DynaScope 7000 Series

Central Monitor

DS-7700 System

Ver.10

Maintenance Manual

- Before using this device, read this operation manual thoroughly.
- Keep this manual near the device for future reference.

FUKUDA DENSHI

This manual is for the DS-7700 System Version 10.

⚠ CAUTION	Federal Law restricts this device to sale by or on the order of a physician.

CAUTION

- Only physician or persons instructed by physicians are allowed to use the equipment.
- The information contained in this document is subject to change without notice due to improvement in the equipment.

If this manual has pages missing or out of order, contact Fukuda Denshi for replacement.

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Preface

Preface

Introduction

Thank you for purchasing this product. Read the "Safety Precautions" thoroughly before use to ensure correct and safe use of the product.

Before using or installing this product, read this manual thoroughly.

Important Notice

For Safe Operation of the Equipment

(1) Before using this equipment, read this operation manual.

(2) Fukuda Denshi cannot predict all the dangers which may be caused by misusage of this product or environmental condition.

(3) For using this equipment, there are many items that "should be performed", "should not be performed", and "cannot be performed". It is not possible to cover all these items in this manual or warning labels. Therefore, it is necessary to also follow the general safety precaution other than the items described in this manual.

(4) To prevent accidents, usage other than intended, or usage, cleaning, and maintenance not described in this manual should not be performed.

(5) When using this equipment, follow the respective regulation to minimize the probability of accidents.

Intended Use of this Equipment

This equipment is designed for the following <Intended Use>.

<Intended Use>

This system is intended for continuously monitoring patient's medical condition in ward, CCU, ICU, and surgery room by acquiring vital information such as ECG, respiration, BP, NIBP, SpO_2 (arterial oxygen saturation), temperature, CO_2 through wired or wireless network.

For specification of this equipment, refer to "Specification" P14-1 of the operation manual.

The operation and maintenance of this equipment should be performed by well-trained and authorized personnel. Also, your local regulation must be followed. If this equipment is used for the purpose other than intended, or if the user does not follow the safety instructions, the following hazard may result.

- Hazard to the Life and Health of the Patient or the User
- Damage to the Equipment

Copyright

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(2) This manual includes the description for the optional equipments that can be connected.

(3) The illustration in this manual may differ with the actual equipment.

(4) If you lose or damage this manual, contact your nearest sales representative. Using the equipment without this manual may cause accidents.

(5) When handing over this equipment, make sure to also pass this manual to the next owner.

Maintenance, Repair, Replacement

Fukuda Denshi is liable for the safety, reliability, and performance of its equipment only if;

- Maintenance, modifications, and repairs are carried out by authorized personnel or organization.
- Components are used in accordance with Fukuda Denshi operating instructions.

A full technical description of the DS-7700 system is available from your local Fukuda Denshi sales representative.

Contact

If you need more detailed information, please contact following.

(1) Fukuda Denshi Co., Ltd., Head Office

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Home Page: http://www.fukuda.com

(2) Sales Representative

Write the name, address, phone, fax number of your local sales representative.

(Name of Sales Representative, Address, Phone/Fax)

About This Manual

Expression Used in This Manual

❑Meaning of the Symbols

Type of Precaution	Description
⚠ DANGER	Failure to follow this message may cause immediate threat of death or serious injury.
⚠ WARNING	Failure to follow this message may result in death or serious injury.
⚠ CAUTION	Failure to follow this message may cause injury or failure to the equipment.
NOTE	"Note" is used to emphasize important information.
REFERENCE	"Reference" is used to provide useful information.
☞	Indicates the reference page for the procedure and precaution.
*	Used in a table which indicates that there is detailed explanation outside the table.

❑Model Types

The following are model types for the DS-7700 system.

In this operation manual, DS-7780, DS-7700L are referred to as "DS-7700 series" , and DS-7780W, DS-7700WL are referred to as "DS-7700W series" .

The extended display unit, LC-7019FT is referred to as LC-7019 series.

	Display Unit Size	Telemeter No. of Receiving Beds	Max. Monitoring Beds
DS-7700 Series			
DS-7780	15 inch	8 Beds	16 Beds
DS-7700L		0 Beds	
DS-7700W Series			
DS-7780W	19 inch	8 Beds	16 Beds
DS-7700WL		0 Beds	

❑The Description of the Display

Although the display layout (key size, arrangement, etc.) for the DS-7700 series and DS-7700W series slightly differs, the display example for the DS-7700 series will be mainly used in this operation manual.

If the display layout of DS-7700 series and DS-7700W series largely differs, both display examples will be used for explanation.

❑Indications for the Screens and Keys

The keys displayed on the monitor screen are indicated by [ ].
(Ex.: [Menu], [Home] etc.)

Other indications on the monitor screen are indicated by " ".
(Ex: "Pacemaker", "Type",etc.)

The titles displayed on the monitor screen are indicated by " ".
(Ex: "Admit/Discharge" screen, "Parameter Setup" screen, etc.)

The messages displayed on the screen are indicated by < >.
(Ex: <Searching>, <Alarm Suspend>, etc.)

❑Restriction of the Function

It is possible to construct a wired, wireless and TCON network system with this unit.

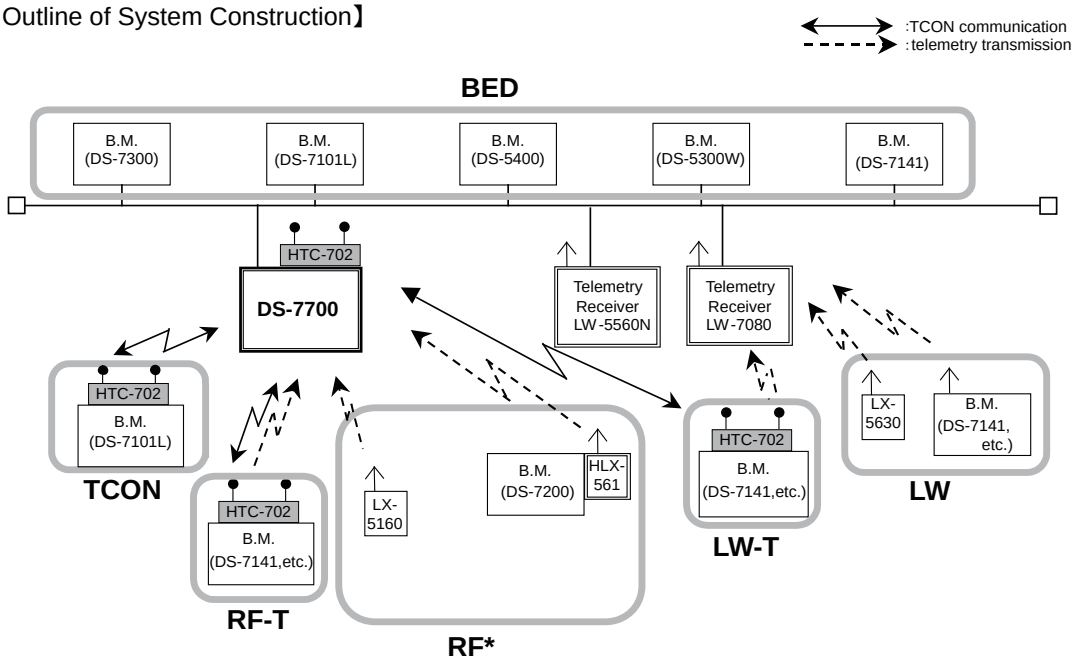
Some display and setups on this system are restricted depending on the system construction.
To explain these restrictions in a easy way to understand, the following expressions are used in this operation manual.

General Term	Expression	Description
Wireless Network Bed*	RF	The monitoring data is transmitted to the built-in telemetry module incorporated in this unit via wireless network. Waveforms and numeric data can be displayed on this unit. Monitoring control is not possible on this unit.
	RF+T	The monitoring data is transmitted to the built-in telemetry module incorporated in this unit, and TCON is also used. Waveforms and numeric data can be displayed on this unit. Monitoring control such as NIBP measurement from this unit is possible.
Wired Network Bed	BED	The monitoring data is transmitted to this unit via wired network. Waveforms and numeric data can be displayed on this unit.
	LW	Telemetry bed. The monitoring data is transmitted to the telemetry receiver which is then transmitted to this unit via wired network. Monitoring control is not possible on this unit.
	LW+T	Telemetry bed which TCON is also used. Waveforms and numeric data can be displayed on this unit. Monitoring control such as NIBP measurement from this unit is possible.
TCON Network Bed	TCON	The monitoring data is transmitted to this unit using only TCON system. Only numeric data will be displayed. Monitoring control such as NIBP measurement from this unit is possible.

NOTE

- When both wireless and TCON system are used, the numeric data from the telemeter will be displayed. Even when the telemetry condition is not good, numeric data from TCON will not be displayed.

【Outline of System Construction】

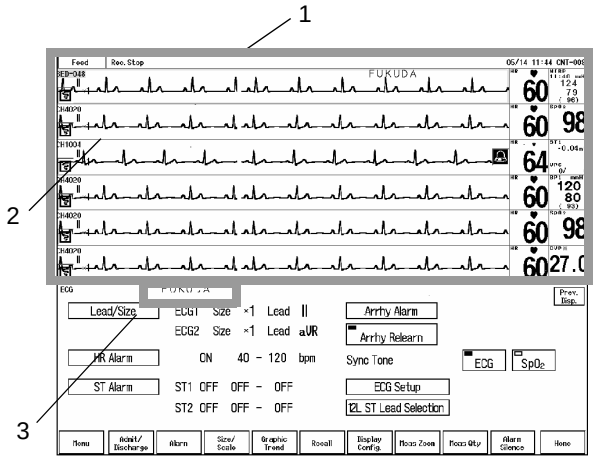


* The DS-7700L/DS-7700WL cannot be installed with a wireless network system (RF).

❑How to View the Illustration

Numbers or alphabets are used to explain the illustration. These are explained in the text below the illustration.

Example:



1 Bed Selection Area

2 Blue Frame

3 Current Patient Name

Composition of This Manual

The operation manual is composed of the following chapters.

Chapter Title	Description
Preface	Outline and purpose of this manual (Important Notice, Warning, Precautions for Safety, EMC, About This Manual)
1. General Description	Features, External Appearance, Product Lineup and Network Performance, Operation Flow
2. Names of Parts and Their Functions	Name and function of each part
3. Operation Procedure and Screen Examples	Operation procedure, home display, operation flow, menu functions, procedure to return the display
4. Preparation	Installing the Recording Paper, Power ON/OFF, Time/Date, Daily Checks
5. Admit / Discharge	Entering patient information (name, age, etc.) at admittance, discharge, monitor suspend, bed transfer, etc.
6. Alarm Function	General description of alarm function, alarm-related setups
7. Monitoring	Measurement condition setup of the monitoring parameters, size/scale setup, etc.
8. Review Function	Trend, recall, NIBP list, ST measurement, 12-lead waveform, full disclosure waveform
9. Recording	Recording functions on the built-in recorder and laser printer.
10. Setup	Display configuration, tone/volume, color setups.
11. Troubleshooting	Maintenance and troubleshooting of this unit
12. Setup Item/Default Value	Setup Item/Default Value
13. Accessories	List of accessories and optional accessoried of this unit
14. Specification	Specification and performance, connector pin assignments of this unit

The maintenance manual is composed of the following chapters.

Chapter Title	Description
Preface	Outline and purpose of this manual (Important Notice, Warning, Precautions for Safety, EMC, About This Manual)
1. Before Installing the Equipment	Precaution about the operating environment, procedure to start monitoring
2. Installation of the Unit	Starting the system, keyboard/mouse setup, slave monitor
3. System Construction	Network restrictions, network connection and setup
4. Using the PC/CF Card	Procedure to use the PC/CF Card
5. EMR Link Function	EMR Link Function
6. Pre-Set Menu	Password to enter the Pre-Set menu, setup for each Pre-Set item
7. Setup Item/Default Value	Default and backup of setup items, data that can be transferred by PC/CF card
8. Replacement Parts	Precautions about the periodic replacement parts
9. Cleaning/Disinfecting/Storing	Procedure to handle, clean, storing this unit
10. Maintenance Check	Daily and periodic checks, maintenance, LAN information, software version, etc.

System Construction and Installation

WARNING

- The installation of this unit will be performed by our service representative. Users should not attempt it.
- The system construction and network setup of this unit should be performed by our service representative or system administrator of your institution.
  (☞Maintenance Manual "System Construction" P3-1)
- Verify that the items that needs to be set before monitoring are correctly set before starting monitoring.
  (☞Operation Manual "Preparation" P4-1)

Safety

Safety

About the Safety Precautions

The Meaning of Each Safety Precaution

Read this manual thoroughly before use to ensure correct and safe use of the product.

Be sure to follow the precautions indicated below, as these are important messages related to safety.

Type of Precaution	Description
DANGER	Failure to follow this message may cause immediate threat of death or serious injury.
WARNING	Failure to follow this message may result in death or serious injury.
CAUTION	Failure to follow this message may cause injury or failure to the equipment.

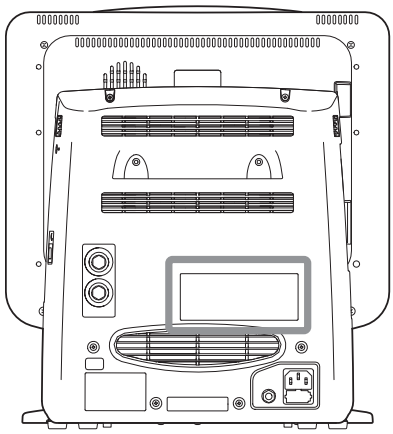
Warning Labels Attached to the Unit

Make sure to read the warning labels attached to the unit and comply with these requirements while operating the unit.

CAUTION

- Do not damage or erase the warning labels attached to the unit.
  These warning labels contain important descriptions for handling and operating the unit properly and safely. A damaged label may compromise safe operation.

❑DS-7700 System Main Unit



Warning Labels Attached to the Unit

⚠ DANGER

Risk of explosion if used in the presence of flammable anesthetics.

⚠ CAUTION

Before connecting, read instruction manual.

⚠ CAUTION

To reduce the risk of electric shock, do not remove cover.
Refer servicing to qualified service personnel.

Warning Label

⚠ Risk of fire,
replace fuse as marked.

Warning Label

Graphic Symbols

❑Symbols Indicated on the Power Supply Part

Symbol	Description
	Potential Equalization Terminal Indicates the terminal to equalize the potential difference when interconnecting the devices.

❑Symbols Indicated on the Equipment

Symbol	Description
	Inhibition Indicates that the operation is inhibited.Refer to the instruction stated near the symbol.
	Caution, refer to accompanying documents Indicates the need to refer to the related accompanying documents before operation.
	Antenna Terminal Indicates the terminal to connect the antenna.
	Electrostatic Sensitive Part Directly touching this connector part with hands should be avoided.
	TCP/IP Network Connector Connects to TCP/IP network.
	Eject Indicates the switch to remove the recorder paper cassette.
	Signal Input Part Indicates that the connector is signal input terminal.
	Year of Manufacture Indicates the manufactured year.
	WEEE (Waste Electrical and Electronics Equipment) Indicates a separate collection for electrical and electronic equipment.

Precautions for Safe Operation

Read this section thoroughly before use to ensure correct and safe use of the product.

Precautions for Safe Operation of Medical Electrical Equipment

⚠ CAUTION

- Users should have a thorough knowledge of the operation before using this system.

❑Precautions about the Location of Installation and Storage of the Equipment

- Do not install or store in an area where the unit will be subject to splashing water.
- Do not install or store in an area where the environmental conditions, such as atmospheric pressure, temperature, humidity, ventilation, sunlight, dust, sodium, sulfur, will adversely affect the equipment.
- Place the equipment on a stable surface where there is no inclination, vibration, or shock (including during transportation).
- Do not install or store in an area where chemicals are stored or gasses are evolved.
- Verify the power frequency, voltage and allowable current (or power consumption).
- Ensure the grounding is proper by connecting the accompanying power cable to the hospital grade outlet.
- Do not install the equipment in a location where it is difficult to unplug the power cable.

❑Precautions Before Using the Equipment

- Verify the power voltage.
- Check the cable connection and polarity to ensure proper operation of the unit.
- Make sure the power system has adequate earth ground.
- Ensure that all cables are firmly and safely connected.
- Pay special attention when the device is used in conjunction with other equipment as it may cause erroneous judgment and danger.

❑Precautions During Using the Equipment

- Always observe the equipment and patient to ensure safe operation of the equipment.
- If any abnormality is found on the equipment or patient, take appropriate measures such as ceasing operation of the equipment in the safest way for the patient.
- Do not allow the patient to come in contact with the equipment. Also, the operator should not contact the patient and the equipment at the same time.
- On start-up of the system, verify that the start-up tone generates and alarm indicator lights.
- For the connectors which are not Type BF, CF applied part, do not touch them and the patient at the same time.

❑Precautions After Using the Equipment

- Unplug all the cables from the patient before turning off the power.
- When unplugging the cables, do not apply excessive force by pulling on the cable. Pull from the connector part of the cable.
- Clean the accessories and cables, and keep them together in one place.

- Keep the equipment clean to ensure proper operation for the next use.

❑Precaution when Equipment Failure Occurs

- If the equipment is damaged and in need of repair, the user should not attempt service. Label the unit "OUT OF ORDER" and contact our service representative.

❑Precaution about Disassembling/Remodeling the Equipment

- Do not disassemble or remodel the equipment.
- Danger such as electric shock may result to the patient and operator.

❑Precautions about Maintenance Check

- Make sure to periodically check the equipment, accessories and cables.
- Before reusing the equipment that has been left unused for a while, make sure that the equipment works normally and safely.

❑Precautions when Using with Other Equipment

- To prevent patient from burn injury, verify proper attachment of patient ground plate, ECG electrode type when using the electrosurgical knife, and verify paste volume, output energy when using the defibrillator. Also, verify that proper ground is selected.

Maintenance

⚠ WARNING

- Never open the housing while the equipment is in operation or connected to hospital grade outlet as it may result in electric shock.

⚠ CAUTION Precautions about Safety Check

- For safe operation of the equipment, regular inspection and maintenance are required. Once a year, check all cables, devices, and accessories for damage, earth impedance, earth and leakage currents, and all alarm functions. Also, ensure that all safety labels are legible. Maintain a record of these safety inspections.
- Immediate maintenance has to be carried out for the following case.
  - When the equipment was subjected to extreme mechanical stress, e.g. after a heavy fall.
  - When the equipment was subjected to liquid spill.
  - When the monitoring function is interrupted or disturbed.
  - When parts of the equipment enclosure are cracked, removed, or lost.
  - When any connector or cable shows signs of deterioration.

Precautions about the Network System

Medical Telemetry

⚠ CAUTION Precautions about the Installation

- The medical institution (hereinafter referred as "Institution") must decide the telemetry installation plan for the medical institution in order to prevent interference between transmitters (telemetry based on destination country's radio law). When telemetry has already been installed and been used, radio format, frequency, and antenna power are required to be examined to prevent interference.
- When using telemetry which requires zone location, the institution is to set up the zones as an operation unit for each transmitter to prevent electronic interference between telemetry throughout the Institution.
- When using telemetry which requires zone location, display and identify each prepared zone in the equipment.
- When laying receiver antenna for each transmitter, the Institution has to examine the installation so that electronic interference does not occur.
- Based on the above examination result, the Institution should place each receiver antenna as required.

⚠ CAUTION Precautions about the Management

- The institution appoints a person to manage the wireless channels for the whole medical institution. And when using telemetry which requires zone location, the Institution should nominate a person to manage the wireless channels in each zone (a "Zone Manager"). However, when using such telemetry in a local medical institution, one person can perform both functions.
- Select a telemetry manager who understands the characteristics and functionality of telemetry systems, and is skilled in operating telemetry.
- When installing telemetry, the Overall Manager and the Zone Manager have to understand the precautions for use of the telemetry in advance.
- The Overall Manager takes responsibility of wireless channel management and transmitter storage for the whole Institution by giving proper instruction.
- The Overall Manager should create a management log (hereinafter referred to as the "log"), which contains a list of the management status of the wireless channels for the whole Institution. When changing a wireless channel, register it in the log and give proper instructions to the Zone Manager or to the user.
- The Zone Manager assumes responsibility for managing the wireless channels, storing, and managing telemetry.
- The Zone Manager assigns the transmitter to the user, and provides enough education for use inside the zone.
- The telemetry user verifies operation of the transmitter/receiver before use.
- The telemetry user, if using the telemetry in a zone location, follows the instructions of the Zone Manager for the zone and gives instructions to the patient if required.
- When interference or breakdown occurs in telemetry communication, the user is required to inform the zone manager and the overall manager of the problems. The Zone Manager and Overall Manager are to deal with the problem properly and/or contact their nearest Fukuda Denshi representative for service.

⚠ CAUTION Precautions about the Installation

- The medical institution (hereinafter referred to as "Institution" must execute investigation required to prevent interference including types of radio waves, frequencies, and antenna power if wireless equipment is already installed and being used in the facility.
- Even if this equipment is installed within the range of radio communication, the communication may not be possible due to noise or multi-path phasing etc.
- If the TCON is installed in a line-of-sight distance where there are no obstacles or on the upper floors, unexpected long distance transmission may occur which may cause interference with nearby medical institution. Before using the TCON system, test the reception to make sure that it does not interfere with other channels. If the channel is used by other medical institution, change the channel ID.
- Do not install the TCON system in an area where it will be subject to splashing water. Water entering the equipment may cause the equipment to malfunction or be damaged.

⚠ CAUTION Precautions about the Management

- The Institution should appoint a person (hereinafter referred as the "Overall Manager" to manage the wireless devices for the whole facility.
- When installing TCON, the Overall Manager has to receive an explanation of the precautions for use of the TCON from the manufacturer or sales representative.
- The Overall Manager is responsible for the maintenance and storage of the equipment.
- The Overall Manager should create a management log (hereinafter referred to as the "log"), which contains a list of the management status of the wireless channels for the whole Institution. When changing a wireless channel, register it in the log and give proper instructions to the Zone Manager or to the user.
- The user needs to verify the transmitting/receiving operation before use.
- If interference or breakdown occurs in the communication, the TCON user is required to stop using the TCON and to inform the Overall Manager of the problem. The Overall Manager is to deal with the problem properly and/or contact the nearest Fukuda Denshi representative for service.

⚠ CAUTION Precautions for Operation

The Bidirectional Wireless Communications Module (TCON) uses radio waves to transmit data. Therefore, necessary precautions need to be taken for the characteristics and difficulties of using the wireless devices that emits radio waves. The TCON user should fully understand these precautions beforehand, and use the TCON system safely. The TCON communication status can be verified by the messages and symbols ( ) displayed on the screen. If TCON communication is interrupted by other wireless devices, a mark indicating the communication status and technical messages, <TCON Interference>, <Chk TCON Reception> will be displayed. For details, please refer to the HTC-702 Instruction Manual.

Furthermore, situations in which interference may occur are outlined below. In such cases, pay special attention to the condition of the patient connected to the bedside monitor, and eliminate the cause of interference.

- When the patient's data become mixed with a different patient's data due to interference.
- When there are multiple TCON communication devices set to the same TCON ID and channel (group).
- When symptoms such as being unable to communicate, unstable communication, or poor reception occur.
- When the radio communication is bad because there are metal, concrete, or other such obstacles between the Bidirectional Wireless Communications Modules (TCON).
- When a different wireless device is using the same frequency (channel).
- When there are other TCON devices nearby using different channels (groups).
- When a cell telephone or other wireless device is being used nearby.
- When citizens broadcast bands such as amateur radio or truck radios are used in the vicinity of the TCON operating area.

- When a computer or word processor, or electrical device that has an internal computer, is used near the TCON device antenna.
- When the TCON device is installed or moved to a location that is outside the radio communication range.
- If a nearby different group is set with a TCON channel frequency that is too close to the channel frequency set for the current TCON group.

Precautions when Using with Other Equipment

Pacemaker

⚠ WARNING

- Minute ventilation rate-adaptive implantable pacemakers can occasionally interact with certain cardiac monitoring and diagnostic equipment, causing the pacemakers to pace at their maximum programmed rate. The cardiac monitoring and diagnostic equipment may possibly send wrong information. If such event occurs, please disconnect the cardiac monitoring and diagnostic equipment, or follow the procedures described in the operation manual of the pacemaker. For more details, contact FUKUDA DENSHI personnel, your institution's professionals, or your pacemaker distributors.
- Rate meters may continue to count the pacemaker rate during occurrences of cardiac arrest or some arrhythmias. Do not rely entirely upon rate meter alarms. Keep pacemaker patients under close surveillance.

Reference

"Minute Ventilation Rate-Adaptive Pacemakers"
FDA alerts health professionals that minute ventilation rate-adaptive implantable pacemakers can occasionally interact with certain cardiac monitoring and diagnostic equipment, causing pacemakers to pace at their maximum programmed rate.
[Based on a safety bulletin issued by FDA Center for Devices and Radiological Health on October 14, 1998]

Non-Explosion Proof

⚠ DANGER

- Never operate the equipment in the presence of flammable anesthetics, high concentration of oxygen, or inside hyperbaric chamber. Also, do not operate the equipment in an environment in which there is a risk of explosion.
  Explosion or fire may result.

Defibrillator

⚠ WARNING

- When defibrillating, keep away from the electrodes or medicament applied to the patient chest. If this is not possible, remove the electrodes or medicament before defibrillating.
  If the defibrillator paddles are directly in contact with the electrodes or medicament, an electrical shock may result by the discharged energy.
- When defibrillating, make sure that the electrodes, sensor cables, or relay cables are firmly connected to the device.
  Contacting the metal part of the disconnected cable may result in electrical shock from the discharged energy.
- When defibrillating, do not touch the patient and the metal part of the device or cables.
  Electric shock may result from the discharged energy.

- This equipment will return to standard operating mode within 10 seconds after defibrillating. However, when in diagnosis mode, it may require 10 seconds or more after defibrillation to display the normal ECG waveform as the time constant setting is large.
  The stored data will not be affected. The measurement accuracy will temporarily decrease during defibrillation, but it will not compromise the safety of patient and the equipment.
- The QRS synchronized signal is not intended to be used as synchronized signal for defibrillator.

Electrosurgical Instrument

⚠ WARNING

- The monitoring system contains protection against burn injury and interference generated by electrosurgical instruments. However, depending on the operating conditions, surgery site with respect to the location of ECG electrodes, ground plate attachment condition, or the type of instrument used, it may cause burn injury at the electrode site or noise on the ECG. The noise is generated at the tip of the electrical knife and is difficult to completely eliminate because of the frequency components of the ECG.To reduce electrosurgical interference, take the following precautions:

  Location:

  Locate the electrosurgical unit as far as possible from this equipment and the patient cable. This will help reduce interference on the ECG through the monitor or cables.

  Power Supply:

  Connect the electrosurgical unit to a power supply that is different from that of this equipment. This will help prevent interference through the power cable.

  Electrode Placement

  Place the ECG electrodes as far away as possible from the surgery site and the ground plate. Do not place electrodes in the path between the surgery site and the ground plate. Position (+) and (–) electrodes as close as possible to each other.

  Ground Plate

  When using electrosurgical instruments, make sure the contact between the patient and the ground plate is secure. If the connection is incomplete, the patient may suffer from burn at the electrode site.
- The stored data will not be affected. The measurement accuracy will temporarily decrease during electrosurgery, but it will not compromise the safety of patient and the equipment.
- When using the electrosurgery-proof type ECG relay cable, the impedance respiration cannot be measured, and its numeric data and waveform will not be displayed. When measuring in an environment where electrosurgery is not performed, make sure to use the standard ECG relay cable.

MRI (Magnetic Resonance Imaging)

⚠ WARNING

MR MR-Unsafe -keep away from magnetic resonance imaging (MRI) equipment.

- Do not use this equipment in magnetic resonance imaging (MRI) environments.
- When conducting MRI test, remove the electrodes and sensors connected to the patient (test subject).
  This equipment may be pulled towards the MRI device. Also, the local heating caused by the induced electromotive force may cause burn injury to the patient (subject) or performance degradation of this equipment.
  For details, refer to the operation manual for the MRI testing device.

Precautions for Using the Equipment

This System

⚠ DANGER

- When using multiple ME equipment simultaneously, perform equipotential grounding to prevent potential difference between the equipments.
  Even a small potential difference may result in electric shock to the patient and the operator.

⚠ WARNING

- Do not connect any equipment or cable not authorized by Fukuda Denshi to any I/O connector.
- If the equipment is used under an environment not fulfilling the specified condition, not only that the equipment cannot deliver its maximum performance, the equipment may be damaged and safety cannot be ensured.
- Use only the supplied 3-way AC power cable. Use of other cables may result in electric shock to the patient and the operator.
- The power cable must be connected to a hospital grade outlet of AC 115V.When connecting, do not use a multiple portable socket-outlet.
- The pacemaker usage setting influences the precision of the QRS detection and arrhythmia analysis. Make sure to select [Used] when a patient is using the pacemaker.
- The patient classification selection influences the precision of the QRS detection and NIBP measurement. Make sure the proper selection is made.
- When [Suspend] is selected for "Setup at Discharge" under Preset menu, the suspend condition on this equipment will continue until the [Resume] key is pressed, even if the monitoring is performed on the bedside monitor.
- Depending on the software version of the bedside monitor, NIBP periodic measurement interval will not synchronize between the central monitor and bedside monitor.For details of the software version, contact your nearest service representative.
  If performing NIBP periodic measurement from the central monitor in such case, do not set the NIBP periodic measurement on the bedside monitor.
- The ventilator alarm on this monitor should be used as supplementary function. Check the patient's condition, ventilator alarm sound and message occasionally.
- If the upper/lower alarm limit of the individual parameter is set to OFF, alarm will not generate even if the individual parameter alarm is set to ON. Pay attention when setting them OFF.
- When the system alarm is suspended, all the alarms will be suspended even if the parameter alarm is set to [ON]. Also, the alarms will not be stored as recall events.
- When a parameter monitored on a bedside monitor or telemetry transmitter is in a connector-off condition, the numeric data and waveform for that parameter will not be displayed on the central monitor. Also the alarm will not generate for that parameter. Make sure that the connector is securely connected. If a waveform/numeric data is not displayed for the monitored parameter, check the patient's condition and pay attention not to miss the connector-off condition.
- The alarm for the parameter not selected for the "HR/PR Alarm Source" (ECG/SpO_2/BP) on the bedside monitor will be set to OFF on this equipment.
- When "Chk TLM Receive" is displayed, alarm will not function. Arrhythmia analysis will not be performed either.
- If the "Alarm Judgment" is set OFF, HR alarm and arrhythmia alarm will not be generated at lead-off condition. If this condition is left unresolved, a sudden change of the patient may not be noticed. Take prompt action when

the lead-off condition is detected.

- If a low battery condition occurs for the battery operating bedside monitor or telemetry transmitter, the waveforms and numeric data for the corresponding bed will not be displayed.For the telemetry transmitter and wireless bedside monitor, check battery mark "  "and a square waveform will be displayed to warn the low battery condition. But for the wired network bedside monitor, "Chk DS-LAN Comm" message will be displayed without prior warning.Therefore, the wired network bedside monitor should be operated by AC power source and not by battery. For the telemetry transmitter and wireless bedside monitor, make sure that check battery mark is not displayed.
- Objective and constant arrhythmia detection is possible through the fixed algorithm incorporated in this monitor.However, excessive waveform morphology change, motion artifact, or the inability to determine the waveform pattern may cause an error, or fail to make adequate detection. Therefore, physicians should make final decisions using functions such as manual printing, alarm printing and recall waveform for evaluation.
- If the QRS pace mask function is set to [OFF], a decrease in heart rate may not generate HR or asystole alarms due to erroneously detected QRS. Turn this function [OFF] only if you are sure that pacing failure will not occur, or when the patient can be constantly monitored.
- During TCON connection, make sure to set the channel ID before setting the ID. Miscommunication with a wrong group may occur.
- The operation cannot be guaranteed if connected to improper TCP/IP network. When changing the network setting, contact your nearest service representative. When connecting to an existing network, follow the instruction of the network administrator.
- Make sure not to duplicate the IP address for the DS-7700 system, laser printer, and the server.
- As this system does not support DHCP (Dynamic Host Configuration Protocol) IP address, set the IP address excluded at DHCP if DHCP server is used.
- Be careful not to confuse the HUB for the DS-LAN II/III network and the TCP/IP network. The operation cannot be guaranteed if connected to improper network.
- When a network setting is changed and [Enter] key is pressed, a warning message will be displayed. All the operation controls will not be possible until the system is restarted.
- When mounting to a trolley, attach the monitor to an adaptor beforehand. Make sure that it is securely locked. Use the fixing screws (x2) to ensure safe use.Otherwise, the equipment may fall from the trolley, resulting in injury to the operator or damage to the equipment.
- Do not use the trolley with any unauthorized equipment. The equipment and trolley may fall down, resulting in injury to the operator or damage to the equipment.
- Make sure that both casters are locked when the equipment is in use or in a storage position. The trolley may move or fall down, resulting in injury to the operator or damage to the equipment.
- Do not use or store the trolley where it will be subject to inclination of 10 degrees or more.The trolley and equipment may fall down, resulting in injury to the operator or damage to the equipment.

⚠ CAUTION

- Do not install this equipment in Patient Environment.
- Use only the spare parts specified for this equipment.Otherwise, proper function cannot be executed.
- For quality improvement, specifications are subject to change without prior notice.
- The maintenance and internal switch setting will be performed by our service representative.Users should not perform this procedure as malfunction may occur.
- Do not use the touch panel with film or adhesive tape attached to it. It may cause malfunction or damage the touch panel.
- As the touch panel is made of glass, a strong impact may cause damage. Pay attention not to hit or drop the touch panel.
- Always operate the touch panel with fingers or a touch panel pen. Do not touch with a pen-point or other hard-edged instruments. It may cause malfunction or damage the touch panel. Do not apply pressure for a prolonged

time to any part of the panel.

- Do not press the touch panel with strength or twist your finger on the panel.It may cause malfunction or damage the touch panel.
- Due to its material characteristic, the touch panel expands/contracts depending on the temperature/humidity. When the touch panel is left unused for a while, or when the ambient temperature is low, the surface film of the touch panel may expand, but this is not an abnormal condition. This expansion will be reduced in few hours or half a day after the power is turned ON.

⚠ CAUTION Precautions about the System

- The full disclosure waveform recording function is not available for the TCON bed.
- The time will be synchronized with the following priority.

  1 Administrating monitor, if wired network is constructed.

  2 TCON base station, if TCON system is used.

  3 SNTP server, if used.

  4 Patient data server, if used, and if [Time Synchronization] is selected on Patient Data Server setup or "Time Synchronization" is set to [ON] for [Link with EMR] or [Search ID].

- Verify that the correct date/time is set before monitoring. The date/time must be set before monitoring. If the date/time is changed during monitoring, error may be caused to the trend data or other patient data.
- If the time/date is changed during monitoring (manually or by time synchronization), the time/date of past measurement data will not be corrected. In such case, the time/date of NIBP list, 12-lead analysis result, etc. will differ between the central monitor and the bedside monitor.
- The HR, SpO_2, PR value of the NIBP list may differ between this unit and the bedside monitor.
- Many of the preset menu setup items can be set only on the network-administrating monitor (Central ID: 001). Such pre-set items will not be displayed on other monitors.
- If constructing a network with more than one central monitors, the same preset setup should be applied to all central monitors.
- Canceling the bed registration will clear all data for that bed.
- The "Drift Filter" setup on the soft switch should be the same for all central monitors.Proper operation will not be performed if the setting is different among the central monitors.
- Unless the correct power frequency is set, the AC filter will not properly function.
- Do not use any slave monitors which does not satisfy the required display resolution. Do not use any monitors which has the function to display higher resolution than the actual resolution.

