

## Video Conference Specifications for IIT Tirupati

Tender specification for the Design, Supply, Installation, Testing & Commissioning of Video conferencing system for **One Board room and one 120 seated class room** with advanced IP based Audio Visual Solution at IIT Tirupati Temporary campus Renigunta Road, Tirupati to meet all its requirements like Video Conferencing, Board meeting, Interactive sessions etc.:

### I. HD Video conference system – 1 No. Location: 120 seater class room

S.No	Description	Specification Parameter
1	Package	<b>Full HD 1080p camera, codec with necessary cables &amp; connectors, wall mount kit, remote control with feature for swapping cameras, One Additional Camera of same specification with telescopic adjustable ceiling mount kit, Additional expandable mics – 2 nos.</b>
2	Video Standards and Resolutions	It should support H.323, SIP standards for communications.
		It should support H.261, H.263, H.264 AVC/ SVC, H.264 High Profile
		It should support 1080p 60 fps, 1080p 30 fps, 720p 60 fps and 720p 30fps
3	Content Standards and Resolutions	It should support content sharing using standard based H.239 and BFCP over SIP
		It should support content resolution at HD 1080p @ 30fps
		It should transmit both people and content simultaneously to the far end location at 1080p @30 fps
4	Audio Standards and Features	It should support G.711, G.728, G.729A, G.722, G.722.1, AAC-LD or better
		It should support 20kHz bandwidth with crystal clear audio and stereo sound.
		Automatic Gain Control and Automatic Noise Suppression
		Keyboard noise reduction and instant adaptation echo cancellation
5	Video and Audio Inputs	2 x HD input for connecting main and additional HD camera
		2 x HDMI input for connecting PC/Laptop/HD device to share HD content
		1 x VGA input for connecting PC/Laptop to share content
		Microphone Input (Support for minimum 2 mics)
		1 x 3.5mm stereo line-in
6	Video and Audio Outputs	3 x HDMI output for connecting main monitor
		1 x 3.5 mm stereo line-out
7	Other Interfaces	1 x 10/100/1000 LAN port
		2 x USB 3.0 and USB 2.0 for software upgrade and connecting external devices
		1 x RS-232 mini-DIN 8-pin
8	Camera	It should support 1080p60fps with 12x optical zoom and 85° field of view. ½.33”CMOS, focal length 3.76-37.6mm, Auto focus, Auto Iris, minimum 50 lux, with IR Detectors, Signal to noise ratio 50db, I/O - HDCI and Power 12v.
		It should support PAN Range of +/-100°, and Tilt of +/-20°
9	Network Features	H.323 and SIP bandwidth up to 3 Mbps
		IPv4 and IPv6 support from day one
		Auto Gatekeeper Discovery
		IP Precedence
		H.323 based Packet Lost Recovery
10	Security	Media Encryption (H.323, SIP): AES-128, AES-256
		Authenticated access to admin menus, web interface and telnet API
		Local account password policy configuration
		H224/H.281, H.323 Annex Q, H.225, H.245, H.241, H.239, H.243, H.460
		It should support native Lync server integrations
		Auto sensing power 50/60Hz

