SECTION 27 41 16

INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

GUIDE SPECIFICATION

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Specifier: Please see PART 4 for a listing of products specified in this Guide Specification.

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# GENERAL

NOT USED in this Guide Specification. Specifier shall Specify PART 1 administrative and procedural requirements as needed.

# PRODUCTS

## 4K60 4:4:4 Transmitter for USB C® DisplayPort™, USB 2.0, and Ethernet Signal Extension over CATx Cable

Specifier Note:

*The HD-TXU-4KZ-111-E is a DM Lite® 4K60 4:4:4 transmitter designed to interoperate with a DM Lite HD-RXU-4KZ Series receiver. A USB-C® input with DisplayPort™ Alt Mode capability enables the transmission of a DisplayPort AV signal. The USB-C input also enables the transmission of USB 2.0 data signals. In addition, a LAN port enables Ethernet pass-through capability. A CAT5e or higher twisted pair cable is used to connect the HD-TXU-4KZ-111-E to the DM Lite receiver.*

### Basis of Design

#### Crestron HD-TXU-4KZ-111-E

### Device Definition

#### Device with the following characteristics:

##### Point to point transmission of USB-C DisplayPort, USB 2.0, and Ethernet signals over CAT5e and higher twisted pair cable

##### Designed for interoperability with receivers from same manufacturer

##### 4K60 4:4:4 and HDR support

##### HDR10, HDR10+, and Dolby Vision® video format support

##### HDCP 2.3 compliant

##### CEC pass-through capability

##### Ethernet pass-through support

##### Surface-mountable form factor

### Device Architecture

#### Construction

##### Chassis: Metal, black finish, vented top and sides

##### Mounting: Freestanding, surface mountable or attachment to a single rack rail

###### Two (2) mounting brackets included

##### Dimensions

###### Height: 1.20 in. (30 mm)

###### Width: 4.19 in. (106 mm)

###### Depth: 7.94 in. (202 mm)

##### Weight: 1.2 lb. (0.55 kg)

##### Environmental Operating Conditions

###### Temperature: 32° to 104° F (0° to 40° C)

###### Humidity: 20% to 90% RH (non-condensing)

### Functions

#### Video

##### Input signal Type

###### DisplayPort™ over USB-C® (DisplayPort Alt Mode)

###### HDR10, HDR10+, Dolby Vision®, Deep Color, 4K60 4:4:4 support

##### Output Signal Type

###### Proprietary signal format by same manufacturer

###### HDR10, HDR10+, Dolby Vision®, Deep Color, and 4K60 4:4:4 support

Specifier Note: 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).

##### Copy Protection: HDCP 2.3

Specifier Note: Please refer to the device’s spec sheet for a table of common resolutions that are supported. The maximum supported resolution is 4K60 with 4:4:4 color sampling. Custom resolutions are supported at pixel clock rates up to 600 MHz. This device does not support interlaced video.

#### Audio

##### Input Signal Type: DisplayPort over USB-C (DisplayPort Alt Mode)

##### Output Signal Type: Proprietary signal format by same manufacturer

##### 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

##### USB-C: HDCP 2.3, EDID, CEC pass-through, USB 2.0 up to 300 Mbps

##### USB

###### USB signal extension via USB 2.0 host ports

###### USB host for cable caddy by same manufacturer via SERVICE port

##### Proprietary signal format: HDCP 2.3, EDID pass-through, USB 2.0 up to 300 Mbps

##### Ethernet: 100/1000 Mbps pass-through

### Connectors

#### USB INPUT

##### (1) USB Type-C® connector, female

##### Digital video/audio input using DisplayPort Alt Mode

##### USB 2.0 data support

#### Proprietary signal out

##### (1) 8-pin RJ45 yellow connector, female, shielded

##### Output port for connection to receiver by same manufacturer

#### LAN

##### (1) 8-pin RJ45 connector, female

##### 100BASE-TX/1000BASE-T Ethernet port

##### Passes Ethernet signal over the proprietary signal connection to receiver by same manufacturer

#### 24 V 1.4 A

##### (1) 2.1 x 5.5 mm DC power connector

##### 24 VDC power input

Specifier Note: Power packs supporting above power delivery specifications are not to be connected to both transmitter and receiver devices simultaneously. In instances where a surface-mounted device is connected to a wall plate device, the power pack included with the surface-mounted device is used to power both endpoints.

#### HOST

##### (2) USB Type-A connectors, female

##### USB 2.0 host ports

##### USB signal extender ports for connection to USB mice, keyboards, or other USB 2.0 peripheral devices

##### Available Power: 500 mA @ 5 VDC per port

#### SERVICE

##### (1) USB 2.0 Type-A connector, female

##### Used for firmware loading, configuration management, or as a USB host port for cable caddy by same manufacturer

##### Can also provide up to 5 VDC 500 mA power to a USB powered device

#### Ground: (1) Chassis ground lug

### Controls and Indicators

#### PWR

##### (1) LED, indicates that power is being applied to the device

##### Amber indicates that the device is booting

##### Green indicates that the device is operational

#### INPUT

##### (1) Green LED, indicates that the device is receiving a DisplayPort over USB-C (DisplayPort Alt Mode) input signal

#### Proprietary signal out

##### (2) LEDs on RJ45 connector

##### Green indicates that a signal link is established

##### Flashing amber indicates non-HDCP video

##### Solid amber indicates HDCP video

#### LAN

##### (2) LEDs on RJ45 connector

##### Green indicates that a 100 Mbps link is established

##### Solid amber indicates that a 1000 Mbps link is established

##### Flashing amber indicates 1000 Mbps Ethernet activity

### Power

#### Power Pack

##### Input: 100-240 VAC

##### Output: 24 VDC 2.5 A

### Compliance

#### Regulatory Model: M202047005

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

## 4K60 4:4:4 Transmitter for USB C® DisplayPort™, USB 2.0, and Ethernet Signal Extension over CATx Cable, Wall Plate

Specifier Note:

*The HD-TXU-4KZ-111-2G is a DM Lite® 4K60 4:4:4 transmitter designed to interoperate with a DM Lite HD-RXU-4KZ Series receiver. A USB-C® input with DisplayPort™ Alt Mode capability enables the transmission of a DisplayPort AV signal. The USB-C input also enables the transmission of USB 2.0 data signals. A CAT5e or higher twisted pair cable is used to connect the HD-TXU-4KZ-111-2G to the DM Lite receiver.*

### Basis of Design

#### Crestron HD-TXU-4KZ-111-2G

### Device Definition

#### Device with the following characteristics:

##### Point to point transmission of USB-C DisplayPort and USB 2.0 signals over CAT5e and higher twisted pair cable

##### Designed for interoperability with receivers from same manufacturer

##### 4K60 4:4:4 and HDR support

##### HDR10, HDR10+, and Dolby Vision® video format support

##### HDCP 2.3 compliant

##### CEC pass-through capability

##### Two gang wall plate form factor

### Device Architecture

#### Construction

##### Composition: Metal housing and bracket with black and white polycarbonate front label overlay

##### Mounting: Mounts into a 2-gang (or larger) 2-inch (51 mm) deep U.S. electrical box or plaster ring

##### Faceplate: Requires a decorator style faceplate

##### Dimensions

###### Height: 4.12 in. (105 mm)

###### Width: 3.57 in. (91 mm)

###### Depth: 1.70 in. (43 mm)

##### Weight: 7.25 oz (206 g)

##### Environmental Operating Conditions

###### Temperature: 32° to 104° F (0° to 40° C)

###### Humidity: 20% to 90% RH (non-condensing)

### Functions

#### Video

##### Input signal Type

###### DisplayPort™ over USB-C® (DisplayPort Alt Mode)

###### HDR10, HDR10+, Dolby Vision®, Deep Color, 4K60 4:4:4 support

##### Output Signal Type

###### Proprietary signal format by same manufacturer

###### HDR10, HDR10+, Dolby Vision®, Deep Color, and 4K60 4:4:4 support

Specifier Note: 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).

##### Copy Protection: HDCP 2.3

Specifier Note: Please refer to the device’s spec sheet for a table of common resolutions that are supported. The maximum supported resolution is 4K60 with 4:4:4 color sampling. Custom resolutions are supported at pixel clock rates up to 600 MHz. This device does not support interlaced video.

#### Audio

##### Input Signal Type: DisplayPort over USB-C (DisplayPort Alt Mode)

##### Output Signal Type: Proprietary signal format by same manufacturer

##### 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

##### USB-C: HDCP 2.3, EDID, CEC pass-through, USB 2.0 up to 300 Mbps

##### USB

###### USB signal extension via USB 2.0 host ports

##### Proprietary signal format: HDCP 2.3, EDID pass-through, USB 2.0 up to 300 Mbps

### Connectors

#### USB IN

##### (1) USB Type-C® connector, female

##### Digital video/audio input using DisplayPort Alt Mode

##### USB 2.0 data support

#### Proprietary signal out

##### (1) 8-pin RJ45 yellow connector, female, shielded

##### Output port for connection to receiver by same manufacturer

#### LAN

##### (1) 8-pin RJ45 connector, female

##### 100BASE-TX/1000BASE-T Ethernet port

##### Passes Ethernet signal over the proprietary signal connection to receiver by same manufacturer

#### 24 V 0.5 A

##### (1) 2-in 3.5 mm detachable terminal block

##### 24 VDC power input

##### Power pack required only if device is used with wall plate receiver by same manufacturer

Specifier Note: Power packs supporting above power delivery specifications are not to be connected to both transmitter and receiver devices simultaneously. In instances where a surface-mounted device is connected to a wall plate device, the power pack included with the surface-mounted device is used to power both endpoints.

