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### BOOMA SOWRIRAJAN Assistant Registrar (Stores & Purchase)

Date: 10.05.2021

## **CORRIGENDUM - VI**

### "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. 6 may be read as

SI.No	Description	Make	UoM	Qty
6	52 port Layer 3 Managed 1 or above Gigabit Switch	CISCO/EXTREME	No.	1
Instead of				
6	Layer 3 Managed Gigabit Switch	CISCO/EXTREME	No.	1

#### 2. 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 / Optional	2-way display device control up to 115.2k baud with hardware and software handshaking		
IR/Serial <mark>/ Optional</mark>	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 <sup>®</sup> iOS <sup>®</sup> , Android <sup>™</sup> , Windows <sup>®</sup> 7, Windows 8, Windows 10, macOS <sup>®</sup> , Chrome OS <sup>™</sup>		
Video Frame Rate	Up to 30 fps or higher, audio supported		
Output Resolutions	1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x800@60Hz, 1366x768@60Hz, 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)		
Bitrate Peak / Optional	0.25 to 8.5 Mbps or higher, variable depending on content complexity		
Bitrate Average / Optional	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/ Optional	36 bit color depth"
	Connection
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
	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)
HDMI Input	HDCP 1.4, EDID; Should supports management of HDCP and EDID
OS Support	Apple <sup>®</sup> iOS <sup>®</sup> , Android <sup>™</sup> , Windows <sup>®</sup> 7, Windows 8, Windows 10, macOS <sup>®</sup> , Chrome OS <sup>™</sup>
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), Up to 4K: 4:4:4 / 4k UHD
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

СОМ	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

#### 3. 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 with scaler		
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 <sup>®</sup> , and Deep Color support		
Audio Formats	Primary multichannel		
Bit Rates/Optional	200 to 850 Mbps or higher		
Streaming Protocols	RTP, SDP		
Session Initiation	Multicast via secure RTSP / UDP		
Copy Protection	HDCP 2.2 or optional 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 / Above		
	Audio		
Input Signal Types	HDMI (Dual-Mode Display Port interface compatible)		
Digital Formats	Dolby Digital <sup>®</sup> , Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS <sup>®</sup> , 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		
	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)		
IR 1 – 2	IR/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; detachable terminal block; Bidirectional RS-232 port;		
COM	Up to 115.2k baud, hardware and software handshaking support		
Instead of			
Item Reference	4		
Item Description	AV Over IP Decoder with scaler		
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 <sup>®</sup> , 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 <sup>®</sup> , Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS <sup>®</sup> , 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;
U	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;
СОМ	Up to 115.2k baud, hardware and software handshaking support
	2.1 x 5.5 mm DC power connector/ equivalent
24VDC 2.0A	24 VDC power input ( Should Included in the Box, If not can be added separate )
	6-32 screw / equivalent
Ground	Chassis ground lug / equivalent

#### 4. 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 <sup>®</sup> , and Deep Color support
Audio Formats	Primary multichannel
Bit Rates / Optional	200 to 950 Mbps
Streaming Protocols	RTP, SDP
Session Initiation	Multicast via secure RTSP
Copy Protection	HDCP 2.2 or Optional 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 / Above
Audio	
Input Signal Types	HDMI (Dual-Mode DisplayPort interface compatible7
Digital Formats	Dolby Digital <sup>®</sup> , Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS <sup>®</sup> , 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
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 <b>/ Optional</b>	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 / Optional	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/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; detachable terminal block; Bidirectional RS-232 port;
СОМ	Up to 115.2k baud, hardware and software handshaking support
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 / 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 <sup>®</sup> , 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

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 <sup>®</sup> , Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS <sup>®</sup> , 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;
U U	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

# 5. In Page No. 15&16, (D) – Detailed Technical Specification – Sl. No. 6 – Layer 3 Managed Gigabit Switch may be read as

Item Reference	6	
Item Description	52 port Layer 3 Managed 1 or above Gigabit Switch	
Make/Brand	CISCO/EXTREME	
Minimum Performance Parameters		
USB slot		
Spanning Tree Protocol	Standard 802.1d Spanning Tree support; Fast convergence using 802.1w (Rapid Spanning Tree [RSTP]), enabled by default; 8 instances should be supported; Multiple Spanning Tree instances using 802.1s (MSTP)	
Port grouping	<ul> <li>Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP)</li> <li>Up to 8 groups</li> <li>Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation</li> </ul>	

	Multicast TV VLAN allows the single multicast VLAN to be shared in the network
Multicast TV VLAN	while subscribers remain in separate VLANs (also known as MVR)
	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH v1 and v2 are
Secure Shell (SSH) Protocol	supported
	Built-in switch configuration utility for easy browser-based device configuration
Web user interface	(HTTP/HTTPS). Supports configuration, system dashboard, system maintenance, and
	monitoring.
	Instead of
Item Reference	6
Item Description	Layer 3 Managed Gigabit Switch
Make/Brand	CISCO/EXTREME
	Minimum Performance Parameters
USB slot	
	Standard 802.1d Spanning Tree support;
Consultant Topo Durate and	Fast convergence using 802.1w (Rapid Spanning Tree [RSTP]), enabled by default;
Spanning Tree Protocol	8 instances should be supported;
	Multiple Spanning Tree instances using 802.1s (MSTP)
	Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP)
Dort grouping	• Up to 8 groups
Port grouping	• Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link
	aggregation
Multicast TV VLAN	Multicast TV VLAN allows the single multicast VLAN to be shared in the network
Wullicast IV VLAN	while subscribers remain in separate VLANs (also known as MVR)
Secure Shell (SSH) Protocol	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH v1 and v2 are
Secure Shell (SSH) Protocol	supported
	Built-in switch configuration utility for easy browser-based device configuration
Web user interface	(HTTP/HTTPS). Supports configuration, system dashboard, system maintenance, and
	monitoring.
Power	740 W Dedicated PoE Power

#### 6. 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) cable2	
USB Device Support	USB 1.0/1.1 and 2.0 compatible including mass storage and isochronous devices1	
USB Hub Support/Optional	Any signal chain may include up to 4 USB hubs plus	
Maximum USB Devices/ Optional	30 USB devices, or 4 USB hubs with 26 USB devices	
Host Computer OS Support	Windows <sup>®</sup> , macOS <sup>®</sup> , and Linux <sup>®</sup> operating systems	
USB Throughput	USB 2.0 up to 480 Mbps / USB 1.1 up to 12 Mbps	
Connectors – Local endpoint		
Link	8-pin RJ45 connector, female; Connects directly to a Remote extender2	
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		
Link	8-pin RJ45 connector, female; should connects to Link port on the Local endpoint	

	USB Type A connectors, female; USB 2.0 host ports for connection of USB devices	
USB	such as mice, keyboards, and other USB devices	
	Instead of	
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) cable2	
USB Device Support	USB 1.0/1.1 and 2.0 compatible including mass storage and isochronous devices1	
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 <sup>®</sup> , macOS <sup>®</sup> , and Linux <sup>®</sup> 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;	
POWEI	24 V, 1A DC power input (power supply included)	
Link	8-pin RJ45 connector, female;	
2	Connects directly to a Remote extender2	
	USB Type B connector, female;	
USB	USB 2.0 device port for connection to the USB host computer, media server, game	
	console, annotator, codec, etc.	
Connectors – Remote endpo		
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 Type A connectors, female; USB 2.0 host ports for connection of USB devices such	
USB	as mice, keyboards, and other USB devices	
	Available USB Power: 1 A maximum per port, 1.5 A maximum total	

### 7. In Page No. 16 & 17, (D) – Detailed Technical Specification – Sl. No. 8 – Unified Conference Bundle may be read as

