GE Healthcare

Bedside flexibility and adaptability
The Dash® monitoring family is a portable monitoring system that is flexible and easy to use. Dash allows the acuity of any bed to be modified to meet changing patient needs.

Gold standard algorithms and technology
Dash monitors revolutionize patient care and assessment by combining the most complete selection of gold standard patient monitoring parameters with leading-edge cardiac technology.

Enterprise networking
Hard-wired and wireless network connectivity – including access to CIS, CVIS, PACS, RIS, HIS and more than 350 beds without central station support – contributes to the Dash monitors' unprecedented ability to adapt to changing patient acuity demands.

Dash 3000, 4000 & 5000
Flexible acuity monitoring

Product specifications	
Display	
Size	Dash 3000 – 8.4 in., Dash 4000 – 10.4 in., Dash 5000 – 12.1 in.
Type	Active-matrix color LCD
Resolution	Dash 3000 and 4000: 640 by 480 dpi, Dash 5000: 800 by 600 dpi
Number of traces	7 (maximum)
Number of seconds/trace	4.9 at 25 mm/sec
Sweep speed	6.25, 12.5, 25 mm/sec (with erase bar)
Controls	
TrimKnob® control	
Five hard keys	Standard Silence Alarm, Print, NBP Go/Stop, Zero All and Power On/Off. Dash 5000 adds Trends, NBP Auto, Admit/Discharge, Standby and Main View
Remote control option	Available
Alarms	
Categories	Patient status and system status
Priority	4 levels – Crisis, Warning, Advisory and 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 dB measured at 1 meter

Invasive blood pressure	
Number of channels	1 to 4 (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
Input specifications	
Range	-25 mmHg to 300 mmHg
Offset	± 150 mmHg
Output specifications	
Frequency response	dc to 50 Hz (-3 dB)
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

ECG	
Standard leads available	I, II, III, V, aVR, aVL and aVF
3 leadwire	I, II, or III
5 leadwire	I, II, III, V, AVR, AVL, and AVF
10 leadwire	I, II, III, AVR, AVL, AVF, VI, V2, V3, V4, V5 and 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 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	
Impulse response	For an impulse of 3 mV applied for 100 ms Displacement following impulse < 0.1 mV Slope following impulse < 0.3 mV/s
Frequency response	Response of non-permanent displays is limited by resolution to 40 Hz (-3 dB) @25 mm/s. Specified upper frequency limits may vary by ± 2 Hz.
Diagnostic mode	0.67 Hz (+0.4 dB) to 100 Hz (-3 dB)
For compliance with China National Standard	1.0 Hz (+0.4dB) to 75 Hz (-3 dB)
Monitoring mode	0.67 (+0.4 dB) to 40 Hz (-3 dB)
Moderate mode	0.67 (+0.4 dB) to 25 Hz (-3 dB)
Maximum mode	5.0 Hz (-0.3 dB) to 25 Hz (-3 dB)
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 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	0-200 breaths per minute for variations of 1.0 – 10.0 Ω
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; ± 0.3°C for YSI series 700 probes
Alarms	User-selectable upper and lower limits for T1, T2

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 and 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 (SpO_2) and peripheral pulse rate (PPR)
SpO_2 range	Nellcor 1-100%; Masimo 30-100%; GE Ohmeda 30-100%
PPR range	Nellcor 20-300 BPM; Masimo 25-240 BPM; GE Ohmeda 30-250
Accuracy	Actual accuracy depends on probe. Please reference manufacturer's specifications.
Nellcor	SpO_2 ± 2 digits (70-100% SpO_2)
Masimo	SpO_2 ± 2% Adults/Pediatric (70-100% SpO_2)
GE Ohmeda	SpO_2 ± 2% (70-100% SpO_2), SpO_2 ± 3% Neonates, ≤ 69% unspecified
PPR	± 3 beats per minute
Alarms	User-selectable upper and lower limits for SpO_2 and PPR

DINAMAP non-invasive blood pressure	
Technology	DINAMAP® classic and SuperSTAT™ (SuperSTAT only available with Masimo and Nellcor SpO_2)
Measurement technique	Oscillometric
Displayed parameters	Systolic, diastolic and mean pressures, time of last measurement
Measurement modes	Adult ICU and OR modes; manual, auto and stat, neonatal mode; manual and auto
Systolic	
Adult	30-285 mmHg
Pediatric	30-235 mmHg
Neonate	30-140 mmHg
Map	
Adult	20-260 mmHg
Pediatric	20-220 mmHg
Neonate	20-125 mmHg
Diastolic	
Adult	10-220 mmHg
Pediatric	10-210 mmHg
Neonate	10-110 mmHg
Pulse rate, as displayed in tabular trends or 3 wave form display	
Adult	30-200 bpm
Pediatric	30-200 bpm
Neonate	30-200 bpm
Other specifications	
Overall system accuracy	Meets or exceeds SP 10-1992 AAMI standards
Automatic cycle times	0-4 hours
Tubing length	12 feet adult, 8 feet neonatal
Automatic cuff deflation	Cycle time exceeding 3 minutes (90 seconds neonatal), French mode – Cycle time exceeding 2 minutes (60 seconds neonatal), power off, or cuff pressure exceeds 294 mmHg (± 6 mmHg) adult, 250 (± 5 mmHg) pediatric, 147 (± 3 mmHg) neonatal
Cuff sizes	Thigh, large adult, adult, small adult, child, infant and neonatal, sizes #5 - #1 and assorted long sizes
Alarms	User-selectable upper and lower limits for systolic, diastolic and mean pressures

