(7) ANAESTHESIOLOGY
NIT: 13277/6-12-16

Department of Anaesthesiology,RIMS,Ranchi.

List of Equipements and Specification

Sl. No.	Name of equipment	Qty.required
1.	Peripheral Nerve stimulator with mapper and nerve locator	One
2.	Ultrasound Machine(portable)	One
3.	Defibrillator with external pacemaker	One
4.	Defibrillator	Two
5.	Automated external Defibrillator	One
6.	Video Laryngoscope	One
7.	MRI Compatible Anaesthesia Machine	One
8.	Fast trach LMA	(full set)
9.	C trach LMA	(full set)
10.	Pulmonary function test machine	One
11.	E.C.G Machine	One
12.	Anaesthesia Machine- Basic with ventilator support	Twelve
13.	Air- Way management set	One
14.	Transcutaneous electrical nerve stimulator- table top	One
15.	Transcutaneous electrical nerve stimulator – portable(pocket size)	One
16	MRI compatible- Multiparameter Monitor	Two
17.	Flexible intubation Video Endoscope non- fiber (Adult and Ped, size)	
18.	Retromolarscope-Adnl	
19.	Bispectra Index Monitor	
20.	Patient Warmer	
21.	Difficult Airway management set- with flexible intubation Video- endoscope with screen.	

Sincerely yours

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1 of 25

Peripheral

Specification for Nerve Stimulator

- Should be suitable to identify peripheral nerves and giving percutaneous stimulation in neuro muscular block.
- Should have a percutaneous bipolar stimulating handle for localization of nerves without puncturing the nerve which should be autoclavable.
- Should offer various stimulation patterns like TOF, DBS ,

  Should offer Tetanus Twitch with 50/100Hz
- Should have selectable stimulation intensity ranging from 0-60mA in steps 0.1mA

  and stimulation impulse width from 0.1ms,0.3ms,0.5ms and1.0ms
- Should have a setup switch.
- Should continuously measure& display actual current passing through the patient and selected current.
- Should have pause function to interrupt stimulation without delivering impulses

  test function
- Should automatically switch off with a acoustic warning if not operated over a period of 20 mins
- Should have LCD display for stimulation current, impulse pattern, pulse width, impulse amplitude.
- Should have analog and digital display of selected current and actual current.
- Should have membrane touch pads for choosing stimulation function
- Should be small (pocket size) & light weight.

Should be supplied complete with

- Adapter with extension cable
- Percutaneous Bipolar Stimulating Handle
- Switch Box for switching between invasive and percutaneous nerve stimulations
- Plexus Cannula with Thin polymer insulation coating (Teflon coating not desirable)

  22G, 24G, 25G - 05 nos. each
- 9 volt rechargeable battery with charger

Technical specification For Portable Colour Doppler Ultrasound Unit for Regional Nerve Blocks, Vascular Access in OT, ICU.

A state of art fully digital, compact portable Colour Doppler Ultrasound machine (weight <5 kg) is required with following technical features

1. Unit should be able to give very high image quality with advance technologies like compound imaging with at least 5 sights of lines for better cardiac contrast resolution, tissue differentiation and edge detection, equivalent to high end cart based systems. Please specify the technology.
2. System should be able to support speckle reduction imaging for better tissue differentiation and edge enhancement please specify the technology.
3. The system shall have the ability to enhance tissue margins and improve contrast resolution by reducing artifacts and improving visualization of texture patterns & needle tip within the image, please specify the technology.
4. System should have both online (Read) as well as offline(Write) zoom facility
5. Imaging modes of Real time 2D, Colour Doppler, Pulsed wave Doppler, Continuous wave Doppler, Power Doppler must be available on all cardiac transducers.
6. System must have fast start up to scanning in less than 30 seconds from off condition, for use in critical and emergency situations.
7. System should support transducer technologies like phased array, convex, linear, TEE etc.
8. Cine memory on all modes.
9. The system shall process a dynamic range that is at least 165db. The system must display at a maximum depth of 35 cm.
10. The system must have a dedicated cardiac calculation packages with PISA, TDI calculation packages, vascular calculations package.
11. The unit must be compact, portable and lightweight, weighing less then 5 kg.
12. Unit must be sturdy, resistant to breakage & damage on fall/ hit against the wall or hard surface for out of the hospital use.
13. Flat LCD/ TFT monitor of at least 10 inches with flicker free image.
14. Alphanumeric soft keys keyboard with easy access scans controls, facility to sanitize the system keyboard to avoid cross contamination.
15. The system must have the ability to function by AC/DC or battery power with the same degree of functionality, the battery life (run time) shall be al least 2 (Two) hours, this need to be demonstrated.
16. The system must have archive capability for storage and retrieval of images and clips.data.

