LIGHTWARE UCX-4×2-HC40D DMI SDVoE Optical Extender User Guide

Contents

LIGHTWARE
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LIGHTWARE UCX-4×2-HC40D DMI SDVoE Optical Extender

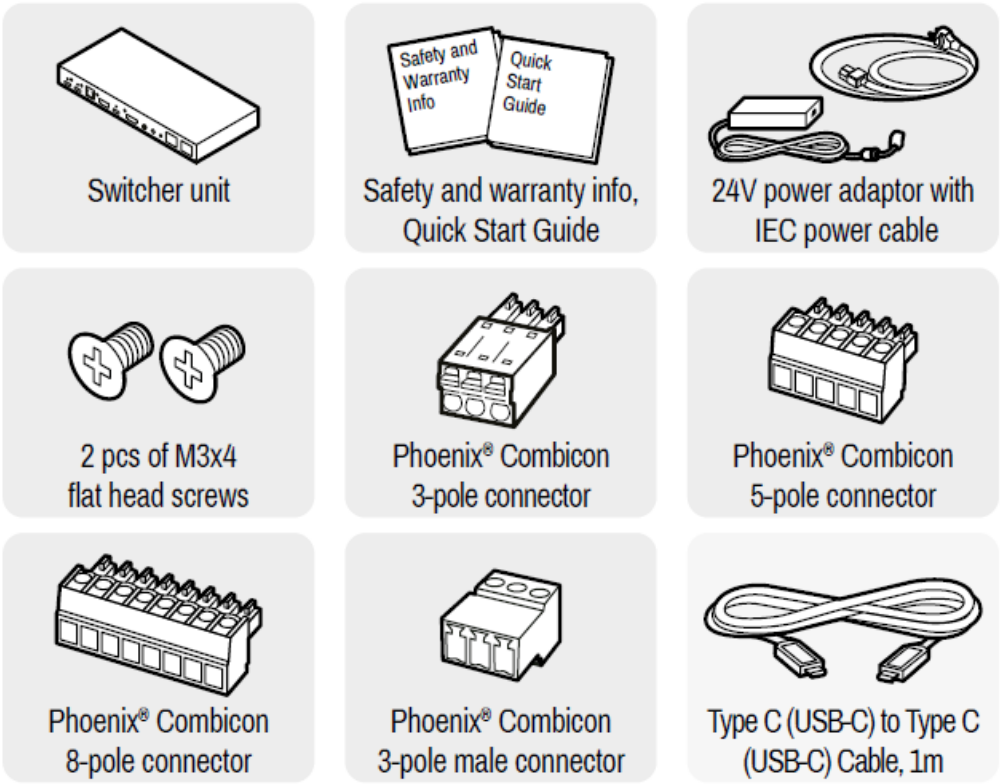
Important Safety Instructions
Please read the supplied safety instruction document before using the product and keep it available for future reference.

Introduction
The universal matrix switcher that exploits USB-C connectivity for a simplified of 4K video, audio, control signals and power, providing meeting participant with easy host-switching, utilizing data speeds of up to 5 Gbps under the USB 3.1 Gen1, providing video resolution capabilities up to 4K@60Hz at 4:4:4 as well as comprehensive and secure Ethernet features.
The UCX-4×2-HC40D and UCX-4×3-HC40-BD models also offer analog audio de-embedding feature as well as support for DANTE/AES67 network connection. The UCX-4×3-HC40-BD model also offers two-way Dante functionality without the need for an external DSP or Dante/USB dongle.

Highlighted features:

