Operator's Manual

Life Scope G9

Bedside Monitor

CSM-1901

CSM-1000 series

0614-906759W

NIHON KOHDEN

MUMG 249 [A] - CO-2564

About This Manual

In order to use this product safely and fully understand all its functions, read this manual before using the product. Keep this manual near the instrument or in the reach of the operator and refer to it whenever the operation is unclear.

Accompanying Documentation

The bedside monitor comes with the following manuals. Refer to the manual depending on your needs.

Operator's Manual (this manual)

Describes the operation and settings of the bedside monitor. Read this manual before use.

Administrator's Guide

For administrators. Describes how to install the bedside monitor. Read the Operator's Manual together with this guide.

Service Manual

For qualified service personnel. Describes information on servicing the bedside monitor. Only qualified service personnel can service the bedside monitor.

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The mark printed on the SD card that is used in this instrument is a trademark. The company name and model name are trademarks and registered trademarks of each company.

This product stores personal patient information. Manage the information appropriately.

Patient names on the screen shots and recording examples in this manual are fictional and any resemblance to any person living or dead is purely coincidental.

The contents of this manual are subject to change without notice. If you have any comments or suggestions on this manual, please contact us at: https://www.nihonkohden.com/

CE 2797 Rx Only

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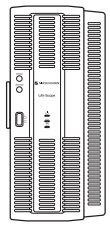
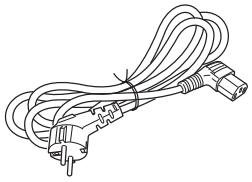
Unpacking

Check that all the items are included in the package. If there are any missing items, contact your Nihon Kohden representative.

The name and quantity are described under the illustration.

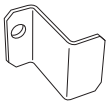


CU-191R or CU-192R core unit (1)

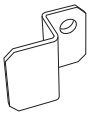


Example is power cord UL

Power cord (2.0m) (1)

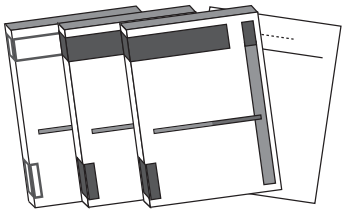


VL cable stopper (1)



WLAN cable stopper (1)

Screw F 3 × 6 (3)/Screw PS 3 × 8 (2)



Manuals

Certification (1)

For the standard accessories such as power cord and for consumables such as recording paper, only use Nihon Kohden specified parts and accessories to satisfy the safety and performance.

For the model, code number and supply code of the standard accessories, refer to the "Options and Consumables" page of Section 16 "Standard Accessories, Options and Consumables" in this manual.

Conventions Used in this Manual and Instrument

Dangers, Warnings and Cautions

Level	Description
⚠ DANGER	A danger alerts the user to a hazardous situation which causes death or serious injury.
⚠ WARNING	A warning alerts the user to possible injury or death associated with the use or misuse of the instrument.
⚠ CAUTION	A caution alerts the user to possible injury or problems with the instrument associated with its use or misuse such as instrument malfunction, instrument failure, damage to the instrument, or damage to other property.

Icons in this Manual

Icon	Description
	Gives additional information and alternative operation methods.
	Indicates related pages in this or other manuals which give more details.

Text Conventions in this Manual

Style	Description
xxx key	Operating panel key
[xxx] tab	Window tab key
[xxx] window	Window name appearing on tab
[xxx]	Window touch key
"xxx"	Window message

Safety Standards

Safety Standard Classification of the CSM-1901 Bedside Monitor

CSM-1901 Op No. 01A

Type of protection against electrical shock:
CLASS I EQUIPMENT

Degree of protection against electrical shock:
Defibrillation-proof type CF applied part

Degree of protection against harmful ingress of water:
IPX1 (protected against vertically falling water drops)
Only when the system configuration is CU-191R or CU-192R, VL-190P and DM-190P

Method of cleaning and disinfecting or sterilization:
Equipment NOT suitable for sterilization

Degree of safety of application in the presence of FLAMMABLE ANAESTHETIC MIXTURE WITH AIR, OR WITH OXYGEN OR NITROUS OXIDE:
Equipment not suitable for use in the presence of FLAMMABLE ANAESTHETIC MIXTURE WITH AIR, OR WITH OXYGEN OR NITROUS OXIDE

Mode of operation:
CONTINUOUS OPERATION

ME EQUIPMENT type:
STATIONARY type

For the following units, refer to the manual for each unit.

- BSM-1733, BSM-1753, BSM-1773 bedside monitor
- GF-210R multigas unit
- AE-918P neuro unit

CSM-1901 Op No. 01K

Type of protection against electrical shock:
CLASS I EQUIPMENT

Degree of protection against electrical shock:
BF applied part: TOF
Defibrillation-proof type CF applied part:
ECG, impedance respiration, thermistor respiration, IBP, temperature, SpO_2, SpO_2-2, CO_2, O_2, BIS, NIBP
CF applied part: CO

Degree of protection against harmful ingress of water:
IPX1 (protected against vertically falling water drops)
Only when the system configuration is CU-191R or CU-192R, VL-190P and DM-190P

Method of cleaning and disinfecting or sterilization:
Equipment NOT suitable for sterilization

Degree of safety of application in the presence of FLAMMABLE ANAESTHETIC MIXTURE WITH AIR, OR WITH OXYGEN OR NITROUS OXIDE:
Equipment not suitable for use in the presence of FLAMMABLE ANAESTHETIC MIXTURE WITH AIR, OR WITH OXYGEN OR NITROUS OXIDE

Mode of operation:
CONTINUOUS OPERATION

ME EQUIPMENT type:
STATIONARY type

For the following units, refer to the manual for each unit.

- BSM-1733, BSM-1753, BSM-1763, BSM-1773 bedside monitor
- GF-110PA, GF-210R, GF-310R multigas unit
- GF-120PA, GF-220R, GF-320R multigas/flow unit
- AE-918P, AE-920P neuro unit
- AF-101P NMT module
- AP-170P hemodynamic unit

1 Bedside Monitor Overview

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General

The CSM-1901 bedside monitor has a color display and is for one patient and is to be installed near the patient. With the basic configuration of the system, ECG, NIBP, temperature, SpO_2, respiration in impedance or thermistor method, CO_2, O_2 of all hospital patients can be monitored and alarms are generated.[1] Apnea and arrhythmia can also be monitored.