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Technical Specifications ofdefibrillator cum monitor with external pacing

1. The machine should have facility for ECG Monitoring, defibrillation, external pacing (transcuteneous) & recorder.
2. The Defibrillator should be Biphasic technology, having energy selection up to maximum 200 joules in AED as well as in manual mode.
3. It must be capable of monitoring ECG through ECG cables, Multi function electrodes and paddles through multifunction single cable.
4. The machine should be able to defibrillate Adult, Pediatric patients.
5. The machine should have ECG waveform display on bright high resolution display.
6. The machine should be compact, portable with inbuilt rechargeable battery. The machine should not be more than 7 Kgs with battery and paddles.
7. The machine should have in built recorder printing ECG trace & stored information.
8. The machine should have a facility of External non-invasing pacing with 40 ms pulse width
9. It should have ability to measure chest compression rate and depth in real time with visual feedback on screen with rate and depth indicator.
10. The machine should have user selectable alarm settings.
11. . The machine should work on mains as well as on rechargeable battery
12. The unit should be supplied with Adult and inbuilt pediatric external paddles The machine should have facility to increase/decrease energy selection on paddles as well as on unit .The unit should also have facility to give print out of ECG and shock instantly from paddles.
13. The charging time should be less than 7 secs at maximum energy
14. The unit should be supplied with following accessories /items unit
    a) Battery -1 nos
    b) 3-Lead ECG cable - 1 nos
    c) External defibrillator paddles (pediatric inbuilt in adult)- 1 nos
    d) Multi Function Defibrillator & Monitoring padz/gel sheets - 200 nos
    e) Reusable CPR feedback sensor/or similar product reused at least on 90 patients – 4 nos

15.The unit should have facility to monitor
A)ETC02,
B) NIBP ,
C) SPO2

Also the unit should be upgradable to 12 lead ECG monitoring if required

16. The unit should be U.S FDA approved.

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Specifications for Defibrillator

1) The machine should have facility for ECG Monitoring, Defibrillation,

2) The Defibrillator should strictly biphasic technology, having energy selection of up to 200 Joules.

3) It must be capable of monitoring ECG through ECG cables and both from Multi function electrodes and paddles.

4) The monitor must be 2 channel colour monitor with ECG as the first trace and an option of choosing EtCO2 or SpO2 as the second trace.

5) The machine should be able to defibrillate Adult, Paediatric patients.

6) The machine should have ECG waveform display on bright colour display along with other virtual numeric information.

7) The machine should have fast charging of 200J in 3 seconds

8) The machine should be compact, portable with built in rechargeable battery, weight of the total machine should not be more than 6.5 Kgs.

9) The machine should have in built recorder of for printing ECG trace & stored information.

10) The machine should have capability for providing internal defibrillation shocks.

11) The machine should be upgradeable to vital sign parameter such as Mainstream EtCO2, SpO2.

12) The machine should have user selectable alarm settings.

13) After defibrillation, the ECG waveform must recover within 3 seconds for immediately checking the result of defibrillation.

14) The machine should work on mains as well as on rechargeable battery.

15) The machine should have fast battery charging of less than 3 hours for full charge.

16) The machine should be supplied with all standard accessories.

(5) Specification of AED (Automated External Defibrillator

- The Unit should be Bi-Phasic with maximum 200J energy level.
- Energy Settings should confer with Latest AHA/ERC guidelines; The device should be U.S.A FDA approved and should be in accordance with ILCOR -ECC/ AHA-2010 guidelines.
- The unit must include an LCD that is capable of displaying text prompts & ECG on screen.
- The unit should be capable of showing CPR feedback in real time with both visual and audible prompts on CPR rate and depth.
- Should be compact, light weight, portable and easy to carry. The unit weight should not be more than 3.2 kgs preferable with handle to carry it easily.
- The unit should include an easily identifiable on/off switch .
- The unit should have airworthiness certification.
- Should be able to operate under following environmental conditions :-

  (a) Temperature - Operating: 0° - 50° C.

  (b) Humidity - Operating: 12 % to 90% relative, non-condensing.

  (c) Altitude - Operating: -100 to 15,000 feet or above.

- The unit Should hold following test reports /certifications :-

  a) Mil Std 810 F
  b) Ingress protection 55
  c) E.N- 60601-1
  d) IEC-60601-1-2
  e) One meter drop test

- The unit should have ability to record data to an internal memory and to upload the same to a computer via wireless mode.
- The unit comes with **CODE READY indicator on the front of the device** which ensures daily maintenance/automatic self test by device of its own.
- The unit should come with lithium batteries with minimum capability to deliver minimum 300 shocks. These batteries must offer minimum a five year shelf-life too.
- The unit must detect the use of pediatric pads and automatically adjust the arrhythmia analysis processing for a pediatric patient and must invoke specific pediatric Joule settings.
- Cost of battery should be quoted along with price bid and same will be considered to decide the lowest bidder.

