The DPM 7 offers a broad range of patient monitoring capabilities for mid and high acuity departments. Its design incorporates a 17" touchscreen display and functionality to meet the demands of the ICU and OR, such as multi-vector Arrhythmia and ST analysis, Cardiac Output (CO), Continuous Cardiac Output (CCO/SVO₂), CO₂, up to 8 invasive blood pressures, 5-agent multi-gas analysis with auto-ID and data storage. Furthermore, a secondary monitor can be used and independently operated to display different parameters to increase monitoring flexibility.

**Summary of Features**
- 17" High Resolution Touchscreen Display
- Wireless 2.4Ghz (802.11g)
- Defibrillator Synchronization
- 120-hours of graph and trends
- 48-hours of full disclosure waveform review
- NIBP recall for 1,000 most recent measurements
- Alarm event review for up to 100 physiological alarm episodes
- Alarm event review for up to 100 arrhythmia alarm episodes
- Connects to DPM CS central station or Panorama® Patient Monitoring Network
- Interfaces with Nurse Call Systems
- 5 built-in module slots
- 8 slot external module rack
- 3, 5 and 12 Lead ECG
- Arrhythmia and ST analysis
- Up to 8 invasive blood pressures
- Non-invasive blood pressure
- SPO₂: DPM, Masimo® or Nellcor®
- CO₂: DPM Sidestream or Oridion® Microstream
- Thermodilution cardiac output and can interface with Vigilance II®
- 2 Temperatures
- 3 Trace recorder
- BIS™
- Respiration
- Respiratory mechanics
- Multi-gas analysis

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**Powerful, practical and portable**

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Data storage and recall capabilities

- 120-hours of graph and list trends
- 48-hours of full disclosure waveform review
- NIBP recall for 1,000 most recent measurements
- Alarm event review for up to 100 physiological alarm episodes
- Alarm event review for up to 100 arrhythmia alarm episodes

ECG split-screen feature to view 5-lead ECG while maintaining visibility of other real-time data.

The DPM 7 provides a large numerics display mode to enhance the view of patient data.

12 touchscreen quick-action keys are configurable for commonly used functions.

Quick-action hard keys for frequently used functions.
**Display**

Type: 17" color TFT touchscreen
Resolution: 1280 x 1024 pixels
Waveforms: 12 selectable

**ECG (3, 5 and 12-Lead)**

Leads: I, II, III, aVR, aVL, aVF, V1-V6
Gain Selection: x0.125, x0.25, x0.5, x1, x2, x4, auto
Sweep Speed: 12.5mm/sec, 25mm/sec, 50mm/sec
Bandwidth
- Diagnostic Mode: 0.05-150Hz
- Monitor Mode: 0.5-40Hz
- Surgical Mode: 1-20Hz
Defibrillator Overload Protection: Withstand 4000VAC/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
Pace 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
Tall T-Wave Rejection:
- When tested with the ANSI/AAMI EC13-2002 Section 4.1.2.1 c, the heart rate meter will reject all 100ms QRS complexes with less than 1.2mV of amplitude, and T-waves with T-wave interval of 180ms and those with Q-T interval of 350ms
Scaling Signal: 1mV ±5%

**ST Analysis**

Adult/Pediatric Only
Measurement Range:
- Adult: -2.0mV to 2.0mV
- Pediatric/Neonate: -0.8 to 0.8mV
Accuracy:
- ST Adjust Scale: 60ms after J point, 80ms after J point (default: 60ms after J point)
- ISO Adjust Scale: 4-200ms before R-Wave (default: 80ms)
- J Point Adjust Scale: 4-200ms after R-Wave (default: 48ms)

**Pace Pulse**

Pulse Indicator:
- Pace pulses meeting the following conditions are marked by the PACE indicator:
  - Amplitude: ±2 to ±700mV
  - 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

