SECTION 27 41 16

INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

Equipment Specified in this section:

DM-MD8X8, DM-MD16X16, DM-MD32X32

DM-MD8X8-RPS, DM-MD16X16-RPS, DM-MD32X32-RPS

DM-MD64X64, DM-MD128X128

DMB-4K-I-HD

DMB-4K-I-HD-DNT

DMB-4K-I-C

DMB-4K-O-C

DMB-4K-O-HD

DMB-4K-O-HD-DNT

DMB-I-S

DMB-I-S2

DMB-O-S

DMB-O-S2

DMC-4K-C-DSP-HDCP2

DMC-4K-C-HDCP2

DMC-4K-CO-HD-HDCP2

DMC-4K-HD-DSP-HDCP2

DMC-4K-HD-HDCP2

DMC-4K-HDO

DMC-DVI

DMC-HDO

DMCI

DMC-VID-RCA-A

DMC-VID-RCA-D

DMC-S

DMC-S2

DMC-S2-DSP

DMC-S2O-HD

DMC-SDI

DMC-S-DSP

DMC-SO-HD

DMC-STRO

DMC-VGA

DMC-VID4

DMC-VID-BNC

DM-RMC-100-S

DM-RMC-150-S

DM-RMC-200-C

DM-RMC-200-S

DM-RMC-200-S2

DM-RMC-4K-100-C

DM-RMC-4K-100-C-1G

DM-RMC-4K-SCALER-C

DM-RMC-4K-SCALER-C-DSP

DM-RMC-SCALER-C

DM-RMC-SCALER-S

DM-RMC-SCALER-S2

DM-TX-200-C-2G

DM-TX-201C

DM-TX-201-S

DM-TX-201-S2

DM-TX-401-C

DM-TX-401-S

DM-TX-401-S2

DM-TX-4K-100-C-1G

DM-TX-4K-202-C

DM-TX-4K-302-C

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2.3 4K HDMI INPUT BLADE 17

A. Description 17

B. Basis of design product: Crestron **DMB-4K-I-HD** DigitalMedia Input Blade. 17

C. Modular Design: Input Blade shall be a modular unit with the following characteristics: 17

D. HDMI inputs: 17

E. Analog Audio Insert: 18

F. Video outputs: 18

G. Audio/surround formats: 18

2.4 4K HDMI AND DANTE INPUT BLADE 18

A. Description 18

B. Basis of design product: Crestron **DMB-4K-I-HD-DNT** DigitalMedia Input Blade. 18

C. Modular Design: Input Blade shall be a modular unit with the following characteristics: 18

D. HDMI inputs: 19

E. Analog Audio Insert: 19

F. Dante Audio Input and Send 19

G. Dante Communication 19

H. Video outputs: 19

I. Audio/surround formats: 20

2.5 SINGLE UTP/STP CABLE 4K TRANSMISSION INPUT BLADE 20

A. Description 20

B. Basis of design product: Crestron **DMB-4K-I-C** DigitalMedia input blade. 20

C. Transmitter receive input: 20

D. Video output: 21

E. Audio/surround formats: 21

2.6 MULTIMODE FIBER INPUT BLADE 21

A. Description 21

B. Basis of design product: Crestron **DMB-I-S** DigitalMedia input blade. 21

C. Transmitter receive input: 21

D. Video output: 22

E. Audio/surround formats: 22

2.7 SINGLE-MODE FIBER INPUT BLADE 22

A. Description 22

B. Basis of design product: Crestron **DMB-I-S2** DigitalMedia input blade. 22

C. Transmitter receive input: 22

D. Video output: 23

E. Audio/surround formats: 23

2.8 4K HDMI OUTPUT BLADE 23

A. Description 23

B. Basis of design product: Crestron **DMB-4K-O-HD** 23

C. Modular Design: 23

D. Output Card Source: 24

E. Analog Audio De-Embedding: 24

F. Outputs: 24

2.9 4K HDMI AND DANTE OUTPUT BLADE 24

A. Description 24

B. Basis of design product: Crestron **DMB-4K-O-HD-DNT** 24

C. Modular Design: 24

D. Output Card Source: 25

E. Analog Audio De-Embedding: 25

F. Dante Audio Output and Send/Return 25

G. Dante Communication 25

H. Outputs: 25

2.10 SINGLE UTP/STP CABLE 4K TRANSMISSION OUTPUT BLADE 25

A. Description 25

B. Basis of design product: Crestron **DMB-4K-O-C** 26

C. Modular Design: 26

D. Output Card Source: 26

E. Outputs: 26

2.11 SINGLE MULTIMODE FIBER CABLE TRANSMISSION OUTPUT CARD 26

A. Description 26

B. Basis of design product: Crestron **DMB-O-S** 27

C. Modular Design: 27

D. Output Card Source: 27

E. Outputs: 27

2.12 SINGLE-MODE FIBER CABLE TRANSMISSION OUTPUT CARD 27

A. Description 27

B. Basis of design product: Crestron **DMB-O-S2** 28

C. Modular Design: 28

D. Output Card Source: 28

E. Outputs: 28

2.13 SYSTEM MAIN CHASSIS TYPE 2 28

A. Manufacturers: 28

B. Description 28

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2.14 HDMI 4K INPUT CARD 29

A. Description 29

B. Basis of design product: Crestron **DMC-4K-HD-HDCP2** DigitalMedia input card. 30

C. Modular Design: Input card shall be a modular unit with the following characteristics: 30

D. HDMI input: 30

E. Video output: 31

F. USB: 31

G. Audio/surround formats: 31

H. Analog audio output. 31

2.15 DVI INPUT CARD 31

A. Description 31

B. Basis of design product: Crestron **DMC-DVI** DigitalMedia input card. 31

C. Modular Design: Input card shall be a modular unit with the following characteristics: 32

D. Video input: 32

E. Audio input: 33

F. Video output: 33

G. USB: 33

2.16 VGA INPUT CARD 33

A. Description 33

B. Basis of design product: Crestron **DMC-VGA** DigitalMedia input card. 34

C. Modular Design: Input card shall be a modular unit with the following characteristics: 34

D. Video input: 34

E. Audio input: 34

F. Video output: 35

G. USB: 35

2.17 HD-SDI INPUT CARD 35

A. Description 35

B. Basis of design product: Crestron **HD-SDI** DigitalMedia input card. 35

C. Modular Design: Input card shall be a modular unit with the following characteristics: 35

D. HD-SDI input: 35

E. HD-SDI Pass-through Output: 36

F. Video output: 36

G. Audio formats: 36

H. Analog audio output. 36

2.18 BNC VIDEO INPUT CARD 36

A. Description 36

B. Basis of design product: Crestron **DMC-VID-BNC** DigitalMedia input card. 37

C. Modular Design: Input card shall be a modular unit with the following characteristics: 37

D. Video input: 37

E. Audio input: 37

F. Video output: 37

2.19 VIDEO INPUT CARD 38

A. Description 38

B. Basis of design product: Crestron **DMC-VID4** DigitalMedia input card. 38

C. Modular Design: Input card shall be a modular unit with the following characteristics: 38

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F. Video output: 39

2.20 VIDEO WITH S/PDIF VIDEO INPUT CARD 39

A. Description 39

B. Basis of design product: Crestron **DMC-VID-RCA-D** DigitalMedia input card. 39

C. Modular Design: Input card shall be a modular unit with the following characteristics: 39

D. Video input: 39

E. Audio input: 40

F. Video output: 40

2.21 VIDEO WITH STEREO INPUT CARD 40

A. Description 40

B. Basis of design product: Crestron **DMC-VID-RCA-A** DigitalMedia input card. 40

C. Modular Design: Input card shall be a modular unit with the following characteristics: 40

D. Video input: 40

E. Audio input: 41

F. Video output: 41

2.22 SINGLE CABLE UTP/STP INPUT CARD 41

A. Description 41

B. Basis of design product: Crestron **DMC-4K-C-HDCP2** DigitalMedia input card. 41

C. Modular Design: Input card shall be a modular unit with the following characteristics: 42

D. Transmitter receive input: 42

E. Transmitter remote power supply capability 42

F. Video output: 42

G. Audio/surround formats: 43

H. Analog audio output. 43

2.23 MULTIMODE FIBER INPUT CARD 43

A. Description 43

B. Basis of design product: Crestron **DMC-S** DigitalMedia input card. 43

C. Transmitter receive input: 43

D. Video output: 44

E. Audio/surround formats: 44

F. Analog audio output. 44

2.24 SINGLE-MODE FIBER INPUT CARD 45

A. Description 45

B. Basis of design product: Crestron **DMC-S2** DigitalMedia input card. 45

C. Transmitter receive input: 45

D. Video output: 45

E. Audio/surround formats: 46

F. Analog audio output. 46

2.25 TRANSMISSION SYSTEM CARD INTERFACE 46

A. Description 46

B. Basis of design product: Crestron **DMCI** DigitalMedia input card interface. 46

2.26 SINGLE UTP/STP CABLE 4K TRANSMISSION OUTPUT CARD 46

A. Description 46

B. Basis of design product: Crestron **DMC-4K-CO-HD-HDCP2** 47

C. Modular Design: 47

D. Output Card Source: 47

E. Outputs: 47

2.27 SINGLE MULTIMODE FIBER CABLE TRANSMISSION OUTPUT CARD 48

A. Description 48

B. Basis of design product: Crestron **DMC-SO-HD** 48

C. Modular Design: 48

D. Output Card Source: 48

E. Outputs: 48

2.28 SINGLEMODE FIBER CABLE TRANSMISSION OUTPUT CARD 48

A. Description 48

B. Basis of design product: Crestron **DMC-S2O** 49

C. Modular Design: 49

D. Output Card Source: 49

E. Outputs: 49

2.29 HDMI WITH ANALOG AUDIO OUTPUT CARD 49

A. Description 49

B. Basis of design product: Crestron **DMC-HDO** 50

C. Modular Design: 50

D. Output Card Source: 50

E. Outputs: 50

2.30 4K HDMI WITH ANALOG AUDIO OUTPUT CARD 50

A. Description 50

B. Basis of design product: Crestron **DMC-4K-HDO** 51

C. Modular Design: 51

D. Output Card Source: 51

E. Outputs: 51

2.31 H.264 STREAMING OUTPUT CARD 52

A. Description 52

B. Basis of design product: Crestron **DMC-STRO** 52

C. Modular Design: 52

D. Output Card Source: 52

E. Output: 52

2.32 4K TRANSMITTER TYPE 1 53

A. Description 53

B. Basis of design product: Crestron **DM-TX-4K-302-C** DigitalMedia transmitter. 53

C. Performance 53

2.33 4K TRANSMITTER TYPE 2 55

A. Description 55

B. Basis of design product: Crestron **DM-TX-4K-202-C** DigitalMedia transmitter. 55

C. Performance 55

2.34 4K TRANSMITTER TYPE 3 56

A. Description 56

B. Basis of design product: Crestron **DM-TX-4K-100-C-1G** DigitalMedia transmitter 57

C. Performance 57

2.35 TRANSMITTER TYPE C1 58

A. Description 58

B. Basis of design product: Crestron **DM-TX-201C** DigitalMedia transmitter. 58

C. Performance 58

2.36 TRANSMITTER TYPE C2 59

A. Description 59

B. Basis of design product: Crestron **DM-TX-200-C-2G** DigitalMedia transmitter. 60

C. Performance 60

2.37 TRANSMITTER TYPE C3 61

A. Description 61

B. Basis of design product: Crestron **DM-TX-401-C** DigitalMedia transmitter. 61

C. Performance 61

2.38 “S” TRANSMITTERS 63

A. The signal transmitters shall extend HDMI video and audio, DVI-I, RGBHV, YPbPr, Y/C, Composite, Analog 2-channel audio, and USB HID (Human Interface Device) data to compatible transmission receiver modules or ports. 63