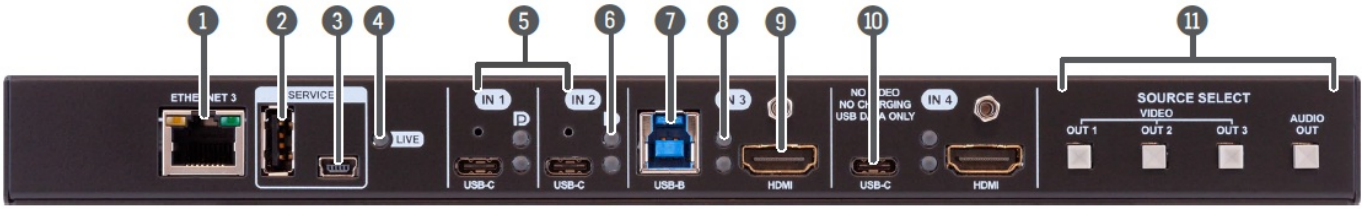
- Multiple USB 3.1 Gen1 connectivities for any type of USB device (Camera, speakerphone, touch-screen, USB HID devices etc.)
- Separate USB 3.1 Host switching layer for multiple USB hosts and USB devices
- Dedicated secure corporate and room utility and BYOD Ethernet connectivity
- USB-C charging up to 2x60W

Box Contents



* USB Type-C cable is not supplied with UCX-2×2-H40 model .

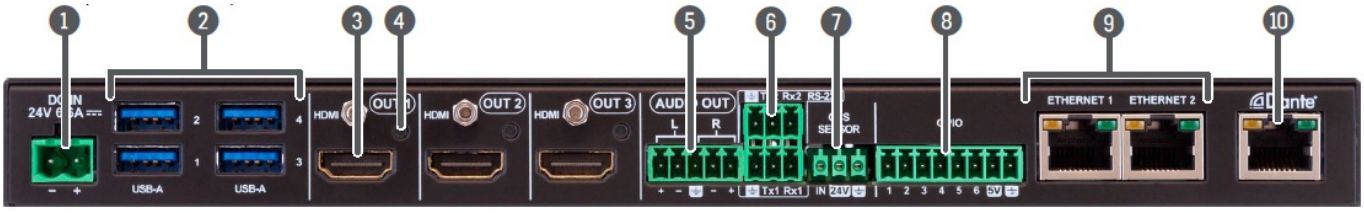
Front view (UCX-4×3-HC40-BD)



1. Configurable Ethernet port RJ45 connector for configurable 100Base-T Ethernet communication.
2. USB-A port The SERVICE-labelled USB-A connector is designed for service funtions.
3. USB mini-B port The SERVICE-labelled USB mini-B port is designed for service functions.
4. LIVE LED See the details in the table on the right.
5. USB-C ports 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 Display port Alternate mode HBR2 (4×5.4Gbps) applications.
6. Video input status LEDs See the details in the table on the right.
7. USB-B port Upstream ports for connecting USB host devices (e.g. computer).
8. USB status LEDs See the details in the table on the right.
9. HDMI input ports HDMI input ports for sources. The applied cable shall not be longer than 5m (22AWG) when the signal resolution is 4K.
   Use cables certified for HDMI 2.0 (3x6Gbps) applications.
10. USB-C data port USB-C port for USB data transmission only.
11. Input select buttons
    For more details on the button functionality, see the table on the other side. When the LEDs blink green three times after pressing the button, they show that the front panel lock is enabled.

The USB-C port on the UCX-2×2-H40 only transmits USB data.
The UCX-2×2-H40 model has no Ethernet 3 Port.

Rear view (UCX-4×3-HC40-BD)



1. DC input The device can be powered by an external 160W power supply. Connect the output to the 2-pole Phoenix connector.
   For more details, see the powering options on the next page.
2. USB-A ports 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 sink devices (e.g. displays).

4. Video output

   status LEDs

   off The video signal is present.

   on The signal is not present or muted.

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.

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 details on the next page.