⚠ CAUTION Precautions about the PC/CF Card, Data Transfer

- Do not use unspecified CF card.
- Turn OFF the power when inserting/removing the CF card.
- Check that the CF card indicator is not lit in red when turning OFF the power.
- The CF card can be used only on the unit where it was formatted.
- The data transfer using the PC/CF card is possible only between the DS-7700 system central monitors and the DS-7600 system central monitors.(However, there are some restrictions.) The data cannot be transferred to a bedside monitor.
- If the software version of the two DS-7700 central monitors are different, the data transfer may not be possible, or part of the data may not be transferred.(The data transfer from the newer version monitor to the older version monitor is not possible.)
- For the data transfer from DS-7700 series to DS-7700W series, or from DS-7700W series to DS-7700 series, the user key settings will not be transferred.

⚠ CAUTION Precautions about the Patient Admit/Discharge

- If monitoring of a new patient is started without discharging the previous patient, data of the new patient will

be added to the data of the previous patient which will result in inaccuracy.When a patient is discharged, make sure to perform the discharge procedure.
If monitoring is suspended on the bedside monitor, the data for that patient will not be transmitted to the central monitor. When monitoring is resumed on the bedside monitor, the data transmission to the central monitor will also resume.
There are following restrictions when using the DS-LANII network.

- Up to 20 characters of patient ID can be set on this equipment but some bedside monitors are capable to set only up to 10 characters depending on the software version.(For details of the software version, contact your nearest service representative.) To synchronize the setting of central monitor and the bedside monitor, set the transmitting starting digit of the ID on the "Patient ID Starting Column" under the soft switch menu. The 10 characters from the set starting digit will be transmitted as patient ID.
- Up to 16 characters for the patient name can be set on this unit but some bedside monitors are capable to set only up to 8 characters depending on the software version.For details of the software version, contact your nearest service representative.

- To display the pacemaker pulse, select [Used] on the "Admit/Discharge" screen, and select [ON] or [Distinct Color] on the "ECG Setup" screen. It is also necessary to select [Used] for pacemaker on the bedside monitor.
- When a patient ID is searched from the patient data server, admit operation should be performed with the patient information acquired from the patient data server. Also, Bed ID of the bedside monitor should not be changed during monitoring.
- When the monitoring is suspended, the trend data and full disclosure waveform (optional function) data will not be acquired.
- Resuming monitoring will also resume the suspended alarm.
- The monitor suspend function will not be linked between the central monitor and the bedside monitor.
- When a bed transfer procedure is performed, all setup data for the new bed will be updated.
  The data for the wired network bed and the same data monitored on other central monitor will be initialized.
- If bed transfer/exchange is performed for the monitors connected to the DS-LANII/III network, the GAS alarm settings will be backed up or initialized depending on the settings for "Backup at Discharge" on the bedside monitor.
- Bed transfer/exchange of ST measurement data and full disclosure waveform data is not possible among different central monitors.
- Depending on the bedside monitor type and software version, discharge procedure for the TCON bed can not be performed on this equipment.Even if the TCON bed patient is discharged on this equipment, the patient will not be discharged on the bedside monitor, and vice versa.
  For details of the bedside monitor type and software version, refer to your nearest service representative.
- When the discharge process is performed on the bedside monitor or other central monitors, the monitoring on this unit will not be suspended even if [Suspend] is selected for "Setup at Discharge".
- When EMR link function is used, the patient admitted on EMR will be also admitted on the central monitor. But it is also necessary to perform admit process for this patient on the central monitor as some items may not be transmitted.
  Make sure that the pacemaker usage and patient classification are properly set as these will affect the monitoring accuracy.
- Depending on the setup of the "Automatic Discharge from EMR" ([Yes]/[No]) under the Soft Switch menu (page 3/3), the discharge operation on this equipment will differ.If [Yes] is selected, the patient will be discharged at the same time when discharged from EMR.If [No] is selected, only patient information will be initialized and monitoring data/alarm settings will not be initialized when a patient is discharged from EMR. To discharge the patient on this equipment, discharge operation needs to be performed on the "Admit/Discharge" menu.

⚠ CAUTION Precautions about the Parameter Monitoring

- The parameters that can be monitored on this equipment differs depending on the bedside monitor type and software version.

⚠ CAUTION Precautions about the ECG Monitoring

- There are some cases when the pacemaker pulse can not be detected depending on the pacemaker type, pulse voltage, pulse width, electrode lead type (unipolar, bipolar), or electrode placement which causes the pacemaker pulse amplitude to decrease and disables the pacemaker pulse detection.
- If signals similar to a pacemaker pulse are present, such as electric blanket noise or excessive AC frequency noise, these may be erroneously detected and displayed as a pacemaker pulse.
- Depending on the electric signal condition under transmission, noise may interfere and incorrectly display the pacemaker pulse.
- When a spontaneous QRS and pacemaker pulse overlap (ex. fusion beat, etc.), QRS detection cannot be performed properly. In this case, the heart rate is degraded.
- When continuously detecting AC noise artifact as pacemaker pulses, QRS detection stops and heart rate decreases. Also arrhythmia detection will not be possible.
- The threshold level for arrhythmia detection changes with the ECG waveform size. Set a proper waveform size for monitoring.
- About the "QRS Detect" on the "ECG Setup" screen:
  It can be set only for the telemetry bed. (RF, LW)
  QRS detection may not be possible for ECG waveform with amplitude 0.3mV or below.
  When only one ECG waveform is measured, QRS detection will be performed on ECG1, regardless of the setting.
  The QRS detection for the wired network bed (BED) will be according to the setting made on the bedside monitor.

⚠ CAUTION Precautions about the Alarm Setup

- The adjustable alarm limit increment is different between the DS-5000 series and the DS-7000 series monitors. Therefore, the set alarm limit may change to the adjustable value depending on the monitor type constructing the network system and the DS-LANII/III, TCON network specification.
- Depending on the model type and software version of the TCON bed, the upper limit of the apnea alarm that can be set on this equipment is either 20 seconds or 60 seconds.
- The arrhythmia alarm of Slow VT, Couplet, Pause, Trigeminy, Tachy and Brady can not be set for the DS-LANII network bed (BED, LW, LW+T).
- The alarm messages will be displayed according to the priority.
- For the same alarm priority, the alarm message for the newer alarm will be displayed.
- Depending on the bedside monitor type and software version, the ventilator alarm factor may not be transmitted to the central monitor.
  For details of the bedside monitor type and software version, refer to your nearest service representative.
- The alarm message for the arrhythmia alarm (except Tachy, Brady) will continue to be displayed for 30 seconds even after the alarm condition dissolves.
- Even during "LEARN" status, alarm for HR, Asystole, VF, Tachy, Brady, Pause will be generated.
- Even during "Cannot analyze" status, alarm for HR, Asystole, VF, Tachy, Brady will be generated.
- If " Suspend Arrhy. Analysis during Noise Interference" under Alarm Related Setup (Preset) is set to [ON], the "Cannot analyze" alarm will generate when analysis suspended duration exceeds 30 seconds.
- When the DS-7300 is connected to the wired network, BP7, 8, TEMP3 to 8 alarm will not generate on the central monitor.
- Depending on the bedside monitor type and software version, BP7, BP8, TEMP3–8, SpMet, SpCO alarm will not be generated on the central monitor.

⚠ CAUTION Precautions about the TCP/IP Network

- Make sure to power cycle the printer after setting the IP address, etc. for the laser printer.

⚠ CAUTION Precautions about the Maintenance

- A special coating is applied to the surface of the touch panel. Do not wipe the surface with a cloth or gauze with coarse texture. Wipe the surface with the soft cleaning cloth provided as optional accessory or with an eyeglass cleaning cloth.
- If stains cannot be removed from the touch panel surface, wipe softly with a dry or ethanol dampened cleaning cloth. Never use strong-acidic cleaning solution.
- Clean the equipment frequently so stains can be removed easily.
- To prevent injury, it is recommended to wear gloves when cleaning the equipment.
- When cleaning or disinfecting, do not allow chemical solution to enter the equipment or connectors.
- Do not use organic solvents, thinner, toluene or benzene to avoid damaging the resin case.
- Do not polish the housing with abrasive, chemical cleaner, alkaline or acidic detergent. Otherwise, the surface resin or paint coating may be damaged, resulting in discoloration, scratches, and other problems.
- Do not open the housing.
- Do not allow alcohol or other liquids to enter the equipment.
- The periodic replacement part must be replaced at specified period.

Wired Network System

⚠ WARNING

- Do not connect unspecified device to the wired network.
- Do not mix devices with DS-LANII and DS-LANIII setting in the same wired network. The network may cease and proper monitoring may not be possible.
- Be careful not to confuse the HUB for the DS-LAN network and the TCP/IP network. Fukuda Denshi is not liable of the operation caused by improper network connection.
- For the DS-LANII network, used the specified 10M HUB. If a 100M HUB or a switching HUB is used, a communication error may occur.
- For the DS-LANIII network, used the specified HUB. If unspecified HUB is used, a communication error may occur.

⚠ CAUTION

- The two different network systems (DS-LANII and DS-LANIII) cannot exist in the same network. Make sure that DS-LAN setup (DS-LANII/DS-LANIII selection) is the same for all monitors connected to the same network.
- The DS-5000 series bedside monitors, LW-5560N Telemetry Receiver, and AU-5500N 8ch Recorder are not compatible with the DS-LANIII network.
- If the DS-LAN setup is changed from DS-LANIII to DS-LANII, the registered beds from 49th to 100th will be cancelled and patient data for these beds will be erased. When using the wired network and TCON system simultaneously, make sure to connect the TCON base station and remote station on the same network.
- The central monitor with central ID: 001 functions as the network administrator and controls the wired network system. One of the central monitors must have the central ID: 001 in a network system. Also, the central ID must not be duplicated among the central monitors.
- For the alarm generation on the bedside monitor, maximum of 2.5 seconds delay will occur for the alarm generation on the central monitor.
- The "12-Lead Wave" and "12-Lead ST" screen can be displayed only for the wired bedside monitors monitoring 12-lead ECG. The "12-Lead ST" screen can be displayed only for the DynaScope 5000 series wired

bedside monitors. It cannot be displayed for the DynaScope 7000 series bedside monitors.

- When connected to the DS-LANII/III network, and if the "RR source" is other than impedance respiration (Or, if [Auto] selects the RR source other than impedance respiration) on the bedside monitor, respiration waveform will not be displayed on the central monitor. Similarly, if the "RR source" is other than CO_2 (Or, if [Auto] selects the RR source other than CO_2) on the bedside monitor, the CO_2 waveform will not be displayed on the central monitor.
- When connected to the DS-LANII/III network, and if BP is selected for "HR/PR source" (Or, if [Auto] selects BP for HR/PR source) on the bedside monitor, ECG waveform will not be displayed on the central monitor.

⚠ CAUTION Precautions about the DS-LANII Network System

- For the network-administrating monitor (Central ID: 001), the DS-7600 or DS-7700 must be set. The network will not function if the DS-5800N/NX/NX^{MB} is set as the network administrator.
- If more than three DS-5800N/NX/NX^{MB} are connected, the DS-5800N/NX/NX^{MB} cannot display the same patient data on all 3 monitors at the same time. Maximum of 2 monitors are able to display the same patient data.
- For the DS-5800N/NX/NX^{MB}, or Other Bed display on the bedside monitor, maximum of 2 monitors can simultaneously display the same patient data.
- Maximum of 32 beds can be monitored on the DS-5800N/NX/NX^{MB} which is connected to the same wired network with this unit.
- If the measurement unit for BP (mmHg/kPa) is different between the bedside monitor and the central monitor, the corresponding waveform and numeric data will not be displayed on the central monitor.
- When the temperature unit is °F, the temperature data can not be monitored on the central monitor.

⚠ CAUTION Precautions about the DS-LANIII Network System

- If the measurement unit for BP (mmHg/kPa) and temperature (°C/°F) is different between the bedside monitor and the central monitor, the corresponding waveform and numeric data will not be displayed on the central monitor.
- If the numeric data is displayed as "xxx" (out of measurement range) on the bedside monitor, maximum or minimum value of measurable range will be transmitted to the central monitor.

Wireless Network System

⚠ DANGER

- When monitoring a patient with wireless telemetry, make sure the patient data is properly received at the central monitor. Pay special attention when channel ID at the bedside monitor is changed.

⚠ WARNING

- Make sure to set the correct channel ID.
- Some wireless combinations of telemetry transmitters may generate interference with other devices. Before selecting the channel, verify it will not interfere with other channels.
- Make sure the telemetry manager of your system is aware of any changes to the telemetry channels.
- If transmitters are used in a neighboring medical facility, your facility and the neighboring facility must make agreements on the setting of the telemetry channels to prevent telemetry interference.
- If channel ID is changed for the transmitter, make sure to replace the channel label attached to the transmitter with a new one.
- If the channel ID is changed without notifying, it will result in monitoring an incorrect patient. To avoid incorrect diagnosis, make sure that the channel ID corresponds to the patient.

⚠ CAUTION

- For the alarm generation on the bedside monitor connected by wireless network, maximum of 15 seconds delay will occur for the alarm generation on this unit.

TCON System

⚠ CAUTION

- Depending on the monitor model type, some functions for the TCON network bed are restricted.
- The date/time setting of the TCON remote station synchronizes with the TCON base station. However, if the TCON remote station is connected to the wired network, the date/time setting synchronizes with the network administrating monitor (central ID: 001).
- The TCON installation and setup should be performed by our service representative. The users should not attempt them.
- Follow the instructions of the Overall Manager for the wireless channel when setting the TCON ID or channel (group) to prevent interference within the same institution.
- The same TCON channel (group) should be set for the central monitors and bedside monitors within the same TCON group.
- For the alarm generation on the bedside monitor connected to the TCON network, maximum of 5 seconds delay will occur for the alarm generation on this equipment.

RTC and Data Backup

⚠ CAUTION

- This unit is equipped with a built-in clock. When the power of this unit is turned OFF, this clock is backed up by a lithium primary battery. If incorrect time is displayed when turning ON the power, a low battery may be the cause. In such case, contact Fukuda Denshi service representative for replacing the battery.
- To protect the data during voltage dip, short interruptions and voltage variations on power supply input lines or during short duration of power turned OFF, this unit performs 10-minute (approx.) data backup using the secondary battery. If the power is turned OFF for more than 10 minutes, the data will not be protected. The data may not be protected if the power is turned OFF within 30 minutes from power ON. The data that may not be protected are trend data, NIBP list data, ST data, and recall data.

Cables

⚠ CAUTION

- When disconnecting the cables, pull on the connector and not on the cable itself. For cable with a lock tab, push the tab when disconnecting. Pull the connector straight so the connector pins do not bend. When attaching the cables to each other, both connectors should be directly facing each other.

Precautions about the Peripheral Device, Accessories, Optional Accessories

Connection to Peripheral Device

In the interest of safe and sufficient performance of this equipment, the connection of other manufacturers' equipment to this unit is not authorized, unless the connection is explicitly approved by Fukuda Denshi. It is the user's responsibility to contact Fukuda Denshi to determine the compatibility and warranty status of any connection made to another manufacturer's equipment.

When connecting peripheral devices to this unit, it is the user's responsibility to verify that the overall system complies with IEC 60601-1-1, "Collateral Standard: Safety Requirements for Medical Electrical Systems".

⚠ WARNING

- For the connector with ⚠ mark, only the peripheral devices specified by Fukuda Denshi should be connected with the given procedure. Use of an unspecified device may cause electric shock to the patient and/or operator due to excessive leakage current.

⚠ CAUTION

- All the peripheral device connectors on this unit are isolated from the power supply, but the peripheral devices are not isolated. To prevent danger of electric shock, always position the peripheral devices away from the patient.

Fuse

⚠ DANGER

- If the fuse blows, contact Fukuda Denshi service representative. Do not continue using it as internal damage to the equipment may be considered.

Accessories and Optional Accessories

⚠ WARNING

- Use only the cables specified by Fukuda Denshi.
  Use of other cables may result in increase in emission or decrease in immunity.

Recording Paper

⚠ CAUTION Precautions about the Recording Paper

- Use only the specified recording paper. The surface treatment and thickness of the recording paper affects the printing quality.

⚠ CAUTION Storing the Recording Paper

The recording paper is thermal type. Storage over an extended period of time at a high temperature may change the quality of the printed content, and make it illegible. When storing, follow the precautions below.

- Store in a place where light is shut off and avoid direct sunlight.
- Do not leave the paper in a high temperature (50 °C/122 °F and above).
- Do not store the paper in a polyvinyl chloride bag.

- Do not superpose the papers until the diazo copy is completely dried.
- Do not expose the paper to alcohol, hydrochloric acid, or ester ketone.
- Avoid using adhesive agents other than water based glue.

Precautions about Disposing of the Equipment, Accessories, or Components

⚠ CAUTION

- When disposing of this equipment, accessories, or components, use an industrial waste distributor. Do not dispose of as ordinary waste.
- When disposing of the battery, separate it from other wastes and contact your nearest service representative.

Precautions about Transportation

⚠ CAUTION

- When transporting this unit, pack it with specified packing materials.
  Also, transport it under appropriate environment condition.
  (☞Operation Manual "Specification/Performance" P14-1)

Electromagnetic Compatibility

The performance of this device under electromagnetic environment complies with IEC 60601-1-2:2001+A1:2004.

Precautions for Safe Operation under Electromagnetic Influence

If any sorts of electromagnetic wave, magnetic field, or static electricity exist around the device, noise interference or malfunction of the device may occur. If any unintended malfunction or noise occurs during monitoring, check the electromagnetic influence and take appropriate countermeasures.

The following are examples of the common cause and countermeasures.

⚠ WARNING Cellular Phone

- The radio wave may cause malfunction to the device.
  Cellular phones and radio sets should be turned off in the room (building) where medical device is located.

⚠ WARNING Lightning

A lightning nearby may induce excessive voltage to the equipment. If any danger is suspected;

- Use the uninterruptible power supply system.

⚠ CAUTION High frequency noise interference from other device through the power outlet

- Check where the noise is originated and remove it using filtering device, etc.
- Stop using the device that is originating the noise.
- Use other power outlet.

EMC Guidance

This equipment complies with IEC 60601-1-2:2001+A1:2004. However, if portable transmitter or wireless LAN equipment is used extremely nearby, the electromagnetic influence may largely exceed the compliance level and may cause unexpected phenomenon such as noise interference on the waveform, etc.

This equipment should be used in a location specified by each medical institution.

If any unexpected noise interference on the waveform or failure to the peripheral device occurs, stop using the equipment and follow the instruction of the technical engineer.

The following is the information relating to EMC (Electromagnetic Compatibility).

(When using this equipment, verify that it is used within the environment specified below.)

❑Compliance to the Electromagnetic Emissions

The DS-7700 system is intended for use in the electromagnetic environment specified below. The customer or the user of the DS-7700 system should assure that it is used in such an environment.

Guidance and Manufacturer's Declaration - Electromagnetic Emissions		
Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF Emissions CISPR 11	Group 1	The DS-7700 system uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class A	The DS-7700 system is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network which supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Not Applicable	
Voltage Fluctuations/ Flicker Emissions IEC 61000-3-3	Not Applicable	

❑Compliance to the Electromagnetic Immunity (1)

The DS-7700 system is intended for use in the electromagnetic environment specified below. The customer or the user of the DS-7700 system should assure that it is used in such an environment.

Guidance and Manufacturer's Declaration - Electromagnetic Immunity			
Immunity Test	IEC 60601-1-2 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	±6kV: contact ±8kV: air	±6kV: contact ±8kV: air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2kV: power supply lines ±1kV: input/output lines	±2kV: power supply lines ±1kV: input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1kV: differential mode ±2kV:common mode	±1kV: differential mode ±2kV:common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines. IEC 61000-4-11	<5% U_T* (>95% dip in U_T) for 0.5 cycles 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec.	<5% U_T (>95% dip in U_T) for 0.5 cycles 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec.	Mains power quality should be that of a typical commercial or hospital environment. If it is required to continuously operate the DS-7700 system during power failure, it is recommended to operate on an uninterrupted power supply.
Power Frequency (50/60Hz) Magnetic Field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

*: U_T is the AC mains voltage prior to application of the test level.

❑Compliance to the Electromagnetic Immunity (2)

The DS-7700 system is intended for use in the electromagnetic environment specified below. The customer or the user of the DS-7700 system should assure that it is used in such an environment.

Guidance and Manufacturer's Declaration - Electromagnetic Immunity			
Immunity Test	IEC 60601-1-2 Test Level	Compliance Level	Electromagnetic Environment - Guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the DS-7700 system, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended Separation Distance
Conducted RF IEC 61000-4-6	3Vrms 150kHz to 80MHz	3Vrms	$d = 1.2 \sqrt{P}$
Radiated RF IEC 61000-4-3	3V/m 80MHz to 2.5GHz	3V/m	$d = 1.2\sqrt{P}$ 80MHz to 800MHz $d = 2.3 \sqrt{P}$ 800MHz to 2.5GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey*1, should be less than the compliance level in each frequency range*2. Interference may occur in the vicinity of equipment marked with the following symbol: 

Note 1: At 80MHz and 800MHz, the separation distance for the higher frequency range applies.

Note 2: These guidelines may not apply in all situations.
Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

*1: Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast can not be predicted theoretically with accuracy.
To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered.If the measured field strength in the location in which the DS-7700 system is used exceeds the applicable RF compliance level above, the DS-7700 system should be observed to verify normal operation.If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the DS-7700 system.

*2: Over the frequency range 150kHz to 80MHz, field strength should be less than 3V/m.

❑Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the DS-7700 system

The customer or the user of the DS-7700 system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the DS-7700 system as recommended below, according to the maximum output power of the communications equipment.

Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the DS-7700 system			
Rated Maximum Output Power of Transmitter (W)	Separation Distance according to Frequency of Transmitter (m)		
	150kHz to 80MHz $d = 1.2\sqrt{P}$	80MHz to 800MHz $d = 1.2\sqrt{P}$	800MHz to 2.5GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be determined using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. Note 1: At 80MHz and 800MHz, the separation distance for the higher frequency range applies. Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

❑Essential Performance Statement

- This equipment complies with the requirements of 6.2.1.10 of IEC 60601-1-2:2007 and the accuracy requirements of heart rate range, accuracy and QRS detection range except sub clauses ESD and electrosurgery.
- This equipment will not change the operation state, lose or change any stored data, generate errors in control software that cause an unintended change in output, or cause errors in blood pressure readings that are outside of 6.2.1.10 of IEC 60601-1-2:2007 and the accuracy requirements of accuracy of systolic and diastolic pressure except for sub clauses ESD and electrosurgery. These criteria do not apply to ESD testing.<IBP>
- Pulse oximeter equipment meets the requirements of IEC 60601-1-2. <SpO_2>
- This equipment will not change the operation state, lose or change any stored data, generate errors in control software.<NIBP/TEMP/CO/RESP/$EtCO_2$>

Telemetry Precautions

For proper management of the telemetry installation, consult your Fukuda Denshi representative concerning the following.

- Plan the installation of your telemetry system, taking into account your entire medical facility needs and plant requirements.
- Be sure the antenna system installed meets the facility and plant requirements.

⚠ WARNING

- The Radio Frequency device is susceptible to interference from other outside sources. Interference may prevent the monitoring of patients connected to this device. If problems exist, contact your local service representative.
  - Note: This device operates in the 600MHz UHF band. The exact frequency of operation depends on the destination, and has been preset for your facility, and may be identified by cross-referencing the channel designator on the device with the Telemetry Channel-Frequency Table in the transmitter operating manual.

⚠ CAUTION

- The manufacturers, installers and users of WMTS equipment are cautioned that operation of this equipment could result in harmful interference to other nearby medical devices.
- Users are advised to periodically contact the FCC or specified frequency coordinator and determine if your transmitter frequencies may cause interference.
- To assure safe and reliable operation, observe the following precautions:
  - Be sure that no other devices are using the frequency assigned to this transmitter.
  - This device is susceptible to interference from electrosurgical knives and other computerized equipment. If problems occur, contact your local Fukuda Denshi service representative.
  - Any obstruction such as reinforced concrete or large metallic surfaces between the receiver and the transmitter can affect reception. If problems occur, contact your local Fukuda Denshi service representative.
  - When a low battery alarm occurs, replace the battery in the transmitter.

Declaration of Conformity

Device: Central Monitor
Model Name: DS-7780/DS-7780W

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
1) This device may not cause harmful interference.
2) This device must accept any interference received, including interference that may cause undesired operation.

The responsible party for this device is:

Fukuda Denshi USA, Inc.
17725-C NE 65th Street
Redmond, WA 98052
Phone: (425) 881-7737, US Agent

WARNING

- Changes or modification not approved by the responsible party for compliance of this device could void the user's authority to operate the equipment.

Chapter 1 Before Installing the Equipment

Chapter 1 Before Installing the Equipment

Precautions for Installing the Equipment

WARNING

- The installation of this unit will be performed by our service representative. Users should not attempt it.
- The system construction and network setup of this equipment should be performed by our service representative or system administrator of your institution.

Operating Environment

- The following environmental conditions should be observed when installing the device.
  - Surrounding Temperature : 10 to 40°C
  - Relative Humidity: 30 to 85% (non-condensing)

- This device is intended for patient monitoring in ICU, CCU, surgery, and ward.
  Direct use in MRI environment or home-care should be avoided.

- The power source should fulfill the following condition.
  - Use a hospital grade 3-way outlet.If a hospital grade outlet is not available, make sure to connect the equipotential ground terminal with the accessory ground cable.
  - Verify power voltage and frequency before connecting to an AC power source.
  - Use the power source that can provide adequate power to the device.

- Pay attention when installing or storing the device. Do not install or store in the following locations.
  - where chemicals are stored or gas may generate
  - where the equipment will be subject to splashing water or humidity from a nebulizer or vaporizer
  - where the equipment will be subject to direct sunlight
  - where the equipment will be subject to inclination, vibration, or shock
  - where it is difficult to unplug the power cable

- Ensure proper ventilation to cool the device.
  - A minimum space of 5 cm is required between vents on the rear side of the monitor and the wall.If the monitor is embedded in a wall or surrounded by a wall, a minimum space of 10 cm is required.

WARNING

- If the monitor is used in an environment not fulfilling the above conditions, not only the monitor will not deliver its maximum performance, but damage to the equipment may occur and safety can not be ensured.

If using in an environment other than specified above, contact our service representative.

Procedure to Start Monitoring

This section explains the operation flow from installation, preparation, and monitoring condition settings.

1 Start the DS-7700 System.

1 Attach the display unit to the main unit. (DS-7700W series only)
2 Connect the power cable.
3 Turn ON the power.
4 Connect the keyboard and mouse (optional).

2 Prepare to construct the network system. (DS-LANII/III, TCON).

1 Select the DS-LAN System (DS-LANII/III)
2 Set the central ID. (DS-LANII/III, TCON)
3 Set the transmitting starting digit of the patient ID. (DS-LANII, TCON)
4 Set the date/time. (DS-LANII/III, TCON)
5 Set the TCON for serial communication port. (TCON)

3 Construct the network system (DS-LANII/III, TCON, wireless system).

1 Connect the LAN cable.
2 Connect the TCON system.
3 Connect the antenna for wireless system (optional).

4 Set the monitoring beds.

1 Register the monitoring beds.
2 Set the channel ID.

5 Set the Pre-Set items to prepare for monitoring.

1 Set the password.
2 Set the recorder operation.
3 Set the Soft Switch.
4 Set the ST, BP, TEMP measurement unit and CO_2 atmospheric pressure.
5 Set the user key.
6 Set the alarm related setup.
7 Set the initial settings at admittance.
8 Register the bed name.

NOTE

- The short-term backup battery used for this equipment needs to be replaced periodically. (Every 3 years depending on the used frequency) Write the replacement date on the Parts Replacement Label supplied as accessory and use it for indication of replacement period.

Chapter 2 Installation of the Unit

Chapter 2 Installation of the Unit

To Start the DS-7700 System

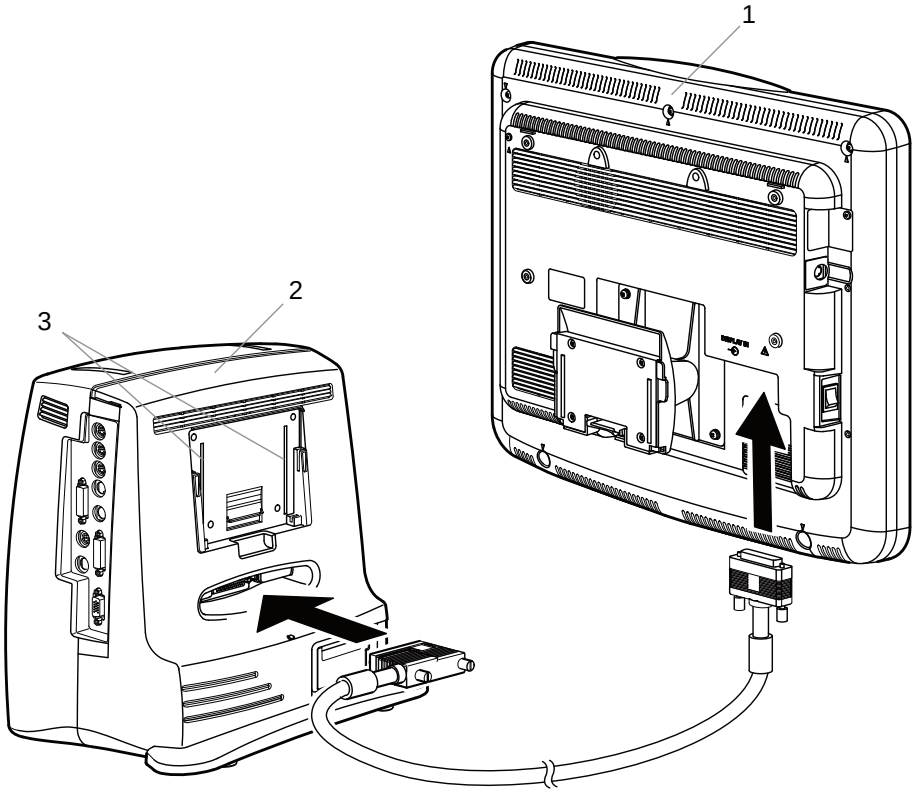
WARNING

- When moving the display unit, do not apply excessive force.

Connecting the Display Unit to the Main Unit (DS-7700W series only)

To use the 19-inch display unit, it is necessary to first attach the display unit to the main unit.
For the DS-7700 series, this procedure is not necessary as the display unit is already connected to the main unit with a cable.

1 Connect the main unit and display unit using the display unit connection cable (CJ-731S).



1 Display Unit

2 Main Unit

3 Attachment Guide

REFERENCE

- The power is supplied to the display unit via display unit connection cable from the main unit.

2 Insert the display unit to the attaching guide on the main unit from above.

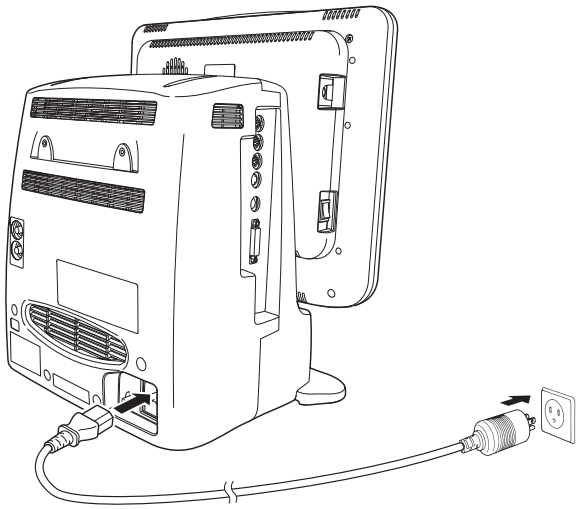
- A click sound can be heard when securely connected.

WARNING

- When lifting this equipment, hold the bottom part of the main unit and not the display unit.
- Make sure that the display unit is securely locked into position on the main unit.

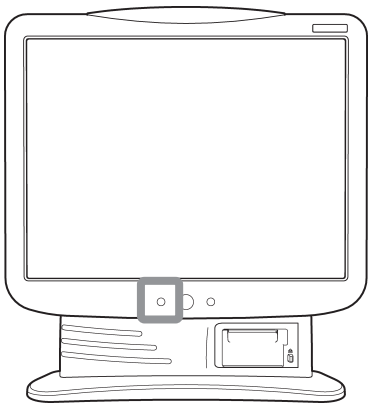
Connecting the Power Cable

1 Connect the accessory power cable (CS-24) to the power supply connector on the rear side of the main unit.



2 Connect the other end of the power cable to the 3-way outlet with ground terminal.

- AC power will be supplied to this unit.
- The main power indicator on the front side of the main unit will light in orange.



WARNING

- Use only the supplied 3-way AC power cable. Use of other cables may result in electric shock to the patient and the operator.
- The power cable must be connected to a hospital grade outlet. When connecting, do not use a multiple portable socket-outlet.

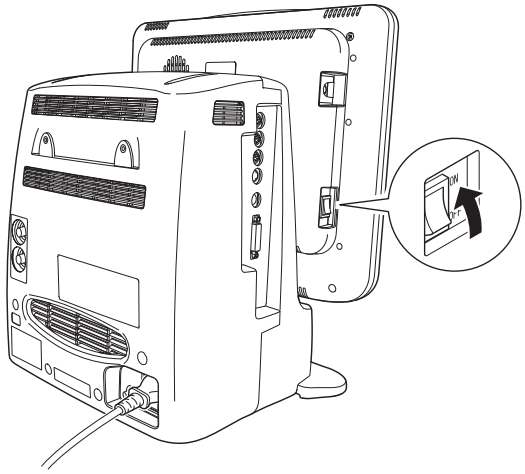
- When using multiple ME equipment simultaneously, perform equipotential grounding to prevent potential difference between the equipments. Even a small potential difference may result in electric shock to the patient and the operator.
- Refer to the following note regarding the equipotential grounding.

NOTE

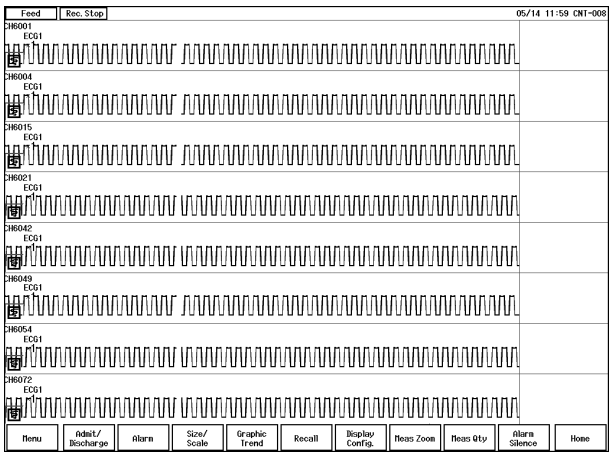
- Equipotential Grounding
  When connecting multiple devices, electrical potential difference may be generated between the devices. This may result in electric shock to the patient connected to these devices. Pay special attention for use in Operating Room, ICU, CCU, Cardiac Catheter Laboratory, and Cardiovascular X-ray room. To avoid such electrical potential difference, use the ground cable to connect each device's potential equalization terminal to the same ground terminal. This is called equipotential grounding.

Turn ON the power.

1 Turn ON the power switch located at the left side of the display unit.



- The main power indicator on the front side of the unit will light in green.
- The display will turn ON.



Example of Startup Display

REFERENCE

- The display will differ according to the setup.

NOTE

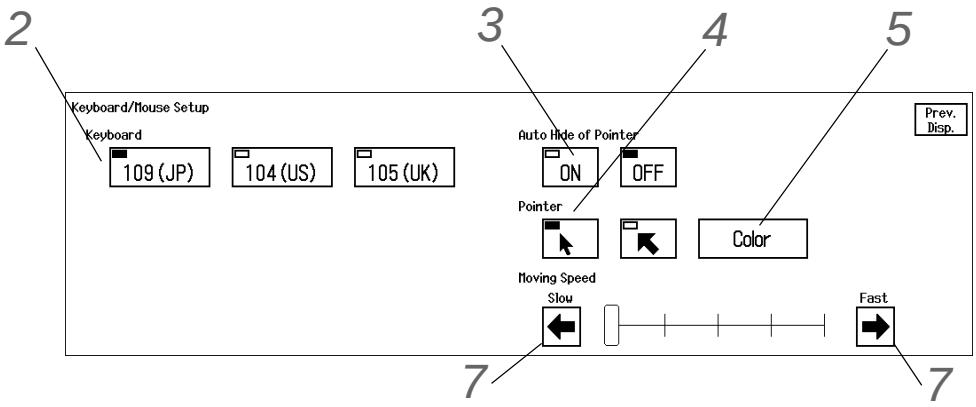
- The display brightness can be adjusted for optimum view.
  (☞Operation Manual "Brightness" P10-13)

Keyboard/Mouse Setup

Connecting the optional mouse and keyboard allows touch panel key control using a mouse, and character input using a keyboard.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Keyboard/Mouse Setup] key.

