

ANNEXURE TO TENDER NO DPS/MRPU/1/1/1235

Annexure for the purchase of Audio System and Accessories

1. Description of the ITEM: Supply and Installation of Audio System, and Associated Accessories at IGCAR Training school, Kalpakkam

2. Detailed SPECIFICATIONS and Quantity:

i) 4Channel Power Amplifier having the following specifications:

Qty: 1No

POWER RATING		
Amplifier Power	4 x 100 W (THD+N < 0.04%, 1 kHz, 4-8 Ω, 70/100V) or Higher	
Maximum Power per Channel	400 W @ 4-8 Ω, 70/100V or Higher	
Gain (Low-Z mode)	30.2 dB ± 5%.	
Gain (70V mode)	35.0 dB ± 5%.	
Gain (100V mode)	38.0 dB ± 5%.	
AUDIO PERFORMANCE		
Frequency Response	4-8 Ω: 20 Hz – 20 kHz (+/- 0.5 dB @ 1 W); 70/100V: Same as 4-8 Ω with 50 Hz high-pass filter or Higher	
Channel Separation (Crosstalk)	> 85 dB @ 1 kHz, > 65 dB @ 20 kHz	
Signal to Noise Ratio	100 dB (at rated power, A-weighted) ± 5%.	
AUDIO INPUTS	ANALOG	AMPLINK
Input Channels	4 balanced or Higher	24 digital
Connectors	12-pin Euroblock	RJ-45 (Input)
Input Impedance	20 kΩ	
Maximum Input Level	20 dBu (at 12 dBu sensitivity setting) ± 5%.	
Sensitivity	4 / 12 dBu (low / high sensitivity) ± 5%.	
AUDIO OUTPUTS	ANALOG	AMPLINK
Outputs	4 or Higher	24 digital
Connectors	8-pin inverted Euroblock	
INTEGRATED DSP		
A/D and D/A Converters	24-bit / 48 kHz	
Processing Functions	Matrix mixer, loudspeaker EQ, real-time 9-band PEQ, Vpeak/Vrms limiters, delay, bandpass, mute/output polarity inversion	

Audio Latency	< 1 ms (any analog or Amplink input to loudspeaker output)	
INDICATORS AND CONTROLS		
LEDs	Power, Input Signal, Output Signal.	
Controls, Front Panel	Power On/Off	
Controls, Rear Panel	Amplifier mode DIP switches, loudspeaker EQ dials, input select dial, output attenuators	
ELECTRICAL		
Mains Voltage	100 VAC – 240 VAC ($\pm 10\%$, 50/60 Hz)	
AC Power Consumption	120 VAC: 14 W (Standby), 500 W (Max)	230 VAC: 14 W (Standby), 500 W (Max)
Maximum Inrush Current	14.14 A (230 VAC / 50 Hz), 8.04 A (120 VAC / 60 Hz)	
Protections	High temperature, output short, extra high frequency (EHF), excessively low or high AC line voltage	

ii) **16W Ceiling Speaker having the following specifications:**
Nos

Qty: 12

System Performance	
Frequency Response	95 Hz - 17 kHz $\pm 5\%$.
Frequency Range (-10 dB)	80 Hz - 19 kHz $\pm 5\%$.
Nominal Dispersion	140° conical
Recommended High-Pass Filter	80 Hz high-pass filter $\pm 5\%$.
Long-Term Power Handling	16 W (64 W peak)
Sensitivity (SPL / 1 W @ 1 m)	84 dB SPL
Maximum SPL @ 1 m	96 dB SPL (102 dB SPL peak) $\pm 5\%$.
Nominal Impedance	8 Ω (transformer bypassed) $\pm 5\%$.
Transformer Taps (70/100 V)	70 V: 1 W, 2 W, 4 W, 8 W, 16 W 100 V: 2 W, 4 W, 8 W, 16 W
Driver Compliment	2.25" (57 mm) full-range driver

iii) **12-Channel Audio Mixer Console having the following specifications:** Qty: 1 No.

