



# DCP-555

## Digital Conferencing Processor



# Installation Guide



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## **Introduction**

The BSS® DCP-555 is a digital conferencing processor designed specifically for medium- to large-sized meeting spaces, such as conference rooms, boardrooms, classrooms, and huddle rooms.

The DCP-555 incorporates BSS's industry-leading audio processing technology to provide intelligent sound management and automated mixing in an easy-to-configure solution. This allows IT managers and integrators to easily deploy DSP to a large number of similar meeting-space installations using a simple web interface, eliminating the need for complicated software and programming.

The DCP-555 offers four bidirectional VoIP connections, providing support for up to four rooms of audio conferencing connectivity, without the need for separate IP phones in each room. The DCP-555 also offers a range of onboard audio I/O connection options, including analog, AES67, BLU link, and USB. And with GPIO, RS232, and Ethernet built in, the DCP-555 supports additional control via potentiometers, contact closure, and 3rd party control solutions.

The built-in DSP includes AEC (Acoustic Echo Cancellation) on the first 12 inputs, 4-band PEQ with high-pass filter on every input, four assignable auto-mixers, and 4-band PEQ with high-pass filter, limiting, and polarity inversion on every output.

The DCP-555 provides an easy-to-deploy conferencing solution with the same pristine audio quality, advanced engineering, and reliability that is synonymous with BSS.



## Features

- **Built-In Web Server Interface**

Configure the DCP-555 using the browser on any compatible device connected to the network—no additional software or complicated DSP programming required!

- **Template-Based Configuration**

Create your own configuration or load a template from the BSS website, edit to taste, then save it to your computer for backup and use in future installations.

- **4 Bi-Directional VoIP Connections**

Use a single DCP-555 to provide audio conferencing for up to 4 meeting rooms simultaneously, without the need for a phone in each room.

- **Analog Audio I/O (16x8)**

Includes 16 analog mic/line inputs with independently selectable +48V phantom power and 8 line-level analog outputs.

- **AES67 I/O (16x16)**

Support for up to 16x16 channels of networked audio distribution to/from any AES67-compliant device.

- **BLU Link I/O (28x32)**

28x32 BLU link expansion. Easily interface audio with other BLU-link equipped HARMAN® audio products, such as BSS Soundweb London processors, BSS BLU-USB interfaces, or Crown® amplifiers.

- **USB Port (2x2 Audio Interface)**

Use the DCP-555 as a USB audio interface with a room PC or AMX® Acendo Core for web conferencing. If additional USB connections are required, expand the system with up to 4 BSS BLU-USB interfaces (sold separately).

- **28x12 Routing**

The DCP-555 provides routing for a total of 28 inputs and 12 discreet outputs (using any combination of analog, VoIP, BLU link, AES67, or USB). Each output can also be mirrored to up to 7 additional outputs, allowing signals to be routed to multiple outputs simultaneously.

- **Built-In DSP**

Includes AEC (Acoustic Echo Cancellation) on the first 12 inputs, 4-band PEQ with high-pass filter on every input, four assignable auto-mixers, and 4-band PEQ with high-pass filter, limiting, and polarity inversion on every output.

- **GPIO + Relays**

Connect to other devices for push-to-talk, mute, and volume control. Includes 16 control inputs (voltage or contact closure), 6 logic control outputs, and 2 relay outputs.

## Product Registration and Warranty

To register your product, please visit [http://bssaudio.com/en-US/support/warranty\\_registration](http://bssaudio.com/en-US/support/warranty_registration).

For warranty information, please visit [http://bssaudio.com/en-US/support/warranty\\_policy](http://bssaudio.com/en-US/support/warranty_policy).

## Included Items

Quantity	Item
1	DCP-555 Conferencing Processor
16	Audio Input Connectors (3.5mm, 3-pin, green, Euroblock)
8	Audio Output Connectors (3.5mm, 3-pin, orange, Euroblock)
3	GPIO Connectors (3.5mm, 12-pin, black, Euroblock)
2	Hardware Brackets (for under-table mounting)
4	5/8" Wood Screws (for under-table mounting)
4	Rubber Bumpons™ (for table-top use)
1	Power Cord
1	Rack-Mount Screw Kit (4x screws, 4x washers)
1	Installation Guide
1	Safety and Compliance Sheet

## Mechanical Installation

### Rack Mounting

Be mindful of rack equipment installation. If the unit is to be rack mounted without sufficient support under the chassis, the unit must be supported at the rear and/or sides to lessen the stress on the front mounting flange. The necessary support can generally be bought ready-built as a rack tray, or the unit can be mounted between other units. Damage caused by insufficient support is not covered by the warranty. To prevent cosmetic damage to the front panel finish, use the provided protective plastic washers under the rack-mounting screws.

### Table-Top Use

For installations where the DCP-555 will sit atop a table or other surface, attach the 4 included Bumpons near the bottom corners of the chassis to prevent the DCP-555 from sliding around.

