

	<p>भारतीय प्रौद्योगिकीसंस्थानमद्रासचेन्नै 600 036 INDIAN INSTITUTE OF TECHNOLOGY MADRAS Chennai 600 036 भंडार एवं क्रय अनुभाग STORES & PURCHASE SECTION Email: adstores@iitm.ac.in दूरभाष: (044) 2257 8285 / 8286 / 8287 / 8288 फ़ैक्स: (044) 2257 8292 Telephone : (044) 2257 8285/8286/8287/8288 FAX: (044) 2257 8292 GSTIN: 33AAAAI3615G1Z6</p>	
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BOOMA SOWHIRAJAN

Assistant Registrar (Stores & Purchase)

Date: **19.04.2021**

CORRIGENDUM - I

**“SUPPLY, INSTALLATION AND COMMISSIONING OF AUDIO AND VIDEO CONFERENCING SYSTEM
IN BOARD ROOM of IIT MADRAS AS PER DESIGN”**

Tender No. IITM/SPS/AV System/001/2021-22

e-Tender ID: 2021_IITM_75180_1

1. In Page No. 10, (C) – Bill of Material – Sl. No. 7 may be read as

Sl.No.	Description	Make	UoM	Qty
7	USB 2.0 Extender	ICRON/CRESTRON/ EXTRON	No.	2
Instead of				
7	USB 2.0 Extender	ICRON/CRESTRON	No.	2

2. In Page No. 11, (D) – Detailed Technical Specification – Sl. No. 1 – 98” UHD Display may be read as

Item Reference	1
Item Description	98" UHD Display
Make/Brand	SAMSUNG/LG/PANASONIC
Minimum Performance Parameters	
Panel	
Diagonal Size	98"
Type	Edge LED BLU
OS	Tizen/equivalent
Resolution	3840*2160 (4K UHD)
Pixel Pitch(mm)	0.562 x 0.562 (mm)
Active Display Area(mm)	2158.848(H) x 1214.352(V)
Brightness(Typ.)	350 nits or better
Contrast Ratio	4000:1 / 1200:1
Viewing Angle(H/V)	178/178
Response Time(G-to-G)	6ms(Typ.)
Display Colors	16.7M
Color Gamut	0.72
Operation Hour	24/7
Panel	Anti-Glare Panel
Display	
Dynamic C/R	Mega
H-Scanning Frequency	30 ~ 81kHz

V-Scanning Frequency	48 ~ 75Hz
Maximum Pixel Frequency	≥594MHz
Input Connectivity	
RGB	DVI-D/ Display Port 1.2/ Mini D-Sub
Video	2 x HDMI 2.0 or greater
HDCP	HDCP2.2
Audio	Stereo mini Jack, DVI, HDMI
USB	USB 2.0 x 2
Output Connectivity	
RGB	HDMI 2.0 (loop-out) or Display Port 1.2 (Out)
Audio	Stereo mini Jack
External Control	RS232C(in/out) thru stereo jack, RJ45
External Sensor	IR
Power	
Power supply	AC 100 - 240 V~ (+/- 10 %), 50 Hz
Instead of	
Item Reference	1
Item Description	98" UHD Display
Make/Brand	SAMSUNG/LG/PANASONIC
Minimum Performance Parameters	
Panel	
Diagonal Size	98"
Type	Edge LED BLU
OS	Tizen
Resolution	3840*2160 (4K UHD)
Pixel Pitch(mm)	0.562 x 0.562 (mm)
Active Display Area(mm)	2158.848(H) x 1214.352(V)
Brightness(Typ.)	350 nits
Contrast Ratio	(4000:1)
Viewing Angle(H/V)	178/178
Response Time(G-to-G)	6ms(Typ.)
Display Colors	16.7M
Color Gamut	0.72
Operation Hour	24/7
Panel	Anti-Glare Panel
Display	
Dynamic C/R	Mega
H-Scanning Frequency	30 ~ 81kHz
V-Scanning Frequency	48 ~ 75Hz
Maximum Pixel Frequency	≥594MHz
Input Connectivity	
RGB	DVI-D, Display Port 1.2 (1)
Video	HDMI 2.0 (2)
HDCP	HDCP2.2

Audio	Stereo mini Jack, DVI, HDMI
USB	USB 2.0 x 2
Output Connectivity	
RGB	HDMI 2.0 (Loop-out)
Audio	Stereo mini Jack
External Control	RS232C(in/out) thru stereo jack, RJ45
External Sensor	IR
Power	
Power supply	AC 100 - 240 V~ (+/- 10 %), 50 Hz

3. In Page No. 11 & 12, (D) – Detailed Technical Specification – Sl. No. 2 – 65” UHD Display may be read as

Item Reference	2
Item Description	65" UHD Display
Make/Brand	SAMSUNG/LG/PANASONIC
Minimum Performance Parameters	
Panel	
Diagonal Size	65"
Type	Edge LED BLU /D- LED
Resolution	3840*2160 (4K UHD)
OS	Tizen or equivalent
Pixel Pitch(mm)	0.372 x 0.372 (mm)
Active Display Area(mm)	2158.848(H) x 1214.352(V)
Brightness(Typ.)	350 nits or better
Contrast Ratio	4000:1 / 1200:1
Viewing Angle(H/V)	178/178
Response Time(G-to-G)	8ms(Typ.)
Display Colors	16.7M
Color Gamut	0.92
Operation Hour	(16/7)
Panel	Anti-Glare Panel
Display	
Dynamic C/R	Mega
H-Scanning Frequency	30 ~ 81kHz
V-Scanning Frequency	48 ~ 75Hz
Maximum Pixel Frequency	≥ 594MHz
Input Connectivity	
RGB	DVI-D / BNC
Video	2 x HDMI 2.0 or more
HDCP	HDCP2.2
Audio	Stereo Mini Jack, DVI/HDMI/Audio(Common)
USB	USB 2.0 x 2
Output Connectivity	
RGB	HDMI 2.0 (loop-out) / DP 1.2 (Out)