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SPECIFICATION FOR VIDEO LARYNGOSCOPE

1.Portable Video Laryngoscope for intubations with minimal manipulation of head & neck, dedicated features for teaching training & Learning in the specialty.

2.Should have CMOS (Complementary Metal Oxide Silicon) Camera

3.Should have fog free medical – grade optical polymer.

4.Should have a suitable View angle to visualize glottis without much head & neck manipulation, ergonomically.

5.The system should have portable color video display LCD of at – least 2.5" size for the real time clear view.

6.Weight of handle should be light and not be more than 250g.

7.Light sources should be High- Intensity LED.

8.Should have facility to run independently on Power of Battery with battery backup to four hour.

9.The system should be supplied with a set of different assorted blade 2,3,4 and for difficult intubation.

10.For difficult intubation blade, it should be having FOV=43

11.Should be immersable for complete disinfection(without battery)

12.Warranty for one year(Minimum)

13.Blades should be of medical grade optical polymer and to be packed in sterile pack.

14.Device should have durable medical grade thermoplastic.

15.All Blades should fit into one Handel

16.Should have an indicator displaying battery life.

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Specification for MRI Compatible Anesthesia System

- Should be made entirely from non-ferrous metals & can be used safely up to the 300 gauss line.

System should be a 3 gas system and pneumatically operated.

System should have 2 stations selectatec back bar.

Should have cascading type flow meters for O2,N2o and Air.

Should be capable of wall, trolley of rail mounted

Should have pressure gagues for cylinders & pipelines

The integrated ventilator should be MRI compatible.

Should have Volume Control Ventilation.

Should have a minimum Tidal Volume of 20 ml. to 1500ml/min

Should have Inspiratory time of: 0.25 to 3.0 seconds and Expiratory time:0.5 to 6.0 seconds.

System should have a flow rate of: 50ml/min to 10 lit/Min

Should have a pressure relief of : 0.8 to 70cm H2o.

The ventilator should be intergrated to workstation.

Should be supplied with a Circle absorber integrated to workstation.

Workstation to be Supplied with two Vaporizer one for isoflurane and another for Sevoflurane.

System should be supplied with oxygen monitor.

System should comply with international safety standers like IEC 60601-1-2-13 and BS EN 60601-1

The system should be certified to work satisfactorily with 3 Tesia MRI Anesthesia machine and supporting documents should be submitted along with tender.

The complete equipment should have certified by US FDA/European CE.

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LMA

Particulars
LMA Classic Size 1
LMA Classic Size 1 1/2
LMA Classic Size 2
LMA Classic Size 2 1/2
LMA Classic Size 3
LMA Classic Size 4
LMA Classic Size 5
LMA Classic Size 6
LMA Cuff Deflator Size 3-4
LMA Cuff Deflator Size 5
LMA Unique Size 1
LMA Unique Size 1 1/2
LMA Unique Size 2
LMA Unique Size 2 1/2
LMA Unique Size 3
LMA Unique Size 4
LMA Unique Size 5
LMA Fastrach Size 3
LMA Fastrach Size 4
LMA Fastrach Size 5
LMA Fastrach Stabiliser Rod
LMA Fastrach ETT 6.0 mm
LMA Fastrach ETT 6.5 mm
LMA Fastrach ETT 7.0mm
LMA Fastrach ETT 7.5mm
LMA Fastrach ETT 8.0 mm
LMA Proseal Size 1.5
LMA ProSeal Size 2
LMA ProSeal Size 2 1/2
LMA ProSeal Size 3
LMA ProSeal Size 4
LMA ProSeal Size 5
LMA ProSeal Cuff Deflator
LMA ProSeal Introducer (1-2 1/2)
LMA ProSeal Introducer (3-5)
LMA CTrach Kit
LMA CTrach Kit SU ETT
LMA CTrach Viewer
LMA Carlton Sureflo TM Size 3
LMA Carlton Sureflo TM Size 4
LMA Carlton Sureflo TM Size 5
LMA CTrach Training Kit Sz 4

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(10) **Technical Specification for Pulmonary Function Testing [PFT Machine (Advanced)] :~**

1 **Description of Function :**

1.1 Pulmonary function tests are a broad range of tests that are usually done in a health care provider's office or a specialized facility. They measure how well the lungs take in and exhale air and how efficiently they transfer oxygen into the blood.