▸ The "Keyboard/Mouse Setup" screen will be displayed.



2 Select the keyboard type from [109(JP)]/[104(US)]/[105(UK)].

3 Select ON/OFF for "Auto Hide of Pointer".

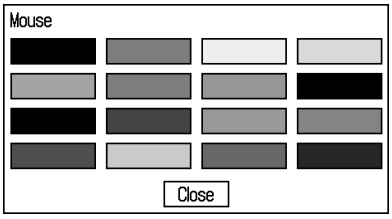
▸ [ON]: Automatically hides the pointer if the mouse is not used for 30 seconds. By moving or clicking the mouse, the pointer will be displayed again.

▸ [OFF]: Pointer will be always displayed.

4 Use the [ ] / [ ] keys to set the pointer shape.

5 Press the [Color] key.

▸ The color selection window will be displayed.



6 Set the pointer color.

▸ The "Keyboard/Mouse Setup" screen will be displayed.

7 Use the ◀/▶ keys for "Moving Speed" to set the pointer speed.

Connecting the Keyboard and Mouse (Optional)

By connecting the keyboard, characters can be input using the keyboard.
Also, by connecting the mouse, the touch panel keys can be controlled by clicking the mouse.

NOTE

- Use a PS/2 compatible keyboard.
- Use a PS/2 compatible mouse.
- When using the keyboard and mouse, keyboard and mouse setup is necessary. (☞"Keyboard/Mouse Setup" P2-4)

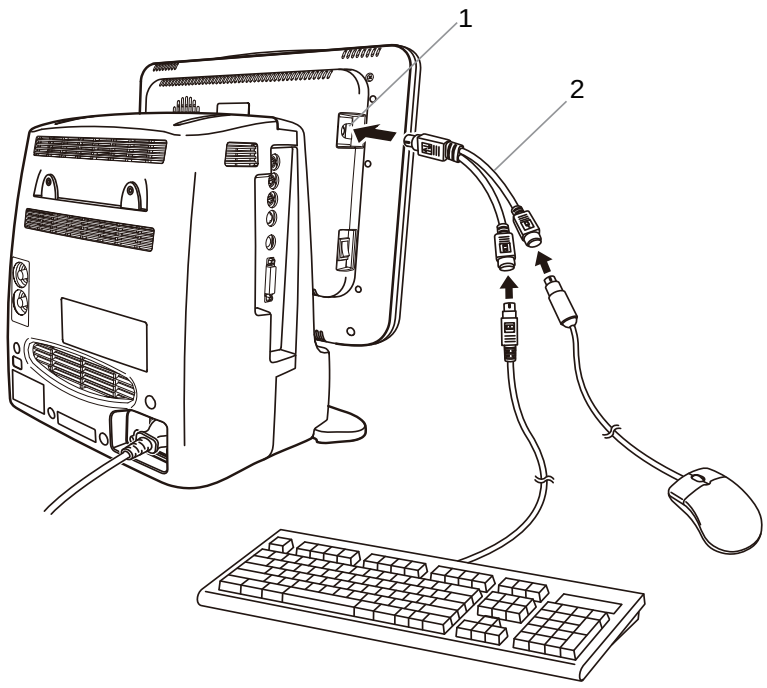
When using both the keyboard and mouse, or keyboard only:

1 Connect the PS/2 Splitter Cable to the external equipment connector located at the left side of the display unit.

2 Connect the keyboard and mouse to the PS/2 Splitter Cable.

NOTE

- Properly connect to the corresponding connectors.



1 External Equipment Connector

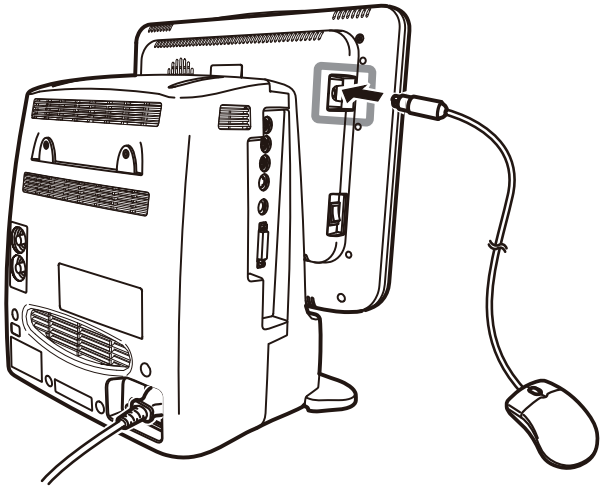
2 PS/2 Splitter Cable

REFERENCE

- On the PS/2 Splitter Cable, a keyboard mark and a mouse mark is indicated.

When using the mouse only:

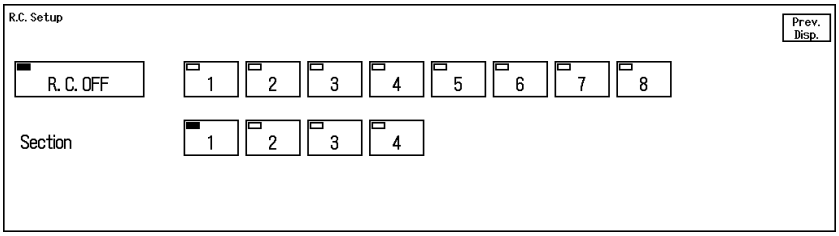
1 Connect the mouse directly to the external equipment connector.



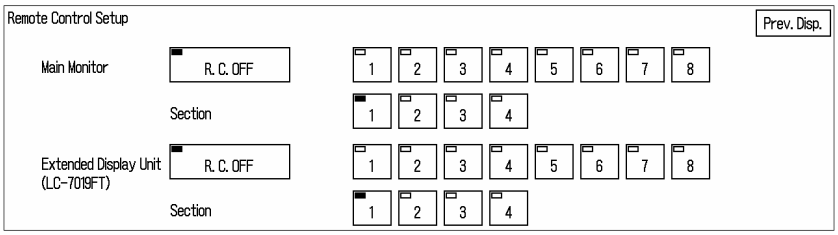
Remote Control Setup

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [R.C. Setup] key.

- The "R.C. Setup" screen will be displayed.



Screen on DS-7700 Series



Screen on DS-7700W Series

NOTE

- The "Extended Display Unit (LC-7019FT) " on the DS-7700W series will be displayed only when [Multi Display] is selected for "Output Selection" on the "Extended Display Unit Setup", and LC-7019FT is used as the extended display unit.

2 Set the bed ID from [1] to [8] which will respond to monitor selection dial on the remote control unit.

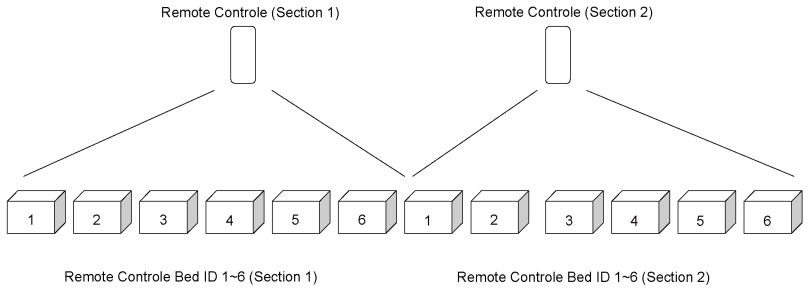
NOTE

- Select [R.C. OFF] if not using the remote control function.

3 Select the "Section" from [1] to [4].

NOTE

- One remote control unit can control maximum of 8 monitors. When controlling more than 8 monitors, it is necessary to set a section for remote control. If the section is not properly set, the remote control may unintentionally control 2 monitors at the same time.
- The set section number must be the same between the remote control unit and the monitor.



REFERENCE

- For procedure to set the section on the remote control unit, refer to the operation manual of the remote control unit.

4 Check the setting.

⚠ CAUTION

- Do not set the same remote control bed ID to more than one monitors on the same floor. Otherwise, it may cause to remote control more than one monitors at the same time.
- After the remote control setup, check that the remote control unit is properly operating.
- In case of DS-7700W series, if the same remote control ID is set for the main display unit and the extended display unit, the alarm generated on both unit will be silenced.
  If different remote control ID is set for the main display unit and the extended display unit, the alarm for the corresponding display unit will be silenced.

Using the Slave Monitor

The main unit is equipped with DVI-I connector for slave monitor output which allows digital or analog RGB connection of the display unit recommended by Fukuda Denshi.

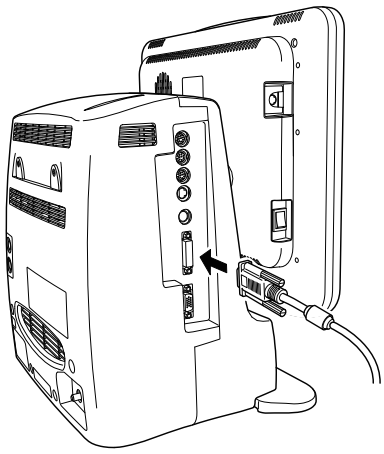
On the slave monitor, the same display as the main unit or full disclosure waveform can be displayed.

For the DS-7700W series, the same display as the main unit will be displayed on the slave monitor, and the full disclosure waveform data will be displayed on the extended display unit.

Connection

NOTE

- When connecting, contact our service representative.



Slave Monitor Specification:

A commercially available monitor satisfying the following condition should be used.

- Resolution — XGA size (1024dot x 768dot) (For DS-7700 series)
  SXGA size (1280dot x 1024dot) (For DS-7700W series)
- Horizontal Frequency — 48.4kHz (For DS-7700 series)
  64.0kHz (For DS-7700W series)
- Vertical Frequency — 60Hz (For both DS-7700 series and DS-7700W series)
- Cable Length — When connecting analog RGB monitor: 10m(max)*1
  when connecting digital monitor: 10m(max)*2

*1: For analog RGB connection, commercial DVI-I male ⇔ VGA HD15 female connector changer and VGA cable are required.
If using a cable longer than 3m, use low-loss cable to maintain the performance.

*2: For digital connection, use the CJZ-01SS digital display connection cable to maintain the performance.

Model	Length
CJZ-01SS3	3m Can be also used for extended display unit connection.
CJZ-01SS5	5m Cannot be used for extended display unit connection.
CJZ-01SS10	10m Cannot be used for extended display unit connection.

⚠ CAUTION

- Do not use any slave monitors which does not satisfy the required display resolution even if it is capable of displaying higher resolution than the actual resolution. If such monitor is used, the display screen image will not be properly shown.

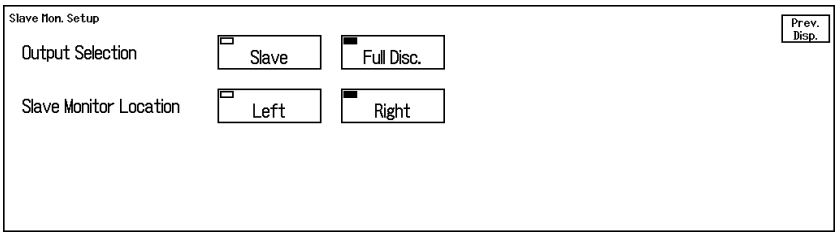
Slave Monitor Setup (DS-7700 series only)

REFERENCE

- For the DS-7700W series, slave monitor display can be performed without this setup.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Slave Mon. Setup] key.

▸ The "Slave Mon. Setup" screen will be displayed.



2 Set the "Output Selection".

▸ [Slave]: Outputs the same display with the main unit.

▸ [Full Disc.]: Outputs the full disclosure waveform.

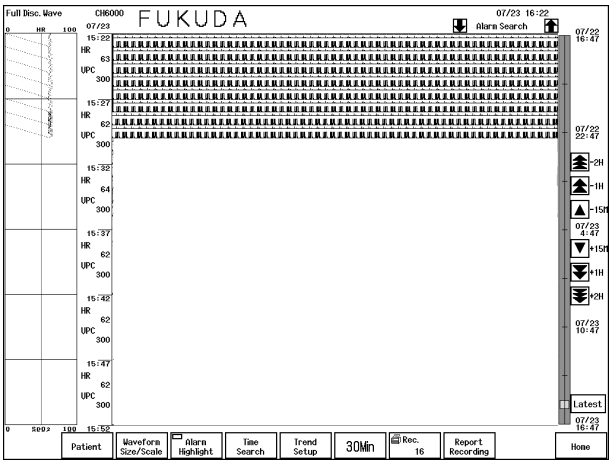
3 Select [Left]/[Right] for "Slave Monitor Location".

REFERENCE

- By viewing the main unit from the front side, select which side of main unit to locate the slave monitor.

Full Disclosure Waveform Display (DS-7700 Series Only)

If [Full Disc.] is selected for " Output Selection" , full disclosure waveform will be displayed on the slave monitor. (☞Operation Manual "Full Disclosure Waveform Recording (Optional Function)" P8-33)

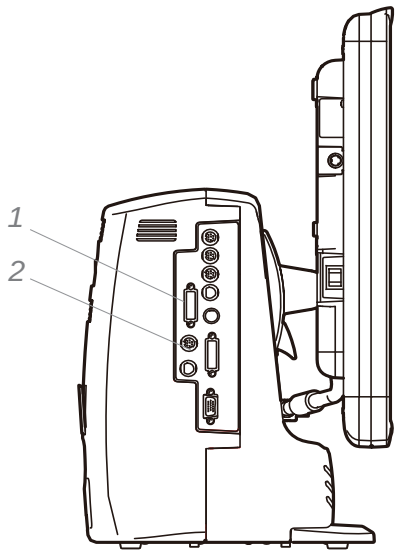


Using the Extended Display Unit (DS-7700W series only)

The main unit is equipped with DVI-I connector for extended display unit output which allows connection of extended display unit (LC-7019 series).
On the extended display unit, the multimode display or full disclosure waveform can be displayed.

Connection

When connecting, contact our service representative.



1 Connect the extended display unit via video cable. (DS-7700W series only.)

2 Connect the extended display unit via serial cable. (DS-7700W series only.)

⚠ CAUTION

- If the video cable of the extended display unit is connected to the slave output connector, multimode display, full disclosure waveform will not be displayed. Make sure to connect the

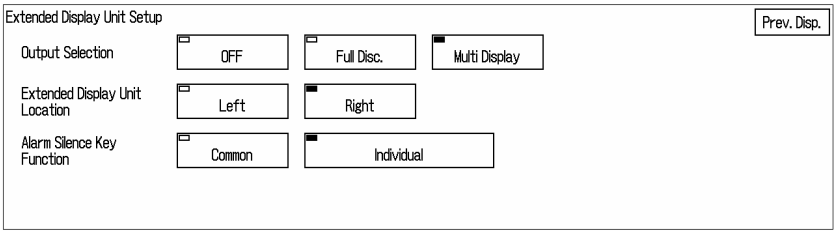
cable to the extended video output connector.

- Do not use any unspecified extended display unit even if it is capable of displaying higher resolution than the actual resolution. If such monitor is used, the display screen image will not be properly shown.

Setup

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Extended Display Unit Setup] key

- The "Extended Display Unit Setup" screen will be displayed.



2 Set the "Output Selection".

- [OFF]: Nothing will be displayed on the extended display unit.
- [Full Disc.]: Full disclosure waveform will be output.
- [Multi Display]: Multimode display will be output.

3 Set the "Extended Display Unit Location".

REFERENCE

- By viewing the main unit from the front side, select which side of main unit to locate the extended display unit.

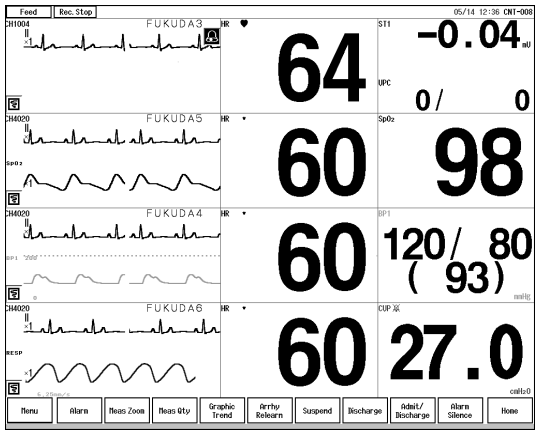
4 Set the "Alarm Silence Key Function".(Only when [Multi Display] is selected]

- [Common]: Pressing the [Alarm Silence] key on either of the main display unit or the extended display unit will silence the alarms generated on both display units.
- [Individual]: Pressing the [Alarm Silence] key will silence only the alarm generated on the display unit which the key was pressed. The alarm for other display unit will not be silenced.

Multimode Display

By selecting [Multi Display] for "Output Setup", multimode display function can be used.
Using the multimode display function allows to monitor maximum of 16 beds on the main unit and the extended display unit.

Main Unit



Extended Display Unit

When using the multimode display function, a light blue line will be displayed at the bottom of the screen for the monitor currently in operation to indicate which monitor can be operated by touch panel, mouse, or keyboard. The keyboard operation will be effective for the monitor with this light blue line.

⚠ CAUTION

- Alarm sound will not generate from the extended display unit as a speaker is not incorporated. Alarm sound will be generated from the main unit. When using the multimode display function, make sure to locate the extended display unit where the alarm sound from the main unit can be heard.

❑Display and Function Available on the Extended Display Unit

The display and function available on the Extended Display Unit are as follows.

Admit/Discharge	
Admit	Admit/discharge, monitor suspend operation for the monitored beds on the extended display unit can be performed.
Discharge	
Monitor Suspend	
Alarm	
Alarm Setting for Each Parameter	Alarm setting for the monitored beds on the extended display unit can be performed.
Alarm Suspend	Alarm suspend/resume operation for the monitored beds on the extended display unit can be performed.
Resume All Alm. Sound	Alarm silence condition for the monitored beds on the extended display unit can be cancelled.
Function	

<table>
<tr><td>Graphic Trend</td><td rowspan="9">Trend, recall, full disclosure waveform for the monitored beds on the extended display unit can be displayed.</td></tr>
<tr><td>Tabular Trend</td></tr>
<tr><td>Recall</td></tr>
<tr><td>NIBP List</td></tr>
<tr><td>ST Measurement</td></tr>
<tr><td>Full Disclosure Waveform</td></tr>
<tr><td>12-Lead</td></tr>
<tr><td>Night Mode</td></tr>
<tr><td colspan="2">Parameter</td></tr>
<tr><td>Setting for Each Parameter</td><td rowspan="2">Parameter setup, parameter ON/OFF selection for the monitored beds on the extended display unit can be performed.</td></tr>
<tr><td>Parameter ON/OFF</td></tr>
<tr><td colspan="2">System Configuration</td></tr>
<tr><td>Record</td><td rowspan="2">Corresponding setup for the monitored beds on the extended display unit can be performed.</td></tr>
<tr><td>Color</td></tr>
<tr><td>Tone/Volume</td><td rowspan="4">Setting which will also apply to the main unit can be performed. If the setting is changed, the setting on the main unit will also change.</td></tr>
<tr><td>Sweep Speed</td></tr>
<tr><td>Monitor Suspend Setup</td></tr>
<tr><td>Nurse Team Setup</td></tr>
<tr><td>Display Configuration</td><td>Monitoring beds on the extended display unit can be selected and display configuration can be set.</td></tr>
<tr><td>Brightness Setup</td><td>The brightness on the extended display unit can be set. (LC-7019FT only)</td></tr>
<tr><td>Bed Transfer</td><td>Bed transfer/exchange for the monitored beds on the extended display unit can be performed.</td></tr>
<tr><td colspan="2">Pre-Set</td></tr>
<tr><td>Channel Setup</td><td>The channel number for the monitored beds on the extended display unit can be set.</td></tr>
<tr><td colspan="2">Recording</td></tr>
<tr><td colspan="2">Manual recording for the monitored bed on the extended display unit can be performed.
If built-in recorder is set as the output recorder, it will be output from the recorder on the main unit.</td></tr>
<tr><td colspan="2">Alarm Indicator</td></tr>
<tr><td colspan="2">Blinks when the monitored bed on the extended display unit generates an alarm. (LC-7019FT only)</td></tr>
</table>

❑Restrictions on the Extended Display Unit

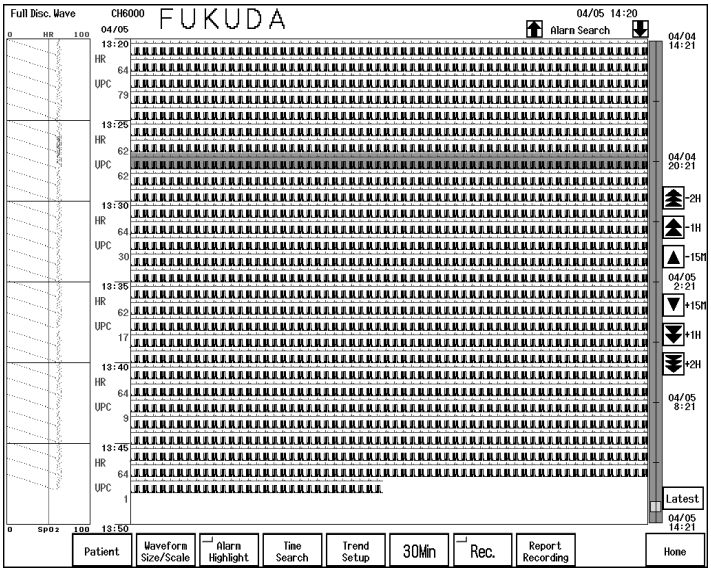
When using the multimode display function, the following displays cannot be viewed simultaneously on the main unit and the extended display unit. To access these displays, first close the display on the other monitor.

- ♦Admit/Discharge
- ♦Full Disclosure Waveform Waveform Selection
- ♦Full Disclosure Waveform (Zoom) Recording Setup
- ♦12-Lead Waveform
- ♦Tone/Volume, Alarm Related Setup 4/5
- ♦Channel Setup

Full Disclosure Waveform Display

If [Full Disc.] is selected for " Output Selection" , full disclosure waveform will be displayed on the extended display unit.

(☞Operation Manual "Full Disclosure Waveform Recording (Optional Function)" P8-33)



Connecting the L760T-C (EIZO®)

For the extended display unit, 19-inch color touch panel monitor, L760T-C (EIZO®) can be also connected. To connect the L760T-C (EIZO®) to the DS-7700W series, it is necessary to use the CJZ-01SS3 Digital Display Connection Cable for DVI and CJ-726 Relay Cable for serial communication which are provided as optional accessories for the DS-7700.

⚠ WARNING

- Use only the cables specified by Fukuda Denshi. Use of other cables may cause malfunction or damage this equipment.

⚠ CAUTION

- The alarm indicator is not equipped for the L760T-C.
- Alarm sound will not generate from the extended display unit as a speaker is not incorporated. Alarm sound will be generated from the main unit. When using the multimode display function, make sure to locate the extended display unit where the alarm sound from the main unit can be heard.

NOTE

- Mouse or keyboard cannot be connected to the L760T-C.
- Remote control unit cannot be used with the L760T-C.
- Keyboard or mouse connected to the main unit can be used to control the L760T-C.
- As the L760T-C is a capacitive touch panel, the touch panel operation is not possible when

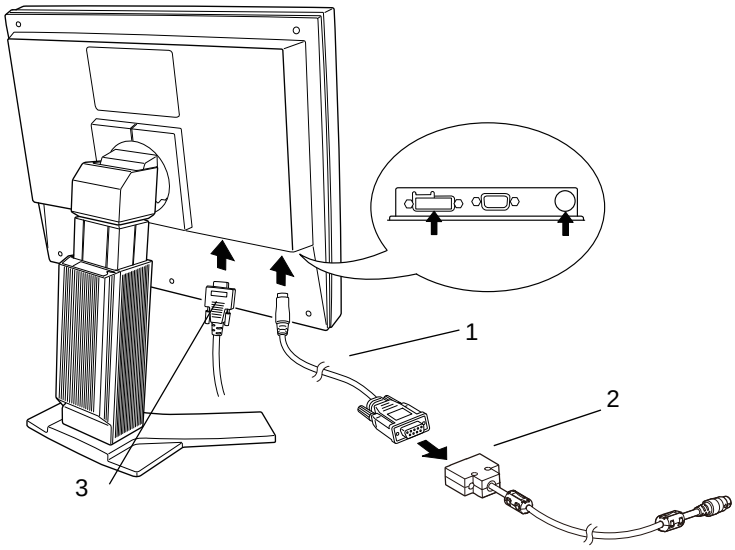
wearing gloves.

❑Connection Procedure

Refer also to the L760T-C (EIZO®) Operation Manual.

1 Connect the touch panel cable (accessory for the L760T-C) and CJZ-01SS3 Digital Display Connection Cable to the L760T-C.

2 Connect the CJ-726 Relay Cable to the touch panel cable.

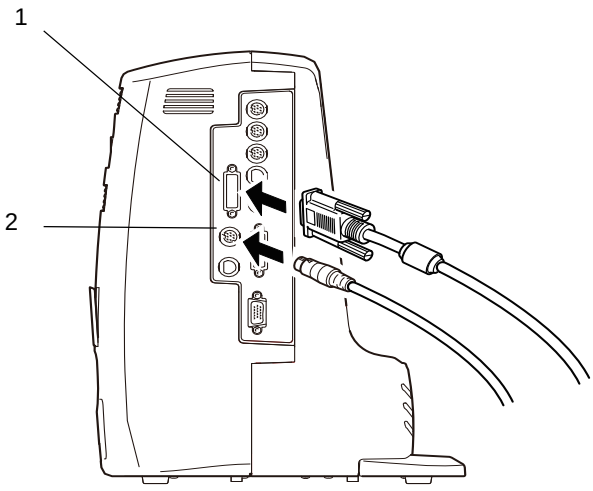


1 Touch Panel Cable (accessory for the L760T-C)

2 CJ-726

3 CJZ-01SS3

3 Connect the CJZ-01SS3 and CJ-726 to the DS-7700W series.



1 Extended Display Unit Connector

2 Serial Connector (COM4)

4 Set the Dip-SW6 to ON on the DS-7700W series. (For the LC-7019FT, the Dip-SW6 should be set to OFF.)

5 Connect the power cable to the DS-7700W series and L760T-C, and turn ON the power.
For the setup procedure after connection, refer to ☞"Connection" P2-10.

Chapter 3 System Construction

Chapter 3 System Construction

System Construction

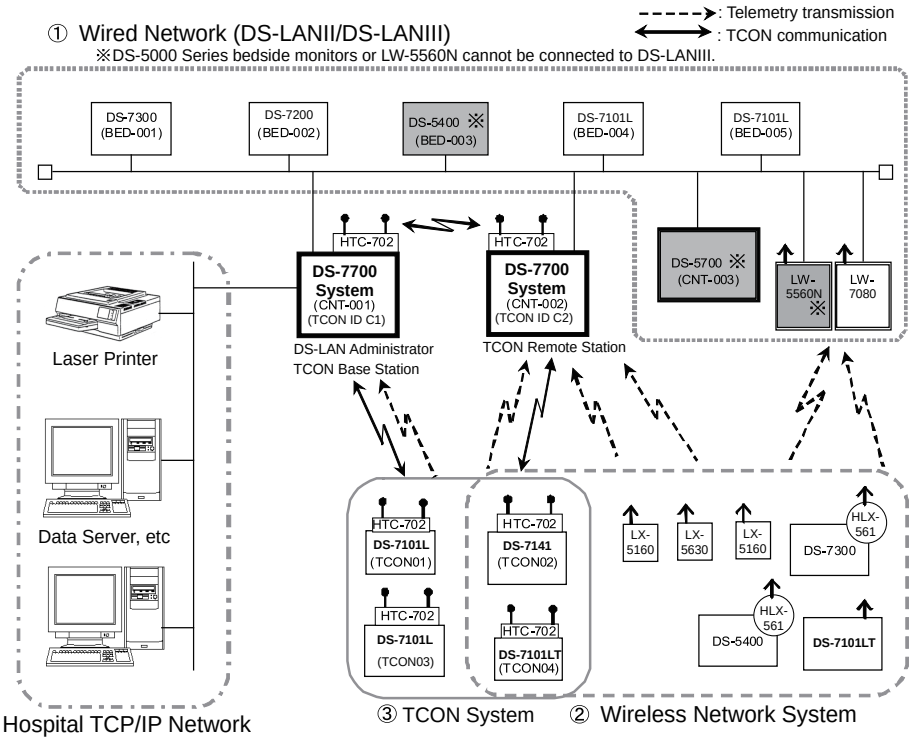
For the DS-7700 System Central Monitor, the following network system can be constructed.

1 Wired Network (DS-LANII/DS-LANIII)
Bedside monitors and central monitors are connected by LAN cable.
The telemetry beds (LW bed) which receives the data through the telemetry receiver can be also connected to this unit by wired network.
Maximum of 48 beds for DS-LANII and maximum of 100 beds for DS-LANIII can be connected for 1 network segment.
A network administrating monitor (Central ID: 001) is required.

2 Wireless Network System
The bedside monitor with HLX-561 or telemetry transmitter, LX-5160 transmits the monitoring data to the central monitor via wireless network.

3 TCON System
The bedside monitor with bidirectional wireless communication module (HTC-702) transmits the numeric data and alarm settings to the central monitor.
When using more than one central monitors, one of the monitors should be set as the TCON base station (TCON ID: C1).

Other than above, TCP/IP network connection is also possible for recording the review data such as graphic trend on the laser printer or storing the waveform on the data server.
By performing network setup for the central monitors, bed transfer/exchange (transfer/exchange of patient information and monitoring data) among several central monitors will become possible through the TCP/IP network.
(☞"TCP/IP Network Connection" P3-20)



Wired Network System

A wired network system can be constructed by using the LAN cable. Maximum of 48 beds for the DS-LANII network, maximum of 100 beds for the DS-LANIII network can be connected.

⚠ CAUTION

- Do not set the DS-5800N/NX/NX^{MB} as the network administrator (Central ID: 001). The network will not function if the DS-5800N/NX/NX^{MB} is set as the network-administrating monitor.
- For the alarm generation on the bedside monitor connected by wired network, maximum of 2.5 seconds delay will occur for the alarm generation on this unit.
- If more than three DS-5800N/NX/NX^{MB} are connected, the DS-5800N/NX/NX^{MB} cannot display the same patient data on all 3 monitors at the same time. Maximum of 2 monitors are able to display the same patient data.
  This restriction does not apply to the DS-5700, DS-7600, and DS-7700.
- For the DS-5800N/NX/NX^{MB}, or Other Bed Display on the bedside monitor, maximum of 2 monitors can simultaneously display the same patient data.
- Maximum of 32 beds can be monitored on the DS-5800N/NX/NX^{MB} which is connected to the same wired network with this unit.
  For example, if more than three DS-5800N/NX/NX^{MB} are connected, and if 16 beds are monitored on each DS-5800N/NX/NX^{MB}, maximum of 32 beds from the smallest central ID and from the prior display location will be displayed. The exceeded beds will not be displayed on the DS-5800N/NX/NX^{MB}.

❑Model Types that can be connected to the Wired Network

	DS-LANII	DS-LANIII
DS-5000 Series Bedside Monitor DS-5100, DS-5300/5300W, DS-5400	Yes	No
DS-5000 Series Central Monitor DS-5700, DS-5800N/NX/NX^{MB}	Yes	No
Central Telemetry Receiver LW-5560N	Yes	No
8ch Recorder AU-5500N	Yes	No
DS-7000 Series Bedside Monitor		
DS-7100, DS-7200, DS-7300	Yes	Yes*
DS-7000	Yes	No
DS-7000 Series Central Monitor DS-7600/7600W, DS-7700/7700W	Yes	Yes*
Central Telemetry Receiver LW-7080	Yes	Yes*

*; For some software version, DS-LANIII is not supported.

TCON System

By using the HTC-702 Bidirectional Wireless Communications Module(TCON), numeric data monitoring can be performed.

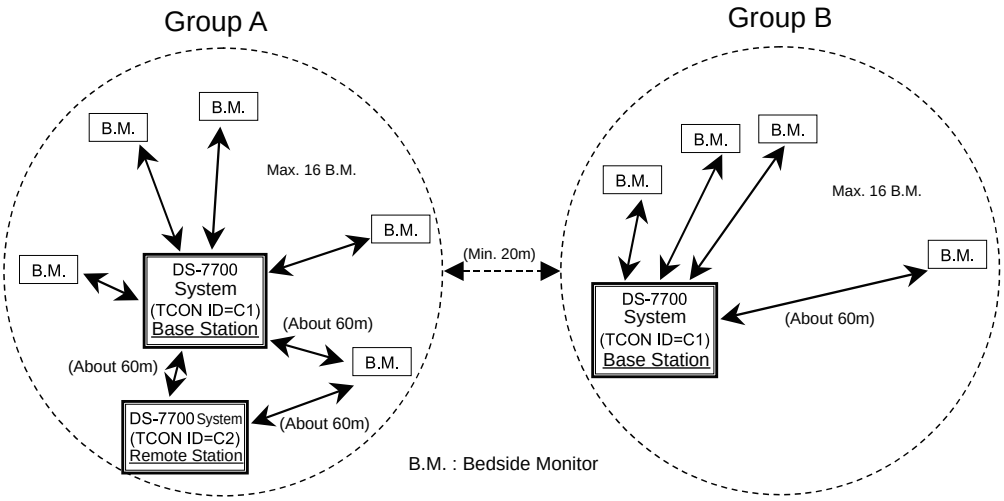
By using the TCON system with wired or wireless network, waveform monitoring can be also performed.

Maximum of two (2) central monitors can be used as the TCON station.

The monitor with TCON ID "C1" will be the base station, and the monitor with TCON ID "C2" will be the remote station.

The same TCON channel (group) should be set for the central monitors and bedside monitors within the same TCON group.

The channel ID of the base station will be automatically assigned as the group number.



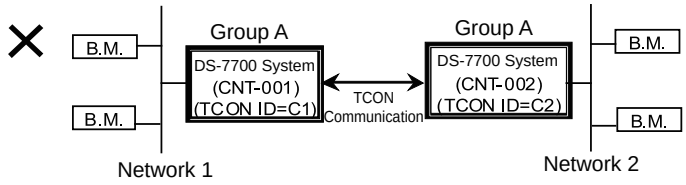
NOTE

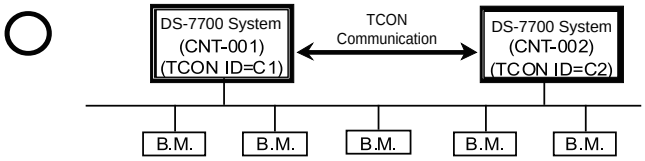
- The communication distance may largely differ depending on the structure material of the medical institution and the TCON installation condition. The indication for the maximum distance is about 60 meters. If the communication condition is unstable, check the

installation condition.

⚠ CAUTION

- Depending on the monitor model type, some functions for the TCON network bed are restricted.
- When using the wired network and TCON system simultaneously, make sure to connect the TCON base station and remote station on the same network.





- The date/time setting of the TCON remote station synchronizes with the TCON base station. However, if the TCON remote station is connected to the wired network, the date/time setting synchronizes with the network administrating monitor (central ID: 001).
- When both wireless and TCON system are used, the numeric data from the telemeter will be displayed.Even when the telemetry condition is poor, numeric data from TCON will not be displayed.
- For the alarm generation on the bedside monitor connected to the TCON network, maximum of 5 seconds delay will occur for the alarm generation on this equipment.
- Even if this device is installed within the range of radio communication, the communication may not be possible due to noise or multi-path phasing etc.
- If the TCON is installed in a line-of-sight distance where there are no obstacles or on the upper floors, unexpected long distance transmission may occur which may cause interference with nearby medical institution. Before using the TCON system, test the reception to make sure that it does not interfere with other channels, If the channel is used by other medical institution, change the channel ID.