9. Configurable

   Ethernet ports

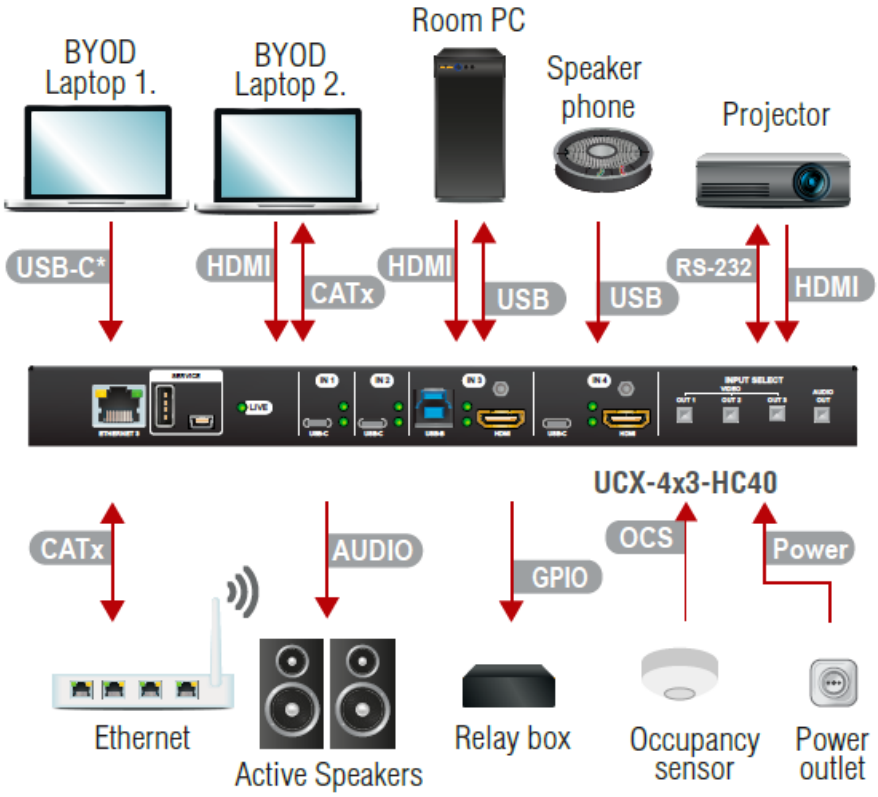
   RJ45 connectors for configurable 100Base-T Ethernet communication.

10. Dante® Audio port

    RJ45 connector for bidirectional 2-channel Dante® or AES67 audio.

Always use the supplied power supply. Warranty void if damage occurs due to use of a different power source.
The UCX-2×2-H40 model has no Ethernet 2 port.

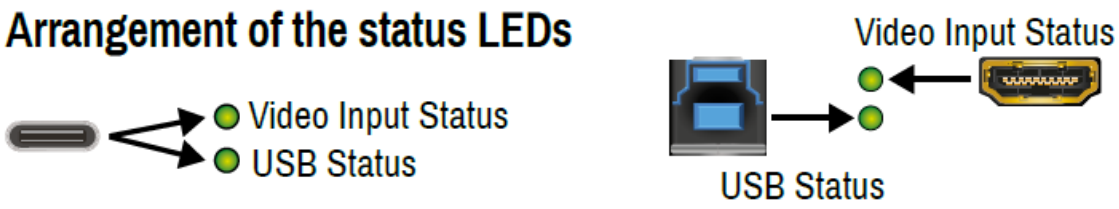
Connecting Steps



- 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 Display port 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 an 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 an 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.



Front Panel LEDs

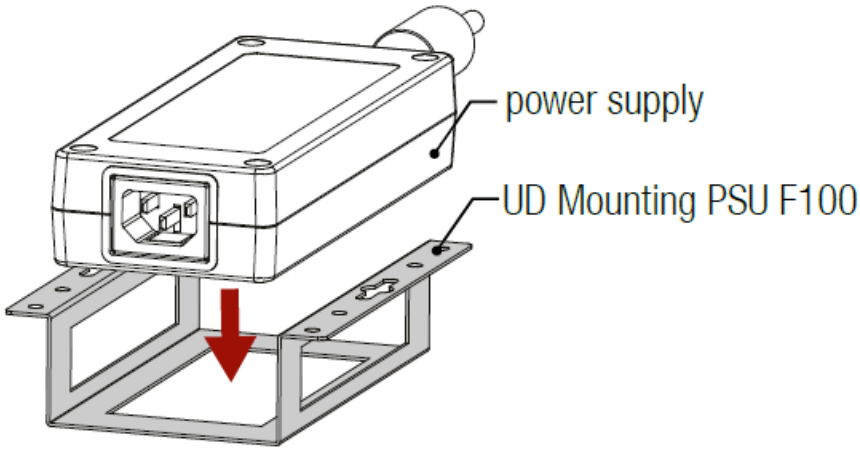
Live LED		
	blinking	The device is powered on and operational.
	off	The device is not powered or out of operation.
Video Input Status LED (the upper one)		
	on	There is a valid video signal on this port.
	off	There is no valid video signal on this port.
	blink at once	The port is selected by a button press.
USB Status LED (the lower one)		
	on	The USB Host connected and selected.
	off	No USB Host or deselected port.

