ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ವೈದ್ಯಕೀಯ ಶಿಕ್ಷಣ ನಿರ್ದೇಶನಾಲಯ
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No. ME/TENDER/20/2021-22. **Dt. 01/01/2022**

"ನೋಟಿಸ್"

ಕೋವಿಡ್–19 3ನೇ ಅಲೆ (ನೋವೆಲ್ ಕೊರೋನಾ ವೈರಸ್) ಸಾಂಕ್ರಾಮಿಕ ರೋಗದಚಿಕಿತ್ಸೆ ಸಲುವಾಗಿ ಅಗತ್ಯ ವೈದ್ಯಕೀಯ ಉಪಕರಣಗಳನ್ನು ಕೆಟಿಪಿಪಿ ಕಾಯ್ದೆಯ 4ಎ ಅಡಿಯಲ್ಲಿ ಖರೀದಿಸಲು ತೀರ್ಮಾನಿಸಲಾಗಿದೆ.

ವೈದ್ಯಕೀಯ ಉಪಕರಣಗಳ ವಿವರಗಳನ್ನು ಈ ನೋಟಿಸ್‌ನೊಂದಿಗೆ ಲಗತ್ತಿಸಿದ್ದು, ಸದರಿ ಉಪಕರಣಗಳಿಗೆ ಕೆಳಕಂಡ ಷರತ್ತು ಮತ್ತು ನಿಬಂಧನೆಗಳನ್ನು ಪೂರೈಸಿ ಅರ್ಹರಾದಲ್ಲಿ ಆದೇಶ ಪಡೆದ ನಂತರ ಕೂಡಲೇ ಸರಬರಾಜು ಮಾಡಲು ಸಾಧ್ಯವಾಗುವಂತಹ ಸರಬರಾಜುದಾರರು ದಿನಾಂಕ:–03/01/2022ರ 3.00 ಅಪರಾಹ್ನ ಒಳಗಾಗಿ ಅಗತ್ಯ ದಾಖಲೆಗಳೊಂದಿಗೆ ಈ ಕೆಳಕಂಡಂತೆ ಸಲ್ಲಿಸಲು ತಿಳಿಸಿದೆ.

Supplier shall fulfill the below mentioned Terms & Conditions and also should submit the required documents/proof without fail:

SlNo	Description	Remarks
1	Hard Copy Technical Documents	1. Shall be submitted on or before 03.01.2022 3.00 PM 2. Hard Copy Technical Documents shall be submitted to Personal Section, Directorate of Medical Education, Anandrao Circle Bangalore
2	Financial Bid	1. Shall be submitted through email to dmekarnataka@yahoo.com on or before 03.01.2022 3.00 PM only
3	Technical Documents to be submitted compulsorily, failing which bid will not considered.	1.Manufacturer License in case of manufacturer 2. Manufacturer Authorization in case of authorized distributor 3. Stock Availability Declaration 4. Service Center in Karnataka 5. Technical brochure 6. Technical Compliance Sheet 7. Warranty for 3 years undertaking letter from the manufacturer for the unit price quoted 8. List of items quoted. 9. Supply details of similar equipment in last three years 10. Atleast 5 purchase order copies received in last three years from other Govt or reputed pvt hospitals for the same equipment. 11. Warranty of all equipment shall be three years and CMC for 7 years shall be quoted seperately.

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List of Required Equipment's

PICU/NICU/HDU(STEP DOWN)	
Sl. No	**Equipment / Consumables Name**
1	Ventilator (Paediatric and Adult Mode)
2	Ventilator (Neonate and Paediatric)
3	Bubble C PAP
4	Defibrillator
5	Bilurubinometer
6	Oxygen Flowmeter
7	Portable X-ray Machine
8	Infusion Pump
9	Multichannel Monitors with NIBP with Different Cuff
10	Resuscitation Kit Paediatric
11	Ambo Bag - Different Sizes
12	Laryngoscope - With Different Blades and stright and curved
13	Resuscitation Kit Adult
14	Nebulizer
15	ECG Machine
16	Thermo Scanner
17	Paediatric Stethoscope
18	ICU Cots
19	Medicine Trolley
20	Syringe Pump
21	Patient Trolley
22	BP apparatus Paediatric / NeonatalCuff
23	Ophthalmoscope
24	Transport Ventilator
25	Finger Pulse Oxymeter
26	Oxygen Hood
27	Radiant Warmer
28	Phototherapy
29	Crash Cart
30	Portable Ultrasound with Echo
31	ABG
32	Otoscope
33	Wheel Chairs
34	Video Laryngoscope
35	X-Ray View Boxes
36	Suction jar
37	Transport Incubator with ventilator
38	Cots (Semifowler)
39	Mobile DR System
40	CT Scan 128 Slice
41	1.5 T MRI Equipment

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TECHNICAL SPECIFICATIONS

1. VENTILATOR(PEDIATRIC AND ADULT)

- Principle – Time cycled, volume constant, pressure controlled ventilator suitable for use with both high pressure and low pressure Oxygen sources.

- Use and application –
    - The ventilator should be suitable for use in Adult and Paediatric patients in all critical care areas with selection between adult and paediatric modes .
    - The ventilator should have both invasive and non invasive ventilation modes. Non invasive ventilation should be possible in all modes from control to spontaneous.
    - The ventilators should be an upgradeable design with software and / or hardware upgradeability for new/future functions.

- Power – The ventilator should run on both mains and battery as below :
    - Mains Power – 230 V 50 Hz with onscreen battery power indication
    - Battery – Internal battery with minimum 45 minutes to one hour battery backup with onscreen battery power indication.
    - The batteries – internal and /or external - should also power the air source.

- Air Source - Integrated internal air source turbine
    - For delivering continuous flow upto 180 lpm in all control modes
    - For delivering continuous flow upto 250 lpm in spontaneous breathing mode with pressure support
    - If internal air source, 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 / HEPA filters for delivering medical grade air should be integrated in the air source
    - The air source should have a mean time between failure / life of 8 years with no restriction on the number of hours of operation during these 8 years. The same should be committed in writing or proof of same to be given in writing.

- Graphical Interface – All commands and settings should be through an integrated 12 inch colour touchscreen. The 12 inch display should show :
    - At least 3 filled curve from pressure, flow, volume or Capnography (optional) for easy viewing at a distance.
    - Any loops from PV, FV, PF should be displayed in any combination such as:
        - waveforms + loops
        - single loop on screen
        - waveform + loops + trends
    - It should be possible to freeze the loops and calculate inflection points with a cursor and keep a reference point for loops
    - Integrated Graphical and tabular trend for 24 hours should be available for monitored parameters
    - There should be a day/ night mode for easy viewing at night.
    - The numerical readings should be freely configurable as per user wish in ANY order

- Valve response time –
    - 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)

- Nebuliser
    - 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.

- Oxygen Cell
    - The ventilator should have low operating costs with a permanent/ non consumable O2 sensor for FiO2 monitoring. Same should be offered as standard.
    - In case consumable/ electrochemical O2 cells are offered by a vendor, same should be provided free of charge for operational lifetime of equipment for 8 years.

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 5 No.s flow sensor should be supplied for the lifetime of the equipment.

- Disposables - 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.

- Suction / Oxygen enrichment –

    - 100% O2 enrichment for 3 minutes with automatic time countdown
    - Disconnection detection

- Modes of Ventilation - 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
        - should be adjustable above the set PEEP.
        - Automatically available every 3 minutes for 2 breaths
        - Adjustable 0 – 20 cmH2O above 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 Dual Control Mode for :

        - delivering tidal volume at lowest possible airway pressure
        - should be possible to combine in all volume control modes
        - **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 200% 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.
    - Airway Pressure Release Ventilation (Optional)
    - MMV or equivalent Volume mode for one volume controlled mode from intubation to extubation ; combined with or without Pressure Support and AutoFlow (Optional)
    - Inspiration Hold key for maximum of 15 seconds
    - Expiration Hold for Maximum of 15 seconds / Intrinsic PEEP manoeuvre with trapped volume measurement

Should have BTPS compensated settings for:

Tidal Volume in Volume modes	20 ml to 2000 ml.
Inspiratory Pressure	1 – 99 cmH2O
CPAP/PEEP /Intermittent PEEP	0 – 50 cmH2O
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 – 50 cmH2O above PEEP
Inspiratory hold	0 – 15 sec
Expiratory hold	0 – 15 sec
Sigh (Pressure oriented)	0 – 35 cmH2O, every 3 minutes for 2 cycles
FiO2	21 - 100%
Apnoea alarm timing	15 – 60 seconds
Automatic altitude compensation	700 – 1060 hPa/ mbar/ CmH2O/
Sigh pressure	0 – 20 CmH2O above PEEP
Inspiration termination Criteria	5 – 75% of Peak Inspiratory Flow

Should have BTPS compensated real time monitoring of:

- Pressure - Peak, Plateau, Mean, CPAP/PEEP
- Intrinsic PEEP with trapped Volume (standard or optional)
- Tidal Volume - Set (Inspired) , Monitored (expired), spontaneous
- Minute Volume - Total, spontaneous, leak
- Peak Flow, Plateau time
- Frequency/ Rate - Set (Inspiratory), Spontaneous, total, I:E Ratio
- FiO2 measured
- Airway Temperature (if active humidifier is used)
- Lung Mechanics - Resistance, Compliance, Rapid Shallow Breathing Index (RSB)
- Capnography (Optional)
  - Capnogram
  - Mainstream sensor
  - ETCO2, dead space calculation

- 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
  - High / Low ETCO2 (optional)
  - Apnoea / apnoea alarm time
  - High/low O2 % (automatic settings)
  - Oxygen line failure
  - Technical error (with error code)
  - Incorrect / abnormal settings – with warning message

Scope of supply should include

- Basic Unit (220 - 240 V) with integrated 12 inch touch screen and integrated 3 hours internal battery to power internal turbine / air source
- Modular corrosion free Trolley
  - should be imported , of same make as the quoted brand and no local substitute will be accepted/ should be offered.
  - Should have mounting facility for humidifier (if humidifier is supplied)
- Heated Flow sensor - 5 no.s
- Reusable autoclavable expiratory valve - 2 No.s (1 on machine and 1 on standby)
- O2 cell – should be non consumable and life long
- Oxygen connecting Hose – 3 meters
- Nebuliser – pneumatic , inspiration synchronised
- 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 and 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.

2. VENTILATOR (NEONATE)

 Advanced microprocessor based continuous flow , pressure limited, time cycled ventilator for very low body weight infants (premature, newborns) and/ or paediatrics based on ideal body weight input setting on start-up

 Should have high flow oxygen therapy, non-invasive, invasive and Upgradable to high frequency ventilation for use on premature, neonatal and paediatrics patients.

 Should have mains/battery operation with battery operation of 30 minutes. Upgradagble to Additional **battery backup upto 2 hours - integrated**

 Should be a modular design with upgradeable hardware and software functions

 Ventilator should have integrated device self check with user prompt via screen messages

- o for determination and display of system compliance
- o inspiratory and expiratory resistance
- o leakage of patient hose system
- o checking of valves, gas supply system, flow sensors, expiratory valve

 Should have inbuilt 15-inch TFT colour touchscreen with user configurable display and 360 degree view rotation (if required you can also add - detachable 15 inch touchscrreen display with 1 metre cable for external mounting - eg in infectious / isolation / Covid room as below:

- o Upto Three filled curves for easy viewing from a distance with 1 or 2 loops / graphic trends at same time
- o Pressure, Flow, Volume curves as standard and Capnography as optional curve If upgraded (for pediatric patients only)
- o Smart Pulmonary View (optional) – for quick intuitive understanding of patient condition based on graphical display of lung condition
- o Upto three user configurable screen layouts as per customer requirement in combinations of user preferred numerics and graphics

 The ventilator should be supplied with heated servo-controlled NON PROPREITARY humidifier (like MR850) with suitable hoses for high flow oxygen, invasive, non-invasive and high frequency ventilation.

 Flow sensor :

- o The flow sensor should be of heated wire type for higher accuracy.
- o It should calibrate quickly within 5 seconds and data should be measured at proximal end, near the Y piece.
- o It should be easily replaceable without disassembling the machine or disassembling the expiratory valve
- o At least 5 No.s flow sensor should be supplied for the lifetime of the equipment.

 The ventilator should have following standard ventilation modes as below:

- o Pressure Controlled – Control, Assist, SIMV
- o CPAP
- o Pressure Support Ventilation
- o Volume Guarantee for providing accurate Tidal Volume within set pressure. Possible to combine as below:

 Control Modes: PC-AC+VG, PC-SIMV+VG

 During HFOV (HFOV + VG)

- Spontaneous breathing (CPAP + VS)
  - Apnea Backup Ventilation with Automatic Return
  - Sigh controls as follows :
- Pressure Sigh with Variable Intermittent PEEP from 0 – 25 cmH2O
- Time Interval adjustable from 20 sec to 3 hours
- Adjustable no. Of sigh cycles from 1 – 20
- PC-MMV mode – with or without VG

- Optional Modes of Ventilation / Upgrades should be provided for following modes of ventilation:
- PC-APRV mode with Auto Release
- HFOV with or without VG – in same machine without disconnecting
- Proportional Pressure Support
- Capnography (for pediatric patients)
- Automatic Tube Compensation (ATC)

- Special procedures to be available such as :
  - Suction Mode – % O2 delivered during in line suction to compensate for drop of FiO2 with pre programmed user adjustable FiO2 %
  - Manual Inspiratory Hold
  - Inbuilt Nebulisation – inspiration synchronised , volume compensated; to be supplied as standard scope of supply with adjustable time intervals of 5,10,15,30 minutes
- There should be automatic :
  - Leakage compensation
  - Device and hose compliance
  - Device and hose resistance
  - Compensation of flow and volume measurements related to ET Tube leakage

- Should have settings for :

Tidal Volume (in Volume Guarantee) 2 – 20 ml (Neonates) and 20 – 300 ml (Pediatrics)
Peak Inspiratory Pressure 1 - 80 cmH2O
PEEP 0 – 35 cmH2O
Inspiratory Time 0.1 – 3 sec
Rate 0 - 150 bpm
Inspiratory flow 2 – 30 lpm
Slope control/ Rise Time 0 - 2 sec.
FiO2 (integrated blender without bleed flow) 21 - 100%
Flow Trigger 0.2 – 5 lpm
O2 flow (O2 therapy) 2 - 50 lpm with FiO2 from 21 – 100%
Automatic altitude compensation with automatic calibration 700 – 1060 hPa/ mbar/ CmH2O/

- 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, P min (Minimum airway pressure)
  - Volume – Total Minute Volume, Spont. MV, Inspired Tidal Volume, Expired Tidal Volume, Spontaneous Tidal Volume,
  - Leakage - Leakage MV, Leakage as %
  - Frequency/ Rate - Set (Inspiratory), Spontaneous , total

- o FiO2
- o ETCO2 (optional - for pediatrics)
- o Lung Mechanics - Resistance, Compliance , C20/C, Time constant Tc, RVR, NIF, RSBI , P.O1
- o Integrated short term and long term graphical trend of all monitored data with duration from 2,4,8,12,24 hours upto**15 days**
- o Integrated alarm log of upto 1000 events on First in First Out basis; data export through USB port should be possible

 Should have automatic alarm settings for all alarms with clear text messages/ corrective action for:

- o Disconnection
- o Tube blocked
- o Ventilation hose kinked
- o High/low Pressure
- o High/low Minute Volume
- o High Rate
- o High Tidal Volume
- o Apnoea / apnoea alarm time
- o High/low O2 % (automatic settings)
- o Oxygen line failure
- o Compressed air failure
- o Total electronic failure (with error code)

 Scope of supply should include

- o Basic Unit (220 - 240 V)
- o Modular corrosion free Trolley - should be imported, of same make as the quoted brand and no local substitute will be accepted/ should be offered.
- o Servo controlled humidifier with reusable chamber
- o Heated Flow sensor - 5 no.s
- o Permanent O2 cell; if consumable same should be supplied for lifetime of machine
- o Reusable heated Hose set for use with neonatal patients (conventional and HFV).
- o Nebuliser – pneumatic , inspiration synchronised and volume compensated
- o Oxygen connecting Hose – 3 meters
- o Air connecting Hose – 3 meters
- o 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
- o Integrated RS232C Interface
- o Neonatal test lung with variable compliance and resistance
- o Instruction Manual

Quality Standards and Support requirements –

The offered unit should have CE or FDA certificate

EN ISO 9001, EN ISO 13485

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

3. BUBBLE CPAP

- Suitable for treating newborns with respiratory distress weighing 500gms to 5000gms.
- CPAP pressure with oscillations should be generated by creating resistance in water column and bubbling of exhaled gas in the water column.
- The system should be suitable for both CPAP and high flow nasal cannula therapy.

Humidifier

- It should have servo controlled heated humidifier with following features :

Temperature and flow sensor with feedback mechanism.

Monitoring temperature of gas at chamber end and near patient end additionally temperature of airway, chamber and heater plate.

Display for temperature of saturated gas.

Modes: intubated and mask mode.

Alarms

- High temperature and low temperature.
- Water out alarm / POP off pressure adjustment.
- Heater adaptor faulty/ disconnect.
- Temp cum probe faulty / disconnect.
- Hardware faults.

Delivery system

- The patient heating circuit should have integrated spiral heated coil for uniform heating.
- The delivery system should have Maximum Input Flow- 15L/min and maximum mean CPAP- 15cmH20.
- Humidification chamber should be auto feed with dual float system
- Chamber Compressible volume 260- 300 ml
- Max peak flow should be 180ltr/min.
- CPAP Bubble generator should have adjustable probe for pressure settings 3-10 cm of H20.It should have detachable overflow container to maintain constant water level. Volume for generator ~ 500ml.
- The system should have safety mechanism with pressure relief valve and ports for pressure and Fio2 monitoring. Pressure relief should be 17 cmh20 and above @8L.

- System should be compatible to wean babies to HFNC without having the need to change the circuit.
- Should be CE/FDA Approved

Interface

- Nasal prongs/ masks of silicon of at least 3 different sizes useful for babies weighing between 750-1250g, 1250-1750g, 1750-2000g, 2000-2500g. Where the resistance to flow at pressure port of nasal tubing should be 0.4 cm H20, 0.6cmH20 or 0.2cm/H20.
- Flexible nasal tubing with glider technology from block and fixing guide with sizes ranging from 50mm to 100mm where resistance to flow should be 0.49cm/H20,0.53cm/H20, 0.55cm/H20 respectively flow of 6 lit/min.
- Infant caps of following sizes: 17-22, 22-25, 25-29, 29-36cm Circumference.
- Nasal cannula of preterm and term sizes. Cannula should be kink proof and have hydrocolloid based adhesive to secure on skin and facilitate kangaroo mother care.
- Nasal masks suitable for preterm and term babies.
- Nasal masks should be interchangeable to nasal prongs.
- The mask should be soft and anatomically shaped.

4.DEFIBRILATOR

1. The machine should have facility for ECG Monitoring, Defibrillation external, transcutaneous pacing, AED, & in-built recorder.

2. Machine should be a low energy biphasic defibrillator with recorder, having facility to monitor vital parameters such as ECG, Heart rate.

3. Should work on manual and automated external defibrillation (AED) in Bi-phasic mode. The maximum energy delivered by the device should be at least 200J or more.

4. Should have manual disarm and automatic disarm facility.

5. Should monitor ECG through external paddles and monitoring electrodes and defibrillate through external paddles.

6. Should have high power backlit 6.5 inch or more LCD display that provide clear visibility for even under strong daylight.

7. Should have display of at least 4 waveforms of various monitoring parameters and their numerical data.

8. System should have instant boot up time, less than 5 seconds.

9. Should have easy operation of all functions through single rotary knob.

10. Should have external paddles with paddles contact indicator- for good paddle contact. Single adult and pediatric/Neonate paddles should be available.

11. Should have compensation for chest impedance for a range of 25 to 150 ohms.

12. The unit should be capable of doing synchronized and synchronized Cardio version.

13. Disposable pads should have the noiseless function to reduce the noise during CPR

14. Should have facility to analyze Continuous patient electro cardiogram in the back ground on AED mode after attaching the pads to the patient.

15. Should have Fixed and Demand mode for External Pacing with pacing width of 40ms for efficient pacing.

16. Should have fast charging time, charging 200J in 5 seconds or less on both mains & battery.

17. Should have a battery capable of giving 100 discharges of maximum energy or 150 min continuous monitoring.

18. The machine should have charge and discharge button on front panel & paddles.

19. The machine should be compact, portable with built in rechargeable battery, weight of the total machine should not be more than 7 Kg.

20. Should have indicator to display status of daily and monthly self-test results.

21. The machine should have in built recorder for printing ECG trace & stored information.

22. The machine must have capability for providing internal defibrillation shocks. The internal paddles of different sizes for adult and pediatric /neonate patient should be available (Price to be quoted separately).

23. The machine must be onsite upgradeable to vital sign parameter such as mainstream EtCO2, SpO2 and NIBP.

24. The machine should have user selectable alarm settings.

25. Should display alarm message and have alarm indicator on top of the machine to view from distance the alarm type and patient condition

26. After defibrillation, the ECG waveform must recover within 5 seconds for immediately checking the result of defibrillation.

27. The machine must have AED with voice prompt facility.

28. The machine should work on mains as well as on rechargeable battery.

29. The battery charging time should be less than 4 hours to full charge.

30. It should have facility to store patient data and review data on SD Card/USB.

31. The machine should be onsite upgradeable to mainstream EtCO2 that can be use on both non-intubated and intubated patients. (Price to be quoted separately).This need to be demonstrated.