[1] Essential performance of the bedside monitor

Adults, children and neonates can be monitored using this bedside monitor.

You can use other units and options with the bedside monitor to add other parameters so the bedside monitor can be used in a wide range of sites such as operating rooms and intensive care units (ICU).

You can also connect the bedside monitor to a network to communicate with a central monitor and other bedside monitors.

CSM-1901 bedside monitor has two models, Op No. 01A and Op No. 01K. The option number is printed on the name plate of the unit. For simplicity, the option number is omitted in this manual. There is no difference in operation between two models unless otherwise specified.

- Descriptions in this manual are based on a basic configuration with the following units.
  - VL-190P LCD unit
  - CU-191R core unit
  - JA-694PA data acquisition unit
  - AY-673P input unit
- The window examples in the descriptions in this manual are factory default settings (OR mode).
- The following units are IEC 60601-1:1988+Amendment 1:1991+ Amendment 2:1995 compliant.
  - AG-920RK multigas unit
  - TG-950P CO_2 sensor kit
  - VL-611R (ET2400L-8CJM-1-BG-NKD-G) LCD unit

⚠ WARNING

Do not use the same bedside monitor for more than one patient at the same time. Do not connect different sensors from different patients to the same bedside monitor.

⚠ WARNING

Do not diagnose a patient based only on data acquired by the bedside monitor. Overall judgement must be performed by a physician who understands the features, limitations and characteristics of the bedside monitor and by reading the biomedical signals acquired by other instruments.

⚠ CAUTION

Only use Nihon Kohden specified options and consumables such as electrodes, sensors, probes and transducers. Otherwise, the maximum performance from the bedside monitor cannot be guaranteed.

NOTE
- This bedside monitor must be used by qualified medical personnel with full knowledge of its functions and operations.
- Changing of settings which affect the operation of the bedside monitor, including location, requires supervision or confirmation from the administrator. Improper changes may result in monitoring errors or overlooked alarms.
- Upgrade the core unit and each optional unit to the Nihon Kohden recommended software version. If more than one CSM-1901 bedside monitor is used in the same facility, make sure the bedside monitors have the same software version. If CSM-1901 bedside monitors with different software versions are used together, correct system operation cannot be guaranteed.

Indications for Use

The CSM-1901 bedside monitor is intended to monitor, display and record physiological data to provide cardiac and vital signs monitoring within a medical facility. The device is intended to produce a visual record of the electrical signal produced by the heart and monitor the electrocardiogram to generate visible and/or audible alarms when an arrhythmia exists. The device is also intended to monitor heart rate, pulse rate, blood oxygen saturation (SpO_2), non-invasive blood pressure (NIBP), invasive blood pressure (IBP), body temperature, BIS, cardiac output (CO), oxygen concentration (FiO_2), carbon dioxide concentration (CO_2), $EtCO_2$, respiratory rate, inspired and expired anesthetic agents and anesthetic gases including N_2O, halothane, isoflurane, enflurane, sevoflurane and desflurane and TOF. The device also displays patient data from external devices such as ventilators, TOF monitors, CCO/SvO_2 monitors, and EEG measuring unit.

The device may generate and audible and/or visual alarm when a measured rate falls outside preset limits.

The device will be available for use by trained medical personnel within a medical facility on all patient populations, including adult, neonate, infant, child, and adolescent subgroups.

Basic Configuration

With the following basic system configuration, the ECG, respiration using the impedance or thermistor method, NIBP, SpO_2, temperature, IBP, CO_2, cardiac output, O_2, BIS and TOF of hospital patients can be monitored.

The bedside monitor can display measurement data when the external instruments such as a multigas unit or ventilator are connected to the bedside monitor.

NOTE: The system configuration depends on the country. Contact your Nihon Kohden representative for the available options for your country.

- CU-191R, CU-192R core unit
- VL-190P LCD unit
- YL-920P alarm indicator
- AY-631P, AY-633P, AY-651P, AY-653P, AY-660P[1], AY-661P[1], AY-663P[1], AY-671P, AY-673P input unit

Model	MULTI Sockets	SpO_2 Measurement
AY-631P	1	Masimo
AY-633P	3	
AY-651P	1	Nellcor
AY-653P	3	
AY-660P[1]	1	Nihon Kohden
AY-661P[1]	1	
AY-663P[1]	3	
AY-671P	1	
AY-673P	3	

- BSM-1700 series bedside monitor

  BSM-1700 series bedside monitor is used as an input unit.

Model	SpO_2 Measurement
BSM-1733	Masimo
BSM-1753	Nellcor
BSM-1763[1]	Nihon Kohden
BSM-1773	

- AA-672P, AA-674P smart expansion unit
- JA-690PA, JA-694PA data acquisition unit
- AA-910P multi amp unit
- JA-920P interface unit
- WS-960P recorder unit
- RY-910PA remote controller

- SB-920P battery pack

[1] The AY-660P, AY-661P and AY-663P input units and BSM-1763 bedside monitor are not available in North America.

Notes for Product Use

- Antivirus software is installed on the bedside monitor at the factory to prevent virus infection from the hospital network or a USB flash drive.
- The exterior of the bedside monitor may become hot, but this is not an abnormality.
- Do not format a USB flash drive which contains the bedside monitor data to the file system of other medical equipment or IT equipment. The USB flash drive data will be lost.

Administrator Settings

The administrator of the bedside monitor can change the operating environment settings according to the intended use, measurement and operation.

There are two windows for changing the settings.

System Configuration

The administrator can change the site and network settings.

For details, refer to Section 2 of the Administrator's Guide.

Administrator's Guide:
Refer to Section 2 "System Configuration"

System Setup

The administrator can change the bed ID and alarm master settings.

For details, refer to Section 3 of the Administrator's Guide.

Administrator's Guide:
Refer to Section 3 "System Setup"

Basic Operation

Operation Methods

The bedside monitor can be operated by the following methods. These methods can be used together.

- Touch screen
- Operation keys on components
- Remote control
- Mouse
- Keyboard

This manual mainly describes operations using the touch screen.

Using the Touch Screen and Operation Keys

You can operate the monitor by touching the keys on the screen or pressing the operation keys.

By touching the keys on the screen directly, you can intuitively operate the bedside monitor.

