

Patient Data Management System

Operator's Manual

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

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Company Contact

Manufacturer:	Shenzhen Mindray Bio-Medical Electronics Co., Ltd.
Address:	Mindray Building, Keji 12th Road South, High-tech industrial park, Nanshan, Shenzhen 518057, P.R.China
Website:	www.mindray.com
E-mail Address:	service@mindray.com
Tel:	+86 755 81888998
Fax:	+86 755 26582680
EC-Representative:	Shanghai International Holding Corp. GmbH (Europe)
Address:	Eiffestraße 80, Hamburg 20537, Germany
Tel:	0049-40-2513175
Fax:	0049-40-255726

Preface

Manual Purpose

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

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

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

Illustrations

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

Conventions

- *Italic* text is used in this manual to quote the referenced chapters or sections.
- [] is used to indicate strings used in the software
- → is used to indicate operational procedures.

FOR YOUR NOTES

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FOR YOUR NOTES

1 Overview

The Patient Data Management software is run on a PC, it should be only used together with Mindray defibrillators.

The patient data is exported from the Mindray defibrillator with a USB flash memory, and then reviewed and edited on a PC through the Patient Data Management software. With this software, you can view and print patient data, events, trends data, ECG waveforms, and 12-lead report.

The Patient Data Management software has the following functions:

- Import patient data exported from the Mindray defibrillator to a PC.
- Export the processed patient data.
- View and edit patient information.
- Review the event information of selected patient.
- Review parameter trend data.
- Play audio files if they are available in the patient data.
- Review ECG waveforms and check ECG wave at specified time.
- Review 12-lead reports.
- Review CPR events, compression waveforms and related data.
- Print patient information, events and ECG waveforms.

FOR YOUR NOTES

2 Installation and Uninstallation

2.1 Operating Environment

The Patient Data Management software can be installed from a computer's CD-ROM. The computer running this software shall meet the following requirements:

- Operating system: Windows 2000, Windows XP, Windows Vista, Windows 7, Windows 10.
- CPU: Intel Pentium, Minimum 500M (For Windows Vista, Vista requirements shall be complied with)
- Display: 17" TFT recommended
- RAM: Minimum 128M (minimum 512M for Windows Vista).
- Hard disk: minimum 100M for installing the software and at least 1G for importing the patient data file.
- CD-ROM: for the software installation.
- Audio card: If you need to play audio files, an audio card is required.

NOTE

- **To install the Patient Data Management System, you should log in windows as an administrator.**
-

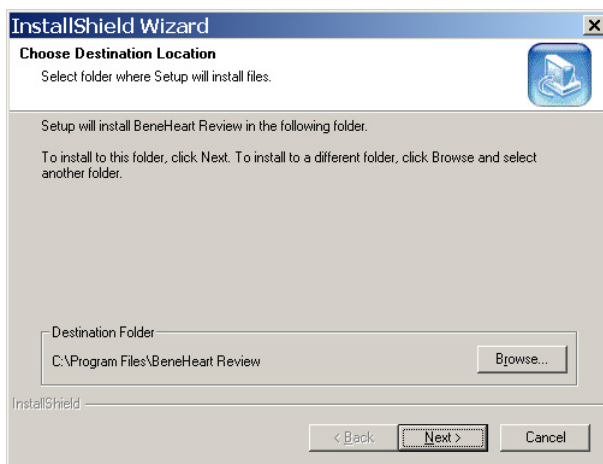
2.2 Installing the Patient Data Management System

1. Put the installation CD into the computer' CD-ROM. Double click the CD-ROM icon.
2. Find the installation program "BeneHeartReview Setup.exe" from CD-ROM files and double click it to start installation. Then the following dialog box pops up.



3. Select a language to guide your installation.

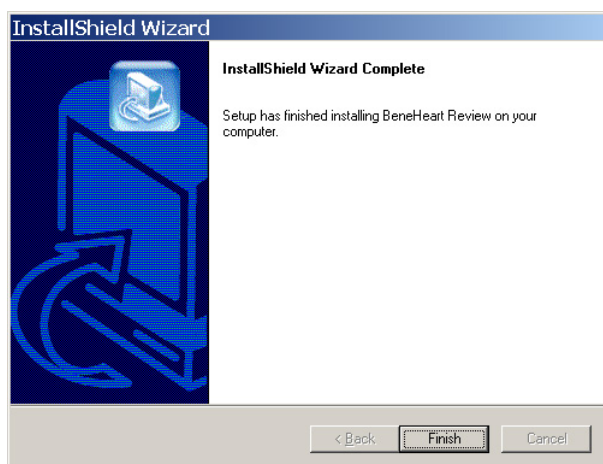
-
4. Click **[Ok]** and the following screen appears to ask you to choose an installation destination.



