

UCS 504, UCS T 503 and UCS SR 501 • Setup Guide

IMPORTANT NOTE:

Go to www.extron.com for the complete UCS 504, UCS T 503 and UCS SR 501 User Guide, installation instructions, and specifications before connecting the product to the power source.



Overview

The UCS 504 is a 4K collaboration switcher and receiver kit that combines AV and USB switching with twisted pair signal extension. The UCS 504 kit consists of the UCS T 503 switching transmitter and UCS SR 501 scaling receiver. The transmitter supports USB-C and dual HDMI with USB inputs for BYOM laptops. The scaling receiver provides an additional HDMI with USB input for a dedicated UC computer and an HDMI output to the room display. Six USB device connections support cameras or mics up to USB 10Gbps and HDMI outputs enable resolutions up to 4K/60. The system supports auto-switching and automation capabilities including CEC, RS-232, or IR control to a display. The compact half-rack width transmitter can mount under a table while the 1" (2.5 cm) high receiver easily mounts behind a display. The UCS 504 makes it easy to integrate AV sources and USB cameras for Teams® and Zoom™ meetings into conference and collaboration spaces.

The products are compatible with all HDMI and USB, and USB-C sources. The product is NOT compatible with Extron DTP or XTP products.

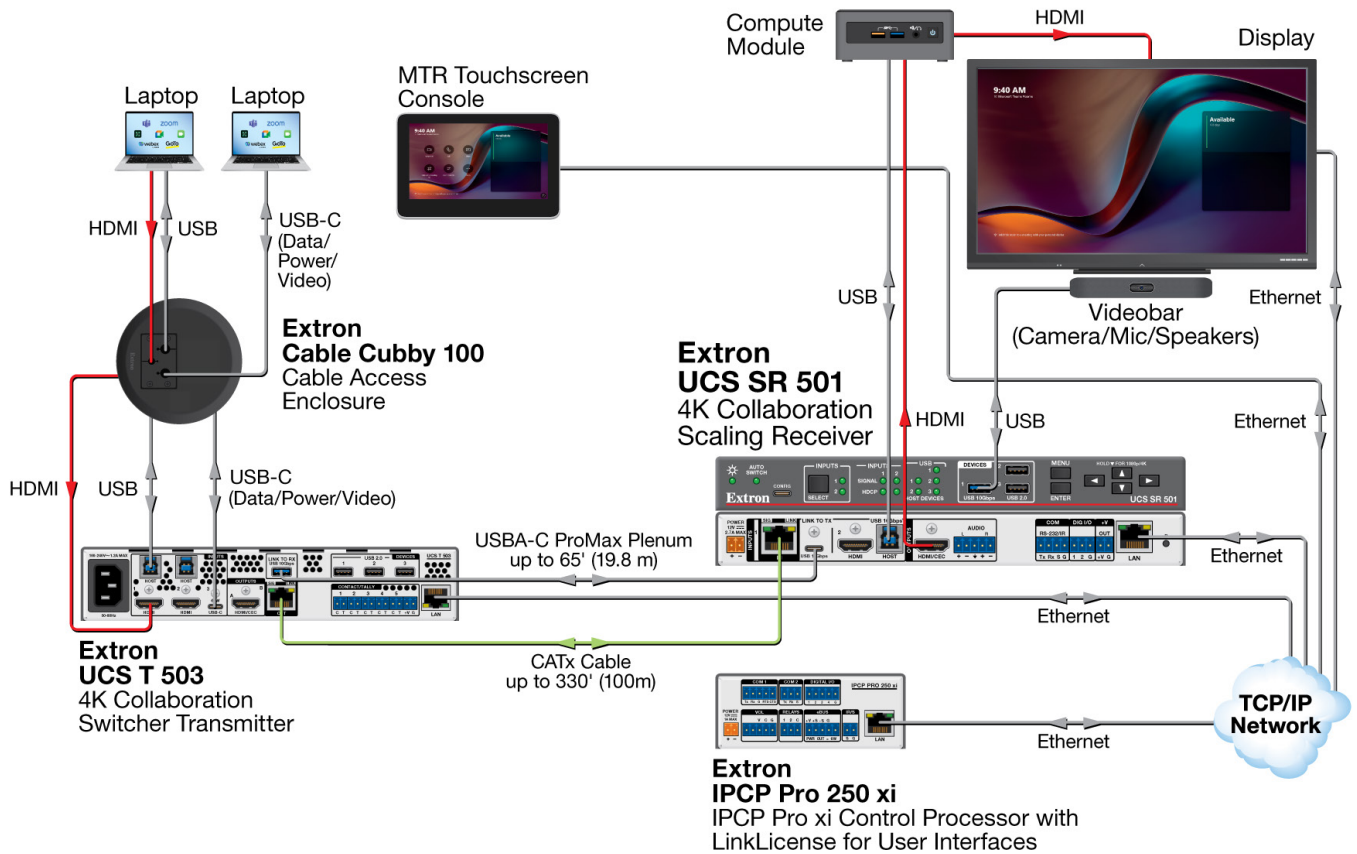
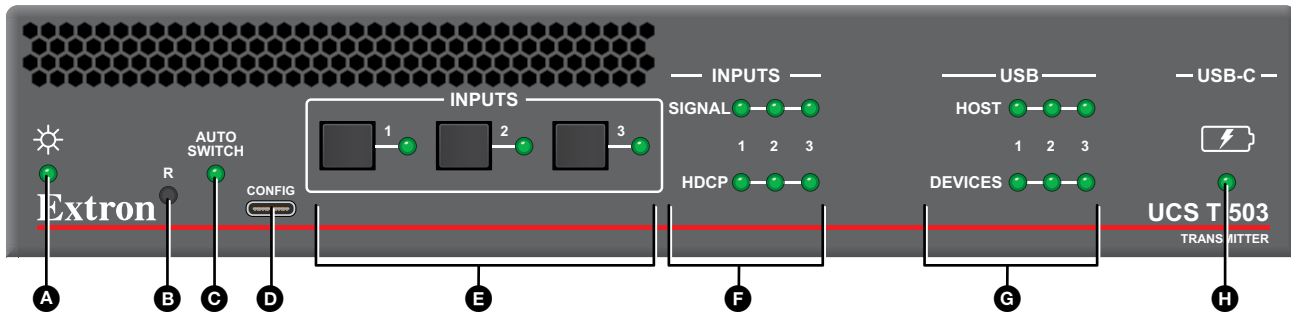