Network Restrictions

There are some setups that can be performed only on the network administrator of the wired network system.

Also, when more than one monitor are used in a same network, there are some setups that should be the same for all monitors (both central monitors and bedside monitors).

If only one DS-7700 is used in a wireless network system, there are no restrictions for setup.

The following lists show these restrictions for setup.

❑Setup Item Synchronizing to the Network Administrator

Yes: Setup item will be synchronized. No: Setup item will not be synchronized.

Setup Item	Synchronize to Wired Network Administrator	Synchronize to TCON System Base Station
System Configuration		
Display Configuration		
Display Layout (ex. 4Beds 2Waves)	No	No
Short Trend	No	No
Name Zoom	No	No
Brightness Setup		
Brightness	No	No
Tone/Volume Setup		
All Setup	No	No
Sweep Speed		
All Setup	No	No
Pre-Set Menu		
Recorder Setup		
LX remote recording	Yes	No
Paper Feed to Top	No	No
Paper Feed to End	No	No
BP Scale on the recording paper	Yes	No
Rec. Paper CO_2 Scale	No	No
QRS Classification	No	No
Meas. Info. Rec.	Yes	No
Print Calibration	No	No
Bed Register		
Registered Beds	No	No
Channel Setup		
Channel No. for Each Bed	No	No
Group ID	No	No
Stored Channel No.	No	No
Soft Switch		
Display measurement error on NIBP list	No	No
Date	No	No
Disregard Artifact Ch. at QRS Detect	Yes	No
Drift Filter	No	No
AC Filter	Yes	No

Yes: Setup item will be synchronized. No: Setup item will not be synchronized.

Setup Item	Synchronize to Wired Network Administrator	Synchronize to TCON System Base Station
Setup at Discharge	No	No
Home Display	No	No
Patient ID Starting Column	No	No
Wave Line	No	No
12-Lead	No	No
Sync Tone Bed Selection	No	No
Sync Mark	No	No
Monitor Suspend's Message Selection	No	No
Nurse Team Function	No	No
Monitor Suspend Time	No	No
Link Recall/Full Disc. Wave	No	No
Scroll Interval	No	No
Full Disc. Wave Background	No	No
Full Disc. Wave Print Range	No	No
Automatic Discharge from EMR	No	No
Serial Comm. Setup		
COM port function assignment	No	No
TCON Setup	No	No
Measurement Unit		
All Setup	No[*1]	No
Bed Name Registration		
Bed Name	No	No
User Key Setup		
All Setup	No	No
Clock		
Time/Date	Yes	Yes[*2]
Central ID		
All Setup	No	No
Network Configuration		
All Setup	No	No
Alarm Related Setup		
Alarm Silence Time	No	No
Alarm Suspend Time	No	No
Too Far Alarm	No	No
Chk TLM Battery Alarm	No	No
Asystole/VF/VT Alarm Setup	Yes (DS-LANIII only)	No
Suspend Arrhy. Analysis during Noise Interference	Yes	Yes[*2]
During Lead OFF		
Alarm Judgement	Yes	No
Alarm Record	Yes	No
Lead OFF Message	No	No

Yes: Setup item will be synchronized. No: Setup item will not be synchronized.

Setup Item	Synchronize to Wired Network Administrator	Synchronize to TCON System Base Station
Lead OFF Alarm Interval	No	No
During "Check SpO_2 Sensor"		
Alarm Judgement	No	No
Message	No	No
Alarm Sound	No	No
During "NIBP measurement failed."	No	No
Alarm Indicator		
Target Alarm	No	No
Pulse Tone	No	No
New Event	No	No
Alarm Wave Background	No	No
Event Key	No	No
Low Limit for Alarm Volume	No	No
Alarm System	No	No
Alarm Priority	No	No
Alarm Silence, Alarm Suspend from Central	No	No
Synchronize the Alarm Limit of HR and PR-1	No	No
Keyboard/Mouse Setup		
All Setup	No	No
Admit Setup		
All Setup	No	No
Slave Setup/Extended Display Unit Setup		
All Setup	No	No
R.C. Setup		
All Setup	No	No

*1: BP unit will be synchronized to the network administrator.
When the DS-LANIII is used, temperature unit will be synchronized to the network administrator.

*2: The wired network, if simultaneously used, will be prioritized.

❑Setup Item Synchronizing within the Same Wired Network/TCON System

Yes: Setup item will be synchronized. No: Setup item will not be synchronized.

Setup Item	Synchronize within the Same Network		Synchronize within the TCON System*1
	DS-LANII	DS-LANIII	
Patient Information			
Patient ID	Yes	Yes	Yes
	For the DS-7100 system with software version V05-01 and newer, all 20 digits will be synchronized. For older version, only 10 digits will be synchronized.		(Same with DS-LANII)
Patient Name	Yes	Yes	Yes
			For the DS-7100 system with software version V04-02 and older, maximum of 8 characters will be synchronized.
Pacemaker Use	Yes	Yes	Yes
Patient Classification	Yes	Yes	Yes
Comment	No	No	No
Height/Weight/BSA	Yes	Yes	Yes
Birth Date/Age	Yes	Yes	Yes
Sex	Yes	Yes	Yes
Alarm			
Alarm Suspend	Yes	Yes	Yes
Alarm Silence	Yes	Yes	No
HR Alarm Setup	Yes	Yes	Yes
Asystole Alarm Setup	Yes	Yes	Yes
VF Alarm Setup	Yes	Yes	Yes
VT Alarm Setup	Yes	Yes	Yes
Slow VT Alarm Setup	No	Yes	Yes
RUN Alarm Setup	Yes	Yes	Yes
Couplet Alarm Setup	No	Yes	Yes
Pause Alarm Setup	No	Yes	Yes
Bigeminy Alarm Setup	Yes	Yes	Yes
Trigeminy Alarm Setup	No	Yes	Yes
Frequent Alarm Setup	Yes	Yes	Yes
Tachy Alarm Setup	Yes	Yes	Yes
Brady Alarm Setup	Yes	Yes	Yes
HR Low Limit for VT*2	Yes	Yes	Yes
HR Low Limit for RUN*2	Yes	Yes	Yes
ST1 Alarm Setup	Yes	Yes	Yes
ST2 Alarm Setup	Yes	Yes	Yes
BP1-3 Alarm Setup	Yes	Yes	Yes
BP4-6 Alarm Setup	Yes	Yes	No
NIBP Alarm Setup	Yes	Yes	Yes

Yes: Setup item will be synchronized. No: Setup item will not be synchronized.

Setup Item	Synchronize within the Same Network		Synchronize within the TCON System*1
	DS-LANII	DS-LANIII	
RR Alarm Setup	Yes	Yes	Yes
APNEA Alarm Setup	Yes	Yes	Yes
SpO_2-1 Alarm Setup	Yes	Yes	Yes
PR-1 Alarm Setup	Yes	Yes	Yes
$EtCO_2$ Alarm Setup	Yes	Yes	Yes
$InspCO_2$ Alarm Setup	Yes	Yes	Yes
GAS Alarm	No	No	No
TEMP1 Alarm Setup	Yes	Yes	Yes
TEMP2 Alarm Setup	Yes	Yes	Yes
SpO_2-2 Alarm Setup	No	Yes	No
PR-2 Alarm Setup	No	Yes	No
SpCO Alarm Setup	No	Yes	No
SpMet Alarm Setup	No	Yes	No
MVe Alarm Setup	No	Yes	No
PEAK Alarm Setup	No	Yes	No
PEEP Alarm Setup	No	Yes	No
Parameter Setup			
ECG Parameter Setup			
Arrhythmia Relearn	Yes	Yes	No
ECG1 Lead	Yes*2	Yes*2	No
ECG1 Size	Yes	Yes	No
ECG1 Baseline Position	No	No	No
ECG2 Lead	Yes*2	Yes*2	No
ECG2 Size	Yes	Yes	No
ECG2 Baseline Position	No	No	No
Sync Tone	No	No	No
AC Filter	No*3	No*3	No
Drift Filter	No*3	No*3	No
QRS Pace Mask	Yes	Yes	No
Pacemaker Pulse	Yes	Yes	No
QRS Detection	Yes	Yes	No
BP1 to BP6 Parameter Setup			
BP Scale	No	No	No
NIBP Parameter Setup			
NIBP Auto Mode Interval	No	Yes	Yes
		The NIBP measurement interval synchronizes for the following case. • DS-7100 system of V08-01 and newer • DS-7300 system of V06-01 and newer	The NIBP measurement interval synchronizes for the following case. • DS-7100 system of V05-01 and newer

Yes: Setup item will be synchronized. No: Setup item will not be synchronized.

Setup Item	Synchronize within the Same Network		Synchronize within the TCON System*1
	DS-LANII	DS-LANIII	
SpO_2-1/SpO_2-2 Parameter Setup			
SpO_2-1/SpO_2-2 Size	No	No	No
Sync Tone	No	No	No
RESP Parameter Setup			
RESP Size	Yes	Yes	No
CVA Detect	Yes	Yes	Yes
CO_2 Parameter Setup			
CO_2 Scale	No	No	No
CO_2 Measurement Unit	No	No	No
GAS Parameter Setup			
O_2 Scale	No	No	No
AGT Scale	No	No	No
SPIRO Parameter Setup			
AWP Scale	No	No	No
AWF Scale	No	No	No
AWV Scale	No	No	No
Parameter ON/OFF			
All Setup	No	No	No
Function			
Graphic Trend/Tabular Trend			
All Setup	No	No	No
Recall			
Waveform Selection	No	No	No
Display Selection	No	No	No
Full Disclosure Waveform			
All Setup	No	No	No
ST Display/12-Lead ST			
Ref. Point/Meas. Point	Yes	Yes	No
System Configuration			
Record			
All Setup	No	No	No
Color			
All Setup	No	No	No
Display Configuration			
Home Display Configuration	No	No	No
Individual Bed Display Configuration	No	No	No

*1: However, some items may not synchronize depending on the bedside monitor specification. For details, check the specification for each bedside monitor.

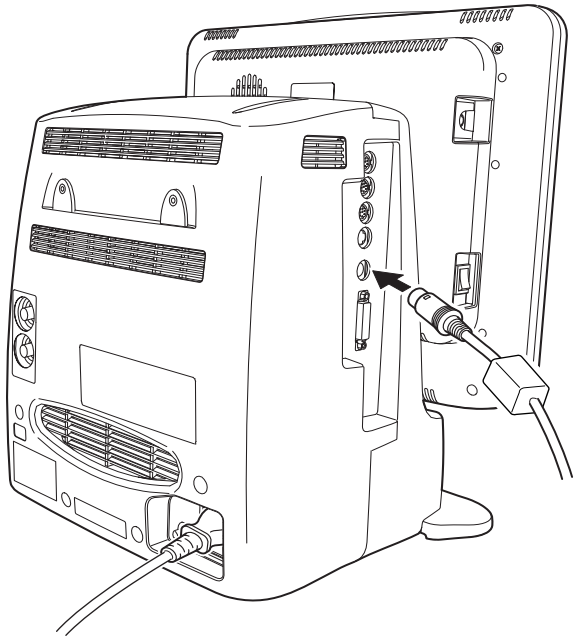
*2: Some leads cannot be synchronized depending on the used transmitter and lead cable type.

*3: The setting is effective for wireless bed only.

Wired Network Connection

By connecting DS-5000 system bedside monitors or DS-7000 series bedside monitors, a wired network system can be constructed.
Maximum of 48 beds for the DS-LANII and maximum of 100 beds for the DS-LANIII network can be connected to one DS-7700 system.

1 Connect the CJ-522 Ethernet Branch Cable to the DS-LAN connector on the left side of this unit.
Or, connect the CJ-530 LAN Interface Cable.



2 Connect the other side of the cable to the HUB.
Or, connect to the LW-5560N/LW-7080.

⚠ WARNING

- Be careful not to confuse the HUB for the DS-LAN network and the TCP/IP network. Fukuda Denshi is not liable of the operation caused by improper network connection.
- For the DS-LAN II network, use the specified repeater HUB, and for the DS-LANIII network, use the specified switching HUB.
  If unspecified HUB is used, communication failure will occur.

⚠ CAUTION

- Make sure that DS-LAN setup (DS-LANII / DS-LANIII selection) is the same for all monitors connected to the same network.
- To construct a DS-LANIII network, it is necessary that all monitors are compatible with the DS-LANIII.

DS-LAN Setup (DS-LANII/III)

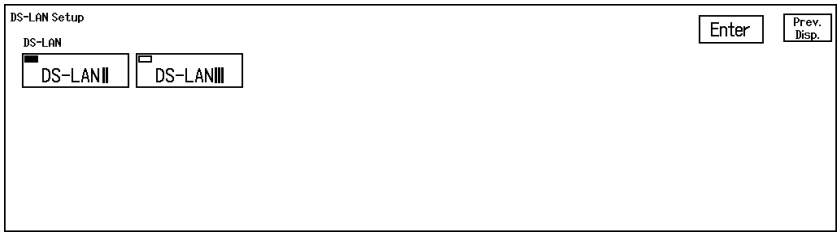
It is necessary to select the DS-LAN system (DS-LANII or DS-LANIII) for all the monitors within the same network.

⚠ CAUTION

- The two different network systems (DS-LANII and DS-LANIII) cannot exist in the same network.
- Make sure that DS-LAN setup (DS-LANII/DS-LANIII selection) is the same for all monitors connected to the same network.
- If the DS-LAN setup is changed from DS-LANIII to DS-LANII, the registered beds from 49th to 100th will be cancelled and patient data for these beds will be erased.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [DS-LAN Setup] key.

▸ The "DS-LAN Setup" screen will be displayed.



2 Select the wired network from [DS-LANII]/[DS-LANIII].

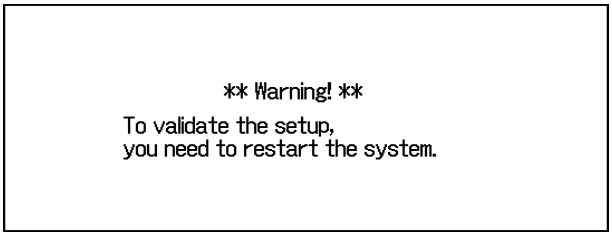
3 Press the [Enter] key.

NOTE

- It is necessary to restart the system.

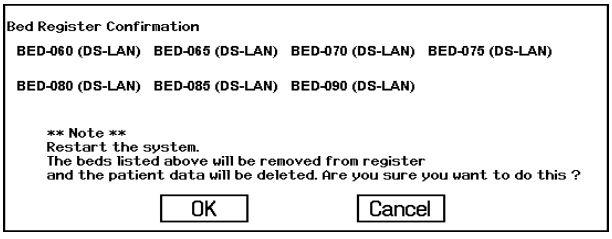
To Change from DS-LANII to DS-LANIII:

▸ A warning message will be displayed.



To Change from DS-LANIII to DS-LANII:

▸ The "Bed Register Confirmation" screen will be displayed.



1 Press the [OK] key.

▸ A warning message will be displayed.

4 Turn OFF the power.

5 Turn ON the power.

▸ The settings will be finalized.

WARNING

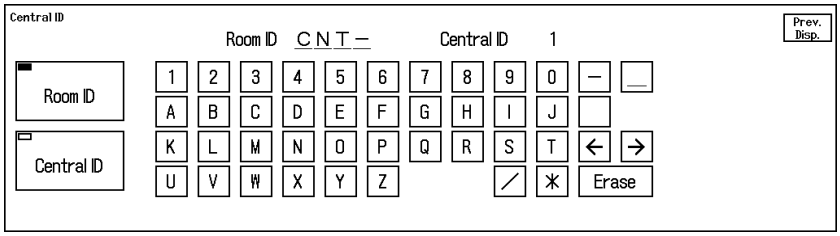
- When a warning message is displayed, all operation controls will not be possible until the system is restarted.

Central ID or Room ID Setup (DS-LANII/III)

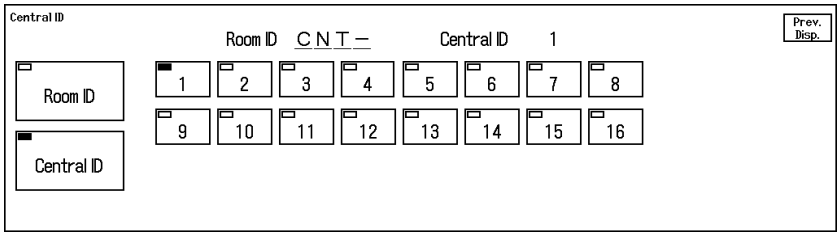
A Central ID or Room ID must be set to connect to the DS-LANII/III network system.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Central ID] key.

▸ The "Central ID" screen will be displayed.



Room ID Input Screen



Central ID Input Screen

2 Press the [Room ID] key.

▸ The screen will change to Room ID input screen.

3 Maximum of 4 letters can be input for the Room ID using the alphanumeric keys.

REFERENCE

- A letter will be input to the red underlined position.

4 Press the [Central ID] key.

▸ The screen will change to Central ID input screen.

For DS-LANII:

1 Select from [1] to [8].

NOTE

- For DS-LANII, only [1] to [8] can be selected for Central ID.
  [9] to [16] will be grayed out.

For DS-LANIII:

1 Select from [1] to [16].

⚠ CAUTION

- The central monitor with the Central ID: 001 will function as a network-administrating monitor, and controls the whole LAN system. One of the central monitors must have the central ID: 001 in a network system. Also, the central ID must not be duplicated among the central monitors.

Patient ID Starting Column (DS-LANII/III/TCON)

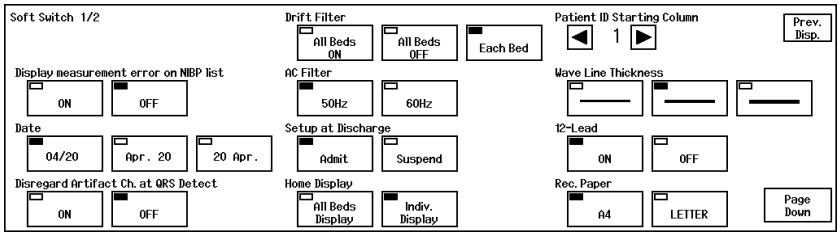
This unit is capable to enter 20 letters for the patient ID on the "Admit/Discharge" screen. However, there are some bedside monitors connected to the DS-LANII network that can enter only up to 10 letters.
The "Patient ID Starting Column" sets the starting digit of 10 letters to transmit to the bedside monitor.

In case of DS-LANIII network, all 20 letters can be transmitted between the central monitor and bedside monitor. However, if central monitor is selected as the recorder on the bedside monitor, the central monitor recorder can print only up to 10 letters. In such case, the starting digit to be printed will be according to the bedside monitor setting.

Example:	Patient ID	ABCDEFGHIJ0123456789 (20digits)
	Patient ID Starting Column	If [5] is selected;
		The patient ID will be EFGHIJ0123 which starts from the 5th digit, "E".

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Soft Switch] key.

▸ The "Soft Switch" screen will be displayed.



2 Use the ◀ / ▶ keys to set the starting digit.

Wireless Network Connection

The DS-7700 system incorporates a telemetry module, which receives monitoring data from a telemetry transmitter. The number of beds that can be received via wireless network depends on the model type.

Model Type	Wireless Beds
DS-7780/7780W	8
DS-7700L/7700WL	0

Channel ID and Antenna Setup for the Receiver

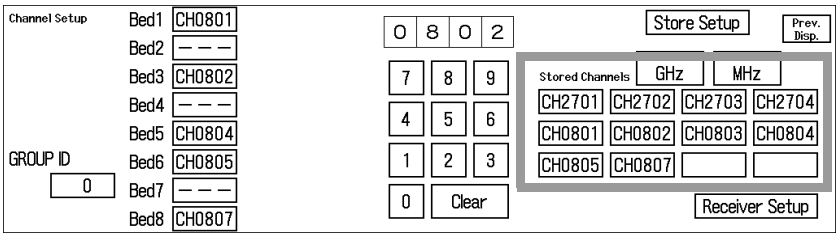
When using a wireless system, it is necessary to set the Channel ID and Band.
If diversity function is available, antenna can be switched.

⚠ WARNING

- Make sure to set the correct channel ID.
- Some wireless combinations of telemetry transmitters may generate interference with other devices.
- Before selecting the channel, verify it will not interfere with other channels.
- Make sure the telemetry manager of your system is aware of any changes to the telemetry channels.
- If transmitters are used in a neighboring medical facility, your facility and the neighboring facility must make agreements on the setting of the telemetry channels to prevent telemetry interference.
- If channel ID is changed for the transmitter, make sure to replace the channel label attached to the transmitter with a new one.
- If the channel ID is changed without notifying, it will result in monitoring an incorrect patient.To avoid incorrect diagnosis, make sure that the channel ID corresponds to the patient.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Channel Setup] key.

▸ The "Channel Setup" screen will be displayed.

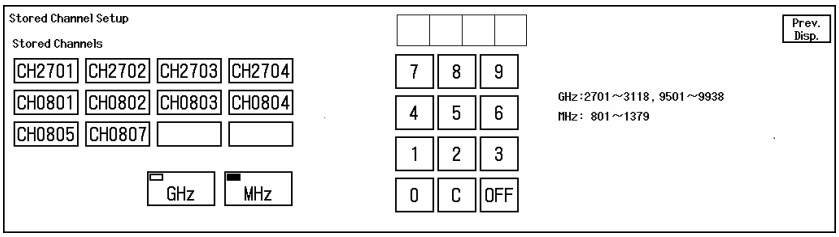


2 Press the [Store Setup] key to register maximum of 12 frequently used channel ID.

▸ The "Stored Channel Setup" screen will be displayed.
First, select the frequency band for the channel number(s) to store.

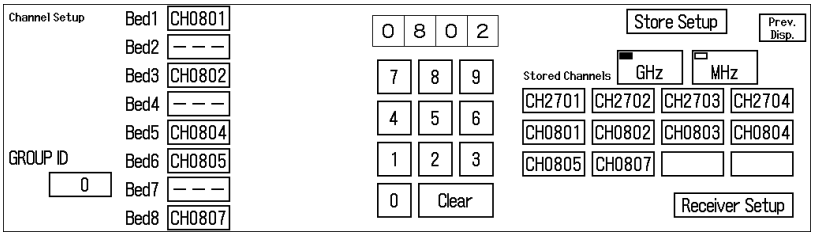
▸ [GHz]: Allows to set the channel number in the GHz band.

▸ [MHz]: Allows to set the channel number in the MHz band.



3 Set the channel ID.

1 Select the frequency band for the receiver.



▸ [GHz]: Allows to select a channel number in the GHz band for the receiver.

▸ [MHz]: Allows to select a channel number in the MHz band for the receiver

2 Select the channel from the "Stored Channels" on the right side of the screen.

REFERENCE

- It is also possible to enter a 4-digit number (medical telemetry channel ID) using the numeric keys.

▸ The selected 4-digit number (medical telemetry channel ID) will be displayed above the numeric keys.

3 Press the key for the bed on the left to assign the channel ID.

▸ The channel ID will be assigned to that bed.

4 Use the numeric keys to enter the group ID in the range from 0 to 63.

⚠ CAUTION

- When using the wireless system and TCON at the same time, the registered channel ID will be automatically assigned for the TCON bed. Therefore, if the same channel ID is registered for another bed, malfunction may occur. Make sure to set a unique channel ID for each bed.

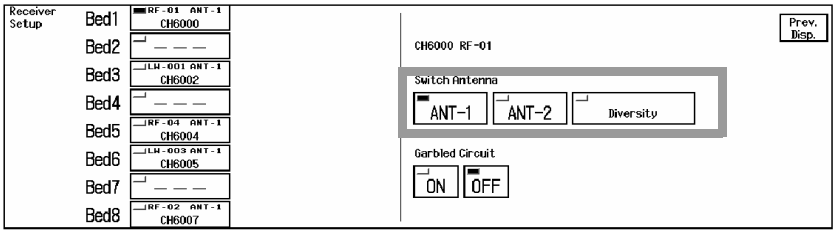
NOTE

- If wired (DS-LANII/III) and wireless system are used simultaneously, the group ID must be set to "0" . Do not set other group ID.
- The channel ID can be set only for the beds displayed on the current display configuration.
  (Quantity of Displayed Beds at Factory Default: 8 beds for DS-7780/7780W)
  To perform setup for all telemetry beds registered at system construction, it is recommended to set the display configuration to [16Beds 1Wave].
  (☞Operation Manual "Home Display Layout" P10-3)

5 Perform setting for "Receiver Setup".

1 Press the [Receiver Setup] key.

- The "Receiver Setup" screen will be displayed.



2 Set the "Switch Antenna" .

- [ANT-1]: Receiving antenna will be fixed to antenna input 1.
- [ANT-2]: Receiving antenna will be fixed to antenna input 2.
- [Diversity]: "Threshold" ▲ / ▼ will be displayed.

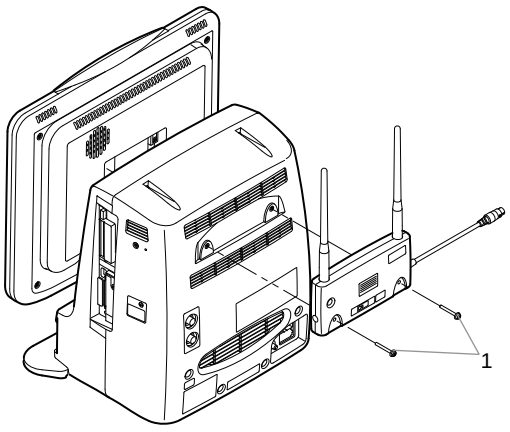
3 When [Diversity] is selected, set the threshold from 1 to 5 using the ▲ / ▼ keys.

4 Select [ON] or [OFF] for "Garbled Circuit".

Connecting the TCON System

By using the HTC-702 Bidirectional Wireless Communications Module (TCON), numeric data monitoring of maximum 16 beds can be performed.

1 Attach the HTC-702 to the back of the DS-7700 using the screws, which are included in the HTC-702 accessories.



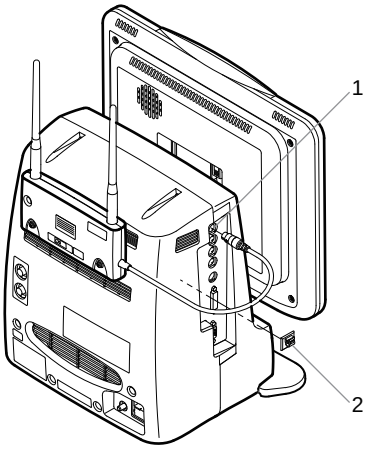
2 Connect the HTC-702 cable to the serial connector on the left side of the DS-7700.

NOTE

- Make sure to connect the cable to the appropriate serial connector which should be set in advance on the serial communication setup (preset menu).

3 Attach the clamp to the DS-7700.

4 Secure the connection cable into the clamp.



1 Serial Connector

2 Clamp

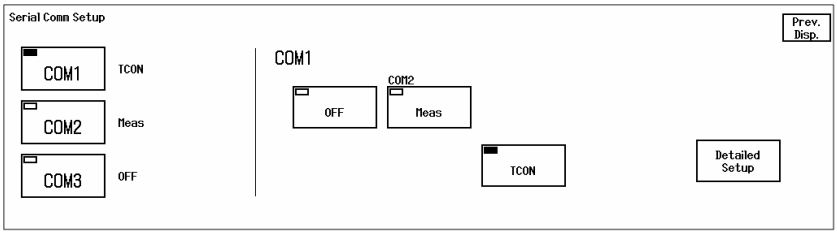
Serial Communication Setup (TCON)

⚠ CAUTION

- The TCON installation and setup should be performed by our service representative. The users should not attempt them.
- Follow the instructions of the Overall Manager for the wireless channel when setting the TCON ID or channel (group) to prevent interference within the same institution.
- The same TCON channel (group) should be set for the central monitors and bedside monitors within the same TCON group.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Serial Comm Setup] key.

▸ The "Serial Comm Setup" screen will be displayed.

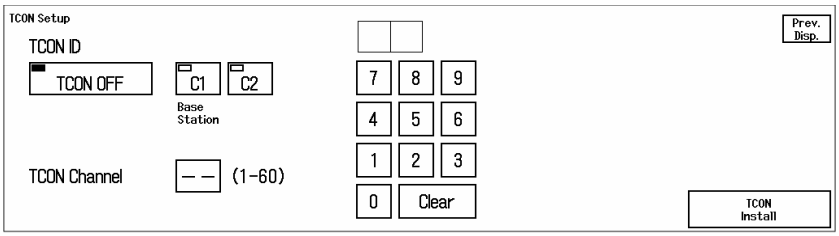


2 Select the serial communication port for TCON connection from [COM1]/[COM2]/[COM3].

3 Press the [TCON] key.

4 Press the [Detail Setup] key.

▸ The "TCON Setup" screen will be displayed.



5 Select the channel ID from [1] to [60].

NOTE

- The same TCON channel (group) should be set for the central monitors and bedside monitors within the same TCON group.
  When using other TCON system with different TCON channel (group), the two (2) channel IDs should be at least 5 channels apart.

6 Set the ID.

In case of TCON base station:

1 Press the [C1] key.

In case of TCON remote station:

1 Press the [C2] key.

When not using the TCON:

1 Press the [TCON OFF] key.

WARNING

- During TCON connection, make sure to set the channel ID before setting the ID. Miscommunication with a wrong group may occur.

TCP/IP Network Connection

By connecting the DS-7700 system to the TCP/IP network, the following function using the laser printer or server can be performed.

- Review data such as graphic trend can be output on the laser printer.
- By using the patient data server, patient data can be referred via server.
- In addition, EMR link function can be used to admit/discharge the patient.
- By using the data server, the waveform data for the patient can be stored in the server.
- By setting the SNTP server ON, the time can be synchronized to the SNTP server.
- If the HL7 server is used in the hospital, patient information and current measurement data monitored on the DS-7700 can be transmitted to the HL7 server when requested.
- By performing network setup for the central monitors, bed transfer/exchange (transfer/exchange of patient information and monitoring data) among several central monitors will become possible through the TCP/IP network.

WARNING

- We cannot assure proper operation if TCP/IP network is connected incorrectly. When changing the network setting, contact our service representative.
- When connecting to an existing network, follow the instruction of the network administrator.
- Make sure not to duplicate the IP address for the DS-7700 system, laser printer, and the server.
- As this unit is not corresponded to DHCP (Dynamic Host Configuration Protocol) IP address, set the IP address excluded at DHCP if DHCP server is in the network configuration.

NOTE

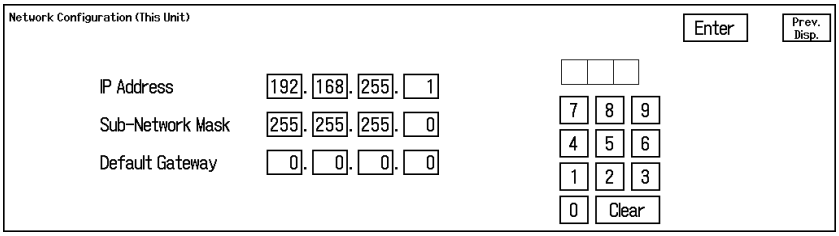
- Before using the laser printer and server, network setup for this unit, laser printer, and server should be performed.

Setup for This Unit

Set the IP address, sub-network mask, default gateway for this unit.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [This Unit] keys.

▸ The "Network Configuration (This Unit)" screen will be displayed.



2 Enter the IP address of the main unit.

1 Use the numeric keys to enter the numbers.

2 Press the corresponded key for "IP Address".

▸ The entered numbers will be displayed inside the key.

3 Using the same procedure above, enter the sub-network mask and default gateway.

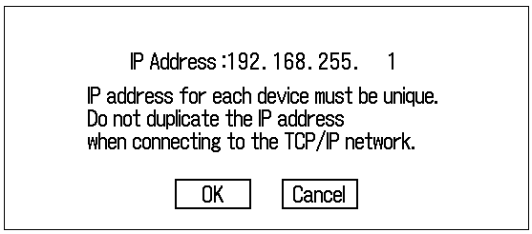
4 Finalize the setting.

NOTE

- It is necessary to restart the system.

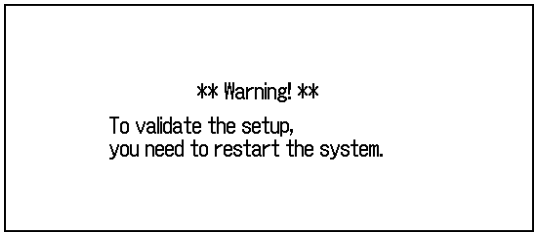
1 Press the [Enter] key.

▸ A confirmation message will be displayed.



2 Press the [OK] key.

▸ A warning message will be displayed.



3 Turn OFF the power.

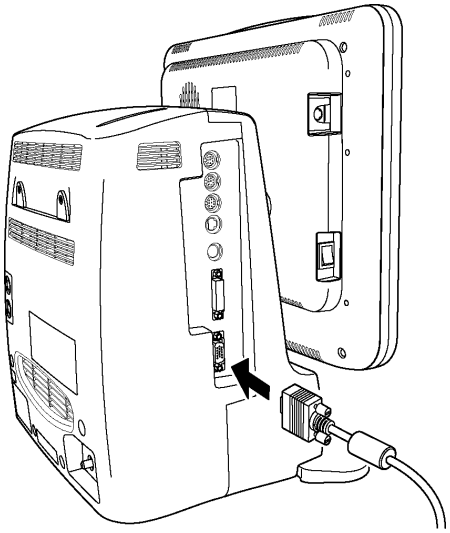
WARNING

- When a warning message is displayed, all operation controls will not be possible until the system is restarted.

5 Connect the CJ-761 LAN Interface Cable (Cross) to this unit.
(☞"To Connect this Unit to the TCP/IP Network" P3-22)

To Connect this Unit to the TCP/IP Network

1 Connect the CJ-761 LAN Interface Cable to the LAN connector on this unit.



WARNING

- Be careful not to confuse the HUB for the DS-LAN network and the TCP/IP network. Fukuda Denshi is not liable of the operation caused by improper network connection.

2 Connect the other side of the cable to the network equipment such as laser printer.

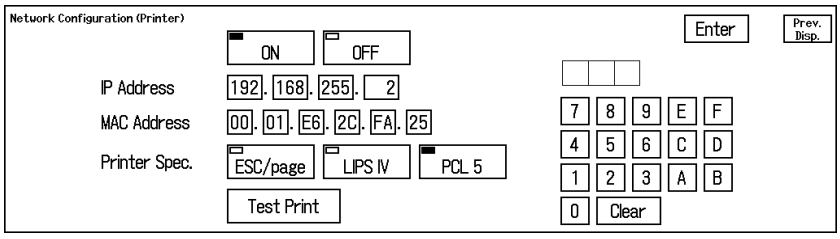
3 Turn ON the power switch located at the left side of the display unit.

Laser Printer Operation

Set the IP address, MAC address, and printer specification for the laser printer.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [Printer] keys.

▸ The "Network Configuration (Printer)" screen will be displayed.



2 Select [ON]/[OFF] of the printer usage.

3 Enter the IP address of the printer.

1 Use the numeric keys to enter the numbers.

2 Press the corresponded key for "IP Address".

▸ The entered numbers will be displayed inside the key.

4 Enter the MAC address of the printer.

REFERENCE

- MAC (Media Access Control) address is an address assigned for each network equipment. Refer to the operation manual of the printer network board.

1 Use the numeric, [A] to [F] keys to enter the address.

2 Press the corresponded key for "MAC Address".

▸ The entered numbers will be displayed inside the key.

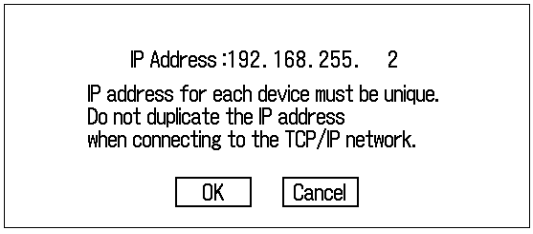
5 Select the printer specification from [ESC/page]/[LIPS IV]/[PCL 5].