32. Adult SPO2 sensor with connectivity. (Price to be quoted separately).

33. Machine must be vibration resistant, it should meet MIL-STD-810F 514.5 Category 4 for Restrained Cargo ambulance transfer & MIL-STD-810F 514.5 Category 9 for transfer of patient by Helicopter ambulances

34. Machine must be able to operate in extreme environment conditions; it should operate from -5°C to 45°C. And should be highly resistant to water and dust.

35. Should meet IP44 Level for water resistance and Protection against harmful ingress of dust.

36. Should conforms to latest electrical safety standards, such as IEC-60601-2-4, IEC-60601-1-2, ISOISO 14971: 2007, EN 1789: 2007

37. Must be European CE approved product.

38. The machine should be supplied with

a. ECG 3 lead cable with connection cord – 01 No.

b. Disposable pacing pads – 01 No.

c. Reusable pacing connection cable – 01 No.

5. Biliribunometer:

1. Non Invasive Screening device that provides a fast (on spot) objective index of icterus in infants, neonatal patients with a gestational age >24 weeks

2. Hand-held device for outpatient/inpatient usage which is of Pocket size.

3. Shouldn't use any consumables (In case consumables are present , same to be included at no extra charge for 3000 measurements)

4. Should have a Reusable measuring probe, to apply wipe disinfection

5. For measurement of transcutaneous bilirubin (TcB)

6. Jaundice Meter should be of following specifications
    a. Non invasive measurement with no consumables. Should use a light source – preferably pulse xenon arc lamp – to carry out readings
    b. Detectors – Silicon photodiodes
    c. Should be light weigh not more than 210 gm with integrated rechargeable battery
    d. Should be capable of doing at least 250 measurements on a full charge. Battery should be easily rechargeable (2hrs)
    e. Should have a choice of taking readings, between single, 2-5 measurements as an average
    f. Should have an internal memory backup of at least 100 readings
    g. Should have connectivity for electronic medical record (EMR) for data transfer
    h. Should have Large touchscreen display for easily readout, should also display the date on which reading is taken
    i. Should easily mark babies that need special attention with patient flagging
    j. Should provide fast, accurate entry of nurse and patient identification information, barcode scanner can be optional
    k. Should have charging station to check calibration on light wavelength
    l. Should work with all skin colour
    m. Measuring range 0.0 mg/dL to 20 mg/dL. Or 0 – 340 µmol/L

7. Scope of supply
    a. Jaundice Meter
    b. Charging unit with calibration checker
    c. Instructions for use
8. Should have European CE

6.OXYGEN FLOW METER WITH HUMIDIFIER JAR AND CONNECTOR:

BACK PRESSURE COMPENSATED (BPC) FLOWMETER WITH HUMIDIFIER JAR BACK PRESSURE COMPENSATED (BPC) FLOW METER MADE OF BRASS BODY WITH OR WITHOUT HUMIDIFIER WITH POLYCARBONATE BOTTLE IS USED FOR OXYGEN THERAPY.

THE EQUIPMENT CALIBRATION ACCURACY WITHIN ± 5% OF THE SET READING (INTERNATIONAL NORM ± 10% OF THE SET READING) INLET & OUTLET NUT IS MADE LEAK PROOF BY SILICONE O RING BY HAND TIGHTENING.

FLOW INDICATING BALL IS MADE OF STAINLESS STEEL WHICH SPINS STEADILY TO ENSURE EASY READING OF FLOW.

FLOW (L/MIN) 0-15

INCREMENT (L/MIN) 1

FLOAT AISI 316 WIRE MESS

INLET & OUT LET CONNECTION SIZE 3/8” BSP RH (METAL)

FILTER MUST BE THERE

BODY BRASS(CHROME PLATED)

CALIBRATED PRESSURE AND TEMPERATURE ACCURACY 50PSIG(3.45BAR)AT21DEGREEC/60PSIG(4.13BAR)+10% OF THE SCALE VALUE OR 0.2 L/M WHICHEVER IS HIGHER

HUMIDIFIER VALVE SETTINGS 5-7 PSIG

INLET/OUT LET NUT NIPPLE MATERIAL BRASS

THE HUMIDIFIER BOTTLE CAN BE FITTED WITH THE OUTLET OF THE BPC FLOW METER. THE JAR MUST BE MADE OF POLYCARBONATE AND THE CAP IS MADE OF ABS PLASTIC MATERIALS. HUMIDIFIER JAR MUST BE AUTO CLAVABLE MATERIAL.

7.Portable X-ray Machine

100MA MOBILE X-RAY	FULLY INTEGRATED & LIGHT WEIGHT HIGH FREQUENCY MOBILE DIGITAL X RAY UNIT WITH ONE NO. DR PANEL SUITABLE FOR BEDSIDE X-RAYS, TRAUMA, INTENSIVE CARE UNITS, OPERATION THEATRE AND RADIOLOGY DEPARTMENT. THE UNIT MUST HAVE FOLLOWING ESSENTIAL FEATURES: 1. THE UNIT SHOULD BE FULLY COUNTERBALANCED AND CAN BE POSITIONED TO SUIT DIFFERENT BED HEIGHTS. THE UNIT SHOULD HAVE FACILITY OF VERTICAL SWING AND HORIZONTAL ROTATION OF THE TUBE HEAD TO ENSURE X RAY OF ANY ANATOMY EVEN WITHIN LIMITED SPACE. 2. THE ENTIRE SYSTEM INCLUDING THE COMPACT TUBE HEAD (CONSISTING OF X-RAY GENERATOR & X-RAY TUBE), CONTROL PANEL AND WORKSTATION WITH BUILT IN HIGH RESOLUTION DISPLAY SHOULD BE IN A SINGLE UNIT MOUNTED ON WHEELS 3. THE UNIT MUST HAVE FULLY INTEGRATED ACQUISITION WORKSTATION WITH INBUILT 12” QHD (2160X1460 PIXELS) RESOLUTION WITH DUAL TOUCH 10 FINGER CAPACITIVE MULTI TOUCH SCREEN. 4. FULL EXPOSURE CONTROL OF HIGH FREQUENCY GENERATOR, X-RAY TUBE & IMAGING S/W MUST BE FROM THE MAIN CONSOLE. 5. THE EXPOSURE RELEASE SWITCH SHOULD BE DETACHABLE WITH A CORD OF SUFFICIENT LENGTH (AT LEAST 3 M) 6. THE UNIT SHOULD HAVE INTEGRATED CASSETTE BOX WITH LOCK & KEY FOR SAFETY OF DR PANEL / DETECTOR 7. THE WEIGHT OF COMPLETE MOBILE DIGITAL X-RAY UNIT WITH ONE DR PANEL MUST BE LESS THAN 100 KG 8. THE X-RAY GENERATOR: □ MICROPROCESSOR CONTROLLED INVERTER TYPE HIGH FREQUENCY 200 KHZ OR MORE FOR CONSTANT OUTPUT. □ IT SHOULD HAVE POWER RATING OF 4 KW OR MORE □ IT SHOULD HAVE A DIGITAL DISPLAY OF MAS AND KV, BOTH ON THE TUBE HEAD AS WELL AS ON THE MAIN CONSOLE. □ KV RANGE : 40 KV TO 100KV OR MORE □ MA RANGE: 10 MA TO 100 MA OR MORE □ MAS SELECTION: 0.1 TO 250 MAS OR MORE 9. X-RAY TUBE AND COLLIMATOR: A. STATIONARY / ROTATING ANODE HAVING FOCAL SPOT SIZE 1.8 MM OR LESS. B. THE X-RAY TUBE SHOULD BE TOSHIBA OR BEL OR CEI MAKE C. LIGHT BEAM DIAPHRAGM / DOUBLE LAYER COLLIMATOR WITH AUTO CUT OFF SWITCH. THE LIGHT INTENSITY MUST BE AT LEAST 160 LUX AT 1 MTR DISTANCE FROM FOCAL SPOT. D. COLLIMATOR ROTATION - 90° TO +90° MUST BE POSSIBLE 10. FLAT PANEL DETECTOR (ONE NO.): A. DIRECT DEPOSIT CSI SCINTILATOR B. DIMENSIONS (IN INCHES): 14” X 17” C. PIXEL PITCH: 140 µM OR LESS D. PIXEL MATRIX: 3072 X 2476 OR MORE E. ACTIVE AREA (CSI): 424 X 339 MM OR MORE

	F. IMAGE QUALITY: DQE @ 0 LP/MM – 78%, DQE @ 1 LP/MM – 58% G. WEIGHT: 3.2 KG OR LESS H. COMMUNICATION: WIRELESS INTERFACE 802.11 A/G/N/AC (2.4 GHZ / 5 GHZ) I. EXPOSURE CONTROL: ENHANCED AUTOMATIC EXPOSURE DETECTION (AED) 11. ACQUISITION WORKSTATION: A. MUST BE FULLY INTEGRATED WITH THE MOBILE X-RAY UNIT. B. 12” QHD (2160X1460 PIXELS) RESOLUTION LCD DISPLAY WITH DUAL TOUCH 10 FINGER CAPACITIVE MULTI TOUCH SCREEN C. MUST HAVE FULL EXPOSURE CONTROL OF GENERATOR & IMAGING S/W FROM CONSOLE D. FULLY LOADED WITH DR SOFTWARE FOR IMAGE ACQUISITION, MANAGEMENT AND PRE/POST IMAGE PROCESSING. E. COMPATIBLE WITH PACS /HIS, READY FOR DICOM PRINT AND STORE. F. SHOULD PROVIDED A 500 DPI TWO TRAYS DRY LASER PRINTER / IMAGER – 1NO . G. HARD DISK STORAGE CAPACITY - MUST BE ABLE TO STORE 1000 OR MORE IMAGES OF 1024 X 1024 MATRIX H. SHOULD HAVE QUICK PREVIEW: RAPID DISPLAY OF IMAGES AND SPEEDY DISPLAY OF IMAGES TO REDUCE EXAMINATION TIME. 12. THE COMPLETE UNIT SHOULD OPERATE ON SINGLE PHASE POWER SUPPLY AND SHOULD HAVE PLUG IN FACILITY TO ANY STANDARD WALL OUTLET WITH AUTOMATIC ADAPTATION TO LINE VOLTAGE 200 TO 240 VOLTS, 15 AMP PLUG. 13. THE LEAKAGE RADIATION LEVEL AT 1 METER FROM THE FOCUS SHOULD BE LESS THAN 50 MR. PRODUCTS HAVING MINIMAL LEAKAGE RADIATION LEVEL WILL BE PREFERRED. (PLEASE ATTACH RELEVANT TEST REPORT) 14. THE MODEL OFFERED MUST HAVE EUROPEAN CE CERTIFICATION. 15. SHOULD BE AN AERB APPROVED PRODUCT. 16. USER/TECHNICAL/MAINTENANCE MANUALS TO BE SUPPLIED IN ENGLISH. NOTE: STANDARD WARRANTY OF SYSTEM SHOULD BE 3 YEARS AND SHOULD QUOTE FOR 7 YEARS FOR CMC .

9. Infusion Pump

1. Should have flow accuracy of ±5%
2. Should have infusion rate range from 1 ml/h to 1200 ml/h
3. Power: AC with battery back-up of at least 5 and a half hours at 25ml/hr with on screen battery indicator
4. Should have a LCD display with backlight and Flow Rate, Infusions set brand, Volume, Total infused Volume and Battery Indicator displayed on the screen
5. Should have an on-screen graphical display of delivery pressure
6. Should be pre-calibrated for use with 2 brands of infusion sets with option to calibrate additional brands
7. Should have infusion program setting where 2 different flowrates can be pre-programmed for the same infusion
8. History log report of 1500 latest records that can be viewed on the pump and downloaded to the PC
9. Should have volume infused display from 1 ml to 9999 ml
10. Should have priming/bolus rate of 1000 ml/h
11. Should have 3 occlusion alarm thresholds – High, Medium and Low
12. Should have adjustable KVO rate from 1 ml/h to 5 ml/h
13. Should have an RS232 interface
14. Should be CE/IEC approved
15. Should be light weight (≤2 kg)
16. Should have the following audible and visual alarms –
    i. Occlusion
    ii. Air in line
    iii. Battery low
    iv. Battery depleted
    v. Infusion near complete
    vi. Infusion complete

10. Multi ChannelPatient Monitors:

1. Should be suitable for adult, paediatric and neonatal patients monitoring.

2. Should monitor ECG, Respiration, NIBP, SpO2, Dual Temperature, Three IBP Enabled, Mainstream etco2 and Cardiac output Enabled

3. Should have ST analysis, Arrhythmia detection, pacer spike detection, Drug Dose Calculation and OxyCRG as standard in every monitor

4. Should have integrated 12'' or above TFT-LCD colour touch screen display (resolution min 800*600) with minimum 10 channels of waveforms.

5. Defib and ESU protection should be present

6. Should have monitoring, surgery and diagnostic mode of monitoring

7. Should have Advance Arrhythmia monitoring for Asystole, Vfib/Vtac, VT>2, Couplet, Bigeminy, Trigeminy, R on T, PVC, Tachy, Brady, Missed Beats, IRR, PNC, Vbrady.

8. Monitor access should be with Touch screen, rotary knob and fast access key for quick function.

9. 150 hrs of trend and 60 events with waveform as standard

10. Color or position of waveforms or parameters should be able to be adjusted based on users preferences. Big font on screen format should be present.

11. Nurse call, VGA output port should be standard in every monitor.

12. Monitor should have USB port for software upgrade

13. Should have inbuilt three channel recorder as standard

14. Should have 350 min or more (typically) of battery backup as standard

15. Should be European CE complying to European Directive 93/42/EEC for both Monitor and software to control physiologic monitoring systems.

16. Wired and wireless networking should be standard to connect to Central station.

17. Anti left lock facility should be possible for better hospital asset management

18. Should have Pulse pressure variation for fluid management.

19. Should have bed to bed view without need of central monitoring system

Should have following parameters

ECG

- Monitor should have capability for display up to 7 Lead .
- ST Analysis
- Waveform Freeze option with review of 120 sec
- Range: 15 to 350bpm

RESPIRATION

- Through impedance pneumography method or EtCO2
- Should provide value for arterial oxygen saturation as well as plethysmographic pulse waveform

SPO2

Should have Spo2 technology.

NIBP

- By oscillometric principle of measurement.
- Should display Systolic, diastolic, mean pressure in large easy to read display
- Range: 10 to 270mmHg

Dual Temperature – core & skin. Range: 0 to 50 Deg C

Three IBP – Should monitor simultaneous monitoring of three IBP should be possible. Range: -50 to 300mmHg

EtCO2 – Mainstream EtCO2.Should be supplied with sensor and adaptor. Range: 0 to 150mmHg

Scope of supply must include below accessories: (Supplier shall supply Adult/Pediaric/neonate of purchaser choice)

- Basic unit with ECG, Resp, SpO2, Dual Temp, NIBP, Three IBP Enabled, Mainstream etco2,Cardiac output Enabled , inbuilt battery, Inbuilt three channel recorder – 1 no
- 3 or 5 lead ECG trunk Cable – 1 no each per monitor
- 3 or 5 lead wire-1 no each per monitor

SpO2 finger sensor – 1 no per monitor

- Skin temperature probe – 1 no per monitor
- NIBP Hose - 1no per monitor,
- NIBP Cuff-2 no per monitor
- Mounting plat -1no per monitor.
- Mainstream Etco2 Sensor with adaptor-1 no per monitor and
- Instruction for Use per monitor.

11. Resuscitation Kit Paediatric

1. USE		
1.1	**CLINICAL PURPOSE**	TOPROVIDEORASSISTVENTILATIONINAPATIENTWHOISAPNOEICOREXHIBITS INADEQUATERESPIRATIONTHROUGHMANUALPULMONAR-DRIVENPRESSURECYCLE FUNCTIONS.
1.2	**USEDBYCLINICALDEPARTMENT/ WARD**	IT IS USED IN AMBULANCES, INTENSIVE CARE UNITS (ICU), DURING INTERNAL PATIENT TRANSFER, ACCIDENT AND EMERGENCY (A&E), AND MASS CASUALTY INCIDENTS (MCI).
TECHNICAL		
2. TECHNICAL CHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS**	1. MANUALRESUSCITATORWITHTRANSPARENTFACE-MASK. 2. CHILDMODELS(750ML,500MLAND260MLBAGCAPACITY). 3. STANDARD15/22MMSWIVELCONNECTORALLOWSCONNECTIONSTOALLCOMMON MASKSENDOTRACHEALTUBESBOTHFORADULTSANDINFANTS. 4. PROVISION TO GIVE SUPPLEMENTED OXYGEN-BY-OXYGEN RESERVOIRPROVIDING 100%OXYGEN. 5. NON-REBREATHINGVALVEENABLINGTHEPATIENTTOINSPIREOXYGENFROMTHE RESERVOIRBAG. 6. SHOULDBESUITABLEFORSINGLEHANDOPERATE. 7. SHOULDBEEASYTODISSEMBLEFORCLEANINGANDDISINFECTION. 8. SHOULDHAVEPRESSURERELEASEVALVEAT40CMH_2O. 9. SHOULDHAVESILICONEOXYGENTUBE2MLENGTH. 10 IT SHOULD BE UP-TO 40 TIMES AUTOCLAVABLE INCLUDING BAG AND WASHERS. 11. THEBAGSHOULDBEOFSILICONEMATERIAL. 12. SELFINFLATINGRESUSCITATORBAGSHOULDBEOFMEDICALGRADESILICONE RUBBER. 13. THERESERVOIRSHOULDBEAPVCBAGOF600MLCAPACITYFOR260ML&500ML BAGCAPACITYAND1000MLFOR750MLBAGCAPACITY.
2.2	**SETTINGS**	NA
2.3	**USER'S INTERFACE**	MANUAL
2.4	**SOFTWARE AND/OR STANDARD OF COMMUNICATION(WHERE EVER REQUIRED)**	NA

3. PHYSICAL CHARACTERISTICS		
3.1	**DIMENSIONS (METRIC)**	HANDHELD
3.2	**WEIGHT (LBS, KG)**	LIGHT ENOUGH TO BE OPERATED BY HAND/PALM FOR LONG DURATION.
3.3	**CONFIGURATION**	NA
3.4	**NOISE(INDBA),HEATDISSIPATION**	NA
3.5	**MOBILITY, PORTABILITY**	HANHELD
3.6	**OTHERS**	
4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO2)		
4.1	**POWER REQUIREMENTS**	NA
4.2	**BATTERY OPERATED**	NA
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	NA
4.4	**PROTECTION**	NA
4.5	**POWER CONSUMPTION**	NA
4.6	**OTHER ENERGY SUPPLIES**	NA
5.ACCESSORIES,SPAREPARTS,CONSUMABLES		
5.1	**ACCESSORIES (MANDATORY, STANDARD, OPTIONAL)**	SILICON BELLOW, NON REBREATHING VALVE, 2 METER OXYGEN TUBE, GUEDEL AIRWAY,
5.2	**SPARE PARTS (MAIN ONES)**	OXYGEN RESERVOIR BAG
5.3	**CONSUMABLES / REAGENTS (OPEN, CLOSED SYSTEM)**	NEONATAL MASK OF 3 SIZES VIZ 0, 1 AND 2
6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATIONS		
6.1	**ATMOSPHERE / AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST ...)**	OPERATING CONDITION: - CAPABLEOFOPERATINGCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO50 DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEALCIRCUMSTANCES. - ANAMBIENTAIRVELOCITYISLESSTHAN0.3M/S.
6.2	**USER'S CARE, CLEANING, DISINFECTION & STERILITY ISSUES**	COMPLETEUNITTOBEEASILYWASHABLEANDSTERILIZABLEUSINGBOTHALCOHOLAND CHLORINEAGENTS.
7. STANDARDS AND SAFETY		

7.1	**CERTIFICATES (PRE-MARKET, SANITARY, ..); PERFORMANCE AND SAFETY STANDARDS (SPECIFIC TO THE DEVICE TYPE); LOCAL AND/OR INTERNATIONAL**	ISO13485;MANUFACTURER/SUPPLIERSHOULDHAVEISOCERTIFICATEFORQUALITY STANDARD. SHOULDBEFDA(US)/CE(EU)APPROVEDPRODUCTORBISCERTIFIED SHOULDMEETISO10651-4STANDARDREQUIREMENT
	8. TRAINING AND INSTALLATION	
8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	SUPPLIERTOPERFORMINSTALLATION,SAFETYANDOPERATIONCHECKSBEFOREHANDOVER.
8.2	**REQUIREMENTS FOR SIGN-OFF**	CERTIFICATE OF CALIBRATION AND INSPECTION FROM THE FACTORY.
8.3	**TRAINING OF STAFF (MEDICAL, PARAMEDICAL, TECHNICIANS)**	TRAINING OF USERS IN OPERATION AND BASIC MAINTENANCE SHALL BE PROVIDED
	9. WARRANTY AND MAINTENANCE	
9.1	**WARRANTY**	3 YEAR.
9.2	**MAINTENANCE TASKS**	MAINTENANCE MANUAL DETAILING COMPLETE MAINTAINING SCHEDULE
9.3	**SERVICE CONTRACT CLAUSES, INCLUDING PRICES**	
9.4	**OTHERS**	
	10. DOCUMENTATION	
10.1	**OPERATING MANUALS, SERVICE MANUALS, OTHER MANUALS**	REQUIRED
10.2	**OTHER ACCOMPANYING DOCUMENTS**	DEMONSTRATION CDS
10.3	**RECOMMENDATIONS FOR MAINTENANCE**	NA
	11. NOTES	
11.1	**SERVICE SUPPORT CONTACT DETAILS (HIERCHY WISE; INCLUDING A TOLL FREE/LANDLINE NUMBER)**	NA
11.2	**RECOMMENDATIONS OR WARNINGS**	NA

11. Ambu Bag -

AMBU BAG- PEDIATRIC/NEONATE

HIGH GRADE RUBBER/SILICON

AUTO SHUT VALVE

FACILITY TO CONNECT OXYGEN

SHOULD BE CE/ISI CERTIFIED

12. Laryngoscope - With Different Blades and stright and curved

	1. USE	
1.1	**CLINICAL PURPOSE**	FORVIEWINGVOCALFOLDSANDGLOTTIS.SURGICALANDMECHANICALVENTILATION/ INTUBATION
1.2	**USEDBYCLINICALDEPARTMENT/ WARD**	PICU/NICU
	TECHNICAL	
	2. TECHNICAL CHARACTERISTICS	
2.1	**TECHNICAL CHARACTERISTICS (SPECIFIC TO THIS TYPE OF DEVICE)**	FIBEROPTICLARYNGOSCOPE-PREFERABLYSHOULDBESINGLEPATIENTUSETOENSURE NOINFECTIONTOTHEPATIENTS,SHOULDCOMPRISEOF DISPOSABLEHANDLEAND REUSABLELIGHTSOURCEUSINGTHELATESTLEDTECHNOLOGY. THEMAINBODYOFTHEHANDLESHOULDINCORPORATEANEXCELLENTGRIP&SHOULD FEELEVENWEARINGAGLOVE. THERESHOULDBEAFREELYMOVINGLIGHTINTENSIFIEROFLIGHTFROMTHELIGHT SOURCETHROUGHTOTHETIPOFTHEFIBEROPTICBLADETOPREVENTANYPOSSIBILITY OF CROSSCONTAMINATION. THEUNITSHOULDALLOWTHEBLADETOBEINSERTEDEASILY&SHOULDPROVIDEA POSITIVELOCKINGMECHANISMWHENMOVEDINTO THECLOSEDPOSITION. THE PATIENT CONTACT MATERIAL SHOULD BE BIOCOMPATIBLE.
2.2	**SETTINGS**	NA
2.3	**USER'S INTERFACE**	MANUAL
2.4	**SOFTWAREAND/ORSTANDARDOF COMMUNICATION(WHEREEVER REQUIRED)**	NA
	3. PHYSICAL CHARACTERISTICS	

3.1	**DIMENSIONS (METRIC)**	NA
3.2	**WEIGHT (LBS, KG)**	LIGHT WEIGHT
3.3	**CONFIGURATION**	1. HANDHELDUNIT,SINGLEPIECEWHENINUSE. 2. ON/OFFSWITCHTOBEROBUSTANDEASYTOUSE. 3. EXTERNALMATERIALTOBENON-FERROUS. 4. BLADESTOBESURGICALGRADESTAINLESSSTEEL. 5. SUPPLIEDINPROTECTIVE,RECLOSABLECONTAINER.

