NIHON KOHDEN

Digital Health Solutions

Central Station

CNSCS-001

Operator's Manual

Rx Only

MD

Revision E

July 2026

© 2026 Nihon Kohden Digital Health Solutions

LICENSE AGREEMENT

SOFTWARE LICENSE

TERMS AND CONDITIONS

PLEASE CAREFULLY READ THE FOLLOWING TERMS AND CONDITIONS **BEFORE OPENING** THE SOFTWARE PACKAGE. OPENING THE PACKAGE INDICATES YOUR ACCEPTANCE OF THESE LICENSE TERMS AND CONDITIONS WITHOUT RESERVATION OR ANY LIMITATION. IF YOU DO NOT AGREE WITH AND ACCEPT ALL OF THEM, YOU SHOULD PROMPTLY RETURN THIS PACKAGE **UNOPENED** FOR A FULL REFUND.

Nihon Kohden and Nihon Kohden Digital Health Solutions provide the **Central Station (CNSCS-001)** Software (the "Program" including its options.) on the media contained herein and license its use to you. You are responsible for the selection of the Program and its options and for the installation, use, and results obtained.

You SHALL NOT sublicense, assign or transfer this License or the Program except as provided in this License Agreement. Any attempt otherwise to sublicense, assign or transfer any of the rights, duties or obligations hereunder is void. Further, you shall not modify the Program or disassemble, reverse assemble, recompile, reverse compile or reverse engineer the Program or any portion of the Program. You shall not rent, lease, distribute, sell or create derivative works of the Program.

This LICENSE permits you to:

1. Use the Program on a single CPU per single license on a unit owned or leased by you.
2. Copy the Program into any machine readable or printed form for backup and archival purposes in support of your use of the Program on a single CPU that you own or lease. You shall affix to such copy all copyright, confidentiality and proprietary notices that appear on the original.
3. Transfer the Program and License to another party if the other party agrees to accept the terms and conditions of this License Agreement and after obtaining the consent of Nihon Kohden and Nihon Kohden Digital Health Solutions; if you transfer the Program, you must at the same time transfer all copies of the Program to the same party or destroy any copies not transferred.

You agree the Program and all of its options and aspects, including design and structure, are the trade secrets and/or copyrighted material of Nihon Kohden and Nihon Kohden Digital Health Solutions. You agree not to disclose, provide or other make available these trade secrets and/or copyrighted material in any form to any other party without the advanced written consent of Nihon Kohden and Nihon Kohden Digital Health Solutions. You agree to implement reasonable security measures to protect the trade secrets and copyrighted material to the same extent you would protect your own such matters. All title, rights and interests in the Program remain with Nihon Kohden and Nihon Kohden Digital Health Solutions.

At all times, the LIMITED WARRANTY of Nihon Kohden and Nihon Kohden Digital Health Solutions shall apply and is incorporated by this reference.

This License is effective until terminated. You may terminate it at any time by destroying the Program along with all copies in any form. It will also terminate without notice upon conditions set forth elsewhere in this Agreement if you fail to comply with any term or condition of the License Agreement. You agree to destroy all copies of the Program upon termination.

The Program and all of its options and aspects, including design and structure, are subject to U.S. export control laws, including the U.S. Export Administration Act and its regulations, and may be subject to export and import regulations in other countries. You shall strictly comply with all such regulations and acknowledge that it is your responsibility to obtain licenses, if any are needed, to export, re-export or import the Program and its options.

This License is governed by and shall be interpreted under the laws of the State of California without regard to its conflict of laws principles. If any portion is found to be void or unenforceable, then the remaining portions shall remain in effect and in full force. You agree that this is the complete and exclusive statement of the license, oral or written, relating to the use of the Program and all of its options and aspects.

WARRANTY

EXCEPT FOR THE SPECIFIC WARRANTY PROVIDED BELOW, THIS PROGRAM IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE PERFORMANCE OF THE PROGRAM IS WITH YOU, SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE ENTIRE COST OF ALL NECESSARY SERVICING, REPAIR, OR CORRECTION. SOME U.S. STATES DO NOT ALLOW EXCLUSION OF IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE.

Nihon Kohden Corporation and Nihon Kohden Digital Health Solutions do not warrant that the functions contained in the Program will meet your requirements or that operation of the Program will be uninterrupted or error-free. However, Nihon Kohden Corporation and Nihon Kohden Digital Health Solutions warrant that the media on which the Program is furnished is free from defects in materials and workmanship under normal use for 120 days from the date of installation ("Limited Warranty").

Nihon Kohden Corporation and Nihon Kohden Digital Health Solutions entire liability and your exclusive remedy for the Program shall be the replacement of any media not meeting Nihon Kohden Corporation and Nihon Kohden Digital Health Solutions Limited Warranty.

IN NO EVENT SHALL NIHON KOHDEN CORPORATION AND NIHON KOHDEN DIGITAL HEALTH SOLUTIONS BE LIABLE FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST WAGES OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT THE USE OR INABILITY TO USE THIS PROGRAM, EVEN IF NIHON KOHDEN CORPORATION AND NIHON KOHDEN DIGITAL HEALTH SOLUTIONS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR FOR ANY CLAIM MADE BY ANY OTHER PARTY. SOME U.S. STATES DO NOT ALLOW THE LIMITATION OR EXCLUSION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

COPYRIGHT NOTICE

The entire contents of this operator's manual are copyrighted by Nihon Kohden Digital Health Solutions. All rights reserved. No part of this document may be reproduced, stored, or transmitted in any form or by any means (electronic, mechanical, photocopied, recorded, or otherwise) without the prior written permission of Nihon Kohden Digital Health Solutions. The contents of this operator's manual are subject to change without notice.

TRADEMARKS

Microsoft®, Windows®, and Windows Server® are either registered trademarks or trademarks of Microsoft Corporation in the U.S. and other countries.

Table of Contents

1 General Product Information 7

1.1 Purpose 7

1.2 Intended Use/Indications for Use 7

1.3 Intended Users 7

1.4 Notices/Cautions/Warnings 7

1.5 Lifetime 8

1.6 Operational Restriction 9

1.7 Symbol Guide 10

2 Basic Operations 11

2.1 All Beds Screen 11

2.2 Individual Bed Window 12

2.3 Opening the Menu Window 14

2.4 Sound Settings 15

3 Admitting, Discharging, Transferring and Exchanging Patients 16

3.1 Overview 16

3.2 Admitting a Patient 17

3.3 Readmitting a recently discharged patient 18

3.4 Discharging a patient 19

3.5 Pausing monitoring of a patient 20

3.6 Transferring Patient to Another Monitoring Device 21

3.7 Changing the monitoring device (moving data to another monitoring device) 22

3.8 Exchanging two beds 24

3.9 Wave Selection and Numerical Selection for Display 25

4 Alarm and Parameter Functions 26

4.1 Alarm Overview 26

4.2 Alarm Display 27

4.3 Silencing Alarms 28

4.4 Parameter, Scale and Sensitivity Setup 29

4.5 Setting Arrhythmia Alarms 30
4.6 Setting ST Alarms 31
4.7 All Beds Limits Window 32
4.8 All Beds Alarm Events Window 33
5 Reviewing Patient Data 34
5.1 Displaying a review window 34
5.2 Expanded Waveform Pane 35
5.3 Measuring a Waveform with Calipers 36
5.4 Trend Windows 37
5.5 Tabular Trend Window 38
5.6 Full Disclosure Window 38
5.7 Arrhythmia Recall Window 39
5.8 ST Recall Window 39
5.9 Event List Window 40
5.10 Alarm Events Window 41
5.11 ECG 12 Lead Analysis Window 41
5.12 Hemodynamics List Window 42
5.13 SpO2 Trend Window 42
5.14 Reviewing Data of Discharged Patients 43
6 Printing and Report Functions 44
6.1 Individual Waveform Printing 44
6.2 All Beds Waveform Printing 44
6.3 Review Window Printing 44
6.4 Report Printing 45
7 Hardware Requirements 46
7.1 Hardware Configuration 46
8 Troubleshooting and Error Messages 47
8.1 Troubleshooting 47
8.2 Error Messages 49

9 Contact Information 51

1 General Product Information

1.1 Purpose

This operator's manual is intended to guide qualified professionals in the safe and effective operation of the product. It provides instructions for configuration, operation, troubleshooting, as well as safety information and warnings specific to this product.

1.2 Intended Use/Indications for Use

Central Station is a network device intended to display, record and print monitored physiological data from Nihon Kohden bedside monitors, telemetry receiver and/or transmitters.

Central Station does not perform any data processing on the data received from the Nihon Kohden compatible devices. When Central Station is to connect with the Nihon Kohden bedside monitors and telemetry receivers/transmitters the Central Station can:

- Admit and discharge patients on the Nihon Kohden network.
- Display and manage compatible devices' real-time patient clinical data, vital signs, alarms and waveforms.
- Review and trend data calculated by connected Nihon Kohden devices.
- Store and transfer historical clinical data for the connected systems.
- Print patient data.

1.3 Intended Users

Central Station is intended for use in professional medical facilities by trained medical personnel.

Patient Target Groups

Central Station is intended for use with patients of all ages who require monitoring of patient data such as vital signs, alarms and waveforms as determined by qualified medical personnel.

1.4 Notices/Cautions/Warnings

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.

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

Patient names on the screenshots 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.digitalhealthsolutions.com/

Rx Only
Federal law restricts this device to sale by or on the order of a physician.

⚠**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.

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

⚠WARNING
Accessing the instructions for use electronically will provide the user with the most recent version. Downloaded and/or paper versions of the instructions for use are only valid on the day of downloading or printing.

1.5 Lifetime

The software is designed and manufactured to operate safely and effectively for a period of 20 years from the date of first release. During this period, the software's performance and safety characteristics will not be adversely affected to such a degree that the health or safety of the patient, user, or other persons are compromised. Regular software maintenance will be performed per the manufacturer's design control and post-market surveillance procedures to ensure continued compliance with safety and performance standards

1.6 Operational Restriction

Category	Description
General	• One instance running Central Station per PC. • Can display a maximum of 32 patients.

1.7 Symbol Guide

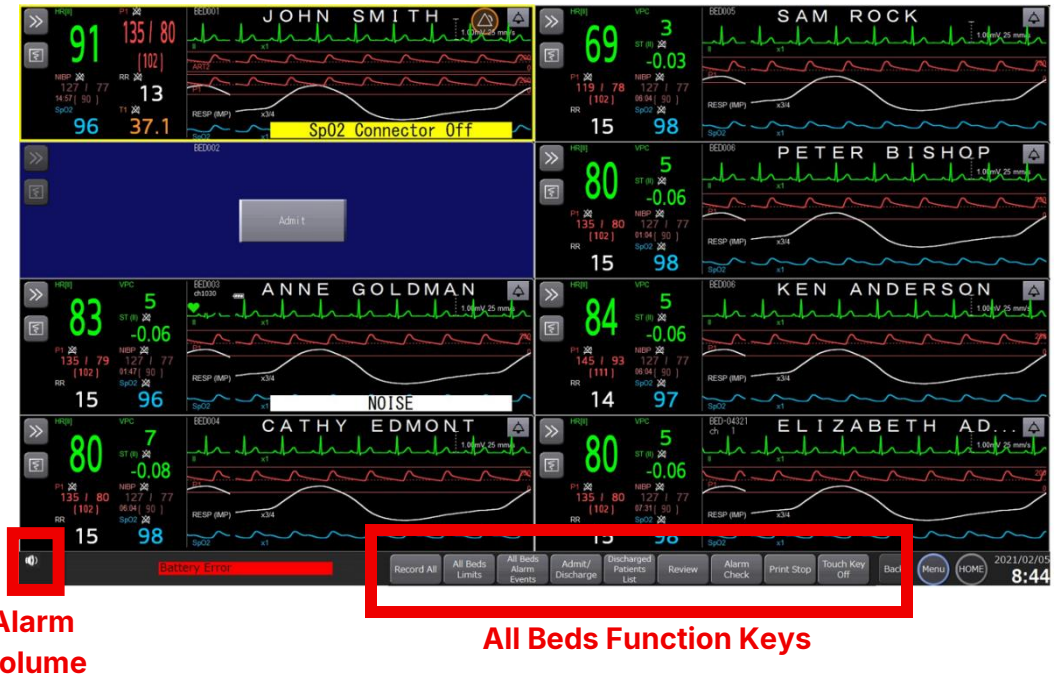
Symbol	Description
	Date of Manufacture
	Manufacturer
	Prescription Device
	Silence Alarms Key
	Alarm Silence
	Audio Off
	All Alarms Off/Vital Sign Alarm Limit Off
	Alarms Suspended at the Transmitter
	Alarm Suspended
	Alarm Notice
	Alarm Volume 1 to 3
	Alarm Volume 4 to 6
	Alarm Volume 7
	Warning
	Update Notice
	Printer Error
	Gives additional information and suggestions
	Additional information
[Square brackets]	Indicates a touchscreen key
“Quotation marks”	Indicates a screen message, setting item, etc.

