

**List of equipments for the department of Paediatric**

Sl. No.	Name of Equipments
1	Neonatal ventilator
2	Infant to Adult ventilator
3	Radiant warmer
4	Mobile X-ray machine (Portable)
5	Cpap (Auto)
6	LED phototherapy
7	Paediatric Video gastroscop
8	Syring pump
9	Infusion pump (Volumetric)
10	Neonatal Transcutaneous Bilirubinometer
11	Ultrasonic nebulizer
12	ABG Machine
13	Apnoea monitor
14	Stadio meter
15	Vein Light (Veinoscope)
16	X-ray View Box
17	Pulse oximeter
18	Defibrillator
19	Weighing machine (For Neonate)
20	Ultrasonic colour doppler
21	Thermometer
22	Weighing machine (Infant to adult with BMI calculator)
23	Digital B.P. Instrument

*Mobile*

## ~~Portable~~ x ray specifications

It should be light weight and portable, suitable for pediatric and neonatal application, bedside xray, trauma, intensive care unit

The unit should be fully counter balanced and can be positioned to suit different bed height. it should have facility of vertical swing and horizontal rotation of the tube head to ensure xray of any anatomy even with limited space

It should draw from mains and consume negligible power in standby mode

It should have negligible leakage radiation

It should have intelligent graphical LCD display with 100 user configurable anatomy presets for utmost convenience to the operator

It should be ergonomically designed for highest degree of mobility

It should have precisely controlled collimator ensuring accurate focussing of xray beam on the required area closely matching with the light field

It should have fail safe actuation technology ensure

It should have modern cutting edge high frequency technology

*- Technical Specification as per floated tender of  
Radiology Dept H (Short tender notice)  
RIMS, Ranchi*

*[Signature]*  
19/09/2024

## Technical Specification for Blood Gas Analyser

1. Fully automatic, microprocessor controlled Blood Gas Analyser with automatic rinsing and calibration.
2. **Measured parameters:-** pO<sub>2</sub>, pCO<sub>2</sub>, pH, & barometric pressure
3. **Calculated parameters:-** Actual bicarbonate (HCO<sub>3</sub>-A), Standard bicarbonate (HCO<sub>3</sub>-S), base excess (BE), Standard base excess (SBE), total CO<sub>2</sub> (TCO<sub>2</sub>), buffer base, O<sub>2</sub> saturation, O<sub>2</sub> content, alveolar to arterial oxygen-tension grade (AaDO<sub>2</sub>) partial O<sub>2</sub>-press. at 50% O<sub>2</sub>-sat (P50) and interpretation of acid base status printed on the result paper.
4. The machine should be able to measure all the above mentioned parameter in single injection/aspiration of sample.
5. The system should be upgradable to include K<sup>+</sup>,Na<sup>+</sup>,Ca<sup>++</sup>,Cl<sup>-</sup>,Li<sup>+</sup>,Hb,Glucose & Lactate in the same system.
6. System should use latest calibration technology for all parameter i.e. liquid calibration technology (without using gas cylinder and gas mixing devices).
7. Calibration/washing reagents must be in separate individual bottles/bags instead of single sealed pack to avoid the wastage of the reagents.
8. Blood Gas Analyser should not be cartridge-based system.
9. On Board life of reagents should be minimum 60 to 90 days.
10. Electrodes should have long life with a minimum guaranteed life of not less than 3 years. The guarantee certificate about the life of electrodes from original Manufacturer should be attached.
11. System should have economy mode/stand by mode for saving reagents. System should have LCD display and Built in Thermal printer.
12. The quotation should be accompanied with an Undertaking in original from the manufacturer confirming: That in case of change of dealer/agent, the new dealer/agent shall be responsible for all the after sales services, AMC & CMC commitments made by the quoting dealer/agent.
13. The analyser should have simple wet-section with minimum no. of valves & tubing's for trouble free operation.
14. Should be supplied with suitable UPS.
15. Should be CE/FDA approved

  
19/09/2014

## Apnea monitor specifications

Non-disposable respiration probe to be fixed on baby's abdomen with micro pore tape

Rotary switch to select 10, 20,30, 40, 60, 120 sec apnea delay

Audio visual alarms in case of Apnea

Facility to set Tachypnea limit with alarm

Digital display apnea counter which records nos apnea episodes in a day

Mains operated 230v 50 Hz works on alternative source in case of power failure

Low respiratory rate alarm

Mute facility for alarm

User friendly sleek design

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# Auto CPAP specifications

## Performance

Operating pressure range - 4-20 cm H<sub>2</sub>O

## Data storage

Compliance and therapy summary and statistic data- 365 sessions an device and SD card