3.4	**NOISE (IN DBA), HEAT DISSIPATION**	NA
3.5	**MOBILITY, PORTABILITY**	YES
3.6	**OTHERS**	STORAGE BOX SHOULD BE PROVIDED
	4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO_2)	
4.1	**POWER REQUIREMENTS**	INDEPENDENT OF EXTERNAL SOURCE
4.2	**BATTERY OPERATED**	INTERNAL BATTERIES, RECHARGEABLE PREFERRED/PENLIGHT BATTERY AA SIZE, BATTERYCHARGER(IFRECHARGEABLES),BATTERYCOMPARTMENT(IFREUSABLES)TOBE SEALEDAGAINSTLIQUIDINGRESS,YETEASILYOPENED.
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	NA
4.4	**PROTECTION**	NA
4.5	**POWER CONSUMPTION**	3V LITHIUM BATTERY
4.6	**OTHER ENERGY SUPPLIES**	
	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**ACCESSORIES (MANDATORY, STANDARD, OPTIONAL)**	BATTERIES, LIGHT SOURCE, BLADES OF VARIOUS NEONATAL SIZES
5.2	**SPARE PARTS (MAIN ONES)**	HANDLE
5.3	**CONSUMABLES/REAGENTS (OPEN, CLOSED SYSTEM)**	5 LED SHOULD BE GIVEN AS SPARE
	6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATONS	
6.1	**ATMOSPHERE/AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST...)**	OPERATING CONDITION: - CAPABLEOFOPERATINGCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO50 DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEALCIRCUMSTANCES. - ANAMBIENTAIRVELOCITYISLESSTHAN0.3M/S. LIQUID SPLASH RESISTANT BLADES SHOULD BE AUTOCLAVABLE
6.2	**USER'S CARE, CLEANING, DISINFECTION & STERILITY ISSUES**	SHOULD BE AUTOCLAVABLE
	7. STANDARDS AND SAFETY	

7.2	**CERTIFICATES (PRE-MARKET, SANITARY,..);PERFORMANCEAND SAFETY STANDARDS (SPECIFIC TO THEDEVICETYPE);LOCALAND/ ORINTERNATIONAL**	ISO7376STANDARD;MANUFACTURER/SUPPLIERSHOULDHAVEISOCERTIFICATEFOR QUALITYSTANDARD. THE LITHIUM BATTERY SHOULD COMPLY TO IEC 62133 OR ITS EQUIVALENT. THEDEVICESHOULDMEETIEC60601-1,IEC60601-2STANDARDREQUIREMENTS. SHOULDBEFDA/CEAPPROVEDPRODUCT.
	8. TRAINING AND INSTALLATION	
8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	NA
8.2	**REQUIREMENTS FOR SIGN-OFF**	NA
8.3	**TRAINING OF STAFF (MEDICAL, PARAMEDICAL, TECHNICIANS)**	TRAININGOFUSERSINOPERATIONANDBASICMAINTENANCESHALLBEPROVIDED.
	9. WARRANTY AND MAINTENANCE	
9.1	**WARRANTY**	3 YEARS; LED UPTO 6 MONTHS
9.2	**MAINTENANCE TASKS**	AUTOCLAVE
9.3	**SERVICE CONTRACT CLAUSES, INCLUDING PRICES**	NA

10. DOCUMENTATION		
10	**OPERATING MANUALS, SERVICE MANUALS, OTHER MANUALS**	USER,TECHNICALANDMAINTENANCEMANUALSTO BESUPPLIEDINENGLISHLANGUAGE. CERTIFICATE OF CALIBRATION AND INSPECTION TO BE PROVIDED. LISTTOBEPROVIDEDOFEQUIPMENTANDPROCED URESREQUIREDFORLOCAL CALIBRATIONANDROUTINEMAINTENANCE LISTTOBEPROVIDEDOFIMPORTANTSPARESANDACC ESSORIES,WITHTHEIRPARTNUMBERS ANDCOST. CONTACTDETAILSOFMANUFACTURER,SUPPLIERAN DLOCALSERVICEAGENTTOBE PROVIDED
10	**OTHER ACCOMPANYING DOCUMENTS**	SERVICE MANUALS
11. NOTES		
11	**SERVICE SUPPORT CONTACT DETAILS (HIERCHY WISE; INCLUDING A TOLL FREE/LANDLINE NUMBER)**	ANY CONTRACT (AMC/MC/ADD-HOC) TO BE DECLARED BY THE MANUFACTURER
11	**RECOMMENDAT IONS OR WARNINGS**	ANYRECOMMENDATIONSFORBESTUSEANDSUPPLIMENT ARYWARNINGFORSAFETY SHOULD BEDECLARED

13.Resuscitation Kit Adult

GENERAL		
1. USE		
1.1	**CLINICAL PURPOSE**	TOPROVIDEORASSISTVENTILATIONINAPATIENTWHOISAPNOEICOREXHIBITS INADEQUATERESPIRATIONTHROUGHMANUALPULMONAR-DRIVENPRESSURECYCLE FUNCTIONS.
1.2	**USEDBYCLINICALDEPARTMENT/ WARD**	IT IS USED IN AMBULANCES, INTENSIVE CARE UNITS (ICU), DURING INTERNAL PATIENT TRANSFER, ACCIDENT AND EMERGENCY (A&E), AND MASS CASUALTY INCIDENTS (MCI).
TECHNICAL		
2. TECHNICAL CHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS**	10. MANUALRESUSCITATORWITHTRANSPARENTFACE-MASK. 11. CHILDMODELS(750ML,500MLAND260MLBAGCAPACITY). 12. STANDARD15/22MMSWIVELCONNECTORALLOWSCONNECTIONSTOALLCOMMON MASKSENDOTRACHEALTUBESBOTHFORADULTSANDINFANTS. 13. PROVISION TO GIVE SUPPLEMENTED OXYGEN-BY-OXYGEN RESERVOIRPROVIDING 100%OXYGEN. 14. NON-REBREATHINGVALVEENABLINGTHEPATIENTTOINSPIREOXYGENFROMTHE RESERVOIRBAG. 15. SHOULDBESUITABLEFORSINGLEHANDOPERATE. 16. SHOULDBEEASYTODISSEMBLEFORCLEANINGANDDISINFECTION. 17. SHOULDHAVEPRESSURERELEASEVALVEAT40CMH_2O. 18. SHOULDHAVESILICONEOXYGENTUBE2MLENGTH. 10 IT SHOULD BE UP-TO 40 TIMES AUTOCLAVABLE INCLUDING BAG AND WASHERS. 12. THEBAGSHOULDBEOFSILICONEMATERIAL. 13. SELFINFLATINGRESUSCITATORBAGSHOULD BEOFMEDICALGRADESILICONE RUBBER. 14. THERESERVOIRSHOULDBEAPVCBAGOF600ML CAPACITYFOR260ML&500ML BAGCAPACITYAND1000MLFOR750MLBAGCAPACITY.
2.2	**SETTINGS**	NA
2.3	**USER'S INTERFACE**	MANUAL
2.4	**SOFTWARE AND/OR STANDARD OF COMMUNICATION(WHERE EVER**	NA

	REQUIRED)	

3. PHYSICAL CHARACTERISTICS		
3.1	**DIMENSIONS (METRIC)**	HANDHELD
3.2	**WEIGHT (LBS, KG)**	LIGHT ENOUGH TO BE OPERATED BY HAND/PALM FOR LONG DURATION.
3.3	**CONFIGURATION**	NA
3.4	**NOISE(INDBA),HEATDISSIPATION**	NA
3.5	**MOBILITY, PORTABILITY**	HANHELD
3.6	**OTHERS**	
4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO2)		
4.1	**POWER REQUIREMENTS**	NA
4.2	**BATTERY OPERATED**	NA
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	NA
4.4	**PROTECTION**	NA
4.5	**POWER CONSUMPTION**	NA
4.6	**OTHER ENERGY SUPPLIES**	NA
5.ACCESSORIES,SPAREPARTS,CONSUMABLES		
5.1	**ACCESSORIES (MANDATORY, STANDARD, OPTIONAL)**	SILICON BELLOW, NON REBREATHING VALVE, 2 METER OXYGEN TUBE, GUEDEL AIRWAY,
5.2	**SPARE PARTS (MAIN ONES)**	OXYGEN RESERVOIR BAG
5.3	**CONSUMABLES / REAGENTS (OPEN, CLOSED SYSTEM)**	NEONATAL MASK OF 3 SIZES VIZ 0, 1 AND 2
6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATIONS		
6.1	**ATMOSPHERE / AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST ...)**	OPERATING CONDITION: - CAPABLEOFOPERATINGCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO50 DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEALCIRCUMSTANCES. - ANAMBIENTAIRVELOCITYISLESSTHAN0.3M/S.
6.2	**USER'S CARE, CLEANING, DISINFECTION & STERILITY ISSUES**	COMPLETEUNITTOBEEASILYWASHABLEANDSTERILIZABLEUSINGBOTHALCOHOLAND CHLORINEAGENTS.
7. STANDARDS AND SAFETY		

7.1	**CERTIFICATES (PRE-MARKET, SANITARY, ..); PERFORMANCE AND SAFETY STANDARDS (SPECIFIC TO THE DEVICE TYPE); LOCAL AND/OR INTERNATIONAL**	ISO13485;MANUFACTURER/SUPPLIERSHOULDHAVEISOCERTIFICATEFORQUALITY STANDARD. SHOULDBEFDA(US)/CE(EU)APPROVEDPRODUCTORBISCERTIFIED SHOULDMEETISO10651-4STANDARDREQUIREMENT
8. TRAINING AND INSTALLATION		
8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	SUPPLIERTOPERFORMINSTALLATION,SAFETYANDOPERATIONCHECKSBEFOREHANDOVER.
8.2	**REQUIREMENTS FOR SIGN-OFF**	CERTIFICATE OF CALIBRATION AND INSPECTION FROM THE FACTORY.
8.3	**TRAINING OF STAFF (MEDICAL, PARAMEDICAL, TECHNICIANS)**	TRAINING OF USERS IN OPERATION AND BASIC MAINTENANCE SHALL BE PROVIDED
9. WARRANTY AND MAINTENANCE		
9.1	**WARRANTY**	3 YEAR.
9.2	**MAINTENANCE TASKS**	MAINTENANCE MANUAL DETAILING COMPLETE MAINTAINING SCHEDULE
9.3	**SERVICE CONTRACT CLAUSES, INCLUDING PRICES**	
9.4	**OTHERS**	
10. DOCUMENTATION		
10.1	**OPERATING MANUALS, SERVICE MANUALS, OTHER MANUALS**	REQUIRED
10.2	**OTHER ACCOMPANYING DOCUMENTS**	DEMONSTRATION CDS
10.3	**RECOMMENDATIONS FOR MAINTENANCE**	NA
11. NOTES		
11.1	**SERVICE SUPPORT CONTACT DETAILS (HIERCHY WISE; INCLUDING A TOLL FREE/LANDLINE NUMBER)**	NA
11.2	**RECOMMENDATIONS OR**	NA

	WARNINGS	

14. Nebulizer

GENERAL		
1. USE		
1.1	**CLINICAL PURPOSE**	DESIGNED TO GENERATE AEROSOLIZED MEDICATION/FLUIDS (FINELY DISPERSED AIRBORNEDROPLETSINALIQUIDPHASE)INTENDEDTO BEINHALEDBYAPATIENTWITHA RESPIRATORYDISORDER.
1.2	**USEDBYCLINICALDEP ARTMENT/ WARD**	ALL
TECHNICAL		
2. TECHNICAL CHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS (SPECIFICTOTHISTYPE OFDEVICE)**	MEDICINE CUP CAPACITY OF MINIMUM 5ML.
2.2	**SETTINGS**	MANUAL
2.3	**USER'S INTERFACE**	MANUAL
2.4	**SOFTWAREAND/ORS TANDARDOF COMMUNICATION(W HEREEVER REQUIRED)**	NA
3. PHYSICAL CHARACTERISTICS		
3.1	**DIMENSIONS (METRIC)**	SHOULD BE COMPACT
3.2	**WEIGHT (LBS, KG)**	<2KG.
3.3	**CONFIGURATION**	
3.4	**NOISE (IN DBA), HEAT DISSIPATION**	<60DBA
3.5	**MOBILITY, PORTABILITY**	YES
4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO_2)		
4.1	**POWER REQUIREMENTS**	220 V AC + 10%, 50HZ POWER SUPPLY; 5A PLUG;
4.2	**BATTERY OPERATED**	NA
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	± 10% OF INPUT AC
4.4	**PROTECTION**	ELECTRICALPROTECTIONBYRESETTABLEOVERCURREN TBREAKERSORREPLACEABLEFUSES, FITTEDINBOTHLIVEANDNEUTRALLINES
4.5	**POWER CONSUMPTION**	SHOULDBECOMPATIBLEWITHOTHERLIFESAVINGEQUI PMENTSRUNNINGPARALLEL
4.6	**OTHER ENERGY SUPPLIES**	NA

	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**ACCESSORIES & SPARES**	WITHNECESSARYACCESSORIES-NEBULIZATIONMASK(BOTHADULTANDPEDIATRICSIZE), PVCTUBINGFORNEBULIZER(TWOPAIREXTRA);CABLECORD
5.2	**CONSUMABLES/REAGENTS (OPEN, CLOSED SYSTEM)**	AEROSOL/MEDICINAL SOLUTIONS
	6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATONS	
6.1	**ATMOSPHERE/AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST ...)**	CAPABLEOFBEINGSTOREDCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO50DEGCANDRELATIVEHUMIDITYOF15TO90%.CAPABLEOFOPERATINGCONTINUOUSLYIN AMBIENTTEMPERATUREOF10TO40DEGCANDRELATIVEHUMIDITYOF15TO90%.
6.2	**USER'S CARE, CLEANING, DISINFECTION & STERILITY ISSUES**	THEUNITSHOULDBECLEANABLEWITHALCOHOLAND/OROTHERCHEMICALAGENTS.
	7. STANDARDS AND SAFETY	
7.1	**CERTIFICATES (PRE-MARKET, SANITARY, ..)**	FDA(US)/CE(EU)ANDBIS/ISO13485:2003;ISO27427-2013;IEC-60601-1.
	8. TRAINING AND INSTALLATION	
8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	SUPPLIERTOPERFORMINSTALLATION,SAFETYANDOPERATIONCHECKSBEFOREHANDOVER.
8.2	**REQUIREMENTS FOR SIGN-OFF**	CERTIFICATE OF CALIBRATION AND INSPECTION FROM THE FACTORY.
8.3	**TRAINING OF STAFF (MEDICAL, PARAMEDICAL, TECHNICIANS)**	TRAINING OF USERS IN OPERATION AND BASIC MAINTENANCE SHALL BE PROVIDED.
	9. WARRANTY AND MAINTENANCE	
9.1	**WARRANTY**	3 YEARS
9.2	**MAINTENANCE TASKS**	MAINTAINANCE MANUAL DETAILING COMPLETE MAINTAINING SCHEDULE
9.3	**SERVICE CONTRACT CLAUSES, INCLUDING PRICES**	LOCAL CLINICAL STAFF TO AFFIRM COMPLETION OF INSTALLATION
	10. DOCUMENTATION	
10.1	**OPERATING MANUALS, SERVICE MANUALS, OTHER MANUALS**	ADVANCED MAINTENANCE TASKS REQUIRED SHALL BE DOCUMENTED USER,TECHNICALANDMAINTENANCEMANUALSTOBESUPPLIEDINENGLISHLANGUAGE.
		LISTTOBEPROVIDEDOFEQUIPMENTANDPROCED

		URESREQUIREDFORLOCAL CALIBRATIONANDROUTINEMAINTENANCE
10.2	**OTHER ACCOMPANYING DOCUMENTS**	LISTTOBEPROVIDEDOFIMPORTANTSPARESANDACCESSORIES,WITHTHEIRPARTNUMBERSANDCOST.CERTIFICATEOFCALIBRATIONANDINSPECTIONTOBEPROVIDED.
	11. NOTES	
11.1	**SERVICE SUPPORT CONTACT DETAILS (HIERCHY WISE; INCLUDING A TOLL FREE/LANDLINE NUMBER)**	CONTACTDETAILSOFMANUFACTURER,SUPPLIERANDLOCALSERVICEAGENTTOBE PROVIDED
11.2	**RECOMMENDATIONS OR WARNINGS**	LISTTOBEPROVIDEDOFIMPORTANTSPARESANDACCESSORIES,WITHTHEIRPARTNUMBERSANDCOST.CERTIFICATEOFCALIBRATIONANDINSPECTIONTOBEPROVIDED.

15.ECG Machine

	1. USE	
1.1	**CLINICAL PURPOSE**	CONTINUOUSLYDETECT,MEASURE,ANDDISPLAYAPATIENT'SELECTROCARDIOGRAM(ECG)THROUGHLEADSANDSENSORSATTACHEDTOTHEPATIENT.
1.2	**USEDBYCLINICALDEPARTMENT/ WARD**	ALL
1.3	**OVERVIEW OF FUNCTIONAL REQUIREMENTS**	CONTINUOUS DISPLAY OF PATIENT ECG AND HEART RATE ON SCREEN. ALLOWSDISPLAYOFSINGLE,5LEADECGORSIMULTANEOUSDISPLAYOFATLEAST5WAVESSELECTEDFROMUPTO12POINTS. OPERATOR CAN SET AUDIOVISUAL ALARM LEVELS FOR LOW OR HIGH HEART RATE. OPERATES FROM MAINS VOLTAGE OR FROM INTERNAL RECHARGEABLE BATTERY. PATIENTCONNECTORSTHATARESTERILISABLEANDREUSABLEAREPREFERRED,THOUGHREUSABLECABLESTHATATTACHTODISPOSABLECONNECTIONPATCHESAREALSO ACCEPTABLE. HARD COPY PRINTOUT OF TRACES WILL BE REQUIRED.
	TECHNICAL	
	2. TECHNICAL CHARACTERISTICS	
2.1	**TECHNICAL CHARACTERISTICS (SPECIFICTOTHISTYPEOFDEVICE)**	1. HEARTRATEMEASUREMENTRANGETOBEATLEAST30TO250BPM,WITHACCURACYBETTERTHAN±5BPM. 2. HEARTRATETRENDDISPLAYOFATLEASTPREVIOUS24HOURS. 3. ARRHYTHMIADETECTIONFACILITYREQUIRED;MINIMUMGRADATIONOF1BPM. 4. HEARTRATEMEASUREMENTRANGETOBEATLEAST30TO250BPM,WITHACCURACYBETTERTHAN±5BPM.
2.2	**SETTINGS**	AUDIOVISUALALARMSREQUIRED:HIGHANDLOWHEARTRATE(OPERATORVARIABLE SETTINGS),CARDIACARRHYTHMIA,SENSOR/WIREDISCONNECTED,LOWBATTERY.
2.3	**USER'S INTERFACE**	MANUAL
2.4	**SOFTWARE AND/OR STANDARD OF COMMUNICATION**	IN BUILT
	3. PHYSICAL CHARACTERISTICS	
3.1	**DIMENSIONS (METRIC)**	NA
3.2	**WEIGHT (LBS, KG)**	LESS THAN 5 KGS

3.3	**CONFIGURATION**	CASE IS TO BE HARD AND SPLASHPROOF. DISPLAYMUSTALLOWEASYVIEWINGINALLAM BIENTLIGHTLEVELS. SUPPLIEDINPROTECTIVECASEFORCLEANSTO RAGEANDSAFETRANSPORT.

