OKUMAN Healthcare
Dedicated Hospital Solutions

OKM 801

INFANT INCUBATOR

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OKM 801 Infant Incubator

- Two control modes: Air mode and Baby (Servo) mode controlled by microprocessor,
- Trend Information can be stored, controlled and displayed by the LCD screen,
- Optional Oxygen concentration level display and servo control system,
- ">37°C" override heat setting function,
- Heated servo humidification setting and display and drawer-shaped integrated water tank with level indicator,
- Optional inbuilt weighing scale & Under-bed X-ray cassette tray,
- Embedded integrated sensor module, with dual thermistors for operational safety
- Adjustable continuous bed tilt
- Air curtains on both front and rear outlets,
- Internal battery for alarms and monitoring, inbuilt drawers, and optional IV pole and monitor tray
- Optional integrated weighing scale, LED examination lamp with spot phototherapy and electrical height adjustment
- Audiable and visible alarms,dual temperature measurement for twins
- Optional wireless and USB connection for data output, and HL7 ready,
- Optional sliding rotating bed with safety lock, double wall, access door covers, slow dumping door mechanism
- Optional slave display, Nellcor SpO2 and NIBP measurements, Patient circuit holder, access ports,
- Easy access to the incubator from four sides
- Fully removable control panel in case of any malfunction
- Rotary knob available for Manual O2 Control

01 Air and Oxygen Circulation and Air Curtain Features

- The air circulation system through front and rear air outlets including left-right air return, the incubator has automatic accelerated vertical air curtains when the cabin doors are open, there by minimizing the heat loss inside the canopy and provide stable micro environment to infants.

- Optional Oxygen supply can be calibrated with single step and the oxygen concentration can be quickly increased to the set value. Servo controlled or manual flowmeter setting options available.

02 Heated Humidification Function

- The high temperature steam humidification method is used to eliminate common pathogenic bacteria in the water tank, greatly reducing the risk of infection.
- Water level indicator is available.

- The drawer type water tank, placed on the outside of the infant's bed, can be removed as a whole for easy cleaning and disinfection. Autoclavable water chamber option is available.
- With the humidification system, a stable thermal environment with the required humidity level is provided. It works perfectly to prevent transepidermal water loss in newborns. It allows clinicians to adjust the relative heated humidity level inside the canopy.

Water tank capacity	1500 ml
Humidity display range	%0 RH~%100 RH
Humidity control range	%30 RH~%95 RH
Humidity control precision	% ±5 RH

03 User-Friendly, Comfortable Treatment Environment

- Pressure-relief waterproof washable mattress is made of polyurethane material, which is soft and breathable, thereby improving the comfort of newborns.

- With the use of biocompatible materials, sensitivity, irritation and toxicity formation on the baby's skin are prevented and the skin integrity is preserved.

04 Trendelenburg Feature

- The angle of the bed can be adjusted through the touch screen and adjust the trendelenburg level. Thus, it provides smooth continous positioning to reduce patient trauma from shaky manual movement. It effectively reduces the reflux and vomiting problems.

  The trendelenburg directions and level can be adjusted as desired by pressing the right and left trendelenburg buttons on the main screen. Bed inclination can be reset with one touch button in the middle.

Manual trendelenburg optional

- By turning the left Trendelenburg manual adjustment knobs on the sides of the device, the bed can be easily the desired angle.

Manual Trendelenburg

05 X-Ray Tray

- The X-ray cassette can be placed under the bassinet, eliminating the need to move the newborns and reducing the risk of infection.

06 Bed Mechanism and Canopy Damping System (Optional)

- Sliding out mattress tray with safety mechanism.
- The panel damping system allows the panels to fall slowly and silently without the need to hold them.
- Double protection design is available to prevent the front door from opening accidentally.

07 User Interface and External Display Feature (Optional)

- Optional dual-screen display for alternative user control and monitorization,
- External 12.1 inch TFT color touch screen, 360° adjustable angle, clearly visible from far distance, fast switching between multiple languages, convenient for medical personnel to monitor and use.
- Medical personnel can easily observe the treatment of infants in the incubator remotely.
- It has single piece injection molding, smooth appearance, long service life, and robust structure.
- Screen brightness can be adjusted, and power on/off for LED examination and spot phototherapy lamps.
- Incubator air temperature, Dual skin temperature, heater power, baby's weight, phototherapy timer, SpO2, Pulse rate, humidity, oxygen concentration and alarms can be monitored on the inbuilt 8 inch color Touch LCD screen.
- Display function and external data output. It is also HL7 ready.
- In addition, the data of measured parameters are recorded in 2, 8, 24 hours and upto 7 days period.
- Can be viewed graphically and numerically on the Trend menu screen.

