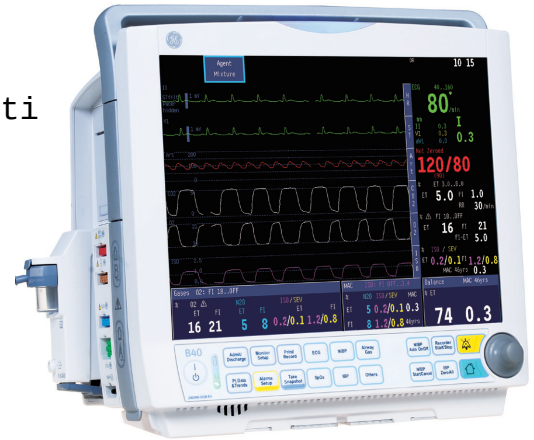
GE Healthcare

Integruoti moduliai

1.



B40 Patient Monitor

B40 Paciento monitorius

Affordable clinical excellence

Patients with acute, life-threatening conditions need the best possible care. The B40 Monitor from GE Healthcare provides a continuous flow of quality information to enhance clinical decision-making for adult, pediatric and neonatal[1] patients in various care areas.

1. suaugusiems, vaikams, naujagimiams

Advanced clinical parameters

The B40 Monitor is designed with advanced measurement technologies for accurate and reliable patient monitoring

- GE EK-Pro arrhythmia analysis
- GE DINAMAP* SuperSTAT non-invasive blood pressure
- GE TruSignal enhanced SpO_2 saturation monitoring options available: Nellcor** OxiMax** SpO_2 and Masimo** SET** SpO_2 algorithms
- GE Datex-Ohmeda* gas technology to support non-invasive monitoring in anesthesia and critical care areas
- GE Entropy* monitoring that provides information on the patient's central nervous system during general anesthesia
- Comprehensive package of neonatal[1] measurements

Ease of use for fast decision-making

The B40 Monitor makes it easy to acquire accurate patient data to support timely decision-making.

- 12.1" crystal-clear monitor displays up to six waveforms simultaneously
- Intuitive menus and one-button access to commonly-used functions

Registruojamų parametrų atmintis 15.

- 72-hour trend display with graphical and numerical data to review patient progress
- HL7** direct output and connectivity with the CARESCAPE* Gateway enables communications to EMR systems 8.
- Capability to work in CARESCAPE Network and S/5 Network environments 5.

5. Galimybė įjungti monitorių į Carescape arba S/5 informacinį tinklą

8. Programinė įranga HL7 skirta monitoriaus duomenų perdavimui į ligoninės informacinę sistemą

Performance and reliability

With its streamlined design, the portable B40 Monitor fits into crowded spaces and is easily moved to different care areas as needed. The system's rugged design stands up to harsh environments and the everyday wear-and-tear of busy care areas. It will provide the performance and accuracy that you expect of GE equipment-so you can provide the care that your patients expect.

[1] CO_2 measurement through E-miniC is intended for use with patients weighing over 5kg (11 lb) only. Entropy is intended for use with adult and pediatric patients older than 2 years.

Parameters and modules 9.1-9.8

Parameters	E-Modules*
ECG	Configured Hemo module
Resp Kvėpavimas	
SpO_2	
NIBP Neinvazinis kraujospūdis	
Temp Temperatūra	
2 channel InvBP Tiesioginis arterinis kraujo spaudimas 2 kanalai	
Entropy 9.8	E-ENTROPY Sąmonės būklės monitoravimas
Sidestream CO_2	E-miniC
Sidestream CO_2, O_2, and N_2O	E-sCO
Sidestream CO_2, O_2 Agents and N_2O Kvėpuojamųjų ir anestetinių dujų monitoravimas	E-sCAiO

NOTE: The monitor also is compatible with the E-sCOV and E-sCAiOV modules without Spirometry function.

NOTE: When monitoring neonatal[1] or other patients that have high respiration rate or low tidal volume, the CARESCAPE Respiratory Module E-sCO or E-sCAiO shall be used within the limits of respiration rates and tidal volumes to ensure specified measurement accuracy.

