

VetiNet CMS

Veterinary Central Monitoring System

Operator's Manual



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Release date: 2024-12

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WARNING

- **It is important for the hospital or organization that employs this equipment to carry out a reasonable service/maintenance plan. Neglect of this may result in machine breakdown or personal injury.**
 - **This equipment must be operated by skilled/trained clinical professionals.**
-

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Customer Service Department

Global Service Department

Company Name: Shenzhen Mindray Animal Medical Technology Co., Ltd.
Address: Room 702, Tower 4, YESUN Intelligent Community III, No.1301-88
Guanguang Road, Xinlan Community, Guanlan Street, Longhua
District, Shenzhen 518110, P. R. China
Website: www.mindrayanimal.com
E-mail Address: service@mindrayanimal.com
Tel: +86 755-33997000

North America Service Department

Company Name: Mindray Animal Medical Technology North America Co., Ltd.
Address: 1200 MacArthur Blvd, Unit 302B, Mahwah, NJ 07430, USA
E-mail Address: naservice@mindrayanimal.com
Tel: 1.800.864.5364

Preface

Manual Purpose

This manual contains the instructions necessary to operate the product safely and in accordance with its function and intended use. Observance of this manual is a prerequisite for proper product performance and correct operation and ensures animal and operator safety.

This manual is based on the maximum configuration and therefore some contents may not apply to your product. If you have any question, please contact us.

This manual is an integral part of the product. It should always be kept close to the equipment so that it can be obtained conveniently when needed.

Intended Audience

This manual is geared for clinical professionals or veterinarian who are expected to have a working knowledge of medical procedures, practices and terminology as required for monitoring of critically ill animals.

Illustrations

All illustrations in this manual serve as examples only. They may not necessarily reflect the setup or data displayed on your anesthesia machine.

Conventions

- ***Italic*** text is used in this manual to quote the referenced chapters or sections.
- **Bold** text is used to indicate the screen texts and names of hard keys.
- → is used to indicate operational procedures.

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1 Safety Information

WARNING

Indicates a potential hazard or unsafe practice that, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potential hazard or unsafe practice that, if not avoided, could result in minor personal injury or product/property damage.

NOTE:

Provides application tips or other useful information to ensure that you get the most from your product.

1.1 Warnings

WARNING

- The CMS is intended for use only by clinical professionals or qualified veterinarians or under their guidance. It must only be used by persons who have received adequate training in its use. Anyone unauthorized or untrained must not perform any operation on it.
- The physiological waveforms, parameters and alarms displayed on the CMS screen are for clinician's reference only and cannot be directly used as the basis for clinical treatment. Before giving invasive treatment to an animal, you must go to the corresponding devices to confirm the results you have obtained from the CMS.
- If any value displayed on the CMS screen is abnormal or questionable, first determine the animal's vital signs by alternative means and then verify that the CMS and the devices connected to the CMS are working properly.
- The CMS is a clinical information device. Except for using such components as the mouse, touchscreen and keyboard to perform normal operations, do not touch or disassemble any other component, especially the power component; otherwise, it may result in personnel injury.
- The computer running the CMS software must comply with local relevant regulations. The CMS is intended to connect with Mindray Animal Medical devices only. Connecting devices made by other manufacturers may cause the values displayed on the CMS to be inaccurate.

- The CMS can be constructed using a wireless local area network (WLAN) for connecting bedside devices. When data is transmitted via radio frequency (RF) signals, it may impact the performance of other WLANs in the environment or the use of other RF equipment, and loss of animal data may occur due to interference from other RF sources. Therefore, the wireless RF equipment must comply with CE, FCC and other local relevant standards and regulations.
 - The CMS software copyright of the equipment is solely owned by Mindray Animal Medical. No organization or individual shall resort to altering, copying, or exchanging it or to any other infringement on it in any form or by any means without due permission.
 - Data communication must be performed within a virtually isolated network provided by a hospital for all network functions. The hospital is responsible for ensuring the security of the virtually isolated network.
 - Do not connect any external audio device to the CMS.
 - The physiological waveforms, parameters, alarms and so on displayed on the CMS screen come from connected devices. If network connection fails, data transmitted from the devices to the CMS might be lost or delayed. Thus keep animals under close surveillance.
 - Do not block the speaker of the CMS.
-

1.2 Cautions

CAUTION

- The service life of the CMS depends on its hardware. Rough treatment, dropping or collision should be avoided in the operation on the keyboard, mouse and computer; otherwise, the service life of the CMS may be shortened.
- Components of the CMS, such as the keyboard and mouse, may be contaminated by microorganisms during transport, storage and use. Inspect the package for damage before removing components of the CMS from their packaging. If any damage is detected, contact the carrier or Mindray Animal Medical.
- Hospitals without an emergency power system should use an Uninterruptible Power Supply (UPS) to power the CMS. When there is a power failure, the system should be shut down by following the specified shutdown procedure before the UPS is turned off. If the system has a sudden power failure, system failure may occur and consequently the system will not work correctly next time or may even have a serious result.
- Do not start or transport the central monitoring system outside the normal conditions specified by the Mindray Animal Medical; otherwise, the CMS damage may be caused. Mindray Animal Medical assumes any liability for any losses caused from this.
- System time should be set before the CMS is put into use. If the system time is changed when the CMS is in use, it may result in animal data loss.
- Restart the CMS every 3 months. Long time operation of the system may lead to a failure of the operating system.
- The CMS should be installed only using Mindray provided Microsoft Windows operating system, service packs, and patches. Use of unauthorized software may lead to abnormal system operation or failure.
- When printing data through an external printer, be sure to follow the printer's instructions. In case any problem occurs during printing, consult the printer's instructions.
- For host computers installing MacAfee Application Control software, all the necessary software such as CMS or third-party software should be authorized through MacAfee. Unauthorized software cannot run in the host computer.

- **At the end of its service life, the CMS and its accessories must be disposed of in compliance with the guidelines regulating the disposal of such products.**
-

1.3 Notes

NOTE:

- This manual describes the product based on the most complete configuration. The product you purchase may not support some configuration or functions.
 - Keep this manual somewhere near the CMS for convenient and prompt access.
 - During normal use, the operator is expected to face the front of the equipment.
 - If the computer installed with the CMS encounters a hardware failure or an operating system failure that causes the CMS to fail to run normally, contact the Customer Service Department or your local distributor.
-

2 System Overview

2.1 Intended Use

The Veterinary Central Monitoring System (hereinafter referred to as the CMS) is intended to conduct centralized monitoring of vital sign information from monitoring devices, infusion information from pumps, and anesthesia information from anesthesia machines, through wired or wireless LAN in hospitals or medical institutions.

WARNING

- **The CMS is intended for use by qualified physicians or well-trained clinicians. Anyone unauthorized or untrained must not perform any operation on it.**
 - **The physiological waveforms, parameters and alarms displayed on the screen of the CMS are for reference only and cannot be directly used as the basis for clinical treatment.**
 - **If any value displayed on the CMS screen is abnormal or questionable, first determine the animal's vital signs by alternative means and then verify that the CMS and connected devices are working properly.**
 - **When the CMS running non-exclusively, do not use the CMS as the primary alarm device.**
-

2.2 Contra-indications

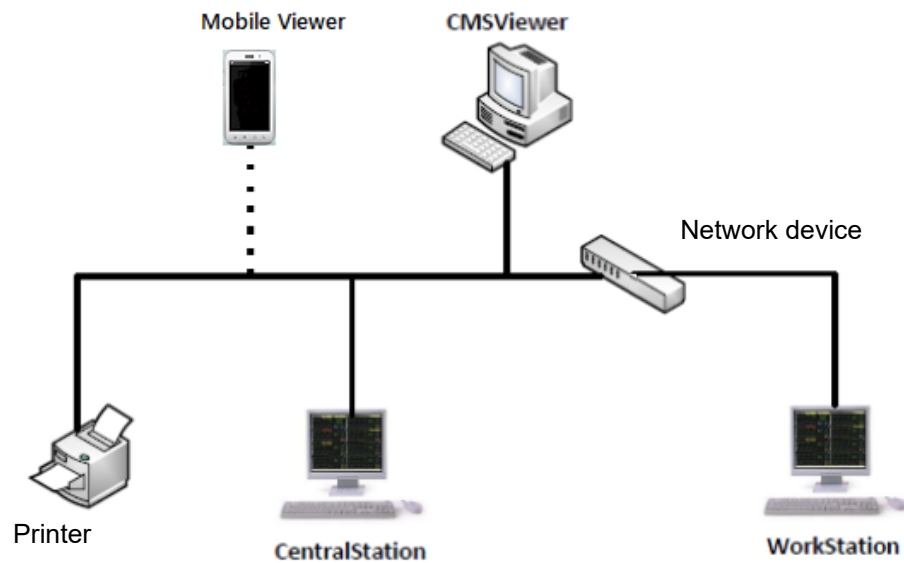
None.

2.3 System Components

The CMS mainly consists of the following components:

- CentralStation
- WorkStation (optional)
- CMS Viewer (optional)
- Mobile Viewer (optional)
- Computer platform
- License
- Network devices (optional)
- Printer (optional)

The following figure shows the system components of the CMS:



2.3.1 CentralStation

WARNING

When CentralStation is running non-exclusively as a normal application:

- Hospitals need to provide the account (with administrator privileges) and password used to log into the host computer.
 - Third-party applications running along with the CentralStation must comply with hospitals' and local regulations relevant to cyber security and privacy protection and must run steady on the host computer.
 - With screen being sent to back, minimized or scaled, the CentralStation alarm message might not be received by the personnel in time, which might result in a hazard to the animal.
 - Don't rely on the waveforms for clinical analysis when CentralStation screen is scaled
 - Do not close or uninstall CentralStation without due permission.
 - Do not open any audio file or silence, disable the speaker of the host computer. Audio files' sound, or speaker silencing or disabling would interfere with CentralStation alarming.
 - Do not lock, hibernate, sleep, log off or shut down the host computer.
 - Changing network settings of the host computer might stop CentralStation from working properly.
 - The host computer should remain safe and steady with firewalls opened, operating system updated regularly and remote control not being used.
-

NOTE:

When the CentralStation is installed on a virtual machine, do not use the CentralStation as the primary device where alarms are annunciated. Because when installed on a virtual machine, the CentralStation cannot detect the state of sound card and therefore may not annunciate an alarm sound.

The CentralStation can admit Mindray Animal Medical devices via wired or wireless connection. It can display, store, print, and review the animal clinical data derived from compatible devices.

You can view information such as data and alarms of connected monitoring devices on the CentralStation's screen. You can also view or modify settings such as parameter settings and system settings directly via the CentralStation.

2.3.2 WorkStation

WARNING

When WorkStation is running non-exclusively as a normal application:

- **Hospitals need to provide the account (with administrator privileges) and password used to log into the host computer.**
 - **Third-party applications running along with the WorkStation must comply with hospitals' and local regulations relevant to cyber security and privacy protection and must run steady on the host computer.**
 - **With screen being sent to back, minimized or scaled, the WorkStation alarm message might not be received by the personnel in time, which might result in a hazard to the animal.**
 - **Don't rely on the waveforms for clinical analysis when WorkStation screen is scaled**
 - **Do not close or uninstall WorkStation without due permission.**
 - **Do not open any audio file or silence, disable the speaker of the host computer. Audio files' sound, or speaker silencing or disabling would interfere with WorkStation alarming.**
 - **Do not lock, hibernate, sleep, log off or shut down the host computer.**
 - **Changing network settings of the host computer might stop WorkStation from working properly.**
 - **The host computer should remain safe and steady with firewalls opened, operating system updated regularly and remote control not being used.**
-

The WorkStation can display and manage animal data with devices assigned from the host CentralStation. All the animal data comes from the CentralStation.

You can enter or modify animal demographic information, configure alarm limits, alarm priorities, and discharge animals at the WorkStation based on the granted permissions.

The WorkStation runs non-exclusively as a normal application along with other applications on the same host computer. The WorkStation screen can be maximized, minimized or scaled and when it is sent to back, minimized or scaled, it would be brought to front whenever an alarm occurs.

- The hardware resource reserved for the WorkStation needs to meet the requirements below: more than 85% CPU, more than 4GB memory, and more than 100GB disk space. For detailed information, see "A Technical Specifications".
- The operating system of the host computer should be windows® 10 or windows® 11.

- WorkStation would not admit telemetry devices.

2.3.3 CMS Viewer

The CMS Viewer is used to view a single animal at the host CentralStation. It is independent of the CMS and shall be installed separately.

The CMS Viewer is for remote browsing only and cannot be used to set or control the host CentralStation or the devices at the host CentralStation. For more information on the CMS Viewer, see *VetiNet CMS Veterinary Central Monitoring System Viewer Operator's Manual*.

2.3.4 Mobile Viewer

The Mobile Viewer is a mobile application independent of the CMS, supporting Android and iOS systems. Doctors, nurses and other medical personnel can use Mobile Viewer to view the data from bedside devices admitted by the CMS.

For the installation software of Mobile Viewer, see *VetiNet CMS Veterinary Mobile Viewer Operator's Manual*.

2.3.5 Computer Platform

The CentralStation, and the WorkStation consist of system software and computers. They have the same computer components: display, host computer, mouse, and keyboard.

Display

NOTE:

- Displaying right click menus is not supported by the touchscreen.
 - Do not use any sharp objects such as pencils to tap the screen.
-

Each of the CentralStation and the WorkStation can be equipped with up to 4 external displays. For display specifications, see “A Technical Specifications”

If you are using a touchscreen display, you can select any selectable screen object by tapping the object.

Host Computer

A host computer is used to run the CMS software program. The CentralStation and the WorkStation need to be installed on different host computers. For computer specifications, see “A Technical Specifications”.

Mouse

The mouse can be used to select a screen element by moving the cursor on the element and then clicking on it.

NOTE:

Clicking refers to positioning the mouse pointer on a selection and pressing the left mouse button once.

Keyboard

A keyboard is used to type text into a data entry field.

2.3.6 License

NOTE:

If your license is lost, please contact the Customer Service Department or your local distributor.

A license is a prerequisite for using the CentralStation. It offers the following capabilities:

- Provide copyright protection for the CentralStation software.
- Configure functionalities.

2.3.7 Network Device

A network device such as a switch and access point are used to connect a bedside device to the CMS.

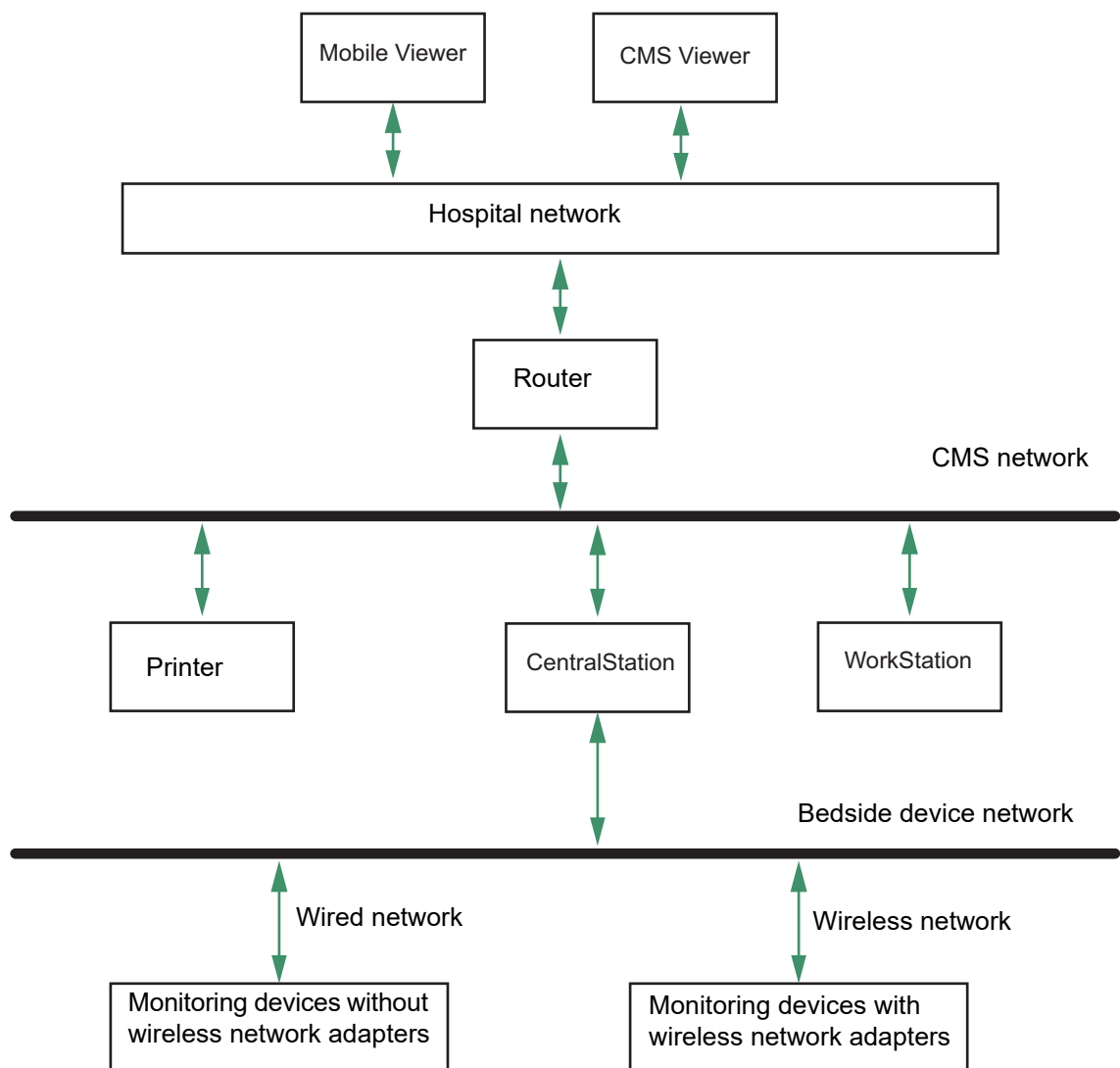
2.3.8 Printer

The CMS can be equipped with a printer to output various reports. The printer has a separate power supply. For more information, see “12 Printing”.

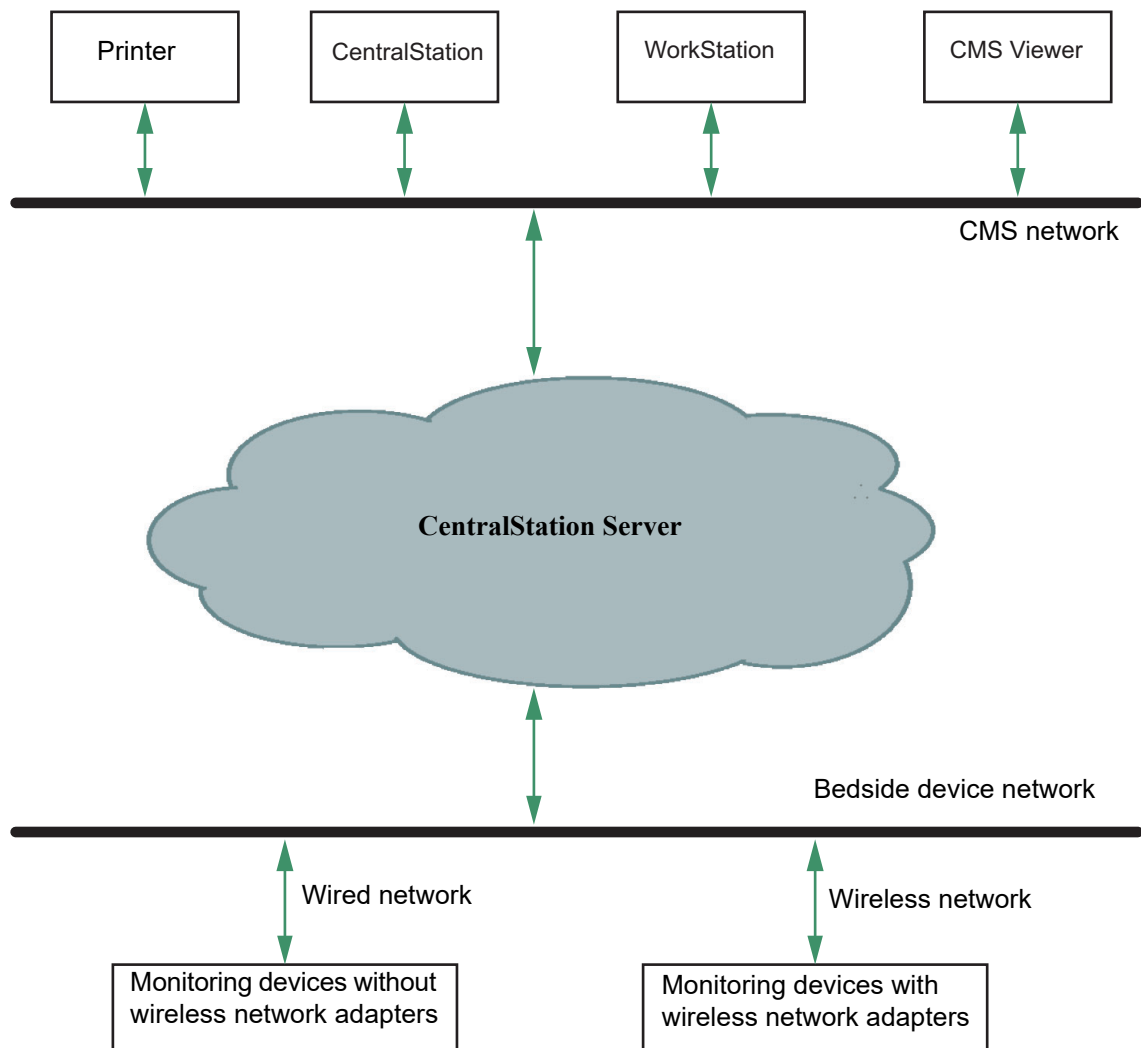
2.4 Networking Mode

The CMS network consists of the bedside device network and the CMS network. The CMS supports networking among multiple central monitoring systems so that the animal data displayed on one CMS can be viewed by other networked CMS.

2.4.1 Local Networking Mode



2.4.2 Cloud Networking Mode



2.4.3 Bedside Device Network

Bedside devices connect with the CentralStation through wired network or wireless network.

Communication Modes

Bedside devices and the CentralStation communicate through Mindray Animal Medical private protocols.

Supported Devices

The bedside device network for local CMS supports the following devices:

- Bedside monitors
 - ePM 12M Vet Portable Multi-Parameter Veterinary Monitor
 - ePM 10 Vet Portable Multi-Parameter Veterinary Monitor

- uMEC10 Vet/uMEC12 Vet Portable Multi-Parameter Veterinary Monitor
 - Vetall 5 Veterinary Multi-Parameter Monitor
- Telemetry devices
 - TMS30 Vet Veterinary Telemetry System
 - TM80 Vet Veterinary Telemetry Monitor
- Pump devices
 - BeneFusion eSP Vet Veterinary Syringe Pump
 - BeneFusion eVP Vet Veterinary Infusion Pump
 - BeneFusion eDS Vet Veterinary Infusion Supervision System
 - AniFM I3 Veterinary Infusion Pump
 - AniFM S3 Veterinary Syringe Pump
- Anesthesia systems
 - Veta 5Plus Veterinary Anesthesia Machine
 - A7 Vet Veterinary Anesthesia System
 - WATO EX-65 Pro Vet/WATO EX-35Vet/WATO EX-20Vet Veterinary Anesthesia Machine (transmit data to the CMS through integrated devices)

The bedside device network for cloud CMS supports the following devices:

- Bedside monitors
 - ePM 12M Vet Portable Multi-Parameter Veterinary Monitor
 - ePM 10 Vet Portable Multi-Parameter Veterinary Monitor
 - Vetall 5 Veterinary Multi-Parameter Monitor
- Pump devices
 - BeneFusion eSP Vet Veterinary Syringe Pump
 - BeneFusion eVP Vet Veterinary Infusion Pump
 - BeneFusion eDS Vet Veterinary Infusion Supervision System
 - AniFM I3 Veterinary Infusion Pump
 - AniFM S3 Veterinary Syringe Pump
- Anesthesia systems
 - Veta 5Plus Veterinary Anesthesia Machine
 - A7 Vet Veterinary Anesthesia System
 - WATO EX-65 Pro Vet/WATO EX-35Vet/WATO EX-20Vet Veterinary Anesthesia Machine (transmit data to the CMS through integrated devices)

2.4.4 CMS Network

The CMS network mainly consists of the CentralStation, the WorkStation, the CMS Viewer, and the Mobile Viewer.

2.5 Equipment Symbols

NOTE:

- Some symbols may not appear on your equipment.

- This manual describes a series of typical computer symbols, which may be slightly different from what are on your computer. The computer symbols usually have their specific meanings. Refer to your computer's operator's manual or contact our service personnel if you have any question.

Symbol	Description	Symbol	Description
	Refer to instruction manual/ booklet		CAUTION: To reduce the risk of electric shock, do NOT remove cover. Refer servicing to qualified service personnel.
	Alternating current		Power switch
	Keyboard port		Mouse port
	Serial communication (COM) port		Display port
	Printer port		USB port or device
	Network port		Microphone port
	Sound input port		Sound output port
	Date of manufacture		Manufacturer
	Serial number		Equipotentiality

Symbol	Description	Symbol	Description
	CE marking		The following definition of the WEEE label applies to EU member states only: the use of this symbol indicates that waste electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately. By ensuring that this product is disposed of correctly, you will help prevent bringing potential negative consequences to the environment and human health. For more detailed information with regard to returning and recycling this product, consult the distributor from whom you purchased the product.

The general meaning assigned to geometric shapes, safety colors and contrast colors for safety signs are as follows:

Geometric shape	Meaning	Safety color	Contrast color	Graphical symbol color
	Prohibition	Red	White	Black
	Mandatory action	Blue	White	White
	Warning	Yellow	Black	Black

3 Installation and Connection

3.1 Installation Requirements

3.1.1 System Requirement

For system requirements of hardware configuration, see “A.1 System Requirement”.

3.1.2 Environmental Requirements

Each component of the CMS must work under the specified environment.

- The environment where the CMS is installed should be reasonably free from noises, vibration, dust, corrosive, flammable, and explosive substances.
- If the CMS is installed in a cabinet, sufficient space in front and behind should be left for convenient operation, maintenance and repair.
- To maintain good ventilation, the CMS should be at least 2 inches (5 cm) away from the cabinet.

When the CMS is moved from one place to another, condensation may occur as a result of temperature or humidity difference. In this case, never start the system before the condensation disappears.

3.1.3 Power Requirements

WARNING

- **Select appropriate power supply according to the setup of the system power voltage. Otherwise serious damage may be caused to the CMS.**
 - **Never use a 3-wire to 2-wire adapter with any unit of the CMS.**
-

To protect hospital personnel from electric shock, the CMS (including the host and displays) must have their casings properly grounded. The CMS host is provided with a 3-wire power cord. Plug it into a properly grounded 3-wire receptacle. If a 3-wire receptacle is not available, contact the hospital's electrical technician.

Each component of the CMS must work under the specified power supply.

3.2 Hardware Preparations

3.2.1 Package Preparations

Local Central Monitoring System

- CMS software
- CMS Viewer software
- Dongle
- AC software

Cloud Central Monitoring System

- CMS software
- CMS Viewer software

3.2.2 Hard disk Area Description

The hard disk must have two partitions. Disk C is the system disk, and disk D is the default data location disk when the CMS is installed. When the hard disk space is large enough, the capacity of disk D is expanded in priority.

- CentralStation
 - The available capacity of disk C is larger than 50G
 - The available capacity of disk D is larger than 100G
- WorkStation
 - The available capacity of disk C is larger than 50G

3.3 Network Connection

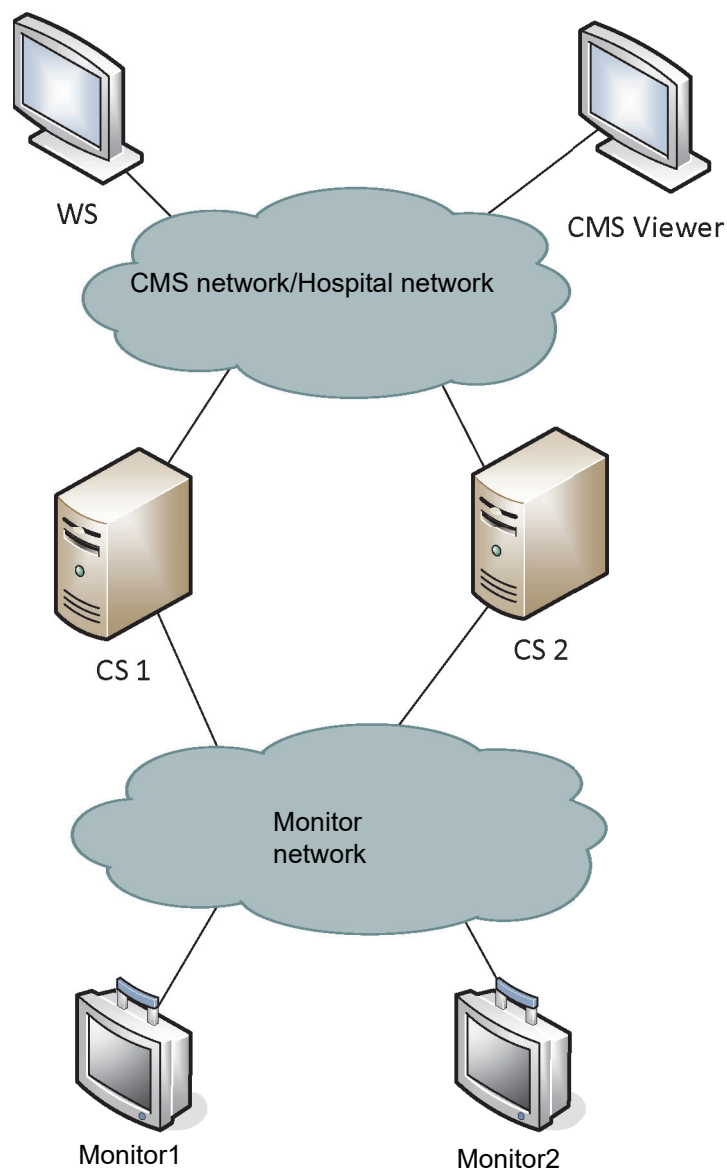
3.3.1 Network Connection Introduction

NOTE:

- If two network adapters are used, be sure to identify which is for monitor network and which is for external network connecting multiple CMS or other information systems. Correctly set IP address for each network adapter.
 - If two network adapters are used, connect them to corresponding networks as desired.
-

The PC will be equipped with two network adapters to isolate the monitor LAN and the external network to ensure network bandwidth and data safety for the monitors. The two network adapters of the CMS are connected to monitor network and external network separately.

The figure below shows the network connection using multiple network adapters.



3.3.2 Bedside Monitor Network

NOTE:

- If two network adapters are used, the one (hereinafter called integrated network adapter) integrated on the PC main board is normally connected to the monitor network and the one (hereinafter called independent network adapter) installed in the PCI slot is connected to the external network.
- Each IP address on each individual network has to be unique. Duplicate IP addresses will cause network connection failures.
- The hospitals can set their own desired DHCP or IP addresses. However, the CMS IP address must not be changed.

To reduce the consumption of network bandwidth, the IP address should be set according to the type of the connected bedside device and protocol type. In principle, set as few IP addresses as possible, and a maximum of two IP addresses can be set for each network card.

3.3.3 Connecting to External Network

External Network Introduction

The independent network adapter is used to connect the external network. Its IP address should be configured according to actual use.

The external network is required when the following situation occur:

- Connect to other hospital's information systems
- Remote view between different CMS
- Use CMS Viewer to remotely view the local CMS
- Use MobileServer to connect the CMS
- The Other situation that requires interconnection through routers

Setting IP Address

NOTE:

- The IP address should be set by Mindray Animal Medical authorized personnel.
- The IP addresses in this chapter are used for example only. For the IP addresses used by a hospital, contact the hospital information department for confirmation.

To enable the remote view between CMSs, each CMS must be equipped with at least two network adapters. One is used for internal communication within the CMS, and the other is used for mutual communication between the CMS. Typical configurations are as follows:

Current CMS A		Target CMS B		Target CMS C	
Network adapter A1	Network adapter A2	Network adapter B1	Network adapter B2	Network adapter C1	Network adapter C2
196.76.0.X1	168.168.4.X2	196.76.0.Y1	168.168.4.Y2	196.76.0.Z1	168.168.4.Z2

As shown in the table above, network adapter A1, B1 and C1 are used for the communication between the CMS and the monitors. Their IP addresses are in the same network segment with the IP addresses of respective monitors. Network adapter A2, B2 and C2 are used for the inter communication between the CMS. Their IP addresses belong to the same network segment and X2, Y2 and Z2 shall be different.

3.4 CMS Software Installation

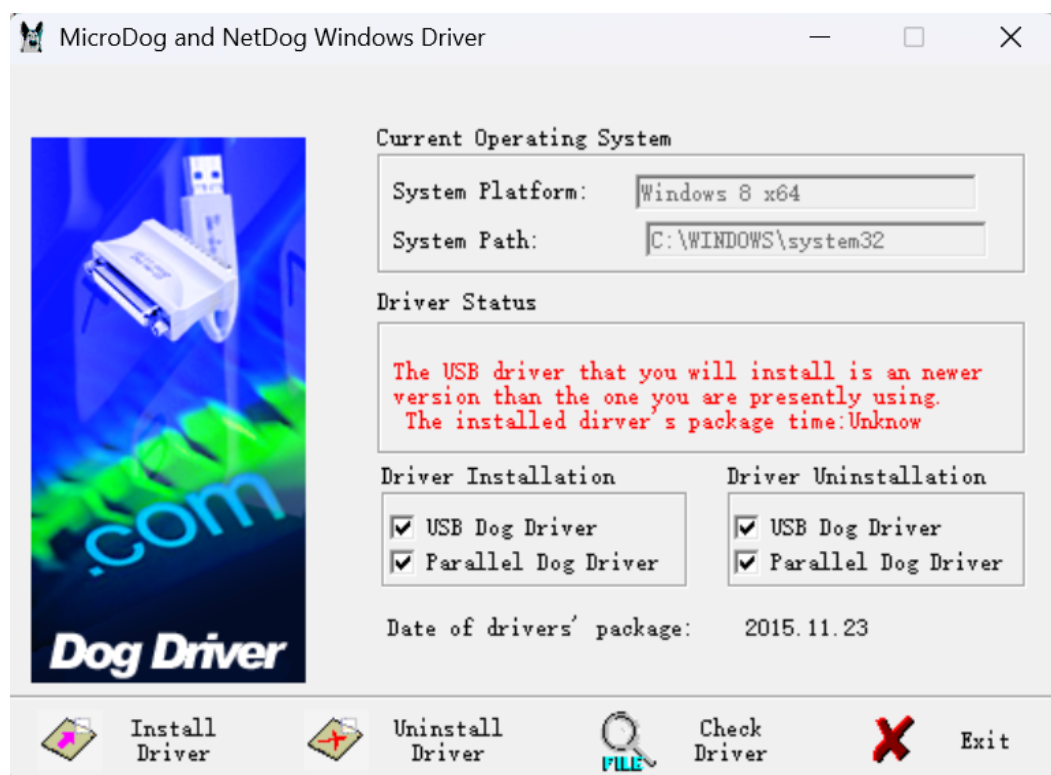
NOTE:

- The default the installation path and data location are recommended.
- Complete the hard disk partition before installing the CMS software.

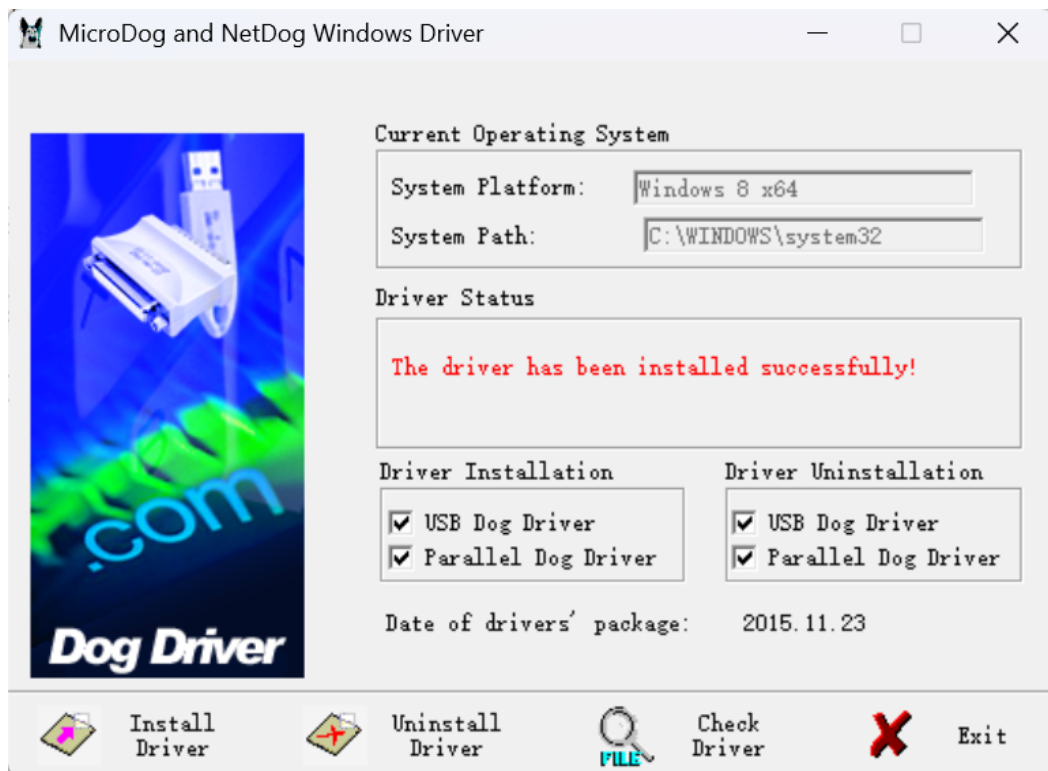
3.4.1 Installing the USB dongle

Perform the following procedure:

1. Obtain the CMS software package, execute "MicroDogInstdrv.exe" under the "USB Dog Driver" folder, and enter the following screen:



2. After configuration completed, select **Install** and enter the following screen.



3. When the message **The driver has been installed successfully** appears, select **Exit**.

3.4.2 Installing CMS Software Running Exclusively

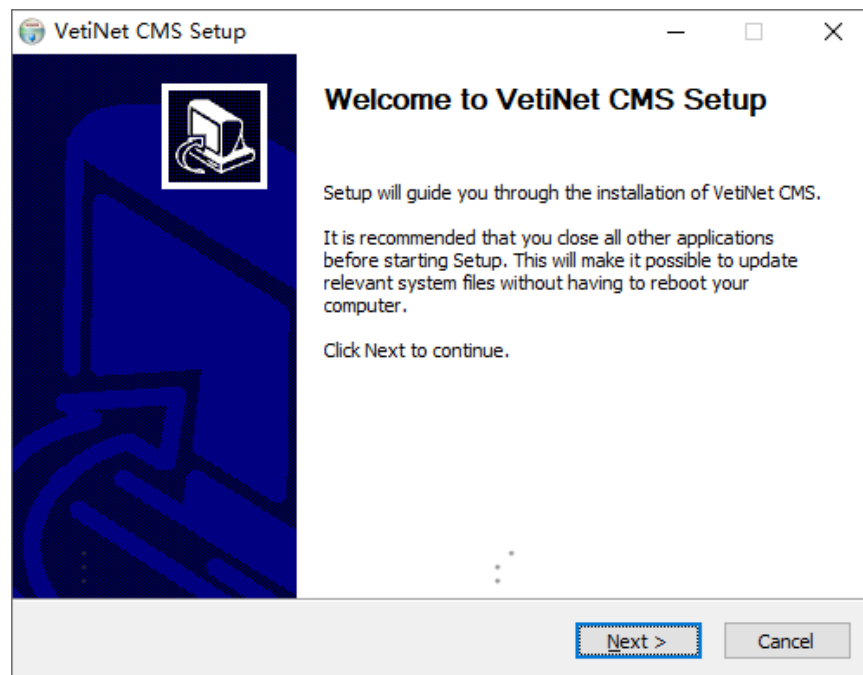
This installation procedure is applicable to the CentralStation running exclusively.

1. Double click “VetiNetCMSSetup.exe” under the folder of the CMS software.
2. Enter the Installer Language window and select a language.

Note: The language selected as shown in the **Installer Language** window is for display on the screen during the process of installation but not the default one when the CMS is operating. The language used when the CMS is operating is to be set up after installation finished.

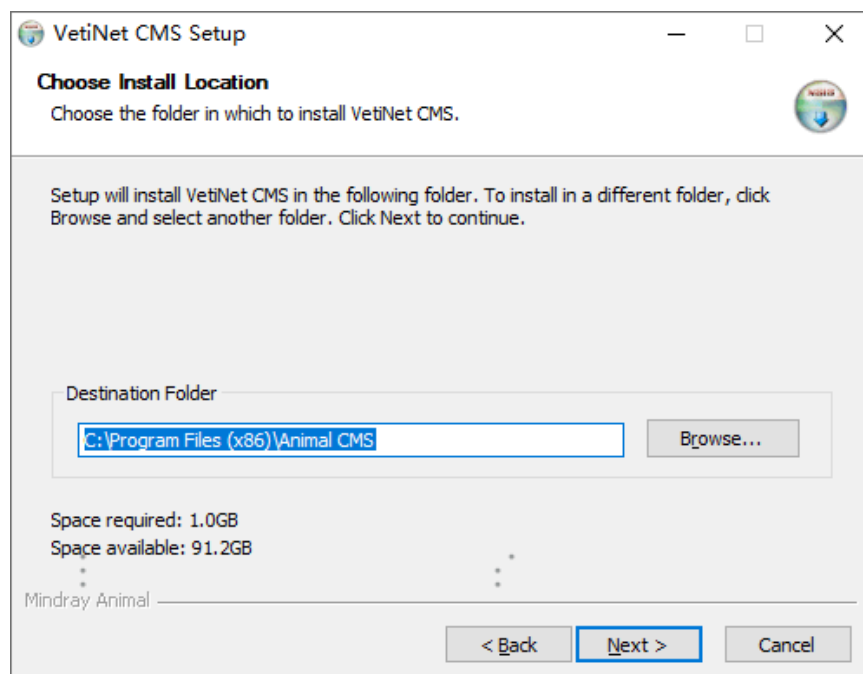


3. Select **OK** to pop up the following dialog box. Click **Next**.



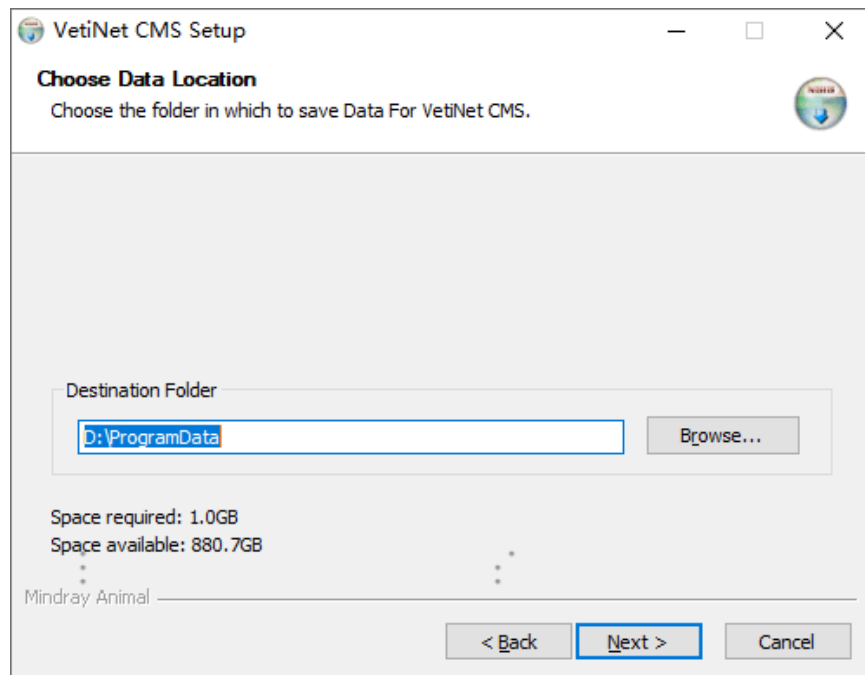
4. Select installation location, and then click **Next**.

Note: The default installation path is recommended.



5. Select data location, and then click **Next**.

Note: The default data location path is recommended.



6. Confirm the current computer name setting.
7. Click **Next**.

After the CMS software is installed, the computer will be restarted automatically.

3.4.3 Installing CMS Software Running Non-Exclusively

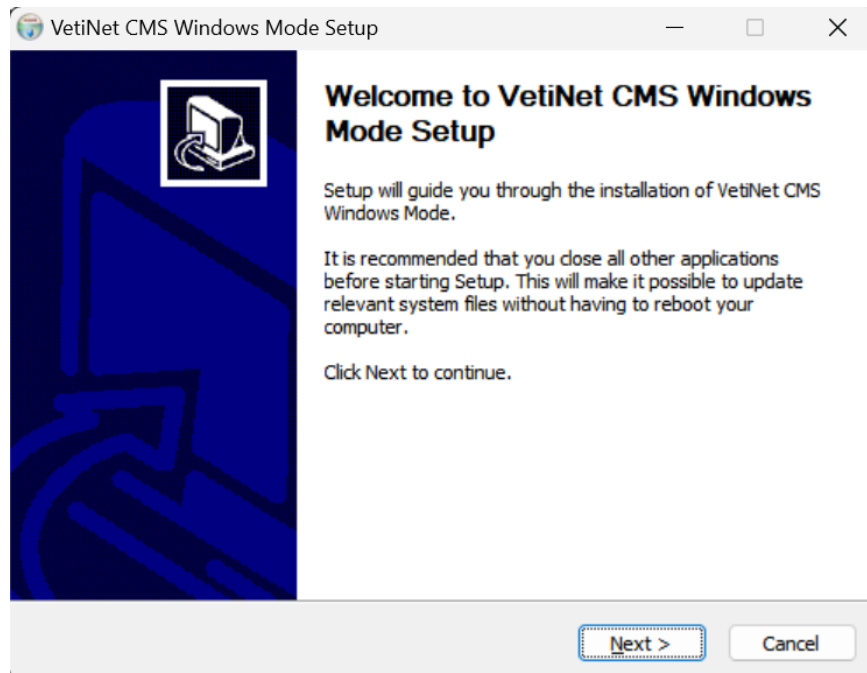
This installation procedure is applicable to the CentralStation and WorkStation running non-exclusively.

1. Double click “ResizeScreenVetiNetCMSSetup.exe” under the folder of the CMS software.
2. Enter the Installer Language window and select a language.

Note: The language selected as shown in the **Installer Language** window is for display on the screen during the process of installation but not the default one when the CMS is operating.

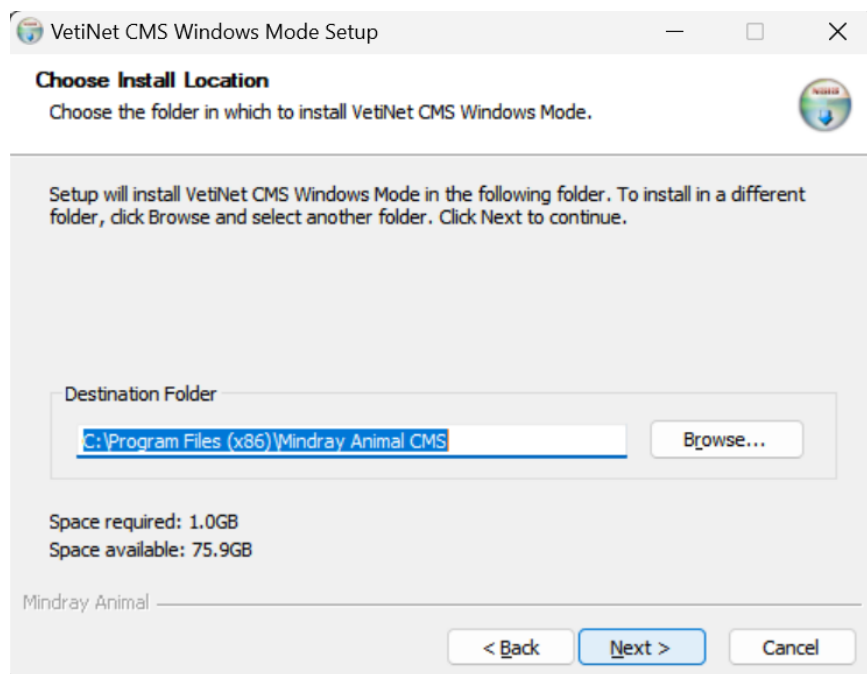


3. Select **OK** to pop up the following dialog box. Click **Next**.



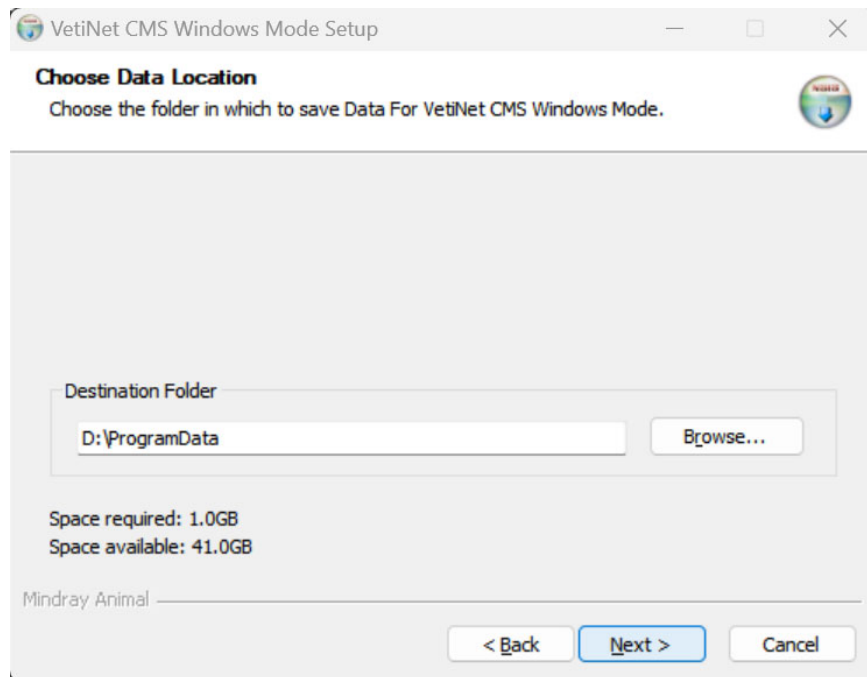
4. Select installation location, and then click **Next**.

Notes: The default installation path is recommended.

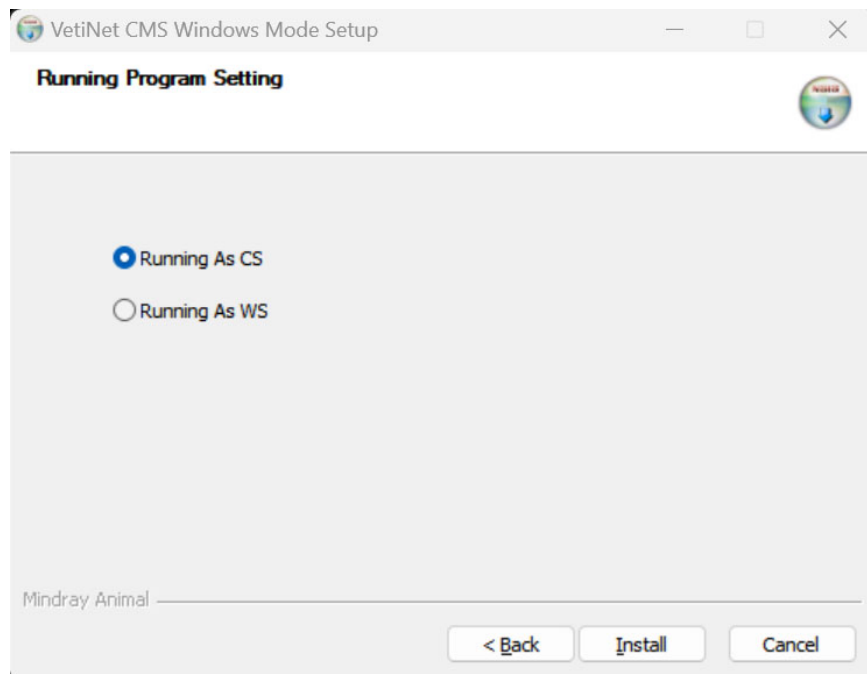


5. Select data location, and then click **Next**.

Notes: The default data location path is recommended.