Figure 1. Typical UCS T 503 and UCS SR 501 System

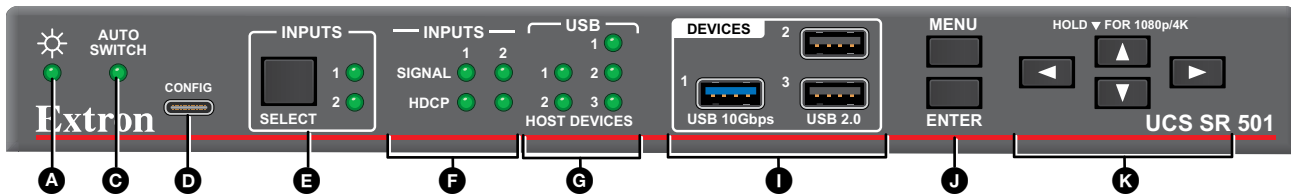
Panels and Features

Front Panel Features



A Power LED	E INPUTS selection buttons
B Reset button	F INPUTS SIGNAL and HDCP LEDs
C AUTO SWITCH LED	G USB HOST and DEVICES LEDs
D CONFIG port	H USB-C power LED

Figure 2. UCS T 503 Front Panel Features



A Power LED	G USB HOST and DEVICES LEDs
C AUTO SWITCH LED	I DEVICES USB ports
D CONFIG port	J MENU and ENTER buttons
E INPUTS selection buttons	K Menu navigation buttons
F INPUTS SIGNAL and HDCP LEDs	

Figure 3. UCS SR 501 Front Panel Features

- A Power LED** — Indicates the power status of the device.
- B Reset button** — Recessed button for resetting the device.
- C AUTO SWITCH LED** — Indicates the auto switch mode status of the device.
- D CONFIG port** — One female USB-C for configuring the device.
- E INPUT selection buttons** —
 - **UCS T 503** — Three buttons for selecting input 1, 2, or 3. Three LEDs, one for each input, indicate the currently selected input.
 - **UCS SR 501** — One button to toggle between inputs 1 and 2. Two LEDs, one for each input, indicate the currently selected input.
- F INPUT SIGNAL and HDCP LEDs** —
 - **UCS T 503** — Three LEDs in the top row provide signal status for inputs 1, 2, and 3; three LEDs in the bottom row provide HDCP input status for inputs 1, 2, and 3.
 - **UCS SR 501** — Two LEDs in the top row provide signal status for inputs 1 and 2; two LEDs in the bottom row provide HDCP input status for inputs 1 and 2.