2 **Operational Requirements :**

2.1 System should be supplied complete with printer.

3 **Technical Specifications :**

3.1 1. The following tests should be performed by the PFT Equipment.

a. It should measure :

FEV, FVC, PEF, SVC, FEV %, MMEF, PIF, MVV, FRC, TLC,

RV, TLC, FET, ERV, IRV, PiMAX / PeMAX

b. DLCO, BRONCHIAL PROVOCATION TEST.

2. Predicted value- depends upon national preference.

3. Multi window lay out.

4. Configurable print out format.

5. Real time flow volume and volume time traces.

6. Overlaying of previous test curves for comparison.

7. Open & Closed flow / volume loop test technique possible.

8. Powerful search capability.

9. Storage – 1000 patients' tests including flow / volume loops and volume time curves.

10. Should have networking support.

4 **System Configuration Accessories, Spares and Consumables :**

None.

5 **Environmental Factors :**

5.1 Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility or should comply with 89/366/EEC; EMC-directive.

5.2 The unit shall be capable of operating continuously in ambient temperature of 20 – 30 deg C and relative humidity of 15 – 90%.

5.3 The unit shall be capable of being stored continuously in ambient temperature of 0 – 50 deg C and relative humidity of 15 – 90%.

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Multi Channel ECG Machine-12 Channels

1 Description of Function
1.1 ECG Machine is primary equipment to record ECG Signal in various configurations. 12 channels with interpretation are required for recording and analyzing the waveforms with a special software.

2 Operational Requirements
2.1 The ECG Machine should be able to acquire all 12 Leads simultaneously and interpret them

3 Technical Specifications
3.1 Should acquire simultaneous 12 lead ECG for both adult and pediatric patients
3.2 Should have Real time display of ECG waveforms with signal quality indication for each lead
3.3 Should have Artifact, AC, and low and high pass frequency filters.
3.4 Should have a storage memory of at least 40 ECGs with easy transfer by optional modem and data card.
3.5 Should have full screen preview of ECG report for quality assessment checks prior to print.
3.6 Should have interpretation facility of the amplitudes, durations and morphologies of ECG waveforms and associated rhythm for adult and pediatric patients
3.7 Should have alphanumeric Keyboard for patient data
Entry. (virtual or hard keys)
3.8 Should have High resolution (200 dpix500dpi on 25 mm/sec speed) digital array A4 size printer
3.9 Should have report formats of 3 x4; 6 x2, Rhythm for up to 12 selected leads; 12 Lead Extended measurements, 1 minute of continuous waveform data for 1 selected lead.
3.10 Should have battery capacity of at least 30 ECGs or 30 minutes of continuous rhythm recording on single charge
3.11 Should be able to be connected to HIS /LAN/Wireless LAN(OPTIONAL)
3.12 Should display ECG on LCD/TFT Display.
3.13 USB Support (optional) for Storage on external portable memories.
3.14 Minimum 150 ECG Storage in Floppy or flash memory or any better device.

4 System Configuration Accessories, spares and consumables
4.1 ECG Machine 12 Leads with Interpretation - 01
4.2 Patient Cable -02
4.3 Chest Electrodes Adult-(set of six) -02 sets.
4.4 Chest Electrodes Paediatric-(set of six) -02 sets
4.5 Limb Electrodes(set of 4)- 02 sets
4.6 Thermal Paper A4 Size for 500 patients

5 Environmental factors
5.1 The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%
5.2 The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%
5.3 Shall meet IEC-60601-1-2:2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility. or should comply with 89/366/EEC; EMC-directive.

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(12) **Anaesthesia Workstation** With Ventilator (Integrated)

The Anaesthesia work station system should consist of:

Anaesthesia machine with two vaporizers, integrated anaesthesia ventilator and closed Breathing system

Anaesthesia machine with vaporizers:

- Rigid construction and design with standard frame mounted on antistatic twin castor wheels with front brakes and full length side rails on both sides of the frame to facilitate mounting of accessories/monitors.
- Gas specific (pin indexed) Yokes – one for oxygen, and one for nitrous oxide to accommodate 5-liter water capacity cylinders.
- Provision to connect oxygen, air & nitrous oxide directly to system with non interchangeable pipeline supply inlet for each gas & separate pressure gauges for each gas on front of the machine.
- Flow meter assy with dual cascading rotameter for O_2 & N_2O, single for Air.
- Auxiliary fresh gas outlet with ISO type 22mm & 15mm & connector for using with open circuit/bains cicuit.

Safety features should include:

- Automatic Cutoff of Nitrous by Oxygen Pressure failure along with hypoxic guard for linear regulation of minimum O_2 concentration at 25% volume.
- Oxygen flush, which is able to deliver at least 30-70 liters per minute of Oxygen.
- Air/N_2O interlock for enabling or disabling air or N_2O & activating as per requirement.
- Oxygen failure alarm.
- Bi-stable change over switch from closed circuit to open circuit & vise-versa.

