



Ref No: ICTS/TIFR/RFQ/75/2018-19

Date: 04/01/2019

**ENQUIRY**

To,

Dear Sir,

**Subject: Enquiry for the Supply, Installation and Commissioning of AV Systems for classrooms****Scope of Work:**

- Supply, Installation and Commissioning of AV Systems for 2 class rooms.
- The following equipment will be provided by ICTS without any cable and accessories for integration.

- 2 number of Panasonic/Epson Projector
- 2 number of Dlite/Elite screen
- 2 number of Lifesize VC codec from streaming and recording
- 2 number of Panasonic/Vaddio PTZ camera with central Joystick Controller
- 4 number of Sennheiser/beyerdynamic Wireless Hand Mic
- 2 number of Revolabs HD Dual Wireless Microphone set
- 2 number of Online streaming CPU with HDMI Capture cards
- 2 number of Monitoring screen
- 2 number of Sennheiser/beyerdynamic Lapel Mic
- 2 number of Crestron DM 8G+HDR Receiver
- 1 number of Crestron DMPS
- 1 number of Crestron of Crestron Touch Panel
- 1 number of Kramer HDMI Matrix switch

- Any additional components that is required to complete the solution should be included by SI in their proposal. (Price should be included in financial bid under line item I1)
- Bidder should configure/integrate all the above equipment with the proposed DSP, controller and touch panel (Price should be included in financial bid under line item I2). The bidder should configure Touch Panel/Controller as per ICTS requirement.

Some of programming options are listed below:-

- Master Volume control
- Audio DSP individual line in/out gain control
- Audio DSP Audio Matrix control
- SIP Audio Controls of DM and DSP
- SIP Audio call dialling and calling feature

**International Centre for Theoretical Sciences – TIFR**

Survey No. 151, Shivakote Village

Hesaraghatta Hobli

Bangalore (North) – 560 089

Ph: 080 4653 6027 Email: [purchase@icts.res.in](mailto:purchase@icts.res.in)

GSTIN : 29AAATT3951F2ZB





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- Individual Dante/AVB MIC on/off
- HDMI In/Out Matrix control
- VC Codec Operation Control
- VC Content sharing Control
- Single Button Recording ON/OFF
- Camera Control (pan/tilt/zoom-in-out/on/off etc.,)
- Projector control (on/off/source selection/settings etc.,
- Dedicated button(s) for each specific mode of operation at homepage,
  - Exa-1: Video Conference mode: - It turn on the Display/Projector, Set the screen, Set Video matrix ,set the audio matrix, turn on dante mic and Speakers, appear VC calling page, Record button on side
  - Exa-2: Meeting mode :- It turn on the Display/projector, set the audio matrix, turn on dante mic and Speakers,Record button on side
  - Exa-3: Audio Bride :- SIP Calling control of DSP's(Tesiraforte ,DMPS\*\* ), need to popup and provide dial and call control options, Set the audio matrix, turn on dante mic and Speakers,Record button on side and etc.,
  - Exa-4: Audio Bridge over 3.5 Jack : DSP auto config to 3.5" TRRS connector (Audio IN/OUT), so mobile/laptop 3.5" jack(AHJ,CTIA,OMTP,..) communicate to system (Set the audio matrix, turn on dante mic and Speakers, Record button on side and etc.,)
  - Exa-5: Soft VC Mode(Laptop/Rack-PC) : It turn on the Display, Set Video matrix ,set the audio matrix including USB, turn on dante mic and Speakers, Record button on side,..
  - Exa-6: Presentation Lecture Recording mode : - It turn on the Display/Projector, Set the screen, Set Video matrix ,set the audio matrix, turn on lapel, hand, dante/AWB mics and Speakers, appear VC calling page and start recording, Record button on side, Dim the room light, Presentation enable/disable option etc.,
  - Exa-7: Board Lecture Recording mode : - It turn off the Display/Projector, close the screen, Set the cammar, Set Video matrix ,set the audio matrix, turn on lapel, hand, dante/AWB mics and Speakers, appear VC calling page and start recording, Record button on side, Turn on board light, Presentation enable/disable option etc.,

→ The bidders are advised to visit sites (at their own expense), prior to the submission of proposal, and make survey and assessment as deemed necessary for proposal submission. Site survey can be done on working days between 11:00 hrs to 17:00 hrs by advance intimation.