5. Confirm the destination folder and click **[Next]**. Then the "Select Program Folder" dialog box appears. You can select the current program folder or input a new folder name.

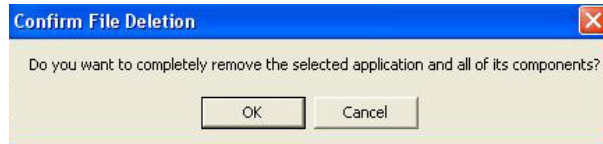


6. Click **[Next]** when the program folder is selected. Click **[Finish]** to complete the software installation.

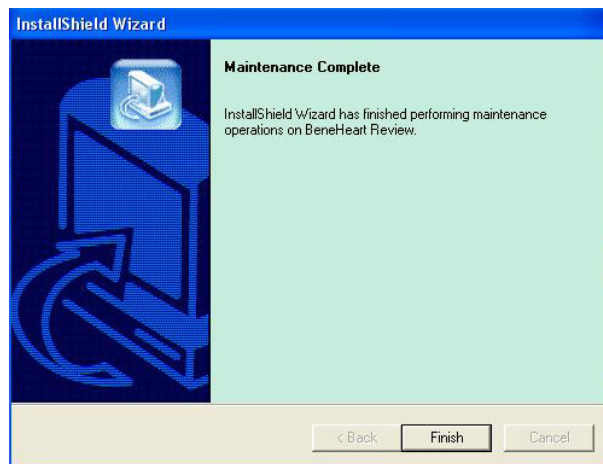


2.3 Uninstalling the Patient Data Management System

1. Select [**Add/ Remove Programs**] from the "Control Panel";
2. Select "BeneHeart Review" and then click [**Change/Remove**];
3. Select [**Ok**] from the pop-up dialog box to uninstall the software.



4. When the following screen appears, click [**Finish**] to complete uninstallation.

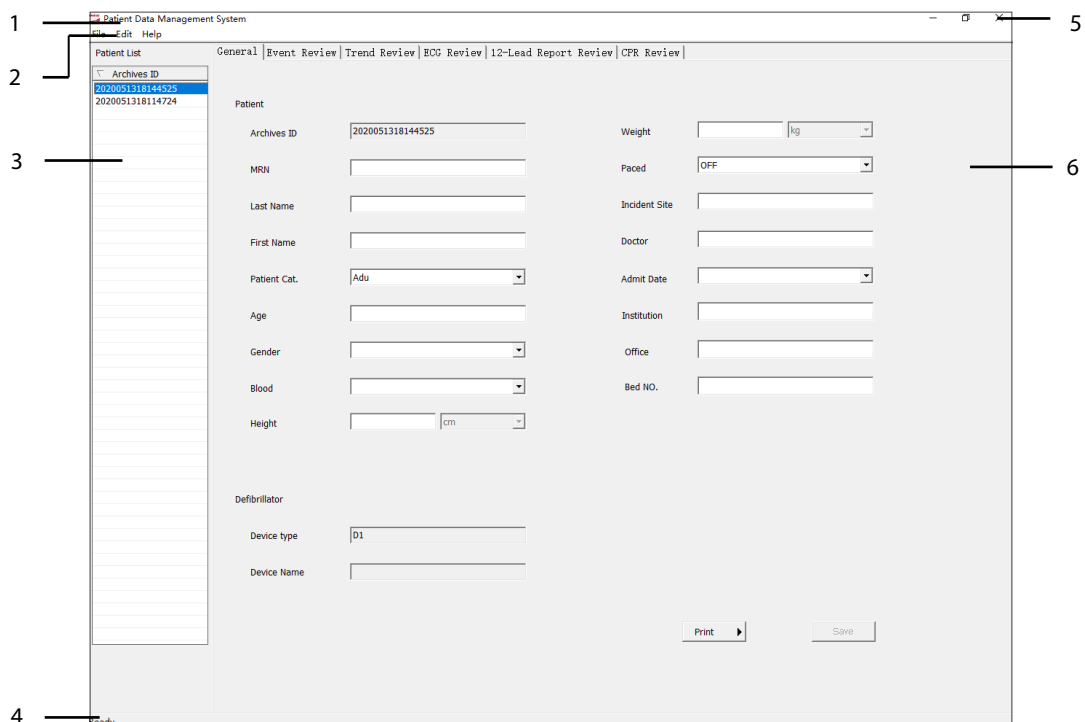


FOR YOUR NOTES

3 Basic Functions

This chapter explains the basic functions of this software, including its screens and common setups to facilitate better use of the software.