## Dimensions

153mmx140mmx86mm (LXWXH)

Weight- 860g

## Air filter

Standard: polyester non-woven fibre

Hypoallergenic: acrylic and polypropylene fibres in polypropylene carrier

## Air tubing

Flexible plastic, 1.8 m, 15 mm inner diameter

## CE certified

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## SPECIFICATIONS OF DEFIBRILLATOR / MONITOR

1. Should be light Light weight, compact and portable.
2. Can deliver shock from 2 to 200 Joules using Bi-phasic technology .
3. Should have colour screen with facility for displaying at least two waveforms simultaneously & size atleast 5".
4. Should have in-built AED Mode with escalating energy upto 200 Joules.
5. Should have facility for Automatic External Defibrillation (AED) and manual defibrillation based on latest Biphasic technology.
6. Should have CPR Metronome facility to help users in performing CPR as per recommended 2010 AHA Guidelines
7. Should have inbuilt non-invasive pacing and SpO2 monitoring facility.
8. Should be upgradeable to EtCO2 functionality.
9. 3 or 5 Lead ECG monitoring and synchronized cardioversion.
10. Charge time to 200 Joules < 10 seconds.
11. Fully charged battery can give minimum 90 shocks of 200 Joules. Battery can be charge in less than 2 hours.
12. Should Work on 220V AC and built-in battery.
13. Should have in-built thermal printer of paper width 50 mm.
14. Should must have US FDA & CE Mark Approvals.

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# Digital Blood pressure measuring instrument specifications

It should be light and portable

It should have inbuilt heart rate calculator

It should be digital

It should have infant, pediatrics and adult cuff

*19/8/2014*

## Technical Specifications for Infant to Adult Ventilator

- Should be suitable for use in Infant, Paediatric and Adult patients in all critical care areas.
- Should be an upgradeable design with software/hardware upgradeability for new/future functions
- Should have both invasive and non invasive ventilation modes. Non invasive ventilation should be possible in all modes from control to spontaneous.
- The ventilator should have minimum internal battery backup of 45minutes with onscreen battery power indication. The internal battery should also power the internal air source. Additional battery backup should be available for 4 hours (may be offered separately) and should be flush mounted on the trolley.
- Should have an integrated internal air source such as turbine:
  - for delivering continuous flow upto 180 lpm.
  - The air source should be powered by the internal battery for at least 45 minutes.
  - The air source should have integrated dust filters which should be easily removable and washable
  - Bacteria filters for delivering medical grade air should be integrated in the turbine
- Integrated 12 inch colour touchscreen
  - display of 3 curves – pressure, flow, volume curves – the curves should be filled curves for easy viewing at a distance.
  - Easy configuration of numeric parameters as per user choice
  - There should be a day/ night mode for easy viewing at night.
- The ventilator should have extremely sensitive valve with response time  $\leq$  5 msec for ensuring quick delivery of gases during spontaneous breathing (proof of same to be shown in technical data sheet)
- The ventilator should have a simple pneumatic nebuliser which should be inspiration synchronised and volume compensated. This should be supplied as standard scope of supply.
- The ventilator should have low operating costs with a permanent/ non consumable O<sub>2</sub> sensor for FiO<sub>2</sub> monitoring. Same should be offered as standard. In case consumable/ electrochemical O<sub>2</sub> cells are offered by a vendor, same should be provided free of charge for operational lifetime of equipment.

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- The ventilator should be supplied with heated servo controlled humidifier F&P MR850 with suitable hoses for adults and paediatrics. Same humidifier – MR850 - should be suitable for both invasive and non invasive use.
- Flow sensor :
  - The flow sensor should be of heated wire type for higher accuracy.
  - It should calibrate within 5 seconds and without necessity to disconnect from patient.
  - It should be easily replaceable without disassembling the machine or disassembling the expiratory valve
  - At least 10 No.s flow sensor should be supplied for the lifetime of the equipment.
- For highly infectious diseases, disposable patient hoses, disposable expiratory valves and disposable HMEs for adults and paediatrics should be offered as per scope of supply.
- The ventilator should have the following ventilation modes as standard with quick touchscreen based operation / change from one mode to another:
  - Volume Control – Control, Assist Control, SIMV with/ without Pressure support
  - Sigh – pressure oriented sigh to avoid volutrauma/ barotraumas and should be adjustable above the set PEEP.
  - CPAP with/without Pressure Support
  - PC-BIPAP – Biphasic (and not Bi-Level) with/without Pressure Support with spontaneous breathing at two pressure levels. Should be one pressure mode from intubation to extubation
  - AutoFlow or equivalent for delivering tidal volume within a set PIP ; should be possible to combine in all volume control modes and should allow spontaneous breathing in all volume controlled modes
  - Apnoea backup ventilation mode with adjustable tidal volume and rate
  - Non Invasive Ventilation
    - Should be possible to be used in all modes – from control to spontaneous
    - Should have leakage compensation upto 100% of tidal volume
    - The alarm limits and compensation criteria should get modified based on selection of Tube / Mask ventilation mode for all the modes
    - The unit should be supplied with Face/ nasal Masks with gel cushion for face, adjustable cushion pad for nasal bridge and magnetic connectors for quick fastening
    - The mask should be non vented type for use in a dual limb circuit and preferably from same vendor.