08 Storage Feature

- The large-capacity drawer is ergonomic and can conveniently take cords and other accessories.

  Large drawer maximum 5 kg
  Two small drawers max 5 kg each

09 Electrical Height Adjustment Feature (Optional)

- The height of the device can be adjusted through electrically powered foot pedals It allows easy use for clinical staffs.

- By pressing the pedal in the direction of the up arrow, the height of the device can be brought to the desired height, or by pressing the pedal in the direction of the down arrow, the height of the device can be reduced.

10 Swivel Bed

- The innovative design with the Slewing Bearing allows for seamless rotation of the incubator bed, providing easy access to the baby from any angle for medical professionals and caregivers.
- Its smooth and silent motion ensures a soothing environment for the infant, fostering a sense of security and aiding in their recovery journey.

11 Examination and Spot Phototherapy Lamp (Optional)

- The examination lamp illuminates the bed evenly and helps the medical staff to observe and care even in a dark environment. Also spot LED Phototherapy is available as option with timers in the control panel.

12 NIBP (Optional)

- Easy, convenient, reliable measurement and monitoring of parameters such as systolic blood pressure, mean arterial pressure (MAP), diastolic blood pressure and pulse,
- Manual, automatic measurement mode (1/2/3/4/5/10/15/30/60/90/120/180/240/480 min and 5 min continuous mode,
- Adjustable upper and lower alarm limits for systolic, diastolic blood pressure and MAP measurements,
- Real-time transmission of module working status, including hardware, software and sensor status,
- A unique algorithm with the ability to resist motion interference and weak signal measurement,
- It has the function of gas leakage detection to detect whether the gas path is leaking
- With double overvoltage protection (hardware and software overvoltage protection)
- Double timeout protection

NIBP Indicator Panel

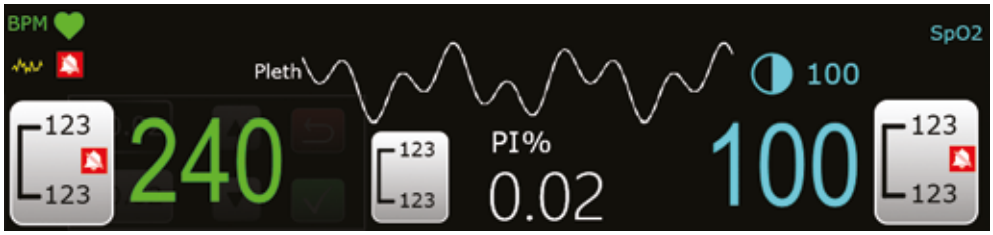
13 Nellcor SpO2 (Optional)

It offers clinicians the opportunity to safely detect respiratory complications early and intervene promptly.
Incorporates the latest Nellcor™ digital signal processing technology for accurate, reliable readings even during low perfusion, motion and other forms of signal interference.

It reacts to the patient's status with technology that displays the patient's oxygenation and pulse more quickly than other technologies.

Provides real-time information on patients' respiratory status, including continuous SpO2 and pulse rate monitoring and trend data
Displays realtime SpO2 and pulse rate measurements, plethysmographic waveforms and pulse amplitude
Includes SatSeconds alarm management, a clinician-controlled feature that can distinguish between real, clinically significant events and transient events by taking into account both the severity and the duration of any desaturation event.

SpO2 Indicator Panel



SatSeconds alarm management: How does it work?

The SatSeconds™ function can be activated by selecting a SatSeconds limit, or "clock," of 10, 25, 50 or 100 SatSeconds. Clinicians who choose to employ the SatSeconds function should select a limit suited to their clinical environment and patient conditions. The SatSeconds function is the product of magnitude and time a patient's saturation exceeds SpO2 alarm limits.

If the oxygen saturation is outside the limits, the SatSeconds feature calculates: [SATURATION POINTS] × [SECONDS].

For example, in the graph below the alarm threshold is set at 95 and SatSeconds is set to 25.

The SatSeconds clock is clearly visible on the monitor. The clock begins to fill as the monitor starts to track a desaturation event.

EVENT 1

The patient's SpO2 drops to 86 percent and the duration of the event is two seconds before the saturation returns above the low alarm limit of 92 percent.

6 percent drop below the Low Alarm Limit
x 2 second duration

12 SatSeconds

Because the SatSeconds Alarm Limit is set at 25 and the actual number of "SatSeconds" equals 12, there is no audible alarm.

