The DASH 4000 Pro Patient Monitor provides unmatched adaptability at the bedside. By combining modularity and portability, the DASH 4000 Pro takes the flexible bed concept to a new level... allowing clinicians to bring the ICU to any patient or easily adapt to specific departmental needs.

- **Modular flexibility**
  - Affordably add capabilities with plug-and-play convenience
  - Smart Anesthesia Multi-Gas (SAM®) module provides breath-by-breath analysis of respiratory and anesthetic gases
  - SAM instantaneously identifies and quantifies agents, alone or in mixture

- **Gold-standard arrhythmia detection**
  - EK-Pro simultaneous multilead arrhythmia detection sets the standard for sensitivity and specificity in a patient monitor
  - Multiple leads assure uninterrupted monitoring and help detect localized events that otherwise might be missed
  - Incremental updating helps eliminate noise, for accurate tracking of subtle, progressive changes in beat shapes
  - Predictive reliability dependent on 12-lead quality; our 12SL® remains the industry’s most thoroughly 12-lead analysis for sensitivity and specificity

- **Early intervention in the NICU**
  - High-resolution CRG provides early indication of physiological shifts in neonates
  - Memory required for High-resolution CRG Trends is built-in

- **Gold standard NIBP accuracy**
  - Only full-featured monitor with DINAMAP® technology built-in
  - System consistently produces the most accurate, reliable NIBP determinations available in a bedside monitor
  - Stepped deflation with patented peak matching technology helps ride through artifact
  - Ideally suited for NICU, PICU and hypertensive patients

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### Display
- Size: 26 cm (diagonal); Type: Active-matrix color TFT; Resolution: 640 by 480 pixels; Number of traces: 6 (maximum);
- Number of seconds/trace: 4.9 at 25 mm/sec; Sweep speed: 6.25, 12.5, 25 mm/sec (with erase bar);
- Information window: Displays non-real-time information without obstructing the display of real-time information;
- Display organization: Prioritized by parameter;

### Controls
- Trim Knob® control
- Five hard keys: Silence Alarm, Graph Go/Stop, NBP Go/Stop, Function (zero all) and Power On/Off;

### Alarms
- Categories: Patient status and system status; Priority: 4 levels – Crisis, Warning, Advisory, Message;
- Notification: Audible and visual; Setting: Default and individual; Silencing: 1 minute, current alarm only;
- Pause: 5 minutes in Adult ICU mode, 3 minutes in Neonatal ICU mode, and 5 minute, 15 minute, or permanent pause in OR mode;
- Volume: Default 70%, 70 dB measured at 1 meter

### ECG
- Leads analyzed simultaneously: I, II, III, and V (multi-lead mode); Lead fail: Identifies failed lead;
- Alarms: User-selectable upper and lower heart rate limits;

### Input specifications
- Voltage range: ±0.5 mV to ±5 mV; Signal width: 40 ms to 120 ms (Q to S); Heart rate range: 30 to 300 bpm;
- Input impedance: Common mode: > 10 MΩ at 50/60 Hz, Differential: > 2.5 MΩ from dc to 60 Hz;
- Common mode rejection: 90 dB minimum at 50 or 60 Hz

### Output specifications
- Frequency response Display: Diagnostic: 0.05 to 40 Hz
- Monitoring: 0.05 to 25 Hz, Maximum: 5 to 25 Hz, Paper;
- Recorder: Diagnostic: 0.05 to 100 Hz
- Monitoring: 0.05 to 25 Hz, Maximum: 0.05 to 25 Hz;
- Noise: < 30 µV (referred to input)

### Pacemaker detection/rejection
- Input voltage range: ±2 mV to ±700 mV;
- Input pulse width: 0.1 ms to 2 ms; Rise time: 10 µs to 100 µs;
- Over/under shot: 2 mV (max); Baseline drift: < 0.5 mV per hour with a ±700 mV, 2-ms pacemaker pulse applied