G USB HOST and DEVICES LEDs —

- **UCS T 503** (see **figure 2** on page 2) — Three LEDs in the top row provide USB Host signal status for inputs 1, 2, and 3; three LEDs in the bottom row provide USB device signal input status for USB Hub ports 1, 2, and 3.
- **UCS SR 501** (see **figure 3** on page 2) — One double stacked column of LEDs provide the USB HOST status; one triple stacked column of LEDs provide the USB Hub device ports status.

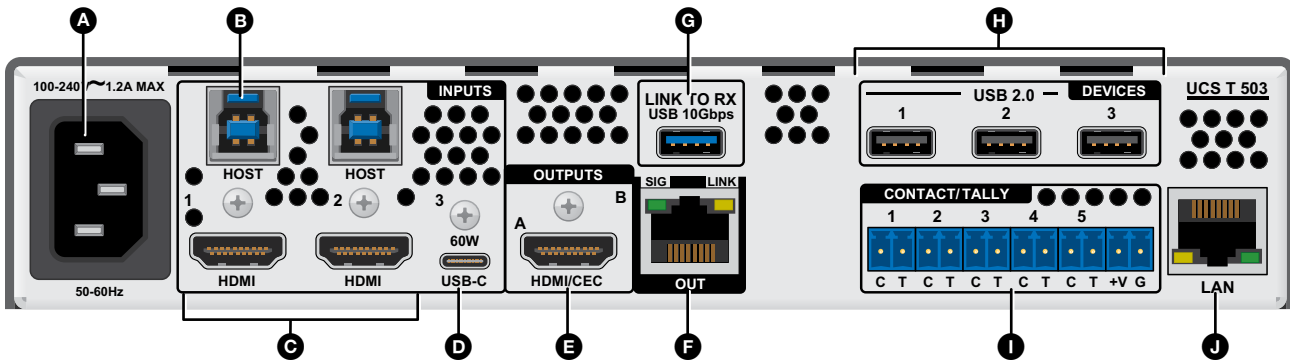
H USB-C power LED (see **figure 2** on page 2) — One LED provides status of USB-C charging for input 3.

I DEVICES USB ports (see **figure 3** on page 2) — One USB 3.x type A female port (port 1) and two USB 2.0 Type-A female ports (ports 2 and 3) for USB HUB.

J MENU and ENTER buttons — Push buttons for menu and enter control within the On Screen Display (OSD).

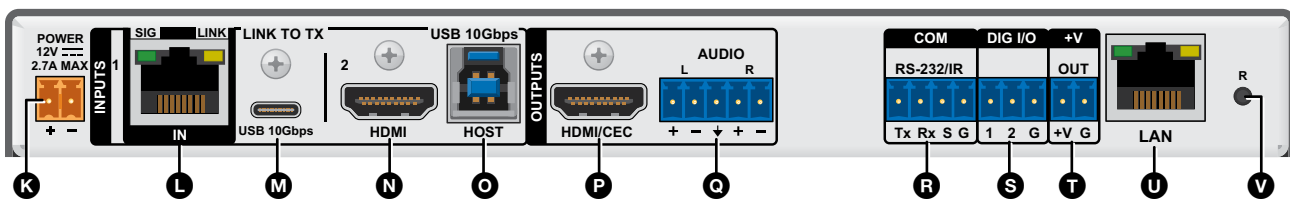
K Menu navigation buttons — Four push buttons for control of the direction or cursor in the OSD menu.

Rear Panel Features



A IEC Power input	E HDMI/CEC OUTPUT port	H USB 2.0 DEVICES ports
B HOST USB connectors	F OUTPUT TP port	I CONTACT/TALLY ports
C HDMI inputs	G USB LINK TO RX	J Ethernet port
D USB-C input port		

Figure 4. UCS T 503 Rear Panel Features



K 12 V power input	O USB HOST port	S Digital I/O port
L Input TP port	P HDMI/CEC OUTPUT port	T Voltage output
M USB-C LINK TO TX port	Q Analog AUDIO Output port	U Ethernet port
N HDMI Input 2	R COM port	V Reset button