#### HOST

##### (2) USB Type-A connectors, female

##### USB 2.0 host ports

##### USB signal extender ports for connection to USB mice, keyboards, or other USB 2.0 peripheral devices

##### Available Power: 500 mA @ 5 VDC per port

#### Ground: (1) Chassis ground lug

### Controls and Indicators

#### PWR

##### (1) LED, indicates that power is being applied to the device

##### Amber indicates that the device is booting

##### Green indicates that the device is operational

#### USB IN

##### (1) Green LED, indicates that the device is receiving a DisplayPort over USB-C (DisplayPort Alt Mode) input signal

#### LINK

##### (1) Green LED, indicates that proprietary signal link is established

#### RESET: (1) Push button, restores factory default settings

#### Proprietary signal out

##### (2) LEDs on RJ45 connector

##### Green indicates that a signal link is established

##### Flashing amber indicates non-HDCP video

##### Solid amber indicates HDCP video

### Power

#### Power Pack

##### Input: 100-240 VAC

##### Output: 24 VDC 0.75 A

### Compliance

#### Regulatory Model: M202047004

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

## 4K60 4:4:4 Transmitter and 2x1 Auto-Switcher for HDMI® and USB 2.0 Signal Extension over CATx Cable

Specifier Note:

*The HD-TXU-4KZ-211 is a DM Lite® 4K60 4:4:4 transmitter designed to interoperate with a DM Lite® HD-RXU-4KZ Series receiver. The HDMI® and associated USB-C® input of the HD-TXU-4KZ-211 enable the transmission of HDMI AV and USB 2.0 data signals. The USB-C input with DisplayPort™ Alt Mode capability enables the transmission of DisplayPort AV and USB 2.0 data signals. A CAT5e or higher twisted pair cable is used to connect the HD-TXU-4KZ-211 to the DM Lite receiver.*

### Basis of Design

#### Crestron HD-TXU-4KZ-211

### Device Definition

#### Device with the following characteristics:

##### Point to point extension of USB-C DisplayPort, HDMI, and USB 2.0 signals over CAT5e and higher twisted pair cable

##### Two (2) inputs with automatic switching

##### Designed for interoperability with receivers from same manufacturer

##### 4K60 4:4:4 and HDR support

##### HDR10, HDR10+, and Dolby Vision® video format support

##### HDCP 2.3 compliant

##### Support for proprietary remote configuration and monitoring software by same manufacturer

##### Interoperability with control system by same manufacturer

###### Support for browser-based setup and configuration with control system via proprietary software suite

##### Integrated web server for device configuration and management

##### EDID management

##### Automatic display control via CEC

### Device Architecture

#### Construction

##### Chassis: Metal, black finish, vented top, front, rear, and sides

##### Mounting: Freestanding, surface mountable, or attachment to a single rack rail

###### Two (2) mounting brackets included

##### Dimensions

###### Height: 1.20 in. (30 mm)

###### Width: 8.52 in. (216 mm)

###### Depth: 6.48 in. (165 mm)

##### Weight: 1.93 lb. (0.88 kg)

##### Environmental Operating Conditions

###### Temperature: 32° to 104° F (0° to 40° C)

###### Humidity: 20% to 90% RH (non-condensing)

### Functions

#### Video

##### Input signal Types

###### HDMI®

DVI and Dual-Mode DisplayPort™ interface compatible

###### USB-C DisplayPort Alt Mode

###### HDR10, HDR10+, Dolby Vision®, Deep Color, 4K60 4:4:4 support

##### Output Signal Type

###### Proprietary signal format by same manufacturer

###### HDR10, HDR10+, Dolby Vision®, Deep Color, and 4K60 4:4:4 support

Specifier Note: 4K60 4:4:4 performance and HDR support require the use of 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.

##### Copy Protection: HDCP 2.3

Specifier Note: Please refer to the device’s spec sheet for a table of common resolutions that are supported. 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 input does not support interlaced video.

#### Audio

##### Input Signal Types: HDMI, USB-C DisplayPort Alt mode

##### Output Signal Type: Proprietary signal format by same manufacturer

##### 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

##### USB-C: HDCP 2.3, EDID, CEC, USB 2.0 up to 300 Mbps

##### USB

###### USB signal extension via USB 2.0 host and device ports

##### Proprietary signal format: HDCP 2.3, EDID, USB 2.0 up to 300 Mbps

##### Ethernet

###### 100/1000 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP, web browser setup and control, integration with control system by same manufacturer, IEEE 802.1X, Secure CIP Authentication, SSH/SSL, TLS

### Connectors

#### SERVICE

##### (1) USB 2.0 Type-A connector, female

##### Used for firmware loading and configuration management

##### Can also provide up to 5 V 500 mA power to a USB powered device

#### 24 V 1.9 A

##### (1) 2.1 x 5.5 mm DC power connector

##### 24 VDC power input

Specifier Note: Power packs supporting above power delivery specifications are not to be connected to both transmitter and receiver devices simultaneously. In instances where a surface-mounted device is connected to a wall plate device, the power pack included with the surface-mounted device is used to power both endpoints.

#### USB, INPUT 1

##### (1) USB Type-C® connector, female

##### Digital video/audio input using DisplayPort Alt Mode

##### USB 2.0 data support

#### HDMI, INPUT 2

##### (1) HDMI Type A connector, female

##### HDMI digital video/audio input

##### DVI and Dual-Mode DisplayPort interface compatible

Specifier Note: The HDMI output requires an appropriate adapter or interface cable to accommodate a Dual-Mode DisplayPort or DVI signal.

