

Bio Signal Total Solution

Total Health care for everyone





BT-550

Infant Warmer

Int. Sales Team
Bistos Co., Ltd.



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❖ Main Purpose

- Nursery
- NICU (neonatal intensive care unit)

❖ Object

- Newborn Infant
- Warmer & Resuscitation

❖ Intended Use

- To emit controlled, evenly distributed overhead heat to the body of premature infant and other newborns that cannot effectively regulate their body temperature.



Introduction - Features

BT-550

- ❖ Servo temperature control (Manual, Baby, Pre-warm mode)
- ❖ Swivel head and X-rays tray for other procedure
- ❖ 7" TFT Color LCD
- ❖ 6 Events Alarms
- ❖ Tilting mattress for Trendelenburg treatment
- ❖ Weighing Scale with high accuracy technology
- ❖ Masimo SpO2
- ❖ Oxygen regulator & Vacuum regulator for resuscitation
- ❖ Easy removable side walls for easy access and cleaning
- ❖ APGAR timer for 1, 5, 10 minutes
- ❖ LED Examination light for 3 level brightness



Specification

BT-550

❖ General

Display	7" Color TFT-LCD screen
Power	AC 110/220, 50/60Hz
Internal battery	3.7V, 2,600mA Li-ion / Alarm sounds for 30min while no power
Interface	RS232C
Dimension	1,027(W) x 690(D) x 1,890(H)mm
Stand height	Fixed: 725mm / Lifting: 615 ~ 815mm
Mattress	495(W) x 810(D) x 27(H)mm
Weight	Main unit: 83kg(Standard), 98kg(Full Option) / Packing: 126kg (Full Option)
Certificate	CE
Warranty	2 years



Specification

BT-550

❖ Temperature Control

Servo control	Prewarm / baby / manual
Skin display range	26 ~ 42°C $\pm 0.3^{\circ}\text{C}$
Skin control range	34 ~ 38°C (in baby mode)

❖ Infrared Heater

Manual control range	0 ~ 100%, 20 levels
Output power	600W
Mode	Prewarm / baby / manual
Life time	5,000hrs



Specification

BT-550

❖ Function

Microprocessor controlled	Prewarm / baby / manual
Rotation of head	90° (left, right both directions)
X-ray tray	34 ~ 38°C (in baby mode)
Alarm	Visual & Sound / 6 events alarms
	Alarm sounds for 30min when power outage

❖ Apgar

Setting range	0sec ~ 59min 59sec
Indicating beep	1, 5, 10min





Specification

BT-550

❖ Examination Lamp

LED	40W(10W x 4ea)
Brightness control	3 levels
Illumination	> 7,000lx

❖ IV Plate (option)

Dimension	479(W) x 402(D) x 756.4(H)mm
Weight	Approx. 5kg
Plate dimension	402(W) x 302(D)mm
Weight limit	Approx. 11kg





Specification

BT-550

❖ Weighing Scale (option)

Measurement range	0 ~ 10.0kg \pm 50g
Dimension	810(W) x 400(D) x 46.6(H)mm
Weight	Approx. 5.8kg

❖ Ringer Pole (option)

Dimension	300(W) x 310(D) x 718~1,068(H)mm
Weight	Approx. 2.5kg

❖ Tilt (option)

Angle	$\pm 15^\circ$
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Specification

BT-550

❖ Basket (option)

Dimension	464.2(W) x 490.5(D) x 241.3(H)mm
Weight	Approx. 4.3kg
Weight limit	Approx. 10kg
Partition dimension	391(W) x 205(D) x 53(H)mm
Partition weight	Approx. 0.45kg

❖ Lifting Stand (option)

Lifting height	615 ~ 815mm
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❖ Masimo SpO2 (option)

SpO2 range	1 ~ 100%
SpO2 accuracy	70 ~ 100% ± 3 digits, 0~69%: unspecified
Pulse rate range	25 ~ 240bpm ± 3 digits