B. Switching: 63

2.39 TRANSMITTER TYPE S1 63

A. Description 63

B. Basis of design product: Crestron **DM-TX-201S** DigitalMedia transmitter. 63

C. Performance 63

2.40 TRANSMITTER TYPE S3 64

A. Description 64

B. Basis of design product: Crestron **DM-TX-401-S** DigitalMedia transmitter. 65

C. Performance 65

2.41 “S2” TRANSMITTERS 66

A. The signal transmitters shall extend HDMI video and audio, DVI-I, RGBHV, YPbPr, Y/C, Composite, Analog 2-channel audio, and USB HID (Human Interface Device) data to compatible transmission receiver modules or ports. 66

B. Switching: 66

2.42 TRANSMITTER TYPE S2-1 67

A. Description 67

B. Basis of design product: Crestron **DM-TX-201-S2** DigitalMedia transmitter. 67

C. Performance 67

2.43 TRANSMITTER TYPE S2-3 68

A. Description 68

B. Basis of design product: Crestron **DM-TX-401-S2** DigitalMedia transmitter. 69

C. Performance 69

2.44 “C” RECEIVERS 70

A. Receivers shall accept a multi-signal transmission over a single UTP or STP cable. 70

B. Multi-Signal transmission shall be converted to standard HDMI video and control signals. 70

C. Receiver shall support device control and communication when integrated with compatible control processors. 70

2.45 RECEIVER TYPE C1 70

A. Description 70

B. Basis of design product: Crestron **DM-RMC-200-C** 71

C. Performance 71

2.46 RECEIVER TYPE C2 72

A. Description 72

B. Basis of design product: Crestron **DM-RMC-SCALER-C** 72

C. Performance 73

2.47 RECEIVER TYPE 4K 74

A. Description 74

B. Basis of design product: Crestron **DM-RMC-4K-100-C** 74

C. Performance 74

2.48 RECEIVER TYPE 4K WALL 75

A. Description 75

B. Basis of design product: Crestron **DM-RMC-4K-100-C-1G** 75

C. Performance 75

2.49 RECEIVER TYPE 4K SCALER 77

A. Description 77

B. Basis of design product: Crestron **DM-RMC-4K-SCALER-C** 77

C. Performance 77

2.50 RECEIVER TYPE 4K SCALER WITH DSP 78

A. Description 78

B. Basis of design product: Crestron **DM-RMC-4K-SCALER-C-DSP** 78

C. Performance 78

2.51 “S” RECEIVERS 79

A. Receivers shall accept a multi-signal transmission over a single multimode fiber cable. 79

B. Multi-Signal transmission shall be converted to standard HDMI video and control signals. 79

C. Receiver shall support device control and communication when integrated with compatible control processors. 80

2.52 RECEIVER TYPE S1 80

A. Description 80

B. Basis of design product: Crestron **DM-RMC-200-S** 80

C. Performance 80

2.53 RECEIVER TYPE S2 82

A. Description 82

B. Basis of design product: Crestron **DM-RMC-SCALER-S** 82

C. Performance 82

2.54 RECEIVER TYPE S3 83

A. Description 83

B. Basis of design product: Crestron **DM-RMC-100-S** 83

C. Performance 83

2.55 RECEIVER TYPE S4 84

A. Description 84

B. Basis of design product: Crestron **DM-RMC-150-S** 84

C. Performance 84

2.56 “S2” RECEIVERS 86

A. Receivers shall accept a multi-signal transmission over a singlemode fiber cable. 86

B. Multi-Signal transmission shall be converted to standard HDMI video and control signals. 86

C. Receiver shall support device control and communication when integrated with compatible control processors 86

2.57 RECEIVER TYPE S2-1 86

A. Description 86

B. Basis of design product: Crestron **DM-RMC-200-S2** 86

C. Performance 86

2.58 RECEIVER TYPE S2-2 88

A. Description 88

B. Basis of design product: Crestron **DM-RMC-SCALER-S2** 88

C. Performance 88

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SECTION 27 41 16

INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

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.

1. GENERAL
	1. SUMMARY
		1. Section Includes
			1. High Definition configurable Audio-Video distribution systems, components and accessories.
2. PRODUCTS
	1. DIGITAL SIGNAL MATRIX SWITCHER AND TRANSMISSION SYSTEM
		1. Manufacturers:
			1. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide products of Crestron Electronics, Inc., Rockleigh, NJ 07647, Phone (800)237-2041, Fax: (201)767-1903, www.crestron.com, with the following components and characteristics.

Specifier: The following paragraph describes a DM system, i.e. DM-MD series configurable switchers), not specific to matrix switcher frame size. Edit to suit specific project “system” requirements.

* + 1. System Description
			1. The Digital AV Matrix system utilizes card-cage architecture. Main chassis, input and output cards shall be selected based on overall system requirements. [see system drawings]. Matrix System shall support cascading of matrix units, and long distance transmitter and receiver devices by same manufacturer.
			2. Chassis shall support switching for 4K Ultra HD built in.
			3. Basis-of-Design Product Manufacturer: Crestron DigitalMedia Matrix Switchers
		2. System Capacity
			1. Configurable Chassis Options—Main chassis shall be available in the following input to output capacities:
				1. 8X8

Maximum input capacity: 8 discrete inputs

Minimum input capacity: 1 discrete inputs

Maximum output capacity: 8 discrete outputs

Minimum output capacity: 2 discrete outputs

* + - * 1. 16X16

Maximum input capacity: 16 discrete inputs

Minimum input capacity: 1 discrete inputs

Maximum output capacity: 16 discrete outputs

Minimum output capacity: 2 discrete outputs

* + - * 1. 32X32

Maximum input capacity: 32 discrete inputs

Minimum input capacity: 1 discrete inputs

Maximum output capacity: 32 discrete outputs

Minimum output capacity: 2 discrete outputs

* + - * 1. 64X64

Maximum input capacity: 64 discrete inputs

Minimum input capacity: 8 discrete inputs

Maximum output capacity: 64 discrete outputs

Minimum output capacity: 8 discrete outputs

* + - * 1. 128X128

Maximum input capacity: 128 discrete inputs

Minimum input capacity: 8 discrete inputs

Maximum output capacity: 128 discrete outputs

Minimum output capacity: 8 discrete outputs

* + 1. System Operation
			1. Switching and Routing
				1. Switch Type:

Audio-Video Matrix switching—Any source input switchable to one or more outputs

USB HID Routing—Any USB type-A port routable to one or more type-B ports

* + - 1. Media Signal Types—The Matrix Switcher shall provide matrix switching for the following video formats and standards through custom selected interchangeable input modules.
				1. Analog Video:

Standard encoding systems:

NTSC.

PAL.

Analog Signal Formats:

Composite video.

S-Video.

RGBHV video.

Component video.

* + - * 1. Digital Video:

Digital Standards and formats:

HDCP v. 1.2.

Deep Color.

3D format.

Digital Signal Formats:

HDMI.

Dual-Mode DisplayPort.

DVI.

SDI.

HDBaseT.

3-Cable Transmission Protocol.

Single Cable Transmission Protocol.

Dual Fiber Transmission Protocol.

Single Fiber Transmission Protocol.

Single-Mode Long Distance Fiber Transmission Protocol.

* + - * 1. Resolutions—The Matrix Switcher shall have native support for the following resolutions:

640x480@60Hz.

20x480@60Hz (480p).

720x576@50Hz (576p).

800x600@60Hz.

848x480@60Hz.

852x480@60Hz.

854x480@60Hz.

1024x768@60Hz.

1024x852@60Hz.

1024x1024@60Hz.

1280x720@50Hz (720p50).

1280x720@60Hz (720p60).

1280x768@60Hz.

1280x800@60Hz.

1280x960@60Hz.

1280x1024@60Hz.

1360x768@60Hz.

1365x1024@60Hz.

1366x768@60Hz.

1400x1050@60Hz.

1440x900@60Hz.

1600x900@60Hz.

1600x1200@60Hz.

1680x1050@60Hz.

1920x1080@24Hz (1080p24).

1920x1080@25Hz (1080p25).

1920x1080@50Hz (1080p50).

1920x1080@60Hz (1080p60).

1920x1200@60Hz.

2048x1080@24Hz.

2048x1152@60Hz.

720x480@30Hz (480i).

720x576@25Hz (576i).

1920x1080@25Hz (1080i25).

1920x1080@30Hz (1080i30).

Other resolutions allowed by HDMI up to 165MHz pixel clock

SMPTE 425M (3G-SDI) 4:2:2 Colorspace: 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60).

SMPTE 425M (3G-SDI) 4:4:4 Colorspace: 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@30Hz (1080p30), 1920x1080@50Hz (1080i50 or 1080sF25), 1920x1080@60Hz (1080i60 or 1080sF30).

SMPTE 260M (HD-SDI): 1920x1035@60Hz (1035i60).

SMPTE 295M (HD-SDI): 1920x1080@50Hz (1080i50).

SMPTE 274M (HD-SDI): 1920x1080@24Hz (1080p24), 1920x1080@24Hz (1080sF24), 1920x1080@25Hz (1080p25), 1920x1080@30Hz (1080p30), 1920x1080@50Hz (1080i50 or 1080sF25), 1920x1080@60Hz (1080i60 or 1080sF30).

SMPTE 296M (HD-SDI): 1280x720@50Hz (720p50), 1280x720@60Hz (720p60).

SMPTE 259M-C (SD-SDI): 720x480@59.94 (NTSC), 720x576@50i (PAL).

* + - 1. Audio Matrix Switching.
				1. The Matrix Switcher shall provide matrix switching for the following audio formats and standards through custom selected interchangeable input modules.

Analog Stereo.

Analog 2-channel.

Dolby Digital Plus.

Dolby TrueHD.

DTS-HD High Res.

DTS HD Master Audio.

8 channel PCM.

Dolby Digital.

Dolby Digital EX.

DTS.

DTS-EX.

DTS 96/24.

2 channel PCM.

* + - 1. USB Matrix Switching.
				1. The Matrix Switcher shall provide USB matrix switching for the following devices through custom selected interchangeable input modules and transmitter and receiver units.

USB HID compatible keyboard.

USB HID compatible mouse.

* + - * 1. The Matrix Switcher shall route connected USB type A host devices to USB type-B controller devices.
			1. Long Distance Transmission
				1. System shall achieve long distance transmission of all switched and managed signals and data through the selected input/output cards over the following cable types:

UTP and STP cable

Multi-mode fiber

Single-mode fiber

* + - * 1. Transmission shall require one cable per channel.
				2. The single cable transmission format shall be capable simultaneously passing the following:

Video

Audio

USB HID

Ethernet

Special purpose device control signals:

Infrared (IR) control signal data

Bidirectional serial control data

Digital relay control data

* + - 1. Network integration: 10/100 Ethernet integrated into long distance transmission protocol.
		1. Integrated Operating System Software Architecture
			1. Stand-Alone System Architecture—System shall be capable of performing all matrix switching and content management functions without external processing or control equipment.
			2. System shall natively control and manage the following using a single software platform:
				1. System Configuration

Setup of overall input and output types and quantities.

* + - * 1. System Setup

Individual sources and sink setup.

* + - * 1. System Operation

Routing

Selection and execution of source to sink or source to multiple sinks routes.

Management

EDID

CEC

* + - * 1. System Status Monitor

Resolution and format information for inputs and outputs

Input resolution and format information

Output resolution and format information

* + - * 1. System diagnostics
	1. SYSTEM MAIN CHASSIS TYPE 1
		1. Manufacturers:
			1. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide products of Crestron Electronics, Inc., Rockleigh, NJ 07647, Phone (800)237-2041, Fax: (201)767-1903, www.crestron.com, with the following components and characteristics.
		2. Description
			1. Card-cage matrix switchers with configurable input and output card modules. Through the use of interchangeable input and output modules the matrix switcher shall support input and output formats up to 4K HDMI. Matrix Card-cage shall support local device input and output card types and special purpose cards for use with long distance transmitter and receiver devices by same manufacturer and HDBaseT compatible devices. Switcher shall include a built-in Ethernet switch. Switcher shall be available in 64x64 and 128x128 chassis sizes. Switcher shall be capable of stand-alone operation or integrated operation using a control processor from the same manufacturer. Input and output cards shall be field-interchangeable. Any input slot shall be routable to any output slot. Setup and diagnostics tools shall be built-in and accessible through the front panel interface. Additional configuration and management tools shall be available through software applications provided by same manufacturer.
		3. Basis-of-Design Products:
			1. Crestron modular matrix switchers: **DM-MD64X64**, and **DM-MD128X128**
		4. System Capacity
			1. Main chassis shall be available in the following input and output capacities:
				1. 64 Input x 64 Output
				2. 128 Input x 128 Output
		5. Input and Output Modules
			1. The Switcher shall support the following input and output signal card types:
				1. Input blade:

8 input connections.