EVENT 2

15 SatSeconds

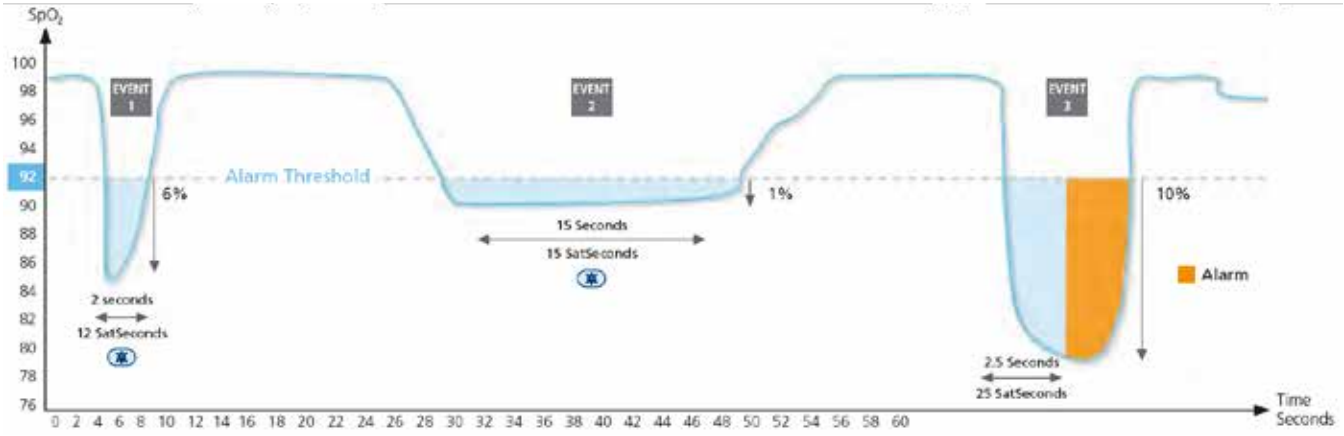
EVENT 3

During this event, the patient's saturation drops to 82 percent, which is 10 percent below the low alarm limit of 92 percent. Since the patient does not return within 2.5 seconds, there is an audible alarm.

10 percent drop below the Low Alarm Limit
x 2.5 seconds (maximum time allowed)

25 SatSeconds

At this level of saturation, the event would only be able to last for 2.5 seconds. However, the patient's saturation did not return within that amount of time. Therefore, an audible alarm is heard just under three seconds into the event.



Technicial Specifications	
Screen Specifications	
Built-in Screen	8" color touch TFT LCD screen with IP2X Protection
Optional-Incubator Integrated External Screen	12.1" color touch TFT LCD screen with IP6X Protection
Physical Specifications	
Height	144 cm (Fixed base) / 131 cm to 156 cm (E-base); Trolley height: 880 to 1100 mm
Width	100.5 cm
Depth	57.7 cm
Weight	110 kg with (Fixed base) / 122 kg with (E-base)
Canopy Specifications	
Inlet Hole (Grommet)	10 pieces
Intervention Window	6 pieces
incubator covers	2 long covers; 1 front and 1 back cover (Can be opened 180 degrees)
Mattress Sponge Size	75 cm x39cm x 3 cm
Bed Tilt	±13 ° base specification
Electrical Specifications	
Power source	AC 230V±%10V 50Hz or AC 110V±%10V 60Hz
Maximum heater output power	400W/240V or 400W/120V
Auxiliary power output	AC 230V±10V 50Hz or AC 110V±10V 60Hz, Max. Current 3A
Temperature Control Modes	
Heater indicator	0~100% (10% adjustment)
Temperature control mode	Air mode Baby mode (Servo)
Air temperature control range	20~37℃ with +/- 0.2 C accuracy 37~39℃ (User controlled mode) Override 37℃
Air temperature display range	10-50 C with 0.1 resolution
Baby temperature control range	34~38℃ 37~38℃ (User controlled mode)
Skin temperature display range:	10-50 C with 0.1 resolution
Skin Mode Control Accuracy	±0.1°C
Dual Skin Temperature Monitoring	Yes
Temperature rise time* (ambient temperature: +25°C)	≤20 min
Temperature variability	≤0.3°C
Temperature uniformity (bed placed horizontally)	≤0.8℃
Sensitivity of the skin temperature sensor	±0.2℃
Oxygen Concentration Control (Optional)	
Oxygen concentration display/measurement range	0%~100% with +/- 1% resolution
Oxygen concentration display/measurement accuracy	±2% (preset oxygen concentration: < 25%) ±3% 02 (preset oxygen concentration: >25%)
Oxygen concentration control accuracy	±1% 02 volume concentration
Oxygen concentration control range	%21–%70
Scale Specifications (Optional)	
Weight range	0 kg~10 kg
Weight display sensitivity	1g
Weight display accuracy	±5 g
Humidity Control	
Working time of the water tank after filling with distilled water	≥ 24 hours maximum 85% RH and 36°C, in Air Mode
Water tank capacity	1500 ml
Humidity display range	0%RH~100%RH
Humidity control range	30%RH~95%RH in 1% increments
Humidity control precision	±5%RH
Resolution	+/- 1%
Humidity sensor measurement accuracy	+/- 1.8%
Target humidity range	User selectable from 30%RH to 95%RH