3.1 Software Operating Screen

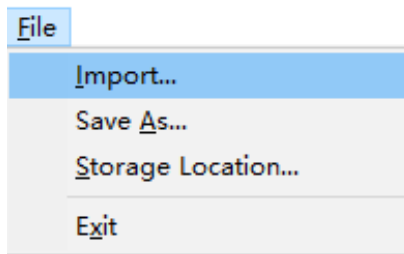


1. Title bar: displays the software name: Patient Data Management System.
2. Menu bar: is below the title bar and has three items: File (F), Edit (E), and Help (H).
3. Patient List: displays all patient IDs.
4. Status bar: is located at the bottom of the screen and displays the running status of the software. When the software is started "Ready" is displayed in the status bar.
5. Window operation buttons: The window of the Patient Data Management System can be maximized, minimized, or closed by using these buttons.
6. Attribute page: display patient information, including General (information on the patient and the defibrillator), Event Review, Trend Review, ECG Review, 12-Lead Report Review and CPR Review.

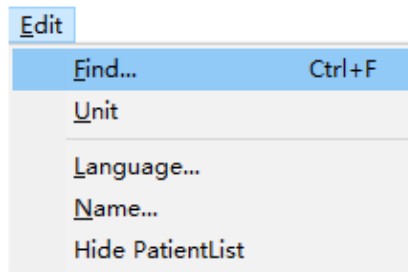
3.2 Menu Items

There are three items in the menu bar and each item has different sub-menus.

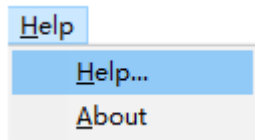
- File (F)



- Edit (E)



- Help (H)




You can operate the software by using shortcut keys instead of selecting menus. The shortcut keys are listed below:

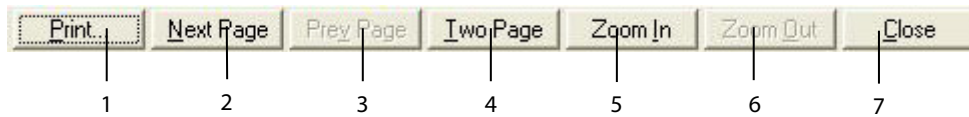
Menu Item	Shortcut Key	Option
File	Alt+F	Import...
		Save As...
		Storage Location...
		Exit
Edit	Alt+E	Find...
		Unit
		Language...
		Name...
		Hide PatientList/Show PatientList
Help	Alt+H	Help
		About

Option	Shortcut Key	Remark
Import...	Alt+F+I	Hold [Alt],press [F] and then press [I]
Save As...	Alt+F+A	Hold [Alt], press [F] and then press [A].
Storage Location...	Alt+F+S	Hold [Alt], press [F] and then press [S].
Exit	Alt+F+X	Hold [Alt], press [F] and then press [X].
Find...	Alt+E+F Ctrl+F	Hold [Alt], press [E] and then press [F]. Or hold [Alt] and press [F]
Unit	Alt+E+U	Hold [Alt], press [E] and then press [U].
Language...	Alt+E+L	Hold [Alt] , press [E] and then press [L]
Name...	Alt+E+N	Hold [Alt] , press [E] and then press [N]
Help	Alt+H+H	Hold [Alt] , press [H] and then press [H]
About	Alt+H+A	Hold [Alt] , press [H] and then press [A]

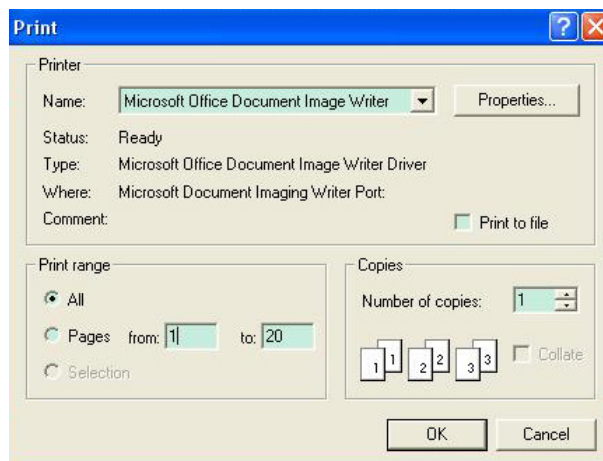
3.3 Print Preview

You can preview events, a patient's trend data, ECG waveforms and 12-lead report before you print. To enter the print preview screen, select an attribute tab you want to print, and then select the Arrow button  at the right of the Print button.

