SECTION 27 41 16.70

INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

Equipment Specified in this section:

HD-XSPA

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INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

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1. GENERAL
   1. SECTION INCLUDES
      1. High Definition Surround Processor System

The HD switching Surround Sound Processor and control interface unit integrates 4K HDMI transmission receive capability, 4K HDMI switching, audio switching, surround sound processing and amplification, and local device control.

1. PRODUCTS
   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](http://www.crestron.com) **[**or comparable products from a single manufacturer approved by A/E prior to bidding**]**, with the following components and characteristics.

* 1. 4K HDMI SURROUND SOUND PROCESSOR
     1. Basis of Design Product:
        1. Crestron, **HD-XSPA** High Definition Surround Sound AV Receiver.
     2. System Architecture
        1. The Surround Sound Processor shall be a single integrated Surround Sound Processor, switcher, amplifier and control interface unit integrating the following functions:
           1. 4K HDMI switching.
           2. HDBaseT and 4K HDMI transmission receiver
           3. Analog and digital audio switching
           4. Stereo mix-down output
           5. 8 channel audio amplifier
           6. Line level and amplified sub-woofer output
           7. Device control interface
        2. The Surround Sound Processor shall integrate the following external devices utilizing a control processor and user interface by same manufacturer:
           1. External Single Cable HDBaseT or 4K Signal transmitter or transmitting matrix switcher
           2. 4K HDMI source devices
           3. 4K HDMI Video display
           4. Local system devices under control
     3. Front Panel Control Interface
        1. The front panel user interface shall provide the following system functions:
           1. System Setup
           2. Basic control
  2. SURROUND SOUND AUDIO
     1. Surround Sound Processor Decoding Modes:
        1. None, Stereo, Dolby Pro Logic IIx Movie, Dolby Pro Logic IIx Music, DTS Neo:6 Cinema, DTS Neo:6 Music, Two Channel Steering – Surround, Two Channel Steering – Rear, Multi-Channel Stereo (Party), Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS, DTS-ES Matrix, DTS-ES Discrete, DTS 96/24, DTS-HD Master Audio™, PCM Multi-Channel
     2. Analog audio output
        1. Pre-amp Down-mix: 2 female RCA connectors
        2. Pre-amp sub-woofer: 1 female RCA connector
  3. AUDIO AMPLIFIER
     1. Integrated Audio Power Amplification
        1. 8 amplifier channels with the following options:
           1. 7.1 Surround – 140 Watts per channel at 8 ohms, 280 Watts per channel at 4 ohms
           2. 5.1 Surround plus Zone-2 stereo down-mix
        2. Connectors:
           1. (8) 2-pin 7.62mm 15A detachable terminal blocks
  4. VIDEO MATRIX SWITCHER
     1. Switcher Signal Routing
        1. Any video input signal shall be routable to the 4K HDMI output.
        2. The internal 4K video switcher shall have multiple inputs.
           1. Four 19-pin Type A HDMI female connector
           2. One 8-pin RJ-45 female connector with support for:

4K Single Cable Signal Transmission protocol

HDBaseT compliant signals

* + - 1. Video matrix switching shall be executed in the digital domain.
    1. HDMI inputs:
       1. Connectors: four (4) 19-pin type A female HDMI
       2. Format:
          1. 4K 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. Transmitter receive input:
       1. Connector: 1 female 8-pin RJ-45 connector
       2. Format:
          1. 4K 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. HDMI Outputs:
       1. Connector: One (1) 19-pin type A female HDMI
       2. Format:
          1. 4K HDMI with Deep Color and 3D
          2. HDCP content protection
       3. Output video resolution: Matched to input resolution
  1. SYSTEM CONTROL INTERFACE
     1. Control Master
        1. The Switching Surround Processor unit shall connect to an external control processor by same manufacturer via 10/100 BaseT Ethernet.
     2. Local Control Port Minimum Characteristics:
        1. Infrared Output
           1. Four 2-pin 3.5mm detachable terminal blocks, IR/Serial output ports;

IR output up to 1.2 MHz; One-way serial TTL/RS-232 (0-5 Volts) 2 up to 9600 baud .

* + - 1. Digital Input
         1. One 5-pin 3.5mm detachable terminal block.

Comprised of 4 digital/contact closure inputs.

Rated for 0-24 Volts DC, referenced to GND.

Input Impedance: 2.2k ohms pulled up to 5 Volts DC.

Logic Threshold: 2.5 Volts DC nominal with 1 Volt hysteresis band.

* + - 1. Relay
         1. One 4-pin 3.5mm detachable terminal block.

Comprised of 2 normally open, isolated relays.

Rated 1 Amp, 30 Volts AC/DC.

MOV arc suppression across contacts.

* + - 1. Serial Communication Port
         1. One 5-pin 3.5mm detachable terminal block, bidirectional RS-232 ports.
         2. Up to 115.2k baud, hardware and software handshaking support for communication with serial devices.
      2. Ethernet
         1. One 8-wire RJ45 with 2 LED indicators.

10/100BaseT Ethernet port.

1. EXECUTION - NOT USED

END OF SECTION 27 41 16