

iPM Series

Modular Patient Monitor

Technical Specifications

iPM 8

Monitor size: 238 mm x 225 mm x 128 mm
 Weight: 3.2 kg, Standard parameters configuration, including a lithium battery and a recorder

iPM 10

Monitor size: 282 mm x 252 mm x 128 mm
 Weight: 3.6 kg, Standard parameters configuration, including a lithium battery and a recorder

iPM 12

Monitor size: 318 mm x 274 mm x 128 mm
 Weight: 4.2 kg, Standard parameters configuration, including a lithium battery and a recorder

Display

Type: iPM 12: 12.1" LED backlight LCD screen
 iPM 10: 10.4" LED backlight LCD screen
 iPM 8: 8.4" LED backlight LCD screen
 Resolution: 800 x 600 pixels
 Waveforms: up to 8
 External display: 1 display through VGA

ECG

3-lead: I, II, III
 5-lead: I, II, III, aVR, aVL, aVF, V
 12-lead (**Not available for iPM 8**): I, II, III, aVR, aVL, aVF, V1 ~ V12
 Gain: x0.125, x0.25, x0.5, x1, x2, x4, Auto
 Sweep speed: 6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
 Bandwidth: Diagnostic Mode: 0.05-150Hz
 Monitor Mode: 0.5-40Hz
 Surgical Mode: 1-20Hz
 ST Mode: 0.05-40Hz
 Defib.protection: Withstand 5000V (360J) defibrillation
 Recovery time: ≤ 10 s
 CMRR: Diagnostic Mode: ≥ 90 dB
 Monitor Mode: ≥ 105 dB
 Surgical Mode: ≥ 105 dB
 ST Mode: ≥ 105 dB
 ST analysis: -2.0 to 2.0 mV
 Arr analysis: Yes

Heart Rate

Range: Adu: 15 to 300 bpm
 Ped: 15 to 350 bpm
 Neo: 15 to 350 bpm
 Resolution: 1 bpm
 Accuracy: ± 1 bpm or $\pm 1\%$, whichever is greater

Respiration

Range: Adu: 0 to 120 rpm
 Ped/Neo: 0 to 150 rpm
 Resolution: 1 rpm
 Accuracy: 7 to 150 rpm: ± 2 rpm or $\pm 2\%$, whichever is greater
 0 to 6 rpm: Not specified
 Lead: I or II (default: lead II)
 Sweep speed: 6.25 mm/s, 12.5 mm/s or 25 mm/s

SpO₂

Mindray/Nellcor Range: 0 to 100%
 Masimo Range: 1% to 100%
 Resolution: 1%
 Mindray accuracy: $\pm 2\%$ (70-100%, Adu/Ped, non-motion)
 $\pm 3\%$ (70-100%, Neo, non-motion)
 $\pm 3\%$ (70-100%, motion)
 Unspecified (0-69%)



Masimo accuracy: $\pm 2\%$ (70-100%, Adu/Ped, non-motion)
 $\pm 3\%$ (70-100%, Neo, non-motion)
 $\pm 3\%$ (70-100%, motion)
 Unspecified (0-69%)

Nellcor accuracy: Actual accuracy depends on probe.
 Refer to the operator's manual

Refreshing rate: 1 s

Pulse Rate

Range: Mindray SpO₂: 20 to 254 bpm
 Masimo SpO₂: 25 to 240 bpm
 Nellcor SpO₂: 20 to 300 bpm

IBP Module: 25 to 350 bpm
 NIBP Module: 40 to 240 bpm
 Accuracy Mindray SpO₂: ± 3 bpm (non-motion)
 ± 5 bpm (motion)

Masimo SpO₂: ± 3 bpm (non-motion)
 ± 5 bpm (motion)
 Nellcor SpO₂: ± 3 bpm (20-250 bpm)
 Unspecified (251-300 bpm)

IBP Module: ± 1 bpm or $\pm 1\%$, whichever is greater
 NIBP Module: ± 3 bpm or $\pm 3\%$, whichever is greater
 Resolution: 1 bpm
 Refreshing rate: 1 s

NIBP

Method: Automatic Oscillometric
 Operation mode: Manual, Auto, STAT
 Parameters: Systolic, Diastolic, Mean
 Systolic range: Adu: 40 to 270 mmHg
 Ped: 40 to 200 mmHg

Neo: 40 to 135 mmHg
 Adu: 10 to 210 mmHg
 Ped: 10 to 150 mmHg
 Neo: 10 to 100 mmHg

Mean range: Adu: 20 to 230 mmHg
 Ped: 20 to 165 mmHg
 Neo: 20 to 110 mmHg

Accuracy Max mean error: ± 5 mmHg
 Max standard deviation: 8 mmHg
 Resolution: 1 mmHg

Temperature

Range: 0 to 50°C (32 to 122 F)
 Resolution: 0.1°C
 Accuracy: ± 0.1 °C or ± 0.2 F (without probe)
 Parameters: T1, T2 and TD

IBP

Channel: iPM 12: up to 4 channels
 iPM 10, iPM 8: up to 2 channels
 Range: -50 to 300 mmHg
 Resolution: 1 mmHg
 Accuracy: $\pm 2\%$ or ± 1 mmHg, whichever is greater (without sensor)
 Sensitivity: 5 uV/mmHg/V
 Impedance range: 300 to 3000Ω

C.O.