The Print Preview menu is as follows:



1. Print (P): Click this button to configure printing.



-
2. Next Page (N): Click this button to view the next page.
 3. Prev Page (V): Click this button to review the previous page.
 4. Two Page (T): Click this button to view two pages at a time. Once selected, the button **[Two Page]** is changed to **[One Page]**
 5. Zoom In (I): Click this button to magnify the viewed page.
 6. Zoom Out (O): Click this button to reduce the viewed page.
 7. Close (C): Clicking this button closes the Print Preview screen and returns to the normal screen.

3.4 Importing Patient Data

1. Select **[File (F)]** → **[Import...]** and the window below appears.



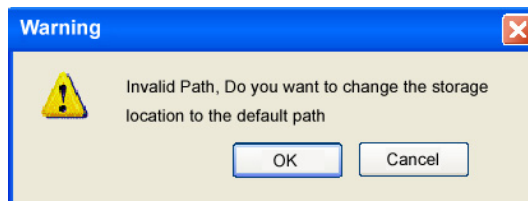
2. Select the folder or disk where PAT folder is located and select **[Ok]** to start importing patient data.
Refer to **3.9 Selecting Storage Location** to select the path to save patient data.

NOTE

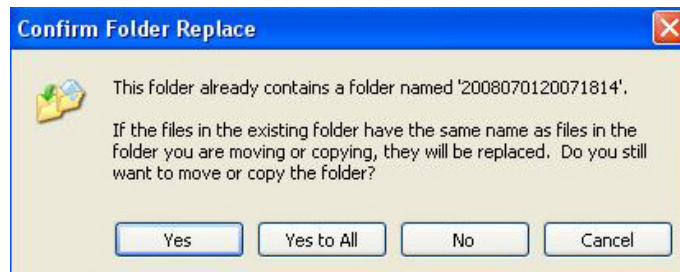
- **The selected folder or disk must contain the "PAT" folder. Otherwise, the [Ok] button is inactive.**
-


The following messages may present during importing patient data.

- When the patient data storage path is invalid, the dialog box below pops up.



- ◆ Click [**Ok**] to import patient data to the default storage location (the Data folder) and change the storage location to the default path where the Data folder is installed. Or
- ◆ Clicking [**Cancel**] cancels patient data import but does not change the configured data storage location.
- If a folder with an identical name is found during data import, the following dialog box will pop up:



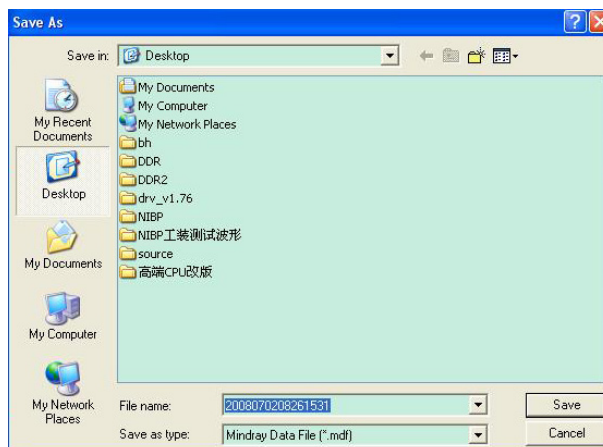
- ◆ Select [**Yes**] to replace the old file with the new one;
- ◆ Select [**All**] to replace all the old files with the new files of identical names.
- ◆ Select [**No**] not to copy the file and keep importing patient data.
- ◆ Select [**Cancel**] or click the  button at the right corner of the dialog box to close the dialog box and stop data importing,
- If the disk is short of memory space during file copying, patient data import stops and a corresponding dialog box pops up.
- If patient data is exported from a USB flash memory and an error occurs to the USB memory, patient data importing stops and a corresponding dialog box appears.
- If no valid patient data file is found in the selected folder, the prompt message "No valid patient data found" pops up.