By pressing the operation keys, you can display the windows or perform the key operations.

For details on operation keys, refer to "Panel Description".

Touch the keys on the screen to change the settings, display or close the window or scroll the bar.

NOTE: Only use your fingers to operate keys on the touch screen. Using a sharp object may damage the bedside monitor.

Using the Remote Control

Use the RY-910PA remote controller to operate the bedside monitor from a distance.

Use the selection knob on the remote controller to move the pointer on the screen and press the [Enter] key to select the item.

NOTE
- If two bedside monitors are near each other, confirm that the remote control operates only the intended bedside monitor. If the remote control operates a different bedside monitor, check the channel setting.
- Watch the monitor screen and check the operation when using the remote control.
  Store the remote control carefully to prevent accidental button operation.

Using the Keyboard and Mouse

A keyboard and mouse can be connected.

Use the keyboard for entering letters, symbols and numbers. Use the mouse to move the pointer on the window, and click the left button to select and register settings.

Multiple Displays

Monitoring with multiple displays is possible when using the bedside monitor.

The window layout and parameters can be set individually for each display, according to the application or installation location.

NOTE: Do not turn the display power off during monitoring.

Precautions for Using Multiple Displays

Window Display

When using the bedside monitor with multiple displays, the same window cannot be displayed at the same time on multiple displays.

If you touch a second display while an operation is still pending on the first display, a message appears on the second display. Touch [Yes] or [No] to close one of the windows.

NOTE: If a window was closed by an operation on the other display while a setting change was in progress, check the setting again.

Volume Setting

When using the bedside monitor with multiple displays, the volume cannot be set separately on each display.

If the volume setting is changed on one display, it is also changed on the other.

Menu Window

The [Menu] window gives one-touch access to all the windows that can be displayed on the bedside monitor.

The keys are located according to the functions on the window. Touch a key to display the corresponding window.

There are four ways to display the [Menu] window:

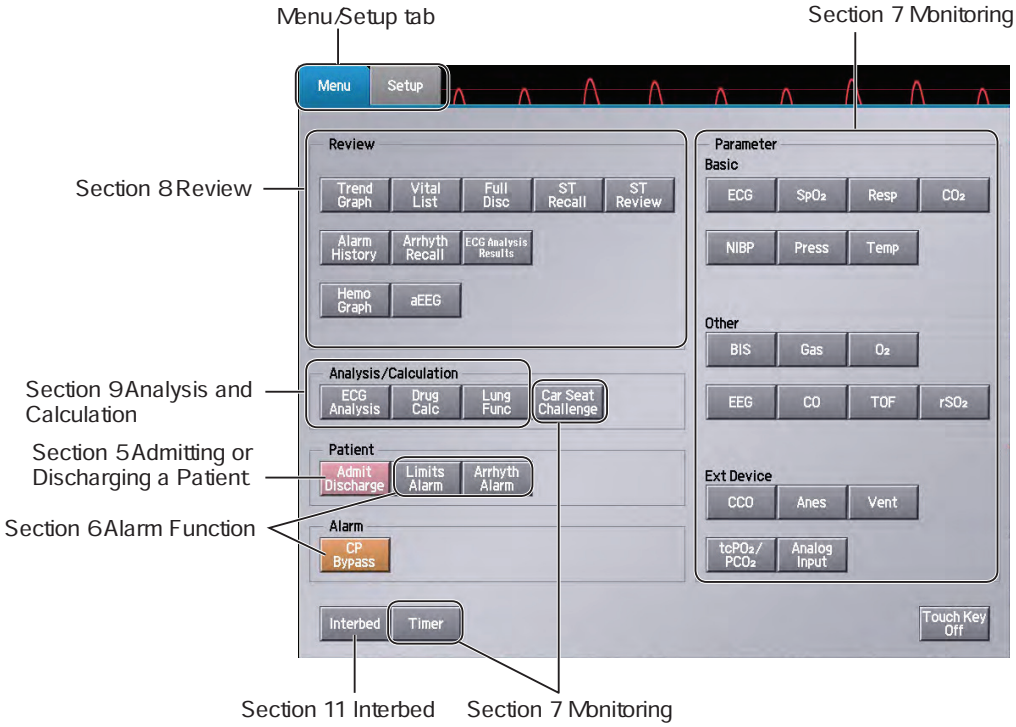
- Press the **Menu key**
- Touch the [Menu/Home] function key

  Available when "Menu/Home" is assigned to a function key in System Setup.
  Administrator's Guide: Refer to "Setting Function Keys" in Section 3

- Press the **MENU/HOME key** on the RY-910PA remote controller

  Press the MENU/HOME key on the remote control (option) while a window other than the home screen is displayed to return to the home screen.
  Press the MENU/HOME key again to display the [Menu] window.

- Press the **Menu key** on the VL-190P LCD unit



Flow/Paw, esCCO and TOF using an AF-101P NMT module are not available in North America.

Car Seat Challenge is only available in North America and only when the [Site] setting is [NICU].

StO_2 is displayed instead of rSO_2 when an IF-963P communication cable is used. The IF-963P communication cable is only available in North America.

Home Screen

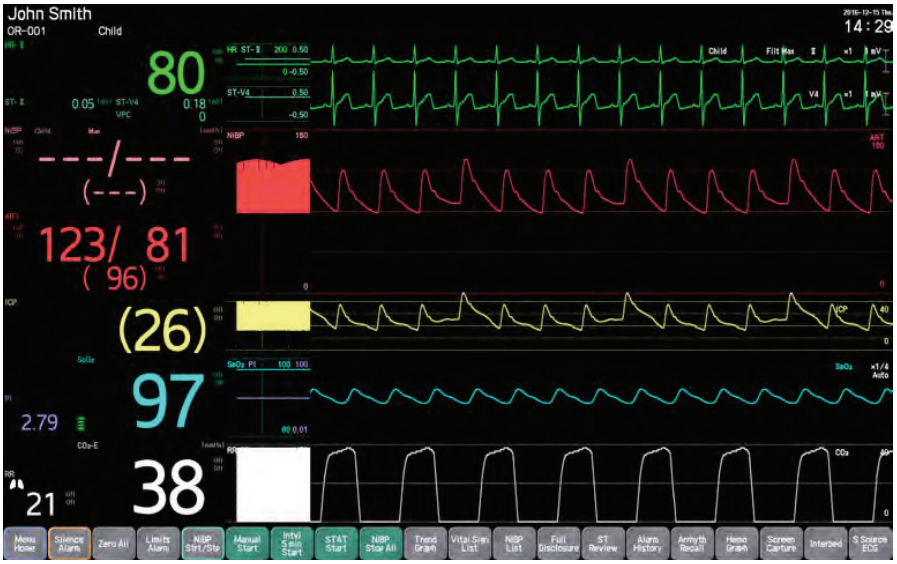
The home screen displays the patient monitoring information. The home screen is the main window of the bedside monitor.