Figure 5. UCS SR 501 Rear Panel Features

- A IEC Power input** (figure 4 on page 3) — One female IEC connector for connecting 100-240 V, 50-60 Hz power to the transmitter.
- B HOST USB connectors** — Two blue USB 3.x type B female connector for inputs 1 and 2.
- C HDMI inputs** — Two female HDMI type A for inputs 1 and 2.
- D USB-C input port** — One USB type C for USB data, video, and power delivery on input 3. The USB-C input port can provide up to 60W of power delivery to the connected host input.
- E HDMI/CEC OUTPUT port** — One female HDMI type A for a local HDMI output. Connect an AV device to the HDMI/CEC output port on the receiver. If the device (such as a CEC-compliant display) supports CEC control, the UCS 504 can automatically turn display power on or off based on whether an active signal is detected at the selected input (see **RJ-45 Connections** on page 6). The video on the HDMI/CEC output is mirrored on the Output TP port.
- F OUTPUT TP port** — One RJ-45 jack for video and USB 2.0 extension via twisted pair. Up to 330 feet (100m) of CAT6A cable is used between the transmitter and receiver.
- G USB LINK TO RX** — Connect this USB port to the USB-C input port 1 labeled LINK TO TX on the receiver (figure 5, **C**, on page 3) using the Extron USBA-C ProMax Plenum extension cable (part number 26-758-xx). See **Transmitter-Receiver Interconnection** on page 6. If the system does not need USB 3.x extension, the USB A to C extension cable connecting the transmitter to the receiver does not need to be connected. This LINK TO RX port to the receiver is used to extend USB 3.x data between the transmitter and receiver using Extron USBA-C ProMax optical extension cable.
- H USB 2.0 DEVICES ports** — Connect USB 2.0 or 1.x devices to these black USB Type A ports. USB 2.0 and 1.x signals from the inputs are routed to these ports. Each port provides 5 V and up to 500 mA.
- I CONTACT/TALLY ports** — Four 3.5 mm, 2-pole captive screw connectors for contact (C) and tally (T) connections. See **Contact/Tally Ports** on page 7 for information about wiring and use of these ports.
- J Ethernet port** — One female RJ-45 jack with integrated amber and green LEDs for Ethernet communications connectivity to the UCS T 503.
- K 12 VDC power input** (see figure 5 on page 3) — One 3.5 mm, 2-pole captive screw connector for connecting power to the receiver. The included 12 VDC external power supply must be connected to the receiver. It cannot be powered remotely from the transmitter.

ATTENTION:

- Do not power on the receiver until you have read the ATTENTION about power supplies (see the *UCS 504, UCS T 503 and UCS SR 501 User Guide*).
- Ne branchez pas le récepteur avant d'avoir lu la mise en garde sur les sources d'alimentation (voir *UCS 504, UCS T 503 and UCS SR 501 User Guide*).

- L Input TP port** — One female RJ-45 jack with integrated amber and green LEDs for twisted pair input.
- M USB-C LINK TO TX port** — Connect this USB port to the corresponding port on the transmitter (figure 4, **G**, on page 3). See **Transmitter-Receiver Interconnection** on page 6.
- N HDMI Input 2** — One female HDMI type A for HDMI input.
- O USB HOST port** — One female USB 3.x blue type-B connector for USB input associated with HDMI Input 2.
- P HDMI/CEC OUTPUT port** — One female HDMI type A for a local HDMI output. Connect an AV device to the HDMI/CEC output port on the receiver. If the device (such as a CEC-compliant display) supports CEC control, the UCS 504 can automatically turn display power on or off based on whether an active signal is detected at the selected input (see **RJ-45 Connections** on page 6).
- Q Analog AUDIO Output port** — One blue 3.5mm 5-pole captive screw connector for analog audio output (see **Audio Output** on page 6).
- R COM port** — One female blue 3.5mm 4-pole captive screw connector for RS-232 and IR communications port. Control is accomplished using an Extron control system (see **RS-232** on page 7 and **IR** on page 8).
- S Digital I/O port** — One female blue 3.5mm 3-pole captive screw connector for two Digital I/O ports. Control is accomplished using an Extron control system (see **Digital I/O** on page 8).
- T Voltage output** — One female blue 3.5mm 2-pole captive screw connector for +V/G ports. Control is accomplished using an Extron control system (see **+V Port** on page 7).
- U Ethernet port** — One female RJ-45 jack with integrated amber and green LEDs for Ethernet communications connectivity to the UCS SR 501.

