



अखिल भारतीय आयुर्विज्ञान संस्थान (रायपुर) छत्तीसगढ़
(All India Institute of Medical Sciences, Raipur (Chhattisgarh))
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No: AIIMS/R/CS/3118/PHY/PAC/23


Date: 21/06/2023

Sub: PAC Tender for “Supply of Polysomnography as upgradation of 64 Channel EEG-ERP Machine, 2) Upgradation of EEG-ERP Machine from 64 channel to 256 Channel” for Department of Physiology at AIIMS, Raipur on Proprietary Basis – Inviting Comments Thereon.

The institute is in the process to purchase through PAC for “Supply of Polysomnography as upgradation of 64 Channel EEG-ERP Machine 2) Upgradation of EEG-ERP Machine from 64 channel to 256 Channel” for Department of Physiology AIIMS Raipur on proprietary basis whose authorized dealer for above said item in India is **M/s Axxonet System Technologies Pvt. Ltd., Bengaluru** is sole manufacture. The Local agent for above item is **M/s Axxonet System Technologies Pvt. Ltd., Bengaluru**. The Proposal submitted by department of Physiology at AIIMS, Raipur and PAC Certificate is attached which is to upload on website.

The above documents are being uploaded for open information to submit objection/comments, if any from any manufacturer/dealer/distributor regarding proprietary nature of the item **within 10 days from the date of issued /uploading of the notification by** reference **No. AIIMS/R/CS/3118/PHY/PAC/23**. The comments should be sent to Store Office, AIIMS, Raipur on upto or before **30.06.2023 upto 3:00 pm or email on store@aiimsraipur.edu.in**, failing which it will be presumed that any other manufacturer/dealer/distributor having no comments to offer and case will be decided on merits.

Encl: Related documents enclosed (Specification and PAC)


Sr. Procurement cum Store Officer
AIIMS, Raipur

Proprietary Certificate

This is to certify that the products listed below have been Invented, Patented, Manufactured and Distributed by **Axxonet®** solely worldwide.

We hold sole proprietary rights on these products worldwide

Some of the items listed below may also be patented or patent pending

No.	ITEMS
1.	B.E.S.S - Brain Electro Scan Systems
2.	B.E.S.S EEG/ERP Systems (8/16/32/64/128 & 256 Channels)
3.	B.E.S.S PSG (Polysomnography) System
4.	B.E.S.S. Bio Feedback System
5.	B.E.S.S. Auditory Brainstem Response
6.	B.E.S.S. Neuro Feedback System
7.	B.E.S.S. tVNs System
8.	BFT (Brain Function Therapy) for cognitive retraining
9.	B.E.S.S. EEG Commutator (with 1 Set of Cable)
10.	B.E.S.S Amplifier mounting
11.	B.E.S.S Commutator Mountings
12.	B.E.S.S. EEG Camera mount
13.	RapidCap – 32 to 64 Channels EEG/ERP/PSG recordings
14.	B.E.S.S EEG/ERP Accessories - EEG Gel, EEG Paste, VEP Goggles

***BESS – Brain Electro Scan System**

Agents: While Axxonet sells directly to all customers in India, we may appoint distributors and dealers to sell the above products at any point of time depending on requirements.

Thanking You,



Ms Deepa D
Account Manager
(For Axxonet System Technologies Private Limited.)



Proprietary Article Certificate

File Number and Reference		
1	Description of article	Polysomnography (PSG) System
2	Forecast of quantity/annual requirement	One time purchase
3	Approximate estimated value for above	
4	Maker's name and address	Axxonet System Technologies Pvt. Ltd. 85/13, 4 th Cross, Bhavani Layout
5	Name(s) of authorised dealers/stockists	Axxonet System Technologies Pvt. Ltd.
6	I approve the above purchase on PAC basis and certify that:- Note- Tick to retain only one out of (b), (c-1) or (c-2) whichever is applicable and cross out others. Please do confirm (a) by ticking it - without which PAC certificate will be invalid.	
6 (a)	This is the only firm who is manufacturing /stocking this item. AND	✓
6 (b)	A similar article in not manufacturing/sold by any other firm, which could be used in lieu OR	X
6 (c-1)	No other make/brand will be suitable for following tangible reasons (like OEM/warranty spares): OR	It is an upgrade of the EEG-ERP System from the same firm, already available & functional in the department. The PSG system shall be integrated into the existing 64 Channel EEG-ERP equipment.
6 (c)	No other make/brand will be suitable for following intangible reasons (if PAC was also given in the last procurement cycle, please also bring out efforts made since then to locate more sources): OR	X
	Reference of concurrence of finance wing to the proposal (Action will be taken by Stores & Account Department)	Budget for FY 2021-22 sanctioned vide OM No.AIIMS-Raipur/FA/Budget/2020/217 dated 01.09.2020 page 33of 39 SI No.1 (Estimated Equipment cost Rs.10 Lakhs) as attached herewith.