- When Dark mode is enabld, no LEDs are lit, even though the device is fully functional.

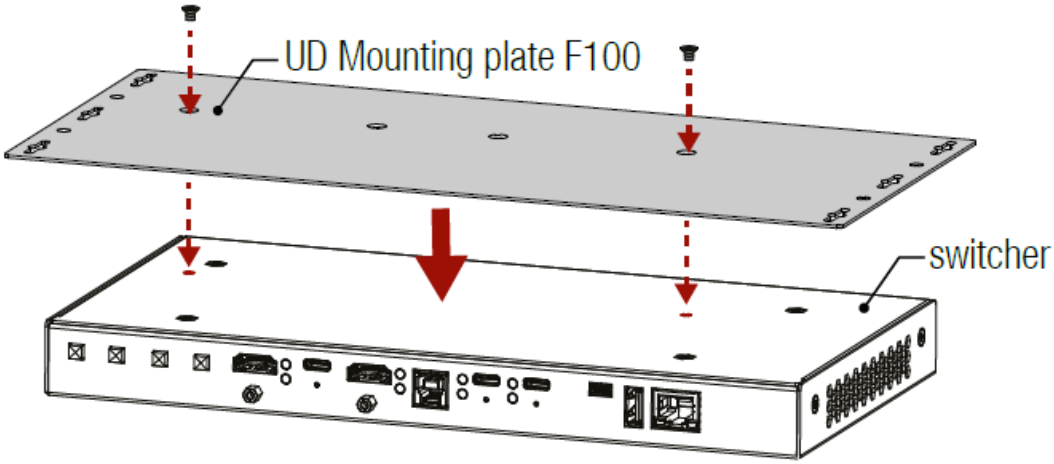
Mounting the Device (with optionally available accessories)

The examples demonstrate the applications of UD Kit accessories:

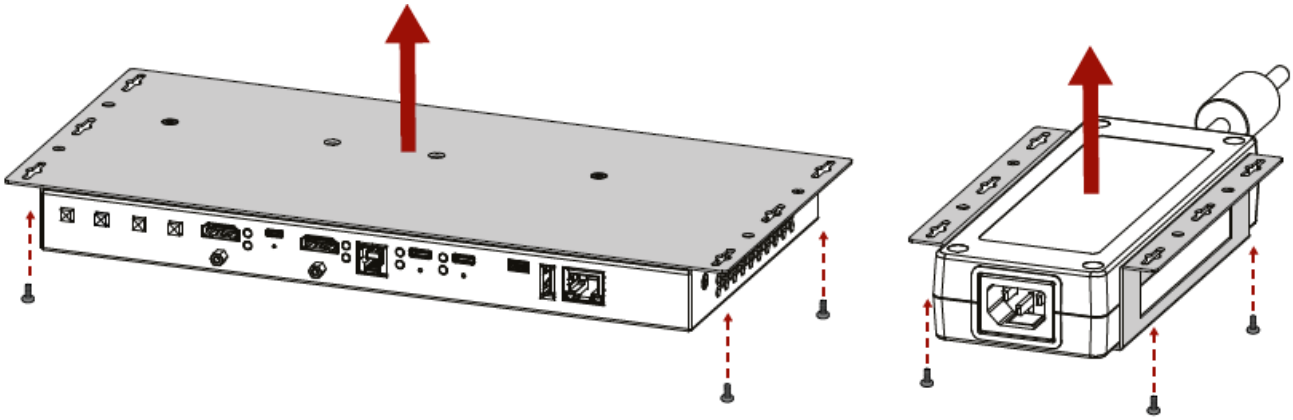
1. Insert the power supply into UD Mounting PSU F100.



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. For more mounting options and accessories please see the Mounting Assembly Guide on www.lightware.com.