CO_2	
Technology	
Supports Novametrix CapnoStat (mainstream) and CapnoFlex LF (low-flow sidestream) CO_2 technologies	
Principle of operation	Non-dispersive infrared (NDIR) single beam optics, dual wavelength and no moving parts
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 (mainstream)	8 foot (2.4 m)
Sample line length (low-flow sidestream)	7 foot (2.1 m)
Information displayed	
Inspired and expired CO_2 concentrations in %, mmHg or kPa; respiratory rate, continuous CO_2 waveform	
Measurement range (at 760 mmHg at an ambient temperature of 25°C)	
0-100 mmHg, 0-13%, 0-12.5 kPa	
$PiCO_2$ /$FiCO_2$ 0-50 mmHg, 0-6.5%, 0-6.25 kPa	
Respiration rate range	Low-flow SS 0-150 breaths/min Mainstream 0-120 breaths/min
Accuracy (at 760 mmHg at an ambient temperature of 25°C)	
MS	±2 mmHg or 5%, whichever is greater
SS	0-40 mmHg ± 2 mmHg; 41-70 mmHg ± 5% of reading; 71-100 mmHg ± 8% of reading; all specifications ± 12% of actual from 80-150 BrPM
Display resolution	1 mmHg
Rise time	Less than 200 ms (low-flow sidestream); less than 60 ms (mainstream adult reusable or SPU); less than 50 ms (mainstream infant reusable or SPU)
Respiration rate accuracy	± 1 breath/min
Compensations	
Automatic barometric pressure	± 25 mmHg from 530-785 mmHg
Operator-selectable O_2/N_2O compensation	
Calibration	
Mainstream	No routine user calibration required. 15 second airway adapter zero performed when changing to a different style of airway adapter.
Low-flow sidestream	No routine user calibration required
Airway adapters and sample lines – mainstream (airway adapters)	
Types	Adult reusable (standard), adult disposable, infant
Deadspace	Adult reusable/disposable < 5 cc Infant disposable < 1 cc Taper meets ISO 5356-1
Low-flow sidestream airway adapters	
Types	Adult reusable (standard), adult disposable, infant
Deadspace	Adult reusable/disposable < 7.3 cc infant disposable < 1 cc
Adult, pediatric and infant	Nasal CO_2 and nasal CO_2/O_2
Adult and pediatric	Nasal/oral CO_2 and nasal/oral CO_2/O_2
Alarms	
CO_2	High inspired CO_2; high/low expired CO_2
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	Refer to frequency response section under ECG
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

Wireless LAN	
Operating frequency	2.4 to 2.5 GHz
Transmit power	100 mW
Data rate (802.11)	1Mbps and 2Mbps per channel; (802.11b) 1, 2, 5.5, 11 Mbps
Radio technology	Frequency-hopping spread spectrum
Communication protocol	IEEE 802.11 or IEEEE 802.11b
UL 1950 Listed (ITE 9B97),	CE Mark RF Standard
US/CAN	FCC Part 15 Class B, RSS-210, Europe: ETSI EN 300 328, Japan: RCD STD-33R

Battery	
Battery type	Exchangeable Lithium-Ion
Maximum number of batteries	2
Voltage	11.1 V (nominal)
Capacity	≥ 3.45 Ah (varies with manufacturers)
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) (Nellcor 0-35°C (32-95°F))
While charging batteries	0-35°C (35-95°F)
CO_2 sensor	10-40°C (50-104°F)
Relative humidity	5-95% @40°C
Vibration	MIL-STD 810E, Method 514.4, Category 1
Altitude	-273 m to 2,943 m (-896 to 9,655 ft.)

Storage conditions	
Do not exceed	
Maximum	70°C (158°F) at 95% relative humidity
Minimum	-40°C (-40°F)
CO_2 sensor	-30 to 65°C (-22 to 149°F)
Batteries	-20 to 60°C (-4 to 140°F)

Physical specifications				
	Height	Depth	Width	Weight*
Dash 5000	28.7 cm (11.3 in.)	23.9 cm (9.4 in.)	30.7 cm (12.2 in.)	6.4 kg (14 lbs.)
Dash 4000	27.4 cm (10.8 in.)	24.3 cm (9.6 in.)	29.3 cm (11.5 in.)	5.5 kg (12.2 lbs.)
Dash 3000	26 cm (10.25 in.)	20 cm (8 in.)	28 cm (11.0 in.)	5.2 kg (11.2 lbs.)

* Weight of product without batteries.

Certification

UL2601-1 classified

IEC 60601-1 certified

CE Marking for the 93/42/EEC Medical Device Directive

UL Classified for CAN/CSA C22.2 No. 601.1

Warranty

Standard warranty is one year.

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GE imagination at work

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