**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.*

**Table of Contents**

**1 GENERAL 4**

1.1 Description: Single cable 4K HDMI transmitter 4

**2 PRODUCTS 4**

2.1 Transmitter Type 1 4

2.1.1 Basis of Design 4

2.1.2 Device Architecture 4

2.1.3 Functions 4

2.1.4 Connectors 5

2.1.5 Power 7

2.1.6 Compliance 7

2.2 Transmitter Type 2 7

2.2.1 Basis of Design 7

2.2.2 Device Architecture 7

2.2.3 Functions 8

2.2.4 Connectors 8

2.2.5 Power 10

2.2.6 Compliance 10

2.3 Transmitter Type 3 11

2.3.1 Basis of Design 11

2.3.2 Device Architecture 11

2.3.3 Functions 11

2.3.4 Connectors 11

2.3.5 Power 14

2.3.6 Compliance 14

2.4 Transmitter Type 4 14

2.4.1 Basis of Design 14

2.4.2 Device Architecture 14

2.4.3 Functions 14

2.4.4 Connectors 15

2.4.5 Power 16

2.4.6 Compliance 16

2.5 Transmitter Type 5 16

2.5.1 Basis of Design 16

2.5.2 Device Architecture 16

2.5.3 Functions 17

2.5.4 Connectors 17

2.5.5 Power 18

2.5.6 Compliance 18

2.6 Transmitter Type 6 18

2.6.1 Basis of Design 18

2.6.2 Device Architecture 18

2.6.3 Functions 19

2.6.4 Connectors 19

2.6.5 Power 20

2.6.6 Compliance 21

2.7 Transmitter Type 7 21

2.7.1 Basis of Design 21

2.7.2 Device Architecture 21

2.7.3 Functions 21

2.7.4 Connectors 21

2.7.5 Power 23

2.7.6 Compliance 23

**3 EXECUTION 23**

**4 APPENDICES 23**

4.1 SPECIFIED PRODUCTS 23

4.1.1 Crestron HD-TX-101-C-1G-E 23

4.1.2 Crestron HD-TX-101-C-E 23

4.1.3 Crestron HD-TX-201-C-2G-E 23

4.1.4 Crestron HD-TX-301-C-E 23

4.1.5 Crestron HD-TXC-101-C-1G-E 23

4.1.6 Crestron HD-TXC-101-C-E 24

4.1.7 Crestron HDI-TX-301-C-2G-E 24

# **GENERAL**

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

## **Description: Single cable 4K HDMI transmitter**

# **PRODUCTS**

## **Transmitter Type 1**

### Basis of Design

#### Crestron HD-TX-301-C-E

### Device Architecture

#### Physical Form factor

##### Freestanding low-profile enclosure

##### Surface mount or single rack rail mount via integrated flange

### Functions

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

##### Automatic switching to active input

##### Manual switching via integrated selection buttons

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

*This option requires a LAN connection at the compatible receiver device connected to a Crestron control processor.*

#### Single UTP/STP cable transmission

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

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

### Connectors

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

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

###### CEC Pass-through and CEC management

###### HDMI with Deep Color, 3D and 4K

###### HDCP 1.4 compliant

###### DisplayPort Dual-Mode

###### Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, LPCM up to 8 channels