Powering Options

- UCX series switchers are designed to provide power delivery for the connected device over the USB-C connectors.
- UCX-2×1-HC40 is able to supply one device with 60W over its USB-C port.
- UCX-4×2-HC40 and UCX-4×3-HC40 models are able to supply two devices with 60W each over the U1 and U2 USB-C ports.

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

Factory Default Settings

To restore factory default values, do the following steps: Make sure the switcher is powered off. Press and keep pressing the VIDEO OUT2 button. Power on the switcher while the VIDEO OUT2 button is being pressed for 10 seconds. The device restores the factory default settings and reboots.

IP address	Dynamic (DHCP is enabled)
Hostname	lightware-<serialno>
Video Crosspoint setting	I1 on O1, I2 on O2, I3 on O3
HDCP mode (in)	HDCP 2.2
HDCP mode (out)	Auto
Signal type	Auto
Emulated EDID	F47 – (Universal HDMI with PCM audio)
Audio Crosspoint setting	I1 on O4
Analog audio output levels	Volume (dB): 0.00; Balance: 0 (center)
Video Autoselect	Disabled
USB-C Power Limit	Equal output power
DP Alternate Mode Policy	Auto
Port Power Role	Dual Role
USB Autoselect	Follow video O1
D1-D4 Power 5V Mode	Auto
RS-232 port setting	9600 BAUD, 8, N, 1
RS-232 serial over IP	Enabled
HTTP, HTTPS	Enabled
HTTP, HTTPS authentication	Disabled
LARA	Disabled

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:

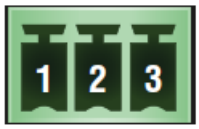
	Input voltage (V)	Output voltage (V)	Max. current (mA)
Logic low level	0 – 0.8	0 – 0.5	30
Logic high level	2 -5	4.5 – 5	18

- 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

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

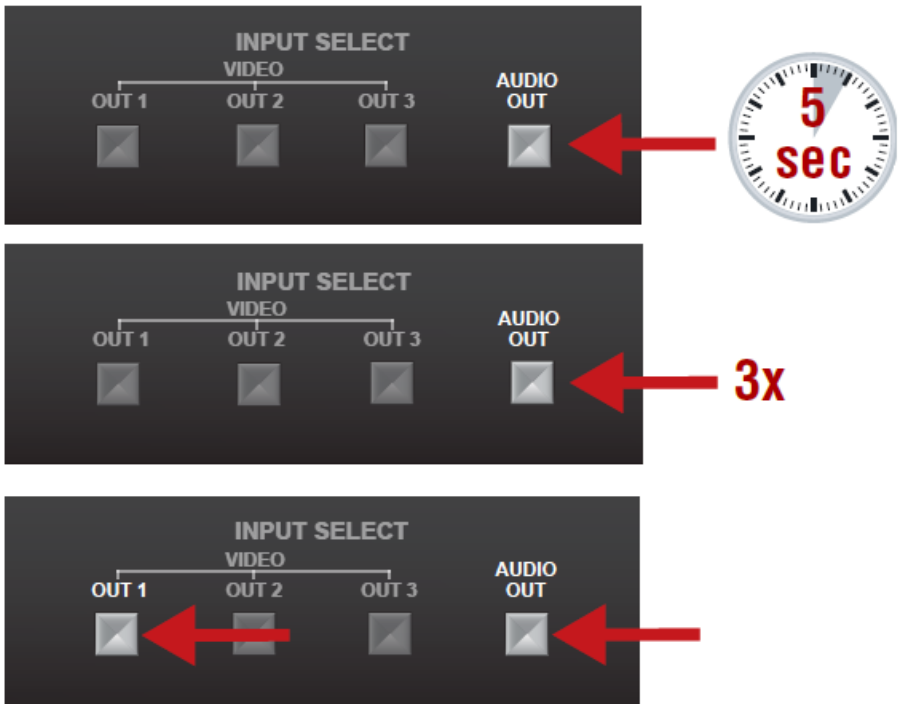
Plug pin assignment: 1: Configurable; 2: 24V (max. 50 mA); 3: Ground

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.