Audio	Stereo mini Jack
External Control	RS232C(in/out) thru stereo jack, RJ45
External Sensor	IR
Power	
Power supply	AC 100 - 240 V~ (+/- 10 %), 50 Hz
Instead of	
Item Reference	2
Item Description	65" UHD Display
Make/Brand	SAMSUNG/LG/PANASONIC
Minimum Performance Parameters	
Panel	
Diagonal Size	65"
Type	Edge LED BLU
Resolution	3840*2160 (4K UHD)
OS	Tizen
Pixel Pitch(mm)	0.372 x 0.372 (mm)
Active Display Area(mm)	2158.848(H) x 1214.352(V)
Brightness(Typ.)	350 nits
Contrast Ratio	(4000:1)
Viewing Angle(H/V)	178/178
Response Time(G-to-G)	8ms(Typ.)
Display Colors	16.7M
Color Gamut	0.92
Operation Hour	(16/7)
Panel	Anti-Glare Panel
Display	
Dynamic C/R	Mega
H-Scanning Frequency	30 ~ 81kHz
V-Scanning Frequency	48 ~ 75Hz
Maximum Pixel Frequency	≥594MHz
Input Connectivity	
RGB	DVI-D
Video	HDMI 2.0 (2)
HDCP	HDCP2.2
Audio	Stereo Mini Jack, DVI/HDMI/Audio(Common)
USB	USB 2.0 x 2
Output Connectivity	
RGB	HDMI 2.0 (Loop-out)
Audio	Stereo mini Jack
External Control	RS232C(in/out) thru stereo jack, RJ45
External Sensor	IR
Power	
Power supply	AC 100 - 240 V~ (+/- 10 %), 50 Hz

4. In Page No. 12 & 13 (D) – Detailed Technical Specification – Sl. No. 3 – Wireless Presenter may be read as

Item Reference	3
Item Description	Wireless Presenter
Make/Brand	CRESTRON/EXTRON/KRAMER
Minimum Performance Parameters	
Ethernet	100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1x, Active Directory authentication, HTTPS web browser setup, 802.3af and 802.3at Type 1 compliant
RS-232	2-way display device control up to 115.2k baud with hardware and software handshaking
IR/Serial	1-way display device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5V)
HDMI Input	HDCP 1.4, EDID; Should supports management of HDCP and EDID
OS Support	Apple® iOS®, Android™, Windows® 7, Windows 8, Windows 10, macOS®, Chrome OS™
Video Frame Rate	Up to 30 fps or higher, audio supported
Output Resolutions	640x480@60Hz, 800x600@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50),
	1280x720@60Hz (720p60), 1280x800@60Hz, 1366x768@60Hz, 1440x900@60Hz,
	1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)
Bitrate Peak	0.25 to 8.5 Mbps or higher, variable depending on content complexity
Bitrate Average	1.4 Mbps typical
Audio Format	Stereo
Input Signal Types	"Wireless Input, HDMI (DVI & Dual-Mode DisplayPort™ compatible3);
Output Signal Types	Simultaneous display of two sources, Should be able to adjust the screen orientation when present from mobile device
Maximum Input Resolution	HDMI (DVI compatible3)
Background & Logo File Support	"1920x1080@60Hz (HD 1080p60), 4:4:4,
Output Signal Type	36 bit color depth"
Connection	
Console	Micro-USB Type B connector, female / USB 2.0 device port for computer console (installer setup)
IR	4-pin 3.5 mm detachable terminal block; IR/Serial output port for display device control; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5V) up to 19200 baud
COM	5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port for display device control; Up to 115.2k baud, hardware and software handshaking support
HDMI INPUT	HDMI Type A connector, female; HDMI digital video/audio input; (DVI & Dual-Mode DisplayPort compatible3)
HDMI OUTPUT	HDMI Type A connector, female; HDMI digital video/audio output; (DVI compatible)
USB	USB Type A connector, female
LAN PoE	8-pin RJ-45 connector, female; 100Base-TX Ethernet port and PoE PD port
24VDC 0.75A	2.1 x 5.5 mm DC power connector/ equivalent
	24VDC power input (Should include in the Box, If not can be added separate)
Ground	6-32 screw / equivalent
	Chassis ground lug / equivalent
Instead of	
Item Reference	3
Item Description	Wireless Presenter
Make/Brand	CRESTRON/EXTRON/KRAMER

Minimum Performance Parameters	
Ethernet	100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1x, Active Directory authentication, HTTPS web browser setup, 802.3af and 802.3at Type 1 compliant
RS-232	2-way display device control up to 115.2k baud with hardware and software handshaking
IR/Serial	1-way display device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5V) up to 19.2k baud
HDMI Input	HDCP 1.4, EDID; Should supports management of HDCP and EDID
OS Support	Apple® iOS®, Android™, Windows® 7, Windows 8, Windows 10, macOS®, Chrome OS™
Video Frame Rate	Up to 30 fps, audio supported
Output Resolutions	640x480@60Hz, 800x600@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50),
	1280x720@60Hz (720p60), 1280x800@60Hz, 1366x768@60Hz, 1440x900@60Hz,
	1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)
Bitrate Peak	0.25 to 8.5 Mbps, variable depending on content complexity
Bitrate Average	1.4 Mbps typical
Audio Format	Stereo
Input Signal Types	"Wireless Input, HDMI (DVI & Dual-Mode DisplayPort™ compatible3);
Output Signal Types	Simultaneous display of two sources, Should be able to adjust the screen orientation when present from mobile device
Maximum Input Resolution	HDMI (DVI compatible3)
Background & Logo File Support	"1920x1080@60Hz (HD 1080p60), 4:4:4,
Output Signal Type	36 bit color depth"
Connection	
Console	Micro-USB Type B connector, female; USB 2.0 device port for computer console (installer setup)
IR	4-pin 3.5 mm detachable terminal block; IR/Serial output port for display device control; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5V) up to 19200 baud
COM	5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port for display device control; Up to 115.2k baud, hardware and software handshaking support
HDMI INPUT	HDMI Type A connector, female; HDMI digital video/audio input; (DVI & Dual-Mode DisplayPort compatible3)
HDMI OUTPUT	HDMI Type A connector, female; HDMI digital video/audio output; (DVI compatible)
USB	USB Type A connector, female
LAN PoE	8-pin RJ-45 connector, female; 100Base-TX Ethernet port and PoE PD port
24VDC 0.75A	2.1 x 5.5 mm DC power connector;
	24VDC power input (Should include in the Box, If not can be added separate)
Ground	6-32 screw;
	Chassis ground lug

5. In Page No. 13 & 14, (D) – Detailed Technical Specification – Sl. No. 4 – AV Over IP Decoder may be read as

Item Reference	4
Item Description	AV Over IP Decoder
Make/Brand	CRESTRON/EXTRON/KRAMER
Minimum Performance Parameters	
Decoding	
Video Codec	Pixel Perfect Processing / processing which support 4K60, 4:4:4, and HDR flawless video transport
Video Resolutions	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color support
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)
Bit Rates	200 to 850 Mbps or higher
Streaming Protocols	RTP, SDP
Container	MPEG-2 transport stream (.ts)
Session Initiation	Multicast via secure RTSP
Copy Protection	HDCP 2.2, AES-128, PKI
Video	
Output Signal Types	HDMI with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support1 (DVI compatible6)
Copy Protection	HDCP 2.2
Audio	
Input Signal Types	HDMI (Dual-Mode Display Port interface compatible)
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels
Analog Formats	Stereo 2-channel
Digital-To-Analog Conversion	24-bit 48 kHz
AES67	24-bit 48 kHz
Analog Performance	Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz;
	Stereo Separation: >90 dB
Analog Output Volume Adjustment	-80 to +20 dB
Communications	
Ethernet	8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port; 2 PoE+ PD (powered device) port, IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant;
HDMI OUTPUT	HDMI Type A connector, female; HDMI digital video/audio output1 (DVI compatible6)
AUDIO	5-pin 3.5 mm detachable terminal block; Balanced/unbalanced stereo line-level audio output3; Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced; Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced
CONSOLE, USB	Micro USB connector, female; USB 2.0 computer console port (for setup)
IR 1 – 2	4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; 5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port;
COM	Up to 115.2k baud, hardware and software handshaking support
24VDC 2.0A	2.1 x 5.5 mm DC power connector/ equivalent
	24 VDC power input (Should Included in the Box, If not can be added separate)
Ground	6-32 screw / equivalent
	Chassis ground lug / equivalent