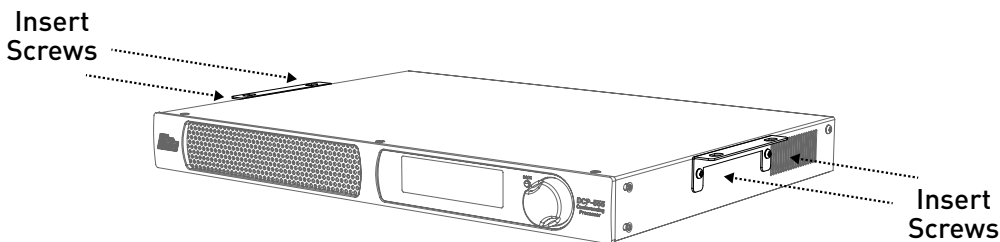
### Under-Table Mounting

Additional tools and supplies required:

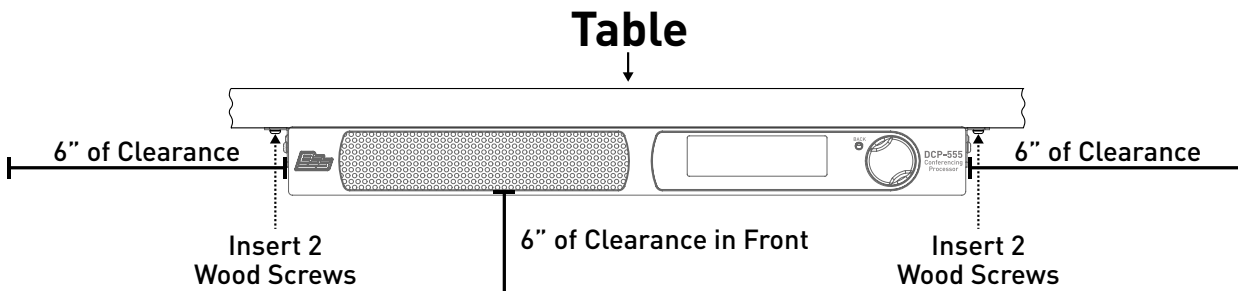
- Phillips screwdriver
- Torx® T10 screwdriver (optional)

To mount the DCP-555 under a table:

1. For a cleaner look, remove the rack ears using a Torx T10 screwdriver (optional). Note that it is recommended to re-insert the screws to avoid losing them and to maintain EMI compliance.
2. Remove the two centered phillips screws on each side of the chassis and place them aside.
3. Affix the mounting brackets to each side of the chassis using the screws removed in step 2.





Install the DCP-555 under the table as shown using the 4 included 5/8" wood screws. When under-table mounting the DCP-555, leave at least 6" of clearance on each side and in front of the device to allow for proper ventilation.

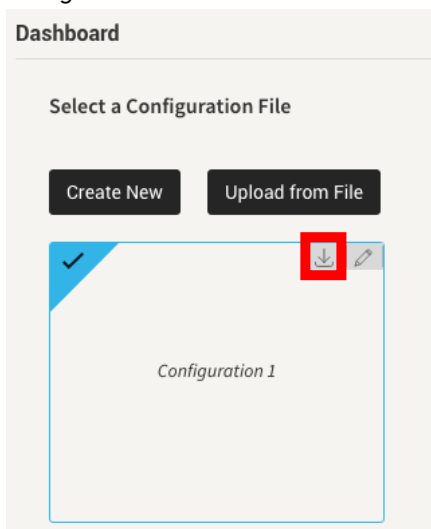


## Quick Start

1. Connect the DCP-555's Ethernet B port to the VoIP/data network.
2. Power on the DCP-555.
  - **If using DHCP** — Wait for the DCP-555 to be assigned an IP address. IP address status can be confirmed by turning the front-panel **ENCODER** to navigate to the "Ethernet B Status" page.



- **If using static IP** — From the front panel, navigate to the "Ethernet B Status" screen then press the **ENCODER** and turn DHCP off. You can now configure the static IP address settings using the **ENCODER**.
3. Connect the control device to the same network as the DCP-555.
  4. Open a browser on the control device and type the IP address (from step 2) in to the address field. The web-server app should launch in the browser if both devices are connected to the same network.
  5. To log in, enter **administrator** for the password. Once logged in, you can change the password by clicking the **User** icon  in the upper right-hand corner of the window.
  6. Load a template from the BSS website or click the **Create New** button to create a new configuration.
  7. Edit the configuration to taste. See the control app help for information on configuring the DCP-555.
  8. Once configuration is complete, click the **Save** icon  in the upper right-hand corner of the app window to save the configuration.
  9. To save the configuration to the computer for backup or for use as a template in future installations, navigate to the "Dashboard" window then click the **Download** button.



### Front Panel Overview



#### 1. Air Vents

These vents provide air flow through the processor. Do not obstruct these vents.

#### 2. LCD

This liquid crystal display provides visual feedback when navigating the front-panel menus.

#### 3. Back Button

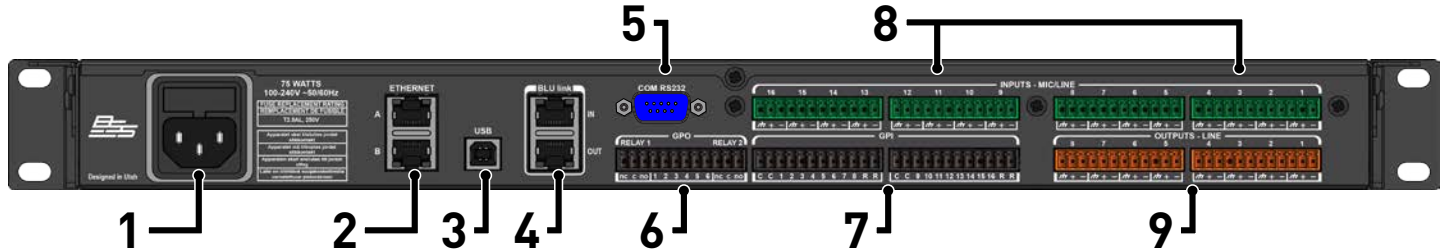
Pressing this button will navigate backwards in the front-panel menu hierarchy.