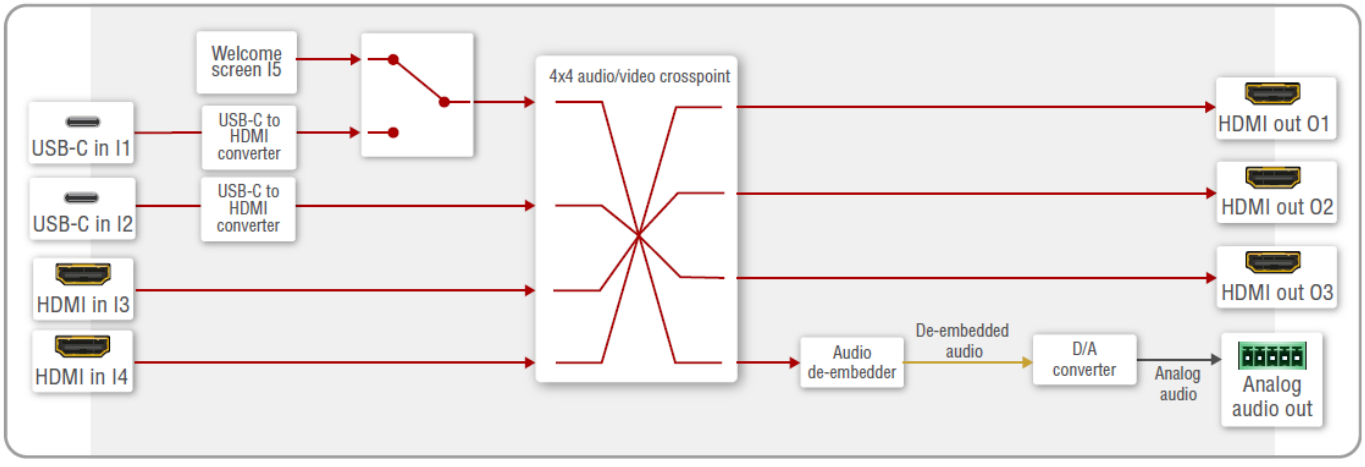
Setting a Dynamic IP Address (DHCP)

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.

