DPM

Central Monitoring System Viewer

Operator's Manual

Contents

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Revision History

This manual has a revision number. This revision number changes whenever the manual is updated due to software or technical specification change. Contents of this manual are subject to change without prior notice.

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■ the product is used in accordance with the instructions for use.

NOTE

● **This equipment must be operated by skilled/trained clinical professionals.**

⚠ 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.**

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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 patient 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.

Illustrations

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

Conventions

- Italic text is used in this manual to quote the referenced chapters or sections.
- The terms danger, warning, and caution are used throughout this manual to point out hazards and to designate a degree or level or seriousness.

FOR YOUR NOTES

1 General Product Description

1.1 Functions

The DPM Central Monitoring System Viewer (hereafter as the Viewer) is a software used to view a single patient connected to the target central station. It is independent of the DPM Central Station (hereinafter as central station or CMS) and shall be installed separately. The CMS Viewer is for remote browsing only and cannot be used to set and control the target central station or monitor.

The Viewer can provide the following major functions:

- Provide ability to view the real-time and review data of online patients on other central stations;

- Provide ability to view the review data of discharged patients;

- Provide ability to configure unit of measure, communication and print settings

NOTE

- **The Viewer and the central station system software cannot be installed on the same PC.**

- **The Viewer does not provide alarm sound.**

- **In this manual, the functions are presented according to the maximum configured level of product.**

- **The system time of the Viewer shall be consistent with the system time of the central station.**

1.2 Operation Window

After the CMS Viewer is opened, the "ViewBed" sheet in "Remote CMS" window displays by default. Three (3) system buttons are located at the bottom of the screen: "Remote CMS", "Discharged Patients" and "System Setup". Tabs and drop-down lists are allocated at the top of the screen.
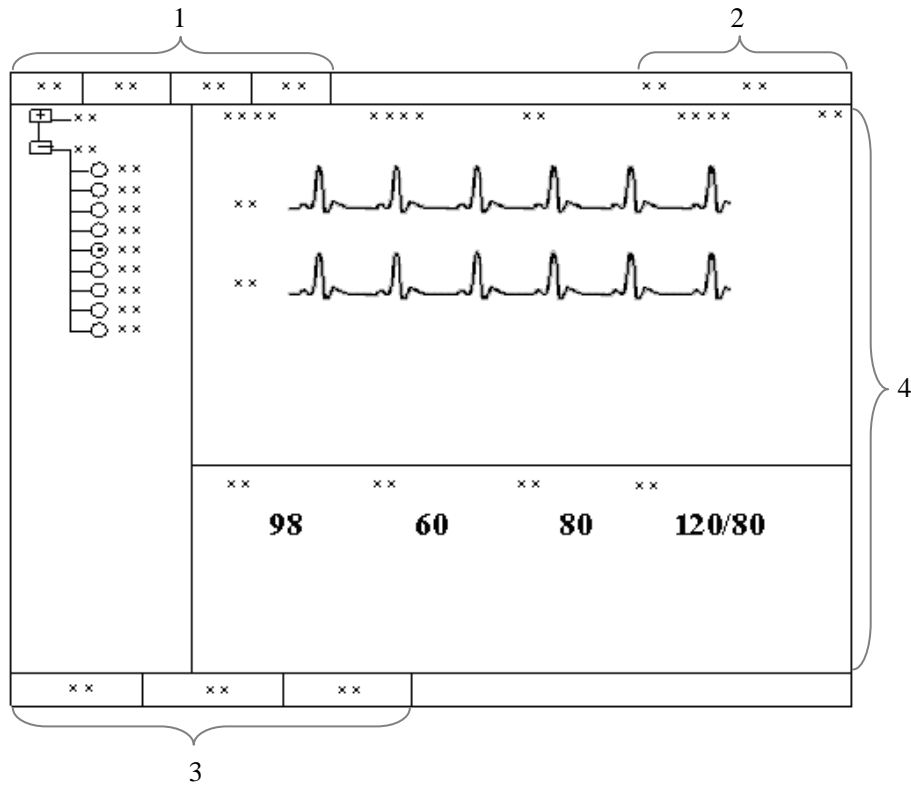

Figure 1-1   The Viewer Default Display

1. Tabs   2. Drop-down List   3. System Buttons   4. ViewBed Screen

2 Installation and Running

2.1 Operation Environment

The basic requirements for the Viewer platform is shown as below:

Components	Requirements
Safety	Meet the IEC60950 requirements defined for ITE equipment, and comply with CE low voltage directives (LVD) and EMC directives.
Host	CPU: Pentium (R) 2.80GHz minimum Memory: 1G minimum Hard disk: 80G minimum, 7200rpm SATA Network adapter: 10M/100M/1000M, Base-T, Ethernet 802.3, RJ45 port
Display	17"LCD minimum, with CE marking.
Operating System	Windows 7 SP1, Windows XP SP3

2.2 Installation

2.2.1 Requirements

The following software or tools are required when installing the Viewer:

- DPM Central Monitoring System Viewer software CD

- DPM Central Station software CD

- DPM Central Station Dongle

2.2.2 Installation of the Viewer

Double click the *Setup.exe* under the Setup folder of the DPM Central Station Viewer software CD, and operate according the following steps:

1. Select the installation language, and click "Next" button, shown as below:
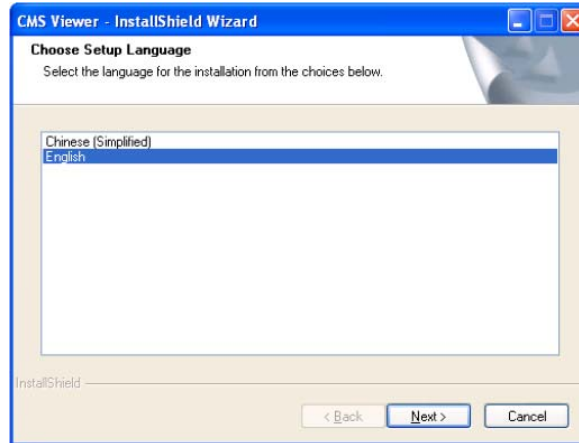

Figure 2-1

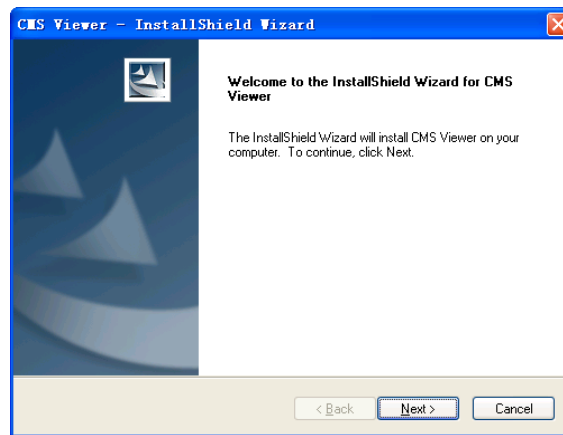2. Select "Next" button in the below window, shown as below:

Figure 2-2

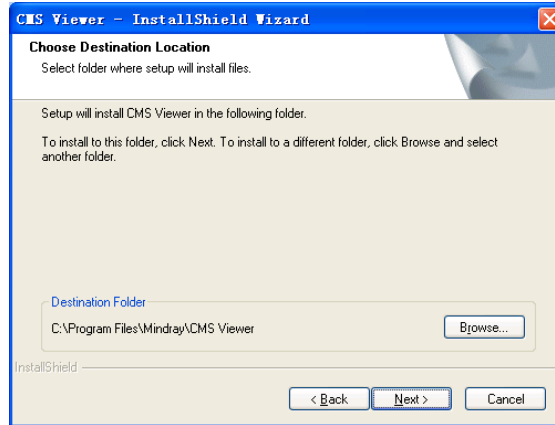3. Select the destination folder where the Viewer is to install, then click "Next" button, shown as below

Figure 2-3

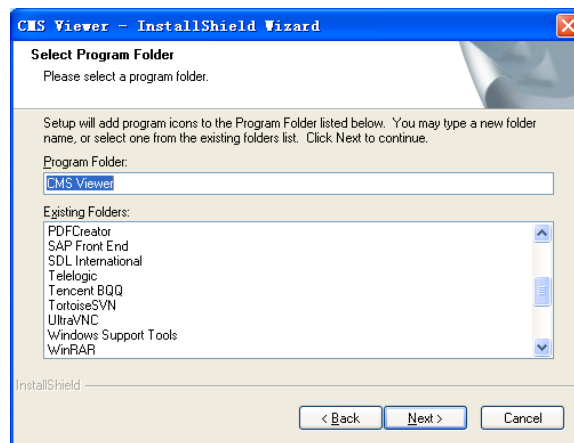4. Select or establish program folder, then click "Next" button, shown as below:

Figure 2-4

5. Select a language for the Viewer, then click "OK" button, shown as below:

Figure 2-5

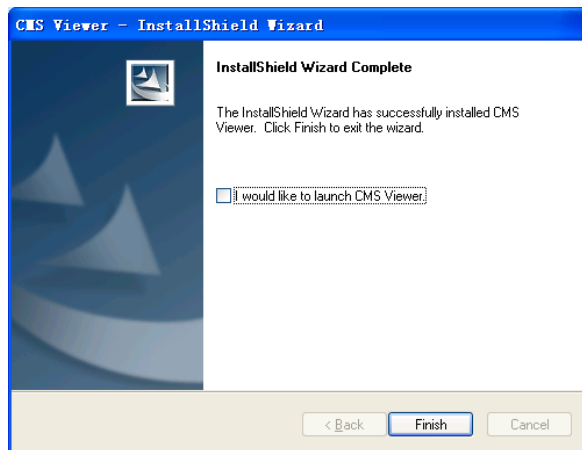6. Click "Finish", shown as below, and then the installation is done.

Figure 2-6

2.2.3 Installation of USB Dongle Driver

NOTE

● **The USB dongle driver needs to be installed only when the dongle is used.**

1. Insert the DPM Central Station software CD and then execute "MicroDogInstdrv.exe" under the "USB Dog Driver" folder to enter the following window.

Figure 2-7

2. Set as the figure shows and then select "Install" to enter the following window after completing installation.

Figure 2-8

3. Select "Exit" when the prompt message "Driver Installation Completed!" appears.

2.3 Running

Double click the shortcut icon of "cmsviewer" on the desktop, the application program will run.

2.4 Communication Settings

To establish the communication between the Viewer and the central station, it is required to make settings both on the central station and on the Viewer.

2.4.1 Communication Settings on the Central Station

On the central station, enter "System Setup" -> "Admin Setup"-> "Other"-> "Gateway Communication Setting"->"Network Setup", set the network adapter and IP address.
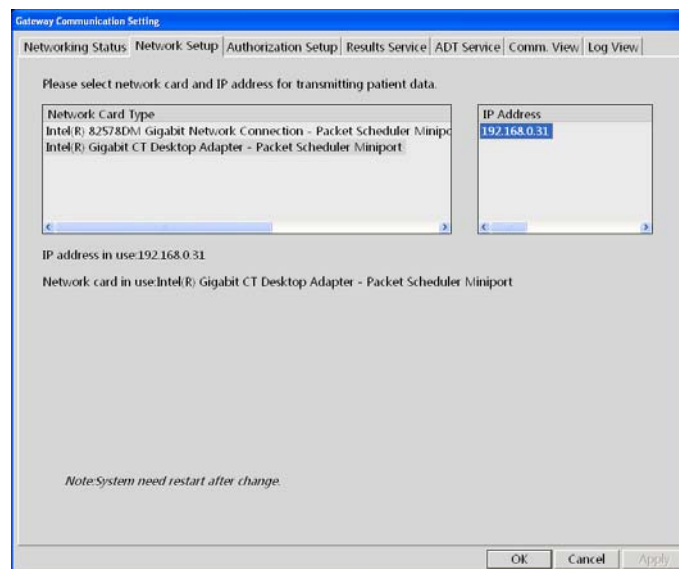

Figure 2-9 Central Station Network Setup

The "Network Setup" tab sheet lists the information about the network adapters configured on the central station. One of the network adapters is for internal communication within the central station and beside monitors; the other network adapter is for inter-communication between the central station and other systems. These are two distinct networks, independent of each other.

Select and activate the network adapter for communication between the central station and other systems.

To activate the network adapter:

1.   Select the network adapter type to be activated.

2.   Select the IP address in the "IP Address" area on the right.

3.   Click "OK".

When the network adapter has been activated, the background color of network card type and IP address is light grey.

2.4.2 Communication Settings on the Viewer

On the Viewer, access "System Setup"->"Communication Settings". You can add/delete the IP address of a central station to establish/break the communication with the Viewer.

Figure 2-10 Communication Setting

■ Adding an IP address: Click "Add" button, and input the new IP network segment or address in the pop-up window, then click "OK".

■ Deleting an IP address: Select one IP address which you want to delete in "IP Address List", then click "Delete" button. Select "Yes" in the pop-up window and you can delete the selected IP address.

2.5 Authorization by a Dongle

■   You can view a patient's real-time data by the Viewer without a dongle.

■   You can view a patient's real-time data and review data, and discharged patients' data by the Viewer, if a dongle authorizes the corresponding operation.