3.4	**NOISE (IN DBA)**	<50 DB
3.5	**HEAT DISSIPATION**	HEATDISSIPIATION:SHOULDMAITAINNOMINALTEMPANDTHEHEATSHOULDBEDISBURSEDTHROUGHAEXHAUSTCOOLINGFAN.
3.6	**MOBILITY, PORTABILITY**	SUPPLIED IN PROTECTIVE CASE FOR CLEAN STORAGE AND SAFE TRANSPORT.
	4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO2)	
4.1	**VOLTAGE(VALUE, ACORDC, MONOPHASE ORTRIPHASE)**	220 TO 240V, 50 HZ
4.2	**BATTERY OPERATED**	BATTERY POWERED, SILENCEABLE ALARM FOR POWER FAILURE. BATTERYCHARGERTOBEINTEGRALTOMAINSPOWERSUPPLY,ANDTOCHARGEBATTERYDURINGMAINSPOWEROPERATIONOFUNIT. INTERNAL,REPLACEABLE,RECHARGEABLEBATTERYALLOWSOPERATIONFORATLEASTONEHOURINTHEEVENTOFPOWERFAILURE.
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	VOLTAGECORRECTOR/STABILIZERTOALLOWOPERATIONAT±30%OFLOCALRATED VOLTAGE.
4.4	**PROTECTION**	ELECTRICALPROTECTIONPROVIDEDBYFUSESINBOTHLIVEANDNEUTRALSUPPLYLINES.
4.5	**POWER CONSUMPTION**	
4.6	**OTHER ENERGY SUPPLIES**	MAINS CABLE TO BE AT LEAST 3M LENGTH.
	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**ACCESSORIES (MANDATORY, STANDARD, OPTIONAL)**	12 LEAD ECG CABLE. 5 LEAD ECG CABLE (IF OPTION OFFERED). 100SETSOFECGCONNECTIONELECTRODES(IFDISPOSABLETYPE). 5SETSOFECGCONNECTIONELECTRODES(IFREUSABLETYPE).
5.2	**SPARE PARTS (MAIN ONES)**	TWO SETS OF SPARE FUSES (IF NON-RESETTABLE FUSES USED)
5.3	**CONSUMABLES/REAGENTS (OPEN, CLOSED SYSTEM)**	5 TUBES ELECTRODE GEL (IF REQUIRED)
	6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATONS	
6.1	**ATMOSPHERE/AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST ...)**	OPERATING CONDITION: _ CAPABLEOFOPERATINGCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO 50DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEALCIRCUMSTANCES.
6.2	**USER'S CARE, CLEANING, DISINFECTION**	THE CASE IS TO BE CLEANABLE WITH ALCOHOL OR CHLORINE WIPES.

	&STERILITY ISSUES	
	7. STANDARDS AND SAFETY	
7.1	**CERTIFICATES (PRE-MARKET, SANITARY, ..); PERFORMANCE AND SAFETY STANDARDS (SPECIFIC TO THE DEVICE TYPE); LOCAL AND/OR INTERNATIONAL**	SHOULDBEFDA/CEAPPROVEDPRODUCT;MANUFACTURER/SUPPLIERSHOULDHAVE ISO13485CERTIFICATEFORQUALITYSTANDARD.ELECTRICALSAFETYCONFORMSTO STANDARDSFORELECTRICALSAFETYIEC-60601-1. SHALLMEETIEC-60601-1-2(GENERALREQUIREMENTSFORSAFETY-ELECTROMAGNETIC COMPATIBILITY) AND IEC 60601-2-25 (ESSENTIAL PERFORMANCE OF ELECTROCARDIOGRAPHS).
	8. TRAINING AND INSTALLATION	
8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	AVAILABILITY OF 5 AMP/15 AMP. ELECTRICAL SOCKET.
8.2	**REQUIREMENTS FOR SIGN-OFF**	SUPPLIERTOPERFORMINSTALLATION,SAFETYAN DOPERATIONCHECKSBEFOREHANDOVER. LOCAL CLINICAL STAFF TO AFFIRM COMPLETION OF INSTALLATION.
8.3	**TRAINING OF STAFF (MEDICAL, PARAMEDICAL, TECHNICIANS)**	TRAINING OF USERS IN OPERATION AND BASIC MAINTENANCE SHALL BE PROVIDED. ADVANCED MAINTENANCE TASKS REQUIRED SHALL BE DOCUMENTED.
	9. WARRANTY AND MAINTENANCE	
9.1	**WARRANTY**	3 YEAR

9.2	**MAINTENANCE TASKS**	MAINTAINANCE MANUAL DETAILING COMPLETE MAINTAINING SCHEDULE.
9.3	**SERVICE CONTRACT CLAUSES, INCLUDING PRICES**	WARRANTY OF three YEAR WITH FREE SERVICING (MIN. 3) DURING WARRANTY.
9.4	**OTHERS**	THESPAREPRICELISTOFALLSPARESANDACCESSORIES(INCLUDINGMINOR)REQUIRED FORMAINTENANCEANDREPAIRSINFUTUREAFTERGUARANTEE/WARRANTYPERIOD SHOULD BEATTACHED.
	10. DOCUMENTATION	
10.1	**OPERATING MANUALS, SERVICE MANUALS, OTHER MANUALS**	USER,TECHNICALANDMAINTENANCEMANUALSTOBESUPPLIEDINENGLISHLANGUAGE. CERTIFICATEOFCALIBRATIONANDINSPECTIONTOBEPROVIDED. LISTTOBEPROVIDEDOFEQUIPMENTANDPROCEDURESREQUIREDFORLOCAL CALIBRATIONANDROUTINEMAINTENANCE. LISTTOBEPROVIDEDOFIMPORTANTSPARESANDACCESSORIES,WITHTHEIRPARTNUMBERS ANDCOST. CONTACTDETAILSOFMANUFACTURER,SUPPLIERANDLOCALSERVICEAGENTTOBEPROVIDED.
10.2	**OTHER ACCOMPANYING DOCUMENTS**	USER/TECHNICAL/MAINTENANCE MANUALS TO BE SUPPLIED IN ENGLISH.
	11. NOTES	
11.1	**OTHER INFORMATION**	ANY CONTRACT (AMC/MC/ADD-HOC) TO BE DECLARED BY THE MANUFACTURER.
11.2	**RECOMMENDATIONS OR WARNINGS**	ANYRECOMMENDATIONSFORBESTUSEANDSUPPLIMENTARYWARNINGFORSAFETY SHOULD BEDECLARED.

16.Thermoscanner

Infrared thermal scanner:

Technical specification measuring method- non-contact

Measuring distance 3cm-5cm

Measuring range 32’c – 42’c(89.6’f – 107.6’f)

Display resolution 0.1’c (or 0.1‘f)

Adjusted mode body mode(measuring site-forehead reference body site: armpit)

Direct mode surface mode

Power supply dc 3v (2 of aa alkaline batteries)

Backlight high brightness

Backlight display unit celsius or fahrenheit degree

Automatic shutdown 10 secs relative humidity

17. Paediatric Stethoscope

18.ICU Cots

ICU BED (ADULT/MOTORISED / FIVE FUNCTIONS)

Motorized five functions bed, back-rest, knee-rest (calf-rest), height, Trendelenburg and reverse Trendelenburg.
Removable Polymer moulded Head and Foot Panels.
Four Polymer moulded swing-down Side Railing (pair for back-rest and calf-section).
Wired remote Hand-set.
Dual side manual CPR lever.
Four section CRCA MS sheet 1.2 mm (SWG18) mattress Platform.
Four corner Buffers.
125 mm diameter single wheel plastic swivel Castors, two with brake fitted for diagonal locking.
Twin side Urine-bag holder.
Four-section PU mattress, 32 density, 4" thickness covered in Blue or Black color Rexene.
Heavy-duty Patient's weight bearing capacity.
Provision for IV Rod, at four locations towards corner.
Heavy-duty IV Rod.
Frame made of CRCA MS rectangular tubes of 1.6 mm (SWG 16).
Frame size (Approx): 2030 mm L x 900 mm W x 550-750 mm H
Back-rest tilt: 0 - 75 degree
Knee-rest tilt: 0 - 35 degree
Tredelenburg: 0 - 12 degree
Reverse Tredelenburg: 0 - 12 degree
All CRCA MS parts chemically Pre-treated and Epoxy powder coated

19.Medicine Trolley:

Framework of the medicine trolley should be having two s.s. Shelves & two smooth drawers provided under the upper shelves.

The medicine trolley should be having s.s. Rails to cover three sides of top shelf & four of bottom.

Medicine trolley dimension should be 60x45x80cm. S.s. Of 304 grades with tubular frame mounted on four 10 cm swivel castor, two with breakings

Vertical framework should be 18g.

It should be isimark or equivalent

20.Syringe Pump

1. Bolus Rate upto 1200ml/hr
2. Wide range of audio and visual alarms :
    - Battery Low, Battery Empty, Occlusion, Syringe Near Empty, Syringe Empty, Syringe Error, Not Infusing
3. Programmable infusion rate of 0.1 ml/hr to 1200 ml/hr and can be adjusted in increments of 0.1 ml/hr
4. Syringe range from 20-50/60 ml.
5. 3 occlusion pressure settings
    - Low (L): 300mmHg +/- 100mmHg
    - Medium (C): 500mmHg +/- 100mmHg
    - High (H): 800mmHg +/- 100mmHg
6. Factory Calibrated for international and local brands of syringes including Romsons Junior and Unolock (Dispovan)
7. On Pump Syringe loading guidelines
8. LED screen
9. Company Owned Service Centre in India
10. CE Marked & ISO Certified

21.Patient Trolley

Patient stretcher trolley

- Overall size: 1905mm l x 710mm w x 660mm to 910 mm h.
- Stretcher dimension 1830 mm l x 555 mm w.
- Two section top. Height adjusted by foot operated maintenance free hydraulic pump.
- Height adjustment shall be obtained by hydraulically operated mono block type linear actuator pump foot operated actuation having stroke of 140 +/- 5 mm, push force 10 kn at 270 bars, number of complete pump stroke 22 to 24 for full stroke length.
- X-ray permeable removable stretcher, backrest raised on ratchet. Quick trendelenburg as well as reverse trendelenburg positions shall be provided with easily accessible operating handle provided with two gas springs for easy action.
- S.s. Saline rod with 12 mm dias.s. Rod shall telescope in ss socket tube approx. 15.8 mm dia x 18g welded on angular base bracket of 14g ss sheet.
- Nylon bracket provided to prevent colour damage. It could be placed at four different locations. Complete with sliding x-ray cassette holder, storage tray.
- Trolley shall be mounted on 125 mm dia non-rusting imported castor wheels two with brakes and two without. Castor housing and wheels made from high grade non floor-staining synthetic materials with integrated thread guards.
- Wheel centre having precision ball bearing to run smoothly. Complete with corner buffers, one on each corner. Covered handles. Oxygen cylinder arrangement.
- It shall have a pair of stainless steel tuck down type railings made of 19 mm dia x 18g tube fitted with m.s. Brackets.
- Effective railing height above main frame is approx. 235 mm & length of the railing is 1175 mm.
- All ms parts and 8 tank pre-treated & powder coated &ss parts finished with matt polish.
- Mattress should be provided with a size 2 inch thickness pu foam which can be fixed to the trolley by valero similar mechanism.

22.Bp apparatus with pediatric and neonate cuff

1. Should be aneroid type

2. Should have isi mark

3. Should have a measuring range from 0 to 300 hg

4. Should be provided with adult arm cuffs of size medium and large and paediatric cuff

5. The dial manometer markings and graduations should be permanent and clearly visible and filled with pigments, with minimum diameter of 160 mm

6. Body & bezel – aluminium die casted (powder coated), screw top bezel

7. Sending-corruagated phosphorous bronze twin capsule bellow

8. Movement mechanism – brass

9. Connection: brass, nickel plated for 3-4 mm rubber hose

10. Dial-aluminium

11. Pointer-white coated, thin & sharp made of phosphorous bronze

12. Window lenses- clear plastic

13. All plastic parts, if any used, should not crack, flake, peel or disintegrate during normal use

14. The inflating rubber bag should be capable of withstanding internal pressure of 450mmhg without leaking

15. The inflating bulb should be soft and should not have any joints or ridges

16. The fastening arrangements of the cuff should be of hook and loop type

17. The threading and fastening arrangement of the cuff should show no sign of slip or failure when subjected to the maximum test conditions

18. The rubber tubes used should have an internal diameter of 3±0.5mm and the external diameter should not be less than 8mm

19. The tubes should be fitted with male and female leur connectors

20. Should provide a carry bag to keep the whole system safe and sound. All parts should be replaceable in case of breakage

21. User/technical/maintenance manual to be supplied

23. Opthalmoscope

	1. USE	
1.1	**CLINICAL PURPOSE**	DIRECT OPHTHALMOSCOPE IS A HAND-HELD AND BATTERY POWERED DEVICE CONTAININGILLUMINATIONANDVIEWINGOPTICSTOEXAMINETHECORNEA,AQUEOUS, LENS,VITREOUS,ANDTHERETINAOFTHEEYE.
1.2	**USEDBYCLINICALDEPARTMENT/ WARD**	NICU & PICU
	TECHNICAL	
	2. TECHNICAL CHARACTERISTICS	
2.1	**TECHNICAL CHARACTERISTICS (SPECIFICTOTHISTYPEOFDEVICE)**	1) SHOULDHAVEON/OFFBUTTONFORILLUMINATIONANDBATTERYOPERATED; 2) SHOULD HAVE ROTATING KNOB TO CONTROL THE INTENSITY OF THE OPHTHALMOSCOPEANDSHOULDBEUSEDWITHFILTERSTHATELIMINATEUV RADIATION(<400NM)AND,WHENEVERPOSSIBLE,FILTERSTHATELIMINATESHORT-WAVELENGTHBLUELIGHT(<420NM); 3) SHOULDHAVETHERANGEOF+20TO-20INSINGLEDIOPTRESTEPSTOENSUREEASY EXAMINATIONOFALLOCULARSTRUCTURES; 4) SHOULDHAVEAPERTURESSHAPE:LARGESPOT,SMALL SPOT,SLIT,CENTRALNET,AND REDFREE;
2.2	**USER'S INTERFACE**	MANUAL
2.3	**SOFTWAREAND/ORSTANDARDOF COMMUNICATION(WHEREEVER REQUIRED)**	NA
	3. PHYSICAL CHARACTERISTICS	
3.1	**DIMENSIONS (METRIC)**	MAX: 50MM X 50MM X 250MM.
3.2	**WEIGHT (LBS, KG)**	NA
3.3	**CONFIGURATION**	NA
3.4	**NOISE (IN DBA)**	NA
3.5	**HEAT DISSIPATION**	NA
3.6	**MOBILITY, PORTABILITY**	HANDHELD DEVICE
	4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO_2)	
4.1	**POWER REQUIREMENTS**	NA
4.2	**BATTERY OPERATED**	YES
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	NA
4.4	**PROTECTION**	NA
4.5	**POWER**	NA

	CONSUMPTION	

	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**ACCESSORIES (MANDATORY, STANDARD, OPTIONAL); SPARE PARTS (MAIN ONES); CONSUMABLES/REAGENTS (OPEN, CLOSED SYSTEM)**	1) REPLACEMENTBULB/ILLUMINATIONSOURCE-2NOS. 2) STORAGECASE(RIGIDANDSTEADY).
	BIDDING/PROCUREMENT TERMS/DONATION REQUIREMENTS	
	6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATIONS	
6.1	**ATMOSPHERE/AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST...)**	1) OPERATING CONDITION: CAPABLE OF OPERATING CONTINUOUSLY IN AMBIENT TEMPERATUREOF10TO40DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEAL CIRCUMSTANCES. 2) STORAGECONDITION:CAPABLEOFBEINGSTORED CONTINUOUSLYINAMBIENTTEMPERATUREOF0TO50DEGCANDRELATIVEHUMIDITYOF15TO90%.
6.2	**USER'S CARE, CLEANING, DISINFECTION & STERILITY ISSUES**	DISINFECTION:PARTSOFTHEDEVICETHATAREDESIGNED TOCOMEINTOCONTACTWITHTHEPATIENTORTHEOPERATORSHOULDEITHERBECAPABLEOFEASYDISINFECTIONOR BEPROTECTEDBYASINGLEUSE/DISPOSABLECOVER.
	7. STANDARDS AND SAFETY	
7.1	**CERTIFICATES (PRE-MARKET, SANITARY, ..); PERFORMANCE AND SAFETY STANDARDS (SPECIFIC TO THE DEVICE TYPE); LOCAL AND/OR INTERNATIONAL**	1) SHOULDHAVEIEC60601-1/IEC60601-1-2/CE(EU)CERTIFICATE; 2) OPTICALRADIATIONHAZARDSWITHOPHTHALMOSCOPES:ISO10942ORISO15004; 3) MANUFACTURER/SUPPLIERSHOULDHAVEISO13485CERTIFICATEFORQUALITY STANDARD;
	8. TRAINING AND INSTALLATION	
8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	NA
8.2	**REQUIREMENTS FOR SIGN-OFF**	CERTIFICATE OF CALIBRATION AND INSPECTION FROM THE MANUFACTURER.
8.3	**TRAINING OF STAFF (MEDICAL, PARAMEDICAL, TECHNICIANS)**	1) TRAININGOFUSERSONOPERATIONANDBASICMAINTENANCE; 2) ADVANCEDMAINTENANCETASKSREQUIREDSHALLBEDOCUMENTED.
	9. WARRANTY AND MAINTENANCE	
9.1	**WARRANTY**	3 YEARS INCLUDING BULB.
9.2	**MAINTENANCE TASKS**	1) MAINTENANCE MANUALDETAILING; 2) COMPLETE MAINTENANCESCHEDULE;

9.3	**SERVICE CONTRACT CLAUSES, INCLUDING PRICES**	1) THE SPARE PRICE LIST OF ALL SPARES AND ACCESSORIES (INCLUDING MINOR) REQUIREDFORMAINTENANCEANDREPAIRSINFUTURE AFTERGUARANTEE/WARRANTY PERIODSHOULDBEATTACHED; 2) FREESERVICING(MIN.2/YEAR)DURINGWARRANTYPERIOD;
	10. DOCUMENTATION	
10.1	**OPERATING MANUALS, SERVICE MANUALS, OTHER MANUALS**	SHOULD PROVIDE 2 SETS (HARDCOPY) OF: 1) USER,TECHNICAL,MAINTENANCEANDSERVICEMANUALSTOBESUPPLIEDALONG WITH MACHINEDIAGRAMS; 2) LISTOFEQUIPMENTANDPROCEDURESREQUIRED FORLOCALCALIBRATIONAND ROUTINEMAINTENANCE; 3) CERTIFICATEOFCALIBRATIONANDINSPECTION;
10.2	**OTHER ACCOMPANYING DOCUMENTS**	LISTOFIMPORTANTSPARESANDACCESSORIES,WITHTHEIRPARTNUMBERSANDCOST;
	11. NOTES	
11.1	**SERVICE SUPPORT CONTACTDETAILS (HIERARCHYWISE;INCLUDINGATOLL FREE/LANDLINENUMBER)**	CONTACTDETAILSOFMANUFACTURER,SUPPLIERANDLOCALSERVICEAGENTTOBE PROVIDED; ANY CONTRACT (AMC/CMC/ADD-HOC) TO BE DECLARED BY THE MANUFACTURER;
11.2	**RECOMMENDATIONSORWARNINGS**	ANY WARNING SIGNS WOULD BE ADEQUATELY DISPLAYED .

