BeneVision TM80

More than telemetry

Telemetry monitor

Physical Specifications

Weight	229 g (including a lithium-ion battery)
Size	126 x 64 x 23 mm

Display

Size	3.5"
Type	Color TFT LCD screen
Resolution	480 pixels × 320 pixels
Wake up screen	2s

LED

Alarm lamp	1 (three colors: red, yellow, and cyan)

Audio Indicator

Speaker	1
Sound Pressure Range	45 dBA to 85 dBA

Keys

Nurse call	1
Power On/Off	1
Main Menu	1

External Connectors

ECG connector	1(3/5/6 leads)
SPO2 connector	1(Mindray Spo2)

MPAN Communications

Modulation mode	GFSK
Operating frequency	2402 to 2480 MHZ
Channel spacing	2 MHZ
Wireless baud rate	1 Mbps
Output power	≤ 2.5 mW
Data Security	Private protocol

MPAN is used in device pairing for BeneVision TM80, BP10 NIBP module.

Wi-Fi Communications

Protocol	IEEE 802.11a/b/g/n/ac
Modulation mode	DSSS and OFDM
Operating frequency	2412 MHz to 2462 MHZ
	5180 MHz to 5240 MHZ
Channel spacing	IEEE 802.11 b/g/n (at 2.4G): 5 MHz
	IEEE802.11 a/n (at 5G): 20 MHz
Wireless baud rate	IEEE 802.11b: 1M Mbps to 11M Mbps
	IEEE 802.11a/g: 6 M Mbps to 54M Mbps
	IEEE 802.11n: MCS0 to MCS7
	IEEE 802.11ac: MCS0 to MCS8
Operating mode	Infrastructure
Output power	<20 dBm (CE: detection mode - RMS)
	<30 dBm (FCC: detection mode - peak power)
Data security	Standards: WPA/WPA2 PSK, WPA/WPA2 EAP, WPA/WPA2 CCKM
	EAP methods: LEAP, TTLS, TLS, FAST, PEAP-MsChapV2, PEAP-GTC, PEAP-TLS
	Encryption modes: TKIP and AES
QoS	QoS setting supported
Data integrity	≤0.1% in 24 hours.
Data latency	≤ 3 seconds.

Safety

Degree of protection	Type CF (defibrillation proof) against electrical shock
Protection against	IPX7 water ingress
Height of fall	1.5 meters

Environmental requirements

Temperature Operating	0 to 40 °C (32 to 104 °F)
Storage	-20 to 60 °C (-4 to 140 °F)
Humidity	Operating 15 to 95% (non condensing)
Storage	10 to 95% (non condensing)
Barometric	Operating 427.5 to 805.5 mmHg (57.0 to 107.4 kPa)
Storage	120 to 805.5 mmHg (16.0 to 107.4kPa)

Power

Battery	Packs AA batteries (three)
Rechargeable	lithium-ion battery (one)

Lithium-Ion Battery

Battery Capacity	3500 mAh
Charge time	≤ 5 hours (0 to 90%)
Safety	IEC62133

Run time

With rechargeable lithium-ion battery

5-lead ECG	≥ 40hours (display off), ≥ 14 hours (display on)
5-lead ECG + Mindray SpO2	≥ 32 hours (display off), ≥ 12 hours (display on)

With 3AA batteries

5-lead ECG	≥ 20 hours (display off),
5-lead ECG + Mindray SpO2	≥ 16 hours (display off)

ECG

Lead set	3-lead: I, II, III
	5-lead: I, II, III, aVR, aVL, aVF, V
	6-lead: I, II, III, aVR, aVL, aVF, Va, Vb
	Automatic 3/5/6 - lead recognition
Input range	±8 mV (p-p)
Sweep speed	6.25 mm/s, 12.5 mm/s, 25 mm/s
Gain	x0.125, x0.25, x0.5, x1, x2, x4
Filter	Monitor: 0.5 to 40 Hz
	ST: 0.05 to 40 Hz
Pace Detection	Amplitude: ±2 mV to ±700 mV
	Width: 0.1 to 2ms
	Rise time: 10 to 100 μs
Pace Rejection	Amplitude: ±2to ±700 mV
	Width: 0.1 to 2ms
	Rise time: 10 to 100μs

Heart Rate

HR range Adult	15 bpm to 300 bpm
Pediatric	15 bpm to 350 bpm
HR accuracy	±1 bpm or ±1%, whichever is greater

Arrhythmia Analysis

25 types arrhythmia based on multi-leads algorithm.

Asystole, VFib/VTac, Vtac, Vent. Brady, Extreme Tachy, Extreme Brady, Vrhythm, PVCs/min, Pauses/min, Couplet, Bigeminy, Trigeminy, R on T, Run PVCs, PVC, Tachy, Brady, Missed Beats, PNP, PNC, Multif. PVC, Nonsus. Vtac, Pause, Irr. Rhythm., Afib.