Symbol	Description
	Record
	Print
	Display Onscreen Keyboard
	Enter a Comment
	Display a Comment
	Pause Timer
	ECG Technical Icon – Replace ECG
	SpO2 Technical Icon – Check probe
	QRS/Pulse Sync Icon
	Touch Keys Disabled
	Non-paced
	Change Transmitter Battery[1]
	Remaining Transmitter Battery Level[1]
	Display/close Individual Bed Icon Keys
	Data Output in Progress
	WLAN Transport Icon
	ZM-View
	HiQ-View

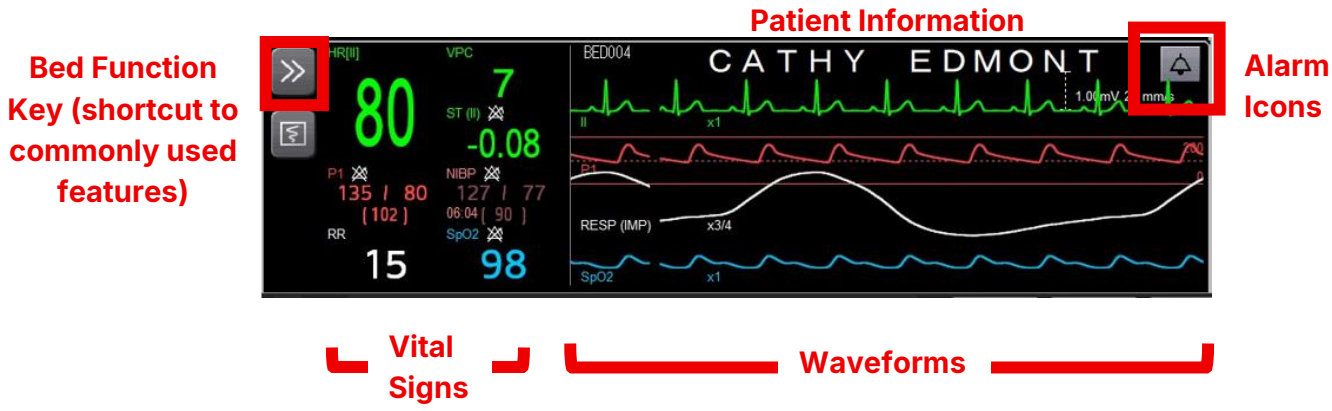
[1] Only available for transmitters with a transmitter battery status display function and setting on the transmitter is required.

2 Basic Operations

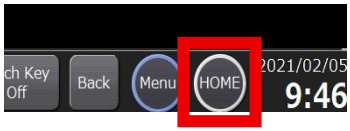
2.1 All Beds Screen



Individual Patient Tile



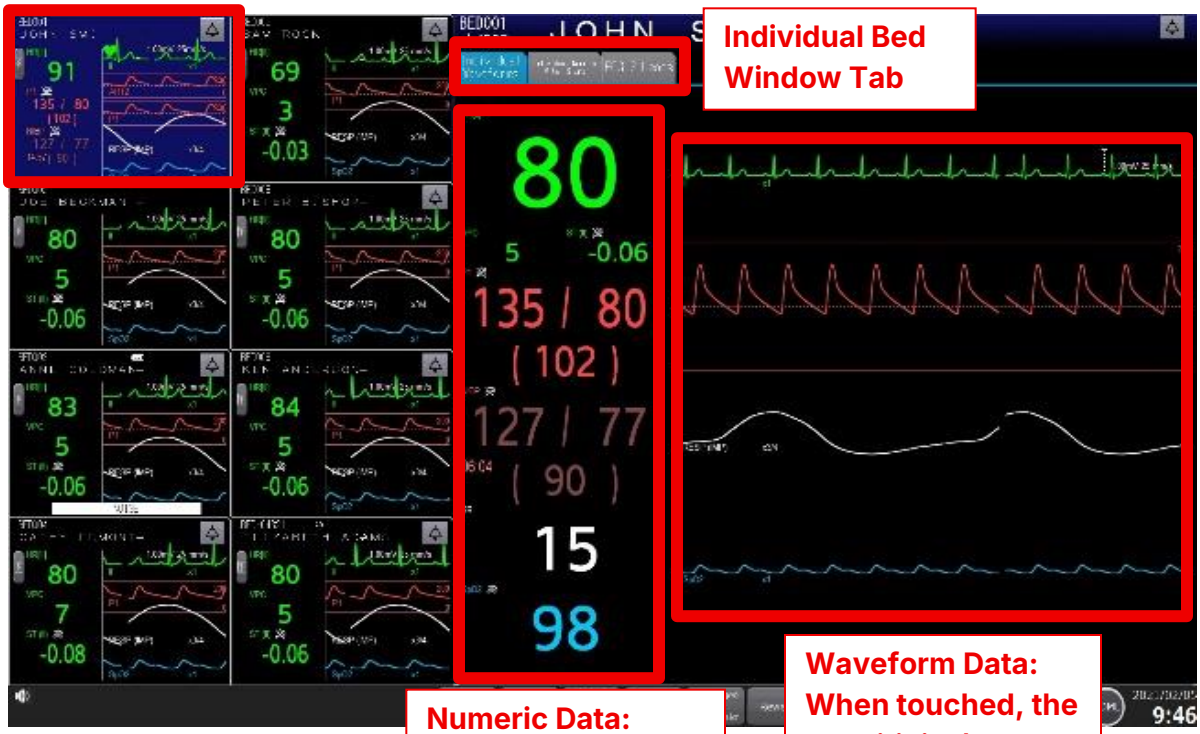
- To go back to the All Beds screen from another screen, touch [HOME] in right lower corner.



2.2 Individual Bed Window

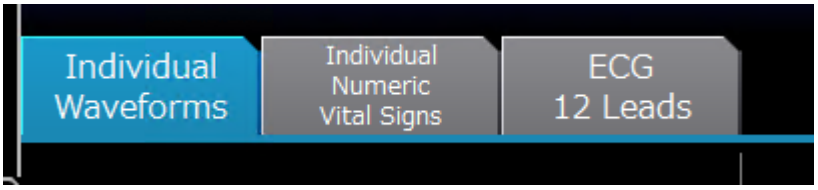
- To display the Individual Bed Window, touch any patient tile in the All Beds Screen.

Background of displayed patient turns blue



Uncontrolled if Printed

Individual Bed Window Tabs



- Displays alternate views of individual Bed Window

Individual Numeric Vital Signs Window

ECG 12 Leads Window

- On the ECG 12 Leads Window, the following ECG and Numeric Data is displayed:
  - Waveform:
    I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6, V, MCL, ECG1, ECG2
  - Numeric data:
    HR, VPC, ST (I), ST (II), ST (III), ST (aVR), ST (aVL), ST (aVF), ST (V1), ST (V2), ST (V3), ST (V4), ST (V5), ST (V6), ST (V), ST (MCL), ST (ECG1), ST (ECG2)

2.3 Opening the Menu Window

1. Touch [Menu] to display the Menu window.
2. The lower part of the Menu window consists of the category icons.

Window Icons: Icons that belong to the category selected below are shown here.

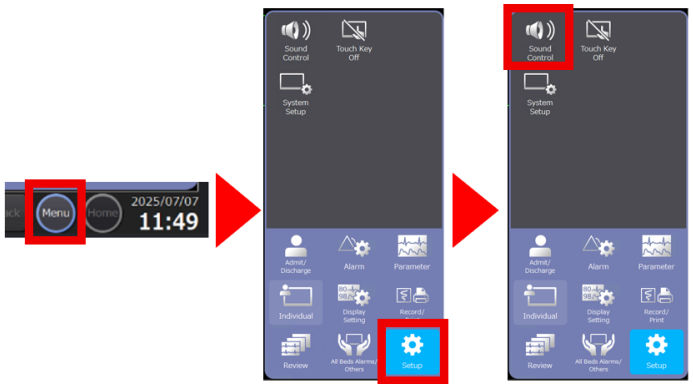
Category Icons: Icons are categorized according to the contents of the windows.

3. Touching a category icon displays the window icons that are associated with the selected category.
4. To close the Menu window, touch [Menu] again.

2.4 Sound Settings

Sound Settings

1 [Menu] > [Setup] > [Sound Control]



Alarm Volume

⚠CAUTION

Alarm volume cannot be set below the limit defined in the System Setup screen's Alarm Volume Limit setting.

1 Touch the [Alarm] tab on the Sound Control window
2 Set the alarm volume.

Sync Volume

⚠CAUTION

The sync sound at the central monitor has a time delay of 1 to 3 seconds because of network connection.

⚠CAUTION

Central monitor lacks ECG analysis capability. QRS sync sound may not align with actual patient QRS during pacing or complex arrhythmias.

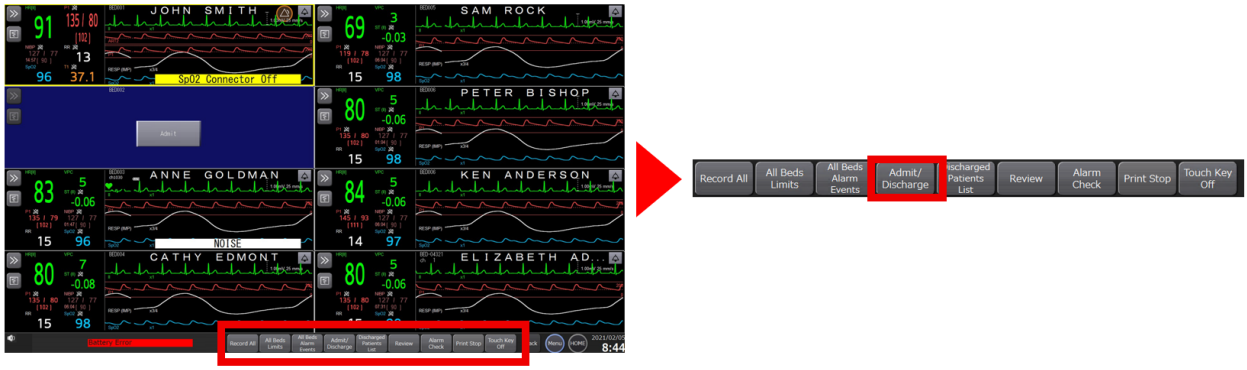
The central monitor cannot perform ECG analysis, causing potential desynchronization of the QRS sync sound during pacing or complex arrhythmias.

1 Touch the [Sync Sound] tab on the Sound Control window
2 Change the settings.

3 Admitting, Discharging, Transferring and Exchanging Patients

3.1 Overview

Admit/Discharge/Transfer/Exchange functions can be accessed by touching the [Admit/Discharge] Key at the bottom of the screen.



Alternatively, the [Menu] Key can be used to access all Admit / Discharge / Transfer / Exchange functions.

