물 품 규 격 서

☐ 입찰공고번호 : (학)일송학원 관리국 제2025-166호
☐ 입찰건명 : 마취통증의학과 Anesthesia Machine 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	Anesthesia Machine (전신 마취기)	하단 참조	1	1	검수(합격)일로부터 3년 종료월 말일까지	SET

☐ 공통사항

1. 장비의 설치와 작동 및 교육은 무상으로 제공한다.
2. 수요기관 담당자 입회하에 계약상대자는 제품의 설치 테스트 및 시험작동을 실시하여야 한다.
3. **무상 하자담보 책임기간은 물품 검수(합격)일로부터 *3년 종료월 말일 까지*를 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 설명 및 설치가 무상으로 이루어진다.
5. 무상 하자담보 책임기간 중 중 공급된 장비의 부속품이 단종된 경우 수요기관이 인정하는 동등 이상의 장비로 무상 교체가 이루어져야 한다.
6. 계약상대자는 어떠한 상황에서나 애프터서비스를 위하여 전문서비스 인력을 제공하여야 하며 애프터서비스를 위하여 교체 부품을 보관하여야 한다.
7. 계약상대자는 장비 납품 시 납품일을 기준하여 제품 제조년월이 6개월 이내인 장비를 납품하고 납품장비에 해당 제조년월이 명시되어야 한다.
8. 기존 노후 의료장비 철거 및 회수(또는 보상판매) 조건으로 제안할 수 있다.

<규격 · 사양-A>

A. Features

1. This device is intended for use in anesthetizing adults, pediatric patients, and neonates. The device can be used for mechanical ventilation, manual ventilation, pressure-supported spontaneous breathing, and spontaneous breathing
2. The device is equipped with the following basic functions:
   - Ventilation monitoring
   - Inspiratory O2 measurement
   - Device monitoring
   - Anesthetic gas receiving system
3. Anesthesia is achieved through a mixture of pure oxygen and Air (medical compressed air) or pure oxygen and nitrous oxide, with the addition of volatile anesthetic agents.
4. The integrated breathing system can be used with partial rebreathing (low-flow or minimum-flow).
5. Supply of the anesthesia workstation with O2: If the O2 supply (central gas supply or gas cylinder) fails, an alarm is issued.
6. Supply of an adequate anesthetic gas concentration to the patient: When the anesthetic gas is measured by means of an integrated patient-gas measurement module, an alarm will be generated if the anesthetic gas concentrations are too high

B. Specifications

1. Weight of the compact variant
   - Compact variant : Approx. 135 kg (298 lbs), basic setup
2. Dimension
   - Compact type: (W x H x D) 74.5 cm x 140.3 x 69.2 cm
3. Power consumption
   - <95 W, during mechanical ventilation, maximum 400 W
   - Mains voltage: 100 to 240 V AC at 50/60 Hz
   - Max power consumption: 4 A
   - Internal battery backup time: at least 45 min, typically 120 min (with new and fully charged battery)
   - Data interface: 2 x serial ports(RS232)(Medivus. X protocol), 1 x USB port, 1 x LAN
   - Auxiliary porwer socket strip(opt): 4 country- specific power sockets
4. Gas supply

   electronic measurement and monitoring of supply pressure of all connected gases

   - Central gas supply for O2, Air, N2O: 2.7 to 6.9 kPa(39 to 100 psi)