Instead of	
Item Reference	4
Item Description	AV Over IP Decoder
Make/Brand	CRESTRON/EXTRON/KRAMER
Minimum Performance Parameters	
Decoding	
Video Codec	Pixel Perfect Processing
Video Resolutions	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color support
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)
Bit Rates	200 to 950 Mbps
Streaming Protocols	RTP, SDP
Container	MPEG-2 transport stream (.ts)
Session Initiation	Multicast via secure RTSP
Copy Protection	HDCP 2.2, AES-128, PKI
Video	
Output Signal Types	HDMI with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support1 (DVI compatible6)
Copy Protection	HDCP 2.2
Audio	
Input Signal Types	HDMI (Dual-Mode Display Port interface compatible)
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels
Analog Formats	Stereo 2-channel
Digital-To-Analog Conversion	24-bit 48 kHz
AES67	24-bit 48 kHz
Analog Performance	Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz;
	Stereo Separation: >90 dB
Analog Output Volume Adjustment	-80 to +20 dB
Communications	
Ethernet	8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port; 2 PoE+ PD (powered device) port, IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant;
HDMI OUTPUT	HDMI Type A connector, female; HDMI digital video/audio output1 (DVI compatible6)
AUDIO	5-pin 3.5 mm detachable terminal block; Balanced/unbalanced stereo line-level audio output3; Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced; Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced
CONSOLE, USB	Micro USB connector, female; USB 2.0 computer console port (for setup)
IR 1 – 2	4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; 5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port;
COM	Up to 115.2k baud, hardware and software handshaking support
24VDC 2.0A	2.1 x 5.5 mm DC power connector;
	24 VDC power input (Should Included in the Box, If not can be added separate)
Ground	6-32 screw;
	Chassis ground lug

6. In Page No. 14 & 15, (D) – Detailed Technical Specification – Sl. No. 5 – AV Over IP Encoder may be read as

Item Reference	5
Item Description	AV Over IP Encoder
Make/Brand	CRESTRON/EXTRON/KRAMER
Minimum Performance Parameters	
Encoding	
Video Codec	Pixel Perfect Processing / processing which support 4K60, 4:4:4, and HDR flawless video transport
Video Resolutions	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color support
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)
Bit Rates	200 to 950 Mbps
Streaming Protocols	RTP, SDP
Container	MPEG-2 transport stream (.ts)
Session Initiation	Multicast via secure RTSP
Copy Protection	HDCP 2.2, AES-128, PKI
Video	
Output Signal Types	HDMI with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support ¹ (DVI compatible ⁶)
Copy Protection	HDCP 2.2
Audio	
Input Signal Types	HDMI (Dual-Mode DisplayPort interface compatible ⁷)
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels
Analog Formats	Stereo 2-channel
Digital-To-Analog Conversion	24-bit 48 kHz
AES67	24-bit 48 kHz
Analog Performance	Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz;
	Stereo Separation: >90 dB
Analog Output Volume Adjustment	-80 to +20 dB
Communications	
Ethernet	(1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port; 2 PoE+ PD (powered device) port, IEEE 802.3at Type 2 PoE+
HDMI OUTPUT	(1) HDMI Type A connector, female; HDMI digital video/audio output ¹ (DVI compatible ⁶)
AUDIO	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE browser setup and control
CONSOLE, USB	USB 2.0 computer console (for setup)
RS-232	2-way device control and monitoring up to 115.2k baud with hardware and software handshaking (via control system); computer console (for setup) (1) 4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports;
IR/Serial	IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud;
COM	1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 V)
HDMI	HDCP 2.2, EDID, CEC
Instead of	
Item Reference	5
Item Description	AV Over IP Encoder
Make/Brand	CRESTRON/EXTRON/KRAMER

Minimum Performance Parameters	
Encoding	
Video Codec	Pixel Perfect Processing
Video Resolutions	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color support
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)
Bit Rates	200 to 950 Mbps
Streaming Protocols	RTP, SDP
Container	MPEG-2 transport stream (.ts)
Session Initiation	Multicast via secure RTSP
Copy Protection	HDCP 2.2, AES-128, PKI
Video	
Output Signal Types	HDMI with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support1 (DVI compatible6)
Copy Protection	HDCP 2.2
Audio	
Input Signal Types	HDMI (Dual-Mode DisplayPort interface compatible7
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels
Analog Formats	Stereo 2-channel
Digital-To-Analog Conversion	24-bit 48 kHz
AES67	24-bit 48 kHz
Analog Performance	Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz;
	Stereo Separation: >90 dB
Analog Output Volume Adjustment	-80 to +20 dB
Communications	
Ethernet	(1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port;2 PoE+ PD (powered device) port,IEEE 802.3at Type 2 PoE+
HDMI OUTPUT	(1) HDMI Type A connector, female; HDMI digital video/audio output1 (DVI compatible6)
AUDIO	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, T+D40:D46P/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE browser setup and control, Crestron 3-Series or later control system integration
CONSOLE, USB	USB 2.0 computer console (for setup)
RS-232	2-way device control and monitoring up to 115.2k baud with hardware and `software handshaking (via control system); computer console (for setup) (1) 4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports;
IR/Serial	IR output up to 1.1 MHz;1-way serial TTL/RS-232 (0-5 V) up to 19200 baud;
COM	1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 V) up to 19.2k baud (via control system)
HDMI	HDCP 2.2, EDID, CEC

7. In Page No. 16, (D) – Detailed Technical Specification – Sl. No. 7 – USB 2.0 Extender may be read as

Item Reference	7
Item Description	USB 2.0 Extender
Approved Make/Brand	CRESTRON/ICRON/EXTRON