Uncontrolled if Printed

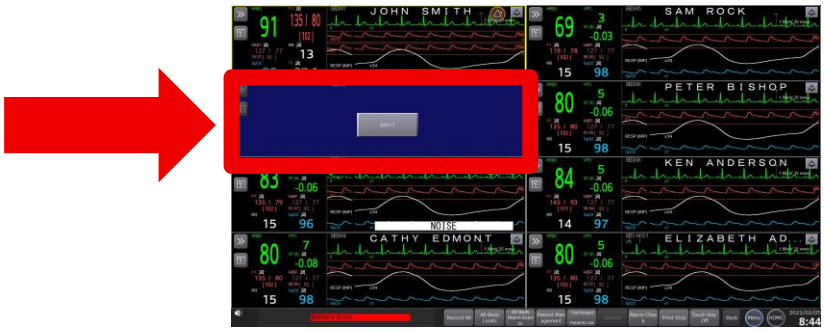
3.2 Admitting a Patient

⚠WARNING

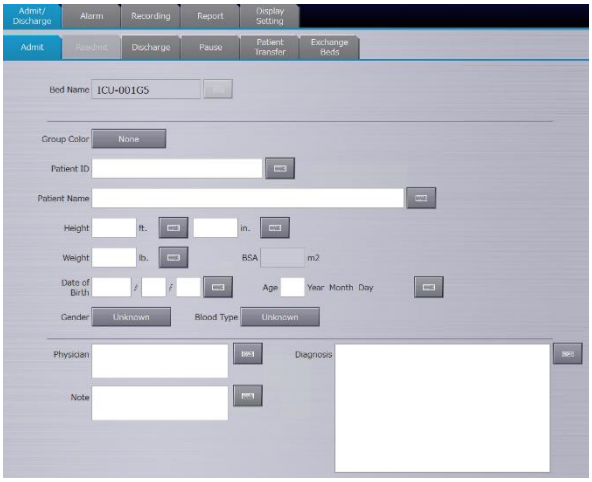
Check the alarm settings when admitting a new patient.

When a patient is admitted on the Central Station, the patient is also admitted on the bedside monitor connected to the patient.

1. Touch [Admit] on the data display area of the bed which the patient is assigned to on the All Beds screen. A message to confirm admitting the patient appears.



2. Check the displayed information and touch [OK]. The Admit window opens.



If there is a [ ] key beside the input field, an on-screen keyboard appears when the key is touched.

3. Touch each input field to enter the patient information or scan patient bar code (if enabled).
4. Confirm that the entered information is correct.

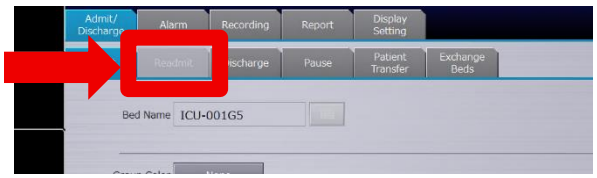
3.3 Readmitting a recently discharged patient

You can readmit a patient who was discharged within the past 120 hours. After a patient was readmitted, newly acquired data is added to patient information and review data that was acquired before the discharge.

When a patient is readmitted, alarm settings and stored wave settings of review windows are the settings before the patient was discharged.

1. Touch [Admit] on the data display area of the bed to readmit the patient. A message to confirm admitting the patient appears.

2. Touch [Readmit] tab. The list of discharged patients appears.



3. Touch the data of the patient to readmit. The patient information before discharge of the selected patient appears.

4. Confirm that the correct patient is selected by checking the displayed information, and touch [Admit]. A confirmation message appears.
5. Check the message and touch [OK]. The patient is readmitted and monitoring starts.

Uncontrolled if Printed

3.4 Discharging a patient

When a patient is discharged, patient data stored in the central monitor is deleted and monitoring of the patient at the central monitor ends.

1. [Menu] > [Admit/Discharge] > [Discharge]. A message to confirm discharging the patient appears. Check the message and touch [OK].

2. All data of the patient in the selected bed is deleted and alarm settings are returned to the Alarm Master 1 setting.

Uncontrolled if Printed

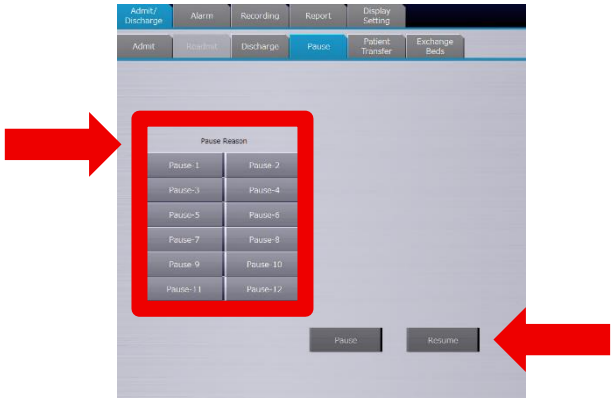
3.5 Pausing monitoring of a patient

When the patient is temporarily away from the bed and no data from that bedside monitor is sent to the central monitor, you can pause monitoring of the patient without deleting the patient data and settings.

The pause function pauses the display of measurement values and alarm function without losing patient information and settings. While monitoring is paused, a pause reason is displayed beside the paused bed on the central monitor screen.

1. Select the patient tile
2. [Menu] > [Admit/Discharge] > [Pause].

3. Touch to select a pause reason from “Pause Reasons”.



4. Touch [Pause]. The [This Bed Is Paused] key appears on the data display area of the selected bed. Inside the key, the pause reason is also indicated.
5. To resume paused monitoring, touch [This Bed is Paused] Key

6. Touch [Resume]

Uncontrolled if Printed

3.6 Transferring Patient to Another Monitoring Device

⚠CAUTION

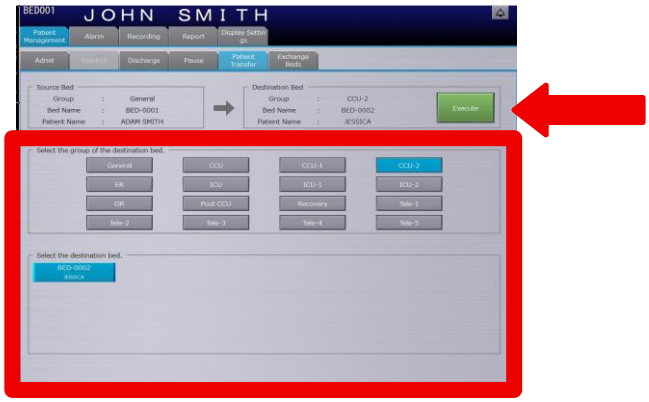
After patient transfer, settings other than patient information and alarm settings are returned to the default settings.

⚠CAUTION

Keep the source bedside monitor and the destination bedside monitor power on and connected to the network until the patient transfer or bed exchange is complete or data may be lost.

1. Select the patient tile
2. [Menu] > [Admit/Discharge] > [Patient Transfer].

3. Select the group of the destination bed and the destination bed.



4. Touch [Execute]. A confirmation message appears. Confirm that the correct source bed and destination bed are selected by checking the patient information items (bed name, patient name, patient ID) of both beds.
5. Touch [Yes].
6. Touch [OK]. The patient is discharged from the source bed and admitted to the destination bed.

3.7 Changing the monitoring device (moving data to another monitoring device)

This procedure is only available for a bed whose data is saved in this Central Station.

The bed position for the patient on the Central Station does not change. The measurement data and settings (such as waveform selection) for the bed are kept after the monitoring device is changed.

⚠CAUTION

Keep the source bedside monitor and the destination bedside monitor power on and connected to the network until the patient transfer or bed exchange is complete or data may be lost.

1. Turn on the monitoring device to monitor a patient, then connect the device to the network.
2. [Menu] > [Admit/Discharge] > [Admit].

3. Touch the data area of the bed whose monitoring device you want to change
4. Touch [Change Device]
5. Select the group of the new device.
6. Select the new device in “Select the new device”.

7. Touch [Execute]. A confirmation message appears.
8. Touch [Yes]

9 After the data is transferred to the destination device, a “Change Device: success” message appears.

10 Touch [OK]. The patient is automatically admitted to the destination device.

3.8 Exchanging two beds

⚠CAUTION

Keep the source bedside monitor and the destination bedside monitor power on and connected to the network until the patient transfer or bed exchange is complete or data may be lost.

1. Touch the data area of either of the two beds to exchange.
2. [Menu] > [Admit/Discharge] > [Exchange Beds].

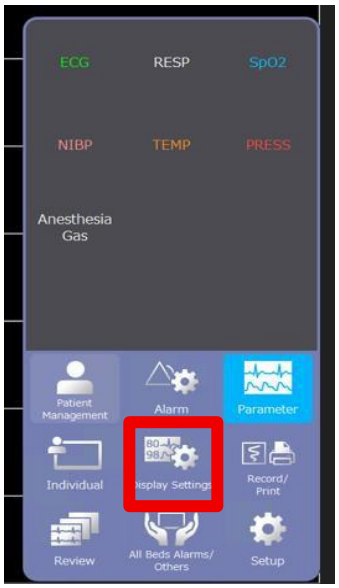
3. Select the group of the bed to exchange with.
4. Select the bed to exchange with in “Select the bed to exchange with”.

5. Touch [Execute]. A confirmation message appears.
6. Confirm that the correct source bed and destination bed are selected by checking the patient information (bed name, patient name, patient ID) of the two exchanged beds. Touch [Yes].
7. After the beds are exchanged, an “Exchange Beds: Success” message appears. Touch [OK].

3.9 Wave Selection and Numerical Selection for Display

1. Select the patient tile
2. Touch [Menu] Key in right lower corner of screen

3. Touch the [Display Settings] key



4. Touch the tab for wave selection or numerical selection

Uncontrolled if Printed

4 Alarm and Parameter Functions

4.1 Alarm Overview

⚠WARNING

Set the appropriate alarm sound volume according to the environment where the central monitor is used.

When an alarm occurs, the Central Station indicates the alarm as follows according to the alarm level.

- ✓ Alarm sound
- ✓ Alarm indicator blinks or lights for the alarm with the highest level among the currently generated ones.
- ✓ When an alarm with a priority of CRISIS or WARNING occurs, the border of the data display area for the bed where the alarm is occurring lights or blinks.
- ✓ Alarm message is displayed. For vital sign alarms, the numeric data of the parameter is highlighted.
- ✓ When any of the following conditions occur simultaneously with another alarm, the messages are displayed alternately: “ALL ALARMS OFF”, “ALARMS SUSPENDED”, “Change Transmitter Battery”, “Arrhythmia Analysis Off”, “Comfort Care”, “All Alarms Off Comfort Care”.

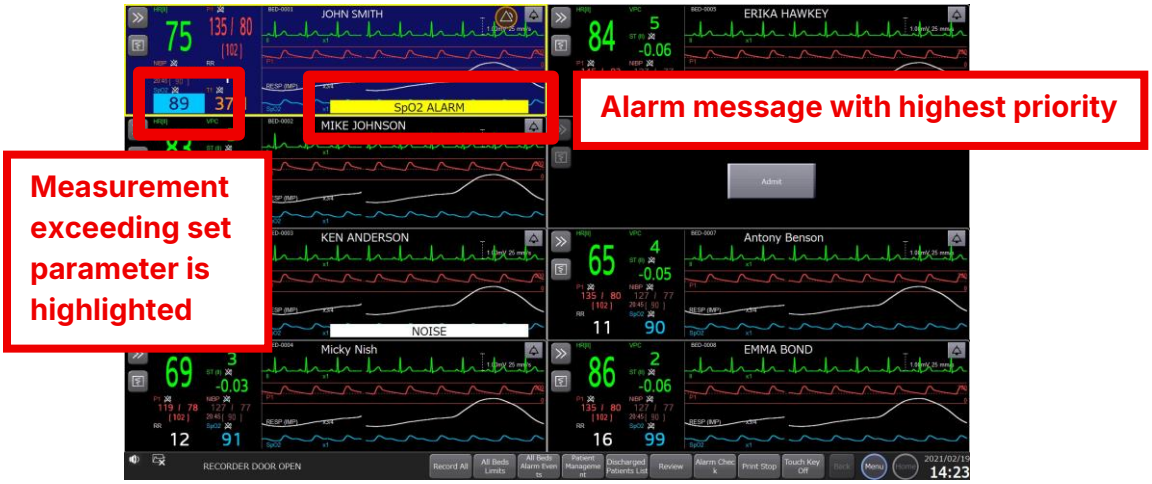
When an alarm is deactivated or suspended or the alarm function is turned off, one of the following icons is displayed on the screen.