Sealed tenders are invited under **2 cover system** from reputed OEM (Original Equipment Manufacturer) /System Integrator(SI) / Registered and Licensed Vendors for Job Contract at International Centre for Theoretical Sciences, Survey No. 151, Shivakote, Hesaraghatta, Bangalore - 560089 (India).

The Technical and Price Bids shall be submitted simultaneously in two cover (sealed) system. The proposals shall

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be evaluated in two stages: (1) Technical and (2) Price. Technical evaluation will be carried out and only those vendors who qualify in the technical evaluation will be eligible for Price Bid opening. Thereafter Financial proposal shall be evaluated. The Commercially Lowest Bidder shall be the first preferred Vendor for the Award of Order.

**Important Instruction:** The bids shall be enclosed in an envelope and sealed duly marked “Enquiry for Supply, Installation and Commissioning of AV Systems for classrooms at ICTS Campus,” Ref No. ICTS/TIFR/RFQ/75/2018-19; and addressed to “Administrative Officer” at the address given below. The bids are liable to be rejected if the sealed envelope is not addressed to “Administrative Officer” with Tender Ref No. and Item Description. Offers delivered in person shall be deposited in the Tender Box kept in the Office. If the bids are sent through courier or mail, it should reach by submission date and time and ICTS will not be responsible for any delay.

The tenders should be submitted in two sealed covers. This tender will be evaluated under 2 cover bid system as described above.

- I. The First sealed cover - **COVER I should be superscribed “Technical Bid”** and should contain:
  - A. Pages 1 to 4 of this enquiry duly sealed and signed.
  - B. Detailed BOQ with Warranty Details (Same as Financial bid without prices mentioned)
  - C. Technical specifications of the product for all quoted items.
  - D. MAF Certificates for all quoted items
  - E. Proof of OEM Certified in-house Engineer’s for all quoted items.
  - F. Two executed Purchase Order copies of similar order.
  
- II. The Second sealed cover - **COVER II superscribed 'Price Bid'** should contain the Financial bid.

**Tender Criteria:**

1. The bidder should submit the MAF (Manufacturer’s Authorization Form) Certificate along with the quotation (if certificate is from the distributor, OEM authorization certificate of the distributor is mandatory). Bids without MAF Certificate will be disqualified.
2. Financial bids, if enclosed with the technical bids in Cover 1 will lead to automatic disqualification of the bid.
3. **All warranty and support must be serviced directly by the OEM. ICTS requires that there be a SPOC from OEM who is responsible for all issues between ICTS and the OEM.**
4. The bidder should have at least two installations of the proposed AV Systems and proof of the same should be enclosed with the technical bid.



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**Terms & Conditions:**

The center being public funded research institution is entitled for GST @ 5% vide notification No. 47/2017-Integrated Tax (Rate) and No.45/2017-Central Tax dated 14-11-2017. Necessary Certificate will be provided along with the order.

The bids/ quotation addressed to “International Centre for Theoretical Sciences – TIFR”. You are requested to superscribe our enquiry number and due date on the envelope.

**All duties, taxes, surcharge and cess as currently applicable must be stated in your quotations, separately. Otherwise your quote is liable to be rejected.**

1. **DUE DATE FOR SUBMISSION OF QUOTATION AGAINST THIS ENQUIRY IS 25/01/2019 till 15.00 Hours.**
2. **QUOTATIONS RECEIVED AFTER THE DUE DATE SHALL BE REJECTED.**
3. Vendors can quote in USD also. OEM should provide **Warranty, Support & Service locally.**
4. The Validity of your quotation should be for **60 days from the date.**
5. Your quotation should include 3-year onsite comprehensive warranty. 4th and 5th year additional warranty is optional but mandatory to quote.
6. Delivery to be made to ICTS-TIFR (at vendor’s own arrangement). Transit Insurance should be done up to International Centre for Theoretical Sciences-TIFR, Survey No. 151, Shivakote Village, Hesaraghatta Hobli, Bangalore North – 560089.
7. Delivery Period: 4 weeks from the date of acceptance of the purchase order and Installation within 2 weeks from delivery.
8. Liquidated damage: In case the item is not supplied within the agreed delivery schedule and after a grace period of 07 days, then liquidated damages will be imposed automatically and will be deducted from the bill of the vendor at the rate of 0.5% per week, subject to a maximum of 10% of the order value.
9. **Payment:** Within 15 days after delivery, acceptance & satisfactory installation.
10. Any dispute or differences that may arise between the parties shall be referred to the sole arbitration of the Centre Director or his nominees. The decision of the arbitrator shall be final and binding on the parties. The venue for arbitration shall be Bangalore. The provisions of the Arbitration and Conciliation Act, 1996 as amended from time to time shall apply. The Courts in Bangalore shall have exclusive jurisdiction to deal with any or all disputes between the parties.