Minimum Performance Parameters	
Communications	
Link	USB extension up to 100 m (330 ft) over solid-core CAT5e (or better) unshielded twisted pair (UTP) cable ²
USB Device Support	USB 1.0/1.1 and 2.0 compatible including mass storage and isochronous devices ¹
USB Hub Support	Any signal chain may include up to 4 USB hubs plus
Maximum USB Devices	30 USB devices, or 4 USB hubs with 26 USB devices
Host Computer OS Support	Windows®, macOS®, and Linux® operating systems
USB Throughput	USB 2.0 up to 480 Mbps, USB 1.1 up to 12 Mbps
Connectors – Local endpoint	
Power	2.1 x 5.5 mm DC power connector; 24 V, 1A DC power input (power supply included)
Link	8-pin RJ45 connector, female; Connects directly to a Remote extender ²
USB	USB Type B connector, female; USB 2.0 device port for connection to the USB host computer, media server, game console, annotator, codec, etc.
Connectors – Remote endpoint	
Power	2.1 x 5.5 mm DC power connector; 24 V, 1A DC power input
Link	8-pin RJ45 connector, female; Should connects to Link port on the Local endpoint
USB	USB Type A connectors, female; USB 2.0 host ports for connection of USB devices such as mice, keyboards, and other USB devices Available USB Power: 1 A maximum per port, 1.5 A maximum total
Instead of	
Item Reference	7
Item Description	USB 2.0 Extender
Approved Make/Brand	CRESTRON/ICRON
Minimum Performance Parameters	
Communications	
Link	USB extension up to 100 m (330 ft) over solid-core CAT5e (or better) unshielded twisted pair (UTP) cable ²
USB Device Support	USB 1.0/1.1 and 2.0 compatible including mass storage and isochronous devices ¹
USB Hub Support	Any signal chain may include up to 4 USB hubs plus
Maximum USB Devices	30 USB devices, or 4 USB hubs with 26 USB devices
Host Computer OS Support	Windows®, macOS®, and Linux® operating systems
USB Throughput	USB 2.0 up to 480 Mbps, USB 1.1 up to 12 Mbps
Connectors – Local endpoint	
Power	2.1 x 5.5 mm DC power connector; 24 V, 1A DC power input (power supply included)
Link	8-pin RJ45 connector, female; Connects directly to a Remote extender ²
USB	USB Type B connector, female; USB 2.0 device port for connection to the USB host computer, media server, game console, annotator, codec, etc.
Connectors – Remote endpoint	
Power	2.1 x 5.5 mm DC power connector; 24 V, 1A DC power input
Link	8-pin RJ45 connector, female; Should connects to Link port on the Local endpoint
USB	USB Type A connectors, female; USB 2.0 host ports for connection of USB devices such as mice, keyboards, and other USB devices Available USB Power: 1 A maximum per port, 1.5 A maximum total

8. In Page No. 19 & 20, (D) – Detailed Technical Specification – Sl. No. 15 – Control Processor may be read as

Item Reference	15
Item Description	Control Processor
Approved Make/Brand	CRESTRON/EXTRON/KRAMER
Minimum performance parameters	
Communications	
Ethernet	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, industry-standard TCP/IP stack, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), FIPS 140-2 compliant encryption, IEEE 802.1xX, SNMP, BACnet™ and IP1, IPv4 or IPv6, Active Directory® service authentication, HTTPS web server, HTTPS web browser setup
USB	Should Support USB mass storage class devices via the rear panel USB 2.0 host port, supports computer console via the front panel USB 2.0 device port
RS-232/422/485	For 2-way device control and monitoring, COM port should support RS-232 up to 115.2k baud with software handshaking, one port also should support RS-422 or RS-485 and hardware handshaking
IR/Serial	Should support 1-way device control via infrared up to 1.2 MHz or serial TTL/RS-232 (0–5 V) up to 115.2k baud
Memory	
SDRAM	2 GB
Flash	8 GB
Memory Card	Should support SD and SDHC cards up to 32 GB
External Storage	Should Support USB mass storage devices up to 1 TB
Connectors	
RELAY OUTPUT 1–8	4-pin 3.5 mm detachable terminal block; Should comprise (8) normally open, isolated relays; Rated 1 A, 30 VAC/VDC; MOV arc suppression across contacts
I/O 1–8	9-pin 3.5 mm detachable terminal block; Should comprises (8) Versiport digital input/output or analog input ports (referenced to GND); Digital Input: Rated for 0–24 VDC, input impedance 20k Ω, logic threshold >3.125 V low/0 and <1.875 V high/1; Digital Output: 250 mA sink from maximum 24 VDC, catch diodes for use with real world loads; Analog Input: Rated for 0–10 VDC, protected to 24 VDC maximum, input impedance 21k Ω with pull-up resistor disabled; Programmable 5 V, 2k Ω pull-up resistor per pin
IR - SERIAL OUTPUT 1–8	8-pin 3.5 mm detachable terminal blocks; Should comprises (8) IR output ports; IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0–5 V) up to 115.2k baud
COM 1	5-pin 3.5 mm detachable terminal block; Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking support
COM 2–3	3-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking support
MEMORY	SD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log files
USB	USB Type A connector, female; USB 2.0 port for storage devices
LAN	8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port

CONTROL SUBNET	8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port;
COMMUNICATION BUS	4-pin 3.5 mm detachable terminal block; Network master port; Outputs power to Network devices only if the included power pack is connected to the 24 VDC power input jack; Alternately functions as a Network power input to power the unit from a Network power supply;
Power	2.1 x 5.5 mm DC power connector / equivalent; 24 V, 2A DC power input; Passes through to the NET port to power Network devices;
Ground	6-32 screw; Chassis ground lug / equivalent
COMPUTER (front)	USB Type B connector, female; USB 2.0 computer console port;
Features	Should be able to run 10 Programs simultaneously
Instead of	
Item Reference	15
Item Description	Control Processor
Approved Make/Brand	CRESTRON/EXTRON/KRAMER
Minimum performance parameters	
Communications	
Ethernet	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, industry-standard TCP/IP stack, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), FIPS 140-2 compliant encryption, IEEE 802.1x, SNMP, BACnet™ and IP1, IPv4 or IPv6, Active Directory® service authentication, HTTPS web server, HTTPS web browser setup
USB	Should Support USB mass storage class devices via the rear panel USB 2.0 host port, supports computer console via the front panel USB 2.0 device port
RS-232/422/485	For 2-way device control and monitoring, COM port should support RS-232 up to 115.2k baud with software handshaking, one port also should support RS-422 or RS-485 and hardware handshaking
IR/Serial	Should support 1-way device control via infrared up to 1.2 MHz or serial TTL/RS-232 (0–5 V) up to 115.2k baud
Memory	
SDRAM	2 GB
Flash	8 GB
Memory Card	Should support SD and SDHC cards up to 32 GB
External Storage	Should Support USB mass storage devices up to 1 TB
Connectors	
RELAY OUTPUT 1–8	4-pin 3.5 mm detachable terminal block; Should comprise (8) normally open, isolated relays; Rated 1 A, 30 VAC/VDC; MOV arc suppression across contacts
I/O 1–8	9-pin 3.5 mm detachable terminal block; Should comprises (8) Versiport digital input/output or analog input ports (referenced to GND); Digital Input: Rated for 0–24 VDC, input impedance 20k Ω , logic threshold >3.125 V low/0 and <1.875 V high/1; Digital Output: 250 mA sink from maximum 24 VDC, catch diodes for use with real world loads; Analog Input: Rated for 0–10 VDC, protected to 24 VDC maximum, input impedance 21k Ω with pull-up resistor disabled; Programmable 5 V, 2k Ω pull-up resistor per pin