History of PAC purchase of this item for past three years may be given below (if any) NIL

Name of the Supplier	Order/Tender reference &Date	Quantity Ordered	Basic Rate on order (₹)	Adverse Performance Reported if any

Name of the approving authority Dr. Meenakshi Sinha

Date 29/6/21

Professor
Dr. Meenakshi Sinha
प्राध्यापक (शरीर क्रिया विज्ञान)
Professor (Physiology)
संस्थान भारतीय आयुर्विज्ञान संस्थान, रायपुर (छ.ग.)
All India Institute of Medical Science, Raipur (CG)



Proprietary Article Certificate

File Number and Reference			
1	Description of article	256 Channel EEG-ERP Machine	
2	Forecast of quantity/annual requirement	One time purchase	
3	Approximate estimated value for above		
4	Maker's name and address	Axxonet System Technologies Pvt. Ltd. 85/13, 4 th Cross, Bhavani Layout	
5	Name(s) of authorised dealers/stockists	Axxonet System Technologies Pvt. Ltd.	
6	I approve the above purchase on PAC basis and certify that:- Note- Tick to retain only one out of (b), (c-1) or (c-2) whichever is applicable and cross out others. Please do confirm (a) by ticking it - without which PAC certificate will be invalid.		
6 (a)	This is the only firm who is manufacturing /stocking this item. AND	<input checked="" type="checkbox"/>	
6 (b)	A similar article in not manufacturing/sold by any other firm, which could be used in lieu OR	<input checked="" type="checkbox"/>	
6 (c-1)	No other make/brand will be suitable for following tangible reasons (like OEM/warranty spares): OR	It is an upgrade of the EEG-ERP System from the same firm, already available & functional in the department.	
6 (c)	No other make/brand will be suitable for following intangible reasons (if PAC was also given in the last procurement cycle, please also bring out efforts made since then to locate more sources): OR	<input checked="" type="checkbox"/>	
	Reference of concurrence of finance wing to the proposal (Action will be taken by Stores & Account Department)	Budget for FY 2021-22 sanctioned vide OM No.AIIMS-Raipur/FA/Budget/2020/217 dated 01.09.2020 page 33of 39 (Estimated Equipment cost Rs.48 Lakhs) as attached herewith.	
History of PAC purchase of this item for past three years may be given below (if any)		NIL	
Name of the Supplier			
Order/Tender reference &Date	Quantity Ordered	Basic Rate on order (₹)	Adverse Performance Reported if any

Name of the approving authority Dr. Meenakshi Sinha

Date 29/6/21

Professor
Dr. Meenakshi Sinha
प्राध्यापक (शरीर क्रिया विज्ञान)
Professor (Physiology)
सकल भारतीय आयुर्विज्ञान संस्थान, रायपुर (छ.प्र.)
All India Institute of Medical Science, Raipur (CG)

Upgrading of current 64 channel EEG system to 256 Channel EEG system

The system should be compatible with existing 64 channel BESS system

To upgrade 64 Channels to 256 Channels - Additional 3 X Amp 64 are required

The system hardware should consist of:

- EEG Channels: 64 to 256
- Bi-Polar Channels: 16
- Supports EEG/ERP/PSG/NFB
- Connectivity: Fiber Optic connection
- On-device LCD to display - amp status
- Supports Saline, Paste, Gel
- Sampling rate of 250 to 4000Hz for 256 channels
- ADC: 24 bit;
- Input Noise: < 2 μ V pp from 0.01–65 Hz or lesser;
- Input Impedance: > 1GOhms;
- Band width 0.1Hz to 2000 Hz
- Operating range: +/- 12.5mV (EEG); +/- 500mV (Polygraph Channels)
- CMRR: more than 110db;
- All of the four docking xAMPs are powered from a medical-grade isolated power supply. All of the four docking xAMPs will be mounted on a stand.