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- Should have BTPS compensated settings for :

Tidal Volume in Volume modes	20 ml to 2000 ml
Peak Inspiratory Pressure	1–99 cmH <sub>2</sub> O
CPAP/PEEP /Intermittent PEEP	0 – 35 cmH <sub>2</sub> O
Inspiratory Rate	2– 80 bpm
Inspiratory Time	0.2 – 10 sec
Flow acceleration	5 – 200 mbar (to deliver continuous peak flow upto 180 lpm)
Flow Trigger	1 – 15 lpm
Pressure support	0 – 35 cmH <sub>2</sub> O
Manual Inspiratory hold	0 – 15 sec
Sigh (Pressure oriented)	0 – 35 cmH <sub>2</sub> O, every 3 minutes for 2 cycles
FiO <sub>2</sub>	21 - 100%
Apnoea alarm timing	15 – 60 seconds
Automatic altitude compensation	700 – 1060 hPa/ mbar/ CmH <sub>2</sub> O/

Should have BTPS compensated real time monitoring of:

- Pressure - Peak, Plateau, Mean, CPAP/PEEP
  - Tidal Volume - Set (Inspired) , Monitored (expired), leakage compensated inspiratory measured tidal volume
  - Minute Volume - Total, spontaneous
  - Frequency/ Rate - Set (Inspiratory), Spontaneous, total, I:E Ratio
  - FiO<sub>2</sub> measured
  - Airway Temperature (if active humidifier is used)
  - Lung Mechanics - Resistance, Compliance
- Should have three level (Advice- Caution – Warning) ISO alarm management with different audio visual color coded alarms, including corrective help messages on the screen for :-
    - High/low Pressure
    - High/low Minute Volume
    - High Rate
    - High Tidal Volume
    - Apnoea / apnoea alarm time
    - High/low O<sub>2</sub> % (automatic settings)
    - Oxygen line failure
    - Technical error (with error code)
    - Incorrect / abnormal settings – with warning message

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19/10/2017



- Scope of supply should include
  - Basic Unit( 220 - 240 V)with integrated 12 inch touch screenand integrated internal battery to power internal turbine
  - Modular corrosion free Trolley - should be imported , of same make as the quoted brand and no local substitute will be accepted/ should be offered.
  - Servo controlled humidifier MR850 for both invasive and non invasive use with 1 set reusable Silicon Hose set for Adults,1 set reusable silicon Hose set for children with chambers for adult and pediatric patients.
  - Heated Flow sensor - 10no.s
  - Reusable autoclavable expiratory valve - 2 No.s(1 on machine and 1 on standby)
  - O2 cell – should be non consumable and life long
  - Disposables :
    - Disposable Adult hose set – 50 No.s
    - Disposable Pediatric hose set – 50 No.s
    - Disposable Adult HMEs for use from 200 – 1500 ml
    - Disposable pediatric HME for use from 50 – 200 ml
    - Disposable expiratory valves for use with the machine – 20 No.s
  - Oxygen connecting Hose – 3 meters
  - Nebuliser – pneumatic , inspiration synchronised and volume compensated
  - Hinged arm Support for patient circuit – should be imported , of same make as the quoted brand and no local substitute will be accepted/ should be offered
  - Integrated RS232C Interface
  - Test Lung – preferable from same vendor
  - Instruction Manual
  
- Quality Standards and Support requirements
  - The offered unit should have CE/FDA certificate
  - The unit should comply with relevant IEC Certification, Environmental conditions, Electromagnetic compatibility ICE/EN 60601-1-2
  - Indian subsidiary/ dealer should have nationwide network, support offices and must be also ISO 9001 certified.
  
- Optional equipment/ features to be quoted indicating separate price –
  - Low Pressure Oxygen – LPO
    - Connection for use with low pressure source such as Oxygen concentrator
    - O2 flow 0.5 – 10 l/min
    - Connecting hose nozzle 6 mm diameter
  - Extended battery pack

  
19/9/2014

- Up to 5 hours of operation
- Suitable for conformal fit on trolley

*19/9/2017*



# Infant to adult weighing machine with BMI calculator specification

It should be light & portable

It should contain digital display

It should have inbuilt BMI calculator

It should have battery backup

*Am*  
19/8/2017

## **Technical Specifications for volumetric infusion pump {With Micro and Macro mode of operation}**

Microprocessor based Volumetric automatic infusion pump should have a range from 1-600 ml/hr and micro range 1 to 99.9 ml/hr.