#### 4. Encoder

Turning and pressing this rotary encoder allows navigation of the front-panel user interface.



## Rear Panel Overview



### 1. AC Mains Power Inlet

Connect the included IEC cable to this AC power inlet. The DCP-555 includes a universal power supply that can operate from 100–240V, 50/60Hz. The fuse is housed in a user-accessible compartment above the AC power inlet.

**WARNING!** Replace with same type fuse only (T2.5AL, 250V).

### 2. Ethernet Ports

The DCP-555 has two Ethernet ports: Port A and Port B. Port A carries the AES67 traffic and Port B carries the VoIP traffic. Port A and Port B carry the control data traffic for communication with the DCP-555 control application and 3rd party control devices, so either can be used for control.

### 3. USB Port

Connect a computer to this port to use the DCP-555 as a USB audio interface with a room PC or AMX Acendo Core for web conferencing. This port supports 2x2 audio channels at 48kHz. See "Using the USB Port" on page 15 for more information.

### 4. BLU Link Ports

BLU link is a proprietary point-to-point digital audio bus that can be used to expand the DCP-555's audio I/O capabilities by interfacing with other BLU link-equipped HARMAN devices. The DCP-555 supports 28x32 BLU link channels at 48kHz. See "Using BLU Link" on page 12 for more information.

### 5. RS232 Port

The serial port allows 3rd party control equipment to control and monitor the DCP-555. See "Using 3rd Party Control" on page 20 for more information.

### 6. GPO Port

This General Purpose Output port can be used to control external LEDs and devices. See "Using the General Purpose Outputs (GPO)" on page 18 for more information.

### 7. GPI Ports

These General Purpose Input ports can be used to control DCP-555 mutes and volume. See "Using the General Purpose Inputs (GPI)" on page 16 for more information.



### 8. Mic/Line Inputs

The DCP-555's 16 analog inputs accept mic- or line-level audio signals and provide software-adjustable analog gain from 0–60dB in 2dB increments. The maximum input level is +20dBu with an input gain setting of 0dB. Phantom power (+48VDC) is provided for condenser-type microphones and is software selectable per input channel.

### 9. Line Outputs

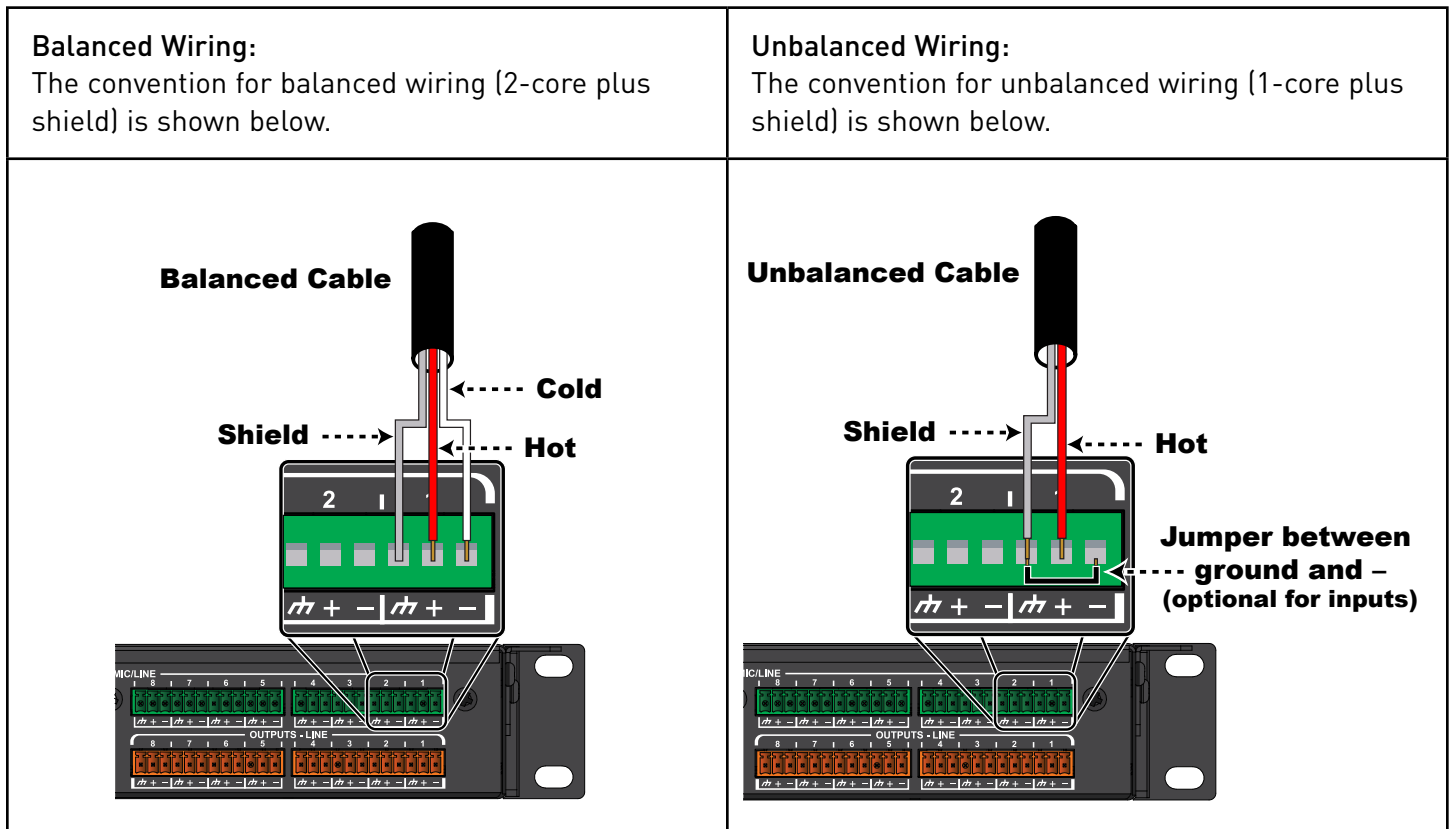
These 8 line-level analog outputs have a maximum output level of +20dBu and support balanced or unbalanced connections. Mute control is available for each output and can be controlled via the app or GPI port.