Input/Output	
Input Channels	Mono[MIC/LINE]-4, Mono/Stereo[MIC/LINE]-2, Stereo[LIN]-2 or Higher
Output Channels	STEREO OUT-2, AUX SEND-2, GROUP OUT-2 or Higher
Phantom power	+48 V
Digital I/O	USB Audio Class 2.0 compliant, Sampling Frequency: Max
Mixing capability	
On-board processors	SPX algorithm: 24 programs, PARAMETER control:1, FOOT
Bus	Stereo: 1, GROUP: 2, AUX: 2 (incl. FX)
Input Channel Function	
PAD	26 dB (Mono) $\pm 5\%$.
HPF	80 Hz, 12 dB/oct (Mono/Stereo: MIC only) $\pm 5\%$.
COMPRESSOR	1-knob compressor (Gain/Threshold/Ratio) Threshold: +22 dBu to -8 dBu, Ratio: 1:1 to 4:1, Output level: 0 dB to 7 dB Attack time: approx. 25 msec, Release time: approx. 300
EQ HIGH	Gain: +15 dB/-15 dB, Frequency: 10 kHz shelving
EQ MID	Gain: +15 dB/-15 dB, Frequency: 2.5 kHz peaking
EQ LOW	Gain: +15 dB/-15 dB, Frequency: 100 Hz shelving
PEAK LED	LED turns on when post EQ signal reaches 3 dB below
Level Meter	2x12 -segment LED meter [PEAK, +10, +6, +3, 0, -3, -6, -10, -15, -20, -25, -30 dB]
Total harmonic distortion	0.03 % @ +14dBu (20 Hz to 20kHz), GAIN knob: Min, 0.005 % @ +24dBu (1kHz), GAIN knob: Min
Hum & noise level	
Equivalent input noise	-128 dBu (Mono Input Channel, Rs: 150 Ω , GAIN knob: Max) $\pm 5\%$.
Residual output noise	-102 dBu (STEREO OUT, STEREO master fader: Min) $\pm 5\%$.
Frequency response	+0.5 dB/-1.5 dB (20 Hz to 48 kHz), refer to the nominal output level @ 1 kHz, GAIN knob: Min
Power requirements	AC 100 – 240 V, 50 / 60 Hz
Power consumption	22 W

iv) **Wireless handheld Microphone having the following specifications:** Qty: 3 Nos.

MAIN FEATURES

- Transmitter Form factors: Handheld
- Operating range (up to): 100 m or Higher

Wireless Receiver

- Microprocessor-controlled internal antenna diversity
- One-touch QuickScan locates the best open frequency
- ¼" and XLR audio outputs
- Two-color audio status indicator LED
 - Green: Normal audio levels
 - Red: Excessive audio levels (overload/clipping)

Handheld Transmitter with Capsule

- Power and battery status LED
- Adjustable gain control
- Quick and easy frequency matching
- AA batteries (included) provide up to 14 hours of continuous use
- 100 m (300 ft) operating range (line of sight) or Higher
- Integrated microphone capsule design
- 10 dB gain attenuation $\pm 5\%$.
- Lightweight, rugged construction
- Color ID caps

v) **Wireless lapel Microphone having the following specifications:** Qty: 2 Nos.

MAIN FEATURES

- Transmitter Form factors: Bodypack
- Operating range (up to): 100 m or Higher

Wireless Receiver

- Microprocessor-controlled internal antenna diversity
- One-touch QuickScan locates the best open frequency
- ¼" and XLR audio outputs
- Two-color audio status indicator LED
 - Green: Normal audio levels
 - Red: Excessive audio levels (overload/clipping)

Wireless Bodypack Transmitter

- Power and battery status LED
- Adjustable gain control
- Quick and easy frequency matching
- AA batteries (included) provide up to 14 hours of continuous use
- 100 m (300 ft.) operating range (line of sight) or Higher

Lavalier Condenser Microphone

- Miniature clip-on lavalier microphone for low visibility
- Permanently charged electret condenser element for clear vocal reproduction
- Unidirectional (cardioid) polar pattern rejects unwanted noise for improved sound quality
- Included tie clip allows for hands-free use, perfect for presenters
- Included windscreen reduces plosives, wind and breath sounds
- Tailored frequency response optimized for speaking and presentations
- TA4F (TQG) connector seamlessly integrates with wireless bodypack systems

vi)

12 U AV Rack

Qty: 1 Nos

- Dimensions: 638 x 600 x 500 (H X W X D) mm. $\pm 5\%$.
- openable side panel with slam latch; 1 fan position.
- Top & Bottom Covers, Side panels, Vertical 19" panel mounts are powder coated.
- Viewing Area Toughened tinted glass.
- For installing the above items mounting plate and power supply should be provided.

Terms & Conditions:

- All Conduits, cables, and connectors for cabling to be done by Vendor
- All Conduits, cables, and connectors shall be ISI certified, Cables shall be laid in MS conduits
- The separate stereo cable should be laid for the Computer aux input
- Necessary warranty of three years from the date of installation for all the complete system
- The complete system shall be installed only by the authorized vendors from OEM (Original Equipment Manufacturer). The necessary evidence supporting the same shall be produced while bidding. The tenders without such evidence will be rejected
- The bidder should have carried out the installation of a similar project. The necessary evidence supporting the same should be produced while bidding.
- The vendor should be certified for ISO 9001:2008 (Proof to be provided)
- All civil and electrical work should be carried by the vendor.
- The solution should be scalable and extendable for any future additions.
- Training to be provided by the vendor at our premises.
- All the items must be supplied and installed by the same vendor.