#### DEVICE, INPUT 2

##### (1) USB Type-C® connector, female

##### USB 2.0 device port associated with HDMI input for AV sources that require USB 2.0 support

##### USB signal extender port for connection to a computer or other USB 2.0 host

#### HOST

##### (2) USB Type-A connectors, female

##### USB 2.0 host ports

##### USB signal extender ports for connection to USB mice, keyboards, or other USB 2.0 peripheral devices

##### Available Power: 500 mA @ 5 VDC per port

#### Proprietary signal out

##### (1) 8-pin RJ45 yellow connector, female, shielded

##### Output port for connection to receiver by same manufacturer

#### LAN

##### (1) 8-pin RJ45 connector, female

##### 100BASE-TX/1000BASE-T Ethernet port for device configuration and management

#### Ground: (1) Chassis ground lug

### Controls and Indicators

#### PWR

##### (1) 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

#### SETUP

##### (1) Push button for Ethernet setup

##### (1) LED, red indicates that the SETUP push button is pressed

#### INPUT 1

##### (1) Push button for manual selection of USB-C DisplayPort input

##### (1) LED

###### Green indicates that the USB-C DisplayPort input is routed to an output

###### Amber indicates that a source is detected but is not routed to an output

#### INPUT 2

##### (1) Push button for manual selection of HDMI input

##### (1) LED

###### Green indicates that the HDMI input is routed to an output

###### Amber indicates that a source is detected but is not routed to an output

#### Proprietary signal out

##### (2) LEDs on RJ45 connector

##### Green indicates that a signal link is established

##### Flashing amber indicates non-HDCP video

##### Solid amber indicates HDCP video

#### LAN

##### (2) LEDs on RJ45 connector

##### Green indicates that a 100 Mbps link is established

##### Solid amber indicates that a 1000 Mbps link is established

##### Flashing amber indicates 1000 Mbps Ethernet activity

### Power

#### Power Pack

##### Input: 100-240 VAC

##### Output: 24 VDC 2.5 A

### Compliance

#### Regulatory Model: M202047007

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

## 4K60 4:4:4 Transmitter and 2x1 Auto-Switcher for HDMI® and USB 2.0 Signal Extension over CATx Cable with Charger

Specifier Note:

*The HD-TXU-4KZ-211-CHGR is a DM Lite® 4K60 4:4:4 transmitter designed to interoperate with a DM Lite® HD-RXU-4KZ Series receiver. The HDMI® and associated USB-C® input of the HD-TXU-4KZ-211-CHGR enable the transmission of HDMI AV and USB 2.0 data signals. The USB-C input with DisplayPort™ Alt Mode capability enables the transmission of DisplayPort AV and USB 2.0 data signals. A CAT5e or higher twisted pair cable is used to connect the HD-TXU-4KZ-211-CHGR to the DM Lite receiver. When the HD-TXU-4KZ-211-CHGR is powered by the included power pack, the USB-C DisplayPort input can charge the connected AV source (for example, a laptop) with up to 60 W of power. If the HD-TXU-4KZ-211-CHGR is powered by a remote DM Lite receiver, no charging capability is provided by the USB-C input.*

### Basis of Design

#### Crestron HD-TXU-4KZ-211-CHGR

### Device Definition

#### Device with the following characteristics:

##### Point to point extension of USB-C DisplayPort, HDMI, and USB 2.0 signals over CAT5e and higher twisted pair cable

##### USB-C DisplayPort charging up to 60 W

##### Two (2) inputs with automatic switching

##### Designed for interoperability with receivers from same manufacturer

##### 4K60 4:4:4 and HDR support

##### HDR10, HDR10+, and Dolby Vision® video format support

##### HDCP 2.3 compliant

##### Support for proprietary remote configuration and monitoring software by same manufacturer

##### Interoperability with control system by same manufacturer

###### Support for browser-based setup and configuration with control system via proprietary software suite

##### Integrated web server for device configuration and management

##### EDID management

##### Automatic display control via CEC

### Device Architecture

#### Construction

##### Chassis: Metal, black finish, vented top, front, rear, and sides

##### Mounting: Freestanding, surface mountable, or attachment to a single rack rail

###### Two (2) mounting brackets included

##### Dimensions

###### Height: 1.20 in. (30 mm)

###### Width: 8.52 in. (216 mm)

###### Depth: 6.48 in. (165 mm)

##### Weight: 1.96 lb. (0.89 kg)

##### Environmental Operating Conditions

###### Temperature: 32° to 104° F (0° to 40° C)

###### Humidity: 20% to 90% RH (non-condensing)

### Functions

#### Video

##### Input signal Types

###### HDMI®

DVI and Dual-Mode DisplayPort™ interface compatible

###### USB-C DisplayPort Alt Mode

###### HDR10, HDR10+, Dolby Vision®, Deep Color, 4K60 4:4:4 support

##### Output Signal Type

###### Proprietary signal format by same manufacturer

###### HDR10, HDR10+, Dolby Vision®, Deep Color, and 4K60 4:4:4 support

Specifier Note: 4K60 4:4:4 performance and HDR support require the use of 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.

##### Copy Protection: HDCP 2.3

Specifier Note: Please refer to the device’s spec sheet for a table of common resolutions that are supported. 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 input does not support interlaced video.