24. Transport Ventilator

1. Should be pneumatic operated portable Transport ventilator can be used for Pediatric and Adult patient.
2. Should have at least CMC, CPAP, oxygen therapy, and manual ventilation
3. Approved for use in various environments such as Emergency, Ambulance, Aircraft, Hospital& MRI 3 Tesla.
4. Built in safety alarms such as High Pressure, Low Pressure (Disconnect), Low battery, Low supply gas,etc
5. Integrated battery can be used only for alarm indication
6. Integrated PEEP function with a range 0-20cmH2O
7. Wide range of tidal volume from 70-1000 ml
8. CPAP: up to max of 10-16cm H2O at 35l/min flow (depending on patient condition)
9. Wide range of frequency from 8-40bpm and I:E ratio: 1:2
10. FiO2 selection can be from 50% to 100%,
11. Oxygen Flow range 0-25L/min
12. FiO2: 50% and 100%,
13. Pressure relief valve and alarm: 20-60cmH2O
14. PEEP range: 0-20cmH2O
15. Power source Medical Oxygen operational pressure range should be between 280-600kPa
16. Weight should not be more than 3Kg.
17. Display inspiratory and expiratory pressure in luminescent manometer
18. Preferable if single lumen patient circuit.
19. Can you used for neonatal ventilation with preferred circuit.
20. Company Owned Service Centre in India
21. FDA Approved, CE Marked & ISO Certified
22. Airworthiness certification
23. Standard Compliance:
    a. Product Safety - EN 60601-1:1990 + A1:1993 + A11:1993 + A12:1993 + A2:1995 + A13:1996
    b. EMC - ISO 10651-3:1997, BS EN 13718-1:2008 (RTCA/DO-160F), BS EN 60601-1-2:2002,Mil Std 461D: 1993 RE101 Radiated Magnetic Field - 30Hz-100KHz, Mil Std 461D: 1993 RS101 Magnetic Field Immunity - 30Hz-100KHz & FDA Guidance November 1993 Quasi-Static Electric Field 0.5Hz @ 2kV pk (2kV/m)
    c. Vibration - ISO 10651-3:1997, BS EN 1789:2007, BS EN 13718-1:2008 (RTCA/DO-160F Section & 8)
    d. Temperature & Altitude - RTCA/DO-160F Section 4 & 5
    e. Enclosure Protection - IEC 60529:2001 IP Code: IP54, RTCA/DO-160F Section 10 Waterproofness Cat Y & W
    f. Emergency and Transport Ventilators - ISO 10651-3:1997
    g. Drop Test Compliance - ISO 10651-3:1997, ISO 10651-5:2006, JIS T 7206:1989

25. Finger Pulse Oxymeter

26. Oxygen Hood

Definition		Adeviceconsistingofarigid/semi-rigidtransparentplasticshellthatformsanenclosureoveraninfant'swholebody,ortheheadonly,inordertoprovideanenrichedenvironmentofoxygen(O2)toincreasethepatient'sO2uptake.ItisconnectedtoanO2sourceandmaybeusedconcurrentlywithincreasedhumidificationandtemperaturecontrol.Itisdesignedtobeusedforpatientsadversetooxygendeliverydevicessuchasanasalcannulaorfacemask.This devicemayincludethetubing,adiffuser(todispersetheflowofincomingO2),O2concentrationandhumiditysensors.Thisisareusabledevice.
GENERAL		
1	**USE**	
1.1	**Clinicalpurpose**	toprovideanenrichedenvironmentofoxygen(O2)toincreasethepatient's O2uptake.
1.2	**Used by clinicaldepartment/ward**	SNCU/NICU
TECHNICAL		
2.TECHNICALCHARACTERISTICS		
2.1	**Technical characteristics(specific to this type ofdevice)**	TransparentPolycarbonateunbreakablesinglemolded,SiliconrubberNeckPortadjustment enabled to minimize the wastage of oxygen, Silicon rubber Neckport adjustment to ensures use in Neonate/Infant/Pediatric patients, OxygeninletPort.
2.3	**Settings**	N.A.
2.4	**User'sinterface**	N.A.
2.5	**Software and/or standardof communication(where everrequired)**	N.A.
3.PHYSICALCHARACTERISTICS		
3.1	**Dimensions(metric)**	smallsize;mediumsize
3.2	**Weight(lbs,kg)**	extremelylightweight
3.3	**Configuration**	NA
3.4	**Noise(indBA)**	N.A.
3.5	**heat dissipation**	NA
3.6	**Mobility,portability**	portable
4.ENERGYSOURCE(Electricity,UPS,Solar,Gas,Water,CO2)		
4.1	**PowerRequirements**	N.A.
4.2	**Batteryoperated**	N.A.

4.3	**Tolerance (to variations,shutdowns)**	N.A.
4.4	**Protection**	N.A.
4.5	**Powerconsumption**	N.A.
4.6	**Otherenergysupplies**	N.A.
	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**Accessories (mandatory,standard, optional)**	NA
5.2	**Spareparts(mainones)**	NA
5.3	**Consumables / reagents(open,closedsystem)**	tubing
5.4	**Others**	
	6.ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS	
6.1	**Atmosphere / Ambiance(air conditioning,humidity, dust...)**	Operatingcondition: – Capableofoperatingcontinuouslyinambienttemperatureof0to50 degCandrelativehumidityof15to90%inidealcircumstances.
6.2	**User's care, Cleaning, Disinfection & Sterilityissues**	Completeunittobeeasilywashableandsterilizableusingbothalcoholandchlorineagents.
	7.STANDARDSANDSAFETY	
7.1	**Certificates(pre-market,sanitary,..)**	ISO15001-2010 ShouldbeCEorFDAapproved ThecompanyshouldbeISO13485certified.
7.2	**Performance and safetystandards(specifictothedevicetype)**	NA
	8.TRAININGANDINSTALLATION	
8.1	**Pre-installationrequirements: nature,values,quality,tolerance**	NA
8.2	**Requirementsforsign-off**	Confirmationinnocrack,noleakinhoodstructure.
8.3	**Training of staff (medical,paramedical,technicians)**	NA
8.4	**Others**	NA
	9.WARRANTYANDMAINTENANCE	
9.1	**Warranty**	3year
9.2	**Maintenancetasks**	NA
9.3	**Service contract clauses,includingprices**	NA
9.4	**Others**	NA
	10.DOCUMENTATION	
10.1	**Operating manuals,service manuals, othermanuals**	Advancedmaintenancetasksrequiredshallbedocumented User,technicalandmaintenancemanualstobesuppliedinenglishlanguage.Listtobeprovidedofequipmentandproceduresrequiredforlocalcalibrationandroutinemaintenance
10.2	**Otheraccompanyingdocuments**	Listtobeprovidedofimportantsparesandaccessories,withtheirpartnumbersandcost.Certificateofcalibrationandinspectiontobeprovided.
	11.NOTES	

11.1	**ServiceSupportContact details (Hierchy Wise;including a toll free/landlinenumber)**	NA
11.2	**Recommendationsorwarnings**	NA

Versionno.:		2.0
Date:		13/08/2013
Doneby:(name/institution)		HCT/NHSRC
NAMEANDCODING		
GMDNname		Infantwarmer
GMDNcode(s)		CT1452
GMDNcategory		04Electromechanicalmedicaldevices
Definition		Mains electricity (AC-powered) mobile devicethat contains an infrared (IR)heatingelement(s)designedtoemitcontrolled,evenlydistributedoverheadheattothebodyofanewborn/infantpatientrequiringsupplemental heat.Thisdeviceisequippedwithwheelssothatitcaneasilybemovedtodifferentareasofaroom,ward,ordepartment.
GENERAL		
1.USE		
1.1	**Clinicalpurpose**	Infant Radiant warmer is an electrically powered device with a radiantheatingsourceintendedtomaintainthethermalbalanceofaninfantbydirectradiantofenergyintheinfraredregionoftheelectromagneticspectrum.
1.2	**Used by clinical department/ward**	NeonatalICU/SNCU
1.3	**Overviewoffunctionalrequirements**	Radiant warmer is a microprocessor controlled unit with heater placed on theoverheadpanel.Thisworkonbothservoandmanualmodeoptionstomaintainthe baby temperature at the set value. There are two modes of operationmanual and baby control or skin control (servo) mode. It has Digital displaysreadingofthesetandbabyobservedtemperaturesseperately.
TECHNICAL		
2.TECHNICALCHARACTERISTICS		
2.1	**Technical characteristics(specifictothistypeofdevice)**	1. Itshouldbemicrocontrollerbasedradiantwarmerwithmanualandservooptions. 2. Itshouldhavefacilitytodisplayskinset,skinobservedtemperatureindegreeCandheatpowerseparately. 3. Shouldhaveuserfriendlytouchpanelcontrol. 4. Itshouldhaveceramicorquartzinfraredorcalrodheater. 5. Itshouldhaveaudiovisualalarmfacilityforoverheatingbeyond settemperaturerange. 6. It should have alarm facility for patient temperature less than or greaterthantherequiredtemperaturei.e.aboveorbelowthesetrange.Machineshouldsensetheskinprobefailureandcutofftheheater. 7. Warmerheadshouldberotatableindifferentdirection,soastoallowtakingX-ray. 8. It should have alarm for probe failure,power failure, system failure andheaterfailure.

		9. Observation light of 90 to 100 foot candles or 1000 Lux (colortemperaturerange3700Kto5100K)souldbeprovidedfo rinspection. 10. Battery back up for Powerfailure indication during powerfail. 11. ThedesiredtemperaturerangefromTo40degreeCandsetta bletemperaturecanbefrom32to38°C. 12. Theresolutionshouldbe0.1degreeCandaccuracyshouldbe0.2°C. 13. Shouldhaveafacilitytolockthekeyboardtoavoidunwantedus ermodificationofthesetparameters. 14. Theheightofthewarmershouldbeadjustablefordifferenttypesofbed . 15. Itshouldhaveseparatebassinettrolley,bedshouldbetiltableandha veprovision for x-ray cassette holder, Mattress foam density should beminimum25kg/cm3,transparentcollapsiblesidewallseasilydet achableforcleaning.Mattresssizeshouldbeminimum20”X30”. 16. ShouldhaveaFeatherTouchoperationwithlargedigitaldispla yandcomprehensivealarms.ControlPanelshouldbeliquidpr oofandalloweasyandhygienicdisinfection. 17. ManualModecanadjustHeaterOutput10-100%,with10%increment,anauditoryandvisualalarmshallbegi venatleastevery15min. 18. Inmanualmode,heatercutoff/switchoff,ifthemaximumirradiancea tany point of the mattress area exceeds a total irradiance level of 10 mW/cm2(between10to30minutes). 19. Bedshouldbeabout80-100cmsfromtheFloorand80-90cmsfromtheheatsource. 20. shouldhavelockablecastorwheels. 21. Greenindicatorlightshallbeprovidedtoindicatethatwarmerisrea dyfornormaluse.
		22. MarkingsonthebassinetandX-Raycassetteholderismandatorytoenableproperpositionin gofthebabywhiledoingtheX-Ray. 23. The size of the drop down sides should be such that it is 5” above thematttresssurfaceandshouldbeatleast6mmthick;clearandtrans parent. 24. Ifthereismorethan60%heateroutputfor10minutesitshouldcu toffwithalarm. 25. For the purpose of cable management there should be atleast twonumber of tubing ports (edges covered by silicon rings) on the sidewalls.Theheightofthesidewallsshouldbeminimum110m moverthemattress. 26. X-Raycassetttetrayshouldbeatleast750X350mmandshould adoptupto20mmthickX-Raycassette. 27. Thbaybedshouldbecrevicefreeforeaseofcleaning,infectioncontrol .

		28. Themattressusedshouldbeofbiocompatiblematerial. 29. Skin temperature probe should be small in size not more than 10mmdiameter and 3-4mm thick to fix the probe firmly on the infant. Babycontact material should be biocompatible as per ISO 10993 standardrequirement.Itshouldbeinsulatedononesideandhavewellconductingnon-rusting,nonreactingmetallicsurfaceontheotherside.Probe wire should be pliable, thin and soft. The attachment site of theprobewiththewireshouldalsobepliableandnonstiff.
2.2	**Settings**	1. ShouldhaveManualmodeandBaby(Servo)modesettings. 2. Modeofoperationshouldbeclearlydisplayed. 3. Inservomodebabysettemperatrueshouldbe32to38°C.
2.3	**User'sinterface**	ManualandServocontrolledtemperatureregulation.

2.4	**Software and/or standard ofcommunication(where everrequired)**	LEDDisplayandinbuiltsoftware;Interruptionandrestorationofthepowersupplydoesnotchangethepresetvalues.
2.5	**Others**	1. Devcieshallnotoverbalancewhenplacedinanytransportpositionofnormaluseona10°inclinedplanefromthehorizontalplane. 2. Transformersofdevcieshallbeprotectedagainstoverheatingintheeventofshortcircuitoroverloadofanyoutputwinding. 3. Patientleakagecurrentshouldbelessthan100µAinnormalcondition 4. Temperatureonthebabymattressshouldnotexceed43degCwhenthewarmerisoperatingundersteadytemperaturecondition. 5. TemperatureofHEATERGUARDSshouldnotexceed85°Cinnormaluse. 6. TheTemperaturedifferencesonthemattressshallnotexceed2°C.
	3.PHYSICALCHARACTERISTICS	
3.1	**Dimensions(metric)**	specificationsupto:2000mm(Height)X900mm(Width)X1100mm(Length).
3.2	**Weight(lbs,kg)**	maximumspec:150kg.
3.3	**Configuration**	Atleast60degreeangleadjustmentmustbepossibleintheheatsourceanditshouldprovideshieldingtotheinfantincaseofbreakageoftubes/bulbs,Allsurfacestobemadeofcorrosionresistantmaterial.
3.4	**Noise(indBA)**	Auditoryalarmshallhaveasoundlevelofatleast65dBAatadistanceof 3 m from the front of the infant radiant warmer, and the sound level of thealarmshallnotexceed80dBAonthemattress.
3.5	**heat dissipation**	Shouldmaintainupto36.5degtempandtheheatdisbursedthroughaexhaustfan,sothateffectofUVlightisnotdisturbed.
3.6	**Mobility,portability**	Yes, on castors(2 ofthe castorsshould havebreaks; casotorsize canbeatleast4inch).
	4.ENERGYSOURCE(Electricity,UPS,Solar,Gas,Water,CO2)	
4.1	**PowerRequirements**	220to240V,50Hz
4.2	**Batteryoperated**	Power failureindicationduringpowerfail.
4.3	**Tolerance (to variations,shutdowns)**	±10%ofinput
4.4	**Protection**	OVP,earthleakageprotection
4.5	**Powerconsumption**	maximum800Watt
4.6	**Otherenergysupplies**	SolarHeating-desirable;notessential.
	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**Accessories (mandatory,standard, optional)**	ShouldhavestandardIVpole(sturdy;nonrusting;medicalgradestainlesssteel;adjustable toa maxheightof 6feetfrom thegroundlevel), monitortray(12X10 inches;270 degswivel;fixed at level of warmer display) andstoragetrays.
5.2	**Spareparts(mainones)**	Skintemperatureprobes.
5.3	**Consumables / reagents(open,closedsystem)**	Thermalrefelctortofixtheskinprobeonbaby.
	6.ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS	

6.1	**Atmosphere/Ambiance(airconditioning,humidity, dust...)**	Operatingcondition: - Capableofoperatingcontinuouslyinambienttemperatureof 0to50degCandrelativehumidityof15to90%inidealcircumstances. - anambientairvelocityislessthan0.3m/s.
6.2	**User's care, Cleaning,Disinfection&Sterilityissues**	Completeunittobeeasilywashableandsterilizableusingbothalcoholandchlorineagents.

	7.STANDARDSANDSAFETY	
7.1	**Performance and safetystandards (specific to thedevicetype);Certificates(pre-market,sanitary,..);Localand/orinternational**	ShouldbeFDA/(CEofclassIIb)approvedproduct.ShallmeetIEC-60601-1-2:2007 Medical electrical equipment -- Part 1-2: General requirementsfor basic safety and essential performance - Collateral standard:Electromagneticcompatibility-Requirementsandtests(OrEquivalentBIS).ShallneetIEC60601-2-21:2009MedicalElectricalEquipment–Part 2-21:ParticularRequirementforthebasicsafetyandessentialperformanceof infant radiant warmers .should meet IEC 60601-1:2005 standardrequirements. BabycontactmaterialshouldbebiocompatibleasperISO10993standardrequirement. ManufacturershouldbeISO13485certified.
	8.TRAININGANDINSTALLATION	
8.1	**Pre-installation requirements:nature, values, quality,tolerance**	Availabilityof5amp/15Amp.Electricalsocket(2nos)foreachwarmer.
8.2	**Requirementsforsign-off**	CertificateofCalibrationandinspectionfromthefactory.
8.3	**Training of staff (medical,paramedical,technicians)**	usertrainingmanualrequired.
8.4	**Others**	Listofimportantsparepartsandaccessorieswiththeirpartnumberandcosting.
	9.WARRANTYANDMAINTENANCE	
9.1	**Warranty**	nickelchromewirefilamentandtubeofquartzshouldhavealifetimewarranty;equipment-3years.
9.2	**Maintenancetasks**	maintainancemanualdetailingcompletemaintainingschedule.
9.3	**Service contract clauses,includingprices**	Warrantyofthreeyearwithfreeservicing(min.3)duringwarranty.
9.4	**Others**	Thesparepricelistofallsparesandaccessories(includingminor)requiredfor maintenance and repairs in future after guarantee / warranty periodshouldbeattached.
	10,.DOCUMENTATION	
10.1	**Operating manuals, servicemanuals,othermanuals**	to be supplied.
10.2	**Otheraccompanyingdocuments**	User/Technical/MaintenancemanualstobesuppliedinEnglish.
	11.NOTES	
11.1	**Service Support Contactdetails (Hierchy Wise;including a toll free/landlinenumber)**	shouldprovidecompletecontactdetailsofsalesandservicedepartments.
11.2	**Recommendationsorwarnings**	Anywarning/precautionstobedeclared.

27. Radiant Warmer

Definition		Mains electricity (AC-powered) mobile devicethat contains an infrared (IR)heatingelement(s)designedtoemitcontrolled,evenlydistributedoverheadheattothebodyofanewborn/infantpatientrequiringsupplemental heat.Thisdeviceisequippedwithwheelssothatitcaneasilybemovedtodifferentareasofaroom,ward,ordepartment.
GENERAL		
1.USE		
1.1	**Clinicalpurpose**	Infant Radiant warmer is an electrically powered device with a radiantheatingsourceintendedtomaintainthethermalbalanceofaninfantbydirectradiantofenergyintheinfraredregionoftheelectromagneticspectrum.
1.2	**Used by clinical department/ward**	NeonatalICU/SNCU
1.3	**Overviewoffunctionalrequirements**	Radiant warmer is a microprocessor controlled unit with heater placed on theoverheadpanel.Thisworkonbothservoandmanualmodeoptionstomaintainthe baby temperature at the set value. There are two modes of operationmanual and baby control or skin control (servo) mode. It has Digital displaysreadingofthesetandbabyobservedtemperaturesseperately.
TECHNICAL		
2.TECHNICALCHARACTERISTICS		
2.1	**Technical characteristics(specifictothistypeofdevice)**	9. Itshouldbemicrocontrollerbasedradiantwarmerwithmanualandservooptions. 10. Itshouldhavefacilitytodisplayskinset,skinobservedtemperatureindegreeCandheatpowerseparately. 11. Shouldhaveuserfriendlytouchpanelcontrol. 12. Itshouldhaveceramicorquartzinfraredorcalrodheater. 13. Itshouldhaveaudiovisualalarmfacilityforoverheatingbeyond settemperaturerange. 14. It should have alarm facility for patient temperature less than or greaterthantherequiredtemperaturei.e.aboveorbelowthesetrange.Machineshouldsensetheskinprobefailureandcutofftheheater. 15. Warmerheadshouldberotatableindifferentdirection,soastoallowtakingX-ray. 16. It should have alarm for probe failure,power failure, system failure andheaterfailure.

		22. Observation light of 90 to 100 foot candles or 1000 Lux (colortemperaturerange3700Kto5100K)souldbeprovidedfo rinspection. 23. Battery back up for Powerfailure indication during powerfail. 24. ThedesiredtemperaturerangefromTo40degreeCandsetta bletemperaturecanbefrom32to38°C. 25. Theresolutionshouldbe0.1degreeCandaccuracyshouldbe0.2°C. 26. Shouldhaveafacilitytolockthekeyboardtoavoidunwantedus ermodificationofthesetparameters. 27. Theheightofthewarmershouldbeadjustablefordifferenttypesofbed . 28. Itshouldhaveseparatebassinettrolley,bedshouldbetiltableandha veprovision for x-ray cassette holder, Mattress foam density should beminimum25kg/cm3,transparentcollapsiblesidewallseasilydet achableforcleaning.Mattresssizeshouldbeminimum20”X30”. 29. ShouldhaveaFeatherTouchoperationwithlargedigitaldispla yandcomprehensivealarms.ControlPanelshouldbeliquidpr oofandalloweasyandhygienicdisinfection. 30. ManualModecanadjustHeaterOutput10-100%,with10%increment,anauditoryandvisualalarmshallbegi venatleastevery15min. 31. Inmanualmode,heatercutoff/switchoff,ifthemaximumirradiancea tany point of the mattress area exceeds a total irradiance level of 10 mW/cm2(between10to30minutes). 32. Bedshouldbeabout80-100cmsfromtheFloorand80-90cmsfromtheheatsource. 33. shouldhavelockablecastorwheels. 34. Greenindicatorlightshallbeprovidedtoindicatethatwarmerisrea dyfornormaluse.
		30. MarkingsonthebassinetandX-Raycassetteholderismandatorytoenableproperpositionin gofthebabywhiledoingtheX-Ray. 31. The size of the drop down sides should be such that it is 5” above thematttresssurfaceandshouldbeatleast6mmthick;clearandtrans parent. 32. Ifthereismorethan60%heateroutputfor10minutesitshouldcu toffwithalarm. 33. For the purpose of cable management there should be atleast twonumber of tubing ports (edges covered by silicon rings) on the sidewalls.Theheightofthesidewallsshouldbeminimum110m moverthemattress. 34. X-Raycassetttetrayshouldbeatleast750X350mmandshould adoptupto20mmthickX-Raycassette. 35. Thbaybedshouldbecrevicefreeforeaseofcleaning,infectioncontrol .

		36. Thematttressusedshouldbeofbiocompatiblematerial. 37. Skin temperature probe should be small in size not more than 10mmdiameter and 3-4mm thick to fix the probe firmly on the infant. Babycontact material should be biocompatible as per ISO 10993 standardrequirement.Itshouldbeinsulatedononesideandhavewellconductingnon-rusting,nonreactingmetallicsurfaceontheotherside.Probe wire should be pliable, thin and soft. The attachment site of theprobewiththewireshouldalsobepliableandnonstiff.
2.2	**Settings**	4. ShouldhaveManualmodeandBaby(Servo)modesettings. 5. Modeofoperationshouldbeclearlydisplayed. 6. Inservomodebabysettemperatrueshouldbe32to38°C.
2.3	**User'sinterface**	ManualandServocontrolledtemperatureregulation.