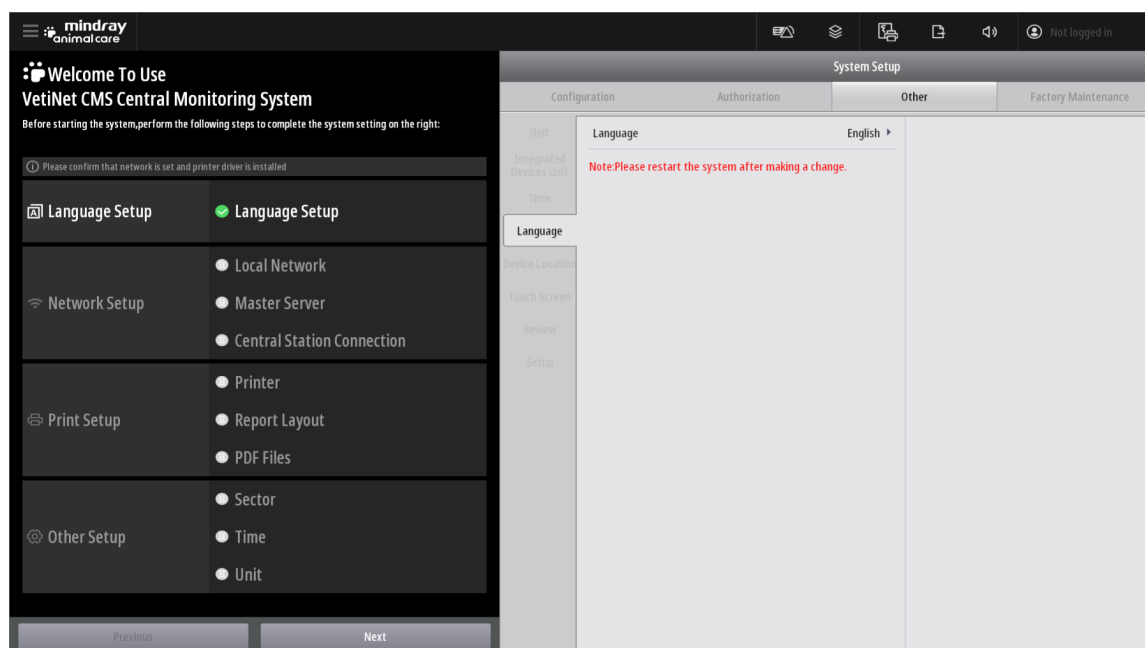


6. Select the running environment.
 - To install the CentralStation, select **Running as CS**.
 - To install the WorkStation, select **Running as WS**.



7. Select Install to enter the installation procedure.
8. Select Finish to close the installation wizard.

3.5 Startup Guide



After the CMS software is installed and the program is started for the first time, the startup wizard appears after the startup self-test screen is completed. The user can complete the System Setup according to the startup wizard.

Parameter		Description
Language Setup	Language Setup	Set system language. For details, see “13.11 Other Settings”.
Network Setup	Loal Network	Select current CMS IP address. For details, see “13.7 Network Settings”.
	Master Server	Set master server. For details, see “13.7 Network Settings”.
	Central Station Connection	Set the CentralStation to be connected to the current system.
Print Setup	Printer	Configure a printer. For details, see “13.8 Print Settings”.
	Report Layout	Set the report layout. For details, see “13.8 Print Settings”.
	PDF Files	Set the PDF file name and directory where PDF files are saved. For details, see “13.8 Print Settings”.

Parameter		Description
Other Setup	Sector	Set the number of animal sector displayed on the multibed screen and other sector information. For details, see “13.2 Display Settings”.
	Time	Set time for current system. For details, see “13.11 Other Settings”.
	Unit	Set desired units displayed on the system. For details, see “13.11 Other Settings”.

3.6 Cloud Central Monitoring System

3.6.1 Connecting to Cloud CMS

NOTE:

You can obtain the user name, password and sever address of the cloud CMS through the following methods:

- See the accompanying installation package of cloud CMS.
- Contact the Customer Service Department or sales representative.

Perform the following procedure:

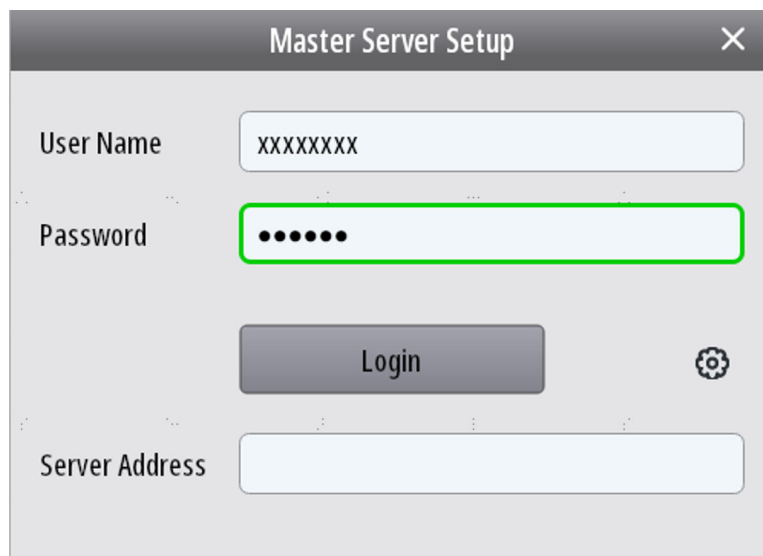
1. Select the system menu area in the upper left corner of the screen → select **System Setup** →select **Network** tab→ input password→ select **OK**.
2. On the **Central Station Connection** tab, select **Add**.
3. From the popup window, select **Cloud CentralStation**.

4. Input the user name, password and sever address of the cloud CMS.

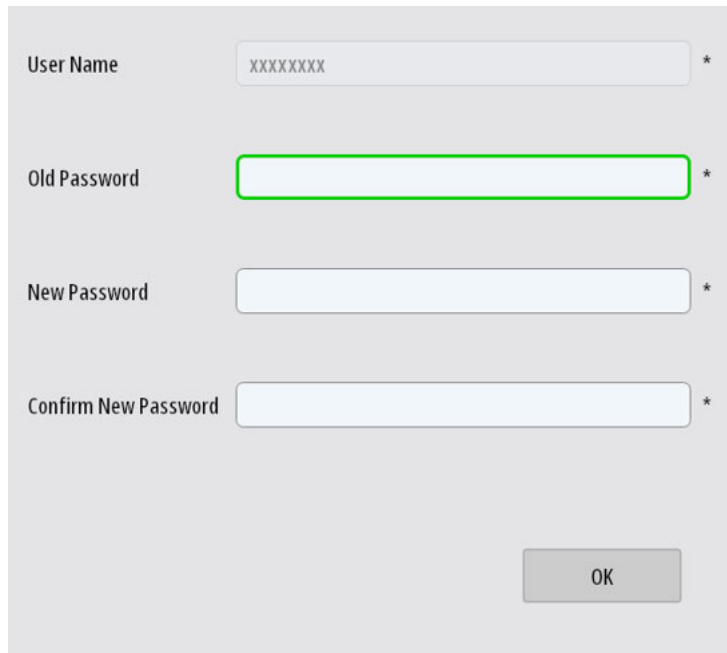
3.6.2 Changing Login Password

Perform the following procedure:

1. Select the system menu area in the upper left corner of the screen → select **System Setup** → select **Network** tab → enter password → select **OK**.
2. On the **Master Server** tab, input the **Master Server Address** and select **Master Server Setup** button.
3. In the popup **Master Server Setup** window.
 - a. Click  symbol to expand the server address column.
 - b. Input user name, password and sever address of the cloud CMS.



4. Select **Login**, and select **Modify Password** tab from the **Master Server Setup** popup page.



User Name XXXXXXXX *

Old Password *

New Password *

Confirm New Password *

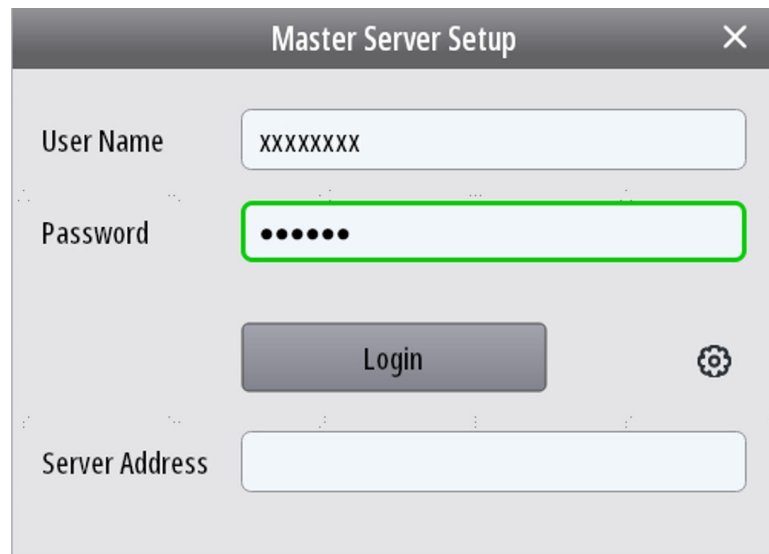
OK

5. Input the old password, new password and confirm the new password.
6. Select **OK**.

3.6.3 Setting Time Zone

Perform the following procedure:

1. Select the system menu area in the upper left corner of the screen → select **System Setup** → select **Network** tab → enter password → select **OK**.
2. On the **Master Server** tab, input the **Master Server Address** and select **Master Server Setup** button.
3. In the popup **Master Server Setup** window.
 - a. Click  symbol to expand the server address column.
 - b. Input user name, password and sever address of the cloud CMS.



The image shows a 'Master Server Setup' dialog box with a title bar containing a close button (X). The dialog contains three input fields: 'User Name' with the text 'XXXXXXXX', 'Password' with six dots and a green rectangular highlight, and 'Server Address' which is empty. A 'Login' button is positioned below the password field, and a gear icon for settings is to its right.

4. Select **Login**, and select **Change Time Zone** tab from the **Master Server Setup** popup page.
5. Select the time zone as necessary.
6. Select **OK**.

4 Operations

4.1 Preparations

4.1.1 Preuse Inspections

Before startup, perform the following inspections. In case of any damage or abnormality, do not use the CMS. Contact your hospital biomedical engineers, the Customer Service Department or your local distributor immediately.

- Inspect the equipment and its accessories for mechanical damage.
- The environment and power supply meet the specific requirements.
- All power cords and signal lines for fraying or other damages, and ensure that they are properly connected and insulated.
- The sound system functions normally.
- Each function of the system is in good condition.

4.1.2 Turning on the System

CAUTION

To prevent damaging the system from a sudden power failure, it is recommended that your CMS is equipped with a UPS.

To turn on the CMS system, follow this procedure:

1. Connect the power cord to the AC power source. When an uninterruptible power supply (UPS) is available, connect the UPS to the power supply and then connect the system to the UPS.
2. Turn on the host to start the operating system and displays.
3. Select the CMS icon on the desktop. The system will perform a series of self-tests.
 - If the self-tests pass, the system will beep one time and enter the main screen immediately.
 - If the self-tests fail, an error message is displayed. In this case, consult the manual provided with the computer for assistance or contact Customer Service Department or your local distributor.

4.1.3 Restarting the System

NOTE:

This chapter applies to CMS running exclusively.

Perform the following procedure:

1. Select the system menu area in the upper left corner of the main screen.
2. Select **Restart** from the pull-down list.
3. Input the password in the **Restart**.

4.1.4 Turning off the System

NOTE:

This chapter applies to CMS running exclusively.

Perform the following procedure:

1. Select the system menu area in the upper left corner of the main screen.
2. Select **Shutdown** from the pull-down list.
3. Input the password in the **Shutdown** dialog.
4. Turn off the UPS if it is in use.
5. Disconnect the power cord of each device from the power outlet.

4.1.5 Exiting the System

NOTE:

This chapter applies to CMS running non-exclusively.

Perform the following procedure:

1. Select the system menu area in the upper left corner of the main screen.
2. Select **Exit** from the pull-down list.
3. Input the password in the **Exit** dialog.
4. Turn off the UPS if it is in use.
5. Disconnect the power cord of each device from the power outlet.

4.2 Admitting Devices

Only when the devices are admitted by the CentralStation, can the CMS display the animal's physiological parameters, waveforms, alarm messages and store the corresponding animal data.

NOTE:

- The WorkStation must be connected to the host CentralStation and have bed authorization before they admit a device from the host CentralStation. For information regarding connecting the host CentralStation and granting bed authorization, see “13.7 Network Settings”.
 - On the same LAN, a device can be admit by any CentralStation and only can be admit by a CentralStation.
-

4.2.1 Setting the Bedside Device Network

Before admitting devices at the CMS, complete network setup at the bedside device first. For the details about the how to set the network and connect to the CMS, see the operator's manual of bedside devices.

4.2.2 Automatically Admitting Devices

NOTE:

A bedside device automatically admitted is not bound with an animal sector. After discharging an animal, the animal sector displays  button. If you need to bind the device and the animal sector, see “4.3 Binding Devices”.

If the devices are collectively distributed within certain IP ranges or certain departments, you can set the CentralStation to automatically admit devices.

1. Select the system menu area in the upper left corner of the screen → select **System Setup** to access the **System Setup** menu.
2. Select the **Device Management** tab → enter the required password → select the **OK** button.
3. Select **Auto Admit Device** tab.
4. Set the desired condition for auto admission.
 - To admit bedside devices within an IP address range, enter the IP address into the Start and End text boxes respectively. Then select **Add**. If the devices are distributed in many IP ranges, repeat this step.
 - To admit bedside devices within a particular department, enter the department name into the **Department** text box → select **Add**. The department entered must match the department entered at the bedside devices. If the devices are distributed in many departments, repeat this step.

Once the eligible bedside devices are detected, they will be automatically admitted and assigned to the CentralStation's multibed screen.

If you wish to cancel an auto admission condition, select the desired condition on the **Auto Admit Device** screen, and then select **Delete**.

4.2.3 Manually Admitting Devices

You can admit device manually.

Entering the Device Assignment Menu

Enter the device assignment menu in either of the following ways:

- Select the system menu area in the upper left corner of the screen → select **System Setup** → select the **Device Management** tab → enter the required password → select the **OK** button → select the **Device Assignment** tab.
- On the multibed screen, select the animal sector with the  symbol.
- Select the system menu area in the upper left corner of the main screen → select the **Device Management** tab from the pull-down list → select **Device Assignment** tab.

If you enter the device assignment menu in the first way, the admitted device and the animal sector will be bound, while in the second and third ways, the admitted device and the animal sector will not be bound. For details on binding the device and the animal sector, see “4.3 Binding Devices”.

Starting Manually Admitting Devices

To start manually admit devices on the CMS, follow this procedure:

1. Enter device assignment menu.
2. If you have multiple screens, select the desired screen to admit devices.

You can select Identify to verify the numbering of the screen.

3. Click  button and select the department where the devices are located.

If you need to specify an animal sector for the device, select a desired animal sector.

Without specifying an animal sector, the devices will be assigned to idle animal sectors on the multibed screen in the order of left to right and from top to bottom.

4. Select the  symbol to admit this device.

4.2.4 Understanding the Symbols on the Device Assignment Menu

After entering the device assignment menu, you may see the following symbols:

	Select this symbol to see device information such as IP address, admitting status etc.
	Select this symbol to sort the devices.
	Select this symbol to refresh the device list.

	This symbol indicates that this device cannot be admitted by the current CentralStation as it has been admitted by another CentralStation. Select this symbol to see the device information such as IP address, admitting status etc.
	The device is admitted at the cloud CMS and is bound to a bed.

4.3 Binding Devices

4.3.1 Binding an Animal Sector

If you need to monitor a device for a long period of time, bind the device and the animal sector. If you need to temporarily monitor a device, unbind the device and the animal sector.

Perform the following procedure:

1. Select the system menu area in the upper left corner of the screen → select **System Setup** → select the **Device Management** tab → enter the required password.
2. Select the **OK** button → select the **Device Assignment** tab.
3. Select the device symbol on the desired animal sector to bind or unbind the device and the animal sector:
 -  : indicates that the device and the animal sector are bound. When the animal is discharged, the device is still admitted and taking up this animal sector. After readmitting an animal, you can continue monitoring this device on this animal sector.
 -  : indicates that the device and the animal sector are not bound. Once the animal is discharged, the device is discharged and the animal sector can admit a new device.

4.3.2 Binding a Monitor with a Telemetry Device

If both a monitor and a telemetry device are available for the same bed and you need to choose the device according to per animal's condition, you can connect the monitor with the telemetry device at the CentralStation or the WorkStation. After these devices are connected successfully, when the animal's condition improves and the animal can perform out-of-bed activities, you can choose the telemetry device to view animal monitoring data. When the animal's condition worsens, you can choose the monitor to view animal monitoring data.

When the monitor supports connecting a telemetry device or vice versa, the  symbol is displayed in the lower right corner of the animal sector on the device assignment screen.

Perform the following procedure:

1. To access the **Device Assignment** screen, follow this procedure:
 - Select the system menu area in the upper left corner of the main screen → select the **System Setup** tab from the pull-down list → select **Device Management** tab → enter the required password → select the **OK** button → select the **Device Assignment** tab.
 - On the multibed screen, select the animal sector with the  symbol.

- Select the system menu area in the upper left corner of the main screen → select the **Device Management** tab from the pull-down list → select **Device Assignment** tab.
- 2. On the left side of the screen, select the  symbol. The device list is displayed.
- 3. Select the desired device.
If you wish to view more details about this device, select the  symbol.
- 4. Select **OK** in the popup dialog box.

4.3.3 Binding a Monitor with Other Device

If you bind a monitoring device with its paired devices. In this case, when the animal is discharged from the monitoring device, the animal will be discharged from other devices as well and still only one animal sector is taken up for all the paired devices. This is suitable when all the paired devices are fixed for one specific bed.

By default, a monitoring is not bound with its paired devices after pairing. In this case, when the animal is discharged from the monitoring device, the animal will not be discharged from other devices. All the devices will take up one animal sector independently. This is suitable when all the paired devices are not fixed for one specific bed.

To bind a monitoring device with its paired devices, follow this procedure:

1. To enter the Viewbed screen, choose any of the following ways:
 - Select the parameter area or waveform area in the desired animal sector on the multibed screen.
 - Select the ViewBed symbol  when it is displayed in the desired animal sector on the multibed screen.
2. Select the **Bedside Devices** quick key at the bottom of the ViewBed screen.
3. Select the lock symbol beside the device that you wish to be bound with the monitoring device:
 -  : indicates that the device and the monitoring device are bound.
 -  : indicates that the device and the monitoring device are not bound.

4.4 Pairing Devices

When a bed is equipped with multiple devices, you can set them to be in the same animal sector. This process is called “pairing”. Once completing pairing, you can view the real-time data from all the devices in the same animal sector to have a comprehensive understanding of the animal’s condition.

The devices supporting pairing function include monitoring devices, pumps, and anesthesia systems.

NOTE:

For a bed, the maximum number of pumps to be paired is 24 and the maximum number of infusion supervision systems to be paired is 3.

4.4.1 Automatically Pairing Devices

If you wish the devices can be paired automatically on the CMS, set same location for all the devices, including department, room number and bed number. For how to set location for the devices, see corresponding operator's manual of the device. The following is an example of how to set the position of bedside devices manufactured by Mindray Animal Medical.

- Monitor: select **System** → select **Maintenance** → enter the required password → select **Device Location**, set the monitor location information (room No., bed No., and department). To fix the monitor location, select **Fixed**.
- Pump:
 - Select Menu → select **Patient Management**, and set room number and bed number.
 - Select Menu → select **User Maintenance** → enter the required password → select **Device Management**, and set department.
- Anesthesia machine: select the animal icon in the upper left corner → select **Patient Information** → select **Location**, and set the location information (room No., bed No., and department).

4.4.2 Checking the Paired Devices

Perform the following procedure:

1. To enter the Viewbed screen, choose any of the following ways:
 - Select the parameter area or waveform area in the desired animal sector on the Multibed screen.
 - Select the ViewBed symbol  when it is displayed in the desired animal sector on the multibed screen.
2. Access the **Bedside Devices** window in either of the following ways:
 - Select the **Bedside Devices** quick key at the bottom of the ViewBed screen.
 - On the ViewBed screen, select **Main Menu** quick key → from the **Bedside Devices** column select bedside devices.
Information of the paired devices is displayed, including the device symbol, name and ID etc.
3. Click the device symbol, the corresponding device gives a beep. You can find the device by the sound.

4.5 Discharging Devices

Perform the following procedure:

1. Select the system menu area in the upper left corner of the screen → select **System Setup** → select the **Device Management** tab from the pull-down list → enter the required password → select the **OK** button → select the **Device Assignment** tab.
2. Discharge the device in either of the following ways:
 - Select the desired screen → select the  button on the animal sector.

- Click  button and select the department where the devices are located → select the  button to discharge the device.

4.6 Remotely Controlling Pumps

4.6.1 Remote Controlled Overview

Once the infusion device gets online at the CentralStation/WorkStation, you can remotely control the infusion device on the ViewBed screen.

When the infusion device is remotely controlled at the CentralStation/WorkStation for the first time, you must input the control authorization code. For the details about how to get the control authorization code, see the Operator's Manual of the infusion device.

4.6.2 Remote Controlled Operations

NOTE:

Before remotely controlling the infusion device, make sure that the remote control switch is turned on at the infusion device side.

Perform the following procedure:

1. Select any parameter on the pump ViewBed.
2. Select a parameter to be remotely modified on the popup screen.
3. Input the local password in the **Enter Password** dialog box. To change the pump authorization, see “13.10 Authorization Settings”.
4. Modify parameters as desired.

4.7 Setting Operating Mode

When the CMS enables operating modes, you can enter or exit operating modes at the CMS.

4.7.1 Bedside Device Standby Mode

If the operator wants to stop monitoring an animal temporarily but does not want to turn off the equipment, standby mode can be used.

Entering the Standby Mode

Perform the following procedure:

1. Enter the standby dialog in either of the following ways:
 - On the ViewBed screen, select the animal location area in the upper left corner of the desired animal sector and select the  symbol from the pull-down list.

- Select **Standby** quick key on the ViewBed screen.
- 2. If necessary, set **Location** optionally to define where the animal is when the monitoring device is in standby mode.
- 3. Select **OK**.

Exiting Standby Mode

To exit standby mode, use one of the following ways:

- On the ViewBed screen, select the animal location area in the upper left corner of the desired animal sector and select the  symbol from the pull-down list.
- Select Resume monitor in the standby mode.

4.7.2 Bedside Device Night Mode

Entering the Night Mode

Perform the following procedure:

1. Enter the night mode in either of the following ways:
 - On the ViewBed screen, select the animal location area in the upper left corner of the desired animal sector and select **Night Mode** from the pull-down list.
 - Select **Night Mode** quick key on the ViewBed screen.
2. Select **The bedside monitor will enter night mode.** or **All bedside monitors will enter night mode..**
3. Select **OK**.

Exiting the Night Mode

Perform the following procedure:

1. Exit the night mode in either of the following ways:
 - On the ViewBed screen, select the animal location area in the upper left corner of the desired animal sector and select **Exit Night Mode** from the pull-down list.
 - Select **Exit Night Mode** quick key on the ViewBed screen.
2. Select **The bedside monitor will exit night mode.** or **All bedside monitors will exit night mode..**
3. Select **OK**.

4.7.3 CMS Night Mode

To avoid sound interference from CMS, you can use the night mode. The bedside device is not affected when entering or exiting the night mode.

Entering the Night Mode

You can choose to enter the night mode automatically or manually.

- Select the system menu area in the upper left corner of the main screen → select **Night Mode** from the pull-down list → Set **Alarm Volume** and **Reminder Volume**.
- To enable entering night mode automatically, enable **Auto Night Mode**. For details about setting the night mode, see “13.11 Other Settings”.

Exiting the Night Mode

When the CMS enters night mode automatically, the CMS will exit the night mode automatically outside the set night time. To exit the night mode manually, follow this procedure:

1. Select the system menu area in the upper left corner of the main screen.
2. Select **Exit Night Mode** from the pull-down list.

After the CMS exits the night mode, the alarm tone and prompt tone are restored.

4.8 Locking the TouchScreen

NOTE:

This chapter applies to exclusive CMS.

To temporarily disable the touchscreen, hold and press the system menu area in the upper left corner of the main screen and slide as directed by the arrow. A padlock symbol  displays on the left side of the system menu area if the touchscreen is disabled.

If the CMS is configured with multiple touchscreens, locking one touchscreen disables other touchscreens. The touchscreen is unlocked once the screen lock duration is reached. To set the screen lock duration, see “13.11 Other Settings”. To manually unlock the touchscreen, hold and press the system menu area in the upper left corner of the main screen and slide as directed by the arrow.

4.9 Setting the Printer

NOTE:

- Before setting the printer, make sure that the printer driver or PDF printer has been installed in the system.
 - For the details about the printer operation, see “12 Printing”.
-

Perform the following procedure:

1. Select the system menu area in the upper left corner of the screen → select **System Setup** → select the **Print** tab from the pull-down list → enter the required password → select the **OK** button → select the **Printer** tab.
2. In the **Printer** tab, perform the following settings for General Report, End Case Report, Print on Alarm Report and Scheduled Report:
 - Printer
 - Printer resolution
 - PDF resolution
 - Print action
 - Color mode

5 Animal Management

5.1 Managing Animal Information

On the **Patient Management** screen, you can edit, search animal information or perform other operations.

5.1.1 Accessing the Animal Management Screen

Enter the **Patient Management** screen in either of the following ways:

- Select the animal information area in the desired animal sector on the multibed screen.
- On the ViewBed screen, or the review screen, select the **Patient Management** tab.

5.1.2 Manually Entering Animal Information

To manually enter animal information, follow this procedure:

1. On the **Patient Management** screen, input the desired animal information fields.
2. When done, verify that all the animal information items are correct.
3. Select the **Save** button.

5.1.3 Importing Discharged Animal Information

To import discharged animal information, follow this procedure:

1. On the **Patient Management** screen, select the **Find Patient** button.
2. Input query criteria.
3. Select the  button.
4. Select the  button at the end of the desired animal.
5. When the **Readmit Patient** dialog appears, decide whether to import **History data**.
 - Select **History data** when you wish to merge the animal demographic information and historical data into current data for this animal.
 - Do not select **History data** when you wish to merge only the animal demographic information into current data for this animal.

6. Select the **OK** button.

5.1.4 Changing Animal Information

When you change the animal information at the CentralStation/WorkStation, the information is also changed at the devices.

To change animal information, follow this procedure:

1. On the **Patient Management** screen, change the animal information in the appropriate fields as necessary.
2. After finishing changing, verify that all the animal information items are correct.
3. Select the **Save** button.

5.1.5 Searching Animal Information

You can search for historical animal information at the CentralStation/WorkStation on the **Patient Management** and **Discharged Patients** screens.

Searching Animal Information on the Patient Management Screen

Perform the following procedure:

1. Enter **Patient Management** screen.
2. Input the search information.
3. Select  button.

Searching Animal Information on the Discharged Patients Screen

Perform the following procedure:

1. Select the system menu area in the upper left corner of the screen.
2. Select **Discharged Patients** from the pull-down list.
3. Select the target CentralStation from the  button in the upper left corner of the discharged animals management screen.
 - **Local Central Station:** view discharged animals in current station.
 - Name of other central stations: view discharged animals in other central stations.
4. Input query criteria. If you need to specify more criteria, select the **Filter** button and input more criteria.
5. Select the **Search** button.
6. Select the **Detail** button in the desired animal information.

5.1.6 Animal Information Synchronization

When bedside devices are admitted at the CentralStation/ WorkStation, any changes to the animal information at either the CentralStation/ WorkStation, or the bedside devices will be synchronized to ensure that the animal information is consistent.

When devices are disconnected from the CentralStation/ WorkStation and then reconnected, animal information from the devices will be updated to the CentralStation/ WorkStation.

5.2 Discharging An Animal

Before monitoring a new animal, discharge the previous animal. This ensures that data from a previous animal is not mixed with the data from the new animal.

Perform the following procedure:

1. Select **Discharge Patient** on the **Patient Management** screen.
2. If you need to print an end case report, select **Print End Case Report**.
3. Select whether to let this device enter standby mode after the animal is discharged.
4. Select the **OK** button.

5.3 Transferring Animal Data

NOTE:

- When the system time at the source CentralStation/WorkStation and target CentralStation is not consistent, transferring an animal may cause animal data loss.
 - Ensure that the same animal is monitored by both the source and destination beds. Otherwise, discharge the animal in the destination animal sector first.
 - When an animal is transferred from one bed to another bed, the source CentralStation/ WorkStation will interrupt animal monitoring temporarily.
 - If there is a version difference between two CentralStations, animal transfer may not be supported.
-

Only when the transferring animal function is allowed in the system setup menu of the CentralStation/ WorkStation, you can transfer an animal data from one bed (source bed) to another bed (destination bed) without losing animal data.

Perform the following procedure:

1. On the **Patient Management** screen, select the **Transfer Patient** button to enter the **Transfer Patient** window
2. Select the destination unit under **Select the destination CMS:**.
 - **Local:** transfers the animal data to the destination bed in the current CentralStation/ WorkStation.

- **Other:** transfers the animal data to the destination bed in the target CentralStation. After selecting this option, select the target CentralStation name from the list box on the right of **Other**.
3. In the **Select the destination bed:** section, select a desired destination bed from the bed list.
 4. Select the **OK** button.
 5. In the **Transfer Patient** dialog box, select the **OK** button.
 6. In the dialog box that prompts successful animal transfer, select the **OK** button.

Upon successful transfer, the source bed's animal sector displays **Discharged**.

5.4 Managing Discharged Animals

On the discharged animals management screen, you can perform operations such as viewing the demographic information and historical data for discharged animals.

NOTE:

When “Prompt on patient auto deleted” is enabled in the system setup menu, if the storage space is nearly full, the alarm “The patient data storage space is nearly full. Please delete some discharged patients.” is displayed in the system alarm area at the top of the screen. In this case, delete some discharged animals. Otherwise, the oldest discharged animal and corresponding historical data will be deleted automatically.

5.4.1 Accessing the Discharged Animals Management Screen

Perform the following procedure:

1. Select the system menu area in the upper left corner of the screen.
2. From the pull-down list, select **Discharged Patients**.

5.4.2 Viewing Discharged Animal Information

Perform the following procedure:

1. Select the target CentralStation from the  button in the upper left corner of the discharged animals management screen.
 - **Local Central Station:** view discharged animals in current station.
 - Name of other central stations: view discharged animals in other central stations.
2. Input query criteria. If you need to specify more criteria, select the **Filter** button and input more criteria.
3. Select the **Search** button.
4. Select the **Detail** button in the desired animal information.

5. After selecting this button, you can view the animal information and historical data in the **Patient Management** tab, **Review** and **Anesthesia Record** tab respectively.

5.4.3 Deleting Discharged Animal Information

NOTE:

Discharged animal information can be deleted only when Delete Discharged Patients is set to No Password or Local Password in the system setup. For more information, see Section “13.10 Authorization Settings”.

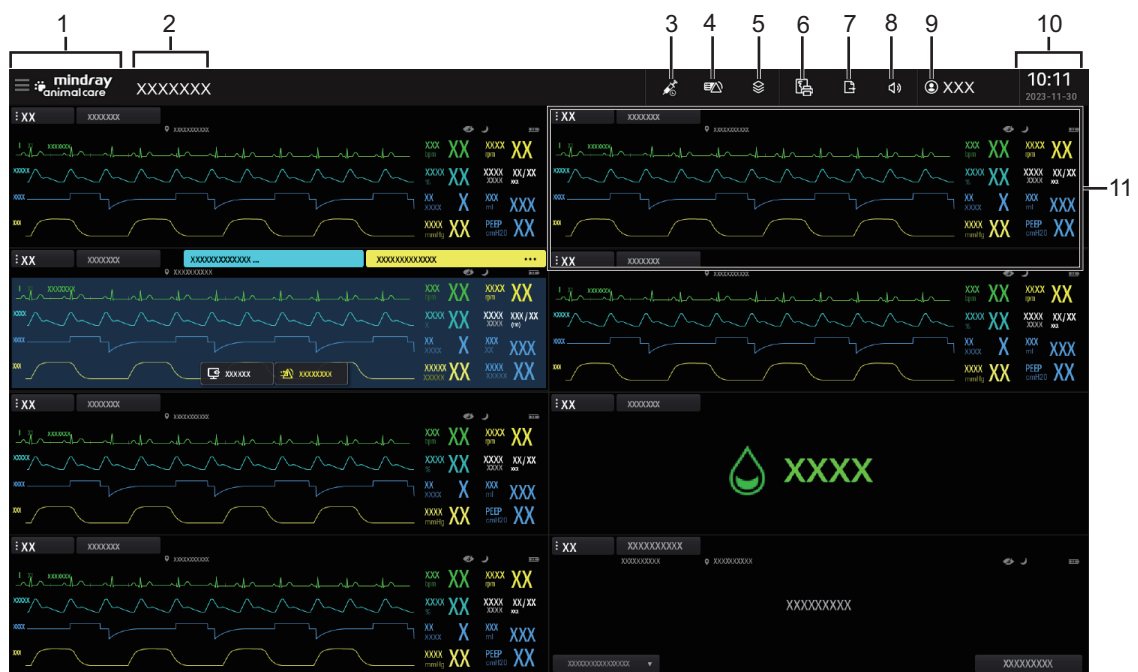
Perform the following procedure:

1. Select the target CentralStation from the button in the upper left corner of the **Patient Management** screen.
 - **Local Central Station:** view discharged animals in current station.
 - Name of other central stations: view discharged animals in other central stations.
2. Select the desired animal information. If you wish to select all the animal information, select the **Select All** button.
3. Select the **Delete** button.
4. In the dialog box that prompts whether to delete, select the **OK** button.

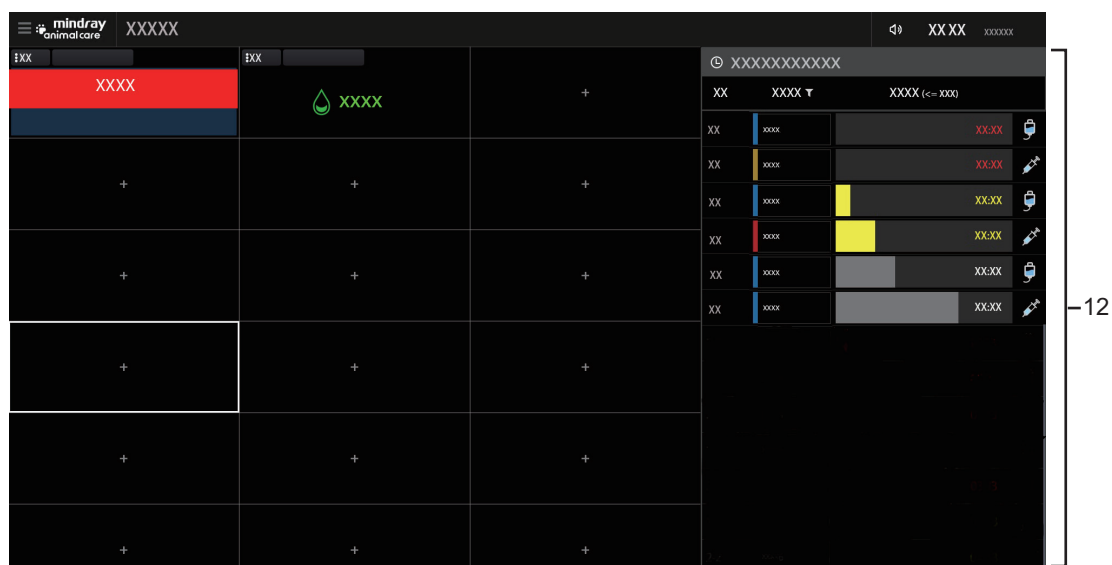
6 Multibed Screen

6.1 The Display of Multibed Screen

Normal Multibed Screen



Pump Multibed Screen



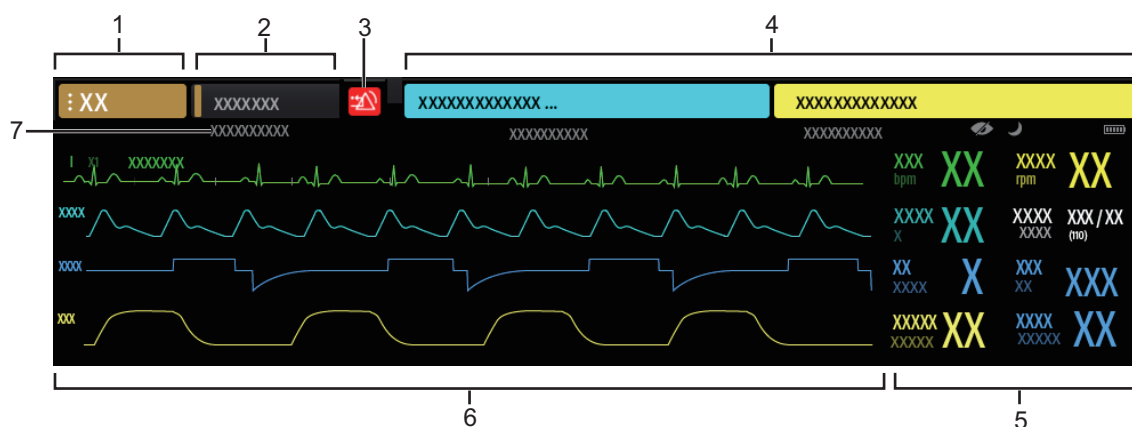
No.	Parameter	Description
1.	System menu area	Selecting this area opens the pull-down list where you can select different functions.
2.	Hospital information area/system alarm area	- When system level alarms are not triggered, this area displays the hospital name and department where the CMS is located. - When system level alarms are triggered, this area displays the highest priority alarm message. Selecting this area opens the list of currently triggered system alarm messages. You can also review the system alarm messages in the alarm list.
3.	T-Remain symbol	Selecting this symbol opens a list showing the remaining infusion time of each pump. This symbol appears on the main screen only when the resolution of the display is 1920 X 1080.
4.	Alarm list symbol	Selecting this symbol opens the alarm list that includes physiological and technical alarms within one hour for all the beds being monitored by the CMS.
5.	Animal summary symbol	Selecting this area opens the Patient Summary window where you can view and select animals that requires special attention.
6.	Print symbol	Selecting this button displays the related print menus.

No.	Parameter	Description
7.	Export queue symbol	Trend data or waveform data export queue symbol. Selecting this symbol opens the Export Setup menu. In this menu, you can view export tasks in the Name column and view export progress and results in the Status column. Upon successful export, the task disappears from the task list. Selecting Retry Failed Export at the bottom of the menu re-exports failed items. Selecting Remove Failed Export removes all the export failure items from the task list. NOTE: The export symbol is displayed only when Save As is enabled in the system menu. For more information on enabling Save As, see “13.11 Other Settings”.
8.	Volume symbol	Selecting this symbol opens volume setup menus.
9.	User information area	Displays user login status. Selecting this area can log in or log out. Users of different roles may have different permissions after logging in. Contact your department manager to acquire password to log in.
10.	System time area	To change system time, see “13.11 Other Settings”.
11.	Animal sector	Displays real-time monitoring data. One animal sector displays data from one animal only.
12.	Remaining infusion time list	Displays the remaining infusion time of each pump within the set time.

6.2 Animal Sector

When an animal is being monitored, the animal sector displays real-time animal data from the bedside device.

6.2.1 The Display of Animal Sector



No.	Parameter	Description
1.	Location area	Displays the department, animal location according to specific settings. For the details about the settings, see “13.2 Display Settings” The background color of the area changes according to the care group the bed is assigned to. Default dark gray indicates the bed is not assigned to any care group.
		Use telemetry When an animal monitor has been connected with a telemetry device at the CentralStation/WorkStation, the option Use Telemetry is displayed. Select Use Telemetry . Follow the screen instructions to switch to the monitoring screen of the telemetry device.
		Use host monitor When an animal monitor has been connected with a monitor at the CentralStation/WorkStation, the option Use Host Monitor is displayed. Select Use Host Monitor . Follow the screen instructions to switch to the monitoring screen of the monitor.
		Move position to Move an animal sector from the source animal sector to the target animal sector on the multibed screen. For locked animal sectors, whether this option is displayed is dependent on the system setup.
		 Reset alarms
		 Pause alarms
		 Standby mode
	Clear the animal sector	Clear the animal sector. This function is used for clearing an animal sector where a bedside device from a remote CentralStation.
2.	Animal information area	Displays animal name or animal ID.
3.	Alarm status symbol	Indicates current alarm status.

No.	Parameter	Description
4.	Alarm information area	Selecting the alarm information area opens the alarm list that includes physiological and technical alarms. This area displays the following items: - Alarms and prompts from a bedside device or from the CMS. - Alarm time is displayed for latched physiological alarms only. - Displays the highest priority alarms. If multiple highest priority alarms exist, this information is displayed circularly. - Select the physiological alarm marked with “>” symbol to access the event review page and view the alarm details.
5.	Parameter area	Displays parameter numerics transmitted from a bedside device. Selecting this area enters the ViewBed screen. If the function of outline font for suspected values are enabled in the System Setup menu, when unreliable measurement values of HR, or SpO2 is detected, these numerics are displayed in outline font. Blue background indicates pending alarms.
6.	Waveform area	Displays waveforms transmitted from a bedside device. Selecting this area enters the ViewBed screen.
7.	Status information area	Displays information such as notes, device signal, device name, device location, operating mode, and battery power.

6.2.2 Animal Sector Status

Normal Status

Status	Description
Offline	Indicates that the animal sector has an animal admitted but its corresponding bedside device may be turned off or disconnected from the CMS. For example, the bedside devices are turned off or disconnected from the CMS.
Working	Indicates that the animal is being monitored and the animal data is sent to CMS. The animal data will show on animal sector.
Standby	Indicates that the monitoring device is in standby mode.
Discharged	Indicates that the animal has been discharged from the monitoring device or from the CMS.
Idle	Indicates that the animal sector is available for admitting a new monitoring device. For details on how to admit monitoring devices, see “5 Animal Management”.

Infusion Status

Status	Description	
	Single Pump Connected to the CMS	Infusion Supervision System Connected to the CMS
The pump is infusing normally	The pump is infusing normally	One or multiple pumps are infusing normally and no alarms are triggered
Infusion alarm	The alarm is triggered.	One or multiple pumps have the alarm triggered.
Offline	The pump is turned off or disconnected from the CMS.	The supervision system is turned off or disconnected from the CMS.
Not started	The pump has no infusion started.	All the pumps are in at least one of the statuses below: • Turn off • Standby • Not started • Disconnected from the supervision system
Infusion pause	The pump has infusion paused.	All the pumps are paused.

6.3 Sorting Animal Sectors

NOTE:

The **Sector Sorting** option is available only when **Sort Type** is set to **Manual** in the **System Setup** Menu.

Perform the following procedure:

1. Select the system menu area in the upper left corner of the main screen.
2. From the pull-down list, select **Sector Sorting**.
3. From the dialog box, select whether to sort the animal sector or not.

For information regarding sorting criteria and automatic sorting, see “13.2 Display Settings”.

6.4 Screen Setup

Enter the **Choose Screen** menu in either of the following ways:

- On the multibed screen, select the animal location area in the upper left corner of the animal sector → select **Screen Setup** → select **Multibed** → select **Choose Screen**.

- On the Viewbed screen, select **Screen Setup** at the bottom of the screen → select **Multibed** → select **Choose Screen**.

6.4.1 Normal Screen

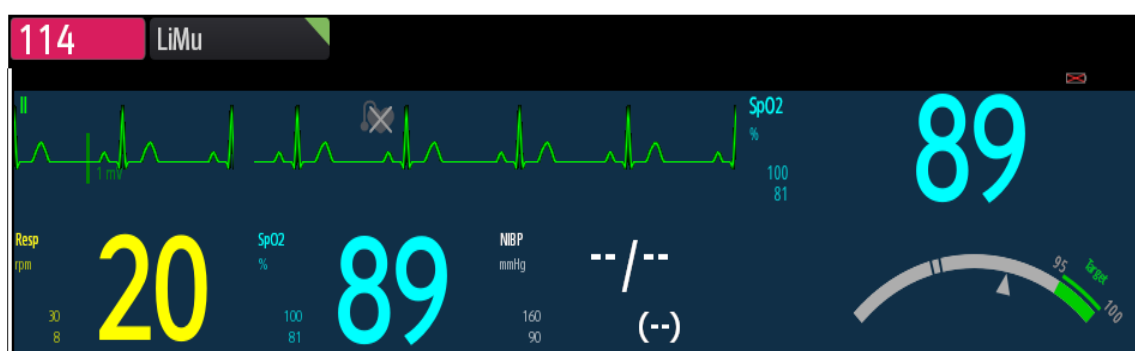
The normal screen is most frequently used for animal monitoring.

6.4.2 Targeted Goal Screen

If you are concerned with specific parameters and their trends, you can use the **Targeted Goal** screen. The **Targeted Goal** screen focuses on the target parameter and displays parameter measurements in big numerics. You can easily identify whether parameter target is reached via a dashboard and review the statistics of the target parameter by sections. The **Targeted Goal** screen also displays other parameters. You can define the target parameter and secondary parameters.

The Display of the Targeted Goal Screen

The following figure is an example of the Targeted Goal screen:



No.	Parameter	Description
1.	Waveform area	/
2.	Parameter area	/
3.	Target parameter area	Displays the measurement of the target parameter in big numerics, as well as its target range, and alarm limits. - The dashboard shows the target range in green. - The $\triangle$ pointer indicates the current measurement values. Selecting this area enters the corresponding parameter setup menu.

Configuring the Targeted Goal Screen Layout

Perform the following procedure:

- Select the animal location area in the upper left corner of the desired animal sector on the multibed screen.

2. Select **System Setup** from the pull-down list.
3. Select **Targeted Goal** tab.
4. Select the target parameter on the right side area, select other parameters and waveforms on the left side area.

Setting Section Range and Target Section

To set section range and target section for the target parameter, follow this procedure:

1. Enters the **Targeted Goal** screen.
2. Select the target parameter area.
3. From the **End** column select the end value for the corresponding section.
4. From the **Target** column select the target section. Target section is the target range for the target parameter.
5. If you need to set the section ranges back to factory defaults, select **Default**.

6.4.3 Big Numerics Screen

The big numerics screen displays parameter numerics in big font size.

6.5 Animal Summary Symbol

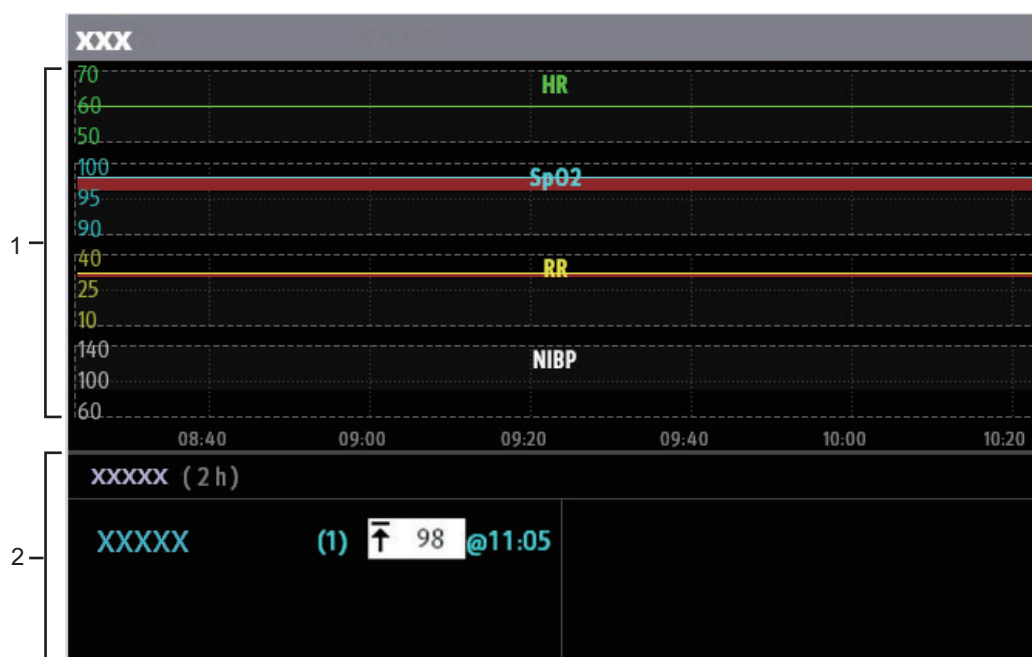
NOTE:

When the CMS is equipped with one 19-inch display only, the animal summary function is not supported.

In the **Patient Summary** window, you can view the trend data and alarm statistics of selected animals. The **Patient Summary** window displays overview information of 4 animals. You can perform the following operations:

- Select  (**Patient Summary**) at the top of the screen to access the **Patient Summary** window.
- View the information of more animals by moving the cursor or the touchscreen.

6.5.1 The Display of Animal Summary Window



No.	Parameter	Description
1.	Trend data area	Displays the trend data of HR, SpO ₂ /SpO ₂ b, RR, and NIBP/IBP within the selected Zoom option. Selecting the trend data area enters the graphic trends review page.
2.	Alarm statistics area	Displays physiological alarm information such as alarm trigger time, times of alarms, or alarm duration within the selected Zoom option.

6.5.2 Filtering Animal Data

You can filter the desired animal data by bed number, animal group, or care group. Perform the following procedure:

1. In the **Patient Summary** window, select the desired filter criterion: **Bed No**, **Patient Group**, or **Care Group**. The background color of the selected criterion changes green.
2. In the **Filter** window that pops up, select the desired beds. If you wish to view data of all beds, select **Select All**.
3. To close the window, select ☐ in the upper right corner of the **Filter** window.

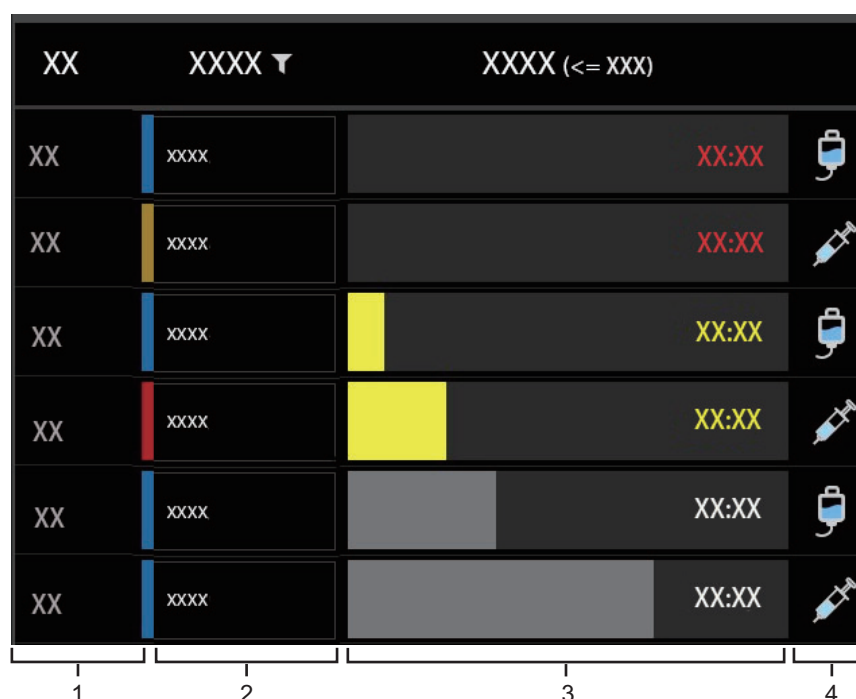
6.5.3 Setting the Time Length of Trends

You can set the time length of trend data displayed in the **Patient Summary** window. Perform the following procedure:

1. Select **Zoom** in the upper right corner of the **Patient Summary** window.
2. Select the desired option. The default is 8 hrs.