There are five ways to display the home screen. Whichever method is used, the home screen appears immediately.

- Touch the waveform display area
- Touch the [Home/Menu] function key

  Available when [Menu/Home] is assigned to a function key in System Setup.
  Administrator's Guide: Refer to "Setting Function Keys" in Section 3

- Press the **MENU/HOME key** on the RY-910PA remote controller
- Press the **Home key** on the VL-190P LCD unit
- Press the **Home key** on the JA-690PA or JA-694PA data acquisition unit



Home screen

Symbols

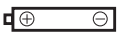
The following symbols are used with the bedside monitor. The names and descriptions of each symbol are as shown in the table below.

For the following units, refer to the manual for each unit.

- GF-110PA[1], GF-210R, GF-310R[1] multigas unit
- GF-120PA[1], GF-220R[1], GF-320R[1] multigas/flow unit
- AE-918P, AE-920P[1] neuro unit
- AF-101P NMT module[1]
- AP-170P hemodynamic unit[1]
- BSM-1733, BSM-1753, BSM-1763[1], BSM-1773 bedside monitor

[1] The GF-110PA and GF-310R multigas units, GF-120PA, GF-220R and GF-320R multigas/flow units, AF-101P NMT module, AP-170P hemodynamic unit, AE-920P neuro unit and BSM-1763 bedside monitor are not available in North America.

Symbol	Description
	"On" only for a part of instrument
	"Off" only for a part of instrument
	Standby
	Alternating current
	Direct current
	Equipotential terminal
	Recorder socket/Recorder
	Input/output terminal (Multi-link socket, EJA unit socket, DAU unit socket, ViSiBLE unit socket and Serial socket)
	Output terminal (Front Panel: ECG/BP OUT socket, Unit connection socket)
	Input terminal
	Sound
	Silence alarms key
	Out of paper
	Attention, see instructions for use/ Caution
Background color: Blue	Follow instructions for use
	USB socket

Symbol	Description
	Display 1 terminal
	Display 2 terminal
	Display 3 terminal
	Protective earth
	Media access lamp
	Nihon Kohden network terminal
	Hospital network terminal
	Defibrillation-proof type CF applied part
	BIS READY label (QE-910P BIS processor/BISx processor can be connected)
	Alarm indicator
	Direction for inserting battery
	NIBP interval
	NIBP start
	NIBP stop
	Alarm silence
	Audio off

Symbol	Description
	Alarms paused
	All alarms off/Vital sign alarm limit off
	Non-paced
	QRS/pulse sync mark
	Respiration sync mark
	MR unsafe
	NIBP
	Recycle
CE	The CE mark is a protected conformity mark of the European Community.
CE XXXX	The CE mark is a protected conformity mark of the European Community. The four digits after the CE mark indicate the identification number of the Notified Body involved in assessing the product's conformity as a medical device.
	Products marked with this symbol comply with the European WEEE directive 2012/19/EU and require separate waste collection. For Nihon Kohden products marked with this symbol, contact your Nihon Kohden representative for disposal.

Symbol	Description
	IBP all zero
	PC starting
	Adjust setting/Scroll data
	Left end/Right end
SN	Serial number
	Date of manufacture
	Recording settings
	Printer
	Car seat challenge time
	HiQ-View
Rx Only	CAUTION: United States law restricts this product to sale by or on the order of a physician.
	Products marked with this symbol comply with an environmental protection use period of 10 years according to the SJ/T11364 "Marking for the Restricted Use of Hazardous Substances in Electronic and Electrical Products" of the People's Republic of China Electronic Industry Standard.

Transport Package

Symbol	Description
	This way up
	Fragile

Symbol	Description
	Keep away from rain
	Stacking limit by number ("n" is the limiting number)

7 Monitoring

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Monitoring Overview

When monitoring starts, waveforms and measurement data appear on the home screen and the corresponding parameter windows.

To display a parameter setting window, touch [Menu] on the home screen ▶ parameter key. The tabs or keys show the setting items.

Basic parameters

- [ECG] window
- [SpO_2] window
- [Resp] window
- [CO_2] window
- [NIBP] window
- [Press] window
- [Temp] window

Other parameters

- [BIS] window
- [Gas] window
- [Flow/Paw] window[1]
- [O_2] window
- [EEG] window
- [CO] window
- [TOF] window
- [rSO_2]/[StO_2][3] window
- [Incu] window[4]

External instrument parameters

- [CCO] window
- [esCCO] window[2]
- [Anes] window
- [Vent] window
- [$tcPO_2$/PCO_2] window
- [Analog] window

[1] Flow/Paw is not available in North America.

[2] esCCO is only available with the QP-192P esCCO program or QP-193P hemodynamics review program. The QP-192P esCCO program and QP-193P hemodynamics review program are not available in North America.

[3] StO_2 is displayed instead of rSO_2 when an IF-963P communication cable is used. The IF-963P communication cable is only available in North America.

[4] Incubator monitoring is only available in North America. The [Incu] window is only displayed when [Site] is set to [ICU] or [NICU] in System Configuration.

Administrator's Guide: Refer to "Site Settings" in Section 2

This section describes monitoring for the basic parameters and other parameters listed above.

⚠ WARNING

Do not diagnose a patient based only on data acquired by the bedside monitor. Overall judgement must be performed by a physician who understands the features, limitations and characteristics of the bedside monitor and by reading the biomedical signals acquired by other instruments.

⚠ WARNING

After attaching electrodes, probes and sensors on the patient and connecting cables to the bedside monitor, check that there is no error messages and the waveforms and numeric data are appropriately displayed on the screen. If there is an error message, or waveform or numeric data is not appropriate, check the electrodes, probes and sensor attachment, patient condition and settings on the bedside monitor and remove the cause.