**II. HD Video conference system – 1 No. Location: Board room**

S.No	Description	Specification Parameter
1	Package	<b>Full HD 1080p camera, codec</b> with necessary cables & connectors, <b>wall mount kit, remote control., additional expandable mics – 2 nos.</b>
2	Video Standards and Resolutions	It should support H.323, SIP standards for communications.
		It should support H.261, H.263, H.264 AVC/ SVC, H.264 High Profile
		It should support 1080p 60 fps, 1080p 30 fps, 720p 60 fps and 720p 30fps
3	Content Standards and Resolutions	It should support content sharing using standard based H.239 and BFCP over SIP
		It should support content resolution at HD 1080p @ 30fps
		It should transmit both people and content simultaneously to the far end location at 1080p @30 fps
4	Audio Standards and Features	It should support G.711, G.728, G.729A, G.722, G.722.1, AAC-LD or better
		It should support 20kHz bandwidth with crystal clear audio and stereo sound.
		Automatic Gain Control and Automatic Noise Suppression
		Keyboard noise reduction and instant adaptation echo cancellation
5	Video and Audio Inputs	1 x HD input for connecting main HD camera
		1 x HDMI input for connecting PC/Laptop to share HD content
		1 x VGA input for connecting PC/Laptop to share content
		1 x Microphone Input
		1 x 3.5mm stereo line-in
6	Video and Audio Outputs	1 x HDMI output for connecting main monitor
		1 x 3.5 mm stereo line-out
7	Other Interfaces	1 x 10/100/1000 LAN port
		2 x USB 3.0 and USB 2.0 for software upgrade and connecting external devices
		1 x RS-232 mini-DIN 8-pin
8	Camera	It should support 1080p60fps with 12x optical zoom and 85° field of view.
		½.33”CMOS, focal length 3.76-37.6mm, Auto focus, Auto Iris, minimum 50 lux, with IR Detectors, Signal to noise ratio 50db, I/O - HDCI and Power 12v.
		It should support PAN Range of +/-100°, and Tilt of +/-20°
9	Network Features	H.323 and SIP bandwidth up to 3 Mbps
		IPv4 and IPv6 support from day one
		Auto Gatekeeper Discovery
		IP Precedence
10	Security	H.323 based Packet Lost Recovery
		Media Encryption (H.323, SIP): AES-128, AES-256
		Authenticated access to admin menus, web interface and telnet API
		Local account password policy configuration
		H224/H.281, H.323 Annex Q, H.225, H.245, H.241, H.239, H.243, H.460
It should support native Lync server integrations		
Auto sensing power 50/60Hz		

**Note:**

1. All cameras should function as PTZ Camera.
2. There should be instant and easy swapping between Primary Camera to secondary Camera and vice versa with feature on remote to select cameras.
3. Video conferencing machine should be content sharing and multi view.

**III. Multi Conferencing Software License 1 No. Location: Board room**

- From the day one the codec should support optional feature of multi conferencing capability to connect minimum 1+3 video sites.
- Dial In and Dial out Mode in IP networks should be supported
- Capability to mix IP Dial In & Dial out participants in the same call.
- The multi-point call can be encrypted (AES/DES encryption)
- Any of the end points should be able to show presentation in addition to the main video in a Multipoint call.

**IV. Standard Projector – 2 Nos. Location: 120 Seater class room**

S.No	Description	Specification Parameter
1	Projection System	LCD Technology
2	Brightness	5000 Lumens
3	Projection Method	Ceiling Mount - Height adjustable
4	Pixel Number	WXGA (1280 x 800)
5	Aspect Ratio	16:10
6	Native Resolution	WXGA (1280 x 800)
7	Lamp Life	4000 Hours +
8	Contrast Ratio	3000 : 1
9	Interfaces	HDMI (1) ; RGB (2); Monitor out (1) ; Audio In (3) ; Audio out (1) S-Video (1) ; Video (1) ; USB (2) ; LAN (1)

**V. Interactive Short Throw Projector – 1 No. Location: Board room**

S.No	Description	Specification Parameter
1	Projection System	LCD Technology
2	Brightness	3100 Lumens
3	Projection Method	Ceiling Mount
4	Pixel Number	WXGA (1280 x 800)
5	Aspect Ratio	16:10
6	Native Resolution	WXGA (1280 x 800)
7	Lamp Life	5000 Hours
8	Contrast Ratio	3000 : 1
9	Interfaces	HDMI (1) ; RGB (2); RGB out (1) ; Mini-DIN (1) ; RCA (1) ; USB (2) ; LAN (1); RS232C (1)

**VI. Projection Screen – 2 Nos. Location: 120 Seater class room**

S.No	Description	Specification Parameter
1	Type	Electric Screen
2	Size	Min128 Inch
3	Ratio	16 : 10
4	Image Dimension	108.9 x 67.9 Inch
5	Fabric Dimension	114.2 x 70.8 Inch

**I. Magnetic Ceramic White board 1no. Location: Board room**

- 8 feet × 4 feet
- Matte finish for display and writing
- Tray for pen and felt eraser

