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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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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 Mindray.

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 patients.

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 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 BeneVision Central Monitoring System Viewer (hereinafter referred to as the CMS Viewer) is used to view a single patient connected to the target CentralStation. It is independent of the BeneVision Central Monitoring System (hereinafter referred to as the CMS) and shall be installed separately. The CMS Viewer is for remote browsing only and cannot be used to set or control the target CentralStation or the monitoring 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 patients on the target CentralStation.
■ The ability to view the review data of discharged patients.
■ The ability to configure system settings such as unit of measure, network, and print settings.

NOTE

• An online patient refers to a patient who is being monitored by the CentralStation.
• Do not install the Viewer and the CMS system software on the same PC.
• The Viewer does not provide alarm sound.
• The system time of the Viewer shall be consistent with the system time of the CentralStation where the patient you wish to view is assigned to.
• In this manual, the functions are presented according to the maximum product configuration.

1.2 Example Main Screen

After you select the desired bed from the bed list under the target CentralStation, the CMS Viewer main screen is as shown in Figure 1-1.
1.3 Trend Data or Waveform Data Export Symbol

The following table lists the symbols that may be displayed on the main screen.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Symbol]</td>
<td>Selecting this symbol opens the Export Setup menu. For more information on this menu, see 1.2 Example Main Screen.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td>Indicate 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.</td>
</tr>
<tr>
<td>![Symbol]</td>
<td>Indicate exporting failure.</td>
</tr>
</tbody>
</table>

1.4 Directly Accessing the ViewBed Screen or the Review Screen

You can directly access the ViewBed screen or review screen of a specific patient by passing in command line parameters when starting the CMS Viewer application. You can also access these two screens by other means. For details on how to access these screens by other means, see 2 ViewBed Screen and 3 Review Screen.

To directly access the desired screen, follow this procedure:

1. Connect the CMS Viewer to the desired CentralStation.

2. From the Windows Command prompt or a shortcut link, enter either of the following parameters to the CMSViewer.exe:
   - `--CMS="Department of CentralStation" --BedNo="Bed Number" --Entry="Desired Screen"`
   - `--PatientID="Medical Record No." --Entry="Desired Screen"`
For example, if you wish to enter the full disclosure review screen of the patient whose medical record number is 1984, bed number is 0011 at the CentralStation whose department is ICU, enter this command: --CMS="ICU" --BedNo="0011" --Entry="Full Disclosure" or this command: --PatientID="1984" --Entry="Full Disclosure"

**NOTE**

- The command is case sensitive.
- Leave a blank space before the "--" symbol. Do not leave a blank space before or after the "=" symbol.
- The Desired Screen in this command can be replaced by ViewBed, Tabular Trends, Graphic Trends, Event, Full Disclosure, 12-Lead ECG, ST, or Arrhy Statistics.

### 1.5 Viewing Patient Data Exported from CentralStation

You can view patient clinical data and historical data exported from CentralStation.

To view the patient data, follow this procedure:

1. Select the **m** button in the upper left corner of the main screen.
2. From the drop-down list, select **Browse**. The **Browse** menu is displayed.
3. Select **Browse**.
4. In the **File Path** dialog box, select the folder where patient data is saved and then select **OK**.
5. If you wish to view the data of a specific patient, enter patient name or Patient ID, and then select **Search**.
6. If you wish to view patient data details, select the desired patient from the patient list, and then select the **Details** button at the end of the discharged patient.
   - In the **Patient Management** tab, you can view patient information.
   - In the **Review** tab, you can review historical data of this patient. For more information on the **Review** tab, see Chapter 3 Review Screen.

**NOTE**

- Only when patient data is exported by the factory maintenance menu at the CentralStation can it be viewed at the CMS Viewer.

### 1.6 Viewing System Information

You can view the system software version in the **System Information** menu.

To access the **System Information** menu, follow this procedure:

1. Select the **m** button in the upper left corner of the main screen.
2. From the drop-down list, select **System Information**.
This page intentionally left blank.
2 ViewBed Screen

2.1 Overview
Real-time data of an online patient can be viewed on the ViewBed Screen.

2.2 Selecting an Online Patient
You need to select the desired patient before viewing real-time data.
To select a patient, follow this procedure:
1. Select the button in the upper left corner of the main screen.
2. Select the button.
3. From the drop-down list, select the department where the desired remote CentralStation is located.
4. From the bed list, select the desired bed.

2.3 ViewBed Screen
After selecting the desired bed, the ViewBed screen is displayed by default. The regular ViewBed screen is shown as follows.

![Figure 2-1 Example ViewBed Screen](image)

| (1) Bed number and room number area: displays the bed number and room number. |
| (2) Technical alarm information area: displays the highest priority technical alarm. For details, see Section 2.3.2 Technical Alarm Information Area. |
| (3) Physiological alarm information area: displays the highest priority physiological alarm. For details, see Section 2.3.3 Physiological Alarm Information Area. |
| (4) Alarm status symbol area: indicates different alarm statuses for the remote monitoring device. See Section 2.3.1 On-Screen Symbols for description of this symbol. |
### 2.3.1 On-Screen Symbols

The following table lists the symbols that may be displayed on the ViewBed screen.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Human_male_blue] | The color of the symbol changes to indicate different patient gender status:  
- Blue: indicates this patient is a male adult.  
- Grey: indicates that this patient is an adult without specified gender. | ![Human_male_blue] | Adult, male |
| ![Human_female_blue] | The color of the symbol changes to indicate different patient gender status:  
- Blue: indicates this patient is a female pediatric.  
- Grey: indicates that this patient is a pediatric without specified gender. | ![Human_female_blue] | Pediatric, female |
| ![Baby_blue] | The color of the symbol changes to indicate different patient gender status:  
- Blue: indicates this patient is a male neonate.  
- Grey: indicates that this patient is a neonate without specified gender. | ![Baby_blue] | Neonate, male |
| ![WiFi] | Indicate the Wi-Fi signal strength after a monitoring device is connected to an AP.  
More white arcs indicate a stronger Wi-Fi signal strength. | ![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. |
| ![Alarm_off] | All the alarms are paused. | ![Alarm_off] | Alarms for some parameter are turned off or the monitoring device is in the alarm off state. |
| ![Audible_alarm_off] | Audible alarms are paused. | ![Audible_alarm_off] | Audible alarms are turned off. |
When a battery symbol listed in the table above is displayed, see appropriate monitoring device's operator's manuals for details about the battery time and alarms.

