



GE Medical Systems
Information Technologies

DASH[®] 4000 PRO - PATIENT MONITOR

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



DASH[®] 4000 PRO - PATIENT MONITOR

Specifications

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

Standard leads available: I, II, III, V, aVR, aVL, and aVF; 10 leadwire cable: I, II, III, V, aVR, aVL, aVF, V2, V3, V4, V5, V6;
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 M Ω at 50/60 Hz, Differential: > 2.5 M Ω 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 40 Hz, Moderate: 0.05 to 25 Hz, Maximum: 5 to 25 Hz; Paper;
Recorder: Diagnostic: 0.05 to 100 Hz
Monitoring: 0.05 to 40 Hz, Moderate: 0.05 to 25 Hz, Maximum: 0.05 to 25 Hz;
Noise: < 30 μ V (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 μ s to 100 μ s;
Over/under shoot: 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;
Input specifications
Probe type: YSI Series 400 or 700 (determined by input cable); Temperature range: 0°C to 45°C (32°F to 113°F);
Resolution: ± 0.1 °C
Output specifications
Parameters displayed: T1, T2; Accuracy: (independent of source) ± 0.1 °C for YSI series 400 probes; ± 0.3 °C for YSI series 700 probes;
Alarms: User-selectable upper and lower limits for T1, T2

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 μ V/V/mmHg
Input specifications
Range: -25 mmHg to 300 mmHg; Offset: ± 150 mmHg
Output specifications
Frequency response: dc to 50 Hz ($-0/+2$ Hz); Zero balance range: ± 150 mmHg; Zero balance accuracy: ± 1 mmHg;
Zero balance drift: ± 1 mmHg over 24 hours; Accuracy: ± 2 % or ± 1 mmHg, whichever is greater (exclusive of transducer);
Alarms: User-selectable upper and lower limits for systolic, diastolic, and mean pressures



DASH[®] 4000 PRO - PATIENT MONITOR

Specifications

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: 30-275mmHg; Pediatric: 30-235mmHg; Neonate: 30-135mmHg

MAP:

Adult: 20-260mmHg; Pediatric: 20-260mmHg; Neonate: 20-125mmHg

Diastolic:

Adult: 10-220mmHg; Pediatric: 10-220mmHg; Neonate: 10-110mmHg

Pulse rate, as displayed in tabular trends:

Adult: 30-200 bpm; Pediatric: 30-200 bpm; Neonate: 30-200 bpm

Cuff pressure range:

Adult: 0-275mmHg; Pediatric: 0-235mmHg; Neonate: 0-135mmHg; 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: $\pm 5\%$; Blood temperature: $\pm 0.2^\circ\text{C}$; Injectate temperature: $\pm 0.3^\circ\text{C}$;

Frequency response: dc to 15 Hz ± 2 Hz

Pulse Oximetry

Parameters monitored: Arterial oxygen saturation (SpO_2) and peripheral pulse rate (PPR); SpO_2 range: 50 – 100%; PPR range: 30 – 300 beats per minute; Accuracy: Actual accuracy depends on probe. Please reference manufacturer's specifications; SpO_2 : $\pm 2\%$ (70 – 100% SpO_2); $\pm 3\%$ (50 – 69% SpO_2); PPR: ± 3 beats per minute; Alarms: User-selectable upper and lower limits for SpO_2 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 13%; 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



DASH[®] 4000 PRO - PATIENT MONITOR

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 ($\pm 2\%$)

Analog Output

ECG

Gain: 1 V/mV $\pm 10\%$; 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 $\pm 2\%$; 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 1; 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.
CE Marking for the 93/42/EEC Medical Device Directive.

Warranty

Standard warranty is one year.

This product or some features of this product may not be available in all countries. Call your local GE representative for more information. GE Medical Systems *Information Technologies* reserves the right to make changes in specifications and features shown herein, or discontinue the product described at any time without notice or obligation. Contact your GE Medical Systems *Information Technologies* Representative for the most current information.



GE Medical Systems
Information Technologies

gemedicalsystems.com

European Headquarters
Marquette Hellige GmbH
P.O. Box 60 02 65
79032 Freiburg • Germany
Tel. +49 761 45 43 - 0
Fax +49 761 45 43 - 233

World Headquarters
GE Medical Systems
Information Technologies, Inc.
8200 West Tower Avenue
Milwaukee, WI 53223 • USA
Tel. +1 414 355 5000
Fax +1 414 355 3790

Asia Pacific
GE Marquette Medical Systems
11th Floor, The Lee Gardens, 33 Hysan Ave.
Causeway Road • Hong Kong
Tel. +852 2100 6300
Fax +852 2100 6292