Item Reference	8	
Item Description	Unified Conference Bundle	
Approved Make/Brand	CRESTRON/POLY/Equivalent	
	Minimum Performance Parameters	
Tabletop Touch Screen		
Touch Screen	8" or above diagonal capacitive multi-touch TFT active matrix color LCD, 1920 x 1200 pixels, 400 nits Brightness, 1000:1 Contrast Ratio, 24 bit and 16.7M Color depth,5 Point Multi Touch Capable	
UC Client (This is the Stated Requirement, However Integrator can quote additional components to enable this feature when using polycom or other equivalent MS Teams Room System)	Microsoft Teams Rooms with Skype <sup>®</sup> for Business software functionality with USB pass through for other UC calls	
Instead of		
Item Reference	8	
Item Description	Unified Conference Bundle	

Approved Make/Brand	CRESTRON/POLY/Equivalent	
	Minimum Performance Parameters	
Tabletop Touch Screen		
Touch Screen	<ul> <li>10.1 in. (257 mm) diagonal capacitive multi-touch TFT active matrix color LCD, 1920 x</li> <li>1200 pixels, 400 nits Brightness, 1000:1 Contrast Ratio, 24 bit and 16.7M Color depth,5</li> <li>Point Multi Touch Capable</li> </ul>	
UI	Microsoft Teams UI plus optional Smart Graphics room control	
Ethernet	100 Mbps, auto switching, auto negotiating, auto discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1X, SNMP, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web browser setup	
Power over Ethernet	IEEE 802.3at Type 2 compliant PoE+ PD (Powered Device); Should provide 15 W from an 802.3at Type 2 PSE with LLDP advanced power management; Should provide 18 W from an 802.3at Type 2 PSE with LLDP; Should provide 30 W (PoE+ Class 4) from an 802.3at Type 2 PSE without LLDP; Should provide 15.4 W (PoE Class 0) from an 802.3af (or 802.3at Type 1) PSE	
PoE Injector	A PoE injector should be included to power the touch screen if network PoE is not available	
UC Bracket Assembly		
Mini PC	Intel Core <sup>®</sup> processor with Windows <sup>®</sup> 10 IOT Edition OS	
UC Client	Microsoft Teams Rooms with Skype <sup>®</sup> for Business software functionality with USB pass through for other UC calls	
Content Ingest	HDMI input via HDMI to USB 3.0 converter	
Display Output	Single display support	
Display Output Resolution	1080p	
Power	65 W via external 100-240 VAC, 50 Hz adapter (included)	
Construction	Metal mounting bracket, black, preassembled	
Mounting	Surface wall mount behind the display device, or attach to the rear of the display device via the bolts attaching the display to a display mount; Bracket includes mounting holes on both side edges, spaced 100, 200, and 300 mm vertically, to allow for attachment to either side of the display mounting plate	

#### 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		
	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half	
Ethernet	duplex, industry-standard TCP/IP stack, UDP/IP, DHCP, IPv4, Active Directory®	
	service authentication, HTTPS web server, HTTPS web browser setup	
USB / Optional	Should Support USB mass storage class devices via the rear panel USB 2.0 host port,	
USB / Optional	supports computer console via the front panel USB 2.0 device port	
DC 222/122/105	For 2-way device control and monitoring, COM port should support RS-232 up to	
RS-232/422/485 115.2k baud with software handshaking		
IR/Serial <mark>/ Optional</mark>	Should support 1-way device control via infrared up to 1.2 MHz or serial TTL/RS-232	
	(0–5V) up to 115.2k baud	
Memory		
SDRAM / Optional	2 GB / 512 MB	
Flash / Optional	8 GB / 4.5 GB	

Momony Cord			
Memory Card/ Optional	Should support SD and SDHC cards up to 32 GB		
External Storage			
Optional	Should Support USB mass storage devices up to 1 TB		
Connectors			
	Minimum of 4 Relay ports with 3.5 mm detachable terminal block;		
	Should comprise normally open, isolated relays;		
RELAY OUTPUT 1-4	Rated 1 A, 30 VAC/VDC;		
	MOV arc suppression across contacts		
	Minimum of 4 I/O ports with 3.5 mm detachable terminal block;		
	Should comprises (4) Versiport digital input/output or analog input ports		
	(referenced to GND);		
	Digital Input: Rated for 0–24 VDC, input impedance 20k $\Omega$ , logic threshold >3.125 V		
	low/0 and <1.875 V high/1;		
I/O 1–4	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 $\Omega$ with pull-up resistor disabled;		
	Programmable 5 V, 2k Ω pull-up resistor per pin		
IR - SERIAL OUTPUT 1-	Minimum of 4 IR Ports 3.5 mm detachable terminal blocks;		
4	Should comprises (4) IR output ports;		
	3 pin or 5 pin 3.5 mm detachable terminal block;		
COM 1	Bidirectional RS-232 ports;		
	Up to 115.2k baud; Software handshaking support		
COM 2 2	3-pin 3.5 mm detachable terminal blocks;		
COM 2–3	Bidirectional RS-232 ports;		
	Up to 115.2k baud; software handshaking support SD memory card slot;		
MEMORY/ Optional Accepts one SD or SDHC card up to 32 GB for storage of log files			
USB	USB Type A connector, female / Optional USB 2.0 port for storage devices		
	8-pin RJ45 connector, female;		
LAN	100/1000Base-TX Ethernet port		
CONTROL SUBNET /	8-pin RJ45 connector, female;		
OPTIONAL	100/1000Base-TX Ethernet port;		
	Instead of		
Item Reference	15		
Item Description	Control Processor		
Approved Make/Brand	CRESTRON/EXTRON/KRAMER		
	Minimum performance parameters		
Communications			
	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex,		
Ethernet	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 <sup>™</sup> and IP1, IPv4 or		
Luiemer	IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser		
	setup		
	Should Support USB mass storage class devices via the rear panel USB 2.0 host port,		
USB / Optional	supports computer console via the front panel USB 2.0 device port		
	For 2-way device control and monitoring, COM port should support RS-232 up to 115.2k		
RS-232/422/485	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 / 512 MB
Flash	8 GB / 4.5 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	
	Minimum of 4 Relay ports with 3.5 mm detachable terminal block;
RELAY OUTPUT 1-4	Should comprise (8) normally open, isolated relays;
	Rated 1 A, 30 VAC/VDC;
	MOV arc suppression across contacts
	Minimum of 4 I/O ports with 3.5 mm detachable terminal block;
	Should comprises (4) Versiport digital input/output or analog input ports
	(referenced to GND);
	Digital Input: Rated for 0–24 VDC, input impedance 20k $\Omega$ , logic threshold >3.125 V
	low/0 and <1.875 V high/1;
I/O 1–4	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 $\Omega$ with pull-up resistor disabled;
	Programmable 5 V, $2k \Omega$ pull-up resistor per pin
	Minimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR
IR - SERIAL OUTPUT 1-	output ports;
4	IR output up to 1.2 MHz;
	1-way serial TTL/RS-232 (0–5 V) up to 115.2k baud
	5-pin 3.5 mm detachable terminal block;
COM 1	Bidirectional RS-232/422/485 port;
	Up to 115.2k baud; hardware and software handshaking support
	3-pin 3.5 mm detachable terminal blocks;
COM 2–3	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 Type A connector, female;
USB	USB 2.0 port for storage devices
	8-pin RJ45 connector, female;
LAN	100/1000Base-TX Ethernet port
CONTROL SUBNET /	8-pin RJ45 connector, female;
OPTIONAL	100/1000Base-TX Ethernet port;
	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
COMMUNICATION BUS	VDC power input jack;
	Alternately functions as a Network power input to power the unit from a Network power
	supply / eBUS control ports - eBUS pin configuration
	2.1 x 5.5 mm DC power connector / equivalent;
- /	24 V, 2A DC power input;
Power / Equivalent	
Power / Equivalent	Passes through to the NET port to power Network devices;
Power / Equivalent Ground	Passes through to the NET port to power Network devices; 6-32 screw;
	Passes through to the NET port to power Network devices; 6-32 screw; Chassis ground lug / equivalent
	Passes through to the NET port to power Network devices; 6-32 screw;