2.4	**Software and/or standard ofcommunication(where everrequired)**	LEDDisplayandinbuiltsoftware;Interruptionandrestorationofthepowersupplydoesnotchangethepresetvalues.
2.5	**Others**	7. Devcieshallnotoverbalancewhenplacedinanytransportpositionofnormaluseona10°inclinedplanefromthehorizontalplane. 8. Transformersofdevcieshallbeprotectedagainstoverheatingintheeventofshortcircuitoroverloadofanyoutputwinding. 9. Patientleakagecurrentshouldbelessthan100µAinnormalcondition 10. Temperatureonthebabymattressshouldnotexceed43degCwhenthewarmerisoperatingundersteadytemperaturecondition. 11. TemperatureofHEATERGUARDSshouldnotexceed85°Cinnormaluse. 12. TheTemperaturedifferencesonthemattressshallnotexceed2°C.
	3.PHYSICALCHARACTERISTICS	
3.1	**Dimensions(metric)**	specificationsupto:2000mm(Height)X900mm(Width)X1100mm(Length).
3.2	**Weight(lbs,kg)**	maximumspec:150kg.
3.3	**Configuration**	Atleast60degreeangleadjustmentmustbepossibleintheheatsourceanditshouldprovideshieldingtotheinfantincaseofbreakageoftubes/bulbs,Allsurfacestobemadeofcorrosionresistantmaterial.
3.4	**Noise(indBA)**	Auditoryalarmshallhaveasoundlevelofatleast65dBAatadistanceof 3 m from the front of the infant radiant warmer, and the sound level of thealarmshallnotexceed80dBAonthemattress.
3.5	**heat dissipation**	Shouldmaintainupto36.5degtempandtheheatdisbursedthroughaexhaustfan,sothateffectofUVlightisnotdisturbed.
3.6	**Mobility,portability**	Yes, on castors(2 ofthe castorsshould havebreaks; casotorsize canbeatleast4inch).
	4.ENERGYSOURCE(Electricity,UPS,Solar,Gas,Water,CO2)	
4.1	**PowerRequirements**	220to240V,50Hz
4.2	**Batteryoperated**	Power failureindicationduringpowerfail.
4.3	**Tolerance (to variations,shutdowns)**	±10%ofinput
4.4	**Protection**	OVP,earthleakageprotection
4.5	**Powerconsumption**	maximum800Watt
4.6	**Otherenergysupplies**	SolarHeating-desirable;notessential.
	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**Accessories (mandatory,standard, optional)**	ShouldhavestandardIVpole(sturdy;nonrusting;medicalgradestainlesssteel;adjustable toa maxheightof 6feetfrom thegroundlevel), monitortray(12X10 inches;270 degswivel;fixed at level of warmer display) andstoragetrays.
5.2	**Spareparts(mainones)**	Skintemperatureprobes.
5.3	**Consumables / reagents(open,closedsystem)**	Thermalrefelctortofixtheskinprobeonbaby.
	6.ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS	

6.1	**Atmosphere/Ambiance(airconditioning,humidity, dust...)**	Operatingcondition: - Capableofoperatingcontinuouslyinambienttemperatureof 0to50degCandrelativehumidityof15to90%inidealcircumstances. - anambientairvelocityislessthan0.3m/s.
6.2	**User's care, Cleaning,Disinfection&Sterilityissues**	Completeunittobeeasilywashableandsterilizableusingbothalcoholandchlorineagents.

	7.STANDARDSANDSAFETY	
7.1	**Performance and safetystandards (specific to thedevicetype);Certificates(pre-market,sanitary,..);Localand/orinternational**	ShouldbeFDA/(CEofclassIIb)approvedproduct.ShallmeetIEC-60601-1-2:2007 Medical electrical equipment -- Part 1-2: General requirementsfor basic safety and essential performance - Collateral standard:Electromagneticcompatibility-Requirementsandtests(OrEquivalentBIS).ShallneetIEC60601-2-21:2009MedicalElectricalEquipment–Part 2-21:ParticularRequirementforthebasicsafetyandessentialperformanceof infant radiant warmers .should meet IEC 60601-1:2005 standardrequirements. BabycontactmaterialshouldbebiocompatibleasperISO10993standardrequirement. ManufacturershouldbeISO13485certified.
	8.TRAININGANDINSTALLATION	
8.1	**Pre-installation requirements:nature, values, quality,tolerance**	Availabilityof5amp/15Amp.Electricalsocket(2nos)foreachwarmer.
8.2	**Requirementsforsign-off**	CertificateofCalibrationandinspectionfromthefactory.
8.3	**Training of staff (medical,paramedical,technicians)**	usertrainingmanualrequired.
8.4	**Others**	Listofimportantsparepartsandaccessorieswiththeirpartnumberandcosting.
	9.WARRANTYANDMAINTENANCE	
9.1	**Warranty**	nickelchromewirefilamentandtubeofquartzshouldhavealifetimewarranty;equipment-3years.
9.2	**Maintenancetasks**	maintainancemanualdetailingcompletemaintainingschedule.
9.3	**Service contract clauses,includingprices**	warrantyofthreeyearwithfreeservicing(min.3)duringwarranty.
9.4	**Others**	Thespareprice listofallsparesandaccessories(includingminor)requiredfor maintenance and repairs in future after guarantee / warranty periodshouldbeattached.
	10,.DOCUMENTATION	
10.1	**Operating manuals, servicemanuals,othermanuals**	to be supplied.
10.2	**Otheraccompanyingdocuments**	User/Technical/MaintenancemanualstobesuppliedinEnglish.
	11.NOTES	
11.1	**Service Support Contactdetails (Hierchy Wise;including a toll free/landlinenumber)**	shouldprovidecompletecontactdetailsofsalesandservicedepartments.
11.2	**Recommendationsorwarnings**	Anywarning/precautionstobedeclared.

28.Phototheraphy

Definition		A neonatal phototherapy unit is a device used to treat or preventhyperbilirubinemia(elevatedserumbilirubinlevel).Thedevic econsistsofoneormorelampsthatemitaspecificspectralbandoflight, underwhichaninfantisplacedfortherapy.
GENERAL		
1.USE		
1.1	**Clinicalpurpose**	Emitsinthemainradiationspectrumintherangebetween400nmand 550nmforreducingtheconcentrationofBilirubin.
1.2	**Used by clinical department/ward**	Newbornstablisationunit,SNCU.
1.3	**Overviewoffunctionalrequirements**	a) Providesfilteredlightusingradiantelectriclights,notfibreoptics. b) Infantsupportedsecurelyinbassinettebelowbulbs. c) Monitorshoursofradiantlightexposure.
TECHNICAL		
2.TECHNICALCHARACTERISTICS		
2.1	**Technical characteristics(specifictothistypeofdevice)**	1. PhototherapyshouldbebasedonCFLtube/LEDtechnology,which afterfiltering should provide, a light of wavelength approximately 450 to 470nmwithpeakwavelengthof450-460nmrange. 2. Irradiancetobeminimum35µW/cm2/nmat40cmheightandUVshouldnotexceed10-4W/m2in180nmto400nm. 3. DigitalHourmetershowingtotalexposuretimeforcurrentpatienttobeclearlyvisiblebyoperator. 4. Effectivelightfield>700cm2. 5. Lamplifeshouldbeminimum20000hoursincaseofLEDand1000hoursincase ofCFLand shouldhavetimer toindicate itsusage. 6. Over temperaturesafetycutouttobeincluded. 7. Up,downandtiltingofheadshouldbepossible. 8. Theunitshouldbemountedwithcastorwheelswithbrakes. 9. Variationinintensityover5-6hours<10%. 10. The irradianceratio(min tomax)shall begreaterthan 40%onmattress. 11. Greenindicatorlightshallbeprovidedtoindicatethatequipment isreadyfornormaluse. 12. Interruptionandarestorationofthepowersupplydonotchangepresetvalues.CFL/LEDheatcanbereducedbynaturalcooling. 13. CFL/LEDshouldbeprotectredfromfreefall. 14. Itshouldnottoppleon10deginclinedangle. 15. Thetemperatureofbabybedandmetalsurfacesshouldnotexceed40degCand43degCforotheraccesiblesurfaces.

		16. Thereshouldbeintutivemethodtoindicatethelightsurfaceisatth eappropriatetreatmentdistance. 17. Mobilestandwithmovablecastorsandheightadjustmentfacility alongwitheasyswivellingofsourcebox.Unitcanbeusedalongwithl nfantcaretrolley,RadiantWarmerandIncubator.
2.2	**Settings**	UP/DOWNadjustmentofOverHeadUnit;Thephototherapyunit shouldbeabletoprovideeffectivetreatmentforbedsandincubators ofvaryingheights (generally 1.0 to 1.6m). Adjustment of light intensity may beprovided.
2.3	**User'sinterface**	Manual
2.4	**Software and/or standard ofcommunication(where everrequired)**	LEDDisplayandinbuiltsoftware
2.5	**Others**	
	3.PHYSICALCHARACTERISTICS	
3.1	**Dimensions(metric)**	minimumspec:1650mmHeightX750mmWidthX500mmLength.
3.2	**Weight(lbs,kg)**	<20kg
3.3	**Configuration**	Clearcabinetforobservationofinfant. Infantbassinettetobeanintegralunitwhichshouldbedetachable. Unit to provide shielding of infant in the event of bulb breakage. Bulbmounttohaveangleadjustmentofatleast30degrees. Allsurfacestobemadeofcorrosionresistantmaterials. Lightunittiltingfacilityandheightadjustmentfacility.
3.4	**Noise(indBA)**	<60dBA
3.5	**heat dissipation**	Thetemperatureofbabybedandmetalsurfacesshouldnotexceed4 0degCand43degCforotheraccesiblesurfaces.
3.6	**Mobility,portability**	Minimum3castorsandatleast2withbrakes.
	4.ENERGYSOURCE(Electricity,UPS,Solar,Gas,Water,CO2)	
4.1	**PowerRequirements**	220to240V,50Hz
4.2	**Batteryoperated**	NA
4.3	**Tolerance (to variations,shutdow ns)**	±10%ofinputAC
4.4	**Protection**	Electrical protection by resettable overcurrent breakers or replaceable fuses,fittedinbothliveandneutrallines.
4.5	**Powerconsumption**	Shouldnotbemorethan160W.
4.6	**Otherenergysupplies**	Mainscable to be atleast 2.5m length.
	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**Accessories (mandatory,standard, optional)**	Completesetofreplacementtubestoallow3months'continuousope ration Tworeplacementsetsoffuses,ifreplaceabletypeused.
5.2	**Spareparts(mainones)**	Nosparesrequired.
5.3	**Consumables / reagents(open,close dsystem)**	Total 500nos. Infanteyemasks ofbothavailable sizes(term andpretermbabies).

6.ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS		
6.1	**Atmosphere/Ambiance(airconditioning,humidity, dust...)**	Capableofoperatingcontinuouslyinambienttemperatureof10to40degCandrelativehumidityof15to90%inidealcircumstances.
6.2	**User's care, Cleaning,Disinfection&Sterilityissues**	Completeunittobeeasilywashableandsterilizableusingbothalcoholandchlorineagents.
7.STANDARDSANDSAFETY		
7.1	**Certificates(pre-market,sanitary,..);Performanceandsafety standards (specific tothe device type);Local and/orinternational**	ShouldbeFDA/CEapprovedproduct. Shall meet IEC-60601-1-2:2007 Medical electrical equipment -- Part 1-2:Generalrequirementsforbasicsafetyandessentialperformance-Collateralstandard: Electromagnetic compatibility - Requirements and tests (OrEquivalentBIS). ShouldmeetIEC60601-1:2005standardrequirements. Shall neet IEC 60601-2-50: 2009 Medical Electrical Equipment – Part 2-50:Particular Requirement for the basic safety and essential performance ofinfantphototherapyequipment. ManufacturershouldbeISO13485certified.
8.TRAININGANDINSTALLATION		
8.1	**Pre-installation requirements:nature, values, quality,tolerance**	Suppliertoperforminstallation,safetyandoperationchecksbeforehandover.
8.2	**Requirementsforsign-off**	CertificateofCalibrationandinspectionfromthefactory.
8.3	**Training of staff (medical,paramedical,technicians)**	Trainingofusersinoperationandbasicmaintenanceshallbeprovided.
8.4	**Others**	
9.WARRANTYANDMAINTENANCE		
9.1	**Warranty**	3yearsforthemachineand20,000hoursforLEDs/1000hoursforCFL.
9.2	**Maintenancetasks**	maintainancemanualdetailingcompletemaintainingschedule.
9.3	**Service contract clauses,includingprices**	Localclinicalstafftoaffirmcompletionofinstallation.
9.4	**Others**	
10.DOCUMENTATION		
10.1	**Operating manuals, servicemanuals,othermanuals**	Advancedmaintenancetasksrequiredshallbedocumented. User,technicalandmaintenancemanualstobesuppliedinenglishlanguage. Listtobeprovidedofequipmentandproceduresrequiredforlocalcalibrationandroutinemaintenance.
10.2	**Otheraccompanyingdocuments**	List to be provided of important spares and accessories, with their partnumbersandcost.Certificateofcalibrationandinspectiontobeprovided.
11.NOTES		

11.1	**Service Support Contactdetails (Hierchy Wise;including a toll free/landlinenumber)**	Contactdetailsofmanufacturer,supplierandlocalserviceagenttobepr ovided.
11.2	**Recommendationsorwarni ngs**	List to be provided of important spares and accessories, with their partnumbersandcost.Certificateofcalibrationandinspectiontobepr ovided.

29. Crash Cart:

CRASH CART (HF W)	1. OVERALL SIZE SHALL BE MORE THAN 900MM L X 500MM W X 1500MM H. 2. THE CRASH CART SHOULD BE MADE OF 25.4MMX18G STAINLESS STEEL TUBULAR FRAME WORK. 3. ALL METAL PARTS SHALL BE SS304 GRADE. 4. SHOULD HAVE PUSH HANDLE ON ONE SIDE. 5. SHOULD HAVE S.S. SHELVES, SIX COLORED REMOVABLE BINS & TWO POLYSTYRENE LOCKABLE STORAGE UNITS WITH THREE DRAWERS EACH. 6. FACILITY TO CARRY ECG MONITORS, DEFIBRILLATORS ETC ON OPEN AREAS AT TOP CENTRE AND BOTTOM SHELVES. 7. SHOULD HAVE STAINLESS STEEL SALINE ROD FIXED WITH. 8. TWO ACCESSORY MOUNTING BRACKETS TO MOUNT ACCESSORIES ANYWHERE WITHOUT THE NEED OF PRE-THREADED HOLES. 9. CRASH CART SHOULD BE MOUNTED ON 12.5 CMS DIA NON-RUSTING SWIVELING DUAL CASTOR WHEELS. TWO HAVING LOCKING ARRANGEMENT. 10. OXYGEN CYLINDER STAND –STAINLESS STEEL, ON ONE SIDE.

30. Portable Ultrasound with Echo

Cart-based point-of-care ultrasound scanners, also called portable ultrasound scanners (both touchscreen and/or standard laptop equipment and cart-based).

1. General technical requirements
   Capable of generating imaging procedures involving lungs, heart, abdomen, pelvis, blood vessels, musculoskeletal and soft tissue. Console: laptop style console design, optional touchscreen combined with conventional user-control panel. Weight of the console: 5–8 kg. Dimensions: 35–45 cm (L); 35–45 cm (H); 5–10 cm (D). Battery duration: minimum 2 hours under normal use conditions. Clear protective control panel cover for infection control. Imaging focusing: adjustable focal depth, synchronization of focal zone to the selected scanning depth. Zooming capability with automated image optimization
   Depth range selection: capable of multiple depth range selection. synchronized with automatic focal zone selection. Field of view: deep (> 15 cm). Image orientation: capable of lateral and vertical

inversion (in B-mode). Image modes at least: • 2D imaging • M-mode • B/M mode • dual 2D/colour image mode with cine loop • Doppler, colour Doppler imaging (CDI), power Doppler imaging (PDI), duplex, continuous wave Doppler, triple mode (optional). Needle enhancement ability. Software applications that include at least: • Obstetrics/gynaecological measurements and calculations, including gestational sac mean, mean sac diameter, femur length, crown-rump length, biparietal diameter and abdominal circumference, enabling estimation of gestational age • small parts • lung • vascular/basic cardiac quantification • easy selection of callipers • measurements capabilities (distance, area and circumference by ellipse and trace method) • capability to be upgraded with additional software applications. Probe-dependant applications with factory-default presets at least: cardiac, peripheral vascular, abdominal adult, abdominal paediatric, small parts, lung, MSK-general, MSK-superficial, obstetrics/gynaecological Equipment with write-zoom function available. Screen annotations capture patient data, date and time, scanning protocols, probes. Text annotations and body markers and image orientation indicator. Transducer ports: at least two active transducer ports permanently available; capability of electronic switch between probes.

2. Monitor and display
   Screen monitor: high-definition (HD) digital black and white and colour liquid crystal display (LCD) monitor of at least 25 cm diagonal (across), equivalent to 10 inches, with reflection filter. Screen monitor protection. Laptop monitor fold-down and lock mechanism of the screen for safe and easy transportation (if applicable). User-friendly control panel: easy to use, logical and orderly control panel: for quick and easy location of most common functions.
   Back lighting of application knobs/buttons.
3. Communication and storage
   Data communication, storage and transfer interface: USB minimum, highdefinition multimedia interface (HDMI) preferable. DICOM 3.0 conformance. Digital image storage: Image and cine memory of at least 64 GB of cine memory. Cine loop: freeze and cine-loop functions. Image grey scale: 256 shades of grey and video output of 625 lines/frame 150 dB full time dynamic range. Capability for database of patient images and information

4. Consumables:
   Ultrasound transmission gel 5 bottles .
   Compatible printing paper for 10 rolls.

5. Accessories (included)
   Transducers: • Phased-array 1–5 MHz for basic cardiac and lung studies and phased array up to 8 MHz for paediatric patients.
   • Broadband curvilinear at least 5–2 MHz for general abdominal, lung and obstetrics/gynaecological ultrasound applications. This should have colour, power and spectral Doppler capabilities. M-mode is desirable for obstetrics.
   • Linear-array high frequency broadband at least 12–5 MHz, with colour, power and spectral Doppler capabilities for vascular and small parts.

• Capability to connect endo-cavitary transducers.

Matching trolley compact and lightweight, easy to transport.Cables and other connection accessories. Storage security lock/chain and key Wheeled cart (if applicable) with gel bottle holders, drawer or dedicated space for accessories, place for scanner positioning and easy orientation.

6. Power supply (voltage, frequency and plug vary across the countries)
   Equipment must be connected to a reliable and continuous source of energy. Operates from AC power electric line: 100–240 V ~, 50/60 Hz. In-built rechargeable battery shall be included.Automatic switch from AC power electric line mode to battery operating mode and vice versa. Power supply: power supply may vary according to countries. Working time in battery mode and standard operations not less than 1 hour.Battery recharging time not more than 4 hours.

7. Documentation (included, minimum in English language)
   Hard and soft copies in English (provision of versions in other UN languages, if available, will be an asset). Certificate of calibration and inspection. User manual with specific protocols for cleaning, disinfection, troubleshooting. Service manual with calibration and routine maintenance. Contact details for after sales service. Contact details of manufacturer, supplier and local service agent.

8. Primary packaging label

Labelling on the primary packaging to include: • Name and/or trademark of the manufacturer. • Model or product's reference. • Information for particular storage conditions (temperature, pressure, light, humidity).

9. Standards, for the manufacturer and the equipment

Certified quality management system for medical devices (e.g. ISO 13485:2016 Medical devices – Quality management systems – Requirements for regulatory purposes).General quality management (e.g. ISO 9001:2015 Quality management systems – Requirements).Application of risk management to medical devices (e.g. ISO 14971:2019 Medical devices – Application of risk management to medical devices).

10. Regulatory approval/certification

Free sales certificate (FSC) or certificate for exportation of medical device provided by the authority in manufacturing country. Proof of regulatory compliance, as appropriate, per the product's risk classification (e.g. Food and Drug Administration [FDA] and/or ConformitéEuropéenne [CE]). National local regulatory approval (of recipient country, as applicable)

11. Standards, for product performance

Compliance to the following international standards or to regional or national equivalent (including the technical tests for safety and performance from accredited laboratory or third party). Reference to the last available version is recommended. • ISO 29821:2018-Condition monitoring and diagnostics of machines – Ultrasound – General guidelines, procedures and validation. • IEC 60601-1 Medical electrical equipment – Part 1: General requirements for basic safety and essential performance. • IEC 60601-1-1 Medical electrical equipment – Part 1-1: General requirements for safety – Collateral standard: Safety requirements for medical electrical systems. IEC 60601-1-2 Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance – Collateral standard: Electromagnetic compatibility – Requirements and tests. • IEC 60601-2-37:2007 Medical electrical equipment - Part 2-37: Particular requirements for the basic safety and essential performance of ultrasonic medical diagnostic and monitoring equipment. • IEC 61157:2007/AMD1:2013 Amendment 1 – Standard means for the reporting of the acoustic output of medical diagnostic ultrasonic equipment. • IEC 60601-1-4 Medical electrical equipment – Part 1-4: General requirements for safety – Collateral standard: programmable electrical medical systems.

