];
Decrease audio input level for USB audio by 2 steps: #AIN1[I4,L-2];
Set audio input level for microphones to 60% of maximum: #AIN1[I6,L60];
Query current settings for Line In 2 (returns value of input and level (as pct)): #AIN1[I2];

Unity Audio Output Level Command				
Syntax: #AOTn[Output,Mute,Level];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
n	Required	Constant	1	Denotes the sub-device. Since Unity has only one sub device, this is always 1
Output	Required	Variant	O*value* where value is an integer from 1 to 2 which specifies the output line being controlled.	Output: 1 = Line Out 2 = ALD / USB audio* (*mute control ONLY)
Mute	Optional	Variant	M*value* where value is 0, 1, or +	Audio output line mute: • Off/playing (0); • On/silent (1); or • toggle (+)
Level	Optional	Variant	L*value* where value is an integer from 1 to 100, +, or -. The + or - may be followed by a single digit (1-9) indicating the change in audio level steps to be made. If no digit is entered, the level will change by one step.	Sets the audio output level to: • the percentage of maximum level corresponding to the integer used; • an increase in level (+) by n steps (+n); or • a decrease in level (-) by n steps (-n)

Examples:
Unmute and increase audio level for Line Out: #AOT1[O1,M0,L+];
Unmute and decrease audio level for Line Out by 2 steps: #AOT1[O1,M0,L -2];
Set audio level for Line Out to 10% of maxiumum: #AOT1[O1,L10];
Mute ALD/USB: AOT1[O2,M1];
Unmute ALD/USB: #AOT1[O2,M0];
Toggle mute on ALD/USB: #AOT1[O2,M+];
Query current setting for Line Out (returns value of input and level (as pct)): #AOT1[O1];

Unity Option Command				
Syntax: #OPTn[Parameter,Value];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
n	Required	Variant	P*value* where value is an integer from 1 to 6 which specifies the specific option being controlled.	Option: 1 = OptiVoice 2 = PrioriTeach 3 = Solo 4 = Mic Registration 5 = Bluetooth control
Parameter	Required	Variant	P*value* where value is an integer from 1 to max (which varies for each OPTn) that specifies the specific parameter of the option being controlled.	Parameter (per OPTn): OPT1: 1 = mode OPT2: 1 = enable OPT3: 1 = enable OPT4: 1 = enable OPT5: 1 = enable pairing 2 = reset
Value	Optional	Variant	X*value* where X indicates the type of value: B = boolean I = integer "..." = string and value is the value (of the corresponding type): B: 0 (false), 1 (true), + (toggle) I: any integer, including negative values **Note:** UNITY does not support any options with string parameters.	UNITY supports the following values based on option and parameter: OPT1[P1: Ix Where x is 0, 1, 2, or 3 OPT2[P1: Bx (x = 0, 1, +) OPT3[P1: Bx (x = 0, 1, +) OPT4[P1: Bx (x = 0, 1, +) OPT5[P1: Bx (x = 0, 1, +) OPT5[P2: B1 (reset can only be started)

Examples:
Set OptiVoice OFF: #OPT1[P1,I0];
Set OptiVoice Medium: #OPT1[P1,I2];
Toggle PrioriTeach on/off: #OPT2[P1,B+];
Set Solo OFF: #OPT3[P1,B0];
Set Mic Registration ON: #OPT4[P1,B1];
Toggle Bluetooth pairing: #OPT5[P1,B+];
Reset Bluetooth: #OPT5[P2,B1];

Query current setting for OptiVoice (returns value of parameter and setting): #OPT1[P1];

Unity Power Command				
Syntax: #PWR[Setting];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
Setting	Optional	Variant	The setting can be entered as either a string state: "ON" (all allowed components powered on) "OFF" (all components powered off) **Or** as a bit-mask in hexadecimal format, e.g. 0x1FF	Bit-mask values: 1 (0x001) = Amp 2 (0x002) = StreamLine 3 (0x004) = ZipLine 4 (0x008) = ClassLight 5 (0x010) = USB 5VDC 6 (0x020) = Trio (24VDC) 7 (0x040) = 12VDC 0.5A + Bluetooth 8 (0x080) = 12VDC 1.5A 9 (0x100) = Mic System

