DPM | Series

DPM™ | 5

PATIENT MONITOR

Summary of Features and Benefits

- 12.1" TFT display, configurable up to 8 waveforms, enables maximum data analysis of your most critical parameters
- Standard features include 3/5-lead ECG, non-invasive blood pressure, SpO_2, pulse rate, respiration, dual-channel invasive blood pressure, dual-channel temperature, lithium ion battery, and integrated recorder
- Optional features include Masimo SET® or DPM SpO_2, arrhythmia and ST analysis, DPM CO_2, and Multi-gas analysis module
- 96-hours of graphic and list trends, NIBP list including 800 measurements, and alarm event recall for 70 alarm episodes for comprehensive historical review of all parameters
- 40-seconds of full disclosure waveform recall for detailed review of physiological events
- Multi-gas analysis module utilizes a sidestream method to measure the concentration of 5 anesthetic agents, $ETCO_2$, N_2O and O_2. It also provides automatic agent identification.
- Compact flash back-up, included on every device, protects your patient's data should a sudden loss of power occur
- Built-in, 3-trace recorder for printing real-time and historical data

Highly capable, yet conveniently flexible.

DPM5 is a robust patient monitor, small enough to move around, yet flexible enough to adapt to your particular needs. With a variety of purchasable options including arrhythmia and ST analysis, $ETCO_2$ measurement and multi-gas analysis, DPM5 is configurable to your liking. Pay for only the advanced features that you need and nothing more. Quick-action keys on the front panel make this device especially easy to learn, which means a shorter learning curve for new or changing staff. Rich in function, conveniently adaptable and pleasingly affordable, DPM5 may be just the monitor for your department.

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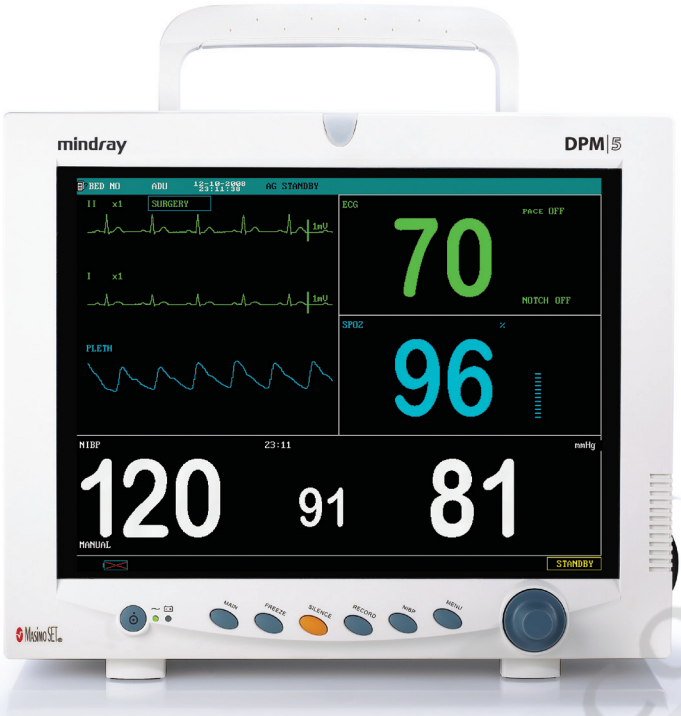
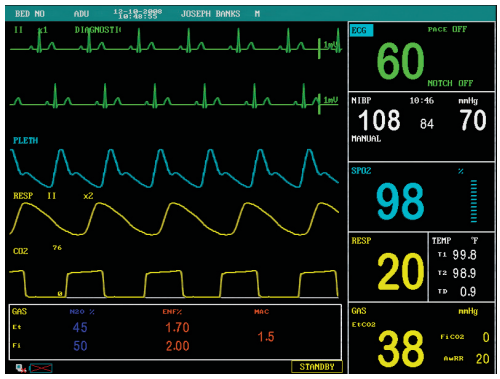


Select Large Numerics Mode for optimal visualization of your most important data. This display mode features bright, sizable numerics visible from across the bed or across the room.

Review your patient's most recent blood pressure measurements using the NIBP recall function, accessible using the Menu quick-action key. At the touch of a button, obtain a dedicated printout of your patient's NIBP measurements.

Choose from a series of mounting schemes to create your ideal monitoring environment.



With the multi-gas analysis module, perform 5-agent measurement, along with $ETCO_2$, N_2O and O_2, easily and reliably.