**II. High Definition Display – 1 No. Location: Control Room**

S.No	Description	Specification Parameter
1	Size	32 Inch
2	Type	LED
3	Resolution	FHD (1920 x 1080)
4	Brightness	230 Nits
5	Interface	HDMI (1) ; USB (1) ; RF (1) ; Component In (1) ; HDCP Input (1) ; RGB (1) ; RS-232C (1) ; LAN (1)
6	Speakers	10W + 10W

**III. High Definition Display – 2 Nos. Location: 120 Seater class room and Board room**

S.No	Description	Specification Parameter
1	Size	55 Inch or more
2	Type	LED
3	Resolution	FHD (1920 x 1080)
4	Brightness	350 Nits
5	Interface	HDMI (3) ; USB (2) ; RF (1) ; Component In (1) ; HDCP Input (1) ; RGB (1) ; RS-232C (1) ; LAN (1)
6	Speakers	10W + 10W
7	Other Features	Smart Hub, Smart View, Wi-Fi direct, Wireless LAN, Content share on USB, PIP
8	Mount kit	Wall\Ceiling mount kit according to room layout design

**IV. HDMI Matrix Switcher – 2 Nos. Location: 120 Seater class room and Board room**

S.No	Description	Specification Parameter
1	Connectivity	4 x 4
2	Video Resolution	HDTV Resolution up to 1080p Computer Resolution up to WUXGA
3	Connectors	Device - HDMI In: 4 x HDMI Type A Female Device - HDMI out: 4 x HDMI Type A Female
4	Switches	4 x push buttons

**V. Lapel Mic – 2 Nos. Location: 120 Seater class room**

- **Wireless Lapel microphone and rack based receiver:**  
The professional clip-on microphone, easily attached to your clothing, ensures a powerful sound transmission – and an enthusiastic audience.
  - Easy-to-use, all-in-one package for speakers and presenters
  - Unobtrusive clip-on microphone
  - High speech intelligibility
  - Mute button for full speech control
  - Synchronization via RF remote channel
  - Frequencies tunable in steps of 25 kHz
  - 24 MHz bandwidth (13 MHz for the E band)  
8 frequency banks with each max 12 presets
- Wireless lavalier mics should be preferably unidirectional ( cardioid )

**VI. Ceiling Microphone Array – 10 nos. Location: 120 Seater class room and Board room**

**Ceiling suspended Microphone array to cover 360 deg to pick up audio within 15 feet radius. Supplied with appropriate length of extension cable from ceiling to integrate with video conference codec**

**VII. HDMI Audio De-embedder – 2 Nos. Location: 120 Seater class room**

S.No	Description	Specification Parameter
1	Connectors - Input	1 x HDMI Type A Female (Black)
2	Connectors – Output	1 x HDMI Type A Female (Black) 1 x Toslink (Black) 1 x RCA (Orange) 2 X RCA (Red / White)
3	Video Resolution	Up to 1920 x 1080

**VIII. Digital Audio/Sound Processor with AEC – 1 No. Location: 120 Seater class room**

S. No	Description	Specification Parameter
1	Microphone Type	Ceiling Microphone Array
2	Microphone Coverage	360 Degree
3	Mixer Technology	HD Voice technology
4	Frequency	100 Hz to 20 kHz
5	Codecs	G.711, G.722.1, G.729AB, G.722, & G.722.1C
6	Interfaces	RJ45, RJ11- 2 Nos, VoIP Lan, Balance Input-8, Balance Output -8, RS232, OBAM IN/OUT & Remote Control 1 &2.