NOTE

- **During copying files, other operations are disabled until the data import finishes.**
-

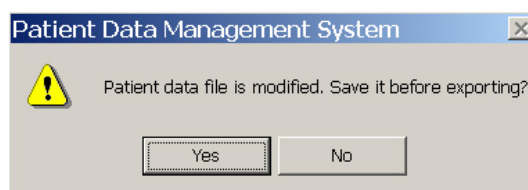
3.5 Exporting Patient Data

1. Select a patient ID from the Patient List. Then select [**File (F)**] → [**Save As...**] and the following window appears.



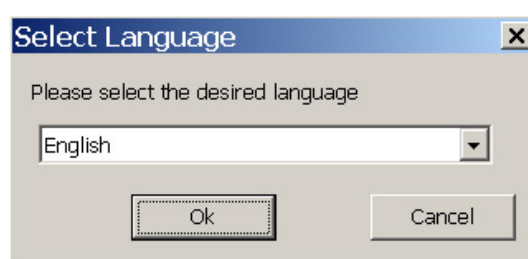
2. Select a storage path and click [**Save**] to export patient data.

If the data is changed but not saved, the dialog box will pop up. Click [**Ok**] to save the changed data and close the dialog box. Click [**Cancel**] not to save the changed data and close the dialog box. See the figure below:



3.6 Selecting Language

1. Select [**Edit(E)**] → [**Language...**] and the following dialog box pops up:



2. Select [**Chinese**] or [**English**] and click [**Ok**].

NOTE

- You can only select Chinese or English as operation language.
-

3.7 Searching for a Patient

1. Select **[Edit (E)]** → **[Find...]** and the dialog box below pops up:

2. You can search for patients according to the Archives ID, Last Name, First Name, MRN, and Doctor. When you have set the options, click **[Search]** and the found results are displayed in the lower half of the dialog box.
3. Double click the patient from the results to view related patient information.

NOTE

- Only when you select the check box before an option can you input related search condition.
-

3.8 Showing/Hiding the Patient List

- Select **[Edit(E)]** → **[Hide PatientList]**, you can expand the Attribute page by hiding the patient list.
Select **[Edit(E)]** → **[Show PatientList]**, you can show the patient list.

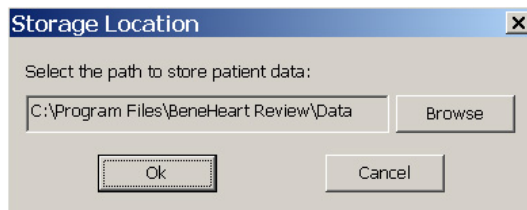
3.9 Setting Hospital Name and Office Name

1. Select **[Edit(E)]** → **[Name...]** and the dialog box below pops up:

2. Enter the Hospital Name and Office Name, click **[Ok]** to confirm.

3.10 Selecting Storage Location

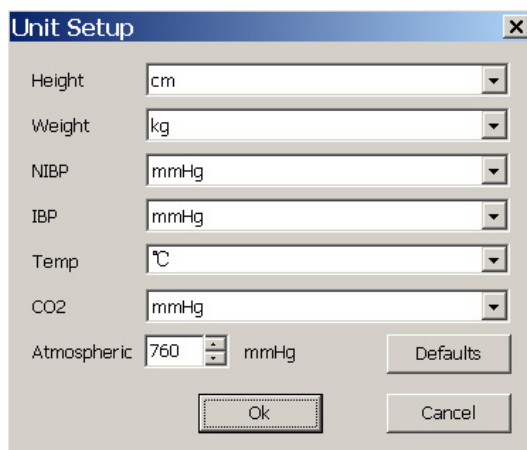
1. Select [**F**] → [**Storage Location...**] and the dialog box below pops up:



2. Click [**B**] to select the desired storage folder and click [**O**] to finish the storage location setup. You cannot edit the storage path displayed in the “Storage Location” dialog box. To change the storage location, click [**B**].

3.11 Setting Unit

1. Select [**E**] → [**Unit**] and the dialog box below pops up:



2. After configuring the units, click [**O**] to confirm. Displayed parameter values change according to the unit settings.