⚠ WARNING

A physician must be within the range where he/she can hear the alarm sound of the bedside monitor while monitoring a patient on the bedside monitor. If the physician cannot hear the alarm sound, critical changes on the patient may be overlooked.

Home Screen

The home screen displays monitoring information such as measurement data and waveforms.

The window layout is selected automatically according to the measured parameters. The window display type and value display positions can be set in the [Screen Layout Select] window of System Setup.

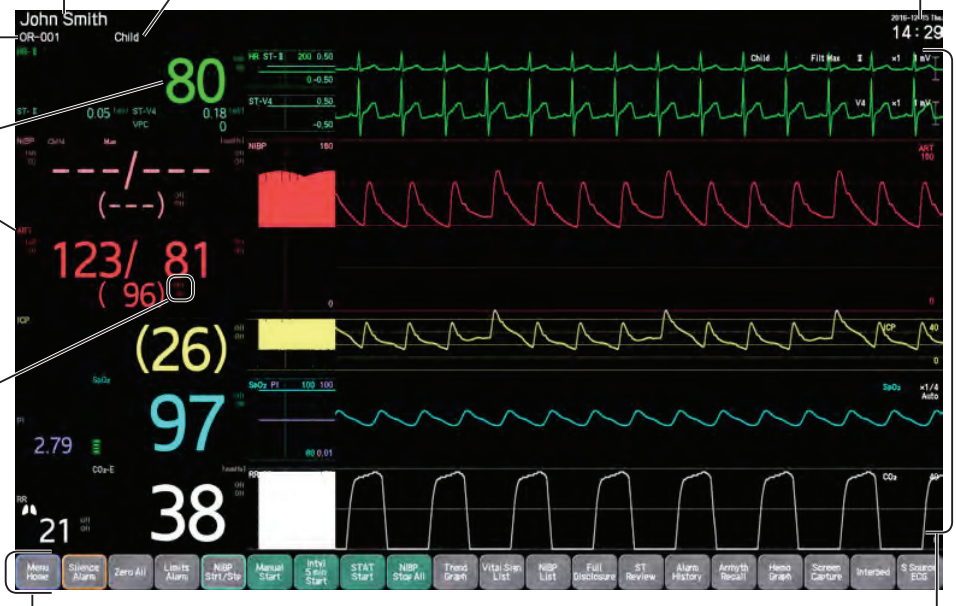
Administrator's Guide:
Refer to "Changing the Master Layout" in Section 3

Displaying the Home Screen

To close an open window and return to the home screen, press the **Home key**.

The display can also be returned to the home screen with the following operations.
- Touch the waveform/short trend display area
- Touch the [Menu Home] function key (only when set as a function key)
- Press the **MENU/HOME key** on the remote control
- Press the **Home key** on the VL-190P LCD unit

Example of Home Screen



The following windows can be displayed directly from the home screen.

- [Admit Discharge] window: Touch a patient name
- Window assigned to a function key: Touch the function key
- Parameter windows: Touch a parameter display area
- Review windows: Touch a bottom or side panel

Home Screen Settings

The home screen displays the monitoring information.

Window Display

- The layout of the home screen can be set.
  ([Menu] window ▶ [Setup] tab ▶ [Screen Select])
- The sensitivity and scale of waveforms can be set.
  (Corresponding parameter window)
- The sweep speed of waveforms can be changed.
  ([Menu] window ▶ [Setup] ▶ [Settings] ▶ [Sound/Display] tab ▶ [Wave] window)
- The pulse rate can be turned on or off.
  ([Menu] window ▶ [ECG], [SpO_2], [Press] or [NIBP] ▶ "PR Display" in [Detailed Settings] window)
- Only one method can be used for detecting the respiration rate (RR). When more than one respiration parameter is measured, only the values for the highest priority method shown below are displayed.

Respiration rate (RR) priority

Anesthetic gas > Flow > CO_2 > Thermistor respiration > Impedance respiration

Recording

- When a WS-960P recorder unit (option) is connected to the bedside monitor, up to 3 waveforms set in the [Setup] window can be recorded. When the bedside monitor is connected to a network, up to 10 waveforms set in the [Setup] window can be printed on the network printer.
- When the bedside monitor is connected to a network, recording can be performed with the central monitor recorder (remote recording).
- When the bedside monitor is connected to a network which has a network printer, a captured screen can be printed with a network printer.
  ([Settings] of the System Configuration ▶ [Other] window ▶ Capture File Redirection)

Administrator's Guide: Refer to Section 2 "System Configuration"

Display Settings in System Setup

The following display settings can be changed in System Setup.

Administrator's Guide: Refer to Section 3 "System Setup"

- The window layout can be customized.
  (System Setup ▶ [Screen Layout Select] ▶ [Edit Layout] window)
- The date format can be set.
  (System Setup ▶ [Settings] ▶ [Sound/Display] tab ▶ [Display] window ▶ [Date Format])

- The waveform display mode (moving, fixed) can be changed.
  (System Setup ▶ [Settings] ▶ [Sound/Display] tab ▶ [Waveform] window ▶ "Wave Display")
- Trace 1, 2 or 3, or all leads, can be displayed for the ECG.
  (System Setup ▶ [Screen Layout Select] ▶ [Edit Layout] tab ▶ Numeric area, Short Trend area or Waveform area ▶ [Parameter] window ▶ "Trace")
- The short trend can be hidden, or changed to the OCRG display.
  (System Setup ▶ [Screen Layout Select] ▶ [Edit Layout] tab ▶ [Change Layout] window ▶ "Short Trend")
- The IBP waveform and short trend display type ([Common], [Separate], [Dual]) can be changed.
  (System Setup ▶ [Screen Layout Select] ▶ [Edit Layout] tab ▶ Numeric area, Short Trend area or Waveform area ▶ [Parameter] window ▶ "Pressure Scale")
- The ICP scale display type ([Common], [Separate]) can be changed.
  (System Setup ▶ [Screen Layout Select] ▶ [Edit Layout] tab ▶ Numeric area, Short Trend area or Waveform area ▶ [Parameter] window ▶ "ICP Scale")
- Anesthesia gas and CO_2 measurement values in the numeric display area can be changed by swiping on them.
  (System Setup ▶ [Param] ▶ [Gas] tab ▶ [Display Numeric Priority] tab)
- Parameter window frames can be displayed for the value display areas. The parameter window frames are displayed around the value display areas that separate each parameter.
  (System Setup ▶ [Settings] ▶ [Sound/Display] tab ▶ [Values] tab ▶ [Border Around Numeric Frame])
- Up to five timers and current time can be displayed on the home screen.
  (System Setup ▶ [Layout] ▶ [Edit Layout] tab ▶ [Change Layout] window ▶ [Timer])

Short Trend

The short trend is a trend for the past 30 minutes or less. You can display a short trend on the home screen.