NOTE

- Refer to the operation manual of the printer. Depending on the printer, the display may differ.

6 Press the [Enter] key.

▸ A confirmation message will be displayed.



1 Press the [OK] key.

▸ The settings will be finalized.

⚠ CAUTION

- Always reset the power of the printer after the printer setup.

7 Press the [Test Print] key.

8 Check that the printing is properly performed.

NOTE

- Select the output recorder for review data recording.
  (☞Operation Manual "Output Recorder Setup for Review Data Recording" P9-6)

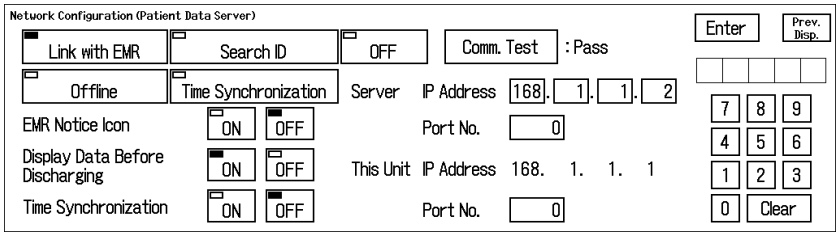
Patient Data Server Setup

By using the patient data server, patient information (ID, name, etc.) can be searched on the server to perform admit process on this unit.
In addition, EMR link function can be used to input patient information from the EMR.

❑To Display the Patient Data Server Setup Screen

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [Patient Data Server] keys.

▸ The "Network Configuration (Patient Data Server)" screen will be displayed.



NOTE

- When not using the patient data server, select [OFF].

REFERENCE

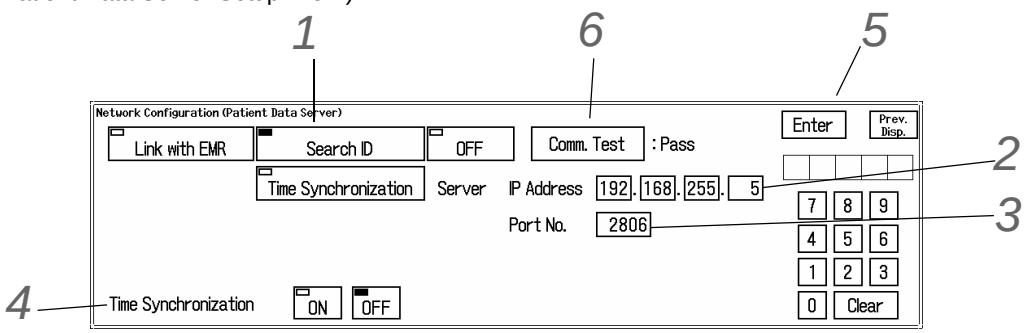
- [Link with EMR] will allow to admit/discharge the patient linked to the EMR. (☞"EMR Link Function" P5-1)
- [Search ID] will display the [Search Patient] key on the [Admit/Discharge] screen, and allows to automatically input patient information from the ID.
- [Time Synchronization] will perform only time synchronization with the patient data server. It will synchronizes the time with patient data server by communicating with the server every minute. However, if higher priority time synchronization is present (see below), this setting will be invalid.

NOTE

- However, if higher priority time synchronization is present, this setting will be invalid.
- Priority of the Time Synchronization
  The time will be synchronized with the following priority.
  1 Administrating monitor, if wired network is constructed.
  2 TCON base station, if TCON system is used.
  3 SNTP server, if used.
  4 Patient data server, if used, and if [Time Synchronization] is selected on Patient Data Server setup, or "Time Synchronization" is set to ON for [Link with EMR] or [Search ID].

❑Search ID Function

1 Select [Search ID] on the "Network Configuration (Patient Data Server)" screen.
(☞"Patient Data Server Setup" P5-2)



2 Enter the IP address of the patient data server.

1 Use the numeric keys to enter the numbers.

2 Press the corresponded key for "IP Address".

▸ The entered numbers will be displayed inside the key.

3 Enter the port number using the same procedure above.

NOTE

- Input the port number recommended for the used patient data server.

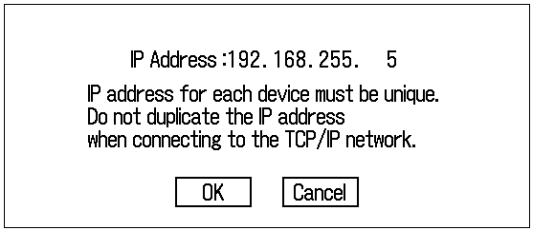
4 Set the "Time Synchronization".

▸ [ON]: Synchronizes the time with patient data server by communicating with the server every minute.

▸ [OFF]: Synchronization with the patient data server will not be performed.

5 Press the [Enter] key.

▸ A confirmation message will be displayed.



1 Press the [OK] key.

▸ The settings will be finalized.

6 Press the [Comm. Test] key.

▸ If properly communicating, <Pass> will be displayed.

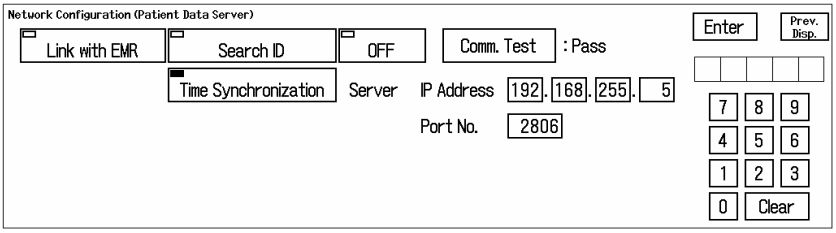
▸ If any failure occurs to the communication, <Fail> will be displayed.

NOTE

- If <Fail> is displayed, check the network setting, and perform the setup again.

❑Time Synchronization Function

1 Select [Time Synchronization] on the "Network Configuration (Patient Data Server)" screen.
(☞"Patient Data Server Setup" P5-2)



2 Enter the IP address of the patient data server.

1 Use the numeric keys to enter the numbers.

2 Press the corresponded key for "IP Address".

▸ The entered numbers will be displayed inside the key.

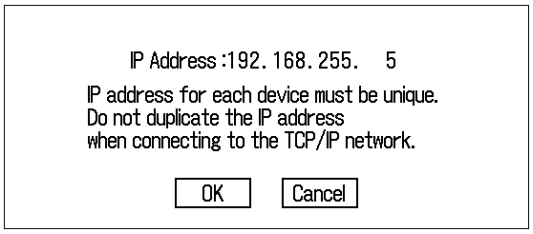
3 Enter the port number using the same procedure above.

NOTE

- Input the port number recommended for the used patient data server.

4 Press the [Enter] key.

▸ A confirmation message will be displayed.



1 Press the [OK] key.

▸ The settings will be finalized.

5 Press the [Comm. Test] key.

▸ If properly communicating, <Pass> will be displayed.

▸ If any failure occurs to the communication, <Fail> will be displayed.

NOTE

- If <Fail> is displayed, check the network setting, and perform the setup again.

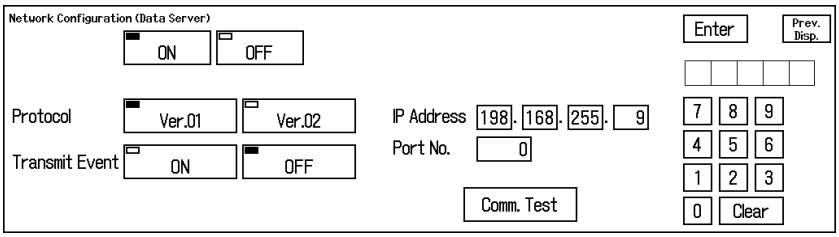
Data Server Setup

By using the data server, the waveform data for the monitored patient can be stored on the server.
Maximum of 32 waveforms can be stored.

❑Specifying the Data Server

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [Data Server] keys.

▸ The "Network Configuration (Data Server)" screen will be displayed.



2 Select [ON]/[OFF] for the data server usage.

3 Enter the IP address of the data server.

1 Use the numeric keys to enter the numbers.

2 Press the corresponded key for "IP Address".

▸ The entered numbers will be displayed inside the keys.

4 Enter the port number using the same procedure above.

NOTE

- Input the port number recommended for the used data server.

5 Select [Ver.01]/[Ver.02] for "Protocol".

NOTE

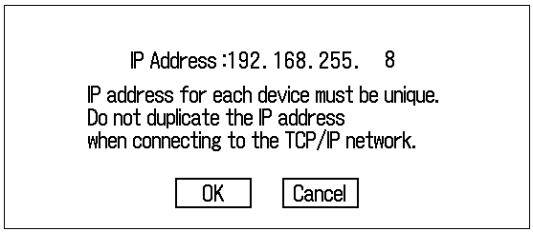
- Use the protocol recommended for the used data server.
  For details of protocol, refer to "Chapter 7 Setup Item/Default Value".

6 Select [ON] or [OFF] for "Transmit Event".

▸ If [ON] is selected, the [Transmit Event] key will be displayed on the full disclosure waveform enlarged display. By pressing this [Transmit Event] key, the event information will be transmitted to the data server.

7 Press the [Enter] key.

▸ A confirmation message will be displayed.



1 Press the [OK] key.

▸ The settings will be finalized.

8 Press the [Comm. Test] key.

▸ If properly communicating, <Pass> will be displayed.

▸ If any failure occurs to the communication, <Fail> will be displayed.

NOTE

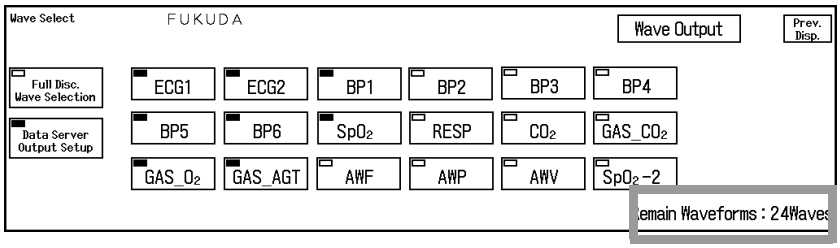
- If <Fail> is displayed, check the network setting, and perform the setup again.

❑Selecting the Waveform to Store

Select the waveform to output to the data server.
Maximum of 32 waveforms for each DS-7700 system can be stored.

1 Select the patient by pressing the bed selection area, and press the [Menu], [Admit], [Wave Select], [Data Server Output Setup] keys.

▸ The "Wave Select" screen for the selected patient will be displayed.



NOTE

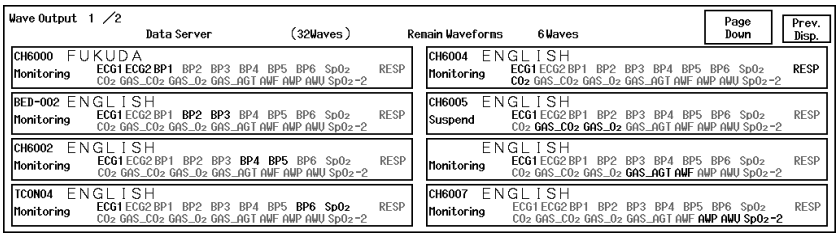
- The [Wave Select] key on the [Admit/Discharge] screen will be displayed only if full disclosure waveform recording function or data server function is effective. If full disclosure waveform recording function or data server function is not effective, the setup screen will not be displayed.

2 Select the waveforms to store from [ECG1] to [SpO_2-2].

▸ At the lower right of the display, the remaining quantity of waveforms will be displayed. Use this as an indication of selectable number of waveforms.

3 Press the [Wave Output] key.

▸ The "Wave Output" screen will be displayed.



REFERENCE

- On the "Wave Output" screen, the waveform selection settings for all registered beds are displayed.
- The parameter for full disclosure waveform recording are displayed in orange, and the parameter for data server output waveform are displayed in blue.
  "Monitoring" will be displayed for the currently monitored bed.

4 To change the setting, press the key for the corresponding patient.

▸ The "Data Server Output Setup" screen for the selected patient will be displayed.

SNTP Server Setup

By using the SNTP (Simple Network Time Protocol) server, the time can be synchronized to SNTP server once every minute.

However, if higher priority time synchronization is present, this setting will be invalid.

Refer following for the priority of time synchronization.

NOTE

♦Priority of the Time Synchronization

The time will be synchronized with the following priority.

1 Administrating monitor, if wired network is constructed.

2 TCON base station, if TCON system is used.

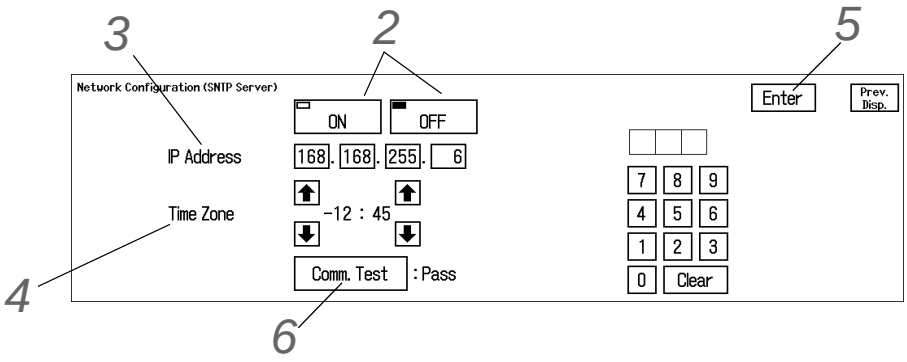
3 SNTP server, if used.

4 Patient data server, if used, and if [Time Synchronization] is selected on Patient Data Server setup or "Time Synchronization" is set to ON for [Link with EMR] or [Search ID].

- When using a wired network, the SNTP server setting should be the same for all DS-7700 system central monitors.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [SNTP Server] keys.

▸ The "Network Configuration (SNTP Server)" screen will be displayed.



2 Select [ON]/[OFF] for SNTP server function.

3 Enter the IP address of the SNTP server.

1 Use the numeric keys to enter the numbers.

2 Press the corresponded key for "IP Address".

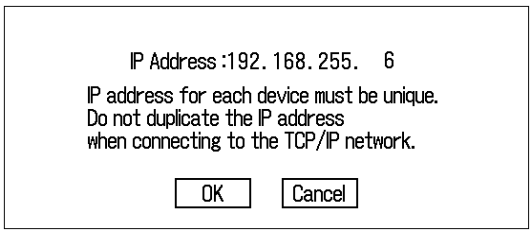
▸ The entered numbers will be displayed inside the key.

4 Set the time zone for your country.

▸ Use the arrow keys to set the time zone. (Ex. Tokyo: +09:00)

5 Press the [Enter] key.

▸ A confirmation message will be displayed.



1 Press the [OK] key.

▸ The settings will be finalized.

6 Press the [Comm. Test] key.

▸ If properly communicating, <Pass> will be displayed.

▸ If any failure occurs to the communication, <Fail> will be displayed.

NOTE

- If <Fail> is displayed, check the network setting, and perform the setup again.

HL7 Server Setup

If the HL7 (Health Level Seven) server is used in the hospital, patient information and current measurement data monitored on the DS-7700 system can be transmitted to the HL7 server when requested.

NOTE

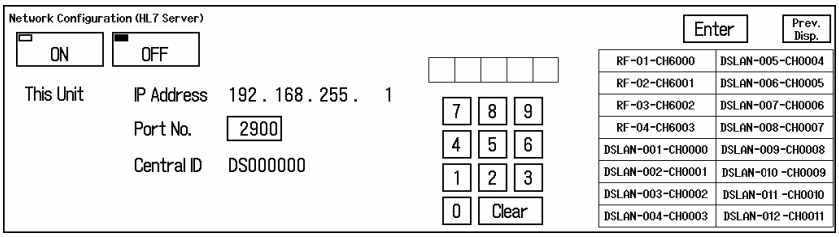
- Only one HL7 server can access to one central monitor.
- There may be some parameters without measurement data if parameter display is set to OFF on the bedside monitor, or monitoring is suspended, or telemetry condition is not good. In such case, those measurement data will not be transmitted to the HL7 server from the central monitor.
- When using the HL7 server, the time needs to be synchronized with the DS-7700 system. Perform SNTP server setup or select [ON] for " Time Synchronization" on the "Network Configuration (Patient Data Server)" screen.

Parameters that can be transmitted to the HL7 Server.

DS-LANII	HR, ST1, ST2, RR(Impedance/CO_2/Ventilator), BP1 to 6,$EtCO_2$, $InspCO_2$, SpO_2, PR(SpO_2), T1, T2, VPC, NIBP, SvO_2, CCO, CCI, BT
DS-LANIII:	HR, ST1, ST2, RR (Impedance/CO_2/Ventilator), BP1 to 6, $EtCO_2$, $InspCO_2$, SpO_2, PR(SpO_2), T1, T2, VPC, NIBP, E-O_2, I-O_2, E-N_2O, I-N_2O, E-CO_2, I-CO_2, E-Agent1, I-Agent1, E-Agent2, I-Agent2, SvO_2, CCO, CCI, BT, MAC

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [HL7 Server] keys.

▸ The "Network Configuration (HL7 Server)" screen will be displayed.



For "This Unit IP Address" , IP address for the DS-7700 system will be displayed. For the "Central ID" , an unique ID for this unit will be displayed.

On the right side of the screen, the registered beds (max. 16) will be displayed.

(☞"Bed Register" P6-4)

2 Select [ON]/[OFF] of HL7 server function.

3 Enter the port number for HL7 server using the numeric keys.

NOTE

- Input the port number recommended for the used HL7 server.

4 Press the [Enter] key.

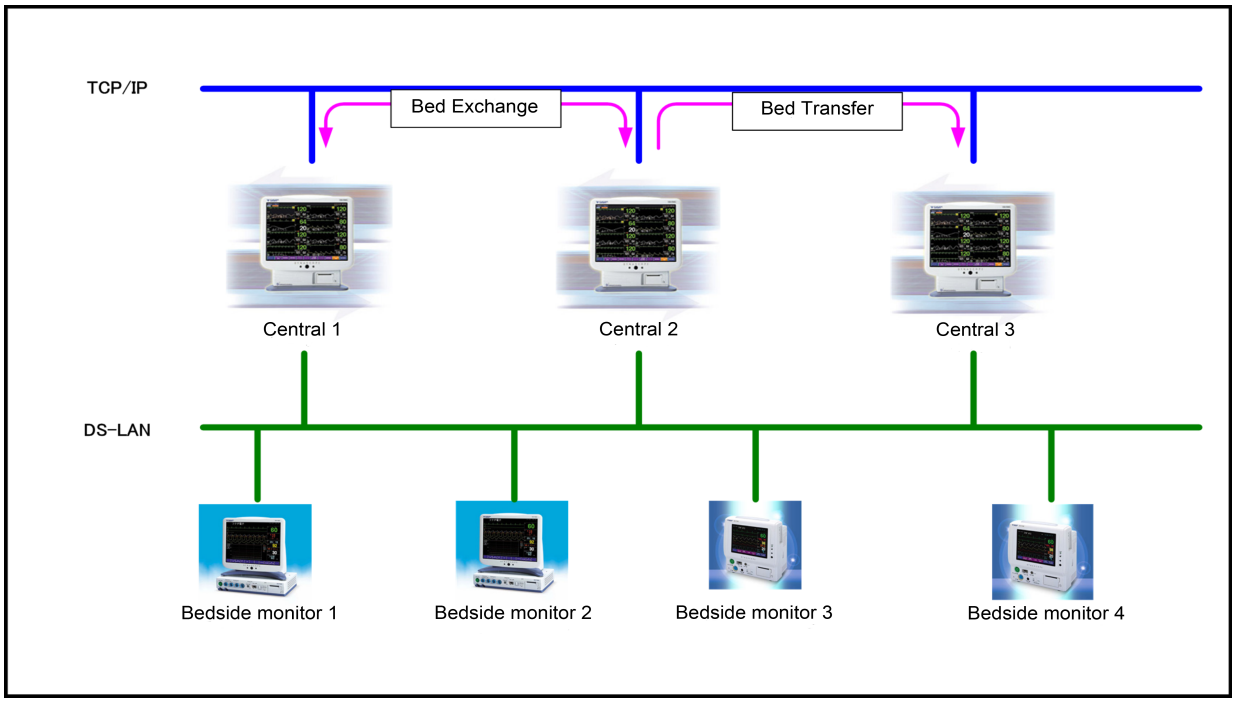
▸ The settings will be finalized.

Central Monitor Communication

By performing network setup for the central monitors, bed transfer/exchange (transfer/exchange of patient information and monitoring data) among several central monitors will become possible through the TCP/IP network.

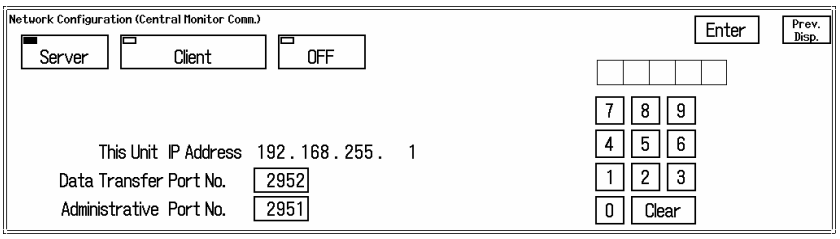
NOTE

- One central monitor should be set as the server, and other central monitors should be set as the client.



1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [Central Monitor Comm.] keys.

▸ The "Network Configuration (Central Monitor Comm.)" screen will be displayed.

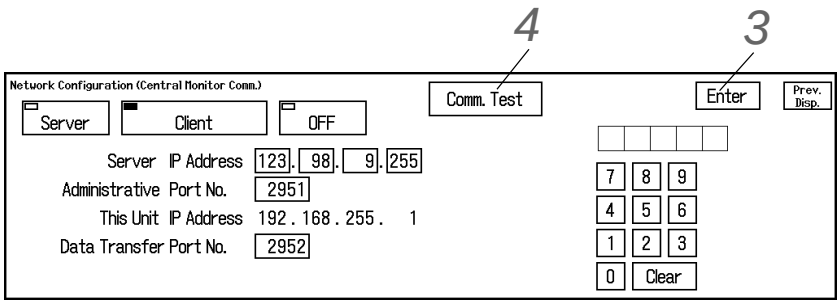


2 Select from [Server]/[Client]/[OFF].

▸ For "This Unit IP Address" , IP address for the DS-7700 system will be displayed.
When [Server] is selected:

1. Use the numeric keys to enter the numbers for "Data Transfer Port No.".
2. Press the key for "Data Transfer Port No.".
3. Use the numeric keys to enter the numbers for "Administrative Port No.".
4. Press the key for "Administrative Port No.".

When [Client] is selected:



1 Use the numeric keys to enter the numbers for "Server IP Address" .

2 Press the key for "Server IP Address".

3 Use the numeric keys to enter the numbers for "Administrative Port No.".

4 Press the key for "Administrative Port No.".

5 Use the numeric keys to enter the numbers for "Data Transfer Port No.".

6 Press the key for "Data Transfer Port No.".

3 Press the [Enter] key.

- The settings will be finalized.

4 Press the [Comm. Test] key and check if the communication is properly performed.

- If properly communicating, <Pass> will be displayed.
- If any failure occurs to the communication, <Fail> will be displayed.

NOTE

- If <Fail> is displayed, check the network setting, and perform the setup again.

Chapter 4 Using the PC/CF Card

Chapter 4 Using the PC/CF Card

By using the optional CF card, FCF-128, patient data and setup data can be transferred.

By using the optional CF card (FCF-1000: 1GB, FCF-16GA: 16GB), the following 4 types of full disclosure waveform data can be stored.

- 32Waves 24Hours (When FCF-1000 is used)
- 32Waves 96Hours (When FCF-16GA is used)
- 16Waves 48Hours (When FCF-1000 is used)
- 8Waves 96Hours (When FCF-1000 is used)

Inserting the Card

1 Insert the specified CF card into the CF card slot.

REFERENCE

- Or, use the adapter and insert to the PC card slot.

Formatting the CF Card

⚠ CAUTION

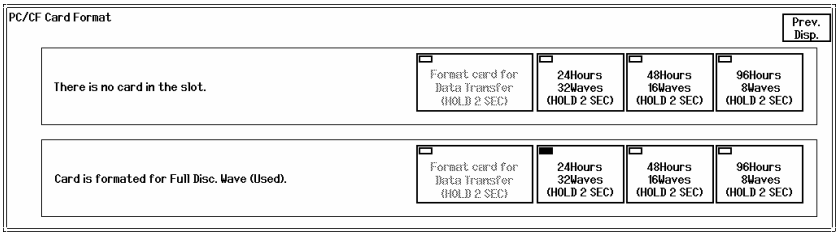
- The CF card can be used only on the unit where it was formatted.
  - The CF card used for full disclosure waveform recording cannot be used for data transfer to other central monitors.
  - The CF card used for full disclosure waveform recording on other central monitors cannot be used on this unit.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [PC/CF Card], [Format] keys.

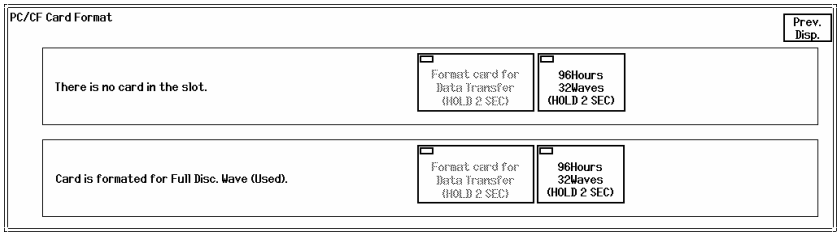
▸ The "PC/CF Card Format" screen will be displayed.

REFERENCE

- This screen can be also displayed by inserting the unformatted card.



When Using the FCF-1000



When Using the FCF-16GA

2 Format the CF card.

To Format the Card for Data Transfer:

1 Press the [Format card for Data Transfer] key for more than 2 seconds.

To Format the Card for Full Disclosure Waveform Recording (When FCF-1000 is used):

1 Press one of the [24Hours 32Waves]/[48Hours 16Waves]/[96Hours 8Waves] key for more than 2 seconds.

To Format the Card for Full Disclosure Waveform Recording (When FCF-16GA is used):

1 Press the [96Hours 32Waves] key for more than 2 seconds.

▸ When the beep tone generates and the display returns to the previous display (or home display), the format process is complete.

To Transfer the Patient Data

When a patient is transferred to another bed, the PC/CF card can be used to transfer the patient data to another central monitor (only between the same series central monitors) and allows monitoring with the same setup.
The following data can be transferred using the PC/CF card.
(☞"Data Transfer by the PC/CF Card" P7-11)

Stored Data (Patient Data)

Data		Description
Patient Information		Stores the patient admittance data. (patient name, comment, sex, height, weight, patient ID, birth date, age, patient type, pacemaker use)
Database	Trend Data	Up to 48 hours of data for the currently monitored parameters will be stored.
	Recall Data	Maximum of 200 recall waveforms will be stored.
	NIBP data	Maximum of 120 data will be stored.
Parameter Setup		Stores the measurement condition (scale, lead, alarm limit, etc.) of the currently monitored parameters.
System Configuration	Record	Stores the current setup.
	Color	
	Display Configuration	Stores the displayed numeric data/waveform on the home display and individual display.
	Alarm	Stores the current setup.

⚠ CAUTION

- The data transfer is possible only between the same series central monitors (DS-7600, DS-7700). (However, there are some restrictions.) The data cannot be transferred to a bedside monitor.

- If the software version of the two central monitors are different, the data transfer may not be possible, or part of the data may not be transferred.
  (The data transfer from the newer version monitor to the older version monitor is not possible.) For details, refer to our service representative.

To Transfer the Setup Data

By storing the setup data to the PC/CF card, it can be used to set the same setup for more than one central monitors. The same setup can be applied by simply reading the setup data stored on the PC/CF card.
The following data can be transferred using the PC/CF card.
(☞"Data Transfer by the PC/CF Card" P7-11)

Stored Data (Setup Data)

Data		Description
System Configuration	Tone/Volume	Stores the current setup.
	Sweep Speed	
	Display Configuration	Stores the current setup. (except bed selection)
	Brightness Setup	Stores the current setup.
Pre-Set	Recorder Setup	Stores the current setup.
	Channel Setup	Stores only stored channel.
	Soft Switch	Stores the current setup.
	Measurement Unit	
	User Key	Stores the current setup.Refer to the following caution.
	Alarm Related Setup	
	Admit	
	Bed Name Registration	Stores the current setup.Refer to the following caution.

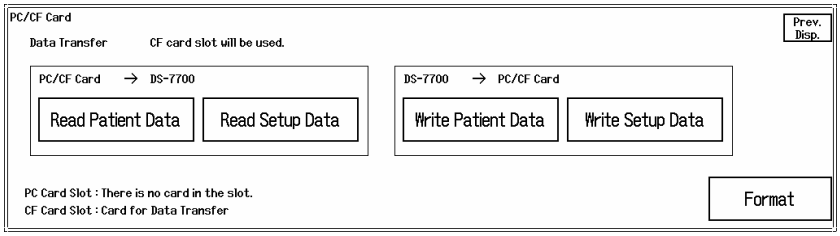
⚠ CAUTION

- The data transfer is possible only between the same series central monitors (DS-7600, DS-7700).(However, there are some restrictions.) The data cannot be transferred to a bedside monitor.
- If the software version of the two central monitors are different, the data transfer may not be possible, or part of the data may not be transferred.
- For the data transfer from DS-7700 series to DS-7700W series, or from DS-7700W series to DS-7700 series, the user key settings will not be transferred.

To Read/Write the Card Data

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [PC/CF Card] key.

▸ The "PC/CF Card" screen will be displayed.



2 Select whether to read or write the data.

To Read the Data from the PC/CF Card:

1 Press the [Read Patient Data]/[Read Setup Data] key.

REFERENCE

- [Read Patient Data] will read the patient attribute data, trend data, etc.
- [Read Setup Data] will read the setup data for recorder, softswitch, etc.

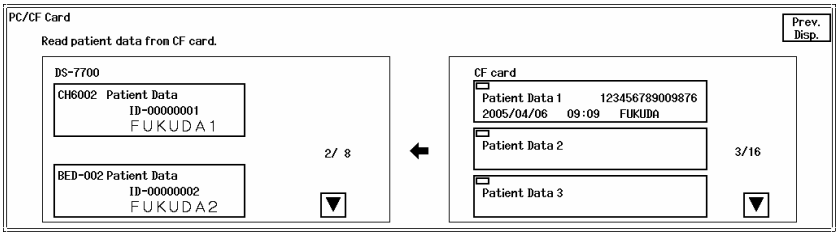
To Write the Data on the PC/CF Card:

1 Press the [Write Patient Data]/[Write Setup Data] key.

REFERENCE

- [Write Patient Data] will write the patient attribute data, trend data, etc.
- [Write Setup Data] will write the setup data for recorder, softswitch, etc.

▸ The data transfer window will appear.



When [Read Patient Data] is pressed

1 Select a patient (or setup data) to read.

2 Select the Room/Bed ID (or Channel ID) to read (or write) the selected data.

NOTE

- Monitoring cannot be performed during the reading/writing process.

Chapter 5 EMR Link Function

Chapter 5 EMR Link Function

Using the EMR link function through the patient data server allows to perform the following operation.

- When a patient is admitted on EMR, the same patient will be admitted on the DS-7700 system.
- When a patient is discharged on EMR, this patient's information on the DS-7700 system will be initialized.
- When a patient information is changed on the EMR, the patient information on the DS-7700 system will also change.

Restrictions of EMR Link Function

These are the following restrictions when using the EMR link function.

Function	Item	Network Configuration (Patient Data Server)		
		EMR Link Function		
		EMR Admitted	EMR Discharged	EMR Offline
Menu	[Discharge]	No	Yes	Yes
System Configuration	[Bed Transfer]	No	No	Yes
User Key	[Bed Transfer]	No	No	Yes
	[Discharge]	No	Yes	Yes
PC/CF Card	[Read Patient Data]	No	No	Yes
	[Write Patient Data]	Yes	Yes	Yes
Admit/Discharge	[ID]	No	No	Yes
	[Search Patient]	No	No	No
	[Name]	No	No	Yes
	[Discharge]	No	Yes	Yes
	[Suspend]	Yes	Yes	Yes
	[Admit Date]	No	No	Yes
	[Bed Name]	Yes	Yes	Yes
	Other patient information	Yes	Yes	Yes
	EMR Link Message	<Admitted on EMR>	<Discharged from EMR>	<EMR Offline>
Patient Information, Comment Input	[ID]	No	No	Yes
	[Name]	No	No	Yes
DS-LAN Network (Operation on the bedside monitor)	Change of patient ID	No	No	Yes
	Change of patient name	No	No	Yes
	Change of admit date	No	No	Yes
	Change of patient information	Yes	Yes	Yes
	Discharge process	No	Yes	Yes

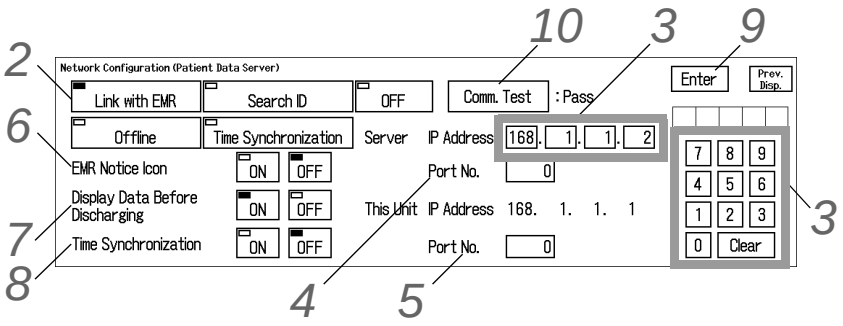
"Yes": Can display, edit, and change settings.

"No": Cannot display, edit, and change settings.

Patient Data Server Setup

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [Patient Data Server] keys.

▸ The "Network Configuration (Patient Data Server)" screen will be displayed.



2 Press the [Link with EMR] key.

3 Enter the IP address of the patient data server.

1 Use the numeric keys to enter the numbers.

2 Press the corresponded key for "IP Address".

▸ The entered numbers will be displayed inside the key.

4 Enter the port number using the same procedure explained in procedure 3.

NOTE

- Enter the port number recommended for the used patient data server.

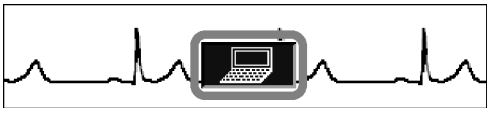
5 Input the port number for the DS-7700 system using the same procedure explained in procedure 3.

NOTE

- The displayed IP address for "This Unit" cannot be changed on this screen. If necessary, it can be changed on the Network Configuration (This Unit) screen.
- The port number in the range from 1024 to 65535 can be entered. The recommended port number is "2809".

6 Set ON/OFF for "EMR Notice Icon".

▸ [ON]: Displays the EMR notice icon on the home display when a patient is admitted on EMR.



REFERENCE

- Pressing this icon will display the "Admit/Discharge" menu.

▸ [OFF]: EMR notice icon will not be displayed.

7 Set ON/OFF for "Display Data Before Discharging".

- [ON]: Displays the review data for the patient discharged from the EMR.
- [OFF]: Review data for the patient discharged from the EMR will not be displayed.

NOTE

- This function is effective only when [No] is selected for "Automatic Discharge from EMR" under the Soft Switch menu (page 3/3).
  (☞"Soft Switch" P6-8)

REFERENCE

- When a patient is discharged from EMR, the patient will be also discharged on the DS-7700 system.
- If EMR link function is not used, the discharge operation will erase the review data for that patient. But if EMR link function is used, the review data for the discharged patient will remain for later reference.
- The review data that can be displayed are as follows.
  - Graphic Trend
  - Tabular Trend
  - Recall (List Display, Enlarged Display)
  - NIBP List
  - ST Waveform
  - 12-Lead ST
  - Full Disclosure Waveform (Compressed Display, Enlarged Display)
  - Full Disclosure Waveform (Slave/Compressed, Slave/Enlarged)

8 Set ON/OFF for "Time Synchronization".

- [ON]: Synchronizes the time of the DS-7700 system with patient data server by communicating with the server every minute.