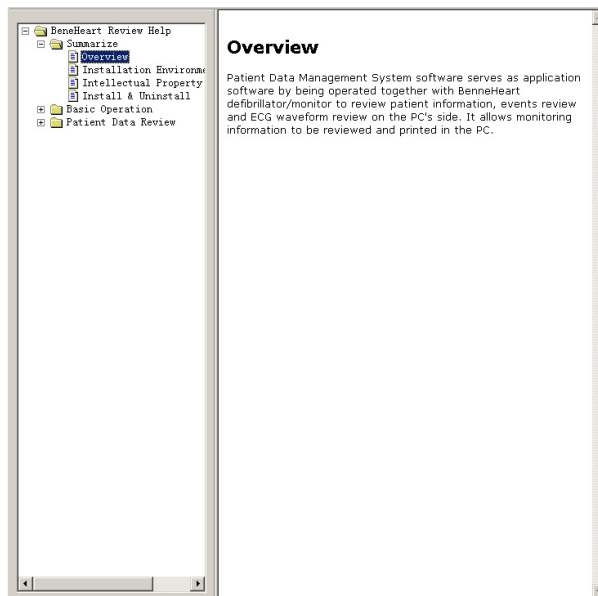
NOTE

- Clicking [**D**] restores all the units and atmospheric pressure value to the defaults.
-

3.12 Help

If you need a help during operating the software, select [**Help (H)**] → [**Help...**] and the Help file appears to facilitate your operation.


These help files provide you with common software operations and other related information.



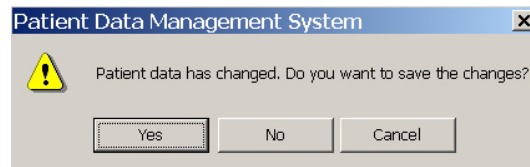
Select [**Help (H)**] → [**About**], you can view software version and copyright information.


3.13 Exiting the Patient Data Management System

You can exit the software by:

- Selecting [**File (F)**] → [**Exit**], or
- Clicking the  button in the right corner of the software.

If you did not save the changed patient data when exiting the software, the following dialog box pops up:



- Select [**Yes**] to close the dialog box, save the changed patient data and exit the software.
- Select [**No**] to close the dialog box and exit the software. The changed patient data will not be saved.
- Select [**Cancel**] or click  in the right corner of the dialog box to close the dialog box but not to exit the software.

4 Instructions for Use

4.1 General Information

Select an Archive ID from the Patient List, and then click [**General**] from the attribute page. You can edit and change patient information in this tab.

General | Event Review | Trend Review | ECG Review | 12-Lead Report Review | CPR Review

Patient

Archives ID: 2020051318144525

MRN:

Last Name:

First Name:

Patient Cat.: Adu

Age:

Gender:

Blood:

Height: cm

Weight: kg

Paced: OFF

Incident Site:

Doctor:

Admit Date:

Institution:

Office:


Bed NO.:

Defibrillator

Device type: D1

Device Name:

Print Save

When the information is changed, click [**Save**] to save it. You can also print out patient's general information simply by clicking [**Print**]. You can also preview the information by clicking the  button on the right of [**Print**].

4.2 Event Review

To review or print events, selected an Archive ID from the Patient List and click **[Event Review]** from the attribute page.

The screenshot displays the 'Event Review' window. At the top, there are tabs for 'General', 'Event Review', 'Trend Review', 'ECG Review', '12-Lead Report Review', and 'CPR Review'. The 'Event Review' tab is active. On the left, there is an 'Event Type' dropdown menu (labeled 1) set to 'All'. Below it is a list of events (labeled 2) with columns for 'Time' and 'Event'. One event is highlighted in blue: '2020-05-12 04:12:52 T2 Too Low, 25.9 < 36.0 °C'. To the right of the event list is an ECG waveform area (labeled 3) showing a green ECG trace on a grid. Below the waveform is a parameter area (labeled 4) displaying various vital signs: HR: 80 bpm, PR: --- bpm, NIBP: Sys --- mmHg, Art: Mean 93 mmHg, FICO2: 0 mmHg, PVCs: --- /min, T1: --- °C, NIBP: Mean --- mmHg, Art: Dia 80 mmHg, awRR: 0 rpm, RR: 20 rpm, T2: 25.9 °C, NIBP: Dia --- mmHg, CVP: Mean --- mmHg, SpO2: --- %, TD: --- °C, Art: Sys 119 mmHg, EtCO2: 0 mmHg. At the bottom, there are playback controls (Play, Stop, Previous, Next) and a 'Print' button.

1. Event type: you can select the desired event type by clicking the arrow button on the right.
2. Event list: from which you can select an event. A shock event has a shock mark in front.
3. ECG waveform area: displays ECG waveform.
4. Parameter area: displays parameter information.

4.2.1 Selecting Events

Clicking the button on the right of Event Type displays the available event type, such as **[All]**, **[Operator Initiated]**, **[Phys. Alarm]**, **[Arrhythmia]**, **[NIBP Meas]**, and **[Tech. Alarm]**. The default is **[All]**. When you have selected the event type, select any event from the event list. If its ECG waveform and/or parameter information are available, they can be viewed from ECG Review and Event Review.

