

DM® Essentials 4K60 4:4:4 Transmitter and 4x1 Auto-Switcher for HDMI® and USB-C® DisplayPort™ Signal Extension over CATx Cable



- *Point-to-point extension of an HDMI® or USB-C® DisplayPort™ signal over CAT5e or higher cable*
- *USB-C inputs with DisplayPort Alt Mode capability*
- *DM® Essentials transmission distance up to 130 ft (40 m) for UHD and 4K signals or up to 230 ft (70 m) for 1080p, WUXGA, and 2K signals*
- *4K60 4:4:4 capability*
- *HDR10, HDR10+, and Dolby Vision® video formats*
- *Compliance with HDCP 2.3*
- *Automatic switching of HDMI and USB-C DisplayPort inputs*
- *Charging capability provided by the USB-C DisplayPort inputs*
- *CEC (Consumer Electronics Control) pass-through capability*
- *EDID pass-through capability*
- *Compact, surface-mountable design*
- *Power from 24VDC power pack (included) or from remote DM Essentials receiver or DMPS Essentials switcher*

The HD-TX-4KZ-421-CHGR is a DM® Essentials 4K60 4:4:4 transmitter designed to interoperate with a DM® Essentials receiver or DMPS Essentials switcher. The HDMI® inputs of the HD-TX-4KZ-421-CHGR enable the transmission of an HDMI signal. The USB-C® inputs with DisplayPort™ Alt Mode capability enable the transmission of a DisplayPort AV signal. A CAT5e or higher twisted pair cable (Crestron [DM-CBL-8G](#) or [DM-CBL-ULTRA](#) sold separately) is needed to connect the HD-TX-4KZ-421-CHGR to the DM Essentials receiver or DMPS Essentials switcher. For 1080p, WUXGA, and 2K signals, a cable length of up to 230 ft (70 m) is supported. For UHD and 4K signals, a cable length of up to 130 ft (40 m) is supported.¹

Interoperability with a DM Essentials Receiver or DMPS Essentials Switcher

The DM Essentials output port of the HD-TX-4KZ-421-CHGR must be connected to a DM Essentials input port of a DM Essentials receiver or DMPS Essentials switcher. Examples of

supported DM Essentials 4K60 4:4:4 receivers are the [HD-RXC-4KZ-101](#) and [HD-RXCA-4KZ-101](#). Supported DMPS Essentials switchers are the [HD-PS622](#), [HD-PS621](#), [HD-PS402](#), [HD-PS401](#), and [HD-RX-4K-210-C-E](#).

The HD-TX-4KZ-421-CHGR can be configured and controlled only when it is used with a DMPS Essentials switcher. The web interface of the switcher can be used to configure the HD-TX-4KZ-421-CHGR. In addition, control system programming and .AV Framework™ software support of the HD-TX-4KZ-421-CHGR is hosted by the switcher.

4K60 4:4:4 and HDR Support

The HD-TX-4KZ-421-CHGR supports video resolutions up to 4K60 with 4:4:4 color sampling. HDR10, HDR10+, and Dolby Vision® video formats are also supported.²

Automatic Switching of Inputs

When the HD-TX-4KZ-421-CHGR is used with a DMPS Essentials switcher, the web interface of the switcher or control system programming hosted by the switcher can be used to configure the AV switching behavior of the HD-TX-4KZ-421-CHGR. Switching among the HDMI and USB-C DisplayPort inputs can occur based on the last connected input or on the routing priority assigned to each input. In addition, input selection push buttons on the front panel of the HD-TX-4KZ-421-CHGR enable the desired input to be selected manually.

USB-C DisplayPort Inputs with Charging Capability

When the HD-TX-4KZ-421-CHGR is powered by the included power pack, each USB-C DisplayPort input can charge the connected AV source (for example, a laptop) with up to 60W of power. If the HD-TX-4KZ-421-CHGR is powered by a remote DM Essentials receiver or DMPS Essentials switcher, no charging capability is provided by the USB-C inputs.