Icon	Description
	Indicates that the current alarms are deactivated for a certain period. The remaining deactivation time is also indicated with this icon.
	Indicates that all alarms are suspended for a certain period on a bedside monitor.
	Indicates that the upper or lower ST or other alarm limit or arrhythmia alarm is set to off. This is available only when Limit Alarm Off Mark is set to ON. Indicates that all the alarms are turned off on the bedside monitor.
	Indicates all the alarms are suspended for a certain period on the transmitter.

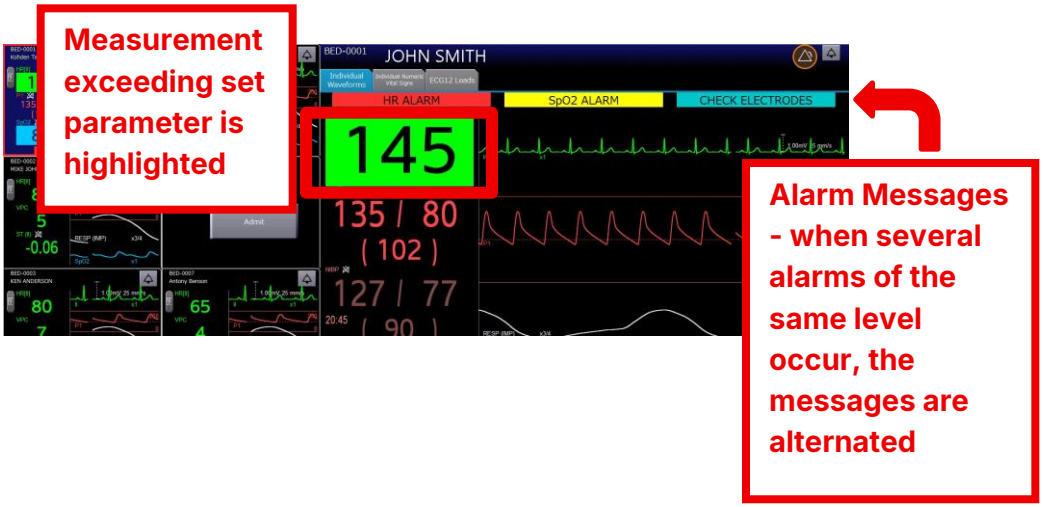
4.2 Alarm Display

When different level alarms occur simultaneously, the alarm sounds and the alarm indicator blinks or lights for the highest level alarm.

All Beds Screen



Individual Bed Window



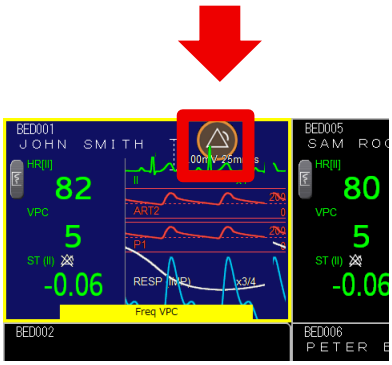
Uncontrolled if Printed

4.3 Silencing Alarms

⚠WARNING

When an alarm is silenced at the Central Station, the alarm is also silenced at the monitoring device. When an alarm is silenced at the monitoring device, the alarm is also silenced at the Central Station.

1 Touch [ ] in the data display area of the bed to silence the alarms.



2 The alarm silence icon ( ) and the remaining minutes are displayed on the bed whose alarms are silenced.

Alarm sound	Alarm sound stops - alarm message remains displayed on the screen.
Screen indication during alarm silence	The alarm silence icon ( ) and the remaining minutes are displayed.
Conditions for alarms to reactivate	• When an alarm different from the silenced alarm occurs • When the cause of the alarm was eliminated temporarily, but reoccurs • When the cause of the alarm continues after the silenced period.

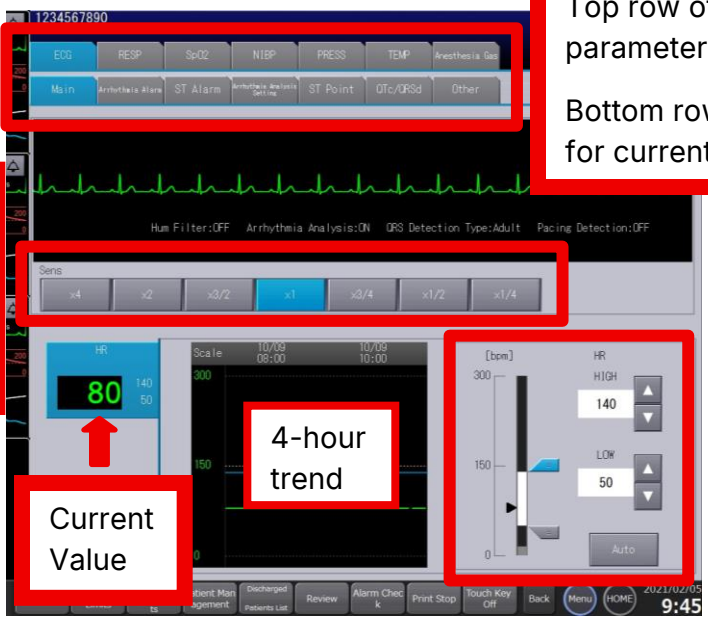
Uncontrolled if Printed

4.4 Parameter, Scale and Sensitivity Setup

1. Select the patient tile
2. Touch [Menu] Key in the right lower corner of the screen

3. Touch the [Parameter] key

All parameter options will appear. Choosing any of them will open the Parameter Setup Window



Top row of tabs alternates between parameters.

Bottom row of tabs indicates details for current parameter selected.

Touch to change desired sensitivity /scale

Use arrows or slider to change high and low settings.

Uncontrolled if Printed

4.5 Setting Arrhythmia Alarms

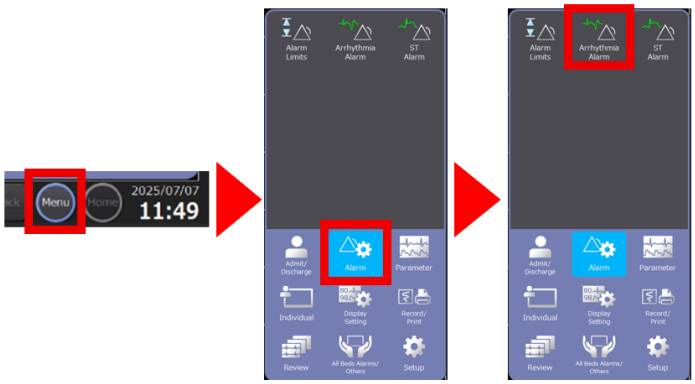
⚠WARNING

For arrhythmia monitoring, set ARRHYTHMIA ANALYSIS to ON. Otherwise, there is no sound or indication for arrhythmia alarms other than ASYSTOLE.

⚠WARNING

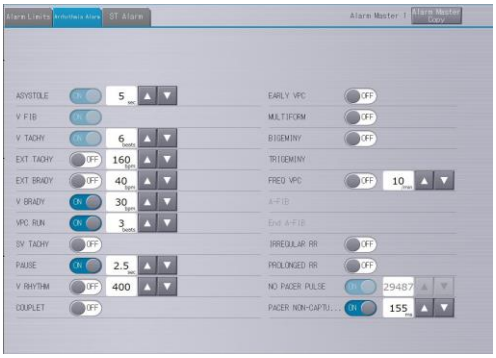
When the alarm is turned OFF for an arrhythmia, there will be no alarm for that arrhythmia type.

1 [Menu] > [Alarms] > [Arrythmia Alarm].



2 Touch the data area of the bed you are going to set alarms for.

3 Set the arrhythmia alarm [ON] or [OFF].



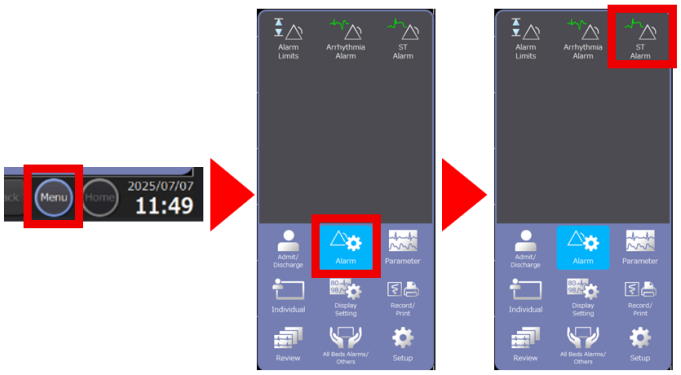
4 Set the detection condition using [▲] or [▼].

ASYSTOLE, V FIB and V TACHY are fixed to ON.

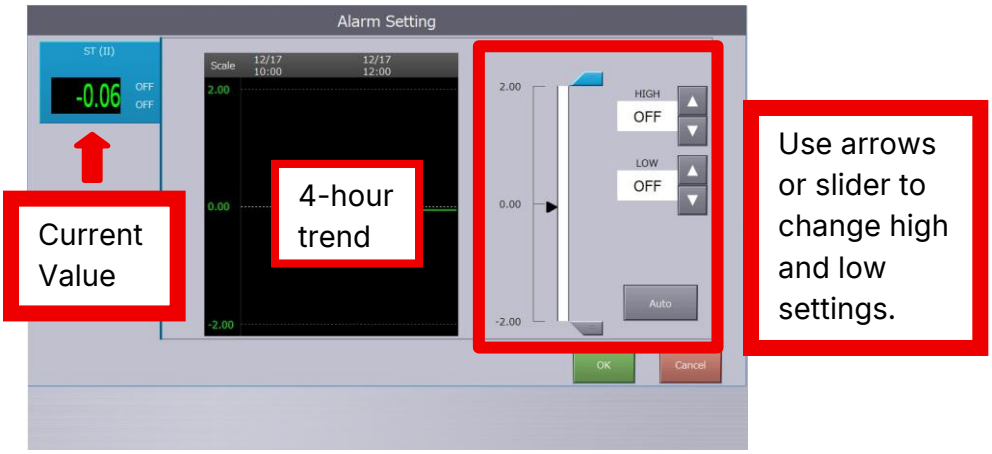
Uncontrolled if Printed

4.6 Setting ST Alarms

1. [Menu] > [Alarms] > [ST Alarm].



2. Touch the data area of the bed you are going to set alarms for.
3. Touch the parameter key to set the alarm limits. The Alarm Setting window opens.
4. Use the upper/lower limit slide bar to set the alarm limits **OR** Adjust the value by touching [▲] or [▼].

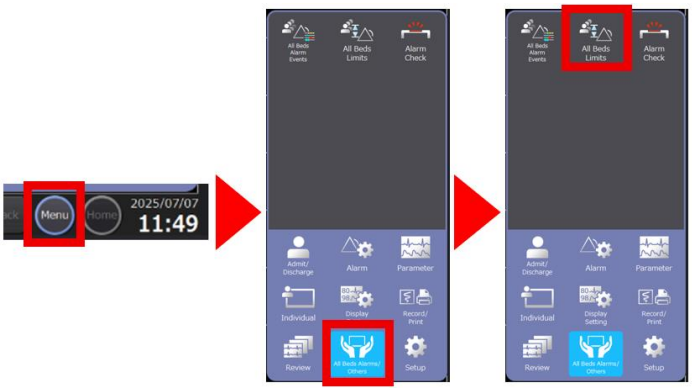


Uncontrolled if Printed

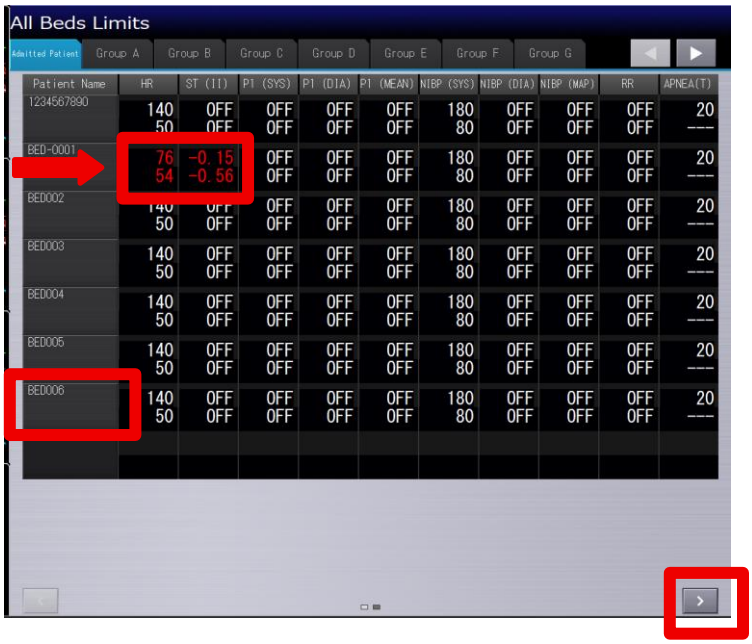
4.7 All Beds Limits Window

Displays the alarm limit settings for multiple patients at the same time.