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P/N: 0002-08-35000 Rev.E

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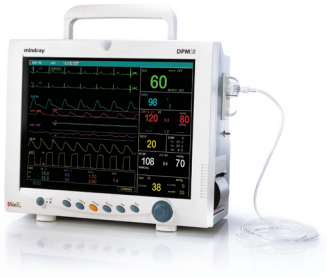

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TECHNICAL SPECIFICATIONS

Display

Type:	12.1" color TFT
Resolution:	800 x 600 pixels
Waveforms:	8 selectable

ECG (3 and 5-Lead)

Leads:	I, II, III, aVR, aVL, aVF, V
Gain Selection:	x0.125, x0.25, x0.5, x1, x2, auto
Sweep Speed:	12.5mm/sec, 25mm/sec, 50mm/sec
Bandwidth:	Diagnostic Mode: 0.05-150Hz (M08A module) Monitor Mode: 0.5-40Hz Surgical Mode: 1-20Hz
Defibrillator Overload Protection:	Withstand 4000 VAC/50Hz voltage in isolation against electrosurgical interference and defibrillation
Recovery Time:	<5sec
CMRR:	Diagnostic Mode: ≥90dB Monitor Mode: ≥105dB Surgical Mode: ≥105dB (Notch filter set to off)

Heart Rate Meter

Measurement Range:	Adult: 15-300bpm Pediatric/Neonate: 15–350bpm
Accuracy:	±1bpm or ±1%, whichever is greater
Resolution:	1bpm

Pacer Rejection:

When tested in accordance with ANSI/AAMI EC13-1992 Section 4.1.4, the 3/5 Lead ECG derived heart rate meter shall reject all pacer pulses ±2.0mV to ±700mV and duration 0.1ms to 2ms with no tail

Tall T-Wave Rejection:

When tested in accordance with the ANSI/AAMI EC13-2002 Section 4.1.2.1 c, the heart rate meter will reject all T-waves with amplitudes less than 1.2mV, 100ms QRS, a T-wave duration of 180ms and a Q-T interval of 350ms

Scaling Signal: 1mV ±5%

Pace Pulse

Pulse Indicator:

Pace pulses meeting the following conditions are marked by the PACE indicator

Amplitude: ±4 to ±700mV (3/5-lead)
Width: 0.1 to 2ms
Rise time: 10 to 100µs

Pulse Rejection:

When tested in accordance with the ANSI/AAMI EC13-2002: Sections 4.1.4.1 and 4.1.4.3, the heart rate meter rejects all pulses meeting the following conditions

Amplitude: ±2 to ±700mV
Width: 0.1 to 2ms
Rise time: 10 to 100µs
Minimum input slew rate: 20V/s RTI

ST Analysis

Adult/Pediatric Only

Measurement Range:	-2.0mV to 2.0mV
Accuracy:	-0.8mV to 0.8mV: ±0.02mV or ±10%, whichever is greater
ST Adjust Scale:	60ms after J point, 80ms after J point (default: 60ms after J point)
ISO Adjust Scale:	4 to 200ms before R-Wave (default: 80ms) Step: 4ms
J Point Adjust Scale:	4 to 200ms after R-Wave (default: 48ms)

Arrhythmia Analysis

Adult/Pediatric Only

Asystole, ventricular fibrillation, ventricular tachycardia, pacer non-paced, pacer non-capture, ventricular rhythm, couplet, VT>2, bigeminy, trigeminy, R on T PVC, multiform PVC, irregular rhythm, missed beats, bradycardia, tachycardia

Respiration

Range:	Adult: 0-120bpm Pediatric/Neonate: 0-150bpm
Resolution:	1bpm
Accuracy:	7-150bpm: ±2bpm or ±2%, whichever is greater 0-6bpm: undefined
Lead:	I or II (default: lead II)
Sweep Speed:	6.25mm/sec, 12.5mm/sec, 25mm/sec

Non-Invasive Blood Pressure

Measurement Method:	Oscillometric
Measurement Modes:	Manual, auto, continuous
Connector Type:	Rectus
Units of Measure:	mmHg, kPa (user-selectable)
Resolution:	1mmHg
Systolic Range:	Adult: 40-270mmHg Pediatric: 40-200mmHg Neonate: 40-135mmHg
Diastolic Range:	Adult: 10-210mmHg Pediatric: 10-150mmHg Neonate: 10-100mmHg
Mean Range:	Adult: 20-230mmHg Pediatric: 20-165mmHg Neonate: 20-110mmHg
Accuracy:	Mean error: <±5mmHg Standard deviation: <8mmHg
Cuff Deflation Technique:	Step bleed
Cuff Inflation:	Volume of 500cc to 300mmHg in <20sec
Over Pressure Protection:	Double safety protection (hardware and software)
Pulse Rate Range:	40-240bpm
Pulse Rate Accuracy:	±3bpm or ±3%, whichever is greater