### 2.3.2 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 monitoring 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.

### 2.3.3 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 monitoring 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.

2.3.4 Configuring 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.

2.3.4.1 Available Quick Keys

The following table shows available quick keys.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Label</th>
<th>Function</th>
<th>Symbol</th>
<th>Label</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>More</td>
<td>Show more quick keys</td>
<td></td>
<td>Screen Setup</td>
<td>Enter the Screen Setup menu</td>
</tr>
<tr>
<td></td>
<td>Alarm Setup</td>
<td>Enter the Alarm menu</td>
<td></td>
<td>ECG Full-Screen</td>
<td>Enter the ECG full screen</td>
</tr>
<tr>
<td></td>
<td>Freeze</td>
<td>Freeze waveforms</td>
<td></td>
<td>Minitrends</td>
<td>Enter the Minitrends window</td>
</tr>
<tr>
<td></td>
<td>Print</td>
<td>Start printing a real-time</td>
<td></td>
<td>Print Setup</td>
<td>Enter the Print Setup menu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>report</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EWS</td>
<td>Enter the EWS window.</td>
<td></td>
<td>ERAS Dashboard</td>
<td>Enter the ERAS Dashboard where you can view a patient’s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>exercise time, resting time, and pain score.</td>
</tr>
<tr>
<td></td>
<td>ECG 24h Sum</td>
<td>View the 24-hour ECG summary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parameters</td>
<td>Enter the Parameters Setup</td>
<td></td>
<td>ECG 24h Sum</td>
<td>View the 24-hour ECG summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>menu</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CMS Viewer Operator's Manual
### 2.3.4.2 Configuring Quick Keys

To configure the desired quick keys, follow this procedure:

1. Select the **Screen Setup** quick key at the bottom of the ViewBed screen.
2. Select the **Quick Keys** tab to enter the quick key setup window.
3. 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.
4. Select the **More** tab to configure the quick keys to be displayed when the **More** quick key is selected.

### 2.3.5 Changing ViewBed Screen Settings

To change ViewBed screen settings, follow this procedure:

1. Select the **Screen Setup** quick key at the bottom of the ViewBed screen.
2. Select the **Choose Screen** tab and select the desired screen mode.
3. Select the **Tile layout** tab.
4. Select a parameter area or waveform area, and then from the drop-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

- The list of parameters/waveforms under the drop-down list in the Tile Layout tab is the super set, not depending on a monitoring device. If a parameter/waveform is not supported by the monitoring device, it is not displayed on the ViewBed screen.
- Changes to the ViewBed screen settings take effective for the CMS Viewer only and do not affect the screen settings at the target CentralStation.

### 2.3.6 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. 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 parameter list.
4. From the drop-down list, select **Parameter List**.

### 2.3.7 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.
2.3.8 **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.

2.3.8.1 **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 drop-down list, select **SpO₂**.
5. From the drop-down list, select **SpO₂ Statistics**.

2.3.8.2 **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.

2.3.9 **Freezing/Unfreezing Waveforms**

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

2.3.9.1 **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, OxyCRG window, EWS window and parameter numerics on the ViewBed screen
- Alarm enunciation

2.3.9.2 **Unfreezing Waveforms**

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

2.3.9.3 **Printing Frozen Waveforms**

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

You can split the normal screen so that the left hand side of the screen shows the minitrends window. The Minitrends screen shows the recent graphic trends of parameters.

2.3.10.1 Entering the Minitrends Window

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.
- 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.

2.3.10.2 Example Minitrends Window

The figure below shows the example minitrends window.

![Example Minitrends Window](image)

Figure 2-2 Example Minitrends Window

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Scale</td>
</tr>
<tr>
<td>(2)</td>
<td>Setup button: select this button to configure the minitrends window.</td>
</tr>
<tr>
<td>(3)</td>
<td>Aldrete Score button: this button is displayed only when the Adrete score functionality is supported by patient monitors.</td>
</tr>
<tr>
<td>(4)</td>
<td>Routine Vital/Baseline: it is used to mark the parameter measurements of certain moment for later reference. Numerics in the square frames on the left side of this line refer to the values when routine vital/baseline is marked. If the department is set to OR, the baseline is displayed. For other departments, the Routine Vital is displayed.</td>
</tr>
<tr>
<td>(5)</td>
<td>Select this button to view the trends of longer time</td>
</tr>
<tr>
<td>(6)</td>
<td>Time line</td>
</tr>
<tr>
<td>(7)</td>
<td>Alarm statistic area</td>
</tr>
</tbody>
</table>

NOTE

- Only when a patient monitor supports the Routine Vital/Baseline function can you view information related to routine vital or baseline at the CMS Viewer.
2.3.10.3 Setting Minitrends Parameters
To set parameters, follow this procedure:
1. Enter the Minitrends window.
2. Select the Setup button.
3. Set parameters. If you wish to use the default parameters, select Default Parameter.

2.3.10.4 Setting the Minitrend Length
To set the Minitrend length, follow this procedure:
1. Enter the Minitrends window.
2. Select the Setup button.
3. Set Minitrend Length.

2.3.10.5 Setting the Alarm Statistics Switch
The Minitrends window can be configured to display the statistic number and duration of physiological alarms in its lower half window.
To set the alarm statistics switch, follow this procedure:
1. Enter the Minitrends window.
2. Select the Setup button.
3. Enable or disable Alarm Statistics.

2.3.10.6 Setting the Alarm Statistics Length
The time length within which the alarms statistics are made is configurable. To set the alarm statistics length, follow this procedure:
1. Enter the Minitrends window.
2. Select the Setup button.

