LIGHTWARE UCX-2×1-HC30 Universal Switcher User Guide

LIGHTWARE UCX-2×1-HC30 Universal Switcher

Contents

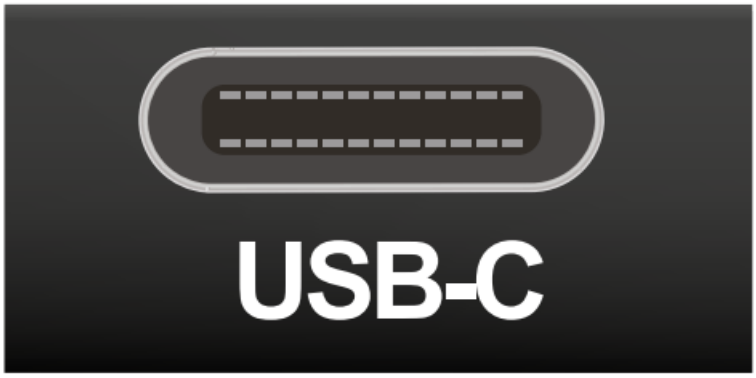
Important Safety Instructions

Please read the supplied safety instruction document before using the product and keep it available for future reference.

Introduction

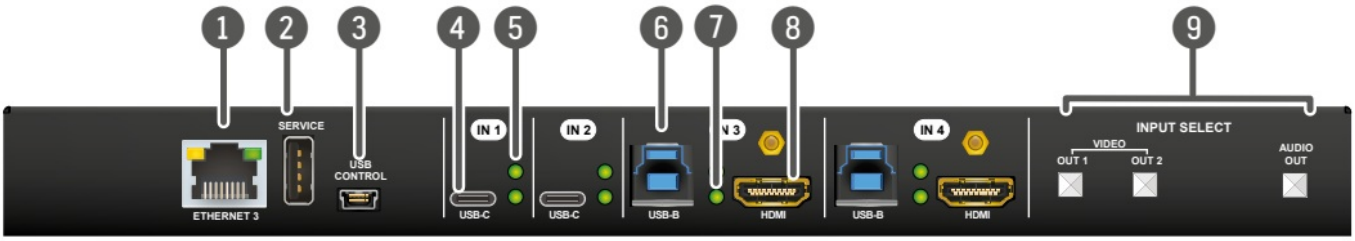
Lightware's universal switcher enhances and extends the possibilities of a meeting room and allows meeting participants to easily use their own devices such as laptops, and preferred video conference platforms while also to utilize the available assets of the meeting space, just like the HDMI displays, room cameras and other USB peripherals.

The device utilizes the USB-C connectivity for a simplified transmission of 4K video, audio, control signals and power, and allows data speeds of up to 5 Gbps under the USB 3.1 Gen1 and allowing video resolution capabilities up to 4K@60Hz at 4:4:4.



The UCX-4×2-HC30D model also thrives when it comes to audio capabilities, offering analog audio de-embedding feature as well as support for DANTE/ AES67 network connection to send DANTE/AES67 audio stream directly to a dedicated audio system

Front View (UCX-4×2-HC30D)



1. **Configurable Ethernet Port**

   RJ45 connector for configurable 100Base-T Ethernet communication.

2. **USB-A Port**

The service function will be added by future firmware update.

3. **USB mini-B Port**

   The LW3 control function will be added by the future firmware update.

4. **USB-C Port**

   Display port 1.2 and USB 3.1 Gen1 connections, AV signal can be transferred up to a resolution of 4K@60Hz 4:4:4 and data speeds up to 5 Gbps with remote charging. Use cables certified for USB 3.1 Gen1 (5Gbps) and Displayport Alternate mode HBR2 (4×5.4Gbps) applications.

5. **Video Input Status LEDs**

   See the details in the table on the right.

   UCX-2×2-H30 model has no USB-C and Configurable Ethernet Port.

6. **USB-B Port**

   Upstream ports for connecting USB host devices (e.g. computer).

7. **USB Status LEDs**

   See the details in the table on the right.

8. **HDMI Input Ports**

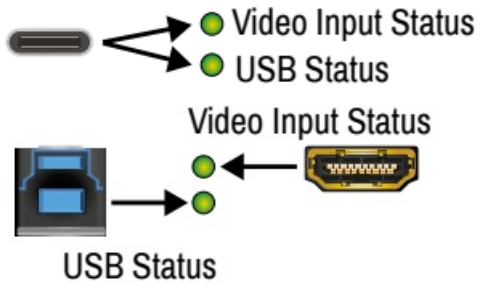
   HDMI input ports for sources. The applied cable shall not be longer than 5m (22AWG) when signal resolution is 4K.

   Use cables certified for HDMI 2.0 (3x6Gbps) applications.

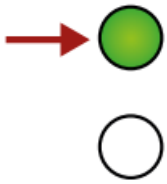
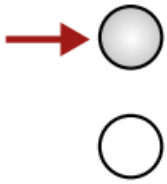
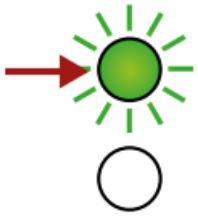
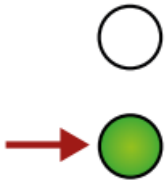
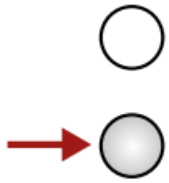
9. **Input Select Button**

   For more details about the button functionality, see the table on the right. When LEDs blink green three times after pressing the button, they show that the front panel lock is enabled.

Arrangement of the Status LEDs



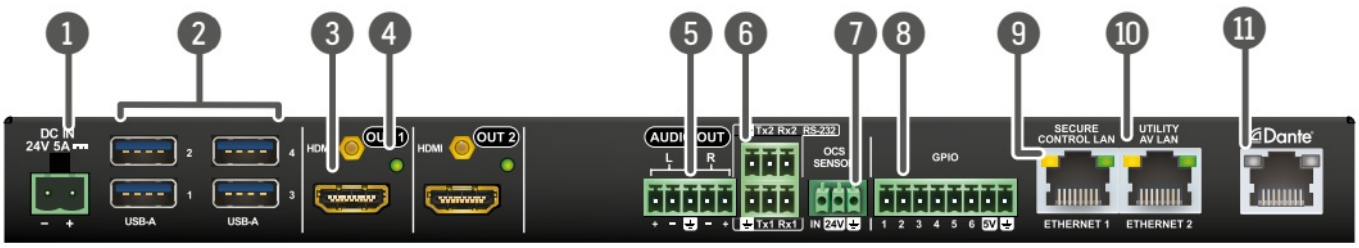
Front Panel LEDs

Video Input Status LED (the upper one)		
	on	There is a valid video signal on this port
	off	There is no valid video signal on this port
	blink at once	The port is selected by a button press.
USB Status LED (the below one)		
	on	The USB Host connected and selected.
	off	No USB Host or deselected port.