ECG EKG multi-derivacinis kanalas 9.1

Leads available	3-lead configuration: I, II, III
	5-lead configuration: I, II, III, aVR, aVL, aVF and V
Sweep speed	12.5, 25 or 50mm/s
Gain range	0.2 to 5.0 cm/mV
Heart rate accuracy	30 to 300 bpm, ±5 % or ±5 bpm, whichever is greater

Pulsas

Bandwidth

50/60 Hz power supply	Monitor: 0.5 to 40 Hz ST: 0.05 to 40 Hz Diagnostic: 0.05 to 150 Hz
Pacemaker detection	Range 2 to 700 mV Pulse width 0.5 to 2 ms
Arrhythmia analysis	Asystole, Bradycardia, Tachycardia, Ventricular fibrillation, Ventricular tachycardia
ST segment analysis	ST numeric range -9 to +9 mm (-0.9 to +0.9 mV)
	ST accuracy -8 mm to +8 mm ±0.2 mm or ±10%, whichever is greater
	ST numeric resolution 0.1 mm (0.01 mV)
	ST Trends Up to 72 hours

Impedance Respiration

Range	Adult/pediatric: 4 to 120 resp/min
	Neonate[1]: 4 to 180 resp/min
Accuracy	±5% or ±5 resp/min, whichever is greater
Gain range	0.1 to 5 cm/Ohm

GE TruSignal SpO2

Measurement range

Pulse oximetry	1 to 100% 1-100%
Pulse rate	30 to 250 bpm

Measurement accuracy Matavimo tikslumas

Saturation	Without motion-adult/pediatric
	Finger sensor: 70 to 100% ±2%
	Ear sensor: 70 to 100% ±3%
	Without motion-neonate[1] 70 to 100% ±3%
	With motion-adult/pediatric/ neonate[1] 70 to 100% ±3%
	Low perfusion adult/pediatric 70 to 100% ±3% (1~69% unspecified)
Pulse Rate	Without motion: ±2 bpm (Adult/Pediatric/Neonatal[1])
	With motion: ±3 bpm (Adult/Pediatric/Neonatal[1])
	Low Perfusion: ±5 bpm (Adult/Pediatric)

Nellcor OxiMax SpO_2

Measurement range

Pulse oximetry	1 to 100%
Pulse rate	20 to 250 bpm

Measurement accuracy

Saturation	Adult 70 to 100% ±2%
	Neo 70 to 100% ±3%
	Low perfusion 70 to 100% ±2%
Pulse Rate	±3 bpm

[1] CO_2 measurement through E-miniC is intended for use with patients weighing over 5kg (11 lb) only.

Entropy is intended for use with adult and pediatric patients older than 2 years.

Masimo SET SpO_2

Measurement range

Pulse oximetry	1 to 100%
Pulse rate	25 to 240 bpm

Measurement accuracy

Saturation	Without motion-adult/pediatric 70 to 100% ±2%
	Without motion-neonate[1]
	70 to 100% ±3%
	With motion-adult/pediatric/ neonate[1] 70 to 100% ±3%
	Low perfusion 70 to 100% ±2% (0~69% unspecified)
Pulse Rate	Without motion ±3 bpm
	With motion ±5 bpm

NIBP

Measurement technique	Oscillometric with step deflation
Modes	Manual, automatic and stat

NIBP Measurement ranges

Systolic	Adult/Pediatric: 30 to 290 mmHg
	Neonate[1]: 30 to 140 mmHg
MAP	Adult/Pediatric: 20 to 260 mmHg
	Neonate[1]: 20 to 125 mmHg
Diastolic	Adult/Pediatric: 10 to 220 mmHg
	Neonate[1]: 10 to 110 mmHg
Accuracy	Meets AAMI SP10
Default initial inflation pressure	Adult/Pediatric: 135 ±15 mmHg
	Neonate[1]: 100 ±15 mmHg
Maximum determination time	Adult/Pediatric 2 minutes
	Neonate[1]: 85 s
Over pressure monitor	Adult/Pediatric: 300 ±6 to 330 mmHg
	Neonate[1]: 150 ±3 to 165 mmHg

Invasive blood pressure

Measurement range	-40 to 320 mmHg (-5.3 to 42.7 kPa)
Measurement accuracy	±5% or ±2 mmHg, whichever is greater
Frequency response	4 to 22 Hz
Transducer sensitivity	5 µV/V/mmHg

Temperature

Numerical display	T1, T2, T2-T1
Scale	° Fahrenheit (F)
	° Celsius (C)
Measurement range	10 to 45°C (50 to 113°F)
Measurement accuracy	±0.1°C without probe
Display Resolution	± 0.1°C at 25 to 45°C with reusable probes
Probe	YSI probes recommended by GE Healthcare

