

물 품 규 격 서

- ☐ 입찰공고번호 : (학)일송학원 관리국 제2025-238호
- ☐ 입찰건명 : 신경과(신경학검사실) Polysomnography System(수면 다원 검사기) 구매
- ☐ 수요기관 : 한림대학교 동탄성심병원
- ☐ 납품장소 : 수요기관 희망장소 입고도
- ☐ 물품내역 등

품명(영문, 국문)	규격 및 사양	총 구매예정수량 (Q'TY)	1회 최대 발주수량	WARRANTY 기간
Polysomnography System (수면 다원 검사기)	A or B	1 Set	1 Set	검수(합격)일로부터 3년 종료월 말일 까지

☐ 공통사항

1. 장비의 설치와 작동 및 교육은 무상으로 제공한다.
2. 수요기관 담당자 입회 하에 계약상대자는 제품의 설치 테스트 및 시험작동을 실시하여야 한다.
3. 무상 하자담보 책임기간은 물품 검수(합격)완료일로부터 3년 종료월 말일 까지를 기본 원칙으로 하며 계약상대자의 추가 제안에 따라 3년을 초과하여 설정할 수 있다.
4. 무상 하자담보 책임기간 중 수요기관의 사정으로 인하여 부서 및 장비의 위치가 불가피하게 이동을 필요로 할 경우 설치 시 협의 하에 무상 또는 부득이한 경우 실비 기준으로 이루어진다.
5. 무상 하자담보 책임기간 중 중 공급된 장비의 부속품이 단종된 경우 수요기관이 인정하는 동등이상의 장비로 무상교체가 이루어져야한다.
6. 계약상대자는 어떠한 상황에서도 애프터서비스를 위하여 전문서비스 인력을 제공하여야 하며 애프터서비스를 위하여 교체 부품을 보관하여야 한다.
7. 계약상대자는 장비 납품 시 납품일을 기준하여 제품 제조년월이 6개월 이내인 장비를 납품 하고 납품장비에 해당 제조년월이 명시되어야 한다.
8. 기존 사용 중인 의료장비 철거 및 회수 또는 보상판매 조건으로 제안할 수 있다.

<규격서 A>

A. Features

- 1) Multi Sleep Lap System
 - It is cost effective multi sleep-lap system available for multi-bed operation with only one system at the same time if you add an amplifier and related devices.
 - This system uses operating software, not a Interface Board between computer system and amplifier, which offer a better maintenance service to user.
- 2) Real-Time Analysis
 - It is possible to use Analysis Modules on the Real-Time basis while acquiring patient data
 - Automatic Apnea Scoring, Sleep Staging, FFT's, Band Power Trend Analysis are used for instant and detailed appraisal of patient's Condition and Sleep Structure
- 3) Pulse Transit Time (PTT)
 - Measures the moment of cardiac muscle contraction with R-top of EKG and fixed point in the pulse wave of Plethysmogram when the Pressure wave reaches to a finger,
 - Measures the time that Arterial pressure pulse wave reaches from heart to periphery parts using PTT.
 - Creates Pulse Transit Time (PTT) traces in EKG and plethysmogram data.
 - PTT value drops is used for analyzing Autonomic Arousal Events.
- 4) Plethysmogram Analyzer (PAT)
 - Creates Pleth Amplitude trace in order to analyze Arousal Events automatically.
 - Finds out Artifact of Pleth trace using Pleth Quality trace.
 - Analyzes Autonomic arousals of Phethysmogram Data with Pleth Analyzer.
- 5) Heart Rate Variability (HRV)
 - Measures the delicate changes of periodic heart rate (HRV) with EKG and provides the Report.
 - Provides Data such as R-R Intervals in addition to Heart Rate Variability, analyzes activities of autonomic nervous system that varies with body activities quantitatively and provides HRV Report.
- 6) Cyclic Alternating Pattern Analysis (CAP)
 - Development of an automatic method to analyze sleep microstructure.
 - A Cyclic Alternating Pattern (CAP) analysis module can score the phases and cycles according to the atlas and rules for CAP scoring.
 - With the addition of a periodicity dimension to the concept of sleep stability and arousal, CAP analysis can provide a new and valuable standard to appreciate underlying physiological sleep mechanisms.
 - The CAP Analysis software also contains a CAP Report to tabulate and summarize the results of the automatic CAP scoring.
- 7) Respiratory Mechanics Instability (RMI)
 - It creates Respirator Mechanics Instability, evaluate the breath during a sleep disordering, and offer analysis of phase-relation between Abdominal and Thoracic.
 - In the process of CPAP Titration, It can decide the Optimal Pressure which has higher compliance.
- 8) Respiratory Inductive Plethysmography (RIP)
 - It can record Respiratory Inductive Plethymography(RIP) Signal conveying high sensitive and stable record about abdominal and thoracic movement through XactTrace

Sensor.