## Making Audio Connections

Audio input connections are made using the included green 3-pin terminal-block connectors (HARMAN part number: 32-0381). Audio output connections are made using the included orange 3-pin terminal-block connectors (HARMAN part number: 5089098-00).

### Audio Input and Output Wiring Convention

The DCP-555 provides cable shielding "back from the destination" to eliminate ground loop problems. This means that the shield connection on an input is grounded, whereas the shield connection on an output is floating (although connected via an internal network to ground for EMC compliance).



## Configuring the DCP-555

### Control Device Specifications

- Screen resolution of 1280x800 – 1680x1050
- Wi-Fi or Ethernet networking interface

### Port Assignment List

Note that a network's firewall may need to be configured to allow the DCP-555 to operate properly on a tightly secured network. The DCP-555 uses the following port assignments:

Port	Protocol	Function
4197	TCP	3rd party control
443 and 8082	TCP	Secure http/websocket connections
80 and 8081	TCP	Unsecure http/websocket connections
5060 and 5061	TCP/UDP	VoIP

### Connecting to the Network

The DCP-555 supports DHCP. If a DHCP server is connected to the network, simply plug the DCP-555 in to the network, apply power, then wait for the DHCP server to assign the unit an IP address.

The IP address can be confirmed from the front panel by turning the **ENCODER** to navigate to the "Ethernet A Status" or "Ethernet B Status" screen, depending on which Ethernet port the network cable is connected.




The DCP-555 can also be configured with a static IP address, which can be set from either the front panel or from the control app once connected to the network using DHCP.

To configure the DCP-555 with a static IP address from the front panel:

1. Navigate to the "Ethernet A Status" or "Ethernet B Status" screen, depending on which Ethernet port the network cable is connected.
2. Press the **ENCODER** then turn DHCP off.
3. You can now configure the static IP address settings using the **ENCODER**.

## Connecting to the Web-Server App

To connect to the DCP-555's built-in web-server app and begin configuring the device:

1. With the control device connected to the same network as the DCP-555, launch the browser of choice and enter the DCP-555's IP address in to the browser's address field.
2. Enter **administrator** for the password and then select **Sign In**.
3. Once logged in, you can change the password by clicking the **User** icon  in the upper right-hand corner of the window.

See the DCP-555 control app help for information on configuring the DCP-555.

## Using BLU Link

BLU link is a proprietary point-to-point digital audio bus that supports up to 256 audio channels at 48kHz or 128 audio channels at 96kHz. The DCP-555 supports 28x32 channels of BLU link audio at 48kHz.

**NOTE:** The BLU link sample rate for all devices on a BLU link bus must be configured to match. The DCP-555 has a fixed sample rate of 48kHz, so all other BLU link devices connected to the bus must also be configured for 48kHz operation.

## Making BLU Link Connections

The physical BLU link connections are made using Category 5e or higher cabling connected from the BLU link OUT port of one device to the BLU link IN port of another device. Additional devices should be connected in a daisy-chain topology. Redundancy can be provided by completing the loop and connecting the BLU link OUT port from the last device to the BLU link IN port of the first device. The maximum cable length between devices cannot exceed 100m/328ft. The BLU link audio bus supports a maximum of 60 BLU link nodes.

**NOTE:** DO NOT connect BLU link ports to network peripherals, such as a network hub, switch, or router. Since BLU link is not an AoIP protocol, such devices are not supported and BLU link audio will not pass through them.

## Fault Tolerance

When the last BLU link device in a system is connected back to the first, the BLU link bus is capable of a degree of fault tolerance since each device receives the same audio from two other devices. If a single cable connection is broken, the devices which are no longer connected will detect the cable break: one device will detect that its BLU link IN port is disconnected and the other will detect that its OUT port is disconnected. The devices will then re-route the audio so that it can again pass through the bus.

**NOTE:** When the cable is broken, the audio will take longer to reach its destination. This small added delay is not compensated for in any way, but is a side-effect of the way the fault tolerance system functions.