### 9. In Page No. 32 &33, (B) – Technical Specification sheet for Audio and Video Conferencing System –

Name of the Make/Brand and Model No			Make /Brand Name :
Description			Model No
		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 / Optional	2-way display device control up to 115.2k baud with hardware and software handshaking		
IR/Serial <mark>/ Optional</mark>	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 <sup>®</sup> iOS <sup>®</sup> , Android <sup>™</sup> , Windows <sup>®</sup> 7, Windows 8, Windows 10, macOS <sup>®</sup> , Chrome OS <sup>™</sup>		
Video Frame Rate	Up to 30 fps or higher, audio supported		
Output Resolutions	1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x800@60Hz, 1366x768@60Hz, 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)		
Bitrate Peak	0.25 to 8.5 Mbps or higher, variable depending on		
Optional	content complexity		
Bitrate Average/ Optional	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 <mark>/ Optional</mark>	36 bit color depth"		
Connection			
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		
	Instead of		
Name of the Make/Brar	nd and Model No		Make /Brand Name : Model No

		(Yes/No)	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 <sup>®</sup> iOS <sup>®</sup> , Android <sup>™</sup> , Windows <sup>®</sup> 7, Windows 8, Windows 10, macOS <sup>®</sup> , Chrome OS <sup>™</sup>		
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), Up to 4K: 4:4:4 / 4k UHD		
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		
СОМ	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	
	2.1 x 5.5 mm DC power connector/equivalent	
24VDC 0.75A	24VDC power input ( Should include in the Box, If not	
	can be added separate )	
Ground	6-32 screw / equivalent	
	Chassis ground lug / equivalent	

## 10.In Page No. 34 & 35, (B) –Technical Specification sheet for Audio and Video Conferencing System – SI. 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 P	arameters.		
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		
Bit Rates / Optional	200 to 850 Mbps or higher		
Streaming Protocols	RTP, SDP		
Session Initiation	Multicast via secure RTSP / UDP		
Copy Protection	HDCP 2.2 or optional 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 / Above		
Audio	•		
Input Signal Types	HDMI (Dual-Mode Display Port interface compatible)		
Digital Formats	Dolby Digital <sup>®</sup> , Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS <sup>®</sup> , 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		
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)		
IR 1 – 2	IR/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; detachable terminal block; Bidirectional RS-232 port;		
СОМ	Up to 115.2k baud, hardware and software handshaking support		
	Instead of		
Name of the Make/Brand	and Model No		Make /Brand Name :
		I	Model No
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document.

Minimum Performance Pa	arameters		
Decoding			
	Pixel Perfect Processing / processing which support		
Video Codec	4K60, 4:4:4, and HDR flawless video transport		
	Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color		
Video Resolutions	sampling, HDR10, HDR10+, Dolby Vision <sup>®</sup> , and Deep		
	Color support		
Audio Formats	Primary multichannel (up to 8-channel LPCM or		
	encoded HBR 7.1 surround sound)		
Bit Rates / Optional	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)		
	Dolby Digital <sup>®</sup> , Dolby Digital EX, Dolby Digital Plus,		
Disital Fama ata	Dolby TrueHD, Dolby Atmos, DTS <sup>®</sup> , DTS ES, DTS 96/24,		
Digital Formats	DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM		
	up to 8 channels		
Analog Formats	Stereo 2-channel		
Digital-To-Analog	24-bit 48 kHz		
Conversion			
AES67	24-bit 48 kHz		
	Frequency Response: 20 Hz to 20 kHz ±0.5 dB; S/N		
Analog Performance	Ratio: >95 dB 20 Hz to 20 kHz A-weighted; THD+N:		
-	<0.005% @ 1 kHz;		
Analas Outrout	Stereo Separation: >90 dB		
Analog Output Volume Adjustment	-80 to +20 dB		
Communications			
	8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-		
Ethernet	T Ethernet port;2 PoE+ PD (powered device) port, IEEE		
	802.3at Type 2 PoE+ Class 4 (25.5 W) compliant;		
	HDMI Type A connector, female; HDMI digital		
HDMI OUTPUT	video/audio output1 (DVI compatible6)		
	5-pin 3.5 mm detachable terminal block;		
	Balanced/unbalanced stereo line-level audio output3;		
AUDIO	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)	<u> </u>	
	4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports;IR output up to 1.1 MHz; 1-way serial		
IR 1 – 2	TTL/RS-232 (0-5 V) up to 19200 baud; 5-pin 3.5 mm		
	detachable terminal block; Bidirectional RS-232 port;		
	Up to 115.2k baud, hardware and software	<u> </u>	
COM	handshaking support		
	2.1 x 5.5 mm DC power connector/ equivalent		
24VDC 2.0A	24 VDC power input ( Should Included in the Box, If		
	not can be added separate )		
		I I	

Ground	6-32 screw / equivalent	
	Chassis ground lug / equivalent	

# 11.In Page No. 35 & 36, (B) –Technical Specification sheet for Audio and Video Conferencing System – SI. 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 P	arameters.		
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		
Bit Rates / Optional	200 to 950 Mbps		
Streaming Protocols	RTP, SDP		
Session Initiation	Multicast via secure RTSP		
Copy Protection	HDCP 2.2 or Optional 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 / Above		
Audio			
Input Signal Types	HDMI (Dual-Mode DisplayPort interface compatible7		
Digital Formats	Dolby Digital <sup>®</sup> , Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS <sup>®</sup> , 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		
Communications			
Ethernet	<ul> <li>(1) 8-pin RJ-45 connector, female; 100BASE-</li> <li>TX/1000BASE-T Ethernet port;2 PoE+ PD (powered device) port,IEEE 802.3at Type 2 PoE+</li> </ul>		
HDMI OUTPUT	(1) HDMI Type A connector, female; HDMI digital video/audio output1 (DVI compatible6)		
AUDIO <b>/ Optional</b>	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 / Optional	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/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; detachable terminal block; Bidirectional RS-232 port;		
СОМ	Up to 115.2k baud, hardware and software		

	handshaking support		
HDMI	HDCP 2.2, EDID, CEC		
	Instead of		
Name of the Make/Brand	l 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 P	arameters.		
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 <sup>®</sup> , 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 <sup>®</sup> , Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS <sup>®</sup> , 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;
сом	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

#### 12.In Page No. 36, (B) –Technical Specification sheet for Audio and Video Conferencing System – Sl. No. 6 – 52 port Layer 3 Managed 1 or above Gigabit Switch may be read as