6.6 Remaining Infusion Time List

6.6.1 The Display of Remaining Infusion Time



No.	Parameter	Description
1.	Bed number	The remaining infusion time of bed number and its corresponding drugs are listed increasingly from top down.
2.	Drug name	
3.	Infusion progress/T-Remain symbol	The color of the remaining time indicates the infusion status. • Red: the infusion is completed. • Yellow: the infusion is almost completed. • Grey: the infusion is not completed.
4.	Pump Type	 : indicates the infusion pump.  : indicates the syringe pump.

6.6.2 Displaying the Remaining Infusion Time List

Select  (T-Remain) from the main screen. On the pump screen, the remaining infusion time list is displayed by default on the right side of the screen.

7 ViewBed Screen

7.1 Accessing the ViewBed Screen

NOTE:

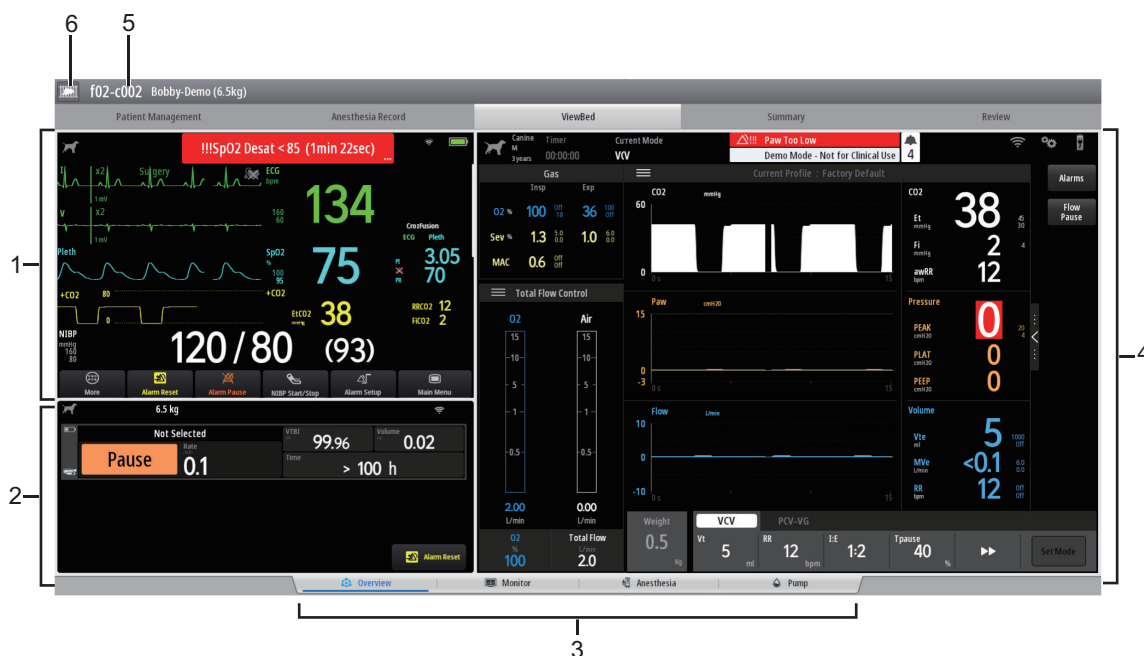
- When the CMS is equipped with one display only, the ViewBed screen is displayed in the lower half of the screen or on the right of the screen depending on the display size.
 - When the CMS is equipped with more than one display, the ViewBed screen can be displayed on a dedicated secondary display.
-

To enter the Viewbed screen, choose any of the following ways:

- On the multibed screen, select the parameter area or waveform area in the desired animal sector.
- On the multibed screen, select the ViewBed symbol  when it is displayed in the desired animal sector.

7.2 The Display of ViewBed Screen

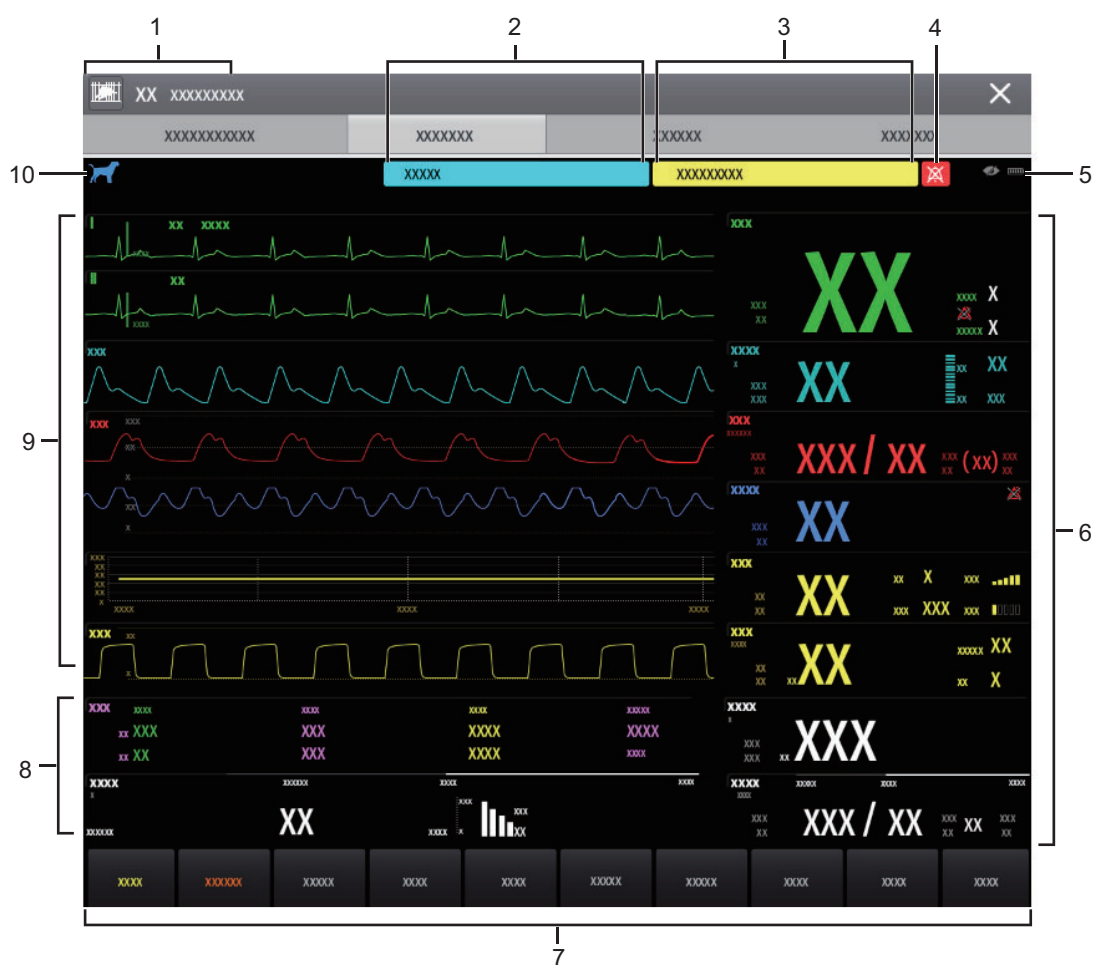
7.2.1 Multiple Devices ViewBed Screen



No.	Parameter	Description
1.	Monitoring information area	Displays monitoring information from monitoring devices. For more information, see “7.2.2 Monitor ViewBed Screen”
2.	Pump information area	Displays infusion information from pumps. For more information, see “7.2.3 Pump ViewBed Screen”
3.	Switching screen area	Selecting different tabs opens different ViewBed screens.
4.	Anesthesia information area	Displays ventilation information from anesthesia machine. For more information, see “7.2.4 Anesthesia ViewBed Screen”
5.	Animal location area	Displays the animal location information, including bed number, room number, name, Patient ID and weight.
6.	Animal list symbol	Selecting this symbol opens the animal list.

7.2.2 Monitor ViewBed Screen

Monitor ViewBed screen displays monitoring information from the monitoring device. The following figure shows the monitor ViewBed screen:

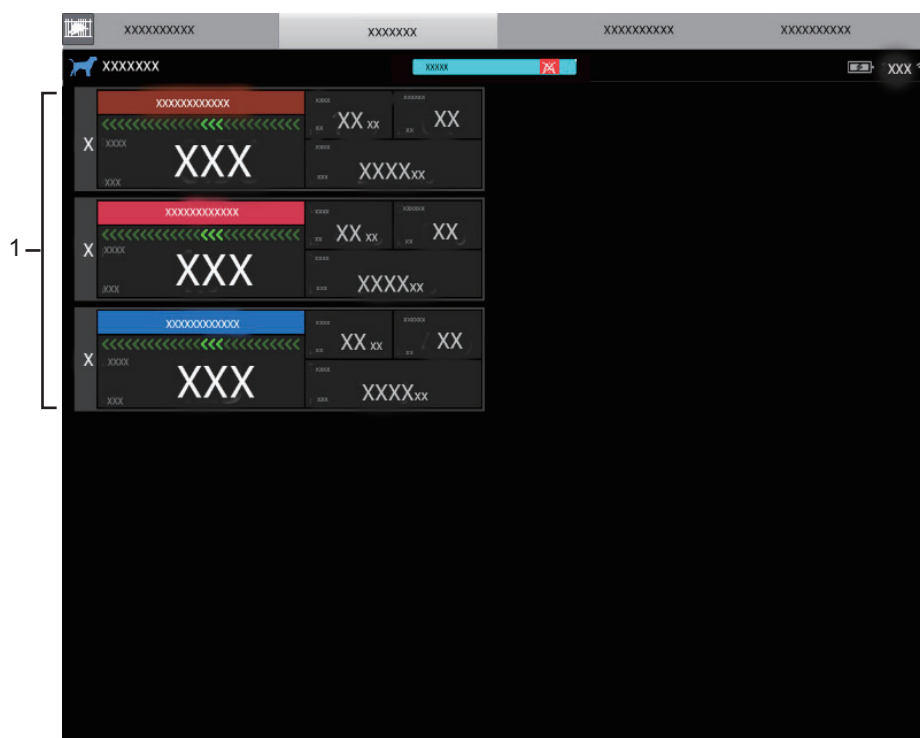


No.	Parameter	Description
1.	Animal location area	Displays the animal location information, including bed number, room number, name, Patient ID and weight.
2.	Technical alarm information area	Displays the highest priority technical alarm.
3.	Physiological alarm information area:	Displays the highest priority physiological alarm.
4.	Alarm symbol area	Displays the alarm status of the bedside device.
5.	Device status area	Displays the battery capacity and network signal strength.

No.	Parameter	Description
6.	Parameter area	Displays items such as parameter values, alarm limits, alarm status, and parameter list. • Selecting a parameter area enters corresponding parameter menu. • Selecting the parameter list enters tabular trends review page. • When a parameter alarm is turned off, the  symbol is displayed in corresponding parameter area. • If the function of outline font for suspected values are enabled in the System Setup menu, when unreliable measurement values of HR, or SpO2 is detected, these numerics are displayed in outline font.
7.	Quick key area	Displays quick keys to access commonly used functions
8.	Parameter numerics/ waveform area	Displays parameter values and waveforms according to the layout setting.
9.	Waveform area	Displays waveforms transmitted from a bedside device. Selecting a waveform enters corresponding parameter menu.
10.	Species symbol	Displays current animal species.

7.2.3 Pump ViewBed Screen

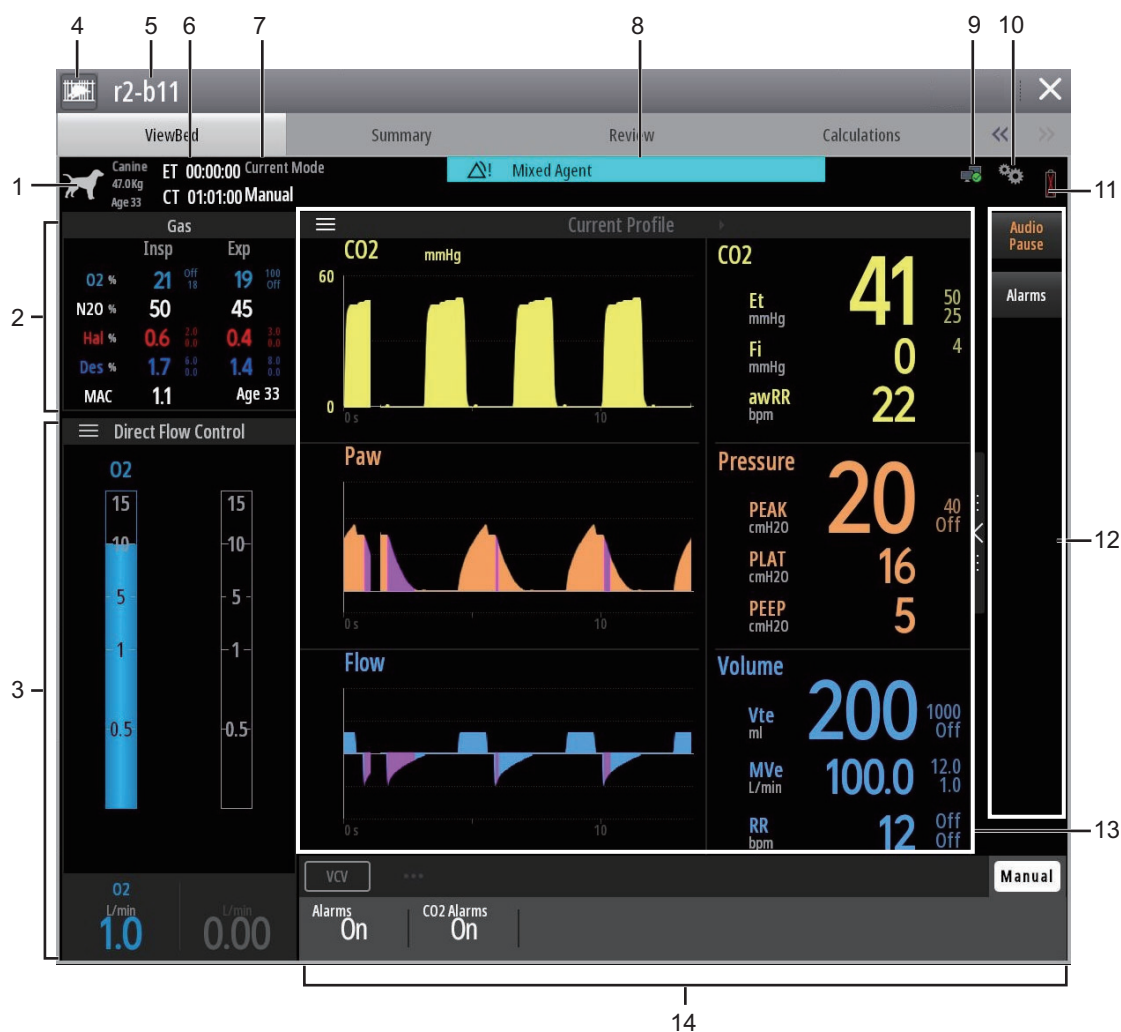
Pump ViewBed screen displays infusion information from the pumps. The following figures shows the pump ViewBed screen.



No.	Parameter	Description
1.	Infusion observation area	Displays the infusion status and drug names of the pumps connected to this animal.

7.2.4 Anesthesia ViewBed Screen

Anesthesia ViewBed screen displays ventilation information and anesthesia information from the anesthesia system. The following figures shows the anesthesia ViewBed screen:



No.	Parameter	Description
1.	Animal information area	Displays current animal species, weight and age.
2.	Gas parameters/O ₂ concentration area	/
3.	Fresh gas control and anesthesia consumption speed area	Displays the real-time flow level of oxygen or balance gas and an indication of optimal flow and anesthetic agent consumption speed and cost.
4.	Animal list symbol	Selecting this area displays other animals of the same department or other departments.
5.	Animal location area	Displays the animal location information, including bed number, room number, name, Patient ID and weight.
6.	Timer	Select this area to start, stop or reset the timer.
7.	Ventilation mode	Display current ventilation mode
8.	Alarm information area	Selecting this area displays more alarm information.
9.	Network connection status symbol	/
10.	Setup symbol	Selecting this symbol displays the screen to set waveform etc.
11.	Battery symbol	/
12.	Quick key area	Displays quick keys.
13.	Waveform and parameter area	Displays waveform and parameter values.
14.	Ventilation mode and ventilation type setup area	Displays ventilation mode and ventilation parameter information

7.3 Operations on the ViewBed Screen

You can have a more detailed view of a single animal's information, waveforms, and parameter numerics on the ViewBed screen. In addition, you can also perform additional operations such as configuring parameters, viewing multi-lead ECG waveforms, and recording waveforms for the selected animal.

7.3.1 Changing the Parameter Layout

NOTE:

The change of the tile layout only affects Viewbed Screen, and does not affect the display of animal sectors.

On the ViewBed screen, you can set the layout of the parameters and waveforms. Perform the following procedure:

1. Access the tile layout menu in either of the following ways:
 - Select the **Screen Setup** quick key on the Viewbed screen → **Tile Layout**.
 - Select the animal location area in the upper left corner of the desired animal sector on the Multibed screen → from the pull-down list select **Screen Setup** → **ViewBed** → **Tile Layout**.
 - Select the **Screen Setup** quick key on the Viewbed screen → **Tile Layout**.
2. Select a parameter area or waveform area, and then from the pull-down list select an element you want to display in this area. The selected parameters and waveforms are displayed on the ViewBed screen. The symbol  indicates that this area can be set to display waveforms. Selecting this area changes this symbol to , indicating that this area can be set to display parameters.

7.3.2 Setting the SpO₂ Statistics

NOTE:

The values for sections should be continuous. When the section value reaches 100, you cannot configure remaining sections.

Perform the following procedure:

1. Select the time area in the upper right corner of the SpO₂ statistics area. For example, .
2. Select the desired option.
3. Enter the **SpO₂ Statistics** menu in either of the following ways:
 - On the ViewBed screen, select the SpO₂ statistics area.
 - On the ViewBed screen, select the SpO₂ parameter or waveform area → select the **SpO₂ Statistics** tab.
4. In the **From** and **To** columns, select the starting and ending SpO₂ values for each section.
5. In the **Target** column, select the target section.
6. If you wish to use the default values, select **Defaults**.

7.3.3 Starting/Stopping NIBP Measurement

CAUTION

Before starting an NIBP measurement, make sure that the animal category on the bedside monitor is correct and the NIBP cuff size is appropriate for this animal.

When the remotely control functionality for NIBP measurement is enabled at the CentralStation/ WorkStation, some bedside monitors allow you to remotely to start an NIBP measurement or stop the ongoing measurement.

1. Start an NIBP measurement in either of the following ways:
 - Select the **NIBP Start/Stop** quick key at the bottom of the ViewBed screen.
 - Select the animal location area in the upper left corner of the desired animal sector on the multibed screen → from the pull-down list select **NIBP Start/Stop**.
2. In the measurement process, if you wish to stop the proceeding measurement, select **NIBP Start/Stop**.

7.3.4 Freezing/Unfreezing Waveforms

During animal monitoring, you can freeze waveforms on the ViewBed screen to allow a closer review of the waveform data.

Freezing Waveforms

NOTE:

Freezing waveforms does not affect waveforms displayed in the minitrends window and parameter numerics on the ViewBed screen.

Perform the following procedure:

1. Select Freeze quick key at the bottom of the ViewBed screen.
2. To display the desired time, select the left or right arrow to move the waveforms backward or forward.

Unfreezing Waveforms

To unfreeze waveforms, select the button in the upper right corner of the **Freeze** window.

Printing Frozen Waveforms

Selecting the  button in the upper left corner of the **Freeze** window prints frozen waveforms.

7.3.5 Loading Configurations

Perform the following procedure to load user defaults or factory defaults for the selected telemetry devices.

1. Select the **Load Config** quick key at the bottom of the ViewBed screen to enter the **Load Config** menu.
2. In the **Local** tab, select the desired option.
 - **User Default**: loads the saved user configuration.
 - **Factory Default**: loads factory default configuration.
3. Select **Load**.

7.3.6 Viewing Device Location

If the AP information has been imported into the CMS, you can view device location information for WiFi devices.

Perform the following procedure:

1. Select  symbol at the top of the ViewBed screen to enter the **Device Location** menu.
2. View the AP switch time in the **Time** column. View the current location of devices in the **Location** column.

7.3.7 Initiating a Manual Event

You can save a manual event at the CentralStation/WorkStation.

1. Select the **Manual Event** quick key to enter the **Manual Event** menu.
2. Select a name for this event, for example **Intubated**, or input a name.
3. Select **OK**. The CMS saves the manual event automatically.

To edit the name of preset event names, select  to enter the **Manual Event Setup** menu.

8 Alarms

8.1 Overview

Alarms triggered by a vital sign that appears abnormally or due to technical problems identified by the bedside devices are sent to the CMS. The CMS provides visual and audible alarm indications.

8.2 Physiological Alarms and Technical Alarms

The CMS' alarms can be classified into two categories: physiological alarms and technical alarms.

- Physiological alarms, also called animal status alarms, are triggered by a monitored parameter value that violates set alarm limits or an abnormal animal condition. Physiological alarm messages are displayed in the physiological alarm area.
- Technical alarms, also called system status alarms, are triggered by a device malfunction or an animal data distortion due to improper operation or mechanical problems. Technical alarm messages are displayed in the technical alarm area.

8.3 Latching Alarms

The latching setting for physiological alarms defines how alarm indicators behave if you do not reset the alarms.

- If you do not “latch” physiological alarms, their alarm indications disappear when the alarm condition ends.
- If you “latch” physiological alarms, all visual and audible alarm indications remains until you reset the alarms. For latched alarms the time when the alarm is last triggered is displayed behind the alarm message.

8.4 Alarm Priorities

By severity, the alarms are classified into the following priority levels:

- High priority alarms: indicates a life threatening situation or a severe device malfunction. High priority alarms require an immediate response.
- Medium priority alarms: indicates abnormal vital signs or a device malfunction. Medium priority alarms require a prompt response.

- Low priority alarms: indicates a discomfort condition, a device malfunction, or an improper operation. Low priority alarms require you to be aware of this condition.
- Prompts: provides additional information on the animal or the system status.

8.5 Alarm Indicators

NOTE:

- Alarm time is displayed for latched physiological alarms only.
- The audible and visual alarms given by the CMS comply with the IEC 60601-1-8 standard. The hospital or institution employing the use of the CMS should give adequate training to the operators.
- When multiple alarms of different priority levels occur simultaneously, the CMS selects the alarms of the highest priorities and provides alarm tones accordingly.
- When multiple alarms of the same priority levels occur simultaneously and are displayed in the same area, all the alarm messages will be scrolled in the display area.
- To comply with the IEC 60601-2-24 standard, the corresponding alarm tone at the pump and the CMS is of medium priority if the pump generates either one low-priority alarm message as below: Time Near End, Syringe Near Empty, Reminder, and Low Battery.
- After the CMS alarm system is reset, if an alarm still exists and a new lower-priority alarm occurs, the CMS has lower-priority alarm tone and higher-priority alarm message.
- Some physiological alarms, such as asystole, are exclusive. They have identical alarm tones with normal high level physiological alarms, but their alarm messages are displayed exclusively. That is to say, when an exclusive physiological alarm and a normal high level physiological alarm are triggered simultaneously, only the alarm message of the exclusive physiological alarm is displayed.
- The pattern of the alarm tone is different from those of the alarm volume adjustment tone, and self-test tone so that the alarm tone can be distinguished from other tones

When an alarm occurs, the CMS gives different visual or audible alarm indications as shown below.

Alarm Indicator		High Priority Alarm	Medium Priority Alarm	Low Priority Alarm	Prompt
Audible tone pattern	Special alarm sound	Repeat pattern of high-pitched single beep	None	None	None
	ISO	Repeat pattern of triple + double + triple + double beeps	Repeat pattern of triple beeps	Repeat pattern of single beep	None
	ISO2	Repeat pattern of triple + double + triple + double beeps	Repeat pattern of triple beeps	Repeat pattern of single beep	None

Alarm Indicator	High Priority Alarm	Medium Priority Alarm	Low Priority Alarm	Prompt
Alarm message	White text inside a red box	Black text inside a yellow box	Black text inside a cyan box	White text
Alarm priority indicator	!!!	!!	!	None
Parameter value	Black text inside a flashing red box	Black text inside a flashing yellow box	Black text inside a flashing cyan box	None

8.5.1 Alarm Status Symbols

The following symbols are displayed on the screen to indicate current alarm status of bedside devices:

Symbols	Description
	The alarm pause symbol, indicating that all the alarms are paused
	The alarm off symbol, indicating that individual measurement alarms are turned off or the system is in the alarm off status.
	The audio pause symbol, indicating that audible alarms are paused
	The audio off symbol, indicating that audible alarms are turned off.
	The alarm reset symbol, indicating that the alarm system is reset.
	The alarm acknowledgement symbol, indicating that the pump alarm has been acknowledged.

8.5.2 Highlighted Display of Alarm Messages

When some alarms are triggered, alarm messages are highlighted to indicate that the animal may be in a critical condition.

On the ViewBed screen, when an alarm is highlighted, the alarm message covers both the original physiological alarm area and the technical alarm area with enlarged word size. Messages of technical alarms and other physiological alarms are displayed at the left of the highlighted alarm.

On the animal sector, when an alarm is highlighted, when an alarm is highlighted, the alarm message covers both the original physiological alarm area and the technical alarm area with enlarged word size. The background red box expands to the animal location area.

Alarm messages of the following alarms can be highlighted:

- Lethal arrhythmia alarms, including Asystole, V-Fib/V-Tach, V-Tach, Vent Brady, Extreme Tachy, and Extreme Brady.
- SpO2 Desat
- Apnea

- HR>XX with arterial pressure-S<XX and RR>XX over YY min, in which “XX” represents parameter value and “YY” represents alarm duration.

8.6 *iStatus* Window

The *istatus* window () displays the current physiological alarms, alarmed systems or organs, and parameter trends over the last one hour. When corresponding alarms are triggered, the *istatus* window pops up synchronously on the monitor and on the ViewBed screen of the CMS.

For details on the *istatus* window, see the operator’s manual of the corresponding devices.

NOTE:

Only displays of 1920 X1080 or above resolution support the **Patient Status** function.

8.7 Alarm Limit Recommendations

If the basic values of the animal's vital signs are abnormal or the animal's status tends to change with a trend, using the current alarm limits may continuously or frequently trigger alarms.

When an alarm limit recommendation is triggered on the monitor, you can view, accept or reject the recommendation on the CMS according to the animal’s conditions. If you accept the recommendation, the alarm limits on the CMS synchronizes to the monitor.

When an alarm limit recommendation is triggered on the monitor, the alarm limit recommendation icon  is displayed above the quick key area of the ViewBed screen on the CMS. To view the alarm limit recommendation, select the **Alarm Setup** quick key.

NOTE:

Monitor alarm setup authorization is required to accept or reject alarm recommendation limits on the CMS.

8.8 Alarm Operations

8.8.1 Viewing Alarms

You can view physiological and technical alarms from all beds or a single bed and CMS’s technical alarms.

Viewing All Alarms

You can view alarms from all the monitoring beds and from the CMS itself during a recent time period.

To do so, follow this procedure:

1. Select the  alarm list symbol at the top of the main screen.

2. Select the time period in the upper right corner of the **Alarm List** screen.
3. Select the **Physiological Alarms** or **Technical Alarms** tab to view physiological alarms or technical alarms.
4. Select the **Detail** button on the right side of the desired physiological alarms to access the event review page and view the alarm details.

Viewing Alarms Triggered from A Single Bed

To view alarms from a single bed, follow this procedure:

1. Open the alarm list window for a bedside device in either of the following ways:
 - Select the alarm information area in the animal sector of this bedside device on the multibed screen.
 - Select the physiological or technical alarm information area on the ViewBed screen of this bedside device.
2. Select the desired alarm message to access the event review page and view the alarm details.

8.8.2 Clearing Alarms in the Alarm List

NOTE:

Selecting the  symbol only clears all the physiological and technical alarms in the alarm list window, but does not clear these alarms stored in the central monitoring system

To clear physiological or technical alarms in the alarm list, follow this procedure:

1. Select the  alarm list symbol at the top of the main screen.
2. Select the  symbol in the upper right corner of the **Alarm List** screen. This clears all the physiological and technical alarms.

8.8.3 Pausing Alarm Sound

When alarm sound is paused, the sound of all physiological alarms and technical alarms for the bedside devices are switched off but alarm messages are still displayed on the screen.

To pause the alarm sound, follow this procedure:

1. Access the ViewBed screen.
2. Pause the alarm sound.
 - For monitors, select the **Audio Pause** quick key at the bottom of the screen.
 - For pumps, pause the alarm sound by entering the pump remotely controlled screen.

8.8.4 CMS System Silence

Silencing the CMS only silences the CMS system sounds. It does not affect the alarm sounds at bedside devices. The CMS system silence feature is disabled by default.

Silence the CMS in either of the following ways:

- If the silence hot key is defined in the system setup screen, pressing this hot key silences the system sounds.
- Select the  symbol at the top of the screen and select the volume symbol again from the popup volume window.

8.8.5 Alarm Pause

NOTE:

- You can pause alarms from bedside devices remotely only when the **Alarm Paused & Alarm Reset** function is enabled at the CentralStation or the WorkStation.
 - Alarm pause on the CMS applies only to the monitoring devices and does not affect the alarms on the ventilators, anesthesia systems and pumps.
-

When alarms are paused, no physiological alarm issued by bedside devices will be presented. For technical alarms issued by bedside devices, alarm sounds are paused, but alarm messages remain presented.

To pause the alarm, follow this procedure:

- Select  symbol.
- Select the **Alarm Pause** quick key.

8.9 Alarm Reset

NOTE:

- You can reset alarms from bedside devices remotely only when the **Alarm Pause&Audio Pause&Alarm Reset** function is enabled at the CentralStation or the WorkStation.
 - If a new alarm is triggered after the alarm system is reset, the alarm reset symbol will disappear and visual and audible alarm indications will be reactivated.
-

8.9.1 Resetting Alarms Triggered for Beds

System Responses after Resetting Alarms

When physiological alarms are reset, the following alarm indications are given:

- The alarm sound is silenced.
- The  symbol appears before the alarm message.
- The color of the parameter numeric background corresponds with the alarm priority, but the parameter numeric does not flash.

When technical alarms are reset, the following alarm indications are given:

- Some technical alarms are cleared and no alarm indications are given.
- Some technical alarms are changed to the prompt messages.

- For some technical alarms, the alarm is silenced and the  symbol appears before the alarm message.

Resetting Alarms in the Animal Sector

Choose one of the following ways to reset alarms in the animal sector:

- Select the alarm information area in the desired animal sector on the multibed screen → select **Alarm Reset**.
- Select the **Alarm Reset** button in the desired animal sector on the multibed screen.
- Select the animal location area in the upper left corner of the desired animal sector on the multibed screen → from the pull-down list select the  symbol.

Resetting Alarms on the ViewBed Screen

To reset alarms on the ViewBed screen, follow this procedure:

- Access the ViewBed screen.
- Select the **Alarm Reset** quick key to reset alarms on the monitoring device or select alarm reset area to reset alarm on the ventilators or pumps.

8.9.2 Resetting System Alarms

When system alarms are reset, the following alarm indications are given:

- Some technical alarms are cleared and no alarm indications are given.
- Some technical alarms are changed to the prompt messages.
- For some technical alarms, the alarm is silenced and a  symbol appears before the alarm message.

To reset system alarms, follow this procedure:

- Select the system alarm area at the top of the screen.
- Select **Alarm Reset**.

8.10 Setting Alarm Properties

For other description about alarm properties, see “13.5 Alarm Settings”.

8.10.1 Setting Parameter Alarm Properties

You can set alarm properties for parameters collectively or individually.

Setting Parameter Alarm Properties Collectively



CAUTION

When changing the alarm limits of a bedside device via the CentralStation or the WorkStation, make sure that the alarm limits settings are appropriate for your animal. Setting alarm limits to extreme values may cause the alarm system to become ineffective.

NOTE:

- When Alarm Setup is selected on the authorization setup page, alarm settings can be changed either via the CMS or the bedside device. Alarm changes made will be synchronized to all locations to ensure consistency. For detailed information on the authorization setup page, see “13.10 Authorization Settings”.
- When Alarm Setup is not selected on the authorization setup page, alarm settings cannot be changed via the CMS. Besides, the  symbol is displayed beside a parameter’s alarm on/off option on the ViewBed screen.

To set alarm properties for all the parameters collectively, follow this procedure:

1. Enter the alarm limits menu in either of the following ways:
 - Select the animal location area in the upper left corner of the desired animal sector on the multibed screen → from the pull-down list select **Alarm Setup** → select the **Limits** tab.
 - Select the **Alarm Setup** quick key at the bottom of the ViewBed screen → select the **Limits** tab.
 - On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Alarm** column select **Limits**.
2. Select the **Limits** tab. Switch on or off alarms and set alarm limits, alarm priority, and alarm outputs.
 - If **Alarm Outputs** is set to **Off**: when an alarm is triggered, alarm information for this parameter will not be printed.
 - If **Alarm Outputs** is set to **Print** or **All**: when the parameter alarm is switched on, once an alarm is triggered, alarm information for this parameter will be sent to the configured printer and printed automatically.

Setting Parameter Alarm Properties Individually

To set alarm properties for a parameter, follow this procedure:

1. Access the ViewBed screen.
2. Select the parameter area or waveform area of the desired parameter.
3. Select the **Alarm** tab and perform settings.

8.10.2 Changing Arrhythmia Alarm Settings

NOTE:

- If a bedside monitor is connected and the Lethal Arrhy Off option in the monitor’s user maintenance menu is set to Disable, the All Off button in the arrhythmia alarm setup menu in the CMS is inactive.
- If a telemetry device is connected and the Lethal Arrhy Alarms Off button on the telemetry setup page is disabled, the All Off button in the arrhythmia alarm setup menu in the CMS is inactive.

- For information on the arrhythmia alarm settings and threshold settings, see operator's manuals for bedside devices.

To change arrhythmia alarm settings, follow this procedure:

1. Enter the arrhythmia alarm setup menu in one of the following ways:
 - Select the animal location area in the upper left corner of the desired animal sector → from the pull-down list select **Alarm Setup** → select the **Arrhythmia** tab.
 - Select the **Alarm Setup** quick key at the bottom of the ViewBed screen → select the **Arrhythmia** tab.
 - Select the ECG parameter area or waveform area on the ViewBed screen to enter the ECG setup menu → select the **Arrhythmia** tab.
 - On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Alarm** column select **Arrhythmia**.
2. Change alarm settings
 - Enable or disable arrhythmia alarms: you can enable arrhythmia alarms separately or collectively. If you need to enable these alarms collectively, select **All On**. If you need to disable all the arrhythmia alarms, select **All Off**. If you need to enable only the lethal arrhythmia alarms, select **Lethals Only**.
 - Set alarm priorities.
 - Set **Alarm Outputs**. For details on the options, see “8.10.1 Setting Parameter Alarm Properties”.
3. Select the **Threshold** tab and adjust as needed.

8.10.3 Changing ST Alarm Settings

To change ST alarm settings, follow this procedure:

1. Enter the ST alarm setup menu in one of the following ways:
 - Select the animal location area in the upper left corner of the desired animal sector → from the pull-down list select **Alarm Setup** → select the **ST** tab.
 - Select the **Alarm Setup** quick key at the bottom of the ViewBed screen → select the **ST** tab.
 - Select the ECG parameter area or waveform area to enter the ECG setup menu → select the **ST** tab.
 - On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Alarm** column select **ST**.
2. Change alarm settings.
3. For telemetry devices, you can set **ST Alarm Mode** to **Absolute** or **Relative**.
 - **Absolute**: you can separately set the alarm properties for each ST alarm.
 - **Relative**: you can set the alarm properties for **ST Single** and **ST Dual** alarms.

8.10.4 Setting Alarm Volume

NOTE:

- Do not rely exclusively on the audible alarm system. Setting the alarm volume to a low level may result in a hazard to the animal.
 - Exercise caution when setting Alarm Volume to zero. When Alarm Volume is set to zero, the High Alarm Volume is unconfigurable. Also, the alarm sound of the CMS is turned off. The  symbol is displayed at the top of the main screen. Even when a new alarm is triggered, the CMS will not provide an alarm sound but still provides other alarm indications such as an alarm message.
 - Setting Alarm Volume to zero affects the CMS only and does not affect the alarm sound at the bedside devices.
-

To set the alarm volume, follow this procedure:

1. Select the volume icon on the upper right corner of screen.
2. Set **Alarm Volume** and **Reminder Volume**.

8.10.5 Setting the Audible Alarm Tone Pattern

You can select audible alarm tone pattern for the CMS in the System Setup menu. For details, see “13.5 Alarm Settings”.

8.10.6 Setting Alarm Interval, Alarm Volume Escalation, and Audio Off Priority

The CMS provides the function of automatically escalating the alarm tone volume. When this function is enabled, if an alarm is not reset within the designated delay time after the alarm occurs, the volume of the alarm tone increases automatically.

You can set the alarm volume escalation, alarm interval, and audio off priority.

8.10.7 Setting Alarm Sound for a Single Bed

When **Single Bed Alarm Audio Off** is set to **Enable** in the system setup menu, you can turn on or off alarm sound for a single bed.

8.10.8 Setting Reminder Tones

The reminder tone is enabled by default. When the CMS is in silenced or audio off mode and if active alarms still exist in the system, the CMS issues a reminder tone at the designated reminder interval.

8.10.9 Setting Special Alarm Sound

You can configure the CMS to give special alarm sound to indicate that the animal may be in a critical condition when any of the following alarms are triggered:

- Lethal arrhythmias, including Asystole, V-Fib/V-Tach, V-Tach, Vent Brady, Extreme Tachy, and Extreme Brady

- SpO2 Desat
- Apnea

For details on how to set special alarm sound, see “13.5 Alarm Settings”.

8.10.10 Setting Alarm Properties for External Devices

NOTE:

- Settings in the Display and Audio columns at the CentralStation take effect for the CentralStation only and does not affect settings at the WorkStation, and vice versa.
 - If alarms in the Display or Audio column is disabled, when these alarms occur, corresponding alarm messages or alarm sound will not be displayed or enunciated at the CentralStation or the WorkStation. In this case, pay close attention to alarms issued at the bedside devices.
-

You can set the alarm properties for external devices that are integrated with the monitor or the eLink module at the CentralStation/WorkStation. These settings take effect for the CentralStation/WorkStation only. They do not affect settings in the remote monitor.

To set alarm properties, follow this procedure:

1. Access the integrated device screen in either of the following ways:
 - On the ViewBed screen, select the **Screen Setup** quick key from the quick key area →select **Integrated Devices**.
 - On the multibed screen, select the animal location area in the upper left corner of the desired animal sector →from the pull-down list select **Screen Setup** → select the **ViewBed** tab→select **Integrated Devices**.
2. Select the **Setup** button. The **Setup** menu is displayed.
3. Set alarm properties.
 - Set whether to store and display alarms and whether to issue alarm sounds in the **Storage**, **Display**, and **Audio** columns.
 - If you wish to add a new alarm, enter its alarm ID on the text box besides the **Add** button. Then select the **Add** button.
 - If you wish to delete an alarm, select the alarms. Then select the **Delete** button. The default alarms cannot be deleted.

9 Summary

9.1 Overview

You can view summary data for online animals on the summary screen. The summary screen provides several tabs to display summary data from different aspects.

NOTE:

- The summary function is intended for online animals. It is not intended for discharged animals.
 - Data displayed on the summary screen is not recalculated.
 - To avoid confusion, the following waveforms are excluded in the typical ECG strips: 1) the waveforms with obvious noise 2) waveforms of alarm events without typical alarm characteristics.
 - To avoid confusion, the following parameter values are excluded in the graphic trends: 1) invalid parameter values 2) parameter values that are calculated on the basis of physiological signal segments with obvious noise.
-

9.2 Accessing the Summary Screen

To enter the summary screen, select the **Summary** tab beside the ViewBed screen and the review screen.

9.3 Symbols on Summary Pages

The following table lists the symbols on summary pages.

Symbol	Description
	Setup button: select it to set up parameters.
	Print button: select it to output animal information and data through the printer.

9.4 Common Operations on Summary Pages

This section describes common operations on summary pages.

9.4.1 Setting the Summary Statistical Duration

On the summary page, select **Zoom** to set summary statistical duration and the corresponding statistical duration displays.

9.4.2 Printing the Summary Report

On the summary pages, select the print button to print corresponding summary reports.

9.5 Vital Sign Summary

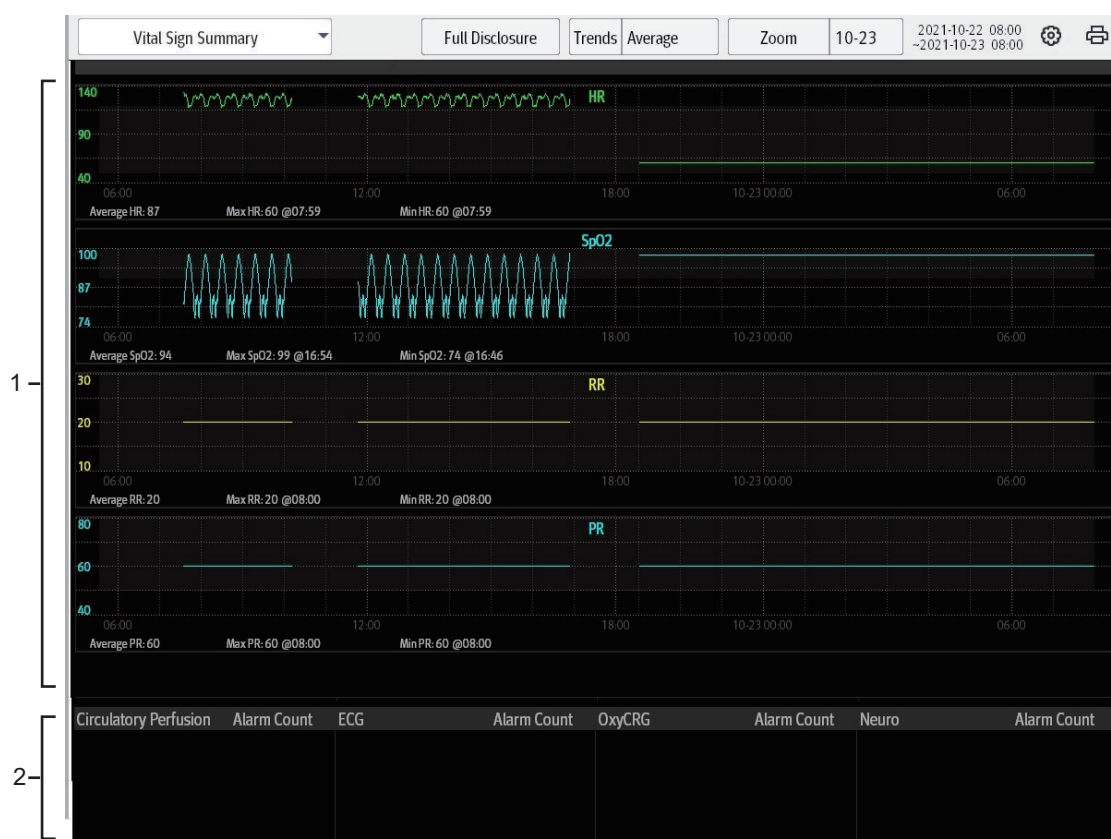
The vital sign summary provides the parameter trend of the animal's vital sign and the alarm events statistics.

9.5.1 Entering the Vital Sign Summary Page

To enter the vital sign summary page, select the ▼ button in the upper left corner of the summary screen → from the pull-down list, select **Vital Sign Summary**.

9.5.2 The Display of Vital Sign Summary

The following figure is an example of the Vital Sign Summary page:



No.	Parameter	Description
1.	Graphic trends	shows the trends of mean parameter value or maximum/minimum parameter value. Up arrow and down arrow indicate the maximum and minimum parameter value in the statistical duration respectively.
2.	Statistics area	Shows alarm statistics.

9.5.3 Setting Trend Parameters for the Vital Sign Summary

Select the setup button to set trend parameters to be displayed in the summary. One trend parameter one row. When parameters are overlapped, all the overlapped parameters are displayed in one row. A maximum of ten rows of parameters are displayed on the graphic trend area.

9.5.4 Setting the Trend Type for the Vital Sign Summary

Select **Trends** to set whether the trend of maximum/minimum values or the trend of mean values is displayed.

9.5.5 Viewing the Parameter Value at a Specific Time

In the graphic trends area, selecting any spot displays a cursor on the page and you can view the corresponding time and the parameter values of this specific time.

9.5.6 Accessing the Corresponding Review

You can access the corresponding review from the vital sign summary page:

- Selecting the area of the alarm statistics can access the events review.
- Selecting **Full Disclosure** can access the full disclosure review.

9.6 ECG Summary

The ECG Summary provides ECG statistics of the animal. It also displays the animal's typical ECG strips.

NOTE:

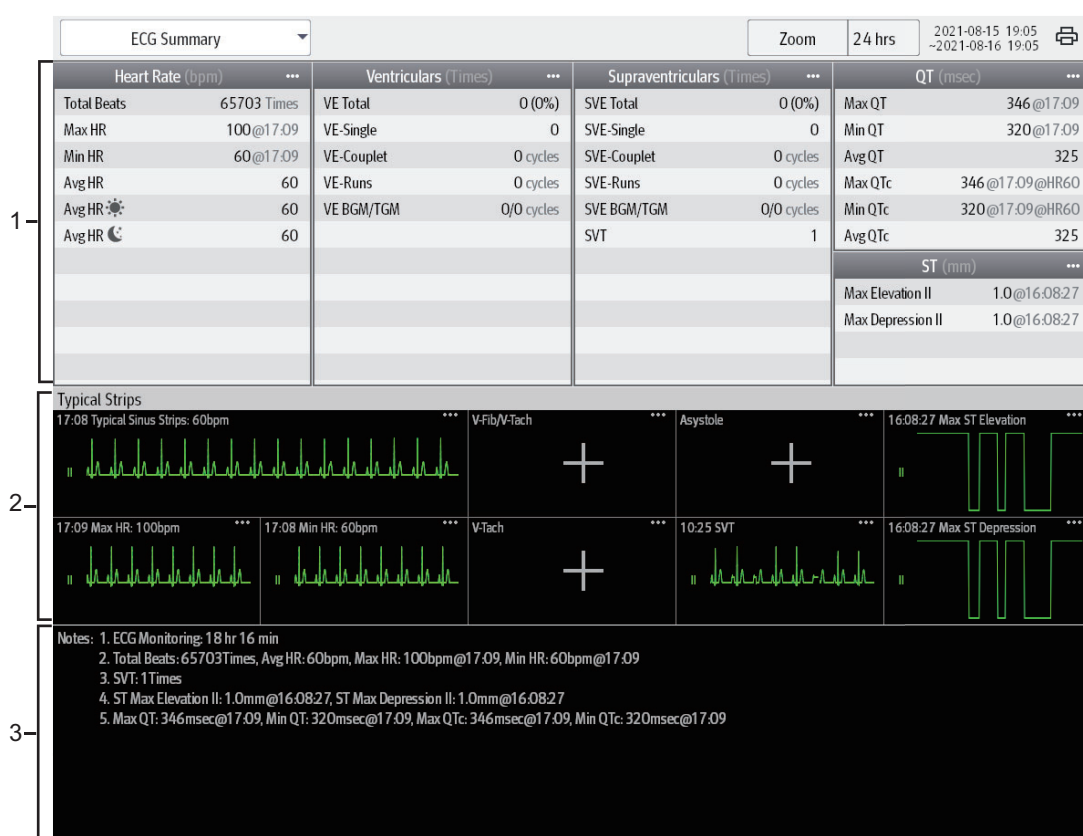
- Pacer statistics is intended for paced animals. Pacer statistics is available only when the Paced setting is Yes.
 - ST statistics is available only when ST analysis is switched on.
 - QT statistics is available only when QT analysis is switched on.
-

9.6.1 Entering the ECG Summary Page

To enter the ECG summary page, select the ▼ button in the upper left corner of the summary screen → from the pull-down list, select **ECG Summary**.

9.6.2 The Display of ECG Summary

The following figure is an example of the ECG Summary page:



No.	Parameter	Description
1.	ECG statistics	Including the following items: - Statistics of heart rates - Statistics of ventricular beats and ventricular arrhythmia events - Statistics of supraventricular beats and supraventricular arrhythmia events - Statistics of QT/QTc measurements - Statistics of maximum ST elevations and depressions - Statistics of pace
2.	Typical ECG strips	/
3.	Notes	Include additional information on the ECG summary

9.6.3 Selecting Typical ECG Strips

Taking V-Tach as an example, to select typical V-Tach waveform, select the currently displayed V-Tach waveform, from the popup list select the desired waveform as typical V-Tach waveform.

If no V-Tach occurs to the animal in the statistical duration, an add symbol  is displayed in the V-Tach area. You can select the add symbol to display a typical ECG waveform of other arrhythmia event in this area.

9.6.4 Reviewing the ECG Summary

Selecting any of the statistic area can access corresponding trends and events review.

9.6.5 Setting the Night Time for Average HR Statistic

You can set the night time for average heart rate statistics, and the rest of the 24 hours is the daytime for average heart rate statistics. For more information on how to set the night time, see “13.11 Other Settings”.

10 Anesthesia Record

10.1 Overview

The **Anesthesia Record** screen provides the following functions:

- Record the surgery information and anesthesia medication information.
- Record the data transmitted by the monitoring device, anesthesia machine and pump after anesthesia record starts.
- Record the anesthesia start time, anesthesia end time and surgery time.
- Record surgical events.
- Generate anesthesia record reports.

10.2 Entering Anesthesia Record Page

Perform the following procedure:

1. Enter the ViewBed screen.
2. Select **Anesthesia Record**.

10.3 Anesthesia Record Procedure

NOTE:

- For the same animal, you cannot fill in the surgery information at different devices at the same time.
 - When using the anesthesia record, It is recommended to set the sleep time of the system to Never; otherwise, devices might be disconnected after entering the sleep mode.
-

10.3.1 Preparations

Before performing operations on the **Anesthesia Record** tab, make sure that relevant devices are admitted at the same animal sector of the CMS. For detailed operations, see “4.4 Pairing Devices”.

10.3.2 Filling in the Surgery Information

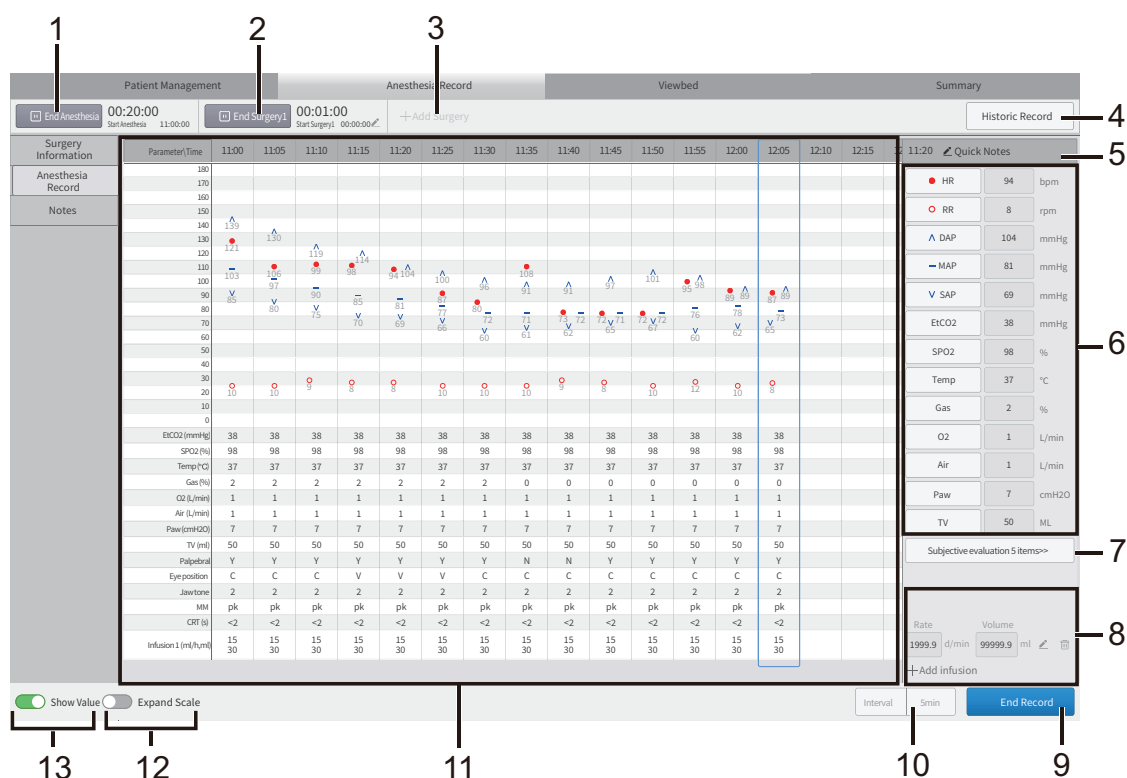
On the **Surgery Information** tab, fill in the surgery information and anesthesia medication. The setting description of the **Surgery Information** tab is as follows:

Menu Item		Description
Surgery Information	Doctor	Fill in the surgery information based on the actual conditions.
	Anesthetist	
	Surgery name	
	Surgery date	
	RR(rpm)	Fill in the physical examination results of the current animal.
	HR(bpm)	
	Temp(°C or °F)	
	MM	Fill in the visible mucosal color.
	CRT(s)	Capillary refill time.
	ASA	Anesthesia risk level. Evaluate according to the animal's condition. Checking “E” indicates emergency treatment.
Anesthesia Medication Record	BCS	Specify the weight of the animal.
	IV Catheter	Fill in the position and specification information of the IV catheter.
	Pre-GA	Fill in the name, dosage, route (intravenous injection, subcutaneous injection, or intramuscular injection), and time of administration before anesthesia. Select  to add medication record before anesthesia. Select  to delete the added medication record.
	Induction	Fill in the name, dosage, route (intravenous injection, subcutaneous injection, or intramuscular injection), and time of interval anesthesia. Select  to add medication record during anesthesia induction. Select  to delete the added medication record.