4.2.2 Playing Audio Files

If there are audio files in the patient data, you can select the **[Play]** button at the bottom of the Event Review window to play an audio file. The file name will be shown on the right of the **[Play]** button. To stop playing an audio file, clicking the **[Play]** button again.

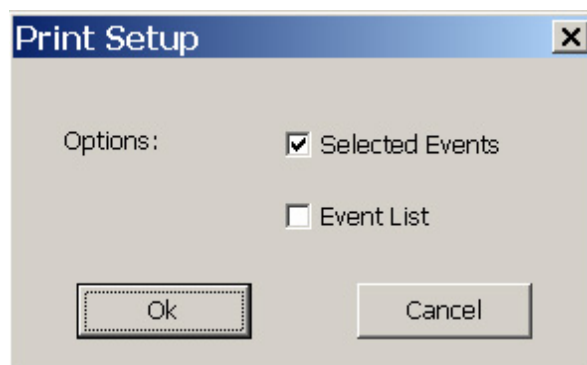
If there are no audio files available, the **[Play]** button is inactive.

4.2.3 Selecting ECG Waveform

You can view one ECG waveform only at a time. In the bottom of the Event Review window, there is a **[Waveform Select]** option, by which you can select the ECG waveform you want to view.

4.2.4 Print Setup

You can print out the events simply by clicking the **[Print]** button on the screen. Prior to printing, you can perform print preview and setup. When **[Print Setup]** is selected, the following dialog box pops up and you can configure it as desired.



4.3 Trend Review

To review or print the trends, select an Archive ID from the Patient List, and then select **[Trend Review]** from the Attribute Page. The Trend Review Tab lists the events and parameter data of a selected patient.

The screenshot shows the 'Trend Review' tab in a software interface. On the left is a sidebar with a tree view of parameters, including:

- Param
 - ECG
 - HR
 - PVCs
 - SpO2
 - CO2
 - FtCO2
 - awRR
 - FtCO2
 - Temp
 - T1
 - T2
 - TD
 - AD
 - BAP
 - ResP
 - RR

 The main table has the following columns: Time, Event, HR(bpm), PVCs(/min), SpO2(%)

Time	Event	HR(bpm)	PVCs(/min)	SpO2(%)	EtCO2(mmHg)	awRR(rpm)	FtCO2(mmHg)	T1(°C)	T2(°C)
2020-05-12 05:00		80	---	---	0	0	0	23.8	24.8
2020-05-12 04:55		80	---	---	0	0	0	23.9	24.8
2020-05-12 04:50		80	---	---	0	0	0	24.0	24.9
2020-05-12 04:45		80	---	---	0	0	0	24.1	25.0
2020-05-12 04:40		80	---	---	0	0	0	24.2	25.0
2020-05-12 04:35		80	---	---	0	0	0	24.1	25.0
2020-05-12 04:30		80	---	---	0	0	0	24.3	25.1
2020-05-12 04:25		80	---	---	0	0	0	24.4	25.1
2020-05-12 04:20		80	---	---	0	0	0	24.7	25.1
2020-05-12 04:15		80	---	---	0	0	0	25.6	25.0
2020-05-12 04:10		80	---	98	0	0	0	---	---
2020-05-12 04:05		80	---	---	0	0	0	---	---
2020-05-12 04:00		---	---	---	0	0	0	---	---

 At the bottom of the table, there is an 'Interval' dropdown menu set to '5 Minutes' and a 'Print' button.

The Trend Review tab only displays trends of selected parameters. Alarmed parameter values are in red and an invalid parameter value is shown as “---”.

You can select the time interval to show the trends by selecting **[Interval]** button at the bottom of the tab. The default setting is 5 minutes.

To print the trends, select **[Print]**. You can use paper size of A4 and Letter to print the trend data.

4.4 ECG Review

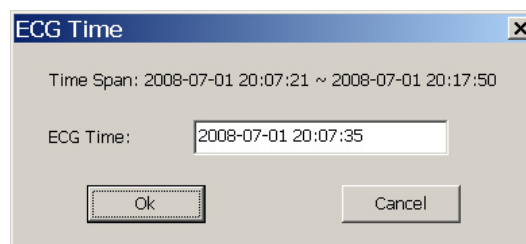
To review or print a patient's ECG waveforms, select an Archive ID from the Patient List, and then select **[ECG Review]** from the Attribute Page.