Integrated breathing system should include

- Single canister integrated circle absorber with unidirectional insp. & exp. Valves free from Gravity and sticking and airway pressure relief valves along with integrated ascending bellow unit.
- It should not have multiple tubing connection from anaesthesia machine & closed circuit system.
- It should have facility for changing the sodalime inter-operatively with sodalime capacity of about 900 gms.
- Fully integrated Circle absorber system for adult as well as pediatric patient category with the same bellow unit.
- It should have an autoclavable base block & should not require any tools when dismantled for cleaning & sterilization.

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(12)

Vaporizer:- provision to connect two vaporizers at a time with interlocking facility. One isoflurane and one Sevoflure vaporizer should be supplied with the machine. Vaporizers flow should be temperature, and pressure compensated and maintenance free for a minimum of 05 years.

Integrated anaesthesia ventilator

* It should have an integrated colour TFT screen of at least 8" size for display of ventilation parameters

* Microprocessor based electronically controlled and pneumatically driven should not required change of bellows for adult and infants.

* It should have following features.

a)Modes – VCV,PCV

b)Tidal volume range 20 ml to 1500 ml.

c)Adjustable breath rate 4-80bpm,I:E ratio 3:1 to 1:9.9

* It should havea spirometery measurement of I/E ratio, Tidal vol,min volume, Peak, Plateau& PEE pressure Fio2,

* Alarms should have audiovisual display of alarm messages for tidal volume,minute volume,inspiratory 02 concentration, audio power supply fail alarm,fails to cycle warning,airway pressure alarms for high and low pressures,Apnoea alarm.

* In built battery backup facility for up one hour.

*Self – diagnostic facility to chek the overall system including ventilator for leakage.

Complete equipment should be Certified by USFDA/European CE or International safety standards

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(13) **Technical Specification for Airway Management System :~**

Airway Management Equipment :

- Difficult Airway Management Kit including Retromolarscope (Adult) [illegible] set.
- Flexible Fibreoptic Bronchoscopy system [illegible]
- Frova Intubating Introducers (with rapi-fit adapters) Size : G12591, G13307.
- LMA Classic (reusable) all sizes (1, 1.5, 2, 2.5, 3, 4, 5) – 10 each.
- Fast Trach LMA - sizes 3, 4, 5 – 3 each.
- Jet Ventilation Kit (Manujet III) complete kit with injector and catheter.
- LMA Flexible (Reusable) sizes (3, 4, 5) – 3 each.
- LMA-C-Trach- complete with visualizing facility. – 1 No.
- LMA Supreme Second Seal – 5 Nos.
- Laryngeal Tube (LT) (Reusable Silicon) Size : 1.2, 2.5, 3, 4, 5, 6, 6.5 – 5 each.
- Microlaryngeal Surgery Tube (all sizes) – 5 Nos. each.
- Gastro-Laryngeal Tube – 3 Nos.
- Mannekin for Fibreoptic Intubation / Bronchoscopy training.
- Proseal Laryngeal Mask Airway (Reusable) sizes (3, 4, 5) – 20 Nos.
- BLS-Mannikin with LED indicators for appropriate CPR. – 2 Nos.
- Glomburger Tongue Depressor for LMA Anaesthesia in Operations like Adenotomy. – 1 No.
- SLIPA (Stream Liner of Laryngeal Airway) – 3 Nos.
- Combitube. All sizes – (1 each)
- Igel. – 10 Nos.
- COBRA (Pharyngeal Express) All sizes – 2 Nos. each.
- Truview EVO2 Laryngoscope with Trueview Premier Intubation Kit. – 1 No.
- UPSHER Laryngscope for difficult intubation. – 1 No.
- Gum Elastic Bougie. (Paediatrics – 5 Nos. & Adult – 10 Nos.)
- Lighted Stylet for Intubation. – Two Nos. (with 30 spare bulbs / light source).
- Light Wand for Oral Tracheal. – Two Nos. (with 30 spare bulbs / light source).
- Cook Airway Exchanger Catheter. – 5 Nos.
- Miller Laryngoscope Blades with fibreoptic light. – 5 Nos.
- Mackintosh Reclination Blade with fibreoptic light. – 2 Nos.
- McCoy Laryngoscope. – 5 Nos.