Menu Item	Description
Maintenance Anesthesia	Select the anesthesia maintenance mode (tracheal intubation, mask, laryngeal mask, or anesthesia injection), anesthesia accessory specification information, and anesthesia agent type. Select the breathing circuit and ventilation mode during the current anesthesia. Patient Position: the fixed position of the animal during the operation.

10.3.3 Performing Anesthesia Record

Anesthesia Record Screen Layout



No.	Parameter	Description
1.	Anesthesia timer bar	Record the anesthesia start time. Selecting it records the anesthesia end time after timing is enabled.
2.	Surgery timer bar	Selecting it records the surgery start time, and selecting it again records the surgery end time. Select  to modify the surgery start time.

No.	Parameter	Description
3.	Add surgery	Selecting it adds surgery timer bar and up to 3 new bars can be added. The new surgery timer bar can be added only when the previous surgery is finished.
4.	Historic record button	Selecting it views historic anesthesia record information of the current animal.
5.	Quick notes	After starting anesthesia, select Quick Notes . The pop-up window will display the time of selecting the notes, you can select typical events quickly or record procedure-related events in the text box. NOTE: In the anesthesia record report, the time of events recorded in Quick Notes is displayed; however, the events recorded in the Notes tab do not display time.
6.	Data editing area	Display the supported record parameters. When a time scale on the data display area is selected, the data editing area will display the parameter values at that time and you can edit the selected parameter results.
7.	Subjective evaluation 5 items	Select Subjective evaluation 5 items and fill in the related information to assist in judging the anesthesia condition of the animal. Select the check box of Automatically follow current data until modified manually and the results of the subjective evaluation will display in the parameter recording area at each interval.
8.	Infusion recording area	Record infusion information. Select Add infusion to add an infusion record. From the popup window, input the drug name and infusion rate, and add the temporary infusion record.
9.	Operation button	Select Start Anesthesia to start the anesthesia record. Select End Record to end the anesthesia record. Select Generate Report button and Print Setup screen will pop up. You can set or print the report.
10.	Interval	Selecting it sets the time interval on the data display area, that is, the anesthesia record time interval.
11.	Data display area	- Display the parameter information (HR, RR, SAP, MAP, DAP, EtCO₂, SpO₂, Temp, Gas, O₂, Air, and TV) and infusion information transmitted from devices. - Some parameters (ECG, Resp and NIBP) from the monitor are displayed in the form of icon mark. - Display “Subjective evaluation 5 items” result.
12.	Expand scale	The default range of the scale is 0-180. When the expanded scale is enabled, the range changes to 0-300.
13.	Show value	When Show Value is enabled, values are displayed beside the icons of some parameters (ECG, Resp and NIBP).

Anesthesia Record Procedure

After filling in surgery information on the **Surgery Information** tab, you can perform anesthesia recording on the **Anesthesia Record** tab.

1. Select **Start Anesthesia** to start the anesthesia record.

On the **Anesthesia Record** tab, parameters transmitted from the monitors, anesthesia machines and pumps are displayed at the set intervals.

2. Select **Start Surgery** to record the surgery start time.
 - Select  to modify the surgery start time if necessary.
 - To add a new surgery record, end the previous surgery time record and then select **Add Surgery**.
3. Select **End Record** to stop the anesthesia record.

10.3.4 Generating Reports

NOTE:

When using the PDFCreator, the directory must be consistent with the file saving directory configured in the PDFCreator.

After the anesthesia record is finished, the **Generate Report** button is displayed in the lower right corner of the **Anesthesia Record** tab. The procedure of generating an anesthesia record report are as follows:

1. Select Generate Report button in the lower right corner.
2. On the popup **Print Setup** screen, view the contents in the anesthesia record report. Perform Print Setup.
 - Print content: select a printer.
 - Printer resolution: set the printer resolution.
 - PDF resolution: set the report resolution.
 - Print action: the options include Paper, PDF, or Paper And PDF.
 - Color mode: select color or monochrome as necessary.
 - Print content: select **Modify Data** and the system will generate a report after the data is modified; select **Raw Data**, and the system will generate the original data report transmitted from the device.
3. Select the path to print the report.
4. Click **Save**.

10.3.5 Viewing Historic Record

Perform the following procedure:

1. On the **Anesthesia Record** screen, select **History Record** on the upper right corner.

2. On the **History Record** window, select an anesthesia record to view.
3. Click **Generate Report**.

10.3.6 Starting New Anesthesia Record

After completing the previous anesthesia record, select **New Record** to start the next round of anesthesia button record for the current animal if necessary. For new animals, the current animal needs to be discharged before performing anesthesia record.

11 Review

11.1 Overview

You can review historical data for online animals and discharged animals on the review screen. The review screen provides several tabs to display historical data from different aspects. The review tabs for the online animals and discharged animals are similar.

11.2 Accessing the Review Screen

Entering the Review Screen for Online Animals

To enter the review screen for online animals, select the **Review** tab beside the ViewBed screen, the **Patient Management** screen, or the calculation screen.

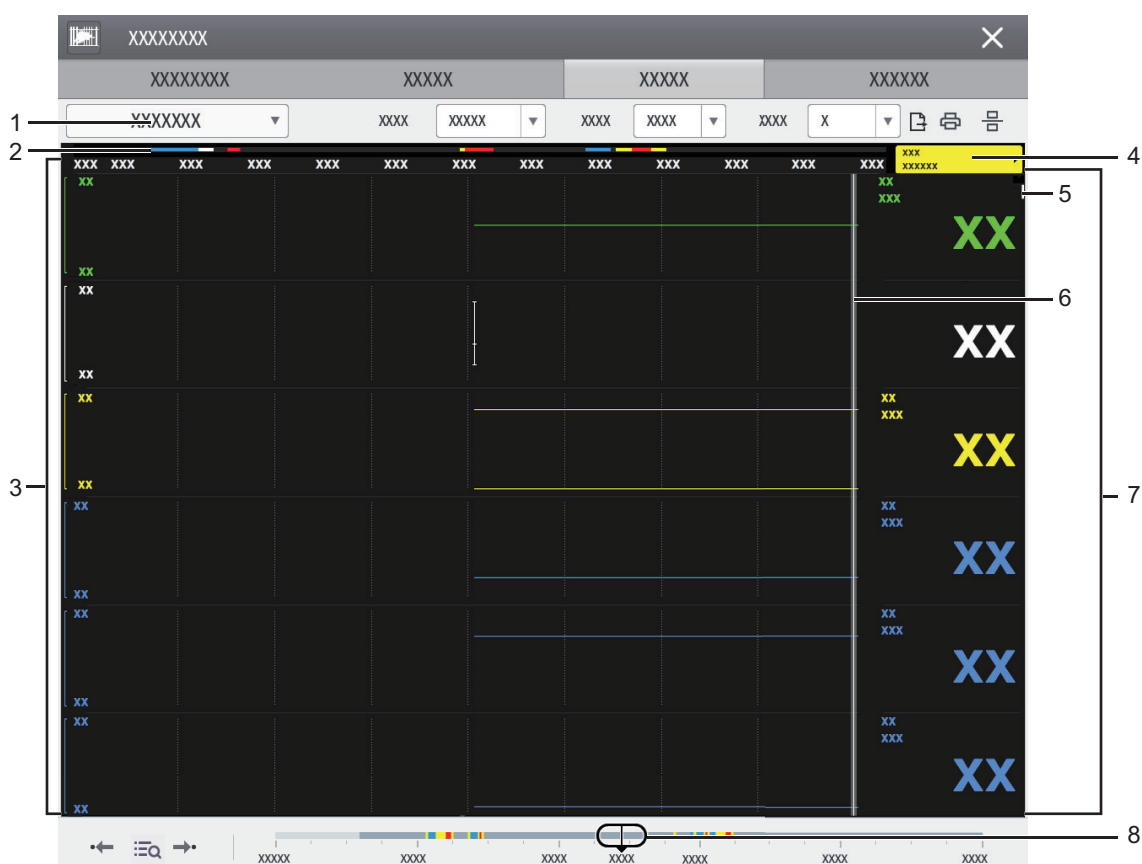
Entering the Review Screen for Discharged Animals

To enter the review screen for discharged animals, follow this procedure:

1. Select the system menu area in the upper left corner of the screen.
2. From the pull-down list, select **Discharged Patients**.
3. From the discharged animals list, select the **Detail** button at the end of the discharged animal.
4. Select the **Review** tab.

11.3 Example Review Page Structure

The graphic trends review page is an example to introduce the items that may also be displayed on other review pages. The following shows an example of the graphic trends page:



No.	Parameter	Description
1.	Current review tab	/
2.	Event type indicator:	Different color blocks match different types of events: • Red: high priority alarm event • Yellow: medium priority alarm event • Cyan: low priority alarm event • Green: manual event • White: operation-related event • Blue: ultrasound report event
3.	Waveform area:	Displays trend curves. The color of trend curves is consistent with the color of parameter labels.
4.	Event area/current cursor time area	After you select an event from the event list, this event is displayed in this area. Selecting this area goes to the Events review page. If an event is not selected, this area displays current cursor time.
5.	Scroll bar	Indicates the position of currently displayed trend data in all the trend data

No.	Parameter	Description
6.	Cursor	Shows your current position in the trend page. When the cursor is moved across the timeline, the values measured at the cursor time are shown in the right column.
7.	Parameter area	Displays numeric values where the cursor stops. The color of numeric values is consistent with the color of parameter labels. The background color of numeric values matches the alarm priority.
8.	Timeline	Indicates the entire time length. : indicates the time length of reviewable trend data.  can be moved within this time length. : indicates no animal monitoring.  cannot be moved within this time length. - Different color blocks at the timeline indicate events of different types. See the color definition for the event type indicator.

11.4 Symbols on Review Pages

The following table lists the symbols on review pages.

Symbol	Description
	Slider: indicates the position of current window time in the entire time length. Dragging the slider left or right enables you to locate the trend data at a specific time and also refreshes trend data in current window accordingly.
	Go to the previous or next event.
	Event list: displays events in a chronological order. The most recent event is displayed at the top. The number of exclamation marks before an event matches different alarm priorities.
	Animals'trend data or waveform data export setup symbol: it is displayed on the tabular trends review page, graphic trends review page, and full disclosure review page. Note: the export setup symbol is displayed only when Save As is enabled in the system menu. For more information on enabling Save As, see “13.11 Other Settings”.
	This symbol is displayed in the upper right corner of a review page for a landscape display greater than 19-inch. Selecting this symbol displays two review pages simultaneously.
	Print button: select it to output animal information and data through the printer.

Symbol	Description
	Indicates that parameter numerics are unreliable.

11.5 Common Operations on Review Pages

This section describes common operations on review pages.

11.5.1 Browsing Trend Data

Browse trend data in one of the following ways:

- Move .
- Move the cursor.
- Move the scroll bar.

11.5.2 Viewing Events

You can view the following types of events:

- Manually triggered events
- Parameter-related operation events and alarm-related events, such as starting C.O. measurement
- Operation events not related to parameters

To view these events, follow this procedure:

1. Select the  button in the upper left corner of the review screen.
2. From the pull-down list, select the desired review page.
3. View events in either of the following ways:
 - Select  and select the desired event.
 - Select  or  to locate the previous or next event.

Events are displayed in a chronological order. The most recent event is displayed at the top. The number of exclamation marks before an event matches the following alarm priority:

- !!!: high priority alarm
- !!: medium priority alarm
- !: low priority alarm

11.5.3 Displaying Two Review Pages Simultaneously

NOTE:

For 19-inch single display, two review pages can not be displayed simultaneously.

When the display size of the CMS is greater than 19-inch, you can display two review pages simultaneously.

To do so, follow this procedure:

1. Select the  button in the upper left corner of the review screen.
2. From the pull-down list, select the desired review page.
3. Select the  symbol located at the top right of the screen. A new review page will be displayed below the desired review page.

You can browse trend data, view events, select other review tabs on the two review pages. If you refresh the trend data by moving the cursor or  on one review page, the trend data on the other review page will be updated accordingly.

11.6 Tabular Trends Review Page

The tabular trends review page displays trend data in a tabular form.

11.6.1 Entering the Tabular Trends Review Page

Enter the tabular trends review page in either of the following ways:

- Select the  button in the upper left corner of the review screen → from the pull-down list, select **Tabular Trends**.
- Select the parameter list area on the ViewBed screen.

11.6.2 Configuring Trends

To configure tabular trends, follow this procedure:

1. Enter the tabular trends review page.
2. Set **Trend Group** and select the desired option. For information on trend group settings, see Section see “13 System Setup”.
3. Set **Interval**. Select parameters, such as NIBP, Temp, to view the tabular trends when parameter measurements are acquired. Select **Manually Saved** to view the tabular trends when spot check data is acquired.

11.6.3 Printing a Tabular Trends Report

To print a tabular trends report, follow this procedure:

1. Enter the tabular trends review page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Set the desired options. Only items that may need special remarks are described here.
4. Select the desired options.

- **Print Preview**: previews the printout. Upon completion of preview, if you wish to start printing, select **Print**.
- **Print (All)**: prints a tabular trends report per **Trend Group** and **Interval** settings on the tabular trends review page.
- **Print**: prints a tabular trends report per settings in the **Print Setup** menu

11.6.4 Exporting Trend Data

When the CMS is connected to a storage device and exporting animals' data is allowed in the system setup menu, you can export animals' trend data from the tabular trends review page or the graphic trends review page. Animals' trend data exported from these two review pages is the same. Exported trend data is saved in csv format.

To export animals' trend data, follow this procedure:

1. Enter the tabular trends review page.
2. Select the  button in the upper right corner of this page. The **Export Setup** menu is displayed.
3. Set the desired options.
4. Select **Export**.

You can view export progress and results in the **Export Queue** menu. The exported trend data is saved in the sub-folder named as Parameter Data under the animal's folder which is located in the selected **Save Path**.

11.7 Graphics Trends Review Page

The graphic trends review page displays trend data in a graphic form.

11.7.1 Entering the Graphic Trends Review Page

To enter the graphic trends review page, follow this procedure:

1. Select the ▼ button in the upper left corner of the review screen.
2. From the pull-down list, select **Graphic Trends**.

11.7.2 Setting Graphic Trends

To set graphic trends, follow this procedure:

1. Enter the graphic trends review page.
2. Set **Trend Group** and select the desired option. For information on trend group settings, see "13 System Setup".
3. Set **Zoom**. Select the desired length of trend data to view the most recent 240-hour data.
4. Select the desired number of **Trends**.

11.7.3 Printing a Graphic Trends Report

To print a graphic trends report, follow this procedure:

1. Enter the graphic trends review page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Set the desired options.
4. If you wish to preview the printout, select **Print Preview**.
5. Select **Print**.

11.7.4 Exporting Trend Data

When the CMS is connected to a storage device and exporting animals' data is allowed in the system setup menu, you can export animals' trend data from the graphic trends review page or the tabular trends review page. Animals' trend data exported from these two review pages is the same. Exported trend data is saved in csv format.

After entering the graphic trends review page, export animals' trend data by following steps in “11.6.4 Exporting Trend Data”

11.8 Full Disclosure Review Page

On the full disclosure review page, you can view the compressed waveforms and detailed waveforms for each animal.

11.8.1 Entering the Full Disclosure Review Page

To enter the full disclosure review page, follow this procedure:

1. Select the ▼ button in the upper left corner of the review screen.
2. From the pull-down list, select **Full Disclosure**.

11.8.2 Selecting Waveforms

If you wish to review waveforms other than the default waveform on the full disclosure review page, you need to select the desired waveforms.

To do so, follow this procedure:

1. Enter the full disclosure review page.
2. Select **Setup**. The **Select Waveform** menu is displayed.
3. Select the **Storage** tab.
4. Configure the desired waveforms.
5. Select the **Display(Maximum: 3)** tab.

6. Enable the desired waveforms to be displayed on the review page.

In case of alarms, the background of compressed waveform block at the alarm time is marked with a special color:

- Red: high alarm priority
- Yellow: medium alarm priority
- Cyan: low alarm priority

11.8.3 Compressed Waveform

The full disclosure review page displays the compressed waveform.

Setting the Scale of Compressed Waveform

To set the size of the compressed waveform, follow this procedure:

1. Enter the full disclosure review page.
2. Set the waveform scale in either of the following ways:
 - Select the **Scale** button and then select the desired option.
 - Select the waveform label on the left side of the review page to enter the **Scale** menu. Then select the desired option.

Setting the Duration of Compressed Waveform

To set the length of the compressed waveform, follow this procedure:

1. Enter the full disclosure review page.
2. Select **Duration**.
3. Configure the desired **Duration** time.

Marking Arrhythmia

In the compressed waveform area, the background of compressed waveform segments at the arrhythmia alarm trigger time is marked with a specific color automatically to indicate the arrhythmia category. For details on how to set the arrhythmia mark color, see “13 System Setup”.

Selecting Compressed Waveform Segments

You can select one or more compressed waveform segments and print these segments. For details on how to print these segments, see “11.8.7 Printing Compressed Waveforms or Detailed Waveforms”.

To select compressed waveform segments, follow this procedure:

1. Enter the full disclosure review page.
2. Select compressed waveform segments in either of the following ways:
 - Using a mouse: in the compressed waveform area, hold down the right mouse button and drag the mouse to select the desired waveform segment. If you wish to select multiple

waveform segments, release the right mouse button and then select the desired waveform segments. You can move the screen up and down to select more waveform segments.

- Using a touch screen: press the **Select** button and then touch the waveform. Hold and drag your finger to select the desired waveform segment. If you wish to move the screen up and down, you need to re-select the **Select** button to exit the selected status.

If you wish to cancel current selection, select the close button in the upper right corner of the waveform segment selection window.

11.8.4 Detailed Waveform Window

In the detailed waveform window, you can view the full size waveforms and parameter numerics.

- Timeline and waveforms are displayed in the upper part of the window.
- Numeric values are displayed in the lower part of the window.

In the detailed waveform window, the background color of parameters indicate whether an alarm is triggered.

- No color: no alarm is triggered.
- Red: a high priority alarm is triggered.
- Yellow: a medium priority alarm is triggered.
- Cyan: a low priority alarm is triggered.

Entering the Detailed Waveform Window

Access the detailed waveform window in either of the following ways:

- Select the **Detail** button in the compressed waveform window.
- Double click the desired compressed waveform.

Setting ECG Gain

To set the ECG gain, follow this procedure:

1. Enter the detailed waveform window.
2. Select the **ECG Gain** button.
3. Configure the desired ECG gain.

Setting Waveform Sweep Speed

To set the waveform sweep speed, follow this procedure:

1. Enter the detailed waveform window.
2. Select the **Speed** button.
3. Configure the desired speed. The speed is applicable to all the ECG waveforms.

Setting Beat Annotation

When a bedside monitor and a telemetry device support the beat annotation functionality, you can enable or disable **Beat Anno:** to display or hide white beat labels above the first ECG waveform in the

detailed waveform window. The white beat labels indicate how the monitor or the telemetry device is classifying beats and may explain suspected, missed, or false arrhythmia calls.

- N = Normal
- V = Ventricular Ectopic
- S = Supraventricular Premature
- P= Paced
- L= Learning
- ?= Insufficient information to classify beats
- I= Inoperative (for example, Lead Off)
- M= Missed beat

When beat labels are displayed above the ECG waveform, they can be printed. If you enable or disable **Beat Anno:** in the detailed waveform window, these beat labels will also be displayed or hidden in the event detailed window, and vice versa.

NOTE:

Ensure that you have selected the optimal leads with the best waveform amplitude and the highest signal-to-noise ratio. Selecting the optimal leads is important for beat detection, beat classification, and V-Fib detection.

Other Operations in the Detailed Waveform Window

In the detailed waveform window, you can save events and export waveforms to third party systems.

To do so, follow this procedure:

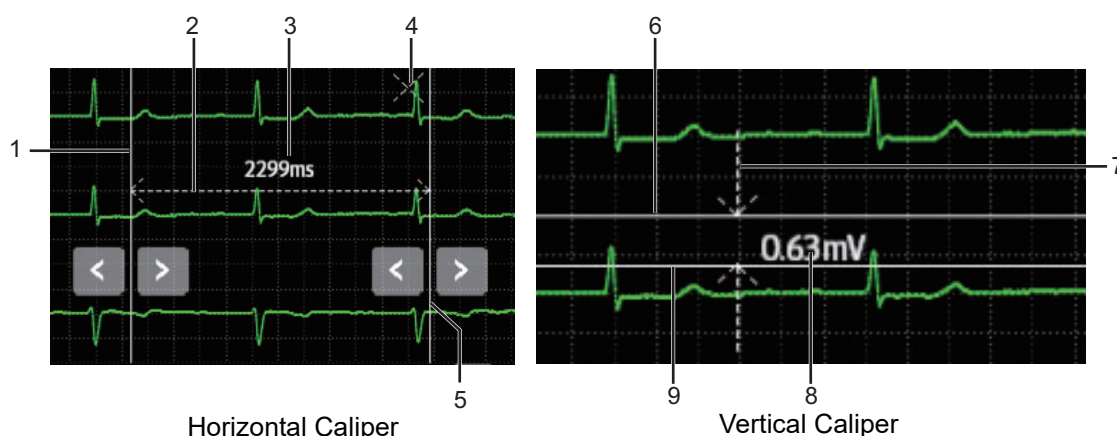
1. Enter the detailed waveform window.
2. Select the  button in the upper right corner of the window.
3. Select the desired option.

Save As Event: displays the **Saved Event** dialog box. The event can be saved with the desired **Name** and **Comments**. The default name for the event is **Saved Event**. The saved event is marked as a manual event on the event review page.

11.8.5 Caliper Measurement Overview

When full disclosure data is collected and stored in the CMS, horizontal calipers can be used to measure the PR, QRS, QT, and R-R waveform intervals, and vertical calipers can be used to measure the ST waveform amplitude in the detailed waveform window.

Horizontal caliper and vertical caliper are shown as follows:



1	Left caliper arm
2, 7	Measurement line
4	Close button: closes the caliper window without saving the measured value.
5	Right caliper arm
3, 8	Realtime measurement
6	Upper caliper arm
9	Lower caliper arm

Performing Measurements Using a Horizontal Caliper

Choose either of the following ways to perform measurements using a horizontal caliper:

Option 1:

1. Enter the detailed waveform window.
2. Select **Caliper**. The **Caliper** menu is displayed.
3. Display a horizontal caliper in either of the following ways.
 - Using a mouse: left or right click the mouse at a place in the desired waveform area and then drag the cursor horizontally until your desired location is reached.
 - Using a touch screen: select a place in the desired waveform area and then drag your finger on the screen surface horizontally without losing the contact until the desired location is reached. If you need to adjust the caliper, slightly touch the left or right caliper arm and select the appropriate touchscreen control.
4. After finishing measurements, select **PR**, **QRS**, **RR**, and **QT** from the **Caliper** menu to obtain the measured values. The QTc value is calculated after RR and QT value have been acquired.
5. Select the desired option to **Save** or **Reset** measured values.

- **Save:** saves the caliper measurement values as a manual event in the event review page. In the **Please input new name:** field, enter the desired name of the event. The default name is **Saved ECG Measurements**. In the **Please input comments:** field, enter the desired comments and then select **OK**. Up to 32 characters can be entered for the name and the comments. The measured values are displayed above the first ECG waveform in the event detailed window.
- **Reset:** clears the measured values.

Option 2:

1. Enter the detailed waveform window.
2. Right click the mouse at a place in the desired waveform area and then drag the cursor horizontally until your desired location is reached. Measured values are displayed in real-time.

NOTE:

Measured values obtained by Option 2 cannot be saved.

Performing Measurements Using a Vertical Caliper

To perform measurements using a vertical caliper, follow this procedure:

1. Enter the detailed waveform window.
2. Select **Caliper**. The **Caliper** menu is displayed.
3. Select **ST**.
4. Display a vertical caliper in either of the following ways.
 - Using a mouse: left click the mouse at a place in the desired waveform area and then drag the cursor vertically until your desired location is reached.
 - Using a touch screen: select a place in the desired waveform area and then drag your finger on the screen surface vertically without losing the contact until the desired location is reached. If you need to adjust the caliper, slightly touch the left or right caliper arm and select the appropriate touchscreen control.
5. After finishing measurements, select **ST** from the **Caliper** menu to obtain the measured value.
6. Select the desired option to **Save** or **Reset** measured values.
 - **Save:** saves the caliper measurement values as a manual event in the event review page. In the **Please input new name:** field, enter the desired name of the event. The default name is **Saved ECG Measurements**. In the **Please input comments:** field, enter the desired comments and then select **OK**. Up to 32 characters can be entered for the name and the comments. The measured values are displayed above the first ECG waveform in the event detailed window.
 - **Reset:** clears the measured values.

Moving the Caliper

After displaying a caliper, you can also move calipers as shown below to measure the time difference between any two points:

- When the cursor is in the shape of , you can move the caliper horizontally.
- When the cursor is in the shape of , you can move the caliper vertically.
- When the cursor is in the shape of  inside the caliper, you can move the entire caliper window.
- Select the  button or the  button in the horizontal caliper measurement area.
- Select the  button or the  button in the vertical caliper measurement area.

Canceling Caliper Measurements

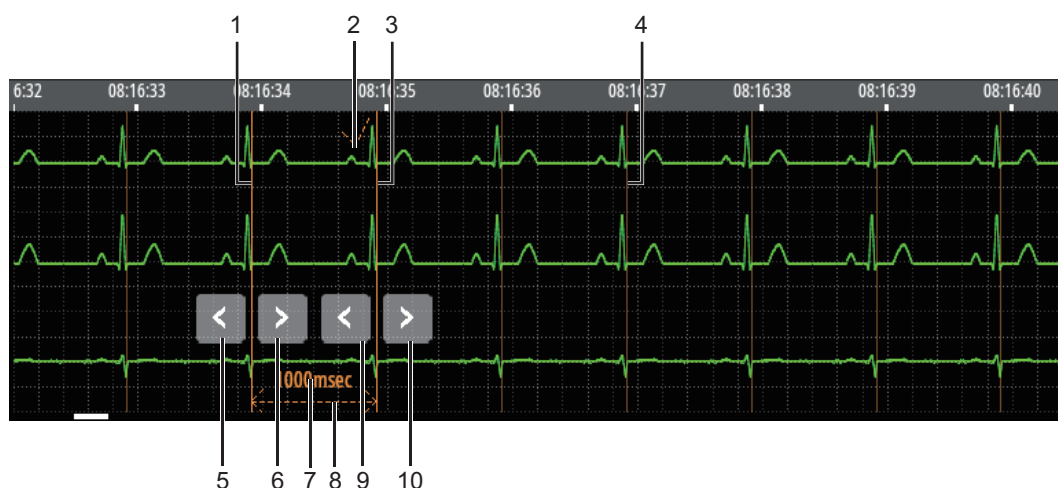
During caliper measurement, you can cancel a caliper measurement in either of the following ways:

- Select the **Caliper** button.
- Select anywhere in the waveform area.
- Select the close button in the caliper window.

11.8.6 Waveform Divider

You can select **Divider** in the detailed waveform window to equally divide the waveform and find the desired waveform segment.

Select **Divider** and the detailed waveform window is shown as follows:



1	Divider left arm
2	Freeze button
3	Divider right arm
4	Divider line
5, 9	Left fine tuning button

6, 10	Right fine tuning button
7	Realtime measurement
8	Measurement line

Adjusting the Dividing Interval

The default dividing interval is 1second. You can adjust the dividing interval in either of the following ways:

- Select left or right fine tuning button to fine tuning the dividing interval with the precision of 1ms at a time.
- Move the cursor near the divider left or right arm until it turns to the shape of , left click the mouse or use your finger to horizontally drag the divider left or right arm to adjust the dividing interval with a larger amplitude.

Freezing the Divider

Select the freeze button to freeze the divider. Once the divider is frozen, left click the mouse or use your finger to horizontally drag the waveform to find waveform segment of different periods. Select  to unfreeze the divider.

Moving the Divider

When the divider is not frozen, move the cursor near the measurement line or realtime measurement until the cursor turns to the shape of , left click the mouse or use your finger to horizontally drag the divider to the desired location.

Moving the Realtime Measurement

Move the cursor near the measurement line or realtime measurement until the cursor turns to the shape of , you can left click the mouse or use finger to vertically drag the realtime measurement to the desired location.

Exiting the Divider

Select **Divider** again to exit the divider.

NOTE:

Once enabling divider function, the caliper function cannot be used and vice versa.

11.8.7 Printing Compressed Waveforms or Detailed Waveforms

To print the compressed waveform or detailed waveform, follow this procedure:

1. Enter the full disclosure review page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Select the desired options. Only items that may need special remarks are described here.

- **Print Waveform Overview:** prints the compressed waveform displayed on the full disclosure review page.
 - **Print Overview of Selected Waveforms:** prints the selected compressed waveform segments. For details on how to select compressed waveform segments, see “Selecting Compressed Waveform Segments”.
 - **Print Details of Selected Waveforms:** prints the detailed waveform for the selected compressed waveform segments according to the time period where selected waveform segments are located.
 - **Print Displayed Detailed Waveforms:** prints the detailed waveform for the entire compressed waveform.
 - **Print Selected Detailed Waveforms:** prints the detailed waveform for the selected waveform segments according to waveforms. If you select this option, you can further select **Select Waveform** to customize the number and sequence of waveforms which are output on a printout. After performing the desired settings, select the  button in the upper right corner of the **Select Waveform** menu.
4. If you wish to preview the printout, select **Print Preview**.
 5. Select **Print**.

11.8.8 Exporting Waveform Data

When the CMS is connected to a storage device and exporting animals' data is allowed in the system setup menu, you can export animals' waveform data from the full disclosure review page. For more information on allowing exporting animals' data, see “13.11 Other Settings”.

To export animals' waveform data, follow this procedure:

1. Enter the full disclosure review page.
2. Select the  button in the upper right corner of this page. The **Export Setup** menu is displayed.
3. Set the desired options.
4. Select **Export**.

You can view export progress and results in the **Export Queue** menu. The exported trend data is saved in the sub-folder named as WaveformData under the animal's folder which is located in the selected **Save Path**.

11.9 Events Review Page

On the events review page, you can view technical alarm events, physiological alarm events, manual events, and operational events.

11.9.1 Entering the Events Review Page

To enter the events review page, follow this procedure:

1. Select the  button in the upper left corner of the review screen.

2. From the pull-down list, select **Events**.

11.9.2 Event List

In the event list:

- Events are displayed in descending chronological order. The most recent event is displayed at the top. The number of exclamation marks before an event matches different alarm priorities.
 - !!!: high priority alarm
 - !!: medium priority alarm
 - !: low priority alarm
- Event lock status, trigger time, alarm priority, and event remarks if available are displayed for each event.
- Different color blocks are displayed on the left of each event to indicate different event types.
 - Red: high priority alarm event
 - Yellow: medium priority alarm event
 - Cyan: low priority alarm event
 - Green: manual event
 - White: operation-related event
 - Blue: ultrasound report event

Setting Filters

You can filter events by time, alarm priority, alarm category, and parameter group.

To filter events, follow this procedure:

1. Enter the event review page.
2. Select **Filter**. From the pull-down list, select the desired item.
3. If you need to customize two criteria. To do so, follow this procedure:
 - a. From the **Filter** pull-down list, select **Custom 1** or **Custom 2** to enter the **Filter Setup** menu.
 - b. Select the **Name** field to edit the name of the custom criterion.
 - c. Select desired items.
4. If you want to review events happened around certain time, select the  button → set the time → select **OK**. Then the cursor jumps to the event happened closest to the defined time.

Other Operations in the Event List

To perform other event-related operations, follow this procedure:

1. Enter the event review page.
2. Select the desired event from the event list.
3. Select the  button.
4. Select the desired option. Only items that may need special remarks are described here. The functions of locking and unlocking events is available in the CentralStation only.

- **Lock:** lock the event manually. When the event is locked, the  symbol is displayed. The locked event needs to be unlocked before being deleted.
- **Rename:** you can rename a manual event or an arrhythmia alarm event.
- **Note:** you can enter comments for the event. When comments are available, the  symbol is displayed. You can also modify or delete comments in the event detailed window.
- **Show Disabled Arrhythmia Alarms:** this option is unselected by default. Select this option and arrhythmia events that have alarms turned off display in the event list.

NOTE:

If events are all locked, the CentralStation will automatically delete the oldest locked event with each addition of a new event when system storage reaches capacity.

11.9.3 Event Detailed Window

Enter the event detailed window in either of the following ways:

- Double click or tap the desired event from the event list.
- Select the **Detail** button on the event review page.

Configuring ECG Gain

To configure the ECG gain, follow this procedure:

1. Enter the event detailed window.
2. Select **ECG Gain**.
3. Select the desired gain.

Configuring Waveform Sweep Speed

To configure the waveform sweep speed, follow this procedure:

1. Enter the event detailed window.
2. Select the **Speed** button.
3. Configure the desired speed. The speed is applicable to all the ECG waveforms.

Caliper Measurement

For details on how to perform caliper measurement, see “11.8.5 Caliper Measurement Overview”.

Waveform Divider

For details on how to perform waveform dividing, see “11.8.6 Waveform Divider”.

Setting Beat Annotation

For details on how to set beat annotation, see “Setting Beat Annotation” in Section “11.8.8 Exporting Waveform Data”.

11.9.4 Printing Events

To print the desired event list or event details, follow this procedure:

1. Enter the event review page.
2. Select the desired events from the event list.
3. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
4. Select the desired options.
 - **Print All Event List:** print the entire event list.
 - **Print List of Selected Events:** print the selected events list.
 - **Print Overview of Selected Events:** when multiple events are selected from the event list, selecting this option prints these events on the same page and outputs an event overview report.
 - **Print Detail of Selected Events:** print the details of selected events.
 - **Print Displayed Event Detail:** print the details of the selected event. If you wish to select this option, you need to open the event detail window first.
5. If you wish to preview the printout, select **Print Preview**.
6. Select **Print**.

11.10 ST Review Page

You can review ST segments and values on the ST review page.

11.10.1 Entering the ST Review Page

To enter the ST review page, follow this procedure:

1. Select the ▼ button in the upper left corner of the review screen.
2. From the pull-down list, select ST.

11.10.2 Setting ST Reference Templates

You can set the desired ST template as a reference template.

To do so, follow this procedure:

1. Enter the ST review page.
2. Select the desired ST template.
3. Select **Set Reference**.

11.10.3 Displaying/Hiding ST Reference Templates

On the ST review page, select **Display Reference** or **Hide Reference**.

- **Display Reference:** the ST template storage time is displayed on the right of current segment and ST values are also displayed on the reference template.
- **Hide Reference:** hide the ST reference template.

11.10.4 Displaying/Hiding Markers

On the ST review page, select **Display Marker** or **Hide Marker**.

- **Display Marker:** a white vertical bar appears above each waveform, marking the positions of ISO, J point, and ST point.
- **Hide Marker:** the positions of ISO, J point, and ST point are not displayed.

11.10.5 Printing ST Segment Waveforms

To print ST segment waveforms, follow this procedure:

1. Enter the ST review page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Set the desired options.
4. Select **Print**.

11.11 Arrhythmia Statistics Page

On the arrhythmia statistics page, you can view the statistics about the HR value and the number of each arrhythmia category within a specific time period. Arrhythmia statistics can be displayed in a tabular or graphic format.

11.11.1 Entering the Arrhythmia Statistics Page

To enter the arrhythmia statistics page, follow this procedure:

1. Select the  button in the upper left corner of the review screen.
2. From the pull-down list, select **Arrhy Statistics**.

11.11.2 Viewing Arrhythmia Statistics

To view arrhythmia statistics, follow this procedure:

1. Enter the arrhythmia statistics page.
2. If you wish to view arrhythmia statistics in a tabular format, select **Tabular** in the upper right corner of this page.
3. Select **Zoom** to view arrhythmia events within a specific time period. The default for **Zoom** is **24 hrs**.
4. If you wish to view arrhythmia statistics in a graphic format, select **Graphic**.

On the graphic arrhythmia statistics page:

- The left side displays the name, times of occurrence, and duration of arrhythmias. The right side displays the arrhythmia occurrence time and colored block which matches different alarm priorities.
Red: high alarm priority
Yellow: medium alarm priority
Cyan: low alarm priority
- Selecting the desired arrhythmia on the left displays the waveform area on the right side. After selecting the waveform area, you can view more details about this arrhythmia.

11.11.3 Setting the Display of Arrhythmia Events

Displaying Disabled Arrhythmia Alarms

To display arrhythmia events that have alarms turned off in the review, follow this procedure:

1. Enter the arrhythmia statistics page.
2. select **Graphic**.
3. select the  button.
4. Select **Show Disabled Arrhythmia Alarms**: this option is disabled by default. Enabling it, arrhythmia events that have alarms turned off displays are displayed in the review.

Displaying High Quality Arrhythmia Alarms Only

To exclude arrhythmia events with obvious noise or arrhythmia events without typical alarm characteristics in the review, follow this procedure:

1. Enter the arrhythmia statistics page.
2. select **Graphic**.
3. select the  button.
4. Select **High Quality Arrhythmia Alarms Only**: this option is disabled by default. Enabling it, events with obvious noise or events without typical alarm characteristics are excluded in the review.

11.11.4 Printing Arrhythmia Statistics Results

To print arrhythmia statistics results, follow this procedure:

1. Enter the arrhythmia statistics page.
2. Select the  button in the upper right corner of this page.
The **Print Setup** menu is displayed.
3. Set the desired options.
4. Select **Print**.

12 Printing

12.1 Supported Printers

The CMS can be connected to a printer to output reports on A4 paper. The printer has a separate power supply. The CMS supports the following printers:

- HP LaserJet 401n
- HP LaserJet M602
- HP LaserJet M202DW
- HP LaserJet M203
- HP LaserJet M605n
- HP LaserJet M608
- HP LaserJet Pro P1106
- PDF printer

NOTE:

- For more details about the printer, see the document accompanying the printer. With product upgrades, the CMS may support more printers and no prior notice will be given. If you have any doubt about the printer you have purchased, contact the Customer Service Department or your local distributor.
 - PDF reports can be output by PDFCreator only.
-

12.2 Starting Printing

You can start a printing task manually or set the printer to start a printing task automatically.

12.2.1 Manually Starting Printing

You can manually start printing reports such as summary information, trends data, and calculation results.

Printing Summary Reports

When bedside devices are being monitored by the CMS, you can print their summary reports which includes information such as animal information, realtime data, and alarm data.

To print a summary report, follow this procedure.

1. Select the  button in the upper right corner of the main screen.
2. Select **Print Summary**.

Printing All Realtime Reports

You can print realtime reports for all the online beds. Reports for beds in standby mode or beds where animals have been discharged cannot be printed.

To print reports for all animals, follow this procedure.

1. Select the  button in the upper right corner of the main screen.
2. Select **Print All Realtime Reports**. The **Print All Realtime Reports** dialog box is displayed.
3. Select **OK**.

Printing Review Data

For details on how to print tabular trends, graphic trends, waveform review, waveform segment, event review, ST segment, and arrhythmia statistics result, see “11 Review”.

Printing Realtime Waveforms

To print realtime waveforms for a single bedside device, choose one of the following ways:

- Select the animal location in the upper left corner of the desired animal sector on the multibed screen and then select the **Print** button from the pull-down list.
- On the ViewBed screen, select the **Print** quick key.
- Select the **Print** button in the **Realtime Report** menu on the ViewBed screen. For details on how to access the **Realtime Report** menu, see “Setting Realtime Reports in the Report Setup Tab”.
- Select the **Main Menu** quick key from the quick key area on the ViewBed screen → from the **Report** column select **Print**.

Printing ECG Reports

When ECG monitoring with lead sets other than 3-lead is being performed, you can print corresponding ECG reports by following the procedure below.

1. Access the ViewBed screen.
2. Access the ECG full screen in one of the following ways:
 - On the ViewBed screen, select the **ECG Full-Screen** quick key.
 - On the ViewBed screen, select the **Screen Setup** quick key → select the **ViewBed** tab → select the **Choose Screen** tab → select **ECG Full-Screen**.
 - Select the ECG parameter area or waveform area to access the ECG menu → select the **Full-Screen** button in the lower left corner of the menu.
3. Select the print button in either of the following ways:
 - On the ViewBed screen, select the **Print** quick key.
 - Select **Print** in the lower right corner of the **ECG Report** menu. For details on how to access this menu, see “Setting ECG Reports in the Report Setup Tab”.

- Select the **Main Menu** quick key from the quick key area on the ViewBed screen→ from the **Report** column select **Print**.
- 4. Select the animal location area in the upper left corner of the desired animal sector on the multibed screen and then select the **Print** button from the pull-down list.

Printing QT Reports

You can print QT reports at the CMS under the following conditions:

- When a bedside monitor supports printing QT reports via the CMS and is performing QT analysis.
- When a telemetry device is performing QT analysis at the CMS.

To print a QT report, follow this procedure:

1. Access the ViewBed screen.
2. Access **QT View** in one of the following ways:
 - Select the QT parameter area to access the QT menu→ select the **QT View** button at the bottom of the menu.
 - Select the ECG waveform or parameter area to access the **ECG** menu → select the **QT** tab → select the **QT View** button at the bottom of the menu.
 - Select the **Parameters Setup** quick key at the bottom of the screen → select **ECG**→ select the **QT** tab → select the **QT View** button at the bottom of the menu.
3. Select the  button in the upper left corner. The Print Setup menu is displayed.
4. After selecting desired settings, select **Print**.

Printing ST View

The ST View shows a complete QRS segment for each ST lead. To print ST View, follow this procedure:

1. Access the ViewBed screen.
2. Access **ST View** in one of the following ways:
 - Select ST segment waveform area.
 - Select the ST parameter area to access the **ST** menu → select the **ST View** button at the bottom of the menu.
 - Select the ECG waveform or parameter area to access the **ECG** menu → select the **ST** tab → select the **ST View** button at the bottom of the menu.
3. Select the  button in the upper left corner. The Print Setup menu is displayed.
4. After selecting desired settings, select **Print**.

Printing Frozen Waveforms

For details on how to print frozen waveforms, see “7.3.4 Freezing/Unfreezing Waveforms”.

Printing Alarm Setup

To print alarm setup, follow this procedure:

1. Access the ViewBed screen.
2. Select the **Alarm Setup** quick key at the bottom of the screen.
3. After selecting the desired settings, select the  button in the upper left corner. The Print Setup menu is displayed.
4. After selecting desired settings, select **Print**.

12.2.2 Automatically Starting Printing

You can set a printer to start printing reports automatically.

Setting Scheduled Printing

You can set scheduled printing of reports. For details, see “12.5.3 Setting End Case Reports” and see “13.8 Print Settings”.

Enabling Print on Alarm

When a parameter alarm switch is set to on and an alarm is triggered for this parameter, you can set a printer to start alarm printing automatically.

To enable automatic printing via the printer when an alarm is triggered, make sure that **Print on Alarm** is set to **Printer**.

To enable the printer to automatically start printing on alarm, follow this procedure:

1. Access alarm setup related tabs in one of the following ways:
 - Select the **Alarm Setup** quick key at the bottom of the screen.
 - Select the parameter or waveform area of the desired parameter → select an alarm related tab.
 - Select the **Parameters Setup** quick key at the bottom of the screen → select the desired parameter → select an alarm related tab.
2. Set **Alarm Outputs** for a parameter to **Print** or **All**. The configured length of waveform data for the parameter will be printed automatically.

12.3 Stopping Printing

To stop a printing task, follow this procedure:

1. Select the  button in the upper right corner of the CMS main screen.
2. Select **Print Queue**.
3. Select one printing task and then select **Delete** to stop this printing task; select all the printing tasks and then select **Delete All** to stop all the printing tasks.

12.4 Viewing Printer Statuses

You can view the status of the most recent printing tasks in the **Print Queue** window. To view the status of printing tasks, follow this procedure:

1. Select the  button in the upper right corner of the CMS main screen.
2. Select **Print Queue**.

12.5 Configuring Reports

You can configure report related contents such as animal information items on a report. This section only describes how to set realtime reports, ECG report, and end case reports for a single bedside device in the **Print Setup** menu.

12.5.1 Accessing the Print Setup Menu

To access the **Print Setup** menu, follow this procedure:

1. Access the ViewBed screen.
2. Access **Print Setup** menu in either of the following ways:
 - Select the **Print Setup** quick key at the bottom of the screen to enter the **Print Setup** menu.
 - Select the **Main Menu** quick key at the bottom of the screen→ from the **Report** column select **Print Setup**.

12.5.2 Setting Realtime Reports and ECG Reports

In the **Report Setup** tab, you can set realtime reports and ECG reports.

Setting Realtime Reports in the Report Setup Tab

To set realtime reports, follow this procedure:

1. In the **Print Setup** menu, select the **Report Setup** tab.
2. Select the **Realtime Report** tab.
3. Set **Speed**.
4. Select waveforms to be printed.
 - **Current Waveforms**: print the realtime report for current waveforms.
 - **Selected Waveforms**: print the realtime report for the selected waveforms. If you wish to select this option, you need to further select **Select Waveform** and select the desired waveforms in the **Select Waveform** menu.

Setting ECG Reports in the Report Setup Tab

When ECG monitoring with lead sets other than 3-lead is being performed, you can set ECG reports.

To do so, follow this procedure:

1. In the **Print Setup** menu, select the **Report Setup** tab.
2. Select the **ECG Report** tab.
3. Set the desired options. Only items that may need special remarks are described here.

Menu item	Description	Options
Auto Interval	Defines the spacing between the ECG waveforms on a printout	On: automatically adjusts the space between waveforms to avoid overlapping. Off: each waveform area has the same size on a printout.

12.5.3 Setting End Case Reports

When you discharge an animal, if you select **Print End Case Report**, the selected end case reports in the **System Setup** menu will be printed automatically. But the report contents for each bed are configured in the **End Case Report** tab.

For more information regarding the system setup menu, see “13.8 Print Settings”.

Setting **Tabular Trends Report** in the **End Case Report** Tab. To set tabular trends reports as end case reports, follow this procedure:

1. In the **Print Setup** menu, select the **End Case Report** tab.
2. Select the **Tabular Trends Report** tab.
3. Set the desired options. Only items that may need special remarks are described here.

Menu item	Description	Options
Interval	Select the resolution of the tabular trends printed on a report.	1 min, 5 min, 10 min, 15 min, 30 min, 1 hr, 2 hrs, 3 hrs, NIBP, C.O. Parameters, such as NIBP,Temp: prints a tabular trends report when parameter measurements are acquired.
Report Format	Select the printing principle.	Parameter Oriented: prints a report with parameters listed by row and time listed by column. Time Oriented: prints a report with time listed by row and parameter listed by column.
Trend Group	Select the trend option whose data you wish to be displayed on a printout.	All, Standard, Hemo, Cardiac, Pulmonary, RM, Neuro, Gases, Custom 1, Custom 2

Setting Graphic Trends Reports in the End Case Report Tab

To set graphic trends reports as end case reports, follow this procedure:

1. In the **Print Setup** menu, select the **End Case Report** tab.
2. Select the **Graphic Trends Report** tab.
3. Set **Trend Group**.

Setting Event Reports in the End Case Report Tab

To set event reports as end case reports, follow this procedure:

1. In the **Print Setup** menu, select the **End Case Report** tab.
2. Select the **Event Report** tab.
3. Select the desired event type.

Setting Realtime Reports in the End Case Report Tab

To set realtime reports as end case reports, follow this procedure:

1. In the **Print Setup** menu, select the **End Case Report** tab.
2. Select the **Realtime Report** tab.
3. Set the desired options.

Setting ECG Reports in the End Case Report Tab

To set ECG reports as end case reports, follow this procedure:

1. In the **Print Setup** menu, select the **End Case Report** tab.
2. Select the **ECG Report** tab.
3. Set the desired options. For details on how to set the options, see Step 3 of Section see “Setting ECG Reports in the Report Setup Tab”.

12.5.4 Setting Scheduled Reports

You set scheduled printing of reports in the **Print Setup** menu only when **Scheduled Report Switch** is enabled in the **System Setup** menu.

In the **Scheduled Report** tab, you can configure report contents for each bed.

To set scheduled printing of reports, follow this procedure:

1. In the **Print Setup** menu, select the **Scheduled Report** tab.
2. Select the desired report tab.
 - Configure the report options.
 - For description of options in the **Tabular Trends Report** tab, see “Setting Tabular Trends Report in the End Case Report Tab. To set tabular trends reports as end case reports, follow this procedure:”.

- For description of options in the **Graphic Trends Report** tab, see “Setting Graphic Trends Reports in the End Case Report Tab”.
- In the **Event Report** tab, select the desired event type.
- For description of options in the **Realtime Report** tab, see “Setting Realtime Reports in the Report Setup Tab”.

12.6 Printer Out of Paper

When the printer runs out of paper, the print request will not be acknowledged. If there are too many print jobs that are not acknowledged a printer error may occur. In this case, install paper and then re-send the print request. Restart the printer if necessary.

To avoid a printer error condition, ensure that there is enough paper in the printer before sending a print request.

13 System Setup

13.1 Overview

WARNING

Changing configuration items may alter the way the CMS performs when monitoring animals. Do not change anything unless you are aware of the possible consequences, especially if you are monitoring an animal while in clinical settings.

NOTE:

Many settings in the CentralStation/WorkStation are password protected. Passwords should only be changed by authorized personnel. Contact your department manager or biomedical engineering department for the passwords used at your facility.

Changes made to the CentralStation/WorkStation are independent of each other. The configuration items apply to the CentralStation/WorkStation if no special explanations.