2.3.10.7 Exiting the Minitrends Window
To exit the Minitrends window, follow this procedure:
1. On the ViewBed screen, select the Screen Setup quick key.
2. Select the desired screen mode.

2.3.11 Early Warning Score (EWS)
The Early Warning Scores (EWS) can help you recognize the early sign of deterioration in patients based on vital signs and clinical observations. Depending on the score calculated, appropriate recommendations are displayed.

The scoring protocol displayed on the CMS is consistent with that on a patient monitor. The following scoring protocols may be supported by patient monitors:
- MEWS (Modified Early Warning Score)
- NEWS (National Early Warning Score)
- NEWS2 (National Early Warning Score 2)
- Custom Score

There are two types of scoring tools:
- Total score: A subscore is given for each parameter based on the measured or entered value. When all the required parameters are entered or measured, the subscores are added together to calculate the total early warning score. Each subscore has a color coding to indicate associated level of risk. When the total score is outside of the thresholds, actions are recommended. MEWS, NEWS and NEWS2 can give total scores.
IPS (individual parameter score): A score indicated by color is given for each parameter based on the measured or entered value. Each parameter has upper and lower thresholds. When an individual parameter measured or entered is outside of the thresholds, actions are recommended.

Custom Score is based on user-defined parameters. It can be a total score or an IPS, depending on the configuration.

MEWS, NEWS and NEWS2 are intended for adult patients only. The patient category of the Custom Score is defined by Mindray Clinical Score Configuration Tool. For more information, see Mindray Clinical Scoring Config Tool Instruction for Use (P/N: 046-007126-00).

---

**WARNING**

- The EWS scores and recommended actions are for reference only and cannot be directly used for diagnostic interpretation.
- EWS cannot be used as an prognosis index. It is not a clinical judgement tool. Clinicians must use their clinical judgement in conjunction with the EWS tool at all times.
- MEWS and NEWS are not applicable to pregnant woman, COPD (Chronic Obstructive Pulmonary Disease) patients and patients under 16 years old. NEWS2 is not applicable to pregnant woman, and patients under 16 years old.

---

### 2.3.11.1 Displaying the EWS Parameter Area

To display the EWS parameter 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 EWS scores.
4. From the drop-down list, select **EWS**.
2.3.11.2 Example EWS Parameter Area

The example EWS parameter area is as shown in the following figure.

![Example EWS Parameter Area](image)

Figure 2-3 Example EWS Parameter Area

- **(1)** EWS protocol label
- **(2)** Total score. The color of the circle indicates the level of risk. For IPS, no score is displayed. Only level of risk is shown: white means normal and red indicates alert by default.
- **(3)** Single parameter whose severity level reaches 3
- **(4)** Latest history total score: up to five groups of history scores can be displayed on the screen.
- **(5)** Risk level indicator. The level of risk increases from top down. The current level is enclosed by a white square frame. For IPS, this indicator does not display.
- **(6)** Scoring interval
- **(7)** Current scoring time
- **(8)** Scoring countdown: time to the next scoring.

2.3.11.3 Entering the EWS Window

Choose one of the following methods to enter the EWS window:

- On the ViewBed screen, select the EWS parameter area.
- On the ViewBed screen, select the **EWS** quick key.
- On the ViewBed screen, select the **Screen Setup** quick key → select **Choose Screen** → select **EWS**.

2.3.11.4 Example EWS Window

Take NEWS2 as an example, the EWS screen is shown as follows.
Figure 2-4 Example EWS Window

(1) Total score. The color of the circle indicates the level of risk. For IPS, no numeric score is displayed. Only level of risk is shown: white means normal and red indicates alert by default.

(2) Risk level indicator. The level of risk increases from top down. The current level is enclosed by a white frame. For IPS, this indicator does not display.

(3) Parameter area: display the subscore and parameter value of each parameter. The keyboard symbol indicates that the parameter value is manually entered.

(4) Current scoring time

(5) EWS protocol label

(6) Scoring countdown: time to the next scoring.

(7) Scoring interval

(8) Select this button to view the clinical response for current score

(9) Operator ID (displays only when the operator ID is selected on the monitor’s side)

(10) Select this button to view the trend data of parameters participating in scoring and the alarm statistics area.
    - The alarm statistics area displays physiological alarms within the most recent 24 hours.
    - Selecting alarm messages in the alarm statistics area accesses the event review page where you can view the alarm details. For information regarding the event review page, see Section 3.9 Events Review Page.

(11) History total scores

(12) Select this button to review history scores
2.3.11.5 Exiting the EWS Window

To exit the EWS window, follow this procedure:

1. On the ViewBed screen, select the Screen Setup quick key.
2. Select the desired screen mode.

2.3.12 ECG 24h Summary

The ECG 24h Summary provides ECG statistics of the current patient over the latest 24 hours. You can view the following information through the ECG 24h Summary:

- Heart rate statistics
- Arrhythmia event statistics
- QT/QTc measurement statistics
- Maximum and minimum ST statistics of each lead
- Pacer statistics
- Typical ECG strips

To view the ECG 24h Summary, select the ECG 24h Sum quick key.

**NOTE**

- The ECG 24h Summary is intended for the current patient. It is not intended for discharged patients.
- Pacer statistics is intended for paced patients.
- Patient data is saved, collected and displayed together in the ECG 24h Summary. Data displayed in the ECG 24h Summary is not recalculated.
- A license is required for the ECG 24h Summary function.
3 Review Screen

3.1 Overview
You can review historical data for online patients and discharged patients on the review screen. The review screen provides several tabs to display historical data from different dimensions. The review tabs for the online patients and discharged patients are the same.

NOTE
• Review tabs are dependent on the patient category and patient window settings. For details on how to select the review tabs in the patient window, see Section 6.2.4 Setting a Patient Window.

3.2 Accessing the Review Screen
Methods for accessing the review screen for online patients and discharged patients are different.