Compact, Surface-Mountable Design

Compact in design, the HD-TX-4KZ-421-CHGR can be mounted onto a flat surface such as the underside of a table, behind a credenza, or inside a podium. It can also be attached to a single rack rail in the back of an equipment cabinet. The HD-TX-4KZ-421-CHGR can receive power from the included power pack or from the remote DM Essentials receiver or DMPS Essentials switcher.³

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Specifications

Video

Input Signal Types	HDMI® (DVI and Dual-Mode DisplayPort™ interface compatible ⁴) and DisplayPort over USB-C® (DisplayPort Alt Mode) with HDR10, HDR10+, Dolby Vision®, Deep Color, and 4K60 4:4:4 support ²
Output Signal Type	DM® Essentials with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support ²
Copy Protection	HDCP 2.3
Resolutions	Common resolutions are listed in the following table.

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 DCI 4K & 3840x2160 4K UHD	24 Hz	4:4:4	12 bit
		30 Hz	4:4:4	12 bit
		60 Hz	4:2:2	12 bit
		60 Hz	4:4:4	8 bit
	2560x1600 WQXGA	60 Hz	4:4:4	8 bit
Interlaced (HDMI inputs only)	1920x1080 FHD 1080p	60 Hz	4:4:4	12 bit
Interlaced (HDMI inputs only)	1920x1080 HD 1080i	30 Hz	4:4:4	12 bit

NOTE: The maximum supported resolution is 4K60 with 4:4:4 color sampling. Custom resolutions are supported at pixel clock rates up to 600 MHz.

The USB-C DisplayPort inputs do not support interlaced video.

Audio

Input Signal Types	HDMI, DisplayPort over USB-C (DisplayPort Alt Mode)
Output Signal Type	DM Essentials
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, Dolby Atmos®, DTS®, DTS ES, DTS 96/24, DTS HD® High Res, DTS-HD Master Audio, DTS:X®, LPCM up to 8 channels

Communications

HDMI	HDCP 2.3, EDID, CEC pass-through
USB-C	HDCP 2.3, EDID, CEC pass-through
USB	USB host for one TT-100 series cable caddy (sold separately)
DM Essentials	HDCP 2.3, EDID pass-through

Connectors

HDMI INPUT 1-2	(2) HDMI Type A connectors, female; HDMI digital video/audio inputs; DVI and Dual-Mode DisplayPort interface compatible ⁴
60W USB INPUT 3-4	(2) USB Type C® connectors, female; Digital video/audio inputs using DisplayPort Alt Mode; Can also charge connected AV sources with up to 60W of power per port ⁵
DM OUT	(1) 8-pin RJ-45 yellow connector, female, shielded; DM Essentials output port for connection to a DM Essentials receiver or DMPS Essentials switcher ^{1, 6}
24V 7.5A	(1) 2.5 x 5.5 mm DC power connector; 24VDC power input; PW-2475DU power pack included ³
SERVICE	(1) USB 2.0 Type-A connector, female; Used for firmware loading, configuration management, or as a USB host port for one TT-100 series cable caddy (sold separately); Can also provide up to 5V 500 mA power to a USB powered device
Ground	(1) Chassis ground lug

Controls and Indicators

PWR	(1) Bicolor amber/green LED, indicates that power is being applied to the device; Amber indicates that the device is booting; Green indicates that the device is operational
AUTO	(1) Push button for enabling or disabling automatic switching of inputs; (1) LED, green indicates that automatic switching of inputs is enabled

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SETUP	(1) Push button for Ethernet setup (applicable only when used with a DMPS Essentials switcher); (1) LED, red indicates that the SETUP push button is pressed
INPUT 1-4	(4) Push buttons for manual input selection; (4) LEDs, green indicates that the corresponding input is routed to an output, and amber indicates that a source is detected but is not routed to an output.
DM OUT	(2) LEDs on RJ-45 connector. Green indicates that a DM Essentials link is established. Flashing amber indicates non-HDCP video, and solid amber indicates HDCP video.