**For and on behalf of International Centre for Theoretical Sciences-TIFR**

**Authorized Signatory****Administrative Officer - 'D'****International Centre for Theoretical Sciences  
Tata Institute of Fundamental Research****Survey No. 151, Shivakote,  
Hesaraghatta Hobli, Bangalore - 560 089.**



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**FINANCIAL BID**

Please let us have your lowest Quote for the following:

Sl. No	Item Description	HSN/SAC Code	Qty	Rate per unit Rs.	Amount Rs.
<b>Audio</b>					
A1.	Supply and installation of Two-Way Line Array Column loudspeakers With Wall bracket ( <b>Enclosure : White</b> ) with the specification of the make JBL ( <b>CBT 50LA</b> ) or equivalent <ul style="list-style-type: none"> <li>• Colors: White</li> <li>• Components : Eight 50 mm(2 in) Full-Range ;</li> <li>• Frequency Range (-10 dB) : 80 Hz – 20 kHz ;</li> <li>• Coverage Pattern : Vertical 20° (1.5 kHz - 16 kHz, ±10°) Horizontal 150° (ave, 1 kHz – 4 kHz, ±20°) ;</li> <li>• Sensitivity (2.83V@ 1m) : 93 dB (speech mode, 2 kHz - 14 kHz)</li> <li>• 89 dB (music mode, 300 Hz - 18 kHz) ;"</li> <li>• Nominal Impedance : 8 ohms ;</li> <li>• Power Capacity : (8 ohm setting) : 150W (600W peak), 2 hrs</li> <li>• 100 W (400W peak), 100 hrs ;"</li> <li>• Max SPL : Speech mode: 115 dB cont ave (121 peak)</li> <li>• Music mode: 111 dB cont ave (117 peak) ;"</li> <li>• 70V/100V Transformer Taps : 60W, 30W, 15W, (7.5W at 70V only), and 8Ω thru, via switch ;</li> <li>• Enclosure : Fiberglass reinforced ABS cabinet, painted aluminum grille ;</li> <li>• Outdoor Capability : IP-55 rated, per IEC529, when installed with optional MTC-PC2 panel cover. UV, moisture and 200-hr ASTM G85 acid-air/salt-spray resistant. ;</li> <li>• Insert Points : Ten M6 insert points on back panel. ;</li> </ul>		4 No.		
A2.	Supply and installation of Audio Amplifier with the specification of the make Crown ( <b>DCI 300 -2</b> ) or equivalent <ul style="list-style-type: none"> <li>• Frequency Response ( 8 Ohms, 20 Hz - 20 kHz) :+/- 0.25 dB" ;</li> <li>• BLU Link Input Signal to Noise Ratio (A-Weighted) : &gt; 104dB ;</li> <li>• Total Harmonic Distortion (at full rated power, 20 Hz - 20 kHz) : 0.0035 ;</li> </ul>		2 No.		