SpO2 Specifications (Optional)	
SpO2 saturation measurement range	%1-100
PR measurement range	20-250 bpm
Perfusion measurement range	0.03-%20
SpO2 measurement accuracy	70% to 100% ± 2 (Low sat) 60% to 80% ± 3 (Low Perfusion) 70% to 100% ± 2 (With Motion) 70% to 100% ± 3
PR measurement accuracy	20 to 250 bpm ± 3 (Low Perfusion) 20 to 250 bpm ± 3 (With Motion) 20 to 250 bpm ± 5
NIBP Specifications (Optional)	
SBP	40-130 mmHg
MAP	20-100 mmHg
DBP	10-90 mmHg
Cuff Pressure	
Range	0-300mmHg
Accuracy	±2mmHg or ± %1
Resolution	1mmHg

Other Specifications	
Noise level inside the incubator	≤ 45 dB at a constant temperature
Noise level in the cabin when operating at 65% oxygen in servo oxygen mode	≤ 49 dB
In-cabin airflow rate	≤10 cm/s
Carbon dioxide (CO2) level:	< 0.5%
Air flow:	< 30 l/m
Baby Cot extandable size:	510 x 848 x 455 mm
User interface with multiple languages	

Physical Conditions	
Operating Range	20 °C-30 °C
Ambient Air elocity:	‹0.3 m/s
Trend Specifications	
Trend duration	0 to 2, 4, 8, 24 hours up to 7 days
Parameters	Canopy air temperature, first and second skin temperatures, oxygen rate, humidity rate, heater, weight
Display Type	Numeric and Graphic

Standard and Optional Features	
Standard	**Optional**
Servo Humidity Control	Servo Oxygen Control
Air Temperature Control	VHA (Vertical Height Adjustment) Stand
Skin Temperature Control	Baby Scale
3x Drawer	External Touch Screen
2x Air Filter	IV pole (load capacity 10 kg) Height Adjustable Monitor Tray (850 mm to 1627 mm, extendable to 2000 mm +/- 5%)
2x Iris Access Window Cover	Manual Trendelenburg
6x Access Window Cover (QT Sleeve)	Nellcor SpO2 measurement module / SatSeconds
10x Grommets	NIBP
APGAR Timer	
	Swivel Bed
	Examination and Phototherapy Lamps

Functional Alarms

Over Temperature	Sensor Module is not in Place
High Humidity Rate	Sensor Module Position is Wrong
Low Humidity Rate	Canopy Door is Open
Water Case not In Place	Low Air Temperature
Water Level Low	High Air Temperature
Skin Probe Placed Wrong	Air Temp Sensor Measure Fault
Skin Probe Removed	High Oxygen Rate
Skin Probe Measure Fault	Low Oxygen Rate
High Skin Temperature	Oxygen Sensors not Connected
Low Skin Temperature	Oxygen Sensors Measure Fault

System Alarms

Skin Probe Fault	Fan Motor Speed Fault
High Air Heater Temperature	Battery System Fault
Air Temp Sensor Fault	Air Heater System Fault
Low Battery Voltage	Sensor Module Communication Fault
Servo Oxygen System Fault	Humidity Heater System Fault
Power Failure	Mainboard Communication Fault
Scale Circuit Fault	Battery is Not Exist
Air Circulation System Fault	Sensor Module Fan Fault
Humidity Sensor Fault	Oxygen Leakage

SpO2 Alarms

Technical Alarms	Physiological Alarms
Replace Sensor	PI Value Low
Pulse Search	PI Value High
Extended Update	Pulse Rate Low
Pulse Timeout	Pulse Rate High
Sensor Failure	SpO2 High
Interference	SpO2 Low
Sensor Disconnected	SpO2 INOP
Pulseoximeter Communication Fault	
Sensor Off	

NIBP Alarms

Technical Alarms	Physiological Alarms
NIBP communication fault	Over pressure
NIBP system fault	Excessive patient movement
Manual stop	Exceed measure scope
Measurement timeout	High MAP pressure
Signal is saturated	Low MAP pressure
Signal is weak	High diastolic pressure
Pressure error	Low diastolic pressure
Cuff is too loose	High systolic pressure
Cuff air leakage	Low systolic pressure

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