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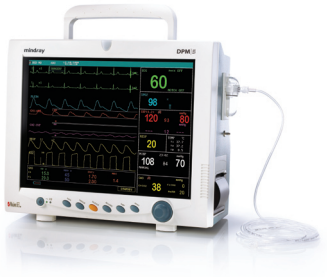

DPM™ 5

TECHNICAL SPECIFICATIONS

Invasive Blood Pressure

Measurement Range:	-50-300mmHg
Resolution:	1mmHg
Accuracy:	1mmHg or ±2%, whichever is greater
Zero Offset Range:	±200mmHg
Excitation:	5VDC, ±2% Minimum load resistance will be 300Ω per transducer
Frequency Response:	DC to 12.5Hz ±1Hz, -3db
Waveform Scales:	ART: 0 to 300mmHg PA: -6 to 120mmHg CVP: -10 to 40mmHg RAP: -10 to 40mmHg LAP: -10 to 40mmHg ICP: -10 to 40mmHg IBP1/IBP2: -50 to 300mmHg

Pulse Rate from Invasive Blood Pressure

Measurement Range:	25-350bpm
Resolution:	1bpm
Accuracy:	25-200bpm: ±1bpm or ±1%, whichever is greater 201-350bpm: ±2%

Pulse Oximetry

With Masimo SET® SpO_2

Measurement Range:	1-100%
Resolution:	1%
Accuracy:	±2% (70-100%, Adult/Pediatric, no motion) ±3% (70-100%, Neonate, no motion) ±3% (70-100%, Adult/Pediatric/Neonate, motion) 0-69% unspecified

Pulse Rate with Masimo SET® SpO_2

Measurement Range:	25-240bpm
Resolution:	1bpm
Accuracy:	±3bpm (no motion) ±5bpm (motion)

With Mindray™ SpO_2

Measurement Range:	0-100%
Resolution:	1%
Accuracy:	±2% (70-100%, Adult/Pediatric, no motion) ±3% (70-100%, Neonate, no motion) ±3% (70-100%, Adult/Pediatric/Neonate, motion) 0-69% unspecified

Pulse Rate with Mindray SpO_2

Measurement Range:	20-254bpm
Resolution:	1bpm
Accuracy:	±3bpm (no motion) ±5bpm (motion)

Temperature

Scale:	Selectable ℃ or ℉
Channels:	2
Measurement Range:	0℃ to 50℃ (32℉ to 122℉)
Resolution:	0.1℃
Accuracy:	±0.1℃ (excluding sensor) ±0.2℃ (including YSI 400 series sensor)
Measurement Time:	Body surface: <100sec (using YSI 400 series sensor) Body cavity: <80sec (using YSI 400 series sensor)

CO_2 with Mindray Sidestream

Measurement Range:	0-99mmHg
Resolution:	1mmHg
Accuracy:	0-40mmHg: ±2mmHg 41-76mmHg: ±5mmHg 77-99mmHg: ±10mmHg
CO_2 Waveform Recognition:	0-40mmHg: ±2mmHg 41-76mmHg: ±5% of reading 77-99mmHg: ±10% of reading
Start-up Time:	<1min from start-up, module enters warming-up status. 1min later, module enters ready-to-measure status (full accuracy mode).
Sampling Rate:	70ml/min or 100ml/min (default: 100ml/min)
Auto-Zeroing Interval:	30sec, 10min and 30min after entering measurement mode and at every odd hour (1, 3, 5, 7, etc.) during operation after that
Respiration Measurement Range:	0-120bpm
Respiration Accuracy:	0-70bpm: ±2bpm >70bpm: ±5bpm

CO_2 with Oridion® Microstream®

Measurement Range:	0-99mmHg
Resolution:	Numeric: 1mmHg Waveform: 0.1mmHg
Accuracy:	0-38mmHg: ±2mmHg 39-99mmHg: ±5% + 0.08% × (reading - 38mmHg)
CO_2 Waveform Recognition:	0-38mmHg: ±2 mmHg 39-99mmHg: ±5% of reading + 0.08% for every 1mmHg
Start-up Time:	30sec typical. Reaches 5% steady-state accuracy within 3min
Sampling Rate:	50ml/min: -7.5ml/min +15ml/min
Auto-Zeroing Interval:	At start-up, and every 12hrs thereafter
Respiration Measurement Range:	0-150bpm
Respiration Accuracy:	0-70bpm: ±1bpm 71-120bpm: ±2bpm 121-150bpm: ±3bpm

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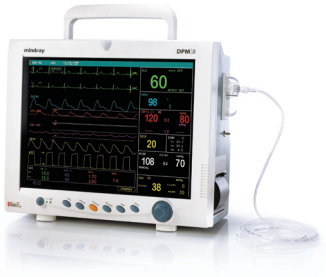