IR - SERIAL OUTPUT 1-8	8-pin 3.5 mm detachable terminal blocks; Should comprises (8) IR output ports; IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 115.2k baud
COM 1	5-pin 3.5 mm detachable terminal block; Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking support
COM 2-3	3-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking support
MEMORY	SD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log files
USB	USB Type A connector, female; USB 2.0 port for storage devices
LAN	8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port
CONTROL SUBNET	8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port; Provides a dedicated local network for Crestron devices
COMMUNICATION BUS	4-pin 3.5 mm detachable terminal block; Network master port; Outputs power to Network devices only if the included power pack is connected to the 24 VDC power input jack; Alternately functions as a Network power input to power the unit from a Network power supply;
Power	2.1 x 5.5 mm DC power connector; 24 V, 2A DC power input; Passes through to the NET port to power Network devices;
Ground	6-32 screw; Chassis ground lug
COMPUTER (front)	USB Type B connector, female; USB 2.0 computer console port;
Features	Should be able to run 10 Programs simultaneously

9. In Page No. 31, (B) – Technical Specification sheet for Audio and Video Conferencing System –
Sl. No. 1 – 98” UHD Display may be read as

Name of the Make/Brand and Model No		Make /Brand Name :
		Model No
Description	Compliance	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
	(Yes/No)	
Minimum Performance Parameters		
Panel		
Diagonal Size	98”	
Type	Edge LED BLU	
OS	Tizen /equivalent	
Resolution	3840*2160 (4K UHD)	
Pixel Pitch(mm)	0.562 x 0.562 (mm)	
Active Display Area(mm)	2158.848(H) x 1214.352(V)	
Brightness(Typ.)	350 nits or better	
Contrast Ratio	4000:1 / 1200:1	
Viewing Angle(H/V)	178/178	
Response Time(G-to-G)	6ms(Typ.)	
Display Colors	16.7M	
Color Gamut	0.72	

Operation Hour	24/7		
Panel	Anti-Glare Panel		
Display			
Dynamic C/R	Mega		
H-Scanning Frequency	30 ~ 81kHz		
V-Scanning Frequency	48 ~ 75Hz		
Maximum Pixel Frequency	≥594MHz		
Input Connectivity			
RGB	DVI-D/ Display Port 1.2/ Mini D-Sub		
Video	2 x HDMI 2.0 or greater		
HDCP	HDCP2.2		
Audio	Stereo mini Jack, DVI, HDMI		
USB	USB 2.0 x 2		
Output Connectivity			
RGB	HDMI 2.0 (loop-out) or Display Port 1.2 (Out)		
Audio	Stereo mini Jack		
External Control	RS232C(in/out) thru stereo jack, RJ45		
External Sensor	IR		
Power			
Power supply	AC 100 - 240 V~ (+/- 10 %), 50 Hz		
Instead of			
Name of the Make/Brand and Model No		Make /Brand Name :	
		Model No	
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document	
Minimum Performance Parameters			
Item Reference	1		
Panel			
Diagonal Size	98"		
Type	Edge LED BLU		
OS	Tizen		
Resolution	3840*2160 (4K UHD)		
Pixel Pitch(mm)	0.562 x 0.562 (mm)		
Active Display Area(mm)	2158.848(H) x 1214.352(V)		
Brightness(Typ.)	350 nits		
Contrast Ratio	(4000:1)		
Viewing Angle(H/V)	178/178		
Response Time(G-to-G)	6ms(Typ.)		
Display Colors	16.7M		
Color Gamut	0.72		
Operation Hour	24/7		
Panel	Anti-Glare Panel		
Display			
Dynamic C/R	Mega		
H-Scanning Frequency	30 ~ 81kHz		
V-Scanning Frequency	48 ~ 75Hz		
Maximum Pixel Frequency	≥594MHz		
Input Connectivity			
RGB	DVI-D, Display Port 1.2 (1)		
Video	HDMI 2.0 (2)		
HDCP	HDCP2.2		

Audio	Stereo mini Jack, DVI, HDMI		
USB	USB 2.0 x 2		
Output Connectivity			
RGB	HDMI 2.0 (Loop-out)		
Audio	Stereo mini Jack		
External Control	RS232C(in/out) thru stereo jack, RJ45		
External Sensor	IR		
Power			
Power supply	AC 100 - 240 V~ (+/- 10 %), 50 Hz		

10. In Page No. 31 & 32, (B) – Technical Specification sheet for Audio and Video Conferencing System –
Sl. No. 2 – 65” UHD Display may be read as

Name of the Make/Brand and Model No		Make /Brand Name :
Description		Model No
		Details of Catalogue/ Data Sheet Proof with Page No in the tender document.
Minimum Performance Parameters.		
Panel		
Diagonal Size	65”	
Type	Edge LED BLU /D- LED	
Resolution	3840*2160 (4K UHD)	
OS	Tizen or equivalent	
Pixel Pitch(mm)	0.372 x 0.372 (mm)	
Active Display Area(mm)	2158.848(H) x 1214.352(V)	
Brightness(Typ.)	350 nits or better	
Contrast Ratio	4000:1 / 1200:1	
Viewing Angle(H/V)	178/178	
Response Time(G-to-G)	8ms(Typ.)	
Display Colors	16.7M	
Color Gamut	0.92	
Operation Hour	(16/7)	
Panel	Anti-Glare Panel	
Display		
Dynamic C/R	Mega	
H-Scanning Frequency	30 ~ 81kHz	
V-Scanning Frequency	48 ~ 75Hz	
Maximum Pixel Frequency	≥ 594MHz	
Input Connectivity		
RGB	DVI-D / BNC	
Video	2 x HDMI 2.0 or more	
HDCP	HDCP2.2	
Audio	Stereo Mini Jack, DVI/HDMI/Audio(Common)	
USB	USB 2.0 x 2	
Output Connectivity		
RGB	HDMI 2.0 (loop-out) / DP 1.2 (Out)	
Audio	Stereo mini Jack	
External Control	RS232C(in/out) thru stereo jack, RJ45	
External Sensor	IR	
Power		
Power supply	AC 100 - 240 V~ (+/- 10 %), 50 Hz	

