

물 품 규 격 서

- ☐ 입찰공고번호 : (학)일송학원 관리국 제2025-167호
- ☐ 입찰건명 : 마취통증의학과 마취기용 Patient Monitor 구매
- ☐ 수요기관 : 한림대학교성심병원
- ☐ 납품장소 : 수요기관 희망장소 입고도
- ☐ 물품내역 등

연번	품명(영문, 국문)	규격 및 사양	총 구매 예정수량 (Q'TY)	1회 최대 발주수량	Warranty 기간	단위 (Unit)
1	마취기용 Patient Monitor (마취기용 환자감시장치)	하단 참조	1	1	검수(합격)일로부터 3년 종료월 말일까지	SET

☐ 공통사항

- 장비의 설치와 작동 및 교육은 무상으로 제공한다.
- 수요기관 담당자 입회하에 계약상대자는 제품의 설치 테스트 및 시험작동을 실시하여야 한다.
- 무상 하자담보 책임기간은 물품 검수(합격)일로부터 3년 종료월 말일 까지를 기본 원칙으로 하며 계약상대자의 추가 제안에 따라 3년을 초과하여 설정할 수 있다.
- 무상 하자담보 책임기간 중 수요기관의 사정으로 인하여 부서 및 장비의 위치가 불가피하게 이동을 필요로 할 경우 설명 및 설치가 무상으로 이루어진다.
- 무상 하자담보 책임기간 중 중 공급된 장비의 부속품이 단종된 경우 수요기관이 인정하는 동등 이상의 장비로 무상 교체가 이루어져야 한다.
- 계약상대자는 어떠한 상황에서도 애프터서비스를 위하여 전문서비스 인력을 제공하여야 하며 애프터서비스를 위하여 교체 부품을 보관하여야 한다.
- 계약상대자는 장비 납품 시 납품일을 기준하여 제품 제조년월이 6개월 이내인 장비를 납품하고 납품장비에 해당 제조년월이 명시되어야 한다.
- 기존 노후 의료장비 철거 및 회수(또는 보상판매) 조건으로 제안할 수 있다.

〈규격 · 사양-A〉

A. Features

1. This System is a FlexAcuity™ monitoring platform for your entire hospital ecosystem.
2. Sustainable lifetime value. Backward and forward-looking support to enable your care transformation.
3. Care area dedicated software packages make monitor configurations easy.
4. Streamlined intra-hospital transport with CARESCAPE ONE monitor or CARESCAPE Patient Data Module provide continuous and consistent measurements during transport.
5. Innovative algorithms aid in accurate diagnoses, including EKPro arrhythmia analysis, DINAMAP™.
6. Comprehensive respiratory monitoring ranges from standard CO2 all the way to gas exchange and metabolic monitoring.
7. Various parameters can help you to assess the Adequacy of Anesthesia in the OR, give insight to patients' readiness for ventilator weaning and assess patient's oxygenation both in the Perioperative and ICU environment.
8. Exceptional alarm functionality, including Auto View on Alarm which automatically shares clinically significant alarms within and across care units, provides flexibility in setting alarm limits and priorities which may help optimize your workflow and reduce alarm.
9. Pages and Profiles functionality provides clinicians the flexibility to easily optimize monitor settings to their patient needs.
10. Connection to CARESCAPE Network infrastructure and CARESCAPE Central Station allows oversight of monitoring to continue beyond bedside.
11. Connectivity with the CARESCAPE Gateway enables communications to EMR systems via standard HL7® protocol.
12. Combination monitoring enables the smooth connection of telemetry patients for more extensive monitoring directly at the bedside.