NOTE

● **You can view a patient's data on a central station by the Viewer only when the patient is authorized to be viewed.**

3 Remote Central Station

3.1 Overview

Click the "Remote CMS" button and then the Remote CMS window is shown. There are the following functions:

- ViewBed
- Waveform Review
- Trend Review
- Event Review
- ST Review
- 12-Lead Review
- C.O. review

NOTE

- **The patients on a central station can be viewed only when the IP address of the central station is added in the "System Setup" window of the Viewer. Please refer to 6** *System Setup* **for adding an IP address.**

3.2 Selecting a Central Station

When accessing the Remote CMS window, you can select a desired central station from the drop-down list of the "CMS" item on the upper screen.

3.3 Selecting a Patient

You can select a desired patient through one of the following ways:

- In the Remote CMS window, select the bed number of the desired patient from the drop-down list of "Patient List" on the top of the screen.

- In the Remote CMS window, select the "ViewBed" tab, and click ○ button before the desired patient in the bed list on the left of the screen. When the button turns to ⊙, it indicates the patient (target monitor) is selected.

3.4 ViewBed of Remote Central Station

Click "ViewBed" tab, and you can view the real-time data of the selected patient, shown as below.
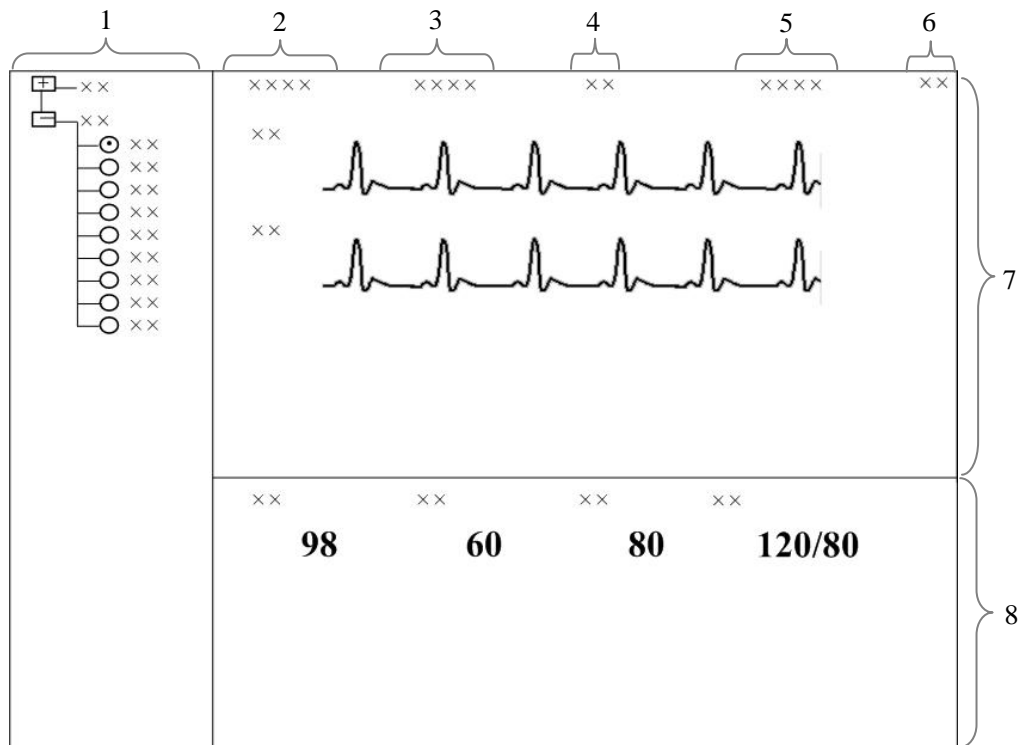

Figure 3-1   ViewBed Window of the Viewer

1. Beds list   2. Patient Information area   3. Physiological Alarm Area

4. Alarm Icon Area   5. Technical Alarm Area   6. Button Area

7. Waveform Area   8. Parameter Area

3.4.1 Beds List

The beds list displays the information about all central stations and networked bedside monitors (target monitors) in the same LAN.

When the Remote CMS screen is accessed, the central station will automatically list other central stations which can be viewed remotely. Only when the IP address of a central station is added in the Communication Settings menu of the Viewer, the names of the corresponding central stations will be automatically displayed in the list.

In the beds list, the first-level nodes are the unit names of the central stations; the second-level nodes are the monitors connected to the central stations. Generally, the name of the second-level node is department, bed number and patient name.

The background color indicates the status of the target monitor.

- White: indicates that no alarm occurs to the target monitor.
- Red: indicates that a high level alarm, nurse call or event occurs to the target monitor.
- Yellow: indicates that a medium or low level alarm occurs to the target monitor.
- Grey: indicates that the target monitor is in standby status.
- Light Grey: indicates that the target monitor is offline.

3.4.2 Physiological Alarm Area

This area is to display the following messages coming from the viewed target monitor circularly

- Physiological alarm;
- The message indicating the alarm or physiological state. For example, "Alarm Pause", "CPB Mode".

Different background colors are used to indicate the alarm priorities.

- Red: indicates that a high level alarm occurs in the target monitor.
- Yellow: indicates that a medium or low level alarm occurs in the target monitor.

3.4.3 Technical Alarm Area

The technical alarm area displays:

- The technical alarms and messages coming from monitor or the central station;
- The work mode and initiated events of a defibrillator.

When multiple messages occur, they will scroll.

3.4.4 Alarm Icon Area

This area displays icons for alarm pause ![alarm pause], alarm off ![alarm off], alarm audio off ![alarm audio off], alarm reset ![alarm reset], monitor silenced ![monitor silenced].

NOTE

- **When an alarm icon appears, the defibrillator icon will not be displayed.**

3.4.5 Button Area

Click ![button] button to open the "Filtering Setup" menu, from which you can select your desired waves and parameters. The waveform and parameter areas will then display the corresponding waveforms and parameters.

3.4.6 Waveform Area

This area displays the waveforms on the target monitor.

3.4.7 Parameter Area

This area displays the parameters on the target monitor. Each block displays the parameters from the same parameter module.

3.5 Remote Central Station Review

Click a tab and the corresponding reviewing data of online patients on target central station will display. In the Remote CMS window, there are waveform review tab, trend review tab, event review tab, ST review tab, 12-lead review tab and C.O. review tab. Select a tab and then you can access the corresponding review sheet.

NOTE

- **The data shown in review tab sheets is the review data of the selected patient. Please refer to *3.3 Selecting a Patient* for additional information.**

3.5.1 Waveform Review

In the "Waveform Review" window, you can review compressed or normal waves as required.