Configuration - Outlook

BT-550

❖ Front View



➤ Standard



➤ Full Option



Configuration - Outlook

BT-550

❖ Side View













➤ Full Option



Configuration - Options & Accessories








BT-550

	Name	Description		Name	Description
	Fixed Stand	Movable warmer cradle with wheels		Masimo Extension for SpO2 sensor (option)	Extend sensor cable
	Mattress	Accommodate infant stably with bouncy mattress		Weighing scale (option)	Measures infant's weight
	Power cable	AC power cord		Basket (option)	Store medical equipment and items which infant needs
	Skin temp sensor	Measures infant's skin temperature, 2pcs		Basket Partition (option)	Partition of basket
	Masimo SpO2 Sensor (option)	Measures infant's SpO2		Ringer pole (option)	IV hanger



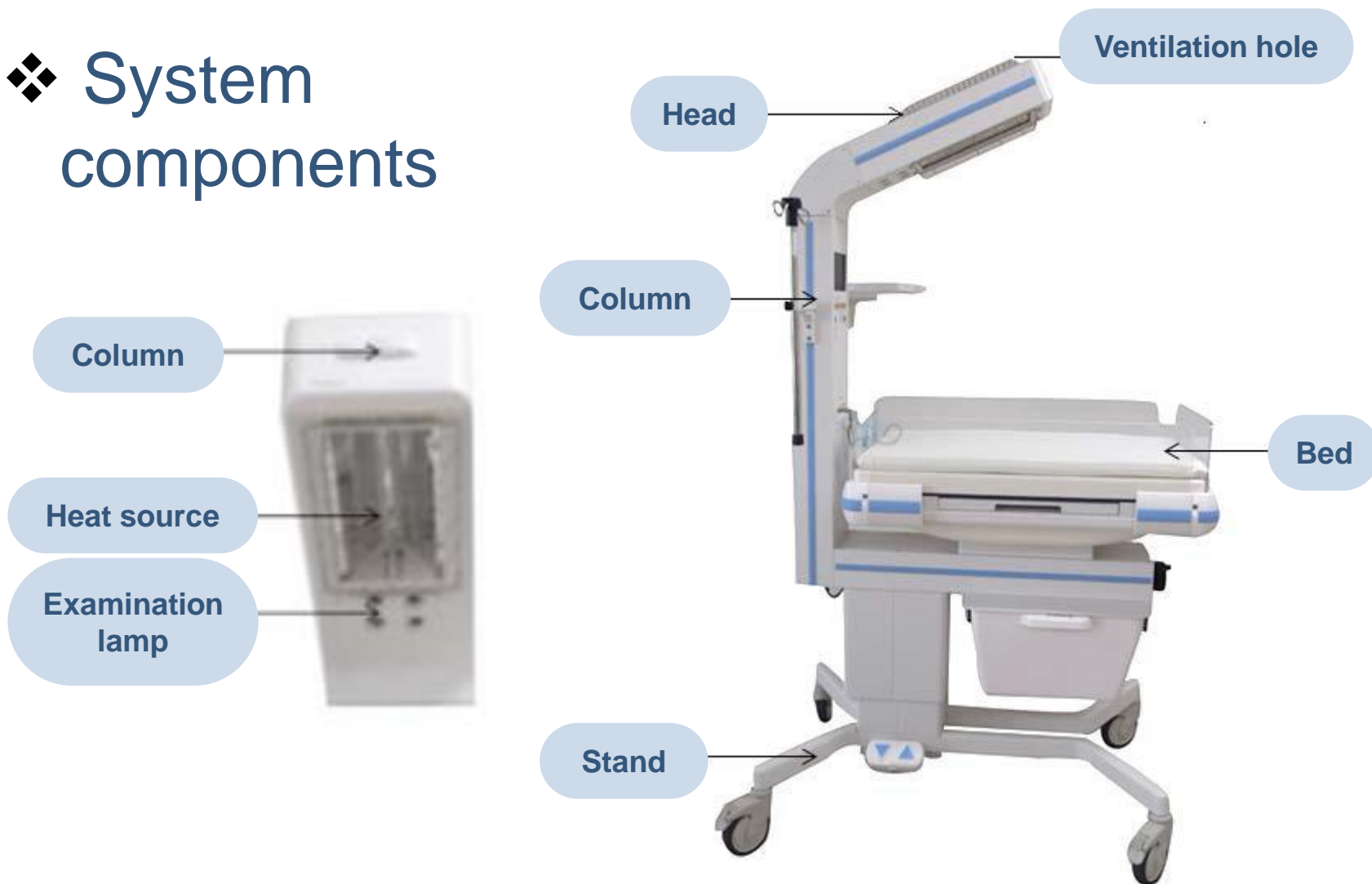
Configuration - Options & Accessories

BT-550

	Name	Description		Name	Description
	IV plate (option)	Plate to place items which infant needs		Oxygen regulator	Control oxygen supply to infant
	Lifting stand (option)	Movable warmer cradle with wheels		Oxygen mask	Supply oxygen to infant
	Tilt (option)	Tilting mattress for Trendelenburg treatment		Vacuum regulator	Suction
	Oxygen cylinder bracket (option)	Bracket to hold oxygen cylinder			