* + - * 1. Output blade:

8 output connections.

* + 1. Front Panel Control Interface
			1. Chassis shall include a built-in control touch screen.
		2. Video Preview
			1. Built-in touch screen interface shall be capable of displaying a live video preview image of any connected source.
		3. Web Browser Interface
			1. Chassis shall include a web server to facilitate browser control of the matrix system.
			2. Browser control interface shall provide the same control and management functionality as the built-in chassis front panel touch screen user interface, with exception of video preview.
		4. Matrix Power
			1. Standard factory configuration shall include hot swappable power supplies.
			2. One redundant power supply shall be included and installed in the switcher chassis.
			3. All power Supply Modules shall be hot swappable.
			4. Removal of chassis from rack shall not be required to replace a power supply module.
			5. Replacing a power supply module shall not require powering down the entire chassis.
			6. Tools shall not be required to replace power supply modules.
			7. The switcher chassis shall be capable of housing one redundant power supply above and beyond power requirements of a fully loaded chassis.
		5. Matrix Cooling
			1. Standard factory configuration shall include a hot swappable fan tray.
			2. Removal of chassis from rack shall not be required to replace a fan tray module.
			3. Replacing the fan tray module shall not require powering down the entire chassis.
			4. Tools shall not be required to replace fan tray modules.
			5. The switcher chassis shall be capable of housing one redundant power supply above and beyond power requirements of a fully loaded chassis.

SPECIFIER:

The following blades will be available soon, please see [www.crestron.com](http://www.crestron.com) for updated information.

Input Blades:

DM 8G (UTP/STP) input blade with 8 inputs and support for 4K.

Model: **DMB-4K-I-C**

Output Blades:

HDMI output blade with 8 outputs, built-in scalers and support for 4K.

Model: **DMB-4K-O-HD-SCALER**

* 1. 4K HDMI INPUT BLADE
		1. Description
			1. The HDMI input blade shall accept up to eight 4K HDMI signals.
			2. 4K Operation:
				1. When installed in the matrix chassis, the input signals shall be switchable to installed 4K output blades for 4K signal transmission.
		2. Basis of design product: Crestron **DMB-4K-I-HD** DigitalMedia Input Blade.
		3. Modular Design: Input Blade shall be a modular unit with the following characteristics:
			1. Input Blade module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible matrix switcher.
			3. Occupy 1 input blade slot in compatible matrix switcher.
			4. Include 1 stereo analog audio input point per channel.
			5. Field installable plug-in card.
		4. HDMI inputs:
			1. Connector: eight (8) 19-pin type A female HDMI
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
			3. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, 2560x1440@60Hz, 2560x1600@60Hz, 3840x2160@24Hz, 3840x2160@30Hz, 4096x2160@24Hz, plus any other resolution allowed by HDMI up to 300MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 300MHz pixel clock.

* + 1. Analog Audio Insert:
			1. Connector: 68-pin VHDCI female

Specifier: Audio Breakout Box model: AUD-BOB-1602 is required for analog audio insertion, see <http://www.crestron.com/products/model/AUD-BOB-1602> for additional information.

* + 1. Video outputs:
			1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
	1. 4K HDMI AND DANTE INPUT BLADE
		1. Description
			1. The HDMI input blade shall accept up to eight 4K HDMI signals.
			2. 4K Operation:
				1. When installed in the matrix chassis, the input signals shall be switchable to installed 4K output blades for 4K signal transmission.
			3. The HDMI input blade shall accept up to eight stereo audio Dante signals.
		2. Basis of design product: Crestron **DMB-4K-I-HD-DNT** DigitalMedia Input Blade.
		3. Modular Design: Input Blade shall be a modular unit with the following characteristics:
			1. Input Blade module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible matrix switcher.
			3. Occupy 1 input blade slot in compatible matrix switcher.
			4. Include 1 stereo analog audio input point per channel.
			5. Field installable plug-in card.
		4. HDMI inputs:
			1. Connector: eight (8) 19-pin type A female HDMI
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
			3. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, 2560x1440@60Hz, 2560x1600@60Hz, 3840x2160@24Hz, 3840x2160@30Hz, 4096x2160@24Hz, plus any other resolution allowed by HDMI up to 300MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 300MHz pixel clock.

* + 1. Analog Audio Insert:
			1. Connector: 68-pin VHDCI female

Specifier: Audio Breakout Box model: AUD-BOB-1602 is required for analog audio insertion, see <http://www.crestron.com/products/model/AUD-BOB-1602> for additional information.

* + 1. Dante Audio Input and Send
			1. Stereo 2-channel send/output and return/input per channel at up to 24-bit 48 kHz
		2. Dante Communication
			1. The Dante network interface shall utilize the host switcher’s LAN port.
				1. Switcher shall support up to 120 stereo audio channels.
		3. Video outputs:
			1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
	1. SINGLE UTP/STP CABLE 4K TRANSMISSION INPUT BLADE
		1. Description
			1. The Input Blade shall receive transmission of any compatible source signal connected.
			2. The Input Blade shall receive transmission of signals over manufacturer suggested STP cable, CAT5e or CAT6 cable, or better.
				1. Contact manufacturer prior to cable installation and use manufacturers suggested transmission cable, connectors, and installation methods for all segments of signal path.
			3. The Input Blade shall provide eight (8) discrete inputs.
			4. The Input Blade shall interface with HDBaseT supported single cable transmitters and multi-function transmission transmitters by same manufacturer.
			5. 4K Operation:
				1. The Input Blade shall receive transmission of 4K HDMI signals from compatible sources.
			6. The input blade shall receive transmissions from compatible transmitter, supporting distance of up to 330 feet (100 m).
			7. The input blade shall accept transmitted signal and convert to HDMI signals. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMB-4K-I-C** DigitalMedia input blade.
		3. Transmitter receive input:
			1. Connector: 8 female RJ-45 connectors
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
			3. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + 1. Video output:
			1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
	1. MULTIMODE FIBER INPUT BLADE
		1. Description
			1. The multimode fiber input card shall receive transmissions from compatible transmitter, supporting distance of up to 1,000 feet (300 km).
			2. The single-mode fiber input card shall accept transmitted signal and convert to HDMI signals. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMB-I-S** DigitalMedia input blade.
		3. Transmitter receive input:
			1. Connector: 8 female SC connector
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
			3. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + 1. Video output:
			1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
	1. SINGLE-MODE FIBER INPUT BLADE
		1. Description
			1. The single-mode fiber input card shall receive transmissions from compatible transmitter, supporting distance of up to 7.5 miles (12 km).
			2. The single-mode fiber input card shall accept transmitted signal and convert to HDMI signals. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMB-I-S2** DigitalMedia input blade.
		3. Transmitter receive input:
			1. Connector: 8 female LC connector
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
			3. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + 1. Video output:
			1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
	1. 4K HDMI OUTPUT BLADE
		1. Description
			1. The Output Blade shall provide 4K HDMI output switched from any video source signal within the matrix chassis.
			2. The Output Blade shall provide eight (8) discrete outputs.
			3. 4K Operation:
				1. The Output Blade shall support 4K HDMI signals from compatible source to compatible sink using 4K switching, transmission and interfacing components from Output Card manufacturer.
			4. The Output Blade shall provide eight (8) discrete outputs.
		2. Basis of design product: Crestron **DMB-4K-O-HD**
		3. Modular Design:
			1. Output Blade shall be a modular unit with the following characteristics:
				1. Output Blade module shall be one of multiple available output modules available from same manufacturer.
				2. Modular component of compatible blade frame matrix switcher.
				3. Occupy output blade slot space in compatible matrix switcher.
				4. Field installable plug-in blade.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input blades.
		5. Analog Audio De-Embedding:
			1. Connector: 68-pin VHDCI female

Specifier: Audio Breakout Box model: AUD-BOB-1602 is required for analog audio output see <http://www.crestron.com/products/model/AUD-BOB-1602> for additional information.

* + 1. Outputs:
			1. Connectors:
				1. Eight (8) 19-pin type A female HDMI
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

* 1. 4K HDMI AND DANTE OUTPUT BLADE
		1. Description
			1. The Output Blade shall provide 4K HDMI output switched from any video source signal within the matrix chassis.
			2. The Output Blade shall provide eight (8) discrete outputs.
			3. 4K Operation:
				1. The Output Blade shall support 4K HDMI signals from compatible source to compatible sink using 4K switching, transmission and interfacing components from Output Card manufacturer.
			4. The HDMI output blade shall output up to eight stereo audio Dante signals from any or all of the blade’s outputs.
		2. Basis of design product: Crestron **DMB-4K-O-HD-DNT**
		3. Modular Design:
			1. Output Blade shall be a modular unit with the following characteristics:
				1. Output Blade module shall be one of multiple available output modules available from same manufacturer.
				2. Modular component of compatible blade frame matrix switcher.
				3. Occupy output blade slot space in compatible matrix switcher.
				4. Field installable plug-in blade.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input blades.
		5. Analog Audio De-Embedding:
			1. Connector: 68-pin VHDCI female

Specifier: Audio Breakout Box model: AUD-BOB-1602 is required for analog audio output see <http://www.crestron.com/products/model/AUD-BOB-1602> for additional information.

* + 1. Dante Audio Output and Send/Return
			1. Stereo 2-channel send/output and return/input per channel at up to 24-bit 48 kHz
		2. Dante Communication
			1. The Dante network interface shall utilize the host switcher’s LAN port.
				1. Switcher shall support up to 120 stereo audio channels.
		3. Outputs:
			1. Connectors:
				1. Eight (8) 19-pin type A female HDMI
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

* 1. SINGLE UTP/STP CABLE 4K TRANSMISSION OUTPUT BLADE
		1. Description
			1. The Output Blade shall provide transmission of any routed source signal within the matrix chassis.
			2. The Output Blade shall transmit over manufacturer suggested STP cable, CAT5e or CAT6 cable, or better.
				1. Contact manufacturer prior to cable installation and use manufacturers suggested transmission cable, connectors, and installation methods for all segments of signal path.
			3. The Output Blade shall provide eight (8) discrete outputs.
			4. The Output Blade shall interface with HDBaseT supported single cable transmission receivers and multi-function transmission receivers by same manufacturer.
			5. 4K Operation:
				1. The Output Blade shall support transmission of 4K HDMI signals from compatible source to compatible sink using 4K switching, transmission and interfacing components from Output Card manufacturer.
			6. The Output Blade shall provide eight (8) discrete outputs.
		2. Basis of design product: Crestron **DMB-4K-O-C**
		3. Modular Design:
			1. Output Blade shall be a modular unit with the following characteristics:
				1. Output Blade module shall be one of multiple available output modules available from same manufacturer.
				2. Modular component of compatible blade frame matrix switcher.
				3. Occupy output blade slot space in compatible matrix switcher.
				4. Field installable plug-in blade.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input blades.
		5. Outputs:
			1. Connectors:
				1. Female shielded RJ-45 connector for each transmission output.
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

Embedded Ethernet

* + - 1. Remote Power Sourcing:
				1. Output Blade through RJ-45 output connection shall be capable of remotely powering transmission receivers through optional power supply.

Specifier: PoDM power supply model: PW-4830-DU is an optional unit, see <http://www.crestron.com/products/model/PW-4830DUS> for additional information.