Should have Micro & Macro modes of operation.

Should display total ml infused, set drops/min. and elapsed time on LCD panel at one time.

Should Have Descriptive Alarm Messages on LCD screen with Suggestive Actions

Should have facility to set Target volume & Target time.

Should have Alarms- for high/slow speed, Battery charge low etc.

Should have air in line removal facility with purge mode.

Should work on mains and battery and minimum 3 hours battery backup.

Should work on KVO Mode. KVO rate should be user selectable between 0.1 ml/hr to 9 ml/hr.

Should work on Micro and Macro standard I.V.sets.

Callibration facility for no. of drops per MI from front panel.

Should have free flow protection feature in case of accidental door opening.

Should work in both modes – Volumetric & Drop counting mode.

Should have nurse call facility with the help of a separate key on the front panel.

Should have potential free contact for remote alarm & Nurse call. Should have fixed drop sensor.

The rates should be stored into memory with facility for memory clear.

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# LED Phototherapy specification

It should be LED Phototherapy with high irradiance till 45 microwatt per sq. cm per nm  
Optimal 450-460 nm wavelength ensures breakdown of bilirubin faster.

It should be Provides phototherapy at a high irradiance of 45 microwatts per cm square.  
And Low irradiance of 22 microwatts per cm square.

It should be optical design helps ensure uniform light distribution and increased surface area to cover the baby from head to toe.

It should unique fan-less technology and no other mechanical moving parts for long term reliability.

It should have timers – one for Lamp hour .

It should have LED lamp Life at least 40000 hour

It should Omni-directional base for ease in positioning.

It should be nominal power consumption (20 Watts).

**It should be Detachable lamp module**

**It should be Tilt able lamp module**

It should have technology and design to remove heat and provide cold light .

It should be tested for Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC)

It should be CE and FDA approve .

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# Neonatal transcutaneous bilirubin meter specification

1. LCD Display is easily viewable
2. Streamlined design makes it small, delicate and easy to be handled.
3. Long service life, low energy consumption.
4. Battery indicator indicates when battery needs recharging.
5. Test results are rapid providing serum bilirubin concentration.
6. Storage and memory function.
7. Convenient to browse and delete functions.
8. Convenient self calibration.
9. Easy use and maintenance.

## Specifications

1. Display: LCD, 3 figures
2. Power: AA 1.5V×2 batteries
3. Indicator light for ready: Green
4. Measurement range: 0.0mg/dL ~30.0mg/dL;
5. Measurement accuracy: low+1.0mg/dL(+17 $\mu$ mol/L, rest  $\pm$ 1.5mg/dL( $\pm$ 25.5 $\mu$ mol/));
6. Preparation time: <12 seconds
7. Record function: Memory 20 latest measuring results and circularly reviews recorded data.
8. Reexamination rate: <10%
9. Certificate: CE,ISO

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## Technical Specifications for Neonatal Ventilator

- Advanced microprocessor based continuous flow , pressure limited, time cycled ventilator for very low body weight infants (premature, newborns) upto maximum 20 kg, upgradeable for additional functions
- Should be an upgradeable design with software/hardware upgradeability for new/ future functions with inbuilt graphic screen
- Should have both invasive and non invasive ventilation modes available in the same machine for use on neonatal and premature patients with suitable accessories.
- The ventilator should have a simple pneumatic nebuliser which should be inspiration synchronised and volume compensated. This should be supplied as standard scope of supply.
- The ventilator should be supplied with heated servo controlled humidifier F&P MR850 with suitable hoses and chambers for neonatal patients.
- Flow sensor :
  - The flow sensor should be of heated wire type for higher accuracy.
  - It should calibrate quickly within 5 seconds and data should be measured at proximal end , near the Y piece.
  - It should be easily replaceable without disassembling the machine or disassembling the expiratory valve
  - At least 10 No.s flow sensor should be supplied for the lifetime of the equipment.
- The ventilator should have ventilation modes as below:
  - Pressure Controlled – Control, Assist, SIMV
  - CPAP
  - HFOV – standard or optional – should be integrated in same machine (detailed specification follows)
  - Pressure Support Ventilation – Standard or Optional should be integrated in same machine(detailed specification follows)
  - Volume Guarantee – standard or optional – should be integrated in same machine(detailed specification follows)

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- Should have settings for :