B. Specification

- 1 Display
 - # Size : 19 in (diagonal)
 - # Brightness 250 cd/m²
 - # Type : Active matrix color TFT LCD optically bonded LCD
 - # Resolution : 1280x1024 @ 60Hz SXGA
 - # Viewing angle : 160 degree horizontal/vertical
 - # Contrast Ratio: 700:1
- Control
 - Touch screen Capacitive technology

Hard keys

* 3 standard keys:

- ON/Standby
- Home, Pause Audio Alarm
- Pause Audio Alarm

* 11 additional keys in non-touch version:

- Trends
- Monitor Setup
- Data & Pages
- Alarm Setup
- Procedures
- Print Waveforms
- Freeze/Snapshot
- NIBP Auto
- NIBP Start/stop
- Parameters
- Zero All Pressures

Remote control : Ordered separately

2 Alarms

Categories: Patient status and system status

Priority

- * 3 levels - High, Medium, Low

High-priority alarm volume in accordance with IEC 60601-1-8

Visual alarm notification

- * 'Red, yellow, cyan
- * Audio silence indicator
- * General alarm indicator

Audible alarm notification: Internal speakers

Audio pause: Configurable for 2 or 5 minutes

3 Power supply

Universal input voltage range: 100 to 240 Vac +/-10%, 50/60 Hz

Power consumption:

CARESCAPE 1000 : 70 VA, typical <70 VA*

CARESCAPE D19 : 50 VA

Protection class Class I

Grounding: Hospital grade

Cooling: Natural convection - no fans

4 Physical specifications

Dimensions (H x W x D): 388 x 440 x 126 mm

Weight

- * main body: 7.5 kg (16.5 lb) without modules (incl. battery, recorder, E-module frame)

- 5 F2 frame without modules and cables
Dimensions (H x W x D): 162 x 290 x 225 mm (6.4 x 11.4 x 8.9 in)
Weight 3 kg (6.6 lb)
- 6 F7 frame without modules and cables
Dimensions (H x W x D): 138 x 314 x 215 mm (5.4 x 12.4 x 8.5 in)
Weight 3 kg (6.6 lb)
- 7 ECG/Respiration
ECG
* Standard Leads : available I, II, III, V1 to V6, aVR, aVL, and aVF
* Leads analyzed simultaneous : Twelve (I, II, III, V1 to V6, aVR, aVL, and aVF)
* Lead fail : Identifies failed electrodes and switches to those intact
* Lead fail sensing current : Active electrodes: <30 nA each, referenced electrode <270 nA
Input specification
* QRS detection range : +/- 0.5mV to +/-5 mV
* Signal width : 40ms to 120ms (Q to S)
* Heart rate range : 30 to 300 beats per minute
* Common mode rejection : 90 dB minimum at 60Hz
* Gain accuracy : +/-5% (diagnostic mode)
* Linearity deviation : +/-5%
* Noise : <30 μ V (referred to input)
Output specifications
* Frequency response : Monitoring mode: 0.05 to 100Hz, 0.05 to 40Hz, 0.05 to 25Hz
* Diagnostic mode : 0.05 to 150Hz
* Analog output : Selectable at 1V/mV
* Sampling rate :
- Monitoring mode 240 samples/second
- Diagnostic mode 500 samples/second
Heart rate
* Heart rate averaging : 8 / 4 beats
* Display update interval : 2 seconds
* Response time : <6 seconds
* Limit alarm delay : <10 seconds after limit alarm condition exceeded
* Heart rate alarm range : 0 to 300 beats/minute, high limit > low limit
* Arrhythmia analysis : 1 to 100 PVCs/minute
* Method : QRS morphology classification and timing based on single or multiple lead analysis
* Arrhythmia calls : Full, lethal only, or no arrhythmia
* PVC alarm range limit : 1 to 100 PVCs/minute
ST segment analysis
* Measurement description : ST segment deviation is measured and displayed for all acquired leads

- * ST display : Lead label, ST deviation, current complex superimposed over a reference complex,
J-point indicator and 15-minute mini-trends are shown for all acquired leads
- * Measurement point : Measured at user-selectable measurement points (0, 30, 40, 50, 60, and 80 ms) following the J-point
- * Measurement range : -12.0mm to +12.0mm
- * Display resolution : 0.1mm
- * ST measurement averaging : 16 beats
- * ST alarm limits : ± 12 mm, high limit $>$ low limit, for any event within a lead group (inferior, lateral, or anterior) that exceeds the alarm limit for that group

Pace detection/rejection

- * Input voltage range : ± 2 mV to ± 700 mV
- * Input pulse width : 0.1ms to 2ms
- * Rise time : 0 μ s to 100 μ s
- * Over/under shoot : 2 mV (maximum)
- * Detection/rejection mode : Pacemaker artifact rejection "On" or 'Off'
- * Standard leads available : I, II, RL, LL