- ▼ **Reset button** (figure 4 on page 3) — The UCS 504 series has five reset modes that are initiated by pressing the **RESET** button. An additional (sixth) mode toggles between enabling and disabling the DHCP client. For complete information about these reset modes, see **Reset Modes** on page 10.

Installation and Configuration Steps

1. Mount the transmitter and receiver in the desired locations.
2. Connect cables and sources to the UCS 504, sources, USB devices, and display.
3. Configure the transmitter and receiver A/V settings using Extron Product Configuration Software (PCS).
4. Configure the transmitter and receiver IP settings using Extron ToolBelt software.
5. If more room and system control is needed at the receiver, configure the receiver control ports along with an Extron IPL Pro controller using Extron Global Configurator software.
6. Test the switching, extension and control functions of the system.

Operation

Powering on the UCS 504 System

To power on the UCS 504:

1. Connect all input and output devices to the rear panel ports (see figure 4 on page 3).
2. Power on the output devices.
3. Connect power to the 12 VDC input on the UCS SR 501.

NOTE: Use only the 12 VDC external power supply included with the UCS SR 501.

4. Connect the power to the IEC power connector port on UCS T 503.

As soon as power is connected, the power LED lights to amber.

Once boot-up is complete, each of the input LEDs light one at a time, in order, for about 250 ms each.

Afterwards, each of the signal status LEDs light in the same manner.

When boot is complete and after the LED sequences mentioned occur, normal operation will begin.

5. Power on the input devices.

Selecting an Input

Switching an input to the output can be done by the following methods:

- **Front panel buttons** — Press the desired input button on the front panel (ensure that auto switching is not enabled). The LED corresponding to the selected input button lights.
- **Auto-switch modes** — Configure the UCS to select the active, connected input based on detection of an active video signal. This can be done via Simple Instruction Set (SIS) commands or Product Configuration Software (PCS).

NOTE: While the UCS 504 is in any auto-switch mode, inputs can still be manually selected via front panel buttons or SIS. This allows the user to switch to any input during usage and not rely on auto-switching. Making a manual switch when the unit is in auto-switch mode does not disengage auto-switch.

- **Contact closure** — Attach a contact closure switch or a Show Me cable to a CONTACT/TALLY connector to enable input switching via contact closure. Use the connected switch to select the input (see **Contact/Tally Ports** on page 7).
- **Remote control** — Inputs can be selected using SIS commands (see the “SIS Communication and Control” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*) or PCS (see the *UCS 504 Help File*).

RJ-45 Connections

Ethernet control enables configuration and control of the UCS 504 from a remote location using PCS, Default Web Pages, or SIS commands.

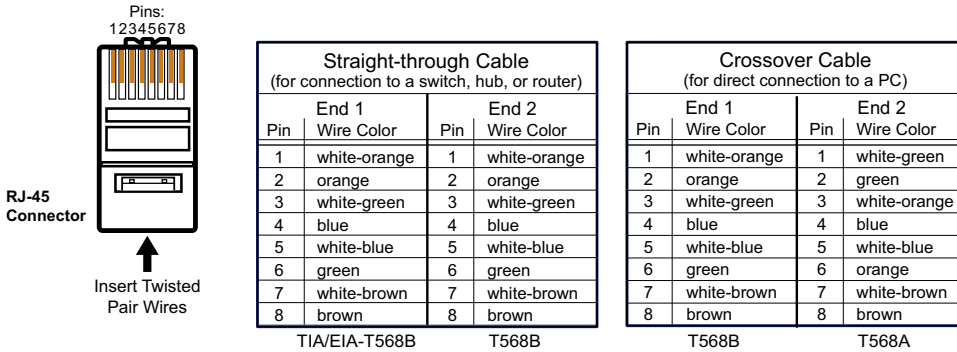


Figure 6. Wiring for RJ-45 Cables

The default network settings of the device are:

- IP Address: 192.168.254.254
- Subnet Mask: 255.255.255.0
- Gateway: 0.0.0.0
- DNS: 0.0.0.0

The default Username is admin.

NOTES:

- The factory configured passwords for all accounts on this device have been set to the device serial number.
- Passwords are case sensitive.
- If the device is reset to default settings, the passwords are reset to the default password, which is extron.