#### Audio

##### Input Signal Types: HDMI, USB-C DisplayPort Alt mode

##### Output Signal Type: Proprietary signal format by same manufacturer

##### 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

##### USB-C: HDCP 2.3, EDID, CEC, USB 2.0 up to 300 Mbps

##### USB

###### USB signal extension via USB 2.0 host and device ports

##### Proprietary signal format: HDCP 2.3, EDID, USB 2.0 up to 300 Mbps

##### Ethernet

###### 100/1000 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP, web browser setup and control, integration with control system by same manufacturer, IEEE 802.1X, Secure CIP Authentication, SSH/SSL, TLS

### Connectors

#### SERVICE

##### (1) USB 2.0 Type-A connector, female

##### Used for firmware loading and configuration management

##### Can also provide up to 5 V 500 mA power to a USB powered device

#### 24 V 4.5 A

##### (1) 2.1 x 5.5 mm DC power connector

##### 24 VDC power input

Specifier Note: Power packs supporting above power delivery specifications are not to be connected to both transmitter and receiver devices simultaneously. In instances where a surface-mounted device is connected to a wall plate device, the power pack included with the surface-mounted device is used to power both endpoints.

#### 60 W USB, INPUT 1

##### (1) USB Type-C® connector, female

##### Digital video/audio input using DisplayPort Alt Mode

##### USB 2.0 data support

##### Charging of connected AV source up to 60 W available

Specifier Note: For the USB-C DisplayPort input to charge the connected AV source, the HD-TXU-4KZ-211-CHGR must be powered by the included power pack. If the HD-TXU-4KZ-211-CHGR is powered by a remote DM Lite receiver, no charging capability is provided by USB-C input.

#### HDMI, INPUT 2

##### (1) HDMI Type A connector, female

##### HDMI digital video/audio input

##### DVI and Dual-Mode DisplayPort interface compatible

Specifier Note: The HDMI output requires an appropriate adapter or interface cable to accommodate a Dual-Mode DisplayPort or DVI signal.

#### DEVICE, INPUT 2

##### (1) USB Type-C® connector, female

##### USB 2.0 device port associated with HDMI input for AV sources that require USB 2.0 support

##### USB signal extender port for connection to a computer or other USB 2.0 host

#### HOST

##### (2) USB Type-A connectors, female

##### USB 2.0 host ports

##### USB signal extender ports for connection to USB mice, keyboards, or other USB 2.0 peripheral devices

##### Available Power: 500 mA @ 5 VDC per port

#### Proprietary signal out

##### (1) 8-pin RJ45 yellow connector, female, shielded

##### Output port for connection to receiver by same manufacturer

#### LAN

##### (1) 8-pin RJ45 connector, female

##### 100BASE-TX/1000BASE-T Ethernet port for device configuration and management

#### Ground: (1) Chassis ground lug

### Controls and Indicators

#### PWR

##### (1) 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

#### SETUP

##### (1) Push button for Ethernet setup

##### (1) LED, red indicates that the SETUP push button is pressed

#### INPUT 1

##### (1) Push button for manual selection of USB-C DisplayPort input

##### (1) LED

###### Green indicates that the USB-C DisplayPort input is routed to an output

###### Amber indicates that a source is detected but is not routed to an output

#### INPUT 2

##### (1) Push button for manual selection of HDMI input

##### (1) LED

###### Green indicates that the HDMI input is routed to an output

###### Amber indicates that a source is detected but is not routed to an output

#### Proprietary signal out

##### (2) LEDs on RJ45 connector

##### Green indicates that a signal link is established

##### Flashing amber indicates non-HDCP video

##### Solid amber indicates HDCP video

#### LAN

##### (2) LEDs on RJ45 connector

##### Green indicates that a 100 Mbps link is established

##### Solid amber indicates that a 1000 Mbps link is established

##### Flashing amber indicates 1000 Mbps Ethernet activity

### Power

#### Power Pack

##### Input: 100-240 VAC

##### Output: 24 VDC 7.5 A

### Compliance

#### Regulatory Model: M202047007

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

## 4K60 4:4:4 Receiver for HDMI®, USB 2.0, and Ethernet Signal Extension over CATx Cable

Specifier Note:

*The HD-RXU-4KZ-101-E is a DM Lite® 4K60 4:4:4 receiver designed to interoperate with a DM Lite HD-TXU-4KZ Series transmitter for the transmission of HDMI® and USB 2.0 signals. In addition, a LAN port enables Ethernet pass-through capability. A CAT5e or higher twisted pair cable is used to connect the HD-RXU-4KZ-101-E to the DM Lite transmitter.*

### Basis of Design

#### Crestron HD-RXU-4KZ-101-E

### Device Definition

#### Device with the following characteristics:

##### Point to point extension of HDMI, USB 2.0, and Ethernet signals over CAT5e and higher twisted pair cable

##### Designed for interoperability with transmitters from same manufacturer

##### 4K60 4:4:4 and HDR support

##### HDR10, HDR10+, and Dolby Vision® video format support

##### HDCP 2.3 compliant

##### CEC pass-through capability

##### Ethernet pass-through support

### Device Architecture

#### Construction

##### Chassis: Metal, black finish, vented top and sides

##### Mounting: Freestanding, surface mountable, or attachment to a single rack rail

###### Two (2) mounting brackets included

##### Dimensions

###### Height: 1.20 in. (30 mm)

###### Width: 4.19 in. (106 mm)

###### Depth: 7.94 in. (202 mm)

##### Weight: 1.19 lb. (0.54 kg)

##### Environmental Operating Conditions

###### Temperature: 32° to 104° F (0° to 40° C)

###### Humidity: 20% to 90% RH (non-condensing)

### Functions

#### Video

##### Input signal Type

###### Proprietary signal format by same manufacturer

###### HDR10, HDR10+, Dolby Vision®, Deep Color, 4K60 4:4:4 support

##### Output Signal Type

###### HDMI®

###### HDR10, HDR10+, Dolby Vision®, Deep Color, and 4K60 4:4:4 support

Specifier Note: 4K60 4:4:4 performance and HDR support require the use of 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.