### **BLU Link Mastership**

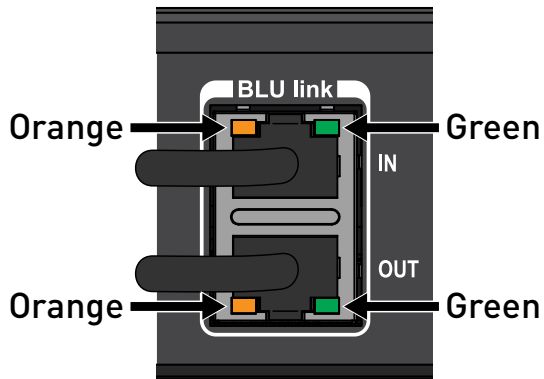
BLU link requires one device to provide master clock for all other devices on the bus. BLU link mastership is automatically negotiated between all devices, and any change to the bus will trigger the auto-negotiation to restart.

Each BLU link device contains a Master Priority setting, with a possible value between 0 and 254. Some BLU link devices have a fixed Master Priority setting, while others are configurable. The device with the highest Master Priority setting on the bus will be configured as the BLU link master. If two BLU link devices have the same Master Priority setting, then the device's MAC addresses are compared to determine which will be the master, with the device with the higher MAC address winning.

If connecting to a BLU link bus that requires a certain device to be master, ensure that the master device has a higher Master Priority setting than all other BLU link devices on the bus.

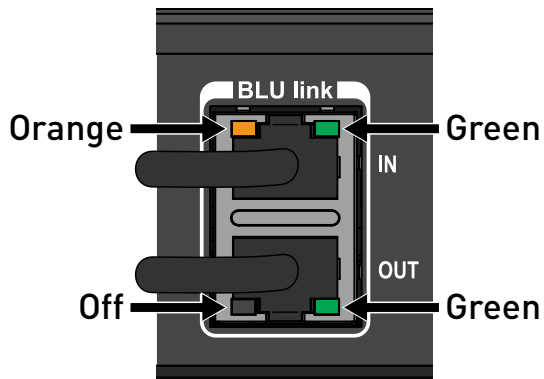
## BLU Link Port Status LEDs

The BLU link ports have LEDs that indicate the following:



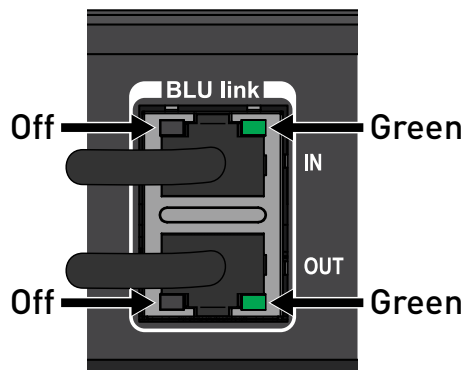
### Both Orange LEDs Lit

This indicates the device is the BLU link master and is providing the clock for all other devices on the BLU link bus.



### One Orange LED Lit

This indicates the device is slaved to the BLU link clock received from another device on the bus.



### Both Orange LEDs Off

This indicates the device is not receiving BLU link clock and will not pass audio. This usually indicates the IN and OUT ports are swapped on the device (an OUT port is connected to an OUT port and an IN port is connected to an IN port). Try swapping the connections to solve the problem.

**NOTE:** The green LEDs light to indicate the ports have established a link with the BLU link bus.



### Using the USB Port

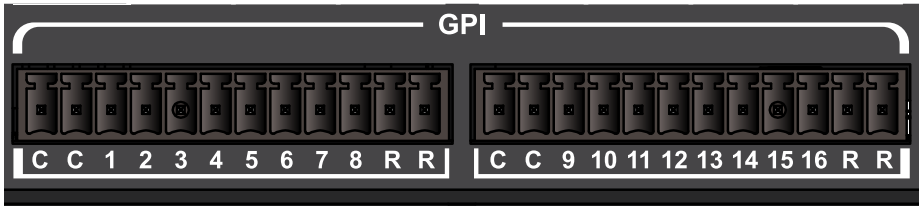
The DCP-555's USB port can be used to transfer audio between the conferencing system and software codecs, such as Skype®, GoToMeeting™, WebEx®, etc. This port is USB Audio Class 1 compliant, so it supports the standard WDM driver in Windows® and Core Audio driver in macOS® and doesn't require any additional drivers to be installed. This port supports 2x2 audio channels (one stereo pair in and out). Simply connect the DCP-555 USB port to the computer then select it as the sound input and output device in the computer.

If additional USB ports are required or the DCP-555's USB port is not accessible due to installation location, up to 4 BSS BLU-USB interfaces can be connected via the BLU link ports. Visit <https://bssaudio.com/en/products/blu-usb> for more information on the BLU-USB.

**NOTE:** To use the BLU-USB with the DCP-555, the BLU-USB must be set to USB Audio Class 1 mode, which is the default mode. This is indicated by a cyan-colored USB port LED on the BLU-USB. If the BLU-USB's USB port LED is magenta, use a small, pointed object—such as the tip of a paperclip—and press and hold the recessed **MODE** pushbutton until the USB port LED changes to cyan (~10 seconds).