Respiration

- * Respiration range limit : 1 to 200 breaths/minute
- * Impedance range : 100 to 1500 Ohms at 52.6 kHz
- * Detection sensitivity range : 0.4 to 10 Ohms impedance variation
- * Respiration rate alarm range : 1 to 200 breaths/minute
- * No Breath alarm range : 3 to 30 seconds

8 Temperature

Number of channels : up to 2 (with Y-adapter cable)

Input specifications

- * Probe type : YSI Series 400 or 700 (determined by input cable)
- * Temperature range : 0°C to 45°C (32°F to 113°F)
- * Resolution ± 0.01 °C (internal)

#Output specifications

- * Parameters displayed : T1, T2
- * Error (independent of source) :
* ± 0.1 C for YSI series 400 probes
* ± 0.3 C for YSI series 700 probes

Alarms : User-selectable upper and lower limits

9 Invasive pressures

Number of channels : up to 4 (with appropriate cables)

Transducer sites, site name, and displayed values

- * Arterial (ART) : systolic, diastolic, mean and rate
- * Femoral (FEM) : systolic, diastolic, mean and rate
- * Pulmonary Artery (PA) : systolic, diastolic, mean
- * Central Venous mean Pressure (CVP) : mean

- * Left Atrial (LA) : mean
- * Right Atrial (RA) : mean
- * Intracranial Pressure (ICP) : mean
- * Umbilical Artery (UAC) : systolic, diastolic, mean, and rate
- * Umbilical Vein (UVC) : mean
- * Special Pressure (SP) : mean
- # Transducer requirements
 - * Excitation voltage : + 2.5V DC $\pm$ 0.1%
 - * Transducer output : 50 μ V/V/cm Hg
- # Input specifications
 - * Range : -25 mmHg to 349 mmHg
 - * Offset : $\pm$ 150 mmHg
- # Output specifications
 - * Frequency response : DC to 40Hz (+ 0/-3dB)
 - * Zero balance range : $\pm$ 150 mmHg
 - * Zero balance accuracy : $\pm$ 1 mmHg
 - * Accuracy : $\pm$ 2% or $\pm$ 1 mmHg, whichever is greater (exclusive of transducer)
 - * Displayed frequency response : 0 to 12 Hz or 0 to 40 Hz (-3dB) user-selectable
 - * Display scale selections : 0-30, 0-40, 0-60, 0-100, 0-160, 0-200, 0-300 mmHg
 - * Analog output : 1V/100 mmHg
 - * Alarms : User selectable upper and lower limits for systolic, diastolic, and mean pressures
 - * Alarm range : -99 to 350 mmHg

10 Non-invasive blood pressure

<DINAMAP™ SuperSTAT™ algorithm>

- # Measurement technique : Oscillometric
- # Displayed parameters : Systolic, diastolic, and mean pressures, pulse rate, time of last measurement
- # Modes : Manual, Auto and Stat
- # Heart rate detection
 - * Adult & Pediatric : 30 to 240 beats / min
 - * Neonate : 30 to 240 beats/min
 - * Total cycle time : 20 to 40 seconds typical (Dependent on heart rate and motion artifact)
- # Systolic pressure range
 - * Adult : 30 to 290 mmHg
 - * Pediatric : 30 to 240 mmHg
 - * Neonatal : 30 to 140 mmHg
- # Diastolic pressure range
 - * Adult : 10 to 220 mmHg
 - * Pediatric : 10 to 200 mmHg
 - * Neonatal : 10 to 110 mmHg
- # Mean pressure range
 - * Adult : 20 to 260 mmHg