Name of the Make/Bran	d and Model No		Make /Brand Name :
			Model No
Description		Compliance	Details of Catalogue/
		(Yes/No)	Data Sheet Proof with
			Page No in the tender
NA:	A	-	document.
Minimum Performance F	arameters.		
USB slot	Standard 202 1d Spanning Tree supports		
	Standard 802.1d Spanning Tree support;		
Spanning Tree	Fast convergence using 802.1w (Rapid Spanning Tree		
Protocol	[RSTP]), enabled by default;		
	8 instances should be supported;		
	Multiple Spanning Tree instances using 802.1s (MSTP)		
	Support for IEEE 802.3ad Link Aggregation Control		
	Protocol (LACP)		
Port grouping	<ul> <li>Up to 8 groups</li> </ul>		
	• Up to 8 ports per group with 16 candidate ports for		
	each (dynamic) 802.3ad link aggregation		
	Multicast TV VLAN allows the single multicast VLAN to		
Multicast TV VLAN	be shared in the network while subscribers remain in		
	separate VLANs (also known as MVR)		
Secure Shell (SSH)	SSH is a secure replacement for Telnet traffic. SCP also		
Protocol	uses SSH. SSH v1 and v2 are supported		
	Built-in switch configuration utility for easy browser-		
\	based device configuration (HTTP/HTTPS). Supports		
Web user interface	configuration, system dashboard, system		
	maintenance, and monitoring.		
	Instead of		
Name of the Make/Bran	d and Model No		Make /Brand Name :
			Model No
Description		Compliance	Details of Catalogue/
		(Yes/No)	Data Sheet Proof with
			Page No in the tender
			document.
Minimum Performance F	Parameters.		
USB slot	Standard 202 1d Cranning Tree successity		
	Standard 802.1d Spanning Tree support;		
Spanning Tree	Fast convergence using 802.1w (Rapid Spanning Tree		
Protocol	[RSTP]), enabled by default;		
	8 instances should be supported;		
	Multiple Spanning Tree instances using 802.1s (MSTP)		
Port grouping	Support for IEEE 802.3ad Link Aggregation Control		
	Protocol (LACP)		

	• Up to 8 groups	
	• Up to 8 ports per group with 16 candidate ports for	
	each (dynamic) 802.3ad link aggregation	
	Multicast TV VLAN allows the single multicast VLAN to	
Multicast TV VLAN	be shared in the network while subscribers remain in	
	separate VLANs (also known as MVR)	
Secure Shell (SSH)	SSH is a secure replacement for Telnet traffic. SCP also	
Protocol	uses SSH. SSH v1 and v2 are supported	
	Built-in switch configuration utility for easy browser-	
Web user interface	based device configuration (HTTP/HTTPS). Supports	
web user interface	configuration, system dashboard, system	
	maintenance, and monitoring.	
Power	740 W Dedicated PoE Power	

#### 13. In Page No. 37, (B) –Technical Specification sheet for Audio and Video Conferencing System – Sl. No. 7 – USB 2.0 Extender may be read as

Name of the Make/Brand	d and Model No		Make /Brand Name :
			Model No
Description		Compliance	Details of Catalogue/
		(Yes/No)	Data Sheet Proof with
			Page No in the tender
			document.
Minimum Performance P	arameters.		
Communications			
Link	USB extension up to 100 m (330 ft) over solid-core		
LIIIK	CAT5e (or better) unshielded twisted pair (UTP) cable2		
LICD Douise Support	USB 1.0/1.1 and 2.0 compatible including mass storage		
USB Device Support	and isochronous devices1		
USB Hub Support /	Any signal shain may include up to ALICE holes also		
Optional	Any signal chain may include up to 4 USB hubs plus		
Maximum USB	30 USB devices, or 4 USB hubs with 26 USB devices		
Devices / Optional	SO OSB devices, of 4 OSB hubs with 20 OSB devices		
Host Computer OS	Windows <sup>®</sup> , macOS <sup>®</sup> , and Linux <sup>®</sup> operating systems		
Support	windows <sup>+</sup> , macos <sup>+</sup> , and Linux <sup>+</sup> operating systems		
USB Throughput	USB 2.0 up to 480 Mbps / USB 1.1 up to 12 Mbps		
Connectors – Local end	dpoint		
Link	8-pin RJ45 connector, female;		
LIIIK	Connects directly to a Remote extender2		
	USB Type B connector, female;		
USB	USB 2.0 device port for connection to the USB host		
0SB	computer, media server, game console, annotator,		
	codec, etc.		
Connectors – Remote	endpoint		
Link	8-pin RJ45 connector, female;		
LINK	Should connects to Link port on the Local endpoint		
	USB Type A connectors, female; USB 2.0 host ports		
USB	for connection of USB devices such as mice,		
	keyboards, and other USB devices		
	Instead of		
Name of the Make/Brand	d and Model No		Make /Brand Name :
			Model No
Description		Compliance	Details of Catalogue/
		(Yes/No)	Data Sheet Proof with
			Page No in the tender

		document.
Minimum Performance Pa	arameters.	
Communications		
Link	USB extension up to 100 m (330 ft) over solid-core	
LINK	CAT5e (or better) unshielded twisted pair (UTP) cable2	
LISP Dovice Support	USB 1.0/1.1 and 2.0 compatible including mass storage	
USB Device Support	and isochronous devices1	
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 <sup>®</sup> , macOS <sup>®</sup> , and Linux <sup>®</sup> operating systems	
USB Throughput	USB 2.0 up to 480 Mbps, USB 1.1 up to 12 Mbps	
Connectors – Local end	point	
Power	2.1 x 5.5 mm DC power connector;	
Power	24 V, 1A DC power input (power supply included)	
Link	8-pin RJ45 connector, female;	
LIIIK	Connects directly to a Remote extender2	
	USB Type B connector, female;	
USB	USB 2.0 device port for connection to the USB host	
030	computer, media server, game console, annotator,	
	codec, etc.	
Connectors – Remote e	ndpoint	
Power	2.1 x 5.5 mm DC power connector;	
TOWER	24 V, 1A DC power input	
Link	8-pin RJ45 connector, female;	
LINK	Should connects to Link port on the Local endpoint	
	USB Type A connectors, female; USB 2.0 host ports for	
	connection of USB devices such as mice, keyboards,	
USB	and other USB devices	
	Available USB Power: 1 A maximum per port, 1.5 A	
	maximum total	

# 14. In Page No. 37 & 38, (B) – Technical Specification sheet for Audio and Video Conferencing System – SI. No. 8 – Unified Conference Bundle may be read as

Name of the Make/Brand and Model No		Make /Brand Name :	
			Model No
Description		Compliance	Details of Catalogue/
		(Yes/No)	Data Sheet Proof with Page No in the tender
			Page No in the tender
			document.
Minimum Performance F	Parameters.		
Tabletop Touch Scree	1		
Touch Screen	8" or above diagonal capacitive multi-touch TFT active matrix color LCD, 1920 x 1200 pixels, 400 nits Brightness, 1000:1 Contrast Ratio, 24 bit and 16.7M Color depth,5 Point Multi Touch Capable		

UC Client (This is the Stated Requirement, However Integrator can quote additional components to enable this feature when using polycom or other equivalent MS Teams Room System)	Microsoft Teams Rooms with Skype® for Business software functionality with USB pass through for other UC calls		
	Instead of		1
Name of the Make/Brand Description	and Model No	Compliance (Yes/No)	Make /Brand Name : Model No Details of Catalogue/ Data Sheet Proof with Page No in the tender document.
Minimum Performance Pa	irameters.		
Tabletop Touch Screen			
Touch Screen	10.1 in. (257 mm) diagonal capacitive multi-touch TFT active matrix color LCD, 1920 x 1200 pixels, 400 nits Brightness, 1000:1 Contrast Ratio, 24 bit and 16.7M Color depth,5 Point Multi Touch Capable		
UI	Microsoft Teams UI plus optional Smart Graphics room control		
Ethernet	100 Mbps, auto switching, auto negotiating, auto discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1X, SNMP, IPv4 or IPv6, Active Directory® service authentication, HTTPS web browser setup		
Power over Ethernet	IEEE 802.3at Type 2 compliant PoE+ PD (Powered Device); Should provide 15 W from an 802.3at Type 2 PSE with LLDP advanced power management; Should provide 18 W from an 802.3at Type 2 PSE with LLDP; Should provide 30 W (PoE+ Class 4) from an 802.3at Type 2 PSE without LLDP; Should provide 15.4 W (PoE Class 0) from an 802.3af (or 802.3at Type 1) PSE		
PoE Injector	A PoE injector should be included to power the touch screen if network PoE is not available		
UC Bracket Assembly			
Mini PC	Intel Core <sup>®</sup> processor with Windows <sup>®</sup> 10 IOT Edition OS		
UC Client	Microsoft Teams Rooms with Skype <sup>®</sup> for Business software functionality with USB pass through for other UC calls		
Content Ingest	HDMI input via HDMI to USB 3.0 converter		
Display Output	Single display support		
Display Output Resolution	1080p		
Power	65 W via external 100-240 VAC, 50 Hz adapter (included)		
Construction	Metal mounting bracket, black, preassembled		