Examples:
#PWR["OFF"]; Powers off ALL (controllable) components (all those listed on the "Power" page + StreamLine, ZipLine and Mic System)
#PWR["ON"]; Powers on all allowed components
#PWR[0x1FE]; Powers off only the Amp
#PWR[0x1DF]; Powers off only the Trio (24 VDC line)
#PWR[0x1FF]; For UNITY, this is the same as "ON"
Query current setting (returns value of current power state and current power mask / maxbits): #PWR[];
UNITY power states are:

0 = unknown / not available
1 = PoE class 0
2 = PoE class 3
3 = PoE class 4
4 = PoE class 6
5 = PoE class 8
6 = PowerLine (max power)

TIP: To create an Energy Saving power schedule for Unity on your campus, use Conductor to send a broadcast message to the FrontRow Unity VLAN with the Power Off and Power On commands, tied to events in the [bell] scheduler.

The following Control commands initiate the Restart and Reset command on the Unity device.

NOTE: • These commands may only be used on Unity's Command Line page.
- Using these Control commands effectively send provides the same functionality as the Reset & Restart buttons located on the Unity Power page.
- Both the Restart and Reset Control commands broadcast to all Unity devices via Conductor.

Control (Restart & Reset) Commands				
Syntax: #CTL["Command"];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
Command	Required	Variant	Restart - Use "SOFTRESET" Reset – Use "SYSTEMRESET"	Restart will reinitialize the software on some of the main internal components without cycling power (soft reset). Reset will perform a complete power cycle of the device and any external devices connected to its power sources, same as the Reset button on the back panel.

Example (Restart): #CTL["SOFTRESET"];

Network (NET) Commands				
Syntax: #NET[Connection, StringType. Device, 'Command'];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
Connection	Required	Variant	F*n* where n is 1 or 2	Defines the connection type: • TCP/IP (1) • UDP (2)
String Type	Optional	Variant	T*n* where n is 1 or 2	Defines the string type: • ASCII string (1) • HEX string (2) If you leave StringType blank, a default of T1 is assumed
Device	Optional	Variant	If using Shortcuts (recommended): Full shortcut: @{*shortcutname*} defined as: IAddress, PPort Separate shortcuts: I@{addr}, P@{port} Default port is 7267	A string expression that is the valid name of a shortcut or the IP address and port of the device being controlled.
Example: (increments the audio input channel of a remote ezRoom by one over TCP/IP protocol using an ASCII string): #NET[F1, @{device},'#AIN1[I1,L+];']; with shortcut **device = I10.2.3.50,P7262** Or toggle muting (using UDP): #NET[F2, I@{address}, P@{port}, '#AUD1[M+];']; with shortcuts **address = 10.2.3.50** and **port = 7262**				

For network (NET) commands, we recommend using UDP ("F2") as the preferred protocol as it tends to be faster.

Intercom (HTP Commands)				
Syntax: #HTP[URL];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
URL	Required	Variant	http: type URL string	URL of remote website
Server	Required (subpart of UR)	Variant	If using Shortcuts (recommended): @{*shortcutname*} For explicit device references: IP address of the Conductor server	A string expression that is the valid name of a shortcut (see section 8) or the IP address of the Conductor server .
Example with shortcuts: (initiates an intercom request to the admin station located in the office): #HTP[http//@{server}/calypso/conductor/call]; with shortcut server = 192.168.1.99 and without shortcut: #HTP[http://192.168.1.99/calypso/conductor/call]				