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TECHNICAL SPECIFICATION

TRANSCUETANEOUS NERVE STIMULATOR

The unit should have the following specifications:

1. Output Channels: 4 independent
2. Current type: Asymmetrical biphasic pulsed current, Symmetrical biphasic pulsed current
3. Phase duration Asymmetrical biphasic pulsed current: 10-200 µs
4. Phase duration Symmetrical biphasic pulsed current: 10-1000 µs
5. Pulse frequency: 1-200 Hz
6. Frequency modulation: 0-180 Hz
7. Surge programme: OFF-SYNC-ASYNC-PEMS
8. Amplitude: 0-140 mA
9. Pre-Programmed Protocols: 39
10. Memory Position: 100
11. Treatment time: 0-60 min
12. The equipment should have International Safety Standards (Imported) CE/TUV.
13. The equipment should be supplied with Standard Accessories, Pen Electrode & Trolley.

Specification of Transcutaneous electrical stimulator

- Pocket Size
- Variable Amplitude
- Rectangular Variable Pulse
- Power Supply 6V DC (4 AA type dry cells)
- Max battery life time 160 hrs
- Max output voltage 65V at 1 KOhm load
- Pulse frequency range, 2 to 50 Hz ± 20%
- Pulse width duration, 400 microsecond ± 20%
- Max output current, 15 MA (RMS) at 500 ohms

16 Technical Specification of High End MR Compatible

Multi Parameter Monitor

- Should be high end MRI compatible patient monitoring system for monitoring all vital parameters of the patient in MR room & should be compatible with MRI scanner upto 3 Tesla.
- Display: Should have at least 12" color TFT display with high resolution of 800*600 pixels.
- Display should be adjustable such that it is clearly visible from any angle.
- Should be able to display at least 5 waveforms and all related numerical values.
- Monitor should be both mains as well as battery operated.
- Should have internal rechargeable battery with backup operation minimum 5 hours. The battery charger should be MR compatible and allow placement in the MR scanner room.
- The monitor should have **inbuilt facility of auto switch OFF**, once the unit crosses the 400 gauss or 40 mT line mark.
- Monitor should be able to monitor Electrocardiogram (ECG), pulse oximetry (SpO2), Non invasive blood pressure, Capnometry (ETCO2 monitoring) & Recorder as standard Parameter.
  Amagnetic trolley with accessory storage (from the same manufacturer)

- Should be able to store and view **at least 24 hrs. of graphical and tabular trends** for all the parameters; with the option for selecting the intervals for storing the trends
- Monitor should be supplied with Adult Spo2 Probe – 1 no's & Universal Probe (Y Probe) – 1no
- Should have **at least 10" screen Slave Monitor for remote display and control of the MRI monitor linked with bidirectional network connections.**
- **Alarms:**
  - Visual and audible signaling alarms can be paused for 2 minutes or permanently disabled; if permanently disabled, the monitor beeps every 2 minutes
- **General Specifications:**
  1. Weight of the monitor should not be more than 25 kgs.
  2. Should comply with standards of protection case up to **IP 20.**

- **Safety Standards:**
  1. The monitor and listed accessories must be **CE approved.**
  2. Monitor should comply with electromagnetic immunity requirements of standard IEC 60601 – 1 – 2
  - Signal inputs: type CF, defibrillation proof

(18) (19)

- **The scope of supply should be:**
  - Main unit
  - 3 wire clip ECG Cable – 1
  - Disposable ECG electrodes (adult) – 1 set
  - Fiber optic SpO2 finger probe (adult) – 1
  - Fiber optic SpO2 finger probe (Y) – 1
  - NIBP hose tubing – 1
  - Adult, pediatric and neonatal NIBP cuff - 1 each
  - ETCO2 accessory – 1 set
  - Amagnetic trolley with accessory storage (from the same manufacturer) – 1
  - Power pack and mains cable – 1 each
  - Operating Manual – English

17

SPECIFICATION OF FLEXIBLE INTUBATION VIDEO ENDOSCOPE (ADULT SIZE+PED SIZE) non fiber

*Flexible Intubation Endoscope with CMOS chip on tip for digitally transferring the image to the screen. There should be **NO Optical Fiber bundles**. Intubation Endoscope should display Full Frame 4:3 Imaging and not the circular image.

*For adult outer diameter of scope should be ranging 5 - 5.5 mm with working length of 60 cm and above.Up and down tip deflection should be same ranging 130-150 degrees. Working channel should be 2.0 – 2.3mm and it should take ETT from 6 size onwards.

*For Pediatric outer diameter of scope should be ranging 3.8-4.1 mm with working length of 60 cm and above. Up and down tip deflection should be same ranging 130-150 degrees. Working channel should be 1.2-1.6mm and it should take ETT from 4.5 size onwards.

*Flexible Intubation scope should display good quality picture by connecting it with 7 inch or more TFT monitor.

TFT monitor/Screen should have feature control buttons on the screen with HDMI output for connecting to a big screen.