NOTE

- However, if higher priority time synchronization is present, this setting will be invalid.
- Priority of the Time Synchronization
  The time will be synchronized with the following priority.

  1 Administrating monitor, if wired network is constructed.

  2 TCON base station, if TCON system is used.

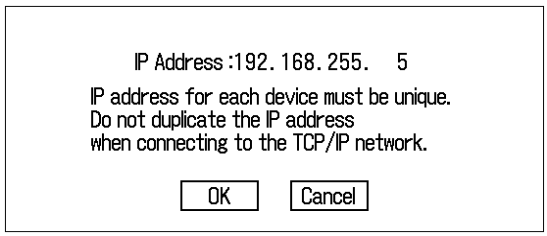
  3 SNTP server, if used.

  4 Patient data server, if used, and if [Time Synchronization] is selected on Patient Data Server setup, or "Time Synchronization" is set to [ON] for [Link with EMR] or [Search ID].

- [OFF]: Synchronization with the patient data server will not be performed.

9 Press the [Enter] key.

▸ A confirmation message will be displayed.



1 Press the [OK] key.

▸ The settings will be finalized.

10 Press the [Comm. Test] key.

▸ If properly communicating, <Pass> will be displayed.

▸ If any failure occurs to the communication, <Fail> will be displayed.

NOTE

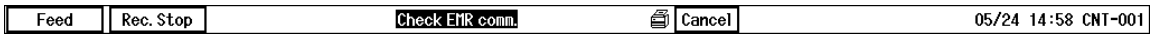
- If <Fail> is displayed, check the network setting, and perform the setup again.

Admit/Discharge on the EMR

The patient admit/discharge process linked to the electronic medical record (EMR) can be performed.
(☞Operation Manual "EMR Link Function" P5-20)

To Suspend the EMR Link Function

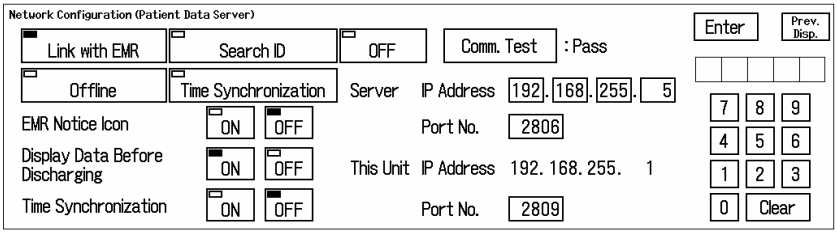
When there is a communication failure between the DS-7700 system and the patient data server, <Check EMR comm.> message will be displayed.



In such case, suspending the EMR link function will allow to perform the patient admit/discharge operation (admit/discharge, edit patient ID, bed transfer/exchange) on the DS-7700 system.
During this offline condition, admit/discharge on the EMR will not be linked to the DS-7700 system.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Network Config.], [Patient Data Server] keys.

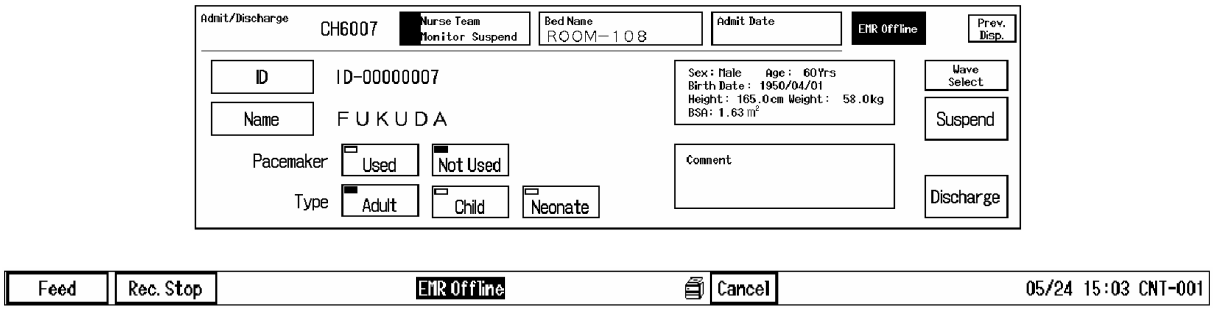
▸ The "Network Configuration (Patient Data Server)" screen will be displayed.



2 Press the [Offline] key.

▸ During the offline condition, <EMR Offline> message will be displayed on the "Admit/Discharge" screen and

system status message area.



3 To resume the EMR link function, press the [Offline] key again.

- The key LED will turn OFF.

Chapter 6 Pre-Set Menu

Chapter 6 Pre-Set Menu

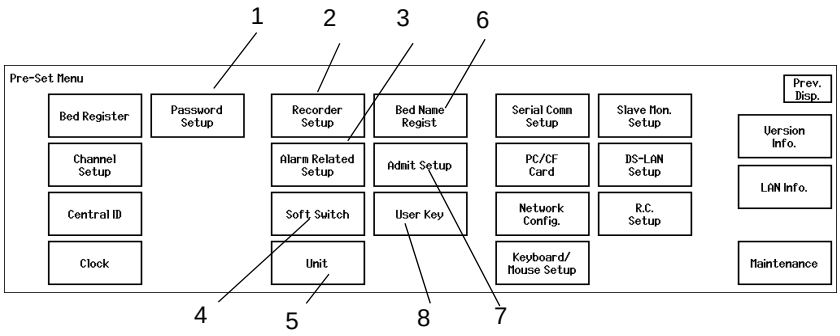
Setups before Starting Monitoring

The setup procedure for each pre-set item is explained below.

⚠ CAUTION

- The pre-set menu includes important setup items for the whole system. Only the system administrator should perform this setup.
- Some pre-set items are restricted to network-administrating monitor (central ID: 001) when connected to wired network system. Such pre-set items will not be displayed on other monitors.
- If constructing a network with more than one central monitors, the same pre-set setting should be applied to all central monitors.
- (☞"Network Restrictions" P3-5)

If using more than one DS-7700 system central monitor, using the PC/CF card will enable same setups for all monitors.



1 Password Setup: 2 types of password numbers, and whether or not to require password for discharge operation and alarm setting can be set.

2 Recorder Setup: ON/OFF of paper feed, QRS classification, etc. can be set.

3 Alarm Related Setup: Alarm suspend duration, alarm silence duration, etc. can be set.

4 Soft Switch: AC frequency, setup at discharge, etc., can be set.

5 Unit: Unit for ST level, BP, TEMP and CO_2 atmospheric pressure can be set.

6 Bed Name Regist: Bed name can be registered.

7 Admit Setup: Initial settings at patient admittance can be set.

8 User Key: Frequently used keys can be assigned at the bottom of the display.

REFERENCE

- For the following items, refer to the corresponded section.

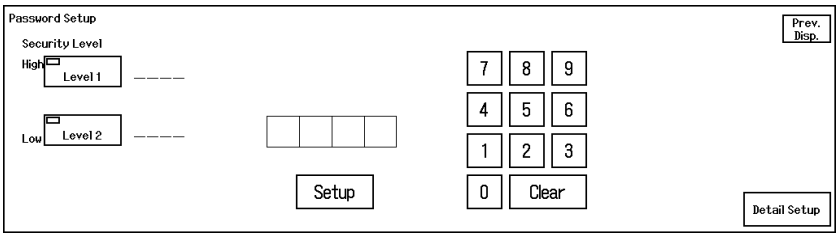
Bed Register:	☞"Bed Register" P6-4
Channel Setup	☞"Channel ID and Antenna Setup for the Receiver" P3-15
Central ID	☞"Central ID or Room ID Setup (DS-LANII/III)" P3-13
Clock	☞"Date/Time Setup" P6-3
Serial Comm. Setup	☞"Serial Communication Setup (TCON)" P3-18
Remote Control Setup	☞"Remote Control Setup" P2-6
PC/CF Card	☞"Using the PC/CF Card" P4-1
Network Configuration	☞"TCP/IP Network Connection" P3-20
Keyboard/Mouse Setup	☞"Keyboard/Mouse Setup" P2-4
Slave Monitor Setup	☞"Using the Slave Monitor" P2-8
Extended Display Unit Setup	☞"Using the Extended Display Unit (DS-7700W series only)" P2-10
DS-LAN Setup	☞"DS-LAN Setup (DS-LANII/III)" P3-12
Version Information	☞"Software Version Information" P10-2
LAN Information	☞"LAN Information" P10-2
Maintenance	☞"Maintenance" P10-2

Password Setup

Password numbers, whether or not to require password for discharge operation, alarm setting, etc., and password security level (if necessary) can be set.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Password Setup] key.

- The "Password Setup" screen will be displayed.



2 Set the password for security level 1 and 2.

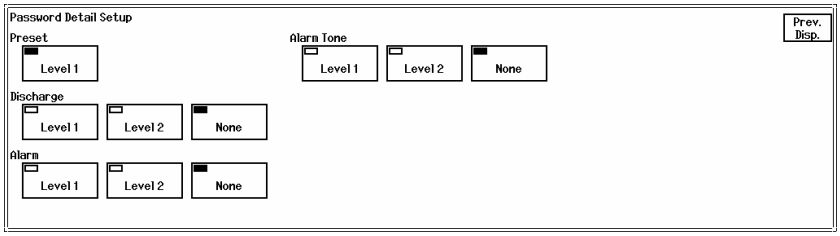
REFERENCE

- Different password numbers can be set for level 1 and level 2. The security level is higher for level 1 password and can deactivate level 2 password.

1. Select the security level from [Level 1]/[Level 2].
2. Use the numeric keys to enter the 4-digit password.
3. Press the [Setup] key.

3 Press the [Detail Setup] key.

▸ The "Password Detail Setup" screen will be displayed.



4 Set the security level for "Discharge", "Alarm", "Alarm Tone".

NOTE

- The security level for "Pre-Set Menu" is fixed as level 1.
- If IEC mode is set as the alarm system, the security level for "Alarm Tone" is set as Level 1.

▸ [None]: Password will not be required for corresponding operation.

Date/Time Setup

Follow the procedure below to adjust the current date/time.

⚠ CAUTION

- The time/date must be set before monitoring. If the time/date is changed during monitoring, error may be caused to the NIBP list data.

The time synchronization will be performed with the following priority.

1 Administrating monitor, if wired network is constructed.
(The time/date can be set only on the administrating monitor.)

2 TCON base station monitor, if TCON system is used.
(The time/date can be set only on the TCON base station.)

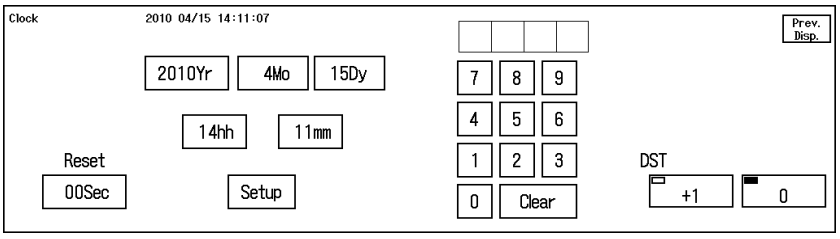
3 SNTP server, if used.

4 Patient data server, if used, and if "Time Synchronization" on Patient Data Server setup is set to ON.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Clock] key.

▸ The "Clock" setup screen will be displayed.

2 Enter the year, month, day, hour, and minutes.



1 Enter the year using the numeric keys.

2 Press the [Yr] key.

3 Enter the month, day, hour, minute using the numeric keys, and press the [Mo], [Dy], [hh], [mm] keys respectively.
Example:
[2][0][1][0][Yr][1][Mo][2][2][Dy][1][5][hh][4][6][mm]

4 Press the [Setup] key.

▸ The entered numbers will be finalized.

3 Press the "Reset" [00Sec] keys.

▸ The seconds will be reset to 0 sec.

NOTE

- The "Reset" [00Sec] key will not become effective by pressing the [Setup] key.
- The "Reset" [00Sec] key can be pressed only once per minute.

4 Set the daylight saving time (DST).

▸ [+1]: The daylight saving time will be set.

▸ [0]: The daylight saving time will not be set.

Bed Register

The beds to monitor on this unit can be registered. Maximum of 16 beds can be registered.
The registered beds can be selected on the "Display Configuration" screen.
(☞Operation Manual "Bed Selection" P10-5)

⚠ CAUTION

- Canceling the bed registration will clear all data for that bed.

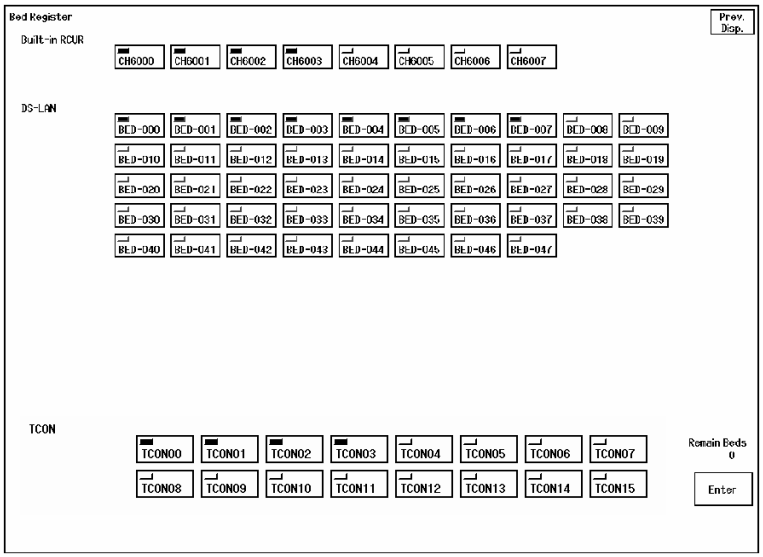
NOTE

- Depending on the monitor model type, some functions for the TCON network bed are restricted.
- For the beds connected to the wired network system (BED, LW), some functions (ex. arrhythmia alarm such as Slow VT, Couplet) are restricted.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Bed Register] key.

▸ The "Bed Register" screen will be displayed.

▸ The beds which can be monitored on this unit will be displayed in green.



1 Built-in RCVR (RF)
[CHxxxx] indicates telemetry beds which construct the wireless network system.

2 DS-LAN
[CHxxxx] indicates telemetry beds which construct the wired network system. (LW)
[BED-xxx] indicates wired beds which construct the wired network system. (BED)

3 TCON
When [CHxxxx] is displayed in gray, the bed with the same channel ID in "Built-in RCVR (RF)" and "DS-LAN" is also set as the TCON bed. (LW+T, RF+T)
When this [CHxxxx] bed in "Built-in RCVR (RF)" or "DS-LAN" is selected, the bed will be automatically set as the TCON telemetry bed.
[TCONxx] displayed in green is the TCON bed. If this bed is selected, telemetry will not be used. Waveforms will not be displayed. To set the bed as the TCON telemetry bed, set the same channel ID for the bed displayed in "Built-in RCVR (RF)" or "DS-LAN" and the bed displayed in "TCON". By setting the same channel ID, the bed will function as the TCON telemetry bed.

NOTE

- When using only the TCON, do not set the same channel ID with the bed for "Built-in RCVR (RF)" or "DS-LAN".

2 Select the monitoring beds.

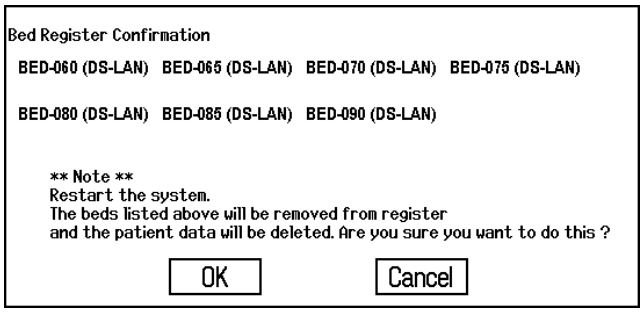
▸ "Remain Beds" will be displayed at the lower right.

REFERENCE

- Use this as an indication of selectable number of beds.

3 Press the [Enter] key.

▸ The "Bed Register Confirmation" screen will be displayed.



NOTE

- The setup will not be validated unless the [Enter] key is pressed. Make sure to press the [Enter] key.

4 Press the [OK] key.

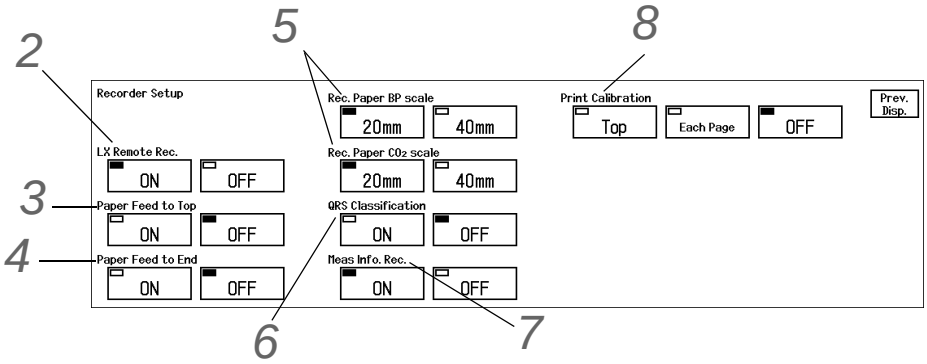
Recorder Setup

NOTE

- The following items will be set according to the network-administrating monitor (Central ID: 001) when more than one central monitors are connected to the wired network (DS-LANII/III).
  - LX remote recording
  - BP Scale on the recording paper
  - Measurement Information Recording

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Recorder Setup] key.

▸ The "Recorder Setup" screen will be displayed.



2 Select ON/OFF of "LX Remote Rec.".

▸ [ON]: Remote recording from the telemetry transmitter (LX-5160, LX-5630, LX-7120, LX-7230) will be performed.

▸ [OFF]: Remote recording from the telemetry transmitter (LX-5160, LX-5630, LX-7120, LX-7230) will not be performed.

NOTE

- This selection can be made when the telemetry transmitter, LX-5160, LX-5630, LX-7120, LX-7230.

3 Select ON/OFF of "Paper Feed to Top".

- [ON]:Recording will start from the next perforation on the recording paper.
- [OFF]:Recording will start from the end position of the last recording.

4 Select ON/OFF of "Paper Feed to End".

- [ON]: Recording paper will be fed to perforation after recording is completed.
- [OFF]: Recording paper will not be fed after recording is completed.

5 Select the recording scale for BP and CO_2 waveform.

- [40mm]: The waveform will be recorded in 40mm scale.

REFERENCE

- The recording accuracy will be higher.

- [20mm]: The waveform will be recorded in 20mm scale.

REFERENCE

- The recording accuracy is lower but overlapping onto other waveforms can be avoided.

6 Select ON/OFF of "QRS Classification".

- [ON]: The QRS classification symbol indicated below will be printed.
- [OFF]: QRS classification symbol will not be printed.

NOTE

- The QRS symbol cannot be printed for manual recording if "None" is selected for delay time and for periodic recording. To print the QRS symbol, set the delay time to [8 sec.] on the "Manual Record" screen.
  (☞Operation Manual "Manual Recording Setup" P9-2)

Symbol	Description
N (Normal)	Normal QRS beat
V (VPC)	Ventricular Extrasystole
P (Pacing Beat)	Pacing beat
F (Fusion Beat)	Fusion beat of pacing and spontaneous beat
? (Undetermined Beat)	Learning arrhythmia, or unmatched beat

7 Select ON/OFF for "Meas Info. Rec.".

- [ON]:The status information will be printed.
- [OFF]: The status information will not be printed.

NOTE

- This function is for maintenance only. For details, refer to out service representative.

8 Select [Top]/[Each Page]/[OFF] for "Print Calibration".

- [Top]: Calibration waveform will be printed only at the beginning of the waveform.
- [Each Page]: Calibration waveform will be printed on each page of the recording paper.
- [OFF]: Calibration waveform will not be recorded.

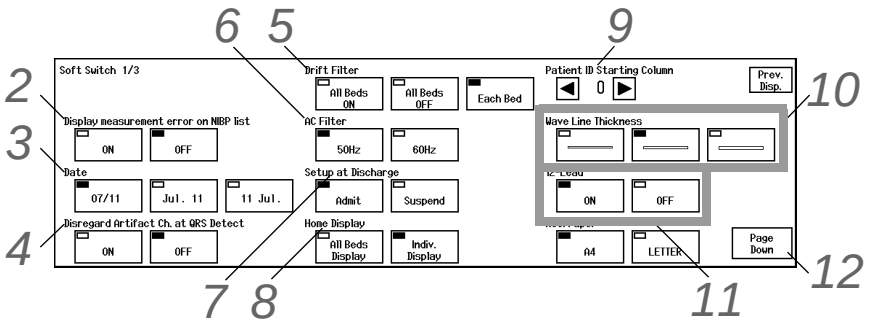
REFERENCE

- The calibration will be printed along with the waveform.

Soft Switch

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Soft Switch] key.

- The "Soft Switch" screen will be displayed.



NOTE

- For the wired network system, the setup of "Disregard Artifact Ch. at QRS Detect" and "AC Filter" can be performed only on the network-administrating monitor (Central ID: 001) The same setup will be applied to other central monitors.

2 Select ON/OFF for "Display measurement error on NIBP list".

- [ON]: Error data will be displayed on the NIBP list.
- [OFF]: Error data will not be displayed.

REFERENCE

- The error data is the incorrect NIBP measurement data.

3 Select [01/11]/ [Jan. 11]/ [11 Jan.] for "Display Format".

- The selected format will be applied to display and printing.

4 Select ON/OFF for "Disregard Artifact Ch. at QRS Detect".

- [ON]: QRS is detected by merging ECG1 and ECG2. However, if artifact is present on one of the waveforms, detection is made using the stable ECG waveform only.

- [OFF]: QRS is detected by always merging ECG1 and ECG2.

NOTE

- When [ON] is selected, and both ECG1 and ECG2 contain artifact, the QRS detection will be performed by merging ECG1 and ECG2.
  If the QRS amplitude is low for the ECG waveform without artifact, QRS may not be detected and may generate HR alarm or asystole alarm. Make sure that both ECG1 and ECG2 waveforms are displayed in appropriate size.
- This setting is effective only when monitoring 2 channels of ECG waveform (ECG1 and ECG2).
- Merging the ECG1 and ECG2 waveform will allow QRS detection if one of the ECG waveform has stable QRS amplitude. However, if either of the ECG waveforms is in lead-off condition or contains artifact, QRS may be erroneously detected causing inaccurate heart rate measurement.
  "Disregard Artifact Ch. at QRS Detect" allows selection of QRS detection procedure in such case.

5 Set the "Drift Filter".

- [All Beds ON]: Drift filter will be set to ON for all beds. ON/OFF selection on the "ECG Setup" screen will become ineffective.
- [All Beds OFF]: Drift filter will be set to OFF for all beds. ON/OFF selection on the "ECG Setup" screen will become ineffective.
- [Each Bed]: Drift filter can be set to ON or OFF for each bed on the "ECG Setup" screen.

⚠ CAUTION

- The drift filter setup should be the same for all central monitors. Proper operation will not be performed if the setting is different among the central monitors.

REFERENCE

- The drift filter setting can be performed only for the telemetry beds (RF, LW).

6 Select [50Hz]/ [60Hz] for "AC Filter".

⚠ CAUTION

- Unless the correct power frequency is set, the AC filter will not properly function.

REFERENCE

- If AC noise is present on the ECG, the AC frequency factor (50 or 60Hz) can be removed. Select 50Hz or 60Hz according to the used AC power source.
- The AC filter setup can be performed only for the telemetry beds (RF, LW).

7 Set the "Setup at Discharge".

- [Admit]: Monitoring will continue even after the discharge operation has been performed.
- [Suspend]: Monitoring will be suspended after the discharge operation has been performed.The numeric data display will be cleared, and alarm generation, NIBP periodic measurement, periodic recording will not

be performed.

WARNING

- When [Suspend] is selected for "Setup at Discharge", the suspend condition will continue until the [Resume] key is pressed on this equipment, even if the monitoring is performed on the bedside monitor.

CAUTION

- When the discharge operation is performed on the bedside monitor or other central monitors, the monitoring on this equipment will not be suspended even if [Suspend] is selected for "Setup at Discharge".

8 Set the "Home Display".

- [All Beds Display]: Home display with all beds display will be displayed when the [Home] key is pressed.
- [Indiv. Display]: Home display with individual bed display will be displayed when the [Home] key is pressed.

REFERENCE

- When the [Home] key is pressed during the individual bed display, the home display will change to all beds display.

9 Use the ◀/▶ keys to set the "Patient ID Starting Column".

NOTE

- This setup should be performed before the network connection.
  (☞"Patient ID Starting Column (DS-LANII/III/TCON)" P3-14)

10 Select —/—/— for "Wave Line Thickness."

REFERENCE

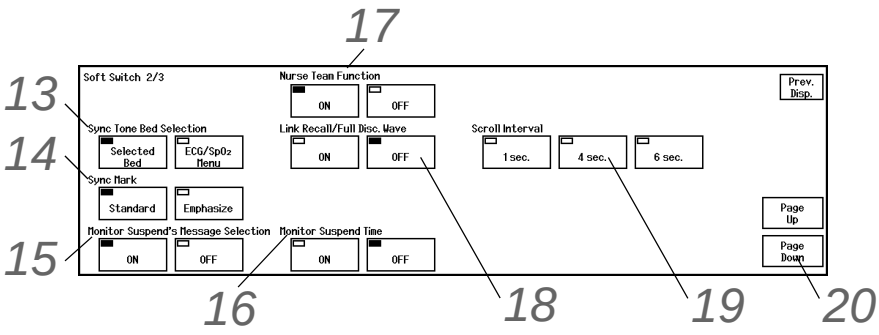
- The thickness of the waveform displayed on the home display and each review display can be selected from 3 levels.

11 Select ON/OFF for "12-Lead".

- [ON]: 12-lead ECG waveform monitoring will be performed.
- [OFF]: 12-lead ECG waveform monitoring cannot be performed. The screen and key for 12-lead function will not be displayed either.

12 Press the [Page Down] key.

▸ The second page of "Soft Switch" screen will be displayed.



13 Set the "Sync Tone Bed Selection" to select the bed to generate the HR/PR synchronized tone.

▸ [Selected Bed]: The synchronized tone for the currently selected bed will be generated. (The displayed individual bed, or bed with the waveform area outlined in light blue on the home display.)

▸ [ECG/SpO_2 Menu]: The synchronized tone for the bed which "Synchronized Mark/Tone" selection is made on the ECG or SpO_2 menu will be generated. This selection will also allow to display an individual bed by pressing the waveform area on the home display.

14 Set the "Sync Mark".

NOTE

- If [ECG/SpO_2 Menu] is selected for "Sync Tone Bed Selection", [Emphasize] will be automatically selected.

▸ [Standard]: The synchronized mark for all beds will be displayed in red.

▸ [Emphasize]: The synchronized mark for the bed generating the synchronized tone will be emphasized by displaying it in red. The marks for other beds will be displayed in a color set for that parameter.

15 Set the "Monitor Suspend's Message Selection".

▸ [ON]: [Mon. Suspend Setup] key will be displayed on the "System Configuration" screen to allow setup of the monitor suspend's message.

▸ [OFF]: Monitor suspend's message function will be ineffective.

REFERENCE

- By setting the monitor suspend's message, a different message and color can be set according to the monitor suspend reason of each patient.

16 Set the "Monitor Suspend Time".

▸ [ON]: Monitor suspend timer function can be used.

▸ [OFF]: Monitor suspend timer function will be ineffective.

NOTE

- If "Monitor Suspend's Message Selection" is set to [OFF], "Monitor Suspend Time" function cannot be used.
- If "Monitor Suspend's Message Selection" is set to [OFF], "Monitor Suspend Time" function will also automatically set to [OFF].
  (☞Operation Manual "Monitor Suspend" P5-12)

REFERENCE

- When the "Monitor Suspend's Message Selection" is set to [ON], setting this "Monitor Suspend Time" function to [ON] will allow to set the monitor suspend duration (15Min./ 30Min./1Hr./1.5Hr./2Hr.). When the preprogrammed duration completes, it will be notified by an alarm sound.

17 Set the "Nurse Team Function".

- [ON]: Nurse team function will be effective. Also, [Nurse Team] will be displayed on the "Admit/Discharge" screen to allow selection of the nurse team.
- [OFF]: Nurse team function will be ineffective.

18 Set the "Link Recall/Full Disc. Wave".

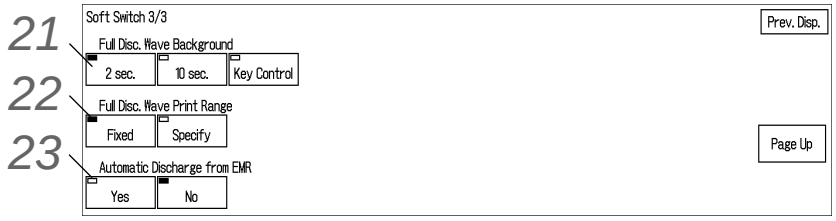
- [ON]: Enables to display the full disclosure waveform from the recall zoom screen. The waveform for the whole recorded duration can be verified by scrolling the display. If there is no full disclosure waveform data, 12 seconds of recall waveform will be displayed.
- [OFF]: Full disclosure waveform will not be linked and 12 seconds of recall waveform will be displayed.

19 Set the "Scroll Interval".

- On the recall zoom and full disclosure waveform zoom screen, the waveform scroll interval when ◀/▶ is pressed can be selected from [1sec.] / [4sec.] / [6sec.].

20 Press the [Page Down] key.

- The third page of "Soft Switch" screen will be displayed.



21 Set the "Full Disc. Wave Background".

- On the compressed full disclosure waveform screen, the duration to highlight the background of the zoom waveform which was previously displayed can be selected.
- [2sec.] / [10sec.]: The background will be highlighted for 2 seconds / 10 seconds respectively.
- [Key Control]: The background highlight will be maintained until the next key operation.

22 Set the "Full Disc. Wave Print Range". (DS-7700W only)

- For the compressed full disclosure waveform displayed on the extended display unit, the printing range can be specified.
- [Fixed]: The currently displayed compressed full disclosure waveform will be output on the built-in recorder.
- [Specify]: The specified range of zoom waveform will be output on the built-in recorder or laser printer.

23 Set the "Automatic Discharge from EMR".

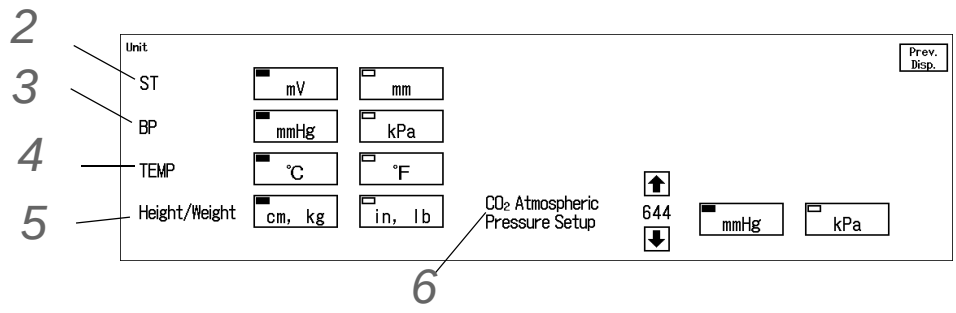
- The discharge operation when a patient is discharged from EMR can be set.
- [Yes]: The patient will be automatically discharged on the central monitor when discharged from EMR.
- [No]: Only the patient information will be initialized, and monitoring data/alarm settings will not be initialized

when a patient is discharged from EMR.

ST, BP, TEMP, Height/Weight Unit and CO_2 Atmospheric Pressure

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Unit] key.

▸ The "Unit" screen will be displayed.



1 Set the CO_2 atmospheric pressure and measurement unit. Entering the atmospheric pressure will adjust the measurement data to a correct value.

2 Select [mV]/[mm] for "ST".

3 Select [mmHg]/[kPa] for "BP".

4 Select [°C]/[°F] for "TEMP".

5 Select [cm, kg]/[in, lb] for "Height/Weight".

6 Set the CO_2 atmospheric pressure.

1 Use the ↑/↓ keys to set the atmospheric pressure.

▸ Entering the atmospheric pressure will adjust the measurement data to a correct value.

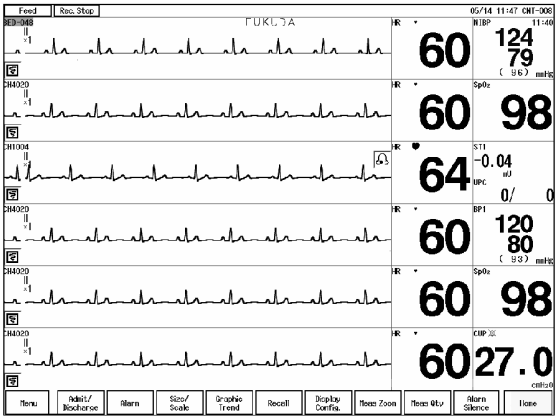
2 Select [mmHg]/[kPa] for "CO_2 Atmospheric Pressure".

⚠ CAUTION

- In case of DS-LANIII network, the measurement unit setting for BP and temperature on the central monitor will synchronize to the network-administrating monitor.
- If the measurement unit for BP and temperature is different between the bedside monitor and the central monitor, monitoring will not be performed for that parameter. Waveforms and numeric data will not be displayed.
- In case of DS-LANII network, temperature unit cannot be selected.

User Key

The frequently used keys can be assigned as user key at the bottom of the display. Setting the user key allows to directly access the frequently used menu. 7 or 9 user keys can be set for the DS-7700 series, and 10 user keys can be set for the DS-7700W series.



There are user keys which function for all beds, and user keys which function only for individual bed. If the user key which functions for individual bed is pressed, it will function only for the selected bed.

1 Example of "key functioning for individual bed"
[Admit/Discharge]: Displays the "Admit/Discharge" screen for the selected bed. (For the above display, "FUKUDA").

2 Example of "key functioning for all beds"
[Alarm Silence]: Silences the alarm for all beds.

The list below shows the items that can be set as user keys.

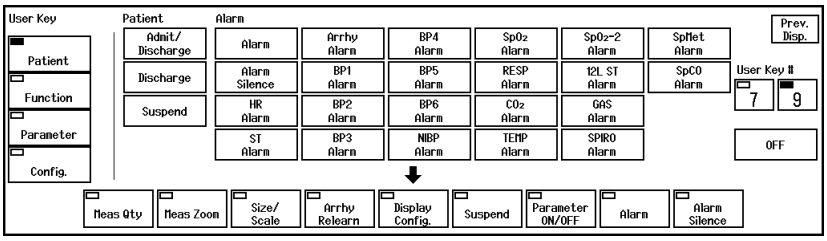
User Keys	Description	Key Control	
		All Beds	Individual Bed
Admit/Discharge			
Admit/Discharge	Displays "Admit/Discharge" screen.		Yes
Discharge	Displays "Discharge" screen.		Yes
Suspend	Suspends patient monitoring.		Yes
Alarm			
Each Parameter	Displays alarm setup screen for each parameter.		Yes
Alarm	Displays the alarm setup screen.		Yes
Alarm Silence	Silences the alarm for preprogrammed time (1 to 5 min.).	Yes	
Function			
Graphic Trend	Displays the graphic trend.		Yes
Tabular Trend	Displays the tabular trend.		Yes
Recall	Displays the recall list.		Yes
NIBP List	Displays the NIBP list.		Yes
ST Display	Displays the ST measurement display.		Yes
Full Disc. Wave	Displays the full disclosure waveform.		Yes
Night Mode	Allows to set the Night Mode for DS-LANIII BED.	Yes	

User Keys	Description	Key Control	
		All Beds	Individual Bed
Rec. All Beds	Records the data of all beds displayed on the home display.	Yes	
12-Lead Wave	Displays the 12-lead waveform.		Yes
12-Lead ST	Displays the 12-lead ST waveform.		Yes
Rec.	Outputs the review data (graphic trend, tabular trend, recall, etc.) to the laser printer.		Yes
Display Setup			
Size/Scale	Displays the keys to set the waveform size/scale and position.	Yes	
Meas. Qty	Sequentially changes the number of numeric data.	Yes	
Meas. Zoom	Sequentially changes the size of numeric data.	Yes	
Review	Displays the full disclosure waveform on the extended display unit when multimode display function is used. At this time, the bed which was displayed on the extended display unit will move to the main display unit at the last row of displayed beds. Pressing the key again will return the screen to multimode display. (DS-7700W series only)	Yes	
Parameter Setup			
Parameter Setup	Displays the "Parameter Setup" screen.		Yes
Each Parameter	Displays the setup screen for each parameter.		Yes
Arrhy. Relearn	Displays the "Arrhy. Relearn" key.	Yes	
Parameter ON/OFF	Displays the "Parameter ON/OFF" screen.		Yes
System Config.			
System Config.	Displays the "System Configuration" screen.	Yes	
Record	The recorder operation setup menu will be displayed.		Yes
Color	Displays the "Color" setup screen.		Yes
Display Configuration	Displays the "Display Configuration" screen.	Yes	Yes
Bright. Setup	Displays the "Brightness Setup" screen.	Yes	
Sweep Speed	Displays the "Sweep Speed" screen.	Yes	
Tone/Volume	Displays the "Tone/Volume" screen.	Yes	
Bed Transfer	Displays the "Bed Transfer" screen.	Yes	
Monitor Suspend Setup	Displays the "Mon. Suspend Setup" screen.	Yes	
Nurse Team Setup	Displays the "Nurse Team Setup" screen.	Yes	

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [User Key] key.

