



Bio Signal Total Solution

Fetal Monitor
Fetal & Vascular Doppler
Patient Monitor
Infant Incubator
Infant Warmer
Phototherapy
Breast Pump
Thermometer
Head Lamp

 **bistos**

Fetal Monitor



BT-380 Fetal & Maternal Monitor

- 1MHz Frequency with Twin Doppler
- 10.1" Color Touch Screen
- Fetal Monitoring : FHR, UC, DECG
Maternal Monitoring : ECG, NIBP, SpO2, TEMP
- Option: DECG, Rechargeable battery, Acoustic Stimulator, Wifi, Cart

BT-350 LCD Fetal Monitor

- 1MHz Frequency with Twin Doppler
- 7" color TFT LCD Display
- CTG Analysis
- Option : Rechargeable battery, Acoustic Stimulator, Carrying bag, Cart



BT-350 LED Fetal Monitor

- 1MHz Frequency with Twin Doppler
- Large 7 Segment LED Display
- Waterproof Probe (IPX 8)
- Option : Rechargeable battery, Acoustic Stimulator, Carrying bag, Cart

BT-300 LED Fetal Monitor

- 1MHz Frequency with Twin Doppler
- Waterproof Probe (IPX 8)
- Option : Rechargeable battery, Acoustic Stimulator, Carrying bag, Cart



Fetal & Vascular Doppler

BT-200 Fetal Doppler

- 2/3 MHz Frequency
- Various Display Type (Sound only, LCD, Color)
- Waterproof Probe
- FHR and Sound management



BT-220 Fetal Doppler

- 2/3 MHz Frequency
- 2.4" Color LCD Display with FHR Trend Display
- Acoustic Stimulator Function
- BMI and Body fat Analysis



BT-250 Fetal Doppler

- 2/3 MHz Frequency
- 3.2" color TFT LCD Display with FHR Trend Display
- Rechargeable Battery



BT-200 Vascular Doppler

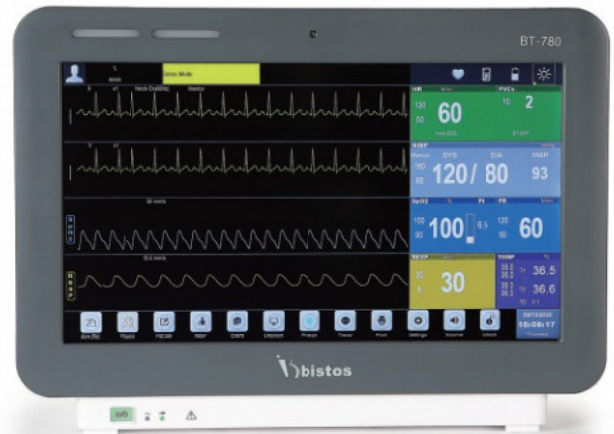
- 2, 4, 5, 8 MHz Frequency
- LCD Display
- Interchangeable Waterproof Probe
- Low Battery Indicator



Patient Monitor

BT-780 Patient Monitor

- ECG, Resp., SpO2, NIBP, Temp., CO2, IBP, Multi-gas, C.O.
- 15.6" Color Touch Screen
- Ultra slim design
- 5 hours operation on battery
- Smart Hook & stand
- HL 7 support
- Option : CO2, IBP, Multi-gas, C.O., Printer, Masimo SpO2, WIFI



BT-770 Patient Monitor

- ECG, Resp., SpO2, NIBP, Temp., CO2, IBP, Multi-gas, C.O.
- 12.1" Color Touch Screen
- Ultra slim design
- 5 hours operation on battery
- Smart Hook & stand
- HL 7 support
- Option : CO2, IBP, Multi-gas, C.O., Printer, Masimo SpO2, WIFI

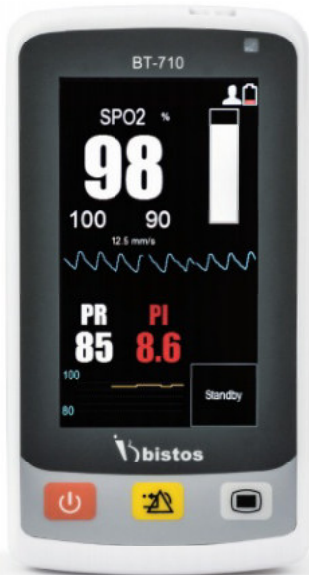
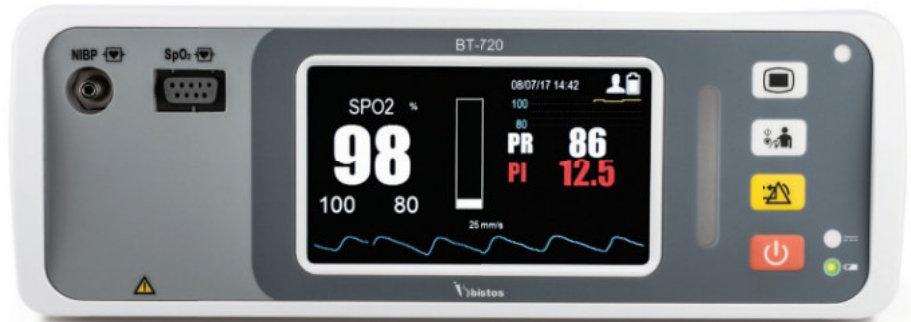