Serial (COM) Commands				
Syntax: #COMn[StringType, “Command”];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
n	Required	Variant	Use 1 for COM1; (UNITY only has one controllable serial port)	Denotes the COM port to be used, corresponding to the serial device to be controlled.
String Type	Optional	Variant	T*n* where n is 1 or 2	Defines the string type: • ASCII string (1) • Hexadecimal (2) If you leave StringType blank, a default of T1 is assumed.
Command	Required	Variant	Specific to device.	A string expression that contains the command.
Example (turns on a projector via COM 1 using an ASCII string command): #COM1[T1, “PWR ON\r”];				

IR-Out Universal Commands				
Syntax: #XROn[F2,“Command”];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
n	Required	Constant	1	Denotes the IR port to be used. UNITY only has 1.
Command	Required	Variant	Specific to device.	A string expression that contains the command.
Example (turns on a DVD player): #XRO1[F2, "40000300015430309DA03F508FC03A704D6039...3A704D803F808FC03A704D403A104FB03A704D903"];				

Alarm Commands				
Syntax: #ALM[“Command”, DTime];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
Command	Required	Variant	Use ON to start the alarm. Use OFF to stop the alarm.	Starts/stops the beep.
Time	Required	Variant	Integer representing multiples of 4ms duration.	Sets the duration.
Example (plays alarm tone for approx. 1 second): #ALM["ON", D250];				

Relay (GPO) Commands				
Syntax: #GPOn["Command", Time];				
Name	**Required/Optional**	**Data Type**	**Format**	**Description**
n	Required	Variant	Use 1 for GPO1 and 2 for GPO2 (UNITY has two relays, one which is NO only and one which has both NO and NC connections).	Denotes the GPO (relay) to be controlled.
Comman	Required	Variant	Use OPEN to open the relay (generally opening a circuit and turning something off). Use CLOSE to close the relay (generally closing the circuit and turning something on).	Opens or closes the relay. The “OPEN” and “CLOSE” commands are targeted at “NO” (normally open) relays. For relays that also have an “NC” (normally closed) connection, the opposite action happens (e.g., “OPEN” will close the NC connection).
Time	Optional	Variant	Dn where n is an integer representing multiples of 4ms duration.	Sets the duration of the requested Command state.

Example (pulses the relay closed for about 1 second): #GPO1["CLOSE", D125];

Appendix B: Power Status - PoE Power Classes & Available UNITY Features

Power Over Ethernet Compatibility

PoE+

Standard	802.3at
Type	2
Class	4
Power Sent	30W
Power at Endpoint	25.5W
Cabling	Cat5e
UNITY Support	Maximum amp power may be limited to 25.5W (same as any device running PoE+) ClassLight not supported. Supports fulltime or backup power.

PoE++

Standard	802.3bt
Type	4
Class	8
Power Sent	90W
Power at Endpoint	71W
Cabling	Copper Cat6a or better recommended. Cable compatibility test kits available from Boxlight.
UNITY Support	All UNITY features, including ClassLight, plus future accessories.

PoE++

Standard	802.3bt
Type	3
Class	6
Power Sent	60W
Power at Endpoint	51W
Cabling	Copper Cat6a or better recommended. Cable compatibility test kits available from Boxlight.
UNITY Support	All UNITY features supported, including ClassLight. Recommended for new construction or campus communication with ClassLight. Supports fulltime or backup power.

PoE Power Draw

	Idle (powered on but no audio)	**Typical** (normal volume settings and usage)	**Max** (inputs and outputs at full power with active signal)
UNITY only (no ClassLight or powered accessories)	8W	25W	42W
UNITY + ClassLight	8-9W (ClassLight off)	32W	49W

		Unit Components									
Power Class	**Max Input Power**	**UNITY Amplifier**	**Microphone Receiver**	**USB Audio**	**BT 4.2 Audio**	**5Vdc @½A**	**12Vdc @½A**	**12Vdc @1½A**	**24Vdc @1A**	**Internal Audio Amp Power**	**ClassLight Power**
4	25.5 W	**ON**	**ON**	power comes from connected host	**off**	**ON**	**ON**	**off**	**off**	**low**	**off**
6	51 W	**ON**	**ON**		**ON**	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**
8	71 W	**ON**	**ON**		**ON**	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**
PowerLine	90 W	**ON**	**ON**		**ON**	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**