* 1. SINGLE MULTIMODE FIBER CABLE TRANSMISSION OUTPUT CARD
		1. Description
			1. The Output Card shall provide transmission of any routed source signal within the matrix chassis.
			2. The output card shall transmit over one multimode fiber optic strand, contact manufacturer for current list of suggested cable types.
			3. The multimode fiber output blade shall transmit to compatible modules or receivers, supporting distances of up to 1,000 feet (300 km).
			4. The Output Card shall provide eight (8) discrete outputs.
		2. Basis of design product: Crestron **DMB-O-S**
		3. Modular Design:
			1. Output card shall be a modular unit with the following characteristics:
				1. Output card module shall be one of multiple available output modules available from same manufacturer.
				2. Modular component of compatible card frame matrix switcher.
				3. Occupy output blade slot space in compatible matrix switcher.
				4. Field installable plug-in card.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input cards.
		5. Outputs:
			1. Connectors:
				1. Eight (8) SC female optical fiber connector for each transmission output.
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

Embedded Ethernet

* 1. SINGLE-MODE FIBER CABLE TRANSMISSION OUTPUT CARD
		1. Description
			1. The Output Card shall provide transmission of any routed source signal within the matrix chassis.
			2. The output card shall transmit over one singlemode fiber optic strand, contact manufacturer for current list of suggested cable types.
			3. The singlemode fiber output blade shall transmit to compatible modules or receivers, supporting distances of up to 7.5 miles (12km).
			4. The Output Card shall provide eight (8) discrete outputs.
		2. Basis of design product: Crestron **DMB-O-S2**
		3. Modular Design:
			1. Output card shall be a modular unit with the following characteristics:
				1. Output card module shall be one of multiple available output modules available from same manufacturer.
				2. Modular component of compatible card frame matrix switcher.
				3. Occupy output blade slot space in compatible matrix switcher.
				4. Field installable plug-in card.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input cards.
		5. Outputs:
			1. Connectors:
				1. Eight (8) LC female optical fiber connector for each transmission output.
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

Embedded Ethernet

* 1. SYSTEM MAIN CHASSIS TYPE 2
		1. Manufacturers:
			1. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide products of Crestron Electronics, Inc., Rockleigh, NJ 07647, Phone (800)237-2041, Fax: (201)767-1903, www.crestron.com, with the following components and characteristics.
		2. Description
			1. Card-cage matrix switchers with configurable input and output card modules. Through the use of interchangeable input and output modules the matrix switcher shall support various input formats up to 4K HDMI and H.264, HDMI and HDMI 4K output formats. Matrix Card-cage shall support local device input and output card types and special purpose cards for use with long distance transmitter and receiver devices by same manufacturer and HDBaseT compatible devices. Switcher shall include a built-in Ethernet switch. Switcher shall be available in 8x8, 16x16, and 32x32 chassis sizes. Switcher shall be capable of stand-alone operation or integrated operation using a control processor from the same manufacturer. Input and output cards shall be field-interchangeable. Any input slot shall be routable to any output slot. Setup and diagnostics tools shall be built-in and accessible through the front panel interface. Additional configuration and management tools shall be available through software applications provided by same manufacturer.
		3. Basis-of-Design Products: Crestron **DM-MD8X8**, **DM-MD16X16**, and **DM-MD32X32**
			1. Crestron modular matrix switchers: **DM-MD8X8**, **DM-MD16X16**, and **DM-MD32X32** ;

Specifier: Redundant power supply versions are also available: **DM-MD8X8-RPS**, **DM-MD16X16-RPS**, and **DM-MD32X32-RPS**

* + 1. System Capacity
			1. Main chassis shall be available in the following input and output capacities:
				1. 8 Input x 8 Output
				2. 16 Input x 16 Output
				3. 32 Input x 32 Output
		2. Input and Output Modules
			1. The Switcher shall support the following input and output signal card types:
				1. Input card:

Single input connection.

* + - * 1. Output card:

One, two, or four output connections, configurable in groups of two.

* + 1. Multi-Format Audio Backplain
			1. The matrix Switcher shall support the option to maintain two audio formats for a single surround sound source device using a single input module.
				1. Audio format 1: Native multi-channel audio generated by source.
				2. Audio format 2: Stereo down-mix of native multi-channel source audio.
		2. Audio Breakaway
			1. Within a single switcher chassis, source audio inputs shall be routable to any output separately or combined with source video.
			2. Switcher shall be capable of routing stereo audio and surround audio separately when an input slot is equipped with an input card with audio processing functionality.
	1. HDMI 4K INPUT CARD

SPECIFIER:

Surround Sound DSP Mix down is available on an optional version of this card,

Use model: [DMC-4K-HD-HDCP2-DSP]

* + 1. Description
			1. The HDMI input card shall accept one 4K HDCP2 HDMI signal.
			2. 4K Operation:
				1. When installed in the matrix chassis, the input signal shall be switchable to installed 4K output cards for 4K signal transmission.

Specifier: The DMC-4K-HD-HDCP2(DSP) card is compatible with original/existing and current DM-MD8X8, DM-MD16X16, and DM-MD32X32 chassis units. Existing chassis units may be upgraded to 4K capability by replacing existing i/o cards and DM receivers with 4K capable models.

* + 1. Basis of design product: Crestron **DMC-4K-HD-HDCP2** DigitalMedia input card.
		2. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
				1. HDMI output includes audio and video from source.
			5. Include 1 stereo analog audio output:
				1. Stereo audio extracted from HDMI source signal.

Specifier: To retain surround source audio for downstream HDMI signal as well as creating stereo mix-down, use model DMC-4K-HD-HDCP2-DSP.

* + - 1. Field installable plug-in card.
		1. HDMI input:
			1. Connector: 19-pin type A female HDMI
			2. Format:
				1. HDMI with Deep Color and 3D
				2. 4K HDMI
				3. HDCP2.2 compliant
			3. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, 2560x1440@60Hz, 2560x1600@60Hz, 3840x2160@24Hz, 3840x2160@30Hz, 4096x2160@24Hz, plus any other resolution allowed by HDMI up to 300MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 300MHz pixel clock.

* + 1. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded source audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. USB:
			1. Local USB port
				1. Connector: USB Type A female connector
				2. Support for:

USB HID devices

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
		2. Analog audio output.
			1. 2 female RCA connectors.
			2. Stereo source pass through.
			3. Digital to analog conversion:
				1. 24 bit 48 kHz
			4. Surround formats shall be mixed to stereo in optional version of input card.

Specifier: To retain surround source audio for downstream HDMI signal as well as creating stereo mix-down, use model DMC-4K-HD-HDCP2-DSP.

* 1. DVI INPUT CARD
		1. Description
			1. The Video Input Card shall accept a DVI video signal, injected audio and convert to HDMI signal. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-DVI** DigitalMedia input card.
		3. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
				1. HDMI output includes audio and video from source.
			5. Field installable plug-in card.
		4. Video input:
			1. Connector: One DVI-I female connector
			2. Auto-sensing multi-format analog video input.
			3. Support for the following video types:
				1. DVI-D
				2. DVI-I
				3. YPbPr (component).
				4. Y/C (S-Video).
				5. RGB
				6. HDCP content protection
			4. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + - * 1. RGB video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz

* + - * 1. Component video resolutions:

480i, 576i, 480p, 576p, 720p50, 720p60, 1080i25 (1125 lines), 1080i30, 1080p30, 1080p50 (1125 lines), 1080p60

* + - * 1. Composite and Y/C (S-Video) video resolutions:

480i, 576i

* + 1. Audio input:
			1. Connector: One 5 position terminal block
			2. Format:
				1. Analog balanced stereo; line level
				2. Analog unbalanced stereo; line level
		2. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded stereo audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. USB:
			1. Local USB 1.1 port
				1. Connector: USB Type A female connector
				2. Support for:

USB HID devices

* 1. VGA INPUT CARD
		1. Description
			1. The Video Input Card shall accept a VGA video signal, injected audio and convert to HDMI signal. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-VGA** DigitalMedia input card.
		3. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
				1. HDMI output includes audio and video from source.
			5. Field installable plug-in card.
		4. Video input:
			1. Connector: One DB15HD female connector
			2. Auto-sensing multi-format analog video input.
			3. Support for the following video types:
				1. VGA
				2. YPbPr (component).
				3. Y/C (S-Video).
				4. RGB
				5. HDCP content protection
			4. Input video resolutions:
				1. RGB video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz

* + - * 1. Component video resolutions:

480i, 576i, 480p, 576p, 720p50, 720p60, 1080i25 (1125 lines), 1080i30, 1080p30, 1080p50 (1125 lines), 1080p60

* + - * 1. Composite and Y/C (S-Video) video resolutions:

480i, 576i

* + 1. Audio input:
			1. Connector: One 5 position terminal block
			2. Format:
				1. Analog balanced stereo; line level
				2. Analog unbalanced stereo; line level
		2. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded stereo audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. USB:
			1. Local USB 1.1 port
				1. Connector: USB Type A female connector
				2. Support for:

USB HID devices

* 1. HD-SDI INPUT CARD
		1. Description
			1. The HD-SDI input card shall accept an HD-SD signal. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **HD-SDI** DigitalMedia input card.
		3. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
				1. HDMI output includes audio and video from source.
			5. Include 1 stereo analog audio output:
				1. Two channels of audio extracted from SDI source signal.
			6. Field installable plug-in card.
		4. HD-SDI input:
			1. Connector: female BNC
			2. Format:
				1. SD-SDI (SMPTE 259M)
				2. HD-SDI (SMPTE 292M)
				3. 3G-SDI (SMPTE 424M)
			3. Input video resolutions:
				1. SMPTE 425M (3G-SDI) 4:2:2 Colorspace: 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60);
				SMPTE 425M (3G-SDI) 4:4:4 Colorspace: 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@30Hz (1080p30), 1920x1080@50Hz (1080i50 or 1080sF25), 1920x1080@60Hz (1080i60 or 1080sF30);
				SMPTE 260M (HD-SDI): 1920x1035@60Hz (1035i60);
				SMPTE 295M (HD-SDI): 1920x1080@50Hz (1080i50);
				SMPTE 274M (HD-SDI): 1920x1080@24Hz (1080p24), 1920x1080@24Hz (1080sF24), 1920x1080@25Hz (1080p25), 1920x1080@30Hz (1080p30), 1920x1080@50Hz (1080i50 or 1080sF25), 1920x1080@60Hz (1080i60 or 1080sF30);
				SMPTE 296M (HD-SDI): 1280x720@50Hz (720p50), 1280x720@60Hz (720p60);
				SMPTE 259M-C (SD-SDI): 720x480@59.94 (NTSC), 720x576@50i (PAL)
		5. HD-SDI Pass-through Output:
			1. Connector: female BNC
		6. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded 2-channel audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio formats:
			1. 2 channel PCM via SDI, HDMI, & DM; 2-channel analog
		2. Analog audio output.
			1. 2 female RCA connectors.
			2. Digital to analog conversion:
				1. 24 bit 48 kHz
	1. BNC VIDEO INPUT CARD
		1. Description
			1. The Video Input Card shall accept an analog audio/video signal and convert it to an HDMI signal. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-VID-BNC** DigitalMedia input card.
		3. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
				1. HDMI output includes audio and video from source.
			5. Field installable plug-in card.
		4. Video input:
			1. Connector: Three BNC female connectors
			2. Auto-sensing multi-format analog video input.
			3. Support for the following video types:
				1. YPbPr (component).
				2. Y/C (S-Video).
				3. Composite
			4. Input video resolutions:
				1. Component video resolutions:

480i, 576i, 480p, 576p, 720p50, 720p60, 1080i25 (1125 lines), 1080i30, 1080p30, 1080p50 (1125 lines), 1080p60

* + - * 1. Composite video resolutions:

480i, 576i

* + 1. Audio input:
			1. Connector: One 5 position terminal block
			2. Format:
				1. Analog balanced stereo; line level
				2. Analog unbalanced stereo; line level
		2. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded stereo audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* 1. VIDEO INPUT CARD
		1. Description
			1. The Security Camera Input Card shall accept analog video signal, provide image processing, and output the result to an HDMI signal. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-VID4** DigitalMedia input card.
		3. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
			5. Field installable plug-in card.
		4. Functions
			1. The input card shall provide an on-board video processor.
			2. Shall support the following display modes:
				1. Quad Screen
				2. Dual Screen
				3. Full Screen
			3. Sequential input switching
			4. Shall support text overlay

Dynamic colored window labeling

Time/date.