**IX. Wall mountable Active Speakers – 6 Nos. Location: 120 Seater class room**

S.No	Description	Specification Parameter
1	Amplifier	Low Frequency – 700W High Frequency – 300W
2	Audio Inputs	XLR (servo Balanced)
	Sensitivity	-36 dBu to 0 dBU
	Impedance	14 kΩ
	Wireless System Connector	USB 3.0 , Frequency band 2.5GHz
	Frequency Response	20 Hz – 20 KHz
	Wireless Range	Ma. 80 m (line of sight)
3	Audio Outputs	XLR balanced

**X. Rack for mounting VC equipment's with accessories 2 Nos. 120 Seater class room and Board room**

- 22U standard 19 inch vented sides and front glass door with features
- 2 sets of adjustable mounting rails
- Removable/ Lockable side panels
- Vented rear door
- Minimum four numbers of fans
- Power sockets with light indicators
- Lockable caster wheels

**XI. Universal Trolley stand for holding up to 80 inch Display and VC codec 1 No. Board room**

- Adjustable height minimum 165cm
- Adjustable base for codec 30cm X 20cm
- Lockable caster wheels fitted on steel frame
- Universal Trolley stand should be adjustable to hold 32 inch to 80 inch LED display and VC codec

## XII. Cables and Connectors

**Proven reputed brand with lifetime warranty to be quoted**

**The length as mentioned below and numbers may be quoted in units**

- High Quality branded Cables, Patch Cords & Accessories
- High standard quality HDMI M-M Pro/50
- High standard quality Projector Communication Cable - Plenum: 50' (15.2 m)
- High standard quality Video 3' Composite out to projector cable
- High standard quality Male to Male Micro VGA Cable
- High standard quality CAT6 RJ-45 Male to Male - Plenum: 50' (15.2m)
- High standard quality CAT6 RJ-45 Male to Male - Non-Plenum: 75' (22.8m)
- High standard quality Male to Male VGA Micro HR with Audio Cables, 3' (90 cm)
- High standard quality Male to Male VGA Micro HR with Audio Cables, 6' (1.8 m)
- High standard quality RCA Male to Male Composite video and stereo Audio Cables, 6' (1.8 m)
- High standard quality Power, Switcher Communications and Volume Control Cable - Plenum: 50' (15.2 m)

## XIII. Installations and integration for 2 Rooms as mentioned above

**Labour Charges including the cost of any additional High Quality branded Cables, Patch Cords, wall plates & Accessories for installing all the above items:**

**AV & VC Equipment's:** Programming, Calibration & Fine tuning of **Multimedia Switcher & Controller**, Installation & Commissioning including Labor. Operation and Maintenance Manuals - including Equipment Manuals & Training.