- Creates XFlow channel and measures semi-quantitative of Inspiratory and Expiratory flow obtained from the XactTrace measurement of Abdominal and Thoracic movement.
- Creates RR channel and analyzes Respiratory Rate in the Respiratory cycle.
- Creates Tidal Volume channel and provides Tidal Volume for 1 time Breath.
- Measures the valid Inspiratory phase periods with Inhalation Detection function.

9) Nasal Pressure Signal

- Nasal Pressure Sensor is not a external connection but built in the Proxy or Patient unit.
- Nasal Pressure Sensor can be used as Respiration Analyzers about Airflow in addition to Thermistor sensor.

10) Customized Report conversion

- PSG Report should be able to be changed and modified by the user to MS Word & Excel according to their intentions.

B. Specifications

1) Amplifier Inputs : Up to 92 Channel

- | | |
|------------------------|--|
| -AC Channels | 64 AC channels, 6 Sensor inputs |
| -Referential Inputs | 40 referential + 24 programmable |
| -Differential Inputs | Programmable up to 12 |
| -Sensor Inputs | 6 (Chest, Abd, Snore, Airflow, Pressure, Position) |
| -DC Channels | 16 |
| -Digital Trigger Input | 8-bit TTL |
| -Pulse Oximetry | SpO2, Pulse Rate, PPG, Plethysmogram, Quality |
| -Event Button | 2 (Breakout and Base) |
| -Headcap Input | 25 Pin Connector |

2) Analog Specifications

- | | |
|------------------------------|--|
| -Input Impedance | Common Mode: $\geq 1 \text{ G}\Omega$ |
| -Differential Mode | $\geq 0 \text{ M}\Omega // 280 \text{ pF} \pm 20\%$ |
| -Input Noise | $\leq 2 \mu\text{Vpp}$ (0.1Hz -70 Hz) |
| -Common Mode Rejection Ratio | $\geq 106 \text{ dB min}$ |
| -Bandwidth | DC to 1600 Hz (default HFF is 0.08 Hz) |
| -Input Signal Range (AC) | 20 mVpp, $\pm 0.3 \text{ VDC}$ |
| -Dedicated Sensor Inputs | Chest, Abdomen, Thermistor, Pressure Cannula, Position, Snore |
| -Derived Traces | XSum, XFlow, XVolume, Phase, RMI, RespRate, Flow_DR, Snore_DR, Elevation, Activity, Position |

3) Digital Specifications

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|------------------------|-------------------------------|
| -Sampling Rates | 256, 512, 1024, 2048, 4096 Hz |
| -Sampling resolution | 24 bits |
| -Sampling Quantization | 305nV |
| -Storage Resolution | 16 bits |

4) Modes of Operation

- | | |
|---------------------------------|--|
| -Base Unit Fuse Type and Rating | Type T, 1.6 A / 250 V |
| -Power | 80 VA |
| -Input | 100 - 230 V, 50/60 Hz |
| -Impedance Check | $< 2.5, < 5, < 10, < 25 \text{ k}\Omega$ |
| -Channel Test Signal | Software Controllable
0.25, 0.5 and 1 Hz; 10 - 2000 μVpp |

5) Amplifier Mechanical

- | | |
|-------------------------|-----------------|
| -Base Unit Size (HxWxD) | 29 x 26.5 x 5cm |
| -Base Unit Weight | 2300 g |

-Breakout Box Size (HxWxD)	19 x 11.4 x 3.2 cm
-Breakout Box Weight	460 g

C. Consist of(per 1 Set)

1	. Main Unit	1 Set
	. Software Data with Video Acquisition-Review licence	
	. System Software for Windows 11	
2	. PSG Amplifier Unit	1 ea
3	. Acquisition and Analysis Computer System	1 ea
4	. Accessories	
	. Air-Flow Thermistor Sensor, Adult	1 ea
	. Snoring Piezo Sensor	1 ea
	. Body Position Sensor	1 ea
	. Respiratory XactTrace RIP Sensor, Thorax	1 ea
	. Respiratory XactTrace RIP Sensor, Abdomen	1 ea
	. Oximeter Adult Flex Sensor	1 ea
	. EEG Lead wire Disk Electrode Cable (10ea)	2 Pack
	. Snap Electrode ECG Cable (Pair)	1 ea
	. Snap Electrode Leg EMG Cable (Pair)	2 ea
	. Nasal Pressure Cannula, Adult (50ea/Pack)	1 ea
	. EEG Cream, EC2+ (10ea/box)	1 ea
	. NuPrep Cream (3ea/box)	1 ea

D. Remarks

1. 장비의 운송, 설치, 교육은 공급자가 책임진다.
2. 제품 하자에 관하여 검수합격일로부터 3년 종료월 말일까지 보증(Warranty)기간으로 한다.