Carbon dioxide (CO_2) E-sCO or E-sCAiO

GE infrared absorption sensor technology

CO_2 waveform

$EtCO_2$	End-tidal CO_2 concentration
$FiCO_2$	Inspired CO_2 concentration
Measurement range	0 to 15 vol% (0 to 15 kPa, 0 to 113 mmHg)
Accuracy	±(0.2 vol% +2% of reading)
Rise time	<260 ms

Adjustable low and high alarm limits for $EtCO_2$ or $FiCO_2$

Carbon dioxide (CO_2) – E-miniC

Measurement range	0 to 20 vol%
Accuracy	0 to 15 vol% ±(0.2 vol% +2% of reading)
	15 to 20 vol% ±(0.7 vol% +2% of reading)
Resolution	0.1%
Rise time	<300 ms with nominal flow
Warm-up time	1 minute for operation
	30 minutes for full specification

NOTE: CO_2 measurement is intended for use with patients weighing over 5kg (11 lb) only.

Respiration rate (RR) – E-sCO or E-sCAiO

Measurement range	4 to 100 breaths/min
Detection criteria	1 vol% change in CO_2 level

Alarm note sent to host device if no breath detected in 20 seconds

Matavimo ribos- diapazonas 13.1-13.2

13.1 invazinio arterinio kraujo spaudimo matavimo diapazonas
13.2 invazinio arterinio kraujo spaudimo matavimo paklaida

[1] CO_2 measurement through E-miniC is intended for use with patients weighing over 5kg (11 lb) only.

Entropy is intended for use with adult and pediatric patients older than 2 years.

Respiration rate (RR) – E-miniC

Breath detection	1% variation in CO_2 level
Measurement range	4 to 80 bpm
Accuracy	±1 bpm in the range 4 to 20 bpm
Resolution	1 bpm

NOTE: CO_2 measurement is intended for use with patients weighing over 5kg (11 lb) only.

Patient oxygen (O_2)

GE differential paramagnetic sensor

O_2 waveform

FiO_2	Inspired O_2 concentration
EtO_2	End-tidal O_2 concentration
FiO_2-EtO_2	Inspired-expired difference
Measurement range	0 to 100 vol%
Accuracy	±(1 vol% +2% of reading)
Rise time	<260 ms

Nitrous oxide (N_2O)

GE infrared absorption sensor

FiN_2O	Inspired N_2O concentration
EtN_2O	End-tidal N_2O concentration
Measurement range	0 to 100 vol%
Accuracy	±(2 vol% +2% of reading) N_2O < 85%

Anesthetic agent (AA)

GE infrared absorption sensor

Anesthetic agent waveform

FiAA	Inspired anesthetic agent concentration
EtAA	End-tidal anesthetic agent concentration

MAC or MACage value options

Agent mixture detection

Measurement range

Sevoflurane	0 to 8 vol%
Desflurane	0 to 20 vol%
Isoflurane, enflurane, halothane	0 to 6 vol%
Accuracy	±(0.15 vol% +5% of reading)

Agent identification

Identification threshold	0.20 (+0.15/-0.05) vol%
Detection time	<20 sec

Entropy

Display range	RE 0 to 100 SE 0 to 91 BSR 0 to 100%
Display resolution	RE/SE 1 BSR 1%

Thermal Recorder

Operating Principle	Thermal array
Waveforms	Selectable 1, 2, or 3 waveforms
Numerics	HR, SpO_2, NIBP, IBP1, IBP2, $ETCO_2$, T1, T2, Resp, O2, AA
Tabular trend printout	HR, NIBP, IBP1, IBP2, T1, T2, Et/$FiCO_2$, RR, Et/Fi O2, Et/Fi AA
Graphical trend printout	HR, ST, IBP1, IBP2, NIBP, SpO_2, Pleth, CO_2, N_2O, O_2, AA, Resp, T1+T2, Entropy

Resolution

Vertical	8 dots/mm (200 dots/inch)
Horizontal	24 dots/mm (600 dots/inch)
Paper width	50 mm, printing width 48 mm
Paper speed	1, 6.25, 12.5, 25 mm/s

I/O connectors

RS-232 computer serial output, Defibrillation synch, Nurse call

Networking

Work in CARESCAPE Network and S/5 Network environments

Printing

Network laser printer supported in S/5 network

Mounting

GCX compatible

Integrated transport handle

Electrical specifications

AC input	100 to 240V ±10%, 50/60 Hz, 150VA
Protection	Class I
Battery	Exchangeable lithium-ion, 2 pcs max
Charging time	2 hours per battery pack
Run time	Up to 4.5 hours

Physical specifications

Dimensions (HxWxD)