❖ System components



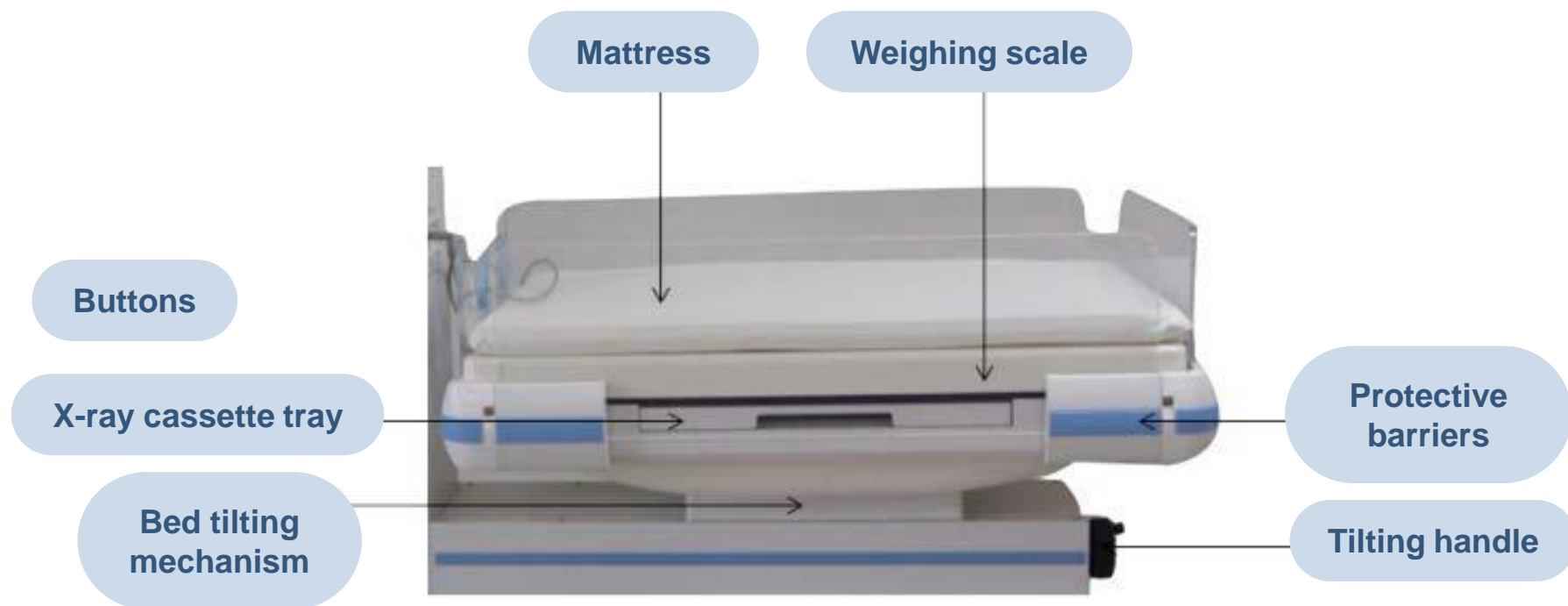


❖ Column



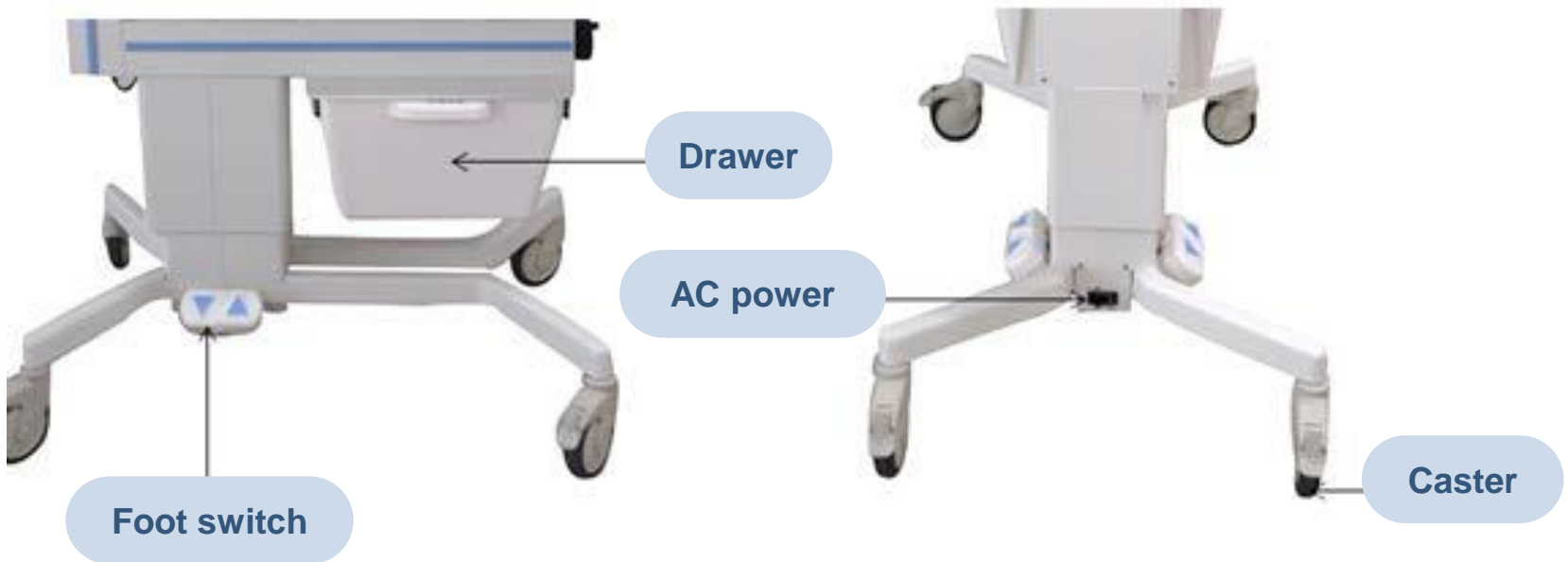


❖ Bassinet



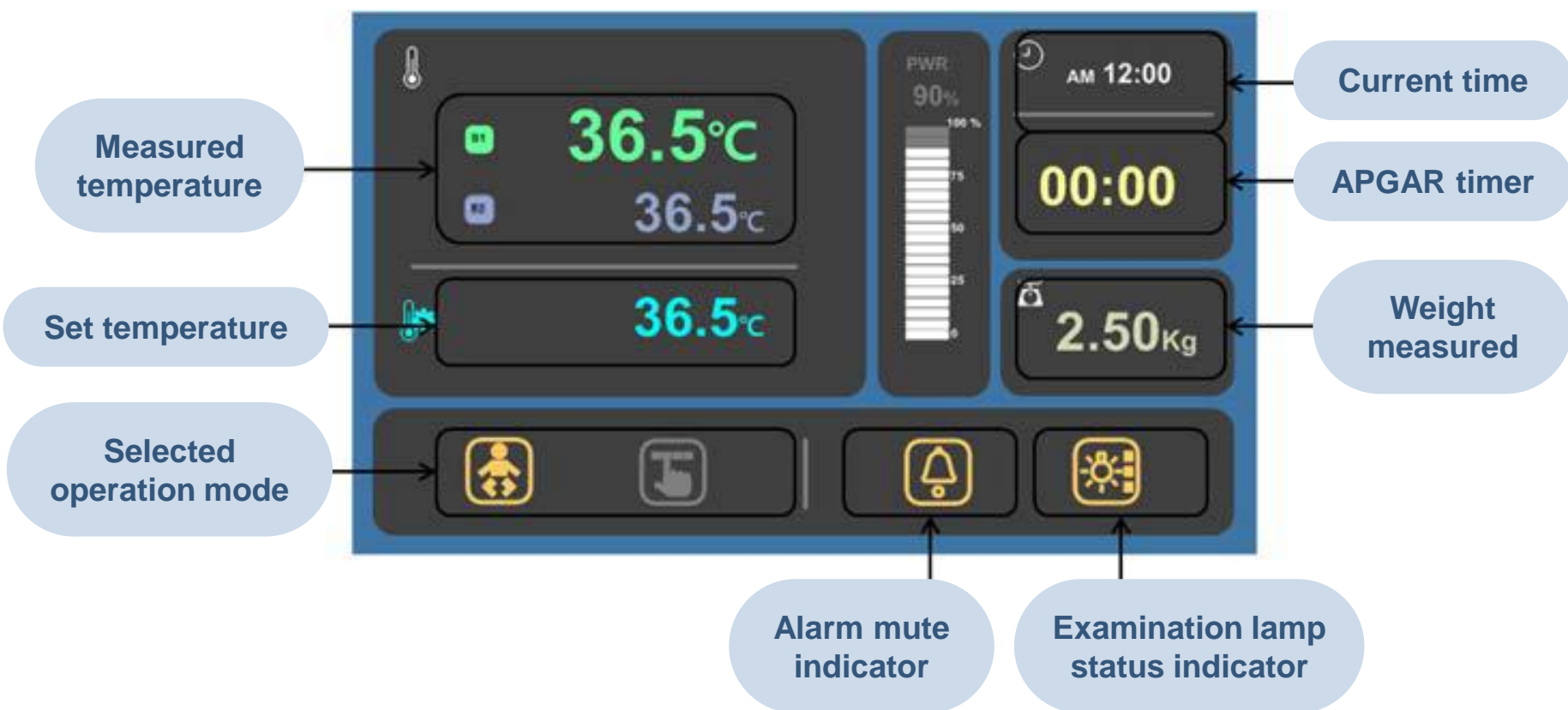


❖ Stand part



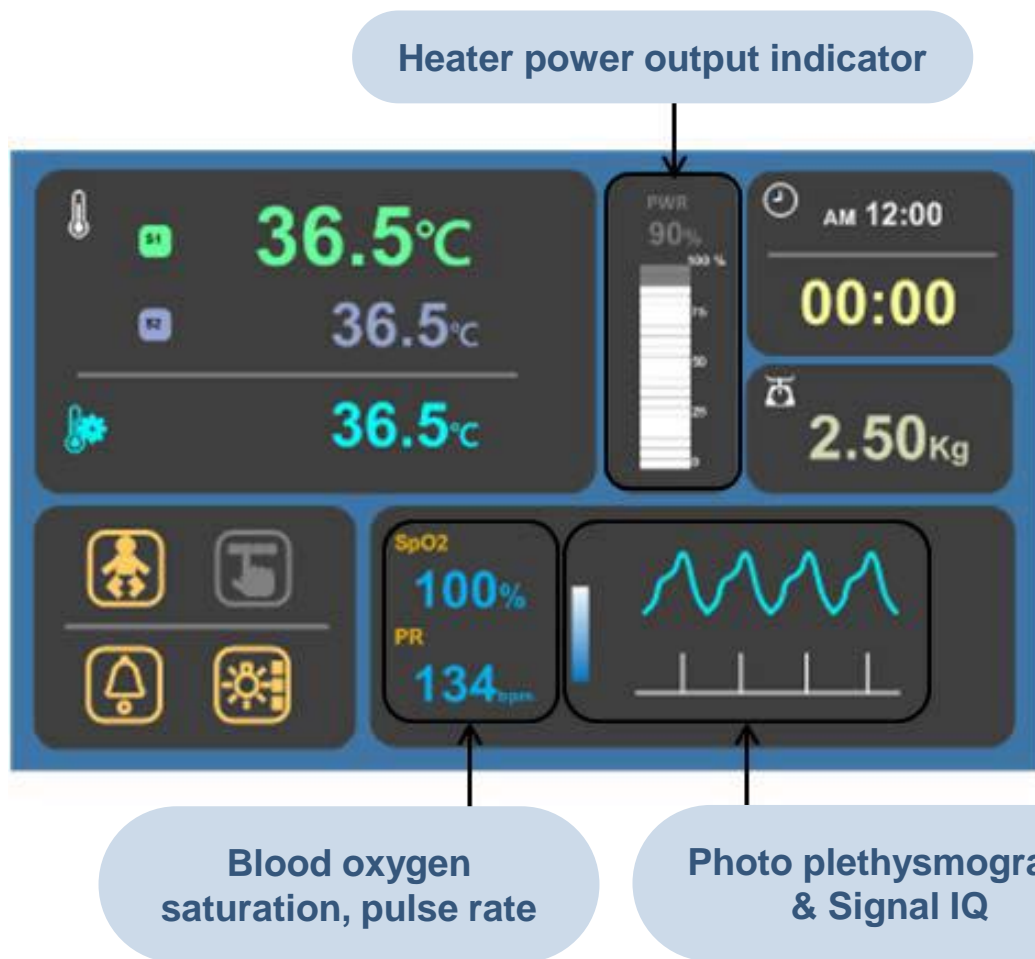


❖ Standard Display











❖ Display with SpO2 option





Basic Info - Buttons






BT-550

Symbol	Name	Description
	Mode	Button for mode selection
	Up	Button for increment of temperature set value in baby mode and heater output in manual mode. It can be used to move cursor upward or change the set value in setting mode.
	Down	Button for decrement of temperature set value in baby mode and heater output in manual mode. It can be used to move cursor downward or change the set value in setting mode.
	Alarm Mute	Alarm mute button. Push the button makes the audible alarm muted for about 5, 10, 15 minutes. The red LED lighted when alarm muted.
	Lamp	Button for lamp control. Lamp brightness changed in Low -> Medium -> High -> OFF sequence when press the button.
	Zero	Button to set the scale to zero.



Basic Info - Buttons




BT-550

Symbol	Name	Description
	Setup	Button for set-up. Press this button to enter set-up menu
	Apgar	Button for APGAR Timer Start and Stop. *The APGAR timer provides tones at 1, 5 and 10 mins set intervals to prompt the assessment on infants nursed under the BT-550 infant warmer.
	Apgar reset	Button for APGAR Timer Rest
	Skin temp sensor connectors	S1 : The first sensor to be attached to the abdomen of infant (The heater power in baby mode is controlled by the temperature measure from S1.) S2 : The second sensor to be attached to the foot or ear lobe of infant
	Power switch	A switch that serves to change between the on state and the off state.