BT-740 Patient Monitor

- ECG, Resp., SpO2, NIBP, Temp., CO2, IBP, Multi-gas, C.O.
- 8.4" Color Touch Screen
- Ultra slim design
- 6 hours operation on battery
- Smart Hook & stand
- HL 7 support
- Option : CO2, IBP, Multi-gas, CO, Printer, Masimo SpO2, WIFI

BT-720 Vital Sign Monitor

- SpO2, Pulse
- 4.3" Color Touch Screen
- 8 hours operation on battery
- Fan-less design
- Rechargeable by USB charger
- Option : NIBP, Temp



BT-710 Pulse Oximeter

- SpO2, Pulse
- Hand-held design
- 4.3" Color Touch Screen
- 8 hours operation on battery
- Fan-less design
- Rechargeable by USB charger
- Option : CO₂



BT-750 Patient Monitor

- ECG, Resp., SpO2, NIBP, Temp., CO₂, IBP
- 10.4" Color LCD Display
- 4 hours operation on battery
- Multi language support
- Option : CO₂, IBP, Printer, LAN, Cart, Wall mount

Neonate Care



BT-500 Infant Incubator

- Air / Skin Temperature servo control
- Humidity Servo Control
- Tilting bed
- Option : O2 Servo Control, O2 Monitoring, Masimo SpO2 & CCD Camera & External monitor, Lifting Stand, Weighing scale, Basket, IV Plate, IV Pole, Shelf

BT-550 Infant Warmer

- Infrared Heater
- Pre-warm / Baby / Manual Mode
- APGAR Timer
- Option : Tilting, Masimo SpO2, Lifting Stand, Weighing scale, Basket, IV Plate, IV Pole, Oxygen delivery, Suction



BT-400 Phototherapy

- Blue LED Lamp
- Intensity Control (High/Low)
- 100,000 hours LED lifetime
- Timer function

BT-450 Phototherapy

- Blue LED (455 nm to 465 nm)
- Intensity Control (High/Low)
- Blanket Type
- 10 hours operation on battery
- Alarm for High Temperature



BT-100 Breast Pump

- Portable Type with Dual Pumping
- Massage / Expression / Memory Mode
- Backflow Prevention
- BPA / Latex Free



BT-150 Breast Pump

- Desktop Type with Dual Pumping
- Massage / Expression / Program Mode
- Various Vacuum Level and Cycle Control
- Option : Carrying bag, Car charging cable, Nursing Night Lamp, Additional bottle set, Rechargeable battery, Bluetooth for mobile app



Non-Contact Thermometer

- Fever Alert Function (Blue/Red Color)
- Measurement of Body and Object
- Protective Cap for Sensor (BT-35)
- Faster Measurement Time (BT-36)



BT-410 Head Lamp

- Power LED Light with 6,000K Color Temperature
- Adjustable illumination (BT-410F)
- Adjustable Light Spot (BT-410A)
- Option: Loupe, Astral Lamp, Additional battery

BIO SIGNAL TOTAL SOLUTION

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Specifications : BT-770 12.1" Multi-parameter Patient Monitor

Functional Characteristics	
Display	
Type	Color TFT touch screen LCD
Size and resolution	12.1", 800 x 600 pixels
LED	
Alarm indicator	Yellow & red
Adaptor power indicator	1 green
Battery status indicator	1 green
Audio	
Speaker	Alarm sound (45 ~ 85dB), key pressing sound
	QRS sound, PR sound
	Alarm sound meets the IEC60601-1-8
Data Storage	
Trend	168hours, resolution : 1min
Alarm event	200 physiological and 100 technical alarm events
NiBp measurement result	1,000 groups
Function	
Multi-language	English, France, Spanish, Turkey
Trend	Graphic/tabular
Alarm	
Mode	Visual, audible, information, parameter flashing
Alarm delay	Off, 1s, 2s, 3s, 4s, 5s, 6s, 7s, 8s
Pause duration	1, 2, 3, 4, 5, 10, 15min or permanent
System	Low battery
Interface	
Auxiliary	Nurse call
RJ45 (LAN)	CMS
USB	S/W upgrade
ECG	
Standard compliance	IEC60601-2-27
Lead type	3Lead : I, II, III
	5Lead : I, II, III, aVR, aVL, aVF, V
Display sensitivity (gain)	Auto, 1.25, 2.5, 5, 10, 20mm/mV
Wave sweep speed	12.5, 25, 50mm/s
Band width	Diagnostic mode : 0.05 ~ 130Hz
	Monitoring mode : 0.5 ~ 40Hz
	Surgery mode : 1 ~ 25Hz
	Strong filter mode : 5 ~ 20Hz
CMRR	> 100dB
Notch	50/60Hz (can be set on or off)
Differential input	> 5MΩ
Electrode polarization voltage range	±400mV
Baseline recovery time	< 5s after defibrillation (monitor and surgery mode)
Calibration signal	1mV (peak-peak), accuracy ±3%
Lead-off detection current	Measuring electrode : < 0.1μA
	Drive electrode : < 1μA
HR measuring range	Adult : 15 ~ 300bpm
	Pediatric/Neonate : 15 ~ 350bpm
HR measuring resolution	1bpm
HR measurement accuracy	±1bpm or ±1%, whichever is greater
HR accuracy & response to irregular rhythm	Ventricular bigeminy : 80±1bpm
	Slow alternating ventricular bigeminy : 60±1bpm
	Rapid alternating ventricular bigeminy : 120±1bpm
	Bidirectional systoles : 90±2bpm
HR time to alarm for tachycardia	0.5/1/2mV, 206bpm ventricular tachycardia : < 10s
	1/2/4mV, 195bpm ventricular tachycardia : < 5s

