



Life Scope G9

The genesis of monitoring

Reliable monitoring is vital for critical patients. Such patients may need immediate attention. To deliver this, information must be retrievable and displayed comprehensively and logically. Life Scope G9, a future-generation bedside monitor designed with pioneering technology, offers synergetic display of patient information based on present and past medical history – on a simple user interface for higher clinical intervention.

Life Scope G9 is a high-precision, futuristic modular bedside monitor from Nihon Kohden, the global manufacturer of innovative products and advanced technologies for medical care.



Life Scope G9

Attributes for powerful performance

Life Scope G9 comes with advanced technologies that allow precise monitoring.

- Multiple optional input units, such as Life Scope PT for modular patient monitor capabilities
- Complete modular flexibility with **MULTI connector** and **Smart Cable™ System**
- Fast and painless measurement of NIBP with **iNIBP**, a unique algorithm for measuring NIBP

Dynamic display

Cutting-edge features support dynamic display for effective monitoring.

- Triple display (24", 22", and 19" wide screen) capabilities with maximum 17 waveforms in each display
- Multiple touchscreens and operations by each display
 - Different layout in each display and layouts can be switched with one click
 - G-Scope allows all important trends and lists to be directly available on the main screen

Information optimization

Life Scope G9 configures the needs of different critical care sites, including OR, ICU, CCU, NICU, and ER—optimizing information accordingly with three screens available for different specialists.

- Comprehensive overview on the home screen without touching the screen
- Target graphs for clear understanding of implications (e.g. hemograph)
- Look beyond by neuro monitoring with aEEG
- Arrhythmia recall with multi-temperate arrhythmia analysis
- Diagnostic 12-lead ECG analysis

Immediate intervention

Life Scope G9 makes information and medical intervention readily accessible.

- Comprehensive ST review with 12-lead ECG required for patient prognosis
- X-rays, medical charts, and lab data through hospital information system
- Review of previous data with **G-scope**, without hiding current signs and waveforms

- **aEEG (amplitude-integrated EEG)** which makes it easier to detect seizures
- Hemodynamic notification for efficient fluid control during administration by combining **esCCO**, Nihon Kohden's **continuous cardiac output technology**, with PPV/SPV (which measures fluid responsiveness)
- Clear EtCO₂ reading for quick intervention in both intubated and non-intubated patients with the help of **capONE**: as the world's most durable, smallest, lightest, and fastest mainstream CO₂ sensor for oral and nasal breathers, capONE offers easy airway management

Optimized workflow

Efficient intra-hospital monitoring with Life Scope PT as an input box, Smart Cable™ System for modular flexibility, and many more add-on features to allow efficient monitoring in transit as well as inter-bed monitoring.

- **ViTrac™ network** server for multiple patient monitoring, anytime, anywhere
- Inter-bed monitoring with numeric data for 16 patients or numeric data and two waveforms for one patient on inter-bed screen
- **HL 7 Gateway**, connecting LS-NET monitor network to the hospital or clinical information system (HIS, CIS)
- **NetKconnect and Transmitter** (available as options, permitting review of real-time patient data and history anytime anywhere from your PC)

Alarm advantage

Effective alarm system has simple user interface that detects changes in the patient's condition.

- Alarm indicator visible from a distance
- Nihon Kohden's **eC1 arrhythmia** analysis provides superior elimination of false alarms
- **PWTT-triggered NIBP measurement** for detecting changes in BP (Nihon Kohden patented)

Contribution to clinical advancement

Life Scope G9 is designed to sustain clinical research and clinical application.

- Implement existing clinical procedures or create new ones in accordance with evidence-based medicine (EBM)
- Save screenshot of the monitoring screen on a USB memory stick
- Utilize monitored information to develop Windows software

Specifications

CSM 1901

Core unit

Model	CU-191 R, CU-192R
Function	CPU
Processor	CU191R: Intel Celeron 1.6GHZ CU192R: Intel Core i7 1.5 Ghz
Operation	Mains AC, Battery DC
Power requirement	100 to 240V, 50 or 60 Hz
Power input	220VA, ± 10%
Battery (SB-920P, Optional)	3 minutes backup in case of power failure
Dimensions	412 (W) x 322 (H) x 365 (D) mm
Weight	12.5 kg
Degree of protection	Against Harmful Ingress of Water: IPX1

Display unit

Type	Color LCD
Operation	Touchscreen panel
Screen size	19" (ML-190P) 18.5" (MDRAP18EAXAC-N1) 21.5" (MDRAP21EAXAC-N1) 24" (MDRAP24XAXAC-N1)
Number of displays	3
Number of traces	17 traces on one display 34 traces on two displays 51 traces on three displays
Sweep speed	1.56, 6.25, 12.5, 25, 50 mm/s
Display colors	32, selectable

Screen details

Site specialized setting	OR, ICU, NICU, ward, ER
Number of screen layout master	20
Review data	Display with numeric value and waveform: available, side, and/or bottom

Alarm

Alarm types	Crisis (red, blinking), Warning (yellow, blinking), Advisory (yellow or blue light)
Alarm suspend	Provided (for 1, 2, 3 min, Off)