3.5.1.1 Compressed Waveform Review

Click the "Waveform Review" tab to open the following window, through which, you can review the patient's latest 240 hours of waveform data. Up to 32 lines of compressed waveforms are displayed on the screen.
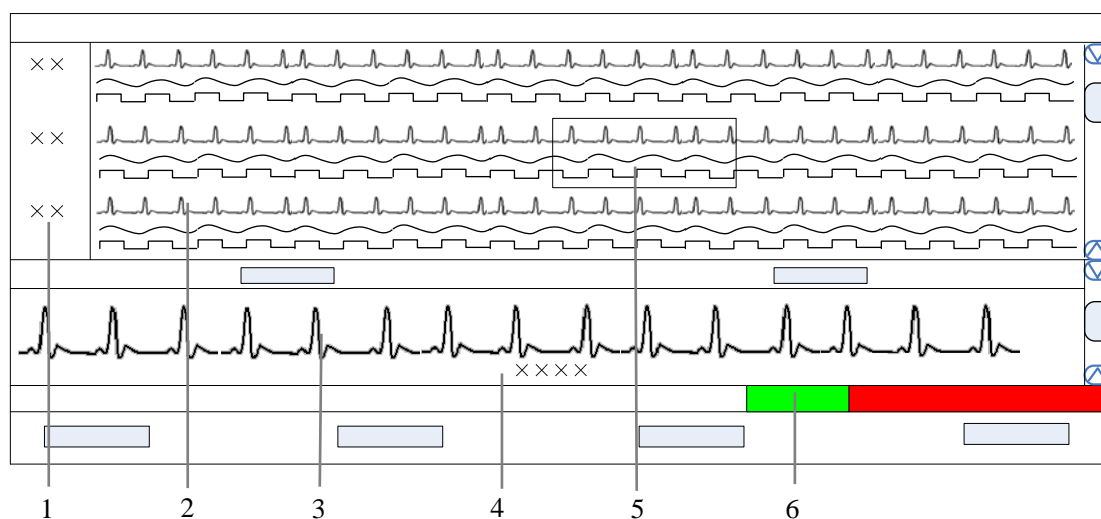

Figure 3-2 Compressed Waveform Review

1. Time scale   2. Compressed waveform area   3.Uncompressed waveform area

4. Cursor time area   5. Cursor   6. Time bar

Time Scale

Display the time to which the waveform group in the compressed waveform area corresponds.

Compressed Waveform Area

Display compressed waveforms. If some waveform signals are not detected within a specific time period, square waves are displayed.

Uncompressed Waveform Area

Display the full size of the corresponding compressed waveform where the cursor is located, or displays the patient's parameter information.

Cursor Time Area

Display the time where the cursor is located.

Cursor

By moving the cursor, you can select 12 seconds of compressed waveforms. The waveform data contains 6 seconds before the cursor time and 6 seconds after the cursor time.

Time Bar

The time bar adopts different colors to identify the alarm status of different time periods:

■   White: indicates that there are no waveforms and values.

■   Green: indicates that there are waveforms and all monitored parameters are within range and no alarms are occurring.

■   Yellow: indicates that some parameters have low- or medium-level alarms but there are still waveforms.

■   Red: indicates that some parameters have high-level alarms but there are still waveforms.

Within the time bar, there is a black line indicating the time to which the current cursor corresponds. While moving the cursor along the time bar, the time corresponding to the cursor location will appear above the time bar. By clicking the mouse, you can check the time to which the current cursor corresponds.

Operation for Compressed Waveform

In the compressed waveform review window, you can:

■ Select Waveforms

■ Mark Arrhythmia

■ View Arrhythmia Statistics

■ Refresh Data

■ Show/Hide Parameters

■ Zoom

■ ICP waveform scale

■ Print

■ Save as

For details about Print and Save as, refer to *Chapter 5 Print and Save as.*

Selecting Waveforms

Click the "Wave Select" button to display the menu of waveforms. Select the checkbox beside the desired waves (at most four waves) and the compressed waveform area will display the selected waves.

To change the order of the waveform, click the waveform name, then select "Move First", "Move Up", "Move Down" or "Move Last".

Marking Arrhythmia

The arrhythmia alarm waveforms can be marked with color in the compressed waveform area. From the "ARR Mark" drop-down list, you can select the types of arrhythmias to be marked. The marked waveforms starts from the point 16 seconds before the arrhythmia alarm, and end when the alarm condition disappears.

NOTE

● **If multiple arrhythmia alarms occur at the same time, only the high priority alarm(s) will be marked; if the arrhythmia alarms are of the same level, the alarm of highest priority will be marked.**

Refreshing Data

Compressed waveform review data will not update automatically. Click "Refresh" button and the data will update.

Viewing Arrhythmia Statistics

Click the "ARR Statistic" button to view the statistics about the HR value and the number of each arrhythmia type during a certain time range. You can set the time range as 24 hours, 12 hours, or 8 hours.

Showing/Hiding Parameters

◆ Click the "Numeric Data" button to display the patient's parameter information in uncompressed waveform area.

◆ Click the "Hide Numerics" button to display the full size of the cursor-located compressed wave in uncompressed waveform area.

Zoom

Set the time span of each line in the compressed waveform window. The options are 15s, 30s, 45s, 1min and 2min. The longer the time span of each line gets, the more the lines of compressed waveform display on the screen. Up to 32 lines of waveforms can be displayed.

ICP Waveform Scale

When ICP is displayed in compressed waveform area, you can right click the mouse to adjust ICP waveform amplitude. Each time you click the right key, the scale is adjusted in the preset order. There are four levels of the scale: 0-15 mmHg, 0-20 mmHg, 0-30 mmHg and 0-40 mmHg. After the change, the scale level displays above the ICP waveform.

3.5.1.2 Full Size Waveform Review

Full Size Waveform Review Screen

Click the "Waveform Review" tab. Click the "Full Size" button to open the following window, through which, you can review the patient's latest 240 hours of waveform data.
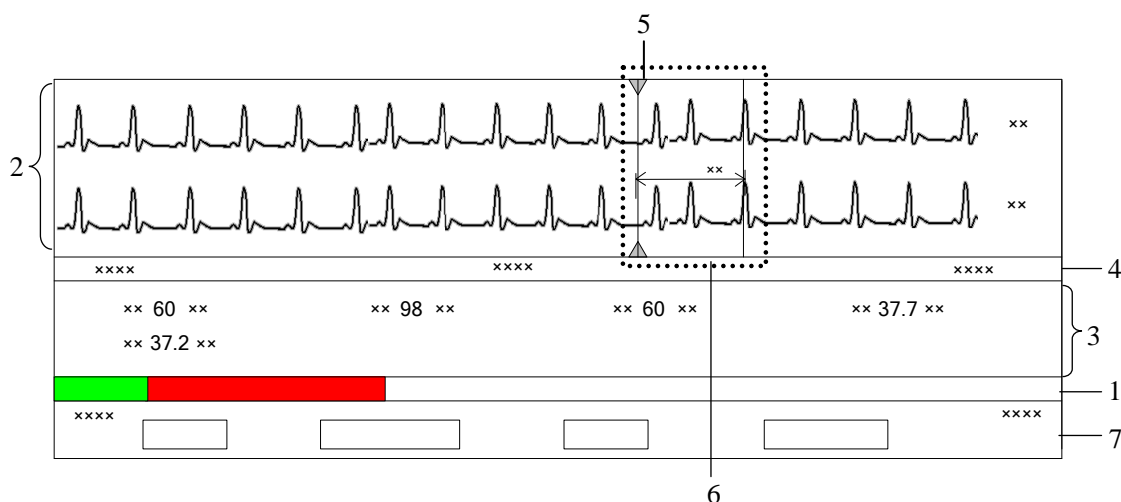
Figure 3-3 Normal Waveform Review