13.2 Display Settings

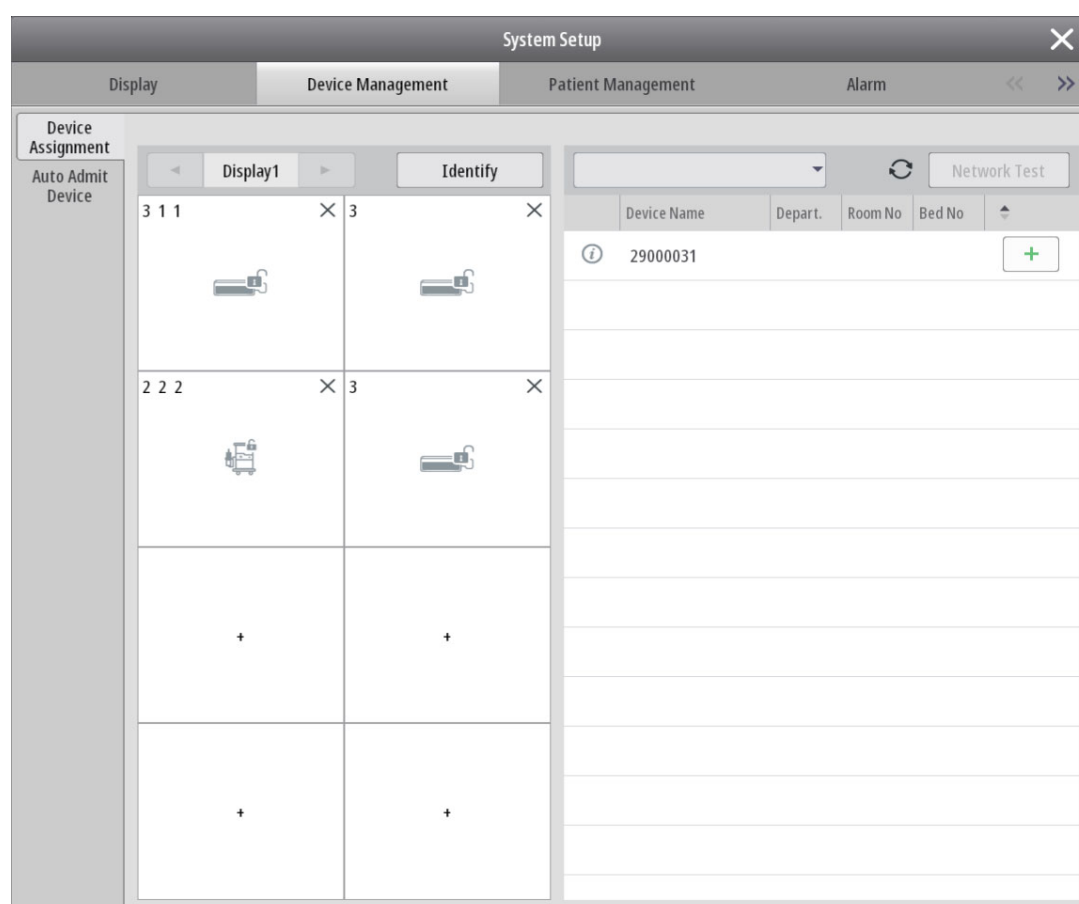
The screenshot shows the 'System Setup' window with the 'Display' tab selected. The 'Layout' section is expanded, showing 'Patient Sector Number' set to 8, 'Column' set to 2, and 'Row' set to 4. The 'Sort' section is also expanded, showing 'Sort Type' set to Manual, 'Sort By' set to Bed No, and 'Sort Orientation' set to Landscape. Below these are sections for 'Display' (Location: Room No. & Bed No., Patient Information: Patient Name), 'Other' (Support Switching Locked Sector: Off, Clear Unlocked Overview Sector After Discharging The Patient: Off, Hide Unused Sectors: Off).

Parameter		Description
Sector	Patient Sector Number	Set the desired number of animal sectors as necessary. When you select Custom , you need to select the desired number of Column and Row.
	Sort Type	- Manual: allows manual sorting of animal sectors. When this option is selected, Sector Sorting is displayed in the pull-down list of system menu. - Auto: sectors are automatically sorted according to sorting criteria.
	Sort By	Set the sorting keyword for animal sectors on the Multibed screen.
	Sort Orientation	Set that the animal sectors on the Multibed screen are sorted horizontally or vertically.
	Position	Set the display content on the location area on the upper left corner of the animal sectors.
	Patient Demographics	Set the display content on the animal information area on the upper left corner of the animal sectors.

Parameter		Description
	Patient Name Privacy Protection	/
	Support Switching Locked Sector	This option is disabled by default. When it is enabled, the option Move Position to is displayed in the pull-down list after selecting the animal location area of locked sectors.
	Clear Unlocked Overview Sector After Discharging The Patient	This option is disabled by default. When it is enabled, if an animal is discharged, the overview bed will be automatically cleared at the current CentralStation/WorkStation.
	Hide Unused Sectors	- Off: no sector is hidden. - Entire Row: the entire row of unused sectors are hidden. - By Single Sector: all the unused sectors are hidden.
Parameter Color		Set the desired color for parameters. Parameter-related information such as realtime waveforms and parameter numerics are displayed in the same color on the CMS screen.
Other	ECG Lead Sequence	After changing the ECG lead sequence, the waveform sequence will be updated in the ECG waveform area, ST parameter area, ST View on the ViewBed screen, ECG waveforms on review pages, and printouts. - Normal: I, II, III, aVR, aVL, aVF, V - Cabrera: aVL, I, -aVR, II, aVF, III, V
	Soft Keyboard	When this option is enabled, a soft keyboard displays when a field that requires manual input is selected.
	Outline Font for Suspected Values	When it is enabled, if unreliable measurement values of HR, or SpO ₂ are detected, these numerics will be displayed in outline font on the Multibed or ViewBed screen or suffixed with the  icon on the review pages.
	Remaining infusion time list	Set whether to enable the remaining infusion time list.
	Remaining infusion time	If the remaining infusion time of certain drug is less than the set time, the remaining infusion time of this drug will be prompted in the Remaining Infusion Time List. NOTE: This item displays only when Remaining Infusion Time List is enable.
	Auto Close ViewBed Screen	Select a specific time: if you do not perform any operation after accessing the ViewBed screen within the configured time, the CMS automatically closes the ViewBed screen and accesses the Multibed screen. Select Never: disable closing the Viewbed screen automatically.

Parameter		Description
	Screen Size	Select screen size as desired. If your screen size is not available, select Other and select the + or — button on the rulers to adjust the screen size. NOTE: The CentralStation/WorkStation each can connect up to 4 displays and will check the number of displays every time it starts. When more than one display is used simultaneously, they should be the same resolution.

13.3 Device Management Settings



In the **Device Assignment** tab and **Auto Admit Device** tab, you can set CentralStation/WorkStation to admit bedside devices manually or automatically. For details about how to admit bedside devices, see “4.2 Admitting Devices”.

13.4 Animal Management Settings

Field	Patient Key	Patient ID
Discharge	Field	
Location	☒ Patient ID	
Patient Group	☐ Visit Number	
Care Group	☒ Room No	
	☐ Length	
	☒ Breed	
	☐ Admit Date	
	☒ Facility	
	☒ Department	
	☐ Patient Group	
	☐ Custom Field 1	Please Input
	☐ Custom Field 2	Please Input
	☐ Custom Field 3	Please Input

13.4.1 Animal Basic Information Settings

Parameter		Description
Field		- Set which animal fields can be displayed on the animal management screen. - Select the customized fields and input names for these fields.
Discharge	Auto Discharge if Network Disconnected	Animals are discharged automatically if offline time exceeds the set time. NOTE: Only CentralStation supports animal discharge.
	Auto delete discharged patients when storage space is full	The CMS will automatically delete the discharged animals when the storage space is full.

Parameter		Description
	Prompt on patient auto deleted	When it is enabled and discharged animals are to be deleted automatically, a prompt message will be displayed.
	Prompt Alarm When Storage Is Nearly Full	Set the alarm priority when storage is nearly full.
	Include Patient Demographics When Exporting Patient Data	Export animal data including animal information.
	Auto Delete Patient Data if Discharged	The CMS automatically delete the animal data when animal discharge time exceeds the set time. • Right Now: animal data is deleted once the animal is discharged. • Auto: animal data is deleted when the storage of the CMS is nearly full.
	Clear All Patient Data	From the dialog box, select whether to clear all animal data.
Position		Set the animal location options displayed on the animal sector and ViewBed screen after a bedside device enters standby mode. NOTE: This function is available at the CentralStation only.
Patient Group		Set animal group with desired background color and animal group name. NOTE: This function is available at the CentralStation only.

13.4.2 Setting Care Groups

Setting Care Groups Manually

Perform the following procedure:

1. On the **Patient Management** page, select the **Care Group** tab.
2. Set **Care Group Setup Mode** to **Manual**.
3. Select the desired care group.
4. Select the  button and then enter the desired care group name. Upon completion of settings, the care groups will be displayed under the **Care Group** field on the **Patient Management** screen.
5. Set **Reset Care Group in the Locked Sector When Admitting a New Patient**. This option applies only when the **Care Group Setup Mode** is set to **Manual**. This function is available at the CentralStation only.

- Enable: the care group setup of a locked sector will be cleared when a new animal is admitted and you need to reassign a care group for this sector.
- Disable: the care group setup of a locked sector remains the same when a new animal is admitted.

Assigning Care Groups Automatically

Set **Care Group Setup Mode** to **Auto**. When an animal is newly admitted by a bed, the care group for this bed will be automatically assigned. To automatically assign care groups, follow this procedure:

- Select the  button in the upper right corner of the current page. The **Add Shift** window is displayed. When it is time for the shift, care groups will be automatically assigned to beds.
- Add a bed:
 - If no beds are available, select the  button in the middle of the current page to enter **Bed List** tab and then add a bed.
 - If beds are available, the  button is not displayed. Access the bed list page to add a bed.
- Select the  button in the lower right corner of the current page to enter **Add Care Group** window.
 - a. Select care groups at the bottom of the current page.
 - b. Select the beds where care groups are assigned to. The background color of the selected beds is consistent with that of care groups.

NOTE:

- Select the  button on the right of the desired shift or care group to edit or delete a shift or care group.
 - When **Care Group Setup Mode** is set to **Auto**, the **Care Group** option on the animal management screen is grayed out.
-

13.5 Alarm Settings

System Setup

Display Device Management Patient Management **Alarm** << >>

Audio

Other

Minimum Alarm Volume: (Buttons: -, 0, +)

High Alarm Volume: Alarm Volume+0

Alarm Sound: ISO2

High Alarm Interval: 3 sec

Med Alarm Interval: 8 sec

Low Alarm Interval: 20 sec

Auto Increase Volume: 2 Steps

Increase Volume Delay: 20 sec

Alarm Reset Reminder: ☐

Alarm Off Reminder: ☐

Reminder Interval: 1 min

Single Bed Alarm Audio Off: Disable

Resume Alarm Audio When Patient is Admitted: ☐

Alarm Type with Audio On: All

Special Advanced Alarm Sound

☒ Asystole

☒ V-Fib/V-Tach

☒ V-Tach

☒ Vent Brady

☒ Extreme Tachy

☒ Extreme Brady

☒ SpO2 Desat

☒ Apnea

Parameter		Description
Audio	Minimum Alarm Volume	Ranges from 0 to 10.
	High Alarm Volume	Set the increase level for high alarm volume.
	Alarm Sound	Select desired alarm sound. When the alarm sound is set to ISO or ISO2, you can set alarm intervals of different priorities. ISO2 supports special alarm sound.
	High Alarm Interval	Set time interval for high alarm volume.
	Med Alarm Interval	Set time interval for medium alarm volume.
	Low Alarm Interval	Set time interval for low alarm volume.
	Auto Increase Volume	Indicates that if an alarm is not reset within the designated delay time after the alarm occurs, the alarm volume automatically increases by two levels or by one level. - Lv 2: the alarm volume automatically increases to 2 steps. - Lv 1: the alarm volume automatically increases to 1 steps. - Off: the alarm volume does not change.

Parameter	Description
Increase Volume Delay	Set the delay time of alarm volume escalation.
Alarm Reset Reminder	When this option is enabled, if the alarm volume is set to 0, or the alarm is reset or turned off, the system will issue reminder tones at a designated reminder interval.
Alarm Off Reminder	When this option is enabled and alarms for a bedside device are turned off, a reminder tone is issued at the designated reminder interval.
Reminder Interval	When Alarm Reset Reminder and/or Alarm Reset Reminder is enabled, you can set the reminder interval.
Single Bed Alarm Audio Off	You can set whether to manually turn off the alarm sound for one bed on the CMS screen. • Disable: you cannot turn off alarm sound of the single bed. • Enable: Audio tab will be displayed in the Alarm Setup menu. You can turn off alarm sound for one bed on the alarm setup menu of the bed.
Resume Alarm Audio When Patient is Admitted	This option is applicable for bedside devices admitted via the Device Assignment tab in the System Setup menu. This option applies to the single bed where the alarm sound is turned off. • If this option is enabled, the bed resumes alarm sound when admitting a new animal. • If disabled, the alarm sound of the bed remains off when admitting a new animal.
Alarm Type with Audio On	Select the type of alarms which will make sound when the corresponding alarm occurs. The default option is All . the CMS provides alarm audio of all types. After the option is change, the selected alarm types are prompted on the system alarm area of the CMS.
Special Advanced Alarm Sound	When the Alarm Sound is set to ISO2, the system gives special alarm sound to indicate that the animal may be in a critical condition when a selected alarm is triggered.

Parameter		Description
Other	Global Silence Hotkey	Set the hotkey that can be used to silence the system.
	Global Silence	Enable or disable the global silence feature. When it is set to Enable, pressing the silence quick key or selecting the symbol on the upper of the main screen silences the system.
	Offline Alarm Priority	Set the alarm priority when a bedside device is disconnected.
	Flashing Alarm Bar	When this option is enabled, the background color of high priority and medium priority alarm messages flashes.
	No offline alarm if patient discharged	When this option is enabled, after the animal is discharged the offline alarm will not be triggered if the monitor is disconnected.
	Patient ID/Visit Number Conflicts	When this option is enabled and different beds have the same patient ID or visit number, the alarm information area of the animal sector displays related alarm. This function is available at the CentralStation only.

13.6 Telemetry Settings

NOTE:

- Changing alarm priorities may affect the latching status of corresponding alarms. Determine if you need to reset the alarm latching status after changing alarm priorities.
- When the alarm system is reset, latched physiological alarms are cleared.
- Selecting alarms of lower priority simultaneously latches higher priority alarms. For example, if low priority alarm is selected, the medium priority alarm, high priority alarm, and lethal alarms will also be automatically selected and locked.

System Setup		
Alarm	Telemetry	Network
Alarm	Alarm Delay	6 sec ▶
ECG	ST Alarm Delay	30 sec ▶
Device Setting	ECG Lead Off	Low ▶
Authorization Setup	SpO2 Sensor Off	Low ▶
	Alarm Reset	Permanent ▶
	Alarm Pause	2 min ▶
	Arrhy Shield Time	2 min ▶

Latching		
Alarm	Visible	Audible
Lethal	☐	☐
High	☐	☐
Med	☐	☐
Low	☐	☐

This tab is applicable to CentralStation.

Parameter		Description
Alarm	Alarm Delay	If an alarm condition is resolved within the delay time, the CentralStation does not present the alarm. The alarm delay setting affects some physiological alarms.
	ST Alarm Delay	Set ST alarm delay time.
	ECG Lead Off	Set alarm priorities.
	SpO2 Sensor Off	
	Alarm Reset	/
	Alarm Pause	Set alarm pause time.
	Arrhy Shield Time	0 min: disable arrhythmia alarm shield time. Other options: when some arrhythmia alarms are detected, the TM80 Vet Veterinary Telemetry Monitor disables alarm tone in the designated period.

Parameter		Description
	Latching	Set whether the physiological alarms of the Telemetry Monitor are displayed on the CMS. - Lethal, High, Med, and Low: indicate alarm priorities. - Visible: latches visual indications only. When an alarm condition is resolved, visual indications, including alarm message and its background color remain. The time when the alarm is last triggered is displayed behind the alarm message. - Audio: Visible will be selected automatically. The audible alarm is locked and the visual alarm of the corresponding level is automatically locked. After the alarm display, the CMS still presents alarm tone.
ECG	Notch Filter	Set Notch Filter to 50 Hz or 60 Hz according to the power line frequency.
Device Setting	Auto Enter Monitor Mode	- No Central Monitoring: when disconnected from the CMS and No Central Monitoring occurs, the telemetry monitor switches from telemetry mode to monitor mode. In this case, the display turns from off to on. - Lethal Arrhy. Alarm: when disconnected from the CMS and Lethal Arrhy. Alarm occurs, the telemetry monitor switches from telemetry mode to monitor mode. In this case, the display turns from off to on.
	Display Auto Off	If the touch screen of the telemetry monitor is not touched for the configured display auto off time, then the screen will turn off after the configured display auto off time has elapsed.
	Upgrade Server Ip	/
Authorization Setup	Automatic Logout Time	/
	Alarm Setup	Set alarms, ECG parameters and other related settings for the telemetry monitor.
	Arrhythmia	
	Alarm Pause & Reset Alarms	Enable: you can perform the related operations on the telemetry monitor.
	ST Analysis	Read only: the setting can only be viewed on the telemetry monitor.
	ECG Relearn	User password: the maintenance password will be required when the telemetry monitor is disconnected with the CMS.
	Modify Patient Demographics	
	Discharge Patient	
	Standby	

13.7 Network Settings

The screenshot shows the 'System Setup' window with the 'Network' tab selected. The left sidebar lists various settings: Local, Master Server, Central Station Authorization, Central Station Connection, Bed Authorization, AP Management, Other, MLDAP, and MobileServer. The main area displays two sections: 'Central Monitoring Network Setup' and 'Bedside Monitoring Network Setup'. Both sections show a 'Local IP address' field with the value '192.168.1.103' and a dropdown arrow. A red note states: 'Note: Please restart the system after making a change.'

13.7.1 Basic Settings

Parameter		Description
Local	Central Monitoring Network Setup	- Local IP address: From the pull-down list, select current CMS IP address. This IP address is used for communication between the CentralStation and external systems such as remote central monitoring system. - CMS/eGW Address: applicable to WorkStation. When it is enabled, input the IP address of the CentralStation which is used for directly communication between the WorkStation and CentralStation. When it is enabled, the WorkStation can not communicate with the CentralStation through the master server.
	Bedside Monitoring Network Setup	Set Local IP address for bedside device network. From the pull-down list, select the IP address of the CentralStation which is used for internal communication between the CentralStation and bedside devices.

Parameter		Description
Master Server	Master Server Address	Input the IP address or name of the master server
	Master Server IP Address	It is automatically acquired after Master Server Address is input.
	Connected Status	Upon completion of connection, the status of connection between the CentralStation and the master server is displayed on the right side of Connected Status.
	Master Server Setup	Select Master Server Setup . Input User Name and Password to log onto the master server setup screen. On the master server setup screen, you can search bedside devices, manage configurations collectively, etc.
	Network Test	Test whether the CMS is properly connected with the Master Server.
Central Station Authorization	Access Control	• Full Control: the WorkStation has full control over this CentralStation. • Read Only: the WorkStation and the CMS Viewer can view this CentralStation only. • Off: cannot access this CentralStation. • User Password: a user name and password are required to visit this CentralStation.
	A password is required to access this Central Station	Set a password to access this CentralStation for a Remote CMS.
	Reset Password	Modify password
CMS Connection		You can add or delete the CentralStation for WorkStation or connect your current station (the CentralStation/WorkStation) to the desired CentralStation.
Bed Authorization		Set to allow which beds at current CentralStation to be viewed by external systems. This function is available at the CentralStation only.
AP Management		Import the desired AP information into the CentralStation and configure animal movement area. NOTE: This function is available at the CentralStation only.
Others	Multicast Setup	Set Multicast Address and Multicast TTL values. These values are used for communication between a CentralStation and bedside devices, between different Centralstations, and between a CentralStation and WorkStation, or CMS Viewer.

Parameter		Description
	Information Security	Set Encryption Connection Type: - Only Private Encryption: Mindray Animal Medical private encryption is used to encrypt the transmitted data. You cannot connect devices supporting SSL (secure sockets layer) encryption. - SSL Encryption Priority: for devices supporting SSL encryption, SSL encryption is used when connecting the devices. For devices not supporting SSL encryption, private encryption is used when connecting the devices. Enable or disable Broadcast Patient Demographics. - Enable: after bedside devices are connected to the CentralStation, they can send device information and animal data such as animal name to the CentralStation. - Disable: after bedside devices are connected to the CentralStation, they can send device information to the CentralStation only.
MLDAP		MLDAP refers to Mindray Animal Medical LDAP (Lightweight Directory Access Protocol). It is an independent process which can be installed on other application server (Windows). MLDAP provides user identity and authentication.
Mobile Server	Install Mobile Server	The Mobile Server need to be installed on the same host computer with the CentralStation. Mobile Server initiates the network connection to the CentralStation in this circumstance.
	Mobile Server Setup	After you install the Mobile Server, you need to configure it.

13.7.2 Logging in Master Server

NOTE:

Contact Customer Service Department or your local distributor to obtain the user name and password of the Master Server.

On the **Master Server** tab, you can set the master server address and log on to the master server.

To set the master server, follow this procedure:

1. On the network setup page, select the **Master Server** tab.
2. Set the options.
 - **Master Server Address:** enter the IP address or name of the master server. There can only be one master in the network.
 - **Master Server IP Address:** it is automatically acquired after **Master Server Address** is entered.

Upon completion of connection, the status of connection between the CentralStation and the master server is displayed on the right side of **Connection Status**.

3. Select **Setup**. The **Master Server Setup** dialog box is displayed.
4. Enter **User Name** and **Password**.
5. Select **Login** to log onto the master server setup screen.

13.7.3 Configuration Management

After adding configurations to the **Configuration Management** screen, the configuration information can be sent to the AniFM I3 Veterinary Infusion Pump, AniFM S3 Veterinary Syringe Pump and BeneFusion eDS Vet Veterinary Infusion Supervision System. The setting description of the Configuration Management screen is as follows:

Item	Description
Add Configuration	Select Add From Device List or Add From File List to add configuration information. - Add From Device List: only applicable to AniFM I3 Veterinary Infusion Pump and AniFM S3 Veterinary Syringe Pump. - Add From File List: supported file formats include .evp, .esp, .vp, and .sp.
Synchronize To Device	Only applicable to AniFM I3 Veterinary Infusion Pump, AniFM S3 Veterinary Syringe Pump and BeneFusion eDS Vet Veterinary Infusion Supervision System. The procedure for sending the configuration Information to the device is as follows: - Select Synchronize To Device. - Check one or more devices to be synchronized on the Select Device dialog box. - Click OK. If synchronized successfully, the message Successful will display at the Result column.
Delete Configuration	Check one or more configuration files and select Delete Configuration to delete the configuration file.
Operation Log	Records the operation information on the Configuration Management screen.

13.7.4 Drug Library Update

After adding drug library files to the **Drug Library Update** screen, the drug library information can be sent to the AniFM I3 Veterinary Infusion Pump, AniFM S3 Veterinary Syringe Pump and BeneFusion eDS Vet Veterinary Infusion Supervision System. The setting description of the **Drug Library Update** screen is as follows:

Item	Description
Add Drug Library	Select Add From Device List or Add From File List to add the drug library information. - Add From Device List: only applicable to AniFM I3 Veterinary Infusion Pump and AniFM S3 Veterinary Syringe Pump. - Add From File List: supported drug library files with .BDL format.
Synchronize To Device	Only applicable to AniFM I3 Veterinary Infusion Pump, AniFM S3 Veterinary Syringe Pump and BeneFusion eDS Vet Veterinary Infusion Supervision System. The procedure for sending the drug library to the device is as follows: 1. Select Synchronize To Device. 2. Check one or more devices to be synchronized on the Select Device dialog box. 3. Click OK.
Delete Drug Library	Check one or more drug library files and select Delete Drug Library to delete the drug library files.
Operation Log	Records the operation information on the Drug Library Update screen.

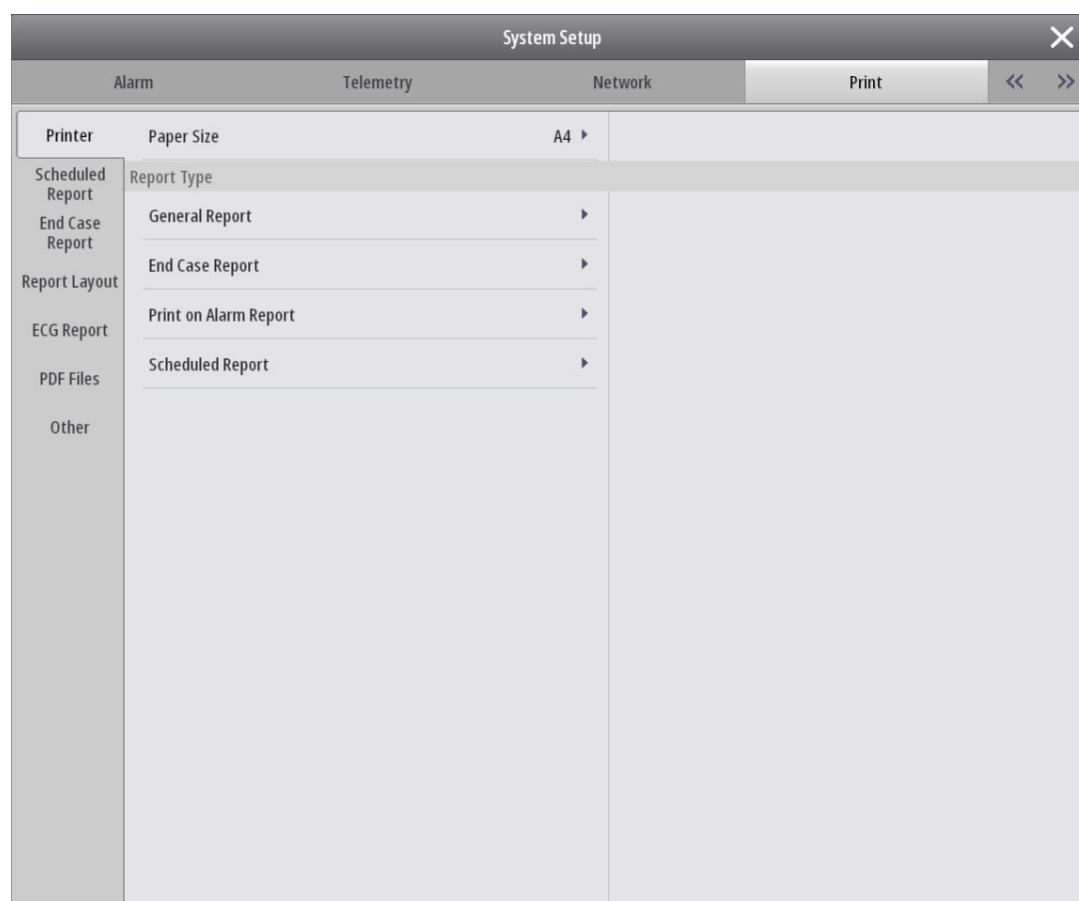
13.7.5 Brand Library Update

After adding brand library files to the **Brand Library Update** screen, the brand library information can be sent to the AniFM I3 Veterinary Infusion Pump, AniFM S3 Veterinary Syringe Pump and BeneFusion eDS Vet Veterinary Infusion Supervision System. The setting description of the **Brand Library Update** screen is as follows:

Item	Description
Add Brand Library	Select Add From Device List or Add From File List to add the brand library information. - Add From Device List: only applicable to AniFM I3 Veterinary Infusion Pump and AniFM S3 Veterinary Syringe Pump. - Add From File List: supported brand library files with .bin format.
Synchronize To Device	The procedure for sending the brand library to the device is as follows: 1. Select Synchronize To Device. 2. Check one or more devices to be synchronized on the Select Device dialog box. 3. Click OK.

Item	Description
Delete Brand Library	Check one or more drug library files and select Delete Brand Library to delete the brand library files.
Operation Log	Records the operation information on the Brand Library Update screen.

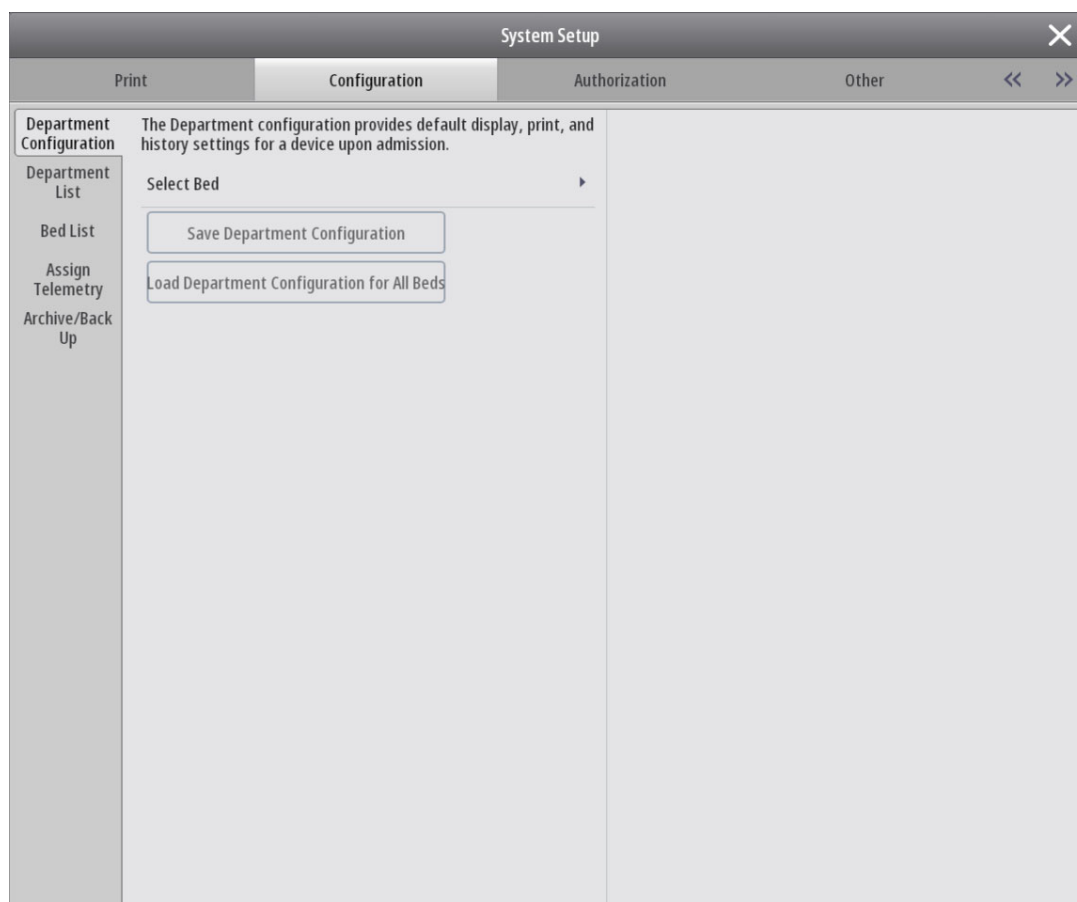
13.8 Print Settings



Parameter		Description
Printer	Paper Size	/
	Report Type	Set the printer. NOTE: - Only the following reports support color printing currently: vital sign summary report, and ECG summary report. - PDF reports can be output by PDFCreator only.

Parameter		Description
Scheduled Report		Sets whether to print report on time, time interval and report type. Select Print Now if you wish to start printing immediately regardless of the configured printing start time.
End Case Report		Select the desired report types. While discharging the animal, if printing the end case report is enabled, the CMS will automatically print the selected end case reports.
Report Layout		Set the animal information displayed on the reports other than ECG report. Set the current hospital information, for example, hospital name and icon.
ECG Report		Set the animal information displayed on ECG reports.
PDF File Name		Set the display content, directory where PDF files are saved and so on. NOTE: The directory must be consistent with the file saving directory configured in the PDFCreator.
Others	Print on Alarm	Set the alarm outputs. When an alarm is triggered for a parameter, the CMS can start a printing task automatically.
	Printing Duration On Alarm	When an alarm is triggered for a parameter, the CMS can start a printing task automatically. 10 sec, 20 sec, and 30 sec means printing the waveforms 5 seconds, 10 seconds, and 15 seconds before and after the alarm triggered time respectively.
	Monitor Remote Print	If you enable this option, the CMS automatically starts a printing task after the printing task is started at the animal monitor.
	Second Mark (Printer)	If you enable this option, second marks will be displayed on the report printout.

13.9 Configuration Settings



Parameter	Description
Department Configuration	You can use the display, print and other settings of the selected bed as configuration items. These configuration items can be loaded for bedside monitors automatically when the monitors are newly admitted by the CentralStation.
Department List	Add or delete departments. NOTE: This function is available at the CentralStation only.
Bed List	Add or delete beds. NOTE: This function is available at the CentralStation only.
Assign Telemetry	Assign telemetry devices to departments. NOTE: This function is available at the CentralStation only.

Parameter		Description
Archive/Back Up	Print All Settings	Prints all settings such as telemetry configurations and department configurations.
	Back Up All Settings	After selecting this option, you need to select the directory where settings are saved and then select OK .
	Restore All Settings	After selecting this option, you need to select the directory where back-up settings are located and then select OK .
	Export/Import	To export all the settings from current CMS for another CMS or import other CMS settings to the current CMS, select Export All Settings or Import All Settings .

13.10 Authorization Settings

System Setup

Print

Configuration

Authorization

Other

<<

>>

General & Monitor

Pump

Anesthesia

Automatic Logout Time

20 sec

▸

Maintenance

User Maintenance

Maintenance Password

▸

Delete Discharged Patients

No Password

▸

Exit the Application

Maintenance Password

▸

Modify Maintenance Password

Clinical Setting

Telemetry

Monitor

Alarm Setup

No Password

▸

No Password

▸

Arrhythmia

No Password

▸

No Password

▸

Alarm Pause & Audio Pause & Alarm Reset

No Password

▸

No Password

▸

View Discharged Patients

No Password

▸

Modify Clinical Password

Other

Telemetry

Monitor

Privacy Mode

Enable All Beds

▸

Night Mode

Enable All Beds

▸

Modify Patient Demographics

No Password

▸

No Password

▸

Parameter		Description
General&Monitor	Automatic Logout Time	When setting the System Setup menu, if the timeout period is reached, you need to input the password again.
	Maintenance	• User Maintenance: selecting Local Password indicates that the password to access the System Setup menu at the CMS is required. Selecting User Password indicates that the user name and password saved in the MLDAP server are required when accessing the System Setup menu. • Delete Discharged Patients: set the permission to delete discharged animal information via the CentralStation or the WorkStation. • Modify Local Password: change the password required to access the System Setup tabs other than the Factory Maintenance tab.
	Clinical Setting	Set permissions for CMS to control bedside devices (monitors and telemetry devices) in the clinic settings area.
	Other	Set other permissions for the CMS to control bedside devices (monitors and telemetry devices). Such as work mode.
Pump	Infusion Mode and Parameter Setup	The options descriptions are as follows: • Enable: you can operate the bedside devices without inputting password. • Read Only: you can only view information from the bedside devices. Other than operations. • Clinical Password: you need to input the local password before performing operation at the CMS. If you wish to change the local password, select Modify Clinical Password. • User Password: the user name and password saved in the MLDAP server are required when operating on the CentralStation/WorkStation.
	Bolus	
	General Option	
	Standby	
	Relay	
	Alarm reset & audio paused	
	Modify Clinical Password	
Anesthesia	Anesthesia Machine Remote Access	/

13.11 Other Settings

WARNING

When the CMS software is running, do not change the operating system time. If the operating system time must be changed, do not change the operating system time directly. Instead, change the CMS system time according to instructions in this section.

NOTE:

- After the CentralStation time is changed, the networked monitor system time will be synchronized to match the CentralStation system time.

- When a monitor is connected to the CentralStation, the monitor system time will be synchronized to match the CentralStation system time.
- The CentralStation will synchronize the time of the networked monitors at start of every hour.
- Users of the WorkStation shall not modify the settings of the operating system, install new hardware or software, or uninstall hardware/software, drive, or operating system components.

Unit	Length Unit	cm ▾	Temp Unit	°C ▾
Integrated Devices Unit	Weight Unit	kg ▾	Pressure Unit	mmHg ▾
Time	ST Unit	mV ▾	SVR Unit	DS/cm ⁵ ▾
Language	Hb Unit	g/dl ▾	Caliper Unit	msec ▾
Device Location	CVP Unit	cmH2O ▾		
Touch Screen	ICP Unit	mmHg ▾		
Anesthesia Record	CO2 Unit	mmHg ▾		
Review	O2 Unit	% ▾		
Setup				

Parameter	Description
Unit	Set the desired units.
Units of the Integrated Device menu	Set the units displayed on the Integrated Device menu.

Parameter		Description
Time	Time Synchronization	- NTP Server: synchronizes time with the NTP server. Select NTP Server. You need to input the IP address or name of NTP server and select Intmt. Time in the Time Server Address. The Time Server will automatically obtain the IP address of the NTP server. The default Intmt. Time is 1 hour. Connected Status displays the status of connection between the CMS and the NTP server. - Manual: sets the time manually. When Manual is selected, you need to set time in the Set System Time. NOTE: At the WorkStation, you can only set date format and whether enable 24-Hour Time.
	Set system time	Set time on the current system. NOTE: It is available only when Time Synchronization is set to Manual.
	Night time	Set night time start time and end time.
Language		Set language on the current system. NOTE: If the language you selected is inconsistent with that of the operating system, unrecognizable characters may appear on the CMS. If this occurs, change the operating system language and region settings by following the operating system operator's manual.
Device Location	Facility Name	Set the facility, department, device Name, and main screen display to which the system belongs.
	Department	Set the department which the current system belongs to.
	Device Name	Set the current system name.
	Main Screen Display	Set the main screen displaying format.
	Synchronize Location To Telemetry/Monitor	When it is enabled, after an animal is discharged from a telemetry device/monitor, if the hospital and department information of this telemetry device/monitor is blank, the CMS will send these pieces of information of its own to the telemetry device or animal monitor. NOTE: This function is available at the CentralStation/ WorkStation only.
Touch Screen	Cal Touchscreen	For Elo touchscreen
	Tablet PC Settings	Calibrate other touchscreen.

Parameter		Description
Anesthesia Record	Anesthesia Record	Set whether to display the Anesthesia Record tab on the Viewbed screen.
	Admit Monitor Data	Set whether to admit monitor data on the Anesthesia Record tab.
Review	Save Waveform	Set the waveform saving accuracy. If the hard-disk partition is less than 450 G, full disclosure waveforms are saved in low resolution by default. If the hard-disk partition is greater than or equal to 450 G, full disclosure waveforms are saved in medium resolution by default. NOTE: This function is available at the CentralStation only.
	Group Setup	A trend group defines the trend displayed on the trend review page and printed in trend reports and recordings. NOTE: In the Group Setup menu, HR is always displayed in the first row. It cannot be deleted or moved.
	Export Patient Data	Click Export Patient Data and select the desired animals, data type and save path.
	Arrhythmia mark colors	Set colors for arrhythmia marks.
Setup		The CentralStation uses the Hodges correction formula by default to correct the QT interval for heart rate. - Hodges: $QT_c = QT + 1.75 \times (HeartRate - 60)$ - Bazett: $QT_c = QT \times \left(\frac{HeartRate}{60} \right)^{\frac{1}{2}}$ - Fridericia: $QT_c = QT \times \left(\frac{HeartRate}{60} \right)^{\frac{1}{3}}$ - Framingham: $QT_c = QT + 154 \times \left(1 - \frac{60}{HeartRate} \right)$

13.12 Factory Maintenance Settings

Options in the **Factory Maintenance** tab is applicable to the customer service personnel.

14 Maintenance

14.1 Overview

Regular maintenance is essential to ensure that the CMS functions properly.

14.2 Safety Information

WARNING

- Individual hospital or institution employing the use of the CMS should implement a satisfactory maintenance schedule. Otherwise, device failure, unpredictable results or personnel injury may occur.
 - The safety checks or maintenance involving any disassembly of the CMS should be performed by professional service personnel. Otherwise, undue equipment failure and possible health hazards could result.
 - The service personnel must be properly qualified and thoroughly familiar with the operation of the CMS.
 - Turn off the CMS if no animals are to be centrally monitored.
 - Restart the CMS every three months. Long time operation of the system may lead to a failure of the operating system.
 - When the CMS is restarting, animal data will not be stored. To prevent any data loss, only restart your system when animals are not monitored.
 - Disinfection or sterilization may cause damage to the equipment. Therefore, when preparing to disinfect or sterilize the equipment, consult your hospital's Infection Control Officer or Epidemiologist. Check the equipment after disinfection. If there is any sign of damage, remove it from use.
-

CAUTION

- If needed, contact Mindray Animal Medical for information concerning the repair of the CMS.
- All servicing and future upgrades must be carried out by the service personnel trained and authorized by Mindray Animal Medical.
- Make sure that the CMS operating environment meets the specific requirements. Otherwise, unexpected consequences, e.g. damage to the equipment, could result.
- When disposing of the packaging material, be sure to observe the applicable waste control regulations and keep it out of children's reach.

- **At the end of its service life, the CMS must be disposed of in compliance with the guidelines regulating the disposal of such products. If you have any questions concerning disposal of the equipment, please contact Mindray Animal Medical.**
-

14.3 General Inspection

Whenever the CMS is first installed, repaired, upgraded or has been used for 6 to 12 months, a thorough inspection should be performed by qualified service personnel to ensure its reliability. For details, see “4.1.1 Preuse Inspections”.

14.4 Cleaning

CAUTION

- **Shut down the system and disconnect all power cords from the outlet before cleaning the equipment.**
 - **When cleaning the mouse, keyboard, or other peripheral devices, disconnect them from the CMS.**
 - **Take extra care when cleaning the screen because it is more sensitive to rough cleaning method than the housing. When cleaning the screen, turn off the CMS.**
 - **Avoid equipment and accessory interfaces when cleaning the equipment housing. Permit fluid to seep into the casing, connectors, switches, or any ventilation openings.**
 - **Never immerse any part of the CMS in liquids or allow liquid to enter the interior.**
 - **Do not pour or spray any liquid directly on the CMS or permit fluid to seep into housing. If you spill liquid on the equipment or accessories, disconnect the power supply, dry the equipment, and contact your service personnel.**
 - **Check the equipment after cleaning. If there is any sign of damage, remove it from use.**
-

The CMS should be cleaned regularly. Especially in areas with severe environmental pollution or heavy wind and sand, the equipment should be clean more regularly.

For the best performance, it is recommended that the CMS touch screen be kept clean. Observe the following precautions when cleaning the touch screen:

- Always remember to use a cloth or towel to apply glass cleaner to the touch screen.
- Any standard glass cleaner can be used to clean the touch screen. Do not use abrasive cleaning materials to clean a touch screen. Do not use alcohol or solvents containing chlorinated hydrocarbons.
- Remove fingerprints and stains by using a liquid lens cleaner and a soft cloth.
- Use a fine soft-hair brush to carefully brush away dust and dirt particles.

A Technical Specifications

A.1 System Requirement

The computer of the CMS should be highly reliable and stable. To make the CMS run normally and effectively, select the computer according to the CMS configuration and performance requirements.

NOTE:

The configurations listed in this chapter are for reference only. The configurations change whenever the CMS is updated.

A.1.1 Requirements of the Host Computer for the CentralStation

The requirements of the host computer are as below:

Item	Requirement
CentralStation	• CentralStation (less than or equal to 32 animals) – CPU: Intel Core i5 minimum, 2.19GHz minimum and 4 cores minimum – Memory: 8GB minimum with 4GB capacity available – Network adapter: 100M (minimum) self-adapting, Ethernet 802.3 – Hard disk: available capacity of 50G minimum for disk C and available capacity of 100G minimum for disk D – USB ports: two or more – Network bandwidth: LAN access bandwidth 150Mbps/s or above; Internet access bandwidth 150Mbps/s or above • CentralStation (more than 32 animals) – CPU: Intel Core i5 minimum, 2.19GHz minimum and 4 cores minimum – Memory: 16GB minimum with 8GB capacity available – Network adapter: 100M (minimum) self-adapting, Ethernet 802.3 – Hard disk: available capacity of 50G minimum for disk C and available capacity of 100G minimum for disk D – USB ports: two or more – Network bandwidth: LAN access bandwidth 150Mbps/s or above; Internet access bandwidth 150Mbps/s or above

A.1.2 Requirements of the Host Computer for the WorkStation

Requirements of the Host Computer for the WorkStation are as follows:

Item	Requirement
WorkStation	• WorkStation (less than or equal to 32 animals) – CPU: Intel Core i3 minimum, 2.19 GHz minimum, 4 cores minimum – Memory: 4GB capacity available – Network adapter: 100M (minimum) self-adapting, Ethernet 802.3 – Hard disk: available capacity of 50G minimum for disk C – USB ports: two or more – Network bandwidth: LAN access bandwidth 150Mbps/s or above; Internet access bandwidth 150Mbps/s or above • WorkStation (more than 32 animals) – CPU: Intel Core i5 minimum, 2.19 GHz minimum, 4 cores minimum – Memory: 8GB minimum with 4GB capacity available – Network adapter: 100M (minimum) self-adapting, Ethernet 802.3 – Hard disk: available capacity of 50G minimum for disk C – USB ports: two or more – Network bandwidth: LAN access bandwidth 150Mbps/s or above; Internet access bandwidth 150Mbps/s or above

A.1.3 Others

The other configurations are as follows:

Item	Requirement
System	• Meet the IEC 62368-1 requirements defined for ITE equipment • Comply with CE low voltage directives (LVD) and EMC directives.
Display	• Support touchscreen • Display: optimal resolution to 1920×1080 • Support single 4K widescreen with 3840X2160 resolution (recommended displays: 55 inches or above with aspect ratio of 16:9)

Item	Requirement
Operating system	CentralStation • Support Windows 10 Home • Support Windows 10 Enterprise • Support Windows 11 Home • Support Windows 11 Pro • Support Windows 11 Enterprise
	WorkStation • Support Windows 10 Home • Support Windows 10 Enterprise • Support Windows 11 Home • Support Windows 11 Pro • Support Windows 11 Enterprise
Antivirus	Support McAfee Application Control
Graphic card	Support dual or multiple displays
Printer	Support A4
Speaker	• Built in the computer or the display • Give alarm tones (45 to 85 dB) and alarm tones comply with IEC 60601-1-8.

A.2 Audio Signals

Item	Description
Alarm tone	600 Hz, ISO pattern; 600 Hz, ISO2 pattern
Self-test tone	a short beep
Alarm volume adjustment tone	a short beep

A.3 Supported Animals and Devices

Parts	Maximum Number of Animals That Can Be Connected	Maximum Number of Monitoring Devices That Each Animal Can Be Connected
CentralStation	64	1 monitor, 1 anesthesia machine and 12 pumps
WorkStation	64	1 monitor, 1 anesthesia machine and 12 pumps

Parts	Maximum Number of Animals That Can Be Connected	Maximum Number of Monitoring Devices That Each Animal Can Be Connected
-------	---	--

NOTE:

- A CentralStation can connect to the maximum number of WorkStations and CentralStations is 32.
- The number of animals connected to the cloud CentralStation depends on the license configuration you purchased.

A.4 Maximum Number of Animal Sectors on the Multibed Screen

Display Resolution	Maximum Number of Animal Sectors on the Multibed Screen
1920× 1080	One display:36 More than two displays: 64
3840× 2160	One display:64

A.5 Maximum Number of CMS Viewers

Maximum number CMS Viewer that can be connected is 32.

NOTE:

The number of animals connected to the cloud CentralStation depends on the license configuration you purchased.

A.6 Parameters That Can Be Displayed

The CMS supports synchronous display of parameter information, including parameter value, waveform, and so on. When the bedside device connected to the CMS is different, different parameters can be displayed as follows:

Bedside Device Type	Parameters That Can Be Displayed On The CMS
Monitoring device [*]	At least include: ECG, SpO ₂ , NIBP/IBP, Resp, Temp, PR, C.O., CO ₂ , O ₂ , AG, measurement value, waveform, alarms and measurement status information.
Pumps	Drug name, drug color, infusion rate and infusion remaining time.

Bedside Device Type	Parameters That Can Be Displayed On The CMS
Anesthetic machine	At least include: RM, CO ₂ , AG, BIS, ESI, ventilation settings, fresh gas settings, ventilation mode (VCV, SIMV-VC, PCV, PCV-VG, SIMV-PC, SIMV-VG, CPAP/PS and APRV); waveforms and alarm message.

NOTE:

- *: when the CMS is connected to the other bedside devices through the BeneLink, the CMS displays the parameter information of the bedside devices. For details, see the Operator's Manual of BeneLink.
- Only when the bedside device supports a parameter module, can the CMS display the data of the parameter synchronously.

A.7 Wired Network

Item	Description
Network structure	Ethernet 802.3
Transmission rate	≥100 Mbps
Max alarm time delay	≤ 3s

A.8 Summary

Support the following summaries:

- Vital sign summary
- ECG summary

A.9 Review

Item	Description
Minitrend	Most recent 8 hours of minitrends for all parameters
Trend review	Most recent 240 hours of tabular trends and graphic trends for all parameters
Waveform review	Most recent 240 hours of full-disclosure waveforms and compressed waveforms
NIBP review	Most recent 3000 NIBP measurements
Event review	Most recent 3000 events, including the parameter name and 16-second waveform before and after an alarm is triggered

Item	Description
Historic review	More than 200 discharged patients' data (depends the capacity of the hard disk)
ST review	Most recent 240 hours of ST segments

A.10 Anesthesia Record

Support anesthesia record, including the following:

- Animal information, surgery information and medication information
- Monitoring data, subjective evaluation and infusion data
- Note information

A.11 Printer

Item	Description
Paper size	A4
Outputs	Tabular trend report, graphic trend report, compressed waveform report, full-disclosure waveform report, waveform segment report, event report, event list report, multi-lead ECG report, ST report, QT report, Arrh statistics report, realtime report, a larm limits report, summary report, vital sign summary report, ECG summary report and anesthesia record report.

B Default Settings

B.1 Overview

This chapter only describes default settings in the **System Setup** menu. For the default settings of bedside devices monitored at the CMS, see appropriate operator's manuals for these devices. For details on how to access the **System Setup** menu, see "13 System Setup".

"All" in the "Available At" column of the following tables indicates that this function is available at the CentralStation, and the WorkStation.

"/" in the following tables indicates that this item is not configurable.

B.2 Display Tab

Subtab	Item	Default	Available At
Sector	Patient Sector Number	16	All
	Sort Type	Manual	
	Sort By	Bed No	
	Sort Orientation	Landscape	
	Location	Room No. & Bed No.	
	Patient Information	Patient Name	
	Support Switching Locked Sector	Off	
	Clear Unlocked Overview Sector After Discharging The Patient	Off	
	Hide Unused Sectors	Off	

Subtab	Item	Default	Available At
Other	ECG Lead Sequence	Normal	All
	Soft Keyboard	Off	
	Outline Font for Suspected Values	Off	
	List of Remaining Infusion Times	On	
	Remaining Infusion Time	20min	CentralStation
	Auto Close ViewBed Screen	Never	All

B.3 Patient Management Tab

Subtab	Item	Default	Available At
Field	Patient ID	Selected	All
	breed		
	Visit Number	Unselected	
	Room No		
	Length		
	Admit Date		
	Facility		
	Department		
	Patient Group		
	Custom Field 1 to Custom Field 3		
Discharge	Auto Discharge if Network Disconnected	Never	CentralStation
	Auto delete discharged patients when storage space is full	On	
	Prompt on patient auto deleted	On	
	Prompt Alarm When Storage Is Nearly Full	Med	
	Include Patient Demographics When Exporting Patient Data	Off	

Subtab	Item	Default	Available At
	Auto Delete Patient Data if Discharged	Auto	
Location	Location 1	Cathlab	CentralStation
	Location 2	X-Ray	
	Location 3	MRI	
	Location 4	CT Scan	
	Location 5	Ultrasound	
	Location 6	Hemodislysis	
	Location 7	OR	
	Location 8	Therapy	
	Location 9	Custom	
	Location 10	Custom	
Patient Group	Group 1 ~ 16	Selected	
Care Group	Care Group Setup Mode	Manual	
	Group 1 ~ 16	Selected	
	Reset Care Group in the Locked Sector When Admitting a New Patient	Off	

B.4 Alarm Tab

Subtab	Item	Default	Available At
Audio	Minimum Alarm Volume	0	All
	High Alarm Volume	Alarm volume+3	
	Alarm Sound	ISO2	
	High Alarm Interval	3sec	
	Med Alarm Interval	8sec	
	Low Alarm Interval	20s	
	Auto Increase Volume	2Steps	
	Increase Volume Delay	20sec	
	Alarm Reset Reminder	Off	
	Alarm Off Reminder	Off	
	Reminder Interval	1min	
	Single Bed Alarm Audio Off	Disable	
	Resume Alarm Audio When Patient is Admitted	Off	

Subtab	Item	Default		Available At
	Alarm Type with Audio On	All		
	Special Advanced Alarm Sound	Asystole	Selected	
		V-Fib/V-Tach		
		V-Tach		
		Vent Brady		
		Extreme Tachy		
		Extreme Brady		
		SpO2 Desat		
		Apnea		
Other	Global Silence Hotkey	None		
	Global Silence	Disable		
	Offline Alarm Priority	Low		
	Flashing Alarm Bar	On		
	No offline alarm if patient discharged	On		
	Patient ID/Visit Number Conflicts	Off		

B.5 Telemetry Tab

This tab is applicable to CentralStation.