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	<ul style="list-style-type: none"> <li>● Voltage Gain : 34 dB ;</li> <li>● Damping Factor (20 Hz to 100 Hz) : &gt;1000 ;</li> <li>● Input Impedance (nominal balanced, unbalanced) : 10 kOhms, 5 kOhms ;</li> <li>● Maximum Input Level before Compression : +20 dBu ;</li> <li>● Load Impedance (Stereo/Dual Mode) : 2 - 16 Ohms; 70Vrms and 100Vrms ;</li> <li>● Load Impedance Bridge Mono : 4 - 16 Ohms; 140Vrms and 200Vrms ;</li> <li>● Cooling : Continuously variable speed forced air, front to back airflow ;</li> <li>● Maximum Fan Noise (re dBA SPL @ 1M) : 45 ;</li> <li>● Required AC Mains (+/- 10%) : 100V-240V ~ 50/60 Hz ;</li> <li>● IEC Power Connector : 15A IEC ;</li> </ul>				
<b>A3.</b>	<p>Supply and installation of Audio DSP with 12 analog inputs, 8 analog outputs, Acoustic Echo Cancellation (AEC) technology for all interface, 8 channels configurable USB audio, AVB and 2-channel VoIP(SIP) interface support with the specification of the make Biamp (Tesiraforte AVB VT) or equivalent</p> <ul style="list-style-type: none"> <li>● SIP VoIP interface via RJ-45 connector</li> <li>● 128 x 128 channels of AVB</li> <li>● Frequency Response 20Hz to 20kHz, +4dBu output : +0.25dB/-0.5dB ;</li> <li>● THD+N (22Hz to 22kHz) 0dB gain, +4dBu input 54dB gain, -50dBu input : &lt; 0.006% &lt; 0.040% ;</li> <li>● EIN (no weighting, 22Hz to 22kHz) : &lt; -125dBu ;</li> <li>● Dynamic Range (in presence of signal) 22Hz to 22kHz, 0dB gain : &gt; 108dB ;"</li> <li>● Input Impedance (balanced) : 8k<math>\Omega</math> ;</li> <li>● Output Impedance (balanced) : 207<math>\Omega</math> ;</li> <li>● Maximum Input : +24dBu ;</li> <li>● Maximum Output (selectable) : +24dBu, +18dBu, +12dBu, +6dBu, 0dBu, -31dBu ;"</li> <li>● Input Gain Range: (6dB steps) : 0dB to 66dB ;</li> <li>● Phantom Power : +48 VDC (7mA/input) ;</li> <li>● Crosstalk, channel to channel, 1kHz 0dB gain, +4dBu input 54dB gain, -50dBu input : &lt; -85dB, &lt; -75dB;</li> <li>● Sampling Rate : 48kHz ;</li> <li>● A/D – D/A Converters : 24-bit ;</li> <li>● Rack mountable (1RU);</li> </ul>		2 No.		


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	<ul style="list-style-type: none"> <li>● System configuration and control via Ethernet / Crestron controller</li> <li>● Should include minimum <b>5-years OEM warranty</b></li> </ul>				
A4.	<p>Supply and installation of Ceiling suspended Beam forming Pendant Microphones with the specification of the make Biamp(TCM-1) or equivalent</p> <ul style="list-style-type: none"> <li>● Microphone Technology : 8-Element Digital Array ;</li> <li>● Frequency Response (150 Hz - 16 kHz) : <math>\pm 3\text{dB}</math> ;</li> <li>● Polar Pattern : Beamformed ;</li> <li>● Sensitivity (94dB SPL, 1kHz) : <math>&gt; 70\text{dB}</math> ;</li> <li>● Maximum SPL (at 0.5% THD) : 106dB ;</li> <li>● Dynamic Range (THD+N &lt; 10%) : 92dB, A-Weighted ;</li> <li>● Indicators : Mute Indicator (Green/Red LED) ;</li> <li>● Digital Interface : Custom/Proprietary ;</li> <li>● Connector : Custom 2-pin (cable length 10 feet)</li> <li>● Should include minimum <b>5-years OEM warranty</b></li> </ul>		4 No.		
A5.	<p>Supply and installation of Ceiling suspended Beam forming Pendant Microphones extension with the specification of the make Biamp(TCM-EX) or equivalent</p> <ul style="list-style-type: none"> <li>● Microphone Technology : 8-Element Digital Array ;</li> <li>● Frequency Response (150 Hz - 16 kHz) : <math>\pm 3\text{dB}</math> ;</li> <li>● Polar Pattern : Beamformed ;</li> <li>● Sensitivity (94dB SPL, 1kHz) : <math>&gt; 70\text{dB}</math> ;</li> <li>● Maximum SPL (at 0.5% THD) : 106dB ;</li> <li>● Dynamic Range (THD+N &lt; 10%) : 92dB, A-Weighted ;</li> <li>● Indicators : Mute Indicator (Green/Red LED) ;</li> <li>● Digital Interface : Custom/Proprietary ;</li> <li>● Connector : Custom 2-pin (cable length 5 feet)</li> <li>● Should include minimum <b>5-years OEM warranty</b></li> </ul>		4 No.		
<b>Controller</b>					
C1.	<p>Supply and installation of 10" Wired Colour touch panel with tabletop docking station (Enclosure : Black) with the specification of the make Crestron (TSW-1060-NC-B-S and TSW-1060- TTK-B-S) or equivalent</p> <ul style="list-style-type: none"> <li>● 10.1 inch (257 mm) diagonal Touch Screen without Camera, Microphone</li> <li>● Tabletop touch screen featuring a clean, contemporary appearance with edge-to-edge glass and advanced high-definition Smart Graphics. Features onboard web</li> </ul>		1 No.		


