

# BeneVision TM80

## Telemetry monitor



### Physical specifications

Weight	229 g (including a lithium-ion battery)
Size	126 x 64 x 23 mm
Display	3.5 inch colour TFT LCD capacitive touch screen
Display resolution	480 x 320 pixels

### ECG

Leadset	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: ±2 to ±700 mV Width: 0.1 to 2ms Rise time: 10 to 100µs
HR range	Adult: 15 to 300 bpm Paediatric: 15 to 350 bpm
HR accuracy	±1 bpm or ±1%, whichever is greater
Arrhythmia	Supply 25 types
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/QTc analysis	Yes
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 to 150 bpm Paediatric: 15 to 180 bpm
QT template	Yes

### Respiration

Range	Adult: 0 to 120 rpm Paediatric: 0 to 150 rpm
Resolution	1 rpm
Accuracy	7 to 150 rpm: ±2 rpm or ±2%, whichever is greater 0 to 6 rpm: Not specified
Lead	II
Sweep speed	3mm/s, 6.25 mm/s, 12.5 mm/s, or 25 mm/s
NCM alarm delay	10s, 15s, 20s, 25s, 30s, 35s, 40s

### SpO<sub>2</sub> (optional)

SpO <sub>2</sub> range	0 to 100%
SpO <sub>2</sub> 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

### Alarms

Audible indicator	Yes
Visible indicator	Supply Red, Yellow, Cyan alarm light Supply alarm message display

### Data Review\*\*

Trends data	24 hours
Events	100 events and associated waveforms

### Power supply

Battery	One rechargeable lithium-ion battery, or three AA batteries
Run time	With rechargeable lithium-ion battery: 5-lead ECG: ≥ 36 hours (display off), ≥ 14 hours (display on) 5-lead ECG + Mindray SpO <sub>2</sub> : ≥ 28 hours (display off), ≥ 12 hours (display on) With 3AA batteries: 5-lead ECG: ≥ 20 hours (display off), 5-lead ECG + Mindray SpO <sub>2</sub> : ≥ 16 hours (display off)
Charge time	≤ 5 hours (0 to 90%)

### Wi-Fi Communications

Protocol	IEEE 802.11a/b/g/n
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
Output power	< 20 dBm (CE: detection mode - RMS) < 30 dBm (FCC: detection mode - peak power)
Data security	Standard: WPA-PSK, WPA2-PSK, WPA-Enterprise, WPA2-Enterprise EAP methods: PEAP-GTC, PEAP- MSCHAPv2, EAP-TLS Encryption: TKIP and AES
QoS	QoS setting supported

### 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 and BeneVision patient monitor.	

### Safety

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

\*\* Some of functions marked with an asterisk may not be available.  
Please contact your local Mindray sales representative for the most current information.

# BP10

## NIBP Module

### Physical Specifications

Weight	202 g (including a lithium-ion battery)
Size	121 x 64 x 24 mm
Display	2.4 inch colour TFT LCD screen
Display resolution	320 x 240 pixels

### NIBP

Method	Oscillometry
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; Paediatric: 25 to 240 mmHg
Diastolic range	Adult: 10 to 250 mmHg; Paediatric: 10 to 200 mmHg
Mean range	Adult: 15 to 260 mmHg; Paediatric: 15 to 215 mmHg
NIBP accuracy	Max mean error: $\pm 5$ mmHg
NIBP resolution	1 mmHg or 0.1 kPa
Initialcuff inflation	Adult: 160 mmHg Paediatric: 140 mmHg
Measurement time	30 seconds (typical) 120 seconds (maximum time)
PR range	30 to 300 bpm
PR accuracy	$\pm 3$ bpm or $\pm 3\%$ , whichever is greater
Venous Puncture	Yes Adult: 20 to 120 mmHg Paediatric: 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	$\geq 700$ measurements (with lithium-ion battery) $\geq 300$ measurements (with 2 AA batteries)
Recharge time	$\leq 5$ 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	$\leq 2.5$ mW
Data Security	Private protocol

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

### Safety

Degree of protection Type CF (defibrillation proof)  
against electrical shock



Protection against water ingress	IP32
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)

Mindray Building, Keji 12th Road South,  
High-tech Industrial Park, Nanshan, Shenzhen 518057, P.R. China  
Tel: +86 755 8188 8998 Fax: +86 755 26582680  
E-mail: intl-market@mindray.com www.mindray.com

**mindray** [healthcare within reach] BeneHeart are registered trademarks or trademarks owned by Shenzhen Mindray Bio-medical Electronics Co., LTD.  
© 2017 Shenzhen Mindray Bio-Medical Electronics Co., Ltd. All rights reserved. Specifications subject to changes without prior notice.  
P/N:ENG-BeneVision TM80 Datasheet -210285x2P-20170817

**mindray**