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TECHNICAL SPECIFICATIONS

Anesthesia Gases

Sampling Rate:	Adult/pediatric: 120, 150, 200ml/min (user-selectable) (default: 120ml/min) Neonatal: 70, 90, 120ml/min (user-selectable) (default: 70ml/min)
Sampling Delay Time:	<4sec
Refresh Rate:	1sec
Warm-up Time:	45sec to warm-up status 10min to ready-to-measure status
Normal Operating Conditions After Warm-up:	Ambient Temperature: 10°C to 55°C (50°F to 131°F) Ambient Pressure: 700–1200hPa Ambient Humidity: 10–95% RH, non-condensing
Measurement Range:	CO_2: 0-30% N_2O: 0-100% Des: 0-30% Sev: 0-30% Enf/Iso/Hal: 0-30% O_2: 0-100% AwRR: 2-100bpm
Resolution:	CO_2: 1mmHg, AwRR: 1bpm
Accuracy:	CO_2: 0-1%: ±.1% 1-5%: ±.2% 5-7%: ±.3% 7-10%: ±.5% >10%: unspecified
	N_2O: 0-20%: ±2% 20-100%: ±3%
	Des: 0-1%: ±.15% 1-5%: ±.2% 5-10%: ±.4% 10-15%: ±.6% 15-18%: ±1% >18%: unspecified
	Sev: 0-1%: ±.15% 1-5%: ±.2% 5-8%: ±.4% >8%: unspecified
	Enf/Iso/Hal: 0-1%: ±.15% 1-5%: ±.2% >5%: unspecified
	O_2: 0-25%: ±1% 25-80%: ±2% 80-100%: ±3%
	AwRR: 2-60bpm: ±1bpm >60bpm: unspecified

Anesthesia Gases (continued)

Measurement Rise Time:	Sampling flow 120ml/min, using the DRYLINE™ water trap and neonatal DRYLINE™ 2.5m sampling line CO_2: 250ms N_2O: 250ms O_2: 600ms Hal/Iso/Sev/Des: 300ms Enf: 350ms Sampling flow 200ml/min, using the DRYLINE™ water trap and adult DRYLINE™ 2.5m sampling line CO_2: 250ms N_2O: 250ms O_2: 500ms Hal/Iso/Sev/Des: 300ms Enf: 350ms

Data Storage

Trend Data:	96hrs at selectable resolutions: 1min, 5min, 10min 1hr at selectable resolutions: 1sec, 5sec
Alarm Events:	70 alarm events and associated waveforms (selectable waveform lengths: 8sec, 16sec or 32sec)
NIBP Measurements:	800 (systolic, diastolic, mean pressure and measurement time)

Recorder

Type:	Thermal array
Speed:	25mm/sec, 50mm/sec
# Traces:	3

Battery

Type:	Rechargeable lithium ion
Number of Batteries:	2
Run Time:	5hrs using a new, fully charged battery and monitoring ECG, SpO_2 and NIBP measurements every 15min at 25°C
Recharge Time:	6.5hrs

Interfacing

Connectors:	1 AC power connector 1 RJ45 network connector 100 BASE-TX 1 VGA connector 15-PIN D-sub 1 BNC connector 1 equipotential grounding connector

DPM | Series

DPM™ 5

TECHNICAL SPECIFICATIONS

Physical Dimensions

Monitor Size:	27cm(H) x 31.8cm(W) x 13.7cm(D) 10.6"(H) x 12.5"(W) x 5.4"(D)
Monitor Weight:	Less than 4.7kg (10.4lbs) standard configuration (ECG, Resp, SpO_2, 2-Temperature, NIBP with 1 lithium ion battery)

Environmental

Operating Temperature:	0°C to 40°C 5°C to 35°C (Sidestream CO_2 module) 5°C to 35°C (Microstream CO_2 module) 10°C to 35°C (AG module)
Storage Temperature:	-20°C to 60°C
Operating Humidity:	15% to 95%, non-condensing
Storage Humidity:	10% to 95%, non-condensing
Operating Altitude:	-500 to 4600m (-1640 to 15092 ft) -305 to 3014m (-1000 to 9889 ft) (Masimo SpO_2/CO_2 modules/AG modules)
Storage/Transportation Altitude:	-500 to 13100m (-1640 to 42979ft) -305 to 6096m (-1000 to 20000ft) (Masimo SpO_2/CO_2 modules/AG modules)

Power Requirements

AC Voltage:	100–240VAC, 50/60Hz
Power:	110VA

Safety

Type of Protection:	Class I with internal electric power supply
Degree of Protection:	Sidestream/Microstream CO_2 modules: BF ECG/Resp/Temp/SpO_2/NIBP/IBP module: CF
Protection Against Ingress of Fluids:	Not protected

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