###### DVI-D with adaptor

###### EDID

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

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

##### One (1) DB15 input with support for the following:

###### VGA video

###### Component video via breakout adaptor

###### Formats: RGBHV, RGBS, RGsB, YPbPr

###### Common resolutions: up to progressive 1920x1200 WUXGA 60Hz

###### Custom resolutions: pixel clock rates up to 165 MHz

##### One (1) 3.5 mm TRS mini phone jack input:

###### Signals supported:

Unbalanced stereo line-level analog audio

###### Audio requirements:

Input Impedance: 44k Ohms

Analog-To-Digital Conversion: 24-bit 48 kHz

Maximum Input Level: 2 Vrms

###### Minimum Audio Performance:

Frequency Response: 20 Hz to 20 kHz ±0.5 dB

S/N Ratio: >93 dB, 20 Hz to 20 kHz A-weighted

THD+N: <0.005% @ 1 kHz

Stereo Separation: >80 dB

##### One (1) RJ45 shielded female connector with support for the following:

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

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

##### One (1) DC power input jack with support for:

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

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

###### USB host port for compatible control connection interface by same manufacturer

###### Service and firmware update connection

### Power

#### Power supply modes:

##### Local or remote DC power source

##### Remote power supplied by opposite end of TX/RX pair.

### Compliance

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

## **Transmitter Type 2**

### Basis of Design

#### Crestron HDI-TX-301-C-2G-E

### Device Architecture

#### Physical Form factor

##### European 2-gang device, mounts in a 45 mm (1-25/32 inch) deep UK or European electrical box.

### Functions

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

##### Automatic switching to active input

##### Manual switching via integrated selection buttons

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

*This option requires a LAN connection at the compatible receiver device connected to a Crestron control processor.*

#### Single UTP/STP cable transmission

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

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

### Connectors

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

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

###### CEC Pass-through and CEC management

###### HDMI with Deep Color, 3D and 4K

###### HDCP 1.4 compliant

###### DisplayPort Dual-Mode

###### Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, LPCM up to 8 channels

###### DVI-D with adaptor

###### EDID

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

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

##### One (1) DB15 input with support for the following:

###### VGA video

###### Component video via breakout adaptor

###### Formats: RGBHV, RGBS, RGsB, YPbPr

###### Common resolutions: up to progressive 1920x1200 WUXGA 60Hz

###### Custom resolutions: pixel clock rates up to 165 MHz

##### One (1) 3.5 mm TRS mini phone jack input:

###### Signals supported:

Unbalanced stereo line-level analog audio

###### Audio requirements:

Input Impedance: 44k Ohms

Analog-To-Digital Conversion: 24-bit 48 kHz

Maximum Input Level: 2 Vrms

###### Minimum Audio Performance:

Frequency Response: 20 Hz to 20 kHz ±0.5 dB

S/N Ratio: >93 dB, 20 Hz to 20 kHz A-weighted

THD+N: <0.005% @ 1 kHz

Stereo Separation: >80 dB

##### One (1) RJ45 shielded female connector with support for the following:

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

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

##### One (1) RJ45 pass-through LAN connection

##### One (1) DC power input jack with support for:

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

### Power

#### Power supply modes:

##### Local or remote DC power source

##### Remote power supplied by opposite end of TX/RX pair.

### Compliance

#### CE, IC, FCC Part 15 Class B digital device

## **Transmitter Type 3**

### Basis of Design

#### Crestron HD-TX-201-C-2G-E

### Device Architecture

#### Physical Form factor

##### Wall mount device, mounts in a 2-gang, 2-1/4 inch (57 mm) deep U.S. electrical box

### Functions

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

##### Automatic switching to active input

##### Manual switching via integrated selection buttons

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

*This option requires a LAN connection at the compatible receiver device connected to a Crestron control processor.*

#### Single UTP/STP cable transmission

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

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

### Connectors

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

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

###### CEC Pass-through and CEC management

###### HDMI with Deep Color, 3D and 4K

###### HDCP 1.4 compliant

###### DisplayPort Dual-Mode

###### Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, LPCM up to 8 channels

###### DVI-D with adaptor

###### EDID

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

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

##### One (1) DB15 input with support for the following:

###### VGA video

###### Component video via breakout adaptor

###### Formats: RGBHV, RGBS, RGsB, YPbPr

###### Common resolutions: up to progressive 1920x1200 WUXGA 60Hz

###### Custom resolutions: pixel clock rates up to 165 MHz

##### One (1) 3.5 mm TRS mini phone jack input:

###### Signals supported:

Unbalanced stereo line-level analog audio

###### Audio requirements:

Input Impedance: 44k Ohms

Analog-To-Digital Conversion: 24-bit 48 kHz

Maximum Input Level: 2 Vrms

###### Minimum Audio Performance:

Frequency Response: 20 Hz to 20 kHz ±0.5 dB

S/N Ratio: >93 dB, 20 Hz to 20 kHz A-weighted

THD+N: <0.005% @ 1 kHz

Stereo Separation: >80 dB

##### One (1) RJ45 shielded female connector with support for the following:

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

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

##### One (1) RJ45 pass-through LAN connection

##### One (1) DC power input jack with support for:

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

### Power

#### Power supply modes:

##### Local or remote DC power source

##### Remote power supplied by opposite end of TX/RX pair.

### Compliance

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

## **Transmitter Type 4**

### Basis of Design

#### Crestron HD-TX-101-C-E

### Device Architecture

#### Physical Form factor

##### Freestanding low-profile enclosure

##### Surface mount or single rack rail mount via integrated flange

### Functions

#### Single UTP/STP cable transmission

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

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

### Connectors

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

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

###### CEC Pass-through and CEC management

###### HDMI with Deep Color, 3D and 4K

###### HDCP 1.4 compliant

###### DisplayPort Dual-Mode

###### Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, LPCM up to 8 channels