Review data

Trend graph	
Storage capacity	168 hours
Vital list	
Storage capacity	168 hours for up to 108 parameters
Number of vital list	6
List interval	1, 5, 10, 15, 30 or 60 min
NIBP list	
Storage capacity list interval	1,008 files at NIBP measurement
Full disclosure	5 waveforms for a period of 168 hours 8 waveforms for a period of 96 hours 35 waveforms for a period of 24 hours
Wave duration	60, 30, 20, 12, or 6 seconds
ST recall	
Storage capacity	10,080 files and 1 reference file
Storage interval	1 minute
Alarm history	
Storage capacity	302,400 files for the past 168 hours
Arrhythmia recall	
Storage capacity	60,480 files
No. of arrhythmia	23 items
Hemodynamics graph (optional QP-193P is required):	
Storage capacity	168 hours
Window types	Trend and target graph, trend, target graph
Number of target graphs	4

Interfaces

Display I/F	2 (3 when optional board installed), image signal (DVI), touch panel and alarm indicator (RS-232C), USB, GPIO (power switch, service key, check key)
Sound output I/F	Sound signal (analog signal)
Sound input IF	Microphone signal (analog sound)
USB I/F	8
Recorder I/F	RS-232C
Network I/F	10/100/1000BASE-T
Multilink I/F	3, based on 5 V UART
Universal serial I/F	RS-232C
EJA unit (interface unit, JA-920P) I/F	Based on RS-422
DAU I/F	Low voltage differential signaling (LVDS)

Parameters

ECG

Leads	3, 6 or 10 lead
Waveform display	3 (maximum, with 6 or 10 electrodes on home screen), 12 (maximum, with 10 electrodes on home screen and 12 LEAD window)

Sensitivity control	x1/8, x1/4, x1/2, x1, x2, Auto
Heart rate counting range	0, 15 to 300 beats/min (± 2 beats/min)

Respiration (impedance)

Number of channels	Selectable from R-F or RL
Respiration rate	0 to 150 counts/min

SpO₂

Technology	Nihon Kohden, Nellcor, Masimo
NK SpO ₂	AY660/661/663P, BSM-1763
Nellcor SpO ₂	AY-651/653P, BSM-1753
Masimo SpO ₂	AY-651/653P, BSM-1753
Display range	0 to 100% SpO ₂

Non-invasive blood pressure (NIBP)

Measuring method	Oscillometric method
Measuring range	0 to 300 mmHg
Operation mode	Manual, STAT, periodic, SIM (depends on the SITE setting)

Invasive blood pressure (IBP)

Labels	ART, ART2, RAD, DORS, AO, FEM, UA,UV, PAP, CVP, RAP, RVP, LAP, LVP, ICP to ICP4, P1 to P8
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Calculation	CPP, PPV, SPV, CVP-ET
Measuring range	50 to 300 mmHg

Temperature

Number of channels	8 channels + Tb
Measuring range	0 to 45°C, 32 to 113°F

Cardiac output (CO)

Measuring method	Thermodilution method
Measuring parameters	Cardiac output (CO), injectate temperature (Ti), blood temperature (Tb), thermodilution curve (Δ Tb)

Bispectral index (BIS)

Measuring parameter	Bispectral Index (BIS), 95% Spectral Edge Frequency (SEF), Suppression Ratio (SR), EMG, Signal Quality Index (SQI)
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esCCO

Method	Estimated continuous non-invasive cardiac output, pulse wave transit time method
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Measured parameter	esCCO, esCCI, esSV, esSVI, esSVR, esSVRI (To calculate esCCI, esSVI, and esSVRI)
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APCO (CCO)

Displayed value	CCO, CCI, SV, SVI, SVR, SVRI, PVR, PVRI, LVSW, LVSWI, RVSW, RVSWI, SW
Measuring range	1 to 20 L/min

EEG

Number of channels	8
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Carbon dioxide (CO₂) (mainstream method)

CO ₂ measuring range	TG-900P/TG-920P/ TG-950P: 0 to 100 mmHg TG-970P: 0 to 150 mmHg
Warm-up time:	TG-900P/TG-920P: 5 s TG-950P: 15 s TG-970P: 10 s

Carbon dioxide (CO₂) (sidestream method)

CO₂ in sidestream method can be monitored with the AG-400R CO₂ unit.

Sampling flow	50 mL/min +15/-7.5 mL/min
Warm-up time	30 s average (from power on to the measurable state)

Anesthesia gas

Measurement method	Sidestream gas sampling
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Measured parameters	Inspired/expired CO ₂ partial pressure, inspired/expired N ₂ O concentration, inspired expired O ₂ concentration, inspired/expired anesthetic agent concentration (halothane, isoflurane, enflurane, sevoflurane, desflurane), respiration rate, minimum alveolar concentration (MAC)
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Flow/Paw

Measured parameters	Flow, Ppeak, Pmean, PEEP, TVi, TVe, MV, C, R, Ri, Re, RR
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NIHON KOHDEN EUROPE GmbH
Raiffeisenstr. 10, 61191 Rosbach, Germany
Phone: +49 (0) 6003 827-0, Fax: +49 (0) 6003 827-599
Internet: www.nihonkohden.com, E-mail: info@nke.de



NIHON KOHDEN CORPORATION
1-31-4 Nishiochiai, Shinjuku-ku, Tokyo 161-8560, Japan
Phone: +81 (3) 59 96-80 36, Fax: +81 (3) 59 96-81 00
Internet: www.nihonkohden.com