1 [Menu] > [All Beds Alarms/Others] > [All Beds Limits].



Alarm Master settings appear in white. If a limit setting is changed from the Alarm Master setting, the color of the value becomes red.



Touch any bed to display alarm settings window

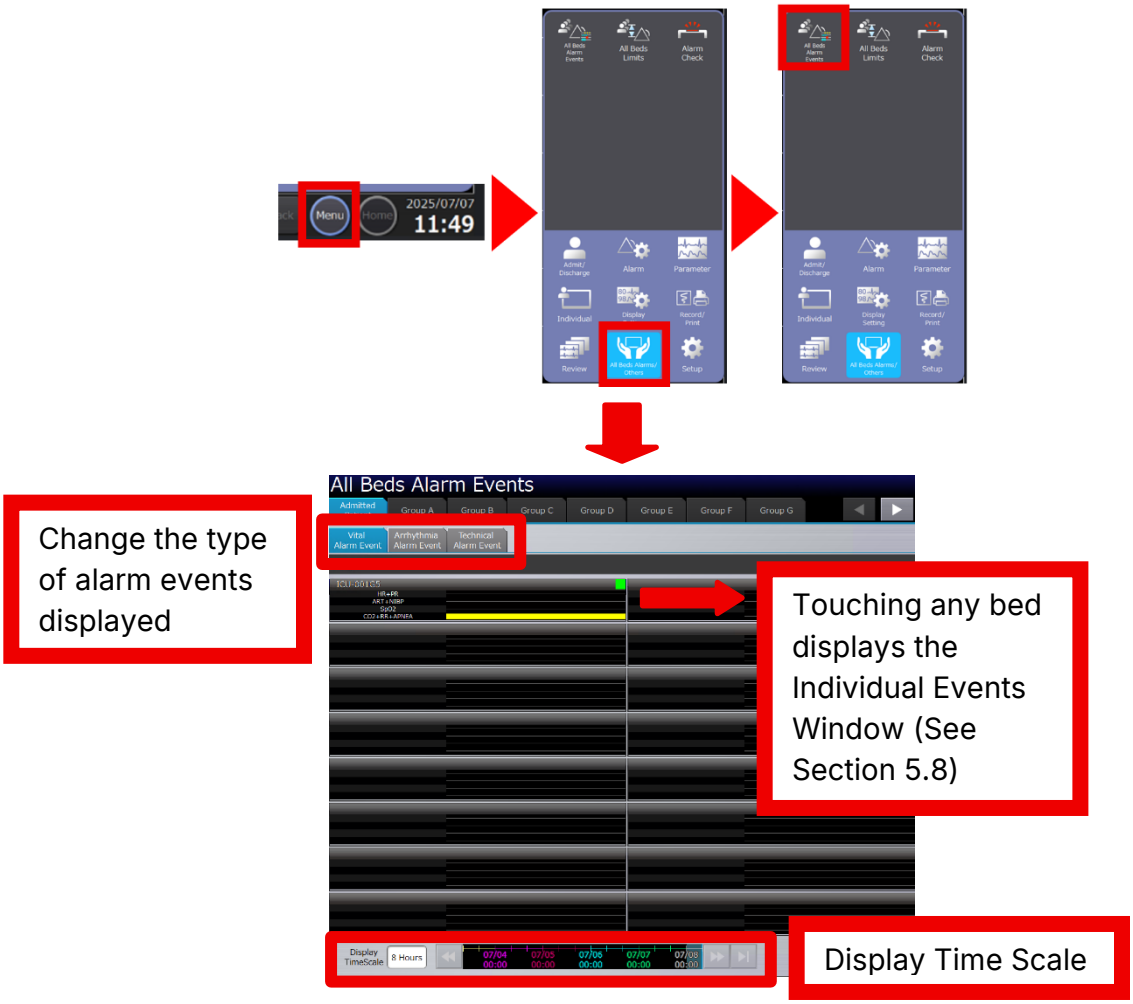
Scroll to see additional parameters

4.8 All Beds Alarm Events Window

Displays all alarm events for admitted patients on a single window.

The All Beds Alarm Events window displays up to 120 hours of alarm events for multiple patients in the most recent files (up to 10,000 events per patient).

1 [Menu] > [All Beds Alarms/Others] > [All Beds Alarm Events].



Uncontrolled if Printed

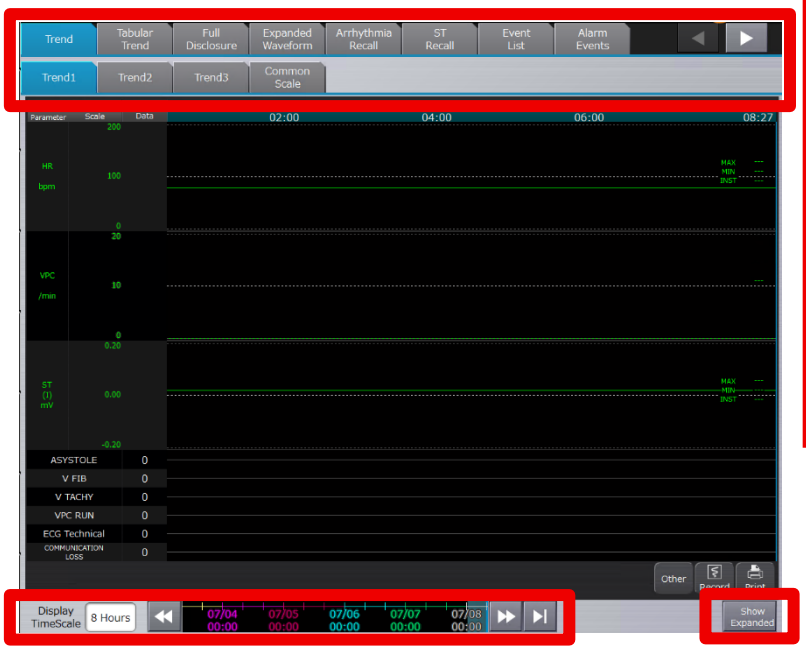
5 Reviewing Patient Data

5.1 Displaying a review window

1. Select the patient tile
2. Touch [Menu] Key in right lower corner of screen

All review options will appear. Choosing any of them will open the Review Window

Individual Review Window



Top row of tabs alternates between review windows.

Bottom row of tabs indicates details of review window selected. Use arrows to show additional review windows.

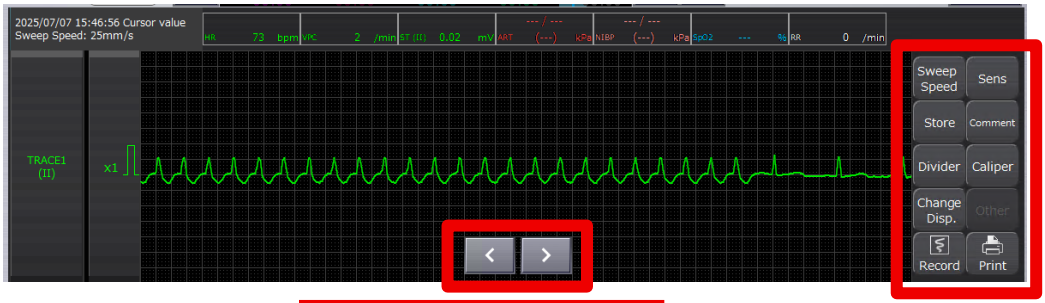
Display Time Scale

Expanded Waveform Pane – shows 10 seconds of the waveform selected in each review window.

Uncontrolled if Printed

5.2 Expanded Waveform Pane

- Access by touching [Show Expanded] Key on right lower corner of Review Window

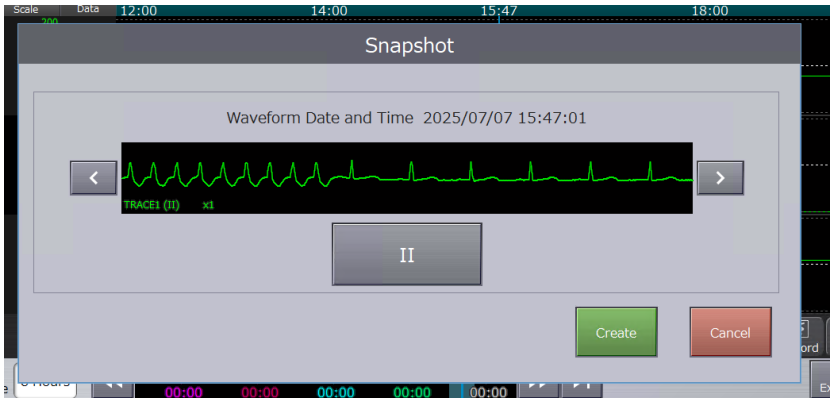


Moves the waveform to the left or right by 1 second.

Sidebar Keys indicate the corresponding action.

- You can create an arrhythmia recall file for a selected 8-second segment of ECG

1. Touch [Store] Key on sidebar and Snapshot Window appears
2. Touch [Nothing Selected] Key and choose an ECG lead. Use arrows to make adjustments
3. Touch [Create] to create the recall file. The ECG wave of the selected lead is registered in an arrhythmia recall file



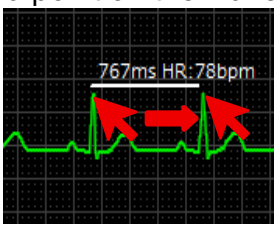
Uncontrolled if Printed

5.3 Measuring a Waveform with Calipers

1 Touch [Caliper] on the sidebar. The measurement window opens.

2 Touch the item to measure (R-R, P-R, etc.).

3 Touch the desired start and end point on the waveform.



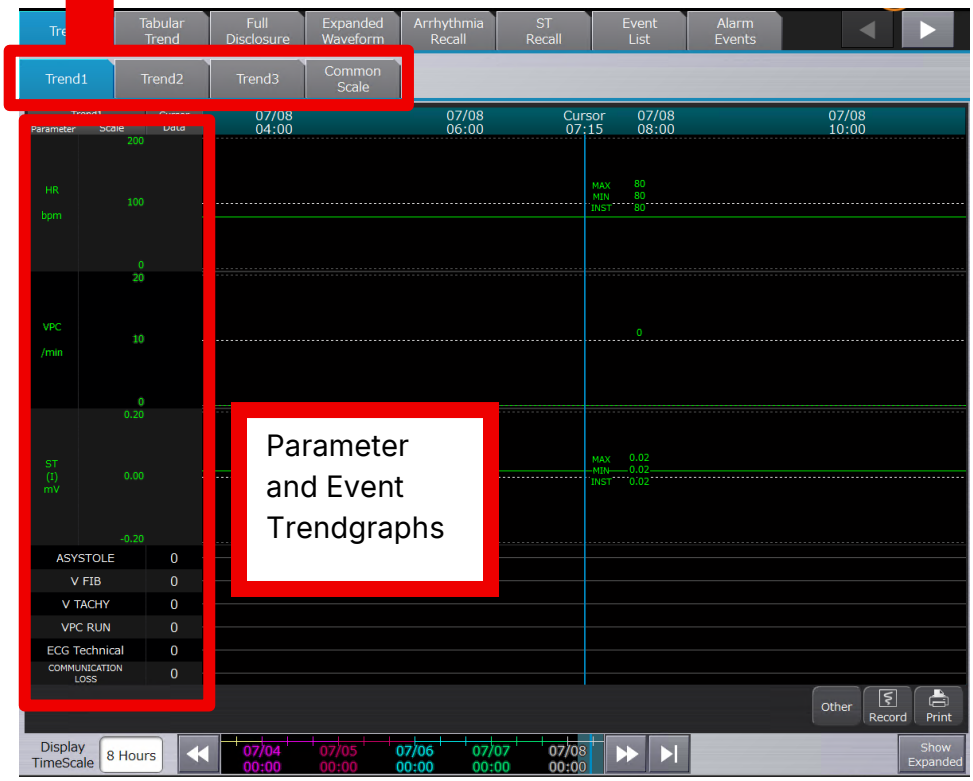
4 Repeat steps 2 and 3 for all desired measurements.