The short trend can be set to off or changed to the OCRG display in System Setup.

Showing or hiding of the short trend can be changed by touching the [Short Trend On/Off] function key when it is set as a function key.

Short trend description

- The scale for each parameter is set in the corresponding parameter window.
- The display method for the IBP short trend depends on the setting for the BP waveform display type (Separate, Common, Dual).
- The short trend and scale values are displayed in the display color of the corresponding parameter. The display colors can be set in the System Setup.
- The length of time for the short trend display can be set from 0 to 30 minutes by touching the screen.
- When NIBP and arterial IBP (ART, ART2, RAD, DORS, AO, FEM, UA, LVP, P1 to P8) are measured at the same time, the short trend of the NIBP measured values is superimposed on the short trend of the arterial IBP measured values.

OCRG

The short trend display on the home screen can be changed to the OCRG display.

The OCRG (oxycardio respirogram) is a trend graph that shows the heart rate, respiration, and oxygenation condition (SpO_2) correlated to changes in these parameters on the same time axis during neonate monitoring.

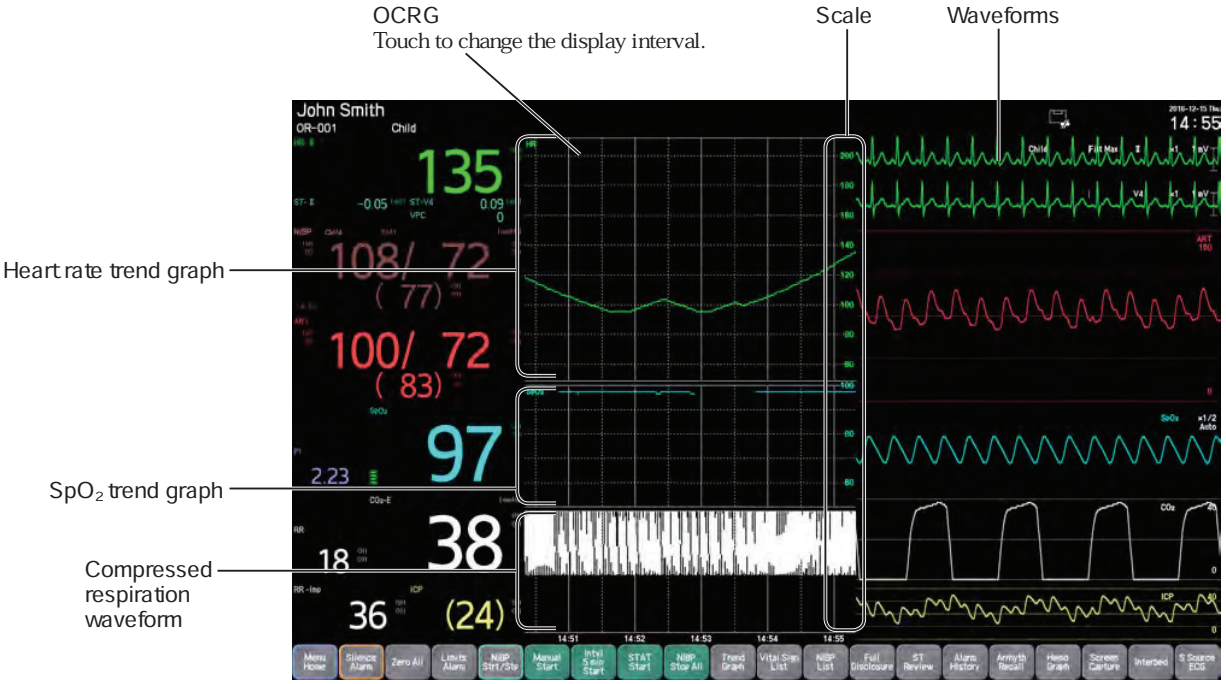
The OCRG display area includes the following data.

- Heart rate trend graph
- SpO_2 trend graph
- Compressed respiration waveform
- $tcPO_2$/$tcPCO_2$ trend graph (only when set in "OCRG" of System Setup ▶ [Settings] ▶ [Sound/Display] tab ▶ [Display] window)
- EEG trend graph (only when set in "OCRG" of System Setup ▶ [Settings] ▶ [Sound/Display] tab ▶ [Display] window)

Change to the OCRG display in System Setup ▶ [Screen Layout Select] ▶ [Edit Layout] ▶ [Change Layout] window.

Set the OCRG display interval with "OCRG Display Interval" in System Setup ▶ [Sound/Display] ▶ [Display] window.

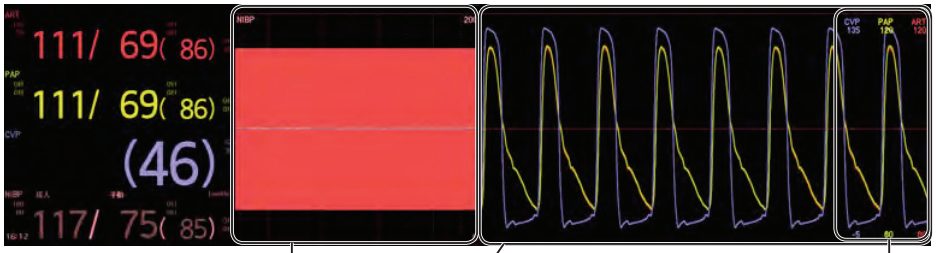
- Respiration rate detection can only be performed with the impedance method or the thermistor method. If both are used for measuring at the same time, detection is performed with the impedance method, and the corresponding measured values are displayed.
- The displayed OCRG can be recorded with the WS-960P recorder unit (option).



IBP Display Types

You can display the IBP waveforms and short trends in separate display for each channel, superimposed in common display area or with high pressure arterial pressures superimposed in one common display area and low pressures superimposed in another common display area (Common, Separate, Dual).