The system should have software features for Viewing, Acquiring & Analysis

- Simultaneous Analysis & Acquisition of EEG and Physiology data
- Auto Synchronization of Data and Video Recording
- Supports Multiple Video Input feeds.
- Multi-Window views for Visual Comparison of Waveforms.
- Semi-Automatic or Automatic Artifact Rejection, Manual Editing Capability, Automatic Eye Movement and Drowsiness Artifact Rejection
- Semi-Automatic Amplitude, frequency and coherency brain mapping
- Selectable Digital filters – adjustable Band Pass , Band Stop, Hi-Low Pass
- DVD Player with Multi-Parameter Non-Linear Feedback.
- Superior signal quality by using special DSP technology.
- Event marker with a note pad.
- Supports long term NFB/EEG monitoring
- Adjustable online target settings for specific power levels to attain different frequency states
- Dynamic and Flexible FFT and Normative Comparisons in the Editing Mode
- Several Montage reformatting supported. Ability Re-Montage to different Reference Arrangements, e.g., Bipolar, Average reference, Current Source Density (CSD)
- EEG Coherence and EEG Phase Raw Values features
- FFT Normative Power Ratios for frequency band
- Various feedback modules – EEG, EMG, Temperature, GSR, Brain feedback (tm) module for clinical grade, Real-time LORETA Neurofeedback etc.
- 3D games made specifically for neuro feedback training.
- Audio/Video/Simple Game Control using Power Frequency of EEG in Relative/ Absolute/Ratio of channels
- Ability to trigger external Games/Applications by means of TCP/IP or other similar network protocols
- Graphs for subject to view strength of power in Frequency in order to give instant feedback
- Customizable Subject / Patient Database Management software with search facility.
- Online and Offline Analysis facility.

- Batch Processing Option for various Analysis
- Supports multiple analysis window options - (TFR) Analysis, Short-Time Fourier Transform Analysis, Hilbert Transform Analysis, Spectral Edge Frequency Analysis.
- Spectral analysis tool with data export.
- Post data processing - View EEG through user selected Band Pass/Notch filter – Save filtered EEG; with features like Horizontal time compression, Vertical display enhancement, Hide channels, Change Display formats, 2 or 3 Dimensional head maps.
- Can perform multiple analysis - Amplitude analysis, Spectral analysis, Wavelet analysis, Power Spectrum & Spectrum analysis, CWT, Correlation Analysis, Coherence analysis, Time-Frequency Response analysis etc.

The system should be able to be used for EEG & Research

- Can be used as a routine EEG machine.
- Capable of real-time data acquisition of Electrophysiology data in any research setting.
- Built in clinical grade Neurofeedback modules.

System should have following features regarding Reports, Dashboard and Data Export

- Inbuilt Export to LORETA Program, without any external conversion.
- Time domain Output Files Formatted for Easy Import to LORETA.
- Editing annotation tools and Bitmap capture for easy report creation.
- Automatic report generation and View and Print Digital EEG.
- Output Files for easy importing into statistical programs and database management systems.
- Export to ASCII format; EDF format
- Compatible with MATLAB / Sci Lab / Octave
- Interface with 3rd party software
- Export Graph and Data output to Image/ASCII/Spreadsheet

The system should have Third Party/ Tools Interface as follows

- Can integrate with Wireless Gamepad for Events
- Option to stream online data into Open format like LSL, OpenBCI, etc. for using with external system like OpenVibe, OpenBCI or any application supporting LSL (additional module)
- Compatible with E-Prime and Superlab. (additional module)
- Supports and integrates with Full HD USB Camera to record Video EEG. EEG Sync Video option to allow analysis with the help of video and option to have video analytics on external systems.

General Requirements are as follows

- Minimum Certification : ISO -9001
- Make in India (MII) : Minimum 50%
- All standard accessories/ PC/ monitor and consumables should be provided.
- Minimum required computer specifications: At least 24" monitor, i5 processor (latest configuration) ; 16 GB or above RAM; Laser color printer
- In house training of faculty is must.
- Desirable warranty for 5 years and thereafter AMC.