▸ The "User Key" screen will be displayed.

For the DS-7700 Series:



1 Select the quantity of user keys from [7]/[9].

2 Select [Patient]/[Function]/[Parameter]/[Config.] to display the user key selection.

NOTE

- The displayed user keys will differ depending on the selected function.

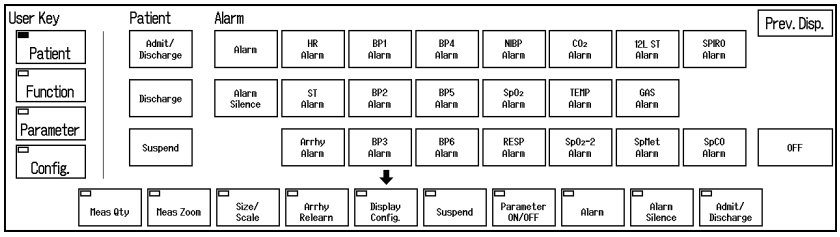
3 Select the assigning position from the lower part of the screen.

4 Select the user key from the displayed selection.

REFERENCE

- If not assigning a user key, select [OFF].

For the DS-7700W Series:



1 Select [Patient]/[Function]/[Parameter]/[Config.] to display the user key selection.

NOTE

- The displayed user keys will differ depending on the selected function.

2 Select the assigning position from the lower part of the screen.

3 Select the user key from the displayed selection.

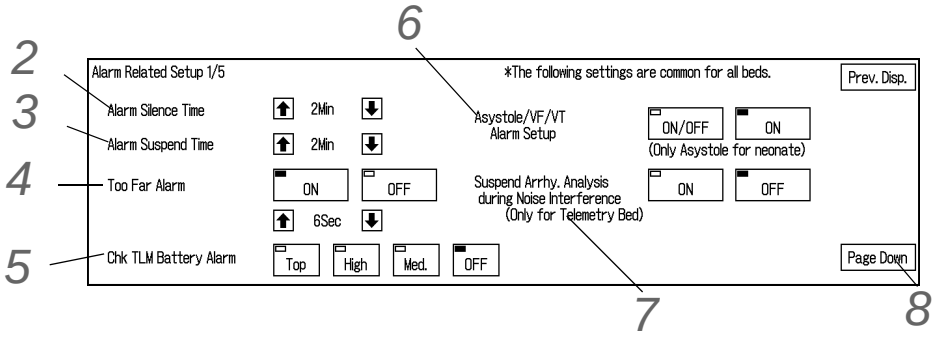
REFERENCE

- If not assigning a user key, select [OFF].

Alarm Related Setup

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Alarm Related Setup] key.

▸ "Alarm Related Setup" screen will be displayed.



2 Use the ↑/↓ keys to set the "Alarm Silence Time" to set the alarm silence duration.

REFERENCE

- When an alarm generates, pressing the [Alarm Silence] key assigned as user key will silence the alarm for the preprogrammed duration. The alarm silence duration can be selected from 1 to 5min.

3 Use the ↑/↓ keys to set the "Alarm Suspend Time" to set the alarm suspend duration.

REFERENCE

- The alarm suspend duration when the [Alarm Suspend] key is pressed can be selected from 1 to 5min.

4 Select [ON]/[OFF] of "Too Far Alarm" and the duration until the alarm generates using the ↑/↓ keys.

REFERENCE

- Whether or not to generate an alarm when a telemetry transmitter is out of receiving range can be selected.
- The duration until the alarm generate can be selected from 5 to 60 sec.

▸ [ON]: Alarm will generate.

▸ [OFF]: Alarm will not generate.

5 Set the "Chk TLM Battery Alarm".

▸ [Top] / [High] / [Med.]: When the remaining battery of the telemetry transmitter becomes low, it will be notified by alarm sound, message, and low battery mark of the specified alarm level.

▸ [OFF]: When the remaining battery of the telemetry transmitter becomes low, it will be notified by alarm message and low battery mark. Alarm sound will not be generated.

6 Set the "Asystole/VF/VT Alarm Setup".

REFERENCE

- To not miss any life-threatening alarm, asystole, VF, VT, and slow VT alarm can be set so that they cannot be turned OFF.

▸ [ON/OFF]: Asystole, VF, VT, Slow VT alarm can be set to ON or OFF.

▸ [ON]: Asystole, VF, VT, Slow VT alarm cannot be set to OFF.

⚠ CAUTION

- The same setup should be applied for all central monitors in the same network (DS-LANII, TCON).
  Otherwise, proper function cannot be achieved. For the DS-LANIII network, this setting will synchronize with the network-administrator.

NOTE

- If the patient type is neonate, this setting will only apply for asystole alarm. The ON/OFF selection of VF, VT, Slow VT alarm can be made on the "Arrhythmia Alarm" screen.

7 Set the "Suspend Arrhy. Analysis during Noise Interference".

REFERENCE

- When a noise is interfering on the ECG signal, arrhythmia analysis can be suspended.

▸ [ON]: Arrhythmia analysis will be suspended for fixed duration (5sec.) when a noise is continuously interfering.

▸ [OFF]: Arrhythmia analysis will not be suspended even when a noise is continuously interfering.

⚠ CAUTION

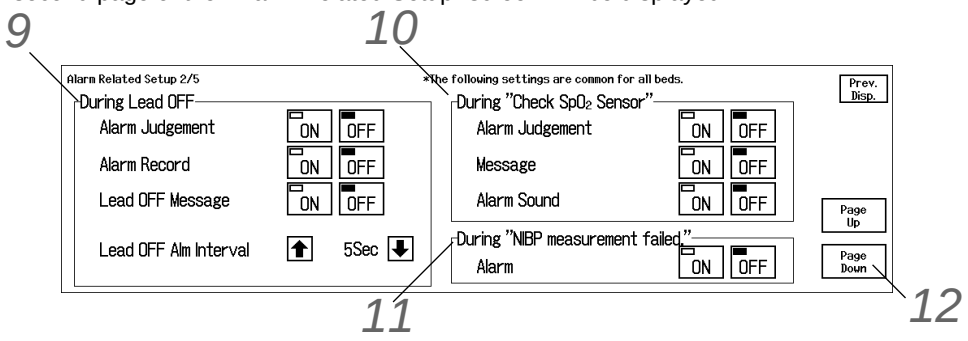
- When "Suspend Arrhy. Analysis during Noise Interference" is set to [ON], and the suspended duration continues for more than 30 seconds, "Cannot analyze" message will generate.

NOTE

- This setup can be performed only for the telemetry bed. (RF, RF+T, LW, LW+T) Even when a wired network or TCON system is constructed, the setting will not be synchronized with the bedside monitor.

8 Press the [Page Down] key.

▸ The second page of the "Alarm Related Setup" screen will be displayed.



9 Set the "During Lead OFF".

REFERENCE

- When an ECG electrode is detached, some waveforms may become immeasurable depending on the detached electrode.
- In such case, ECG waveform or respiration waveform will be displayed as baseline, and ECG related alarm will generate.
  ECG related alarms are as follows.
  - HR Alarm
  - Arrhythmia Alarm
  - ST Alarm
  - RR Alarm of Impedance Respiration
  - Apnea Alarm of Impedance Respiration
- If the alarm generated during lead-off condition is considered not reliable, selecting [OFF] for "Alarm Judgement" will not generate the ECG related alarm during lead-off condition.

(☞Operation Manual "ECG Alarm at Lead-Off Condition" P6-26)

1 Set the "Alarm Judgement".

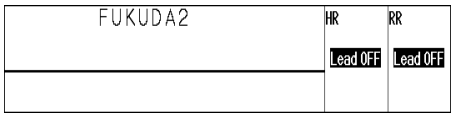
- [ON]: Alarm will be generated even during lead-off condition. HR and other ECG related alarms will generate.
- [OFF]: Alarm will not generate during lead-off condition.

⚠ WARNING

- If the "Alarm Judgement" is set OFF, HR alarm and arrhythmia alarm will not be generated at lead-off condition. If this condition is left unresolved, a sudden change of the patient may not be noticed. Take prompt action when the lead-off condition is detected.

REFERENCE

- When the "Alarm Judgement" is set OFF, a continuous tone different from standard lead-off alarm tone (low priority) will be generated if other alarm of medium priority or higher is not generating. Selecting [OFF] for "Alarm Judgement" will automatically set "Alarm Record" to [OFF], and "Lead-Off Message" to [ON]. <Lead OFF> message will be displayed inside the numeric data box.



2 Set the "Alarm Record".

NOTE

- Alarm recording will be performed if parameter other than ECG (BP, SpO_2, etc.) generates alarm during lead-off condition.

- [ON]: Alarm recording will be performed for ECG related alarm even during lead-off condition.
- [OFF]: Alarm recording will not be performed for ECG related alarm during lead-off condition.

3 Set the "Lead OFF Message".

- [ON]: <Lead OFF> message will be displayed.
- [OFF]: <Lead OFF> message will not be displayed.

4 Set the "Lead OFF Alm Interval" using the ↑/↓ keys.

REFERENCE

- The lead-off alarm interval can be selected from 5 sec./30 sec./60 sec.

- An alarm sound will generate with the set interval.

10 Set the "During Check SpO_2 Sensor".

REFERENCE

- When the pulse wave cannot be detected due to low amplitude or inappropriate probe attachment, whether to generate the alarm message/sound or not can be selected.
- If the SpO_2 measurement is disabled for the wireless network bed due to the sensor been

disconnected, etc., <Check SpO_2 Sensor> alarm will generate with medium priority regardless of this setting.

1 Set the "Alarm Judgement".

- [ON]: High priority SpO_2 alarm will generate when the SpO_2 value exceeds the alarm limit during <Check SpO_2 Sensor> condition.
- [OFF]: Medium priority SpO_2 alarm will generate when the SpO_2 value becomes 0% during <Check SpO_2 Sensor> condition.

2 Set the "Message".

- [ON]: <SpO_2 Sensor Check> message will be displayed.
- [OFF]: <SpO_2 Sensor Check> message will not be displayed.

3 Set the "Alarm Sound".

- [ON]: Alarm sound will generate to notify the sensor check condition.
- [OFF]: Alarm sound will not generate.

11 Set the "During NIBP measurement failed."

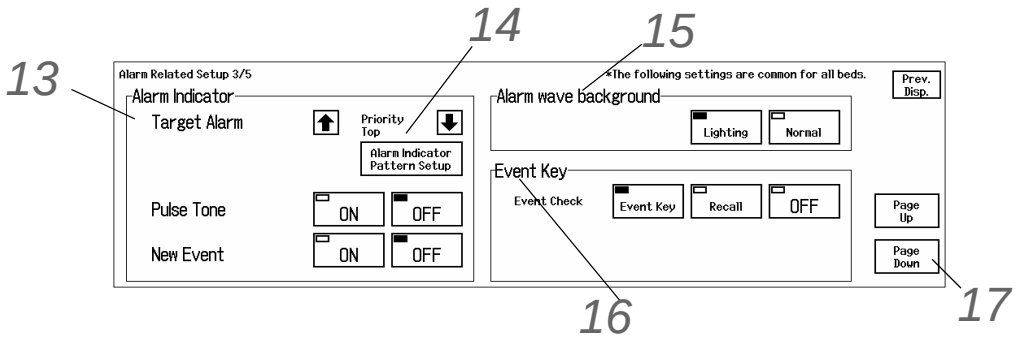
- [ON]: Medium priority alarm <NIBP meas. failed.> will generate at NIBP measurement failure.
- [OFF]: Alarm will not generate even at NIBP measurement failure.

CAUTION

- This setup is effective only when connected to the DS-LANIII network.

12 Press the [Page Down] key.

- The third page of the "Alarm Related Setup" screen will be displayed.



13 Set the "Alarm Indicator".

1 Set the "Target Alarm".

- ⬆ : Alarm level to flash the alarm indicator will sequentially change in the order of [Top-Low], [Top-Med.], [Top-High], [Top].
- ⬇ : Alarm level will sequentially change in the opposite order of ⬆.

CAUTION

- If the alarm system is IEC mode, the alarm level is fixed as [High] to [Low].

2 Set the "Pulse Tone".

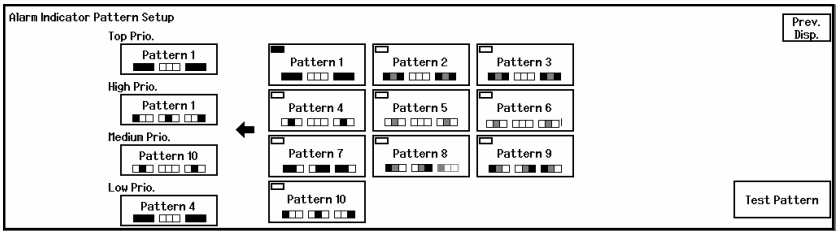
- [ON] : Green LED at the center of alarm indicator will flash synchronizing to the pulse tone.
- [OFF]: Alarm indicator will not flash.

3 Set the "New Event".

- [ON] : Alarm indicator will flash to notify that the event key is displayed.
- [OFF] : Alarm indicator will not flash even if the event key is displayed.

14 Set the "Alarm Indicator Pattern Setup".

- The "Alarm Indicator Pattern Setup" screen will be displayed.



NOTE

- If the alarm system is IEC mode, the pattern is fixed and cannot be changed.

1 Select the flash pattern from [Pattern 1] to [Pattern 10].

2 Assign the selected pattern to "Top Prio.", "High Prio.", "Medium Prio.", "Low Prio.".

3 Press the [Test Pattern] key.

- The flash pattern test will start.

Alarm Indicator Flash Pattern ("x" indicates the light is OFF.)

When the alarm system is FUKUDA DENSHI:

Pattern No.	Flash Pattern
Pattern 1	(Red, Red, Red), (x, x, x), (Red, Red, Red), (x, x, x), (Red, Red, Red)
Pattern 2	(Red, Yellow, Red), (x, x, x), (Red, Yellow, Red), (x, x, x), (Red, Yellow, Red)
Pattern 3	(Red, Green, Red), (x, x, x), (Red, Green, Red), (x, x, x), (Red, Green, Red)
Pattern 4	(x, Red, x), (x, x, x), (x, Red, x), (x, x, x), (x, Red, x)
Pattern 5	(x, Yellow, x), (x, x, x), (x, Yellow, x), (x, x, x), (x, Yellow, x)
Pattern 6	(x, Green, x), (x, x, x), (x, Green, x), (x, x, x), (x, Green, x)
Pattern 7	(Red, Red, x), (x, x, x), (x, Red, Red), (x, x, x), (Red, Red, x)
Pattern 8	(Red, Yellow, x), (x, x, x), (x, Yellow, Red), (x, x, x), (Red, Yellow, x)
Pattern 9	(Red, Green, x), (x, x, x), (x, Green, Red), (x, x, x), (Red, Green, x)
Pattern 10	(Red, x, x), (x, x, x), (x, Red, x), (x, x, x), (x, x, Red)

The interval is as follows.

- Pattern 1 to 9: 480ms, 480ms, 480ms, 480ms, 480ms
- Pattern 10: 480ms, 240ms, 480ms, 240ms, 480ms

When the alarm system is IEC:

Alarm Priority	Flash Pattern
High Priority	(Red, Red, Red), (x, x, x), (Red, Red, Red), (x, x, x), (Red, Red, Red) 320ms 320ms 320ms 320ms 320ms
Medium Priority	(x, Yellow, x), (x, x, x), (x, Yellow, x), (x, x, x), (x, Yellow, x) 800ms 800ms 800ms 800ms 800ms
Low Priority	(x, Yellow, x) constantly lights
New Event	(x, Yellow, x) constantly lights

15 Set the "Alarm wave background".

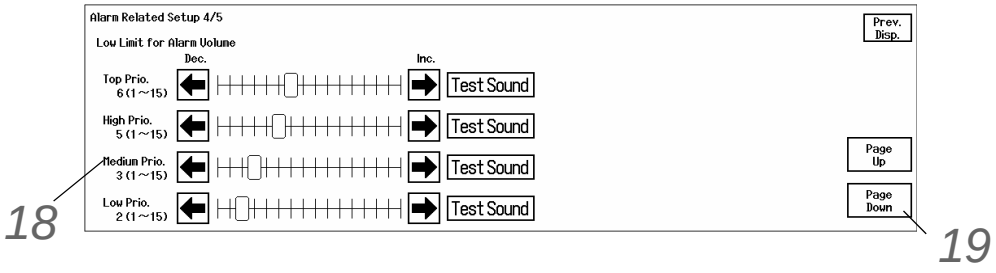
- [Lighting]: The background of the alarm-generated waveform will light in red.
- [Normal]: The background of the alarm-generated waveform will not light in red.

16 Set the "Event Key".

- [Event Key]: Pressing the event key when the alarm generates will be considered as the alarm has been checked and erases the event key.
- [Recall]: Displaying the recall screen when the alarm generates will be considered as the alarm has been checked and erases the event key.
- [OFF]: will not be displayed even when the alarm generates.

17 Press the [Page Down] key.

- The fourth page will be displayed.



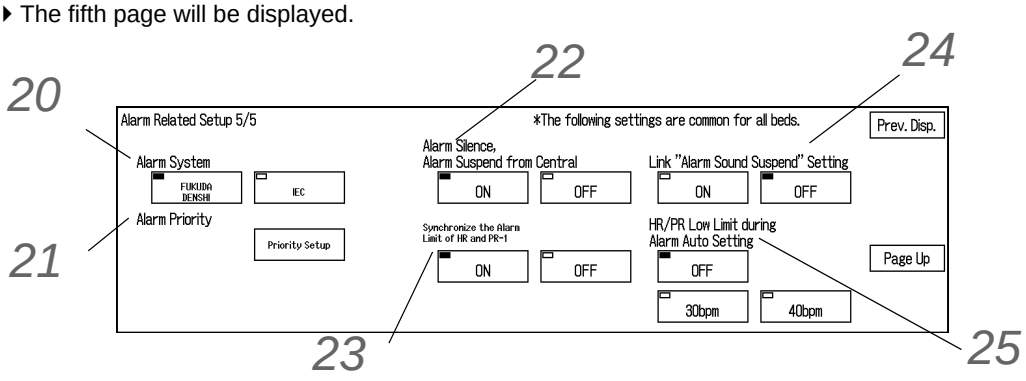
18 Use the / keys to set the "Low Limit for Alarm Volume" for each alarm priority.

REFERENCE

- The low limit for the alarm volume to be set on the [Tone/Volume] screen can be set.
- The adjustable alarm volume will be indicated by yellow underline on the [Tone/Volume] screen.

19 Press the [Page Down] key.

▸ The fifth page will be displayed.



20 Set the "Alarm System".

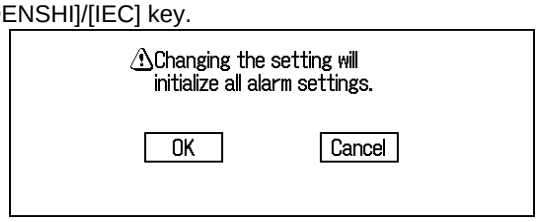
WARNING

- When the alarm system is changed, all alarm settings will be initialized. When changed, make sure to check the alarm sound and alarm indicator setting.

REFERENCE

- The alarm sound and alarm indicator flash pattern will be changed. (☞"Settings for Each Alarm System" P7-9)

1 Press the [FUKUDA DENSHI]/[IEC] key.



2 Press the [OK] key.

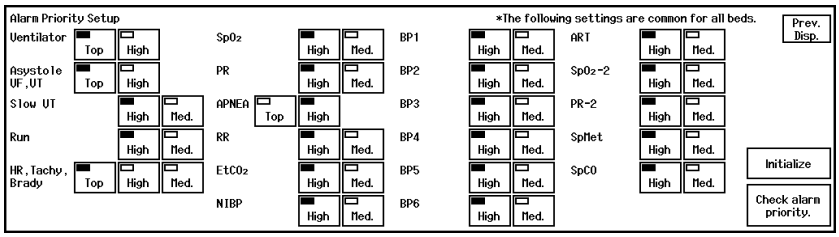
21 Set the "Alarm Priority".

NOTE

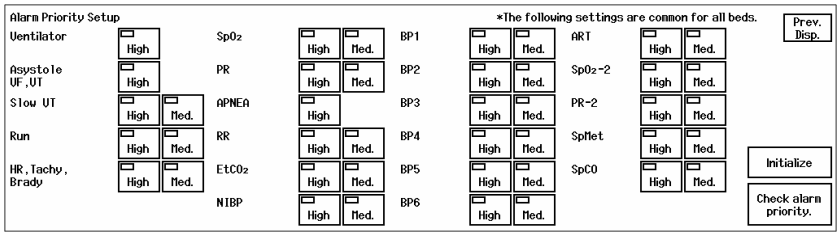
- The selectable alarm priority depends on the parameter.

1 Press the [Priority Setup] key.

▸ The "Alarm Priority Setup" screen will be displayed.



FUKUDA DENSHI Mode



IEC Mode

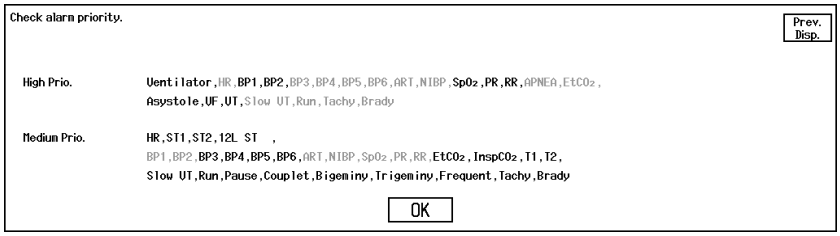
Selectable Alarm Priority

Alarm Parameter	FUKUDA DENSHI	IEC
Ventilator	Top/High	High
Asystole, VF, VT	Top/High	High
Slow VT	High/Med.	High/Med.
RUN	High/Med.	High/Med.
HR, Tachy, Brady	Top/High/Med.	High/Med.
SpO_2-1	High/Med.	High/Med.
PR-1	High/Med.	High/Med.
NIBP	High/Med.	High/Med.
RR	High/Med.	High/Med.
APNEA	Top/High	High
$EtCO_2$	High/Med.	High/Med.
BP1 to 6	High/Med.	High/Med.
ART	High/Med.	High/Med.
SpO_2-2	High/Med.	High/Med.
PR-2	High/Med.	High/Med.
SpCO	High/Med.	High/Med.
SpMet	High/Med.	High/Med.

2 Set the alarm priority for each parameter.

3 Press the [Check alarm priority] key to check the alarm priority.

▸ A confirmation message will be displayed.



4 Press the [OK] key.

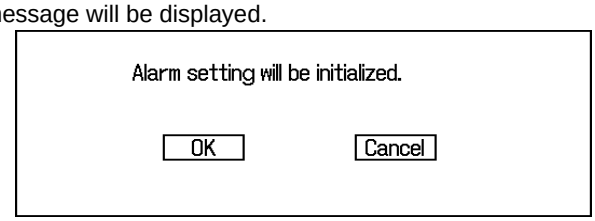
5 Press the [Prev. Disp.] key.

▸ The fifth page of the "Alarm Related Setup" screen will be displayed.

To Initialize the Alarm Priority:

1 Press the [Initialize] key.

▸ A confirmation message will be displayed.



2 Press the [OK] key.

▸ The setting will be initialized to factory default setting.

22 Set the "Alarm Silence, Alarm Suspend from Central".

▸ [ON]: The alarm generated on the bedside monitor can be silenced or suspended from the central monitor.

▸ [OFF] : The alarm generated on the bedside monitor cannot be silenced or suspended from the central monitor.

23 Set the "Synchronize the Alarm Limit of HR and PR-1"

▸ [ON] : Alarm limit setting for HR and PR-1 will synchronize.
Changing the HR alarm limit will also change the PR-1 alarm limit to the same value.

▸ [OFF] : Alarm limit setting for HR and PR-1 will not synchronize.
Changing the HR alarm limit will not change the PR-1 alarm limit.

NOTE

- The ON/OFF setting for HR and PR-1 will not synchronize even if [ON] is set.

24 Set the "Link 'Alarm Sound Suspend' Setting".

When the alarm sound is suspended on the bedside monitor, whether or not to suspend the alarm sound on this central monitor can be selected.

▸ [ON]: If the alarm sound is suspended on the bedside monitor, the alarm sound on this central monitor will be also suspended.

▸ [OFF]: Even if the alarm sound is suspended on the bedside monitor, the alarm sound on this central monitor will not be suspended and normal monitoring will be performed.

25 Set the "HR/PR Low Limit during Alarm Auto Setting".

When auto alarm is set for HR/PR alarm, the lower alarm limit can be fixed to 30bpm or 40bpm.

▸ [30bpm]: The lower alarm limit will be fixed to 30bpm.

▸ [40bpm]: The lower alarm limit will be fixed to 40bpm.

▸ [OFF]: The lower alarm limit will be fixed to 20bpm.

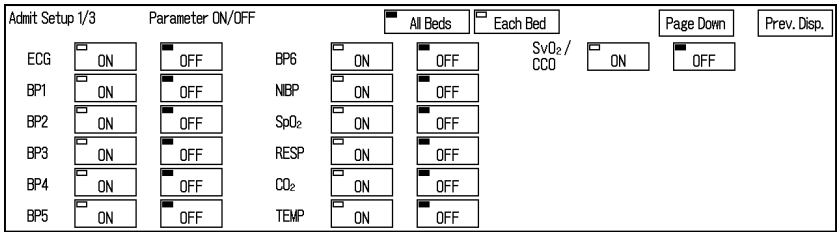
Initial Settings at Admittance

Set the initial settings at admittance.

ON/OFF of parameter monitoring, alarm limit, etc. can be set. When a new patient is admitted, the settings of previous patient will be cleared and will be reset to these initial settings.

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Admit Setup] key.

- The "Admit Setup" screen will be displayed.



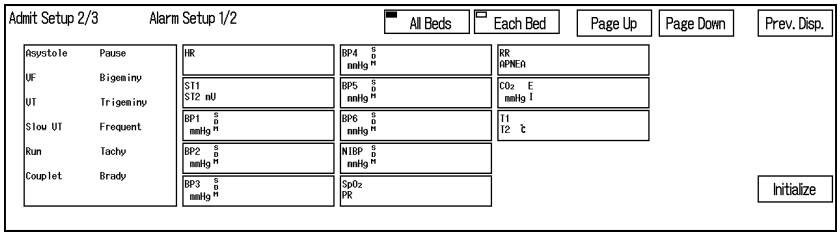
2 Select [All Beds] or [Each Bed].

- [All Beds]: The default setting will be the same for all monitoring beds.
- [Each Bed]: The default setting will be set for each bed. To select a patient, press the numeric data box for the corresponding patient.

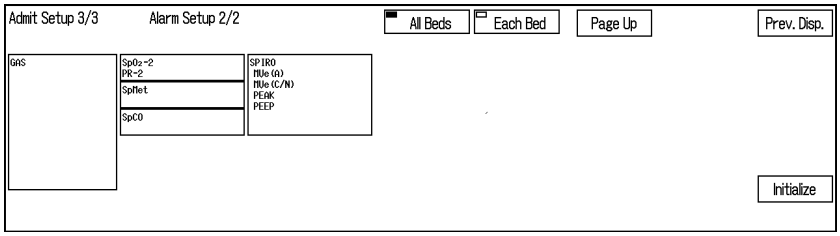
3 Select [ON]/[OFF] of monitoring of each parameter.

4 Press the [Page Down] key.

- The second page of "Admit Setup" screen will be displayed.



- The third page of "Admit Setup" screen will be displayed.



5 Set the alarm setting at admittance.

1. Press the key for the parameter such as [HR] to set the alarm.
   - The alarm setup screen will be displayed.
2. Select [ON]/[OFF] for the alarm.
3. Use the ⬅ / ➡ keys to set the alarm limit.
4. Press the [Prev. Disp.] key.

Bed Name Registration

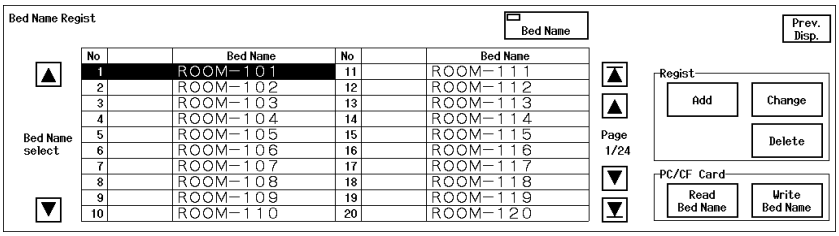
In this section, the procedure for the bed name registration is explained.
By registering a bed name, the bed name for the patient can be displayed on the home display.
Maximum of 480 bed names can be registered.

REFERENCE

- The registered bed name can be assigned to the patient during the admit process. (☞Operation Manual "Admit" P5-2)

1 Press the [Menu], [System Config.], [Pre-Set] keys, enter password, and press the [Bed Name Regist] key.

▸ The "Bed Name Regist" screen will be displayed.



2 The bed name can be read from the PC/CF card and can add/change/delete the data.

a: To read the bed name data from the PC/CF card:

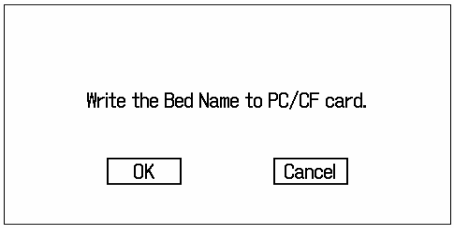
1 Insert the CF card with the bed name data to the CF card slot.

REFERENCE

- Or, insert the card to the PC card slot using the adapter.

2 Press the [Read Bed Name] key.

▸ A confirmation message will be displayed.



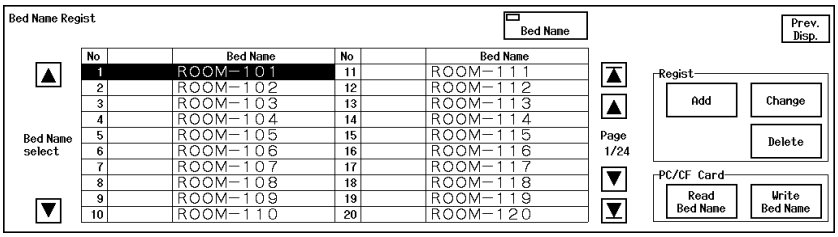
3 Press the [OK] key.

NOTE

- All bed name data will be replaced with the data read from the PC/CF card.
- Reading the bed name data from the card will erase all bed name data on this unit.

▸ When a beep tone generates, the reading process is complete.

▸ The bed name read from the card will be displayed.



b: To add/change/delete the data:

REFERENCE

- The bed name can be added/changed/deleted by selecting a bed name from the list and pressing the respective [Add]/[Change]/[Delete] key.

3 Save the current bed name data to the PC/CF card.

1 Insert the CF card formatted for data transfer to the CF card slot.

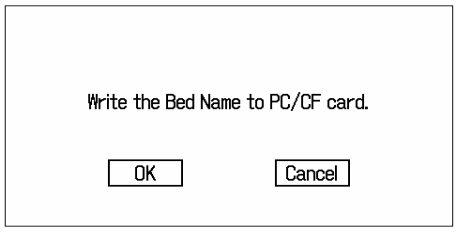
(☞"Formatting the CF Card" P4-1)

REFERENCE

- Or, insert the card to the PC card slot using the adapter.

2 Press the [Write Bed Name] key.

▸ A confirmation message will be displayed.



3 Press the [OK] key.

▸ When a beep tone generates, the writing process is complete.

Chapter 7 Setup Item/Default Value

Chapter 7 Setup Item/Default Value

Default and Backup

This section lists selection, default setting, and backup status for each setup item.
The following indicates the selection, default setting and backup status for each setup item.

NOTE

- Depending on the setting on this unit, the setup item and range may not be the same as the following table.
  (Ex.) ON/OFF of "12-Lead" under Soft Switch.