##### Copy Protection: HDCP 2.3

Specifier Note: Please refer to the device’s spec sheet for a table of common resolutions that are supported. The maximum supported resolution is 4K60 with 4:4:4 color sampling. Custom resolutions are supported at pixel clock rates up to 600 MHz.

#### Audio

##### Input Signal Type: Proprietary signal format by same manufacturer

##### Output Signal Type: HDMI

##### 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

##### Proprietary signal format: HDCP 2.3, EDID pass-through, USB 2.0 up to 300 Mbps

##### USB

###### USB signal extension via USB 2.0 host ports

###### USB host for cable caddy by same manufacturer via SERVICE Port

##### Ethernet: 100/1000 Mbps pass-through

### Connectors

#### HDMI OUTPUT

##### (1) HDMI Type A connector, female

##### HDMI digital video/audio output

##### DVI compatible

Specifier Note: The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal.

#### Proprietary signal in

##### (1) 8-pin RJ45 yellow connector, female, shielded

##### Input port for connection to transmitter by same manufacturer

#### LAN

##### (1) 8-pin RJ45 connector, female

##### 100BASE-TX/1000BASE-T Ethernet port

##### Receives Ethernet signal over the proprietary signal connection from transmitter by same manufacturer

#### 24 V 1.4 A

##### (1) 2.1 x 5.5 mm DC power connector

##### 24 VDC power input

Specifier Note: Power packs supporting above power delivery specifications are not to be connected to both transmitter and receiver devices simultaneously. In instances where a surface-mounted device is connected to a wall plate device, the power pack included with the surface-mounted device is used to power both endpoints.

#### HOST

##### (2) USB Type-A connectors, female

##### USB 2.0 host ports

##### USB signal extender ports for connection to USB mice, keyboards, or other USB 2.0 peripheral devices

##### Available Power: 500 mA @ 5 VDC per port

#### SERVICE

##### (1) USB 2.0 Type-A connector, female

##### Used for firmware loading, configuration management, or as a USB host port for cable caddy by same manufacturer

#### Ground: (1) Chassis ground lug

### Controls and Indicators

#### PWR

##### (1) LED, indicates that power is being applied to the device

##### Amber indicates that the device is booting

##### Green indicates that the device is operational

#### OUTPUT

##### (1) Green LED, indicates that the device is transmitting an HDMI signal

#### Proprietary signal in

##### (2) LEDs on RJ45 connector

##### Green indicates that a signal link is established

##### Flashing amber indicates non-HDCP video

##### Solid amber indicates HDCP video

#### LAN

##### (2) LEDs on RJ45 connector

##### Green indicates that a 100 Mbps link is established

##### Solid amber indicates that a 1000 Mbps link is established

##### Flashing amber indicates 1000 Mbps Ethernet activity

### Power

#### Power Pack

##### Input: 100-240 VAC

##### Output: 24 VDC 1.3 A

### Compliance

#### Regulatory Model: M202047006

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

## 4K60 4:4:4 Receiver for HDMI® and USB 2.0 Signal Extension over CATx Cable, Wall Plate

Specifier Note:

*The HD-RXU-4KZ-101-2G is a DM Lite® 4K60 4:4:4 wall plate receiver designed to interoperate with a DM Lite HD-TXU-4KZ Series transmitter for the transmission of HDMI® and USB 2.0 signals. A CAT5e or higher twisted pair cable is used to connect the HD-RXU-4KZ-101-2G to the DM Lite transmitter.*

### Basis of Design

#### Crestron HD-RXU-4KZ-101-2G

### Device Definition

#### Device with the following characteristics:

##### Point to point extension of HDMI and USB 2.0 signals over CAT5e and higher twisted pair cable

##### Designed for interoperability with transmitters from same manufacturer

##### 4K60 4:4:4 and HDR support

##### HDR10, HDR10+, and Dolby Vision® video format support

##### HDCP 2.3 compliant

##### CEC pass-through capability

##### Two gang wall plate form factor

### Device Architecture

#### Construction

##### Composition: Metal housing and bracket with black polycarbonate front label overlay

##### Mounting: Mounts in a 2-gang (or larger) 2-inch (51 mm) deep U.S. electrical box or plaster ring

##### Faceplate: Requires a decorator style faceplate

##### Dimensions

###### Height: 4.12 in. (105 mm)

###### Width: 3.57 in. (91 mm)

###### Depth: 1.70 in. (43 mm)

##### Weight: 6.87 oz (195 g)

##### Environmental Operating Conditions

###### Temperature: 32° to 104° F (0° to 40° C)

###### Humidity: 20% to 90% RH (non-condensing)

### Functions

#### Video

##### Input signal Type

###### Proprietary signal format by same manufacturer

###### HDR10, HDR10+, Dolby Vision®, Deep Color, 4K60 4:4:4 support

##### Output Signal Type

###### HDMI®

###### HDR10, HDR10+, Dolby Vision®, Deep Color, and 4K60 4:4:4 support

###### DVI compatible

Specifier Note: 4K60 4:4:4 performance and HDR support require the use of 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.