HR alarm upper limit (bpm)	Adult : 16 ~ 300, 1bpm step Pediatric/Neonate : 16 ~ 350, 1bpm step
HR alarm lower limit (bpm)	Adult : 15 ~ 299, 1bpm step Pediatric/Neonate : 15 ~ 349, 1bpm step
Pacing pulse identification	Detection range : $\pm 2\text{mV}$ ~ $\pm 700\text{mV}$ Pulse width : 0.2ms ~ 2.0ms
Pacing pulse average HR	15s data
Pacing pulse interval of HR Refreshing	Every second
Pacing pulse HR change response time	$\leq 10\text{sec}$
Pacing pulse tall T-wave suppression	2mV
Alarm	Communication, configuration, selfcheck error
	Lead off
	HR high/low, PVCs high
	Asystole, VF/VTA, R on T, Tachycardia/bradycardia, PVC frequent/couplet/singlr/bigeminy/trigeminy, Miss Beat
	Pacemaker not capture/work
	Signal weak, ST-I, II, III high/low
Respiration	
Measurement method	Thoracic electrical bio impedance method
Measuring lead	Lead RA-LA, RA-LL
Wave gain	X0.5, x1, x2
Respiratory impedance range	0.2 ~ 3 Ω
Base line impedance	500 ~ 2,000 Ω
Gain	10 grades
Wave sweep speed	6.25mm/s, 12.5mm/s, 25mm/s
Measurement accuracy	$\pm 2\text{rpm}$
Measurement range	0 ~ 120rpm
Alarm	RR high/low
	Apnea
	Respiration artifact
Temperature	
Standard compliance	ISO80601-2-56
Measurement method	Thermistor
Measuring range	0°C ~ 50.0°C (32°F ~ 122.0°F)
Resolution	0.1°C
Measurement accuracy	$\pm 0.3^\circ\text{C}$
Number of channel	2
T1/T2 alarm upper limit	0.1°C ~ 50.0°C, 0.1°C/°F step
T1/T2 alarm lower limit	0°C ~ 49.9°C, 0.1°C/°F step
Temperature difference alarm upper limit	0°C ~ 50.0°C, 0.1°C/°F step
Alarm	T1, T2 Sensor off
	T1/T2 high/low, TD high
NiBp	
Standard compliance	IEC80601-2-30
Measurement method	Automatic oscillometric method
Operating mode	Manual, automatic, continuous(STAT)
Useful life	100,000times
Measurement interval in automatic mode	1/2/3/4/5/10/15/30/60/90/120/180/240/480min
Typical measurement time	20~40s
Normal mode measuring range (mmHg)	Systolic : Adult(40~270), Pediatric(40~200), Neonate(40~130)
	Mean : Adult(20~230), Pediatric(20~175), Neonate(20~100)
	Diastolic : Adult(10~210), Pediatric(10~162), Neonate(10~90)
Measurement accuracy	Maximum average error: $\pm 5\text{mmHg}$
	Maximum standard deviation: 8mmHg
Resolution	1mmHg
Initial inflation pressure (mmHg)	Adult : 150(default), 80~240(pressure setting range)
	Pediatric : 100(default), 80~200(pressure setting range)
	Neonate : 100(default), 60~120(pressure setting range)

Overpressure protection point (software)	Adult: 300mmHg Pediatric: 240mmHg Neonate: 150mmHg
Overpressure protection point (hardware)	Adult: 320~330mmHg Pediatric: 265~275mmHg Neonate: 160~165mmHg
Static Pressure accuracy	±3mmHg
Supply voltage	10V~14VDC
Maximum power consumption	3.6W
Quiescent current	50mA
Maximum current during measurement	180mA
Maximum current during inflation	300mA
Alarm	Communication, selfcheck, CFG error System error, measurement timeout Cuff loose, no, leak, type error Air pressure error Over range, signal weak/unstable/saturated Over pressure Module reset failed Systolic, mean, diastolic high/low
SpO2	
Standard compliance	ISO80601-2-61
Display range	0% ~ 100%
SpO2 display resolution	1%
SpO2 accuracy	Adult/Pediatric : 70 ~ 100% ±2% Neonate : 70 ~ 100% ±3% 0 ~ 69% : Unspecified
Wave sweep speed	12.5mm/s, 25mm/s
Wave mode	Scan, fill
Pulse volume	0, 1, 2, 3, 4, 5, 6, 7, 8, 9 level
SpO2 alarm preset limits	Upper Alarm Limit : 86% ~ 100% Lower Alarm Limit : 85% ~ 99%
SpO2 alarm preset accuracy	±1%
SpO2 alerting signal generates delay	No Delay
SpO2 value refresh period	1s/time
SpO2 value refresh delay	< 10s
Average period	Low Sensitivity : 7 ~ 8s Intermediate Sensitivity : 4 ~ 6s Advanced Sensitivity : 2 ~ 3s
Alarm condition delay period	Low Sensitivity : < 8s Intermediate Sensitivity : < 6s Advanced Sensitivity : < 3s
Alarm sign generates delay period	0s
Perfusion index	0.05 ~ 20%
PR Measurement Range	25 ~ 254bpm
PR Resolution	±1bpm
PR Measurement accuracy	±2% or ±2bpm, whichever is greater
Alarm	Communication stop/error No sensor/ sensor off Search timeout Search pulse(weak) SpO2, RR high/low
IBP (Option)	
Standards compliant	IEC60601-2-34
Pressure measurement range	-50 ~ 400 mmHg
Pressure measurement accuracy	±3 mmHg or ±2%, whichever is greater
Pressure resolution	1 mmHg
PR measurement range	35 ~ 250 bpm