Polysomnography as upgradation of 64 channel EEG-ERP machine

The system & its software should be compatible with existing 64 channel BESS system

The system should have following Hardware features:

Fiber Optical EEG + PSG System - Amplifier:

Parameter	Condition	value
Connectivity		Fiber Optic
No Of EEG Channels per BESS xAMP		64
No of Bi-Polar Channels		16 (supports EMG, EOG, ECG, respiratory effort sensors, airflow sensors, etc.)
Resolution		24 Bits
CMRR		110 dB
Input impedance		1G Ω
RMS noise	0.1Hz to 35hz	0.443 μ V
Maximum Sampling Rate		4000 SPS
Bandwidth		0.1hz to 400 Hz
Peak to Peak Voltage measurements	EEG Channels	\pm 12.5mV

The system should have following Software features:

2) General features:

- Support both manual as well as automated annotations
- Support multiple montages that are easily configurable
- Easy to change time scale (horizontal display), amplitude scale (vertical display), channels displayed (hiding option), scroll speed, channel colour, background tick marks, etc. Also support touch gestures.
- 2D/3D Head Maps of EEG, spectral, coherence and ERP data.

3) Filters:

- High-accuracy software digital filters (IIR and FIR Filters).
- Options to configure Low-pass, High-pass, Band-pass and Band-stop (or Notch) filters.
- Online viewing, as well as offline saving of filtered EEG, supported.

4) Signal Processing:

- FFT-based spectral analysis with configurable frequency band binning (absolute/relative/dominant power). Support different windows (like Hamming), overlapping, scaling (log-transform), and welch-based power spectral density.
- Multiple time-frequency analysis options: Short-Time Fourier Transform, S-Transform, Morelet wavelet, Hilbert Transform, etc.

- Whole recording spectrogram trend display like DSA with Spectral Edge Frequencies
- Correlation and Coherence analysis.
- ICA and PCA-based artifact rejection, eye blink correction, etc.
- Morphology-based spike detection
- LORETA and sLORETA Source Localisation Analysis
- HRV analysis

5) Polysomnography:

- Online Hyperventilation Marking
- AASM 2007-based manual sleep scoring module
- Set markers such as a light on/off marker with the mouse or using function keys
- Adding notes to the screen
- Multiple event markers
- View and analyze hypnogram, generated automatically or manually
- View time-locked EEG, PSG, and video data simultaneously
- View EEG and PSG channels in a separate window with selectable time comparisons
- Input sleep staging options and analysis. Allow adding sleep-specific markers like a light on/off marker
- Display and analyzes PSG events such as ECG, EOG, EMG, respiration, snore linked to different sleep stages, and SpO2 saturation levels
- Additional sensors and accessories to be provided
 - i. 2 respiration sensors
 - ii. 1 snore sensor
 - iii. 2 EMG sensors
 - iv. 2 EOG sensors
 - v. 2 ECG sensors
 - vi. 1 heart rate and SpO2 sensor
 - vii. 1 movement sensor
 - viii. 1 airflow thermal sensor
 - ix. 1 night vision camera
- AASM compliant scoring guidelines
- Compatible with Polyman sleep scoring software
- HRV analysis
- Supports multi user scoring
- Provides trend graphs such as a spectrogram
- Trend graph based navigation
- Stage based EEG scoring

- Automated sleep scoring
- Can conduct a long term sleep recording till the HDD is full
- Time-locked display of multiple hypnograms of same data
- Supports the import and export of scored hypnograms in an EDF format
- Supports TAL timestamp annotation list
- Integrates with stimulus mode for sleep ERP studies
- Multi physiological parameters are acquired and displayed
- Automated and manual animal and human sleep scoring
- Provides Density Spectral Array (DSA) and Spectral edge Frequency (SEF)
- Sleep-stage specific power spectral analysis
- Compatible with sleep scoring done using Polyman (an open-source sleep scoring tool)
- Display and Analyze PSG events such as EMG, Respiration, Snore linked to different sleep stages, or SPO2 saturation levels

6) Import/Export of data :

- Export EEG data, epochs or average data to ASCII and EDF formats (batch option also available)
- Compatible with data sharing with MATLAB / Sci Lab / Octave / Python
- Export Graph and Data output to Image/ASCII/Spreadsheet
- Export power Spectrogram to Image/ASCII/Spreadsheet

7) General Requirements :

- Minimum Certification : ISO -9001
- Make in India (MII) : Minimum 50%
- All standard accessories/ PC/ monitor and consumables should be provided.
- Minimum required computer specifications: At least 24" monitor, i5 processor (latest configuration) ; 16 GB or above RAM; Laser color printer
- In house training of faculty is must.
- Desirable warranty for 5 years and thereafter CMC for 5 Year.