Automatic/Manual white balance facility should be available

Monitor should run on battery,when fully charged should work for more than 100 minutes

*Documentation of Video & still image should be possible with operating buttons on the scope to be recorded on SD card and USB pen drive present in the monitor

*It should be light weight, high resolution & portable reusable flexible scope

*Airway Guide (cum Bite block) for Oral intubation should be provided with the set.

*ET TUBE HOLDER has to be a part standard accessory

*Set should include – Suction Adaptors (Disposable), Cleaning brush & Leakage tester as standard accessories

*Container for sterilization and storage of scope should be provided

*One imported Trolley to hang Scope as well monitor should be provided

*Five reusable suction caps to be also provided

***Suitable for following application**

Bronchoscopy

Endotracheal Intubation (Gold standard for Difficult Airways)

-Foreign body removal

-Bronchial Lavage

-Inspection of the Airways

-Dilatation Tracheotomy

19

14/1/17

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Retromolar Scope- Spects OD 5mm WL 40cm Adult(with channel)

Difficult intubation semi rigid fibre-scope for oral intubation with 40 degree permanent tip bending and OD 5cm with working length of 40cm with total length 52cm. Eyepiece should be adjustable according to the comfort level. Endo-tracheal tube holder should be a part of standard accessory. Scope should contain fiber bundles with close to 35000 pixels.angle of view 110 degree and total length 54cm. should be provided with a case and tube holder. Should take min. of 5.5 size of ET tube till 10

Retromolar Scope- Spects OD 5mm WL 40cm (w/o channel)

Difficult intubation semi rigid fibre-scope for oral intubation with 40 degree permanent tip bending and OD 5cm with working length of 40cm with total length 54cm. Eyepiece should be adjustable according to the comfort level. Endo-tracheal tube holder should be a part of standard accessory. Scope should contain fiber bundles with close to 35000 pixels.angle of view 110 degree and total length 54cm. should be provided with a case and tube holder with oxygen supply facility. Should take min. of 5.5 size of ET tube till 10. should have a working channel of 1.2mm for injecting drugs.

Retromolar Scope- Spects OD 3.5mm WL 40cm (Pediatric)

Difficult intubation semi rigid fibre-scope for oral intubation with 40 degree permanent tip bending and OD 3.5mm with working length of 35cm and total length 39cm. Eyepiece should be adjustable according to the comfort level. Endo-tracheal tube holder with facility to supply oxygen should be a part of standard accessory. Should take ET tube size 4 till 5.5mm

Retromolar Scope- Spects OD 2mm WL 40cm (Neonatal)

Difficult intubation semi rigid fibre-scope for oral intubation with 40 degree permanent tip bending and OD 2mm with working length of 22cm and total length 32cm. Endo-tracheal tube holder with facility to supply oxygen should be a part of standard accessory. Should take ET tube size 2.5 till 3.5mm.

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(19)

(19) Specification Difficult Airway Management Set along with Flexible Intubation Video Endoscope with Screen(Adult Size)

(I) Specification of Airway Management set

Set containing :-

1. One flexible intubation fiberscope with OD 3.7mm and WL ranging between 63-66cm and total length approx. 93cm, scope should have suction channel and working channel of 1.5mm. Should have 0 degree direction of view and 90 degree angle of view. Scope should have same 140 degree up/down tip deflection and outer shaft of should have 5cm interval markings. ET tube holder, suction cap, cleaning brush, Leakage tester and neccessary adaptors should be provided as standard accessories of the scope. It should take min. 4.5 size of ETT tube.

2. Scopes can be connected to endoscopic camera to visualize image on monitor.

3. LED Battery operated light source with LED life not less then 50000 hrs and intensity should be more than 50000 Lux. Should run with two 3v lithium batteries. Should be compatible with above mentioned scopes. Burning time of new batteries should approx two hours.

4. Cold Xenon Light laryngoscope with handle and single universal blade with weight markings should be in the set to be used on adult and pediatric patients

5. It should also contains a connector to connect the intubation fiberscope to the portable screen of flexible Intubation Video Endoscope (FIVE)

Set should have :-

6. 2 ILMA with complete kit size 3 and 4

7. 3 LMA sizes 1,2 and 4

8. Surgical handle, single use package of 10

9. Nasal Speculum, blade length 55cm, length 13cm for dialation.

10. Larynx tube two sizes

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(21)

11. Adaptors for oral intubation – optosafe, bite block, Mainz adaptor etc

12. Magill Forceps, length 25cm

13. Spiral Tube dia 6cm

14. One easily metal carrying case should be provided which can carry/fit all the above mentioned difficult intubation devices and accessories.