Mounting	Surface wall mount behind the display device, or attach to the rear of the display device via the bolts attaching the display to a display mount; Bracket includes mounting holes on both side edges, spaced 100, 200, and 300 mm vertically, to allow for		
	attachment to either side of the display mounting plate		

#### 15. 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/Br	and 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	ce Parameters.		
Communications			
Ethernet	100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, industry-standard TCP/IP stack, UDP/IP, DHCP, IPv4, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup		
USB / Optional	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		
IR/Serial <mark>/</mark> Optional	Should support 1-way device control via infrared up to 1.2 MHz or serial TTL/RS-232 (0–5V) up to 115.2k baud		
Memory	1		
SDRAM/ Optional	2 GB / 512 MB		
Flash / Optional	8 GB / 4.5 GB		
Memory Card/ Optional	Should support SD and SDHC cards up to 32 GB		
External Storage/ Optional	Should Support USB mass storage devices up to 1 TB		
Connectors	T		
RELAY OUTPUT 1– 4	Minimum of 4 Relay ports with 3.5 mm detachable terminal block; Should comprise normally open, isolated relays; Rated 1 A, 30 VAC/VDC; MOV arc suppression across contacts		
I/O 1–4	<ul> <li>Minimum of 4 I/O ports with 3.5 mm detachable terminal block;</li> <li>Should comprises (4) Versiport digital input/output or analog input ports (referenced to GND);</li> <li>Digital Input: Rated for 0–24 VDC, input impedance 20k Ω, logic threshold &gt;3.125 V low/0 and &lt;1.875 V high/1;</li> <li>Digital Output: 250 mA sink from maximum 24 VDC, catch diodes for use with real world loads;</li> </ul>		

	Analog Input: Rated for 0–10 VDC, protected to 24		
	VDC maximum, input impedance $21k \Omega$ with pull-up		
	resistor disabled;		
	Programmable 5 V, 2k Ω pull-up resistor per pin		
	Minimum of 4 IR Ports 3.5 mm detachable terminal		
IR - SERIAL	blocks;		
OUTPUT 1–4	Should comprises (4) IR output ports;		
	3 pin or 5 pin 3.5 mm detachable terminal block;		
COM 1	Bidirectional RS-232 ports;		
	Up to 115.2k baud; Software handshaking support		
	3-pin 3.5 mm detachable terminal blocks;		
COM 2–3	Bidirectional RS-232 ports;		
	Up to 115.2k baud; software handshaking support		
MEMORY/	SD memory card slot;		
Optional	Accepts one SD or SDHC card up to 32 GB for storage of log		
optional	files		
USB	USB Type A connector, female / Optional 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;		
/ OPTIONAL	100/1000Base-TX Ethernet port;		
No	Instead of		Males (Descriptions)
Name of the Make/Br	and and Model No		Make /Brand Name : Model No
Description		Compliance	Details of Catalogue/
Description		(Yes/No)	Data Sheet Proof with
		(103/100)	Page No in the tender
			document.
Minimum Performance	e Parameters.		-
Minimum Performanc	e Parameters.		-
	e Parameters. 100/1000 Mbps, auto-switching, auto-negotiating,		-
	1		-
	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		-
	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		-
Communications	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active		-
Communications	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server,		-
Communications	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup		-
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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup Should Support USB mass storage class devices via the rear		-
Communications	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup Should Support USB mass storage class devices via the rear panel USB 2.0 host port, supports computer console via the		-
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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup 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		-
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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup 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 For 2-way device control and monitoring, COM port should		-
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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup 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 For 2-way device control and monitoring, COM port should support RS-232 up to 115.2k baud with software		-
Communications Ethernet USB / Optional	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup 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 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		-
Communications Ethernet USB / Optional	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup 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 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		-
Communications Ethernet USB / Optional	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup 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 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 Should support 1-way device control via infrared up to 1.2		-
Communications Ethernet USB / Optional RS-232/422/485 IR/Serial	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup 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 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		-
Communications Ethernet USB / Optional RS-232/422/485	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 <sup>™</sup> and IP1, IPv4 or IPv6, Active Directory <sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup 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 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 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		-
Communications Ethernet USB / Optional RS-232/422/485 IR/Serial Memory	<ul> <li>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<sup>™</sup> and IP1, IPv4 or IPv6, Active Directory<sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup</li> <li>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</li> <li>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-485 and hardware handshaking</li> <li>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</li> </ul>		-
Communications Ethernet USB / Optional RS-232/422/485 IR/Serial Memory SDRAM Flash	<ul> <li>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<sup>™</sup> and IP1, IPv4 or IPv6, Active Directory<sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup</li> <li>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</li> <li>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</li> <li>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</li> <li>2 GB / 512 MB</li> <li>8 GB / 4.5 GB</li> </ul>		-
Communications Ethernet USB / Optional RS-232/422/485 IR/Serial Memory SDRAM Flash Memory Card	<ul> <li>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<sup>™</sup> and IP1, IPv4 or IPv6, Active Directory<sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup</li> <li>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</li> <li>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</li> <li>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</li> <li>2 GB / 512 MB</li> <li>8 GB / 4.5 GB</li> <li>Should support SD and SDHC cards up to 32 GB</li> </ul>		-
Communications Ethernet USB / Optional RS-232/422/485 IR/Serial Memory SDRAM Flash	<ul> <li>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<sup>™</sup> and IP1, IPv4 or IPv6, Active Directory<sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup</li> <li>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</li> <li>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</li> <li>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</li> <li>2 GB / 512 MB</li> <li>8 GB / 4.5 GB</li> </ul>		-
Communications Ethernet USB / Optional RS-232/422/485 IR/Serial Memory SDRAM Flash Memory Card External Storage	<ul> <li>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<sup>™</sup> and IP1, IPv4 or IPv6, Active Directory<sup>®</sup> service authentication, HTTPS web server, HTTPS web browser setup</li> <li>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</li> <li>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</li> <li>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</li> <li>2 GB / 512 MB</li> <li>8 GB / 4.5 GB</li> <li>Should support SD and SDHC cards up to 32 GB</li> </ul>		-

