

# CARESCAPE Patient Data Module

## High-acuity mobile patient monitoring

The CARESCAPE™ Patient Data Module helps you to transport patients to the right place at the right time so you can deliver a consistent level of care virtually anywhere.

### Features

- Helps eliminate the traditional tangle of cables connected to multiple individual monitors by uniting common parameters in one convenient, compact, ergonomically designed unit, allowing better access to the patient in emergency situations and quickly prepare for transport
- Facilitates patient mobility with uninterrupted flow of clinical intelligence before, during and after intra-hospital transport by collecting all patient data from the hardwired Solar® or CARESCAPE modular monitors at the bedside, then quickly snaps into the Transport Pro® monitoring device – carrying the patient's complete vital signs record
- Powers the Transport Pro device in case of a depleted or missing battery to ensure monitoring continuity
- Refreshes the patient's record with the data collected before and during transport, when reconnected to the network in the new location, eliminating time-consuming ECG template resets and critical data gaps
- Supports patient monitoring in – and between – the highest-acuity clinical environments
- Exceptional parameter set including GE's clinical algorithms, including 12SL™ 12-lead ECG, 12RL™ derived 12-lead ECG, GE EK-Pro four-lead arrhythmia analysis, GE DINAMAP® SuperSTAT™ non-invasive blood pressure, and Masimo® SET® or Nellcor® OxiMax® SpO<sub>2</sub>



# Performance specifications

## ECG

Standard leads available	I, II, III, V1 to V6, aVR, aVL, and aVF
Leads analyzed simultaneously	Twelve (I, II, III, V1 to V6, aVR, aVL, and aVF)
Lead fail	Identifies failed electrodes and switches to those intact
Lead fail sensing current	Active electrodes: < 30 nA each, referenced electrode < 270 nA
Gain selections	0.5x = 5 mm/mV 1x = 10 mm/mV 2x = 20 mm/mV 4x = 40 mm/mV

### Display bandwidth

Diagnostic	0.05 to 100 Hz
Monitoring	0.05 to 32 Hz (with 50 Hz powerline frequency) 0.05 to 40 Hz (with 60 Hz powerline frequency)
Moderate	0.05 to 22 Hz
Maximum	5 to 25 Hz
ECG diagnostic (12SL) analysis signal bandwidth	0.05 to 150 Hz
Differential offset voltage	±1 V

### Input impedance

Common mode	> 10 M $\Omega$ at 50/60 Hz
Differential	> 2.5 M $\Omega$ from dc to 60 Hz
Maximum tall t-wave rejection capability	For a 1 mV QRS test signal is 1.5 mV
Overall system error	Less than ±5%; using the method described in AAMI EC11 3.2.7.1
Leadwire supported	3-, 5-, 6-, and 10-leadwire
Input voltage range for pace detection and rejection	±2 mV to ±700 mV
Pacemaker marker	5 V, 2 ms pulse; summed with the ECG analog output
Defibrillator sync delay	< 35 ms
Defibrillation protection	5000 V, 360 J

### Analog output

ECG signal output	1 V/1 mV
ECG signal bandwidth	0.05 to 100 Hz
ECG analog output delay	< 35 ms

### Input specification

QRS detection range	±0.5 mV to ±5 mV
Signal width	40 ms to 120 ms (Q to S)
Heart rate range	30 to 300 beats per minute
Common mode rejection	90 dB minimum at 60 Hz
Gain accuracy	±5% (diagnostic mode)
Linearity deviation	±5%
Noise	< 30 $\mu$ V (referred to input)

### Sampling rate

Monitoring mode	240 samples/second
Diagnostic mode	500 samples/second

### Heart rate

The ECG heart rate indicates a new heart rate for a simulated step increase of 80 to 120 bpm in less than 8.6s (range 7.9 to 9.5s), and a step decrease of 80 to 40 bpm in less than 9.8s (range .2 to 11.2s).

Heart rate calculation operates with irregular rhythms of ANSI/AAMI EC13 4.1.2.1e as follows:

- a): 80 bpm
- b): 60 bpm
- c): 120 bpm
- d): 87 bpm

Heart rate is computed by converting the total time duration of the most recent 4 or 8 RR intervals into an equivalent heart rate.

Heart rate averaging	8/4 beats
Display update interval	< 2 seconds
Response time	< 6 seconds
Heart rate alarm range	0 to 300 beats/minute, high limit > low limit

NOTE: All specifications are relevant to both Solar and CARESCAPE modular monitors, unless otherwise noted.