Power

Power Pack (Included)	Input: 100-240VAC Output: 24VDC 7.5A Model: PW-2475DU ³
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Environmental

Temperature	32° to 104°F (0° to 40°C)
Humidity	20% to 90% RH (non-condensing)

Enclosure

Chassis	Metal, black finish, vented top, front, rear, and sides, 2 mounting brackets included
Mounting	Freestanding, surface mountable, or attachment to a single rack rail

Dimensions

Height	1.20 in. (30 mm)
Width	8.52 in. (216 mm)
Depth	5.23 in. (133 mm)

Weight

1.69 lb (0.77 kg)

Compliance

Regulatory Model: M202046003

Intertek® Listed for US and Canada, CE, IC, FCC Part 15 Class A digital device

To search for product certificates, refer to support.crestron.com/app/certificates.

Model

HD-TX-4KZ-421-CHGR

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Included Accessories

PW-2475DU

Desktop Power Pack, 24VDC, 7.5A

Available Accessories

For a list of available accessories, visit the HD-TX-4KZ-421-CHGR product page.

Notes:

- For DM Essentials connections, use Crestron [DM-CBL-8G](#), Crestron [DM-CBL-ULTRA](#), or third-party CAT5e or higher cable. For information about the maximum transmission distance for each cable type, refer to [Online Help Answer ID 1001567](#).

To safeguard against unpredictable environmental electrical noise that may impact performance at resolutions above 1080p, shielded cable and connectors are recommended for all applications and are required when bundling multiple cables in a wire run. Cables are sold separately.
- For HDMI inputs, 4K60 4:4:4 performance and HDR support require the use of HDMI cables and couplers with a minimum TMDS bandwidth of 18 Gbps. If 4K60 4:2:0 or 4K30 4:4:4 performance is acceptable, cables and couplers with a minimum bandwidth of 10.2 Gbps may be used. Bandwidth loss is cumulative; therefore, performance may be reduced when inserting multiple cables and couplers inline.

For USB-C DisplayPort inputs, 4K60 4:4:4 performance and HDR support require the use of USB 3.2 Gen 1 (5 Gbps) cables with support for DisplayPort Alt Mode (DisplayPort 1.4 video, 4K60 4:4:4, 2 lanes). Cables are sold separately.
- When a surface-mountable DM Essentials transmitter is paired with a surface-mountable DM Essentials receiver, either the power pack included with the transmitter or the receiver can be used to power both devices. A power pack must not be connected to both devices simultaneously.

When a surface-mountable DM Essentials transmitter is paired with a wall plate DM Essentials receiver, the power pack included with the transmitter is used to power both devices.

When a DM Essentials transmitter is paired with a DMPS Essentials switcher, the switcher provides power to the DM Essentials transmitter. The DM Essentials transmitter must not be connected to the included power pack.
- The HDMI input requires an appropriate adapter or interface cable to accommodate a Dual-Mode DisplayPort or DVI signal. CBL-HD-DVI interface cables are sold separately.
- [CBL-USB3G1-C-C-6](#) and [CBL-USB3G2-C-C-3](#) cables are sold separately.

This product may be purchased from select authorized Crestron dealers and distributors. To find a dealer or distributor, please contact the Crestron sales representative for your area. A list of sales representatives is available online at www.crestron.com/How-To-Buy/Find-a-Representative or contact us for additional information by visiting www.crestron.com/contact/our-locations for your local contact.

This product is covered under the Crestron standard limited warranty. Refer to www.crestron.com/warranty for full details.

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The specific patents that cover Crestron products are listed online at patents.crestron.com.

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HDMI

Specifications are subject to change without notice.

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