5 Touch [Entry] to register the caliper measurement value to the event list.

5.4 Trend Windows

The Trend windows show measured parameter values and events of the most recent 120 hours as trendgraphs.

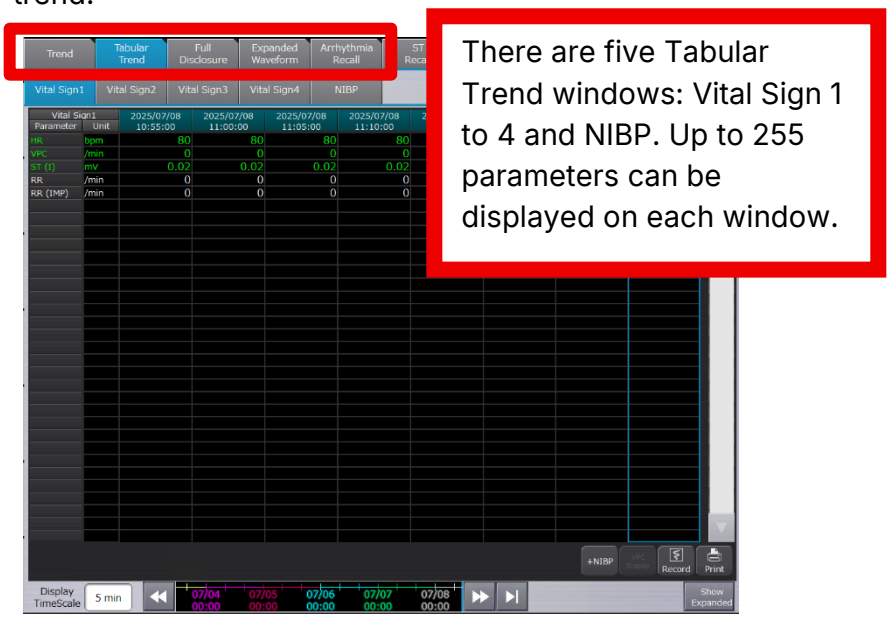
Window Name	Number of Parameters Displayed	Number of Events Displayed
Trend 1	3	6
Trend 2	3	6
Trend 3	7	3
Common Scale	4	3



Uncontrolled if Printed

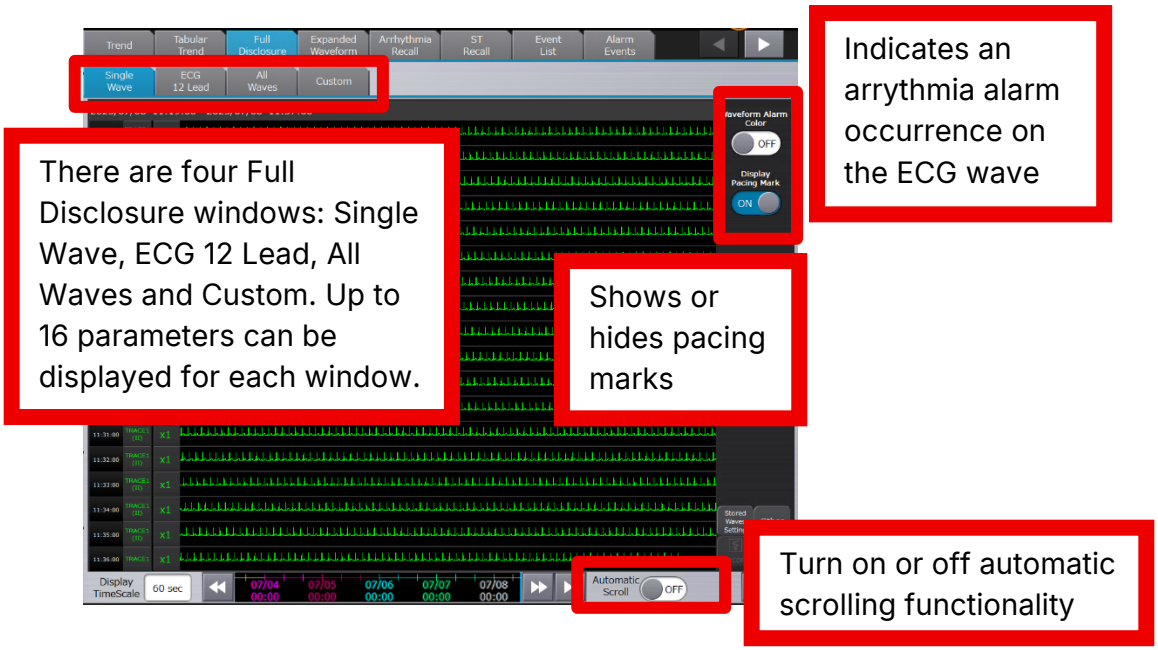
5.5 Tabular Trend Window

The Tabular Trend windows show measured parameter values of the most recent 120 hours as a tabular trend.



5.6 Full Disclosure Window

The central monitor saves 120 hour full disclosure waveforms for up to 16 parameters for each monitored bed. You can select the full disclosure waveforms to display from the stored parameters.

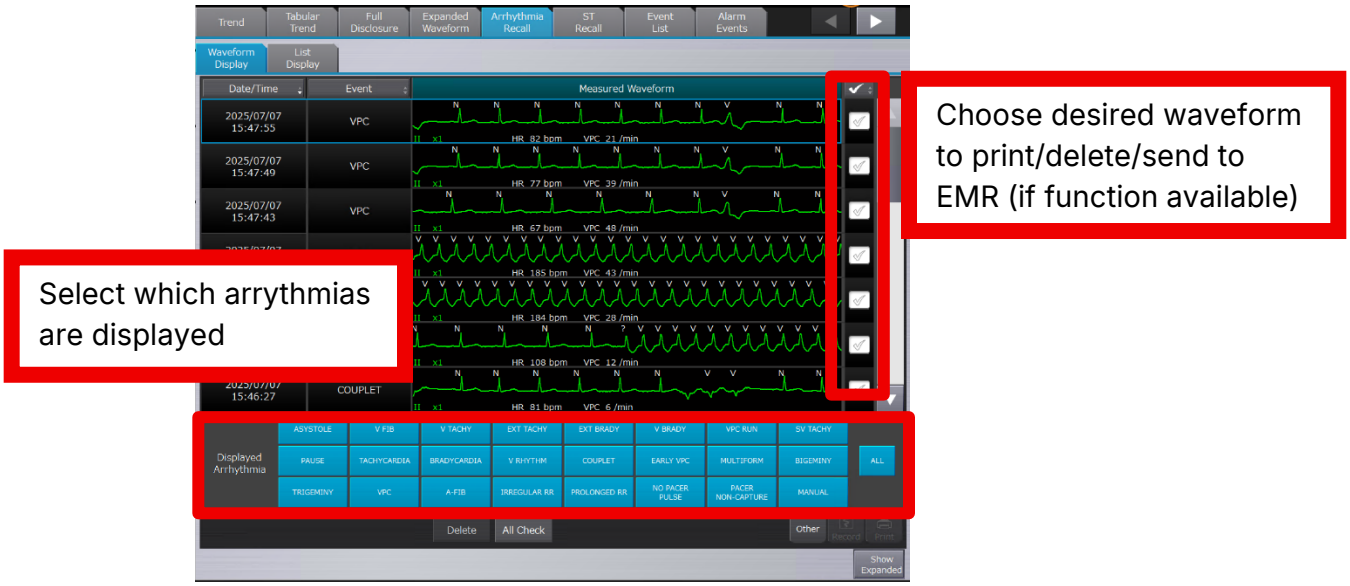


Uncontrolled if Printed

5.7 Arrhythmia Recall Window

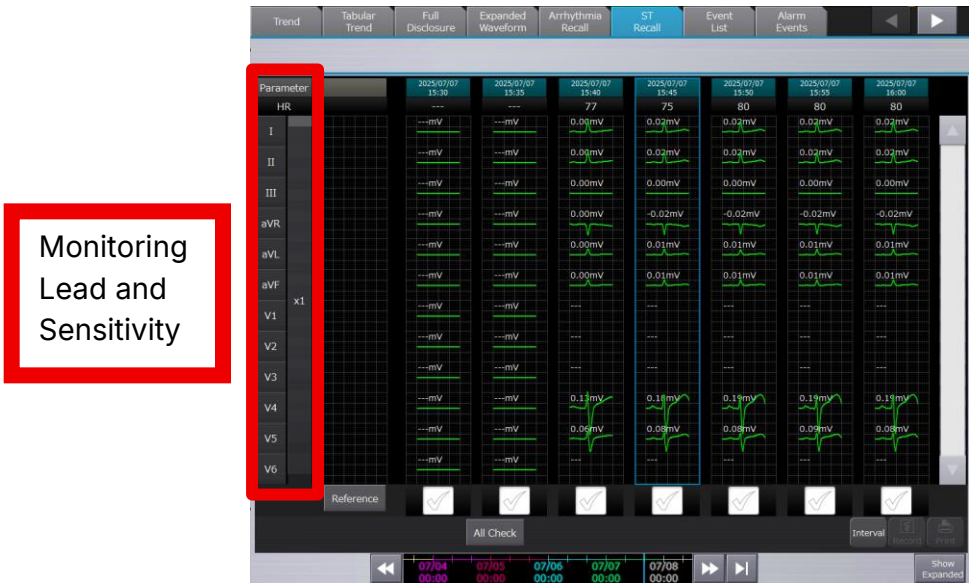
The Arrhythmia Recall windows show the list of recall files that are automatically created when an arrhythmia occurred.

The arrhythmia recall files are created for the most recent 1,500 arrhythmias for each bed.