Peak Inspiratory Pressure	10 - 80 cmH <sub>2</sub> O
Flow independent PEEP	0 - 25 cmH <sub>2</sub> O
Inspiratory Time	0.1 - 2 sec
Expiratory Time	0.2 - 30 sec
Maximum Rate (based on Insp. Time and exp. Time)	200 bpm
Inspiratory flow	1 - 30 lpm
Expiratory flow (VIVE)	1 - 30 lpm
Slope control	0 - 2 sec.
FiO <sub>2</sub> (integrated blender without bleed flow)	21 - 100%
Trigger	0.03 - 3 ml adjustable in scale of 1 to 10 (1 most sensitive and 10 least sensitive).
I:E Ratio (dependant on Insp.Time and Exp.Time)	3:1 to 1:300
Automatic altitude compensation	780 - 1060 hPa/ mbar/ CmH <sub>2</sub> O/

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- Should have selection of measurement conditions for NTPD or BTPS. The real time data should be monitored at Y-piece for:
  - Pressure - Peak, Plateau, Mean, CPAP/PEEP
  - Expired Tidal Volume (Monitored), Expired Minute Volume, leakage in %
  - Frequency/ Rate - Set (Inspiratory), Spontaneous MV in %, total , I:E ratio
  - FiO<sub>2</sub>
  - Lung Mechanics - Resistance, Compliance , C20/C, Time constant T<sub>c</sub>, RVR
  - Integrated graphical trend
  - Integrated alarm log of upto 100 alarms on First in First Out basis
  
- Should have automatic alarm settings for all alarms with clear text messages/ corrective action for:
  - Disconnection
  - Tube blocked
  - Ventilation hose kinked
  - High/low Pressure
  - High/low Minute Volume
  - High Rate
  - High Tidal Volume
  - Apnoea / apnoea alarm time
  - High/low O<sub>2</sub> % (automatic settings)
  - Oxygen line failure
  - Compressed air failure
  - Total electronic failure (with error code)
  
- Scope of supply should include
  - Basic Unit ( 220 - 240 V)
  - Modular corrosion free Trolley - should be imported , of same make as the quoted brand and no local substitute will be accepted/ should be offered.
  - Silicon heated Hose set for use with MR850 for neonatal patients
  - Disposable heated hoses with disposable chamber for use with MR850 for extremely infectious patients should be also supplied – 10 No.s
  - Servo controlled humidifier (F&P MR 850) with reusable chamber
  - Heated Flow sensor - 10 no.s
  - O<sub>2</sub> cell
  - Disposables :
    - Disposable patient hose set – 20 No.s
    - Disposable patient chamber – 20 No.s
  - Nebuliser – pneumatic , inspiration synchronised and volume compensated
  - Oxygen connecting Hose – 3 meters
  - Air connecting Hose – 3 meters
  - Hinged arm Support for patient circuit – should be imported , of same make as the quoted brand and no local substitute will be accepted/ should be offered
  - Integrated RS232C Interface
  - Neonatal test lung with variable compliance and resistance

  
 19/09/2017



- Instruction Manual

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## Quality Standards and Support requirements –

- The offered unit should have CE certificate
- The unit also should have FDA certification
- The unit should comply with relevant IEC Certification
- Indian subsidiary/ dealer should have nationwide network, support offices and must be also ISO 9001 certified.
- Optional features to be quoted indicating separate price
  
- Nasal CPAP ventilation (standard or optional)
  - The nasal CPAP unit should be self contained with head strap, hood, nasal prongs, fixing unit.
  - Should be possible to field upgrade the same if required
  - Should be possible to use in Control mode or CPAP
  - Masks, prongs, head bands, caps should be supplied as standard in 5 sizes
  
- HFOV (standard or optional)
  - It should be possible to combine HFOV as below :
    - Control + HFOV
    - CPAP + HFOV.
  - The HFOV function should be integrated in same machine and NOT as an external facility/ add on.
  - The HFOV function should control :
    - Frequency in Hz : 5 – 20 Hz.
    - Amplitude control : 0 – 100%.
  - It should be possible to use HFOV WITHOUT disconnecting the patient by simply switching ON/OFF in the same machine .If HFOV is offered, separate patient tubings for same to be offered.
  - Should measure parameters in HFOV such as DCO<sub>2</sub>, V<sub>t</sub>HF (tidal volume in HFOV), MV<sub>im</sub> (MV in IMV strokes in inspiration), VT<sub>im</sub> (MV in IMV strokes in expiration)
  
- Pressure Support/ Volume Guarantee (standard or optional)
  - It should be possible to give leakage adapted inspiratory trigger during pressure support to spontaneously breathing patients with a set volume guarantee.
  - Volume guarantee should be regulated with lowest possible airway pressure within a set PIP.
  - It should be possible to adjust the Volume Guarantee manually as per patient requirement

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**TECHNICAL SPECIFICATION FOR “HIGH DEFINITION/RESOLUTION” PAEDIATRIC VIDEO GASTROSCOPE SYSTEM**

The Endoscopy system must be Suitable to produce High Resolution & High Magnification Images of GI Tract with ability to detect early cancers and pre – neoplastic lesions by optical image enhancement system.