Without extension rack (±5 mm)	312 mm x 312 mm x 158 mm
With extension rack (±5 mm)	312 mm x 352 mm x 178 mm
Weight	<=7Kg
Ingress protection	IP21

Warranty

One year

Certifications

IEC 60601-1 passed

CE marking according to Directive 93/42/ EEC

Technical specifications

Display

Display size	12.1 inch
Resolution	SVGA resolution, 800 x 600
Number of traces	Up to 6
Display layout and colors	User-configurable

Controls

TrimKnob* control and hard keys	Standard

Alarms

Priority	High, Medium, Low and Message
Notification	Audible and visual
Setting	Default and individual
Visual alarm notification	Red, yellow, cyan
	Audio silence message
	General alarm message
Audio pause	2 minutes
Adjustment	Central alarm display and adjustment page
Trending	10 minutes graphical trends referenced to set alarm limits

Trends

Graphical	All parameters, selectable time scales from 20 minutes to 72 hours
Numerical	All parameters, every 5 minutes sampling or after NIBP determination
Snapshot	Up to 10 snapshots
	Manual or alarm triggered
OCRG trend	Real time or snapshot
	Neonate mode only
Trend cursor	In both graphical and numerical trends
Minitrends	5 or 30 minute minitrends can be displayed for a continuous historical view

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 around the world. Headquartered in the United Kingdom, GE Healthcare is a unit of General Electric Company (NYSE: GE). Worldwide, GE Healthcare employees are committed to serving healthcare professionals and their patients in more than 100 countries. For more information about GE Healthcare, visit our website at www.gehealthcare.com.

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GE imagination at work

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(Global version DOC1266491)

14.

Neuromuscular Transmission Module, E-NMT

For integrated measurement of the level of neuromuscular block

The Neuromuscular transmission module provides a unique, integrated measurement of the level of neuromuscular block.

Features

- Provides quantitative, automatic measurement of muscle response to an electrical stimulus
- All common stimulation modes: train of four (TOF), single twitch (ST), double burst stimulation (DBS) and tetanic stimulation
- Covers the whole range of neuromuscular blockade
- Two measurement sensor options: the easy-to-apply MechanoSensor (KMG) for routine clinical use, and ElectroSensor (EMG) for research use
- Two MechanoSensor options: for adults and for pediatric patients
- Automatic setting of supramaximal current
- Automatic measurement at user-selectable interval
- Recovery Note can be set to notify when the block is wearing off
- Recall function enables moving the module with the patient without losing the reference values and the measured supramaximal current
- In addition to the integrated neuromuscular block measurement, the module enables nerve location for regional block by utilizing a comfortable 40 µs pulse

Techincal Data

Direct function keys

Start-up	Automatically initiates the measurement by setting supramaximal current, reference value and starting cycle
Stop/Continue	Stops / continues measurement with same patient

Dimension and weight

Module size (WxDxH)	37 x 186 x 112 mm/1.5 x 7.3 x 4.4 in
Module weight	0.35 kg/0.8 lb

NMT

Stimulation modes	Train of four, TOF Double burst, DBS (3,3) Single twitch, ST 50 Hz tetanic & post tetanic count, PTC
Numeric display	TOF%/DBS%, Count, T1%, PTC
Measurement intervals for TOF/DBS	Manual, 10 sec, 12 sec, 15 sec, 20 sec, 1 min, 5 min, 15 min in Anesthesia Monitor and Compact Anesthesia Monitor Manual, 20 sec, 1 min, 5 min, 15 min, 30 min, 60 min, 120 min in Critical Care Monitor and Compact Critical Care Monitor
Measurement intervals for ST	Manual, 1 sec, 10 sec, 20 sec
Stimulus pulse	Square wave, constant current
Pulse width	100, 200 or 300 µs
Stimulus current range	supramax 10 to 70 mA manual 10 to 70 mA with 5 mA steps
Stimulus current accuracy	10% or ±3 mA, whichever is greater
Max load for 70mA	3 kΩ
Max voltage	300 V

Regional Block mode

Stimulation mode	Single twitch
Stimulation intervals	1, 2, 3 sec
Stimulus pulse	Square wave, constant current
Pulse width	40 µs
Stimulus current range	0 to 5.0 mA with 0.1 mA steps
Stimulus current accuracy	20% or ±0.3 mA, whichever is greater

Ordering information

Description	Order code
Neuromuscular Transmission Module	E-NMT
NMT Sensor Cable,	
3.3 m/11 ft	888414
1.5 m/5 ft	888415
NMT MechanoSensor	888418
NMT MechanoSensor, pediatric	897439
NMT ElectroSensor	888416
NMT Regional Block Adapter	888417
NMT Electrodes 30 pcs	57268

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imagination at work

M1034896/0305

Neuroraumeninio laidumo modulis, E-NMT

Integruotam neuroraumeninės blokados lygio matavimui

Neuroraumeninio laidumo modulis suteikia išskirtinę integruoto neuroraumeninės blokados lygio matavimo galimybę.