5. Fresh gas delivery
   - Gax mixer technology : electronically controlled gas mixer with manual emergency O2 delivery
   - Fresh-gas flow(Fg flow) : Off; 0.2 to 15L/min
   - O2 concentration(FG O2) : 21 to 100 Vol%(carrier gas: Air); 25 to 100 Vol% (carrier gas: N2O)
   - O2 flush : 25 to 75 L/min at 2.7 to 6.9 kPa x 100(39 to 100 psi: 0.27 to 0.69 Mpa) supply pressure
   - Flow for O2 insufflation(Aux. O2) : off; 2 to at least 10 L/min, flow for O2 insufflation (Aux. O2) is also passed through the vaporiser when switched off
6. Ventilator and setting parameters
   Electronically driven piston ventilator (E-Vent plus), fresh-gas decoupled, ventilation without drive gas i.e. no medical gases are consumed in operating the ventilator (regardless of gas supply). All patient-gas leading components are autoclavable
   1) Standard ventilation modes:
      - Manual/Spontaneous(Man/Spn),
      - Volume-controlled: time controlled(VC-CMV)
      - Pressure-controlled: time controlled(PC-CMV)
      - AutoFlow time controlled (VC-CMV/AF)
      - Volume-controlled, synchronised (VC-SIMV)
      - Volume-controlled, synchronised (VC-SIMV)
      - CPAP / PSV
      - AutoFlow, synchronised(VC-SIMV/AF)
   2) Respiratory rate (RR) : 3 to 100/min
   3) Inspiratory time(Ti) : 0.2 to 10 S
   4) I:E : 1: 50 to 50:1
   5) Tidal volume (VT) : 10 to 1,500 mL
   6) Trigger threshold : 0.3 to 15 L/min
   7) Inspiratory flow : Minimum 0.1 L/min, maximum ≥160 L/min
   8) Inspiratory pressure : PEEP +5 to 80 hPa(cmH2O)
   9) Pressure limitation : PEEP +10 to 80 hPa(cmH2O)
   10) Δpsupp : Off, 3 to (80 - PEEP) hPa (cmH2O)
   11) Insp termination : 5 to 80%
7. Breathing system
   Heated breathing system for low-flow and minimum-flow applications, disassembly without tools, design optimised for easy and effective hygienic reprocessing.
   1) Total volume : Approx. 3.65 L (incl. CO2 absorber when applying a maximum tidal volume of 1,500 mL)
   2) Absorber volue : Approx. 1.2 to 1.5 L
   3) Reprocessing : Cleaning, disinfection, replaceable without tools, less than 11 individual components
8. Connections for Vaporizers
   - For connection of at least two removable vaporizer modules for anesthetic agent delivery integrated in the basic unit
   - Vaporizer mount type: Autoexclusion
   - Agent capacity: 360mL(ENF,ISO,SEV) & 240mL(DES)

9. User Interface

1) Screen: 15.3" (38.9 cm) touchscreen, configurable screen contents, smart alarm management with extensive support system

2) Screen configuration: Depending on the machine configuration simultaneous display of 2, 3 or 4 real-time curves for : concentration of CO2, O2, and anaesthetic agents, airway pressure, inspiratory and expiratory flow; display of virtual flow tubes for O2, AIR, N2O, of tabular trends, quick access to 3 screen layouts.

3) Device status display
Front Panel with LC display of airway pressure, supply status of battery and gases (CGS + cylinders)

4) Ventilation monitoring
- Minute volume (MV): 0 to 40 L/min
- Tidal volume (VT and ΔVT); 0 to 2500mL
- respiratory rate (frequency): 0 to 100/min
- Peak inspiratory pressure (PIP): –20 to + 99 hPa (cmH2O)
- Plateau pressure (Pplat): –20 to + 99 hPa (cmH2O)
- Mean airway pressure (Pmean) : –20 to + 99 hPa (cmH2O)
- PEEP: –20 to + 99 hPa (cmH2O)
- Dynamic compliance (Cdyn): 0 to 200 mL/hPa (mL/cmH2O)
- Resistance ®: 0 to 100 hPa/L/s (cmH2O/L/s)
- Elastance : 0.005 to 10 hPa/mL (cmH2O/mL)
- External pressure gauge for indicating the pressure in the internal breathing system

5) Advanced ventilation monitoring(Option)
- Bar diagram display of volume and tidal volume, simultaneous display of 2 loops: Volume-pressure and flow-volume, reference loop

6) Advanced trend display (Option)
- Display of graphical trends or mini-trends simultaneously with real-time curves and volume-pressure loop; additional data export functions via USB storage device

10. Gas monitoring

The device can monitor inspiratory O2 concentration or use the integrated patient-gas measurement module for O2, N2O and anaesthetic agent