PVC range	
Solar	1 to 100 PVCs/minute
CARESCAPE modular monitor	0 to 300 PVCs/minute
Method	QRS morphology classification and timing based on single or multiple-lead analysis
Arrhythmia calls	Full, lethal only, or no arrhythmia
PVC rate resolution	1 PVC/minute

### ST segment analysis

Measurement description	ST segment deviation is measured and displayed for all acquired leads
ST display	Lead label, ST deviation, current complex superimposed over a reference complex, J-point indicator and 15-minute mini-trends are shown for all acquired leads
Measurement point	Measured at user-selectable measurement points (0, 30, 40, 50, 60, and 80 ms) following the J-point
Measurement range	-12.0 mm to 12.0 mm
Display resolution	0.1 mm
ST measurement	16 beats averaging
ST alarm limits	±12mm, high limit > low limit, for any event within a lead group (inferior, lateral, or anterior) that exceeds the alarm limit for that group

### Pace detection/rejection

Input voltage range	±2 mV to ±700 mV
Input pulse width:	0.1 ms to 2 ms
Rise time	0 µs to 100 µs
Over/under shoot	Overshoot measured using Method A of AAMI EC13 4.1.4.2
Detection/rejection mode	Pacemaker artifact rejection "On" or 'Off'

Standard leads available	I, II, RL, LL
Accuracy	±1% or ±1 bpm, whichever is greater
Resolution	1 bpm
Sensitivity	≥ 0.5 mV peak
ST numeric accuracy	±0.3 mm or 20%, whichever is greater
QT numeric range	100 to 900 ms
QT numeric accuracy	±30 ms
QT numeric resolution	1 ms
QTc numeric range	100 to 900 ms
QTc numeric resolution	1 ms

### Respiration

Respiration range limit	1 to 200 breaths/minute
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### Input impedance range

Dynamic	0.4 to 10 Ω
Static	100 to 1500 Ω @52.7 kHz
Respiration rate alarm range	1 to 200 breaths/minute
No Breath alarm range	3 to 30 seconds
Impedance respiration measurement	
Accuracy	±1 breath/minute over the range of 0 to 120 breaths per minute
	±3 breaths/minute over the range of 121 to 200 breaths per minute
Impedance respiration update interval	1s

NOTE: All specifications are relevant to both Solar and CARESCAPE modular monitors, unless otherwise noted.

## Temperature

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Number of channels up to 2 (with Y-adapter cable)

### Input specifications

Probe type Series 400 or 700  
(determined by input cable)

Temperature range 0°C to 45°C (32°F to 113°F)

Resolution  $\pm 0.1^\circ\text{C}$  ( $\pm 0.1^\circ\text{F}$ )

### Output specifications

Parameters displayed T1, T2

Accuracy  $\pm 0.1^\circ\text{C}$  ( $\pm 0.2^\circ\text{F}$ ) for series  
400 probes  
(independent of source)  $\pm 0.3^\circ\text{C}$  ( $\pm 0.5^\circ\text{F}$ ) for series  
700 probes

Alarms User-selectable upper and  
lower limits

Test measurement cycle Every minute

## Invasive pressures

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Number of channels Up to 4 (with appropriate cables)

### Transducer sites, site name, and displayed values

Arterial (ART) Systolic, diastolic, mean and rate

Femoral (FEM) Systolic, diastolic, mean and rate

Pulmonary artery (PA) Systolic, diastolic, mean

Central venous  
pressure (CVP) Mean

Left atrial (LA) Mean

Right atrial (RA) Mean

Intracranial pressure (ICP) Mean

Umbilical artery (UAC) Systolic, diastolic, mean, and rate

Umbilical vein (UVC) Mean

Special pressure (SP) Mean

### Transducer requirements

Excitation voltage +2.5 V DC  $\pm 0.1\%$

Transducer output 5  $\mu\text{V}/\text{V}/\text{mmHg}$

### Input specifications

#### Range

Solar -25 mmHg to 349 mmHg

CARESCAPE  
modular monitors -98 mmHg to 349 mmHg

### Output specifications

Displayed frequency response 0 to 12 Hz or 0 to 40 Hz (-3dB)  
user-selectable

Zero balance range  $\pm 150$  mmHg ( $\pm 20.0$  kPa)