PR measurement accuracy	±3bpm
PR resolution	1bpm
Transducer sensitivity	5µV/V/mmHg
Transducer resistance range	300-5,000Ω
Supply voltage	+12VDC
Maximum power consumption	≤5W
Scan speed	12.5mm/s, 25mm/s
Alarm	IBP1, 2 communication stop/error
	IBP1, 2 sensor off
	Art-sys, PA-sys, P1-sys, P2-sys high
	Art-dia, PA-dia, P1-dia, P2-dia high
	Art-mean, PA-mean, CVP-mean, LAP-mean, RAP-mean, ICP-mean, P1-mean, P2-mean high
EtCO2 Mainstream & Sidestream (Option)	
Measurement parameters	EtCO2、FiCO2、AwRR
Measuring range	EtCO2 : 0~150mmHg, AwRR : 0~150rpm
Resolution	EtCO2/FiCO2 : 1mmHg, AwRR : 1rpm
Apnea delay	20s, 25s, 30s, 35s, 40s, 45s, 50s, 55s, 60s
Operating mode	Standby, measure
O2 compensation	Low, mid, high
N2O compensation	On, off
Alarm limit	EtCO2 lower limit : 0~149mmHg
	EtCO2/FiCO2 upper limit : 1~150mmHg
	AWRR lower limit : 0~119rpm
	AWRR upper limit : 1~120rpm
Alarm	Communication stop/error
	CO2 sensor off/error
	O2 sensor error/replace
	adaptor/sampling line no/check
	Parameter accuracy error
	O2, Air calibration error
	S/W, H/W error
	Motor accuracy error
	CO2 factory calibration error
	Adaptor, sampling line replace
	O2 port error
	CO2, O2, N2O out of accuracy
	CO2 temp., pressure out of accuracy
	CO2 zero required
	CO2 zeroing/sleeping
	CO2 module calibrating/calibration error
	EtCO2, FiCO2, AWRR high/low
	Apnea
C.O. (Cardiac Output : Option)	
Measurement range	C.O. : 0.2 ~ 20 L/min
	BT : 23 ~ 45°C±0.5 °C
	IT : 0 ~ 20°C±0.5 °C
Resolution factor	C.O. : 0.1L/min
	BT, IT : 0.1°C
Accuracy	C.O. : ±5% or ±0.1 L/min, subject to the bigger one BT, IT : ±0.1°C (sensor exclusive)
Scope of alarm limit	BT high limit : (Low limit +0.1) ~ 43°C
	BT low limit : 23.0 ~ (high limit -0.1) °C
	Step size : 0.1°C
Alarm	BT sensor off
	BT high/low
	C.O. high

Printer (Option)	
Type	Thermal dot array
Print speed	12.5, 25, 50mm/s
Paper size	58mm(W) x 42m
Power	
Adaptor	Input : AC 100 ~ 240V (50/60Hz) Output : DC 15V/2.4A
Consumption	13.5W
Rechargeable battery	11.1V Li-ion 4,400mA Operating Time : 5hrs Charging Time : 4hrs
Standard Configurations	
ECG cables and lead wire	1ea(5lead)
ECG electrode for adult	1pack(25pcs)
SpO2 adult reusable sensor	1ea
SpO2 extension cable	1ea
NiBp adult cuff	1ea
NiBp extension tube	1ea
Temperature sensor	1ea
Power adaptor	1ea
Bracket	1ea
Operation manual	1ea
Options (Function)	
IBP	Sensor cable & package
EtCO2 Mainstream (Bistos)	Airway adaptor & module
EtCO2 Sidestream (Bistos)	Sampling tube
EtCO2 IRMA Mainstream (Masimo)	Airway adaptor & module
EtCO2 ISA Sidestream (Masimo)	Sampling tube
C.O.	Sensor cable
Printer	Printer & paper
Cart	
Options (Accessory)	
ECG cables and lead wire	5/3 lead
ECG electrode	adult/neonate
SpO2 reusable sensor	adult/pediatric/neonate
SpO2 disposable sensor	adult/pediatric/neonate
Skin & rectal temperature sensor	adult/pediatric/neonate
NiBp cuff	adult(27~35cm)/pediatric(14~21.5cm)/neonate(4*9cm)
Physical Characteristics	
Dimension	
Main unit	320(W) x 65(D) x 250(H)mm
Packing	400(W) x 350(D) x 290(H)mm
Weight	
Main unit	< 2.8Kg
Packing	4.6Kg
Environmental Conditions	
Operating temperature	10 ~ 40°C (50 ~ 104°F)
Operating humidity	5 ~ 85% non-condensing
Storage temperature	-20 ~ 60°C (-4 ~ 140°F)
Storage humidity	0 ~ 95% non-condensing
Warranty	
Main unit	2 years
Optional sensor & accessory	1 year
Certificates	
KFDA, CE	