Pre-Set Menu

❑Bed Register

Item	Details	Default
Bed Register	-	DS-7780: only RF1 to 8 DS-7780W: only RF1 to 8 DS-7700L: None DS-7700WL: None

❑Channel Setup

Item		Details	Default
Stored Channel No.		-	none
Receiver Setup	Switch Antenna	ANT-1, ANT-2, Diversity	ANT-1
	Diversity Threshold	1 to 5	3
	Garbled Circuit	ON, OFF	OFF

❑Central ID

Item	Details	Default
Room ID	Numeric, Alphabet, Symbol (4 characters)	CNT-
Central ID	1 to 16	1

❑Recorder Setup

Item	Details	Default
LX Remote Rec.	ON, OFF	OFF
Paper Feed to Top	ON, OFF	OFF
Paper Feed to End	ON, OFF	ON
Rec. Paper BP Scaler	20mm, 40mm	40mm
Rec. Paper CO_2 Scale	20mm, 40mm	40mm
QRS Classification	ON, OFF	OFF
Meas. Info. Rec.	ON, OFF	OFF
Print Calibration	Top, Each Page, OFF	OFF

❑Password Setup

Item	Details	Default
Pre-Set	-	Level 1
Discharge	Level 1, Level 2, none	none
Alarm	Level 1, Level 2, none	none
Alarm Tone	Level 1, Level 2, none	none

❑Alarm Related Setup

Item		Details	Default
Alarm Silence Time		1 to 5 Min.	3 Min.
Alarm Suspend Time		1 to 5 Min.	3 Min.
Too Far Alarm	Setup	ON, OFF	OFF
	Time	5 to 60 sec.	7 sec.
Chk TLM Battery Alarm		Top, High, Med., OFF	Med.
Asystole/VF/VT Alarm Setup		ON/OFF, ON	ON
Suspend Arrhy. Analysis during Noise Interference		ON, OFF	OFF
During "Check SpO_2 Sensor"	Alarm Judgement	ON, OFF	ON
	Message	ON, OFF	ON
	Alarm Sound	ON, OFF	ON
During Lead OFF	Alarm Judgement	ON, OFF	ON
	Alarm Record	ON, OFF	ON
	Lead OFF Message	ON, OFF	ON
	Lead OFF Alarm Interval	5, 30, 60 sec.	5 sec.
During "NIBP measurement failed."		ON, OFF	ON
Alarm Indicator	Target Alarm	(FUKUDA DENSHI mode) Top-Low, Top-Medium, Top-High, Top (IEC mode) High-Low	(FUKUDA DENSHI mode) Top-High (IEC mode) High-Low
	Pulse Tone	ON, OFF	OFF
	New Event	ON, OFF	OFF
Alarm Indicator Pattern Setup (FUKUDA DENSHI mode only)	Top Priority	Pattern 1 to 10	Pattern 1
	High Priority		Pattern 1
	Medium Priority		Pattern 10
	Low Priority		Pattern 4
Alarm Wave Background		Lighting, Normal	Lighting
Event Key		Event Key, Recall, OFF	Event Key
Low Limit for Alarm Volume	Top Priority	16 levels	Level 10
	High Priority		Level 7
	Medium Priority		Level 7
	Low Priority		Level 7
Alarm System		FUKUDA DENSHI, IEC	IEC
Synchronize the Alarm Limit of HR and PR-1		ON, OFF	ON
HR/PR Low Limit during Alarm Auto Setting		30bpm, 40bpm, OFF	30bpm

Item		Details	Default
Link "Alarm Sound Suspend" Setting		ON, OFF	OFF
Alarm Priority (FUKUDA DENSHI mode)	Ventilator	Top, High	Top
	Asystole, VF, VT	Top, High	High
	Slow_VT	High, Med.	High
	RUN	High, Med.	High
	HR, Tachy, Brady	Top, High, Med.	High
	SpO_2-1	High, Med.	High
	PR-1	High, Med.	High
	APNEA	Top, High	High
	RR	High, Med.	High
	$EtCO_2$	High, Med.	High
	NIBP	High, Med.	High
	BP1	High, Med.	High
	BP2	High, Med.	Medium
	BP3	High, Med.	Medium
	BP4	High, Med.	Medium
	BP5	High, Med.	Medium
	BP6	High, Med.	Medium
	ART	High, Med.	High
	SpO_2-2	High, Med.	High
	PR-2	High, Med.	High
	SpCO	High, Med.	Medium
	SpMet	High, Med.	Medium
Alarm Priority (IEC mode)	Ventilator	High	High
	Asystole, VF, VT	High	High
	Slow_VT	High, Med.	High
	RUN	High, Med.	High
	HR, Tachy, Brady	High, Med.	High
	SpO_2-1	High, Med.	High
	PR-1	High, Med.	High
	APNEA	High	High
	RR	High, Med.	High
	$EtCO_2$	High, Med.	High
	NIBP	High, Med.	High
	BP1	High, Med.	High
	BP2	High, Med.	Medium
	BP3	High, Med.	Medium
	BP4	High, Med.	Medium
	BP5	High, Med.	Medium
	BP6	High, Med.	Medium
	ART	High, Med.	High
	SpO_2-2	High, Med.	High
	PR-2	High, Med.	High

Item		Details	Default
	SpCO	High, Med.	Medium
	SpMet	High, Med.	Medium
Alarm Silence, Alarm Suspend from Central		ON, OFF	ON

❑Soft Switch

Item	Details	Default
Display measurement error on NIBP list	ON, OFF	ON
Date	4/17, Apr. 17, 17 Apr.	Apr.17
Disregard Artifact Ch. at QRS Detect	ON, OFF	ON
Drift Filter	All Beds ON, All Beds OFF, Each Bed	All Beds ON
AC Filter	50Hz, 60Hz	60Hz
Setup at Discharge	Admit, Suspend	Admit
Home Display	All Beds Display, Indiv. Display	Indiv. Display
Patient ID Starting Column	1 to 10	1
Wave Line	3 levels (Thin, Medium, Thick)	2nd Level (Medium)
12-Lead	ON, OFF	OFF
Rec. Paper	A4, Letter	Letter
Sync Tone Bed Selection	Selected Bed, ECG/SpO_2 Menu	Selected Bed
Sync Mark	Standard, Emphasize	Standard
Monitor Suspend's Message Selection	ON, OFF	OFF
Monitor Suspend Timer	ON, OFF	OFF
Nurse Team Function	ON, OFF	OFF
Link Recall/Full Disc. Wave	ON, OFF	OFF
Scroll Interval	1sec., 4sec., 6sec.	4sec.
Full Disc. Wave Background	2sec., 10sec., Key Control	Key Control
Full Disc. Wave Print Range (DS-7700W series only)	Fixed, Specify	Fixed
Automatic Discharge from EMR	Yes, No	No

❑Measurement Unit

Item		Details	Default
ST		mm, mV	mV
BP		mmHg, kPa	mmHg
TEMP		°C, °F	°C
Height/Weight		cm/kg, in/lb	cm/kg
CO_2 Atmospheric Pressure Setup	Pressure	-	760mmHg
	Unit	mmHg, kPa	mmHg

❑Bed Name Registration

Item	Details	Default
Bed Name Registration	Numeric, Alphabet, Symbol (16 characters)	Not registered

❑User Key Setup

Item	Details	Default	
No. of User Keys (DS-7700 series only)	7, 9	9	
(From left) User Key 1	Admit/Discharge: Admit/Discharge, Discharge, Suspend Alarm: Alarm Setup, Alarm Silence, HR Alarm, ST Alarm, Arrhy. Alarm, BP1(to BP6) Alarm, NIBP Alarm, SpO_2-1 Alarm, SpO_2-2Alarm, RESP Alarm, CO_2 Alarm, TEMP Alarm, 12L ST Alarm, GAS Alarm, SPIRO Alarm, SpCO Alarm, SpMet Alarm Function: Graphic Trend, Tabular Trend, Recall NIBP List, ST Display, Full Disc. Wave, Night Mode, Rec. All Beds, 12-Lead Wave, 12-Lead ST, 🖨 Rec., Display Setup: Size/Scale, Meas Qty, Meas Zoom, Review (DS-7700W series only) Parameter Setup: Parameter Setup, ECG, BP1 (to BP6), NIBP, SpO_2-1, SpO_2-2, RESP, CO_2, SPIRO GAS, Arrhy. Relearn, Parameter ON/OFF System Configuration: System Config., Record, Color, Display Config., Bright. Setup, Sweep Speed, Tone/Volume, Bed Transfer, Mon. Suspend Setup, Nurse Team Setup	DS-7700	DS-7700W
		Admit/Discharge	Admit/Discharge
User Key 2		Alarm Setup	Alarm Setup
User Key 3		Size/Scale	Size/Scale
User Key 4		Graphic Trend	Arrhy. Relearn
User Key 5		Recall	Graphic Trend
User Key 6		Display Configuration	Recall
User Key 7		Meas. Zoom	Display Configuration
User Key 8		Meas. Qty	Meas. Zoom
User Key 9		Alarm Silence Key	Meas. Qty
User Key 10 (DS-7700W series only)		-	Alarm Silence Key

❑Serial Communication Setup

Item	Details	Default
COM1	OFF, Meas., TCON	OFF
COM2		OFF
COM3		OFF

❑TCON Setup

Item	Details	Default
TCON ID	TCON OFF, C1, C2	TCON OFF
TCON Channel	1 to 60	60

❑Network Configuration

Item		Details	Default
This Unit	IP Address	Numeric (0 to 9)	0. 0. 0. 0
	Sub-Network Mask		0. 0. 0. 0
	Default Gateway		0. 0. 0. 0
Printer	Function	ON, OFF	OFF
	IP Address	Numeric (0 to 9)	0. 0. 0. 0
	MAC Address	Alphanumeric (0 to 9, A to F)	00. 00. 00. 00. 00. 00
	Printer Spec.	ESC/page, LIPS IV, PCL 5	PCL 5
Data Server	Function	ON, OFF	OFF
	IP Address	Numeric (0 to 9)	0. 0. 0. 0
	Port No.		2000
	Protocol	Ver. 01, Ver.02	Ver.02
	Transmit Event	ON, OFF	ON
Patient Server	Function	Link with EMR, Search ID, Time Synchronization, OFF	Not used
	Client IP Address	Numeric (0 to 9)	0. 0. 0. 0
	Server Port No.		2806
Link with EMR	EMR Notice Icon	ON, OFF	ON
	Display Data Before Discharging	ON, OFF	OFF
	This Unit Port No.	Numeric (0 to 9)	2809
	Time Synchronization	ON, OFF	OFF
Search ID	Time Synchronization	ON, OFF	OFF
SNTP Server	Function	ON, OFF	OFF
	IP Address	Numeric (0 to 9)	0. 0. 0. 0
	Time Zone	-12:45 to + 13:45	00:00 (Greenwich Mean Time)
HL7 Server	Function	ON, OFF	OFF
	Port No.	Numeric (0 to 9)	2900
Central Monitor Communication	Function	Server, Client, OFF	OFF
	Client IP Address	Numeric (0 to 9)	0. 0. 0. 0
	Administrative Port No.	Numeric (0 to 9)	2950
	Data Transfer Port No.	Numeric (0 to 9)	2951

❑Keyboard/Mouse Setup

Item	Details	Default
Auto Hide of Pointer	ON, OFF	ON
Pointer		
Moving Speed	5 levels	2nd level from "Slow"
Color	16 colors	White
Keyboard	109(JP), 104(US), 105(UK)	104 (US)

❑Slave Monitor Setup (DS-7700 series only)

Item	Details	Default
Output Selection	Slave, Full Disc.	Slave
Slave Monitor Location	Left, Right	Right

❑Extended Display Unit Setup (DS-7700W series only)

Item	Details	Default
Output Selection	OFF, Full Disc., Multi Display	OFF

❑DS-LAN

Item	Details	Default
DS-LAN	DS-LAN II/DS-LAN III	DS-LANII

❑Remote Control Setup (DS-7700 series)

Item	Details	Default
ID	R.C. OFF, 1 to 8	R.C. OFF (1)
Section	1 to 4	1

❑Remote Control Setup (DS-7700W series)

Item		Details	Default
This Unit	ID	R.C. OFF, 1 to 8	R.C. OFF (1)
	Section	1 to 4	1
Extended Display Unit	ID	R.C. OFF, 1 to 8	R.C. OFF (1)
	Section	1 to 4	1

❑Admit Setup

Item	Details	Default
Beds to apply the settings	All Beds, Each Bed	All Beds
Parameter ON/OFF	Parameter ON/OFF	All parameter ON
HR	ON, OFF 20 to 300bpm	ON 40–120
Asystole	ON, OFF 3 to10 sec.	ON 5 sec.
VF	ON, OFF	ON
VT	ON, OFF	ON
Slow_VT	ON, OFF	ON
Run	ON, OFF 2 to 8 beats	ON 3 beats
Couplet	ON, OFF	OFF
Pause	ON, OFF 1.5 to 5 sec.	OFF 3 sec.
Bigeminy	ON, OFF	OFF
Trigeminy	ON, OFF	OFF
Frequent	ON, OFF 1 to 50 beats/min.	OFF, 10 beats/min.
Tachy	ON, OFF	ON
Brady	ON, OFF	ON
HR Low Limit for VT	120bpm, 140bpm	120bpm
HR Low Limit for RUN	0, 30 to 100 bpm	40 bpm

Item		Details	Default
ST		ON, OFF ST1 ±2.0mV/±20mm ST2 ±2.0mV±20mm	OFF ±1.0mV/±10mm
BP1 (mmHg)		ON, OFF 0 to 300mmHg	ON SYS:80-180mmHg DIA:OFF-OFF MEAN:OFF-OFF
BP1 (kPa)		ON, OFF 0 to 40.0kPa	ON SYS:10.0-24.0kPa DIA:OFF-OFF MEAN:OFF-OFF
BP2 to 6(mmHg)		ON, OFF 0 to 300mmHg	OFF SYS:80-180mmHg DIA:OFF-OFF MEAN:OFF-OFF
BP2 to 6(kPa)		ON, OFF 0 to 40.0kPa	OFF SYS:10.0-24.0kPa DIA:OFF-OFF MEAN:OFF-OFF
CVP(cmH_2O)		ON, OFF 0 to 40cmH_2O	OFF OFF-OFF
RR		ON, OFF 5 to 150Bpm	OFF 5-30Bpm
APNEA		ON, OFF 5 to 60 sec.	ON 15 sec.
SpO_2-1, SpO_2-2		ON, OFF 50 to 100%	ON 90–OFF
PR-1, PR-2		ON, OFF 20 to 300bpm	OFF 40-120bpm
SpCO		ON , OFF 0 to 40%	OFF OFF
SpMet		ON , OFF 0 to 15%	OFF OFF
NIBP (mmHg)		ON, OFF 10 to 300mmHg	ON SYS:80-180mmHg DIA:OFF-OFF Mean:OFF-OFF
NIBP(kPa)		ON, OFF 16 to 40.0kPa	OFF SYS:10.0-24.0kPa DIA:OFF-OFF Mean:OFF-OFF
TEMP1 to 2(°C)		ON, OFF 30 to 50°C	OFF 35-40°C
TEMP1 to 2 (°F)		ON, OFF 86 to 122°F	OFF 95-104°F
$EtCO_2$(mmHg)		ON, OFF 1 to 115mmHg	OFF 30-45mmHg
$EtCO_2$(kPa)		ON, OFF 0.1 to 15.0kPa	OFF 4.0-6.0kPa
$EtCO_2$(%)		ON, OFF 0.1 to 15.0%	OFF 4.0-6.0%
$InspCO_2$(mmHg)		ON, OFF 1 to 24mmHg	OFF 3mmHg
$InspCO_2$(kPa)		ON, OFF 0.1 to 3.0kPa	OFF 0.4kPa
$InspCO_2$(%)		ON, OFF 0.1 to 3.0%	OFF 0.4%
MVe	Adult	ON, OFF 2 to 20L/min	OFF 5-10L/min
	Child/Neonate	ON, OFF 0.5 to 5L/min	OFF 2-5L/min
PEAK		ON, OFF 8 to 100cmH_2O	OFF 8-26cmH_2O
PEEP		ON, OFF 2 to 50cmH_2O	OFF 2-10cmH_2O
GAS Alarm		ON, OFF	ON

Settings for Each Alarm System

The alarm system can be selected from FUKUDA DENSHI mode or IEC mode.
In this section, settings for each alarm system are described.

Item	FUKUDA DENSHI Mode	IEC Mode
Alarm Priority		
Priority	Top Priority (Life Threatening) High Priority (Life Threatening) Medium Priority (Cautionary) Low Priority (Treatment Needed) 4 Levels	High Priority (Life Threatening) Medium Priority (Cautionary) Low Priority (Treatment Needed) 3 Levels (no top priority)

Item	FUKUDA DENSHI Mode	IEC Mode
Display		
Alarm OFF Parameter	Icon: 	Icon: 
Alarm Silence	No display	Icon: 
Alarm Suspend	No display Only <Alarm Susp: xxxs> message will be displayed.	<Alarm Susp: xxxs> Message Icon: 
Event Key	Icon: 	During Alarm Generation (If no parameter is in alarm silence condition) Icon:  (orange light)
		During Alarm Generation (If parameter in alarm silence condition is present) Icon:  (red-yellow blink)
		End of Alarm Generation (Unchecked) Monitor Suspend Timer Too Far Alarm Icon:  (red light)

Item	FUKUDA DENSHI Mode	IEC Mode
Alarm Sound		
Top Priority	Continuous and rapid beep tone	none
High Priority	Continuous beep tone	Continuous beep tone (different tone from FUKUDA DENSHI mode)
Medium Priority	Beep tone every 5 seconds	Beep tone every 5 seconds (different tone from FUKUDA DENSHI mode)
Low Priority	Single beep tone	Single beep tone (different tone from FUKUDA DENSHI mode)

Item	FUKUDA DENSHI Mode	IEC Mode
Alarm Sound		
Volume	Adjustable according to priority. The volume level is Top>High>Med.>Low	Adjustable according to priority. The volume level is High>Med.>Low
Tone	Different tone for Top and High/Med./Low	Same tone for all priority.

Item	FUKUDA DENSHI Mode	IEC Mode
Alarm Priority for Each Parameter		
Ventilator	Top, High	High
Asystole, VF, VT	Top, High	High
Slow VT	High, Med.	High, Med.
Run	High, Med.	High, Med.
Pause, Couplet	Med.	Med.
Bigeminy, Trigeminy	Med.	Med.
Frequent	Med.	Med.
HR, Tachy, Brady	Top, High, Med.	High, Med.
SpO_2-1, SpO_2-2	High, Med.	High, Med.
PR-1, PR-2	High, Med.	High, Med.
NIBP	High, Med.	High, Med.
RR	High, Med., Low	High, Med.
APNEA	Top, High	High
$EtCO_2$	High, Med.	High, Med.
$InspCO_2$	Med.	Med.
BP1(to BP6)	High, Med.	High, Med.
Temp	Med.	Med.
ST (12-Lead ST)	Med.	Med.
GAS	Med.	Med.
SpCO	High, Med.	High, Med.
SpMet	High, Med.	High, Med.
MVe	Med.	Med.
PEAK	Med.	Med.
PEEP	Med.	Med.

Item	FUKUDA DENSHI Mode	IEC Mode
Alarm Indicator		
Target Alarm	Setup can be performed.	Cannot change (High to Low)
Alarm Indicator Pattern Setup		Cannot change Refer to the following <Alarm Indicator Flash Pattern at IEC Mode>.
Pulse Tone		Setup can be performed.
New Event		

Item	FUKUDA DENSHI Mode	IEC Mode
Other Alarm Related Setup		
Alarm Wave Background	Setup can be performed.	Setup can be performed.
Event Key		Setup can be performed. However, cannot be set to OFF.

<Alarm Indicator Flash Pattern at IEC Mode>

Alarm Priority	Flash Pattern				
High Priority	(Red, Red, Red), 320ms	(x, x, x), 320ms	(Red, Red, Red), 320ms	(x, x, x), 320ms	(Red, Red, Red) 320ms
Medium Priority	(x, yellow, x), 800ms	(x, x, x), 800ms	(x, yellow, x), 800ms	(x, x, x), 800ms	(x, yellow, x) 800ms
Low Priority	(x, yellow, x), constantly lights				
New Event	(x, yellow, x), constantly lights				

"x" indicates that the light is OFF.

Data Transfer by the PC/CF Card

This section lists the items that can be transferred using the PC/CF card (patient data/setup data).

❑Data Transfer of Patient Data

Yes: Data transfer is possible, -: Data transfer is not possible

Setup Item	Data Transfer by the PC/CF Card
Patient Information	
Patient ID	Yes
Patient Name	Yes
Pacemaker Use	Yes
Patient Classification	Yes
Comment	Yes
Height/Weight/BSA	Yes
Birth Date/Age	Yes
Sex	Yes
Alarm	
Alarm Suspend	-
Alarm Silence	-
HR Alarm Setup	Yes
Asystole Alarm Setup	Yes
VF Alarm Setup	Yes
VT Alarm Setup	Yes
Slow VT Alarm Setup	Yes
RUN Alarm Setup	Yes
Couplet Alarm Setup	Yes
Pause Alarm Setup	Yes
Bigeminy Alarm Setup	Yes
Trigeminy Alarm Setup	Yes
Frequent Alarm Setup	Yes
Tachy Alarm Setup	Yes
Brady Alarm Setup	Yes

Setup Item	Data Transfer by the PC/CF Card
HR Low Limit for VT	Yes
HR Low Limit for RUN	Yes
ST1 Alarm Setup	Yes
ST2 Alarm Setup	Yes
12L ST Alarm Setup	Yes
BP1to BP6 Alarm Setup	Yes
NIBP Alarm Setup	Yes
RR Alarm Setup	Yes
APNEA Alarm Setup	Yes
SpO_2-1, SpO_2-2 Alarm Setup	Yes
PR-1, PR-2 Alarm Setup	Yes
$EtCO_2$ Alarm Setup	Yes
$InspCO_2$ Alarm Setup	Yes
TEMP1 Alarm Setup	Yes
TEMP2 Alarm Setup	Yes
GAS Alarm Setup	Yes
SPIRO Alarm Setup	Yes
SpCO Alarm Setup	Yes
SpMet Alarm Setup	Yes
Parameter Setup	
ECG Parameter Setup	
Arrhythmia Relearn	-
ECG1 Lead	-
ECG1 Size	Yes
ECG1 Baseline Position	Yes
ECG2 Lead	-
ECG2 Size	Yes
ECG2 Baseline Position	Yes
Sync Tone	Yes
AC Filter	Yes
Drift Filter	Yes
QRS Pace Mask	Yes
Pacemaker Pulse	Yes
QRS Detection	Yes
BP1 to BP6 Parameter Setup	
BP Scale	Yes
NIBP Parameter Setup	
NIBP Auto Mode Interval	Yes
SpO_2-1 Parameter Setup	
SpO_2-1 Size	Yes
Sync Tone	-
SpO_2-2 Parameter Setup	

Setup Item	Data Transfer by the PC/CF Card
SpO_2-2 Size	Yes
Sync Tone	-
RESP Parameter Setup	
RESP Size	Yes
CVA Detect	Yes
CO_2 Parameter Setup	
CO_2 Scale	Yes
CO_2 Measurement Unit	Yes
GAS Parameter Setup	
O_2 Scale	Yes
AGT Scale	Yes
SPIRO Parameter Setup	
AWF Scale	Yes
AWP Scale	Yes
AWV Scale	Yes
Parameter ON/OFF	
All Setup	Yes
Function	
Graphic Trend/Tabular Trend	
All Setup	Yes
Recall	
Waveform Selection	-
Display Selection	Yes
Full Disclosure Waveform	
All Setup	-
ST Measurement	
Ref. Point/Meas. Point	Yes
System Configuration	
Record	
All Setup	Yes
Color	
All Setup	Yes
Display Configuration	
Home Display Configuration	Yes
Individual Bed Display Configuration	Yes

❑Data Transfer of Setup Data

Yes: Data transfer is possible, -: Data transfer is not possible

Setup Item	Data Transfer by the PC/CF Card
System Configuration	
Display Configuration	
Display Layout	-
Short Trend	Yes
Name Zoom	Yes
Bright. Setup	
Brightness	-
Tone/Volume Setup	
All Setup	-
Sweep Speed	
All Setup	Yes
Monitor Suspend Setup	
All Setup	Yes
Pre-Set Menu	
Recorder Setup	
LX Remote Rec.	Yes
Paper Feed to Top	Yes
Paper Feed to End	Yes
Rec. Paper BP Scale	Yes
Rec. Paper CO_2 Scale	Yes
QRS Classification	Yes
Meas. Info. Rec.	Yes
Print Calibration	Yes
Bed Register	
Registered Beds	-
Channel Setup	
Channel No. for Each Bed	-
Group ID	-
Stored Channel No.	Yes
Soft Switch	
Display measurement error on NIBP list	Yes
Date	Yes
Disregard Artifact Ch. at QRS Detect	Yes
Drift Filter	-
AC Filter	Yes
Setup at Discharge	Yes
Home Display	Yes
Patient ID Starting Column	Yes
Wave Line	Yes
12-Lead	Yes

Setup Item	Data Transfer by the PC/CF Card
Rec. Paper	Yes
Sync Tone Bed Selection	Yes
Sync Mark	Yes
Monitor Suspend's Message Selection	Yes
Monitor Suspend Time	Yes
Nurse Team Function	Yes
Link Recall/Full Disc. Wave	Yes
Scroll Interval	Yes
Full Disc. Wave Background	Yes
Full Disc. Wave Print Range	Yes
Automatic Discharge from EMR	Yes
Measurement Unit	
All Setup	Yes
Bed Name Registration	
Bed Name	Yes
User Key*	
All Setup	Yes
Serial Comm. Setup	
COM port function assignment	-
TCON Detailed Setup	-
Clock	
Time/Date	-
Central ID	
All Setup	-
Network Configuration	
This Unit	-
Printer	Yes
Data Server	Yes
Patient Server	Yes
SNTP Server	Yes
HL7 Server	Yes
Central Monitor Communication	Yes
Alarm Related Setup	
Alarm Silence Time	Yes
Alarm Suspend Time	Yes
Too Far Alarm	Yes
Chk TLM Battery Alarm	Yes
Asystole/VF/VT Alarm Setup	Yes
Suspend Arrhy. Analysis during Noise Interference	Yes
During "Check SpO_2 Sensor"	
Message	Yes
Alarm Sound	Yes

Setup Item	Data Transfer by the PC/CF Card
Alarm Judgement	Yes
During Lead OFF	
Alarm Judgement	Yes
Alarm Record	Yes
Lead OFF Message	Yes
Lead OFF Alarm Interval	Yes
During "NIBP measurement failed."	Yes
Alarm Indicator	Yes
Alarm Wave Background	Yes
Event Key	Yes
Synchronize the Alarm Limit of HR and PR-1	Yes
HR/PR Low Limit during Alarm Auto Setting	Yes
Alarm Priority Setup	Yes
Low Limit for Alarm Volume	Yes
Admit Setup	
All Setup	Yes
Slave Monitor Setup	
All Setup	-
Extended Display Unit Setup	
All Setup	-

NOTE

- The data transfer is possible only between the same type of central monitor system (DS-7600 system, DS-7700 system). The data cannot be transferred to a bedside monitor.
- If the software version of the two central monitors is different, or if the type of central monitor system is different (ex. DS-7600 system and DS-7700 system), the data transfer may not be possible, or part of the data may not be transferred. (The data transfer from the newer version monitor to the older version monitor is not possible.) For details, refer to our service representative.

*: For the data transfer from DS-7700 (or DS-7600) series to DS-7700W (or DS-7600W) series, or from DS-7700W (or DS-7600W) series to DS-7700 (or DS-7600) series, the user key settings will not be transferred.

Data Transmission to the Data Server

This section lists the items that can be transferred to the data server.

❑Waveforms

Item	Details	Protocol Version
Waveform	ECG1, ECG2, BP1 to 6, SpO_2-1, RESP, CO_2	
	SPIRO(AWF, AWP, AWV), GAS_O_2, GAS_CO_2, GAS_AGENT, SpO_2-2	Ver.02 only
Synchronized Signal	ECG, SpO_2, Respiration	
QRS judgment	No judgment/N/V/P/F/?	

❑Numeric Data

Parameter	Item		Protocol Version
ECG	Numeric Data	HR, ST1, ST2, VPC (min, hour)	
	Alarm Status	HR, ST1, ST2, Arrhythmia	
	Alarm Setting (ON/OFF, Upper/Lower Limit)	HR Alarm Setup ST Alarm Setup Arrhythmia Alarm Setup	
	Status	LEARN ECG/ECG1/ECG2 Low ECG/ECG1/ECG2 Artifact Cannot analyze	
		Lead OFF (ECG1/ECG2)	Ver.01 only
		Lead OFF (each lead)	Ver.02 only
	Other	ECG1, ECG2 Lead Type Measurement Unit (ST)	
		HR Low Limit for VT HR Low Limit for RUN	Ver.02 only
SpO_2-1	Numeric Data	SpO_2, PR	
		PI, PVI, SpCO, SpMet	Ver.02 only
	Alarm Status	SpO_2, PR	
		SpCO, SpMet	Ver.02 only
	Alarm Setting (ON/OFF, Upper/Lower Limit)	SpO_2 Alarm Setup PR Alarm Setup	
		SpCO Alarm Setup SpMet Alarm Setup	Ver.02 only
	Status	Chk SpO_2 Sensor	
BP1 to 6	Numeric Data	SYS, DIA, MEAN	
	Alarm Status	SYS, DIA, MEAN	
	Alarm Setting (ON/OFF, Upper/Lower Limit)	SYS, DIA, MEAN Alarm Setup	
	Other	BP1 to 6 Label Measurement Unit	
NIBP	Numeric Data	SYS, DIA, MEAN Measured Time	
	Alarm Status	SYS, DIA, MEAN	
	Alarm Setting (ON/OFF, Upper/Lower Limit)	SYS, DIA, MEAN Alarm Setup	
	Other	Measurement Unit	

Parameter	Item		Protocol Version
RESP	Numeric Data	RR, APNEA	
	Alarm Status	RR, APNEA	
	Alarm Setting (ON/OFF, Upper/Lower Limit)	RR Alarm Setup APNEA Alarm Setup	
CO_2	Numeric Data	$EtCO_2$, $InspCO_2$	
	Alarm Status	$EtCO_2$, $InspCO_2$, RR	
	Alarm Setting (ON/OFF, Upper/Lower Limit)	$EtCO_2$ Alarm Setup $InspCO_2$ Alarm Setup RR Alarm Setup	
	Status	Check CO_2	
	Other	CO_2 Measurement Unit	
TEMP1 to 2	Numeric Data	TEMP1, TEMP2	
	Alarm Status	TEMP1, TEMP2	
	Alarm Setting (ON/OFF, Upper/Lower Limit)	TEMP1 Alarm Setup TEMP2 Alarm Setup	
	Other	TEMP1/TEMP2 Label Measurement Unit	
Ventilator	Alarm	Alarm Status Ventilator Alarm Factor	Ver.02 only
SPIRO	Numeric Data	TV Insp/Exp, MV, PEAK, PEEP	Ver.02 only
SvO_2/CCO	Numeric Data	SvO_2, $ScvO_2$, CCO, CCI, BT	Ver.02 only
GAS	Numeric Data	CO_2_I/E, O_2_I/E, N_2O_I/E, Agent1_I/E, Agent2_I/E, MAC	Ver.02 only
	Alarm Status	CO_2_I/E, O_2_I/E, N_2O_I/E, Agent1_I/E, Agent2_I/E, MAC	Ver.02 only
	Alarm Setting (ON/OFF, Upper/Lower Limit)	CO_2_I/E Alarm Setup O_2_I/E Alarm Setup N_2O_I/E Alarm Setup Agent1_I/E Alarm Setup Agent2_I/E Alarm Setup MAC Alarm Setup	Ver.02 only
	Other	Agent1/Agent2 Label Measurement Unit (CO_2)	Ver.02 only
12-Lead ST	Numeric Data	ST(1) to ST(V6)	Ver.02 only
	Alarm Status	ST(1) to ST(V6)	Ver.02 only
	Alarm Setting (ON/OFF, Upper/Lower Limit)	ST(1) to ST(V6) Alarm Setup	Ver.02 only
	Other	Measurement Unit	Ver.02 only
BIS	Numeric Data	BIS, SQI, SR, EMG	Ver.02 only
INVOS	Numeric Data	rSO_2, 1 to 4	Ver.02 only
	Other	rSO_2 label	Ver.02 only
SpO_2-2	Numeric Data	SpO_2, PR	Ver.02 only
		PI, PVI, SpCO, SpMet	Ver.02 only
	Alarm Status	SpO_2, PR	Ver.02 only
		SpCO, SpMet	Ver.02 only
	Alarm Setting (ON/OFF, Upper/Lower Limit)	SpO_2 Alarm Setup PR Alarm Setup	Ver.02 only
		SpCO Alarm Setup SpMet Alarm Setup	Ver.02 only
	Status	Chk SpO_2 Sensor	Ver.02 only

Chapter 8 Replacement Parts

Chapter 8 Replacement Parts

Periodic Replacement Parts

To ensure reliability of safety, function, and performance of this equipment, the following parts must be replaced periodically. When replacing, contact our service representative.

Short Term Backup Battery Replacing Period: 3 years depending on the used frequency

⚠ CAUTION

- Replace the parts periodically as specified.

NOTE

- To protect the data during voltage dip, short interruptions and voltage variations on power supply input lines or during short duration of power turned OFF, this unit performs 10-minute (approx.) data backup using the secondary battery. If the power is turned OFF for more than 10 minutes, the data will not be protected. The data may not be protected if the power is turned OFF within 30 minutes from power ON. The data that may not be protected are trend data, NIBP list data, ST data, and recall data.
- If the short-term backup battery is continuously used without replacement, the short-term backup time may become extremely short or backup may not be performed at all. However, this will not affect the normal monitoring.
- The LCD unit utilizes exclusive fluorescent light for the backlight. Since this fluorescent light deteriorates by the life cycle, the display may become dark, scintillate, or may not light by the long term use. In such case, contact your nearest service representative.

Chapter 9 Cleaning/Disinfecting/Storing

Chapter 9 Cleaning/Disinfecting/Storing

Handling After Use and Display Panel

After Use

- When unplugging the cables, make sure to pull from the connector part of the cable and avoid applying excessive force.
- Clean the unit, accessories, and cables, and keep them together in one place for next use.
- Always check for adequate supply of disposable accessories such as ECG electrodes, if any shortage, contact our service representative and supply as necessary.

Display Panel

- The display panel utilizes exclusive fluorescent light for the backlight. Since this fluorescent light deteriorates by the life cycle, the display may become dark, scintillate, or may not light by the long term use. In such case, contact your nearest service representative.
- Although the LCD utilizes highly accurate picture elements, occasionally, there may be few pixels which does not light or constantly lights. This is not an equipment failure and will not affect monitoring operation.
- Due to its material characteristic, the touch panel expands/contracts depending on the temperature/humidity. When the touch panel is left unused for a while, or when the ambient temperature is low, the surface film of the touch panel may expand, but this is not an abnormal condition. This expansion will be reduced in few hours or half a day after the power is turned ON.

Cleaning the Touch Panel and Housing

Touch Panel

Since this device incorporates a touch panel, fingerprints and other stains are likely to appear on the touch panel. Wipe the touch panel using cleaning cloth supplied as accessory.

⚠ CAUTION

- A special coating is applied to the surface of the touch panel. Do not wipe the surface with a cloth or gauze with coarse texture. Wipe the surface with the soft cleaning cloth provided as optional accessory or with an eyeglass cleaning cloth.
- If stains cannot be removed from the touch panel surface, wipe softly with a dry or ethanol dampened cleaning cloth. Never use strong-acidic cleaning solution.

Housing

❑Cleaning

Wipe the housing and cables using a tightly squeezed cloth saturated with diluted neutral detergent.

❑Disinfection

Wipe the housing and cables using a tightly squeezed cloth saturated with alcohol. Then, wipe off with a soft cloth.

⚠ CAUTION

- Clean the equipment frequently so stains can be removed easily.
- To prevent injury, it is recommended to wear gloves when cleaning the equipment.
- When cleaning or disinfecting, do not allow chemical solution to enter the equipment or connectors.
- Do not use organic solvents, thinner, toluene or benzene to avoid damaging the resin case.
- Do not polish the housing with abrasive, chemical cleaner, alkaline or acidic detergent. Otherwise, the surface resin or paint coating may be damaged, resulting in discoloration, scratches, and other problems.

Storing the Unit and Recording Paper

Unit

- Store in a place where the device will not be exposed to splashing water.
- Store in a place where the equipment will not be affected by atmospheric pressure, temperature, humidity, ventilation, sunlight, dust or atmosphere containing salt or sulfur.
- Store in a level area where the equipment is not exposed to vibration and shock (including during transportation).
- The following environmental conditions should be observed when storing the equipment.
  - Storage Temperature: -10 to 60°C
  - Storage Humidity: 10 to 95% (at 60°C)(non-condensing)
  - Storage Atmospheric Pressure: 800 to 1060hPa

Recording Paper

The recording paper is thermal type. Storage over an extended period of time at a high temperature may change the quality of the printed content, and make it illegible. When storing, follow the precautions below.

- Store in a place where light is shut off and avoid direct sunlight.
- Do not leave the paper in a high temperature (50 °C/122 °F and above).
- Do not store the paper in a polyvinyl chloride bag.
- Do not expose the paper to alcohol, hydrochloric acid, or ester ketone.
- Avoid using adhesive agents other than water based glue.

Chapter 10 Maintenance Check

Chapter 10 Maintenance Check

Daily and Periodic Check

Maintenance Check

Periodic check must be performed. When reusing the equipment which was left unused for a while, always check that the equipment operates properly and safely before use.

In this section, the maintenance check items that must be performed for this equipment are explained. To ensure safety, reliability, and high performance, a "Daily Check" and "Periodic Check" must be performed. Fukuda Denshi is not liable for any accidents arising from lack of maintenance.

⚠ CAUTION

- Do not open the housing.
- Do not allow alcohol or other liquids enter the equipment.

Periodic Inspection

❑Daily Check

Perform the daily check according to the "Daily Check List".
(☞Operation Manual "Daily Check" P4-5)

❑Periodic Inspection

Periodic inspection of medical electronic equipment is mandatory to prevent failures and accidents and to ensure safety and reliability.

Periodic maintenance may be performed by each medical institution or by a third party by concluding a "Maintenance Contract".

For more details, contact your nearest service representative.

Maintenance

On the maintenance display, maintenance procedure such as touch panel adjustment, recorder adjustment, and maintenance test can be performed.

⚠ CAUTION

- The maintenance procedure will be performed by our service representative. Users should not perform this procedure as malfunction may occur.

LAN Information

Information such as the connection status of the equipment connected to the network system will be displayed.

Software Version Information

The software version of the main unit and the built-in module (telemeter, etc.) can be verified.

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