Rear Panel LEDs

Video Output Status		
	on	The video signal is present.
	off	The signal is not present or muted.

Rear View (UCX-4×2-HC30D)



1. DC Input

   The device can be powered by an external 120W power supply. Connect the output to the 2-pole Phoenix® connector. For more details, see powering options below.
2. USB-A Port

   Downstream ports for connecting USB peripherals (e.g. camera, keyboard, multitouch display) with USB 3.1 Gen1 data speed.
3. HDMI Output Ports

   HDMI output ports for connecting to the sink devices.
4. Video Output Status LED

   See the details in the table on the right.
5. Analog audio port

   Audio output port (5-pole Phoenix®) for balanced analog audio output signal. The signal is de-embedded from the selected video signal.

   UCX-2×2-H30 model has no Utility AV LAN port.
6. RS-232 port

   3-pole Phoenix® connector for bi-directional RS-232 communication.
7. OCS sensor

   3-pole Phoenix® connector (male) for connecting an occupancy sensor. The port provides 24V output voltage (50mA).
8. GPIO

   8-pole Phoenix® connector for configurable general purpose. Max. input/output voltage is 5V, see the details on the next page.
9. Secure Control LAN

   RJ45 connector for secure 100Base-T Ethernet communication.
10. Utility AV LAN

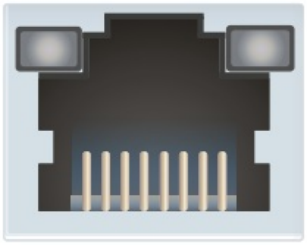
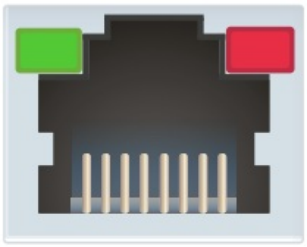
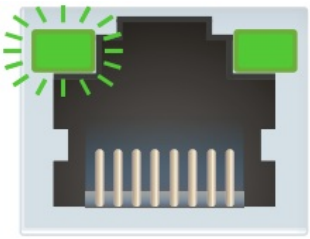
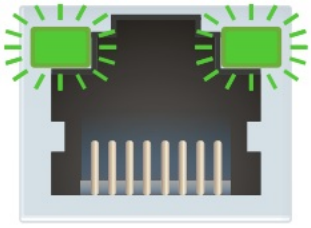
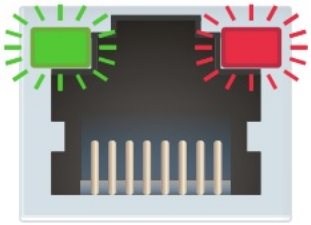
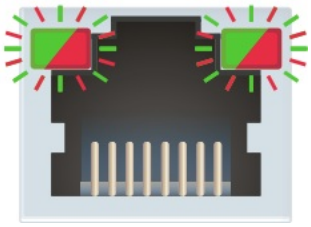
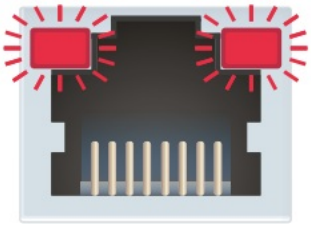
    RJ45 connector provides room utility Ethernet connection for e.g BYOD laptops.
11. Dante® Audio Output

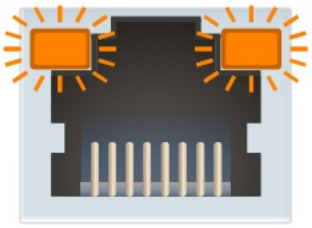
    In UCX-4×2-HC30D model: RJ45 connector for de-embedding the HDMI audio, which can be transmitted as a 2-channel Dante® or AES67 source.

Always use the supplied power supply. Warranty void if damage occurs due to use of a different power source.