Transmitter-Receiver Interconnection

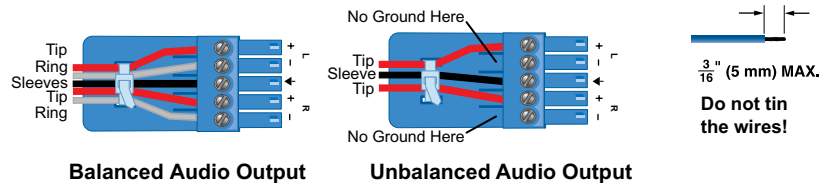
Connect the USB Link to the Rx port on the transmitter (see figure 4, G, on page 3) to the USB Link to Tx port on the receiver (see figure 5, M, on page 3), using an Extron USBA-C ProMax Extension cable (part # 26-758-xx). Depending on the selected input/host, the USB 3.x signal will be routed automatically so that USB 3.x devices on both transmitter and receiver can be accessed by all hosts. Note that the USBA-C extension cable only needs to be connected if USB 3.x extension is required between the transmitter and receiver. If only USB 2.0 extension is needed, only the connection via Twisted Pair cable between the transmitter and receiver is required.

Audio Output

One analog audio output, via a 5-pole 3.5mm captive screw port, is available for de-embedding 2-CH LPCM audio from the selected HDMI input signal.

For analog audio output, connect an amplifier, powered speaker, mixer, or other audio device to the 3.5 mm, 5-pole captive screw connector. See the diagrams at right for the appropriate wiring for your application.

For unbalanced audio, connect the sleeve(s) to the ground contact. Do not connect the sleeve(s) to the negative (-) contacts.



NOTE: The output volume control in the PCS software and in the OSD menu applies to the analog audio output only. The output level for the HDMI embedded audio is fixed and cannot be adjusted.

Contact/Tally Ports

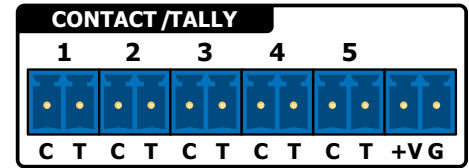
Wire a push-button switch or other contact closure device to pin C (contact) and to the shared pin G (ground) of any of these 2-pole connectors. These ports are configured via PCS (see the *UCS 504 Help File*).

To make input selections via contact closure, short the C pin of each port momentarily to the ground pin G. Input switching occurs immediately on contact, and not on the release.

The +V pin constantly outputs +24 VDC power with 200 mA total (shared between pins). Use this pin when power is needed for external Tally LEDs, such as those on the Extron CCB 30 contact closure remote.

Alternatively, wire a Show Me® cable to the C and T pins.

1. Connect the red (contact) pigtail to the C pin corresponding to the input being used.
2. Connect the black (tally out) pigtail to the T pin.



NOTE: The HDMI source device supplies the ground source needed to trigger the contact and the voltage to drive the tally indicator on a Show Me cable. Therefore, it is not necessary to connect the cable to a G (ground) or +V pins.

ATTENTION:

- The length of the exposed wires in the stripping process is critical. The ideal length is 3/16 inch (5 mm). If the exposed portion is longer, the wires may touch, causing a short circuit between them. If the exposed wires are shorter, they can be easily pulled out, even if tightly fastened by the captive screws.
- La longueur des câbles exposés est primordiale lorsque l'on entreprend de les dénuder. La longueur idéale est de 5 mm (3/16 inches). S'ils sont un peu plus longs, les câbles exposés pourraient se toucher et provoquer un court circuit. S'ils sont un peu plus courts, ils pourraient sortir, même s'ils sont attachés par les vis captives.
- Do not tin the wires. Tinned wires are not as secure in the captive screw terminals and could pull out.
- Ne pas étamer les câbles. Les câbles étamés ne sont pas aussi bien fixés dans les terminaisons à vis captives et pourraient sortir.
- The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 725 and the Canadian Electrical Code part 1, section 16.
- Cette installation doit toujours être conforme aux dispositions applicables du Code américain de l'électricité (National Electrical Code) ANSI/NFPA 70, article 725, et du Code canadien de l'électricité, partie 1, section 16.

+V Port

The +V port provides +24 VDC voltage to power accessory products such as occupancy sensors.

Configuration and Control

The digital I/O, RS-232, and IR ports can all be used for device control. All of these ports must be used with an Extron IPL Pro Controller via Secure Platform Device (SPD) control.

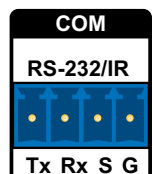
NOTE: The initial passwords, set at the factory, are the serial number of the unit. If the unit is reset, this password reverts to extron.