**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**

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

**Non-Invasive Blood Pressure**

Measurement Method: Oscillometry
Measurement Modes: Manual, auto, stat
Units of Measure: mmHg, kPa (user-selectable)
Resolution: 1mmHg
Systolic Range:
- Adult: 40-270mmHg
- Pediatric: 40-220mmHg
- Neonate: 40-350mmHg
Diastolic Range:
- Adult: 10-210mmHg
- Pediatric: 10-150mmHg
- Neonate: 10-110mmHg
Mean Range:
- Adult: 20-230mmHg
- Pediatric: 20-165mmHg
- Neonate: 20-110mmHg
Accuracy:
- Mean error is <±5mmHg
- Standard deviation is <8mmHg
Cuff Deflation Technique: Step bleed
Non-Invasive Blood Pressure (continued)

Initial Cuff Inflation:
- Adult: 160mmHg
- Pediatric: 140mmHg
- Neonate: 90mmHg

Over Pressure Protection:
Software overpressure protection

Pulse Rate Range:
- 40-240bpm

Pulse Rate Accuracy:
±3bpm or ±3%, whichever is greater

Invasive Blood Pressure

Measurement Range:
-50 to 300mmHg

Resolution:
1mmHg

Accuracy:
1mmHg or ±2%, whichever is greater

Zero Offset Range:
±200mmHg

Excitation:
5V DC, ±2%

Frequency Response:
DC to 12.5Hz ±1 Hz, -3db

Waveform Scales:
ART/Ao/UAP/BAP/FAP: 0 to 300mmHg
PA: -6 to 120mmHg
CVP/UVP: -10 to 40mmHg
RAP/LAP/ICP: -10 to 40mmHg
IBP1-IBP8: -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® SpO₂

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® SpO₂

Measurement Range:
25-240bpm

Resolution:
1bpm

Accuracy:
±3bpm (no motion)
±5bpm (motion)

With Nellcor® SpO₂

Measurement Range and Accuracy*

MAX-A, MAX-AL, MAX-N, MAX-P, MAX-I, MAX-FAST

Range:
70 to 100%

Accuracy:
±2%

Range:
0% to 69%

Accuracy:
Not specified

With DPM SpO₂

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 DPM SpO₂

Measurement Range:
20-254bpm

Resolution:
1bpm

Accuracy:
±3bpm (no motion)
±5bpm (motion)

DPM Sidestream CO₂

Measurement Range:
0-99mmHg

Resolution:
1mmHg

Accuracy:
0-40mmHg: ±2mmHg
41-76mmHg: ±5mmHg
77-99mmHg: ±10mmHg

* When the SpO₂ sensor is applied for neonatal patients as indicated, the specified accuracy range is increased by ±1%, to compensate for the theoretical effect on oximeter measurements of fetal hemoglobin in neonatal blood.
DPM Sidestream CO₂ (continued)

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 100 ml/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:  0-120rpm
Respiration Accuracy:  0-70rpm: ±2rpm
                    71-120rpm

Oridion® Microstream® CO₂

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

Anesthesia Gases

Sampling Rate:  Adult/pediatric: 120, 150, 200ml/min
                Neonatal: 70, 90, 120ml/min
Sampling Delay Time:  <4sec
Refresh Rate:  1sec
Warm-up Time:  45sec to warm-up status
                10min to ready-to-measure status
Measurement Range:  CO₂: 0-30%
                    N₂O: 0-100%
                    Des: 0-30%
                    Sev: 0-30%
                    Enf/Iso/Hal: 0-30%
                    O₂: 0-100%
                    awRR: 2-100rpm
Resolution:  CO₂: 1mmHg
            awRR: 1rpm

Accuracy:

CO₂:
0-1%: ±.1%
1-5%: ±.2%
5-7%: ±.3%
7-10%: ±.5%
>10%: unspecified

N₂O:
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

O₂:
0-25%: ±.1%
25-80%: ±.2%
80-100%: ±.3%

awRR:
2-60rpm: ±1rpm
>60rpm: unspecified

Measurement Rise Time:

Sampling flow 120ml/min, using the DRYLINE™ water trap and neonatal DRYLINE™ 2.5m sampling line
CO₂: ≤250ms
N₂O: ≤250ms
O₂: ≤600ms
Hal/Iso/Sev/Des: ≤300ms
Enf: ≤350ms