Instead of			
Panel			
Diagonal Size	65"		
Type	Edge LED BLU		
Resolution	3840*2160 (4K UHD)		
OS	Tizen		
Pixel Pitch(mm)	0.372 x 0.372 (mm)		
Active Display Area(mm)	2158.848(H) x 1214.352(V)		
Brightness(Typ.)	350 nits		
Contrast Ratio	(4000:1)		
Viewing Angle(H/V)	178/178		
Response Time(G-to-G)	8ms(Typ.)		
Display Colors	16.7M		
Color Gamut	0.92		
Operation Hour	(16/7)		
Panel	Anti-Glare Panel		
Display			
Dynamic C/R	Mega		
H-Scanning Frequency	30 ~ 81kHz		
V-Scanning Frequency	48 ~ 75Hz		
Maximum Pixel Frequency	≥594MHz		
Input Connectivity			
RGB	DVI-D		
Video	HDMI 2.0 (2)		
HDCP	HDCP2.2		
Audio	Stereo Mini Jack, DVI/HDMI/Audio(Common)		
USB	USB 2.0 x 2		
Output Connectivity			
RGB	HDMI 2.0 (Loop-out)		
Audio	Stereo mini Jack		
External Control	RS232C(in/out) thru stereo jack, RJ45		
External Sensor	IR		
Power			
Power supply	AC 100 - 240 V~ (+/- 10 %), 50 Hz		

11. In Page No. 32 & 33, (B) – Technical Specification sheet for Audio and Video Conferencing System – Sl. No. 3 – Wireless Presenter may be read as

Name of the Make/Brand and Model No		Make /Brand Name :
		Model No
Description		Compliance
		(Yes/No)
		Details of Catalogue/ Data Sheet Proof with Page No in the tender document.
Minimum Performance Parameters.		
Ethernet	100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1x, Active Directory authentication, HTTPS web browser setup, 802.3af and 802.3at Type 1 compliant	
RS-232	2-way display device control up to 115.2k baud with hardware and software handshaking	
IR/Serial	1-way display device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5V)	

HDMI Input	HDCP 1.4, EDID; Should supports management of HDCP and EDID		
OS Support	Apple® iOS®, Android™, Windows® 7, Windows 8, Windows 10, macOS®, Chrome OS™		
Video Frame Rate	Up to 30 fps or higher, audio supported		
Output Resolutions	640x480@60Hz, 800x600@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50),		
	1280x720@60Hz (720p60), 1280x800@60Hz, 1366x768@60Hz, 1440x900@60Hz,		
	1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)		
Bitrate Peak	0.25 to 8.5 Mbps or higher, variable depending on content complexity		
Bitrate Average	1.4 Mbps typical		
Audio Format	Stereo		
Input Signal Types	"Wireless Input, HDMI (DVI & Dual-Mode DisplayPort™ compatible3);		
Output Signal Types	Simultaneous display of two sources, Should be able to adjust the screen orientation when present from mobile device		
Maximum Input Resolution	HDMI (DVI compatible3)		
Background & Logo File Support	"1920x1080@60Hz (HD 1080p60), 4:4:4,		
Output Signal Type	36 bit color depth"		
Connection			
Console	Micro-USB Type B connector, female / USB 2.0 device port for computer console (installer setup)		
IR	4-pin 3.5 mm detachable terminal block; IR/Serial output port for display device control; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5V) up to 19200 baud		
COM	5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port for display device control; Up to 115.2k baud, hardware and software handshaking support		
HDMI INPUT	HDMI Type A connector, female; HDMI digital video/audio input; (DVI & Dual-Mode DisplayPort compatible3)		
HDMI OUTPUT	HDMI Type A connector, female; HDMI digital video/audio output; (DVI compatible)		
USB	USB Type A connector, female		
LAN PoE	8-pin RJ-45 connector, female; 100Base-TX Ethernet port and PoE PD port		
24VDC 0.75A	2.1 x 5.5 mm DC power connector/ equivalent 24VDC power input (Should include in the Box, If not can be added separate)		
Ground	6-32 screw / equivalent Chassis ground lug / equivalent		

Instead of			
Name of the Make/Brand and Model No			Make /Brand Name :
			Model No
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document.
Minimum Performance Parameters.			
Ethernet	100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1x, Active Directory authentication, HTTPS web browser setup, 802.3af and 802.3at Type 1 compliant		
RS-232	2-way display device control up to 115.2k baud with hardware and software handshaking		
IR/Serial	1-way display device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5V) up to 19.2k baud		
HDMI Input	HDCP 1.4, EDID; Should supports management of HDCP and EDID		
OS Support	Apple® iOS®, Android™, Windows® 7, Windows 8, Windows 10, macOS®, Chrome OS™		
Video Frame Rate	Up to 30 fps, audio supported		
Output Resolutions	640x480@60Hz, 800x600@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50),		
	1280x720@60Hz (720p60), 1280x800@60Hz, 1366x768@60Hz, 1440x900@60Hz,		
	1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)		
Bitrate Peak	0.25 to 8.5 Mbps, variable depending on content complexity		
Bitrate Average	1.4 Mbps typical		
Audio Format	Stereo		
Input Signal Types	"Wireless Input, HDMI (DVI & Dual-Mode DisplayPort™ compatible3);		
Output Signal Types	Simultaneous display of two sources, Should be able to adjust the screen orientation when present from mobile device		
Maximum Input Resolution	HDMI (DVI compatible3)		
Background & Logo File Support	"1920x1080@60Hz (HD 1080p60), 4:4:4,		
Output Signal Type	36 bit color depth"		
Connection			
Console	Micro-USB Type B connector, female; USB 2.0 device port for computer console (installer setup)		
IR	4-pin 3.5 mm detachable terminal block; IR/Serial output port for display device control; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5V) up to 19200 baud		
COM	5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port for display device control; Up to 115.2k baud, hardware and software handshaking support		

HDMI INPUT	HDMI Type A connector, female; HDMI digital video/audio input; (DVI & Dual-Mode DisplayPort compatible3)		
HDMI OUTPUT	HDMI Type A connector, female; HDMI digital video/audio output; (DVI compatible)		
USB	USB Type A connector, female		
LAN PoE	8-pin RJ-45 connector, female; 100Base-TX Ethernet port and PoE PD port		
24VDC 0.75A	2.1 x 5.5 mm DC power connector; 24VDC power input (Should include in the Box, If not can be added separate)		
Ground	6-32 screw; Chassis ground lug		

12. In Page No. 34 & 35, (B) – Technical Specification sheet for Audio and Video Conferencing System – Sl. No. 4 – AV Over IP Decoder may be read as