3.2.1 Accessing the Review Screen for Online Patients
To enter the review screen for online patients, follow this procedure:
1. Select the button in the upper left corner of the main screen.
2. Select the button.
3. From the drop-down list, select the department where the desired remote CentralStation is located.
4. From the bed list, select the desired bed.
5. Select the Review tab.

3.2.2 Accessing the Review Screen for Discharged Patients
To enter the review screen for discharged patients, follow this procedure:
1. Select the button in the upper left corner of the main screen.
2. From the drop-down list, select Discharged Patients.
3. From the discharged patients list, select the Details button at the end of the desired discharged patient.
4. Select the Review tab.
3.3 Example Review Page Structure

Select the button in the upper left corner of the review screen to enter appropriate review pages. The graphic trends review page is an example to introduce the items that may also be displayed on other review pages.

![Figure 3-1 Example Review Page](image)

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Current review tab</td>
</tr>
</tbody>
</table>
| (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 |
| (3) | 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. |
| (4) | Scroll bar: indicates the position of currently displayed trend data in all the trend data. |
| (5) | 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. |
| (6) | 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. |
| (7) | Total timeline: indicates the entire time length.  
| ■ | Indicates the time length of reviewable trend data. can be moved within this time length.  
| ■ | Indicates no patient 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. |
| (8) | Waveform area: displays trend curves. The color of trend curves is consistent with the color of parameter labels. |
3.4 Symbols on Review Pages

The following table lists the symbols on review pages.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Go to the previous or next event.</td>
<td></td>
</tr>
<tr>
<td>Event list: displays events in a chronological order. The most recent event is displayed at the top. The number of asterisk symbols before an event matches different alarm priorities. When a parameter label is prefixed with the plus sign (+), it indicates that the trend data is for external devices connected to the monitor.</td>
<td></td>
</tr>
<tr>
<td>Patients’ 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 <strong>Save As</strong> is enabled in the system menu. For more information on enabling <strong>Save As</strong>, see 6.3.4 Setting Patient Data Export.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Indicates that parameter numerics are unreliable.</td>
<td></td>
</tr>
</tbody>
</table>

3.5 Common Operations on Review Pages

This section describes common operations on review pages.

3.5.1 Browsing Trend Data

Choose one of the following methods to browse trend data:

- Move.
- Move the cursor.
- Move the slider.

3.5.2 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 drop-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. The number of asterisk symbols before and event matches the following alarm priority:

- ****: high priority alarm
- ***: medium priority alarm
- *: low priority alarm

### 3.5.3 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 drop-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 cannot be displayed simultaneously.

### 3.6 Tabular Trends Review Page

The tabular trends review page displays trend data in a tabular form. When external devices are connected to the monitor via the BeneLink module, you can also view the trend data of the external devices on this review page. Parameter labels from external devices are prefixed with the plus sign (+).

#### 3.6.1 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 drop-down list, select Tabular Trends.
- Select the parameter list area on the ViewBed screen.

#### 3.6.2 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 6.3.2.1 Setting Trend Parameters.
3. Set Interval and select the desired option. Among these options, selecting NIBP, TempIF, or C.O. means to view the tabular trends when NIBP, infrared temperature, or C.O. measurements were acquired. The default for Interval in OR is 5 min and in other departments is 30 min.

**NOTE**

- The options for Interval are dependent on the functions of a bedside monitor.
- The parameters displayed for Trend Group are dependent on the parameters configured at a bedside monitor.
3.6.3 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., Auto  
**NIBP, TempIF, C.O.**: print a tabular trends report when NIBP, infrared temperature, or C.O. measurements were acquired. Each NIBP, infrared temperature, or C.O. measurement will generate a column on the tabular trends review page. The values for the other measurements are added to the column to provide a complete dataset for the NIBP, infrared temperature, or C.O. measurement time.  
**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

3.6.4 Exporting Trend Data

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

For more information on allowing exporting patients' data, see 6.3.4 Setting Patient Data Export. For more information on exporting patients' trend data from the graphic review page, see 3.7.4 Exporting Trend Data.
To export patients' 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. For more information on this menu, see 1.2 Example Main Screen. The exported trend data is saved in the sub-folder named as ParameterData under the patient's folder which is located in the selected Save Path.

### 3.7 Graphics Trends Review Page

The graphic trends review page displays trend data in a graphic form. When external devices are connected to the monitor via the BeneLink module, you can also view the trend data of the external devices on this review page. Parameter labels from external devices are prefixed with the plus sign (+).

#### 3.7.1 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 drop-down list, select Graphic Trends.

#### 3.7.2 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 Section 6.3.2.1 Setting Trend Parameters.
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.

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Set the specific date on which you wish to export trend data.</td>
<td>Default to the date for the data where the cursor stops.</td>
</tr>
<tr>
<td>Time</td>
<td>Set the export end time.</td>
<td>Default to the date for the time where the cursor stops.</td>
</tr>
<tr>
<td>Period</td>
<td>Select the period during which trend data is exported.</td>
<td>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.</td>
</tr>
<tr>
<td>Interval</td>
<td>Select the resolution of trend data.</td>
<td>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., NIBP, TempIF, C.O.: export trend data when NIBP, infrared temperature, or C.O. measurements were 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.</td>
</tr>
<tr>
<td>Save Path</td>
<td>Select the path to save the trend data.</td>
<td>/</td>
</tr>
</tbody>
</table>
3.7.3 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.

3.7.4 Exporting Trend Data

When the CMS Viewer is connected to a storage device and exporting patients’ data is allowed in the system setup menu, you can export patients’ trend data from the graphic trends review page or the tabular trends review page. Patients’ 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 patients’ trend data by following steps in Section 3.6.4 Exporting Trend Data.

3.8 Full Disclosure Review Page

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

3.8.1 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 drop-down list, select Full Disclosure.

3.8.2 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.
3.8.3 Compressed Waveform
The full disclosure review page displays the compressed waveform.

3.8.3.1 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.

3.8.3.2 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.

3.8.3.3 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 Section 6.3.3 Setting an Arrhythmia Mark Color.