Subtab	Item	Default
Alarm	Alarm Delay	6 sec
	ST Alarm Delay	30 sec
	ECG Lead Off	Low
	SpO2 Sensor Off	Low
	Alarm Reset	Permanent
	Alarm Pause	2 min
	Arrhy Shield Time	2 min
ECG	Notch Frequency	60 Hz
Device Setting	Auto Enter Monitor Mode	No Central Monitoring
	Display Auto Off	1 min
	Upgrade Server Ip	Custom

Subtab	Item	Default
Authorization Setup	Automatic Logout Time	20 sec
	Alarm Setup	No Password
	Arrhythmia	No Password
	Alarm Paused & Alarm Reset	No Password
	ST Analysis	No Password
	QT Analysis	No Password
	ECG Relearn	No Password
	Modify Patient Demographics	No Password
	Discharge Patient	No Password
	Standby	No Password

B.6 Network Tab

Subtab	Item	Default		Available At
Local	Central Monitoring Network Setup	Local IP address	Null	All
	Bedside Monitoring Network Setup	Local IP address	Null	
Master Server	Master Server Address	Custom		
	Connected Status	Disconnected		
Central Station Authorization	Access Control	Full Control		
	A password is required to access this Central Station	Unselected		
Bed Authorization	Default authorization to be enabled for all beds.	Selected		
AP Management	Setup Mode	Allowed Area		
	Department	General		
	Trigger an alarm when devices move out of the allowed area	Off		
	Alarm Priority	Low		

Subtab	Item	Default		Available At
Other	Multicast Setup	Multicast Address	225.0.0.8	All
		Multicast TTL	1	
	Information Security	Encryption Connection Type	Only Private Encryption	
		Broadcast Patient Demographics	Off	
MLDAP	Server Address	Custom		
	IP Address	/		
	Port	6665		
MobileServer	Access AlarmGUARD Tool from System Menu	Off		CentralStation

B.7 Print Tab

Subtab	Item	Default	Available At
Printer	Paper Size	A4	All
	For General Report, End Case Report, Print on Alarm Report, and Scheduled Report:		
	Printer	Blank	
	Printer Resolution	300 dpi	
	PDF Resolution	600 dpi	
	Print Action	Paper	
	Color Mode	Color	
Scheduled Report	Scheduled Report Switch	Off	
	Time	08:00	
	Scheduled Report Interval	8 hrs	
	Tabular Trends Report	Selected	

Subtab	Item	Default	Available At
End Case Report	Period	4 hrs	All
	Tabular Trends Report	Selected	
	Graphic Trends Report	Selected	
	Event Report		
	Arrhy Statistics Report		
	Alarm Limits Report		
	Realtime Report		
	ECG Report		
	Vital Sign Summary		
	ECG Summary	Selected	
	Report Layout	Patient Name	
Species			
Gender			
Owner			
Weight			
Patient ID			
Physician			
Age			
Bed No			
ECG Report		Patient ID	Selected
	Visit Number	Unselected	
	Patient Name	Selected	
	Age		
	Gender		
	Owner		
	Physician	Unselected	
	Department		
	Bed No		
	Bed No		
PDF File Name	Patient ID	Displayed	
	Title		
	Printing Time		
Other	Print on Alarm	Printer	
	Printing Duration On Alarm	20 sec	

Subtab	Item	Default	Available At
	Monitor Remote Print	On	
	Second Mark (Printer)	On	

B.8 Authorization Tab

Subtab	Item	Default		Available At
General&Monitor	Automatic Logout Time		20 sec	All
	Maintenance	User Maintenance	Maintenance Password	
		Delete Discharged Patients	No Password	
	Clinical Setting	/	For Telemetry	For Monitor
		Alarm Setup	No Password	No Password
		Arrhythmia	No Password	No Password
		Alarm Pause&Audio Pause&Alarm Reset	No Password	No Password
		View Discharged Patients	/	No Password
	Other	Privacy Mode	/	Enable All Beds
		Night Mode	/	Enable All Beds
		Modify Patient Demographics	No Password	No Password
		Transfer Patient		
		Discharge Patient		
		Standby		
		NIBP Start/Stop	No Password	No Password
		NIBP Interval	/	No Password
		NIBP Clock Measure	/	No Password

Subtab	Item	Default			Available At
		ST Analysis	No Password	No Password	All
		QT Analysis	No Password	No Password	
		QRS Threshold	No Password	/	
		Pacemaker Rate	No Password	No Password	
		Pacer Reject	No Password	No Password	
		ECG Relearn	No Password	No Password	
		Send Data to EMR/Export EMR	No Password	No Password	
		Care Group Assignment	No Password	No Password	
		Device Location	No Password	No Password	
Pump	Infusion Mode and Parameter Setup	Clinical Password			All
	Bolus				
	General Option				
	Standby				
	Relay				
	Alarm Reset&Audio Pause				
Anesthesia	Anesthesia Machine Remote Access	Read Only			All

B.9 Other Tab

Subtab	Item	Default		Available At
Unit	Length Unit	cm		All
	Weight Unit	kg		
	ST Unit	mV		
	Hb Unit	g/dl		
	CVP Unit	cmH ₂ O		
	ICP Unit	mmHg		
	CO2 Unit			
	O2 Unit	%		
	Temp Unit	°C		
	Pressure Unit	mmHg		
	SVR Unit	DS/cm ⁵		
	Caliper Unit	msec		
Integrated Devices Unit	Pressure Unit	cmH2O		CentralStation
	CO2 Unit	mmHg		
	tcpCO2/tcpO2 Unit			
	Weight Unit	kg		
Time	Time Synchronization	Manual		CentralStation
	Interval	1h		
	Date Format	yyyy-mm-dd		All
	24-Hour Time	On		
	Nighttime	From	22:00	
		To	06:00	
	Data Statistics Time	08:00		CentralStation
Language	Language	English		
Device Location	Main Screen Display	Facility Name+Department		All
	Synchronize Location To Telemetry/Monitor	Off		CentralStation, WorkStation
Anesthesia Record	Anesthesia Record	On		All
	Admit Monitor Data	On		
Review	Save Waveform	Low resolution		
	Arrhy Mark	Selected		

Subtab	Item	Default	Available At
Setup	Barometric Pressure	760mmHg	
	ECG Standard	AHA	
	QTc Formula	Hodges	
	Manual Event Edit	On	

C Alarm Messages and Troubleshooting

C.1 Alarm Messages

This chapter only lists alarms and their solutions coming from the CMS. For physiological and technical alarm messages from bedside devices, see appropriate Operator's Manuals of these devices.

Alarm Messages in the System Alarm Area

Alarm message	Alarm Priorities	Cause and solution
Network is disconnected. Please check.	High	The CMS network connection is disconnected. Check the network.
The settings have been changed. Please restart the system.	High	Modification of system network settings takes effect after restart.
Storage Error	High	Contact the Customer Service Department or your local distributor.
Sound Card Error	High	Replace the computer with a known good one.
The patient data storage space is nearly full. Please delete some discharged patients.	Medium	The discharged patient storage space is nearly full. Please delete some discharged patients. Note: The alarm priority is configurable. You can change the alarm priority.
The patient data storage space is full. The earliest data will be deleted.	Prompt	The discharged patient storage space is full. The earliest discharged patients will be deleted automatically.
Station (Department), Network Disconnected	Low	Check the connection between the WorkStation and the CentralStation. Note: The "(Department)" in the alarm message refers to the department where the WorkStation is located. The alarm priority is configurable in the System Setup menu.

Alarm message	Alarm Priorities	Cause and solution
Disk array error. Please check.	Medium	Contact Customer Service Department or your local distributor and replace the faulty one with a known good one.
Time Server Unavailable.	Low	Check the time synchronization settings and check that the external time server works properly.
No bed is online. Please check network connection.	Prompt	No bed is online. Please check network connection.
Bed No. conflicts. Please check.	Prompt	Check the bed numbers of all the bedside devices. If the same bed number is found, change it to a different bed number.
User name or password error.	Prompt	The user name or password of logging in the cloud CMS is wrong. Please input the correct user name and password.
Account is invalid.	Prompt	Both the user name and password of logging in the cloud CMS are correct. The remaining validity period of the user is 0. Contact Customer Service Department or your local distributor.

Alarm Messages in Animal Sectors

Alarm Messages	Alarm Priorities	Cause and Solution
Patient ID conflicts with XXX	Medium	Patient ID conflicts with XX Check and modify the Patient ID.
Visit number conflicts with XXX	Medium	Visit number conflicts with XX. Check and modify the visit number.
Offline	Low	The bedside device is disconnected from the CMS network abnormally, such as the bedside device power failure, device or the CMS network disconnection. Check the network.
No RF Signal	Low	The telemetry device is disconnected from the CMS network. Check the network.

C.2 Troubleshooting

C.2.1 Common Failure

The following lists the common failure of the CMS. If the problem persists after corrective actions have been taken, contact Customer Service Department or sales representative.

Failure Description	Solution
Network printer cannot print	When this situation occurs, perform the following procedure: 1. From System Setup → Print tab, select other printer from Check if the printout is normal. If problem still occurs, perform the following: 2. Check if the network printer can be used in the windows system. If it can, restart the computer and perform the step 1 on the CMS. If not, proceed to the next step. 3. Make sure the network cable between the printer and the CMS is properly connected. 4. Make sure the IP addresses of the printer and CMS are in the same network segment. For the method to obtain the IP address of the printer, see the accompanying documents of the printer or dial the customer service call of the printer. For example, For HP LaserJet 1505n, configuration page has IP address information, and you can directly press the print button on the operation panel to print the configuration page. For HP LaserJet 2035n, press and hold the print button for 5s to 10s on the operation panel to print the configuration page. 5. If the above two items are normal, please try to delete the existing printer driver and reinstall it. 6. If the printer still cannot work normally under windows after the driver is installed, contact the printer supplier for technical support.
No waveform is displayed in the Review tab.	The reason for this is that the waveform to be stored is not added. Click Select Waveform on the Full Disclosure screen to add waveforms as necessary.
Dongle Error	The following errors may occur during installation and running: 1. When “Cannot find Softdog, please insert it” prompt appears, this may be caused by dongle driver not installed, dongle inserted improperly, or USB port damaged. Please check dongle driver, reinsert dongle or change the USB port. If the error still occurs, replace the Softdog. 2. The system prompts that the Softdog version is too high or does not match the current software version. This problem may occur during maintenance or replacement. In this case, the Softdog may be written too high. Upgrade the CMS software version or replace the Softdog.

Failure Description	Solution
CMS cannot connect to the bedside device.	This fault may be caused by network configuration, network cable plugged improperly, network cable damaged etc. Refer to the following procedures to troubleshoot this fault. 1. Check if the network cable is plugged properly. 2. Check network configuration and check if the IP address of the CMS or network bed number of the monitor is configured correctly. Check the network configuration of the CMS. 3. Use ping command to check if the CMS can be connected to the bedside monitor. Try to ping as many monitors as possible. In the case of ping failure, the hardware might be damaged. 4. Check if the crystal connector on the network cable or the network cable is damaged.

C.2.2 Diagnosis of Network Connection Problems

The following lists the possible causes for network connection problem.

Check Items	Checkout Description	Prompt for a Check Failure	Possible Cause for a Check Failure
Local address check	Check whether the local network address is set.	Local IP is invalid. Please check local network settings.	The local network address is not set.
	Check the subnet mask.	The subnet mask is invalid. Please enter a valid mask.	The subnet mask is 255.225.255.255.
	Perform the ping test on the local network address and gateway.	The gateway is not connected. Please check the local IP, subnet mask, and gateway settings.	The ping operation on the local network address and gateway fails.
Server address check	Check whether the server address or domain name is inputted.	Please input the server address or domain name information	The server address or domain name is not inputted.
	Check whether the server port number is inputted.	Please input the server port number.	The server port number is not inputted.
	Server domain name resolution	The domain name resolution failed. Please contact the IT staff.	The server domain name fails to be resolved.

Check Items	Checkout Description	Prompt for a Check Failure	Possible Cause for a Check Failure
Network connectivity check	Perform the ping test on the local network address and server address.	Connectivity check failed. Please check that the local IP and peer IP are correct, or contact the IT staff to check the gateway and routing settings.	The ping test on the local network address and server address fails.
Port connectivity check	Connection test on the TCP ports between the CentralStation and data export server.	Please confirm if the XXXX port is enabled or filtered, or contact the IT staff.	The TCP port connection fails.
	Connection test on the TCP ports between the CentralStation and MLDAP server.	NOTE: XXXX indicates a specific server port.	
Port connectivity check	Connection test on the TCP ports between the CentralStation and master server.	Please confirm if the 9999 port is enabled or filtered, or contact the IT staff. Confirm that the Master Server has started and Master Server Address is correct.	The TCP port connection fails.
	Connection test on the TCP ports between the CentralStation and other CentralStation.	Please confirm if the 6588/ 6600 port is enabled or filtered, or contact the IT staff. Please confirm if the 7588/ 7600 port is enabled or filtered, or contact the IT staff.	The TCP port connection fails.
	Connection test on the TCP ports between the CentralStation and MobileServer.	Please confirm if the 7602/ 7603 port is enabled or filtered, or contact the IT staff. Confirm that the Mobile Server has started. Confirm that the switch of "Public network deployment" in Mobile Server has selected.	The TCP port connection fails.

Check Items	Checkout Description	Prompt for a Check Failure	Possible Cause for a Check Failure
	Connection test on the TCP ports between the CentralStation and different devices.	Please confirm if the YYYY port is enabled or filtered, or contact the IT staff. NOTE: YYYY indicates the port for a monitor to connect to the CentralStation. The port varies with the monitor.	The TCP port connection fails.

C.2.3 Network Information Display

To obtain the current network card information, multicast group information, dynamic routing information, and static routing information on the CMS, contact the Customer Service Department.

D Abbreviations

Abbreviation	In Full
AC	alternating current
AG	anesthesia gas
AHA	American Heart Association
Ao	aortic pressure
Art	arterial
ATMP	barometric pressure
AUC	area under the curve
AUX	auxiliary
awRR	airway respiratory rate
BAP	brachial arterial pressure
BC	burst count
BL	baseline
BSA	body surface area
BT	blood temperature
BTPS	body temperature and pressure, Saturated
CE	Conformité Européenne
C.I.	cardiac index
CIS	clinical information System
CISPR	International Special Committee on Radio Interference
CMS	central monitoring system
C.O.	cardiac output
CO ₂	carbon dioxide
CPI	cardiac power index
CPO	cardiac power output
CPU	central processing unit

Abbreviation	In Full
CSA	Compressed Spectral Array
CVP	central venous pressure
DC	direct current
Des	desflurane
Dia	diastolic
dpi	dot per inch
DSA	Density Spectral Array
DVI	digital video interface
ECG	electrocardiograph
EDV	end-diastolic volume
EEC	European Economic Community
EMC	electromagnetic compatibility
EMG	electromyograph
EMI	electromagnetic interference
Enf	enflurane
ESU	electrosurgical unit
Et	end-tidal
EtAA	end-tidal anesthetic agent
EtCO ₂	end-tidal carbon dioxide
EtN ₂ O	end-tidal nitrous oxide
ETO	ethylene oxide
EtO ₂	end-tidal oxygen
FAP	femoral arterial pressure
FCC	Federal Communication Commission
FDA	Food and Drug Administration
Fi	fraction of inspired
FiAA	inspired anesthetic agent
FiCO ₂	fraction of inspired carbon oxygen
FiN ₂ O	fraction of inspired nitrous oxide
FiO ₂	fraction of inspired oxygen
FPGA	field programmable gate array
FRC	fractional residual capacity
Hal	halothane
HIS	hospital information system
HR	heart rate

Abbreviation	In Full
IBP	invasive brood pressure
ICP	intracranial pressure
ICU	intensive Care Unit
ID	identification
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IP	internet protocol
Iso	isoflurane
LA	left fore leg
LCD	liquid crystal display
LCW	left cardiac work
LED	light emitting diode
LL	left hind leg
MAC	minimum alveolar concentration
MAP	mean arterial pressure
MRI	magnetic resonance imaging
N/A	not applied
N ₂	nitrogen
N ₂ O	nitrous oxide
NIBP	noninvasive blood pressure
O ₂	oxygen
O ₂ %	Oxygen concentration
OR	operating room
PA	pulmonary artery
pArt	artery pressure
pArt-D	diastolic artery pressure
pArt-M	mean artery pressure
pArt-S	systolic artery pressure
PAWP	pulmonary artery wedge pressure
pCVP	central venous pressure
Pleth	plethysmogram
PPV	pulse pressure variation
PR	pulse rate
PVC	premature ventricular contraction
RA	right fore leg

Abbreviation	In Full
Rec	record, recording
Resp	respiration
RL	right hind leg
RR	respiration rate
SEF	spectral edge frequency
Sev	sevoflurane
SpO ₂	arterial oxygen saturation from pulse oximetry
SQI	signal quality index
Sys	systolic pressure
TB	blood temperature
TD	temperature difference
Temp	temperature
TFT	thin-film technology
TI	injectate temperature
UAP	umbilical arterial pressure
UPS	uninterruptible power supply
USB	universal serial bus
UVP	umbilical venous pressure
VAC	volts alternating current

VetiNet CMS
Veterinary Mobile Viewer
Operator's Manual

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Mindray Animal Medical is responsible for the effects on safety, reliability and performance of this product, only if:

- All installation operations, expansions, changes, modifications and repairs of this product are conducted by Mindray Animal Medical authorized personnel;
- The electrical installation of the relevant room complies with the applicable national and local requirements;
- The product is used in accordance with the instructions for use.

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Exemptions

Mindray Animal Medical's obligation or liability under this warranty does not include any transportation or other charges or liability for direct, indirect or consequential damages or delay resulting from the improper use or application of the product or the use of parts or accessories not approved by Mindray Animal Medical or repairs by people other than Mindray Animal Medical authorized personnel.

This warranty shall not extend to

- Malfunction or damage caused by improper use or man-made failure.
- Malfunction or damage caused by unstable or out-of-range power input.
- Malfunction or damage caused by force majeure such as fire and earthquake.
- Malfunction or damage caused by improper operation or repair by unqualified or unauthorized service people.
- Malfunction of the instrument or part whose serial number is not legible enough.
- Others not caused by instrument or part itself.

Customer Service Department

Global Service Department

Company Name:	Shenzhen Mindray Animal Medical Technology Co., Ltd.
Address:	Room 702, Tower 4, YESUN Intelligent Community III, No.1301-88 Guanguang Road, Xinlan Community, Guanlan Street, Longhua District, Shenzhen 518110, P. R. China
Website:	www.mindrayanimal.com
E-mail Address	service@mindrayanimal.com
Tel:	+86 755-33997000

North America Service Department

Company Name:	Mindray Animal Medical Technology North America Co., Ltd.
Address:	1200 MacArthur Blvd, Unit 302B, Mahwah, NJ 07430, USA
E-mail Address	naservice@mindrayanimal.com
Tel:	1.800.864.5364

Preface

Manual Purpose

This manual contains the instructions necessary to operate the product safely and in accordance with its function and intended use. Observance of this manual is a prerequisite for proper product performance and correct operation and ensures animal and operator safety.

This manual is based on the maximum configuration and therefore some contents may not apply to your product. If you have any question, please contact us.

This manual is an integral part of the product. It should always be kept close to the equipment so that it can be obtained conveniently when needed.

Intended Audience

This manual is geared for clinical professionals who are expected to have a working knowledge of medical procedures, practices and terminology as required for monitoring of critically ill animals.

Illustrations

All illustrations in this manual serve as examples only. They may not necessarily reflect the setup or data displayed on your equipment.

Conventions

- ***Italic text*** is used in this manual to quote the referenced chapters or sections.
- **Bold text** is used to indicate the screen texts.
- → is used to indicate operational procedures.

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1 Safety

1.1 Safety Information

WARNING

- Indicates a potential hazard or unsafe practice that, if not avoided, could result in death or serious injury or property damage.
-

CAUTION

- Indicates a potential hazard or unsafe practice that, if not avoided, could result in minor personal injury or product/property damage.
-

NOTE

- Provides important precautions, instructions or explanations to ensure that you get the most from your product.
-

1.2 Warnings

WARNING

- To avoid inadvertent disconnection, route all cables in a way to prevent a stumbling hazard, wrap and secure excess cabling to avoid risk of entanglement or strangulation by animals or personnel.
 - Dispose of packing materials as per the applicable waste control regulations, and keep them out of children's reach.
 - If the monitoring network contains wireless devices, the wireless devices should be provided with CE identifier. Before connecting the device to the power line, check that the voltage and frequency ratings of the power line are the same as those indicated on the equipment's label or in this manual.
 - On the host where the Mobile Server is running, enable the firewall and update the system patches regularly to ensure the security and stability of the system.
 - The Mobile Server cannot directly support the monitoring device of other manufacturers.
-

1.3 Cautions

CAUTION

- If the power supply of the hospital is unstable, provide a UPS to the Mobile Server. If the Mobile Server system is powered off unexpectedly, the system may become abnormal and fail to operate properly when it is turned on next time or even lead to a more severe consequence.
 - The Mobile Server system should be maintained every 3 to 6 months. Continuous operation for a long term may cause the system to operate abnormally.
 - Always install or carry the equipment properly to avoid damage caused by drop, impact, strong vibration or other mechanical force.
-

2 Overview

2.1 Overview

Veterinary Mobile Server (hereinafter referred to as Mobile Server) provides monitoring data for veterinary Mobile Viewer (hereinafter referred to as Mobile Viewer) on the mobile clients of the veterinary central monitoring system (CMS), serving as the central server of Mobile Viewer.

Mobile Server should be used by the IT engineers of the hospital or by the Customer Service Department of Mindray Animal Medical or under their instructions. Personnel must be authorized and trained before operating this equipment. Any unauthorized personnel or personnel that are not trained should not perform any operation.

NOTE

- **Mobile Server needs to be used with the Vetinet CMS Veterinary Central Monitoring System of Mindray Animal Medical.**
-

2.2 Application Scope

This manual aims to guide the user to perform the following operations:

- Install, configure and use the Mobile Server.
- Perform test, verification and troubleshooting.

2.3 Specifications

When deploy in the LAN (Local Area Network), Mobile Server supports the following specifications:

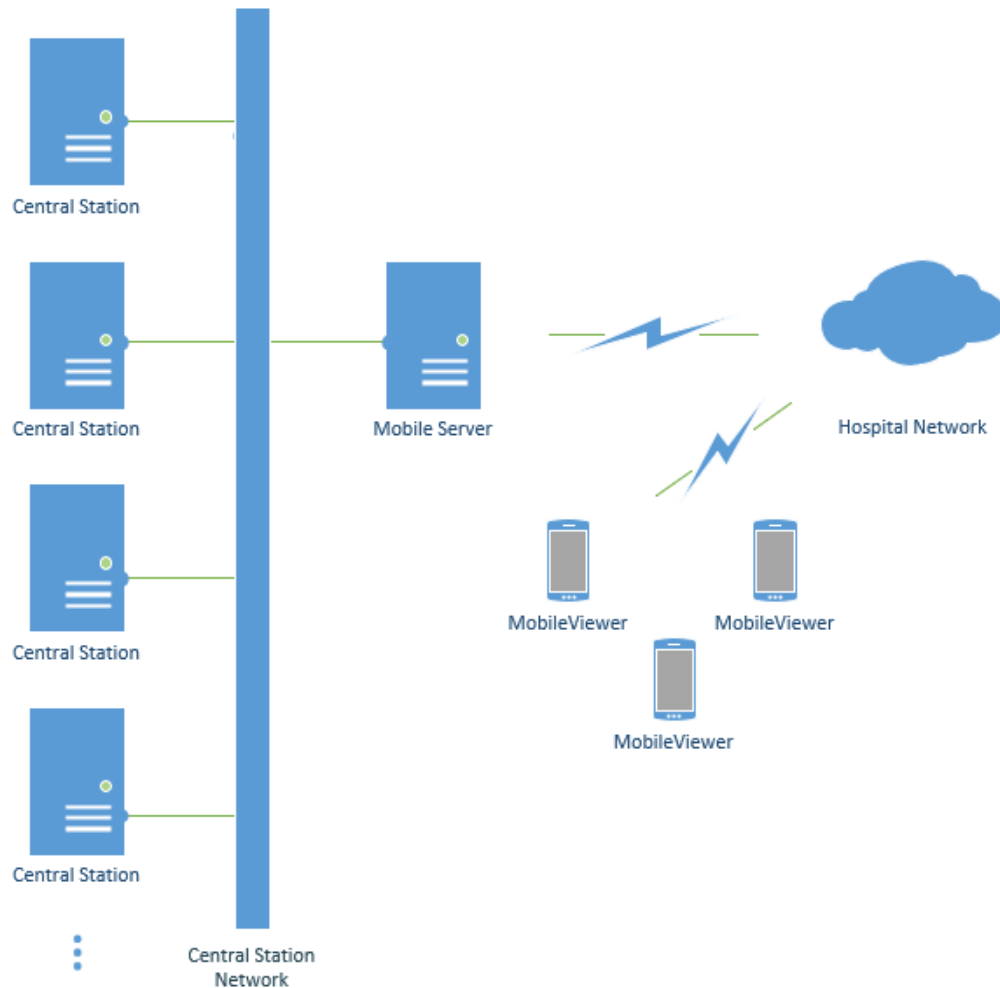
- Up to 1,200 animals can be connected at the same time
- At least 500 clients can access the Mobile Server at the same time

When deploy in the cloud network, the number of connected animal and client accessing depends on the license configuration you purchased.

3 Mobile Server

3.1 Network Topology of Mobile Server

The network topology of Mobile Server is as follows:



3.2 Mobile Server Communication Port

3.2.1 Communication Port between Mobile Server and CMS

Protocol	Mobile Server Port	Remote Port	Description
TCP	Any	6588	Communicating with the CentralStation
TCP	Any	7588	Communicating with the CentralStation
TCP	Any	6600	Communicating with the CentralStation
TCP	Any	7600	Communicating with the CentralStation
TCP	7602	Any	Mobile Server listening port, receiving real-time data from the CentralStation
TCP	7603	Any	Mobile Server listening port, receiving historical data from the CentralStation
TCP	Any	9997	Communicating with the main server

NOTE

- The SSL protocol is preferred for ports used to communicate with the CentralStation, and non-SSL protocol is also supported.

3.2.2 Communication Port between Mobile Server and Mobile Viewer

Protocol	Mobile Server Port	Mobile Viewer Port	Description
HTTPS or HTTP	7601	Any	Single-bed access port (configurable)
HTTPS	443	Any	Except single bed, other real-time communication ports (configurable)

3.3 Installing Mobile Server

Install Mobile Server by All-In-One installation. Mobile Server is supported by the dongle along with the local CentralStation, and the Mobile Server can be only connected to the local CentralStation, and the number of devices supported is the same as that of the CentralStation.

3.3.1 Installation Requirements

3.3.1.1 Environmental Requirements

The environment where the Mobile Server is installed should be reasonably free from noises, vibration, dust, corrosive, flammable and explosive substances.

When the system is positioned, a sufficient space in front and behind should be left for convenient operation, maintenance and repair. Moreover, to maintain good ventilation, a gap of at least 2 inches (5 cm) should be kept around the equipment.

When the Mobile Server is moved from one place to another, condensation may occur as a result of temperature or humidity difference. In this case, never start the system before the condensation disappears.

NOTE

-
- **It is recommended to install the Mobile Server in the equipment room of the hospital or medical institution.**
-

3.3.1.2 Power Supply Requirements

Each component of the Mobile Server must be powered by the specified power source.

To protect the hospital personnel from electric shock, the Mobile Server system (including the host and displays) must be grounded. The Mobile Server is provided with a 3-wire power cable, which must be plugged into a properly grounded 3-wire receptacle. If a 3-wire, grounded receptacle is not available, consult the hospital electrician.

WARNING

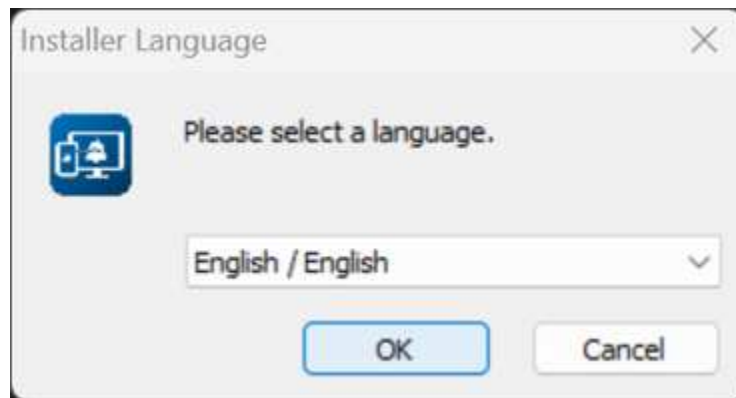
- **Make sure that the operating environment and power source of the Mobile Server meet the specific requirements; otherwise, unexpected consequences, e.g. damage to the equipment, may arise.**
 - **Appropriate power supply must be selected according to the setup of the system power voltage; otherwise, serious damage may be caused to the system.**
 - **Never use a 3-wire to 2-wire adapter with any unit of the Mobile Server. Indicates a potential hazard or unsafe practice that, if not avoided, could result in death or serious injury or property damage.**
-

3.3.2 Installation Procedure

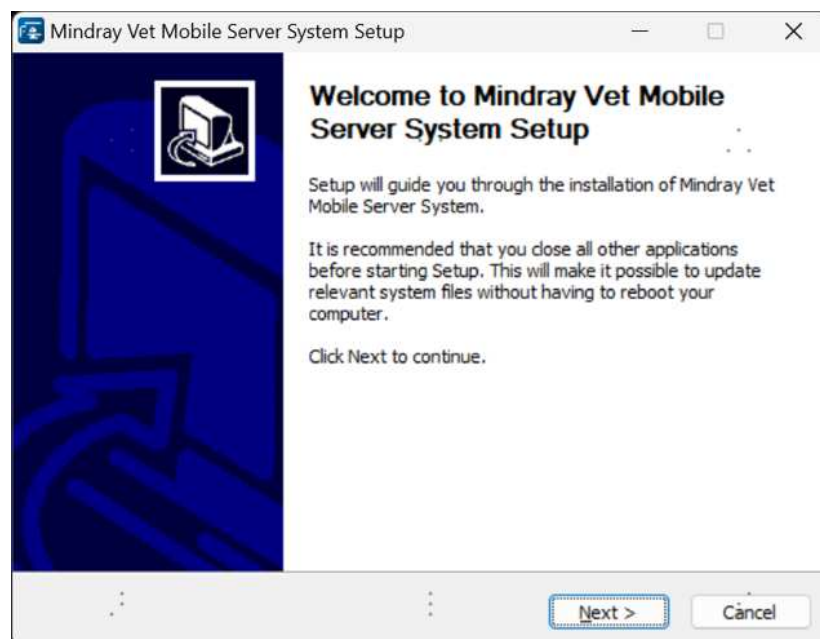
NOTE

- If the Mobile Server is installed in All-In-One mode, you do not need to install the dongle driver again, because it has been installed when installing the CentralStation.
- Administrator privileges are required to install the Mobile Server, otherwise the installation will fail.
- When UAC is set to "Default-Notify me only when the program tries to make changes to my computer", the system will prompt the user to enter the user name and password during common installation, otherwise it will prompt "Please login with administrator rights before installing the Mobile Server".
- Before upgrading to the new version, uninstall the previous version and back up the previous configuration files. The default paths of the configuration file are Config and db folders under D:\ProgramData\MobileServer.

1. At the CMS, select **System Setup** → select **Network** → Enter password → select **MobileServer** → select **Install MobileServer**.
2. Enter Installer Language window and select a language



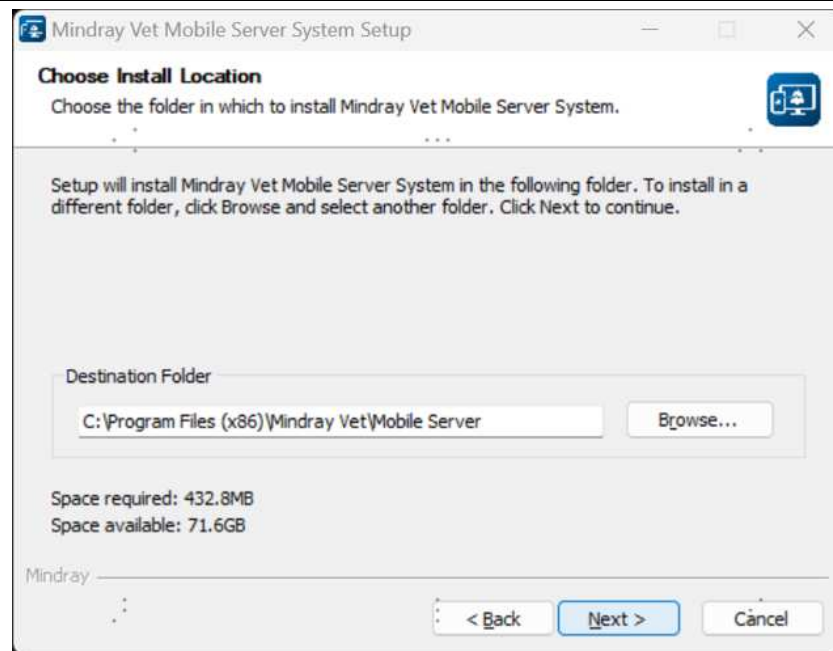
3. Enter the installation wizard, and click **Next**.



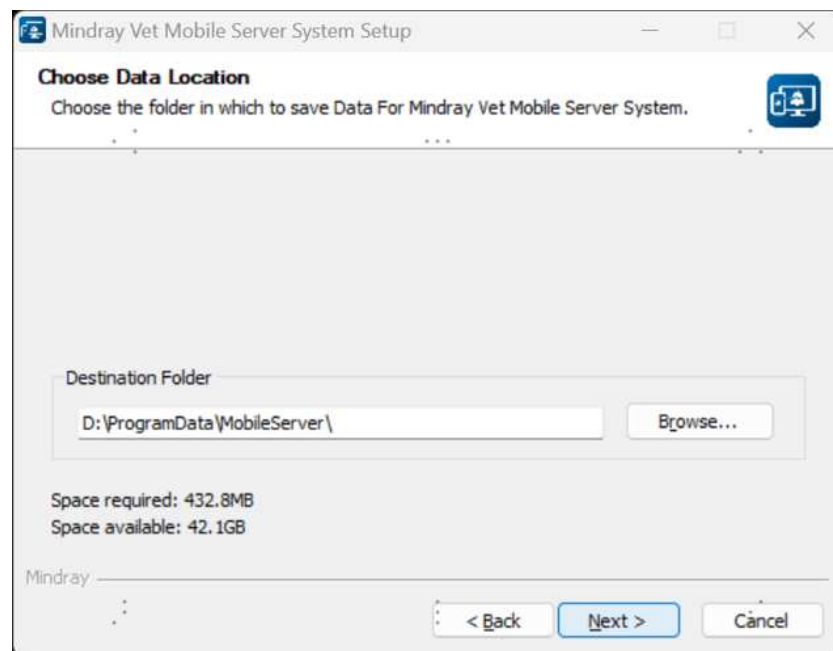
4. Select the installation location of service, and then click **Next**.

NOTE

- Due to user account control of Windows, it is recommended to install the server in a directory other than the system disk.



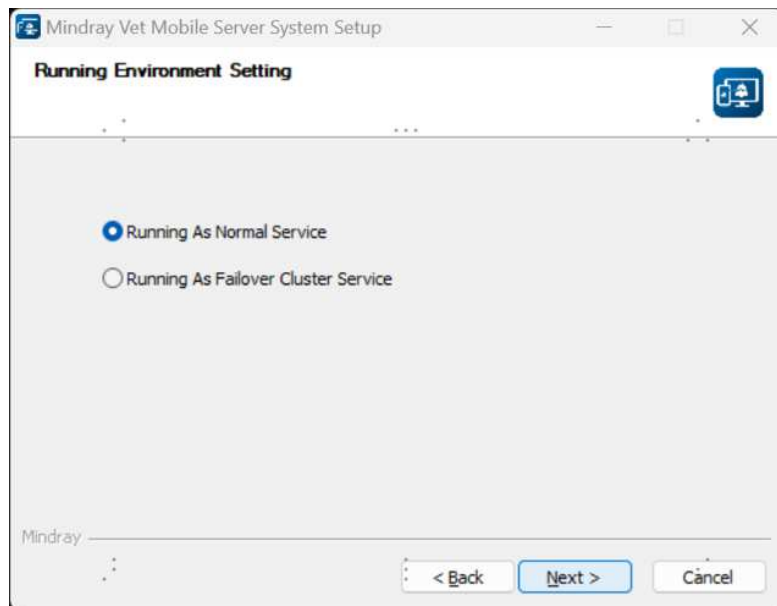
5. Select a location to save the data, and then click **Next**.



NOTE

- If previous configuration data exists in the folder, the service will automatically use the last configuration.

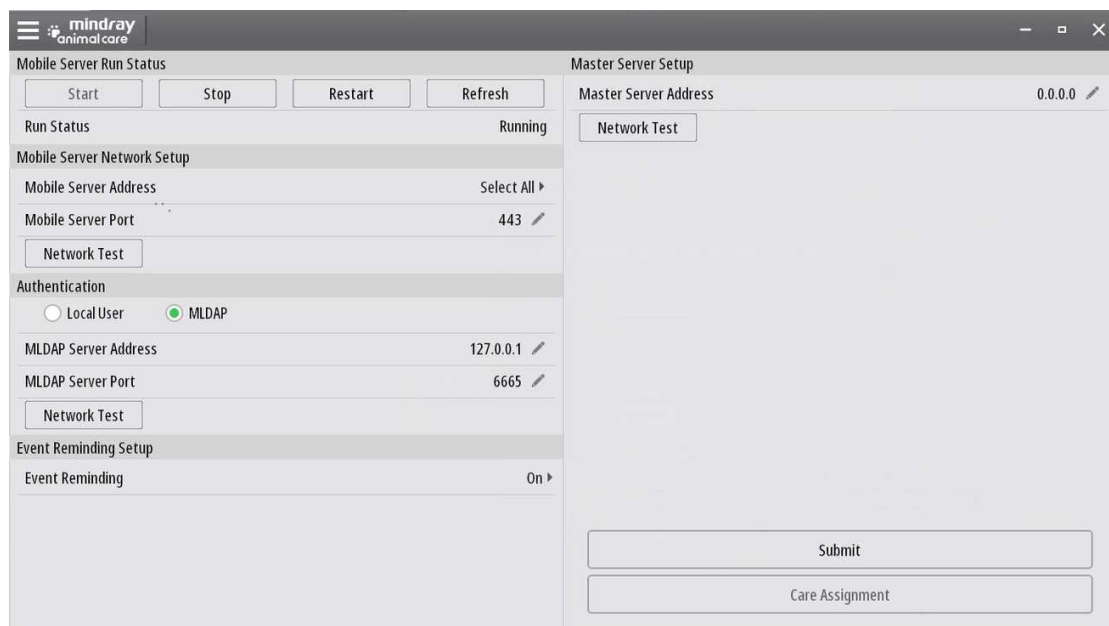
6. Select the run environment configuration, and then click **Next**.



7. Select **Install**.
8. Select **Finish** and restart the operating system. The Mobile Server software installation is complete.

3.4 Mobile Server Service Configuration

After the installation is complete, click  on the desktop or start menu to open the system setup tool.



NOTE

- To complete any of the following settings, you need to click "Submit" button in the lower right corner and confirm to restart the Mobile Server service before you can save the settings and make them take effect.

3.4.1 Service Management

The system setup tool provides an entrance to the Mobile Server service management.

1. Click **Start** to start the service, and the service running status is **Running**.
2. Click **Stop** to stop the service, and the service running status is **Stopped**.
3. Click **Restart** to restart the service, the service will be stopped and restarted immediately.
4. Click **Refresh** to display the current running status of the service.

3.4.2 Mobile Server Network Setup

To access the Mobile Server, you need to use the address and port configured for the server. Configure them as needed.

Configure the Mobile Server as follows:

1. In **Mobile Server Address**, select the network adapter that the server monitors. If you select **All**, the IP addresses corresponding to all network adapters of the machine will be monitored. You can also select a designated network adapter for service monitoring in the drop-down menu.
2. Enter the port number that the server monitors in **Mobile Server Port**. The default value is 443.
3. After the setting is complete, click **Submit**. A **Confirm** box appears, click **OK**. The service restarts, and the configuration is saved and takes effect.

3.4.3 Master Server Setup

Set the master server address that the MobileServer connected to as the following procedure.

1. After the configuration is set completely, click **Submit**.
2. A **Confirm** box appears, click **OK**. The service restarts, and the configuration is saved and takes effect.

3.4.4 Authentication

Clients including Mobile Viewer requires login authentication before they can be used. Mobile Server supports following user authentication systems, which can be selected in **Authentication**:

1. **Local**: local users refer to users maintained by Mobile Server.
2. **MLDAP**: If you need to use the MLDAP system for user authentication, select the **MLDAP** option and configure the address and port of the MLDAP server.

NOTE

- **CentralStation can only be used when the public network is deployed.**
- **After selecting the MLDAP method, you need to log in as an MLDAP user, and control the access range according to the MLDAP user authority.**
- **If you need to browse animal data, the user needs to have Remote View Patient permission in the department.**

3.4.5 Event Reminding Setup (Optional)

Event Reminding Setup: Off by default. Only if the Mobile Server does not support the alarm notification function (no License for AlarmNotification), the Event Reminding Setup option will be displayed. The Event Reminding Setup option is off by default. Only when it is set as "On" can the setup menu of the Mobile Viewer display the Event Reminding option, and the Mobile Viewer can send event reminders.

NOTE

- **The iOS operating system does not support the Event Reminding function.**

3.4.6 Items to Be Checked after Configuration

- Check whether the USB dongle is plugged in place or the license file exists in C:\License.

- Configure the address and port number of the Mobile Server and make sure that the port does not conflict with other software.
- Check whether Mobile Server is deployed correctly in common deployment mode or public network deployment mode.
- In case of public network deployment, check the Mobile Server address at the CentralStation.
- Configure the user authentication mode.
- Submit the configuration and check that the service is running.

4 Mobile Viewer

4.1 Requirements for Installing the Mobile Viewer

For Android Mobile Devices

- ◆ Operating system: Android 8.0 or above
- ◆ CPU: eight cores or above, 1.8 GHz or above
- ◆ Memory: 2 GB or above
- ◆ Hard disk: 32 GB or above
- ◆ Resolution: 1280×720 or above

For iOS Mobile Devices

- ◆ Operating system: iOS 11.0 or above
- ◆ CPU: quad-cores or above, A10 or above
- ◆ Memory: 2 GB or above
- ◆ Hard disk: 32 GB or above
- ◆ Resolution: 1334×750 or above

4.1.1 Acquiring the Installation Software

For Android Mobile Devices

Contact the Customer Service Department or your local distributor for the Mobile Viewer installation software.

For iOS Mobile Devices

In Apple application store, search “Mobile Viewer Vet” to acquire the installation software.

4.1.2 Starting Installing

Tap the installation software and select **INSTALL**. The software installs automatically.

NOTE

- **Allow installing software of unknown resource on the mobile device while installing the software.**
- **Authorize the software to access the memory space during the installation.**

4.2 Preparations before Operations

4.2.1 Connecting the Mobile Server

If you are using the software for the first time, connect the Mobile Server first.

To connect the Mobile Server, follow this procedure:

1. Tap the Mobile Viewer symbol to enter the login screen.
2. Select **Server** to enter the server setup screen.
3. Enter **Address** and **Port** of the Mobile Server. **Address** can be the domain name or the IP address of the Mobile Server.
4. Select **Test**.

After the test succeeds, the Mobile Viewer is connected to the Mobile Server. The Mobile Viewer will automatically connect with the Mobile Server next time.

4.2.2 Logging in the Mobile Viewer

To log in the Mobile Viewer, follow this procedure:

1. Tap the Mobile Viewer symbol to enter the login screen.
2. Enter user name, password. Verification code might be required according to the Mobile Server.
3. Select **Login**.

4.2.3 Exiting the Current Account

To exit the Mobile Viewer, follow this procedure:

1. On the main screen, select the account symbol  to enter **Account** screen.
2. Select **System Setup** → enter the required password → select **OK** to enter the **System Setup** screen.
3. Select **Log Out**.

4.2.4 Uninstalling the Mobile Viewer

To uninstall the Mobile Viewer, follow this procedure:

1. Press and hold on the Mobile Viewer symbol.
2. Select UNINSTALL.

4.3 Mobile Viewer Setup

4.3.1 Account Management

4.3.1.1 Configuring System Setup

To configure system setup, follow this procedure:

1. On the main screen, select the account symbol  to enter the **Account** screen.
2. Select **System Setup** → enter the required password → select **OK** to enter the **System Setup** screen.
3. Select **Patient Selection Mode** to set how to add or delete animals:
 - ◆ **Manual**: you need to manually add or delete animals.
 - ◆ **Care Group**: you can monitor all the animals in the selected care group.
4. Set **Event Notification**. If **Enable Event Notification** is turned on, the user will receive event notifications when the selected alarms happen to the monitored beds.
5. Set **Event Notification Sound Setup**. This is necessary only when event notification is turned on.
 - ◆ Enable or disable **Event Notification Sound**.
 - ◆ Enable or disable **Vibration**.
 - ◆ Set **Customize Sound** to customize notification sound for alarms of different priorities. Select **Browse** to search desired sound file and select **Test** to listen to the customized sound.

NOTE

-
- The **Event Notification** and **Event Notification Sound Setup** options are available only when event notification is enabled on the Mobile Server.
 - The event notification sound pattern is decided by the Mobile Server. **Customize Sound** option is available only when the **Alarm Sound** is set to **Custom** in the Mobile Server.
-

4.3.1.2 Configuring Screen Layout

You can select what type of devices, physiological parameters and waveforms to view when monitoring animals. To do so, follow this procedure:

1. On the main screen, select the account symbol  to enter the **Account** screen.
2. Select Screen Layout.
3. Enable the type of devices you need to view.
4. Select desired parameters or waveforms.
5. Select  on the right corner to add or delete parameters or waveforms.
6. Select **Edit** and you can delete parameter or waveform, or drag the parameter or waveform to modify the order.

4.3.1.3 Default Settings

Item	Default Setting		
Screen Layout	Monitor	Enable	
		Physiological Parameter	ECG, Art, SpO2, fArt, Any IBP, NIBP, EtCO2, Resp, Gas, PR, Any Temp
		Waveform	I, II, Art, SpO2, fArt, Any IBP, CO2, Resp
		Integrated Device Physiological Parameter	+Anesthesia, +IABP, +Monitor, +NMT, +SpO2
		Integrated Device Waveform	+Anesthesia, +SpO2, +IABP, +Monitor,
	Pump	Enable	
System Setup	Patient Selection Mode	Manual	
	Event Notification Sound Setup	Event Notification Sound	Enable
		Vibration	Enable
	Event Notification	Enable Event Notification	Disable

NOTE

- The Event Notification and Event Notification Sound Setup options are available only when event notification is enabled on the Mobile Server.

4.3.2 Animal Management

You need to perform animal management only when the **Patient Selection Mode** is set to Manual. For details, see 4.3.1.1 *Configuring System Setup*.

Animal management allows you to search, add or delete animals.

4.3.2.1 Searching an Animal

To search an animal, follow this procedure:

1. On the main screen, select the  on the top right corner to enter the **Manage Beds** screen.

2. Select the search symbol  on the top right corner to search an animal.

4.3.2.2 Adding Animals

To monitor animals, add them in My Departments. If the desired care groups are selected in the **Care Group Selection**, you can also receive related alarms about this animal.

To add animals, follow this procedure:

1. On the main screen, select the  on the top right corner to enter the **Manage Beds** screen.
2. Select desired animals in **My Departments**. The check symbol  displays if an animal is added successfully.

NOTE

- You can add animals only when desired departments are selected. For details on selecting departments, see 4.3.1.1 *Configuring System Setup*.

4.3.2.3 Deleting Animals

You can delete unwanted animals.

To delete an animal, follow this procedure:

1. On the main screen, select the  on the top right corner to enter the **Manage Beds** screen.
2. Select **My Beds**.
3. Select the delete symbol  beside the desired animals.

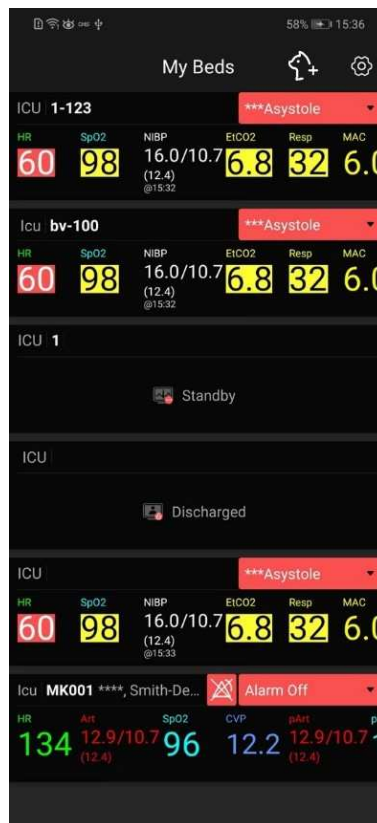
4.4 Animal Monitoring

4.4.1 Multi-Animal Screen

The Display of the Multi-Animal Screen

Logging in the Mobile Viewer enters the main screen, also-called multi-animal screen. You can monitor multiple animals on the multi-animal screen.

The multi-animal monitoring screen is shown as follows:



The Multi-animal screen is consisted of single animal sector as shown below:



(1)	Animal information area: displays animal information, including department, bed number and name etc.
(2)	Parameter area: slide left and right to see more parameter information. Tapping this area enters the ViewBed screen.
(3)	Alarm information area: displays alarms of highest priority; tapping this area displays more alarm information.

Alarm Information Area

Alarm information area includes physiological and technical alarms.

Alarm Indicator	High Priority Alarm	Medium Priority Alarm	Low Priority Alarm	Prompt	Comments
Alarm message	White text inside a red box	Black text inside a yellow box	Black text inside a cyan box	White text	Alarm messages are displayed on the Alarms screen, the multi-animal screen and the ViewBed screen.

Alarm Indicator	High Priority Alarm	Medium Priority Alarm	Low Priority Alarm	Prompt	Comments
Alarm priority indicator	!!!	!!	!	None	The indicator is displayed in front of a corresponding alarm message.
Parameter value	Black text inside a flashing red box	Black text inside a flashing yellow box	Black text inside a flashing cyan box	None	None

NOTE

- **You cannot set alarm limits, turning off, resetting, or pausing alarms on the Mobile Viewer. These operation should be performed on the CentralStation, WorkStation, or bedside devices. For details, see the operator's manual of the corresponding device.**
- **Alarms on the Mobile Viewer are synchronized from the CentralStation. For details on the alarms, see the operator's manual of the CMS.**
- **The visual alarms on the Mobile Viewer comply with the IEC 60601-1-8.**

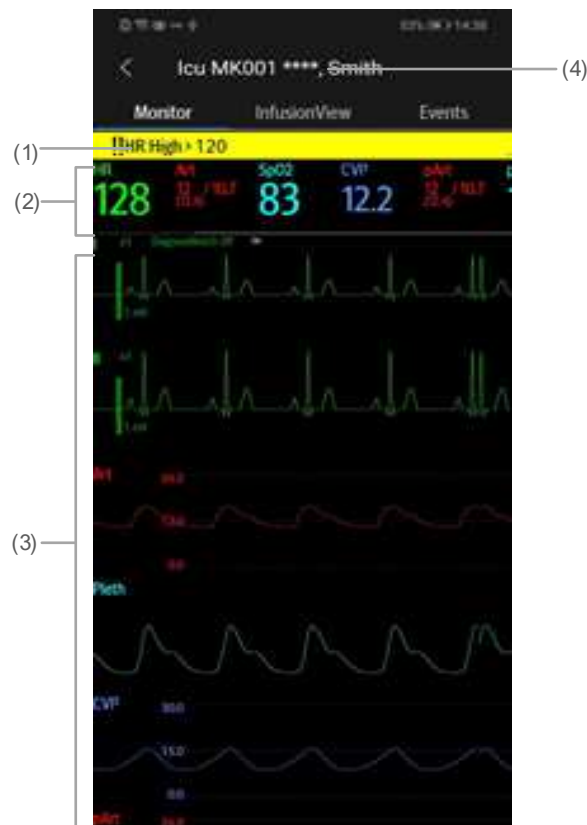
4.4.2 ViewBed Screen

You can have a more detailed view of a single animal's information, waveforms, and parameter numerics on the ViewBed screen.