Should complete (notified) open (soluted relays, Mared 1, a) VG/VDC;         MV arc suppression across contacts         Minimum of 4 I/O ports with 3.5 mm detachable terminal block;         Should comprises (4) Versiport digital input/output or analog input ports (referenced to GND);         Digital Input: Rated for 0–24 VDC, input impedance 20k 0, 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 0 with pull-up resistor disabled;         Programmable 5 V, 2k Ω pull-up resistor per pin         Minimum of 4 IR Ports 3.5 mm detachable terminal block;         blocks; Should comprises (4) IR output ports;         OUTPUT 1–4         IR • SERIAL blocks; Should comprises (4) IR output ports;         OUTPUT 1–4         IB output up to 1.2 MHz; 1-way serial TTL/RS-323 (0–5 V) up to 115.2k baud         COM 1         ************************************		Should comprise (8) normally open, isolated relays;	
MOV arc suppression across contacts           Minimum of 41/O ports with 3.5 mm detachable terminal block;           Should comprises (4) 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           Minimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR output ports;           UTPUT 1-4           Ho output up to 1.2 MHz;           1-way serial TTL/RS-232(42/485 port;           Up to 115.2 k baud; hardware and software handshaking support           3-pin 3.5 mm detachable terminal block;           Bidrectional RS-232/422/485 port;           Up to 115.2 k baud; software handshaking support           SD memory card slot;           SD mark detachable terminal block;           Bidrectional RS-232/422/485 port;           Up to 115.2 k baud; software handshaking support           SD memory card slot;           SD memory card slot;           Bidrectional RS-232/422/485 port;           Up to 115.2 k baud; software handshaking support           SD memory card slo			
Minimum of 4 I/O ports with 3.5 mm detachable           terminal block;           Should comprises (4) 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           Minimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR output ports; UI R output tp 0 1.2 MHz; 1 way serial TTL/RS-232 (0–5 V) up to 115.2k baud           COM 1         Spin 3.5 mm detachable terminal block; Bidirectional RS-232/24/2458 port; Up to 115.2k baud; shardware and software handshaking support           COM 2–3         Bidirectional RS-232/24/2458 port; Up to 115.2k baud; shardware handshaking support           SD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log files         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         USB Type A connector, female; Apin RIAS connector, female; Apin RIAS connector, female; Apin RIAS connector, female; Apin RIAS connector, female; Atternately functions as a Network power input to power the unit from a Network power sony if the included power pack is connected to the 24 VDC power input jack; Atternately functions as a Network power input to power the unit from a Network power sony if the included power pack is connected to the 24 VDC power input jack; Atternately functions as a Network power input to power the unit from a N			
terminal block;         Should comprises (4) Versiport digital input/output or analog input ports (referenced to GND); Digital Input: Rated for 0–24 VDC, input impedance 20k Q, logic threshold >3.125 V low/O 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           Minimum of 4 IR Ports 3.5 mm detachable terminal block; Should comprises (4) IR output ports; OUTPUT 1–4         IR output up to 1.2 MHz; 1-way serial TTL/KS-232 (0–5 V) up to 115.2k baud           COM 1         S-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         Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking support           COM 2–3         Bidirectional RS-232/422/485 port; Up to 115.2k baud; software handshaking support           COM 2–3         Bidirectional RS-232/422/485 port; Up to 115.2k baud; software handshaking support           COM 2–3         Bidirectional RS-232/422/485 port; Up to 115.2k baud; software handshaking support           COM 1         SD memory card slot; Bidirectional RS-232 verts; 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 10 port for storage devices         Port           COMMUNICATION BUS         S-pin RIAS			
Should comprises (4) 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         blocks; Should comprises (4) IR output ports; UTPUT 1–4         IR output up to 1.2 MHz; 1-way serial TTL/R5-232 (0–5 V) up to 115.2k baud           COM 1         Bidirectional R5-232/24/2485 port; Up to 115.2k baud; hardware and software handshaking support         Spin 3.5 mm detachable terminal blocks; Bidirectional R5-232/24/2485 port; Up to 115.2k baud; offware handshaking support           COM 2–3         Bidirectional R5-232/24/2485 port; Up to 115.2k baud; offware handshaking support         Spin 3.5 mm detachable terminal blocks; Bidirectional R5-232/24/2485 port; Up to 115.2k baud; offware handshaking support           US8         US8 Type A connector, female; 100/10008ase-TX Ethernet port;         Spin R145 connector, female; 100/10008ase-TX Ethernet port;           COMMUNICATION BUS         8-pin R145 connector, female; 100/10008ase-TX Ethernet port;         Up to 115.2k baud; sortwork devices only if the included power pack is connected to the 24 VDC power input jack; Atternately functions as a Network power supply / eBUS control ports - eBUS pin configuration         Power / 24 x x 3.5 mm detachable terminal block; Network master port; Output spower to Network devices only if the included power pack is connector / equivalent; 24 x y x 3.5 compter console port; 24 x			
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     Minimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) 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     Bidirectional RS-232/42/485 port; Up to 115.2k baud; hardware and software handshaking support       COM 2–3     Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking support       MEMORY     Accepts on SD or SDHC card up to 32 GB for storage of log files       USB     USB Type A connector, female; 100/10008as-TX Ethernet port;       CONTROL SUBNET BUS     8-pin RJ45 connector, female; 100/10008as-TX Ethernet port;       COMMUNICATION BUS     Alternately functions as a Network power input to power ret built from a Network power supply / eBUS control ports - eBUS pin configuration       Power / 2.1 x 5.5 mm DC power connector / equivalent; 2.4 v, 2.0 C power input; Passes through to the NET port to power Network devices; ereus pin configuration       Power / 2.1 x 5.5 mm DC power connector / equivalent; 2.4 v, 2.0 C power input; Passes through to the NET port to power Network devices; ereus D pin configuration       Power / 2.1 x 5.5 mm DC power connector / equivalent; COMPUTER (front)     USB Type B connector / equivalent; USB 1.0 conputer console port;			
Digital Input: Rated for 0-24 VDC, input impedance 20 k 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 pinMinimum of 4 IR Ports 3.5 mm detachable terminal block; Should comprises (4) IR output ports; 1-way serial TTL/R5-232 (0-5 V) up to 115.2k baudCOM 18-pin 3.5 mm detachable terminal block; Bidirectional R5-232/422/485 port; Up to 115.2k baud; software handshaking supportCOM 2-33-pin 3.5 mm detachable terminal block; Bidirectional R5-232 ports; Up to 115.2k baud; software handshaking supportMEMORYSD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log filesCOM 2-38-pin 7.85 mm detachable terminal block; Bidirectional R5-232 ports; Up to 115.2k baud; software handshaking supportMEMORYSD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log filesUSBUps 10.0protodase-TX Ethernet port 100/1000Base-TX Ethernet port;COMTOLS UBNET BUSS-pin 7.45 connector, female; 100/1000Base-TX Ethernet port;COMMUNICATION BUSPower / 2.1 x 5.5 mm DC power connector / equivalent; 2.4 v, 2A DC power input; Passes through to the NET port to power input to power the unit from a Network power supply / eBUS control ports -eBUS pin configurationPower / 2.4 x 2.5 x Screw; Ground6-32 screw; 6-32 screw; COMPUTER (front)COMPUTER (front USB 2.0 competer console port;USB Type B connector, female; 100/10			
J/O 1–4       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       Minimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR output ports; OUTPUT 1–4       Minimum of 4 IR Ports 3.5 mm detachable terminal Blocks; Should comprises (4) IR output ports; OUTPUT 1–4         COM 1       Ro utput up to 1.2 MHz; 1-way serial TTL/RS-232 (0–5 V) up to 115.2k baud         COM 1       Bidirectional RS-232 ports; Up to 115.2k baud; hardware and software handshaking support         COM 2–3       Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking support         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;         COMTROL SUBNET BUS       4-pin 3.5 mm detachable terminal block; Network master port;         COMMUNICATION BUS       4-pin 3.5 mm detachable terminal block; Network master port;         COMMUNICATION BUS       4-pin 3.5 mm detachable terminal block; Network master port;         COMMUNICATION BUS       4-pin 3.5 mm detachable terminal block; Network master port;         COMMUNICATION BUS       4-pin 3.5 mm detachable terminal block; Network ma			