NOTE: To ensure uninterrupted announcements during a power outage on your campus, it is essential to have a PoE+ or PoE++ capable network switch supported by a reliable battery backup system (UPS). The UPS must have sufficient capacity to power the system for the desired duration, such as 30 minutes. Online PoE/UPS calculators can assist in accurately determining your requirements.

If you wish to make announcements in the event of a power outage at your campus, be sure to equip your PoE switches with sufficient UPS backup power for the desired duration. Various PoE/UPS calculators are available on the web.

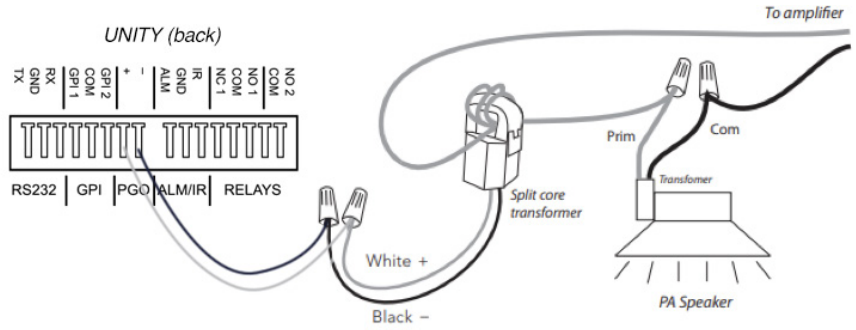
Appendix C: Configuring Page Override

Confirm voltage of your PA system. Do not complete these instructions unless you have a 25-, 70-, or 100-volt PA system.

NOTE: Page override will typically be used with UNITY Classroom only.

1. Disconnect the power from UNITY.
2. Using wire nuts, extend the white and black wires from the split core transformer with enough 18 - 22 AWG wire to reach from the PA speaker to the UNITY.

Connect the white wire from the split core transformer to the “+” slot in the page input terminal and secure with the connector screw. Connect the black wire from the split core transformer to the “–” slot in the page input terminal and secure with the connector screw. (See Image)