Specifications : BT-710 Handheld Pulse Oximeter

Functional Characteristics

SpO2

Display range	0% ~ 100%
SpO2 display resolution	1%
SpO2 accuracy	Adult/Pediatric : 70 ~ 100% $\pm 2\%$
	Neonate : 70 ~ 100% $\pm 3\%$
	0 ~ 69% : unspecified
SpO2 alarm preset limits	Upper alarm limit : 86% ~ 100%
	Lower alarm limit : 85% ~ 99%
SpO2 alarm preset accuracy	$\pm 1\%$
SpO2 alerting signal generates delay	No delay
SpO2 value refresh period	1s/time
SpO2 value refresh delay	< 10s
Average period	Low sensitivity : 7 ~ 8s
	Intermediate sensitivity : 4 ~ 6s
	Advanced sensitivity : 2 ~ 3s
Alarm condition delay period	Low sensitivity : < 8s
	Intermediate sensitivity : < 6s
	Advanced sensitivity : < 3s
Alarm sign generates delay period	0s

Pulse Rate

Measuring range	25 ~ 250bpm
Resolution	± 1 bpm
Accuracy	$\pm 2\%$ or ± 2 bpm, whichever is greater

Display

Type	Color TFT touch screen LCD
Size	4.3"

Function

Sleep mode	
Perfusion index	
Multi-language	
Trend	168hours

Alarm

SpO2 alarms	SpO2 high/low
	PR high/low
	PI high/low
System alarms	Spo2 sensor no/off/error
	SpO2 search timeout/pulse
	SpO2 signal unstable
	SpO2 board failure
	Low perfusion
	Too much light
	Battery low
	System will shutdown

PC Interface

SD card interface	S/W upgrade
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Others

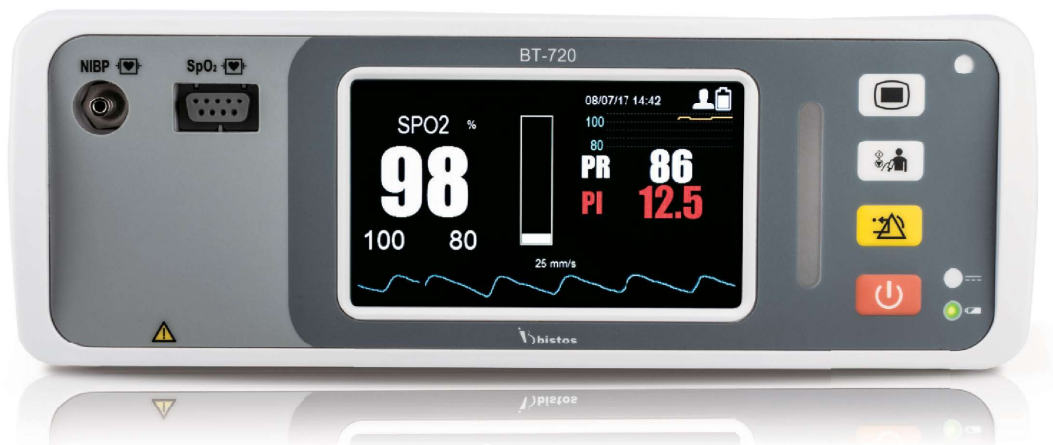
Liquid Inlet Protection Grade	IPX2
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Power

Adaptor	Input : AC 100 ~ 240V (50/60Hz)
	Output : DC 5V/2A
Rechargeable battery	3.7V Li-ion 3,800mA
	Operating time : 8hrs
	Charging time : 4hrs

Standard Configurations	
Adult SpO2 probe	1ea
Carrying pouch	1ea
Operation manual	1ea
Power adaptor	1ea
Physical Characteristics	
Dimension	
Main unit	84(W) x 34.5(D) x 158.5(H)mm
Packing (one unit)	201(W) x 106(D) x 69(H)mm
Carton box (10ea)	355(W) x 230(D) x 220(H)mm
Weight	
Main unit	300g
Packing (one unit)	620g
Carton box (10ea)	6.6Kg
Environmental Conditions	
Operating temperature	10 ~ 40°C (50 ~ 104°F)
Operating humidity	5 ~ 85% non-condensing
Storage temperature	-20 ~ 60°C (-4 ~ 140°F)
Storage humidity	0 ~ 95% non-condensing
Warranty	
Main unit	2 years
Optional sensor & accessory	1 year
Certificates	
KFDA, CE	

BT-720 VITAL SIGN MONITOR



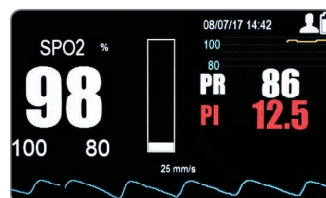
4.3" Vital Sign Monitor

SpO₂, Pulse, NIBP, Masimo SpO₂

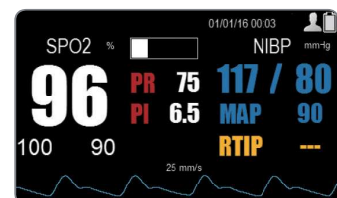
Touch screen / Portable design / PC view software