(II) FLEXIBLE INTUBATION VIDEO ENDOSCOPE WITH THE SCREEN (ADULT SIZE)

- Flexible Intubation Endoscope with CMOS chip on tip for digitally transferring the image to the screen. There should be NO Optical Fiber bundles. Intubation Endoscope to display Full Frame 4:3 Imaging, replacing the circular display windows. The image can be displayed directly on a small TFT monitor attached to the screen
- Screen 7 inch or more in size for display with clearly arranged soft keys for immediate use. The screen should have Composite output for connecting to a big screen.
- Automatic/ manual white balance facility should be available on the monitor as well as on the scope
- Documentation of Video & still images should be possible on data card or USB drive with JPEG and MPEG4 format which can be easily transferred to the computer/laptop. Documented videos & still images should be easily recalled on the monitor
- Screen should be rechargeable & runs on Lithium Ion Batteries (operating time- 1 hr or more)
- It should be light weight , high resolution & potable flexible scope
- Airway Guide (cum Bite block) for Oral intubation should be provided with the set (at least 10 airways)
- TUBE HOLDER should be a part of standard accessory
- Set should include- Suction Adaptors (Disposable), Cleaning brush & Leakage tester as standard accessories

- Suitable for following applications-
  - Bronchoscopy
  - Endotracheal Intubation (Gold standard for Difficult Airways)
  - Foreign body removal
  - Bronchial Lavage
  - Inspection of the Airways
  - Dilatation Tracheotomy

Technical Details of Flexible Video Endoscope-

(29)

Bi-Spectra Index Monitor

1. Should have capability to be used in Adults and Pediatric patients as standalone unit
2. The monitor should display 2 channel EEG, BIS Index values, EMG, Signal Quality indicator, Suppression Ratio and Burst count in the form of value or graph
3. Should display trend and real-time EEG waveforms
4. Should be able to display BIS Value in the range of 0 to 100.
5. The monitor should be supported by different types of sensors like adult and pediatric
6. Should have auditory and visual alarms with manual limit adjustment facility
7. Should have facility for the sensor to select the mode automatically
8. The technology should be backed by strong clinical evidences and studies
    a. Should have studies supporting reduced intraoperative awareness
    b. Should have studies supporting PONV
    c. Should have studies supporting pediatric use
9. The BIS index values should be updated every 1 second with EEG sweep speed of 10 – 50 mm/sec
10. Should have facility to detect artifact of Electrocautery& EMG; and reject artifact automatically
11. Should have capability for software updates through USB or internet
12. Weight should be less than 2kg
13. Dimensions should be 19 x 15 x 6 inches with display size of 15 inches maximum
14. Digital Output: USB ports, RS232 serial port
15. Power Requirement: 100 – 250 VAC, 40 – 60 Hz
16. Electrical Safety: Should conform to UL 60601-1, IEC 60601-2-26, CAN/CSA-C22.2#601.1
17. Should have battery backup of minimum 45minutes with a recharge time of maximum 6 hours
18. Should be USFDA & CE approved
19. Should be supplied with 100 Adult and 50 Pediatric sensors

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(23)

(21) **Patient Warmer specifications:-**

1. Should have 4 set temperatures: 34 ^{O}C, 40 ^{O}C, 45 ^{O}C & 47 ^{O}C
2. Should have boost temperature setting at 47 ^{O}C for rapid warming
3. Should have hose end nozzle clip & Sheet Clip for easy use of blankets and reduce drag of hose pipe.
4. Should have low maintenance requirements.
5. Should have short warm up time of less than 40 seconds.
6. Should have accuracy of +/- 1°C, supported by authenticated paper.
7. Can be mounted to the infusion pole or bed rails or placed on the floor or Cart Mount facility.
8. Should display temperature in LCD display.
9. Should have automatic step-down facility from high setting to medium setting after 45mins.
10. Should have filter expiry display for easy maintenance of machine and self-life of filter should be at least 2000 hrs.
11. Should have corrugated hose pipe to increase & decrease the length of hose pipe according to requirement
12. Must meet all convective warming standards.
13. Should be easy to operate in two steps.
14. Should have safety alarms like over temperature, power disconnection.
15. Airflow of approx. 25L / sec for better and faster warming.
16. Should be light weight less than 6 kg.
17. Should deliver warm air uniformly to the patient through disposable blankets
18. Should have disposable blanket options like Full body, Upper and Lower body, Pediatric & sterile blanket for Surgical access
19. Blankets must have strong 2ply layers to resist tear, puncture and fluid with comfortable draping on patient
20. Should have USFDA .

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(24)

a) Tip deflection UP/DOWN: 140°/140° ,
b) Angle of view 85° or more,
c) Working Length: at least 65 cm,
d) Total length: at least 93 cm,
e) Working Channel diameter: at least 2.2 mm,
f) Distal Tip Outer Diameter: 5.5 mm or less

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