### Respiration
- Measurement technique: Impedance variation detection;
- Range Respiration rate: 0 – 200 breaths per minute; Base impedance: 100 – 1000 Ω at 52.6 kHz;
- Detection sensitivity: 0.4 to 10 Ω variation; Waveform display bandwidth: 0.1 to 1.8 Hz (~3 dB);
- Alarms: User-selectable upper and lower respiration rate limits, and user-selectable apnea limit

### Temperature
- Number of channels: 2;

### Invasive Blood Pressure
- Number of channels: 2 (optional); Transducer sites: Arterial, femoral artery, pulmonary arterial, central venous, right atrial, left atrial, intracranial, and special;
- Transducer requirements: Excitation voltage: 5 V dc ± 0.1%; Transducer output: 5 µV/V/mmHg

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**DASH® 4000 PRO - PATIENT MONITOR**
DINAMAP Noninvasive Blood Pressure
Measurement technique: Oscillometric; Displayed parameters: Systolic, diastolic, and mean pressures, time of last measurement; Measurement modes: Manual, auto, and stat in Adult ICU and OR modes; manual and auto in neonatal mode; Measurement range(s): Resolutions of 5 mmHg up to Maximum Adult/Pediatric/Neonate limits
Systolic:
Adult: 30-275 mmHg; Pediatric: 30-235 mmHg; Neonate: 30-135 mmHg
MAP:
Adult: 20-260 mmHg; Pediatric: 20-260 mmHg; Neonate: 20-125 mmHg
Diastolic:
Adult: 10-220 mmHg; Pediatric: 10-220 mmHg; Neonate: 10-110 mmHg
Pulse rate, as displayed in tabular trends:
Adult: 30-200 bpm; Pediatric: 30-200 bpm; Neonate: 30-200 bpm
Cuff pressure range:
Adult: 0-275 mmHg; Pediatric: 0-235 mmHg; Neonate: 0-135 mmHg; Overall system accuracy: Meets or exceeds SP 10-1992 AAMI standards; Total cycle time: 20 to 40 seconds typical (dependent on heart rate and motion artifact); Automatic cycle times: 0 to 8 hours; Tubing length: 12 feet adult, 8 feet neonatal; Automatic cuff deflation: Cycle time exceeding 3 minutes (90 seconds neonatal), power off, or cuff pressure exceeds 294 mmHg (±6 mmHg) adult, 147 (±3 mmHg) neonatal
Cuff sizes:
Disposable: Large adult, adult, small adult, pediatric, small pediatric, and infant; Reusable: Thigh, large adult, adult, child, and infant; Alarms: User-selectable upper and lower limits for systolic, diastolic, and mean pressures
Cardiac Output
Input specifications
Probe type: In-Line or bath probe; Catheter size: 5F, 6F, 7F, 7.5F, and 8F; Injectate volume: 3, 5, or 10 cc
Output specifications
Parameters displayed: Cardiac output, blood temperature, injectate temperature, trial number; Range:
Cardiac output: 0.2 – 15 (liters per minute); Blood temperature: 30 – 42°C; Injectate temperature: 0 – 30°C
Accuracy:
Cardiac output: ±5%; Blood temperature: ±0.2°C; Injectate temperature: ±0.3°C;
Frequency response: dc to 15 Hz ±2 Hz
Pulse Oximetry
Parameters monitored: Arterial oxygen saturation (SpO₂) and peripheral pulse rate (PPR); SpO₂ range: 50 – 100%; PPR range: 30 – 300 beats per minute; Accuracy: Actual accuracy depends on probe. Please reference manufacturer's specifications;
SpO₂: ±2% (70 – 100% SpO₂); ±3% (50 – 69% SpO₂); PPR: ±3 beats per minute;
Alarms: User-selectable upper and lower limits for SpO₂ and PPR
CO₂
Information displayed
Inspired and expired CO₂ concentrations in %, mmHg, or kPa; respiratory rate, continuous CO₂ waveform
Measurement range
Pi CO₂ / Fi CO₂: 0 to 100 mmHg / 0 to 13%; Pe CO₂ / Fe CO₂: 0 to 100 mmHg / 0 to 15%; RR: 0 to 120 breaths/min
Accuracy
CO₂: 5% of reading or ±2 mmHg, whichever is greater; Display resolution: 1 mmHg; Rise time: Less than 60 msec; Respiration rate accuracy: ±1 breath/min
Compensations: O₂/N₂O compensation: Operator selectable; Barometric pressure compensation: Automatic
Performance Specifications
Technology
Type: Novametrix Medical Systems' CAPNOSTAT III; Sensor: Mainstream non-dispersive infrared (NDIR) absorption, dual wavelength ratiometric, true single beam optics.
Warm-up time: 2 minutes warm-up time to meet accuracy specifications; waveform immediate upon power up, calculated end tidal after two breaths; Cable Length: 10 feet (3.0 m)
Calibration
Simple one-step calibration; no calibration gases required.
Airway adapters
Types: Adult reusable (standard), adult disposable, neonatal; Deadspace/chamber volume:
Adult reusable: < 5 cc; Adult disposable: < 5 cc, Neonatal: < 0.5 cc
Alarms
CO₂: High inspired CO₂; high/low expired CO₂; Respiratory rate: Adjustable high and low
## Paper Recorder
- Method: Thermal dot array; Horizontal resolution: 480 dots/in @ 25 mm/sec;
- Vertical resolution: 200 dots/in; Number of waveform channels: four;
- Paper width: 50 mm (1.97 in); Paper length: 30 m (100 ft); Paper speed: 0.1, 0.5, 1, 5, 10, 12.5, 25, and 50 mm/sec (±2%)