* + 1. Video input:
			1. Connectors: Four RCA female connectors
			2. Support for Composite video
			3. Input video resolutions:
				1. Composite video resolutions:

480i, 576i

* + 1. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

* 1. VIDEO WITH S/PDIF VIDEO INPUT CARD
		1. Description
			1. The video w/S/PDIF Input Card shall accept an analog audio/video signal and convert it to an HDMI signal. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-VID-RCA-D** DigitalMedia input card.
		3. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
				1. HDMI output includes audio and video from source.
			5. Field installable plug-in card.
		4. Video input:
			1. Connector: Three RCA female connectors
			2. Auto-sensing multi-format analog video input.
			3. Support for the following video types:
				1. YPbPr (component).
				2. Y/C (S-Video).
				3. Composite
			4. Input video resolutions:
				1. Component video resolutions:

480i, 576i, 480p, 576p, 720p50, 720p60, 1080i25 (1125 lines), 1080i30, 1080p30, 1080p50 (1125 lines), 1080p60

* + - * 1. Composite video resolutions:

480i, 576i

* + 1. Audio input:
			1. Connector: One RCA female
			2. Format:
				1. S/PDIF coaxial
				2. Dolby Digital®, Dolby Digital EX, DTS®, DTS-ES, DTS 96/24, 2ch PCM
		2. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* 1. VIDEO WITH STEREO INPUT CARD
		1. Description
			1. The Video Input Card shall accept an analog audio/video signal and convert it to an HDMI signal. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-VID-RCA-A** DigitalMedia input card.
		3. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
				1. HDMI output includes audio and video from source.
			5. Field installable plug-in card.
		4. Video input:
			1. Connector: Three RCA female connectors
			2. Auto-sensing multi-format analog video input.
			3. Support for the following video types:
				1. YPbPr (component).
				2. Y/C (S-Video).
				3. Composite
			4. Input video resolutions:
				1. Component video resolutions:

480i, 576i, 480p, 576p, 720p50, 720p60, 1080i25 (1125 lines), 1080i30, 1080p30, 1080p50 (1125 lines), 1080p60

* + - * 1. Composite video resolutions:

480i, 576i

* + 1. Audio input:
			1. Connector: Two RCA female
			2. Format:
				1. Analog stereo
		2. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* 1. SINGLE CABLE UTP/STP INPUT CARD

SPECIFIER:

Surround Sound DSP Mix down is available on an optional version of this card,

use model: [DMC-4K-C-DSP-HDCP2]

* + 1. Description
			1. The single cable UTP or STP input card shall receive transmission from compatible transmitters, supporting distance of up to 330 feet (100 km).
			2. The HDMI input card shall accept one 4K HDCP2 signal from compatible 4K HDCP2 transmitter.
			3. The single cable UTP or STP input card shall accept transmitted signal and convert to HDMI signal and separate audio output. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-4K-C-HDCP2** DigitalMedia input card.
		3. Modular Design: Input card shall be a modular unit with the following characteristics:
			1. Input card module shall be one of many available input modules available from same manufacturer.
			2. Modular component of compatible card frame matrix switcher.
			3. Occupy 1 input card slot in compatible matrix switcher.
			4. Include 1 HDMI pass through output.
				1. HDMI output includes audio and video from transmission source.
			5. Include 1 stereo analog audio output:
				1. Stereo audio extracted from HDMI source signal.

Specifier: To retain surround source audio for downstream HDMI signal as well as creating stereo mix-down, use model DMC-4K-C-HDCP2-DSP.

* + - 1. Field installable plug-in card.
		1. Transmitter receive input:
			1. Connector: 1 female shielded RJ-45 connector
			2. Convert compatible transmitter signal to HDMI and stereo audio for local output.
			3. Convert compatible transmitter signal to HDMI, surround/stereo audio, and Ethernet link for connection to matrix switcher backplane.
			4. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
			5. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + 1. Transmitter remote power supply capability
			1. Power compatible transmitter through single CAT5e cable.
		2. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded stereo audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
		2. Analog audio output.
			1. 2 female RCA connectors.
			2. Stereo source pass through.
			3. Digital to analog conversion:
				1. 24 bit 48 kHz
			4. Surround formats shall be mixed to stereo in optional version of input card.
	1. MULTIMODE FIBER INPUT CARD

SPECIFIER:

Surround Sound DSP Mix down is available on an optional version of this card,

Use model: [DMC-S-DSP]

* + 1. Description
			1. The multimode fiber input card shall receive transmissions from compatible transmitter, supporting distance of up to 1,000 feet (300 km).
			2. The single-mode fiber input card shall accept transmitted signal and convert to HDMI signal and separate audio output. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-S** DigitalMedia input card.
		3. Transmitter receive input:
			1. Connector: 1 female SC connector
			2. Convert compatible transmitter signal to HDMI and stereo audio for local output.
			3. Convert compatible transmitter signal to HDMI, surround/stereo audio, and Ethernet link for connection to matrix switcher backplane.
			4. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
			5. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + 1. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded stereo audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
		2. Analog audio output.
			1. 2 female RCA connectors.
			2. Stereo source pass through.
			3. Digital to analog conversion:
				1. 24 bit 48 kHz
			4. Surround formats shall be mixed to stereo in optional version of input card.
	1. SINGLE-MODE FIBER INPUT CARD

SPECIFIER:

Surround Sound DSP Mix down is available on an optional version of this card,

Use model: [DMC-S2-DSP]

* + 1. Description
			1. The single-mode fiber input card shall receive transmissions from compatible transmitter, supporting distance of up to 7.5 miles (12 km).
			2. The single-mode fiber input card shall accept transmitted signal and convert to HDMI signal and separate audio output. This signal shall be available as an output on the matrix.
		2. Basis of design product: Crestron **DMC-S2** DigitalMedia input card.
		3. Transmitter receive input:
			1. Connector: 1 female LC connector
			2. Convert compatible transmitter signal to HDMI and stereo audio for local output.
			3. Convert compatible transmitter signal to HDMI, surround/stereo audio, and Ethernet link for connection to matrix switcher backplane.
			4. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
			5. Input video resolutions:
				1. Progressive video resolutions:

640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + - * 1. Interlaced video resolutions:

720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock.

* + 1. Video output:
			1. Local HDMI output:
				1. Connector: 19-pin Type A female HDMI.
				2. HDMI signal includes:

Video source signal at native resolution.

Embedded stereo audio signal.

* + - 1. Matrix backplane:
				1. HDMI signal includes:

Source video at native resolution.

Embedded source audio signal.

* + 1. Audio/surround formats:
			1. Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, Up to 8ch PCM.
		2. Analog audio output.
			1. 2 female RCA connectors.
			2. Stereo source pass through.
			3. Digital to analog conversion:
				1. 24 bit 48 kHz
			4. Surround formats shall be mixed to stereo in optional version of input card.
	1. TRANSMISSION SYSTEM CARD INTERFACE
		1. Description
			1. The interface is a card-cage unit capable of interfacing with single input slot input cards.
			2. The interface enables front panel connections of compatible inputs cards.
			3. The interface shall power and provide limited communication to input card features.
		2. Basis of design product: Crestron **DMCI** DigitalMedia input card interface.
	2. SINGLE UTP/STP CABLE 4K TRANSMISSION OUTPUT CARD
		1. Description
			1. The Output Card shall provide transmission of any routed source signal, within the matrix chassis.
			2. The output card shall transmit over manufacturer suggested STP cable, CAT5e or CAT6 cable, or better.
				1. Contact manufacturer prior to cable installation and use manufacturers suggested transmission cable, connectors, and installation methods for all segments of signal path.
			3. The Output Card shall provide 2 discrete outputs.
			4. The Output Card shall interface with HDBaseT supported single cable transmission receivers.
			5. The card shall provide 1 HDMI output for every 2 single cable transmission outputs:
				1. HDMI output shall be a parallel signal to the single cable transmission output.
			6. 4K Operation:
				1. The Output Card shall support transmission of 4K HDMI signals from compatible source to compatible sink using 4K switching, transmission and interfacing components from Output Card manufacturer.

Specifier: The DMC-4K-CO-HD-HDCP2 card is compatible with original/existing and current DM-MD8X8, DM-MD16X16, and DM-MD32X32 chassis units. Existing chassis units may be upgraded to 4K capability by replacing existing i/o cards and DM receivers with 4K capable models.

* + 1. Basis of design product: Crestron **DMC-4K-CO-HD-HDCP2**
			1. Crestron **DMC-4K-CO-HD-HDCP2** DigitalMedia output card.
		2. Modular Design:
			1. Output card shall be a modular unit with the following characteristics:
				1. Output card module shall be one of many available output modules available from same manufacturer.
				2. Modular component of compatible card frame matrix switcher.
				3. Occupy output card slot space in compatible matrix switcher.
				4. Field installable plug-in card.
		3. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input cards.
		4. Outputs:
			1. Connectors:
				1. Female shielded RJ-45 connector for each transmission output.
				2. Female 19-pin Type A HDMI for parallel output channels.
			2. Format:
				1. HDMI with Deep Color and 3D
				2. 4K HDMI
				3. HDCP2.2 content protection
				4. Signal includes:

Video source signal at native resolution.

Embedded audio signal

Embedded Ethernet

* + - 1. Remote Power Sourcing:
				1. Output Card, through RJ-45 output connection shall be capable of remotely powering transmission receivers through optional power supply.

Specifier: Use PoDM power supply model(s): DM-PSU-ULTRA-MIDSPAN, CEN-SWPOE-16, and DM-PSU-8/16 for remote powering compatible transmitters and receivers.

* 1. SINGLE MULTIMODE FIBER CABLE TRANSMISSION OUTPUT CARD
		1. Description
			1. The Output Card shall provide transmission of any routed source signal within the matrix chassis.
			2. The output card shall transmit over one multimode fiber optic strand, contact manufacturer for current list of suggested cable types.
			3. The Output Card shall provide 2 discrete outputs.
			4. The card shall provide 1 HDMI output for every 2 single cable transmission outputs:
				1. HDMI output shall be a parallel signal to the single cable transmission output.
		2. Basis of design product: Crestron **DMC-SO-HD**
			1. Crestron **DMC-SO-HD** DigitalMedia output card.
		3. Modular Design:
			1. Output card shall be a modular unit with the following characteristics:
				1. Output card module shall be one of many available output modules available from same manufacturer.
				2. Modular component of compatible card frame matrix switcher.
				3. Occupy output card slot space in compatible matrix switcher.
				4. Field installable plug-in card.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input cards.
		5. Outputs:
			1. Connectors:
				1. SC female optical fiber connector for each transmission output.
				2. Female 19-pin Type A HDMI for parallel output channels.
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

Embedded Ethernet

* 1. SINGLEMODE FIBER CABLE TRANSMISSION OUTPUT CARD
		1. Description
			1. The Output Card shall provide transmission of any routed source signal within the matrix chassis.
			2. The output card shall transmit over one singlemode fiber optic strand, contact manufacturer for current list of suggested cable types.
			3. The Output Card shall provide 2 discrete outputs.
			4. The card shall provide 1 HDMI output for every 2 single cable transmission outputs:
				1. HDMI output shall be a parallel signal to the single cable transmission output.
		2. Basis of design product: Crestron **DMC-S2O**
			1. Crestron **DMC-S2O** DigitalMedia output card.
		3. Modular Design:
			1. Output card shall be a modular unit with the following characteristics:
				1. Output card module shall be one of many available output modules available from same manufacturer.
				2. Modular component of compatible card frame matrix switcher.
				3. Occupy output card slot space in compatible matrix switcher.
				4. Field installable plug-in card.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input cards.
		5. Outputs:
			1. Connectors:
				1. LC female optical fiber connector for each transmission output.
				2. Female 19-pin Type A HDMI for parallel output channels.
			2. Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

Embedded Ethernet

* 1. HDMI WITH ANALOG AUDIO OUTPUT CARD
		1. Description
			1. The Output Card shall provide an HDMI with balanced analog audio output of any routed source signal within the matrix chassis.
			2. Analog audio level shall be controllable via programming and control processor by same manufacturer.
			3. The Output Card shall provide 2 discrete outputs.
		2. Basis of design product: Crestron **DMC-HDO**
			1. Crestron **DMC-HDO** DigitalMedia output card.
		3. Modular Design:
			1. Output card shall be a modular unit with the following characteristics:
				1. Output card module shall be one of many available output modules available from same manufacturer.
				2. Modular component of compatible card frame matrix switcher.
				3. Occupy one output card slot space in compatible matrix switcher.
				4. Field installable plug-in card.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input cards.
		5. Outputs:
			1. Connectors:
				1. LC female optical fiber connector for each transmission output.
				2. Female 19-pin Type A HDMI
				3. 5 position terminal block
			2. Audio Format:
				1. Analog balanced stereo
				2. Analog unbalanced stereo
			3. Video Format:
				1. HDMI with Deep Color and 3D
				2. HDCP content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

Embedded Ethernet

* 1. 4K HDMI WITH ANALOG AUDIO OUTPUT CARD
		1. Description
			1. The Output Card shall provide an HDMI with balanced analog audio output of any routed source signal within the matrix chassis.
			2. Analog audio level shall be controllable via programming and control processor by same manufacturer.
			3. The Output Card shall provide 2 discrete outputs.
			4. 4K Operation:
				1. The Output Card shall support output of 4K HDMI signals from compatible source to compatible sink.

