**SECTION 27 41 16**

**INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT**

**GUIDE SPECIFICATION**

*Specifier: The Specifier/Design Professional is responsible for the accuracy of all project specifications, including system application and coordination with related sections. This guide specification is provided as a convenience and requires editing to match actual project requirements. CRESTRON ELECTRONICS, INC. SHALL NOT BE LIABLE FOR ANY DAMAGES ARISING OUT OF THE USE OF ANY OF ITS GUIDE SPECIFICATIONS. For Crestron design assistance and design review please contact Sales Support Services Department at 800.237.2041 or techsales@crestron.com.*

*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.*

## **Description: Single cable 4K HDMI Receiver and Switcher**

# **PRODUCTS**

## **Receiver Type 1**

### Basis of Design

#### Crestron HD-RX-4K-510-C-E-SW4

#### Crestron HD-RX-4K-510-C-E

### Device Architecture

#### Physical Form factor

##### Surface mount via integrated flange

### Functions

#### The receiver shall support input switching with the following options:

##### Automatic switching to active input

##### Manual switching via integrated selection buttons

##### Remote switching and control via control processor by same manufacturer

##### Remote switching and control via web interface

#### Single UTP/STP cable transmission receiver

##### Signal transmission up to 230 feet.

##### Minimum cable type supported: UTP/STP CAT5e

#### 3rd party System Integration

##### When integrated with a control processor and Touch 10 Routing and Control Program by same manufacturer the unit shall be capable of integrating with the Cisco Touch 10, providing routing and expanded inputs and switching control.

*Specifier Note:*

*The Crestron and Cisco® Touch 10 Routing and Control Program is a program that allows Crestron® A/V switcher devices to be integrated into a Cisco room control solution and controlled via the Cisco Touch 10 touch screen, increasing the available HDMI® inputs within the room. The Crestron and Cisco® Touch 10 Routing and Control Program requires no custom programming and can be scaled to easily configure thousands of Cisco rooms through the provided user interface.*

*Please see link below for additional info and comaptible products:*

*https://www.crestron.com/Products/Control-Hardware-Software/Software/Development-Software/Crestron-and-Cisco-Touch-10*

### Connectors

#### The device shall include the following connectors:

##### One (1) HDMI output with support for the following:

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### 4K Video scaling

Motion-adaptive deinterlacing

Intelligent frame rate conversion

Deep Color support

Content-adaptive noise reduction

3:2/2:2 pull-down detection and recovery

###### DVI-D with adaptor

###### EDID

###### Scaler output resolutions: Auto (EDID preferred), 1280x720p@50Hz (720p50), to 4096x2160p@60Hz

##### Three (3) HDMI inputs with support for the following:

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### DisplayPort Dual-Mode

###### DVI-D with adaptor

###### EDID

###### Common resolutions: 1920x1080 60Hz to 4096x2160 DCI 4K 4:4:4 30Hz

###### Custom resolutions: pixel clock rates up to 300 MHz

##### Two (2) RJ45 single cable HDMI transmission input with support for the following:

###### Link port for connection to compatible transmission device by same manufacturer

###### Power sharing option for connected remote transmission device

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### EDID

###### Common resolutions: 1920x1080 60Hz to 4096x2160 DCI 4K 4:4:4 30Hz

###### Custom resolutions: pixel clock rates up to 300 MHz

##### Two (2) balanced Microphone inputs

##### Two (2) balanced or unbalanced Line Level inputs

##### One (1) balanced mono Aux. input

##### Two (2) Aux. Stereo output

##### One (1) Speaker level output

##### Two (2) Control i/o connection ports

##### Two (2) Control relay ports

##### One (1) Control IR output port

##### One (1) Control Serial port

##### One (1) 4 A - 2 A @ 100-240 VAC, 50/60 Hz AC power input jack

###### Power connection shall support power sharing with connected transmission device

##### One (1) USB Type A connector with support for:

###### Service and firmware update connection

##### Two (2) RJ45 100BASE-TX/1000BASE-T Ethernet ports

*SPECIFIER NOTE: The HD-RX-4K-510-C-E-****SW4*** *includes ethernet switch, the HD-RX-4K-510-C-E does NOT include an ethernet switch.*

##### Two (2) RJ45 100BASE-TX/1000BASE-T PoE+ Power Sourcing Equipment (PSE) Ethernet ports

*SPECIFIER NOTE: The HD-RX-4K-510-C-E-****SW4*** *includes ethernet switch, the HD-RX-4K-510-C-E does NOT include an ethernet switch.*

###### IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant

### Power

#### Power supply

##### Built-in 4 A - 2 A @ 100-240 VAC, 50/60 Hz

##### Power supply shall support device and connected equipment

### Compliance

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

## **Receiver Type 2**

### Basis of Design

#### Crestron HD-RX-4K-410-C-E-SW4

#### Crestron HD-RX-4K-410-C-E

### Device Architecture

#### Physical Form factor

##### Surface mount via integrated flange

### Functions

#### The receiver shall support input switching with the following options:

##### Automatic switching to active input

##### Manual switching via integrated selection buttons

##### Remote switching and control via control processor by same manufacturer

##### Remote switching and control via web interface

#### Single UTP/STP cable transmission receiver

##### Signal transmission up to 230 feet.

##### Minimum cable type supported: UTP/STP CAT5e

#### 3rd party System Integration

##### When integrated with a control processor and Touch 10 Routing and Control Program by same manufacturer the unit shall be capable of integrating with the Cisco Touch 10, providing routing and expanded inputs and switching control.

*Specifier Note:*

*The Crestron and Cisco® Touch 10 Routing and Control Program is a program that allows Crestron® A/V switcher devices to be integrated into a Cisco room control solution and controlled via the Cisco Touch 10 touch screen, increasing the available HDMI® inputs within the room. The Crestron and Cisco® Touch 10 Routing and Control Program requires no custom programming and can be scaled to easily configure thousands of Cisco rooms through the provided user interface.*

*Please see link below for additional info and comaptible products:*

*https://www.crestron.com/Products/Control-Hardware-Software/Software/Development-Software/Crestron-and-Cisco-Touch-10*

### Connectors

#### The device shall include the following connectors:

##### One (1) HDMI output with support for the following:

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### 4K Video scaling

Motion-adaptive deinterlacing

Intelligent frame rate conversion

Deep Color support

Content-adaptive noise reduction

3:2/2:2 pull-down detection and recovery

###### DVI-D with adaptor

###### EDID

###### Scaler output resolutions: Auto (EDID preferred), 1280x720p@50Hz (720p50), to 4096x2160p@60Hz

##### Two (2) HDMI inputs with support for the following:

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### DisplayPort Dual-Mode

###### DVI-D with adaptor

###### EDID

###### Common resolutions: 1920x1080 60Hz to 4096x2160 DCI 4K 4:4:4 30Hz

###### Custom resolutions: pixel clock rates up to 300 MHz

##### Two (2) RJ45 single cable HDMI transmission input with support for the following:

###### Link port for connection to compatible transmission device by same manufacturer

###### Power sharing option for connected remote transmission device

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### EDID

###### Common resolutions: 1920x1080 60Hz to 4096x2160 DCI 4K 4:4:4 30Hz

###### Custom resolutions: pixel clock rates up to 300 MHz

##### Two (2) balanced Microphone inputs

##### Two (2) balanced or unbalanced Line Level inputs

##### One (1) balanced mono Aux. input

##### Two (2) Aux. Stereo output

##### One (1) Speaker level output

##### Two (2) Control i/o connection ports

##### Two (2) Control relay ports

##### One (1) Control IR output port

##### One (1) Control Serial port

##### One (1) 4 A - 2 A @ 100-240 VAC, 50/60 Hz AC power input jack

###### Power connection shall support power sharing with connected transmission device

##### One (1) USB Type A connector with support for:

###### Service and firmware update connection

##### Two (2) RJ45 100BASE-TX/1000BASE-T Ethernet ports

*SPECIFIER NOTE: The HD-RX-4K-410-C-E-****SW4*** *includes ethernet switch, the HD-RX-4K-410-C-E does NOT include an ethernet switch.*

##### Two (2) RJ45 100BASE-TX/1000BASE-T PoE+ Power Sourcing Equipment (PSE) Ethernet ports

*SPECIFIER NOTE: The HD-RX-4K-410-C-E-****SW4*** *includes ethernet switch, the HD-RX-4K-410-C-E does NOT include an ethernet switch.*

###### IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant

### Power

#### Power supply

##### Built-in 4 A - 2 A @ 100-240 VAC, 50/60 Hz

##### Power supply shall support device and connected equipment

### Compliance

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

## **Receiver Type 3**

### Basis of Design

#### Crestron HD-RX-4K-210-C-E

#### Crestron HD-RX-4K-210-C-E-POE

### Device Architecture

#### Physical Form factor

##### Surface mount via integrated flange

### Functions

#### The receiver shall support input switching with the following options:

##### Automatic switching to active input

##### Manual switching via integrated selection buttons

##### Remote switching and control via control processor by same manufacturer

##### Remote switching and control via web interface

#### Single UTP/STP cable transmission receiver

##### Signal transmission up to 230 feet.

##### Minimum cable type supported: UTP/STP CAT5e

#### 3rd party System Integration

##### When integrated with a control processor and Touch 10 Routing and Control Program by same manufacturer the unit shall be capable of integrating with the Cisco Touch 10, providing routing and expanded inputs and switching control.

*Specifier Note:*

*The Crestron and Cisco® Touch 10 Routing and Control Program is a program that allows Crestron® A/V switcher devices to be integrated into a Cisco room control solution and controlled via the Cisco Touch 10 touch screen, increasing the available HDMI® inputs within the room. The Crestron and Cisco® Touch 10 Routing and Control Program requires no custom programming and can be scaled to easily configure thousands of Cisco rooms through the provided user interface.*

*Please see link below for additional info and comaptible products:*

*https://www.crestron.com/Products/Control-Hardware-Software/Software/Development-Software/Crestron-and-Cisco-Touch-10*

### Connectors

#### The device shall include the following connectors:

##### One (1) HDMI output with support for the following:

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### 4K Video scaling

Intelligent frame rate conversion

Deep Color support

Content-adaptive noise reduction

3:2/2:2 pull-down detection and recovery

###### DVI-D with adaptor

###### EDID

###### Scaler output resolutions: Auto (EDID preferred), 1280x720p@50Hz (720p50), to 4096x2160p@60Hz

##### One (1)) HDMI input with support for the following:

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### DisplayPort Dual-Mode

###### DVI-D with adaptor

###### EDID

###### Common resolutions: 1920x1080 60Hz to 4096x2160 DCI 4K 4:4:4 30Hz

###### Custom resolutions: pixel clock rates up to 300 MHz

##### One (1) RJ45 single cable HDMI transmission input with support for the following:

###### Link port for connection to compatible transmission device by same manufacturer

###### Power sharing option for connected remote transmission device

###### HDMI with Deep Color and 4K

###### HDCP 2.2 compliant

###### EDID

###### Common resolutions: 1920x1080 60Hz to 4096x2160 DCI 4K 4:4:4 30Hz

###### Custom resolutions: pixel clock rates up to 300 MHz

##### One (1) Aux. Stereo output

##### Two (2) Control i/o connection ports

##### Two (2) Control relay ports

##### One (1) Control IR output port

##### One (1) Control Serial port

##### One (1) 1.25 A @ 24 VDC, power input jack

###### Power connection shall support power sharing with connected transmission device

##### One (1) USB Type A connector with support for:

###### Service and firmware update connection

##### One (1) RJ45 100BASE-TX/1000BASE-T Ethernet ports

*SPECIFIER NOTE: The HD-RX-4K-210-C-E-****POE*** *supports power over ethernet, the HD-RX-4K-210-C-E does NOT.*

##### One (1) RJ45 100BASE-TX/1000BASE-T PoE+ Power Sourcing Equipment (PSE) Ethernet ports

###### IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant

### Power

#### Power over Ethernet PoE+

*Specifier Note: Only the HD-RX-4K-210-C-E-POE version supports power over Ethernet.*

##### IEEE 802.3at Type 2 Class 4 (25.5 W) compliant powered device (PD), powered by a PoE+ port of Gigabit Ethernet switch.

#### Power supply

##### External 24 VDC power supply

*Specifier Note: The HD-RX-4K-210-C-E includes the external DC power supply, the PoE version HD-RX-4K-210-C-E-POE supports use of an external DC power supply but the power supply is not included.*

##### Power supply shall support device and connected equipment

### Compliance

#### UL® 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**

### Crestron HD-RX-4K-410-C-E

### Crestron HD-RX-4K-510-C-E

### Crestron HD-RX-4K-410-C-E-SW4

### Crestron HD-RX-4K-510-C-E-SW4

### Crestron HD-RX-4K-210-C-E

### Crestron HD-RX-4K-210-C-E-POE