1) Integrated patient-gas measurement module
- Inspiratory and expiratory gas concentration of O2, N2O, CO2 and anaesthetic agents, automatic identification of isoflurane, sevoflurane, desflurane, halothane, enflurane, detection of anaesthetic gas mixtures, age-corrected xMAC display; sample gas returned to the breathing circuit

2) Advanced gas monitoring (Option by PGM module)
- Econometer for displaying fresh-gas efficiency (optionally including trend and/or in the form of low-flow wizard) determination of consumption and uptake (determination of uptake only for anaesthetics), fresh-gas and anaesthetics per case and since last zeroing

3) Gas measurement
- Sample gas flow Range: 200 mL/min ±10 %
- O2 range: 0 to 100 Vol%
- CO2 range: 0 to 13.6 Vol%
- N2O range: 0 to 100 Vol%
- Anesthetic gases range
  - Sevoflurane : 0 to 10 Vol% (kPa)
  - Desflurane : 0 to 20 Vol% (kPa)

11. Safety function
    - The integrated device checklist and illustrated step-by-step instructions for daily machine preparation help to comply with national guidelines, such as DGAI (Deutschland), ASA/APSF (USA), AAGBI (UK)
    - Man/Spon ventilation with dosing of O2 and anaesthetic agents possible even when switched off (emergency start-up)
    - Backup manual mode allows the direct change to manual ventilation while maintaining gas and ventilation monitoring; O2 and anaesthetic agents from the vaporisers can be continuously delivered
    - Mechanical ventilation with ambient air in case of complete failure of the gas supply, the change to intravenous anaesthetic agents is required
    - Real-gas O2 test integrated in automatic machine self-test with patient-gas measurement module

C. Consist of(per 1 Set)

1.	Anesthesia Basic unit - Real-gas O2 test integrated in automatic machine self-test - Integrated Heated breathing system on/off - Central brake system	1	set
2.	Patient gas module xGM AutoID	1	ea
3.	Dräger Auto Exclusion, 2 vap	1	ea
4.	AutoFlow	1	ea
5.	Spontaneous Breathing Support	1	ea
6.	AGS active	1	ea
7.	Air ZV-Hose 5m DISS US KAWA	1	ea
8.	O2 ZV-Hose 5m DISS US KAWA	1	ea
9.	N2O ZV-Hose 5m DISS US KAWA	1	ea
10.	VAC ZV-Hose 5m DISS US KAWA	1	ea
11.	Flexible breathing bag arm	1	ea
12.	Waterlock 2	1	ea
13.	Flow sensor	1	ea
14.	Sample line set	1	ea
15.	Vapor 2000	1	set
16.	D Vapor	1	set
17.	CASTrGARD, large	1	ea
18.	Operator's & Service Manual	1	ea

D. Remarks

-. Warranty : 검수(합격)일로부터 3년 종료월 말일

<규격 · 사양-B>

A. Features

1. Movable 15'' touch screen with user interface for the unified user experience with Monitors
2. 'Flow Power Inside' our ventilator engine can ventilate all patient types from neonates to obese adults
3. During ventilation fresh gas flow compensation continues in case of leakage
4. Optional ecoFLOW helps clinicians mitigate the risk of hypoxic mixtures during low and minimum flow
5. Optional ecoFLOW for visualizing agent consumption and help in mitigating wasteful over delivery of fresh gas flow
6. User configurable 'Quick Picks' for rapid selection of FiO2 and total flow combinations

B. Specification

1. Ventilation Modes

1) Volume Control with tidal volume compensation
2) Pressure control
3) PCV-VG
4) SIMV PVG&VCV
5) PSV Pro
6) SIMV PCV-VG