## Using the General Purpose Inputs (GPI)

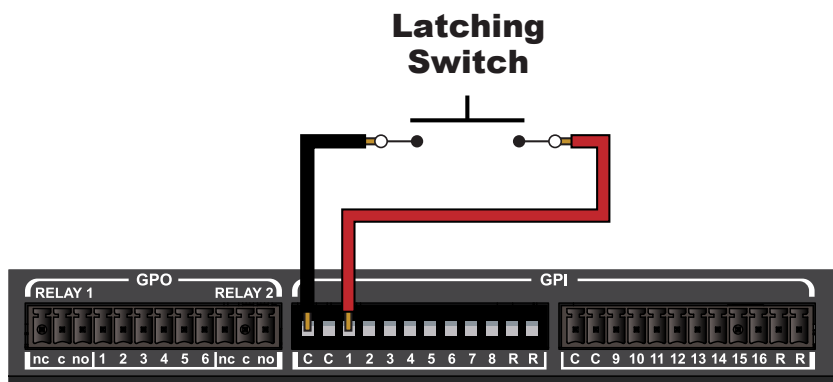
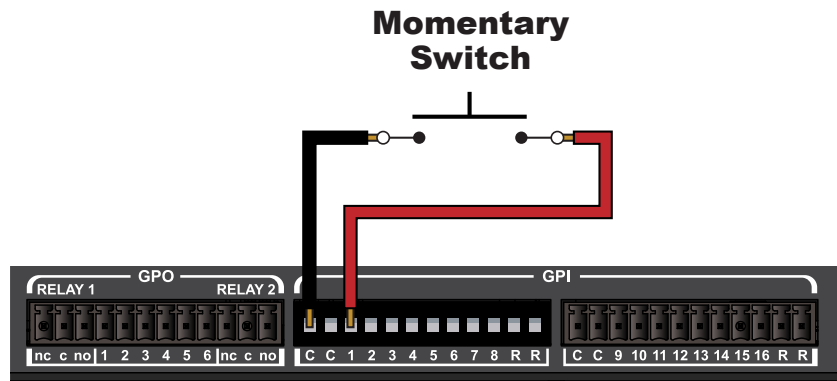


There are 16 analog /digital control inputs, referred to as "General Purpose Inputs" or "GPI". The General Purpose Inputs are used to connect switches (for control of mutes) or potentiometers (for control of volume). GPI connections are made using the included black 12-pin terminal-block connectors (HARMAN part number: 32-1006).

There are two common ground ("C") pins to the left and two reference voltage ("R") pins to the right that provide an output of ~5VDC.

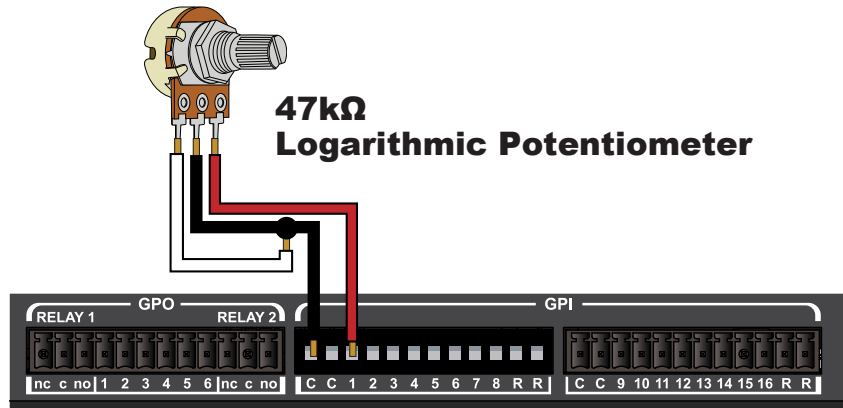
### Contact Closure

Connect a momentary switch for push-to-talk control, or connect a latching switch for mute on/off control.



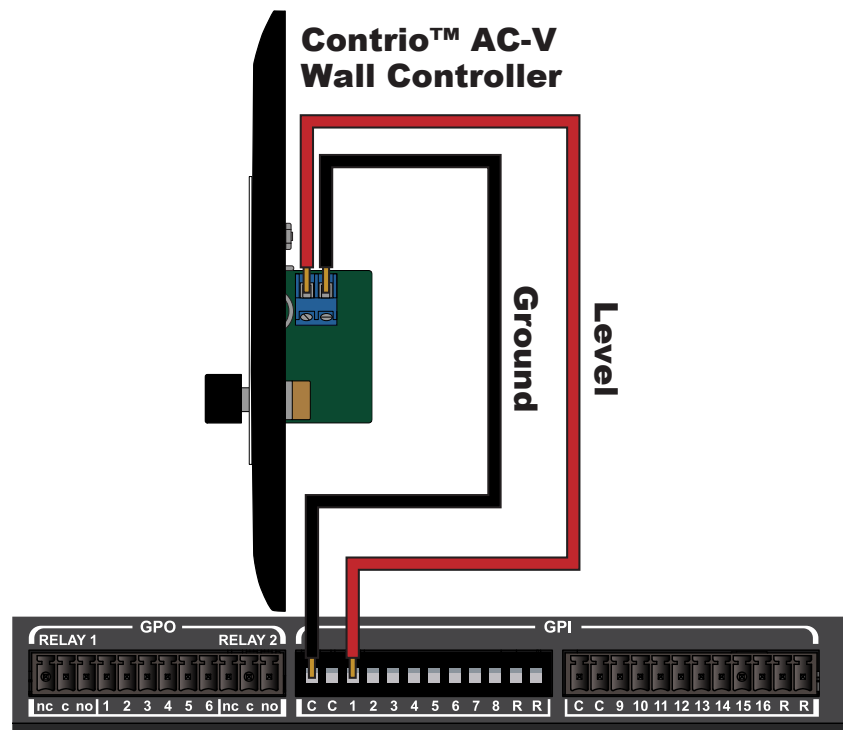
## Volume Control via Potentiometer

Connect a 47kΩ logarithmic potentiometer between a control input and common to control volume linearly.