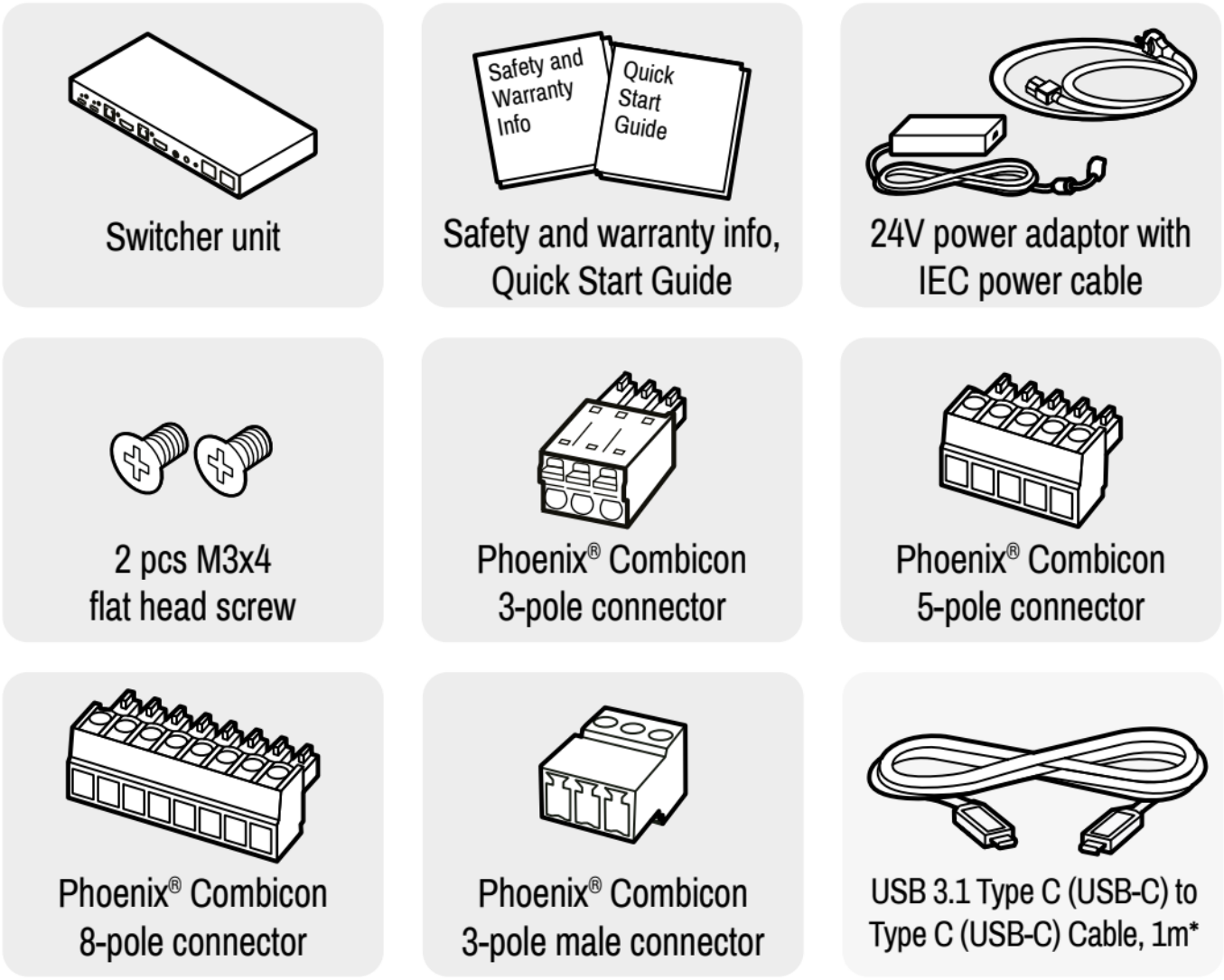
Dante® Audio Out (in UCX-4×2-HC30D model)

LED state	Left LED	Right LED	Function

	Off	Off	No power
	Solid green	Solid red	Dante is booting
	Blinking green	Solid green	Slave with sync (normal operation)
	Blinking green	Blinking green	Clock master (normal operation)
	Blinking green	Blinking red	Acquiring clock sync (normal operation)
	Alternating red/green	Alternating red/green	Identify (blinking for 6 seconds)
	Blinking red	Blinking red	Dante fail safe

	Blinking orange	Blinking orange	Dante is upgrading

Box Contents



* USB Type-C cable is not supplied with UCX-2×2-H30 model .

Powering Options

UCX series switchers are designed to provide power delivery for the connected device over the USC-C connectors. The following operation modes are available:

1. Charge one device on the chosen port with up to 60W. The other port can supply up to 5V/3A.
2. Charge one device with 30W (in this case, the other USB-C port can supply 30W or 5V/3A)
3. Charge two devices with 60W each with UCX-4×2-HC30 and UCX-4×2-HC30D from HW v2.4 and FW v1.4.0.

Power profiles can be set with Lightware Device Controller Software, REST API or with LW3 protocol commands.

Software Control – Using Lightware Device Controller (LDC)

The device can be controlled from a computer using the Lightware Device Controller software. The application is available at **www.lightware.com**, install it on a Windows PC or a macOS and connect to the device via LAN.

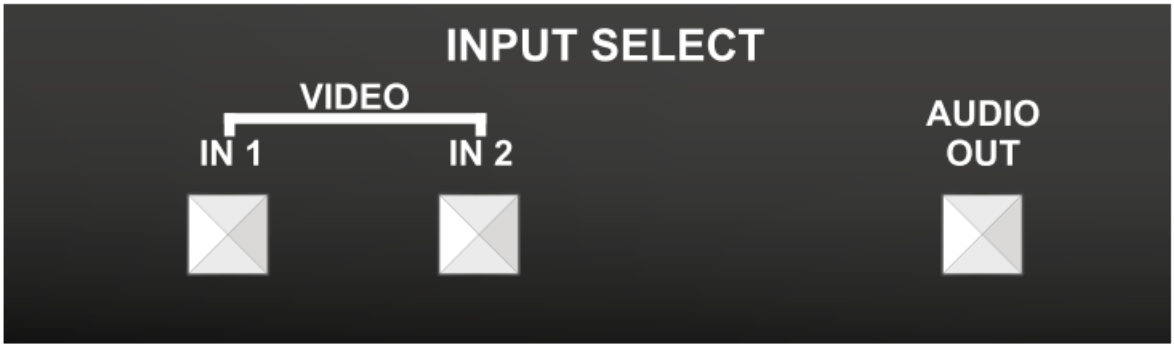
Firmware Update

Lightware Device Updater2 (LDU2) is an easy and comfortable way to keep your device up-to-date. Establish the connection via Ethernet.
Download and install the LDU2 software from the company's website **www.lightware.com**, where you can find the latest firmware package as well.