Specifier Note: The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal.

##### Copy Protection: HDCP 2.3

Specifier Note: Please refer to the device’s spec sheet for a table of common resolutions that are supported. The maximum supported resolution is 4K60 with 4:4:4 color sampling. Custom resolutions are supported at pixel clock rates up to 600 MHz.

#### Audio

##### Input Signal Type: Proprietary signal format by same manufacturer

##### Output Signal Type: HDMI

##### 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

##### Proprietary signal format: HDCP 2.3, EDID pass-through, USB 2.0 up to 300 Mbps

##### USB

###### USB signal extension via USB 2.0 host ports

### Connectors

#### HDMI OUT

##### (1) HDMI Type A connector, female

##### HDMI digital video/audio output

##### DVI compatible

#### HOST

##### (2) USB Type-A connectors, female

##### USB 2.0 host ports

##### USB signal extender ports for connection to USB mice, keyboards, or other USB 2.0 peripheral devices

##### Available Power: 500 mA @ 5 VDC per port

#### Proprietary signal in

##### (1) 8-pin RJ45 yellow connector, female, shielded

##### Input port for connection to transmitter by same manufacturer

#### 24 V 0.5 A

##### (1) 2-pin 3.5 mm detachable terminal block

##### 24 VDC power input

Specifier Note: Power packs supporting above power delivery specifications are not to be connected to both transmitter and receiver devices simultaneously. In instances where a surface-mounted device is connected to a wall plate device, the power pack included with the surface-mounted device is used to power both endpoints.

#### Ground: (1) Chassis ground lug

### Controls and Indicators

#### PWR

##### (1) LED, indicates that power is being applied to the device

##### Amber indicates that the device is booting

##### Green indicates that the device is operational

#### HDMI OUT

##### (1) Green LED, indicates that the device is transmitting an HDMI signal

#### LINK

##### (1) Green LED, indicates that a proprietary signal link is established

#### RESET: (1) Push Button, restores factory default settings

#### Proprietary signal in

##### (2) LEDs on RJ45 connector

##### Green indicates that a signal link is established

##### Flashing amber indicates non-HDCP video

##### Solid amber indicates HDCP video

### Power

#### Power Pack

##### Input: 100-240 VAC

##### Output: 24 VDC 0.75 A

### Compliance

#### Regulatory Model: M202047004

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

## 4K60 4:4:4 Receiver and 2x2 Auto-Switcher for HDMI® and USB 2.0 Signal Extension over CATx Cable

Specifier Note:

*The HD-RXU-4KZ-202 is a DM Lite® 4K60 4:4:4 receiver designed to interoperate with a DM Lite HD-TXU-4KZ Series transmitter for the transmission of HDMI® and USB 2.0 signals. A CAT5e or higher twisted pair cable is used to connect the HD-RXU-4KZ-202 to the DM Lite transmitter.*

### Basis of Design

#### Crestron HD-RXU-4KZ-202

### Device Definition

#### Device with the following characteristics:

##### Point to point extension of HDMI and USB 2.0 signals over CAT5e and higher twisted pair cable

##### Two (2) inputs with automatic switching

##### Designed for interoperability with transmitters from same manufacturer

##### 4K60 4:4:4 and HDR support

##### HDR10, HDR10+, and Dolby Vision® video format support

##### HDCP 2.3 compliant

##### Support for proprietary remote configuration and monitoring software by same manufacturer

##### Interoperability with control system by same manufacturer

###### Support for browser-based setup and configuration with control system via proprietary software suite

##### Integrated web server for device configuration and management

##### EDID management

##### Automatic display control via CEC

### Device Architecture

#### Construction

##### Chassis: Metal, black finish, vented top and sides

##### Mounting: Freestanding, surface mountable, or attachment to a single rack rail

###### Two (2) mounting brackets included

##### Dimensions

###### Height: 1.20 in. (30 mm)

###### Width: 8.52 in. (216 mm)

###### Depth: 6.48 in. (165 mm)

##### Weight: 1.95 lb. (0.88 kg)

##### Environmental Operating Conditions

###### Temperature: 32° to 104° F (0° to 40° C)

###### Humidity: 20% to 90% RH (non-condensing)

### Functions

#### Video

##### Input signal Types

###### HDMI®

DVI and Dual-Mode DisplayPort™ interface compatible

###### Proprietary signal format by same manufacturer

###### HDR10, HDR10+, Dolby Vision®, Deep Color, 4K60 4:4:4 support

##### Output Signal Type

###### HDMI®

###### HDR10, HDR10+, Dolby Vision®, Deep Color, and 4K60 4:4:4 support

Specifier Note: 4K60 4:4:4 performance and HDR support require the use of 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.

##### Copy Protection: HDCP 2.3

Specifier Note: Please refer to the device’s spec sheet for a table of common resolutions that are supported. The maximum supported resolution is 4K60 with 4:4:4 color sampling. Custom resolutions are supported at pixel clock rates up to 600 MHz.

