

# ePM 10A PATIENT MONITORS

## Performance Specifications

### Display

Type:	Capacitive touchscreen, supports multi-touch operation
Size and Resolution:	10.1-inch, 1280 x 800 pixels
Waveforms:	Up to 8 waveforms

### ECG (3, 5 lead)

Leads:	I, II, III, aVR, aVL, aVF, V
Sweep Speed:	6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
Gain Selection:	x 0.125, x 0.25, x 0.5, x 1, x 2, x 4, auto
Input Signal Range:	±8 mV (p-p)
Electrode Offset	
Potential Tolerance:	±500 mV

### Bandwidth

Diagnostic Mode:	0.05 to 150 Hz
Monitor Mode:	0.5 to 40 Hz
Defibrillator Protection:	Withstand 5000 VAC voltage in isolation against defibrillation
Recovery Time:	< 5 s

### CMRR

Diagnostic:	>90 dB
Monitor Mode:	>105 dB (with notch filter on)

### Heart Rate Meter

Measurement Range:	
Adult:	15 to 300 bpm
Pediatric/Neonate:	15 to 350 bpm
Accuracy:	±1 bpm or ±1%, whichever is greater
Resolution:	1 bpm
Tall T-wave Rejection:	When the test is performed based on Clause 201.12.1.101.17 of ANSI/AAMI/IEC 60601-2-27: 2011, the heart rate calculation is not affected for QRS of 1 mV amplitude and 100 ms duration, T-wave duration of 180 ms and amplitude lower than 1.2 mV, and QT interval of 350 ms.

### Pace Pulse

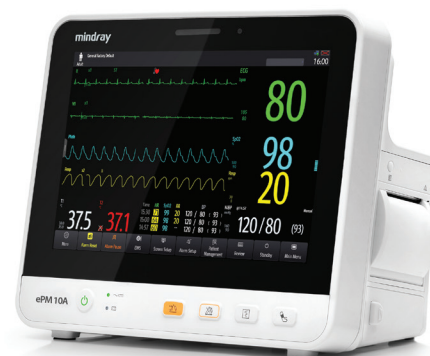
Pace Indicator:	Pace pulses meeting the following conditions are labelled with a PACE marker:
Amplitude:	±2 to ±700 mV
Width:	0.1 to 2 ms
Rise Time:	10 to 100 µs (without overshoot)
Pace Pulse Rejection:	When tested in accordance with the ANSI/AAMI/IEC 60601-2-27: 2011.12.1.101.13, the heart rate meter rejects all pulses meeting the following conditions.
Amplitude:	±2 to ±700 mV
Width:	0.1 to 2 ms
Rise Time:	10 to 100 µs (without overshoot)

### Arrhythmia Analysis

Patient:	Adult/Pediatric
Monitored Arrhythmias:	Asystole, V-Fib/V-Tach, V-Tach, Vent Brady, Extreme Tachy, Extreme Brady, Vent Rhythm, PVCs/min, Pauses/min, Couplet, Bigeminy, Trigeminy, R on T, Run PVCs, PVC, Tachy, Brady, Missed Beats, Pacer Not Pacing, Pacer Not Capture, Multiform PVC, Nonsus V-Tach, Pause, Irr Rhythm, A-Fib

### Respiration

Lead:	I or II, auto
RR Range:	0 to 120 rpm (Adult) 0 to 150 rpm (Pediatric/Neonate)
RR Accuracy:	± 2 rpm (7 to 150 rpm) or ± 2 %, whichever is greater 0 to 6 rpm: not specified
RR Resolution:	1 rpm
Sweep Speed:	3 mm/s, 6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
Apnea Alarm Delay:	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s



### Pulse Oximetry

#### With Masimo SET® SpO<sub>2</sub>

Range:	1 to 100%
Resolution:	1%
Accuracy:	±2% (70 to 100%, Adult/Pediatric, non-motion) ±3% (70 to 100%, Neonate, non-motion) ±3% (70 to 100%, motion) 1 to 69% unspecified
Pulse Rate Range:	25 to 240 bpm
Pulse Rate Accuracy:	±3 bpm (non-motion) ±5 bpm (motion)
Refresh Rate:	≤ 1 s

#### With Nellcor SpO<sub>2</sub>

Range:	0 to 100%
Resolution:	1%
Accuracy:	±2% (70 to 100%, Adult/Pediatric) ±3% (70 to 100%, Neonate) Unspecified (0 to 69%)
Refresh Rate:	≤ 1 s

### Temperature

Meets standard of ISO 80601-2-56.	
Method:	Thermal resistance
Channels:	2 channels
Range:	0 to 50 °C (32 to 122 °F)
Accuracy:	± 0.1 °C or ± 0.2 °F (without probe error)
Resolution:	0.1 °C