<규격서 B>

A. Features

1. Record crystal clear signals with the 4kHz sampling rate and perform impedances bedside. Amplifier inputs remain active even when using the Remote Input Box.
2. Using the color-coded, compact and lightweight headbox protects your amplifier from accidental drops, ensures recording integrity and provides patient convenience.
3. Display recorded data with continuous EEG trends and channels.
4. Personalize the role-based software the way you want. Set up montages and displays quickly and modify them on-the-fly.
5. Simultaneously monitor live and recorded video to improve patient care during the study.
6. Display and trend EEG with Persyst®
7. Burst suppression trending with Persyst
8. Customize Word®-based Report templates
9. Decide where you store data, and configure network and remote access.

B. Specifications

AC Amplifier

- (1) Channels: 32ch (7 active/reference pairs for ECG, oral nasal airflow, respiratory effort belts, snoring sensor, etc.)
- (2) Connection Types: 1.5mm (touchproof) safety connectors.
- (3) Patient connections: Electrically Isolated
- (4) Mini remote input box: Detachable 3 or 6 meter cable. Low profile side mount or top mount connections.
- (5) Differential input impedance: 20 MΩ.
- (6) Noise: <2 μV.
- (7) Typical mains noise rejection: 110dB at 50 or 60 Hz minimum.
- (8) Sensitivity: 19 steps between 0.5 - 1000 μV/mm
- (9) Lowcut filter: Act/Ref pairs: 9 steps (0.032 - 10Hz).
- (10) EEG channels: 8 steps (0.16 - 10 Hz).
- (11) Highcut filter: 5 steps (15 - 100 Hz).
- (12) Notch filter: 50 or 60 Hz
- (13) Calibration: Square wave. 50 μV, 0.5 Hz.

Integrated DC Channels

- (1) DC Inputs: 8 (+10 V to -10 V input range). Standard on 64 and 128 channel, and optional on 32 channel amplifier.
- (2) Photoc Stimulator: Flash rates from 1 - 60 Hz. Manual mode, default, or custom Flash Programs.

Data Acquisition

- (1) Analog-to-digital conversion: 18 bit.
- (2) Sampling rate: 4000 Hz per channel.
- (3) Anti-aliasing filter: 40 dB.
- (4) Rapid remontaging.
- (5) Referential data storage: Manual or automatic reference electrode selection during data collection.
- (6) Montages: Unlimited number, user programmable.
Patient Event Marker.(DC Input option required).

Software Features

EEG/PSG Reviewing Software

- (1) Quick data scanning by page, second, comments or events.
- (2) Variable-speed forward and backward reviewing.

- (3) Automatic paging mode.
- (4) Rapid remontaging.
- (5) Retrospective chart speed, filter, and sensitivity rescaling.
- (6) Returns to original recording parameters and montages with the click of the mouse.
- (7) On-line event log.
- (8) Can select specific segments to be archived when editing record.
- (9) EEG ruler for measuring frequency, duration, and amplitude.
- (10) Optional HL7 interface module.
- (11) Reports: Comprehensive reports for use with EEG/LTM and PSG studies
can be customized to meet the requirements of specific users.

Network Compatibility

- (1) Automatic data transfer to network after recording. View previously recorded or real time data over network from another networked Easy III.

Minimum Computer Requirements

- (1) OS: Windows 10 Pro 64 bit.
- (2) CPU: Dual Core, 3.2 GHz for faster Recommend i7 or Quad Core
- (3) HDD : 750 GB higher
- (4) Memory : 16GB
- (5) ODD : CD/DVD RW Drive
- (6) Graphics :1600 x 1200 resolution for PSG studies, 1280 x 1024
- (7) Video : Analog NTSC input to video-USB adapter
- (8) Audio : SoundMAX compatible input,

Other Options

- (1) Digital Video.
- (2) Long-term monitoring up to 72 hours at 30 frames per second.
- (3) Sleep diagnostic system options.
- (4) Spike detection software.

C. Consist of(per 1Set)

1.	Main Unit	1 set
2.	LCD Monitor	1 ea
3.	System Software	1 ea
4.	32ch PSG Amplifier	1 ea
5.	Remote Input Box & Cable	1 ea
6.	Network Connection Cable	1 ea
7.	Digital Video Package	1 ea
8.	Acquistion & Review Software	1 ea
9.	Accessories	
	EEG Disk Electrode	2 ea
	EMG lead wire	2 ea
	Airflow Sensor	1 ea
	Resp. Effort Sensor	2 ea
	Snore Sensor	1 ea
	Body position Sensor	1 ea
	SaO2 Sensor	1 ea
	PTAF kit	1 ea

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