Zero balance accuracy  $\pm 1$  mmHg ( $\pm 0.1$  kPa)

Accuracy  $\pm 2\%$  or  $\pm 1$  mmHg, whichever is  
greater (exclusive of transducer)

$\pm 2\%$  or  $\pm 2$  bpm,  
whichever is greater

Sweep speed options 6.25, 12.5, 25, and 50 mm/s

Pulse rate  
display resolution 1 bpm

Pulse rate range 30 to 300 bpm

Display scale selections 0-30, 0-40, 0-60, 0-100, 0-160,  
0-200, 0-300 mmHg (0.0-2.0,  
to 0.0-40.0 kPa, with a step size  
of 2.0 kPa)

Alarms User selectable upper and lower  
limits for systolic, diastolic, and  
mean pressures

Alarm range -99 to 350 mmHg

### Analog output

Invasive pressure output 1V/100 mmHg

Invasive pressure analog  
output delay < 35 ms

NOTE: All specifications are relevant to both Solar and CARESCAPE modular monitors, unless otherwise noted.

## Non-invasive blood pressure

Measurement technique	Oscillometric	Tubing length	Variable
Displayed parameters	Systolic, diastolic, and mean pressures, pulse rate, time of last measurement	Automatic cuff deflation	Cycle time exceeding 2 minutes (85 seconds neonatal), power off, or cuff pressure exceeds
Modes	Manual, Auto and Stat	Adult	290 ±6 mmHg (38.7 ±0.8 kPa)
<b>Heart rate detection</b>		Pediatric	250 ±5 mmHg (33.3 ±0.7 kPa)
Adult and Pediatric	30 to 240 beats/min	Neonatal	145 ±5 mmHg (19.3 ±0.7 kPa)
Neonate	30 to 240 beats/min	<b>Cuff sizes</b>	
Total cycle time	20 to 40 seconds typical (Dependent on heart rate and motion artifact)	Disposable	Large adult, adult, small adult, pediatric, child, and neonatal
<b>Systolic pressure range</b>		Reusable	Adult thigh, large adult, adult, small adult, small adult/child, child, and infant
Adult	30 to 290 mmHg (4.0 to 38.7 kPa)	Alarms	User selectable upper and lower limits for systolic, diastolic, and mean pressures
Pediatric	30 to 240 mmHg (4.0 to 32.0 kPa)	<b>Maximum inflation pressures</b>	
Neonatal	30 to 140 mmHg (4.0 to 18.7 kPa)	Adult/pediatric	315 ±5 mmHg (42.0 ±0.7 kPa)
<b>Diastolic pressure range</b>		Infant	157 ±5 mmHg (20.9 ±0.7 kPa)
Adult	10 to 220 mmHg (1.3 to 29.3 kPa)	<b>Automatic cycle times</b>	
Pediatric	10 to 200 mmHg (1.3 to 26.7 kPa)	1 min, 2 min, 2.5 min, 3 min, 4 min, 5 min,	
Neonatal	10 to 110 mmHg (1.3 to 14.7 kPa)	10 min, 15 min, 20 min, 30 min, 1 h, 2 h and 4 h	
<b>Mean pressure range</b>		<b>Default NIBP measurement initial inflation pressures</b>	
Adult	20 to 260 mmHg (2.7 to 34.7 kPa)	Adult	135 mmHg (18.0 kPa)
Pediatric	20 to 215 mmHg (2.7 to 28.7 kPa)	Pediatric	125 mmHg (16.7 kPa)
Neonatal	20 to 125 mmHg (2.7 to 16.7 kPa)	Infant	100 mmHg (13.3 kPa)
<b>Cuff pressure range</b>			
Adult	0 to 290 mmHg		
Pediatric	0 to 250 mmHg		
Neonatal	0 to 145 mmHg		
<b>Pressure accuracy</b>			
Static	±2% or ±3 mmHg (0.4 kPa), whichever is greater		
Clinical	±5 mmHg (0.7 kPa) average error, 8 mmHg (1.1 kPa) standard deviation		
Auto zero	Zero pressure reference prior to each cuff inflation		

NOTE: All specifications are relevant to both Solar and CARESCAPE modular monitors, unless otherwise noted.