### Non-Invasive Blood Pressure

Meet standards of ISO 80601-2-30.	
Method:	Oscillometry
Modes:	Manual, Auto, STAT, Sequence
Max Measurement Time:	Adult/Pediatric: 180 s Neonate: 90 s
Systolic Range:	Adult: 25 to 290 mmHg Pediatric: 25 to 240 mmHg Neonate: 25 to 140 mmHg
Diastolic Range:	Adult: 10 to 250 mmHg Pediatric: 10 to 200 mmHg Neonate: 10 to 115 mmHg
Mean Range:	Adult: 15 to 260 mmHg Pediatric: 15 to 215 mmHg Neonate: 15 to 125 mmHg
Accuracy:	Max mean error: ± 5 mmHg
Max standard deviation:	8 mmHg
Resolution:	1 mmHg
Assisting Venous Puncture:	Yes

## Performance Specifications

### PR

PR Range: 30 to 300 bpm (from NIBP)  
PR Accuracy:  $\pm 3$  bpm or  $\pm 3$  %, whichever is greater (from NIBP)

### Sidestream CO<sub>2</sub>

Measurement Range:  
etCO<sub>2</sub>: 0 to 150 mmHg  
CO<sub>2</sub> Accuracy:  
0 to 40 mmHg:  $\pm 2$  mmHg  
41 to 76 mmHg:  $\pm 5\%$  of reading  
77 to 150 mmHg:  $\pm 10\%$  of reading  
Resolution:  
etCO<sub>2</sub>: 1 mmHg  
Sample Flow Rate:  
Adult/Pediatric: 120 ml/min  
Neonate: 70 ml/min or 90 ml/min  
Sample Flow Rate  
Tolerance:  $\pm 15$  ml/min or  $\pm 15\%$ , whichever is greater  
Warm-up Time: 90 s (maximum), 20 s (typically)

Measured with a Neonatal watertrap and 2.5-meter Neonatal sampling line, or an Adult watertrap and a 2.5-meter Adult sampling line:

Rise Time:  
etCO<sub>2</sub>:  $\leq 250$  ms @ 70 ml/min (Neonate watertrap)  
 $\leq 250$  ms @ 90 ml/min (Neonate watertrap)  
 $\leq 300$  ms @ 120 ml/min (Adult/Pediatric watertrap)

Response Time:  
etCO<sub>2</sub>:  $\leq 5.0$  s @ 70 ml/min (Neonate watertrap)  
 $\leq 4.5$  s @ 90 ml/min (Neonate watertrap)  
 $\leq 5.0$  s @ 120 ml/min (Adult/Pediatric watertrap)

awRR Range: 0 to 150 rpm

awRR Accuracy:  
0 to 60 rpm:  $\pm 1$  rpm  
61 to 150 rpm:  $\pm 2$  rpm

Apnea Alarm  
Delay: 10, 15, 20, 25, 30, 35, 40 s

### Data Review Storage

Trends Data: Up to 120 hours @ 1 min  
Events: Up to 1000 events, including parameter alarms, arrhythmia events technical alarms  
NIBP: Up to 1000 sets  
Full Disclosure: 48 hours for all parameter waveforms  
OxyCRG: 400 OxyCRG events

### Interfacing

Main Unit:  
AC power connector (1)  
VGA port (1)  
USB 2.0 connector (2)  
Analog output/nurse call/defib. Sync/Serial Port (1)  
Barcode Scanner: Supports 1D and 2D barcode  
Thermal Recorder: 3 traces (paper 50 mm width, 20 m length)  
Network Printer: Support

### Power

Line Voltage: 100 to 240 VAC ( $\pm 10$  %)  
Maximum Current: 2.0A  
Frequency: 50/60 Hz ( $\pm 3$  Hz)  
Battery: Rechargeable lithium-ion battery, 4500mAh  
 $\geq 4$  hours run time  
Recharge Time  
(power off): 5 hours to 90%

### Physical Specifications

Weight: 7.05 lbs. (3.2 Kg)  
(Standard configuration, excluding recorder, battery and accessories)  
Size: 10.7" x 8.9" x 6.8"  
27.1 cm x 22.6 cm x 17.3 cm

### Environmental Requirements

#### Temperature

Operating: 0 to 40 °C (without CO<sub>2</sub>)  
5 to 40 °C (with CO<sub>2</sub>)

Storage: -20 to 60 °C

#### Humidity

Operating: 15 to 95 % (non condensing)  
Storage: 10 to 95 % (non condensing)

#### Barometric

Operating:  
Without CO<sub>2</sub>: 427.5 to 805.5 mmHg (57 to 107.4 kPa)  
With CO<sub>2</sub>: 430 to 790 mmHg (57.3 to 105.3 kPa)  
Storage:  
Without CO<sub>2</sub>: 120 to 805.5 mmHg (16 to 107.4 kPa)  
With CO<sub>2</sub>: 430 to 790 mmHg (57.3 to 105.3 kPa)