2. Ventilator parameter ranges

1) Tidal Volume range : 5 ~ 1500ml(PCV mode), 20 ~ 1500ml(VCV, PCV-VG, SIMV)
2) Incremental settings :
   20 to 100 ml (increments of 5 ml), 100 to 300 ml (increments of 10ml),
   300 to 1000 ml (increments of 25 ml), 1000 to 1500 ml (increments of 50 ml)
3) Minute volume range : 0 to 99.9 L/min
4) Pressure (P inspired) range :
   5 to 60cm H2O (increments of 1cm H2O), 5 to 1500ml volume delivery
5) Pressure (P limit) range : 12 to 100cm H2O (increments of 1cm H2O)
6) Pressure (P support) range : Off, 2 to 40cm H2O (increments of 1cm H2O)
7) Rate : 4 to 100 breaths per minute for Volume control and
   Pressure control ; 2 to 60 breaths per minute
8) Inspiratory / expiratory ratio : 2:1 to 1:8 (increments of 0.5)
9) Inspiratory time : 0.2 to 5.0 seconds (increments of 0.1 seconds)
10) Trigger window : 5 to 80% (increments of 5%)
11) Flow trigger : 1 to 10 L/min (increments of 0.5 L/min),
    0.2 to 1 L/min (increments of 0.2 L/min)
12) Inspiration termination level : 5 to 50% (increments of 5%)
13) Inspiratory Time Pause : Off, 5 -60% of Tinsp

3. Positive End Expiratory Pressure (PEEP)

1) electronically controlled
2) Range: OFF, 4 to 30cm H2O (increments of 1cm H2O)

4. Ventilator perfomance

1) Display size: 15 inch
2) Pixel format: 1024 x 768
3) Peak gas flow: 120 L/min + fresh gas flow
4) Flow valve range: 1 to 120 L/min
5) Flow compensation range: 150mL/min to 15 L/min

5. Anesthesia agent delivery

1) Vaporizer: Tec 850
2) Number of positions: 2
3) Mounting: Tool-free installation, Selectatec manifold inter locks and isolates vaporizers

6. O2 controls

1) Method: N2O shut off with loss of O2 pressure
2) Supply failure alarm: Range: 193 kPa to 221 kPa/28 psig to 32 psig, Sounds at maximum volume every
3) O2 flush: Range > 35 L/min

7. Fresh gas & Accuracy

1) Flow range: 0 and 500 mL/min to 15 L/min (minimal flow capable)
2) O2, Air, N2O Accuracy: ±5% of setting, or ±20 mL/min
3) O2 concentration range: 21% - 100% when air is available
4) O2 Sensor accuracy: ±2.5%

8. Alarm (all audible and visual)

1) Tidal volume
2) Minute volume
3) Patient Apnea
4) Low airway pressure
5) High pressure
6) Sustained Airway Pressure

9. Carbon Dioxide Absorbent Canisters

1) Reusable Absorbent Capacity: 1000g
2) Disposable Absorbent Canister: 1400g

10. Bag to Vent Switch

1) Type : Bi-stable
2) Control : Controls ventilator and direction of breathing gas within the circuit

11. Alternate O2(safety flow)

1) Range: 500mL/min minimum to 10 L/min
2) Indicator: Flow tube
3) Indicator accuracy: +-5% full scale

C. Consist of(per 1Set)

1.	Main Unit - 15" touchscreen ventilator display - English software and korean manual - Ventilation Mode : VCV, PCV, PSVPro, SIMV-PCV/VCV, PCV-VG, SIMV PCV-VG - 2 vapo. Mounting System - Pause Gas Flow System - Eco Flow mode	1	ea
2.	Recruitment maneuver (Vital Capacity&Cycling)	1	ea
3.	Flow sensor	2	ea
4.	Active Scavenging System	1	ea
5.	Bag support arm	1	ea
6.	Airway Multi Gas Module (E-sCAiO Module)	1	ea
7.	Start-up kit	1	ea
8.	Drawer	1	ea
9.	Side shelf	1	ea
10.	Desflurane Vaporizer	1	ea
11.	Sevoflurane Vaporizer	1	ea
12.	Hose Assembly w/ Adapter (Air/O2/N2O/EVA)	1	set
13.	Operation / service manual	1	ea

D. Remark

1. Warranty : 검수(합격)일로부터 3년 종료 월 말일까지