Savybės

• Atlieka kiekybinį, automatinį raumens atsako į elektrinį dirgiklį matavimą
• Visi įprastiniai stimuliacijos būdai: 4 impulsų sekos (angl. *train of four*, TOF), pavienio impulso (angl. *single twitch*, ST), dvigubo pliūpsnio (angl. *double burst stimulation*, DBS) ir tetaninė stimuliacija
• Apima visą neuroraumeninės blokados gylio skalę
• Dviejų rūšių matavimo davikliai: patogus naudoti „MechanoSensor“ (KMG) kasdieniniam klinikiniam vartojimui ir „ElektroSensor“ (EMG) moksliniam naudojimui
• Dvi „MechanoSensor“ pasirinktys: suaugusiems ir vaikams
• Automatinis supramaksimalios srovės nustatymas
• Automatinis matavimas vartotojo pasirinktame intervale
• Gali būti nustatytas “atsigavimo” signalas, kad praneštų apie besibaigiančią blokadą
• Atminties funkcija leidžia transportuoti modulį kartu su pacientu neprarandant pradinių reikšmių ir nustatytos supramaksimalios srovės
• Be integruoto neuroraumeninės blokados matavimo, modulis leidžia nustatyti nervo lokalizaciją regioninei blokadai, panaudojant 40 µs dažnio impulsus

Techniniai duomenys

Tiesioginių funkcijų mygtukai

„Start-up“	Automatiškai pradeda matavimą nustatydamas supramaksimalią srovę, pradinę reikšmę ir paleidimo ciklą
„Stop/Continue“	Sustabdo / tęsia matavimą tam pačiam pacientui

Matmenys ir svoris

Modulio dydis (plotis, gylis, aukštis)	37 x 186 x 112 mm/1.5 x 7.3 x 4.4 colio
Modulio svoris	0.35 kg/0.8 svaro

NMT

Stimuliacijos būdai	4 impulsų seka (TOF) Dvigubas pliūpsnis (DBS) (3,3) Pavienis impulsas (ST) 50 Hz tetaninis ir potetaninis stimulas (PTC)
Skaitmeninė išraiška	TOF%/DBS%, Count, T1%, PTC
TOF/DBS matavimo intervalai	Rankinis, kas 10 s, 12 s, 15 s, 20 s, 1 min, 5 min, 15 min anestezijos aparato monitoriuje ir nešiojamame anestezijos monitoriuje Rankinis, kas 20 s, 1 min, 5 min, 15 min, 30 min, 60 min, 120 min intensyvios terapijos skyriaus monitoriuje ir nešiojamame intensyvios terapijos skyriaus monitoriuje
ST matavimo intervalai	Rankinis, 1 s, 10 s, 20 s
Impulsų ritmas	“Laiptuota” banga, pastovi srovė
Impulsų pasikartojimo dažnis	100, 200 ar 300 µs
Impulsų srovės diapazonas	supramaksimali, nuo 10 iki 70 mA rankinis: nuo 10 iki 70 mA, kas 5 mA
Impulsų srovės tikslumas	10% arba ±3 mA, kuris didesnis
70mA maksimali varža	3 kΩ
Maksimali įtampa	300 V

Regioninės blokados režimas

Stimuliacijos būdas	Pavienis impulsas
Stimuliacijos intervalai	1, 2, 3 s
Impulsų ritmas	“Laiptuota” banga, pastovi srovė
Impulsų pasikartojimo dažnis	40 µs
Impulsų srovės diapazonas	nuo 0 iki 5.0 mA, kas 0.1 mA
Impulsų srovės tikslumas	20% arba ±0.3 mA, kuris didesnis

Informacija užsakymui

Aprašas	Užsakymo kodas
Neuroraumeninio laidumo modulis	E-NMT
NMT daviklio kabelis,	
3.3 m/11 pėdų	888414
1.5 m/5 pėdų	888415
NMT „MechanoSensor“	888418
NMT „MechanoSensor“, vaikiškas	897439
NMT „ElectroSensor“	888416
NMT regioninės blokados adapteris	888417
NMT elektrodai, 30 vnt.	57268