I/O 1-4       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         Minimum of 4 IR Ports 3.5 mm detachable terminal         blocks; Should comprises (4) IR output ports;         OUTPUT 1-4         IR output up to 1.2 MHz;         1-way serial TTL/RS-232 (0-5 V) up to 115.2k baud         -i-way serial TTL/RS-232 (0-5 V) up to 115.2k baud         6001         Bidirectional RS-232/422/485 port;         Up to 115.2k baud; hardware and software handshaking support         COM 2-3         Bidirectional RS-232 ports;         Up to 115.2k baud; software handshaking support         MEMORY         Accepts on SD or SDHC card up to 32 GB for storage of log files         USB       USB Type A connector, female;         USB       USB Type A connector, female;         OUTPIONAL       8-pin RI45 connector, female;         /OPTIONAL       8-pin RI45 connector, female;         OUTOU00Base-TX Ethernet port;       0utputs power to Network devices only if the included power pack is connector, female;         /OPTIONAL <td></td> <td></td>			
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, 2 k Ω pull-up resistor per pinMinimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR output ports; OUTPUT 1–4Minimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR output ports; I n-way serial TTL/RS-232 (0–5 V) up to 115.2k baudCOM 1blocks; Should comprises (4) IR output port; Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking supportCOM 2–33-pin 3.5 mm detachable terminal block; Bidirectional RS-232 (ports; Up to 115.2k baud; software handshaking supportCOM 2–33-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 (ports; Up to 115.2k baud; software handshaking supportMEMORYAccepts one SD or SDHC card up to 32 GB for storage of log filesUSBUSB Type A connector, female; 100/1000Base-TX Ethernet portCOMTROL SUBNET POPT;0utput spower to Network devicesOUTPUONAL4-pin 3.5 mm detachable terminal block; Network master port;OUTPUONAL8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port;COMMUNICATION BUS0utput spower to Network devices only if the included power pack is connected to the 24 VDC power input jack; Atternately functions as a Network power supply / eBUS control ports - eBUS pin configurationPower / Equivalent21.4 S.5 mD CD cower connector / equivalent; 24 V, 2A DC power input; Passes through to the NET port to power Network devices; Passes through to the NET po		20k $\Omega$ , logic threshold >3.125 V low/0 and <1.875 V	
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         Minimum of 4 IR Ports 3.5 mm detachable terminal block; Should comprises (4) IR output ports;       OUTPUT 1-4         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         3-pin 3.5 mm detachable terminal blocks;       Bidirectional RS-232 ports;         Up to 115.2k baud; software handshaking support       SD memory card slot;         MEMORY       Accepts one SD or SDHC card up to 32 GB for storage of log files         USB       USB Type A connector, female;         UOMIONAL       100/1008ase-TX Ethernet port;         COMTROL SUBNET       8-pin R45 connector, female;         OUTIONAL       004008ase-TX Ethernet port;         COMMUNICATION       Outputs power to Network devices only if the included power the unit from a Network power input i power the unit from a Network power input i power the unit from a Sa Network power input i power the unit from a Network power input i power the unit from a Network power input is power input i Passes through to the NET port to power Network devices;         Power / Equivalent       USB 2.0 connetor, female;	I/O 1–4	high/1;	
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 pinMinimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR output ports; UTPUT 1–4IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0–5 V) up to 115.2k baudCOM 1UFUT 1–4IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0–5 V) up to 115.2k baudCOM 1UP to 115.2k baud; hardware and software handshaking supportCOM 2–3Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking supportCOM 2–3Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking supportMEMORYAccepts one 5D or SDHC card up to 32 GB for storage of log filesUSBUSB Type A connector, female; 100/1000Base-TX Ethernet portCONTROL SUBNET BuSAprin 3.5 mm detachable terminal block; Network master port;OUTROL SUBNET BUSAprin 3.5 mm detachable terminal block; Network master port;OUTROL SUBNET BUS4-pin 3.5 mm detachable terminal block; Network master port;OUTRUL SUBNET Power pack is connected to the 24 VDC power input jack; Alternately functions as a Network power input power the unit from a Network power supply / eBUS control ports - eBUS pin configurationPower / Equivalent21.x 5.5 mm DC power connector / equivalent; Equivalent24.V, 2A DC power input; Passes through to the NET port to power Network devices; Ground6-32 screw; Chassis ground lug / equivalen		Digital Output: 250 mA sink from maximum 24 VDC,	
VDC maximum, input impedance 21k Ω with pull-up resistor disabled;Programmable 5 V, 2k Ω pull-up resistor per pinIR - SERIAL OUTPUT 1-4Minimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR output ports; IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0–5 V) up to 115.2k baudCOM 1S-pin 3.5 mm detachable terminal block; Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking supportCOM 2-3Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking supportCOM 2-3Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking supportSD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log filesUSBUSB Type A connector, female; 100/10008as-TX Ethernet portCONTROL SUBNET BUS8-pin RJ45 connector, female; 100/10008as-TX Ethernet portCOMTONLS USUBNET BUS4-pin 3.5 mm detachable terminal block; Network master port; OUTIONALCOMMUNICATION BUSOutputs power to Network devices only if the included power pack is connected to the 24 VDC power input jack; Atternately functions as a Network devices; eBUS pin configurationPower / Equivalent EquivalentLis 5, 5mm DC power connector / equivalent; 24 V, 2A DC power input; Passes through to the NET port to power Network devices; GroundStype B connector, female; 24 US 20 computer console port;COMPUTER (fromt USB 2 Lo computer console port;USB Type B connector, female; 		catch diodes for use with real world loads;	
resistor disabled;       Programmable 5 V, 2k Ω pull-up resistor per pin         IR - SERIAL       Minimum of 4 IR Ports 3.5 mm detachable terminal         0UTPUT 1-4       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         Bidirectional RS-232 ports;         Up to 115.2k baud; software handshaking support         MEMORY         Accepts one SD or SDHC card up to 32 GB for storage of log files         USB       USB Type A connector, female;         USB       USB Type A connector, female;         100/1000Base-TX Ethernet port         CONTROL SUBNET       8-pin RI45 connector, female;         (OPTIONAL       0utputs power to Network devices only if the included         porwer pack is connected to the 24 VDC power input jack;         Alternately functions as a Network power supply / eBUS control ports - eBUS pin configuration         Power /       2.1 x 5.5 mm DC power connector / equivalent;         24 V, 2A DC power input;       Pases through to the NET port to power Network devices;         Ground       6-32 screw;       Chasis ground lug / equivalent;		Analog Input: Rated for 0–10 VDC, protected to 24	
resistor disabled;       Programmable 5 V, 2k Ω pull-up resistor per pin         IR - SERIAL       Minimum of 4 IR Ports 3.5 mm detachable terminal         0UTPUT 1-4       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         Bidirectional RS-232 ports;         Up to 115.2k baud; software handshaking support         MEMORY         Accepts one SD or SDHC card up to 32 GB for storage of log files         USB       USB Type A connector, female;         USB       USB Type A connector, female;         100/1000Base-TX Ethernet port         CONTROL SUBNET       8-pin RI45 connector, female;         (OPTIONAL       0utputs power to Network devices only if the included         porwer pack is connected to the 24 VDC power input jack;         Alternately functions as a Network power supply / eBUS control ports - eBUS pin configuration         Power /       2.1 x 5.5 mm DC power connector / equivalent;         24 V, 2A DC power input;       Pases through to the NET port to power Network devices;         Ground       6-32 screw;       Chasis ground lug / equivalent;		VDC maximum, input impedance 21k $\Omega$ with pull-up	