“The system must have the facility to provide the images with optical chromo endoscopy by using NBI/SPIES or similar technology”.

**Pediatric Video Gastroscope** – Should have

- Ability to produce High Resolution true color video images
- 8x magnification for optimal diagnostics
- 2x electronic zoom
- Ergonomic control body for fatigue free working
- Excellent Deflection
- Recessed air / water nozzle with directional flow channel for effective irrigation of optics

**Technical Specification**

Sheath Diameter	Not more than 5.9 mm
Working channel diameter	2 mm or more
Working length	110 cm or more
Deflection of distal tip(up – down)	210° – 100°
Deflection of distal tip (left – right)	120° - 120°

**HIGH DEFINITION VIDEO PROCESSOR**

**Special Features:**

- **System should be on High Definition platform , Max resolution 1080p**
- Should provide full screen image with wide angle.
- Fully compatible to the color systems PAL & NTSC
- Individual contrast and brightness adjustments in 3 levels
- Automatic control of Xenon Light Intensity
- Digital Zoom Function
- **Should have USB interface at front panel for Image & Video storage & rear for compatible USB Printers**
- **Should have variety of output connections option (HD-SDI, RGB, DVI, S-Video and composite etc.)**

*M/19/19/2014*



## XENON LIGHT SOURCE

XENON light source should be easy to operate and offer outstanding light delivery in compact design.

Required Features:

- Optimal light delivery
- Excellent brightness with daylight spectrum
- Individually adjustable luminous / light intensity
- Lamp Life cycle indicator
- Easy lamp replacement
- Integrated insufflations pump with minimum 3 output levels

**Monitor: System should be supplied with a 19" High Definition Medical Grade Monitor (LED / LCD) Max Resolution 1280 x 1024**

## Suction Machine

The Machine should offer quiet, low vibration operation, thus creating a pleasing environment for carrying out examinations and facilitating stress-free, concentrated work.

Should have

- 1- High suction capacity of 30 liters/minute
- 2- Maintenance free cylinder and piston system
- 3- Hydrophobic bacterial filter to protect the pump
- 4- Easy to clean

Technical data:

Suction capacity: 30 liters/minute

Vacuum: up to 85kPa, up to 640mmHg

Line voltage: 115VAC, 50/60Hz  
230VAC, 50/60 Hz

Dimensions: 345mm x 245mm x 282 mm (HxWxD)

Weight: Not More than 7Kg

Protection Class: Protection class I; BF; IPX I

## Equipment Cart

Should be from the same endoscope manufacturer company (Mother Company) and have following specifications-

Equipment cart, rides on 4 antistatic dual wheels, 2 equipped with locking brakes (front), 3 fixed shelves, 1 with handles, mains switch in vertical beam, 1 drawer unit with lock, integrated cable conduits in both vertical beams, 1 set of non-sliding stands for units, double rear panel with integrated electrical sub distributors with 12 sockets, holder for power supplies, potential earth connectors and cable winding on the outside, 1 camera holder, 2 equipment rails sidewise, 2 handles sidewise  
Dimensions: Equipment cart: 530 x 1455 x 645 mm (w x h x d), shelf: 430 x 480 mm (w x d), caster diameter: 125 mm.

**THE SCOPE, HIGH DEFINITION VIDEO PROCESSOR, XENON LIGHT SOURCE, SUCTION MACHINE AND TROLLEY SHOULD BE FROM THE SAME COMPANY**

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19/9/2014



## Pre-tendering Specifications for Pulse-oximeter

- Should be minimum 6" High-resolution color backlit LED screen
- Should have capacitive touch keypad
- Should display SpO2 values, PR value, plethysmograph along with perfusion level indicator.
- Should display online short trend for at least an hour
- SpO2 Range 1-100 %
- Should use standard Nellcor / Masimo technology
- Alarm Limits : SpO2 50-95 % (Low), 55-100% (High)
- Adult to neonatal applications.
- Should have minimum 70 hours of graphical and tabular trends with zoom facility.
- Should have 3 priority graded alarm system
- Should have advanced Alarm management system for reducing Nuisance Alarms
- Should have tone variation indication with change in SpO2
- Alarm recall facility to view minimum last 15 alarms should be possible
- Should be mains and battery operated
- Should have battery backup of minimum 4 hours
- Should be Light weight with weight less than 2 Kgs.