1. Time bar	2. Waveform area	3. Parameter area
4. Waveform time display area	5. Current cursor	6. Caliper
7. Button area		

Time Bar

Same functions with that in the compressed waveform review.

Waveform Area

This area is to display the waveform segment over a specific period. Click in the waveform area, and the grey triangles on the top of and at the bottom of the waveform area will appear indicating the current time corresponding to the cursor location.

Caliper Measurement
Left click the mouse at a place in the waveform area and then hold it down while dragging the cursor until your desired location is reached. During dragging, a caliper with two arms and a middle measurement line marking the real time measurement will appear on the waveforms.

During dragging, if you move the mouse horizontally, the right arm will be moved accordingly; if you move the mouse vertically, the measurement line will be moved accordingly.
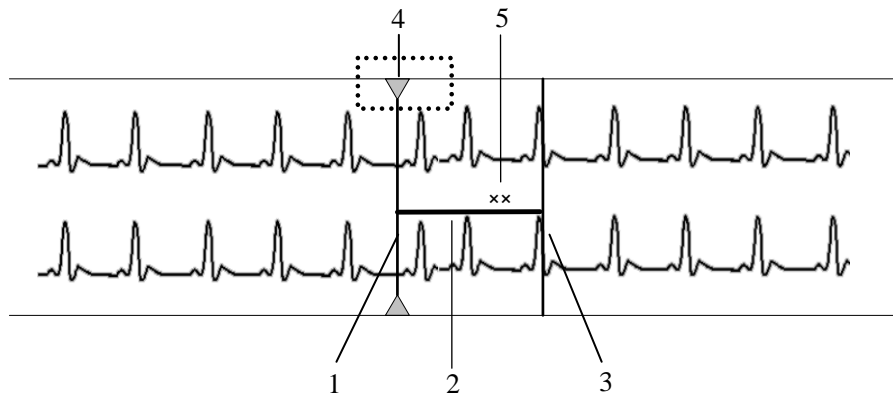
1. Left arm   2. Measurement line   3. Right arm

4. Current cursor   5.Real-time measurement

When a caliper is formed, you can adjust the caliper by the following operations to measure the time difference between any two points:

◆ When the cursor is positioned at caliper arm, and the cursor turns to ⟷ ,you can horizontally move the arm.

◆ When the cursor is positioned at measurement line, and the cursor turns to ↕ , you can vertically move the measurement line.

◆ When the cursor is positioned between the two arms, and the cursor turns to ⬌⬍ , you can move the whole caliper..

ECG Waveform Gain

You can set the ECG waveform gain in the waveform area by either:

◆ When the cursor is positioned at any ECG waveform, the buttons 🔍⊕ and 🔍⊖ will display at the left end of the waveform. Click 🔍⊕ button can increase the gain, and click 🔍⊖ button can decrease the gain.

◆ Right click mouse, and select "Zoom in ECG Gain" or "Zoom out ECG Gain" in the pop-up menu.

Sweep Speed

◆ In the waveform area, right click, and select "Zoom in Sweep Speed" and "Zoom out Sweep Speed" to adjust the speed.

◆ In button area, click "Sweep Speed" to set the waveform sweep speed. Refer to *3.5.1.2 Full Size Waveform* Review *-Full Size* Waveform*-Select Sweep Speed* for additional information on selecting sweep speed.

Adjust Buttons

You can further adjust the black line by using the following buttons and the waveform will also move accordingly.

■ |< : Clicking it will move the black line to the leftmost, i.e. the review start time.

■ << : Clicking it will move the black line left, so that the waveforms in the waveform area move left at the length of one screen.

■ < : Clicking it will move the black line left in short increments.

■ > : Clicking it will move the black line right in short increments.

■ >> : Clicking it will move the black line right, so that the waveforms in the waveform area move right at the length of one screen.

■ >| : Clicking it will move the black line to the rightmost, i.e. the review end time.

Parameter Area

By default, the parameter area is hidden. Clicking the "Numeric Data" button will show the parameter area. If parameter area is displayed, clicking the "Hide Numerics" button will hide the parameter area.

Parameter area shows all current parameter values.

◆ For parameters having high-level alarms, they are highlighted in red and "***" is shown in front of the parameter values.

◆ For parameters having medium level alarms, they are highlighted in yellow and "**" is shown in front of the parameter values.

◆ For parameters having low level alarms, they are highlighted in yellow and "*" is shown in front of the parameter values.

◆ For parameters having message, they are shown with black as the background color, but no indication by "*" before parameter values.

◆ For the parameters from integrated devices, they are shown in white and indicated with "+" before the parameter name.

Waveform Time Display Area

In this area, waveform start time and end time are respectively shown at leftmost and rightmost; the current cursor time is shown in the middle. By clicking the "Refresh" button, you can update the end time to current system time and the start time changes accordingly.

Button Area

Refer to *3.5.1.2 Full Size Waveform* Review-*Full Size* Waveform for additional information about button function.

Full Size Waveform Operation

In the full size waveform review window, you can:

■ Select waveforms

■ Select sweep speed

■ Auto play

■ Refresh Data

■ Print

■ Save as

For details about print and save as, refer to *5* Print and Save as.

Selecting Waveforms

Click the "Wave Select" button, and a list of available waveforms will be shown. By default, all waveforms are selected. You can deselect a waveform by selecting its check box. You can also drag a waveform name to change its display order.

Selecting Sweep Speed

By clicking the "Sweep Speed" button, you can set the width of waveforms displayed in the waveform area. Available options are 6.25 mm/s, 12.5 mm/s, 25 mm/s and 50 mm/s. Changing sweep speed will affect the time length of the waveform area. At the 1280×1024 resolution, the sweep speed and time length correlate as follows:

Sweep Speed	Time length (approximate)
6.25 mm/s	52.0s
12.5 mm/s	26.0s
25 mm/s	13.0s
50 mm/s	6.5s

Auto Play

By clicking "Auto Play" and then selecting ⟨⟨ , ⟨ , ⟩ or ⟩⟩ buttons, you can review waveforms in the auto mode.