Portable design



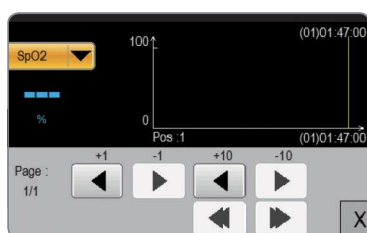
SpO₂



SpO₂+NIBP

:: Technical Specification

Model			BT-720
Category			Vital Sign Monitor
Display			4.3" Touch LCD
SpO ₂	Measurement Range		0-100 %
	Accuracy (70-100%)	Adult / Pediatric	±2 %
		Neonate	±3 %
	Accuracy (0-69%)		Unspecified
	Perfusion Index		0.05-20 %
	Pulse Rate Range (bpm)		25-250
NIBP**	Method		Automatic Oscillometric
	Operation Mode		Manual / Auto / STAT
	Parameter		Systolic, Diastolic, Mean
	Systolic Range (mmHg)	Adult	40-270
		Pediatric	40-200
		Neonate	40-130
	Diastolic Range (mmHg)	Adult	10-210
		Pediatric	10-160
		Neonate	10-90
	Mean Range (mmHg)	Adult	20-230
		Pediatric	20-175
		Neonate	20-100
SpO ₂ -Masimo*			Masimo SpO ₂
Battery	Type (capacity)		Li-ion (4400 mAh)
	Run Time		8 hour
	Charging Time		8 hour
PC Software Interface			RJ45, SD card slot
Warranty			2 year



Trend Graphic

Time	SpO2	PR	ET	FI	awRR
1-01-2016 00:00	---	---	---	---	---
1-01-2016 00:01	---	---	---	---	---
1-01-2016 00:00	---	---	---	---	---
1-01-2016 00:01	---	---	---	---	---
1-01-2016 00:00	---	---	---	---	---
1-01-2016 00:02	---	---	---	---	---
1-01-2016 00:01	---	---	---	---	---
1-01-2016 00:00	---	---	---	---	---
1-01-2016 00:01	---	---	---	---	---
1-01-2016 00:00	---	---	---	---	---
1-01-2016 00:05	---	---	---	---	---
1-01-2016 00:04	---	---	---	---	---

Trend Tabular



PC Viewer Software

Specifications : BT-780 15.6" Multi-parameter Patient Monitor

Functional Characteristics	
Display	
Type	Color TFT touch screen LCD
Size and resolution	15.6", 1366 x 768 pixels
LED	
Alarm indicator	Yellow & red
Adaptor power indicator	1 green
Battery status indicator	1 green
Audio	
Speaker	Alarm sound (45 ~ 85dB), key pressing sound
	QRS sound, PR sound
	Alarm sound meets the IEC60601-1-8
Data Storage	
Trend	168hours, resolution : 1min
Alarm event	200 physiological and 100 technical alarm events
NiBp measurement result	1,000 groups
Function	
Multi-language	English, Turkish, Spanish, French, Polish, German, Italian, Hungarian
Trend	Graphic/tabular
Alarm	
Mode	Visual, audible, information, parameter flashing
Alarm delay	Off, 1s, 2s, 3s, 4s, 5s, 6s, 7s, 8s
Pause duration	1, 2, 3, 4, 5, 10, 15min or permanent
System	Low battery
Interface	
Auxiliary	Nurse call
RJ45 (LAN)	CMS
USB	S/W upgrade
ECG	
Standard compliance	IEC60601-2-27
Lead type	3Lead : I, II, III
	5Lead : I, II, III, aVR, aVL, aVF, V
Display sensitivity (gain)	Auto, 1.25, 2.5, 5, 10, 20mm/mV
Wave sweep speed	12.5, 25, 50mm/s
Band width	Diagnostic mode : 0.05 ~ 130Hz
	Monitoring mode : 0.5 ~ 40Hz
	Surgery mode : 1 ~ 25Hz
	Strong filter mode : 5 ~ 20Hz
CMRR	> 100dB
Notch	50/60Hz (can be set on or off)
Differential input	> 5MΩ
Electrode polarization voltage range	±400mV
Baseline recovery time	< 5s after defibrillation (monitor and surgery mode)
Calibration signal	1mV (peak-peak), accuracy ±3%
Lead-off detection current	Measuring electrode : < 0.1μA
	Drive electrode : < 1μA
HR measuring range	Adult : 15 ~ 300bpm
	Pediatric/Neonate : 15 ~ 350bpm
HR measuring resolution	1bpm
HR measurement accuracy	±1bpm or ±1%, whichever is greater
HR accuracy & response to irregular rhythm	Ventricular bigeminy : 80±1bpm
	Slow alternating ventricular bigeminy : 60±1bpm
	Rapid alternating ventricular bigeminy : 120±1bpm
	Bidirectional systoles : 90±2bpm