Programmable 5 V, 2k Ω pull-up resistor per pinIR - SERIALMinimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) IR output ports;OUTPUT 1-4IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0–5 V) up to 115.2k baudCOM 1Bidirectional RS-232/42/485 port; Up to 115.2k baud; hardware and software handshaking supportCOM 2-33-pin 3.5 mm detachable terminal block; Bidirectional RS-232/422/485 port; Up to 115.2k baud; software handshaking supportCOM 2-33-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking supportMEMORYSD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log filesUSBUSB Type A connector, female; 100/1000Base-TX Ethernet port;COMTOL SUBNET8-pin RJ45 connector, female; outpin USS mu detachable terminal block; Network master port;COMMUNICATION BUSPower 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 / eBUS control ports - eBUS pin configurationPower / Equivalent2.1 x 5.5 mm DC power connector / equivalent; 24 V, 2A DC power input; Passes through to the NET port to power Network devices; GroundGround6-32 screw; Chasis ground lug / equivalent USB 1/0 connueter or, female; COMPUTER (fromt)USB 1/0 connueter, female; USB 2.0 connut lug / equivalent			
Minimum of 4 IR Ports 3.5 mm detachable terminal blocks; Should comprises (4) 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       Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking support         MEMORY       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         COMTROL SUBNET       8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port         COMMUNICATION BUS       4-pin 3.5 mm detachable terminal block; Network master port;         OUTPUT 1-4       4-pin 3.5 mm DC power connector, female; 100/1000Base-TX Ethernet port;         COMMUNICATION BUS       4-pin 3.5 mm detachable terminal block; Network master port;         OUTPUT spower to Network devices only if the included power pack is connected to the 24 VDC power input jack; Alternately functions as a Network power supply / eBUS control ports - eBUS pin configuration         Power / Equivalent       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 1/pe B connector, female; USB 2.0 computer console port;       USB 2.0 computer			
IR - SERIAL       blocks; Should comprises (4) IR output ports;         OUTPUT 1-4       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       Bidirectional RS-232 ports;         Up to 115.2k baud; software handshaking support       SD memory card slot;         MEMORY       Accepts one SD or SDHC card up to 32 GB for storage of log files         USB       USB Type A connector, female;         USB       USB Type A connector, female;         USB       USB Toyne A connector, female;         USB       USB Type A connector, female;         UO/1000Base-TX Ethernet port       CONTROL SUBNET         A-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 Network devices;         Power / Equivalent       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 / equivale			
OUTPUT 1-4       IR output up to 1.2 MHz;         1-way serial TTL/RS-232 (0-5 V) up to 115.2k baud         5-pin 3.5 mm detachable terminal block;         Bidirectional RS-232/422/485 port;         Up to 115.2k baud; hardware and software handshaking         support         3-pin 3.5 mm detachable terminal blocks;         Bidirectional RS-232 ports;         Up to 115.2k baud; software handshaking support         MEMORY         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       100/1000Base-TX Ethernet port         COMTOLSUBNET       8-pin RJ45 connector, female;         / OPTIONAL       100/1000Base-TX Ethernet port;         COMMUNICATION       0utputs 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 supply / eBUS control ports -eBUS pin configuration         Power / Equivalent       2.1 x 5.5 mm DC power connector / equivalent; 24 V, 2A DC power input; 25 VPB & Gonnector, female; USB Type & Connector, female; USB Type & Connector			
Interpret of the second seco	-		
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       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;         COMMUNICATION BUS       0utputs 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 / eBUS control ports - eBUS pin configuration         Power / Equivalent       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;	00110114		
COM 1Bidirectional RS-232/422/485 port; Up to 115.2k baud; hardware and software handshaking support3-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking supportCOM 2-33-pin 3.5 mm detachable terminal blocks; Up to 115.2k baud; software handshaking supportMEMORYSD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log filesUSBUSB Type A connector, female; USB 2.0 port for storage devicesLAN8-pin RJ45 connector, female; 100/1000Base-TX Ethernet portCONTROL SUBNET BUS8-pin RJ45 connector, female; 100/1000Base-TX Ethernet port;COMMUNICATION BUS4-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 / eBUS control ports - eBUS pin configurationPower / Equivalent2.1 x 5.5 mm DC power connector / equivalent; 24 v, 2A DC power input; Passes through to the NET port to power Network devices;Ground6-32 screw; Chassis ground lug / equivalent USB Type B connector, female; USB Type B connector, f			
COM 1Up to 115.2k baud; hardware and software handshaking supportCOM 2-33-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking supportMEMORYSD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log filesUSBUSB Type A connector, female; 100/1000Base-TX Ethernet portCONTROL SUBNET8-pin R145 connector, female; 100/1000Base-TX Ethernet portCONTROL SUBNET8-pin R145 connector, female; 100/1000Base-TX Ethernet port;CONTROL SUBNET8-pin R145 connector, female; 100/1000Base-TX Ethernet port;COMMUNICATION BUS0utputs 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 / eBUS control ports - eBUS pin configurationPower / Equivalent2.1 x 5.5 mm DC power connector / equivalent; 24 V, 2A DC power input; Passes through to the NET port to power Network devices; GroundCOMPUTER (front)USB Type B connector, female; USB 2.0 computer console port;			
supportsupportCOM 2-33-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; software handshaking supportMEMORYSD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log filesUSBUSB Type A connector, female; 100/1000Base-TX Ethernet portCONTROL SUBNET (OPTIONAL8-pin RI45 connector, female; 100/1000Base-TX Ethernet port;COMTROL SUBNET BUS8-pin RI45 connector, female; 100/1000Base-TX Ethernet port;COMMUNICATION BUS8-pin RI45 connector to the Very Review of the unit from a 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 / eBUS control ports - eBUS pin configurationPower / Equivalent6-32 screw; Chassis ground lug / equivalentCOMPUTER (front)USB Type B connector, female; USB J0 computer console port;	COM 1		
3-pin 3.5 mm detachable terminal blocks;         Bidirectional RS-232 ports;         Up to 115.2k baud; software handshaking support         MEMORY         Accepts one SD or SDHC card up to 32 GB for storage of log files         USB       USB Type A connector, female;         USB       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;         (OPTIONAL       100/1000Base-TX Ethernet port;         Accomposition       4-pin 3.5 mm detachable terminal block; Network master port;         OUTIONAL       0utputs 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 supply / eBUS control ports - eBUS pin configuration         Power /       2.1 x 5.5 mm DC power connector / equivalent;         Equivalent       6-32 screw;         Ground       6-32 screw;         COMPUTER (front)       USB Type B connector, female;		-	
Up to 115.2k baud; software handshaking supportImage: software handshaking supportMEMORYSD memory card slot; Accepts one SD or SDHC card up to 32 GB for storage of log filesUSBUSB Type A connector, female; USB 2.0 port for storage devicesLAN8-pin RI45 connector, female; 100/1000Base-TX Ethernet portCONTROL SUBNET / OPTIONAL8-pin RI45 connector, female; 100/1000Base-TX Ethernet port;Arpin RI45 connector, female; 100/1000Base-TX Ethernet port;Image: software mathematication of the software mathematication of th			
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Ground     Chassis ground lug / equivalent       COMPUTER (front)     USB Type B connector, female; USB 2.0 computer console port;	Ground		
COMPUTER (front)     USB Type B connector, female; USB 2.0 computer console port;			
USB 2.0 computer console port;			
Features/Optional         Should be able to run 10 Programs simultaneously			
	Features/Optional	Should be able to run 10 Programs simultaneously	

#### 16. In Page No. 52 – Proforma Format for Financial Bid (BOQ) Format - Sl. No. 6 may be read as

Sl.No	Description	Qty	UoM	Rate per unit	Total cost without Tax	GST	Total cost with tax				
6	52 port Layer 3 Managed 1	1	No.								
	or above Gigabit Switch										
	Instead of										
6	Layer 3 Managed Gigabit	1	No.								
	Switch										

NOTE:

- Further request if any received from the bidders for an amendment will not be considered.
- BOQ not able to update due to process started for bid submission.

All other conditions remain unchanged.

Sd/-Assistant Registrar (Stores & Purchase)