RS-232

Use the RS-232 COM port (see [figure 5, R](#), on page 3) for serial control of a display or other device and to receive status messages from the connected device. This port is controlled from an IPL Pro controller via Secure Platform Device control (SPD).

Serial protocol:

- 300 to 115200 baud (9600 baud = default)
- 8 (default) or 7 data bits
- 1 (default) or 2 stop bits
- No parity (default), even, or odd parity
- Flow control support (default = none): software-only (XON, XOFF)



For bidirectional serial communication, the transmit, ground, and receive pins must be wired at both the receiver and the other device. Each projector or other device may require different wiring. For details, see the manual for that equipment or read the Extron device driver communication sheet, which is included with the drivers.

NOTE: Maximum distances between the receiver and the device being controlled are generally up to 200 feet (61 m) but may vary based on factors such as cable gauge, baud rates, environment, and output levels (from the UCS SR 501 and the device being controlled).

For additional details, see the “COM Port” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

IR

One uni-directional port is available for IR control. IR control requires compatibility with the existing library of IPL IR drivers. This port is configured and controlled from an IPL Pro controller via Secure Platform Device control (SPD).

Wire the IR emitter with the positive lead connected to the S port and the negative lead of the emitter to the G port.

For additional details, see the “COM Port” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

Digital I/O

Two digital I/O ports can be configured to operate in the following modes.

- Digital Input
- Digital Output

The I/O ports support the following executable actions:

- On
- Off
- Toggle
- Pulse

The I/O ports support the following thresholds:

- Lower threshold: +2.0 V
- Upper threshold: +2.8 V

This port is configured and controlled from an IPL Pro controller via Secure Platform Device control (SPD).

For full details and application examples, see the “Digital I/O” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

HDMI/CEC Output

Connect an AV device to the HDMI/CEC output port (see [figure 4, E](#), on page 3 for UCS T 503 or [figure 5, P](#), on page 3 for the UCS SR 501). If the device (such as a CEC-compliant display) supports CEC control, the UCS can automatically turn display power on or off based on whether an active signal is detected at the selected input.

CEC control from the receiver is configured using Extron Product Configuration Software (PCS).

TIPS:

- Some displays must be configured to enable CEC communication.
- If your display device does not support CEC commands or does not support a full implementation of them, use one of the other control options available in the UCS 504, such as RS-232, IR, or Ethernet control.
- If you need additional control options, use Global Configurator to fully customize the system to configure display control using Ethernet, RS-232 serial, or IR control, or by using an occupancy sensor.

For additional details, see the “HDMI/CEC” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

On-screen Display

The On-Screen Display (OSD) can be navigated using the receiver **MENU**, **NEXT**, and **arrow** buttons (see [figure 3](#), [J](#) and [K](#), on page 2). The OSD is used to configure video scaler settings, view the product device settings and details, and various other functions.

1. Connect a monitor to the HDMI OUTPUT port for the USC SR 501 (see [figure 5](#), [P](#), on page 3).
2. Press the **MENU** button ([J](#)).
3. Use the **MENU** and **ENTER** buttons ([J](#)) and the **arrow** buttons ([K](#)) to navigate and select options from the on-screen display menu.

For complete information about the on-screen display, see the “On-screen Display” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

Default Web Pages

1. Connect the device to the internet using the Ethernet port (see [figure 4](#), [J](#), on page 3 for the USC T 503 or [figure 5](#), [U](#), on page 3 for the USC SR 501).

Alternatively, use IP over USB by connecting the host to the front panel USB-C CONFIG port (see [figure 2](#), [D](#), on page 2 for the USC T 503 or [figure 3](#), [D](#), on page 2 for the USC SR 501).

2. Open a browser on a PC connected to the internet.
3. Enter the device IP address in the address bar.
4. Enter your Username and Password and click **Login**.

For complete information about UCS 504 web pages, see the “Default Web Pages” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

Product Configuration Software

1. Connect the device to the internet using the LAN port (see [figure 4](#), [J](#), on page 3 for the USC T 503 or [figure 5](#), [U](#), on page 3 for the USC SR 501) or the front panel USB Config port (see [figure 2](#), [D](#), on page 2 for the USC T 503 or [figure 3](#), [D](#), on page 2 for the USC SR 501).
2. Open the Product Configuration Software (PCS) on a PC connected to the LAN network or the front panel USB CONFIG port.
3. If required, enter your Username and Password and click **Login**.