Sampling flow 200ml/min, using the DRYLINE™ water trap and adult DRYLINE™ 2.5m sampling line
CO₂: ≤250ms
N₂O: ≤250ms
O₂: ≤500ms
Hal/Iso/Sev/Des: ≤300ms
Enf: ≤350ms
### Data Storage

| Trend Data          | 120hrs at 1min resolution  
|                    | 1hr at 1sec resolution  
| Alarm Events       | 100 alarm events and associated waveforms  
| Arrhythmia Events  | 100 arrhythmia events and associated waveforms  
| NIBP Measurements  | 1,000 (systolic, diastolic, mean pressure, pulse rate and measurement time)  
| Full Disclosure Waveforms | Up to 48 hours  

### Recorder

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

### Interfacing

| Connectors:           | 1 AC power connector  
|                      | 2 RJ45 network connector, 100 BASE-TX  
|                      | 10 USB 1.1 connectors  
|                      | 1 nonstandard USB SMR connector  
|                      | 1 50-pin CF revision 2.0 connector  
|                      | 1 standard DVI-D video interface connector  
|                      | 1 BNC connector  
|                      | 1 equipotential grounding connector  
|                      | 1 RJ11 defib sync connector  

### Battery

| Type:                  | Rechargeable lithium ion  
| Number of Batteries:   | 2  
| Run Time:              | Lithium ion: 2hrs using 2 new, fully charged batteries and monitoring ECG, SpO₂, and auto NIBP measurements every 15min at 25°C  
| Recharge Time:         | 6hrs maximum  

### Physical Dimensions

| Monitor Size:         | 37cm(H) x 40cm(W) x 19.3cm(D)  
|                      | 14.6"(H) x 15.7"(W) x 7.6"(D)  
| Monitor Weight:       | Less than 14.5kg (31.9lbs) including 17" touchscreen display, MPM, AG module, 2 lithium batteries, recorder, and CF components  

### Environmental

| Operating Temperature: | 5°C to 40°C (main unit/MPM/IBP module/recorder/CO/CCO, SvO₂)  
|                        | 0°C to 40°C (Microstream CO₂ module)  
|                        | 5°C to 35°C (Sidestream CO₂ module)  
|                        | 10°C to 40°C (AG module)  
| Storage Temperature:   | -20°C to 60°C (main unit/MPM/IBP module/recorder/CO/CCO, SvO₂)  
|                        | -20°C to 60°C (Microstream CO₂ module)  
|                        | -20°C to 60°C (Sidestream CO₂ module)  
|                        | -20°C to 70°C (AG module)  
| Operating Humidity:    | 15% to 95%, non-condensing (main unit/MPM/IBP module/recorder/Microstream CO₂ module/Sidestream CO₂ module/AG module)  
| Storage Humidity:      | 10% to 95%, non-condensing (main unit/MPM/IBP module/recorder/Microstream CO₂ module/AG module)  
|                        | 15% to 95%, non-condensing (Sidestream CO₂ module)  
| Operating Atmospheric Pressure: | 425-809mmHg (main unit/MPM/IBP module/recorder/CO/CCO, SvO₂)  
|                        | 430-795mmHg (Microstream CO₂ module)  
|                        | 428-790mmHg (Sidestream CO₂ module)  
|                        | 525-900mmHg (AG module)  
| Storage Atmospheric Pressure: | 120-809mmHg (main unit/MPM/IBP module/recorder/CO/CCO, SvO₂)  
|                        | 430-795mmHg (Microstream CO₂ module)  
|                        | 428-790mmHg (Sidestream CO₂ module)  
|                        | 525-900mmHg (AG module)  

### Power Requirements

| AC Voltage:             | 100 to 240VAC, 50/60Hz  
| Current:                | 2.8 to 1.6A  

### Safety

| Type of Protection:     | Class I (main unit and secondary display only)  
| Degree of Protection:   | Sidestream CO₂ module/Microstream CO₂ module/AG module: BF  
|                        | MPM/IBP module: CF  
| Protection Against:     | Not protected  

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