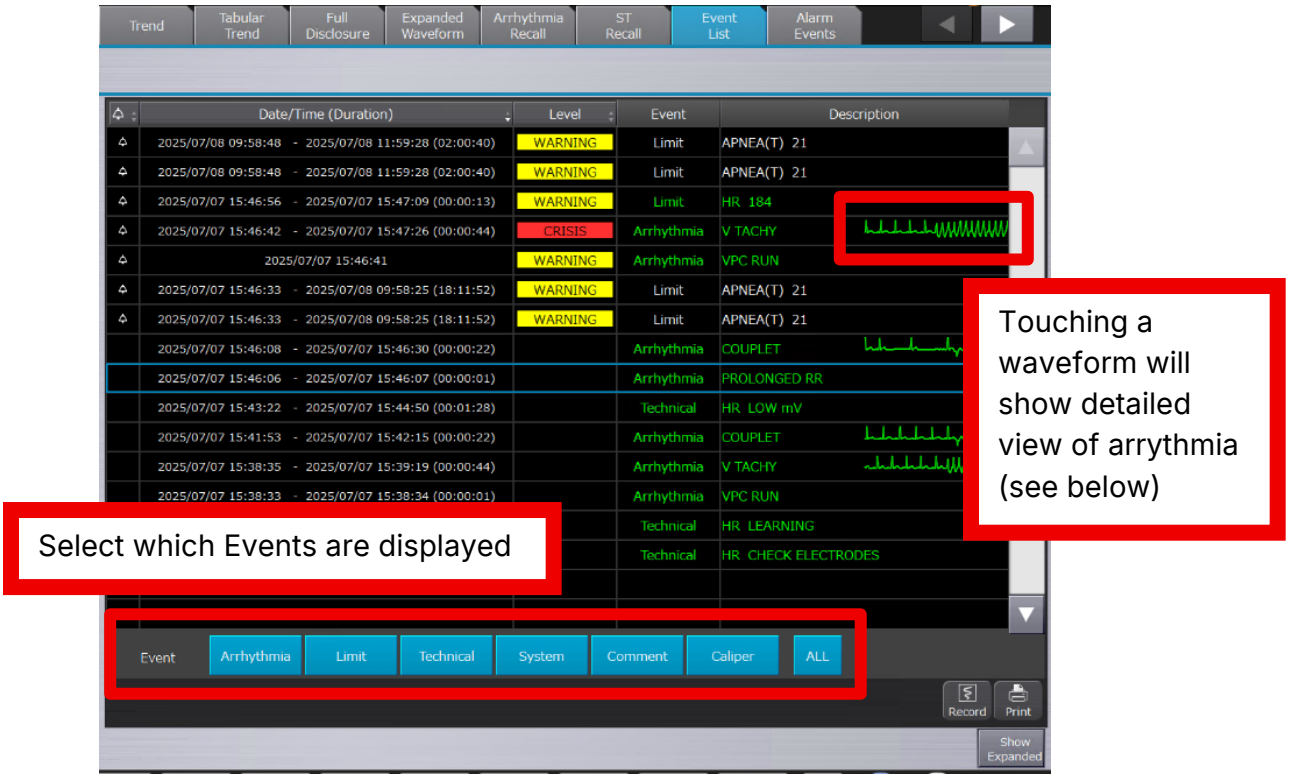
5.8 ST Recall Window

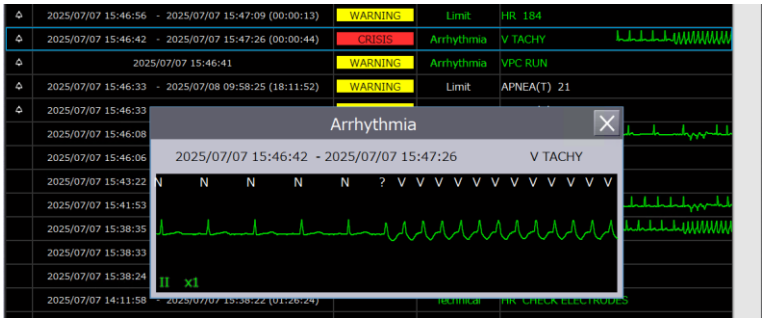
The ST Recall window shows ST recall files of up to 120 hours. ST recall files are created every minute.



5.9 Event List Window

The Event List window shows the latest 120 hours of events on the monitored beds. The most recent 10,000 files can be saved for each bed.

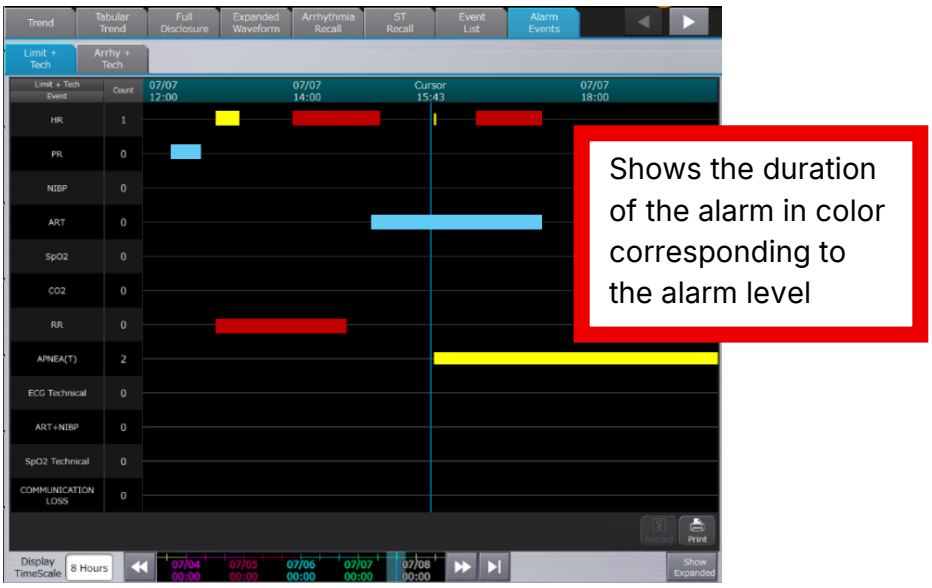




Uncontrolled if Printed

5.10 Alarm Events Window

The Alarm Events windows show up to 10,000 files of alarm events for one patient in the most recent 120 hours. There are two Alarm Events windows: Limit+Tech, and Arrhy+Tech. Up to 12 events can be displayed for each window.



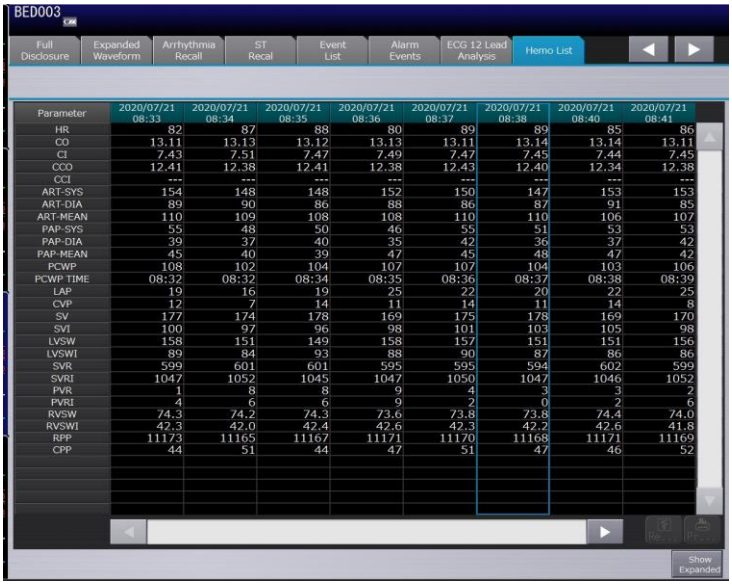
5.11 ECG 12 Lead Analysis Window

The ECG 12 Lead Analysis windows show the results of ECG 12 lead analysis performed at bedside monitors. Up to 200 files can be saved for each bed at the central monitor.

Uncontrolled if Printed

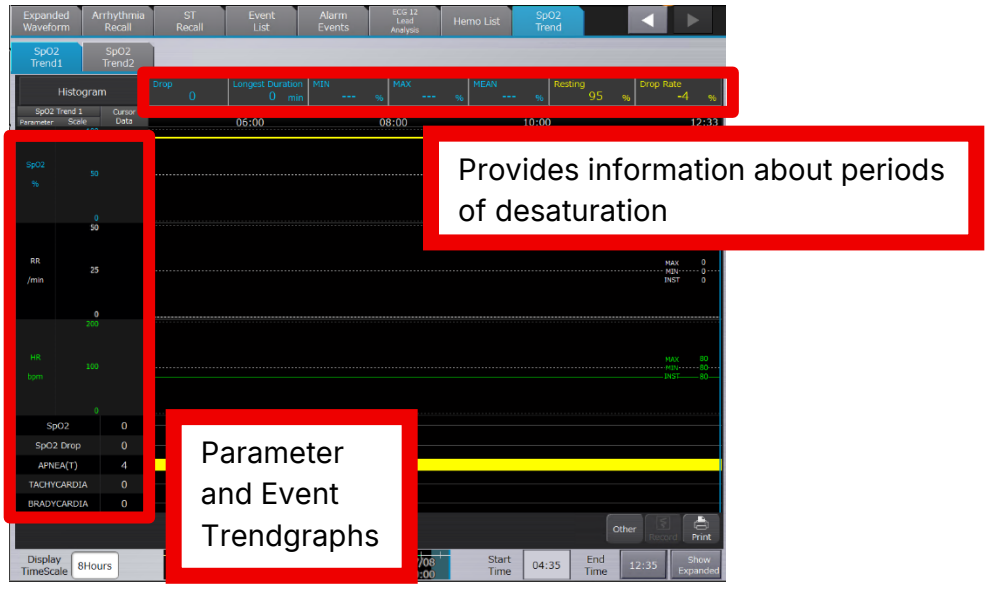
5.12 Hemodynamics List Window

The Hemodynamics List window shows hemodynamics parameter values registered on the CO measurement window, blood pressure value entry window and hemodynamics parameters. Hemodynamics parameter values are automatically registered when CCO is measured on a bedside monitor.



5.13 SpO2 Trend Window

The SpO2 Trend window shows the trend information of the selected time period. You can select the time period of the data to display on the windows from the data acquired in the most recent 120 hours. The windows show trendgraphs and histograms of SpO2 values, including number and duration of SpO2 drops.

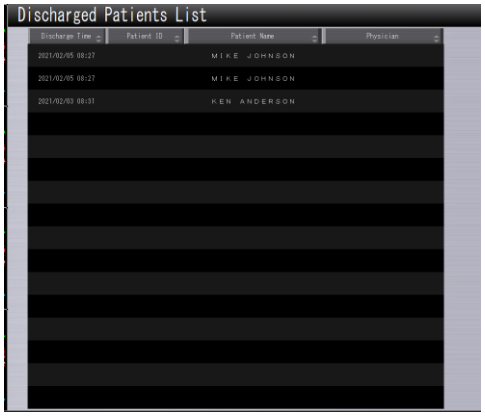


5.14 Reviewing Data of Discharged Patients

The Discharged Patient List window shows the information of the patients who were discharged from the Central Station within the past 120 hours and the patients whose data were deleted from the Central Station within the past 120 hours. This includes patients who were deleted by changing the channel.

1. Select the patient tile
2. [Menu] > [Admit/Discharge] > [Discharged Patients List]

3. Touch the name of the patient whose data you want to review.

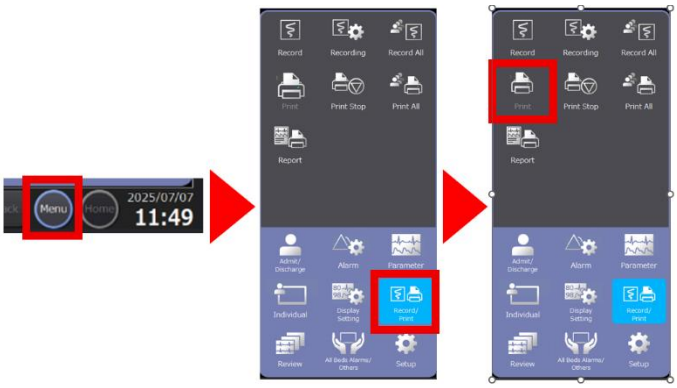


The review window will open for selected patient. Refer to Sections 5.1 – 5.13 for more information.

6 Printing and Report Functions

6.1 Individual Waveform Printing

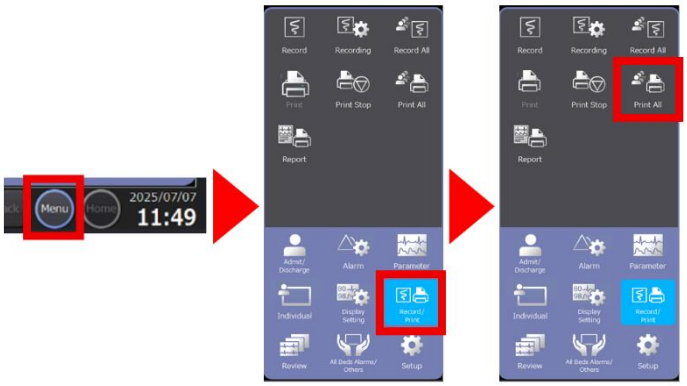
1 [Menu] > [Record/Print] > [Print].