- * Pediatric : 20 to 215 mmHg
- * Neonatal : 20 to 125 mmHg
- # Cuff pressure range
 - * Adult : 0 to 290 mmHg
 - * Pediatric : 0 to 250 mmHg
 - * Neonatal : 0 to 145 mmHg
- # Pressure accuracy
 - * Static : $\pm 2\%$ or ± 3 mmHg, whichever is greater
 - * Clinical : ± 5 mmHg average error, 8 mmHg standard deviation
 - * Automatic cycle times : 0 to 24 hours
 - * Auto zero : Zero pressure reference prior to each cuff inflation
 - * Tubing length : Variable
 - * Automatic cuff deflation : Cycle time exceeding 2 minutes (85 seconds neonatal), power off, or cuff pressure exceeds 290 mmHg (± 6 mmHg) for adult, 250 mmHg (± 5 mmHg) for pediatric, or 145 mmHg (± 5 mmHg) for neonatal

11 Pulse oximetry

- # Parameters monitored : Arterial oxygen saturation (SpO₂) and pulse rate
- # Probe types : Nellcor (reusable/single use)
- # Nellcor range :
 - * SpO₂ 1 to 100%
 - * PPR: 20 to 300 beats per minute
- # Nellcor accuracy*
 - * 70 to 100% : SpO₂ Adult ± 2 , Neonatal ± 3
 - * $< 69\%$ SpO₂ : unspecified
 - * Pulse Rate : ± 3 beats per minute
- # Analog output : Selectable saturation 0 to 100% equivalent 0 to 1V
- # Alarm limit range : SpO₂: 0 to 100%;
- # PPR : 0 to 350 beats per minute
- # Messages : No Sensor, Defective Sensor, Sensor Off, Unrecognized Sensor, Low Perfusion, Pulse Search, Interference Detected, Ambient Light, Low Signal QI
- # Nellcor Probe off patient, low quality, pulse search

12 Cardiac output

- # Method : thermodilution
- # Cardiac output range : 0.2 to 15 liters per minute
- # Blood temperature range : 17°C to 44°C (62°F to 111°F)
- # Blood temperature accuracy : $\pm 0.5^\circ\text{C}$ 17°C – 30°C
- # Injectate temperature range : 0°C to 30°C (32°F to 86°F)
- # Injectate temperature accuracy : $\pm 0.3^\circ\text{C}$
- # Output parameters :
 - * Cardiac output, blood temperature, injectate temperature, real-time
 - * cardiac output washout curve, last average CO

- # Cardiac output review : accept / reject individual measurements and store average
- # Catheter sizes : 5, 6, 7, 7.5, or 8 French
- # Injectate volume selections : 3, 5, or 10

C. Consist of(per 1Set)

- | | |
|--|------|
| 1. Main monitor | 1 ea |
| - 19 inch Touch LCD display | |
| - Display controller with 8 Channel Display | |
| - Plug in module slots & Software Cartridge | |
| - Anesthesia specific software | |
| - Module frame | |
| 2. PDM Parameter Module w/Acc's set | 1 ea |
| (3 ch ECG/ST/Resp/SpO2/NIBP/2 Temp/2 IBP) | |
| 3. NMT Neuromuscular Transmission Module w/Acc's set | 1 ea |
| 4. Entropy Module w/ Entropy Sensor set | 1 ea |
| 5. Operation / service manual | 1 ea |