###### DVI-D with adaptor

###### EDID

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

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

##### One (1) RJ45 shielded female connector with support for the following:

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

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

##### One (1) DC power input jack with support for:

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

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

###### USB power port (500 mA maximum output)

###### Supplies power to a USB powered device

### Power

#### Power supply modes:

##### Local or remote DC power source

##### Remote power supplied by opposite end of TX/RX pair.

### Compliance

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

## **Transmitter Type 5**

### Basis of Design

#### Crestron HD-TX-101-C-1G-E

### Device Architecture

#### Physical Form factor

##### Wall mount device, mounts in a 1-gang (or larger) 2-1/4 inch (57 mm) deep U.S. electrical box

### Functions

#### Single UTP/STP cable transmission

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

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

### Connectors

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

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

###### CEC Pass-through and CEC management

###### HDMI with Deep Color, 3D and 4K

###### HDCP 1.4 compliant

###### DisplayPort Dual-Mode

###### Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, LPCM up to 8 channels

###### DVI-D with adaptor

###### EDID

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

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

##### One (1) RJ45 shielded female connector with support for the following:

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

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

##### One (1) DC power input jack with support for:

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

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

###### USB power port (500 mA maximum output)

###### Supplies power to a USB powered device

### Power

#### Power supply modes:

##### Local or remote DC power source

##### Remote power supplied by opposite end of TX/RX pair.

### Compliance

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

## **Transmitter Type 6**

### Basis of Design

#### Crestron HD-TXC-101-C-E

### Device Architecture

#### Physical Form factor

##### Freestanding low-profile enclosure

##### Surface mount or single rack rail mount via integrated flange

### Functions

#### Single UTP/STP cable transmission

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

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

### Connectors

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

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

###### CEC Pass-through and CEC management

###### HDMI with Deep Color, 3D and 4K

###### HDCP 1.4 compliant

###### DisplayPort Dual-Mode

###### Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, LPCM up to 8 channels

###### DVI-D with adaptor

###### EDID

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

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

##### One (1) RJ45 shielded female connector with support for the following:

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

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

##### One (1) DC power input jack with support for:

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

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

###### USB power port (500 mA maximum output)

###### Supplies power to a USB powered device

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

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

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

### Power

#### Power supply modes:

##### Local or remote DC power source

##### Remote power supplied by opposite end of TX/RX pair.

### Compliance

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

## **Transmitter Type 7**

### Basis of Design

#### Crestron HD-TXC-101-C-1G-E

### Device Architecture

#### Physical Form factor

##### Wall mount device, mounts in a 1-gang (or larger) 2-1/4 inch (57 mm) deep U.S. electrical box

### Functions

#### Single UTP/STP cable transmission

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

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

### Connectors

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

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

###### CEC Pass-through and CEC management

###### HDMI with Deep Color, 3D and 4K

###### HDCP 1.4 compliant

###### DisplayPort Dual-Mode

###### Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, LPCM up to 8 channels

###### DVI-D with adaptor

###### EDID

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

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

##### One (1) RJ45 shielded female connector with support for the following:

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

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

##### One (1) DC power input jack with support for:

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

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

###### USB power port (500 mA maximum output)

###### Supplies power to a USB powered device

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

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

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

### Power

#### Power supply modes:

##### Local or remote DC power source

##### Remote power supplied by opposite end of TX/RX pair.

### Compliance

#### UL Listed for US & 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-TX-101-C-1G-E

### Crestron HD-TX-101-C-E

### Crestron HD-TX-201-C-2G-E

### Crestron HD-TX-301-C-E

### Crestron HD-TXC-101-C-1G-E

### Crestron HD-TXC-101-C-E

### Crestron HDI-TX-301-C-2G-E