12. Warranty

The system shall be covered by three years of warranty including parts and labour, including the probes, starting as of the date of successful on-site acceptance, as per testing and acceptance. Warranty shall include all necessary spare parts, shipment to site, cost of replacement work, personnel, disposal of faulty parts, and software (patches, upgrades, and updates).

31.ABG

NAME		BLOOD GAS MONITORS/MONITORING SYSTEMS AND ASSOCIATED DEVICES.
GENERAL		
1. USE		
1.1	**CLINICAL PURPOSE**	DETERMININGTHECONCENTRATIONOFBILIRUBININTHEBLOODOROTHERCLINICAL SPECIMEN,MOSTCOMMONLYTORAPIDLYASSESSHYPERBILIRUBINEMIAINNEONATES.
1.2	**CLINICAL DEPARTMENT/WARD**	NICU/PICU
TECHNICAL		
2. TECHNICAL CHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS**	1) SHOULDMEASUREANALYTEPHANDMINIMUMMEASURINGRANGE6.8-7.8PH UNITSWITHRESOLUTIUONOF0.01; 2) SHOULDMEASUREANALYTEPO2ANDMINIMUMMEASURINGRANGE 0-760MMHG; 3) SHOULDMEASUREANALYTEPCO2ANDMINIMUMMEASURINGRANGE 5-100 MMHG; 4) SHOULDMEASUREANALYTENA+ANDMINIMUMMEASURINGRANGE 100-180MMOL/L; 5) SHOULDMEASUREANALYTEK+ANDMINIMUMMEASURINGRANGE1-10MMOL/L; 6) SHOULDMEASUREANALYTECA++ANDMINIMUMMEASURINGRANGE 0.25-5.00MMOL/L; 7) SHOULDMEASUREANALYTEHCTANDMINIMUMMEASURINGRANGE15-70%; 8) SHOULDCALCULATEANALYTETHBANDMINIMUMMEASURINGRANGE 3.0-23G/DL; 9) SHOULDHAVEFEATUREOFDATASTORAGEFORMINIMUM50SAMPLESRESULTS 10) SOFTWAREINCLUDESPRINTOUTSOFLEVEY-JENNINGCHARTSFORQUALITYCONTROL REQUIREMENTS; 11) SHOULDHAVEDISPOSABLECARTRIDGESFOR300AMIMINUMOF300SAMPLES; NOMEMBRANEMAINTENANCEORREPLACEMENTISREQUIRED; 14) EXTERNALSOURCEOFGASNOTREQUIRED(NOTMANDATORY); 15) ANALYZINGTIMESHOULDHAVE<120SECONDS; 16) SHOULDPROVIDEAUTOMATICERRORDETECTION;
2.3	**SETTINGS**	METHOD TO RECALIBRATE/SAVE CURRENT CALIBRATION, SET SAMPLE SIZE.

2.4	**USER'S INTERFACE**	BACKLIT DISPLAY WITH EASY VIEWING IN ALL AMBIENT LIGHT LEVELS.
2.5	**SOFTWARE AND/OR STANDARD OF COMMUNICATION**	ELECTRONIC

3. PHYSICAL CHARACTERISTICS		
3.1	**DIMENSIONS (METRIC)**	NA
3.2	**WEIGHT (LBS, KG)**	MAX. 10 KGS EXCLUDING THE CARTRIDGES
3.3	**CONFIGURATION**	SHOULD HAVE COMPACT SIZE;
3.4	**NOISE (IN DBA)**	<60DB
3.5	**HEAT DISSIPATION**	HEAT DISBURSED THROUGH A EXHAUST FAN (IF APPLICABLE).
3.6	**MOBILITY, PORTABILITY**	EASYANDSAFETRANSPORTTOBEPOSSIBLEBYHAND,STABLEWHENTABLETOPMOUNTED.
4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO2)		
4.1	**VOLTAGE (VALUE, AC OR DC, MONOPHASE OR TRIPHASE)**	220VAC ± 10%, 50 HZ
4.2	**BATTERY OPERATED**	YES
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	VOLTAGECORRECTOR/SMPS,STABILIZERTOALLOW OPERATIONAT±10%OFRATED VOLTAGE,ELECTRICALPROTECTIONBYRESETTABLE OVER-CURRENTBREAKERSOR REPLACEABLEFUSESFITTEDINBOTHLIVEANDNEUTRALLINES.
4.4	**PROTECTION**	RESETTABLE OVER-CURRENT MAINS FUSE TO BE INCORPORATED;
4.5	**POWER CONSUMPTION**	NA
4.6	**OTHER ENERGY SUPPLIES**	POWER CABLE TO BE AT LEAST 3MTR IN LENGTH;
5.ACCESSORIES,SPAREPARTS,CONSUMABLES		
5.1	**ACCESSORIES (MANDATORY, STANDARD, OPTIONAL)**	HARD AND SPLASH-PROOF CASE TO BE SUPPLIED;
5.2	**SPARE PARTS (MAIN ONES)**	TWOSETSOFSPARE/REPLACEABLEFUSES,REAGENTSANDCAPILLARYTUBESSUFFICIENT FOR 100TESTS;
5.3	**CONSUMABLES/REAGENTS (OPEN, CLOSED SYSTEM)**	1) CARTRIDGES-COMBINATIONOFVARIOUSTESTS; 2) EXTERNALSOURCEOFGAS(IFAPPLICABLE);
5.4	**OTHERS**	
6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATIONS		
6.1	**ATMOSPHERE/AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST ...)**	1) OPERATING CONDITION: CAPABLE OF OPERATING CONTINUOUSLY IN AMBIENT TEMPERATUREOF10TO40DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEAL CIRCUMSTANCES; 2) STORAGECONDITION:CAPABLEOFBEINGSTORED CONTINUOUSLYINAMBIENT TEMPERATUREOF0TO50DEGCANDRELATIVEHUMIDITYOF15TO90%;

6.2	**USER'S CARE, CLEANING, DISINFECTION & STERILITY ISSUES**	THE CASE IS TO BE CLEANABLE WITH ALCOHOL OR CHLORINE WIPES
	7. STANDARDS AND SAFETY	
7.1	**CERTIFICATES (PRE-MARKET, SANITARY, ..); PERFORMANCE AND SAFETY STANDARDS (SPECIFIC TO THE DEVICE TYPE); LOCAL AND/OR INTERNATIONAL**	1) FDA(US)/CE(EU)FROMAUTORIZEDTHIRDPARTYAND BIS/ISO13485 2) SHOULDBEIEC61010CERTIFICATEFROMANOTIFIED AGENCY
	8. TRAINING AND INSTALLATION	
8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	1) AVAILABILITY OF 5 AMPS/15AMPS. ELECTRICAL SOCKET;
8.2	**REQUIREMENTS FOR SIGN-OFF**	1) SUPPLIERTOPERFORMINSTALLATION,SAFETYAN DOPERATIONCHECKSBEFORE HANDOVER; 2) LOCALCLINICALSTAFFTOAFFIRMCOMPLETIONOFIN STALLATION;

8.3	**TRAININGOFSTAFF(MEDICAL, PARAMEDICAL,TECHNICIANS)**	1) TRAININGOFUSERSONOPERATIONANDBASICMAINTENANCE; 2) ADVANCEDMAINTENANCETASKSREQUIREDSHALLBEDOCUMENTED;
	9. WARRANTY AND MAINTENANCE	
9.1	**WARRANTY**	3 YEARS;
9.2	**MAINTENANCE TASKS**	1) MAINTENANCE MANUALDETAILING; 2) COMPLETE MAINTENANCESCHEDULE;
9.3	**SERVICE CONTRACT CLAUSES, INCLUDING PRICES**	1) THESPARE,ACCESSORIES&CONSULABLESPRICELISTREQUIREDFORMAINTENANCE AND REPAIRS IN FUTURE AFTER GUARANTEE/WARRANTY PERIOD SHOULD BE ATTACHED; 2) WARRANTYOFTHREEYEARSWITHFREESERVICING(MIN.6)DURINGWARRANTY;
	10. DOCUMENTATION	
10	**MANUALS**	SHOULD PROVIDE 2 SETS (HARDCOPY) OF:- 1) USER,TECHNICALANDMAINTENANCEMANUALSTOBESUPPLIEDINENGLISH/HINDI LANGUAGEALONGWITHMACHINEDIAGRAMS; 2) LISTOFEQUIPMENTANDPROCEDURESREQUIRED FORLOCALCALIBRATIONAND ROUTINEMAINTENANCE; 3) CERTIFICATEOFCALIBRATIONANDINSPECTION;
10	**OTHER ACCOMPANYING DOCUMENTS**	LISTOFIMPORTANTSPARESANDACCESSORIES,WITHTHEIRPARTNUMBERSANDCOST;
	11. NOTES	
11	**OTHER INFORMATION**	CONTACTDETAILSOFMANUFACTURER,SUPPLIERANDLOCALSERVICEAGENTTOBE PROVIDED; ANY CONTRACT (AMC/CMC/ADD-HOC) TO BE DECLARED BY THE MANUFACTURER;
11	**RECOMMENDATIONS OR WARNINGS**	ANYRECOMMENDATIONSFORBESTUSEANDSUPPLEMENTARYWARNINGFORSAFETY SHOULD BEDECLARED

32. Otoscope

1. Pocket size and Handy
2. Light source LED should have LED illumination defining optimal light intensity, homogeneity and colour rendering for the most accurate diagnosis. Red is red, blue is blue. Colour temperature: 3,500K, Colour Rendering Index (CRI) >97, special index for red colours (R9) >93 on a maximum scale of 100.
3. Should have continuous brightness control between 100% and 3%.
4. Single finger operation brightness control.
5. Viewing Window with 4x Magnification: Optimized casing surface for razor-sharp images and minimal reflection.
6. Swiveling Viewing Window: built into the instrument. Useful for instrumentation, cannot be misled
7. Power source- Rechargeable battery
8. Attachment clip with integrated on/off switch. Secure. Switches off automatically when returned to the pocket.
9. 20.000 switch cycles.
10. High-quality handle: Chrome-finish upper section/ refined plastic. Shock proof, sturdy, non-slippery.
11. Multi-coated precision optics. Should Offer high resolution and distortion free images.
12. Fiber Optic Illumination. Should Ensures homogeneous, very bright illumination and an unobstructed view of the ear canal and tympanum.
13. Should have Integrated insufflation port offers tympanic mobility testing without air leakage 14. Instrument head matt-black inside.Eliminates reflexes.Accessories 1. 5 sets of 4 reusable tips with each otoscope(total 20) 2. 20 each of 2.5 and 4mm dia. All Spec disposable tips 3. Hard case to keep otoscope safely 4. 1 led Bulb

33.Wheel Chairs:

1.overallapprox size: 670mm w x 1120mm d x 920mm h.

2. Welded frame construction of round tubes.

3. Two solid rubber tyred bicycle wheels with brakes &self propelling stainless steel hoops.

4. Minimum frames size of round steel 22.2 x 18 g tubes and 19.05 x 18 g tubes.

5. Mild steel tubular construction fitted with cushion seat and back.

6. Wheel chair is fitted with minimum 24'' dia rim of bicycle wheel fitted on specially developed and heat treated axle with solid tyre in the rear.

7. In the front minimum 150mm dia castor wheels are fitted. In front of castor wheels, aluminum foot paddles are provided on adjustable brackets.

8. Two handles are provided with hand grips. Brakes are provided on rear wheel to hold the chair to stop in 5 degree ramp.

9. All mild steel components should be thoroughly pre-treated chemically to remove rust and foreign matter like grease, oil etc. By dip tank process pretreatment system.

10. The treated metal surface should have coating of epoxy polyester powder and oven baked at 180 degree to 200 degree centigrade to avoid contamination of the clean metal surface from dust particles.

35. Video Laryngoscope

1.Should be a video laryngoscope convenient for tracheal intubation.

2. Should have a camera for live Image capturing

3. Should have LED light illumination

4. Should have color Image display facility LCD/TFT display

5. Should have provision to insert all sizes of endotracheal tube

6. Should have a provision to introduce all sizes of suction catheters

7. Should have water proof protection

8. Should be supplied with rechargeable battery and provision for re-charge.

9. Should have a battery backup facility of minimum 1 hr .

10. Should have all blade sizes/adjustable for adult and paediatric laryngoscopy. If the blades are disposable, should supply 50nos. of blades compatible for both adult and paediatric along with each unit.

11. Should have safety certificate from a competent authority CE / FDA (US) / STQC CB certificate / STQC S certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid

36. X-Ray View Boxes

LED Type

Luminescence: 5000 candellas or more

Adjustable luminescence with built in viewing diaphgram

Individual control for each panel of 4 films

3 years comprehensive warranty

36.Suction Jar
Ward Vaccum Unit with connecting probe (site specific)
ISI Approved

37. Transport Incubator with ventilator

Integrated incubator, ventilator, suction, and gas supply, with space provision for mounting syringe pumps, patient monitoring & other accessories. The complete unit should be mounted on a good quality trolley for easy mobility and loading unloading in an ambulance**.**

System to have -

1. Incubator with Double Wall Canopy, Front and Head End Access Doors with Access portholes and Tubing Access Ports.

2. Should have Closed-loop air temperature control system to maintain temperature stability within a very narrow range to create the thermal neutral environment required by fragile infants

3. Retractable mattress for emergency procedures and intubations

4. Digital Displays of Air and Baby Skin Temperatures.

5. Indicators for Mains and Battery Modes of Operation.

6. Indicator for Battery Power Capacity.

7. Examination Light.

8. AC and 12VDC Connectors

9. Front mounted gas content display

10. Comprehensive Alarm System.

11. Should have an option of an integrated air compressor. You can deliver medical grade air while eliminating the need to carry air tanks.

12. All controls should be front mounted for quick access and heightened visibility.

13. Neonatal time cycled and volume / pressure limited ventilator with IPPV, IMV and CPAP Modes.

- Breath Rate Variable to 120 BPM.
- Adjustable Peak Pressure and PEEP.
- Air/Oxygen auxiliary blender for FiO2 from 21% to 100%.
- Cylinder Supply.

14. Oxygen Analyser with Digital Display of Oxygen Concentration.
15. Suction Unit suitable for Neonatal Use.
16. Trolley to be Lightweight on four locking Castors with Handles.
17. The system should have European CE and US FDA approved.

System must be Capable of being Securely Installed in Ambulance.

Should have US FDA Approval.

<u>System to conform to standards</u>

- IEC 601-1
- IEC 601-2-20
- MIL STD461C
- CE MDD Directive

38. Semi fowler Cot with mattress:

1. Should have over all approximate size of 198 x 90 x 60 cms. Size.

2. The back section should be adjustable to at least 60 degrees.

3. The top sheet shall be made of a perforated 18 gauge cr sheet.

4. Should have 25mm x 50mm x 16 gauge frame with two crossbar support.

5. Legs shall be of 30mm x 16 gauge round cr pipe, with 30mm x 16 gauge crossbar round tube support for leg support and detachable and collapsible side rail made of ss or aluminium.

6. Should have hooked on leg side both ends for hanging euro bags.

7. Should be provided with a high-quality suitable mattress of at least 4 inches thick foam of 40 density covered with soft waterproof material, bacteriostatic & pillow.

8. All ms components should be 7 dip tanks pre-treated and epoxy powder coated with 50-60 microns.

9. Should have provision for fixing iv stand on all four corners. Should be provided with one telescopic iv stand with four hooks

10. Should be mounted on four swiveling pu castors of diameter 10 to 12.5 cms.

11. Should be provided with ss laminated head and foot board.

39.Mobile DR System

100 mA HIGH FREQUENCY MOBILE DIGITAL RADIOGRAPHY SYSTEM

Fully integrated & light weight High Frequency Mobile Digital XRayunit with one no. DR panel suitableforbedsidex-rays,trauma,Intensivecareunits,Operationtheatre and Radiology department. The unit must have following essential features:

1. Theunitshouldbefullycounterbalancedandcanbepositionedtosuitdifferentbedheights.Theunitshouldhavefacilityofverticalswingandhorizontalrotationofthetubeheadtoensure XRayofanyanatomyevenwithinlimitedspace.
2. The entire system including the compact Tube head (consisting of X-Ray generator & X-Ray tube), Control panel and workstation with built in High resolution display should be in a single unit mounted on wheels
3. The unit must have fully integrated Acquisition Workstation with inbuilt 12" QHD (2160x1460 Pixels) resolution with Dual Touch 10 Finger Capacitive Multi Touch screen.
4. Full exposure control of High Frequency generator, X-Ray tube & imaging S/W must be from the main console.
5. The exposure release switch should be detachable with a cord of sufficient length (at least 3 m)
6. The unit should have integrated cassette box with lock & key for safety of DR panel / detector
7. The weight of complete Mobile Digital X-Ray unit with one DR panel must be less than 100 kg
8. The X-Ray Generator:
   - Microprocessorcontrolled inverter type highfrequency 200 KHz or moreforconstantoutput.
   - Itshouldhavepowerratingof4kWormore
   - ItshouldhaveadigitaldisplayofmAsandkV, both on the Tube head as well as on the main console.
   - KVrange: 40 kv to 100kVormore
   - mArange: 10 mA to 100mAormore
   - mAS selection: 0.1 to 250 mAS or more

9. X-RayTubeandCollimator:
   a. Stationary / Rotating anode having focalspotsize 1.8 mm or less.
   b. The X-Ray tube should be Toshiba or BEL or CEI make
   c. LightBeamdiaphragm / Double layer Collimatorwithautocutoffswitch. Thelightintensitymustbe at least 160luxat1mtrdistance from focal spot.
   d. Collimator rotation - 90° to +90° must be possible

10. Flat Panel Detector (one no.):
    a. Direct Deposit CsiScintilator
    b. Dimensions (in inches): 14" x 17"
    c. Pixel pitch: 140 µm or less
    d. Pixel Matrix: 3072 x 2476 or more

e. Active Area (CsI): 424 x 339 mm or more
f. Image Quality: DQE @ 0 lp/mm – 78%, DQE @ 1 lp/mm – 58%
g. Weight: 3.2 kg or less
h. Communication: Wireless interface 802.11 a/g/n/ac (2.4 GHz / 5 GHz)
i. Exposure Control: Enhanced Automatic Exposure Detection (AED)

11. Acquisition Workstation:
    a. Must be fully integrated with the Mobile X-Ray unit.
    b. 12" QHD (2160x1460 Pixels) resolution LCD display with Dual Touch 10 Finger Capacitive Multi Touch screen
    c. Must have Full exposure control of generator & imaging S/W from console
    d. Fully loaded with DR software for Image Acquisition, Management and Pre/Post Image processing.
    e. Compatible with PACS /HIS, ready for Dicom print and store.
    f. Should provided a 500 DPI two trays Dry Laser Printer / Imager – 1no .
    g. Hard disk storage capacity - must be able to store 1000 or more images of 1024 x 1024 matrix
    h. Should have Quick Preview: Rapid display of Images and Speedy display of images to reduce examination time.

12. The complete unit should operate on single phase power supply and should have plug in facility to any standard wall outlet with automatic adaptation to line voltage 200 to 240 volts, 15 Amp plug.

13. The Leakage radiation level at 1 meter from the focus should be less than 50 mR. Products having minimal leakage radiation level will be preferred. (Please attach relevant test report)

14. The Model offered must have European CE certification.

15. Should be an AERB approved product.

16. User/Technical/Maintenance manuals to be supplied in English.

Note: Standard Warranty of System should be 3 years and should quote for 7years CMC .

40.CT Scan

Tender Specification FOR 128 SLICE CT SCANNER for ALL PURPOSE SCANNING INCLUDING CORONARY ANGIOGRAPHY :

Requirement of top of a line Spiral Multi-Slice CT Scanner with capabilities of acquiring 128 slices per 360 degree in body and Cardiac Scan as per below parameter :

Slno	Description	Parameters
1	**Type :** **Type of CT scanner**	Multislice CT scanner
	Number of Slices per Rotation	128 Slices .
	Number of detector Rows	64 or more.
	Number of acquisition channels	64 channels.
2	**Detector Assembly :** Minimum Field of View	50 cms
	Extended Field of View	50 cms
	Minimum Reconstructed Slice Width Range	0.625 to 20 mm or better .
	Minimum Standard Rotation time for full 360 deg	0.35 Secs or better.
3	**Detector Performance :** High – Contrast spatial resolution at 0% MTF with full FOV	15 lp/cm or more.
	Low – Contrast resolution at 3 HU with 10 mm Slice on 20 cm Catphan Phantom	5 mm or better .
	Image Noise	0.3 % at 25 mGy(2.5rads) or Better .
4	**Advanced Image Acquisition :** Cardiac Imaging	Should be standard .
	Perfusion Imaging	Should be standard .
5	**Gantry :** Gantry Tilt (Physical)	+_ 30 Deg .
	Minimum Gantry Aperture	70 cms or more.
	Scan Localizer	Laser.
6	**X – Ray Generator :** Minimum kW output .	100 kW or more .
	Minimum kVp Range	80-140 kVp
7	**X -Ray Tube :** Minimum Anode Heat Storage (MHU)	7 MHU .
	Anode Heat Dissipation Rate (kHU/ min)	1000 or more.
	Tube Cooling	Air.
	Tube Focal spots	Small focal spot (0.8 x 1mm) , large Focal spot (1 x 1.2 mm).