3.8.3.4 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 Section 3.8.5 Printing Compressed Waveforms or Detail 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 button in the upper right corner of the waveform segment selection window.

3.8.4 Detail Waveform Window
In the detail waveform window, you can view the full size waveforms and parameter numerics.

Access the detail 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 detail waveform window.

### 3.8.4.1 Setting ECG Gain

To set the ECG gain, follow this procedure:
1. Enter the detail waveform window.
2. Select the button.
3. Select the **ECG Gain** button.
4. Configure the desired ECG gain.

### 3.8.4.2 Setting Waveform Sweep Speed

To set the waveform sweep speed, follow this procedure:
1. Enter the detail 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.

### 3.8.4.3 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 detail waveform window.

Horizontal caliper and vertical caliper are as shown in Figure 4-2.

![Figure 4-2 Example Caliper](image)

| (1) | Left caliper arm |
| (2), (7) | Measurement line |
| (4) | Close button: closes the caliper window without saving the measured value. |
Performing Measurements Using a Horizontal Caliper

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

Option 1:
1. Enter the detail 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 detail 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 detail 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 button in the caliper window.

3.8.4.4 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 detail 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 Annotation in the detail waveform window, these beat labels will also be displayed or hidden in the event detail window, and vice versa.

CAUTION

- 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.

3.8.5 Printing Compressed Waveforms or Detail 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 3.8.3.4 Selecting Compressed Waveform Segments.
   - Print Details of Selected Waveforms: prints the detail waveform for the selected compressed waveform segments according to the time period where selected waveform segments are located.
   - Print Displayed Detailed Waveforms: prints the detail waveform for the entire compressed waveform.
   - Print Selected Detailed Waveforms: prints the detail 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 detail waveform window only. For information regarding accessing the detail waveform window, see Section 3.8.4 Detail Waveform Window.

3.8.6 Exporting Waveform Data

When the CMS Viewer is connected to a storage device and exporting patients’ data is allowed in the system setup menu, you can export patients’ waveform data from the full disclosure review page. For more information on allowing exporting patients’ data, see 6.3.4 Setting Patient Data Export.

To export patients’ 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. For more information on this menu, see 1.2 Example Main Screen. The exported waveform data is saved in the sub-folder named as WaveformData under the patient’s folder which is located in the selected Save Path.

3.9 Events Review Page

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

When external devices are connected to the monitor via the BeneLink module, you can also view the data of the external devices on this review page. Parameter labels from external devices are prefixed with the plus sign (+).

3.9.1 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 drop-down list, select Events.

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Set the specific date on which you wish to export waveform data.</td>
<td>Default to the date for the data where the cursor stops.</td>
</tr>
<tr>
<td>Time</td>
<td>Set the export end time.</td>
<td>Default to the date for the time where the cursor stops.</td>
</tr>
<tr>
<td>Period</td>
<td>Select the period during which waveform data is exported.</td>
<td>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.</td>
</tr>
<tr>
<td>Select Waveform</td>
<td>Select the desired waveforms to be exported.</td>
<td>Enabling a waveform means this waveform will be exported.</td>
</tr>
<tr>
<td>Save Path</td>
<td>Select the path where exported waveform data is saved.</td>
<td>/</td>
</tr>
<tr>
<td>File Format</td>
<td>Select the desired format in which exported waveform data is saved.</td>
<td>csv, xml. csv is the default.</td>
</tr>
</tbody>
</table>
3.9.2 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 asterisk symbols 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

3.9.2.1 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. Enable Filter.
3. Select Filter Setup and set the desired filter criterion. Events after filtering will be displayed in the event list.

**NOTE**
- When the filter is disabled, all the settings you made in the Filter Setup window will not take effect.
- Manual events are always displayed.

3.9.3 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.

In the event detail window:

- The upper half of the window displays:
  - Event name: displays in the upper left corner.
  - Event triggered time: displays in red font.
  - Waveform: 16 seconds of waveforms before and after the event triggered time.
- 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 event list, select the button and then select the List button.
3.9.3.1 Configuring ECG Gain
To configure the ECG gain, follow this procedure:
1. Enter the event detail window.
2. Select the button.
3. Select ECG Gain.
4. Select the desired gain.

**NOTE**
• When there is sufficient space to display all the menu items, the button is not displayed in the event detail window. In this case, skip the procedure which instructs to select this button.

3.9.3.2 Configuring Waveform Sweep Speed
To configure the waveform sweep speed, follow this procedure:
1. Enter the event detail window.
2. Select the button.
3. Select the Speed button.
4. Configure the desired speed. The speed is applicable to all the ECG waveforms.

3.9.3.3 Caliper Measurement
To perform caliper measurement, follow this procedure:
1. Enter the event detail window.
2. Select the button.
3. Select the Caliper button.
4. Perform caliper measurement by following steps in Section 3.9.3.3 Caliper Measurement.

3.9.3.4 Setting Beat Annotation
For details on how to set beat annotation, see Section 3.9.3.4 Setting Beat Annotation.

3.9.4 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. If waveform data is available for the selected event, 16 seconds of waveforms before and after the alarm trigger time are printed by default. The actual waveform data printed depends on the option selected for Printing Duration. For details on how to set Printing Duration, see Section 6.5.6 Setting Other Print-Related Items.
5. If you wish to preview the printout, select Print Preview.
6. Select Print.
3.10 12-Lead ECG Review Page

You can review 12-lead analysis events on the 12-lead ECG review page.

3.10.1 Entering the 12-Lead Review Page

To enter the 12-Lead ECG review page, follow this procedure:

1. Select the button in the upper left corner of the review screen.
2. From the drop-down list, select 12-Lead ECG.

3.10.2 Median Complex Window (For Glasgow Algorithm Only)

On the 12-lead ECG review page, select the button and then select Median Complex to enter the median complex window.

In the median complex window, the median complex template marks the start and end position of P-wave and QRS-wave and the end position of T-wave.

Selecting Waveform returns to the 12-lead ECG waveform page.

**NOTE**
• When there is sufficient space to display all the menu items, the button is not displayed on the 12-lead ECG review. In this case, skip the procedure which instructs to select this button.