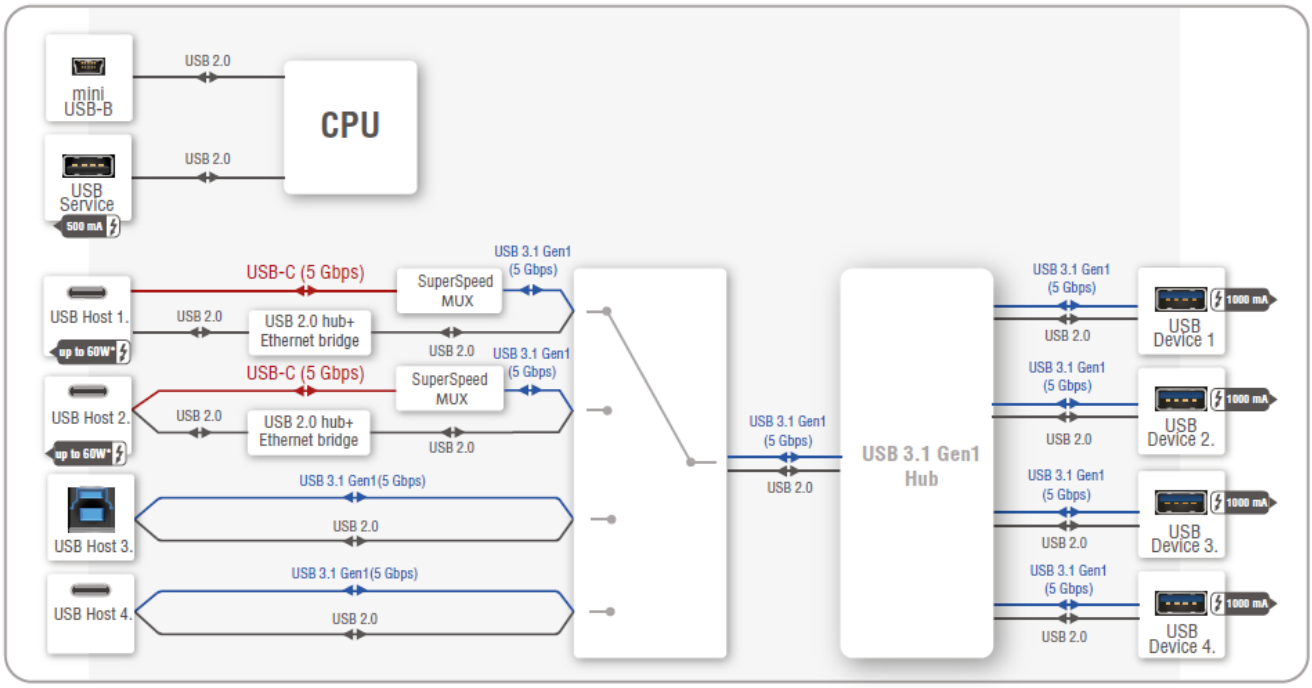


Lock / Unlock Buttons
Press the VIDEO OUT1 and AUDIO OUT buttons together (within 100 ms) to disable/enable front panel buttons; front panel LEDs blink 4 times when locking / unlocking.

AV Port Diagram (UCX-4×3-HC40)



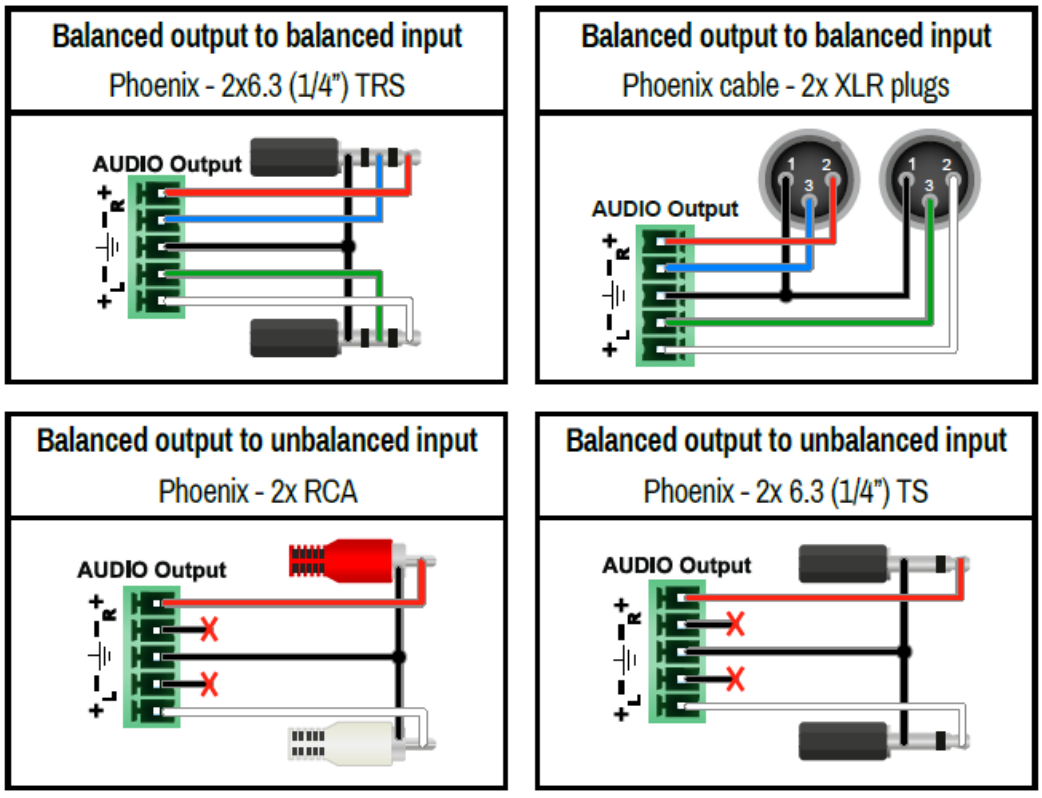
USB Port Diagram (UCX-4×3-HC40)



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

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.