## Analog Output
### ECG
- Gain: 1 V/mV ±10%; DC offset: ±100 mV (max); Noise: < 5 mV peak to peak 0 – 300 Hz;
- Frequency response: 0.05 Hz to 100 Hz 0/±7 Hz

### Blood pressure
- Gain: 10 mV/mmHg ±2%; DC offset: ±20 mV (max); Noise: < 5 mV peak to peak 0 – 300 Hz;
- Frequency response: dc to 50 Hz 0/±2 Hz

## Battery
- Battery type: Exchangeable Lithium-Ion; Maximum number of batteries: 2; Voltage: 11.1 V (nominal);
- Capacity: 3.9 Ah; Charge time: Less than 4 hours each; Run time: 4 to 5 hours; Battery life: 500 cycles to 50% capacity

## Environmental Specifications
- Power requirements: 90-132 VAC 50/60 Hz 2.0A, 190-264 VAC 50/60 Hz 1.0A; Power consumption: 75 W (fully loaded);
- Cooling: convection; Heat dissipation: 240 Btu/hr (max)

### Operating Conditions
- Ambient temperature: 0-40°C (32-104°F) While charging batteries: 0-35°C (32-95°F);
- CO₂ Sensor: 10-40°C (59-104°F); Relative humidity: 5-95% @40°C;
- Vibration: MIL-STD 810E, Method 514.4, Category I; Altitude: -610 to 4.570 m (-2,000 to 15,000 ft.)

### Storage Conditions (do not exceed):
- Maximum: 70°C (158°F) at 95% relative humidity; Minimum: -40°C (-40°F); CO₂ Sensor: -30 to 65°C (-22 to 149°F);
- Batteries: -20 to 60°C (-4 to 140°F)

## Physical Specifications
- Height: 27.4 cm, Depth: 24.3 cm, Width: 29.3 cm, Weight: 5.7 kg

## Certification
- UL 2601-1 classified. UL classified for CAN/CSA C22.2 No. 601.1; IEC 60601-1 certified.

## Warranty
- Standard warranty is one year.