D. Remark

1. Warranty : 검수(합격)일로부터 3년 종료 월 말일까지

〈규격 · 사양-B〉

A. Features

1. Lets you monitor vital signs and therapy, view and control alarms, review Web-based diagnostic images, access patient records, and scale up functionality based on patient acuity level – all at one place
2. Integrates real – time data, clinical applications, the hospital network and the Internet at the point of care
3. Continuously displays vital signs on at least half of the Medical Cockpit screen while allowing access to other relevant medical information on the split screen
4. Scale up or down your solution depending on your patient's acuity by adding parameters, device connectivity and an optional secondary display
5. M540 can be used as a stand alone monitor or as the transport component of the Infinity Acute Care System(IACS)
6. M540 continuously captures and displays hemodynamic monitoring data at the bedside and on transport in the hospital
7. M540 automatically backfills vital signs data collected on transport into the Maker's Medical Cockpit upon docking
8. Trends
 - 1) Provides up to 96 hours of trends on the system, 72hours on the M540 transport component
 - 2) Trends and events gathered on transport are automatically available at the Cockpit upon arrival
 - 3) Data resolutions 30-second sampling
 - 4) Trend table 1minute, 5minute, 10minute, 15minute(default), 30minute, 1hour display formats
 - 5) Trend graphs 1hour(default), 2hour, 4hour, 8hour, 12hour, 1day, 2day, 3day, 4day display formats
9. Alarm History and Events
 - 1) Alarm history review allows a retrospective view of significant events in the patient's history
 - 2) Event storage provides up to 150 events, 20-second strips, all monitored waveforms
10. Views and Profiles
 - 1) The user may choose up to 8 pre-configured view, and 8 custom views (with View Editor option) including split-screen views, where at least half of the available screen real estate is dedicated to real-time patient information
 - 2) Views are configured depending on the care area needs and optionally support user-customizable views
 - 3) User can configure up to 4 profiles per patient category, thus adapting alarm limits and parameter settings depending on the patient, the acuity, and the environment. A fifth Maker's profile is available.
11. Lung Recruitment Application
 - 1) Displaying direct relation between hemodynamic and ventilation data allows clinicians to assess the effect of therapeutic procedures
 - 2) A comprehensive trend page for visualizing information necessary to perform a recruitment maneuver. The page shows the effects on lung mechanics and hemodynamic parameters on a single, integrated display. The Recruitment page displays twelve minutes of data for a maximum of 9 parameters, which are configurable.
12. Calculations
 - 1) Drug dosage calculations Customizes a drug list of up to 40 drugs

B. Specifications

1. User interface
 - 17" TFT widescreen LCD Touch screen, rotary knob and/or via keyboard and mouse
2. ECG
 - 1) Acquires up to 12 leads
 - 3-lead wire set : I, II, III (user-selectable)
 - 5-lead wire set : I, II, III, aVR, aVL, aVF, V
 - 6-lead wire set : I, II, III, aVR, aVL, aVF, V, V+
 - 10-lead wire set : I, II, III, aVR, aVL, aVF, V1-V6
 - Trust derived 12-lead on : I, II, III, aVR, aVL, aVF, dV1, V2, dV3, dV4, V5, dV6
 - 2) Measurement
 - 15 to 300 beats per minute (bpm)
 - ± 2 bpm or $\pm 1\%$ (whichever is greater)
 - 3) Resolution
 - 1 bpm
3. Arrhythmia
 - 1) Basic arrhythmia
 - Asystole, Ventricular Fibrillation, Ventricular Tachycardia, Artifact
 - 2) Full arrhythmia
 - Basic plus Ventricular Run, Accelerated Idioventricular Rhythm, Supra-Ventricular Tachycardia, Couplet, Bigeminy, Tachycardia, Bradycardia, Pause, PCV/min
4. Respiration rate
 - 1) Sensing leads
 - I, II (user-selectable)
 - 2) Measuring method
 - Impedance pneumography
 - 3) Measuring range
 - 0 to 155 breaths per minute
 - 4) Apnea detection interval times
 - Off, 10,15,20,25 and 30s
5. Pulse Oximetry (SpO₂)
 - 1) Displayed parameters
 - Saturation (fraction of oxyhemoglobin to functional hemoglobin) and pulse (rate and curve), perfusion index (Masimo SET® only);
 - 2) Measuring range
 - SpO₂ : 1 to 100%
 - Pulse rate : 26 to 239 bpm
6. Non-Invasive Blood Pressure (NIBP)
 - 1) Parameter display : Systolic, Diastolic, Mean
 - 2) Measuring method : Oscillometric via step deflation
 - 3) Modes of operation : Manual (single measurement), Interval, Contrnuous, or Venous Stasis
 - 4) Interval times : Off, 1,2,2.5,3,5,10,15,20,25,30,45,60,120 and 240min
 - 5) Static cuff accuracy : ± 3 mmHg (± 0.4 kPa)