HR time to alarm for tachycardia	0.5/1/2mV, 206bpm ventricular tachycardia : < 10s 1/2/4mV, 195bpm ventricular tachycardia : < 5s
HR alarm upper limit (bpm)	Adult : 16 ~ 300, 1bpm step Pediatric/Neonate : 16 ~ 350, 1bpm step
HR alarm lower limit (bpm)	Adult : 15 ~ 299, 1bpm step Pediatric/Neonate : 15 ~ 349, 1bpm step
Pacing pulse identification	Detection range : $\pm 2\text{mV}$ ~ $\pm 700\text{mV}$ Pulse width : 0.2ms ~ 2.0ms
Pacing pulse average HR	15s data
Pacing pulse interval of HR Refreshing	Every second
Pacing pulse HR change response time	$\leq 10\text{sec}$
Pacing pulse tall T-wave suppression	2mV
Alarm	Communication, configuration, selfcheck error Lead off HR high/low, PVCs high Asystole, VF/VTA, R on T, Tachycardia/bradycardia, PVC frequent/couplet/singlr/bigeminy/trigeminy, Miss Beat Pacemaker not capture/work Signal weak, ST-I, II, III high/low
Respiration	
Measurement method	Trans-Thoracic impedance
Operation modes	Auto
Measuring lead	Lead RA-LA, RA-LL, LA-RL, LL-RL
Wave gain	X0.5, x1, x2
Respiratory impedance range	0.2 ~ 3 Ω
Base line impedance	500 ~ 2,000 Ω
Sensitivity	1,2,3,4,5
Wave sweep speed	6.25mm/s, 12.5mm/s, 25mm/s
Measurement accuracy	$\pm 2\text{rpm}$
Measurement range	0 ~ 120rpm
Alarm	RR high/low Apnea Respiration artifact
Temperature	
Standard compliance	ISO80601-2-56
Measurement method	Thermistor
Measuring range	0°C ~ 50.0°C (32°F ~ 122.0°F)
Resolution	0.1°C
Measurement accuracy	$\pm 0.1^\circ\text{C}$ or $\pm 0.2^\circ\text{F}$ (without probe)
Number of channel	2
T1/T2 alarm upper limit	0.1°C ~ 50.0°C, 0.1°C/°F step
T1/T2 alarm lower limit	0°C ~ 49.9°C, 0.1°C/°F step
Temperature difference alarm upper limit	0°C ~ 50.0°C, 0.1°C/°F step
Alarm	T1, T2 Sensor off T1/T2 high/low, TD high
NiBp	
Standard compliance	IEC80601-2-30
Measurement method	Automatic oscillometric method
Operating mode	Manual, automatic, continuous(STAT)
Useful life	100,000 times
Measurement interval in automatic mode	1/2/3/4/5/10/15/30/60/90/120/180/240/480min
Typical measurement time	20~40s
Normal mode measuring range (mmHg)	Systolic : Adult(30~280), Pediatric(30~230), Neonate(30~145) Mean : Adult(10~240), Pediatric(10~175), Neonate(10~115) Diastolic : Adult(10~220), Pediatric(10~165), Neonate(10~105)
Measurement accuracy	Maximum average error: $\pm 5\text{mmHg}$ Maximum standard deviation: 8mmHg
Resolution	1mmHg

Initial inflation pressure (mmHg)	Adult : 160 (default)
	Pressure setting range:140mmHg, 160mmHg, 180mmHg
	Pediatric : 140 (default)
	Pressure setting range:140mmHg, 160mmHg
	Neonate : 100 (default)
Overpressure protection point (software)	Pressure setting range:100mmHg, 120mmHg
	Adult: 300mmHg
	Pediatric: 240mmHg
Overpressure protection point (hardware)	Neonate: 150mmHg
	Adult: 320~330mmHg
	Pediatric: 265~275mmHg
Static Pressure accuracy	Neonate: 160~165mmHg
Supply voltage	±3mmHg
Maximum power consumption	10V~14VDC
Quiescent current	3.6W
Maximum current during measurement	50mA
Maximum current during inflation	180mA
Alarm	300mA
	Communication, selfcheck, CFG error
	System error, measurement timeout
	Cuff loose, no, leak, type error
	Air pressure error
	Over range, signal weak/unstable/saturated
	Over pressure
	Module reset failed
	Systolic, mean, diastolic high/low
SpO2	
Standard compliance	ISO80601-2-61
Display range	0% ~ 100%
SpO2 display resolution	1%
SpO2 accuracy	Adult/Pediatric : 70 ~ 100% ±2%
	Neonate : 70 ~ 100% ±3%
	0 ~ 69% : Unspecified
Wave sweep speed	12.5mm/s, 25mm/s
Wave mode	Scan, fill
Pulse volume	0, 1, 2, 3, 4, 5, 6, 7, 8, 9 level
SpO2 alarm preset limits	Upper Alarm Limit : 86% ~ 100%
	Lower Alarm Limit : 85% ~ 99%
SpO2 alarm preset accuracy	±1%
SpO2 alerting signal generates delay	Off,1s,2s,3s,4s,5s,6s,7s,8s
SpO2 value refresh period	1s/time
SpO2 value refresh delay	< 10s
Average period	Low Sensitivity : 7 ~ 8s
	Intermediate Sensitivity : 4 ~ 6s
	Advanced Sensitivity : 2 ~ 3s
Perfusion index	0.05 ~ 20%
PR Measurement Range	25 ~ 250 bpm
PR Resolution	±1 bpm
PR Measurement accuracy	±2% or ±2bpm, whichever is greater
Alarm	Communication stop/error
	No sensor/ sensor off
	Search timeout
	Search pulse(weak)
	SpO2, RR high/low
IBP (Option)	
Standards compliant	IEC60601-2-34
Channel	2-ch, 4-ch
Pressure measurement range	-50 ~ 400 mmHg