4.4.2.1 Monitor ViewBed Screen

Monitor ViewBed screen displays real-time monitoring parameters and waveforms from the monitoring devices. Tap the desired animal on the multi-animal screen to enter the Monitor ViewBed screen.

The Monitor ViewBed screen is shown as follows:



(1)	Alarm information area: displays alarms of highest priority; tapping this area displays more alarm information. For details, see 6.1.2 Alarm Information Area.
(2)	Parameter area: slide left and right to see more parameter information.
(3)	Waveform area: slide up and down to see more waveform information.
(4)	Animal information area: displays animal information, including department, bed number and name etc.

NOTE

- For details on the Monitor ViewBed screen, see the operator's manual of corresponding monitoring devices.

4.4.3 Event Notification

If event notification is turned on, the mobile device will receive event notifications and issue event notification sound when the selected alarms in the **Event Notification** screen happen to the monitored beds. For details on how to set event notification, see **4.3.1.1 Configuring System Setup**.

Tap the event on the notification panel of the mobile device to enter event review screen.

NOTE

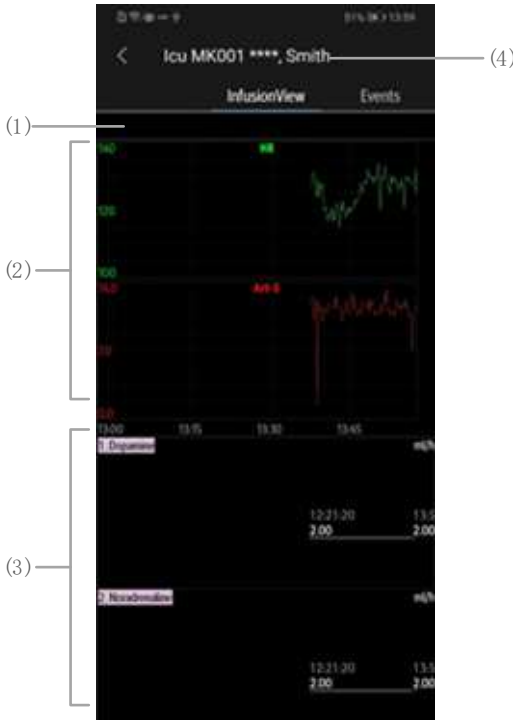
- The event notification sound is decided by the Mobile Server. When the Alarm Sound is set to Custom on the Mobile Server, the user can customize the event notification sound.
- When event notification is enabled, the mobile device should not enter Do Not Disturb mode; otherwise the event notification sound of the Mobile Viewer will not play normally.
- When event notification is enabled, it is recommended to grant self-start permission for the Mobile Viewer to prevent from missing event notifications.
- When event notification is enabled, the mobile device should not enter sleep mode; otherwise event notifications may be missed.

4.5 Review

4.5.1 InfusionView Review

When the monitor is connected with pumps and support InfusionView function, you can review vital sign trends and infusion status on the InfusionView screen of the Mobile Viewer.

To enter the InfusionView screen, tap the desired animal on the multi-animal screen → select **InfusionView**. The InfusionView screen is shown as follows:



(1)	Alarm information area: displays alarms of highest priority; tapping this area displays more alarm information.
(2)	Parameter minitrends area: displays the minitrends of vital sign parameters.
(3)	Drug review area: displays the name and flow rate of vital sign related drugs, as well as the time when the flow rate changes. Dragging this area up and down can view trends of more drugs.
(4)	Animal information area: displays animal information, including department, bed number and name etc.

NOTE

- For details on the InfusionView screen, see the operator’s manual of corresponding monitoring devices.

4.5.2 Event Review

You can review the following events on the event screen: technical alarm events, physiological alarm events, manual events, and operational events.

To enter the event screen, tap the desired animal on the multi-animal screen → select **Event**. The event screen is shown as follows:



(1)	Filtering area: select which type of events to view.
(2)	Event list: slide up and down to see more events. Selecting certain event enters event details window.
(3)	Event details window: slide left and right on the waveform area to view waveforms of different period; slide up and down on the parameter area to view more parameter information when the event happens.
(4)	Animal information area: displays animal information, including department, bed number and name etc.

NOTE

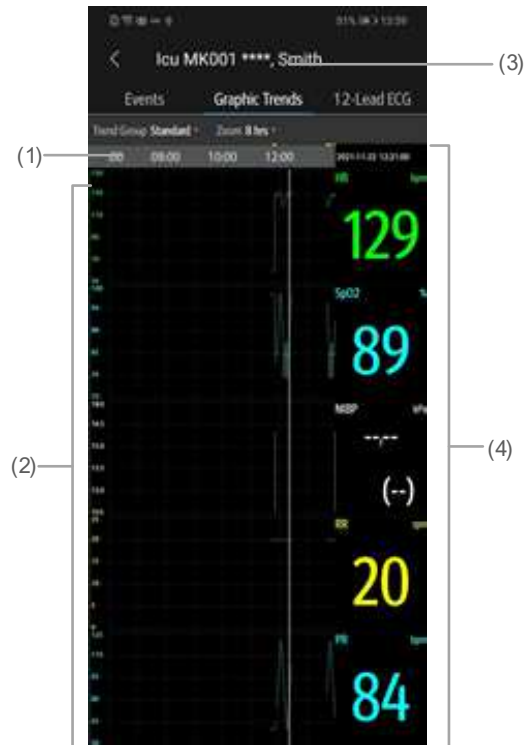
- For details on the event screen, see the operator’s manual of the CMS.

4.5.3 Graphic Trends Review

You can review trend data in a graphic form on the graphic trends screen.

To enter the graphic trends screen, tap the desired animal on the multi-animal screen → select **Graphic Trend**.

The graphic trends screen is shown as follows:



(1)	Setup area: set trend group and statistical duration of the trend data in this area.
(2)	Waveform area: displays trend curves. The color of trend curves is consistent with the color of parameter labels.
(3)	Animal information area: displays animal information, including department, bed number and name etc.
(4)	Parameter area: displays numeric values where the cursor stops. Slide up and down to view more parameter information.

NOTE

- For details on the graphic trends screen, see the operator's manual of the CMS.

5 FAQs

Problems	Possible Cause or Solution
Precautions for Mobile Server Installation	Only one Mobile Server can be installed in a computer, so Mobile Server can be installed once only. Uninstall the original Mobile Server first and then reinstall it or choose to overwrite the installation.
Which network ports need to be opened on the firewall of the Mobile Server and the CMS	During common deployment, you need to open the TCP protocol ports 6588, 7588, 6600, 7600 and 9997 at the CentralStation, so that the Mobile Server can connect to the CMS. During the public network deployment, you need to open the ports 7602 and 7603 on the Mobile Server, so that the CMS can connect to the Mobile Server. You need to open the ports 443, port 443 is used for data communication except for the single bed. It can be modified in the system setting tool.
Mobile Viewer users cannot log in	The user login failure may have the following reasons. For details, see the error message on the screen. ● Incorrect username or password: Make sure that you use the correct username and password to log in. ● If logging in timeout, in the server setup screen, check the address and port and tap Test. If test fails, check whether the Wi-Fi is connected properly or contact the administrator to see whether Mobile Server has opened corresponding port. ● Contact the administrator to confirm this mobile device is activated on the Mobile Server. ● Contact the administrator to confirm the License for the Mobile Server is valid..
Mobile Viewer users can log in, but cannot see animal information	1.Check whether the CentralStation connection is set correctly and whether the CentralStation has a bedside monitor online. 2. Check the connection mode of the Mobile Server. If it is deployed on the public network, check whether the CMS is configured correctly, and use the network test of the CMS to check whether the network is normal.
Multi-animal monitoring is working but ViewBed screen or review screen is not available.	Contact the administrator to see whether Mobile Server has configured proper port for ViewBed or review. The default port is 7601. If multiple users fail to access the ViewBed or review screen at the same time occasionally, contact the administrator to check the memory usage of the Mobile Server. If memory usage has exceeded 80%, consider expanding memory or contact the service personnel.

Problems	Possible Cause or Solution
The events notified by Mobile Viewer can not be received	The main reason is that the Mobile Viewer process is killed by a mobile assistant application or the Wi-Fi is dormant. Confirm the following configuration: 1. Confirm that the mobile is set to allow Mobile Viewer to pop up notifications. 2. Make sure to enable "Allow background activities", "Whitelist", etc. of Mobile Viewer on the mobile where the mobile assistant, smart manager, etc. are installed to prevent Mobile Viewer from being killed by these applications when it is in the background. 3. If you still cannot receive notification events after sleep, set Wi-Fi not to sleep.

6 Default Settings

This chapter only describes the default setting information on Setup of the system configuration tool.
Refer to **3Mobile Server** for specific configuration method.

Tab	Menu Item	Default
Mobile Server Network Setup	Mobile Server Address	All
	Mobile Server Port	443
Authentication	Authentication	Local
	MLDAP Port	6665
Network Deployment Mode	Public Network Deployment	Off
Event Reminding Setup	Event Reminding Setup	Off

7 Abbreviations

Abbreviation	English
CPU	Central processing unit
iOS	iPhone Operating System
GHz	Gigahertz
MHz	Megahertz
DDR	Double data rate
GB	Giga bytes
M	Mega
MB	Mega byte
s	Second
app	Application
UAC	User account control
IP	Internet protocol
DNS	Domain name system
SSL	Secure sockets layer
ECG	Electrocardiograph
HTTP	Hypertext transfer protocol
HTTPS	Hypertext transfer protocol secure
LDAP	Lightweight directory access protocol
USB	Universal serial bus
UI	User interface

VetiNet CMS

**Veterinary Central Monitoring System
Viewer**

Operator's Manual



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Release time: 2024-12

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WARNING

- **This equipment must be operated by skilled/trained clinical professionals.**
 - **It is important for the hospital or organization that employs this equipment to carry out a reasonable service/maintenance plan. Neglect of this may result in machine breakdown or personal injury.**
-

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Customer Service Department

Global Service Department

Company Name:	Shenzhen Mindray Animal Medical Technology Co., Ltd.
Address:	Room 702, Tower 4, YESUN Intelligent Community III, No.1301-88 Guanguang Road, Xinlan Community, Guanlan Street, Longhua District, Shenzhen 518110, P. R. China
Website:	www.mindrayanimal.com
E-mail Address:	service@mindrayanimal.com
Tel:	+86 755-33997000

North America Service Department

Company Name:	Mindray Animal Medical Technology North America Co., Ltd.
Address:	1200 MacArthur Blvd, Unit 302B, Mahwah, NJ 07430, USA
E-mail Address:	naservice@mindrayanimal.com
Tel:	1.800.864.5364

Preface

Manual Purpose

This manual contains the instructions necessary to operate the product safely and in accordance with its function and intended use. Observance of this manual is a prerequisite for proper product performance and correct operation and ensures animal and operator safety.

This manual is based on the maximum configuration and therefore some contents may not apply to your product. If you have any question, please contact us.

This manual is an integral part of the product. It should always be kept close to the equipment so that it can be obtained conveniently when needed.

Intended Audience

This manual is geared for clinical professionals who are expected to have a working knowledge of medical procedures, practices and terminology as required for monitoring of critically ill animals.

Illustrations

All illustrations in this manual serve as examples only. They may not necessarily reflect the setup or data displayed on your monitor.

Conventions

- *Italic text* is used in this manual to quote the referenced manuals, chapters, sections and formulas.
- **Bold text** is used to indicate the screen texts and names of hard keys.
- → is used to indicate operational procedures.

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1 General Product Description

1.1 Overview

The Veterinary Central Monitoring System Viewer (hereinafter referred to as the CMS Viewer) is a part of the Veterinary Central Monitoring System (hereinafter referred to as CMS). The CMS Viewer is used to view a single animal connected to the target CentralStation. It is for remote browsing only and cannot be used to set or control the target CentralStation or the monitored devices at the target CentralStation.

The CMS Viewer provides the following major functions:

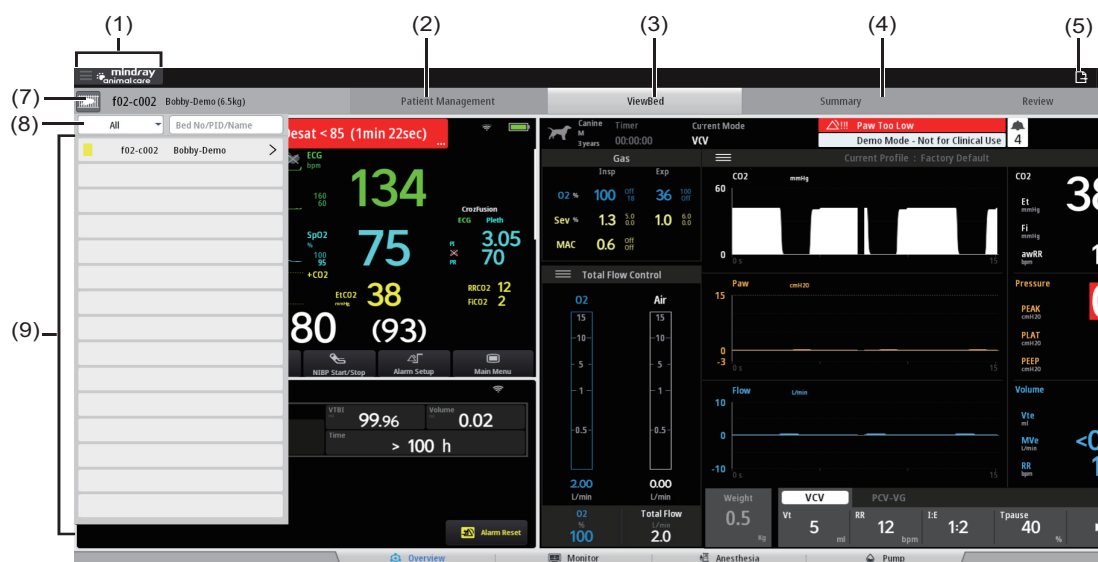
- The ability to view data in real-time and review data of online animals on the target CentralStation.
- The ability to view the review data of discharged animals.

NOTE

- An online animal refers to an animal that is being monitored by the CentralStation. The discharged animals refer to animals that are discharged by the CentralStation.
- Do not install the CMS Viewer and the CMS system software on the same PC.
- The CMS Viewer does not provide alarm sound.
- The system time of the CMS Viewer shall be consistent with the system time of the CentralStation.
- In this manual, the functions are presented according to the maximum product configuration.

1.2 The Display of Main Screen

After you select the desired bed from the bed list under the target department, the CMS Viewer's main screen is as shown below.



(1)	System menu area: selecting this area opens the pull-down list where you can select different functions.
(2)	Patient Management tab: you can view animal information.
(3)	ViewBed tab: you can view the real-time data of the online animal. For details, see 3 ViewBed Screen.
(4)	Summary tab: you can view the summary data of the online animal. For details, see 4 Summary Screen.

(5)	Trend data or waveform data export queue symbol*: selecting this symbol opens the Export Setup menu. In this menu, you can view export tasks in the Name column and view export progress and results in the Status column. Upon successful export, the task disappears from the task list. Selecting Retry Failed Export at the bottom of the menu re-exports failed items. Selecting Remove Failed Export removes all the export failure items from the task list. Note: the export symbol is displayed only when Save As is enabled in the system menu.
(6)	Review tab: you can view the review data of the online animal.
(7)	Remote view button: selecting this button displays the bed list. For details, see 3.2 <i>Selecting an Online Animal</i> .
(8)	Department selecting and animal searching area: you can select desired department and search desired animal in this area.
(9)	Bed list: displays the list of beds in the selected department. A colored block is displayed before bed numbers to indicate different statuses: ■ Red: indicates that a high priority alarm is triggered. ■ Yellow: indicates that a medium priority alarm is triggered. ■ Cyan: indicates that a low priority alarm is triggered.

1.3 Trend Data or Waveform Data Export Symbol

The following table lists the symbols that may be displayed on the main screen.

Symbol	Description	Symbol	Description
	Selecting this symbol opens the Export Setup menu. For more information on this menu, see 1.2 <i>The Display of Main Screen</i> .		Indicates that there are a total of five export tasks that are in progress or waiting to be started. The number in the green circle in the upper right corner changes with the number of export tasks. ■ When there are less than five tasks, the number of actual export tasks is displayed. ■ When there are more than five tasks, ellipsis dots are displayed.
	Indicates exporting failure.		

1.4 Viewing Animal Data Exported from CentralStation

You can view animal clinical data and historical data exported from CentralStation.

To view the animal data, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **Browse**. The **Browse** menu is displayed.
3. Select **Browse**.
4. In the **File Path** dialog box, select the folder where animal data is saved and then select **OK**.
5. If you wish to view the data of a specific animal, enter animal name, patient ID or bed No, and then select **Search**.
6. If you wish to view animal data details, select the desired animal from the animal list, and then select the **Detail** button at the end of the discharged animal.
 - ◆ In the **Patient Management** tab, you can view animal information.
 - ◆ In the **Review** tab, you can review historical data of this animal. For more information on the **Review** tab, see Chapter 5 *Review Screen*.

NOTE

- Only when animal data is exported by the factory maintenance menu at the CentralStation can it be viewed at the CMS Viewer.
-

2 Planning Your Deployment

2.1 Overview

This chapter provides the necessary technical information for you to plan your deployment of the CMS Viewer within your healthcare facility.

It covers network design requirements/guidelines for connecting your facilities' network to the Monitoring System, software deployment requirements, methods for deploying the software, and configuration of the software.

2.2 Network Design and Software Installation Requirements

2.2.1 Network Design Requirements

This section covers the network design requirements and recommendations for connection between the hospital network and the Monitoring Network. The Monitoring Network refers to the network that includes the bedside device network and the CMS network.

The purpose of the following requirements is to protect the Monitoring Network and the hospital network from any cyber security threats or network issues which may exist on the either of the networks.

Restrict dataflow between the Monitoring Network and the hospital network to only what is required for the CMS Viewer to operate.

- Only TCP communications on Ports 9999, 6588, and 6600 shall be allowed.. All other ports shall be blocked.
- Block all communications to/from IP addresses not in the specified list on the Monitoring Network.
- Block application level broadcast communication between the hospital network and the Monitoring Network.
- Block multicast communication between the hospital network and the Monitoring Network.

Recommendation for a firewall: Mindray Animal Medical recommends implementation of these design requirements and recommendations through the use of the network firewall appliance.

2.2.2 Software Installation Requirements

This section describes the software installation requirements on a physical PC .

Basic requirements for the CMS Viewer platform are shown below:

Item	Requirements
Safety	Meet the IEC 62368-1 requirements defined for ITE equipment and comply with CE low voltage directives (LVD) and EMC directives.
Host	CPU: 2 cores and 2.0 GHz minimum Memory: 2GB minimum Hard disk: 80GB minimum Network adapter: 100M, Ethernet 802.3
Operating System	■ Support Windows 10 Home ■ Support Windows 10 Enterprise ■ Support Windows 11 Home ■ Support Windows 11 Pro ■ Support Windows 11 Enterprise

2.3 Installing the CMS Viewer

Perform the following procedure:

1. Double click CMSViewerSetup.exe under the Setup folder of the software package.
2. Select the installation language, and then select the **OK** button.
3. In the Welcome screen, select the **Next** button.
4. In the User Selection screen, select a the desired installation mode, and then select the **Next** button.
5. Select the destination folder where the CMS Viewer is to be installed. If you want to change the default destination installation folder, select the **Browse** button and select the desired folder.
6. Select the **Install** button.
7. Upon completion of installation, select the **Finish** button.

The CMS Viewer shortcut is automatically created on the desktop.

2.4 Configuring the CMS Viewer Software

Once the CMS Viewer software has been installed, the CMS Viewer needs to be configured in the system setup screen to allow communication to the Monitoring Network.

2.4.1 Connecting to the CentralStation

After starting the CMS Viewer, you need to connect the CMS Viewer to the desired CentralStation before viewing animal information from the desired CentralStation.

To connect the CentralStation, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **System Setup** to access the **System Setup** menu.
3. Select the **Network** tab to access the network setup page.
4. Select the **Local** tab.
5. In the **Central Monitoring Network Setup** section, set **Local IP address**. From the pull-down list, select the IP address of the CMS Viewer. This IP address is used for communication between CMS Viewer and CentralStation,
6. Select the **Master Server** tab and then set the desired options:
 - ◆ **Master Server Address:** enter the IP address or name of the CentralStation that is used as the master server.
 - ◆ **Master Server IP Address:** it is automatically acquired after **Master Server Address** is entered.

The status of connection between the CMS Viewer and the master server is displayed on the right of **Connection Status**.

7. Select the **Central Station Connection** tab. For details on the **Central Station Connection** tab, see *8.4.3 Setting the Central Station Connection Tab*.
8. Select the **Connect** button beside the desired CentralStation. If the access to the CentralStation is password-protected, enter the desired password.

Once connected, the status of the CentralStation changes to **Connected**. The department of this CentralStation is also displayed under the list of department where CentralStations are located.

NOTE

- If the CMS Viewer failed to be connected to the CentralStation, select the IP address from the pull-down list under Local IP Address.
- After changing the central monitoring network settings, restart the CMS Viewer.

2.4.2 Configuring Printer

The CMS Viewer provides the capability to print reports. The printing feature utilizes the drivers installed on the PC for the printer. the CMS Viewer will always use the printer configured as the default printer in Windows.

2.5 Viewing System Information

You can view the system software version in the **System Information** the menu.

To access the **System Information** the menu, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **System Information**.

3 ViewBed Screen

3.1 Overview

Real-time data of an online animal can be viewed on the ViewBed Screen.

3.2 Selecting an Online Animal

You need to select the desired animal before viewing real-time data.

To select an animal, follow this procedure:

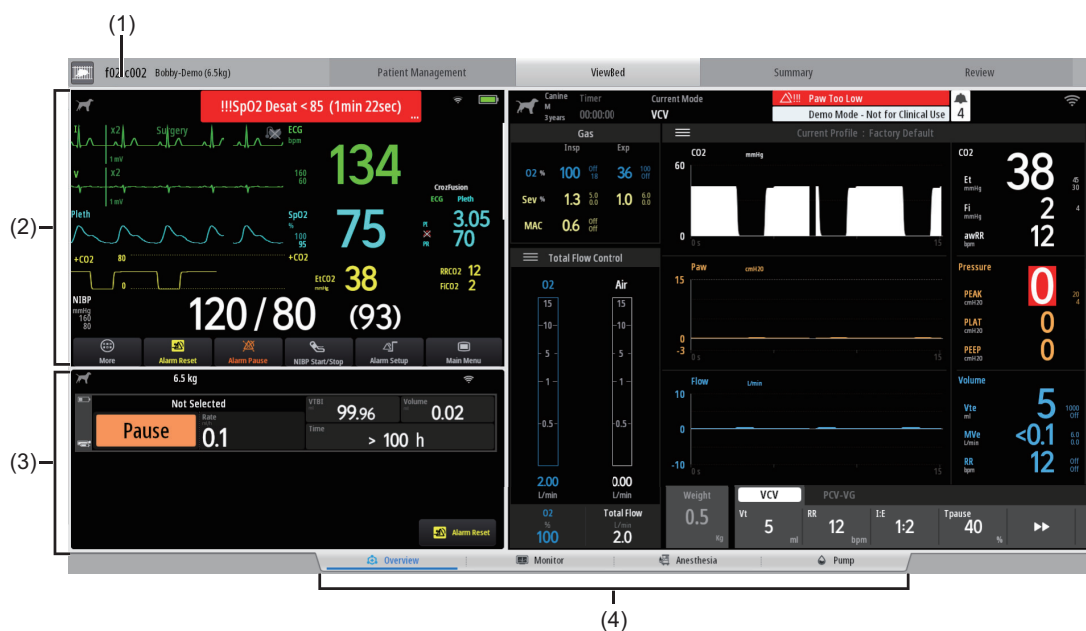
1. Select the  button in the upper left corner of the main screen.
2. Select the  button.
3. From the pull-down list, select the department where the desired device is located.
4. Select the desired bed by one of the following ways:
 - ◆ From the bed list, select the desired bed.
 - ◆ Search the animal in the search bar and select the desired bed.

3.3 The Display of ViewBed Screen

After selecting the desired bed, the ViewBed screen is displayed by default. ViewBed Screen can display realtime data transmitted from multiple devices or single one device.

3.3.1 Multiple Devices ViewBed Screen

The following figure shows the ViewBed screen that displays data from a monitor, a pump and an anesthesia machine:

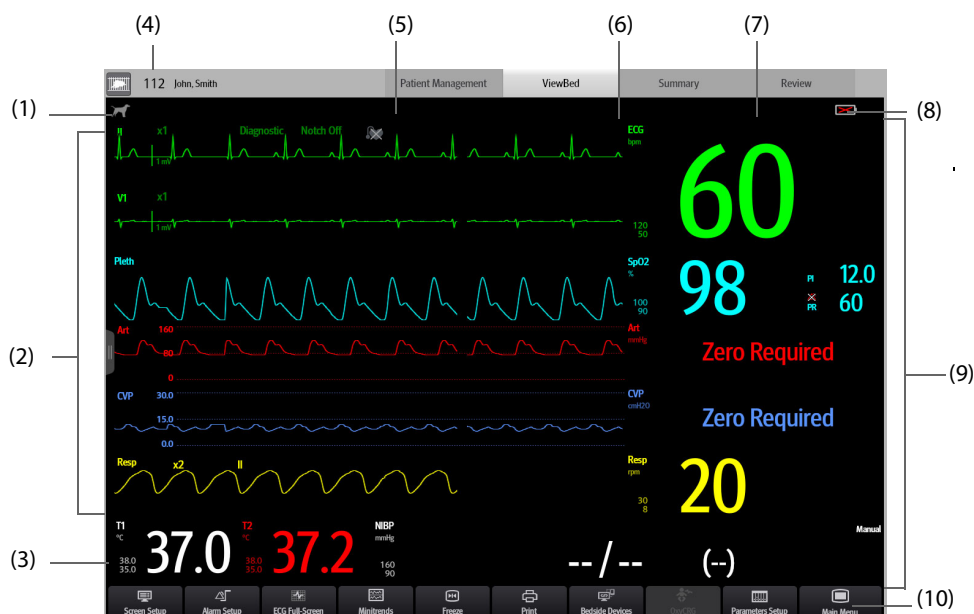


- (1) Animal location information area: displays the bed number and room number.
- (2) Monitoring information area: displays monitoring information from monitoring devices. For more information, see 3.3.2 Monitor ViewBed Screen.

- (3) Pump information area: displays infusion information from pumps. For more information, see 3.3.3 *Pump ViewBed Screen*.
- (4) Switching screen area: selecting different tabs opens different ViewBed screens.

3.3.2 Monitor ViewBed Screen

Monitor ViewBed screen displays monitoring information from the monitoring device. The following figures shows the monitor ViewBed screen:



- (1) Animal information area: displays species, notes etc.
- (2) Waveform area: displays parameter waveforms. Selecting a waveform enters corresponding parameter menu.
- (3) Parameter numerics/waveform area: displays parameter values and waveforms.
- (4) Animal location information area: displays the location information of the animal.
- (5) Technical alarm information area: displays the highest priority technical alarm. Selecting this area displays more technical alarm information.
- (6) Physiological alarm information area: displays the highest priority physiological alarm. Selecting this area displays more physiological alarm information.
- (7) Alarm status area: indicates current alarm status. For more information, see Section 3.4 *On-Screen Symbols*.
- (8) Device status area: displays the battery capacity and network signal strength. Privacy mode would also be displayed in the regular ViewBed screen.
- (9) Parameter area: displays items such as parameter values, alarm limits, alarm status, and parameter list.
 - Selecting a parameter numeric block enters corresponding parameter menu. For more information on the parameters, see the operator's manual of the corresponding device.
 - Selecting the parameter list enters tabular trends review page. For information regarding the parameter list, refer to Section 3.7.2 *Displaying the Parameter List*.
 - When a parameter alarm is turned off, the symbol is displayed in corresponding parameter area.
 - If the function of outline font for suspected values is enabled in the **System Setup** menu, when unreliable measurement values of HR, SpO₂, or BIS are detected, these numerics are displayed in outline font.
- (10) Quick key area: displays quick keys to access commonly used functions (keys are configurable).

NOTE

- Monitor ViewBed screen is similar to the main screen of the monitoring device. For more details on the monitor ViewBed screen, see the operator's manual of the corresponding monitoring device.

3.3.3 Pump ViewBed Screen

Pump ViewBed screen displays infusion information from the pumps. The following figures shows the pump ViewBed screen



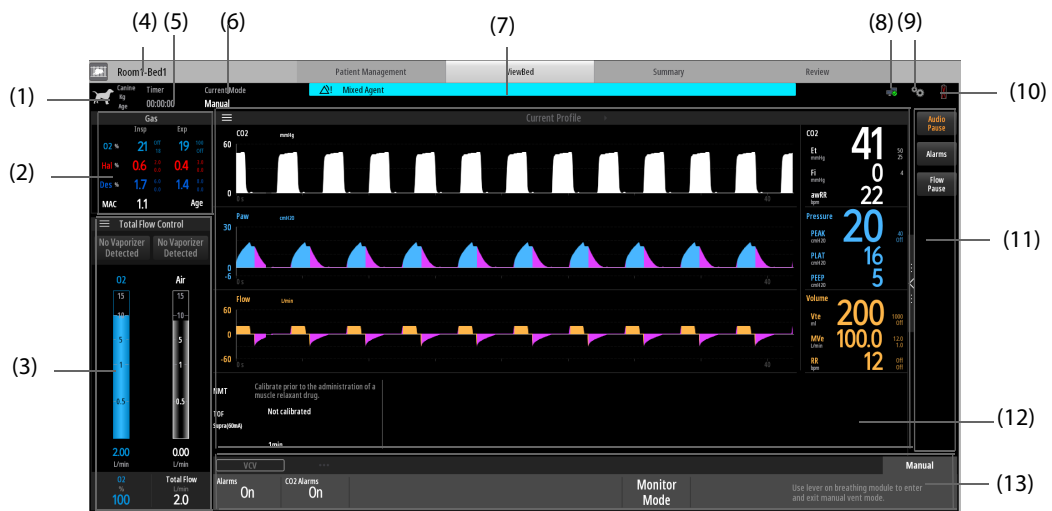
- (1) Animal information area: displays species, notes etc.
- (2) Animal location information area: displays the location information of the animal.
- (3) Technical alarm information area: displays the highest priority technical alarm. Selecting this area displays more technical alarm information.
- (4) Alarm status area: indicates current alarm status. For more information, see Section 3.4 On-Screen Symbols.
- (5) Device status area: displays the battery capacity and network signal strength.
- (6) Scrolling bar: scrolling up and down displays more infusion information.
- (7) Infusion observation area: displays the infusion details, including infusion status, drug names, flow etc.

NOTE

- Pump ViewBed screen is similar to the main screen of the pump. For more details on the pump ViewBed screen, see the operator's manual of the corresponding pump.

3.3.4 Anesthesia ViewBed Screen

Anesthesia ViewBed screen displays ventilation information and anesthesia information from the anesthesia system. The following figures shows the anesthesia ViewBed screen:



- (1) Animal information area: displays species, weight and age.
- (2) Gas parameters/O₂ concentration area
- (3) Fresh gas control and anesthesia consumption speed area: displays the real-time flow level of oxygen or balance gas and an indication of optimal flow and anesthetic agent consumption speed and cost.
- (4) Animal location information area: displays the location information of the animal.
- (5) Timer: select this area to start, stop or reset the timer.
- (6) Current ventilation mode
- (7) Alarm information area: selecting this area displays more alarm information.
- (8) Network connection status symbol
- (9) Setup symbol: selecting this symbol displays the screen to set waveform etc.
- (10) Battery status symbol
- (11) Quick key area: displays quick keys.
- (12) Waveform and parameter area: displays waveform and parameter values.
- (13) Ventilation mode and ventilation type setup area: displays ventilation mode and ventilation parameter information.

NOTE

- Anesthesia ViewBed screen is similar to the main screen of the anesthesia system. For more details on the anesthesia ViewBed screen, see the operator's manual of the corresponding anesthesia system.**

3.4 On-Screen Symbols

The following table lists the symbols that may be displayed on the ViewBed screen.

3.4.1 Alarm Symbols

Symbol	Description	Symbol	Description
	All the alarms are paused.		Alarms for some parameter are turned off or the bedside device is in the alarm off state.

Symbol	Description	Symbol	Description
	Audible alarms are paused.		Audible alarms are turned off.
	Alarms are reset.		The system is silenced.
	Pump alarms are acknowledged.		

3.4.2 Battery Status Symbols

Symbol	Description	Symbol	Description
	The battery of the device has sufficient power. The white grid indicates the remaining battery power.		The battery of the device has low charge and needs to be charged or changed.
	The battery of the device has critically low charge and needs to be charged or changed immediately. Otherwise, the device will shut down.		No battery is installed into the device.

NOTE

- When a battery symbol listed in the table above is displayed, see appropriate bedside device's operator's manuals for details about the battery time and alarms.

3.4.3 Other Symbols

Symbol	Description	Symbol	Description
	A animal's pacing status is set to Yes . The pace pulse markers "I" are shown on the ECG wave when a pacer pulse is detected.		A animal's pacing status is set to No , or Unspecified .
	Indicate that the followed parameter is from an external device connected to the monitor.		Contain more than one alarm messages.
	Selecting this symbol can view device location.		This device is in night mode.
	Indicate the Wi-Fi signal strength after a bedside device is connected to an AP. More white arcs indicate a stronger Wi-Fi signal strength.		Indicate the received signal strength of telemetry devices. The color of the symbol changes to indicate received signal strength changes. White: indicates the received signal strength is normal. Yellow: indicates the received signal strength is weak. Red: indicates no signal is received.

3.5 Alarm Information Area

3.5.1 Technical Alarm Information Area

By selecting the technical alarm information area, you can view all the technical alarm messages.

This area displays:

- Technical alarms and prompts from a remote device or from the host CentralStation.
- The highest priority technical alarms. When multiple highest priority technical messages exist, they will scroll.
- Technical alarms are displayed in different background colors to indicate alarm priorities:
 - ◆ Red background indicates high priority alarms.
 - ◆ Yellow background indicates medium priority alarms.
 - ◆ Cyan background indicates low priority alarms.

For more information on the alarm, see the operator's manual of the corresponding CMS.

3.5.2 Physiological Alarm Information Area

By selecting the physiological alarm information area, you can view all the physiological alarm messages.

Selecting one physiological alarm message suffixed with the ">" symbol enters the event review page where you can view more details about this alarm.

This area displays:

- Physiological alarms from a remote device.
- Alarm time for latched physiological alarms.
- The highest priority physiological alarms. When multiple highest priority physiological alarms exist, they will scroll.
- Physiological alarms are displayed in different background colors to indicate alarm priorities:
 - ◆ Red background indicates high priority alarms.
 - ◆ Yellow background indicates medium priority alarms.
 - ◆ Cyan background indicates low priority alarms.

For more information on the alarm, see the operator's manual of the corresponding CMS.

3.6 Quick Keys

The ViewBed screen provides quick keys for you to quickly access some functions. The **More** key is permanently located at the left bottom. Selecting the **More** quick key shows more quick keys. The quick keys displayed on the screen are configurable.

3.6.1 Available Quick Keys

The following table shows available quick keys.

Symbol	Label	Function	Symbol	Label	Function
	More	Show more quick keys		Screen Setup	Enter the Screen Setup menu
	Alarm Setup	Enter the iAlarm setup menu		ECG Full-Screen	Enter the ECG full screen

Symbol	Label	Function	Symbol	Label	Function
	Freeze	Freeze waveforms		Minitrends	Enter the Minitrends window
	Print	Start printing a real-time report		Print Setup *	Enter the Print Setup menu
	InfusionView	Enter the InfusionView.		Main Menu	Enter the main menu
	Infusion Details	Enters the Infusion Details screen		Parameters Setup	Enter the Parameters Setup menu

3.6.2 Configuring Quick Keys

To configure the desired quick keys, follow this procedure:

- Access the quick keys setup menu in either of the following ways:
 - On the ViewBed screen select the **Screen Setup** quick key from the quick key area → select the **Quick Keys** tab.
 - On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Display** column select **Quick Keys**.
- Select the **Current** tab to configure the desired quick keys.
 - Add a quick key: on the top of **Quick Keys** tab, first select a key which you want to configure for a specific quick key function, next select the quick key function from the list of functions. For example, if you want to show the **Screen Setup** quick key in the first key, select the first key, and then select **Screen Setup** from the function list.
 - Clear a quick key: select the quick key to be cleared from the quick key and then select **Blank** from the function list
- Select the **More** tab to configure the quick keys to be displayed when the **More** quick key is selected.

3.7 General Operations

3.7.1 Changing Tile Layout of the ViewBed Screen

To change tile layout of the ViewBed screen, follow this procedure:

- Access the tile layout menu in either of the following ways:
 - On the ViewBed screen, select the **Screen Setup** quick key from the quick key area → select **Tile Layout**.
 - On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Display** column select **Tile Layout**.
- Select a parameter area or waveform area, and then from the pull-down list select an element you want to display in this area. The parameters and waveforms selected are displayed on the ViewBed screen. The  symbol indicates that this area can be set to display waveforms. Selecting this area changes this symbol to , indicating that this area can be set to display parameters.

NOTE

- Changes to the ViewBed screen settings take effective for the CMS Viewer only and do not affect the screen settings at the target CentralStation.

3.7.2 Displaying the Parameter List

You can display trends of HR, SpO₂, RR, and NIBP/IBP in the parameter numerics area on the ViewBed screen.

To display the parameter list, follow this procedure:

1. Access the tile layout menu in either of the following ways:
 - ◆ On the ViewBed screen, select the **Screen Setup** quick key from the quick key area → select **Tile Layout**.
 - ◆ On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Display** column select **Tile Layout**.
2. Select a parameter area where you wish to display the parameter list.
3. From the pull-down list, select **Parameter List**.

3.7.3 Accessing Parameter Setup Menus

Each parameter has a setup menu in which you can adjust the alarm and parameter settings. You can enter a parameter setup menu by using any of the following methods:

- Select the parameter numeric area or waveform area.
- Select the Parameter Setup quick key, and then select the desired parameter.

3.7.4 SpO₂ Statistics

Statistic data of each SpO₂ section within a specific time can be displayed in the SpO₂ statistics area on the ViewBed screen. The target SpO₂ section is displayed in green.

3.7.4.1 Displaying the SpO₂ Statistics Area

To display the SpO₂ statistics area, follow this procedure:

1. On the ViewBed screen, select the **Screen Setup** quick key.
2. Select the **Tile Layout** tab.
3. Select a parameter area where you wish to display the SpO₂ statistics area.
4. From the pull-down list, select **SpO₂**.
5. From the pull-down list, select **SpO₂ Statistics**.

3.7.4.2 Configuring SpO₂ Statistics

To configure SpO₂ statistics, follow this procedure:

1. In the upper right corner of the SpO₂ statistics area, select the time area, i.e. **1 h**.
2. Select the desired option.
3. Access the **SpO₂ Statistics** menu in either of the following ways:
 - ◆ Select the SpO₂ statistics area.
 - ◆ On the ViewBed screen, select the SpO₂ parameter or waveform area → select the **SpO₂ Statistics** tab.
4. In the **From** and **To** columns, select the starting and ending SpO₂ values for each section.
5. In the **Target** column, select the target section.
6. If you wish to use the default values, select **Defaults**.

NOTE

- **The values for sections should be continuous. When the section value reaches 100, you cannot configure remaining sections.**

3.7.5 Freezing/Unfreezing Waveforms

During animal monitoring, you can freeze waveforms on the ViewBed screen to allow a closer review of the waveform data.

3.7.5.1 Freezing Waveforms

To freeze waveforms, follow this procedure:

1. On the ViewBed screen, select the **Freeze** quick key.
2. In the **Freeze** window, select the left or right arrow to move the waveforms backward or forward one second, to display the desired time.

Freezing waveforms does not affect:

- Waveforms displayed in the minitrends window and parameter numerics on the ViewBed screen
- Alarm enunciation

3.7.5.2 Unfreezing Waveforms

To unfreeze waveforms, select the  button in the upper right corner of the **Freeze** window.

3.7.5.3 Printing Frozen Waveforms

Selecting the  button in the upper left corner of the **Freeze** window prints frozen waveforms.

3.8 User Screens

To facilitate animal monitoring in different departments and clinical applications, different user screens are provided as follows on the Viewbed Screen:

- Normal Screen
- Minitrends
- Integrated Devices
- ECG Full-Screen

3.8.1 Minitrends Window

The Minitrends screen shows the recent graphic trends of parameters.

Choose one of the following methods to enter the Minitrends window:

- On the ViewBed screen, select the **Minitrends** quick key.
- On the ViewBed screen, select the **Screen Setup** quick key →select **Choose Screen** →select **Minitrends**.
- On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Display** column select **Minitrends**.
- Select the  button at the leftmost screen if normal screen is displayed currently.
- Swipe right on the touchscreen with one finger if normal screen is displayed currently.
- For a non-touchscreen, place the mouse at anywhere on the normal screen, and drag the mouse to right while holding the mouse right or left button.

NOTE

- For details on the Minitrends window, see the operator's manual of the corresponding devices.

3.8.2 Integrated Devices Window

You can view the information of the external devices that are integrated with the monitor in the integrated devices window.

Choose one of the following methods to enter the Integrated Devices window:

- On the ViewBed screen, select the **Screen Setup** quick key →select **Choose Screen** →select **Integrated Devices**.
- On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Display** column select **Choose Screen** →select **Integrated Devices**.

The **Integrated Devices** screen has the following features:

- For the parameters measured by the external device, the measurements display directly after the parameter labels.
- For the parameters input on the external device, the settings are enclosed in parenthesis after parameter labels.
- For the measured parameters and input parameters that have the same label, parameter measurements and settings are displayed after parameter labels with the settings are enclosed in parenthesis. For example, PEEP 18 (20), in which PEEP is parameter label, 18 is the measurement, and (20) is the setting.

NOTE

- **Parameters in the Integrated Devices screen are displayed in the order of priorities. If the screen cannot display all the selected parameters, only parameters with higher priorities are displayed.**
- **For details on the integrated devices window, see the operator's manual of the corresponding devices.**

3.8.2.1 Setting Parameters from External Devices for Display

To select parameters displayed on the **Integrated Devices** screen, follow this procedure:

1. From the **Integrated Devices** screen select **Select Parameter**.
2. Select desired parameters.

3.8.2.2 Setting Alarms from External Devices

To enable or disable the storage and display of the external device alarms of a certain priority and category, follow this procedure:

1. From the **Integrated Devices** screen select **Select Parameter**.
2. Set alarm properties.
 - ◆ Set whether to store and display alarms in the **Storage, Display** columns.
 - ◆ If you wish to add a new alarm, enter its alarm ID on the text box besides the **Add** button. Then select the **Add** button. For the list of alarm IDs, see the corresponding operator's manual of Benelink.
 - ◆ If you wish to delete an alarm, select the  symbol. Then select the **Delete** button. The default alarms cannot be deleted.

3.8.3 ECG Full-Screen

You can choose ECG Full-Screen when performing 5-lead. Only ECG waveforms are displayed in the waveform area of the ECG Full-Screen.

Choose one of the following methods to enter the ECG Full-Screen:

- On the ViewBed screen, select the **ECG Full-Screen** quick key.
- On the ViewBed screen, select the **Screen Setup** quick key →select **Choose Screen** →select **ECG Full-Screen**.
- On the ViewBed screen, select the **Main Menu** quick key from the quick key area → from the **Display** column select **Choose Screen** →select **ECG Full-Screen**.

NOTE

- **For details on the ECG full-screen, see the operator's manual of the corresponding devices.**

3.9 *iStatus* Window

The *istatus* window ( *iStatus*) displays the current physiological alarms, alarmed systems or organs, and parameter trends over the last one hour.

When corresponding alarms are triggered, the *istatus* window pops up synchronously on the monitor and on the ViewBed screen of the CMS and the CMS Viewer.

For details on the *istatus* window, see the operator's manual of the corresponding devices.

4 Summary Screen

You can view summary data for online animals on the summary screen. The summary screen provides several tabs to display summary data from different aspects.

NOTE

- **The summary function is intended for online animals. It is not intended for discharged animals.**
- **Data displayed on the summary screen is not recalculated.**

4.1 Accessing the Summary Screen

To enter the summary screen, select the **Summary** tab beside the ViewBed screen and the review screen.

4.2 Symbols on Summary Pages

The following table lists the symbols on summary pages.

Symbol	Description
	Setup button: select it to set up parameters.
	Print button: select it to output animal information and data through the printer.

4.3 Common Operations on Summary Pages

This section describes common operations on summary pages.

4.3.1 Setting the Summary Statistical Duration

On the summary page, select **Zoom** to set summary statistical duration and the corresponding statistical duration displays.

4.3.2 Printing the Summary Report

On the summary pages, select the print button to print corresponding summary reports.

4.4 Vital Sign Summary

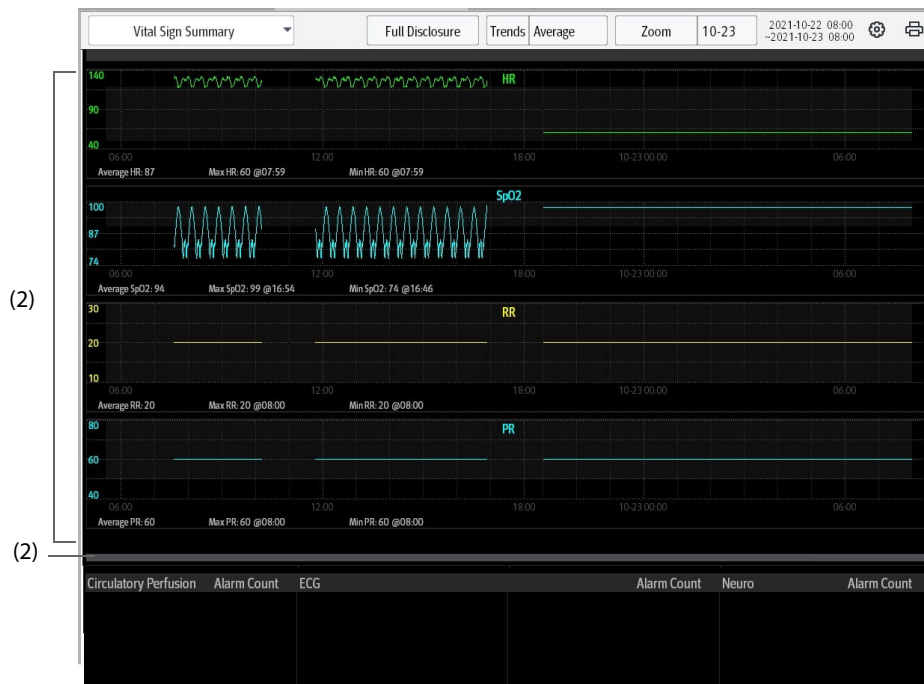
The vital sign summary provides the parameter trend of the animal's vital sign and the alarm events statistics.

4.4.1 Entering the Vital Sign Summary Page

To enter the vital sign summary page, select the ▼ button in the upper left corner of the summary screen → from the pull-down list, select **Vital Sign Summary**.

4.4.2 The Display of Vital Sign Summary

The following figure is an example of the Vital Sign Summary page:



- (1) Graphic trends: show the trends of mean parameter value or maximum/minimum parameter value. Up arrow and down arrow indicate the maximum and minimum parameter value in the statistical duration respectively.
- (2) This area shows alarm statistics.
An up arrow indicates an increase in the current statistical duration compared to the previous one, while a down arrow indicates a decrease.

4.4.3 Setting Trend Parameters for the Vital Sign Summary

Select the setup button to set trend parameters to be displayed in the summary. One trend parameter one row. When parameters are overlapped, all the overlapped parameters are displayed in one row. A maximum of ten rows of parameters are displayed on the graphic trend area.

4.4.4 Setting the Trend Type for the Vital Sign Summary

Select **Trends** to set whether the trend of maximum/minimum values or the trend of mean values is displayed.

4.4.5 Viewing the Parameter Value at a Specific Time

In the graphic trends area, selecting any spot displays a cursor on the page and you can view the corresponding time and the parameter values of this specific time.

4.4.6 Accessing the Corresponding Review

You can access the corresponding review from the vital sign summary page:

- Selecting the area of the alarm statistics can access the events review.
- Selecting **Full Disclosure** can access the full disclosure review.
- parameter trends: include hemodynamic parameters, oxygenation parameters. When a ventilator is connected, ventilation parameters will be displayed as well.

4.5 ECG Summary

The ECG Summary provides ECG statistics of the animal. It also displays the animal's typical ECG strips.

NOTE

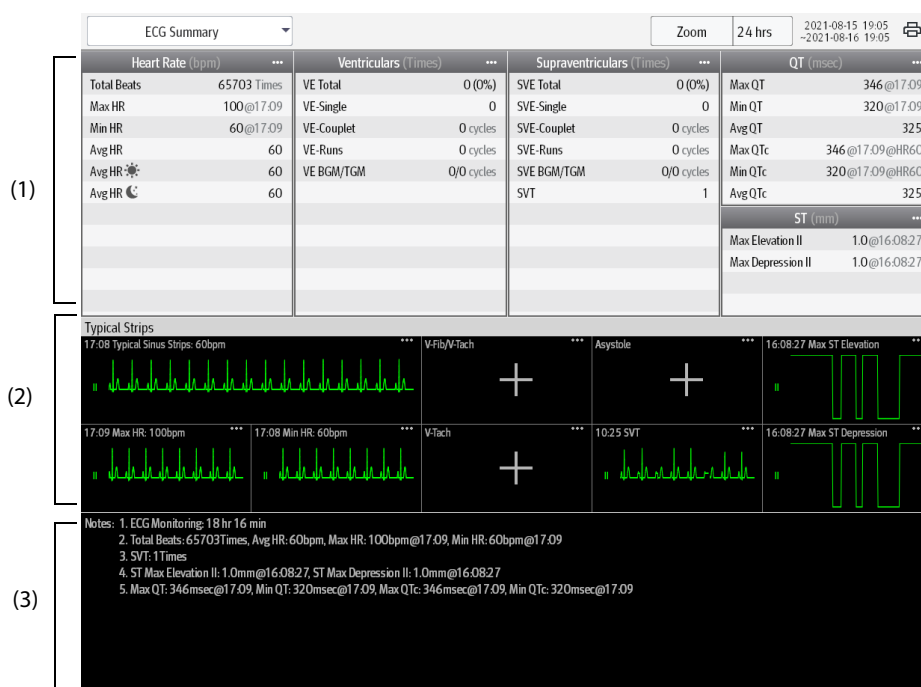
- **Pacer statistics is intended for paced animals. Pacer statistics is available only when the Paced setting is Yes.**
- **ST statistics is available only when ST analysis is switched on.**
- **QT statistics is available only when QT analysis is switched on.**

4.5.1 Entering the ECG Summary Page

To enter the ECG summary page, select the ▼ button in the upper left corner of the summary screen → from the pull-down list, select **ECG Summary**.

4.5.2 The Display of ECG Summary

The following figure is an example of the ECG Summary page:



- (1) ECG statistics, including the following items:
 - Statistics of heart rates
 - Statistics of ventricular beats and ventricular arrhythmia events
 - Statistics of supraventricular beats and supraventricular arrhythmia events
 - Statistics of QT/QTc measurements
 - Statistics of maximum ST elevations and depressions
 - Statistics of pace
- (2) Typical ECG strips
- (3) Notes: include additional information on the ECG summary

4.5.3 Selecting Typical ECG Strips

Taking V-Tach as an example, to select typical V-Tach waveform, select the currently displayed V-Tach waveform, from the popup list select the desired waveform as typical V-Tach waveform.

If no V-Tach occurs to the animal in the statistical duration, an add symbol  is displayed in the V-Tach area. You can select the add symbol to display a typical ECG waveform of other arrhythmia event in this area.

4.5.4 Reviewing the ECG Summary

Selecting any of the statistic area can access corresponding trends and events review. For more information, see *5 Review Screen*.

5

Review Screen

5.1 Overview

You can review historical data for online animals and discharged animals on the review screen. The review screen provides several tabs to display historical data from different dimensions. The review tabs for the online animals and discharged animals are the same.

NOTE

- Review tabs are dependent on the species and animal window settings.
-

5.2 Accessing the Review Screen

Methods for accessing the review screen for online animals and discharged animals are different.

5.2.1 Accessing the Review Screen for Online Animals

To enter the review screen for online animals, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. Select the  button.
3. From the pull-down list, select the department where the desired animal is located.
4. From the bed list, select the desired bed.
5. Select the **Review** tab.