3.10.3 Configuring 12-Lead ECG Waveforms

To configure 12-lead ECG waveforms on the review page, follow this procedure:

1. Enter the 12-lead ECG review page.
2. Select the button.
3. Configure Speed and Gain.
4. Configure Layout.
   ◆ 12x1: displays 12-lead ECG waveforms on one page in one column.
   ◆ 6x2: displays 12-lead ECG waveforms on one page in two columns, with 6 lines in each column.
   ◆ 6x2+1: displays 12-lead ECG waveforms on one page in two columns, with 6 lines in each column, and one rhythm lead waveform at the bottom.
   ◆ 3x4+1: displays 12-lead ECG waveforms on one page in 4 columns, with 3 lines in each column, and one rhythm lead waveform at the bottom.
   ◆ 3x4+3: displays 12-lead ECG waveforms on one page in 4 columns, with 3 lines in each column, and three rhythm lead waveforms at the bottom.

3.10.4 Caliper Measurement

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 median complex window.

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

1. Enter the 12-lead ECG review page.
2. Select the button.
3. From the drop-down list, select the desired option:
   ◆ Caliper: perform measurement using a horizontal caliper.
   ◆ ST Caliper: perform measurement using a vertical caliper.
4. Display a caliper.
5. Obtain measured values.
For details on how to display a horizontal or vertical caliper, how to obtain measured values, and how to move a caliper, see Section 3.8.4.3 Caliper Measurement.

3.10.5 Printing 12-Lead Analysis Reports
To print a 12-lead ECG analysis report, follow this procedure:
1. Enter the 12-lead ECG 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.

3.11 ST Review Page
You can review ST templates on the ST review page.

3.11.1 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 drop-down list, select ST.

3.11.2 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.

3.11.3 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.

3.11.4 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.

3.11.5 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.
3.12  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**.

3.12.1  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 drop-down list, select **Arrhy Statistics**.

3.12.2  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.

3.12.3  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**.
4 Discharged Patients Management

4.1 Overview
The CMS Viewer provides you the ability to search and review data of discharged patients in the target CentralStation.

4.2 Accessing the Discharged Patients Management Screen
To access the discharged patients management screen, follow this procedure:
1. Select the button in the upper left corner of the main screen.
2. From the drop-down list, select Discharged Patients.

4.3 Searching Discharged Patients
To search discharged patients, follow this procedure:
1. Select the button in the upper left corner of the discharged patients management screen.
2. From the drop-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 patients are displayed in the discharged patients list.

4.4 Viewing Patient Information and Historical Data of Discharged Patients
From the discharged patients list, select the Details button at the end of the discharged patient.
- In the Patient Management tab, you can view patient information.
- In the Review tab, you can review historical data of this patient. For more information on the Review tab, see Chapter 3 Review Screen.

4.5 Sorting Discharged Patients
You can sort all discharged patients 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 patients in ascending order.
- : sort discharged patients in descending order.
By default, all discharged patients are sorted ascendingly by discharged date.

4.6 Refreshing Data
Selecting the button in the upper right corner of the discharged patients list updates the patients list.
5 Printing

5.1 Printer

The CMS Viewer can be connected to a printer to output reports on A4 or Letter 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.

5.2 Starting Report Printouts

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

5.2.1 Manual Printing

You can manually start printing reports such as trends data.

5.2.1.1 Printing Review Data

For details on how to print tabular trends, graphic trends, waveform review, waveform segment, event review, 12-lead analysis review, ST segment, and arrhythmia statistics result, see Chapter 3 Review Screen.

5.2.1.2 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 5.3.2 Setting Realtime Reports.

5.2.1.3 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**. If you are performing 12-lead ECG monitoring, select the **Choose Screen** tab → select **ECG 12-Lead**.
   - 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. If you are performing 12-lead ECG monitoring, select the 12-Lead.

2. Select the print button in either of the following methods.
   - Select the **Print** quick key at the bottom of the ViewBed screen.
5.2.1.4 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.

5.2.1.5 Printing CCO-Related Hemodynamic Parameters
To print CCO-related hemodynamic parameters, follow this procedure:
1. On the ViewBed screen, access the CCO menu in either of the following ways:
   ◆ Select the CCO parameter area.
   ◆ Select the Parameter Setup quick key at the bottom of the screen → select CCO.
2. Select the HemoSight button at the bottom of the menu.
3. Select the Diagnosis tab.
4. Select the button in the upper left corner. The Print Setup menu is displayed.
5. After selecting desired settings, select Print.

5.2.1.6 Printing ICG-Related Hemodynamic Parameters
To print ICG-related hemodynamic parameters, follow this procedure:
1. On the ViewBed screen, access the ICG menu in either of the following ways:
   ◆ Select the ICG waveform or parameter area.
   ◆ Select the Parameter Setup quick key at the bottom of the screen → select ICG.
2. After selecting desired settings, select the Hemodynamic Parameters 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.

5.2.1.7 Printing SvO2/ScvO2-Related Hemodynamic Parameters
To print SvO2/ScvO2-related hemodynamic parameters, follow this procedure:
1. On the ViewBed screen, access the SvO2 or ScvO2 menu either of the following ways:
   ◆ Select the SvO2 or ScvO2 parameter area.
   ◆ Select the Parameter Setup quick key at the bottom of the screen → select SvO2/ScvO2.
2. Select the HemoSight button at the bottom of the menu.
3. Select the Diagnosis tab.
4. Select the button in the upper left corner. The Print Setup menu is displayed.
5. After selecting desired settings, select Print.
5.2.1.8 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.

5.2.1.9 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.

5.2.1.10 Printing Frozen Waveforms
For details on how to print frozen waveforms, see Section 2.3.9.1 Freezing Waveforms.

5.2.1.11 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.

5.2.1.12 Printing ECG 24h Summary
To print an ECG 24h summary, follow this procedure:

1. Select the ECG 24h Sum quick key at the bottom of the ViewBed screen.
2. Select the button in the upper left corner. The Print Setup menu is displayed.
3. Selecting the desired settings.
4. If you wish to preview the printout, select Print Preview.
5. Select Print.