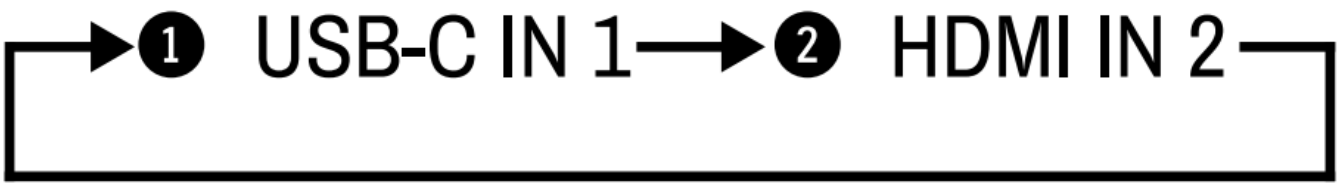
Button functionality

UCX-2×1-HC30

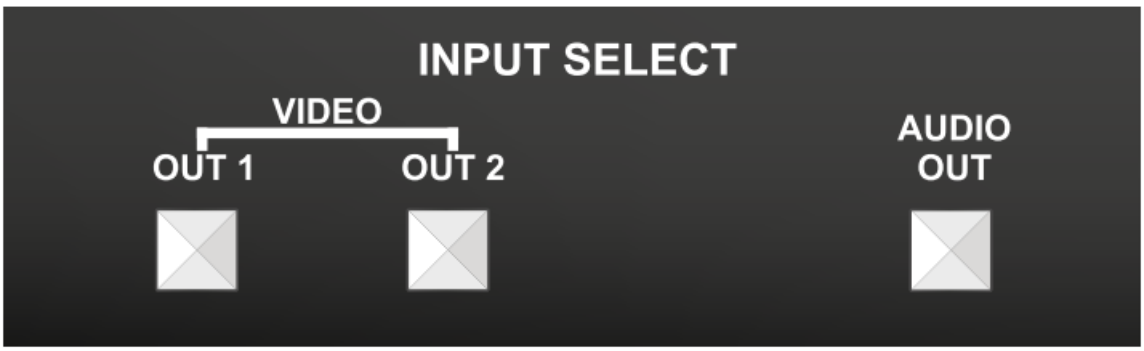
Use IN1 and IN2 buttons for selecting the video source. IN1 button switches the USB-C IN1 to the output, IN2 button switches the HDMI IN2 to the output.



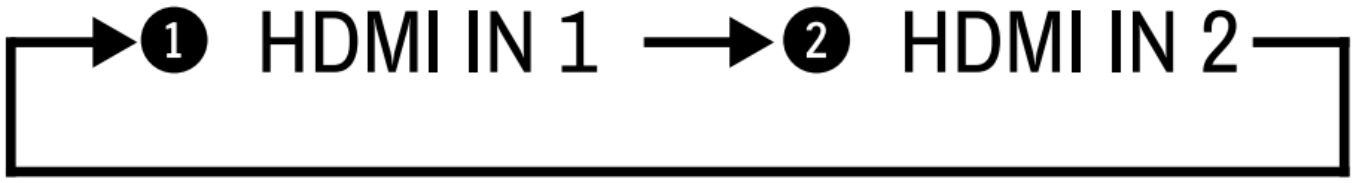
Use the AUDIO OUT button for selecting the audio source of the analog audio output.
The sequence is the following (for audio switching):



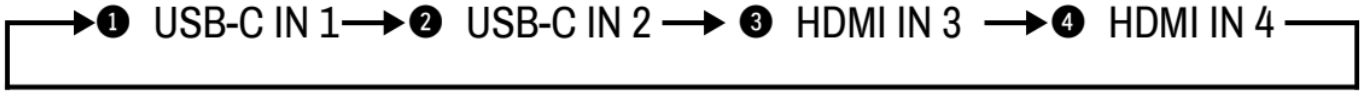
UCX-2×2-H30
Use OUT1 and OUT2 buttons for selecting the video source. Push OUT1 to select the video input for the HDMI OUT1 port, OUT2 button switches the video input for the HDMI OUT2 port.



Use the AUDIO OUT button for selecting the audio source of the analog audio output.
The sequence is the following (both for the video and audio switching):



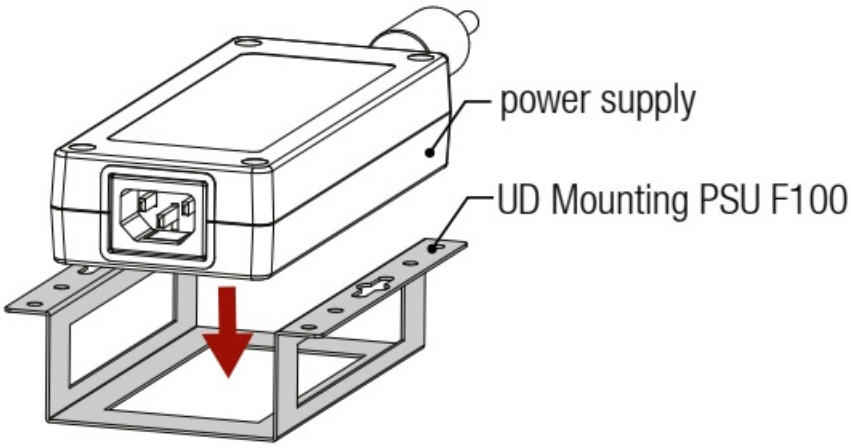
UCX-4×2-HC30 and UCX-4×2-HC30D
Push OUT1 to set the video input to the HDMI OUT1 port. Push OUT2 to set the video input to the HDMI OUT2 port. Push AUDIO OUT to set the audio source of the analog audio output.
The sequence is the following (both for the video and audio switching):



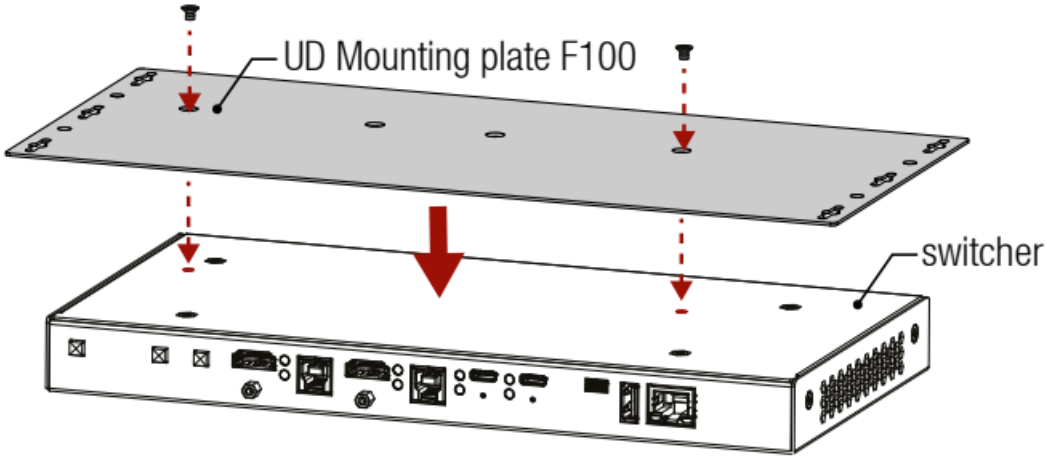
Mounting the Device (with optionally available accessories)

The examples demonstrate the applications of UD Kit accessories:

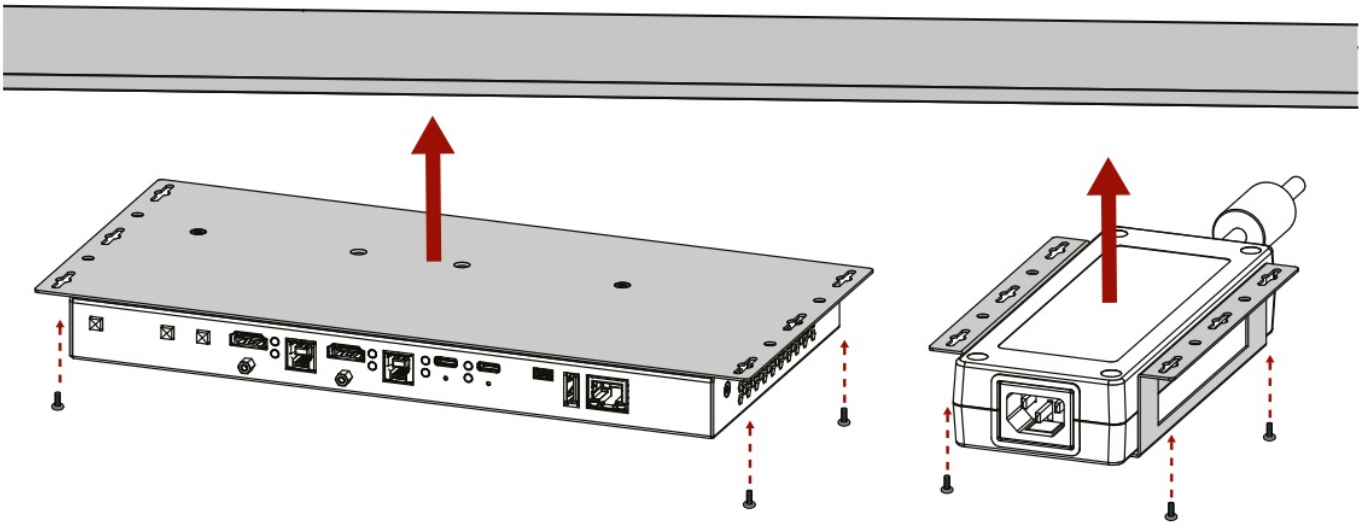
1 Insert the power supply into UD Mounting PSU F100.



2 Fix the UD Mounting plate F100 to the switcher by fastening the screws (these 2pcs screws are supplied with the switcher).



3 Fix the UD-Kits under the desk by fastening the screws.



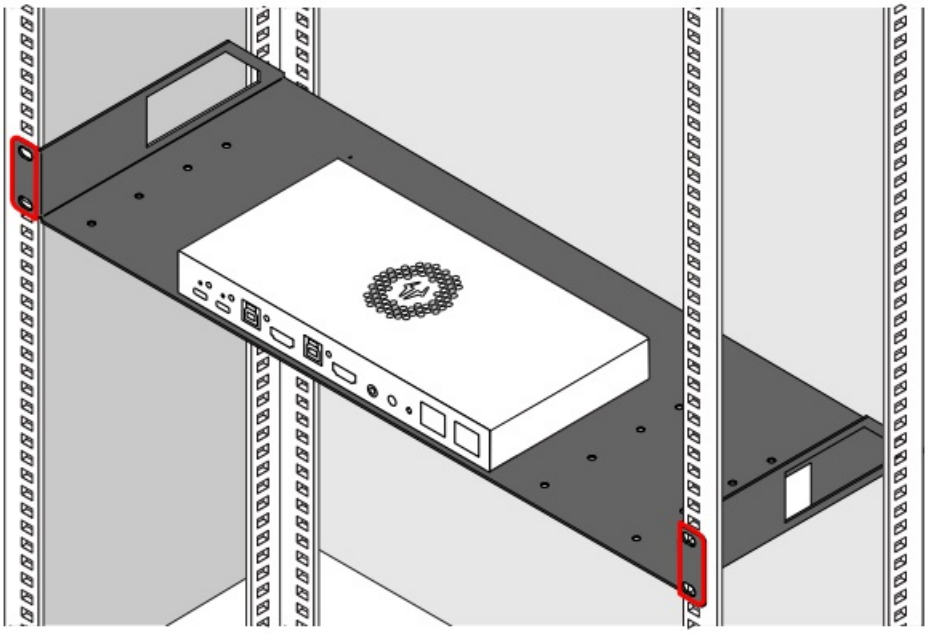
⚠ UD-Mounting plate F100 and UD Mounting PSU F100 do not contain the fixing screws, they can be purchased from the local hardware store. 2x4pcs M3-M5 metric or wood screws needed, M3 size is

recommended.

⚠ To ensure the correct ventilation and avoid overheating, insert the switcher face down to the UD KIT to keep the ventilation holes free.