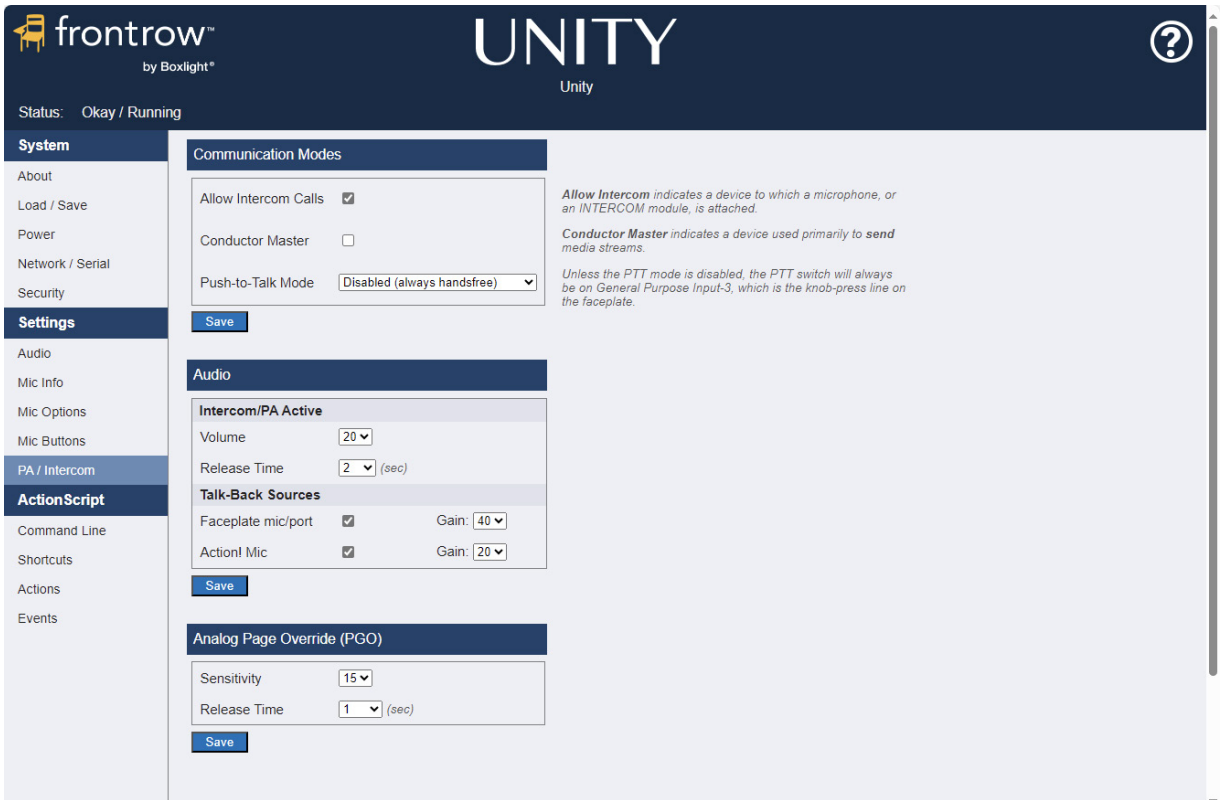
3. Open the split core transformer.
4. Wrap the primary side (the side that connects to the PA amplifier) wire from the PA speaker around the split core transformer. Depending on the voltage of your PA system, follow the guide below for how many times to wrap wire around split core transformer.

   IMPORTANT! Wrap ONLY the primary wire around the split core transformer.
   - 100-volt: Wrap 1–2 times
   - 70-volt: Wrap 2–3 times
   - 25-volt: Wrap 3–4 times
5. Close the split core transformer.
6. Connect the other end of the White and Black wires to the PGO connection on the UNITY.

Test and Adjust

1. Reconnect the power to the UNITY.
2. Play music or some other continuous audio source through the UNITY.
3. While the music is playing, have your assistant make a long announcement over the PA system. Adjust the sensitivity control until you just mute the music. When your assistant's announcement stops, the music should return to full volume.
4. While the music is playing, have your assistant make several brief announcements over the PA system.
5. Adjust the delay control so that the music is quickly muted when a PA announcement begins and returns after the announcement is complete. The delay range is approximately 1/2 second to 5+ seconds

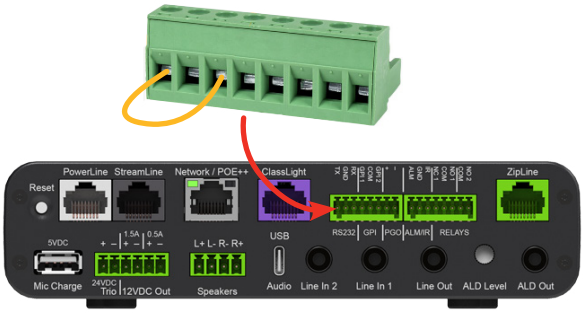
See the PA / Intercom page under the Settings section.



Appendix D: Troubleshooting

I can't remember the IP address I changed UNITY to, and now I can't communicate with it.

1. Disconnect the serial cable (if connected) from the RS232 connector.
2. Build a shorting plug by connecting the TX1 and RX1 lines of connector.
3. Power down the UNITY, then insert the shorting plug.
4. Power up the UNITY and remove the shorting plug within 3 to 4 seconds
5. If the reset was not successful, try again with a shorter or longer time duration before pulling out the plug.
6. A hardware reset changes the IP address back to the default (192.168.1.103) and turns off DHCP (if it was on).