5.2.2 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.

5.3 Setting Reports

You can set report related contents such as patient information items on a report. For details, see Section 6.5 Print Tab. This section only describes how to set real-time reports and ECG reports in the Print Setup menu.

5.3.1 Accessing the Print Setup Menu

Select the Print Setup quick key at the bottom of the screen to enter the Print Setup menu. If this quick key is not available, configure it by following steps in 2.3.4 Configuring Quick Keys.

5.3.2 Setting Realtime Reports

To set real-time 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 real-time report for current waveforms.

* Selected Waveforms: print the real-time 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.

5.3.3 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.

<table>
<thead>
<tr>
<th>Menu item</th>
<th>Description</th>
<th>Options</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Interval</td>
<td>Defines the spacing between the ECG waveforms on a printout</td>
<td>On: automatically adjusts the space between waveforms to avoid overlapping. Off: each waveform area has the same size on a printout.</td>
<td>Off</td>
</tr>
</tbody>
</table>

Note: This setting is only relevant when 12×1 is selected for 12-Lead Format.
5.4 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.
This page intentionally left blank.
6 System Setup

6.1 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.

6.2 Display Tab
In the Display tab, you can set display-related items such as colors for parameters.

6.2.1 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 drop-down list, select System Setup to access the System Setup menu.
3. Select the Display tab.

6.2.2 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 drop-down list, select the desired color.

6.2.3 Setting a Screen Size
To set the screen size, follow this procedure:
1. On the display setup page, select the Screen tab.
2. Select Screen Size.
3. Select the desired option. If your screen size is not available, select Others and select the + or – button on the rulers to adjust the screen size.
4. Select OK.

NOTE
• Restart the system after making a change in the screen size.

6.2.4 Setting a Patient Window
You can select the desired items displayed on the review screen. To do so, follow this procedure:
1. On the display setup page, select the Patient Window tab.
2. Select the desired items.
6.2.5 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, V1, V2, V3, V4, V5, V6
   - Cabrera: aVL, I, -aVR, II, aVF, III, V1, V2, V3, V4, V5, V6
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.

6.3 Review Tab

In the Review tab, you can set trends related items.

6.3.1 Accessing the Review Setup Page

To access the review setup page, follow this procedure:

1. Select the button in the upper left corner of the main screen.
2. From the drop-down list, select System Setup to access the System Setup menu.
3. Select the Review tab.

6.3.2 Setting a Trend Group

In the Trends tab, you can set a trend group. A trend group defines the trend displayed on the trend review page and printed in trend reports.

You can perform the following operations:

- Add/Delete parameters
- Overlap/Unoverlap parameters
- Move parameters
- Rename trend groups

**NOTE**

- In the Group Setup menu, HR is always displayed in the first row. It cannot be deleted or moved.

6.3.2.1 Setting Trend Parameters

To add, delete, overlap, unoverlap, or move a parameter, follow this procedure:

1. On the review setup page, select the Trends tab.
2. Select Group Setup.
3. Select the desired tab and then the desired parameter.
4. Select the desired buttons. Only buttons that may need special remarks are described here.
   - Overlap: after selecting two parameters and the Overlap button, the symbol displays on the right of overlapped parameters. The numeric values and trend curves of two parameters are displayed in one row on the screen.
6.3.2.2 Renaming a Trend Group

To rename a trend group, follow this procedure:

1. On the review setup page, select the Trends tab.
2. Select the Group Setup button to enter the Group Setup screen.
3. Select the desired trend group tab.
4. Select the symbol in the upper left corner of the screen.
5. Input the desired name. The new trend group is displayed in the list of options for Trend Group on the tabular trends review page and the graphic trends review page.

6.3.3 Setting an Arrhythmia Mark Color

In the Arrhy Mark tab, you can set colors for arrhythmia marks that display in the compressed waveform.

To do so, follow this procedure:

1. On the display setup page, select the Arrhy Mark tab.
2. Select the desired arrhythmia category.
3. Select the color box on the right of the arrhythmia category.
4. From the drop-down list, select the desired color.

6.3.4 Setting Patient Data Export

In the Export tab, you can set to allow exporting patients’ trend data and waveform data.

To do so, follow this procedure:

1. On the review setup page, select the Export tab.
2. Enable Save As.

Once Save As is enabled, the export symbol is displayed at the top of the main screen. Selecting this symbol opens the Export Queue menu. In this menu, you can view the export progress, export task, and so on. For more information on this menu, see 1.2 Example Main Screen.

The export symbol is also displayed on the tabular trends review page, graphic trends review page, and full disclosure review page. For more information on exporting patients’ trend data or waveform data from these review pages, see 3.6.4 Exporting Trend Data, 3.7.4 Exporting Trend Data, and 3.8.6 Exporting Waveform Data.

6.4 Network Tab

In the Network tab, you can set communication conditions between the CMS Viewer and the CentralStation, between the CMS Viewer and the MLAP server.

6.4.1 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 drop-down list, select System Setup to access the System Setup menu.
3. Select the Network tab.

6.4.2 Setting the General Tab

In the General tab, you can set the central monitoring network. For description of items in the General tab, see BeneVision Central Monitoring System Viewer Installation Guide (PN: 046-011214-00).

◆ Unoverlap: after two parameters are overlapped, select the Unoverlap button cancels the overlapping relation.
NOTE

• Restart the CMS Viewer after making a change in the General tab.

6.4.3 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.

6.4.4 Setting the Central Station Connection Tab

In the Central Station Connection tab, you can see the list of available CentralStations and connect the CMS Viewer to the desired CentralStation. For details on how to establish a connection, see BeneVision Central Monitoring System Viewer Installation Guide (PN: 046-011214-00).

If you need to disconnect the CMS Viewer from a CentralStation, select the Disconnect button at the end of the desired CentralStation.

6.5 Print Tab

In the Print tab, you can set items related to a printer or reports.