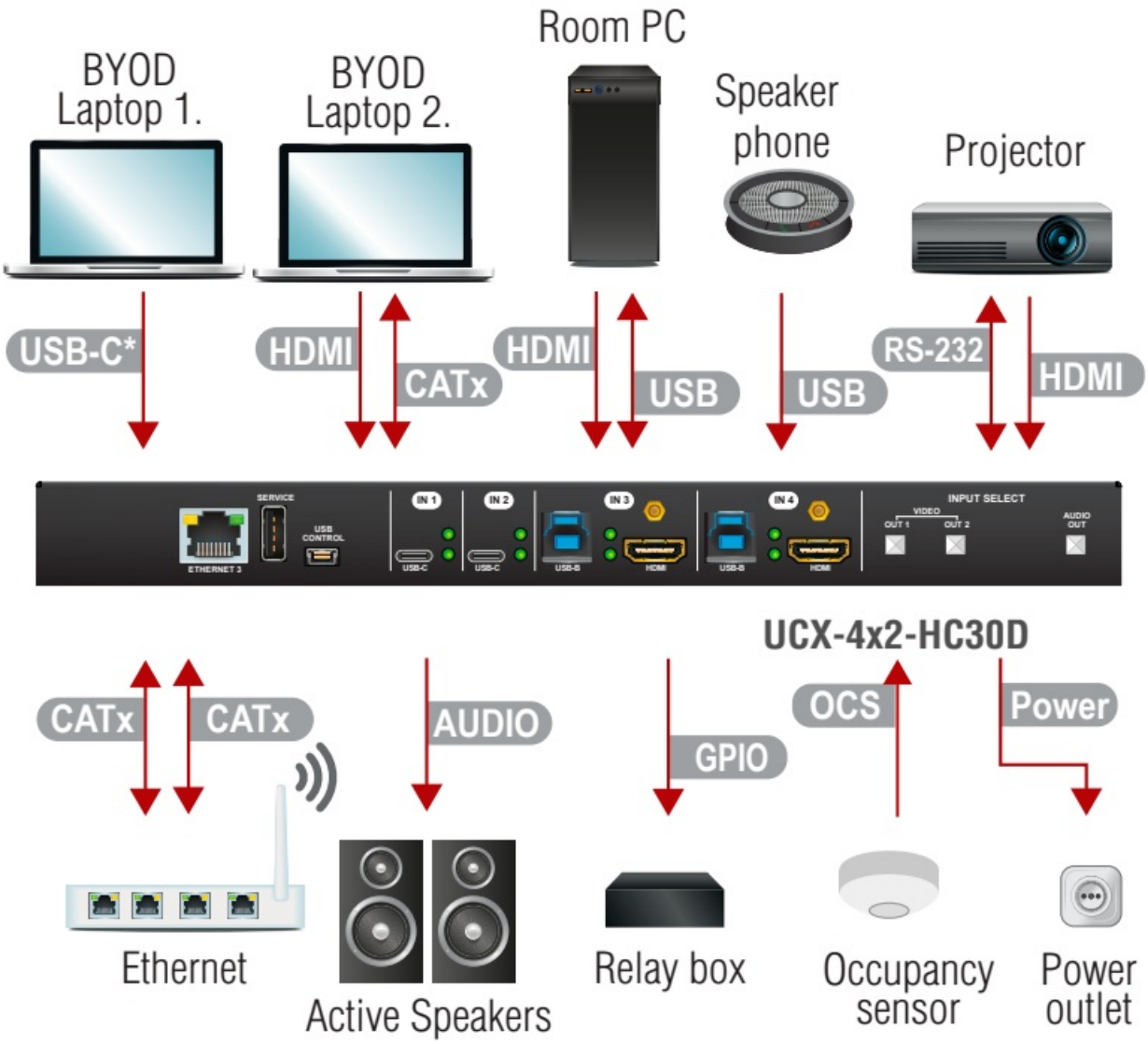
Mounting the Device with UD Kit Rack Shelf (with optionally available accessories)

The example on the right demonstrates the applications of UD Kit Rack Shelf accessories.



⚠ For fixing the device to a Rack shelf, use the screw supplied with th switcher. Longer screws may touch internal parts and harm the device.

Connecting Steps



Connecting USB-B and HDMI ports to the same PC or laptop is recommended in case of I3 and I4 inputs.

- USB-C

  Connect a USB-C source (e.g. BYOD laptop) to the USB-C input port.

  The applied cable shall be certified for USB 3.1 Gen1 (5Gbps) and Displayport

  Alternate mode HBR2 (4×5.4Gbps) applications.
- HDMI

  Connect an HDMI source (e.g. BYOD laptop or room PC) to the HDMI input port.
- CATx

  Connect a device (e.g. BYOD laptop) to the Utility Ethernet port to access the Internet or local network.
- USB

  USB Type-A: Optionally connect the USB device (e.g. Speaker phone).

  USB Type-B: Optionally connect the USB host (e.g. PC).
- HDMI

  Connect an HDMI sink (e.g projector) to the HDMI output port.
- RS-232

  Optionally for RS-232 extension: connect a controller/controlled device (e.g. Projector to the RS-232 port).
- CATx

Optionally connect the Secure Control Ethernet port to a Local Network Switch to provide Ethernet connection for device configuration and BYOD internet access.

- Audio

  Optionally connect an audio device (e.g. active speakers) to the analog audio output port by an audio cable.
- GPIO

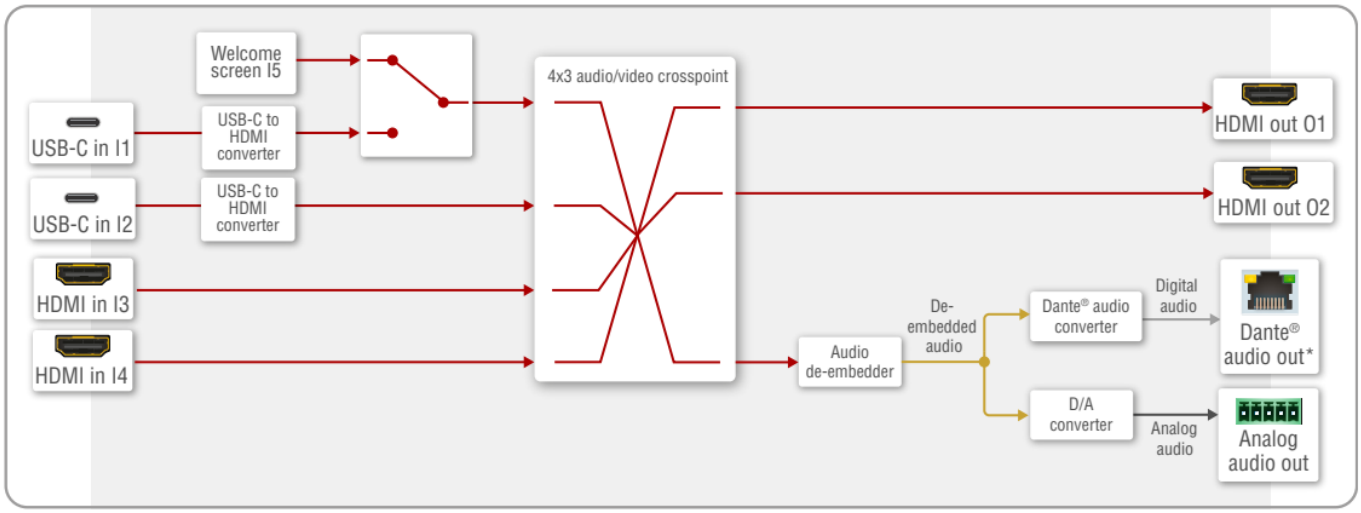
  Optionally connect a device (e.g. Relay box) to the GPIO port.
- OCS