Name of the Make/Brand and Model No		Make /Brand Name :
		Model No
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document.
Minimum Performance Parameters.		
Decoding		
Video Codec	Pixel Perfect Processing / processing which support 4K60, 4:4:4, and HDR flawless video transport	
Video Resolutions	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color support	
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)	
Bit Rates	200 to 850 Mbps or higher	
Streaming Protocols	RTP, SDP	
Container	MPEG-2 transport stream (.ts)	
Session Initiation	Multicast via secure RTSP	
Copy Protection	HDCP 2.2, AES-128, PKI	
Video		
Output Signal Types	HDMI with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support1 (DVI compatible6)	
Copy Protection	HDCP 2.2	
Audio		
Input Signal Types	HDMI (Dual-Mode Display Port interface compatible)	
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels	
Analog Formats	Stereo 2-channel	
Digital-To-Analog Conversion	24-bit 48 kHz	
AES67	24-bit 48 kHz	
Analog Performance	Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz; Stereo Separation: >90 dB	

Analog Output Volume Adjustment	-80 to +20 dB		
Communications			
Ethernet	8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port; 2 PoE+ PD (powered device) port, IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant;		
HDMI OUTPUT	HDMI Type A connector, female; HDMI digital video/audio output1 (DVI compatible6)		
AUDIO	5-pin 3.5 mm detachable terminal block; Balanced/unbalanced stereo line-level audio output3; Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced; Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced		
CONSOLE, USB	Micro USB connector, female; USB 2.0 computer console port (for setup)		
IR 1 – 2	4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; 5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port;		
COM	Up to 115.2k baud, hardware and software handshaking support		
24VDC 2.0A	2.1 x 5.5 mm DC power connector/ equivalent		
	24 VDC power input (Should Included in the Box, If not can be added separate)		
Ground	6-32 screw / equivalent		
	Chassis ground lug / equivalent		
Instead of			
Name of the Make/Brand and Model No		Make /Brand Name :	
		Model No	
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document.	
Minimum Performance Parameters.			
Decoding			
Video Codec	Pixel Perfect Processing		
Video Resolutions	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color support		
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)		
Bit Rates	200 to 950 Mbps		
Streaming Protocols	RTP, SDP		
Container	MPEG-2 transport stream (.ts)		
Session Initiation	Multicast via secure RTSP		
Copy Protection	HDCP 2.2, AES-128, PKI		
Video			
Output Signal Types	HDMI with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support1 (DVI compatible6)		
Copy Protection	HDCP 2.2		
Audio			
Input Signal Types	HDMI (Dual-Mode Display Port interface compatible)		

Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels		
Analog Formats	Stereo 2-channel		
Digital-To-Analog Conversion	24-bit 48 kHz		
AES67	24-bit 48 kHz		
Analog Performance	Frequency Response: 20 Hz to 20 kHz \pm 0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz;		
	Stereo Separation: >90 dB		
Analog Output Volume Adjustment	-80 to +20 dB		
Communications			
Ethernet	8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port; 2 PoE+ PD (powered device) port, IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant;		
HDMI OUTPUT	HDMI Type A connector, female; HDMI digital video/audio output ¹ (DVI compatible ⁶)		
AUDIO	5-pin 3.5 mm detachable terminal block; Balanced/unbalanced stereo line-level audio output ³ ; Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced; Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced		
CONSOLE, USB	Micro USB connector, female; USB 2.0 computer console port (for setup)		
IR 1 – 2	4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; 5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port;		
COM	Up to 115.2k baud, hardware and software handshaking support		
24VDC 2.0A	2.1 x 5.5 mm DC power connector;		
	24 VDC power input (Should Included in the Box, If not can be added separate)		
Ground	6-32 screw;		
	Chassis ground lug		

13.In Page No. 35 & 36, (B) – Technical Specification sheet for Audio and Video Conferencing System –
Sl. No. 5 – AV Over IP Encoder may be read as

Name of the Make/Brand and Model No		Make /Brand Name :
		Model No
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document.
Minimum Performance Parameters.		
Encoding		
Video Codec	Pixel Perfect Processing / processing which support 4K60, 4:4:4, and HDR flawless video transport	
Video Resolutions	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color support	
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)	
Bit Rates	200 to 950 Mbps	
Streaming Protocols	RTP, SDP	
Container	MPEG-2 transport stream (.ts)	
Session Initiation	Multicast via secure RTSP	
Copy Protection	HDCP 2.2, AES-128, PKI	
Video		
Output Signal Types	HDMI with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support1 (DVI compatible6)	
Copy Protection	HDCP 2.2	
Audio		
Input Signal Types	HDMI (Dual-Mode DisplayPort interface compatible7	
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels	
Analog Formats	Stereo 2-channel	
Digital-To-Analog Conversion	24-bit 48 kHz	
AES67	24-bit 48 kHz	
Analog Performance	Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz; Stereo Separation: >90 dB	
Analog Output Volume Adjustment	-80 to +20 dB	
Communications		
Ethernet	(1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port;2 PoE+ PD (powered device) port,IEEE 802.3at Type 2 PoE+	
HDMI OUTPUT	(1) HDMI Type A connector, female; HDMI digital video/audio output1 (DVI compatible6)	
AUDIO	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE browser setup and control	
CONSOLE, USB	USB 2.0 computer console (for setup)	

RS-232	2-way device control and monitoring up to 115.2k baud with hardware and `software handshaking (via control system); computer console (for setup) (1) 4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports;		
IR/Serial	IR output up to 1.1 MHz;1-way serial TTL/RS-232 (0-5 V) up to 19200 baud;		
COM	1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 V)		
HDMI	HDCP 2.2, EDID, CEC		
Instead of			
Name of the Make/Brand and Model No		Make /Brand Name :	
		Model No	
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document.	
Minimum Performance Parameters.			
Encoding			
Video Codec	Pixel Perfect Processing		
Video Resolutions	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color support		
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)		
Bit Rates	200 to 950 Mbps		
Streaming Protocols	RTP, SDP		
Container	MPEG-2 transport stream (.ts)		
Session Initiation	Multicast via secure RTSP		
Copy Protection	HDCP 2.2, AES-128, PKI		
Video			
Output Signal Types	HDMI with HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support1 (DVI compatible6)		
Copy Protection	HDCP 2.2		
Audio			
Input Signal Types	HDMI (Dual-Mode DisplayPort interface compatible7		
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels		
Analog Formats	Stereo 2-channel		
Digital-To-Analog Conversion	24-bit 48 kHz		
AES67	24-bit 48 kHz		
Analog Performance	Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N: <0.005% @ 1 kHz; Stereo Separation: >90 dB		
Analog Output Volume Adjustment	-80 to +20 dB		
Communications			
Ethernet	(1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port;2 PoE+ PD (powered device) port, IEEE 802.3at Type 2 PoE+		