6.5.1 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 drop-down list, select System Setup to access the System Setup menu.
3. Select the Print tab.

6.5.2 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 Print Action.
   ◆ Paper: outputs paper report. After selecting this option, you need to set Printer and Printer Resolution.
   ◆ PDF: outputs the electronic report in PDF format. After selecting this option, you need to set PDF Resolution.
   ◆ Paper and PDF: outputs both the paper report and the PDF report. After selecting this option, you need to set Printer, Printer Resolution, and PDF Resolution.

NOTE

• PDF reports can be output by PDFCreator only.

6.5.3 Setting a Report Layout

In the Report Layout tab, you can set the patient information displayed on the reports other than ECG 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.
6.5.4 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.

6.5.5 Setting PDF File Name
In the **PDF File Name** tab, you can set items such as the naming rule for PDF reports.
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.

6.5.6 Setting Other Print-Related Items
In the **Other** tab, you can set the printing duration and PDF report naming rule.
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.

6.6 Other Tab
In the **Other** tab, you can set items such as unit of measurement.

6.6.1 Accessing the Other Setup Page
To access the other setup page, follow this procedure:
1. Select the **mindray** button in the upper left corner of the main screen.
2. From the drop-down list, select **System Setup** to access the **System Setup** menu.
3. Select the **Other** tab.

6.6.2 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.
### 6.6.3 Setting the Module

In the **Module** tab, you can set ECG standard and QTc formula.

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: \( QTc = QT + 154 \times \left(1 - \frac{60}{HeartRate}\right) \)

### 6.6.4 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.

### 6.6.5 Setting a Device Location

To set the name of the facility and department where the CMS Viewer is located, follow this procedure:

1. On the other setup page, select the **Device Location** tab.
2. Set **Facility Name**.
3. Set **Department**.
7 Default Settings

7.1 Overview

This chapter lists the default settings on the system setup screen.

7.2 Display Tab

<table>
<thead>
<tr>
<th>Subtab</th>
<th>Item</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Window</td>
<td>12-Lead ECG</td>
<td>Selected</td>
</tr>
<tr>
<td></td>
<td>ST</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arrhy Statistics</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>ECG Lead Sequence</td>
<td>Normal</td>
</tr>
<tr>
<td></td>
<td>Soft Keyboard</td>
<td>Off</td>
</tr>
<tr>
<td></td>
<td>Auto Exit</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>Outline Font for Suspected Values</td>
<td>On</td>
</tr>
</tbody>
</table>

7.3 Review Tab

<table>
<thead>
<tr>
<th>Subtab</th>
<th>Item</th>
<th>Default</th>
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<tbody>
<tr>
<td>Arrhy Mark</td>
<td>Asystole</td>
<td>Selected</td>
</tr>
<tr>
<td></td>
<td>V-Fib</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V-Fib/V-Tach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V-Tach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vent Brady</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extreme Tachy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extreme Brady</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PVCs/min High</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vent Rhythm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R on T</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multiform PVC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pauses/min High</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Run PVCs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Couplet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PVC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bigeminy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trigeminy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tachy</td>
<td></td>
</tr>
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</table>
### 7.4 Network Tab

<table>
<thead>
<tr>
<th>Subtab</th>
<th>Item</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrhy Mark</td>
<td>Brady</td>
<td>Selected</td>
</tr>
<tr>
<td></td>
<td>Pacer Not Capture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pacer Not Pacing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Missed Beats</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nonsus V-Tach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pause</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A-Fib</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irr Rhythm</td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>Save As</td>
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</table>

### 7.5 Print Tab

<table>
<thead>
<tr>
<th>Subtab</th>
<th>Item</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printer</td>
<td>Paper Size</td>
<td>A4</td>
</tr>
<tr>
<td></td>
<td>For General Report and Print on Alarm Report:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Print Action</td>
<td>Paper</td>
</tr>
<tr>
<td></td>
<td>Printer</td>
<td>Blank</td>
</tr>
<tr>
<td></td>
<td>Printer Resolution</td>
<td>300 dpi</td>
</tr>
<tr>
<td></td>
<td>PDF Resolution</td>
<td>600 dpi</td>
</tr>
<tr>
<td>Report Layout</td>
<td>Patient Name</td>
<td>Displayed</td>
</tr>
<tr>
<td></td>
<td>Patient Category</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DOB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient ID</td>
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</tr>
<tr>
<td></td>
<td>Bed No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Height/Weight</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paced</td>
<td></td>
</tr>
<tr>
<td>ECG Report</td>
<td>Patient ID</td>
<td>Selected</td>
</tr>
<tr>
<td></td>
<td>Patient Name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td></td>
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</table>
### 7.6 Other Tab

<table>
<thead>
<tr>
<th>Subtab</th>
<th>Item</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other</strong></td>
<td>Printing Duration on Alarm</td>
<td>20 sec</td>
</tr>
<tr>
<td></td>
<td>Monitor Remote Print</td>
<td>Enabled</td>
</tr>
<tr>
<td></td>
<td>Second Mark (Printer)</td>
<td>Enabled</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subtab</th>
<th>Item</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>Height Unit</td>
<td>cm</td>
</tr>
<tr>
<td></td>
<td>Weight Unit</td>
<td>kg</td>
</tr>
<tr>
<td></td>
<td>ST Unit</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>Hb Unit</td>
<td>g/dl</td>
</tr>
<tr>
<td></td>
<td>CVP Unit</td>
<td>cmH₂O</td>
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<tr>
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<td>ICP Unit</td>
<td>mmHg</td>
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<td>CO₂ Unit</td>
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</tr>
<tr>
<td></td>
<td>O₂ Unit</td>
<td>%</td>
</tr>
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<td>Temp Unit</td>
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<td>Module</td>
<td>ECG Standard</td>
<td>AHA</td>
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<tr>
<td></td>
<td>O₂c Formula</td>
<td>Hodges</td>
</tr>
</tbody>
</table>
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8 Troubleshooting

8.1 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.

8.2 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

8.3 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.
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