"Common" BP display

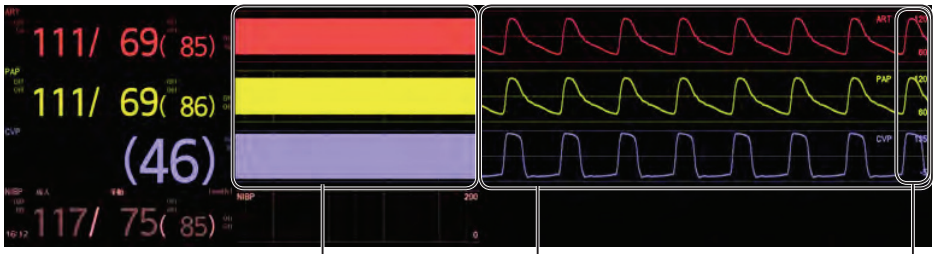


BP waveform short trends:
Sys (Max) and Dia (Min) for highest priority BP channel, Mean for the other BP channels

BP waveforms
(Up to 8 waveforms)

BP waveform scales

"Separate" BP display

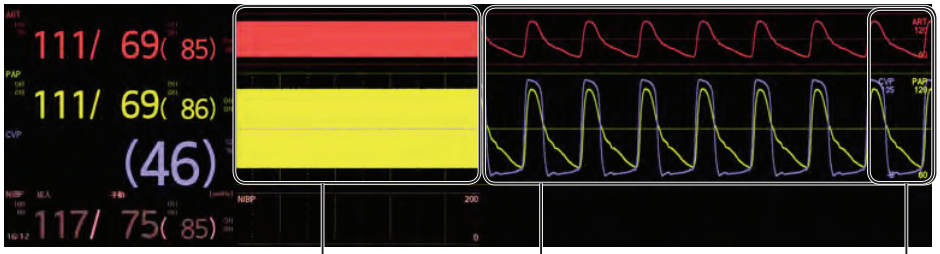


BP waveform short trends:
Sys and Dia

BP waveforms
(Up to 8 waveforms)

BP waveform scales

"Dual" BP display



BP waveform short trends:
Sys and Dia

BP waveforms
(Up to 8 waveforms)

BP waveform scales

Freezing Waveforms

To freeze all the waveforms displayed on the home screen, touch the Freeze function key.

NOTE: Unfreeze to continue monitoring.

Unfreezing Waveforms

The waveforms can be unfrozen in the following ways.

- Touch [Freeze] again
- Touch the touch screen
- Press any key

Touch a key below for the corresponding function or window.	
Silence Alarms key:	If the alarm status is present at the moment of silencing, enters the alarm silenced status at the same time.
Start/Stop key:	Starts manual measurement at the same time.
Menu key:	Displays the [Menu] window.

- Three minutes elapse (unfrozen automatically)
- When the [Interbed] window is displayed automatically

[Interbed] window display:
"Changing the Interbed Alarm Settings" in Section 11

Changing to Another Window

The [Menu] window has keys for all windows on the bedside monitor. Some windows such as parameter windows or [Admit Discharge] window can also be accessed from the home screen.

Using the [Menu] window to access another window

1 Press the **Menu key** (VL-190P LCD unit, JA-690PA or JA-694PA data acquisition unit) to display the [Menu] window.

The [Menu] window can also be displayed by touching the [Menu Home] function key when it is set as a function key.

2 Touch the key of the desired window.

The review window which is set as a function key can also be displayed by touching the review function key when it is set as a function key.

Changing directly from the home screen

The following windows can be accessed from the home screen.

- Touch a parameter numeric value: Displays the corresponding parameter window
- Touch a patient name: Displays the [Admit Discharge] window
- Touch a function key: Displays the window assigned to the function key
- Touch a bottom panel: Displays the corresponding review window
- Touch a side panel: Displays the corresponding review window

Home Screen Layout

The home screen of the bedside monitor can be customized.

Customized window layouts can be saved and used later.

Window layout settings:
Refer to “Changing the Master Layout” in Section 3 of the Administrator’s Guide

⚠ CAUTION

When the screen layout is set to [Auto], not all parameters can be displayed on the screen when too many parameters are monitored. When the screen layout is set to [Fixed], only the assigned parameters are displayed on the screen regardless of whether the parameter is measured or not. At the start of monitoring, check which parameters are displayed and which parameters are not displayed on the screen. When an alarm occurs on the measured parameter, the alarm is displayed regardless of whether the parameter is displayed or not displayed.

Timer Function

Up to five timers can be displayed on the home screen. Use the timer to time measurement. You can set each timer individually on the [Timer] window ▶ [Monitor Setting] in System Setup.

Refer to “Timer” in Section 3 of the Administrator’s Guide

Showing Timers

You can display the timers by either of the following methods.

- Display all timers by touching [Timer] on the Menu window

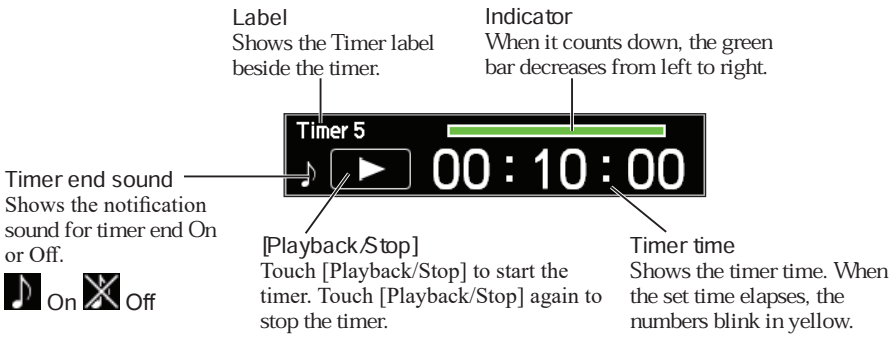
  This displays all timers on the home screen.

  You can also display all the timers with the [Timer] function key on the remote control if it is assigned as a function key.

- Display one or more individual timers by touching the [Timer] function key (when assigned as a function key)

  Select one or more of the five timers ([Timer 1] to [Timer 5]) to display the timer on the home screen.

Timer



Changing the Timer Layout

Swipe to the right on the timer to display the [Row Layout] key and [Vertical Layout] key.