### ***Should be supplied with:***

Reusable SpO2 finger sensor and extension cable

  
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## Technical Specification for Radiant Warmer

1. Should have an integrated radiant warmer with Smart Swivel to keep heat always focused on the baby , Baby should still be in focus of the warmer, even when radiant heater is swivelled to the side for procedures. Warmer specifications should be as below:
  - a. Radiant power at a distance of 80 cm should not be more than 10 – 30 mw/cm<sup>2</sup>
  - b. 2 infrared ceramic radiating elements
  - c. Should have an integrated procedure light (20 – 25 W ) and a night lamp ( 7 – 10 W)
2. Should have warmer integrated on trolley and control panel for settings and messages
3. Should have Chassis with 4 castors, 2 of which are lockable
4. Integrated X Ray Tray – can be standard or optional
5. Tilting should be smooth and should be from +20 Degrees to – 15 Degrees
6. Height adjustment should be through two footswitches with smooth jerk free movement
7. Weighing Scale display unit - can be standard or optional
8. Should have Accessory mounting rail, should also have swivel drawers for easy accessibility - can be standard or optional
9. Control Panel should have built in self test when switched on. It should have :
  - a. Manual Temperature control to set temperature regardless of core temperature
  - b. Servo / Baby mode – warmer output automatically adjusted according to temperature difference between skin temperature and desired value
  - c. Alarms for deviations in temperature of  $\pm 0.5^{\circ}$  Cent.
  - d. Text message to appear in the text display, if there is any alarm.
  - e. Central Large alarm with audio for deviations in temperature Measurement of central and peripheral temperature
  - f. Continuous measurement with Large easy to read display
10. Integrated Phototherapy unit (optional) in same unit as warmer
11. Physical dimensions should not be more than 131.5 cm (L) x 75 cm (W) x 189 - 221 cm (Variable Height)

  
19/9/2014

12. Warmer should confirm to relevant EN standard for Electrical Safety and should have European CE and US FDA approvals

13. Standard scope of supply must include :

- a. Warming Unit
- b. Skin servo mode
- c. Alarm facility with thermo monitoring
- d. In Built scale (optional) which should be easily integrated
- e. Bed tilt facility
- f. X Ray Tray
- g. Integrated RS232C output
- h. Temperature probes – reusable or disposable.

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## Syringe pump specification

It should have manual and automatic loading of syringe

It should be sleek and light.

It should work on mains as well as internal rechargeable battery back up upto 10 hours and external DC

Freely Stackable: Users can freely stack one syringe pump onto another to provide multiple Solutions, which have a wide range of clinical applications.

Stackable to be the maximum 8 channels.

Three working modes: rate mode, time-volume mode, dosage-weight mode.

Large LCD screen displays working status.

KVO and Bolus functions.

Has drug library with more than 500 drugs

With 2000 infusion records.

Automatic Syringe detection

2/3, 5/10, 20/30, 50/60 ml syringe compatible

Anti Bolus capable

Flow rate from 0.01 ml / hr onwards to 1500ml/hr.

Drug Dose Calculation

It should have facility of PCA patient controlled analgesia

Should be microprocessor controlled and splash proof design

It should have front loading system

It should have audio and visual alarms for following

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19/9/2017



- a. infusion end
- b. low volume
- c. occlusion
- d. KOR (KVO)
- e. power failure
- f. end of standby
- g. system error
- i. preventive maintenance alarm

 19/09/2014

# Thermometer specifications

- Water Resistant
- Memory & beeper
- Both for adult & children
- Safe, fast, clinically accepted
- Oral, Rectal or underarm use
- Automatic shut off
- Last Reading Recall
- Buzzer Notification
- Probe cover
- Readings -°C, °F (32°C -42°C)
- Warranty Duration 6 month(s)