Specifier: The DMC-4K-HDO card is compatible with original/existing and current DM-MD8X8, DM-MD16X16, and DM-MD32X32 chassis units. Existing chassis units may be upgraded to 4K capability by replacing existing i/o cards and DM transmitters and receivers with 4K capable models.

* + 1. Basis of design product: Crestron **DMC-4K-HDO**
			1. Crestron **DMC-4K-HDO** DigitalMedia output card.
		2. Modular Design:
			1. Output card shall be a modular unit with the following characteristics:
				1. Output card module shall be one of many available output modules available from same manufacturer.
				2. Modular component of compatible card frame matrix switcher.
				3. Occupy one output card slot space in compatible matrix switcher.
				4. Field installable plug-in card.
		3. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input cards.
		4. Outputs:
			1. Connectors:
				1. LC female optical fiber connector for each transmission output.
				2. Female 19-pin Type A HDMI
				3. 5 position terminal block
			2. Audio Format:
				1. Analog balanced stereo
				2. Analog unbalanced stereo
			3. Video Format:
				1. 4K HDMI with Deep Color and 3D
				2. HDCP2.2 content protection
				3. Signal includes:

Video source signal at native resolution.

Embedded audio signal

Embedded Ethernet

* 1. H.264 STREAMING OUTPUT CARD
		1. Description
			1. The Output Card shall provide an H.264 stream of any one or two routed source signals within the matrix chassis.
			2. Analog audio level shall be controllable via programming and control processor by same manufacturer.
			3. The Output Card shall provide one output that may be composed of any one or two input sources.
			4. The single stream output shall be capable of combining two separate sources in the following methods:
				1. Picture-in-picture
				2. Side-by-side.
		2. Basis of design product: Crestron **DMC-STRO**
			1. Crestron **DMC-STRO** DigitalMedia output card.
		3. Modular Design:
			1. Output card shall be a modular unit with the following characteristics:
				1. Output card module shall be one of many available output modules available from same manufacturer.
				2. Modular component of compatible card frame matrix switcher.
				3. Occupy output card slot space in compatible matrix switcher.
				4. Field installable plug-in card.
		4. Output Card Source:
			1. All outputs shall be sourced by the matrix backplane. Matrix backplane shall include all sources connected to matrix input cards.
		5. Output:
			1. Connectors:
				1. CONTENT LAN: (1, 2, 3, or 4) 8-wire RJ45 female; 10Base-T/100Base-TX/1000Base-T Ethernet ports; Each port provides a dedicated LAN connection per streaming output
				2. LAN Link Indicators: (1 set per each CONTENT LAN port)
			2. Audio:
				1. AAC stereo
				2. Audio Controls:

Volume: Adjustable 0% to 100%, plus mute

Delay: 0.0 to 40.0 ms

   Source 1 – 2 Mix Level: -80.0 to 0.0 dB

* + - 1. Video:
				1. Video Streaming Formats: H.264 @ 360p60, 480p30, 480p60, 720p10, 720p15, 720p30, 720p60, 1080p10, 1080p15, and 1080p30
				2. Video Streaming Bitrate: Up to 25 Mbps
				3. Streaming Protocols: RTP, RTSP, SDP
				4. Container: MPEG-2 transport stream (.ts) or none
				5. Session Initiation Modes:

By receiver (unicast)

By transmitter (unicast)

Multicast via RTSP

Multicast via UDP

* 1. 4K TRANSMITTER TYPE 1
		1. Description
			1. The signal transmitters shall extend 4K HDMI video, audio, and data over a single UTP/STP cable to compatible transmission receiver modules or ports. The following source formats shall be supported:
				1. 4K HDMI, HDCP2.2 compliant
				2. DVI-I
				3. Dual-Mode Display Port
				4. RGBHV
				5. YPbPr
				6. VGA
				7. Y/C
				8. Composite
				9. Analog 2-channel audio
				10. USB HID (Human Interface Device)
			2. Switching:

Transmitter shall include integrated switching with signal sensing.

* + - * 1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching and audio break-away switching.

* + 1. Basis of design product: Crestron **DM-TX-4K-302-C** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. Two (2) HDMI video, audio, and control input:

Supports 4K HDMI

Supports HDCP 2.2

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort with adaptor.

CEC device control

* + - * 1. One (1) DB15 input:

Component (YPbPr)

RGB

S-Video (Y/C)

Composite Video

* + - * 1. One (1) analog stereo audio input:

(1) 3.5mm TRS (L/R unbalanced)

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. HDMI digital video/audio output

One (1) 19-pin Type A HDMI female connector

Supports 4K HDMI

Supports HDCP 2.2

* + - * 1. Ethernet Port

One (1) 8-wire RJ-45

10/100 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP

* + - * 1. Single UTP/STP cable transmission connection

Supports HDBaseT signal specifications.

Supports remote power injection through matrix switcher.

Supports CAT5e.

Signal transmission up to 330 feet.

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

Freestanding.

Surface mount.

Rack rail mount.

* + - 1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. One (1) IR/Serial port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
	1. 4K TRANSMITTER TYPE 2
		1. Description
			1. The signal transmitters shall extend 4K HDMI video, audio, and data over a single UTP/STP cable to compatible transmission receiver modules or ports. The following source formats shall be supported:
				1. 4K HDMI, HDCP2.2 compliant
				2. DVI-I
				3. Dual-Mode Display Port
				4. USB HID (Human Interface Device)
			2. Switching:

Transmitter shall include integrated switching with signal sensing.

* + - * 1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching.

* + 1. Basis of design product: Crestron **DM-TX-4K-202-C** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. Two (2) HDMI video, audio, and control input:

Supports 4K HDMI

Supports HDCP 2.2

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort with adaptor.

CEC device control

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. HDMI digital video/audio output

One (1) 19-pin Type A HDMI female connector

Supports 4K HDMI

Supports HDCP 2.2

* + - * 1. Ethernet Port

One (1) 8-wire RJ-45

10/100 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP.

* + - * 1. Single UTP/STP cable transmission connection

Supports HDBaseT signal specifications.

Supports remote power injection through matrix switcher.

Supports CAT5e.

Signal transmission up to 330 feet.

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

Freestanding.

Surface mount.

Rack rail mount.

* + - 1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. One (1) IR/Serial port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
	1. 4K TRANSMITTER TYPE 3
		1. Description
			1. The wall mount signal transmitters shall extend 4K HDMI video and audio over a single UTP/STP cable to compatible transmission receiver modules or ports. The following source formats shall be supported:
				1. 4K HDMI, HDCP2.2 compliant.
				2. DVI-I
				3. Dual-Mode Display Port.
		2. Basis of design product: Crestron **DM-TX-4K-100-C-1G** DigitalMedia transmitter
		3. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. One (1) HDMI video, audio, and control input:

Supports 4K HDMI.

Supports HDCP 2.2

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort with adaptor.

CEC device control.

* + - * 1. Single UTP/STP cable transmission connection

Supports HDBaseT signal specifications.

Supports remote power injection through matrix switcher.

Supports CAT5e.

Signal transmission up to 330 feet.

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

1-gang wall box mount

Surface mount

Rack rail mount

* + - 1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block
				2. GND, TX, RX, CTS, RTS support
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. One (1) IR/Serial port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
	1. TRANSMITTER TYPE C1
		1. Description
			1. The signal transmitters shall extend HDMI video, audio, and data over a single UTP/STP cable to compatible transmission receiver modules or ports. The following source formats shall be supported:
				1. HDMI
				2. DVI-I
				3. RGBHV
				4. YPbPr
				5. VGA
				6. Y/C
				7. Composite
				8. Analog 2-channel audio
				9. USB HID (Human Interface Device)
			2. Switching:

Transmitter shall include integrated switching with signal sensing.

* + - * 1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching and audio break-away switching.

* + 1. Basis of design product: Crestron **DM-TX-201C** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. One (1) HDMI video, audio, and control input:

Supports HDMI.

Supports HDCP.

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort.

CEC device control.

* + - * 1. One (1) DB15 input:

Component (YPbPr)

RGB

S-Video (Y/C)

Composite Video

* + - * 1. One (1) analog stereo audio input:

(1) 3.5mm TRS (L/R unbalanced)

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. HDMI digital video/audio output

One (1) 19-pin Type A HDMI female connector

* + - * 1. Ethernet Port

One (1) 8-wire RJ-45

10/100 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP

* + - * 1. Single UTP/STP cable transmission connection

Supports HDBaseT signal specifications.

Supports remote power injection through matrix switcher.

Supports CAT5e.

Signal transmission up to 330 feet.

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

Freestanding.

Surface mount.

Rack rail mount.

* 1. TRANSMITTER TYPE C2
		1. Description
			1. The signal transmitters shall extend HDMI video, audio, and data over a single UTP/STP cable to compatible transmission receiver modules or ports. The following source formats shall be supported:
				1. HDMI
				2. DVI-I
				3. RGBHV
				4. VGA
				5. YPbPr
				6. Y/C
				7. Composite
				8. Analog 2-channel audio
				9. USB HID (Human Interface Device)
			2. Switching:

Transmitter shall include integrated switching with signal sensing.

* + - * 1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching and audio break-away switching.

* + 1. Basis of design product: Crestron **DM-TX-200-C-2G** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. One (1) HDMI video, audio, and control input:

Supports HDMI.

Supports HDCP.

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort.

CEC device control.

* + - * 1. One (1) DB15 input:

Component (YPbPr)

RGB

S-Video (Y/C)

Composite Video

* + - * 1. One (1) analog stereo audio input:

(1) 3.5mm TRS (L/R unbalanced)

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. Single UTP/STP cable transmission connection

Supports HDBaseT signal specifications.

Supports remote power injection through matrix switcher.

Supports CAT5e.

Signal transmission up to 330 feet.

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

2-gang wall box mount.

2-gang floor box mount.

* 1. TRANSMITTER TYPE C3
		1. Description
			1. The signal transmitters shall extend HDMI video, audio, and data over a single UTP/STP cable to compatible transmission receiver modules or ports. Transmitter shall support connection of four separate sources simultaneously. The following source formats shall be supported:
				1. Display Port
				2. HDMI
				3. DVI-I
				4. RGBHV
				5. VGA
				6. YPbPr
				7. Y/C
				8. Composite
				9. Analog 2-channel audio
				10. USB HID (Human Interface Device)
			2. Switching: Transmitter shall include integrated switching with signal sensing.
				1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching and audio break-away switching.

* + - 1. Transmitter shall include the following control ports for remote device control.
				1. One (1) 5-position terminal block for Serial RS-232 communication.
				2. One (1) 2-position terminal block for Infrared (IR) control.
		1. Basis of design product: Crestron **DM-TX-401-C** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. One (1) HDMI video, audio, and control input:

Supports HDMI.

Supports HDCP.

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort.

CEC device control.

* + - * 1. One (1) Display Port video, audio, and control input:

Supports DisplayPort.

Supports HDCP.