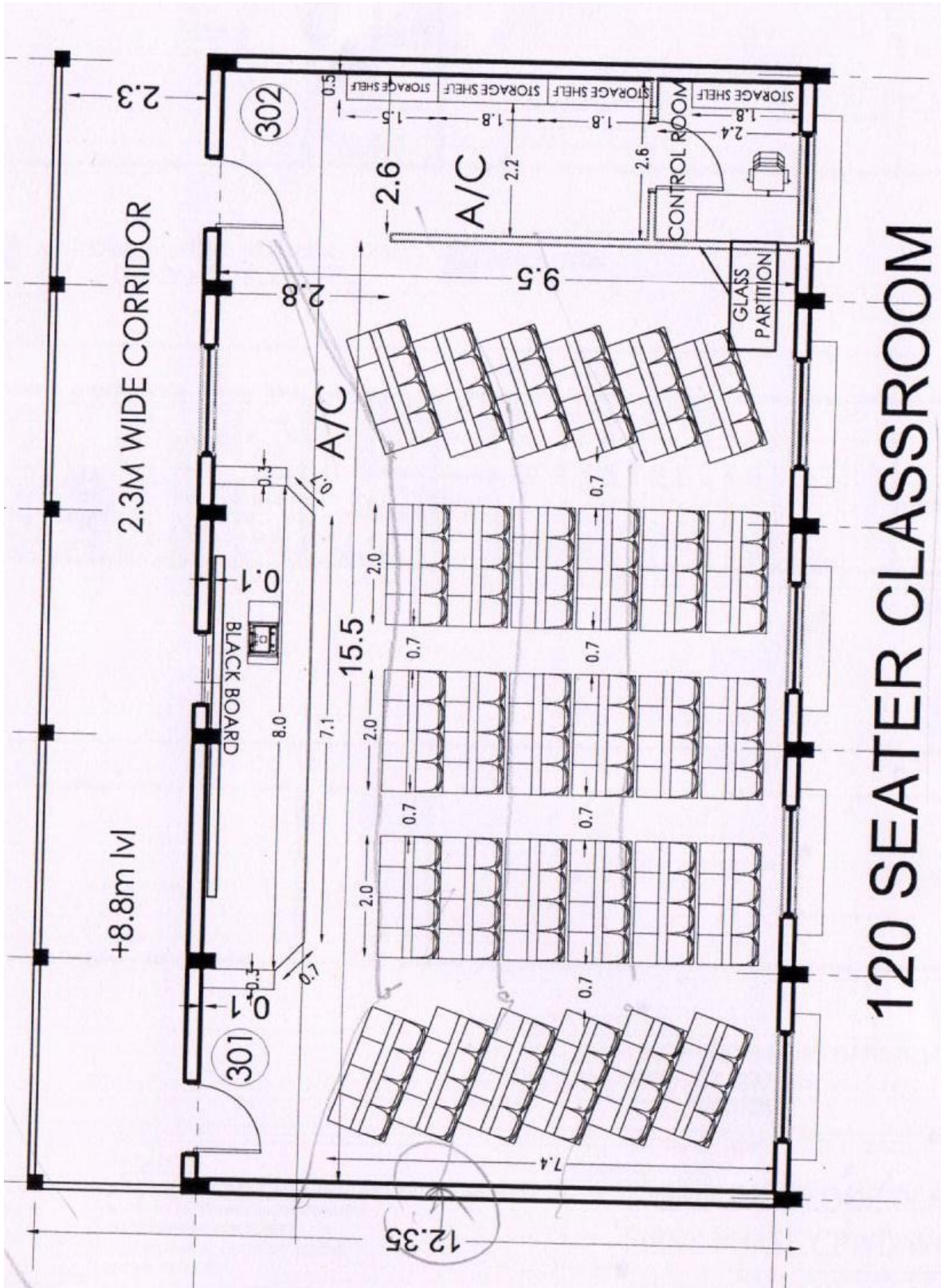
**Important note: The Vendor and Integrator shall assure the integrated equipment - Projector, Audio system comprising of Microphones, Speakers can also be used for local class when not connected to a far end location via video conference systems.**

### *Terms and Conditions:*

1. If the vendor is not the Manufacturer, he shall submit Dealership Certificate from the Manufacturer of Video Conferencing Systems and other major allied accessories. Major connecting Cables for critical points and connectors : Extron, Belden, Kramer or equivalent.
2. *Payment will be given after successful installation & configuration.*
3. *Installation includes Electrical wiring with fire retardant cables and power points for equipment in all the 2 rooms and 1 control rooms/cabin.*
4. *The Prices should be quoted inclusive of all taxes in single units also.*
5. *The Prices should be quoted in INR.*
6. *Total cost including all taxes should be clearly shown in the quotation.*
7. *3 Years onsite Vendor TAC Support & OEM Warranty should be clearly mentioned (Proof has to be submitted at the time of installation).*

8. *The product should match each and every specifications mentioned. The specification has to be mentioned clearly in the technical bid.*
9. *Compliance sheet for the specification & OEM Brochure has to be attached along with Technical bid.*
10. *You should have Technical support staff in Tirupati for providing immediate support (24/7).*
11. *Replacement or standby equipment should be installed within 24 hours after registration of faulty equipment during the warranty period.*
12. *All standard accessories to be supplied along with VC/Display/Audio switching system.*
13. ***The Installation and testing to be completed on or before 27<sup>th</sup> July.***
14. *Those who have done similar kind of installation (both audio & video integration) for Classroom/Boardroom will be preferred. Proof (Purchase Order/Performance Certificate) has to be attached.*
15. **Only those who qualify technical specification will be called for complete integrated demo using equipment required for one site/location and the venue for demo will be in IIT Madras.**
16. **The tenderer who qualify both Technical specs and Demo will considered for final evaluation to select the lowest bidder.**
17. **Provide Power Calculation \ Power load value for each room for UPS.**





# 120 SEATER CLASSROOM