## Device specifications

Display- LCD

Type- digital

Battery- Lithium Ion Button Battery

 17/09/2014

## Ultrasound color Doppler specification

1. Fully articulating virtually flicker-free 15-inch high-resolution flat panel LCD display, and fully articulating control panel, can be raised, lowered, and rotated.
2. System should at least 230 dB full times input dynamic range.
3. System should perform on imaging modes like: 2D, anatomical M-Mode, M-mode, Color Flow, PW, CW, HPRF, Steerable CW and Directional Color Power Angio Facility, intelligent Doppler, adaptive Doppler, adaptive color Doppler, one button optimization for 2D and Doppler modes, Auto Doppler Calculation taking the entire sample acquired.
4. The system should be capable of supporting the Extreme Resolution adaptive image processing technique that performs analysis at the pixel level.
5. The system should support - General imaging, Cardiology, Vascular, Urology, applications for pediatric patients.
6. System should be capable of supporting to Stress Echo, contrast imaging, tissue Doppler imaging, trans - esophageal application in case required for future upgrade.
7. Slide pot TGC & gain optimization in the lateral walls (LGC) with pre-defined curves, Triplex Imaging.
8. System should have maximum scanning depth of 30 cm.
9. System should be capable of producing 300 frames per second in B-mode.
10. System should have cine loop image review up to 400 frames and should have dual loop facility for simultaneous full screen left & right display.
11. Simultaneous real time display Angio/Color Doppler and Gray scale images side by side.
12. System should have minimum 4 active transducer connectors.
13. System should have at least 500-gigabyte hard drive.
14. System should have on board management of direct digital storage, and print option though in-built B&W thermal printer.
15. Following broadband probes to be offered
  - a. 5 to 8 MHz small scan head curved array transducer for dedicated pediatric abdominal/general imaging applications, and should support pediatric cephalic scan.
  - b. 3-12 MHz linear array transducer for Vascular, small parts, musculoskeletal, regional anesthesia, and acute care applications
  - c. Phased array transducer with 3 to 8 MHz extended range for pediatric and neonatal cardiac applications.
16. All these to be supported with product data sheet
17. System should be certified by USFDA
18. System should be supplied with online UPS & B/W thermal printer

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Technical Specifications for Ultra Sonic Nebulizer for tender

Ultrasonic Nebulizers and not atomizers, should not use pump air to atomize the medicine. Ultrasonic source for nebulization of liquids for inhalation therapy. The working mechanism should involve ultrasound waves to touch to the surface of the liquid (e.g. medicine, water) and merge the liquid into micron size sub particles. To increase therapy efficiency, because of the even distribution of the particle sizes. Doctors should be able of plan nebulisation as treatment with machine. Latest generation Ultra Sonic nebulizer with following added features

- 1 Intensity Controller to control intensity of mist
- 2 controlled volume of mist & Jet Nebulization in trauma cases
- 3 Timer for 1hour so treatment can be planned with continuous mode also
- 4 Facility to attach Oxygen Cylinder
- 5 Big medicine cups of 350ml to treat multiple patients on same drug
- 6 Can work from 3 ml with practically no wastage
- 7 should be connected to ventilators
- 8 Unit should be table top as well as portable working on multiple power sources like Electricity, Solar power, Ambulance Battery, Car Battery
- 9 Unit should be supplied with manual with circuit diagram, Mask, mouth connector for nebulization by mouth, nasal connector for nebulization through nostrils, extension non latex pipes, spare fuses
- 10 Noise level less than 30dB
- 11 Ultrasonic and not piston or diaphragm Ultra sonic Frequency 1.7 MHz
- 12 Droplet/micron size should be less than 1.5µl Weight Not more than 3Kg
- 13 Nebulization 2ml/min. with facility for Jet Nebulization under high intensity to acute and Trauma cases
- 14 ISO, ETC (Govt. Of India) CE / FDA certified trademarked product for authenticity of supply
- 15 Guarantee /Warranty for two years with service and spares available for next 6years
- 16 Should be supplied with circuit so as to connect Oxygen Cylinder to Nebulizer so controlled Nebulization and controlled Oxygen can be given at the same time
- 17 Rates for Nebulization Kit ( 2 Nos Latex Pipes with Connector, Mask adult & pediatric, and mouth connector for nebulization by mouth), Ultrasonic Crystal & Medicine cup should be separately quoted

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## Vein light specifications

1. powerful LED lights
2. smaller and more portable
3. cool lights are strong enough to illuminate the hardest to find veins without the risk of burning the baby

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# Weighing machine specification

## For Neonate

It should be light weight and portable

Weighing range should be 0 to 10kg

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19/08/2014

# **X ray box specifications**

**Triple Screen LED X-Ray Viewer**

**Latest LED backlight technology**

**Should light immediately**

**Initial brightness can be set**

**Easily dimmed**

**Silent operation**

**Low-voltage power supply (increased safety)**

**Film activated switch, automatic shutdown if no film inside for 2 sec**

**12 step digital dimmer to get the perfect brightness**

**Technical specification**

- 1. Light source-LED**
- 2. Power supply input- AC100-240V 50/60Hz**
- 3. Brightness (LUX)- 5,500**
- 4. Net Weight (Kgs)- 12.4**
- 5. Dimensions (mm)- Frame (L x H x T)- 1255 x 503 x 29 mm  
Viewing Area (W x H)- 1112 x 440**
- 6. Power Consumption- 45W**

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