- 6) Resolution : 1mmHg (0.1kPa)
7. Measuring range (default)
 - 1) Heart rate : 30 to 240 bpm
8. Adult
 - 1) Systolic : 30 to 250mmHg (4 to 33.3 kPa)
 - 2) Mean : 30 to 230mmHg (4 to 30.6 kPa)
 - 3) Diastolic : 10 to 210mmHg (1.3 to 28 kPa)
9. Pediatric
 - 1) Systolic : 30 to 170mmHg (4 to 22.6 kPa)
 - 2) Mean : 30 to 150mmHg (4 to 20 kPa)
 - 3) Diastolic : 10 to 130mmHg (1.3 to 17.3 kPa)
10. Neonatal
 - 1) Systolic : 30 to 130mmHg (4 to 17.3 kPa)
 - 2) Mean : 30 to 110mmHg (4 to 14.7 kPa)
 - 3) Diastolic : 10 to 100mmHg (1.3 to 13.3 kPa)
11. Cuff Pressure
 - 1) Default inflation pressure
 - Adult : 160 $\pm$ 5mmHg (21.3 $\pm$ 0.66 kPa)
 - Pediatric : 130 $\pm$ 5mmHg (17.3 $\pm$ 0.66 kPa)
 - Neonatal : 110 $\pm$ 5mmHg (14.7 $\pm$ 0.66 kPa)
 - 2) Maximum inflation pressure
 - Adult : 265 $\pm$ 5mmHg (35.3 $\pm$ 0.66 kPa)
 - Pediatric : 180 $\pm$ 5mmHg (24 $\pm$ 0.66 kPa)
 - Neonatal : 140 $\pm$ 5mmHg (18.6 $\pm$ 0.66 kPa)
 - 3) Minimum inflation pressure
 - Adult : 110 $\pm$ 5mmHg (14.7 $\pm$ 0.66 kPa)
 - Pediatric : 90 $\pm$ 5mmHg (12 $\pm$ 0.66 kPa)
 - Neonatal : 80 $\pm$ 5mmHg (10.6 $\pm$ 0.66 kPa)
12. Invasive Blood Pressure
 - 1) Measuring method
 - Resistive strain gauge transducer
 - 2) Measuring range
 - 50 to 400mmHg (-6.6 to 53.3 kPa)
 - 3) Response time (at 90% of pressure change)
 - 14 beats + 2s (ART, LV, GP1, GP2, GP3, GP4)
 - 8 beats + 2s (PA, RV)
 - 16s (CVP, RA, LA, ICP)
13. Carbon dioxide
 - 1) Displayed parameters
 - End-tidal CO₂ (etCO₂), inspired CO₂ (inCO₂), respiration rate (RRc)
14. Measurement range
 - 1) CO₂
 - 0 - 100mmHg (0 to 13.3 kPa or 0 to 13.2 vol% at sea level)
 - CO₂ partial pressure

- 2) RRc
 - 0 to 150 bpm
- 15. Temperature
 - 1) Parameter display
 - Temperatures ; Ta, Tb, ΔT , T1a, T1B, $\Delta T1$
 - 2) Measurement range
 - Ta, Tb, T1a, T1b : 0°C to 50°C (32°F to 122°F)
 - ΔT , $\Delta T1$: 0°C to 39°C (0°F to 102.2°F)
- 16. Information Management Capabilities
 - 1) Trend storage
 - Up to 96 hours of parameter information
- 17. Infinity M540 Monitor
 - 1) Battery operating time
 - Normal operation : approximately 3 hours
 - Power save mode : approximately 4 hours
 - 2) Battery Recharging Time
 - 100% capacity : approximately 6.5 hours for completely discharged battery
 - 70% capacity : approximately 4 hours for completely discharged battery

C. Consist of(per 1 Set)

1. IACS Monitoring with C500	1set
2. ECG 3-Lead single-pin Euro/AHA 1m	1ea
3. ECG Extension single-pin, 2m	1ea
4. INFINITY Mcable-Nellcor Oximax	1ea
5. SpO2 Nellcor Sensor DS100A	1ea
6. Temp. Probe. Adult 1.5m Reusable	1ea
7. NBP Cuff M, 23-33cm	1ea
8. NBP Cuff L, 31-40cm	1ea
9. NBP Extension hose, adult, 3.7m	1ea
10. INFINITY Mcable-Dual HEMO	2ea
11. Transducer Cable(Baxter/Adwards)	1ea
12. NBP Cuff XL, 38-50cm	1ea
13. Operating manual	1ea

D. Remarks

- Warranty : 검수(합격)일로부터 3년 종료월 말일