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	<p>browsing, H.264 streaming video, and <b>PoE+ network power</b>. Includes native applications for room scheduling, Zoom Rooms conferencing control, and Sonos, Hall Sound System control.</p> <ul style="list-style-type: none"> <li>● Display Type : TFT active matrix color LCD</li> <li>● Aspect Ratio : 16:10 WXGA</li> <li>● Resolution : 1280 x 800 pixels</li> <li>● Brightness: 400 nits (cd/m<sup>2</sup>)</li> <li>● Contrast : 950:1</li> <li>● Color Depth : 24-bit, 16.7M colors</li> <li>● Illumination : Edgelit LED w/auto-brightness control</li> <li>● Viewing Angle : ±80° horizontal, ±80° vertical</li> <li>● Touch Screen : Projected capacitive, 5-point multi-touch capable</li> <li>● Hard Keys : Projected capacitive pushbuttons, backlit w/auto-brightness control, per-button show/hide (backlight enable/disable), pre-labeled with icons for "Power", "Home", "Lights", "Up", and "Down"</li> <li>● Color as per site requirement to maintain the aesthetic look</li> </ul>				
<b>C2.</b>	<p>Supply and installation of Digital Media matrix switcher with min 7 Inputs 4 Outputs with Integrated Control processor. with the specification of the make Crestron(DMPS3- 4k-350-C) or equivalent</p> <ul style="list-style-type: none"> <li>● Should provides AV signal routing solution for classrooms.</li> <li>● Should provides Integrates the control system, matrix switcher, video scaler, streaming decoder, mic mixer, audio DSP, amplifier,</li> <li>● Affords substantial signal routing flexibility and high-performance signal processing without the need for separate components.</li> <li>● Should provides a complete 4K AV presentation control</li> <li>● Simplified configuration and control without programming (Built-in .AV Framework)</li> <li>● Matrix switcher : Min 7x4 matrix, Crestron QuickSwitch HD technology</li> <li>● Scalers (HDMI outputs): 4K video scalers with motion-adaptive deinterlacing, intelligent frame rate conversion, Deep Color support, 3D to 2D conversion , content-adaptive noise reduction, and widescreen format selection (zoom, stretch, maintain aspect-ratio, or 1:1)</li> </ul>		1 No.		






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	<ul style="list-style-type: none"> <li>● Input Type: HDMI w/Deep Color, &amp; 4K (DVI &amp; Dual-Mode DisplayPort compatible ) on DM 8G+ &amp; HDBaseT w/Deep Color,</li> <li>● Output Type: HDMI w/Deep Color &amp; 4K on Outputs 1 &amp; 2; DM 8G+ &amp; HDBaseT w/Deep Color, 3D, &amp; 4K on Outputs 3 &amp; 4</li> <li>● Ethernet: 10/100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, industry-standard TCP/IP stack, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), FIPS 140-2 compliant encryption, IEEE 802.1X, SNMP, BACnet™/IP [10], IPv4 or IPv6, Active Directory authentication, IIS v.6.0 Web Server, SMTP e-mail client, RSTP, Private Network Mode</li> <li>● Control Subnet : 10/100/1000 Mbps Ethernet, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP server, DNS Server, port forwarding, Isolation Mode, IEEE 802.3at Type 1 compliant PoE PSE</li> <li>● Streaming: (Via Ethernet) 10/100 Mbps, DHCP, H.264 decoding, MJPEG decoding, HDCP 2.2, RTP, RTSP, SDP</li> <li>● USB:USB signal routing via select DM transmitters and receivers, or via USB-EXT-DM series extenders[9]; USB device port for computer console</li> <li>● RS-232:2-way device control and monitoring up to 115.2k baud with hardware and software handshaking</li> <li>● IR/Serial:1-way device control via infrared up to 1.2 MHz or serial TTL/RS-232 (0-5 Volts) up to 115.2k baud; supports CNXRMIRD IR Receiver [6]</li> <li>● DigitalMedia:DM 8G+, HDCP 2.2, EDID, CEC, PoDM+ [8], Ethernet</li> <li>● HDBaseT:HDCP 2.2, EDID, CEC, RS-232, PoE+ [8], Ethernet</li> <li>● HDMI:HDCP 2.2, EDID, CEC</li> <li>● IR ports:2-pin 3.5 mm detachable terminal blocks,IR/Serial output ports, IR output up to 1.2 MHz,1-way serial TTL/RS-232 (0-5 Volts) up to 115.2k baud</li> <li>● Relay ports: 8-pin 3.5 mm detachable terminal block;</li> </ul>				
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	<p>Comprises (4) normally open, isolated relays; Rated 1 Amp, 30 Volts AC/DC; MOV arc suppression across contacts</p> <ul style="list-style-type: none"> <li>Comm Ports: DB9 connectors-male; Bidirectional RS-232 ports, Up to 115.2k baud, hardware and software handshaking support</li> </ul>				
C3.	Supply and installation of 24 Port POE+ Network Switch (Should support AVB) with the specification of the make Cisco or equivalent		1 No.		
<b>Video</b>					
V1.	<p>Supply and installation of Digital media HDMI   VGA Transmitter with Face plates (Enclosure : Black) with the specification of the make Crestron(DM-TX-201-C-2G-B-T) or equivalent</p> <ul style="list-style-type: none"> <li>Should be 2x1 auto-switching, auto-detecting multi-format digital/analog inputs</li> <li>Should support the following resolutions:</li> <li>640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165 MHz pixel clock"</li> <li>Should include high-speed LAN port for extension of Ethernet signal.</li> <li>Alternative to RS-232 and other conventional control procedure, should be capable of supporting CEC for controlling third party AV Devices.</li> <li>All signals are transported over a single CAT type cable, supporting distances up to 330 feet (100 m) when using proprietary cables.</li> <li>Should function as a keyboard/mouse extender, allowing the connected computer (or other USB HID-compliant host) to be controlled by a mouse and/or keyboard located at a</li> </ul>		2 No.		