6.2 All Beds Waveform Printing

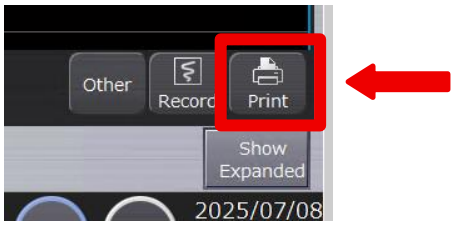
1 [Menu] > [Record/Print] > [Print All].

Printing automatically stops after all waves have been printed.



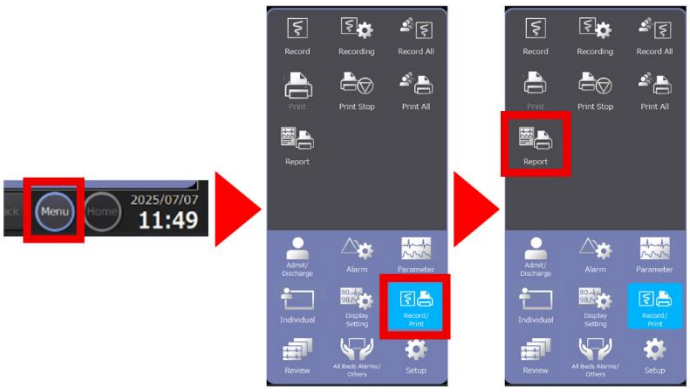
6.3 Review Window Printing

➢ All review window data can be printed by touching [Print] key in right lower corner of any Review Screen.

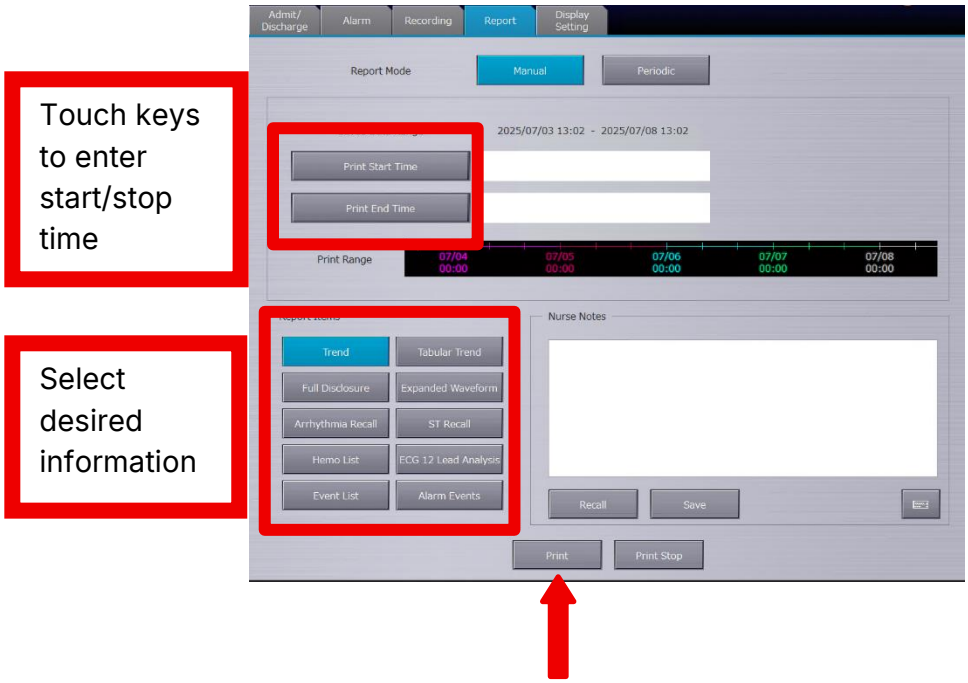


6.4 Report Printing

1 [Menu] > [Record/Print] > [Report]



2 Enter requested information on Report Window



3 Touch [Print] then [Yes] to confirmation message.

Uncontrolled if Printed

7 Hardware Requirements

7.1 Hardware Configuration

Central Station is a software product that is installed on a commercial off-the-shelf computer with the following minimum hardware requirements:

- CPU: Intel© Core™ Ultra 5 235T
- RAM: 8 GB RAM
- Storage: 512 GB Solid State Drive
- USB: Minimum of 3 USB ports to support Mouse, Keyboard, and USB thumb drive. When using touchscreens or accessories, additional ports are required (optional).
- NICs: 1 wired Ethernet port for the NK Patient Monitoring Network
  1 wired Ethernet port for the Hospital Network (optional)
- Display: Must support 1920x1080 resolution and audio output functionality
- Touch Screen: Microsoft HID-compliant touch screen driver

⚠WARNING
Do not install or run any software not specified by Nihon Kohden on the Central Station.

⚠WARNING
While the Central Station is operating, do not connect a USB flash drive or any other device to the Central Station.

8 Troubleshooting and Error Messages

8.1 Troubleshooting

Problem	Possible Cause	Action
Admitting/Discharging/Transferring/Exchanging		
Cannot transfer a patient's data, pause monitoring or exchange monitored beds.	The patient's data is not saved in the central monitor.	Perform this operation on the central monitor which the patient's data is saved to.
Cannot change the receiving channel.		
Cannot admit/discharge a patient.	The patient's data is not saved in the central monitor.	Perform this operation on the central monitor which the patient's data is saved to.
Cannot select a bed as a destination of patient transfer or bed exchange.	The bedside monitor is turned off	Turn on the bedside monitor.
A "Transferring" message appears on the screen but it does not change to "Completed" after patient transfer.	During patient transfer or changing the monitor, the central monitor was turned off. Or there was trouble on the network and the transfer failed.	When a patient data remains on the Discharged Patients List window, readmit the patient. Set alarm settings because the alarm settings are initialized when the patient is readmitted.
When the patient data does not remain on the Discharged Patients List window, the patient data is deleted. The deleted data cannot be recovered. Admit the patient again.		
A "Patient Transfer: Failed" message appears on the screen after patient transfer.		
A "Change Device: Failed" message appears on the screen after changing the monitor.		
All patient's data is lost after patient transfer.		
Cannot resume monitoring after monitoring pause.	The bed was paused on a transmitter that has the pause function and the transmitter power is on.	Turn the transmitter off then on to resume monitoring.
Viewing Patient Data		
Waveform is not displayed.	The bed is discharged.	Admit the patient.
	The monitoring of the bed is paused.	Resume monitoring.
	The bedside monitor, the multiple patient receiver or	Turn on the bedside monitor, the multiple patient receiver or vital sign telemeter.

	vital sign telemeter is turned off.	
	The currently measured lead/ label is different from the lead/ label to be displayed on the screen.	Confirm the setting so that the currently measured lead/label matches the lead/label to be displayed on the screen.
	The waveform is not selected as a displayed waveform.	Set the waveform as a displayed waveform.
Numeric data is not displayed.	The parameter of the numeric data is not selected as the displayed parameter.	Set the parameter of the numeric data to the displayed parameter.
	The label of the currently measured numeric data is different from the label to be displayed.	Confirm the setting so that the label of the currently measured numeric data matches the label to be displayed.
	A vital sign alarm occurred in a parameter that is not set to a displayed parameter and its numeric data took the place of a numeric data that is set to the displayed parameter.	The numeric data of a parameter whose vital sign alarm is currently occurring has a higher priority to be displayed.
Heart rate is not counted correctly.	QRS detection type is not set correctly.	Change the QRS detection type.
	QRS detection threshold is not set correctly.	Adjust the QRS detection sensitivity.
	Waveform is too large or too small.	
	QRS detection threshold is changed.	
	QRS and pacemaker spikes are not distinguished.	Turn pacing detection [ON].
Respiration is not measured correctly.	Waveform is too large or too small.	Set the proper sensitivity.
	Respiration sensitivity is changed.	
	Impedance respiration measurement functionality is turned off.	Turn the impedance respiration measurement on.
Alarms		
No alarm.	Each alarm setting is set to OFF.	Turn on the necessary alarms (vital sign, arrhythmia, ST).
	Arrhythmia analysis is turned OFF.	Turn on the arrhythmia analysis functionality.
	On the bedside monitor, “Comfort Care” is set to On and “Send alarms to network” is set to Off.	Change the “Comfort Care” and “Send alarms to network” settings on the bedside monitor. These settings cannot be changed on the central monitor.

	All alarms are turned off at the bedside monitor.	The central monitor cannot turn all alarm on or off. Turn all alarms on or off on the bedside monitor.
All alarms for a bed cannot be turned on or off together	-	
Review Windows		
Review Data is not displayed	The central monitor where the bed's data is saved is turned off.	Turn on the central monitor where the bed's data is saved.

8.2 Error Messages

Message	Possible Cause	Action
Data Send Error	The data cannot be transferred from a bedside monitor to the central monitor for one or more of the following reasons. •The network cable is not connected firmly. •The network setting is incorrect. •The network cable is damaged or hub failure	Check the network connection condition.
COMMUNICATION LOSS	•The selected bedside monitor power is OFF or disconnected from the network. •The network communication is lost during sleep mode.	Check the patient condition and ensure the patient's safety. Then check the monitoring systems.
	The multiple patient receiver for the transmitter is disconnected from the network.	
Monitor Battery Weak	The battery pack that is installed in the bedside monitor is weak.	Change the monitor to AC power operation and charge the battery pack.
Parameter Not Available	The cable of an unavailable parameter is connected.	Disconnect the cable of the unavailable parameter.
Duplicate Transmitter	Two or more transmitters have the same channel.	Set all of the transmitters to different channels.
Duplicate Receiver	Two or more multiple patient receivers have the same channel.	Set all of the multiple patient receivers to different channels.
	Two or more beds whose data is received by the multiple patient receiver use the same channel number.	Change the channel number of the bed whose data is received by the multiple patient receiver on the Admit window.
Change Transmitter Battery	Weak transmitter battery.	Replace the batteries with new ones.
Check Device	A technical alarm is detected on the bedside monitor.	Check the bedside monitor status.
SIGNAL LOSS	Weak electric field strength of a wireless telemeter.	

	The network communication is lost during sleep mode.	Check the patient condition and ensure the patient's safety. Then check the following: •Remaining charge of the transmitter battery •Transmitter antenna lead condition •Distance between the multiple patient receiver and transmitter
Telemetry not Connected	The connection between the telemetry device and bedside monitor is interrupted (for example by signal loss) during HiQ-View operation.	Check the patient condition and secure patient safety. Then, inspect the monitoring system for abnormalities.
HiQ-View Connection Failure	When the bedside monitor was restarted, HiQ-View could not be restarted for one of the following reasons. • HiQ-View could not be started because the telemetry device was already paired with another bedside monitor for HiQ-View. HiQ-View could not be started because of an incompatibility between the settings or patient information of the bedside monitor and telemetry device.	Check the status of the telemetry device and restart HiQ-View.
HiQ-View Setting Inconsistent	There is a discrepancy between the settings on the bedside monitor and the telemetry device.	Check the settings on the bedside monitor and telemetry device and change the settings as necessary
Monitor Busy	The bed is already being monitored by four other devices.	Change the network configuration so that the number of devices monitoring the bed (including the central monitor) is four or less.
	HiQ-View is performed using a bed (transmitter or vital sign telemeter) which is already being monitored.	The bed is automatically discharged when HiQ-View is ended.

9 Contact Information

Nihon Kohden Digital Health Solutions
R&D and Product Development Center
14 Bunsen
Irvine, CA 92618, USA

Phone: +1 (949) 474-9207
Fax: +1 (949) 474-8267
Email: info@nklab.com
www.digitalhealthsolutions.com

Nihon Kohden America
15353 Barranca Parkway
Irvine, CA 92618, USA

Phone: +1 (949) 580-1555
Fax: +1 (949) 580-1550
Email: info@nihonkohden.com
us.nihonkohden.com

Nihon Kohden Corporation
1-31-4 Nishiochiai, Shinjuku-ku
Tokyo 161-8560, Japan

Phone: +81 (3) 5996-8036
Fax: +81 (3) 5996-8100
www.nihonkohden.com