Supports Dolby Digital®, Dolby Digital EX, DTS®, DTS-ES, DTS 96/24, Up to 8ch PCM

* + - * 1. One (1) DB15 input:

Component (YPbPr)

RGB

S-Video (Y/C)

Composite Video

* + - * 1. One (1) analog stereo audio input:

(1) 3.5mm TRS (L/R unbalanced)

* + - * 1. One (1) analog stereo audio input:

(2) Female RCA (L/R unbalanced)

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. HDMI digital video/audio output

One (1) 19-pin Type A HDMI female connector

* + - * 1. Ethernet Port

One (1) 8-wire RJ-45

10/100 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP

* + - * 1. Single UTP/STP cable transmission connection

Supports HDBaseT signal specifications.

Supports remote power injection through matrix switcher.

Supports CAT5e.

Signal transmission up to 330 feet.

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

Freestanding

1U, 1/2-width 19-inch rack-mountable

* 1. “S” TRANSMITTERS
		1. The signal transmitters shall extend HDMI video and audio, DVI-I, RGBHV, YPbPr, Y/C, Composite, Analog 2-channel audio, and USB HID (Human Interface Device) data to compatible transmission receiver modules or ports.
		2. Switching:
			1. Multiple input transmitters shall include integrated switching with signal sensing.
			2. Switching modes:
				1. Automatic: switcher shall switch to the last detected input.
				2. Controlled: control processor controls source switching and audio break-away switching.
	2. TRANSMITTER TYPE S1
		1. Description
			1. The signal transmitters shall extend HDMI video, audio, and data over a single strand of multimode fiber cable to compatible transmission receiver modules or ports. The following source formats shall be supported:
				1. HDMI
				2. DVI-I
				3. RGBHV
				4. YPbPr
				5. VGA
				6. Y/C
				7. Composite
				8. Analog 2-channel audio
				9. USB HID (Human Interface Device)
			2. Switching:

Transmitter shall include integrated switching with signal sensing.

* + - * 1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching and audio break-away switching.

* + 1. Basis of design product: Crestron **DM-TX-201S** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. One (1) HDMI video, audio, and control input:

Supports HDMI.

Supports HDCP.

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort.

CEC device control.

* + - * 1. One (1) DB15 input:

Component (YPbPr)

RGB

S-Video (Y/C)

Composite Video

* + - * 1. One (1) analog stereo audio input:

(1) 3.5mm TRS (L/R unbalanced)

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. HDMI digital video/audio output

One (1) 19-pin Type A HDMI female connector

* + - * 1. Ethernet Port

One (1) 8-wire RJ-45

10/100 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP

* + - * 1. Single multimode fiber cable transmission connection

One (1) SC female connector.

Signal transmission up to 1000 feet (300m).

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

Freestanding.

Surface mount.

Rack rail mount.

* 1. TRANSMITTER TYPE S3
		1. Description
			1. The signal transmitters shall extend HDMI video, audio, and data over a single strand of multimode fiber cable to compatible transmission receiver modules or ports. Transmitter shall support connection of four separate sources simultaneously. The following source formats shall be supported:
				1. Display Port
				2. HDMI
				3. DVI-I
				4. RGBHV
				5. VGA
				6. YPbPr
				7. Y/C
				8. Composite
				9. Analog 2-channel audio
				10. USB HID (Human Interface Device)
			2. Switching: Transmitter shall include integrated switching with signal sensing.
				1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching and audio break-away switching.

* + - 1. Transmitter shall include the following control ports for remote device control.
				1. One (1) 5-position terminal block for Serial RS-232 communication.
				2. One (1) 2-position terminal block for Infrared (IR) control.
		1. Basis of design product: Crestron **DM-TX-401-S** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. One (1) HDMI video, audio, and control input:

Supports HDMI.

Supports HDCP.

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort.

CEC device control.

* + - * 1. One (1) Display Port video, audio, and control input:

Supports DisplayPort Multimode.

Supports HDCP.

Supports Dolby Digital®, Dolby Digital EX, DTS®, DTS-ES, DTS 96/24, Up to 8ch PCM

* + - * 1. One (1) DB15 input:

Component (YPbPr)

RGB

S-Video (Y/C)

Composite Video

* + - * 1. One (1) analog stereo audio input:

(1) 3.5mm TRS (L/R unbalanced)

* + - * 1. One (1) analog stereo audio input:

(2) Female RCA (L/R unbalanced)

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. HDMI digital video/audio output

One (1) 19-pin Type A HDMI female connector

* + - * 1. Ethernet Port

One (1) 8-wire RJ-45

10/100 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP

* + - * 1. Single multimode fiber cable transmission connection

One (1) SC female connector.

Signal transmission up to 1000 feet (300m).

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

Freestanding

1U, 1/2-width 19-inch rack-mountable

* 1. “S2” TRANSMITTERS
		1. The signal transmitters shall extend HDMI video and audio, DVI-I, RGBHV, YPbPr, Y/C, Composite, Analog 2-channel audio, and USB HID (Human Interface Device) data to compatible transmission receiver modules or ports.
		2. Switching:
			1. Multiple input transmitters shall include integrated switching with signal sensing.
			2. Switching modes:
				1. Automatic: switcher shall switch to the last detected input.
				2. Controlled: control processor controls source switching and audio break-away switching.
	2. TRANSMITTER TYPE S2-1
		1. Description
			1. The signal transmitters shall extend HDMI video, audio, and data over a single strand of multimode fiber cable to compatible transmission receiver modules or ports. The following source formats shall be supported:
				1. HDMI
				2. DVI-I
				3. RGBHV
				4. YPbPr
				5. VGA
				6. Y/C
				7. Composite
				8. Analog 2-channel audio
				9. USB HID (Human Interface Device)
			2. Switching:

Transmitter shall include integrated switching with signal sensing.

* + - * 1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching and audio break-away switching.

* + 1. Basis of design product: Crestron **DM-TX-201-S2** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. One (1) HDMI video, audio, and control input:

Supports HDMI.

Supports HDCP.

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort.

CEC device control.

* + - * 1. One (1) DB15 input:

Component (YPbPr)

RGB

S-Video (Y/C)

Composite Video

* + - * 1. One (1) analog stereo audio input:

(1) 3.5mm TRS (L/R unbalanced)

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. HDMI digital video/audio output

One (1) 19-pin Type A HDMI female connector

* + - * 1. Ethernet Port

One (1) 8-wire RJ-45

10/100 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP

* + - * 1. Single mode fiber cable transmission connection

One (1) LC female connector

Supports G.652.D single-mode fiber optic cable

Signal transmission up to 7.5 miles (12 km).

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

Freestanding.

Surface mount.

Rack rail mount.

* 1. TRANSMITTER TYPE S2-3
		1. Description
			1. The signal transmitters shall extend HDMI video, audio, and data over a single strand of multimode fiber cable to compatible transmission receiver modules or ports. Transmitter shall support connection of four separate sources simultaneously. The following source formats shall be supported:
				1. Display Port
				2. HDMI
				3. DVI-I
				4. RGBHV
				5. VGA
				6. YPbPr
				7. Y/C
				8. Composite
				9. Analog 2-channel audio
				10. USB HID (Human Interface Device)
			2. Switching: Transmitter shall include integrated switching with signal sensing.
				1. Switching modes:

Automatic: switcher shall switch to the last detected input.

Controlled: control processor controls source switching and audio break-away switching.

* + - 1. Transmitter shall include the following control ports for remote device control.
				1. One (1) 5-position terminal block for Serial RS-232 communication.
				2. One (1) 2-position terminal block for Infrared (IR) control.
		1. Basis of design product: Crestron **DM-TX-401-S2** DigitalMedia transmitter.
		2. Performance
			1. The transmitter shall meet the following minimum requirements:
				1. One (1) HDMI video, audio, and control input:

Supports HDMI.

Supports HDCP.

Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channel PCM.

Supports DVI-D with adaptor.

Supports Dual-Mode DisplayPort.

CEC device control.

* + - * 1. One (1) Display Port video, audio, and control input:

Supports Dual-Mode DisplayPort.

Supports HDCP.

Supports Dolby Digital®, Dolby Digital EX, DTS®, DTS-ES, DTS 96/24, Up to 8ch PCM

* + - * 1. One (1) DB15 input:

Component (YPbPr)

RGB

S-Video (Y/C)

Composite Video

* + - * 1. One (1) analog stereo audio input:

(1) 3.5mm TRS (L/R unbalanced)

* + - * 1. One (1) analog stereo audio input:

(2) Female RCA (L/R unbalanced)

* + - * 1. One (1) USB HID port.

Supports USB HID class devices

* + - * 1. HDMI digital video/audio output

One (1) 19-pin Type A HDMI female connector

* + - * 1. Ethernet Port

One (1) 8-wire RJ-45

10/100 Mbps, auto-switching, auto negotiating, auto-discovery, full/half duplex, DHCP

* + - * 1. Single mode fiber cable transmission connection

One (1) LC female connector

Supports G.652.D single-mode fiber optic cable

Signal transmission up to 7.5 miles (12 km).

* + - * 1. Power supply modes:

Remote power supplied by matrix switcher through UTP/STP transmission cable.

Local or remote DC power source.

* + - * 1. Mounting:

Freestanding

1U, 1/2-width 19-inch rack-mountable

* 1. “C” RECEIVERS
		1. Receivers shall accept a multi-signal transmission over a single UTP or STP cable.
		2. Multi-Signal transmission shall be converted to standard HDMI video and control signals.
		3. Receiver shall support device control and communication when integrated with compatible control processors.
	2. RECEIVER TYPE C1
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. HDMI
				2. Analog stereo audio
				3. Amplified stereo audio
				4. USB HID (Human Interface Device)
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
				3. Relays for contact closure control.
		2. Basis of design product: Crestron **DM-RMC-200-C**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP.
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Integrated HD video scaling:

Deinterlacing and interlacing.

Frame rate conversion.

Deep Color support.

3D to 2D conversion.

Content adaptive noise reduction.

Wide screen format selection:

Zoom.

Stretch.

Maintain source aspect ratio.

1:1.

Video wall processing:

2x2.

3x2.

3x3.

4x3.

4x4.

* + - 1. Analog audio output:
				1. Digital to analog conversion: 24-bit 48 kHz.
				2. Volume gain range: -80db to 0db.
				3. Stereo line level.
				4. Stereo amplified, 15 Watts per channel at 8 ohms.
			2. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			3. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			4. Two (2) normally open isolated relay ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. Maximum ratings: 1 Amp, 30 Volts AC/DC.
			5. One (1) digital contact closure sensing port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. Rating: 0-24 Volts DC, referenced to ground.
			6. One (1) USB HID port.
				1. USB type A female.
			7. One (1) 10/100 LAN port.
			8. Single UTP/STP cable transmission connection
				1. Supports HDBaseT signal specifications.
				2. Supports CAT5e
				3. Signal transmission up to 330 feet
			9. Power supply:
				1. Local or remote DC power source.
			10. Mounts on a US 2-gang electrical box
	1. RECEIVER TYPE C2
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. HDMI
				2. USB HID (Human Interface Device)
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
		2. Basis of design product: Crestron **DM-RMC-SCALER-C**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP.
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Integrated HD video scaling:

Deinterlacing and interlacing.

Frame rate conversion.

Deep Color support.

3D to 2D conversion.

Content adaptive noise reduction.

Wide screen format selection:

Zoom.

Stretch.

Maintain source aspect ratio.

1:1.

Video wall processing:

2x2.

3x2.

3x3.

4x3.

4x4.

* + - 1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			3. One (1) USB HID port.
				1. USB type A female.
			4. One (1) 10/100 LAN port.
			5. Single UTP/STP cable transmission connection
				1. Supports HDBaseT signal specifications.
				2. Supports CAT5e
				3. Signal transmission up to 330 feet
			6. Power supply:
				1. Local or remote DC power source.
			7. Mounts on a US 2-gang electrical box
	1. RECEIVER TYPE 4K
		1. Description
			1. The signal receiver shall receive long distance 4K HDMI transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. 4K HDMI
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
		2. Basis of design product: Crestron **DM-RMC-4K-100-C**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports 4K.
				4. Supports DVI-D with adaptor.
				5. Supports HDCP.
				6. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			3. One (1) digital contact closure sensing port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. Rating: 0-24 Volts DC, referenced to ground.
			4. One (1) 10/100 LAN port.
			5. Single UTP/STP cable transmission connection
				1. Supports HDBaseT signal specifications.
				2. Supports remote power injection through matrix switcher.
				3. The receiver shall support transmissions over manufacturer suggested STP cable, CAT5e or CAT6 cable, or better.