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	<p>presentation lectern, conference table, or some other remote location.</p> <ul style="list-style-type: none"> <li>• Face plates color as per site Architecture look</li> </ul>				
V2.	<p>Supply and installation of Digital media HDMI Transmitter with the specification of the make Crestron(DM-TX-201-C) or equivalent</p> <ul style="list-style-type: none"> <li>• Should be 2x1 auto-switching, auto-detecting multi-format digital/analog inputs</li> <li>• Should support the following resolutions: 640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165 MHz pixel clock"</li> <li>• Should give a local HDMI output as pass-through for Monitoring</li> <li>• Should include high-speed LAN port for extension of Ethernet signal.</li> <li>• Alternative to RS-232 and other conventional control procedure, should be capable of supporting CEC for controlling third party AV Devices.</li> <li>• All signals are transported over a single CAT 6 type cable, supporting distances up to 330 feet (100 m) when using proprietary cables.</li> <li>• Should functions as a keyboard/mouse extender, allowing the connected computer (or other USB HID-compliant host) to be controlled by a mouse and/or keyboard located at a presentation lectern, conference table, or some other remote location.</li> </ul>		2 No.		
<b>Installation and Commissioning</b>					
11.	<p>Cables, Patch Cords, Connectors, Adaptors and accessories - <b>both classrooms.</b></p>		1 Lot.		




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	Preferred Makes :Belden / Klotz / Extron / Crestron / Crown / Neutrik / Kramer / Commscope • CAT 6 Cable : Commscope/Systemax, • CAT 6 Patch Cord : <b>Commscope GS8E-LBCPC3312-02</b> • CAT 6 cable Color <b>Light Blue Jacket</b> • <b>HDMI Cable/Patch Cords : Kramer/Crestron make with minimum 10-years OEM warranty</b> • The patch cords should be company molded cables (without any joints/adaptors) • Audio signal cable : <b>Klotz make Preferred</b> • Connectors from <b>neutrik</b> make Preferred.				
I2.	Installation,Labour, Control System, touch Panel   Audio DSP Programming with 3 years of comprehensive onsite warranty and support <b>for both Classrooms</b>		1 Lot.		
	<b>*Optional but mandatory to quote:</b>				
	4 year of comprehensive onsite warranty and support*		1 Lot		
	5 year of comprehensive onsite warranty and support*		1 Lot		
	Sub Total				
	Add: GST				
	Total Amount in Rupees				

Signature, Name, Address and

Seal of the proprietor / Managing Partner etc.


Name:

Seal of the Company:

Designation:

Signature:

Date:

**For and on behalf of International Centre for Theoretical Sciences-TIFR**

**Authorized Signatory**
**Administrative Officer - 'D'**
**International Centre for Theoretical Sciences  
Tata Institute of Fundamental Research**
**Survey No. 151, Shivakote,  
Hessarghatta Hobli, Bangalore - 560 089.**