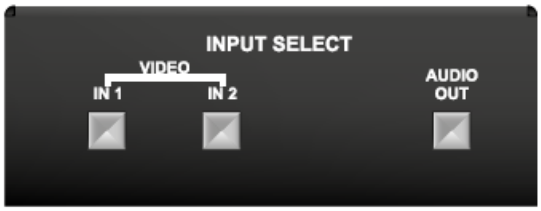
Software Control – Using Lightware Device Controller (LDC)
The device can be controlled from a computer using the Lightware Device Controller software. The application is available at www.lightware.com, install it on a Windows PC or a macOS and connect to the device via LAN.

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.

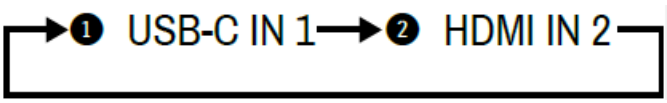
LARA – Lightware Advanced Room Automation
LARA is a room automation platform designed to make setting up meeting rooms for easy and quick use possible. It connects the services and devices in the rooms with rules that can be customized to best suit the needs of the user. For more information, please see **lightware.com/lara**.

Button functionality

UCX-2×1-HC40
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.

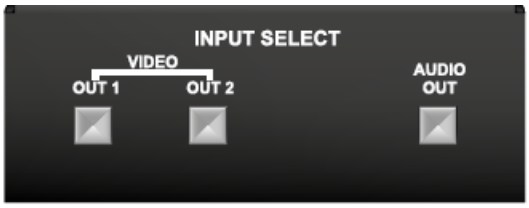


Use the AUDIO OUT button for selecting the audio source of the analog audio output.

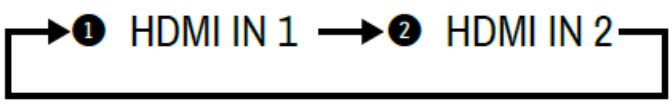


The sequence is the following (for audio switching):

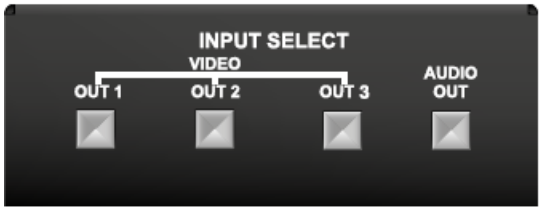
UCX-2×2-H40, UCX-4×2-HC40, UCX-4×2-HC40D
Use OUT1 and OUT2 buttons for selecting the video source. Push OUT1 to select the video input for the HDMI OUT1 port, OUT2 button switches the video input for the HDMI OUT2 port. Use the AUDIO OUT button for selecting the audio source of the analog audio output.



The sequence is the following (both for the video and audio switching):

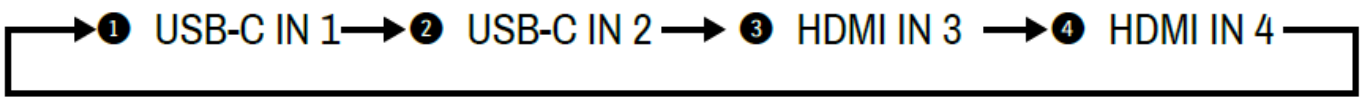


UCX-4×3-HC40, UCX-4×3-HC40-BD
Push the OUT1 button to set the video input to the HDMI OUT1 port.
Push the OUT2 button to set the video input to the HDMI OUT2 port.



Push the OUT3 button to set the video input to the HDMI OUT3 port. Push the AUDIO OUT button to set the audio source of the analog audio output.

The sequence is the following (both for the video and audio switching):



The User's Manual is also available via the QR code below:

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Budapest, Hungary

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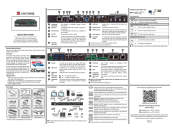
Further information on the device is available at www.lightware.com.

Documents / Resources

	LIGHTWARE UCX-4x2-HC40D DMI SDVoE Optical Extender [pdf] User Guide UCX-4x2-HC40D DMI SDVoE Optical Extender, UCX-4x2-HC40D, DMI SDVoE Optical Extender, Optical Extender, Extender

References

- User Manual