HDMI OUTPUT	(1) HDMI Type A connector, female; HDMI digital video/audio output1 (DVI compatible6)		
AUDIO	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, T+D40:D46P/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE browser setup and control, Crestron 3-Series or later control system integration		
CONSOLE, USB	USB 2.0 computer console (for setup)		
RS-232	2-way device control and monitoring up to 115.2k baud with hardware and software handshaking (via control system); computer console (for setup) (1) 4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports;		
IR/Serial	IR output up to 1.1 MHz;1-way serial TTL/RS-232 (0-5 V) up to 19200 baud;		
COM	1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 V) up to 19.2k baud (via control system)		
HDMI	HDCP 2.2, EDID, CEC		

14. In Page No. 41 & 42, (B) – Technical Specification sheet for Audio and Video Conferencing System –
Sl. No. 15 – Control Processor may be read as

Name of the Make/Brand and Model No		Make /Brand Name :
		Model No
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document.
Minimum Performance Parameters.		
Communications		
Ethernet	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, industry-standard TCP/IP stack, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), FIPS 140-2 compliant encryption, IEEE 802.1xX, SNMP, BACnet™ and IP1, IPv4 or IPv6, Active Directory® service authentication, HTTPS web server, HTTPS web browser setup	
USB	Should Support USB mass storage class devices via the rear panel USB 2.0 host port, supports computer console via the front panel USB 2.0 device port	
RS-232/422/485	For 2-way device control and monitoring, COM port should support RS-232 up to 115.2k baud with software handshaking, one port also should support RS-422 or RS-485 and hardware handshaking	
IR/Serial	Should support 1-way device control via infrared up to 1.2 MHz or serial TTL/RS-232 (0–5 V) up to 115.2k baud	
Memory		
SDRAM	2 GB	
Flash	8 GB	
Memory Card	Should support SD and SDHC cards up to 32 GB	
External Storage	Should Support USB mass storage devices up to 1TB	

Connectors			
RELAY OUTPUT 1–8	4-pin 3.5 mm detachable terminal block; Should comprise (8) normally open, isolated relays; Rated 1 A, 30 VAC/VDC; MOV arc suppression across contacts		
I/O 1–8	9-pin 3.5 mm detachable terminal block; Should comprises (8) Versiport digital input/output or analog input ports (referenced to GND); Digital Input: Rated for 0–24 VDC, input impedance 20k Ω , logic threshold >3.125 V low/0 and <1.875 V high/1; Digital Output: 250 mA sink from maximum 24 VDC, catch diodes for use with real world loads; Analog Input: Rated for 0–10 VDC, protected to 24 VDC maximum, input impedance 21k Ω with pull-up resistor disabled; Programmable 5 V, 2k Ω pull-up resistor per pin		
IR - SERIAL OUTPUT 1–8	8-pin 3.5 mm detachable terminal blocks; Should comprises (8) IR output ports; IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0–5 V) up to 115.2k baud		
COM 1	5-pin 3.5 mm detachable terminal block; Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking support		
COM 2–3	3-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking support		
MEMORY	SD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log files		
USB	USB Type A connector, female; USB 2.0 port for storage devices		
LAN	8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port		
CONTROL SUBNET	8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port;		
COMMUNICATION BUS	4-pin 3.5 mm detachable terminal block; Network master port; Outputs power to Network devices only if the included power pack is connected to the 24 VDC power input jack; Alternately functions as a Network power input to power the unit from a Network power supply;		
Power	2.1 x 5.5 mm DC power connector / equivalent; 24 V, 2A DC power input; Passes through to the NET port to power Network devices;		
Ground	6-32 screw; Chassis ground lug / equivalent		
COMPUTER (front)	USB Type B connector, female; USB 2.0 computer console port;		
Features	Should be able to run 10 Programs simultaneously		

Instead of			
Name of the Make/Brand and Model No		Make /Brand Name :	
		Model No	
Description		Compliance	Details of Catalogue/ Data Sheet Proof with Page No in the tender document.
		(Yes/No)	
Minimum Performance Parameters.			
Communications			
Ethernet	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, industry-standard TCP/IP stack, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), FIPS 140-2 compliant encryption, IEEE 802.1xX, SNMP, BACnet™ and IP1, IPv4 or IPv6, Active Directory® service authentication, HTTPS web server, HTTPS web browser setup		
USB	Should Support USB mass storage class devices via the rear panel USB 2.0 host port, supports computer console via the front panel USB 2.0 device port		
RS-232/422/485	For 2-way device control and monitoring, COM port should support RS-232 up to 115.2k baud with software handshaking, one port also should support RS-422 or RS-485 and hardware handshaking		
IR/Serial	Should support 1-way device control via infrared up to 1.2 MHz or serial TTL/RS-232 (0–5 V) up to 115.2k baud		
Memory			
SDRAM	2 GB		
Flash	8 GB		
Memory Card	Should support SD and SDHC cards up to 32 GB		
External Storage	Should Support USB mass storage devices up to 1 TB		
Connectors			
RELAY OUTPUT 1–8	4-pin 3.5 mm detachable terminal block; Should comprise (8) normally open, isolated relays; Rated 1 A, 30 VAC/VDC; MOV arc suppression across contacts		
I/O 1–8	9-pin 3.5 mm detachable terminal block; Should comprises (8) Versiport digital input/output or analog input ports (referenced to GND); Digital Input: Rated for 0–24 VDC, input impedance 20k Ω, logic threshold >3.125 V low/0 and <1.875 V high/1; Digital Output: 250 mA sink from maximum 24 VDC, catch diodes for use with real world loads; Analog Input: Rated for 0–10 VDC, protected to 24 VDC maximum, input impedance 21k Ω with pull-up resistor disabled; Programmable 5 V, 2k Ω pull-up resistor per pin		
IR - SERIAL OUTPUT 1–8	8-pin 3.5 mm detachable terminal blocks; Should comprises (8) IR output ports; IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0–5 V) up to 115.2k baud		
COM 1	5-pin 3.5 mm detachable terminal block; Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking support		
COM 2–3	3-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking support		

MEMORY	SD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log files		
USB	USB Type A connector, female; USB 2.0 port for storage devices		
LAN	8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port		
CONTROL SUBNET	8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port; Provides a dedicated local network for Crestron devices		
COMMUNICATION BUS	4-pin 3.5 mm detachable terminal block; Network master port; Outputs power to Network devices only if the included power pack is connected to the 24 VDC power input jack; Alternately functions as a Network power input to power the unit from a Network power supply;		
Power	2.1 x 5.5 mm DC power connector; 24 V, 2A DC power input; Passes through to the NET port to power Network devices;		
Ground	6-32 screw; Chassis ground lug		
COMPUTER (front)	USB Type B connector, female; USB 2.0 computer console port;		
Features	Should be able to run 10 Programs simultaneously		

All other conditions remain unchanged.

Sd/-
Assistant Registrar (Stores & Purchase)