  Optionally connect an occupancy sensor to the OCS port.
- Power

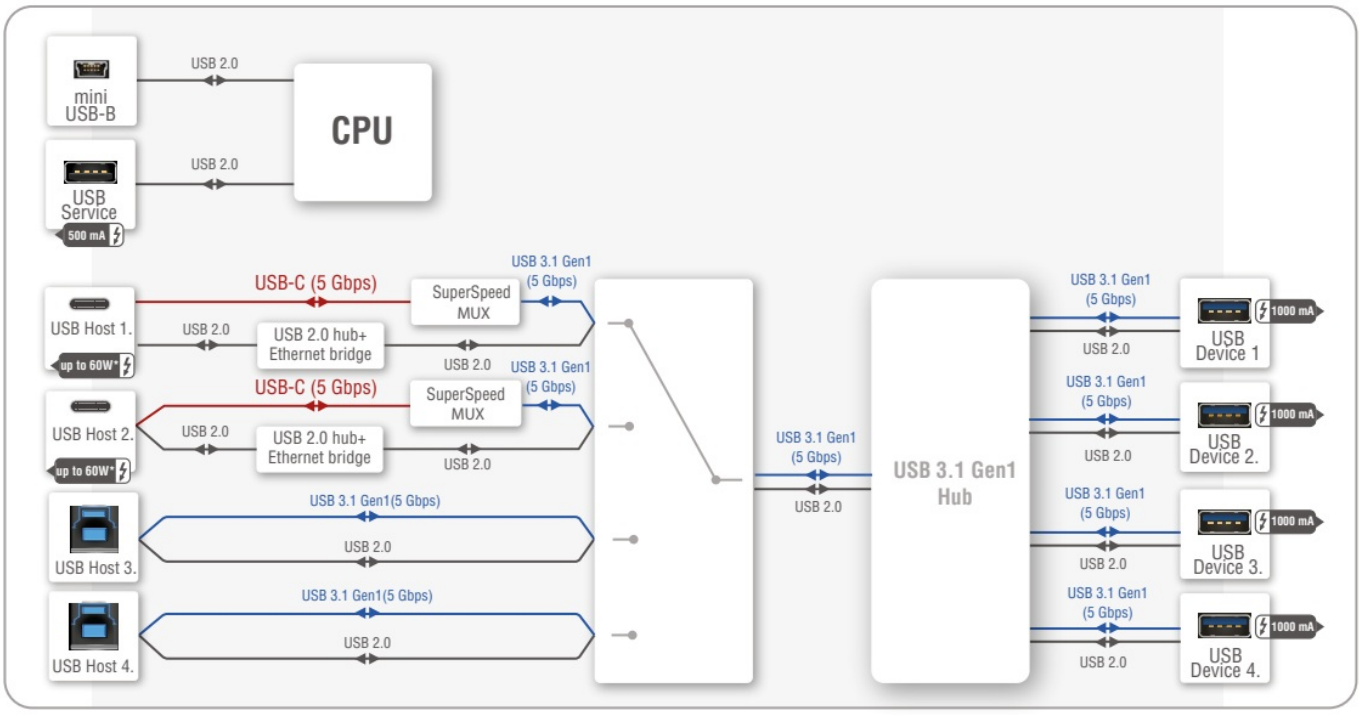
  Connect the external power supply to the AC power socket and the switcher unit.

Powering the device is recommended as the final step.

AV Port Diagram (UCX-4×2-HC30D)



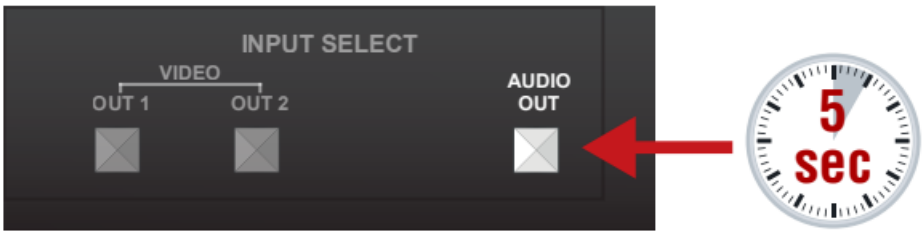
USB Port Diagram (UCX-4×2-HC30D)



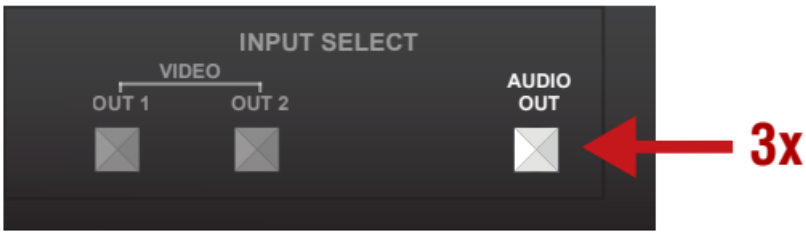
*For more details about the power delivery of the USB-C port, see the Powering Options section.

Setting a Dynamic IP Address (DHCP)

1. Keep the Audio out button pressed for 5 seconds; all front panel LEDs start to blink.



2. Release the button, then press it 3 times quickly. DHCP is now enabled.



Lock / Unlock Buttons

Press the VIDEO OUT1 (VIDEO IN1 in UCX-2×1-HC30 model) and AUDIO OUT buttons together (within 100 ms) to disable/enable front panel buttons; front panel LEDs blink 4 times when locking / unlocking.

OCS (Occupancy) Sensor

The switcher is supplied with a 3-pole Phoenix® connector (male), which is for connecting an OCS sensor.