Refreshing Data

Compressed waveform data will not update automatically. Click "Refresh" button and the data will update.

3.5.2 Trend Review

3.5.2.1 Overview

Clicking the "Trend Review" tab will enter a tab sheet, through which you can store and review up to 240 hours of trend data. Trend changes can be observed in a graphic or tabular format. You can switch between the tabular and graphic format by simply clicking their buttons.

3.5.2.2 Operation

In this tab sheet, you can:

- Set Resolution or Zoom

- View Parameter Values at a Certain Time

- Select Trend Group

- Refresh Data

- Print

- Save as

For details about print and save as, refer to *5* Print and Save as.

Setting Resolution or Zoom

In the tabular trends,
You can set a time interval as the resolution to display the tabular trends. Options for the resolution are 1 sec, 5 sec, 1 min, 5 min, 10 min, 15 min, 30 min, 1 hour, 2 hours and NIBP. When the resolution is set to "NIBP" or "TEMP", up to 240 hours of NIBP measured values and other parameter values to which NIBP or TEMP measurement time corresponds can be displayed. When the resolution is set to "Manually Saved", all the manual data can be displayed. If your central station software does not support full-disclosure waveform review, no measurement data is available in the 1 sec and 5 sec tabular trends.

In the graphic trends,
You can set the desired resolution for reviewing graphic trends. Resolution options include 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 s, 12 hours, 24 hours and 48 hours.

Viewing Parameter Values at a Certain Time

By clicking a point in the graphic trends, you can place the cursor at that position and view the corresponding parameter values of the cursor time. In the tabular trends, the cursor time is the same as it is in graphic trends. Contrarily, if you select a row in the tabular, the cursor in the graphic trends will be positioned at the time corresponding to that row.

You can further position the time at which the cursor is located by clicking these buttons:

Buttons	Graphic
≪	Clicking this button will move to the previous graphic page.
<	Clicking this button will move the graph to left by a time range of one resolution.
>	Clicking this button will move the graph to right by a time range of one resolution.
≫	Clicking this button will move to the next graphic page.

Buttons	Tabular
⌄	Clicking this button will move to the next tabular page.
⌄	Clicking this button will move the cursor down one line.
⌃	Clicking this button will move the cursor up one line.
⌃	Clicking this button will move to the previous tabular page.

Selecting Trend Group

Click the "Trend Group" drop-down list to select the desired trend group to review.

NOTE

- **Selecting different trend group views in the "Trend Review" screen shows different trend parameters.**

Refreshing Data

Trend data will not update automatically. Therefore, if you want to view current trend data, you have to manually refresh the screen. Clicking the "Refresh" button will open a dialog box, through which you can input a start time and then select "OK" to reload data. After refreshing, the select status and order of parameters remain unchanged.

3.5.3 Event Review

3.5.3.1 Overview

Clicking the "Event Review" tab will enter the following tab sheet, through which you can view all event parameters and waveforms of a patient.
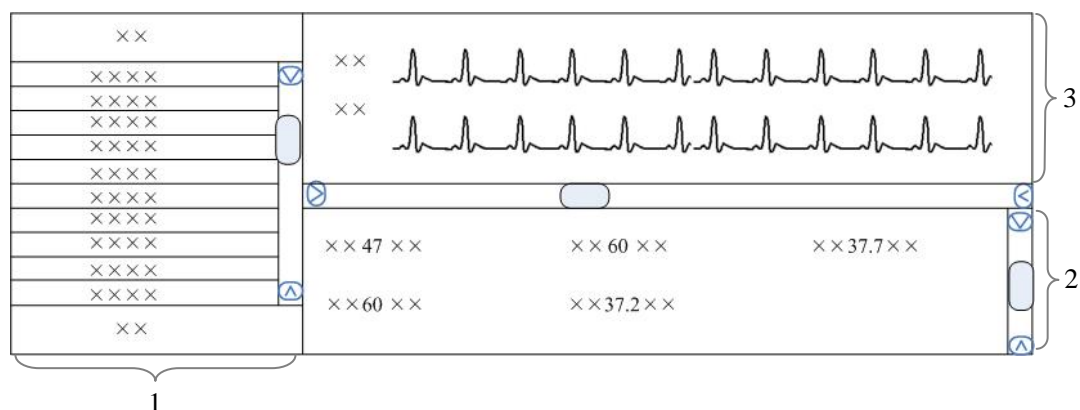

Figure 3-4   Event Review

1. Event list   2. Event parameter area   3. Event waveform area

1.   Event list: displays event status (locked or not), time, message, level, and description.

2.   Event parameter area: displays all parameter values in each event time. The integrated device parameters are indicated with a "+"before the parameter name, and the relevant text is shown in white. The central station prompts if an alarm occurs for a specific parameter and indicates the alarm priority by using different background colors.

   ◆   Black: no alarm generated

   ◆   Red: high level alarm generated

   ◆   Yellow: medium or low level alarm generated

3.   Event waveform area: displays relevant parameters' waveforms within ±16 seconds around the event time. You can use caliper to measure the time difference between any two points on waveform. Please refer to *3.5.1.2 Full Size Waveform* Review *-Full Size Waveform Review* Screen *-Waveform Area* for how to use caliper, how calipers to adjust ECG waveform gain and how to adjust sweep speed in waveform area.

Select an event from the event list and you will view its corresponding parameter values and waveforms in the event parameter area and event waveform area.

NOTE

● **For the integrated device events, there are no corresponding waveforms in the event waveform area.**

3.5.3.2 Operation

In the "Event Review" sheet, you can:

- Select Event Type and Alarm Priority

- Sequence the Event List

- Refresh Data

- Sweep speed

- Print

- Save as

For sweep speed, refer to *3.5.1.2 Full Size Waveform* Review*-Full Size* Waveform*-Selecting sweep speed.*

For details about print and save as, refer to *Chapter 5* Print and Save as.

Selecting Event Type and Alarm Priority

Above the event list, there are two drop-down list boxes: "Filter by Event" and "Filter by Priority". By clicking the down arrow buttons next to them, you can select event type and level. The selected events will be listed in the event list.

Options for event type are "ALL", "ECG", "SpO$_2$", "RESP", "NIBP", "IBP", "C.O.", "TEMP", "CO$_2$", "GAS", "ICG", "BIS", "RM", "CCO", "SvO$_2$", "ScvO$_2$", "Arr.", "ST Analysis", "Saved Event", "Event"(only for telemetry monitor), "Anesthesia", "Ventilator", "Unknown Phys. Alarm", "User Initiated"(only for defibrillator)), "Manual Event", and options for alarm priority include "ALL", "HIGH", "MED", "LOW" or "Message". By default, "All" for event type and "ALL" for alarm priority are selected.