Basic Info – Alarm & Warning




BT-550

Message	Name	Description
	Power Fail	When the supply power are interrupted the 'POWER FAIL' warning message are displayed in white and red and audio alarm stays for 10 minutes
	Sensor Disable	Alarms are activated when skin temperature sensor did not connect to S1 connector.
	Skin temp high & low	<ul style="list-style-type: none"> • High Temperature: Alarm activated when the measured temperature is higher than set temperature value by 1.0 °C in baby mode or 38 °C in manual mode. • Low temperature: Alarm activated when the measured temperature is lower than set temperature value by 1.0 °C in baby mode or 30 °C in manual mode.



Basic Info – Alarm & Warning

BT-550

Message	Name	Description
	Baby check	<ul style="list-style-type: none"> • In manual mode, the alarm activated after 12 minutes and the heater output reduced to 25 % after 15 minutes. • In baby mode, the heater output set to 100 %, the alarm activated after 12 minutes and the heater output reduced to 25 % after 15 minutes.
	Head Rotation	<p>When the head is rotated more than 20 degree, the heater output reduced to 0% and alarm activated.</p>
	Masimo Check Alarm	<ul style="list-style-type: none"> • Alarm will be activated upon situation; Open LEDs, Shorted LEDs, Interference detected, Low SpO2, No cable, Sensor off patient, Unrecognized sensor, Bad sensor ID offset, Shorted detector, High pulse rate, Low pulse rate, No adhesive sensor, No sensor connected, Too much ambient light, Low perfusion, Low signal IQ, Masimo board failure, Diagnostic failure, Procal failure • To see the alarm situation pressing down the [ALARM MUTE] button until the message pop-up displayed.



❖ Power on

- When the power switch turned on, initial logo screen displayed.



❖ Measuring the skin temperature of infant

- The BT-550 start to measure the skin temperature of infant as the power switched on. When the skin temperature sensor does not connected to the connector in baby mode, sensor disable message displayed and audible alarm activated.

❖ Mode Selection

- Baby Mode – Heater output controlled automatically by measured skin temperature
- Manual Mode – Heater output controlled manually



❖ Weighing scale (option)

- The infant warmer measures the weight of infant automatically when the weighing plate is connected to the infant warmer. Press [ZERO] button to set the scale to zero.

❖ SpO2 and pulse rate (option)

- The SpO2 option is disabled when delivered. The enable/disable of SpO2 option can be changed in Service Mode. Press the following buttons in sequence to enter Service Mode: [UP] [DOWN] [UP] [DOWN] [SETUP] [APGAR] [APGAR RESET]. Change the SpO2 Option from DIS to EN. Select [EXIT] using [UP] or [DOWN] button and press [SETUP] button.
- The SpO2 function only activated when the SpO2 module connected to BT-550. The measurement is started when the sensor is attached to infant's index finger or other part (such as toe, ear lobe etc.). Use site appropriate according to each sensor's individual direction for use.



❖ APGAR Timer

- Press [APGAR] button to start the APGAR timer. Indicating sound will be heard on 1 minute, 5 minutes and 10 minutes. Press [APGAR] button to mute the timer. To reset the timer, press [APGAR RESET] button.

❖ Examination lamp

- You can control the brightness of examination lamp. Press the [LAMP] button to change the lamp brightness from OFF to low, mid and high. Press the [LAMP] button again to OFF the lamp.

❖ Power Off

- Turn the power off after using the device. When the device expected do not used for a while, then unplug the power cord from socket outlet.