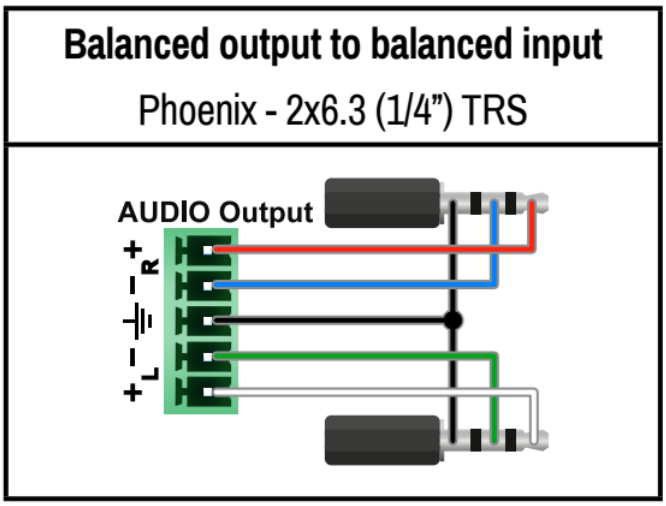
Plug pin assignment: 1: Configurable; 2: 24V (max. 50 mA); 3: Ground

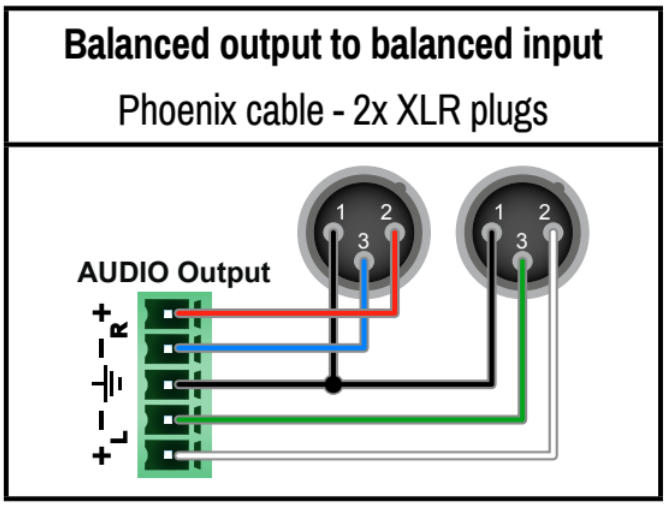
The signal levels for the **Pin 1**	**Input voltage (V)**	**Max. current (mA)**
Logic low level	0 – 0.8	30
Logic high level	2 -5	18

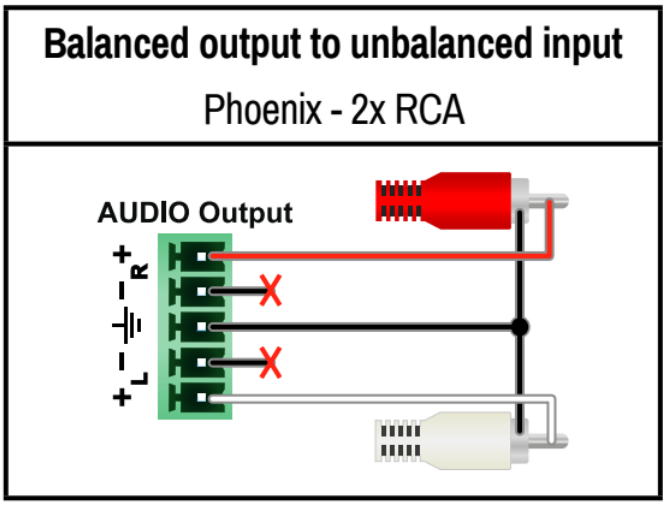
The occupancy sensor connector and the GPIO port are not compatible with each other because of the voltage level difference, please do not connect them directly.

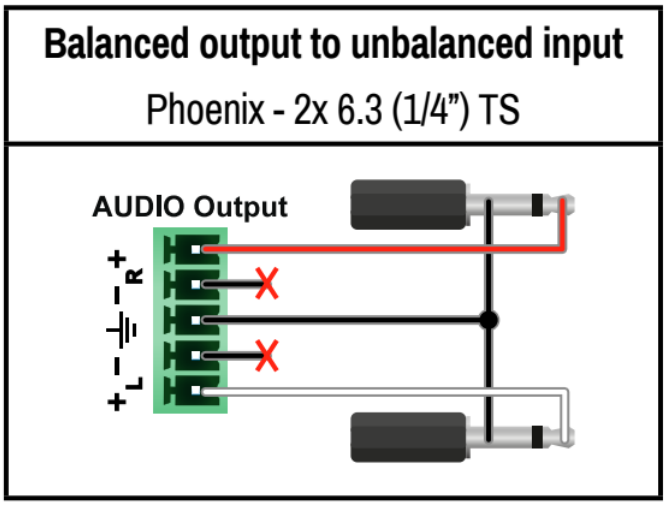
Audio Cable Wiring Guide

The Taurus UCX series is built with a 5-pole Phoenix® output connector. See a few examples below of the most common assembling cases.









GPIO (General Purpose Input/Output Ports)

The device has seven GPIO pins that operate at TTL digital signal levels and can be set to high or low level (Push-Pull). The direction of the pins can be input or output (adjustable). The signal levels are the following:

	Input voltage (V)	Output voltage (V)	Max. current (mA)
Logic low level	0 – 0.8	0 – 0.5	30
Logic high level	2 -5	4.5 – 5	18

Plug pin assignment 1-6: Configurable, 7: 5V (max. 500 mA); 8: Ground
The recommended cable for the connectors is the AWG24 (0.2 mm2 diameter) or the generally used ‘alarm cable’ with 4×0.22 mm2 wires.

The maximum total current for the six GPIO pins is 180 mA, the max. supported input/ output voltage is 5V

RS-232

The switcher provides a 3-pole Phoenix® connector for bi-directional serial communication.
The signal levels are the following:

	Output voltage (V)
Logic low level	3 – 15
Logic high level	-15 – 3

Plug pin assignment: 1: Ground, 2: TX data, 3: RX data

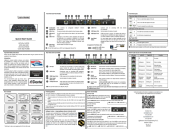
Customer Service

Further information on the device is available on www.lightware.com.
The User’s Manual is also available via the QR code below:

Contact Us
sales@lightware.com
+36 1 255 3800
support@lightware.com
+36 1 255 3810
Lightware Visual Engineering PLC.
Budapest, Hungary
Doc. ver.: 1.4
19210025

visual engineering
LIGHTWARE

Documents / Resources

	LIGHTWARE UCX-2x1-HC30 Universal Switcher [pdf] User Guide UCX-2x1-HC30 Universal Switcher, UCX-2x1-HC30, Universal Switcher, Switcher

References

- Lightware Visual Engineering