Pressure measurement accuracy	±3 mmHg or±2%, whichever is greater
Pressure resolution	1 mmHg
PR measurement range	35 ~ 250 bpm
PR measurement accuracy	±3bpm
PR resolution	1bpm
Transducer sensitivity	5μV/V/mmHg
Transducer resistance range	300-3,000Ω
Supply voltage	+12VDC
Maximum power consumption	≤5W
Scan speed	12.5mm/s, 25mm/s
Alarm	IBP1, 2 communication stop/error
	IBP1, 2 sensor off
	Art-sys, PA-sys, P1-sys, P2-sys high
	Art-dia, PA-dia, P1-dia, P2-dia high
	Art-mean, PA-mean, CVP-mean, LAP-mean, RAP-mean, ICP-mean, P1-mean, P2-mean high
EtCO2 Mainstream & Sidestream (Option)	
Measurement parameters	EtCO2、FiCO2、AwRR
Measuring range	0-15%
Accuracy	±0.2%+2% of the reading
Resolution	EtCO2/FiCO2 : 1mmHg, AwRR : 1rpm
Rise time	200ms, typical at 50ml/min flow rate
Total response time	within 3 seconds(within 2m Nomoline sampling)
AWRR range	0-150bpm
AWRR Accuracy	±1 breath
Apnea delay	20s, 25s, 30s, 35s, 40s, 45s, 50s, 55s, 60s
Warm-up time	Full accuracy within 10 seconds
Sampling flow rate	50ml/min(+/-10ml/min)
Operating mode	Standby, measure
O2 compensation	Low, mid, high
N2O compensation	On, off
Alarm limit	EtCO2 lower limit : 0~149mmHg
	EtCO2/FiCO2 upper limit : 1~150mmHg
	AWRR lower limit : 0~119rpm
	AWRR upper limit : 1~120rpm
Alarm	Communication stop/error
	CO2 sensor off/error
	O2 sensor error/replace
	adaptor/sampling line no/check
	Parameter accuracy error
	O2, Air calibration error
	S/W, H/W error
	Motor accuracy error
	CO2 factory calibration error
	Adaptor, sampling line replace
	O2 port error
	CO2, O2, N2O out of accuracy
	CO2 temp., pressure out of accuracy
	CO2 zero required
	CO2 zeroing/sleeping
	CO2 module calibrating/calibration error
	EtCO2, FiCO2, AWRR high/low
	Apnea
C.O. (Cardiac Output : Option)	
Method	Thermodilution
Measurement range	C.O. : 0.2 ~ 20 L/min
	BT : 23 ~ 45°C±0.5 °C
	IT : 0 ~ 20°C±0.5 °C

Resolution factor	C.O. : 0.1L/min BT, IT : 0.1°C
Accuracy	C.O. : ±10% TB, TI : ±0.5°C
Scope of alarm limit	BT high limit : (Low limit +0.1) ~ 43°C BT low limit : 23.0 ~ (high limit -0.1) °C Step size : 0.1°C
Alarm	BT sensor off BT high/low C.O. high
Printer (Option)	
Type	Thermal dot array
Print speed	12.5, 25, 50mm/s
Paper size	50mm(W) x 2m
Power	
Adaptor	Input : AC 100 ~ 240V (50/60Hz) Input Current: 1.6-0.6A
Consumption	13.5W
Rechargeable battery	11.1V Li-ion 4,400mA Operating Time : 5hrs Charging Time : 4hrs
Standard Configurations	
ECG cables and lead wire	1ea (5lead)
ECG electrode for adult	1pack (25pcs)
SpO2 adult reusable sensor	1ea
SpO2 extension cable	1ea
NiBp adult cuff	1ea
NiBp extension tube	1ea
Temperature sensor	1ea
Power adaptor	1ea
Bracket	1ea
Operation manual	1ea
Options (Function)	
IBP	Sensor cable & package
EtCO2 Mainstream (Bistos)	Airway adaptor & module
EtCO2 Sidestream (Bistos)	Sampling tube
EtCO2 IRMA Mainstream (Masimo)	Airway adaptor & module
EtCO2 ISA Sidestream (Masimo)	Sampling tube
C.O.	Sensor cable
Printer	Printer & paper
Cart	
Options (Accessory)	
ECG cables and lead wire	5/3 lead
ECG electrode	adult/neonate
SpO2 reusable sensor	adult/pediatric/neonate
SpO2 disposable sensor	adult/pediatric/neonate
Skin & rectal temperature sensor	adult/pediatric/neonate
NiBp cuff	adult(27~35cm)/pediatric(14~21.5cm)/neonate(4*9cm)
Physical Characteristics	
Dimension	
Main unit	410(W) X 298(H) X 120(D)
Packing	495(W) x 295(D) x 385(H)mm
Weight	
Main unit	< 4.9Kg
Packing	7kg
Environmental Conditions	
Operating temperature	5 ~ 40°C (41 ~ 104°F)
Operating humidity	30 ~ 85% non-condensing

Storage temperature	−20 ~ 60°C (−4 ~ 140°F)
Storage humidity	0 ~ 95% non-condensing
Warranty	
Main unit	2 years
Optional sensor & accessory	1 year
Certificates	
KFDA, CE	