

Annexure I

Technical Specification for High-Density EEG Systems

1.0	Bidder Eligibility Criteria	Compliance (Yes/No)	Reference Page No.
1	Vendors should provide three similar global or domestic supply details in the last five years. PO copies or installation certificates along with contact details of end user need to be submitted as the proof of supply. IITM reserve rights to obtain feed back from the end users and to select/reject bids based on the feedback received.		
2	The bidders will be called to visit and give a presentation/documentation on the equipment after opening the technical bid. It is mandatory criteria for technical bid evaluation.		

2.0 Technical Compliance:

S.NO	SPECIFICATION	COMPLIED/ NOT COMPLIED	Ref.Pg.No
	<p>Items required:</p> <ul style="list-style-type: none"> • 2 x 64 channel gel-based wired EEG amplifier • 2 x 64 channel M size cap • 2 x 64 channel L size cap • 2 x set of 64 electrodes • 2 x reference and ground electrodes • 2 x 5 face electrodes • 2 x 6 pairs of bipolar channels • 2 x set of trigger sensors • 2 x set of auxiliary sensors • 2 x set of consumables (gels, syringe, electrode cleaning kit) • 2 x ERP module (E-Prime Bundle) • 2 x EEG Acquisition software with import/export features, LSL and EEG video support • 2 x video EEG (Full HD camera) • 1 x Tobii pro 3 glass • 1 x Tobii pro spectrum 		
1.	<p>64 channel gel-based EEG system for acquisition and processing</p> <ul style="list-style-type: none"> • Active electrodes or electrodes with active shielding should be provided and electrodes may/may not be permanently attached to the caps • Electrode caps should have rings/holes for easy attachment/detachment of electrodes to ensure quick setup • Electrode caps of varied sizes (1xmedium, 1xlarge) should be available for easy and quick EEG acquisition 		
Hardware requirements:			
1.	The system should be upgradable to a higher number of channels in future		

	seamlessly		
2.	System should not become obsolete for the next 10 years		
3.	System capable of being used with passive and/or active electrodes		
4.	DC coupled input channels capable of connecting various sensors and stack units		
5.	A minimum of 16-bit (preferred 24-bit) resolution with simultaneous sampling frequency of all channels should be 1KHz and above.		
6.	Internal calibration unit and impedance checking on the system		
7.	Amplifier with input range of 200mV		
8.	Should be capable of integrating with third party electrodes for acquisition		
9.	Incorporation of ExG (EOG, EMG, ECG) and auxiliary electrodes should be provided in the amplifier unit		
10.	Integrated camera for behavioral monitoring (video EEG) should be available		
11.	Camera should have pan, zoom, tilt and night vision		
12.	Compatible with Indian power supply of 220 V and 50 Hz		
13.	Power source to the system should be either AC powered or battery powered. Battery should support continuous recording for at least 2 hours before recharging		
14.	In case of AC powered, one rechargeable battery unit (power bank) should be provided for amplifier for portability		
15.	System should have provision for accommodating ERP modules		
16.	Input impedance of the system should be 1000 Mohm and above		
17.	System should have provision for recording event triggers like TTL digital inputs		
18.	System should provide minimum bandwidth frequency range of 0 to 100 Hz		
19.	System should support continuous recording duration of minimum 3 hours		
20.	Hardware should be certified and approved by ISO or CE or FCC		

Electrode requirements and consumables:

21.	Head cap layout be flexible to permit customized electrode positioning		
22.	Gel used should support continuous recording of minimum 2 hours without signal degradation		
23.	Reference electrodes (earclips or mastoids) and ground electrodes to be provided		
24.	Face electrodes (5 nos) with adhesive tapes should be provided		
25.	12 Bi-polar channels (6 pairs) for recording other physiological signals namely EOG, ECG, EMG should be provided		
26.	Trigger sensors – photosensors, microphone, push buttons, LED sensors		

27.	Auxiliary sensors – GSR, pulse oximeter (measuring SpO2), respiration band, 3D accelerometer, temperature sensor, blood pressure monitor – should be provided		
28.	Suitable connecting modules for connecting bi-polar electrodes and auxiliary sensors should be provided		
29.	Support for ear clip based SpO2 should be provided		
30.	Anti-static kit to reduce static electricity interference (optional)		
31.	1 year of consumables such as gel, blunt syringe (3 nos), measuring tape, measuring cups, double sided adhesives (200 nos), chin straps, velcro strips for clustering electrodes, electrode cleaning kit should be provided		
Event Related Potential (ERP) module requirements:			
32.	The ERP bundle should consist of <ul style="list-style-type: none"> •E-prime 3.0 software – single user USB license •One chronos response box •Chronos adapter box (optional) •TTL port connectors or suitable connecting modules to sync EEG and ERP responses to reduce timing delay should be provided 		
33.	The timing delays of TTL markers should not exceed 5 ms		
Eye Tracker (ET) module requirements:			
34.	ET module should consist of <ul style="list-style-type: none"> •One Tobii Pro 3 Glasses bundle •One Tobii Pro Spectrum bundle •Tobii Pro Lab software for recording and analysis 		
35.	Connectors for connecting tobii glasses and tobii spectrum to amplifier should be provided		
36.	Connectors for connecting tobii glasses and tobii spectrum to stimuli presenting PC should be provided		
Software requirements:			
1.	Export format of recorded data should be compatible with third party signal processing tools like matlab-EEGLab, MNE python etc.		
2.	Options to import ExG data from third party systems		
3.	Signals streaming via LSL should be supported		
4.	Should sync frames of video EEG with the ExG signals		
5.	Import and sync ET data with ExG (EEG, ECG, EMG) for combined analysis		
Support and Miscellaneous:			

1.	The selected firm for the supply of tendered item will have to provide free upgradations of software (all update & upgrades) up to 5 years from the date of satisfactory installation		
2.	In case of separate purchase of ET and/or ERP systems, technical support must be provided to simultaneously integrate ET, ERP with EEG system		
3.	Easy replacement of electrodes and consumables within and beyond warranty periods		
4.	The caps with electrode attached should have minimum warranty of 1 year.		
(The above-mentioned technical specifications are highly desired. The Institute reserves the right to go for lower specifications(Qty 1) taking into consideration its financial constraints and technical preferences)			
Terms & Conditions			
1.	Vendors should provide detailed documentation for the equipment and services level agreement (SLA) contract for servicing amplifiers, electrode nets and sensors.		
2.	Vendors should take the responsibility for completely integrating, installing and testing the hardware, downloading and installing software along with toolkits, training to our technical staff and detailed demo as part of the system acceptance after delivery of the system at IIT Madras.		
3.	Vendors have to provide warranty for a minimum of three year. Approximate cost of annual system support/maintenance contract for 4th and 5th year once the warranty period is over, It has to be mandatorily quoted as an optional item.		
4.	All the expenses for installation, training and post sales technical support will be borne by the vendor.		
5.	Vendors should draft service contract to facilitate complete integration of the Tobii eye tracker with the EEG systems. The contract should include the post-installation services and repairs of the Eye-Trackers and of the accessories used to integrate the Tobii with the EEG.		

(Note: It is mandatory for the bidders to submit a compliance statement for the aforementioned points in tabular format and required/necessary documents in the technical bid. Failure to comply with which bidders will be formally rejected)