## Volume Control via AC-V Wall Controller

For an easy-to-integrate and stylish solution, connect a BSS Soundweb™ Contrio™ AC-V Wall Controller for volume control. Visit <https://bssaudio.com/en/products/ac-v> for more information on the AC-V Wall Controller.



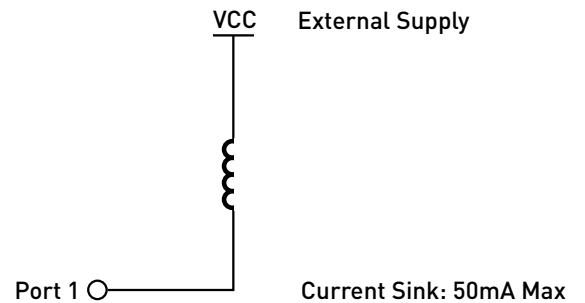
## Using the General Purpose Outputs (GPO)



These outputs are known as “General Purpose Outputs” or “GPO”. There are 6 digital logic control outputs for controlling LEDs and 2 relay outputs for controlling external devices. GPO connections are made using the included black 12-pin terminal-block connectors (HARMAN part number: 32-1006).

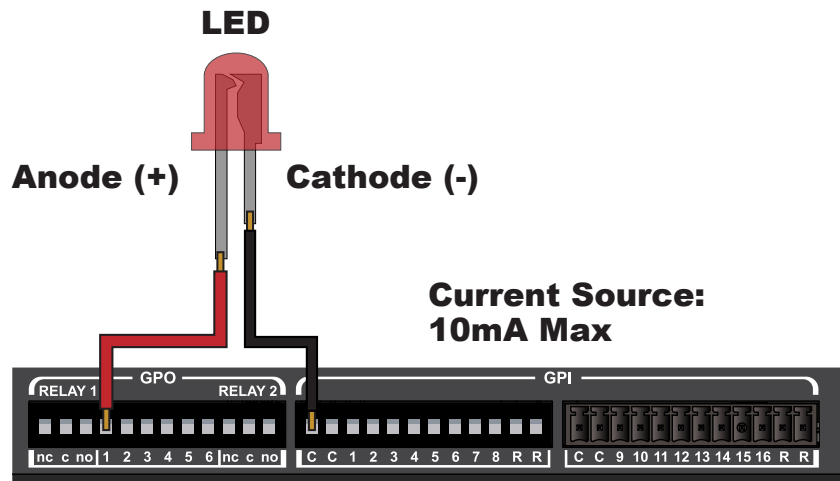
The GPO logic outputs can source 10mA at 5VDC, or sink up to 50mA of current as an open collector output.

For higher-current reed-type relays you must use one of the GPO logic outputs to sink current using an external power supply.



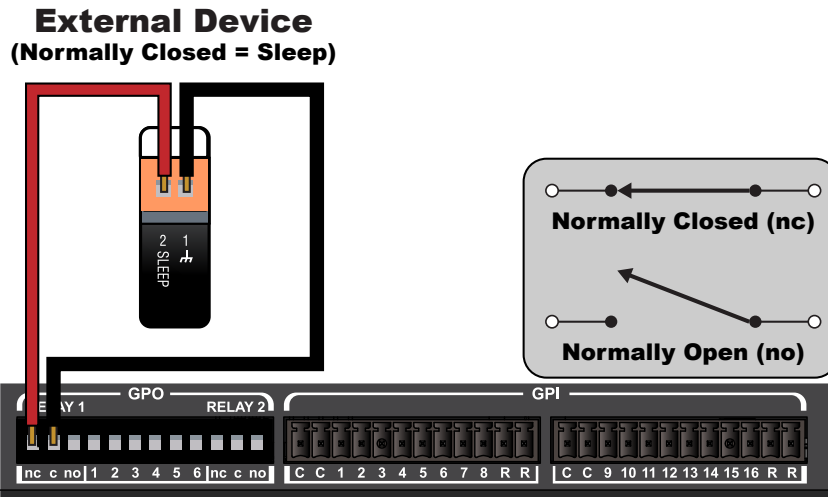
### LED Indication

When sourcing from a logic output, an LED connected between one output (Anode, A) and common (Cathode, K) will illuminate when the logic output is activated, without requiring any external current limiting resistor (the DCP-555 contains an internal 300Ω resistor).



## Relay Output Control

The GPO port contains two relay outputs with normally open (no) and normally closed (nc) contacts. The illustration below shows a relay output being used to wake a device when a particular output is unmuted.



The relay outputs are rated for up to 1A @ 120VAC.

**WARNING!** DO NOT expose energized wiring that carries a high voltage.

## Using 3rd Party Control

The DCP-555 can be controlled by a 3rd party device via Ethernet or RS232. For more information, download the DCP-555 Control API Guide from <https://bssaudio.com/en/products/dcp-555#documentation>.

## Performing the Factory Reset

The Factory Reset procedure can be used to reset all parameters within the DCP-555 back to their factory default state.