- [Row Layout]: Arrange all the timers on the screen horizontally from left to right.
- [Vertical Layout]: Arrange all the timers on the screen vertically from top to bottom.

Using the Timer

Start/Stop Counting

Touch [Playback/Stop] on the timer to start counting up or counting down. To stop counting, touch [Playback/Stop] again.

Retting the Timer

To reset the timer, swipe to the left on the timer and touch the [Reset] key.

Hiding a Timer

To remove a timer from the screen, swipe to the left on the timer and touch the [Delete] key.

Setting the Timer

1. Touch the time on the timer.
2. Set each item on the Timer setting window and touch [Set] to apply the changes. For the settings, refer to the Administrator's Guide.

Refer to "Timer" in Section 3 of the Administrator's Guide

Browser Function

To display the browser on the window, touch the [Browser] function key. The browser display area is fixed.

NOTE: Do not perform unspecified update of the browser. The bedside monitor might not function properly.

Using Sleep Mode

Sleep mode can be used when all the following conditions are satisfied.

- [Site] in System Configuration is set to “ICU”, “NICU”, “Ward” or “ER”.
- “Alarm Off Type” is set to “Alarms Suspended” in System Setup ▶ [Settings] ▶ [Alarm] tab ▶ [Paused/Silence] window.
- The bedside monitor is connected to a network, and the patient being monitored by the bedside monitor is also being monitored at the same time from another monitor, such as a telemetry system or central monitor.

When more than one display is used, sleep mode can be used for each individual display.

When [Sleep] is touched on the [Menu] window and then [Yes] is touched, the bedside monitor operates as follows.

- The screen dims.
- The sync sound is no longer emitted.
- The alarm indicator turns off. (No longer blinks synchronized with the sync sound.)

⚠ WARNING

When using sleep function, monitor the patient on the central monitor or telemetry system. Otherwise, the bedside monitor alarm may be overlooked. When [Exit Sleep Mode on Crisis Alarm] check box on the ALARM page of the System Setup window is [Off], bedside monitor alarms and sync sound appear on the central monitor but do not appear on the bedside monitor during sleep mode.

Exiting Sleep Mode

Sleep mode is exited when any of the following occurs. When sleep mode is exited, the home screen returns.

- Touching the touch screen
- Pressing any key

Touch a key below for the corresponding function or window.	
Silence Alarms key:	If the alarm status is present at the moment of silencing, enters the alarm silenced status at the same time.
Start/Stop key:	Starts manual measurement at the same time.
Press all zero key:	Zero balance of all blood pressure lines exposed to air is performed.
Interval key:	Changes the NIBP measurement interval.
Menu key:	Displays the [Menu] window.
Home key:	Displays the home screen.

- When the auto exit time elapsed

  Set the auto exit time for the sleep mode in the administrator window of the alarm settings.

- A crisis alarm occurs (automatically exits the sleep mode)

  When "Exit Sleep Mode on Crisis Alarm" is set to [On] in the administrator window of the alarm settings, the sleep mode is exited when a crisis alarm occurs.

- When disconnected from the network
- When admitting or discharging a patient from the central monitor
- When suspending monitoring from the central monitor
- When a parameter is added
- When the input unit in the JA-690PA or JA-694PA data acquisition unit is removed

Disabling the Touch Keys

The touch keys are disabled when you touch the [Touch Key Off] on the [Menu] window. This is useful when cleaning the touch screen.

1 Touch the [Touch Key Off] on the [Menu] window to display the Touch Key Off window.

> The Touch Key Off window can also be displayed by touching [Touch Key Off] function key (Only when set as a function key.)

2 Touch [Yes] to disable the touch keys.

- To cancel disabling touch keys, touch [No]. The window returns to the home screen.
- If the bedside monitor has more than one display, the touch keys on all displays are disabled.

Restoring Touch Key Operation

Touch key operation is restored when any of the following occurs.

- Pressing a key
  (JA-690PA or JA-694PA data acquisition unit, BSM-1700 series bedside monitor, RY-910PA remote controller)

Touch a key below for the corresponding function or window.	
Silence Alarms key:	If the alarm status is present at the moment of silencing, enters the alarm silenced status at the same time.
Start/Stop key:	Starts manual measurement at the same time.
Menu key:	Displays the [Menu] window.
Home key:	Displays the home screen.
Record key:	Starts manual recording at the same time.

- Pressing the Power switch, Check key or Service key
  (CU-191R, CU-192R core unit, VL-190P LCD unit)
- Three minutes elapse (restored automatically)

Using the Car Seat Challenge Function

Car Seat Challenge is only available in North America.

The American Academy of Pediatrics recommends a car seat challenge for all neonates born before 37 weeks gestation to ensure that the neonate is able to sit in a car seat safely without any episodes of oxygen desaturation apnea or bradycardia.

The Car Seat Challenge window measures a neonate's lower heart rate limit, lower SpO_2 limit and apnea time for a set duration. This is only available when the [Site] setting is [NICU].

1. On the [Menu] window, touch the [Car Seat Challenge] key. The Test window is displayed.
2. Set the test duration and touch the [Start] key. The [Car Seat Challenge] window appears.

   To stop the test, touch the [Stop] key.

   After the set duration, the [Results] window appears.

   You can set display of the countdown timer window for the car seat challenge on or off.

   Administrator's Guide:
   "Setting Display of the Cart Seat Challenge Time Window On or Off" in Section 3
3. Touch the [Report] key to print the report. The [Report Settings] window is displayed.
4. The name of the person who performed the test and any comments can be entered.
   1) Touch the Name column and enter the name (up to 16 characters). Touch the Comments column to enter comments with the displayed keyboard.
   2) Touch the [Set] key. The window closes.

5 Touch the [Print] key on the [Report Settings] window. Change the time range to print if necessary.

The test results are printed on the network printer.

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The model and serial number of your device are identified on the rear or bottom of the unit.
Write the model and serial number in the spaces provided below. Whenever you call your representative concerning this device, mention these two pieces of information for quick and accurate service.

Model _____ Serial Number _____

Your Representative

Note for users in the territory of the EEA and Switzerland:
Any serious incident that has occurred in relation to the device should be reported to the European Representative designated by the manufacturer and the Competent Authority of the Member State of the EEA and Switzerland in which the user and/or patient is established.

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