Contact manufacturer prior to cable installation and use manufacturers suggested transmission cable, connectors, and installation methods for all segments of signal path.

* + - * 1. 2K Signal transmission up to 330 feet.
				2. 4K Signal transmission up to 230 feet.

Specifier: For maximum 4K signal transmission distance, specify Crestron DM-8G cable. Contact manufacturer prior to cable installation and use manufacturers current suggested transmission cable, connectors, and installation methods for all segments of signal path.

* + - 1. Power supply:
				1. Remote power supplied by matrix switcher through UTP/STP transmission cable.
				2. Local or remote DC power source.
			2. Mounts on a US 2-gang electrical box
	1. RECEIVER TYPE 4K WALL
		1. Description
			1. The signal receiver shall receive long distance 4K HDMI transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. 4K HDMI
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
		2. Basis of design product: Crestron **DM-RMC-4K-100-C-1G**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports 4K.
				4. Supports DVI-D with adaptor.
				5. Supports HDCP2.2
				6. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. One (1) bidirectional RS-232 port:
				1. One (1) 3-pin 3.5mm detachable terminal block.
				2. GND, TX, RX support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. One (1) IR/Serial port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			3. Single UTP/STP cable transmission connection
				1. Supports HDBaseT signal specifications.
				2. Supports remote power injection through matrix switcher.
				3. The receiver shall support transmissions over manufacturer suggested STP cable, CAT5e or CAT6 cable, or better.

Contact manufacturer prior to cable installation and use manufacturers suggested transmission cable, connectors, and installation methods for all segments of signal path.

* + - * 1. 2K Signal transmission up to 330 feet.
				2. 4K Signal transmission up to 230 feet.

Specifier: For maximum 4K signal transmission distance, specify Crestron DM-CBL-ULTRA cable. Contact manufacturer prior to cable installation and use manufacturers current suggested transmission cable, connectors, and installation methods for all segments of signal path.

* + - 1. Power supply:
				1. Remote power supplied by matrix switcher through UTP/STP transmission cable.
				2. Local or remote DC power source.
			2. Mounts in US 1-gang electrical box
	1. RECEIVER TYPE 4K SCALER
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. 4K HDMI
				2. HDCP2.2 Compliant
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
		2. Basis of design product: Crestron **DM-RMC-4K-SCALER-C**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP2.2
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Integrated HD video scaling:

4K/60 Scaling

Deinterlacing and interlacing.

Frame rate conversion.

Deep Color support.

Content adaptive noise reduction.

Wide screen format selection:

Zoom.

Stretch.

Maintain source aspect ratio.

1:1.

Video wall processing:

Up to 64 individual displays

* + - 1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			3. One (1) 10/100 LAN port.
			4. Single UTP/STP cable transmission connection
				1. Supports HDBaseT signal specifications.
				2. Supports CAT5e
				3. Signal transmission up to 330 feet
			5. Power supply:
				1. Local or remote DC power source.
				2. Power over HDBaseT
				3. Power over DM
	1. RECEIVER TYPE 4K SCALER WITH DSP
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. 4K HDMI
				2. HDCP2.2 Compliant
				3. Audio De-embedding
				4. Audio Downmixing
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
		2. Basis of design product: Crestron **DM-RMC-4K-SCALER-C-DSP**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP2.2
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Integrated HD video scaling:

4K/60 Scaling

Deinterlacing and interlacing.

Frame rate conversion.

Deep Color support.

Content adaptive noise reduction.

Wide screen format selection:

Zoom.

Stretch.

Maintain source aspect ratio.

1:1.

Video wall processing:

Up to 64 individual displays

* + - 1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			3. One (1) 10/100 LAN port.
			4. Single UTP/STP cable transmission connection
				1. Supports HDBaseT signal specifications.
				2. Supports CAT5e
				3. Signal transmission up to 330 feet
			5. Power supply:
				1. Local or remote DC power source.
				2. Power over HDBaseT
				3. Power over DM
	1. “S” RECEIVERS
		1. Receivers shall accept a multi-signal transmission over a single multimode fiber cable.
		2. Multi-Signal transmission shall be converted to standard HDMI video and control signals.
		3. Receiver shall support device control and communication when integrated with compatible control processors.
	2. RECEIVER TYPE S1
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. HDMI
				2. Analog stereo audio
				3. Amplified stereo audio
				4. USB HID (Human Interface Device)
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
				3. Relays for contact closure control.
		2. Basis of design product: Crestron **DM-RMC-200-S**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP.
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Integrated HD video scaling:

Deinterlacing and interlacing.

Frame rate conversion.

Deep Color support.

3D to 2D conversion.

Content adaptive noise reduction.

Wide screen format selection:

Zoom.

Stretch.

Maintain source aspect ratio.

1:1.

Video wall processing:

2x2.

3x2.

3x3.

4x3.

4x4.

* + - 1. Analog audio output:
				1. Digital to analog conversion: 24-bit 48 kHz.
				2. Volume gain range: -80db to 0db.
				3. Stereo line level.
				4. Stereo amplified, 15 Watts per channel at 8 ohms.
			2. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			3. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			4. Two (2) normally open isolated relay ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. Maximum ratings: 1 Amp, 30 Volts AC/DC.
			5. One (1) digital contact closure sensing port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. Rating: 0-24 Volts DC, referenced to ground.
			6. One (1) USB HID port.
				1. USB type A female.
			7. One (1) 10/100 LAN port.
			8. Single multimode fiber cable transmission connection
				1. One (1) SC female connector
				2. Signal transmission up to 1000 feet (300 m)
			9. Power supply:
				1. Local DC power source.
			10. Mounts on a US 2-gang electrical box
	1. RECEIVER TYPE S2
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. HDMI
				2. USB HID (Human Interface Device)
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
		2. Basis of design product: Crestron **DM-RMC-SCALER-S**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP.
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Integrated HD video scaling:

Deinterlacing and interlacing.

Frame rate conversion.

Deep Color support.

3D to 2D conversion.

Content adaptive noise reduction.

Wide screen format selection:

Zoom.

Stretch.

Maintain source aspect ratio.

1:1.

Video wall processing:

2x2.

3x2.

3x3.

4x3.

4x4.

* + - 1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			3. One (1) USB HID port.
				1. USB type A female.
			4. One (1) 10/100 LAN port.
			5. Single multimode fiber cable transmission connection
				1. One (1) SC female connector
				2. Signal transmission up to 1000 feet (300 m)
			6. Power supply:
				1. Local DC power source.
			7. Mounts on a US 2-gang electrical box
	1. RECEIVER TYPE S3
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. HDMI
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
		2. Basis of design product: Crestron **DM-RMC-100-S**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP.
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			3. One (1) digital contact closure sensing port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. Rating: 0-24 Volts DC, referenced to ground.
			4. One (1) 10/100 LAN port.
			5. Single multimode fiber cable transmission connection
				1. One (1) SC female connector
				2. Signal transmission up to 1000 feet (300 m)
			6. Power supply:
				1. Remote power supplied by matrix switcher through UTP/STP transmission cable.
				2. Local DC power source.
			7. Mounts on a US 2-gang electrical box
	1. RECEIVER TYPE S4
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. HDMI
				2. Analog stereo audio
				3. USB HID (Human Interface Device)
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
				3. Relays for contact closure control.
		2. Basis of design product: Crestron **DM-RMC-150-S**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP.
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Analog audio output:
				1. Digital to analog conversion: 24-bit 48 kHz.
				2. Volume gain range: -80db to 0db.
				3. Stereo line level.
				4. Stereo amplified, 15 Watts per channel at 8 ohms.
			2. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			3. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			4. Two (2) normally open isolated relay ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. Maximum ratings: 1 Amp, 30 Volts AC/DC.
			5. One (1) digital contact closure sensing port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. Rating: 0-24 Volts DC, referenced to ground.
			6. One (1) USB HID port.
				1. USB type A female.
			7. One (1) 10/100 LAN port.
			8. Single multimode fiber cable transmission connection
				1. One (1) SC female connector
				2. Signal transmission up to 1000 feet (300 m)
			9. Power supply:
				1. Local DC power source.
			10. Mounts on a US 2-gang electrical box
	1. “S2” RECEIVERS
		1. Receivers shall accept a multi-signal transmission over a singlemode fiber cable.
		2. Multi-Signal transmission shall be converted to standard HDMI video and control signals.
		3. Receiver shall support device control and communication when integrated with compatible control processors
	2. RECEIVER TYPE S2-1
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. HDMI
				2. Analog stereo audio
				3. Amplified stereo audio
				4. USB HID (Human Interface Device)
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
				3. Relays for contact closure control.
		2. Basis of design product: Crestron **DM-RMC-200-S2**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP.
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Integrated HD video scaling:

Deinterlacing and interlacing.

Frame rate conversion.

Deep Color support.

3D to 2D conversion.

Content adaptive noise reduction.

Wide screen format selection:

Zoom.

Stretch.

Maintain source aspect ratio.

1:1.

Video wall processing:

2x2.

3x2.

3x3.

4x3.

4x4.

* + - 1. Analog audio output:
				1. Digital to analog conversion: 24-bit 48 kHz.
				2. Volume gain range: -80db to 0db.
				3. Stereo line level.
				4. Stereo amplified, 15 Watts per channel at 8 ohms.
			2. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			3. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			4. Two (2) normally open isolated relay ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. Maximum ratings: 1 Amp, 30 Volts AC/DC.
			5. One (1) digital contact closure sensing port:
				1. One (1) 2-pin 3.5mm detachable terminal block.
				2. Rating: 0-24 Volts DC, referenced to ground.
			6. One (1) USB HID port.
				1. USB type A female.
			7. One (1) 10/100 LAN port.
			8. Singlemode fiber cable transmission connection
				1. One (1) LC female connector.
				2. Supports G.652.D single-mode fiber optic cable.
				3. Signal transmission up to 7.5 miles (12 km).
			9. Power supply:
				1. Local DC power source.
			10. Mounts on a US 2-gang electrical box
	1. RECEIVER TYPE S2-2
		1. Description
			1. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
				1. HDMI
				2. USB HID (Human Interface Device)
			2. Receiver shall include the following control port types for remote device control.
				1. Serial RS-232 communication.
				2. Infrared (IR) control.
		2. Basis of design product: Crestron **DM-RMC-SCALER-S2**
		3. Performance

The receiver shall meet the following minimum requirements:

* + - 1. HDMI digital video, audio, and control output:
				1. One (1) 19-pin Type A HDMI female connector
				2. Supports HDMI with Deep Color and 3D.
				3. Supports DVI-D with adaptor.
				4. Supports HDCP.
				5. HDMI audio Support:

Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.

* + - * 1. CEC device control.
			1. Integrated HD video scaling:

Deinterlacing and interlacing.

Frame rate conversion.

Deep Color support.

3D to 2D conversion.

Content adaptive noise reduction.

Wide screen format selection:

Zoom.

Stretch.

Maintain source aspect ratio.

1:1.

Video wall processing:

2x2.

3x2.

3x3.

4x3.

4x4.

* + - 1. One (1) bidirectional RS-232 port:
				1. One (1) 5-pin 3.5mm detachable terminal block.
				2. GND, TX, RX, CTS, RTS support.
				3. Up to 115.2k baud, hardware and software handshaking support.
			2. Two (2) IR/Serial ports:
				1. One (1) 4-pin 3.5mm detachable terminal block.
				2. IR output up to 1.1 MHz.
				3. 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
			3. One (1) USB HID port.
				1. USB type A female.
			4. One (1) 10/100 LAN port.
			5. Singlemode fiber cable transmission connection
				1. One (1) LC female connector.
				2. Supports G.652.D single-mode fiber optic cable.
				3. Signal transmission up to 7.5 miles (12 km).
			6. Power supply:
				1. Local DC power source.
			7. Mounts on a US 2-gang electrical box
1. NOT USED

END OF SECTION 27 41 16