## Pulse oximetry

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Display resolution	1 digit (% of SpO <sub>2</sub> )
Peripheral pulse rate resolution	1 bpm
Display update period	Less than 30s
Sweep speed options	6.25, 12.5, 25, and 50 mm/s
Waveform scale options	1x, 2x, 4x, and 8x

### Wavelength of SpO<sub>2</sub> probe LEDs using Masimo:

#### LNOP and LNCS sensors

Infrared LED	905 nm
Red	660 nm

#### LNOP and LNCS tip clips

Infrared LED	880 nm
Red	653 nm

#### LNOP and LNCS TF-I

Infrared LED	880 nm
Red	660 nm

### Wavelength of SpO<sub>2</sub> probe LEDs using Nellcor:

Infrared LED	900 nm
Red	660 nm
Parameters monitored	Arterial oxygen saturation (SpO <sub>2</sub> ) and pulse rate
Probe types	Masimo (reusable/single use) Nellcor (reusable/single use)
Masimo range	SpO <sub>2</sub> : 1 to 100% Pulse Rate: 25 to 240 beats per minute
Nellcor range	SpO <sub>2</sub> : 1 to 100% Pulse rate: 20 to 300 beats per minute

### Masimo accuracy\*

Without motion	SpO <sub>2</sub> (70% to 100%): ±2 Adult, ±3 Neonatal SpO <sub>2</sub> (< 70%): Unspecified
With motion	SpO <sub>2</sub> (70% to 100%): ±3 Adult, ±3 Neonatal SpO <sub>2</sub> (< 70%): Unspecified
Low perfusion	SpO <sub>2</sub> (70% to 100%): ±2 Adult, ±3 Neonatal SpO <sub>2</sub> (< 70%): Unspecified

### Nellcor accuracy\*

With/without motion	SpO <sub>2</sub> (70% to 100%): ±2 Adult, ±2 Neonatal SpO <sub>2</sub> (60% to 80%): ±3 Adult, ±3 Neonatal SpO <sub>2</sub> (< 60%): Unspecified
Low perfusion	SpO <sub>2</sub> (70% to 100%): ±2 Adult, ±2 Neonatal SpO <sub>2</sub> (< 70%): Unspecified

\* Refer to Probe Manufacturer's specifications for probe accuracy statement.

Messages	No Sensor, Defective Sensor, Sensor Off, Unrecognized Sensor, Low Perfusion, Pulse Search, Interference Detected, Ambient Light, Low Signal IQ
Nellcor	Probe off patient, low quality, pulse search

## Cardiac output

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Method	Thermodilution
Cardiac output range	0.2 to 15 liters per minute
Blood temperature range	17°C to 42°C (62.6°F to 107.6°F)
Blood temperature accuracy	±0.5°C (0.9°F): BT 17°C to 30°C (62.6°F to 86.0°F) ±0.2°C (0.4°F): BT 30°C to 42°C (86.0°F to 107.6°F)
Injectate temperature range	0°C to 30°C (32°F to 86°F)
Injectate temperature accuracy	±0.3°C (±0.6°F)
Blood temperature display resolution	0.1°C (0.1°F)
Output parameters	Cardiac output, blood temperature, injectate temperature, real-time cardiac output washout curve, last average CO
Cardiac output review accept/reject individual measurements and store average	
Catheter sizes	5, 6, 7, 7.5, or 8 French
Injectate volume selections	3, 5, or 10

NOTE: All specifications are relevant to both Solar and CARESCAPE modular monitors, unless otherwise noted.

## Environmental specifications

### Operating conditions

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Heat dissipation	15.36 BTU/hour
Temperature	10°C to 35°C (50°F to 95°F)
Relative humidity	15% to 95% (non-condensing)

### Storage conditions

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Temperature	-40°C to 60°C (-40°F to 140°F)
Relative humidity	15% to 95% (non-condensing)

## Power specifications

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Cooling	Natural convection
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### Batteries

Type	Removable lithium ion
Quantity	One
Voltage	11.1 Volt (nominal)
Capacity	1.8 Amp hour (nominal)
Charge time	Approximately 2.5 hours
Run time	Approximately 1.5 hours (new, fully charged)
Battery Life	300 cycles to 60% capacity

## Physical specifications

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Dimensions (H x W x D)	7.0 x 14.6 x 21.6 cm (2.75 x 5.75 x 8.5 in)
Weight	1.1 kg (2.4 lb) without battery 1.3 kg (2.9 lb) with battery

## Warranty

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One year

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## About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our “healthymagination” vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access and improving quality and efficiency around the world.

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