	Max mA	800 mA or more.
	Minimum Continuous scan time (sec)	100 or more.
8	**Patient Table :** Table Top Material	Carbon Fiber.
	Table Type	Moveable .
	Range of movement – Vertical (cm)	58-88 cms or Better .
	Minimum Scannable Range	160 cms.
	Max load capacity without restrictions (kg)	200 kg or more.
9	**Radiation Dose:** Dose – modulation technique	Should be standard .
	Pediatric – specific Dose control .	Should be standard .
	Prospective ECG gating	Should be standard .
	Retrospective ECG editing .	Should be standard .
	Iterative Image reconstruction for dose reduction .	Should be standard .
	Overbeaming reduction sliding collimation.	Should be standard .
	Low dose Cardiac axial acquisition	Should be standard .
10	**Clinical Applications and Functionality :** Auto Vessel Mapping	Should be standard .
	Quantification	Should be standard .
	Ventricular Output	Should be standard .
	Lung Nodule assisted reading	Should be standard .
	Lung nodule CAD	Should be standard .
	Lung function analysis	Should be standard .
	Respiratory gating	Should be standard .
	Coronary artery calcification scoring	Should be standard .
	Virtual Colonoscopy CAD	Should be standard .
	Vessel analysis (non Cardiac)	Should be standard .
	Brain Perfusion	Should be standard .
	Z-axis coverage for brain perfusion	Should be standard .
	Auto bone removal	Should be standard .
	Body Perfusion	Should be standard .
	Should have highest achievable temporal resolution	Should be standard .
	Dental CT	Should be standard .
	Neuro DSA	Should be standard .
	Metal artifacts reduction	Should be standard .
11	**Image Reconstruction :** Reconstruction FOVs	50 cms or more.
	Reconstruction Matrix	512x 512 and 1024 x 1024.
	Max reconstruction rate, (512x 512) , image /sec .	33 or more.
	Real – time Image reconstruction	Should be standard .
12	**System Integration :** DICOM conformance statement available	Should be standard .
	CT image storage SCU/SCP	Should be standard .
	Enhanced CT storage SCU/SCP	Should be standard .

	Modality work list SCU	Should be standard .
	Query / retrieve SCU and SCP	Should be standard .
	DICOM Worklist License	Should be standard .
	Storage commitment SCU	Should be standard .
13	**Image Processing :** Image Processing Type	Should be standard .
	OEM post processing workstation with dual medical grade Monitor .	Should be provided.
	DICOM 3-D image export	Should be standard .
	Image – processing Software	Should provide Review workstations- MPR, MIP, VRT formats , tools for stenosis measurement , Advanced vessel analysis, automatic bone removal etc.
14	**Workstation Hardware :** Medical grade Monitor and CPU	Should be provided.
	Monitor Type of workstation	LCD/LED / TFT
	Monitor Size of workstation	19'' or more with 2MP resolution or better should be provided.
	Minimum Ram size of workstation	16 or higher.
	Minimum storage capacity of workstation	1000 or higher.
15	**Workstation Applications :** Neuro DSA application in workstation	Should be standard .
	CardicAngio	Should be standard .
	Cardiac Calcium scoring	Should be standard .
	CT angio	Should be standard .
	Filming	Should be standard .
	CT VRT Imaging	Should be standard .
	Perfusion Imaging in workstation	Should be standard .
16	**Accessories :** Online UPS for full backup of atleast 30 minutes**.**	120 KV UPS should be provided.
	Lead Glass	5 feet x 3 feet with 1.5 mm lead equivalence, should be provided.
	Lead apron	5 noswith Hanger& stand should be provided.
	Gonald and Thyroid shield	5 nos should be provided.
	Pressure Injector	Dual Head CT compatible pressure injector with remote control of standard make, latest model with interface software with 100 number syringes and tubings to inject the contrast

		must be provided. Capable of maximum 300psi pressure and flow rate of 10 ml/s and bolus tracker.
	Head Holder	Should be provided.
	Patient Table accessories	Should be provided.
	X RAY film viewer 14'' x 17''	3 film viewer of 14'' x 17'' size-1no should be provided.
	Dry Imager with two Online Trays	1 no of 508 DPI or m ore should be provided.
	Variety of phantoms for quality control.	Should be provided.
	Revolving chairs .	4 nos to be provided.
17	**Certifications and Reports:** Availability of test report/ QA and QC reporting during warranty and CMC as per AERB/ NABH/ JCI guidelines**.**	Should be arranged by the supplier.
	AERB type approval.	Machine should be AERB type approved or NOC
	Product certification	Valid US-FDA & EU-CE certificate of the offered model must be submitted with the offer
	Conformity to Manufacturer's certificate	ISO 9001 & ISO 13485
	Certificate , performance and safety standards specific to the device	IEC 60601-2-44 or equivalent BIS
18	**PRE- Installation Site requirement:** Pre- installation requirements including Room drawing .	Pre- installation requirements including room drawing should be provided by seller after inspecting the proposed site for installation.
	CT installation site	Company should visit the site, in consultation with HOD and do the necessary works like Granite flooring, false ceiling for CT room & Console Room including internal electrical & lighting fittings works. Side walls should be covered with Granite upto 6 feet and 6 nos of 2 tons AC should be supplied for area of 1000 sft.
19	Installation , Training and Maintenance :	Onsite Training for three weeks on machine operations , applications , trouble

		shootingaspects and basic Maintenance should be provided by the supplier.
	After Sales Service	After sales service centre should be available in India and within 24 Hrs complaints should be attended properly, The service should be provided directly by company / Bidder / Local agent .
	Contact details	Contact details of manufacturer, supplier and local services agent to be provided.
	Uptime service during warranty and CMC period	At least 95% to be provided.
	Number of Installations CT scan	The supplier should have experiences in supply and installation of similar type CT scanner of at least – 3nos
20	Warranty of system	Bidder should give warranty for complete system including all accessories for period of three years with 6 years CMC.
21	CT model & software technology	Bidder quoting for the latest model& technology (Post RSNA 2018) model will be preferred .

41. **1.5 Tesla MRI System**

Feature	Detailed Specification
General	
Technical advancement requirements	The vendor should guarantee that the system supplied is not refurbished and the MR system quoted is the latest available model in the segment. Please mention that year of launch of the quoted model.
Certification requirement	The offered model should be CE and USA FDA approved (authentic and legible certificate for the same to be annexed).
Magnet System	
Field strength	1.5T
Type of magnet	Superconducting
Material of magnet	Niobium-Titanium alloy
RF shielding	Should support RF shielding
Filed stability	< 0.1 ppm/h
Shimming system	Should be equipped with shimming system
Shimming	Should have both active and passive shimming
High order shimming	Should have at least 1 channels high order shimming or Auto Shimming or Equivalent
Length of magnet	≤150cm
Patient bore size	≥70cm
Liquid helium boil-off rate	0.0 L/year
Helium volume	≤1400L
Type of cold head	4K cold head
5 Gauss line (axial × radial)	≤4.0m × 2.5m
Gradient System	
Gradient control technique	Should have digital and real-time control techniques
Cooling type	Water cooling

Maximum gradient strength in each axis	≥40 mT/m
Maximum gradient slew rate in each axis	≥200 mT/m/ms
Minimum rise time	≤0.25 ms
Simultaneously achieve max. gradient strength and max. gradient slew rate	Yes
Duty cycle of full FOV	100%
Shielding	Should have active shielding in X/Y/Z planes
Noise reduction technology	Should have noise reduction technology
RF System	
Power of RFPA	≥15kW
Type of RFPA	Should be water cooling and digital interface
Transmit coil	Should be tuning free
Independent receive channels	≥48
Sampling resolution	100MHz
Dynamic range (1 Hz bandwidth)	≥160dB
Noise figure	< 0.5dB
Demodulation filtering	Should have fully digital quadrature demodulation and fully digital filtering techniques
Receive coil	Calculation of coil channels independently
Transmit/receive body coil	Should be equipped with transmit/receive body coil
Head and neck coil	≥20 channels with combination of two coils in single FOV
Body array coil	≥32 channels with combination of two coils
Spine coil	≥24 channels
Large flex coil	≥4 channels
Small flex coil	≥4 channels
Breast coil	≥16 channels with combination of two coils in single FOV

Knee coil	≥12 channels
Shoulder coil	≥12 channels
Wrist coil	≥12 channels
Lower extremity coil	≥24 channels
Cardiac coil	≥24 channels
Coil for infant imaging	≥24 channels
Number of coil interface	≥6
Combined imaging technology	Should have combined imaging technology for multi-body parts
Computer System	
Host	
CPU	≥3.0GHz
Memory capacity	≥32GB
Hard drive capacity	≥1000GB
Image storage (512x512)	≥600000
Monitor resolution	≥1920 x 1200
Monitor size	≥21 inch
High speed MR reconstruction	
CPU	Core number≥44, frequency≥2.0GHz
Memory capacity	≥64GB
Hard drive capacity	≥1000GB
image reconstruction speed (256x256)	≥70,000 frame/second
Maximum MR acquisition matrix	1024×1024
Maximum MR reconstruction matrix	512 x 512
Integrated operating system	The operating system can support the whole process of patient information management, patient registration, scanning, image browsing, post-processing, film printing, archive management, etc.
Interfaces	

Parallel scanning and storage	Should provide parallel scanning and storage
DICOM 3.0 interface and PACS connection	Should provide DICOM 3.0 interface and PACS connection
Network connection with PACS	Support printing, transmission, receiving, query, worklist, etc.
Spin echo (SE)	
2D/3D spin echo	Should provide 2D/3D SE
2D/3D fast spin echo	Should provide 2D/3D FSE
Tissue relaxation time measurement	Should providerelaxation time measurement technique
Variable angle SE sequence	Should provide variable angle SE sequence
Single shot fast spin echo (SSFSE)	Should provide single shot fast spine echo sequence
Gradient echo (GRE)	
Spoiled gradient echo	Should provide gradient echo with RF spoiled technology
3D fast spoiled gradient echo	Should provide 3D fast spoiled gradient echo that utilizes fast fat-saturated pulse, acquiring multiple encoding lines in k-space continuously after each fat-saturated pulse, to reduce acquisition time.
Steady state free precession	Should provide the steady state free precession sequence
Balanced steady state free procession	Should provide balanced steady state free procession to ensure steady-state by spatial, phase and frequency-encodings and finish fast imaging with high SNR
Contrast enhanced MRA sequence	Should provide sequence to conduct contrast enhanced MRA
Time of flight (TOF)	Should provide TOF sequence that enhances signal intensity relative to static tissue by using inflow blood
Phase contrast (PC)	Should provide PC sequence that utilizes phase changes of inflow blood to suppress background tissue but highlight inflow blood
Multi echo combined gradient sequence	Should provide sequence that utilizes shifts of readout gradient after each small-angle RF excitation to acquire multiple gradient echoes
Echo planar imaging (EPI)	
Single shot EPI	Should provide single shot EPI sequence

SE-EPI	Should provide SE-based EPI sequence
GRE-EPI	Should provide GRE-based EPI sequence
EPI IR	Should provide combined EPI and IR technique
Fat saturation technique	
Fat Saturation	Should provide technique that uses chemical shift differences in water/fat molecules to complete selective saturation of fat peak for excellent fat suppression
Spectral attenuated inversion recovery	Should provide technique that uses fat saturated and adiabatic pulses to suppress the maximum fat signals with automatic calculations of inverse time
Spectral excitation	Should provide technique that uses frequency and spatial selected binomial pulses, to combine multiple pulses with various flip angles in different directions
STIR	Should provide STIR technique that is insensitive to inhomogeneous magnetic field/RF filed and provides remarkable fat suppression on large FOV and off-center scanning
EPI-IR	Should provide EPI-IR technique that combines EPI and IR sequence to suppress fat signals and completes EPI acquisitions
Diffusion imaging	
ADC acquisition	Should be able to perform ADC acquisition
Isotropic acquisition	Should be able to perform isotropic acquisition
Anisotropic acquisition	Should be able to perform anisotropic acquisition
ADC measurement	Should be able to perform ADC measurement
ADC mapping	Should be able to perform ADC mapping
Angiography	
2D/3D time of flight (TOF)	Should provide TOF technique to utilize enhanced effect of inflow blood and saturation of background tissue to generate excellent blood-tissue contrast
2D/3D phase contrast (PC)	Should provide PC technique to utilize phase changes and flow velocity encoding to suppress background tissue but highlight angiographic signals
Magnetization transfer contrast	Should provide MTC technique to improve contrast of MR angiography

(MTC)	
Maximal intensity projection (MIP)	Should provide MIP technique
Multi planar reconstruction (MPR)	Should provide MPR technique
Curved planar reconstruction (CPR)	Should provide CPR technique
Artifacts reduction technology	
Flow compensation	Should provide flow compensation technique to reduce the phase error and motion artifacts
Respiratory trigger	Should provide respiratory trigger technique to reduce respiratory motion artifacts
Multi-breath hold scan	Should provide multi-breath hold technique to reduce respiratory motion artifacts
Average mode	Should provide technique to average acquired data for improving SNR and suppressing motion artifacts.
Motion artifact reduction acquisition	Should provide the motion insensitive technology to do radial k-space filling and reduce motion artifacts. Specify the technology name.
Image filtering	Should provide image filtering to improve image quality
Radial acquisition	Should provide the radial acquisition technology to reduce motion artifact caused by pulsation, breathing or swallowing
Fast acquisition technique	
Half Fourier	Should provide Partial Fourier that fills out k-space with acquired phase-encoding lines based on its conjugate-symmetric theory
Partial read out	Should provide partial read out that utilizes sequences without echo-train and reduces TE to decrease acquisition time or increase acquisition slice numbers
Rectangular FOV	Should provide rectangular FOV technique that could save scanning time
Parallel imaging	Should provide parallel imaging technique to accelerates routine clinical scanning to improve patient throughput and optimizes temporal/spatial resolution within same acquisition time
Elliptical acquisition	Should provide elliptical acquisition technique that can partial fill k-space with central information by elliptical acquisition technology

Other standard techniques	
Sequential and interleaved slice acquisition	Should provide sequential and interleaved slice acquisition method
Variable bandwidth	Should provide method that is open for users to adjust sequence bandwidth
adjustable receiving gain	Receiving gains should be adjustable for acquired signals.
Frequency offset	Scanning frequency offset can be adjusted automatically and manually
Graphical and interactive slice planning	Should provide Graphical and interactive slice planning technique
Variable-rate selective excitation	Should provide variable-rate selective excitation to optimize RF energy
Automatic coil selection	Should provide automatic coil selection technique
Comprehensive application package	
Neuro examination	Should provide dedicatedly designed sequences, protocols and workflow for neuro imaging
Body examination	Should provide dedicatedly designed sequences, protocols and workflow for body imaging
Orthopedics examination	Should provide dedicatedly designed sequences, protocols and workflow for orthopedics imaging
Oncology examination	Should provide dedicatedly designed sequences, protocols and workflow for oncology imaging
Breast examination	Should provide dedicatedly designed sequences, protocols and workflow for breast imaging
Vessel examination	Should provide dedicatedly designed sequences, protocols and workflow for vessel imaging
Cardiac examination	Should provide dedicatedly designed sequences, protocols and workflow for cardiac imaging
Pediatric examination	Should provide dedicatedly designed sequences, protocols and workflow for pediatric imaging
Advanced application	
Compressed sensing or compressed sensing-based acceleration technology	Should support compressed sensing technique, and it cannot be replaced by other technologies such as parallel imaging technology.

Compressed sensing for dynamic imaging	Specify the highest temporal resolution achievable for the quoted MR system
Compressed sensing for static imaging	Should support compressed sensing technique for 2D / 3D static imaging
High speed reconstruction machine for compressed sensing	Should provide high speed reconstruction machine for compressed sensing imaging data
Susceptibility weighted imaging	Support amplitude map, phase map, and Min IP reconstruction
Susceptibility weighted imaging with blood signal suppression	Should support blood signal suppression in susceptibility weighted imaging
Susceptibility weighted imaging in abdomen	Support fast acquisition for a single layer to obtain a comparison of tissue susceptibility
Magnet resonance spectroscopy	Support single voxel and multi voxel acquisition
Diffusion tensor imaging (DTI)	Should support ≥128 directions diffusion tensor imaging
Brain perfusion	Should support brain perfusion to show high temporal resolution imaging of brain tissue
Functional MRI with BOLD technology	Should support BOLD to analyze brain function, such as motion and cognitive positioning, and data of activated brain region with respect to susceptibility changes
Fat quantification technology	Should support fat quantification technique, specify the technology name
Computed DWI technology	Should support computed DWI technology that produces computed b value DWI images
Small FOV DWI	Should support DWI in small FOV, specify the technology name
Mapping technology	Should provide sequences for tissue T1, T2. Mapping
Smart examination	Should support automatic “one-button-to-push” anatomical orientation for examination process
Head smart examination	Should support smart examination for head
Spine smart examination	Should support smart examination for spine
knee smart examination	Should support smart examination for knee
Cardiac smart examination	Should support smart examination for cardiac
Multiple protocols manipulation	Should support manipulation of multiple protocols within a single user interface
Cardiac imaging package	Should provide cardiac imaging package

Advanced image post-processing workstation	Should provide the latest version of image post-processing workstation
BOLD analysis	Should provide post-processing software for evaluation of functional MRI data
MRS analysis	Should provide post-processing software for evaluation of MRS data, including single voxel and multiple voxel data
Brain perfusion analysis	Should provide post-processing software for evaluation of MR brain perfusion data
Tractography	Should provide post-processing software for DTI and Tractography, estimation of ADC, FA, fiber tracking, fiber statistics and display of fiber tracts on anatomical images
Breast evaluation and analysis (optional)	Should provide post-processing software for evaluation of MR breast imaging data
Maps analysis	Should provide post-processing software for the calculation of T1, T2., R2. and ADC
Image fusion	Should provide post-processing software for images fusions of different MRI contrasts
Vessel analysis	Should provide post-processing software for angiography analysis, with the accurate extraction of blood vessels and fast automatic measurement
Cardiac analysis	Should provide post-processing software for cardiac function analysis
Examination environment	
Communication system	Should provide two-way intercom to communicate with patient for scan instruction and patient's anxiety elimination
MR compatible headphone	Should provide MR compatible headphone to play music or to communicate with patient
Adjustable patient comfort setting in tunnel	Should provide adjustable patient comfort setting of ventilation and in-bore lightness
Control panels	Should provide dual-side control panels with touching screen
Emergency alarm device	Should provide emergency alarm device for patient during examination
Maximum weight of patient table	≥200kg
Maximum horizontal moving speed of patient table	≥20cm/s
Length of patient table	≥260cm

Scanning range	≥200cm
Automatic table movement for multi-station scan	Should provide automatic table movement for multi-station scan
Emergency stop button	Should have emergency stop button on each side of patient table
MR compatible drip stand	Should provide MR compatible drip stand
MR compatible paper roll stand	Should provide MR compatible paper roll stand
Coil cabinet	Should provide coil cabinet for coils storage
Three independent High-end OEM make dedicated workstations with 24 Inch Medical Grade Monitor	A standalone workstation with hardware and software of the same user (OEM) interface as of main console is required with the availability with all software and applications in each of them including advanced post processing for Neuro, Cardiac etc
Camera	MR compatible OEM make camera should be provided inside the Scanning Room , to observe the patient condition while scanning .

Local Third-Party Standard Accessories
160 KVA ups for the MRI with 30 mts back up
Metal detector doors to be installed at the entrance points These detectors are recognized to be the most accurate ferromagnetic detectors for MRI on the market.
Handheld Metal Detectors
MRI compatible Fire Fighting System,
Fire Detectors with Fire Extinguishers.
Music Systems.
Closed circuit CCD camera for the entire MRI work floor.
Dry Imager with two Online Trays: 1 no of 508 DPI or more should be provided. XRAY film viewer 14'' x 17'': 3 film viewers of 14'' x 17'' size- 1no should be provided.
X RAY film viewer 14'' x 17'': 3 film viewers of 14'' x 17'' size- 1no should be provided.
MR Compatible Oxygen Cylinder.
MRI Console Table & Two Chairs for Technician and Doctors.

MR compatible stethoscope
MR compatible IV stand
MRI compatible
Medicine trolley
wheelchair
patient trolley
Suitable chiller for MRI system.
Three latest generation Computer for online reporting (16 GB Ram, 1TB hard disc, 21 inch) with UPS.
RF cabin and interior and RF interior Room and air- conditioning of the same should be provided.
RF coil storage cart.
Color laser printer (all in one, scan, copy, print)
200 DVD and 10 pen drive (32 GB)
Patient comfort kit including following and other standards.
Noise guard head set for adult, children and neonatal.
MRI compatible Dual Head Pressure Injector with 50 syringe
Earphones.

Turn Key Civil works for Installation of MRI system for of 1200 SFT should be carried by the Bidder
Turn Key offer – to include for existing MRI designated area
Total Civil Works : False ceiling, flooring and wall painting for the following room i) Magnate Room , Cabinet Room , Console Room, Radiologist Reporting Room and Dress change Room .
Electrical Works :Power panel, Electrical wiring and electrical fittings for the magnet, Cabinet, Console room and other attached area including copper earthing.
Air conditioning of the above specified area.
Warranty : Bidder should give warranty (3) three years for complete system including all accessories

&Third party items supplied along with the MRI system .

Bidder should also quote for 7 years CMC prices for the complete system including all accessories & Third party items supplied.

Note: Operator's console to have the following.

1. Emergency scan abort capability.
2. Manual over rise.
3. Audio System for communication.
4. Room Oxygen indicator.

- Should comply toGovt of Karnataka Order No. FD 455 exp-12 2020 Dated 25.08.2020.

Declaration should be submitted should be submitted in the tender .

- Should comply to CDSCO GOI .F . NO 29/Misc/03/2021-DC(28) Dated 03.11.2021.
  Documents complying CDSCO GOI .F . NO 29/Misc/03/2021- DC(28) Dated 03.11.2021 to be submitted should in the tender .