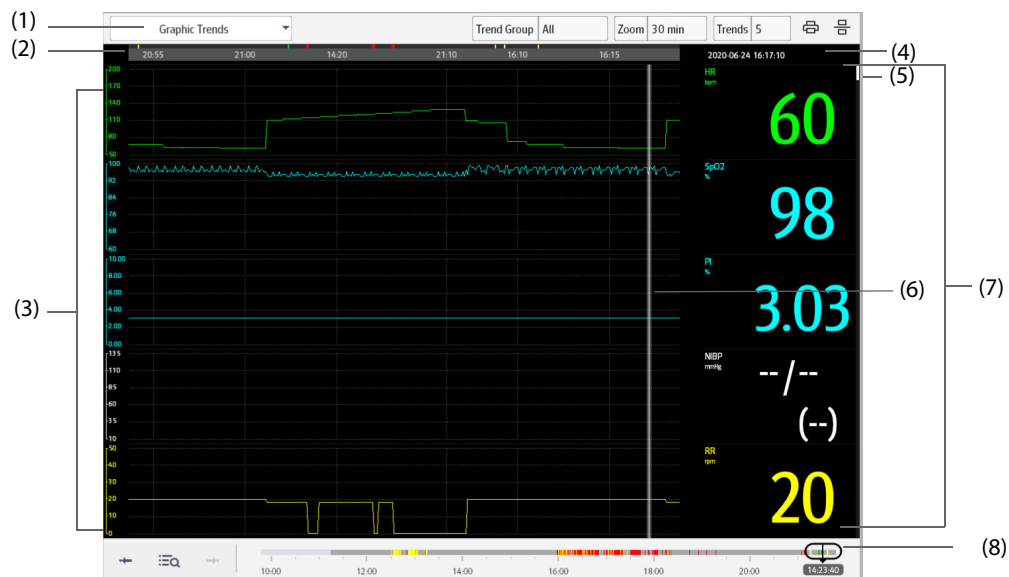
5.2.2 Accessing the Review Screen for Discharged Animals

To enter the review screen for discharged animals, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **Discharged Patients**.
3. From the discharged animals list, select the **Details** button at the end of the desired discharged animal.
4. Select the **Review** tab.

5.3 Example Review Page Structure

The graphic trends review page is an example to introduce the items that may also be displayed on other review pages.



(1)	Current review tab
(2)	Event type indicator: different color blocks match different types of events: ■ Red: high priority alarm event ■ Yellow: medium priority alarm event ■ Cyan: low priority alarm event ■ Green: manual event ■ White: operation-related event ■ Blue: ultrasound report event
(3)	Waveform area: displays trend curves. The color of trend curves is consistent with the color of parameter labels.
(4)	Event or message or current time area: after you select an event from the event list, this event is displayed in this area. Selecting this area turns to the Events review page. If an event is not selected, this area displays current cursor time.
(5)	Scroll bar: indicates the position of currently displayed trend data in all the trend data.
(6)	Cursor: shows your current position in the trend page. When the cursor is moved across the timeline, the values measured at the cursor time are shown in the right column.
(7)	Parameter area: displays numeric values where the cursor stops. The color of numeric values is consistent with the color of parameter labels. The background color of numeric values matches the alarm priority.
(8)	Total timeline: indicates the entire time length. ■ : indicates the time length of reviewable trend data. can be moved within this time length. ■ : indicates no animal monitoring. cannot be moved within this time length. Different color blocks at the timeline indicate events of different types. See the color definition for the event type indicator.

5.4 Symbols on Review Pages

The following table lists the symbols on review pages.

Symbol	Description
	Slider: indicates the position of current window time in the entire time length. Dragging this button left or right enables you to locate the trend data at a specific time and also refreshes trend data in current window accordingly.
	Go to the previous or next event.
	Event list: displays events in a chronological order. The most recent event is displayed at the top.
	Animals'trend data or waveform data export setup symbol*: it is displayed on the tabular trends review page, graphic trends review page, and full disclosure review page. Note: the export setup symbol is displayed only when Save As is enabled in the system menu.
	This symbol is displayed in the upper left corner of a review page for a landscape display greater than 19-inch. Selecting this symbol displays two review pages side by side.
	Print button
	Indicates that parameter numerics are unreliable.
+	Indicates that the followed parameter is from an external device connected to the monitoring device.

5.5 Common Operations on Review Pages

This section describes common operations on review pages.

5.5.1 Browsing Trend Data

Choose one of the following methods to browse trend data:

- Move .
- Move the cursor.
- Move the slider.

5.5.2 Viewing Events

You can view the following types of events:

- Manually triggered events
- Parameter-related operation events and alarm-related events, such as starting C.O. measurement
- Operation events not related to parameters

To view these events, follow this procedure:

1. Select the  button in the upper left corner of the review screen.
2. From the pull-down list, select the desired review page.
3. View events in either of the following ways:
 - ◆ Select .
 - ◆ Select  or .

Events are displayed in a chronological order. The most recent event is displayed at the top.

5.5.3 Displaying Two Review Pages Side by Side

When the display size of the CMS Viewer is greater than 19-inch, you can put two review pages side by side.

To do so, follow this procedure:

1. Select the  button in the upper left corner of the review screen.
2. From the pull-down list, select the desired review page.
3. Select the  symbol located at the top right of the screen. A new review page will be displayed below the desired review page.

You can browse trend data, view events, select other review tabs on the two review pages. If you refresh the trend data by moving cursor or  on one review page, the trend data on the other review page will be updated accordingly

NOTE

- For 19-inch single display, two review pages can not be displayed simultaneously.

5.6 Tabular Trends Review Page

The tabular trends review page displays trend data in a tabular form.

5.6.1 Entering the Tabular Trends Review Page

Enter the tabular trends review page in either of the following ways:

- Select the  button in the upper left corner of the review screen → from the pull-down list, select **Tabular Trends**.
- Select the parameter list area on the ViewBed screen.

5.6.2 Configuring Trends

To configure tabular trends, follow this procedure:

1. Enter the tabular trends review page.
2. Set **Trend Group** and select the desired option.
3. Set **Interval**. Select parameters, such as NIBP, Temp, to view the tabular trends when parameter measurements are acquired. Select **Manually Saved** to view the tabular trends when spot check data is acquired.

NOTE

- The parameters displayed for Trend Group are dependent on the parameters configured at a bedside monitor.

5.6.3 Printing a Tabular Trends Report

To print a tabular trends report, follow this procedure:

1. Enter the tabular trends review page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Set the desired options. Only items that may need special remarks are described here.

Menu Item	Description	Options
Period	Select the period during which a tabular trends report will be printed.	30 min, 1 hr, 2 hrs, 4 hrs, 8 hrs, 12 hrs, 24 hrs, 48 hrs, 72 hrs, 96 hrs, Auto, All Auto: prints one page of a tabular trends before the current time. All: prints all stored tabular trends at the selected Interval. Note: Auto only limits the number of rows or columns for time on a report. The report may have multiple pages to accommodate the number of parameters. To limit the parameters, change the trend group on the review page.
Interval	Select the resolution of the tabular trends printed on a report.	5 sec, 30 sec, 1 min, 5 min, 10 min, 15 min, 30 min, 1 hr, 2 hrs, 3 hrs, NIBP, TempIF, C.O., Manually Saved, Auto Parameters, such as NIBP, Temp: prints a tabular trends report when parameter measurements are acquired. Manually Saved: prints a tabular trends report when spot check data is acquired. Auto: print a tabular trends report at the interval set in the Interval option in the upper right corner of the Tabular Trends review page.
Report Format	Select the printing principle.	Parameter Oriented: prints a report with parameters listed by row and time listed by column. Time Oriented: prints a report with time listed by row and parameter listed by column.

4. Select the desired options.

- ◆ **Print Preview:** previews the printout. Upon completion of preview, if you wish to start printing, select **Print**.
- ◆ **Print (All):** prints a tabular trends report per **Trend Group** and **Interval** settings on the tabular trends review page.
- ◆ **Print:** prints a tabular trends report per settings in the **Print Setup** menu.

5.6.4 Exporting Trend Data

When the CMS Viewer is connected to a storage device and exporting animals' data is allowed in the system setup menu, you can export animals' trend data from the tabular trends review page or the graphic trends review page. Animals' trend data exported from these two review pages is the same. Exported trend data is saved in csv format.

For more information on exporting animals' trend data from the graphic review page, see *5.7.4 Exporting Trend Data*.

To export animals' trend data, follow this procedure:

1. Enter the tabular trends review page.
2. Select the  button in the upper right corner of this page. The **Export Setup** menu is displayed.
3. Set the desired options.

Menu Item	Description	Options
Date	Set the specific date on which you wish to export trend data.	Default to the date for the data where the cursor stops.
Time	Set the export end time.	Default to the date for the time where the cursor stops.

Menu Item	Description	Options
Period	Select the period during which trend data is exported.	30 min, 1 hr, 2 hrs, 4 hrs, 8 hrs, 12 hrs, 24 hrs, 48 hrs, 72 hrs, 96 hrs, All Default to 1 hr.
Interval	Select the resolution of trend data.	1 sec, 5 sec, 30 sec, 1 min, 5 min, 10 min, 15 min, 30 min, 1 hr, 2 hrs, 3 hrs, NIBP, TempIF, C.O., Manually Saved Parameters, such as NIBP , Temp : export trend data when parameter measurements are acquired. Manually Saved : export trend data when spot data is acquired. Interval is defaulted to Interval displayed on the tabular trends review page. Note: The options for Interval are dependent on the functions of a bedside monitor.
Save Path	Select the path to save the trend data.	/

4. Select **Export**.

You can view export progress and results in the **Export Queue** menu. For more information on this menu, see *1.2 The Display of Main Screen*. The exported trend data is saved in the sub-folder named as ParameterData under the animal's folder which is located in the selected **Save Path**.

5.7 Graphics Trends Review Page

The graphic trends review page displays trend data in a graphic form.

5.7.1 Entering the Graphic Trends Review Page

To enter the graphic trends review page, follow this procedure:

1. Select the ▼ button in the upper left corner of the review screen.
2. From the pull-down list, select **Graphic Trends**.

5.7.2 Setting Graphic Trends

To set graphic trends, follow this procedure:

1. Enter the graphic trends review page.
2. Set **Trend Group** and select the desired option.
3. Set **Zoom**. Select the desired length of trend data to view the most recent 240-hour data.
4. Select the desired number of **Trends**.

5.7.3 Printing a Graphic Trends Report

To print a graphic trends report, follow this procedure:

1. Enter the graphic trends review page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Set the desired options.
4. If you wish to preview the printout, select **Print Preview**.
5. Select **Print**.

5.7.4 Exporting Trend Data

When the CMS Viewer is connected to a storage device and exporting animals' data is allowed in the system setup menu, you can export animals' trend data from the graphic trends review page or the tabular trends

review page. Animals' trend data exported from these two review pages is the same. Exported trend data is saved in csv format.

After entering the graphic trends review page, export animals' trend data by following steps in Section 5.6.4 *Exporting Trend Data*.

5.8 Full Disclosure Review Page

On the full disclosure review page, you can view the compressed waveforms and detailed waveforms for each animal.

5.8.1 Entering the Full Disclosure Review Page

To enter the full disclosure review page, follow this procedure:

1. Select the  button in the upper left corner of the review screen.
2. From the pull-down list, select **Full Disclosure**.

5.8.2 Selecting Waveforms

If you wish to review waveforms other than the default waveform on the full disclosure review page, you need to select the desired waveforms.

To do so, follow this procedure:

1. Enter the full disclosure review page.
2. Select the  button.
3. Select **Setup**. The **Select Waveform** menu is displayed.
4. Select the **Storage** tab.
5. Configure the desired waveforms.
6. Select the **Display(Maximum: 3)** tab.
7. Enable the desired waveforms to be displayed on the review page.

In case of alarms, the background of compressed waveform block at the alarm time is marked with a special color:

- Red: high alarm priority
- Yellow: medium alarm priority
- Cyan: low alarm priority

NOTE

- When there is sufficient space to display all the menu items, the  button is not displayed on the full disclosure review page. In this case, skip the procedure which instructs to select this button.

5.8.3 Compressed Waveform

The full disclosure review page displays the compressed waveform.

5.8.3.1 Setting the Scale of Compressed Waveform

To set the size of the compressed waveform, follow this procedure:

1. Enter the full disclosure review page.
2. Select the  button.
3. Set the ECG waveform size in either of the following ways:
 - ◆ Select the **Scale** button and then select the desired option.
 - ◆ Select the ECG lead label on the left side of the review page to enter the **Scale** menu. Then select the desired option.

4. Select other parameter labels on the left side of the review page to enter the **Scale** menu and set the scale for these parameters.

5.8.3.2 Setting the Duration of Compressed Waveform

To set the length of the compressed waveform, follow this procedure:

1. Enter the full disclosure review page.
2. Select the  button.
3. Select **Duration**.
4. Configure the desired **Duration** time.

5.8.3.3 Marking Arrhythmia

In the compressed waveform area, the background of compressed waveform segments at the arrhythmia alarm trigger time is marked with a specific color automatically to indicate the arrhythmia category. For details on how to set the arrhythmia mark color, see [8.3.3 Setting an Arrhythmia Mark Color](#).

5.8.3.4 Selecting Compressed Waveform Segments

You can select one or more compressed waveform segments and print these segments. For details on how to print these segments, see [5.8.5 Printing Compressed Waveforms or Detailed Waveforms](#).

To select compressed waveform segments, follow this procedure:

1. Enter the full disclosure review page.
2. Select compressed waveform segments in either of the following ways:
 - ◆ Using a mouse: in the compressed waveform area, hold down the right mouse button and select the desired waveform segment. If you wish to select multiple waveform segments, release the right mouse button and then select the desired waveform segments. You can move the screen up and down to select more waveform segments.
 - ◆ Using a touch screen: press the **Select** button and then touch the waveform. Hold and drag your finger to select the desired waveform segment. If you wish to move the screen up and down, you need to re-select the **Select** button to exit the selected status.

If you wish to cancel current selection, select the close button in the upper right corner of the waveform segment selection window.

5.8.4 Detailed Waveform Window

In the detailed waveform window, you can view the full size waveforms and parameter numerics.

Access the detailed waveform window in either of the following ways:

- Select the  button, and then select the **Detail** button in the compressed waveform window.
- Double click the desired compressed waveform.

In the detail review window:

- Timeline and waveforms are displayed in the upper part of the window.
- Numeric values are displayed in the lower part of the window. The background color of parameters indicate whether an alarm is triggered.
 - ◆ No color: no alarm is triggered.
 - ◆ Red: a high priority alarm is triggered.
 - ◆ Yellow: a medium priority alarm is triggered.
 - ◆ Cyan: a low priority alarm is triggered.

If you wish to return to the compressed waveform window, select the **Overview** button in the detailed waveform window.

5.8.4.1 Setting ECG Gain

To set the ECG gain, follow this procedure:

1. Enter the detailed waveform window.
2. Select the  button.
3. Select the **ECG Gain** button.
4. Configure the desired ECG gain.

5.8.4.2 Setting Waveform Sweep Speed

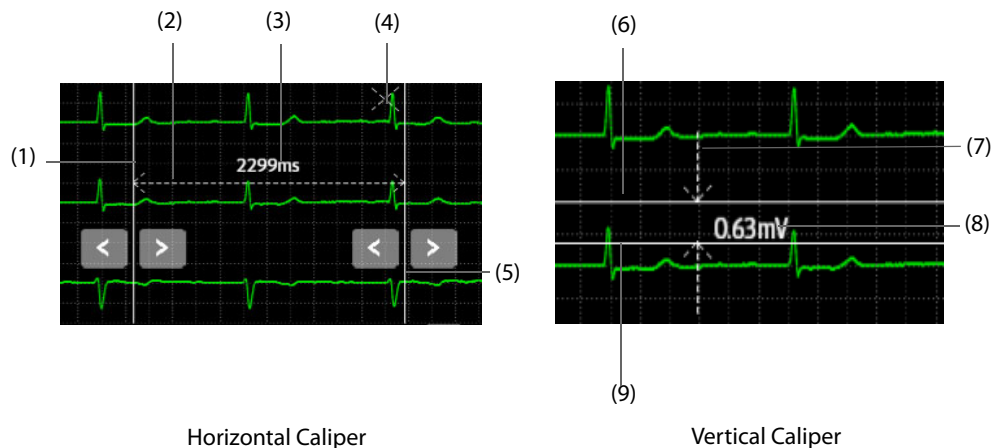
To set the waveform sweep speed, follow this procedure:

1. Enter the detailed waveform window.
2. Select the  button.
3. Select the **Speed** button.
4. Configure the desired speed. The speed is applicable to all the ECG waveforms.

5.8.4.3 Caliper Measurement

When full disclosure data is collected and stored in the CMS, horizontal calipers can be used to measure the PR, QRS, QT, and R-R waveform intervals, and vertical calipers can be used to measure the ST waveform amplitude in the detailed waveform window.

Horizontal caliper and vertical caliper are as shown in the following figure.



(1)	Left caliper arm
(2), (7)	Measurement line
(4)	Close button: closes the caliper window without saving the measured value.
(5)	Right caliper arm
(3), (8)	Real-time measurement
(6)	Upper caliper arm
(9)	Lower caliper arm

Performing Measurements Using a Horizontal Caliper

Choose either of the following ways to perform measurements using a horizontal caliper:

Option 1:

1. Enter the detailed waveform window.
2. Select **Caliper**. The **Caliper** menu is displayed.
3. Display a horizontal caliper in either of the following ways.
 - ◆ Using a mouse: left or right click the mouse at a place in the desired waveform area and then drag the cursor horizontally until your desired location is reached.

- ◆ Using a touch screen: select a place in the desired waveform area and then drag your finger on the screen surface horizontally without losing the contact until the desired location is reached. If you need to adjust the caliper, slightly touch the left or right caliper arm and select the appropriate touchscreen control.
4. After finishing measurements, select **PR**, **QRS**, **RR**, and **QT** from the **Caliper** menu to obtain the measured values. The QTc value is calculated after RR and QT value have been acquired.
 5. If you need to clear measured values, select the **Reset** button.

Option 2:

1. Enter the detailed waveform window.
2. Right click the mouse at a place in the desired waveform area and then drag the cursor horizontally until your desired location is reached. Measured values are displayed in real-time.

Performing Measurements Using a Vertical Caliper

To perform measurements using a vertical caliper, follow this procedure:

1. Enter the detailed waveform window.
2. Select **Caliper**. The **Caliper** menu is displayed.
3. Select **ST**.
4. Generate a vertical caliper in either of the following ways.
 - ◆ Using a mouse: left click the mouse at a place in the desired waveform area and then drag the cursor vertically until your desired location is reached.
 - ◆ Using a touch screen: select a place in the desired waveform area and then drag your finger on the screen surface vertically without losing the contact until the desired location is reached. If you need to adjust the caliper, slightly touch the left or right caliper arm and select the appropriate touchscreen control.
5. After finishing measurements, select **ST** from the **Caliper** menu to obtain the measured value.
6. If you need to clear measured values, select the **Reset** button.

Moving the Caliper

After generating a caliper, you can also move calipers as shown below to measure the time difference between any two points:

- When the cursor is in the shape of , you can move the caliper horizontally.
- When the cursor is in the shape of , you can move the caliper vertically.
- When the cursor is in the shape of  inside the caliper, you can move the entire caliper window.
- Select the  button or the  button in the horizontal caliper measurement area. Select the  button or the  button in the vertical caliper measurement area.

Canceling Caliper Measurements

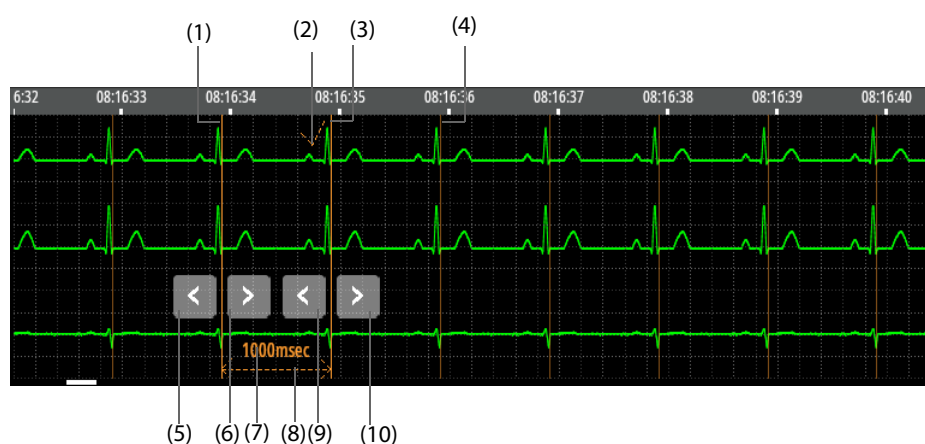
During caliper measurement, you can cancel a caliper measurement in either of the following ways:

- Select the **Caliper** button.
- Select anywhere in the waveform area.
- Select the close button in the caliper window.

5.8.4.4 Waveform Divider

You can select **Divider** in the detailed waveform window to equally divide the waveform and find the desired waveform segment.

Select **Divider** and the detailed waveform window is shown as follows:



(1)	Divider left arm
(2)	Freeze button
(3)	Divider right arm
(4)	Divider line
(5) (9)	Left fine tuning button
(6) (10)	Right fine tuning button
(7)	Realtime measurement
(8)	Measurement line

Adjusting the Dividing Interval

The default dividing interval is 1second. You can adjust the dividing interval in either of the following ways:

- Select left or right fine tuning button to fine tuning the dividing interval with the precision of 1ms at a time.
- Move the cursor near the divider left or right arm until it turns to the shape of , left click the mouse or use your finger to horizontally drag the divider left or right arm to adjust the dividing interval with a larger amplitude.

Freezing the Divider

Select the freeze button to freeze the divider. Once the divider is frozen, left click the mouse or use your finger to horizontally drag the waveform to find waveform segment of different periods. Select  to unfreeze the divider.

Moving the Divider

When the divider is not frozen, move the cursor near the measurement line or realtime measurement until the cursor turns to the shape of , left click the mouse or use your finger to horizontally drag the divider to the desired location.

Moving the Realtime Measurement

Move the cursor near the measurement line or realtime measurement until the cursor turns to the shape of , you can left click the mouse or use finger to vertically drag the realtime measurement to the desired location.

Exiting the Divider

Select **Divider** again to exit the divider.

NOTE

- Once enabling divider function, the caliper function cannot be used and vice versa.

5.8.4.5 Setting Beat Annotation

When a bedside monitor and a telemetry device support the beat annotation functionality, you can enable or disable **Beat Annotation** to display or hide white beat labels above the first ECG waveform in the detailed waveform window. The white beat labels indicate how the monitor or the telemetry device is classifying beats and may explain suspected, missed, or false arrhythmia calls.

- N = Normal
- V = Ventricular Ectopic
- S = Supraventricular Premature
- P = Paced
- L = Learning
- ? = Insufficient information to classify beats
- I = Inoperative (for example, Lead Off)
- M = Missed beat

5.8.5 Printing Compressed Waveforms or Detailed Waveforms

To print the compressed waveform or detailed waveform, follow this procedure:

1. Enter the full disclosure review page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Select the desired options. Only items that may need special remarks are described here.
 - ◆ **Print Waveform Overview:** prints the compressed waveform displayed on the full disclosure review page.
 - ◆ **Print Overview of Selected Waveforms:** prints the selected compressed waveform segments. For details on how to select compressed waveform segments, see Section 5.8.3.4 *Selecting Compressed Waveform Segments*.
 - ◆ **Print Details of Selected Waveforms:** prints the detailed waveform for the selected compressed waveform segments according to the time period where selected waveform segments are located.
 - ◆ **Print Displayed Detailed Waveforms:** prints the detailed waveform for the entire compressed waveform.
 - ◆ **Print Selected Detailed Waveforms:** prints the detailed waveform for the selected waveform segments according to waveforms. If you select this option, you can further select **Select Waveform** to customize the number and sequence of waveforms which are output on a printout. After performing the desired settings, select the  button in the upper right corner of the **Select Waveform** menu.
4. If you wish to preview the printout, select **Print Preview**.
5. Select **Print**.

NOTE

- **Print Displayed Waveform Detail and Print Selected Waveform Detail are selectable in the detailed waveform window only. For information regarding accessing the detailed waveform window, see Section 5.8.4 Detailed Waveform Window.**

5.8.6 Exporting Waveform Data

When the CMS Viewer is connected to a storage device and exporting animals' data is allowed in the system setup menu, you can export animals' waveform data from the full disclosure review page.

To export animals' waveform data, follow this procedure:

1. Enter the full disclosure review page.
2. Select the  button in the upper right corner of this page. The **Export Setup** menu is displayed.
3. Set the desired options.

Menu Item	Description	Options
Date	Set the specific date on which you wish to export waveform data.	Default to the date for the data where the cursor stops.

Menu Item	Description	Options
Time	Set the export end time.	Default to the date for the time where the cursor stops.
Period	Select the period during which waveform data is exported.	30 min, 1 hr, 2 hrs, 4 hrs, 8 hrs, 12 hrs, 24 hrs, 48 hrs, 72 hrs, 96 hrs, All Default to 1 hr.
Select Waveform	Select the desired waveforms to be exported.	Enabling a waveform means this waveform will be exported.
Save Path	Select the path where exported waveform data is saved.	/
File Format	Select the desired format in which exported waveform data is saved.	csv, xml. csv is the default.

4. Select **Export**.

You can view export progress and results in the **Export Queue** menu. For more information on this menu, see *1.2 The Display of Main Screen*. The exported waveform data is saved in the sub-folder named as WaveformData under the animal's folder which is located in the selected **Save Path**.

NOTE

- **This function is supported only when the CMS Viewer is visited via application; this function is not supported when the CMS Viewer is visited via web page.**

5.9 Events Review Page

On the events review page, you can view technical alarm events, physiological alarm events, manual events, and operational events.

5.9.1 Entering the Events Review Page

To enter the events review page, follow this procedure:

1. Select the  button in the upper left corner of the review screen.
2. From the pull-down list, select **Events**.

5.9.2 Event List

In the event list:

- Events are displayed in descending chronological order. The most recent event is displayed at the top. Event lock status, trigger time, alarm priority, and event remarks if available are displayed for each event.
- Different color blocks are displayed on the left of each event to indicate different event types.
 - ◆ Red: high priority alarm event
 - ◆ Yellow: medium priority alarm event
 - ◆ Cyan: low priority alarm event
 - ◆ Green: manual event
 - ◆ White: operation-related event
 - ◆ Blue: ultrasound report event

5.9.2.1 Setting Filters

You can filter events by time, alarm priority, alarm category, and parameter group.

To filter events, follow this procedure:

1. Enter the event review page.
2. Select **Filter**. From the pull-down list, select the desired item.

You can customize two criteria. To do so, follow this procedure:

1. From the **Filter** pull-down list, select **Custom 1** or **Custom 2** to enter the **Filter Setup** menu.
2. Select the **Name** field to edit the name of the custom criterion.
3. Select desired items.

If you want to review events happened around certain time, select the  button → set the time → select **OK**. Then the cursor jumps to the event happened closest to the defined time.

5.9.2.2 Setting the Display of Disabled Arrhythmia Alarms

You can set to display arrhythmia events that have alarm turned off in the event list.

To do so, follow this procedure:

1. Enter the event review page.
2. Set **Show Disabled Arrhythmia Alarms**: this option is unselected by default. Select this option and arrhythmia events that have alarms turned off display in the event list.

5.9.3 Event Detail Window

Enter the event detail window in either of the following ways:

- Double click the desired event from the event list.
- Select the **Detail** button on the event review page.

The event detail window displays the event name, the event triggered time and the details of the event.

5.9.3.1 Configuring ECG Gain

To configure the ECG gain, follow this procedure:

1. Enter the event detail window.
2. Select **ECG Gain**.
3. Select the desired gain.

5.9.3.2 Configuring Waveform Sweep Speed

To configure the waveform sweep speed, follow this procedure:

1. Enter the event detail window.
2. Select the **Speed** button.
3. Configured the desired speed. The speed is applicable to all the ECG waveforms.

5.9.3.3 Caliper Measurement

To perform caliper measurement, follow this procedure:

1. Enter the event detail window.
2. Select the **Caliper** button.
3. Perform caliper measurement by following steps in Section 5.9.3.3 *Caliper Measurement*.

5.9.3.4 Waveform Divider

For details on how to perform waveform dividing, see Section 5.8.4.4 *Waveform Divider*.

5.9.3.5 Setting Beat Annotation

For details on how to set beat annotation, see Section 5.9.3.4 *Waveform Divider*.

5.9.4 Printing Events

To print the desired event list or event details, follow this procedure:

1. Enter the event review page.
2. Select the desired events from the event list.
3. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
4. Select the desired options.
 - ◆ **Print All Event List:** print the entire event list.
 - ◆ **Print List of Selected Events:** print the selected events list.
 - ◆ **Print Overview of Selected Events:** when multiple events are selected from the event list, selecting this option prints these events on the same page and outputs an event overview report.
 - ◆ **Print Detail of Selected Events:** print the details of selected events.
 - ◆ **Print Displayed Event Detail:** print the details of the selected event. If you wish to select this option, you need to open the event detail window first.
5. If you wish to preview the printout, select **Print Preview**.
6. Select **Print**.

NOTE

- **This function is supported only when the CMS Viewer is visited via application; this function is not supported when the CMS Viewer is visited via web page.**
- **Print preview is not applicable for Print Detail of Selected Events.**

5.10 ST Review Page

You can review ST templates on the ST review page.

5.10.1 Entering the ST Review Page

To enter the ST review page, follow this procedure:

1. Select the  button in the upper left corner of the review screen.
2. From the pull-down list, select **ST**.

5.10.2 Setting ST Reference Templates

You can set the desired ST template as a reference template.

To do so, follow this procedure:

1. Enter the ST review page.
2. Select the desired ST template.
3. Select **Set Reference**.

5.10.3 Displaying/Hiding ST Reference Templates

On the ST review page, select **Display Reference** or **Hide Reference**.

- **Display Reference:** the ST template storage time is displayed on the right of current segment and ST values are also displayed on the reference template.
- **Hide Reference:** hides the ST reference template.

5.10.4 Displaying/Hiding Markers

On the ST review page, select **Display Marker** or **Hide Marker**.

- **Display Marker:** a white vertical bar appears above each waveform, marking the positions of ISO, J point, and ST point.
- **Hide Marker:** the positions of ISO, J point, and ST point are not displayed.

5.10.5 Printing ST Segment Waveforms

To print ST segment waveforms, follow this procedure:

1. Enter the ST review page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Set the desired options.
4. Select **Print**.

5.11 Arrhythmia Statistics Page

On the arrhythmia statistics page, you can view the statistics about the HR value and the number of each arrhythmia category within a specific time period. The default for **Zoom** is **24 hrs**.

5.11.1 Entering the Arrhythmia Statistics Page

To enter the arrhythmia statistics page, follow this procedure:

1. Select the ▼ button in the upper left corner of the review screen.
2. From the pull-down list, select **Arrhy Statistics**.

5.11.2 Viewing Arrhythmia Statistics

To view arrhythmia statistics, follow this procedure:

1. Enter the arrhythmia statistics page.
2. If you wish to view arrhythmia statistics in a tabular format, select **Tabular** in the upper right corner of this page.
3. Select **Zoom** to view arrhythmia events within a specific time period. The default for **Zoom** is **24 hrs**.
4. If you wish to view arrhythmia statistics in a graphic format, select **Graphic**.

On the graphic arrhythmia statistics page:

- The left side displays the name, times of occurrence, and duration of arrhythmias. The right side displays the arrhythmia occurrence time and colored block which matches different alarm priorities.
 - ◆ Red: high alarm priority
 - ◆ Yellow: medium alarm priority
 - ◆ Cyan: low alarm priority
- Selecting the desired arrhythmia on the left displays the waveform area on the right side. After selecting the waveform area, you can view more details about this arrhythmia.

5.11.3 Setting the Display of Arrhythmia Events

5.11.3.1 Displaying Disabled Arrhythmia Alarms

To display arrhythmia events that have alarms turned off in the review, follow this procedure:

1. Enter the arrhythmia statistics page.
2. select **Graphic**.
3. select the  button.
4. Select **Show Disabled Arrhythmia Alarms**: this option is disabled by default. Enabling it, arrhythmia events that have alarms turned off displays are displayed in the review.

5.11.3.2 Displaying High Quality Arrhythmia Alarms Only

To exclude arrhythmia events with obvious noise or arrhythmia events without typical alarm characteristics in the review, follow this procedure:

1. Enter the arrhythmia statistics page.

2. select **Graphic**.
3. select the  button.
4. Select **High Quality Arrhythmia Alarms Only**: this option is disabled by default. Enabling it, events with obvious noise or events without typical alarm characteristics are excluded in the review.

5.11.4 Printing Arrhythmia Statistics Results

To print arrhythmia statistics results, follow this procedure:

1. Enter the arrhythmia statistics page.
2. Select the  button in the upper right corner of this page. The **Print Setup** menu is displayed.
3. Set the desired options.
4. Select **Print**.

6 Discharged Patients Management

6.1 Overview

The CMS Viewer provides you the ability to search and review data of discharged animals in the target CentralStation.

6.2 Accessing the Discharged Animals Management Screen

To access the discharged animals management screen, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **Discharged Patients**.

6.3 Searching Discharged Animals

To search discharged animals, follow this procedure:

1. Select the  button in the upper left corner of the discharged animals management screen.
2. From the pull-down list, select the department where the desired remote CentralStation is located.
3. Input query criteria. If you need to specify more criteria, select the **Filter** button and input more criteria.
4. Select the **Search** button. The eligible animals are displayed in the discharged animals list.

6.4 Viewing Animal Information and Historical Data of Discharged Animals

From the discharged animals list, select the **Details** button at the end of the discharged animal.

- In the **Patient Management** tab, you can view animal information.
- In the **Review** tab, you can review historical data of this animal. For more information on the **Review** tab, see Chapter 5 *Review Screen*.

6.5 Sorting Discharged Animals

You can sort all discharged animals in ascending or descending order by clicking the heading of any column. At the same time, the following symbols will appear to right of the heading:

- : sort discharged animals in ascending order.
- : sort discharged animals in descending order.

By default, all discharged animals are sorted ascendingly by discharged date.

6.6 Refreshing Data

Selecting the  button in the upper right corner of the discharged animals list updates the animals list.

7 Printing

7.1 Printer

The CMS Viewer can be connected to a printer to output reports on A4 paper. The printer has a separate power supply. So far, the CMS Viewer supports the following printers:

- HP LaserJet 401n
- HP LaserJet M602
- HP LaserJet M605n
- HP LaserJet M608
- PDF printer

NOTE

- **For more details about the printer, see the document accompanying the printer. With product upgrades, the CMS may support more printers and no prior notice will be given. If you have any doubt about the printer you have purchased, contact Mindray.**
-

7.2 Starting Report Printouts

You can start a printing task manually or the printer will start a printing task automatically.

7.2.1 Manual Printing

You can manually start printing reports such as trends data.

7.2.1.1 Printing Review Data

For details on how to print tabular trends, graphic trends, waveform review, waveform segment, event review, ST segment, and arrhythmia statistics result, see Chapter 5 *Review Screen*.

7.2.1.2 Printing Realtime Waveforms

Choose one of the following ways to print real-time waveforms:

- Select the **Print** quick key at the bottom of the ViewBed screen.
- Select the **Print** button in the **Realtime Report** menu on the ViewBed screen. For details on how to access the **Realtime Report** menu, see Section 7.3.2 *Setting Realtime Reports*.
- Select the **Main Menu** quick key from the quick key area on the ViewBed screen → from the **Report** column select **Print**.

7.2.1.3 Printing ECG Reports

When ECG monitoring with lead sets other than 3-lead is being performed, you can print corresponding ECG reports by following the procedures below.

1. On the ViewBed screen, access the ECG full screen by either of the following ways:
 - ◆ Select the **ECG Full-Screen** quick key at the bottom of the screen.
 - ◆ Select the **Screen Setup** quick key at the bottom of the screen → select the **ViewBed** tab → select the **Choose Screen** tab → select **ECG Full-Screen**.
 - ◆ Select the ECG parameter area or waveform area to access the ECG menu → select the **Full-Screen** button in the lower left corner of the menu.
2. Select the print button in either of the following methods.
 - ◆ Select the **Print** quick key at the bottom of the ViewBed screen.

- ◆ Select **Print** in the lower right corner of the **ECG Report** menu. For details on how to access this menu, see Section 7.3.3 *Setting ECG Reports*.
- ◆ Select the **Main Menu** quick key from the quick key area on the ViewBed screen→ from the **Report** column select **Print**.

NOTE

- For details on how to set the ECG reports, see Section 7.3.3 *Setting ECG Reports*.

7.2.1.4 Printing EEG Reports (BIS Module)

To print EEG reports, follow this procedure:

1. On the ViewBed screen, access the BIS menu in either of the following ways:
 - ◆ Select a BIS waveform or parameter area.
 - ◆ Select the **Parameter Setup** quick key at the bottom of the screen → select **BIS**.
2. Select the **BIS Expand** button at the bottom of the menu.
3. Select the **EEG** tab.
4. After selecting desired settings, select the  button in the upper left corner. The **Print Setup** menu is displayed.
5. After selecting desired settings, select **Print**.

7.2.1.5 Printing QT Reports

To print a QT report, follow this procedure:

1. On the ViewBed screen, access **QT View** in one of the following ways:
 - ◆ Select the QT parameter area to access the QT menu→ select the **QT View** button at the bottom of the menu.
 - ◆ Select the ECG waveform or parameter area to access the ECG menu → select the **QT** tab → select the **QT View** button at the bottom of the menu.
 - ◆ Select the **Parameter Setup** quick key at the bottom of the screen → select **ECG**→ select the **QT** tab → select the **QT View** button at the bottom of the menu.
2. Select the  button in the upper left corner. The **Print Setup** menu is displayed.
3. After selecting desired settings, select **Print**.

7.2.1.6 Printing ST View

The ST View shows a complete QRS segment for each ST lead. To print ST View, follow this procedure:

1. On the ViewBed screen, access **ST View** in one of the following ways:
 - ◆ Select ST segment waveform area.
 - ◆ Select the ST parameter area to access the **ST** menu → select the **ST View** button at the bottom of the menu.
 - ◆ Select the ECG waveform or parameter area to access the **ECG** menu → select the **ST** tab → select the **ST View** button at the bottom of the menu.
2. Select the  button in the upper left corner. The **Print Setup** menu is displayed.
3. After selecting desired settings, select **Print**.

7.2.1.7 Printing Frozen Waveforms

For details on how to print frozen waveforms, see Section 3.7.5.1 *Freezing Waveforms*.

7.2.1.8 Printing Alarm Setup

To print alarm setup, follow this procedure:

1. Select the **Alarm Setup** quick key at the bottom of the ViewBed screen.

2. After selecting desired settings, select the  button in the upper left corner. The **Print Setup** menu is displayed.
3. After selecting desired settings, select **Print**.

7.2.2 Automatic Printing

You can set a printer to start printing automatically.

To do so, follow this procedure:

1. On the ViewBed screen, access the alarm setup menu in either of the following ways:
 - ◆ Select the desired parameter area or waveform area to access the parameter setup menu and then select the alarm-related tab such as the **Alarm** tab.
 - ◆ Select the **Alarm Setup** quick key at the bottom of the ViewBed screen.
2. Enable **Alarm Outputs** for the desired parameter. Once an alarm for this parameter is triggered, the parameter related data will be printed automatically.

7.3 Setting Reports

You can set report related contents such as patient information items on a report. For details, see Section 8.5 *Print Tab*. This section only describes how to set real-time reports and ECG reports in the **Print Setup** menu.

7.3.1 Accessing the Print Setup Menu

Access the **Print Setup** menu in either of the following ways:

- ◆ Select the **Print Setup** quick key at the bottom of the ViewBed screen. If this quick key is not available, configure it by following steps in 3.6 *Quick Keys*.
- ◆ Select the **Main Menu** quick key at the bottom of the ViewBed screen→ from the **Report** column select **Print Setup**.

7.3.2 Setting Realtime Reports

To set realtime reports, follow this procedure:

1. In the **Print Setup** menu, select the **Report Setup** tab.
2. Select the **Realtime Report** tab.
3. Set **Speed**.
4. Select waveforms to be printed.
 - ◆ **Current Waveforms**: print the realtime report for current waveforms.
 - ◆ **Selected Waveforms**: print the realtime report for the selected waveforms. If you wish to select this option, you need to further select **Select Waveform** and select the desired waveforms in the **Select Waveform** menu.

7.3.3 Setting ECG Reports

When ECG monitoring with lead sets other than 3-lead is being performed, you can set ECG reports.

To do so, follow this procedure:

1. In the **Print Setup** menu, select the **Report Setup** tab.
2. Select the **ECG Report** tab.
3. Set the desired options. Only items that may need special remarks are described here.

Menu item	Description	Options	Default
Auto Interval	Defines the spacing between the ECG waveforms on a printout	On: automatically adjusts the space between waveforms to avoid overlapping. Off: each waveform area has the same size on a printout.	Off

7.4 Printer Out of Paper

When the printer runs out of paper, the print request will not be acknowledged. If there are too many print jobs that are not acknowledged a printer error may occur. In this case, install paper and then re-send the print request. Restart the printer if necessary.

To avoid a printer error condition, ensure that there is enough paper in the printer before sending a print request.

8 System Setup

8.1 System Setup Overview

The CMS Viewer comes with factory set defaults that govern how your system operates. You can make changes to the configuration items to accommodate the needs of your unit. Changes made to the CMS Viewer take effective for the CMS Viewer only and do not affect the host CentralStation.

8.2 Display Tab

8.2.1 Accessing the Display Setup Page

To access the display setup page, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **System Setup** to access the **System Setup** menu.
3. Select the **Display** tab.

8.2.2 Setting a Parameter Color

Parameter-related information such as realtime waveforms and parameter numerics are displayed in the same color on the screen.

To set the desired parameter colors, follow this procedure:

1. On the display setup page, select the **Param Color** tab.
2. Select the color box on the right of the desired parameter.
3. From the pull-down list, select the desired color.

8.2.3 Setting Other Items

You can set the waveform sequence for multi-lead ECG, whether to enable soft keyboard, and Viewer auto exit. To do so, follow this procedure:

1. On the display setup page, select the **Other** tab.
2. Set **ECG Lead Sequence**. After changing the ECG lead sequence, the waveform sequence will be updated in the ECG waveform area, ST parameter area, ST View on the ViewBed screen, ECG waveforms on review pages, and printouts.
 - ◆ **Normal:** I, II, III, aVR, aVL, aVF, V
 - ◆ **Cabrera:** aVL, I, -aVR, II, aVF, III, V
3. Enable or disable **Soft Keyboard**. When this option is enabled, a soft keyboard displays when a field that requires manual input is selected.
4. Set **Auto Exit**. When it is set to **Never**, the CMS Viewer never exits automatically. When it is set to other options, it exits automatically once the selected time interval expires.
5. Enable or disable **Outline Font for Suspected Values**. This option is enabled by default. When it is enabled, if unreliable measurement values of HR, SpO₂, or BIS are detected, these numerics will be displayed in outline font on the multibed or ViewBed screen or suffixed with the  icon on the review pages.

8.3 Patient Management Tab

Set which animal fields can be displayed on the Patient Management screen.

Select the customized fields and input names for these fields.

8.4 Network Tab

In the **Network** tab, you can set communication conditions between the CMS Viewer and the CentralStation, between the CMS Viewer and the MLDAP server.

NOTE

- **Network tab is supported only when the CMS Viewer is visited via application; network tab is not supported when the CMS Viewer is visited via web page.**

8.4.1 Accessing the Network Setup Page

To access the network setup page, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **System Setup** to access the **System Setup** menu.
3. Select the **Network** tab.

8.4.2 Setting the Master Server Tab

In the **Master Server** tab, you can set the information of the CentralStation that is used as a master server. For details on the master server setup, see *2.4 Configuring the CMS Viewer Software*.

8.4.3 Setting the Central Station Connection Tab

In the **Central Station Connection** tab, you can add, delete, connect or disconnect a desired CentralStation.

8.4.3.1 Adding the CentralStation

A maximum of 50 CentralStation can be added. perform the following procedure:

1. On the network setup page, select the **Central Station Connection** tab.
2. Select **Add**.
3. From the popup window, select **Local CentralStation** to add local or select **Cloud CentralStation** to add cloud CentralStation.

8.4.3.2 Deleting the CentralStation

To delete the CentralStation for the CMS Viewer, follow this procedure:

1. On the network setup page, select the **Central Station Connection** tab.
2. Delete the CentralStation in either of the following way.
 - ◆ To delete the CentralStation one by one, select the symbol  beside the desired CentralStation.
 - ◆ To delete all the CentralStation, select **Delete All**.

8.4.3.3 Connecting or Disconnecting the CentralStation

To connect the desired CentralStation, follow this procedure:

1. On the network setup page, select the **Central Station Connection** tab.
2. Select the desired CentralStation from the list of CentralStations.
3. Select the **Connect** button. If password protection is enabled for the chosen CentralStation, you need to enter a password.

If you need to disconnect from a CentralStation, select the desired station, and select the **Disconnect** button.

8.5 Print Tab

8.5.1 Accessing the Print Setup Page

To access the print setup page, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **System Setup** to access the **System Setup** menu.
3. Select the **Print** tab.

8.5.2 Setting a Printer

To set a printer, follow this procedure:

1. On the print setup page, select the **Printer** tab.
2. Set **Printer**.
3. Select the desired report type.
4. Set desired print-related properties.

NOTE

- Only the following reports support color printing currently: vital sign summary report and ECG summary report.
- PDF reports can be output by PDFCreator only.

8.5.3 Setting a Report Layout

In the **Report Layout** tab, you can set the patient information displayed on the reports.

To set the report layout, follow this procedure:

1. On the print setup page, select the **Report Layout** tab.
2. Select the desired items under **Report Name**. **N/A** indicates that this item is not displayed on a report.

NOTE

- Contents in the reports can be customized for each bed. For more information, see Section 8.5.4 *Setting an ECG Report*.

8.5.4 Setting an ECG Report

In the **ECG Report** tab, you can set the patient information displayed on ECG reports.

To set ECG reports, follow this procedure:

1. On the print setup page, select the **ECG Report** tab.
2. Select the desired items.

8.5.5 Setting PDF File Name

To set PDF file name, follow this procedure:

1. On the print setup page, select the **PDF File Name** tab.
2. Select the desired items under **PDF File Name**.
3. In the **File Path** text box, enter the directory where PDF files are saved.
4. In the **User Name** text box and the **Password** text box, enter the user name and password to access the directory where PDF files are saved.
5. Select **Confirm**.

NOTE

- The directory must be consistent with the file saving directory configured in the PDFCreator.

8.5.6 Setting Other Print-Related Items

To set other print-related items, follow this procedure:

1. On the print setup page, select the **Other** tab.
2. Set the desired option.
 - ◆ **Printing Duration on Alarm:** sets the desired length of waveforms that will be printed automatically when **Alarm Outputs** for a parameter is enabled and an alarm is triggered. 10 sec, 20 sec, and 30 sec means printing the waveforms 5 seconds, 10 seconds, and 15 seconds before and after the alarm triggered time respectively.
 - ◆ **Monitor Remote Print:** if you enable this option, the CMS automatically starts a printing task after the printing task is started at the patient monitor.
 - ◆ **Second Mark (Printer):** if you enable this option, second marks will be displayed on the report printout.

8.6 Other Tab

8.6.1 Accessing the Other Setup Page

To access the other setup page, follow this procedure:

1. Select the  button in the upper left corner of the main screen.
2. From the pull-down list, select **System Setup** to access the **System Setup** menu.
3. Select the **Other** tab.

8.6.2 Setting a Unit of Measure

To set units, follow this procedure:

1. On the other setup page, select the **Unit** tab.
2. Set the desired units.

8.6.3 Setting the Module

To set the ECG standard, follow this procedure:

1. On the other setup page, select the **Module** tab.
2. Set **ECG Standard**.
3. Set **QTc Formula**. The CMS Viewer uses the Hodges correction formula by default to correct the QT interval for heart rate.
 - ◆ Hodges: $QTc = QT + 1.75 \times (HeartRate - 60)$
 - ◆ Bazett: $QTc = QT \times \left(\frac{HeartRate}{60}\right)^{\frac{1}{2}}$
 - ◆ Fridericia: $QTc = QT \times \left(\frac{HeartRate}{60}\right)^{\frac{1}{3}}$
 - ◆ Framingham: $QTc = QT + 154 \times \left(1 - \frac{60}{HeartRate}\right)$

8.6.4 Setting a Language

In the **Language** tab, you can select the desired language. When the CMS Viewer starts, it is displayed in the language selected at the time of installation.

To change a language, follow this procedure:

1. On the other setup page, select the **Language** tab.
2. Select the desired language. It is recommended to select the language supported by your operating system.
3. Restart the system.

8.6.5 Setting a Device Location

To set the the device location of the CMS Viewer, follow this procedure:

1. On the other setup page, select the **Device Location** tab.
2. Set **Facility Name**.
3. Set **Facility Icon**.
4. Set **Department**.

8.6.6 Review

On the Review tab, you can perform the following settings:

- Set the waveform saving accuracy.
- Group Setup: a trend group defines the trend displayed on the trend review page and printed in trend reports and recordings.
- Arrhythmia mark colors: set colors for arrhythmia marks.

9 Default Settings

9.1 Overview

This chapter lists the default settings on the system setup screen.

9.2 Display Tab

Subtab	Item	Default
Other	ECG Lead Sequence	Normal
	Soft Keyboard	Off
	Auto Exit	Never
	Outline Font for Suspected Values	On

9.3 Patient Management Tab

Subtab	Item	Default
Field	Patient ID	Selected
	breed	Selected
	Visit Number	Unselected
	Room No	
	Length	
	Admit Date	
	Facility	
	Department	
	Patient Group	
	Custom Field 1 to Custom Field 3	

9.4 Network Tab

Subtab	Item	Default
Local	Local IP address	Auto
Master Server	Connection status	Not connected
Other	Encryption Connection Type	Only Private Encryption

9.5 Print Tab

Subtab	Item	Default
Printer	Paper Size	A4
	For General Report and Print on Alarm Report:	
	Printer	Blank
	Printer Resolution	300 dpi
	PDF Resolution	600 dpi
	Print Action	Paper
	Color Mode	Color
Report Layout	Patient Name	Displayed
	Species	
	Age	
	Gender	
	Patient ID	
	Bed No	
	Weight	
	Owner	
	Department	
ECG Report	Patient ID	Selected
	Patient Name	
	Age	
	Gender	
	Owner	UnSelected
	Physician	
	Department	
	Room No	
	Bed No	
Other	Printing Duration on Alarm	20 sec
	Monitor Remote Print	Enabled
	Second Mark (Printer)	Enabled

9.6 Other Tab

Subtab	Item	Default
Unit	Height Unit	cm
	Weight Unit	kg
	ST Unit	mV
	Hb Unit	g/dl
	CVP Unit	cmH ₂ O
	ICP Unit	mmHg
	CO ₂ Unit	
	O ₂ Unit	%
	Temp Unit	°C
	Pressure Unit	mmHg
	SVR Unit	DS/cm ⁵
	Caliper Unit	msec
Language	Language	English
Device location	Facility Name	Custom
	Department	Custom
Review	Save Waveform	Low Resolution
	Arrhy Mark	Selected
Setup	ECG Standard	AHA
	Qtc Formula	Hodges

10 Troubleshooting

10.1 Connection Issues

When the CMS Viewer cannot be connected to the host CentralStation, do as follows:

- Ensure that the CMS Viewer software is configured properly.
- Ensure that the CentralStation you are connecting to authorize remote connections.
- Ensure that communication to the Master Server and the CMS Viewer is normal.

10.2 Unable to View History/Discharged Patients

When you could not view the historical data of discharged patients, do as follows:

- Ensure that the connected CentralStation supports CMS Viewer review.
- Ensure that the patient you are viewing is authorized to be viewed on the host CentralStation

10.3 Unable to Print

When you could not send a printing request at the CMS Viewer, do as follows:

- Ensure that printers are installed and functioning in the Windows operating system.
- Ensure that the intended printer is set as the default printer in the Windows operating system.
- Ensure that the printer/PDF writer/XPS writer is not displaying a popup behind the CMS Viewer.