ST Segment Analysis

ST range	-2.0 to +2.0 mV
ST accuracy	±0.02 mV or±10%, whichever is greater (-0.8 to +0.8 mV)
ST resolution	0.01 mV
ST template	Supply

QT Analysis

QTc formula	Bazett, Fridericia, Framingham, and Hodges
QT range	200 to 800 ms
QT accuracy	±30 ms
QT resolution	4 ms
QTc range	200 to 800 ms
QTc resolution	1 ms
QT-HR range	Adult [15, 150] bpm
Pediatric	[15, 180] bpm
QT template	Yes

Respiration

Lead	I or II, auto
RR range	0 to 200 rpm
RR Accuracy	± 1 rpm (0 to 120 rpm), ± 2 rpm (121 to 200 rpm)

RR Resolution	1 rpm
Apnea time	10, 15, 20, 25, 30, 35, 40 s
Sweep speed	3mm/s,6.25mm/s,12.5mm/s, 25mm/s,50 mm/s

SpO2 (optional)

SpO2 range	0 to 100%
SpO2 accuracy	±2% (70 to 100%)
Perfusion indicator	Yes
PI range	0.05 to 20%
Pitch Tone	Yes
PR range	20 to 300 bpm
PR accuracy	±3 bpm

Data Review

Most recent 48 hours of tabular trends for all parameters at the trend interval equal to or greater than 1 minute.

Event	200 events

BP10

NIBP Module

Physical Specifications

Weight	202g (including a lithium-ion battery)
Size	121x64x24mm
Display	2.4inch color TFT LCD screen
Display resolution	320 x 240 pixels

NIBP

Method	Oscillometer
Operation mode	Manual, Auto, Continuous, Sequence, and ABPM
Interval in auto mode	1, 2, 2.5, 3, 5, 10, 15, 20, 30, 60, 90, 120, 180, 240, 480 min
Parameters	Systolic, Diastolic, Mean
Systolic range	Adult: 25 to 290 mmHg; Pediatric: 25 to 240 mmHg
Diastolic range	Adult: 10 to 250 mmHg; Pediatric: 10 to 200 mmHg
Mean range	Adult: 15 to 260 mmHg; Pediatric: 15 to 215 mmHg
NIBP accuracy	Max mean error: ±5 mmHg
NIBP resolution	1 mmHg or 0.1 kPa
Initial cuff inflation	Adult: 160 mmHg Pediatric: 140 mmHg
Measurement time	30 seconds (typical) 120 seconds (maximum time)
PR range	30 to 300 bpm
PR accuracy	±3 bpm or ±3%, whichever is greater
Venous Puncture	Yes Adult: 20 to 120 mmHg Pediatric: 20 to 80 mmHg

Data Review

NIBP review	500 measurements
Data export	Yes, transferring to central station through USB

Power supply

Battery	One rechargeable lithium-ion battery, or 2 AA batteries
Run time	≥ 700 measurements (with lithium-ion battery) ≥ 300 measurements (with 2 AA batteries)
Recharge time	≤ 5 hours (0 to 90%)

MPAN Communications

Modulation mode	GFSK
Operating frequency	2402 to 2480 MHz
Channel spacing	2 MHz
Wireless baud rate	1 Mbps
Output power	≤2.5 mW
Data Security	Private protocol

MPAN is used in device pairing for BeneVision TM80, BP10 NIBP module

Safety

Degree of protection	Type CF (defibrillation proof) against electrical shock
Protection against	IP32 water ingress
Height of fall	1.5 meters

Environmental requirements

Temperature	Operating: 0 to 40 °C (32 to 104 °F) Storage: -20 to 60 °C (-4 to 140 °F)
Humidity	Operating: 15 to 95% (non condensing) Storage: 10 to 95% (non condensing)
Barometric Operating	427.5 to 805.5 mmHg (57.0 to 107.4 kPa) Storage:120 to 805.5 mmHg (16.0 to 107.4 kPa)

Charger

Charging station for TM80 Li-ion battery and BP10 Li-ion battery

Physical specifications

Size	36.5 cm (H) × 17.0 cm (W) × 7.79 cm (D) 14.4" (H) x 6.7" (W) x 3.0" (D) (without batteries and wall mount bracket)
Weight	1.13 kg (without batteries and wall mountbracket)
Charger Slots	10
Indicators	10 LEDs, which indicate the battery charge status,1 LED AC power indicator. Mounting Desktop or wall mount with GCX® wall channel

Power

Input Voltage	100 VAC to 240 VAC(± 10%)
Frequency	50 Hz/60 Hz (±3 Hz)
Input Current	1.5 A to 0.75 A
Charge Time	5hrs (room temperature) to 90% battery charge

Overcharge Protection Charger automatically stops charging when the lithium-ion battery charges full

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