Method:	Thermodilution
Range:	C.O.:0.1 to 20 L/min TB: 23 to 43°C TI: 0 to 27°C
Accuracy:	C.O.: ±5% or ±0.1 L /min, whichever is greater TB, TI: ±0.1°C (without sensor)
Resolution:	C.O.: 0.1 L/min TB, TI: 0.1°C

Sidestream CO₂

CO ₂ Range:	0 to 99 mmHg
Accuracy:	0 to 40 mmHg: ±2 mmHg 41 to 76 mmHg: ±5% of the reading 77 to 99 mmHg: ±10% of the reading
Sample flowrate:	70, 100 ml/min
Accuracy:	±15% or ±15 ml/min, whichever is greater.
Warm-up time:	ISO accuracy mode: 45 s Full accuracy mode: 10 min
AWRR range:	0 to 120 rpm
AWRR precision:	±2 rpm
Response time:	When using neonatal watertrap and 2.5 m neonatal sampling line <4.5s@100 ml/min <5s@70 ml/min When using adult watertrap and 2.5 m adult sampling line <6s@100 ml/min <7s@70 ml/min
Apnea time:	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s

Microstream CO₂

CO ₂ Range:	0 to 99 mmHg
Accuracy:	0 to 38 mmHg: ±2 mmHg 39 to 99 mmHg: ±5% of reading +0.08% for every 1mmHg (above 38mmHg)
Sample flowrate:	50ml/min
Accuracy:	- 7.5/+15ml/min
Initialization time:	30 s (typical)
awRR range:	0 to 150 rpm
awRR precision:	0 to 70 rpm : ±1 rpm 71 to 120 rpm: ±2 rpm 121 to 150 rpm: ±3 rpm
Response time:	2.9 s (typical)
Apnea time:	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s

Mainstream CO₂

CO ₂ Range:	0 to 150 mmHg
Accuracy:	0 to 40 mmHg: ±2 mmHg 41 to 70 mmHg: ±5% of the reading 71 to 100 mmHg: ±8% of the reading 101 to 150 mmHg: ±10% of the reading
awRR range:	0 to 150 rpm
Accuracy:	±1 rpm
Response time:	<60 ms

Multi-gas/O₂

Method:	Infrared absorption
Gas:	CO ₂ , O ₂ , N ₂ O, Des, Iso, Enf, Hal, Sev
Warm-up time:	ISO accuracy mode: 45 s Full accuracy mode: 10 min
Sample flow rate:	Adu/Ped: 120, 150, 200 ml/min Neo: 70, 90, 120 ml/min
Accuracy:	±10 ml/min or ±10%, whichever is greater
Range:	CO ₂ : 0 to 30% O ₂ /N ₂ O: 0 to 100% Hal/Iso/Enf: 0 to 30% Des: 0 to 30% Sev: 0 to 30%
awRR range:	2 to 100 rpm
awRR accuracy:	2 to 60 rpm: ±1 rpm >60 rpm: unspecified
Apnea time:	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s

Data Storage

Trend data:	120 hrs (interval 1 min), 4 hrs (interval 5 sec), 1 hrs (interval 1 sec)
Alarm events:	100 events and associated waveforms
ARR events:	100 ARR. events and associated waveforms
NIBP:	1000 measurements
Waveforms:	Max. 48 hrs full disclosure waveforms (specific storage time depends on the type and number of waveforms stored)

Battery

Type:	Chargeable Lithium-Ion
Number:	1 pc for iPM 8 and iPM 10 max. 2 pcs for iPM 12
Voltage:	11.1 VDC
Capacity:	4500 mAh
Run time:	6 hrs for iPM 8 4 hrs for iPM 10/ iPM 12 8 hrs for iPM 12 with 2 pcs
Recharge time:	8 hrs maximum

Interfacing

Connectors:	1 AC power connector 1 RJ45 network connector 2 USB 2.0 connector 1 VGA output connector 1 multifunctional output connector (output ECG, IBP, nurse call and Defib. Synch. Signals)
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Recorder

Type:	Thermal array
Speed:	25 mm/s, 50 mm/s
Trace:	3

Power Requirements

AC Voltage:	100 to 240 VAC, 50/60Hz
Current:	1.1 to 0.5 A
DC input (iPM 8 only):	12v DC



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