#### Audio

##### Input Signal Types: HDMI, Proprietary signal format by same manufacturer

##### Output Signal Type: HDMI

##### 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

##### Proprietary signal format: HDCP 2.3, EDID, USB 2.0 up to 300 Mbps

##### USB

###### USB signal extension via USB 2.0 host and device ports

##### Ethernet

###### 100/1000 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP, web browser setup and control, integration with control system by same manufacturer, IEEE 802.1X, Secure CIP Authentication, SSH/SSL, TLS

### Connectors

#### SERVICE

##### (1) USB 2.0 Type-A connector, female

##### Used for firmware loading and configuration management

##### Can also provide up to 5 V 500 mA power to a USB powered device

#### 24 V 1.9 A

##### (1) 2.1 x 5.5 mm DC power connector

##### 24 VDC power input

Specifier Note: Power packs supporting above power delivery specifications are not to be connected to both transmitter and receiver devices simultaneously. In instances where a surface-mounted device is connected to a wall plate device, the power pack included with the surface-mounted device is used to power both endpoints.

#### HDMI OUTPUT 1-2

##### (2) HDMI Type A connectors, female

##### HDMI digital video/audio output

##### DVI compatible

Specifier Note: The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal.

#### HDMI INPUT 1

##### (1) HDMI Type A connector, female

##### HDMI digital video/audio input

##### DVI and Dual-Mode DisplayPort interface compatible

Specifier Note: The HDMI input requires an appropriate adapter or interface cable to accommodate a Dual-Mode DisplayPort or DVI signal.

#### DEVICE INPUT 1

##### (1) USB Type-C® connector, female

##### USB 2.0 device port associated with HDMI input for AV sources that require USB 2.0 support

##### USB signal extender port for connection to a computer or other USB 2.0 host

#### HOST

##### (2) USB Type-A connectors, female

##### USB 2.0 host ports

##### USB signal extender ports for connection to USB mice, keyboards, or other USB 2.0 peripheral devices

##### Available Power: 500 mA @ 5 VDC per port

#### Proprietary signal in

##### (1) 8-pin RJ45 yellow connector, female, shielded

##### Input port for connection to transmitter by same manufacturer

#### LAN

##### (1) 8-pin RJ45 connector, female

##### 100BASE-TX/1000BASE-T Ethernet port for device configuration and management

#### Ground: (1) Chassis ground lug

### Controls and Indicators

#### PWR

##### (1) 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

#### SETUP

##### (1) Push button for Ethernet setup

##### (1) LED, red indicates that the SETUP push button is pressed

#### INPUT 1

##### (1) Push button for manual selection of HDMI input

##### (1) LED

###### Green indicates that the HDMI input is routed to an output

###### Amber indicates that a source is detected but is not routed to an output

#### INPUT 2

##### (1) Push button for manual selection of proprietary signal input

##### (1) LED

###### Green indicates that the proprietary signal input is routed to an output

###### Amber indicates that a source is detected but is not routed to an output

#### OUTPUT 1

##### (1) Push button for manual selection of HDMI output 1

##### (1) LED

###### Green indicates that a display or other destination device is detected and HDMI output 1 is transmitting video

###### Amber indicates that a display or other destination device is detected but no video is routed to the output

#### OUTPUT 2

##### (1) Push button for manual selection of HDMI output 2

##### (1) LED

###### Green indicates that a display or other destination device is detected and HDMI output 2 is transmitting video

###### Amber indicates that a display or other destination device is detected but no video is routed to the output

#### Proprietary signal in

##### (2) LEDs on RJ45 connector

##### Green indicates that a signal link is established

##### Flashing amber indicates non-HDCP video

##### Solid amber indicates HDCP video

#### LAN

##### (2) LEDs on RJ45 connector

##### Green indicates that a 100 Mbps link is established

##### Solid amber indicates that a 1000 Mbps link is established

##### Flashing amber indicates 1000 Mbps Ethernet activity

### Power

#### Power Pack

##### Input: 100-240 VAC

##### Output: 24 VDC 2.5 A

### Compliance

#### Regulatory Model: M202047008

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

# EXECUTION

NOT USED in this Guide Specification. Specifier shall Specify PART 3 On-Site work as needed.

# APPENDICES

## SPECIFIED PRODUCTS

Specifier Note: This Article includes Crestron products specified in this Guide Specification document. This Article is for reference only and should not be required in actual project manual unless included in an overall system equipment list.

### Crestron HD-TXU-4KZ-111-E

### Crestron HD-TXU-4KZ-111-2G

### Crestron HD-TXU-4KZ-211

### Crestron HD-TXU-4KZ-211-CHGR

### Crestron HD-RXU-4KZ-101-E

### Crestron HD-RXU-4KZ-101-2G

### Crestron HD-RXU-4KZ-202

## Input / Output Connection Diagrams

### HD-TXU-4KZ-111-E



### HD-TXU-4KZ-111-2G



### HD-TXU-4KZ-211



### HD-TXU-4KZ-211-CHGR



### HD-RXU-4KZ-101-E



### HD-RXU-4KZ-101-2G



### HD-RXU-4KZ-202