4. PCS opens to the Device Discovery page.

- If your device is listed, double click on it.
- If your device is not listed, click the **TCP/IP** button and enter the device IP address.

PCS opens to the device home page.

For complete information about configuring the UCS 504 using PCS, see the *UCS 504 Help File*.

Simple Instruction Set

1. Connect the UCS T 503 or UCS SR 501 to a host PC via the rear panel LAN port or the front panel USB-C CONFIG port.
2. Use one of the following methods to establish communication between the host and the UCS device.
 - **LAN** — Ensure the unit is connected to the host via the rear panel LAN port (see [figure 4](#), [J](#), on page 3 for the USC T 503 or [figure 5](#), [U](#), on page 3 for the USC SR 501). To enter SIS commands, use a secure communication utility that supports Secure Shell (SSH). Enter the UCS IP address where requested.
 - **Front Panel USB-Config Port (IP over USB)** — Connect the host to the front panel USB-C CONFIG port (see [figure 2](#), [D](#), on page 2 for the USC T 503 or [figure 3](#), [D](#), on page 2 for the USC SR 501). To enter SIS commands, use a secure communication utility that supports Secure Shell (SSH). Enter 203.0.113.22 for the IP address where requested and 22023 as the port number. The default Username is `admin` and the default Password is the serial number of the device when connecting to the device via the front panel USB config port

NOTE: If the device is reset to default settings, the passwords are reset to the default password, which is `extron`.

For complete information about UCS 504 SIS commands, see the “SIS Communication and Control” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

Reset Modes

Reset modes are initiated by a recessed reset button on each device. The transmitter reset button is on the front panel (see [figure 2, B](#), on page 2). The receiver reset button is on the rear panel (see [figure 5, V](#), on page 3).

The UCS 504 series has five reset modes that are initiated by pressing the RESET button. An additional (sixth) mode toggles between enabling and disabling the DHCP client.

- Use Factory Firmware
- Run or Stop Program
- Full Factory Reset
- Project Recovery
- Reset IP Settings
- Toggle DHCP Client

For complete information about these reset modes, see “Reset Modes” in the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

Mounting

The UCS T 503 and UCS SR 501 can be set on a table or mounted on a rack shelf.

ATTENTION:

- All structural steps and electrical installation must be performed by qualified personnel in accordance with local and national building codes and electrical codes.
- Toute étape structurelle et installation électrique, doit être effectuée par un personnel qualifié, conformément aux codes du bâtiment, aux codes incendie et sécurité, et aux codes électriques, locaux et nationaux.

If using a mounting kit, follow the instructions provided with that kit.

If mounting these devices in an equipment rack, follow the UL Guidelines for Rack Mounting in the “Mounting” section of the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

For complete information about mounting these products, see “Mounting” in the *UCS 504, UCS T 503 and UCS SR 501 User Guide*.

Lockit Plus Lacing Bracket

Follow these instructions to secure the HDMI and USB-C connectors to the unit with the Lockit Plus lacing brackets provided:

1. **Plug in the cable** – Connect the HDMI or USB-C cable to the port.
2. **Loosen the screw** – Slightly loosen the mounting screw (do not remove it).
3. **Attach the bracket** – Place the bracket over the screw and tighten it. Do not overtighten the connector mounting screw.
4. **Secure the cable** – Tighten the tie wrap around the connector and bracket, and cut off the extra length.

Figure 7 shows how to secure a USB-C connector. HDMI connectors are secured in exactly the same way.

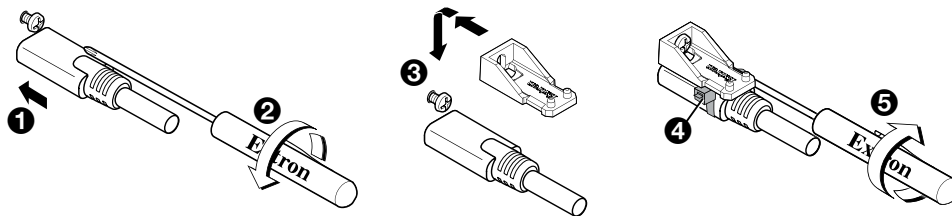


Figure 7. Securing a USB-C cable using a Lockit Plus Lacing Bracket

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the [Extron Safety and Regulatory Compliance Guide](#) on the Extron website.