Sorting the Event List

You can sort all events ascendingly or descendingly by clicking the heading of any column:

- Time: Clicking it will sort all alarms ascendingly or descendingly by time.

- Message: Clicking it will sort all alarms ascendingly or descendingly by parameter.

- Description: Clicking it will sort all alarms ascendingly or descendingly by description.

- Priority: Clicking it will sort all alarms ascendingly or descendingly by priority.

At the same time, one of the following symbols will appear to the left of the heading:

- △ for ascending sequence, and

- ▽ for descending sequence.

By default, all events are sorted in descending order by time.

Refreshing Data

Alarm data will not update automatically. Click "Refresh" button and the data will update.

3.5.4 ST Review

3.5.4.1 Overview

Click the "ST Review" tab to open the "ST review" window as shown in Figure 3-6. In this window, you can view the historical ST segments. You can also print out ST segments.

Time Scale   Reference Cursor   Historical Cursor   Reference ST Segment Mark   ST Segment Mark Bar
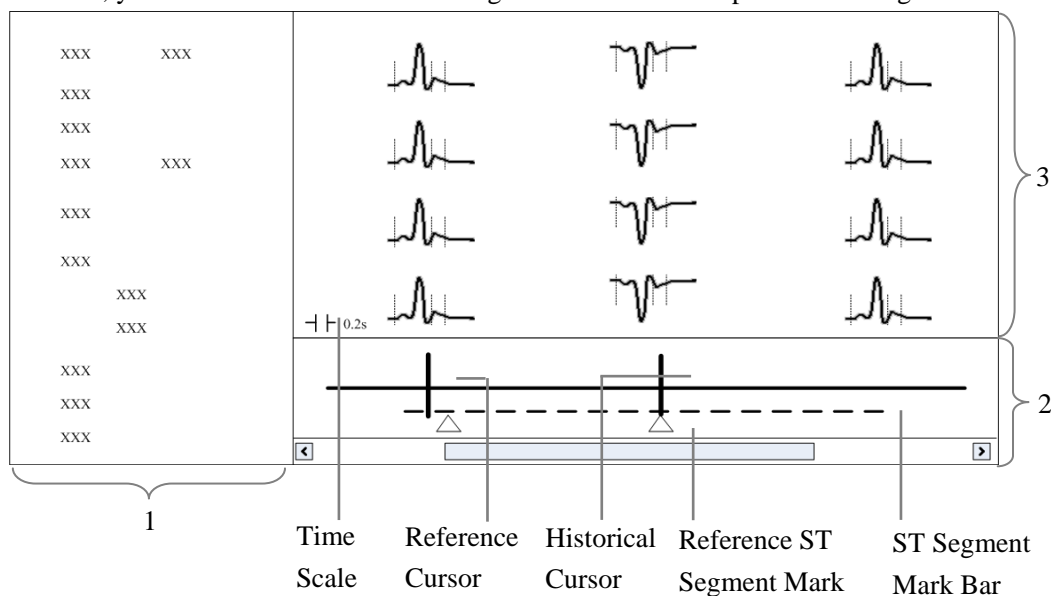
1. Setting control area   2. Trend parameter area   3. ST segment area

Figure 3-6   ST review

1. Setting control area: sets up ST segments and trend parameters.

2. Trend parameter area: displays trend parameters, reference cursor, historical cursor and ST segment mark.

3. ST segment area: displays historical ST segments and reference ST segment.

⚠WARNING

● **The ST algorithm has been tested for accuracy of the ST segment data. The significance of the ST segment changes need to be determined by a clinician.**

3.5.4.2 Operation

In the ST Review window, you can:

- View Historical ST Segment
- Select Reference ST Segment
- Display Reference ST Segment
- Set Waveform Speed
- Set Trend Parameter
- Refresh Data
- Print

For details about print, refer to *Chapter 5 Print and Save as*.

Viewing Historical ST Segment

In the setting control area, you can select "Historical" to view historical ST segments by using the "View Hist." buttons. You can also view historical ST segments by clicking any position in the parameter trend area.

Selecting Reference ST Segment

In the setting control area, you can click the "Change Ref." button to set the reference ST segment located at the reference cursor to the current reference ST segment.

Displaying Reference ST Segment

In the setting control area, tick "Show Ref.", the reference ST segment is overlapped with ST segment. The reference ST segment is shown in white.

Setting Waveform Speed

You can click the "Sweep Speed" drop-down list to set different waveform speeds. The time scale in the ST segment area is related to the waveform speed set. The greater the waveform speed, the smaller the time scale.

Setting Trend Parameter

You can click the "Trend Parameter" drop-down list to select two different trend parameters and "Zoom" drop-down list to set different time lengths.

Refreshing Data

The parameter trend data is not refreshed automatically. You can click the "Refresh" button and set start time in the pop-up window, and then click "OK" to read the data again.

3.5.5 C.O. Review

3.5.5.1 Overview

Clicking the "C.O. Review" tab will enter a tab sheet, through which you can view up to 720 C.O. measurement curves and parameter values of a patient

The average C.O. and C.I values of the selected C.O. measurements are shown below the C.O. review window.

3.5.5.2 Operation

In the "C.O. Review" window, you can:

■ Select Measurements

■ Refresh Data

■ Print

■ Save as

For details about print and save as, refer to *5* Print and Save as.

Selecting measurements

The time corresponding to each measurement is listed in the "Measure results list", from which you can select up to 6 measurements. To the right of the "Measure results list", there are six (6) C.O. review windows, displaying the C.O. curves and parameter values measured at six (6) different times.

Click in a C.O. review window. The border of the window will highlight in blue when it is selected.

Refreshing Data

C.O. data will not update automatically. Click "Refresh" button and the data will update.

FOR YOUR NOTES

4 Discharged Patients

The Viewer is capable of searching and reviewing the data of historic patients. It includes all patients, patient management, waveform review, trend review, event review, 12-lead review, ST review and C.O. review. By clicking the "Discharged Pat." tab, you can enter the tab sheet, which contains nine tabs as follows:

- All patients
- Patient Mgmt.
- Waveform Review
- Trend Review
- Event Review
- 12-lead Review
- ST Review
- C.O. Review

NOTE

- **The patient management, waveform review, trend review, event review, 12-lead review, ST review and C.O. review for discharged patients are basically same with that for online patients. For details, refer to *Chapter 3 Remote Central Station.***

- **The patients on a central station can be viewed only when the IP address of the central station is added in the "System Setup" menu of the Viewer. Please refer to *Chapter 6* System Setup for adding an IP address.**

4.1 All Patients

4.1.1 Overview

In the "All patients" tab sheet, you can view discharged patients' data from all central stations on the network. Brief information of discharged patients on the selected central station is shown in the patient list, with each line for one discharged patient.