❖ Factory Setting - Parameters

Parameters	Default Value
Control temperature in Baby Mode	36 °C
Heater output in Manual Mode	50%
Temperature unit	°C
Weight Unit	Kg
Alarm mute period	5 minutes
Alarm sound level	Max
Pulse rate beep volume	3 steps
SpO2 algorithm mode	Normal sensitivity
SpO2 alarm delay	0 second
Average time	2-4 seconds
SpO2 low limit	85
Pulse rate high limit	200
Pulse rate low limit	100
Scale calibration value	Disabled



❖ Factory Setting – System & Alarm

Category	Parameter	Description	Selection
System	Time	To set the current time	AM/PM, Hour and minutes
	Temp. Unit	To select the temperature unit	℃(Celsius)/ °F(Fahrenheit)
	Weight Unit	To select the weight unit	kg(kilogram)/lb(pound)
	Default set	All parameters are reset to factory setting	
Alarm	Mute period	Alarm paused time	5/10/15 minutes
	PR beep	Pulse rate volume sound	0 ~ 5 steps
	SpO2 alarm delay	SpO2 alarm delay time setup	0/5/10/15 seconds
	Alarm test	To check alarm work correctly. The audio and visual alarm can be generated by ON the alarm test in Setup mode. The operator should be test the alarm system normality of audible and visible status before operating.	



❖ Factory Setting – SpO2

Category	Parameter	Description	Selection
SpO2	Algorithm mode	SpO2 measuring algorithm selection	Normal sensitivity, Maximum sensitivity, APOD(Adaptive Probe Off Detection)
	Normal sensitivity	This selection provides the best combination of sensitivity and probe-off detection performance and is recommended for the majority of patients	
	Maximum sensitivity	This selection should be reserved for the sickest patients, where obtaining a reading is most difficult. Maximum sensitivity is designed to interpret and display data for even the weakest of signals, and is recommended during procedures and when clinician and patient contact is continuous.	
	APOD (Adaptive Probe Off Detection)	This mode is the least sensitive in picking up a reading on patients with low perfusion but has the best detection for probe-off conditions. This mode is useful for patients that are at particular risk of sensor becoming detached (pediatric, combative, etc.)	



❖ Factory Setting – SpO2

Category	Parameter	Description	Selection
SpO2	FastSat	Enable rapid tracking of arterial oxygen saturation changes	ON/OFF When the average time set to 2-4 or 4-6, the FastSat® is automatically activated
	Average	Set the time to average	2-4/4-6/8/10/12/14/16 seconds
	SpO2 alarm limit L	SpO2 low alarm limit. Alarm activated when measured value are lower than this limit. Cannot be set below 85.	
	PR alarm limit H, L	Pulse rate low and high alarm limit. Alarm activated when measured value are lower or higher than this limit. High limit can be set to 50 -240 and low setting value should be more than 10 higher from low limit setting. Low limit can be set to 40-230 and high setting value should be less than 10 lower from high limit setting.	



❖ Alarm

Alarm message	Alarm conditions
Power Fail	Power cord was not connected properly or power does not supplied
Sensor Disable	Skin temperature sensor was not connected or measured temperature is too low
S1 (S2) Temp Low	Measured skin temperature is too low
S1 (S2) Temp High	Measured skin temperature is too high
Baby Check	Stay in the Manual Mode more than 12 minutes Heater output remains 100 % in Baby Mode more than 12 minutes
Head Rotation	The head on infant warmer rotated more than 20°
Masimo check Alarm	SpO2 alarm Limit L, PR alarm limit H, L



Function

BT-550

- ❖ Easy removable side walls for easy access and cleaning



- Pull the barrier upward.



- Decline the barrier backward and detach upper locking pin.



- Pull the barrier upward again and detach lower locking pin.



❖ Stand caster lock

At least two casters should be locked before using. To lock the caster, depress the caster lock. To unlock the caster, raise above the caster lock.



➤ Caster unlocked



➤ Caster locked

Thank You !