**WARNING!** Performing the Factory Reset will erase all user-configured settings. This process is irreversible. It is recommended to back up settings before performing this procedure.

To perform the Factory Reset:

1. Power off the DCP-555.
2. Apply power to the unit then immediately press and hold the **ENCODER**. Keep the **ENCODER** pressed until the Factory Reset prompt appears on the front-panel LCD screen, then release it.
3. Turn the **ENCODER** clockwise to confirm.
4. Press the **ENCODER** to start the Factory Reset procedure.

**NOTE:** To abort the Factory Reset procedure, press the **BACK** button instead.

5. Wait for the Factory Reset to complete.

## Updating Firmware

To update the DCP-555 firmware:

1. While connected to the Internet, launch the DCP-555 control app and sign in.
2. Using the navigation menu icons on the left of the page, navigate to the "Device Settings" page.
3. Press the **Update Firmware** button then follow the on-screen instructions.

**NOTE:** If a network's firewall restricts access to the DCP-555 firmware download, it may be required to open port 80 in the network's firewall to allow for internet-based updates. See "**Port Assignment List**" on page 11 for more information on the ports used by the DCP-555.



## Specifications

### INTERFACE

User Controls: LCD, rotary push button encoder, back button

### ANALOGUE INPUTS

Connectors: 16 electronically balanced on Phoenix/Combicon removable screw connectors  
Mic/Line Inputs: Nominal gain 0dB, software adjustable up to +60dB in 2dB increments  
Input impedance: 6k $\Omega$   
Maximum Input Level: +20dBu with 0dB input gain  
CMRR: >75dB at 1kHz  
Equiv. Input Noise (EIN): <-124dBu typical with 150 $\Omega$  source  
Phantom Power: 48VDC nominal, software-enabled per input  
A/D Word Length: 24-bit  
A/D Latency: 37/Fs (0.77 ms @ 48kHz)

### ANALOGUE OUTPUTS

Connectors: 8 electronically balanced on Phoenix/Combicon removable screw connectors  
Output Impedance: 40 $\Omega$  balanced, 20 $\Omega$  unbalanced  
Maximum Output Level: +20dBu  
Frequency Response: 20Hz – 20kHz (+1dB/-1dB)  
THD: <0.5% 20Hz – 20kHz, 0dBu output  
Dynamic Range: 108dB typical, 22Hz – 22kHz unweighted; 110dB typical, 22Hz – 22kHz "A" weighted  
Crosstalk: <-75dB  
D/A Word Length: 24-bit  
D/A Latency: 29/Fs (0.60 ms @ 48kHz)

### CONTROL PORTS

Number of Ports: 16 inputs, 6 outputs, and 2 relay contact closures  
Control Input Voltage: 0 to 5.0VDC (protected, do not exceed 5.5VDC)  
Control Input Impedance: 4.7k $\Omega$  to +5VDC  
Logic Output Voltage: 0 or +5VDC unloaded  
Logic Output Impedance: 440 $\Omega$   
Logic Output Current: 10mA source, 50mA sink  
Relay Contact Rating: 1A, 120VAC  
**(WARNING! DO NOT expose energized wiring that carries a high voltage.)**

### USB

Port Type: Female, Type B  
Supported Classes: USB Audio Class 1 (16-bit or 24-bit, 48kHz)  
Number of I/O Channels: 2x2

## NETWORK

Connectors:	2 x RJ45 (Port A = AES67 and control, Port B = VoIP and control)
Maximum Cable Length:	100m/328ft on Category 5 cable between device and Ethernet switch

## BLU LINK

Connectors:	2 x RJ45
Maximum Cable Length:	100m/328ft on Category 5e cable between devices
Maximum Number of Nodes:	60
Number of I/O Channels:	28x32
Supported Sample Rate:	48kHz
Latency:	11/Fs (0.23 ms @ 48kHz)
Pass-Through Latency:	4/Fs (0.08 ms @ 48kHz)

## AES67

Connectors:	1 x RJ45 (Ethernet Port A)
Number of I/O Channels:	16x16
Max Number of Streams:	16
Supported Channels per Stream:	Up to 16
Supported Sample Rate:	48kHz

## VOIP

Connectors:	1 x RJ45 (Ethernet Port B)
Number of Simultaneous Lines:	4
Supported Sample Rate:	48kHz

## POWER/TEMPERATURE

Mains Voltage:	100 – 240VAC, ~50/60Hz
Power Consumption:	<65VA
Operating Temperature Range:	0° to 45° C (32° to 113° F)

## PHYSICAL

Rack Space:	1U
Dimensions (H x W x D):	1.7" x 19" x 13" (43mm x 483mm x 330mm), width includes rack mounts
Weight:	9.4 lbs (4.3 kg)

Specifications subject to change without notice.

BSS Audio incorporates high-quality mechanical fans in some products. All mechanical fans have a limited life expectancy. We recommend annual inspection of fans for dust occlusion and excessive noise. Fan assemblies should be replaced after six to ten years of use. Environmental factors such as elevated temperature, dust, and smoke can adversely affect fan life. Systems exposed to these conditions should be inspected more frequently. Fan replacement can be performed either at the factory or by an experienced technician in the field. Please contact BSS Technical Support for more information on purchasing replacement parts or product service. BSS Audio has a policy of continued product improvement and accordingly reserves the right to change features and specifications without prior notice



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DCP-555 Installation Guide

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