4.1.2 Operation

In the "All patients" tab sheet, you can:

■ Sequence discharged patient

■ Search discharged patient

■ Refresh Data

Sequencing Discharged Patient

You can sequence all discharged patients ascendingly or descendingly by clicking the heading of any column. At the same time, one of the following symbols will appear to the left of the heading:

■ △ for ascending sequence, and

■ ▽ for descending sequence.

By default, all discharged patients are sequenced ascendingly by discharged time.

Searching Discharged Patient

1. Click the ❯ button at the left of the "All patients" tab sheet, and the "All patients" tab sheet will show an area for inputting search conditions at its left.

2. Input search conditions, e.g. "name" and "Patient ID". You can click the "More Options" to input more search conditions.

3. Click the "Search" button. The system will search and display the discharged patients that meet the search conditions.

Refreshing data

Clicking the "Refresh" button will update the discharged patient list.

NOTE

● **Only after selecting a discharged patient from the "All patients" tab sheet, you can switch to other tab sheets for review.**

4.2 Patient Management

In "Patient Mgmt." sheet, you can view the target patient's information, such as gender, type, admit/discharge date, and print the information.

5 **Print and Save as**

5.1 Print

Through the printer, the Viewer can print:

■ Waveforms

■ Arrhythmia Statistic Result

■ Graphic or Tabular

■ Events

■ 12-lead Review

■ ST Segment Waveform

■ C.O. Measurements

Printing Compressed Waveforms

1. Enter the "Waveform Review" tab sheet. If full size waveforms are displayed, click the "Compressed" button in the lower right corner of the screen.

2. Click the ▶ icon on the right side of the "Print" button and select "Print Preview" to preview the printout.

3. Click the "Print" button.

Printing Waveform Segment Reports

1. Enter the "Waveform Review" tab sheet. If full size waveforms are displayed, click the "Compressed" button in the lower right corner of the screen to change to Compressed Waveform view.

2. Select the desired waveform groups by double-click to add them to one report. At most, six (6) waveform groups can be printed on each page. You can also deselect a waveform group by double clicking it again. The "Prev" and "Next" button can be used to toggle between the selected waveform groups.

3. Select "Print Preview" to preview the printout.

4. Click the "Print All" button.

Printing ARR Statistic Result

1. Enter the "Waveform Review" tab sheet. If full size waveforms are displayed, click the "Compressed" button in the lower right corner of the screen.

2. Click the "ARR Statistic" button to enter the "ARR Statistic" menu where you can view the statistics about the HR value and the number of each arrhythmia type occurred during a specified time range.

3. Click the "Print" button.

Printing Full Size Waveforms

1. Enter the "Waveform Review" tab sheet. If compressed waveforms are displayed, click the "Full Size" button in the lower right corner of the screen.

2. Select the current review time.

3. Click the ▶ icon on the right side of the "Print" button and select "Print Setup" to perform print setups as prompted.

4. Click the ▶ icon on the right side of the "Print" button and select "Print Preview" to preview the printout.

5. Click the "Print" button.

Printing Graphic or Tabular Trends

1. Enter the "Trend Review" tab sheet.

2. Set the resolution or zoom per part *3.5.2 Trend Review*.

3. Click the ▶ icon on the right side of the "Print" button in the tabular trends and select "Print Setup" to set up the printing options.

4. Click the ▶ icon on the right side of the "Print" button and select "Print Preview" to preview the printout.

5. Click the "Print" button.

Printing Event Lists

1. Enter the "Event Review" tab sheet.

2. Click the ▶ icon on the right side of "Print" button under event list in the tabular and select "Print Setup" to set up the printing options.

3. Click the ▶ icon on the right side of the "Print" button and select "Print Preview" to preview the printout.

4. Click the "Print" button.

Printing Events

1. Enter the "Event Review" tab sheet.

2. Select an event from the event list.

3. Click the ▶ icon on the right side of "Print" button under the event parameter area and select "Print Preview" to preview the printout.

4. Click the "Print" button.

Printing 12-lead Analysis Results

1. Enter the "12-lead Review" tab sheet.

2. Click the ▶ icon on the right side of the "Print" button and select "Print Setup" to set the "Time Span".

3. Click the ▶ icon on the right side of the "Print" button and select "Print Preview" to preview the printout.

4. Click the "Print" button.

Printing 12-lead Analysis Waveforms

1. Enter the "12-lead Review" tab sheet.

2. Click the "Wave" button after an analysis result is selected.

3. Click the ▶ icon on the right side of the "Print" button and select "Print Setup" to set up the printing options.

4. Click the ▶ icon on the right side of the "Print" button and select "Print Preview" to preview the printout.

5. Click the "Print" button.

Printing ST Segment Waveforms

1. Enter the "ST Review" tab sheet.

2. Click the ▶ icon on the right side of the "Print" button and select "Print Preview" to preview the printout.

3. Click the "Print" button.

Printing C.O. Measurements

1. Enter the "C.O. Review" tab sheet.

2. Select one or more C.O. measurements.

3. Click the ▶ icon on the right side of the "Print" button and select "Print Preview" to preview the printout.

4. Click the "Print" button.

5.2 Save as

The Viewer can save the following items as HTML files:

■ Graphic Trends

■ Tabular Trends

■ Waveform Review

■ C.O. Review

■ Alarm Review

■ Alarm Event Review

■ 12-Lead Review

With the file name defaulted as "XXXX-patient name YYYY", in which the "XXXX" represents one of the above items. If no patient name is input, the file name will have no patient name. If it is the first time saving, the "YYYY" will be 0001, which will automatically add one (1) every time data is saved.

The saved files can be browsed using the Internet Explorer.

The files can be saved to local disks, mobile hard disk, flash, or the like. If the files are to be saved in mobile storage medium, the mobile storage medium must be connected to the central station before saving.

Operation

■ Select one tab.

■ Operate as introduced in *3.5Remote Central Station* Review*.

■ Click "Save as" button.

■ Select the drive from the pop-up dialog, then click "OK".

6 System Setup

Click the "System Setup" button, and you can set up the followings in the window:

- Unit of measure

- Communication

- Print

.

6.1 Unit Setting

You can modify parameter's measure unit as required.

6.2 Communication Settings

Refer to *2.4.2 Communication Settings on CMS Viewer*.

6.3 Print Setup

Select the waveform sweep speed and if print grid.

FOR YOUR NOTES