7. In addition, the web-access password will be reset back to **calypso** (login name remains admin), though the state of password protection will not change (active or inactive as before). No other settings are changed.

I can't remember what web access password I set for the UNITY, and now I can't log onto it.

- Reset UNITY to its default web access password (**calypso**) by following steps 1 - 7 above.

I've connected a new UNITY to my computer for configuration but can't communicate with it.

- If you are using a Windows® computer, clear the ARP cache. From the command prompt, enter: ARP -D IPADDRESS (e.g., ARP -D 192.168.1.104).
- Verify the UNITY is connected to the network. Looking at the faceplate, the network icon should be illuminated green.

I am not able to access my UNITY through the web browser, Conductor or the Rollout app.

- Verify the UNITY is connected to the network. Looking at the faceplate, the network icon should be illuminated green.

I've connected the serial cable from the UNITY to the projector and I've verified that baud rate and other settings are correct, but I still can't control the projector.

- Try switching the TX and RX wires. In a 9-pin connector the standard is to use pins 2 and 3 for TX and RX, but there is no standard as to which is which. Most manufacturers use pin 2 for TX and pin 3 for RX, but over 10% use the reverse.

I've connected everything but I can't get any sound from the amp.

- Check **Master Volume** settings by going to the command line and enter **#AUD1[ ];**

  Response: 0 0 50

  | |____ Volume Level value 0 - 100 where 100 is max

  |_____ Mute state: 0 = Not Muted, 1 = Muted

- Go to the Power page and verify that the Amplifier power state is On.

My UNITY power LED is different from the classroom next to mine. What do the different colors mean?

- UNITY will display three different colors based on available power:
  - White is displayed when UNITY is powered by the PowerLine adapter. (90 Watts)
  - Green is displayed when UNITY is powered by PoE Class 6 or 8
  - Amber is displayed when UNITY is powered by PoE Class 3 or 4.

  NOTE: If your UNITY is powered by both PoE, (Class 3,4,6, or 8) and PowerLine, the UNITY power LED will display a combination of White and Green or White and Amber.

Appendix E: Mic Mute Button Behavior Reference

		Mute button function based on hold time				
Not Registered (& not connected) to a Base Station, but in range	Wireless LED	Tap Mute (1 beep)	2 Sec (2-beep)	4 Sec (3-beep)	6 Sec (2-beep)	8 Sec (3-beep)
Teacher Mic	Amber short flash			Registration Mode		Hibernate
Student Mic	Amber short flash			Registration Mode		Hibernate

Registered and unlocked (out-of-RF-range)	Wireless LED	Tap Mute (1 beep)	2 Sec (2-beep)	4 Sec (3-beep)	6 Sec (2-beep)	8 Sec (3-beep)
Teacher Mic	Amber short flash			Registration Mode		Hibernate
Student Mic	Amber short flash			Registration Mode		Hibernate

Registered and locked, but not connected	Wireless LED	Tap Mute (1 beep)	2 Sec (2-beep)	4 Sec (3-beep)	6 Sec (2-beep)	8 Sec (3-beep)
Teacher Mic	Amber slow fade	Connect		Registration Mode		Hibernate
Student Mic	Amber slow fade	Connect		Registration Mode		Hibernate

Registered and locked, and connected	Wireless LED	Tap Mute (1 beep)	2 Sec (2-beep)	4 Sec (3-beep)	6 Sec (2-beep)	8 Sec (3-beep)
Teacher Mic	Amber or Green	Mute/Unmute		Registration Mode		Hibernate
Student Mic	Amber or Green	Mute/Unmute		Registration Mode		Hibernate

Appendix F: Links

Please see the Boxlight Software Downloads page. Look for Rollout.
URL - Software Downloads - [Software for The Classroom | Boxlight]