4.4.1 Locating ECG Waveform


You can locate the ECG waveform either by:

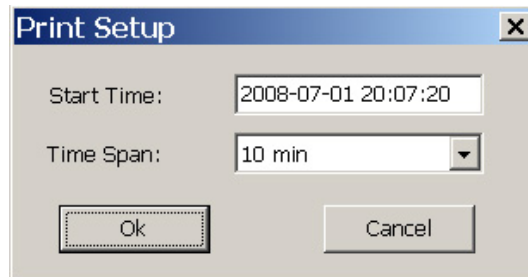
- Clicking the ECG waveform area.
Then the blue ECG time cursor stops at a position indicating the time you selected.
- Or click the **[ECG Time]** button at the bottom of the screen, and then enter a time. Within the time span. Click **[OK]**, the time cursor will move the cursor to the designated time position.



If the input time is beyond the current ECG time span, an error notification "Invalid time, Input a time in valid time span" will be shown.

4.4.2 Print Setup

You can print out the ECG waveform by clicking the **[Print]** button. Prior to printing, you can preview the printout, set waveform start time and time span by clicking  on the right of the **[Print]** button, and selecting **[Preview]** or **[Print Setup]**. Selecting **[Print Setup]** pops up the dialog box below.



The setting of **[Start Time]** shall within the saved ECG time span. If the Start Time is not configured, the time when the ECG waveform appears at the first second is selected by default. If the start time and time span are valid, the print setup is then saved. Otherwise, an error notification "Invalid time, Input a time in valid time span" will be shown.

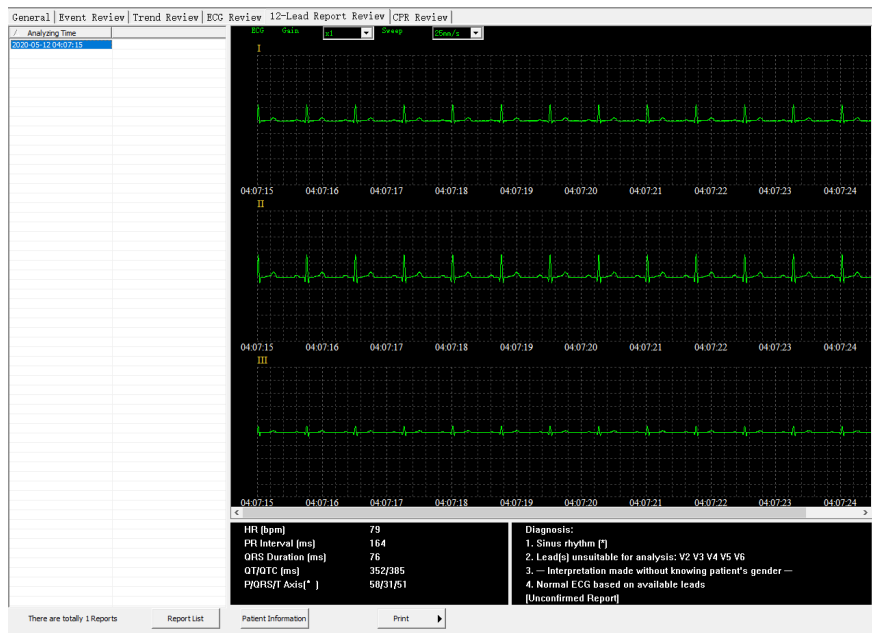
4.5 12-Lead Report Review

To review or print 12-lead report, selected an Archive ID from the Patient List and click **[12-Lead Report Review]** from the attribute page.

From the 12-Lead Report Review tab, you can view the 12-Lead ECG screen which shows the 11 seconds of 12-lead ECG waveform and diagnosis result of a selected report, or the Report List screen which includes the 12-lead ECG parameters and diagnosis results of all the reports for this patient.

You can switch between 12-Lead ECG screen and the Report List screen by selecting the **[12-Lead ECG]/[Report List]** button at the bottom of the screen.

The following picture shows the 12-Lead ECG screen.



The following picture shows the Report List screen.

Analyzing Time	HR (bpm)	PR Interval (ms)	QRS Duration (ms)	QT/QTc (ms)	P/QRS/T Axis(°)	Diagnosis
2020-05-12 04:07:15	79	164	76	352/385	58/31/51	1. Sinus rhythm [*] 2. Lead[s] unsuitable for analysis: V2 V3 V4 V5 V6 3. — In...

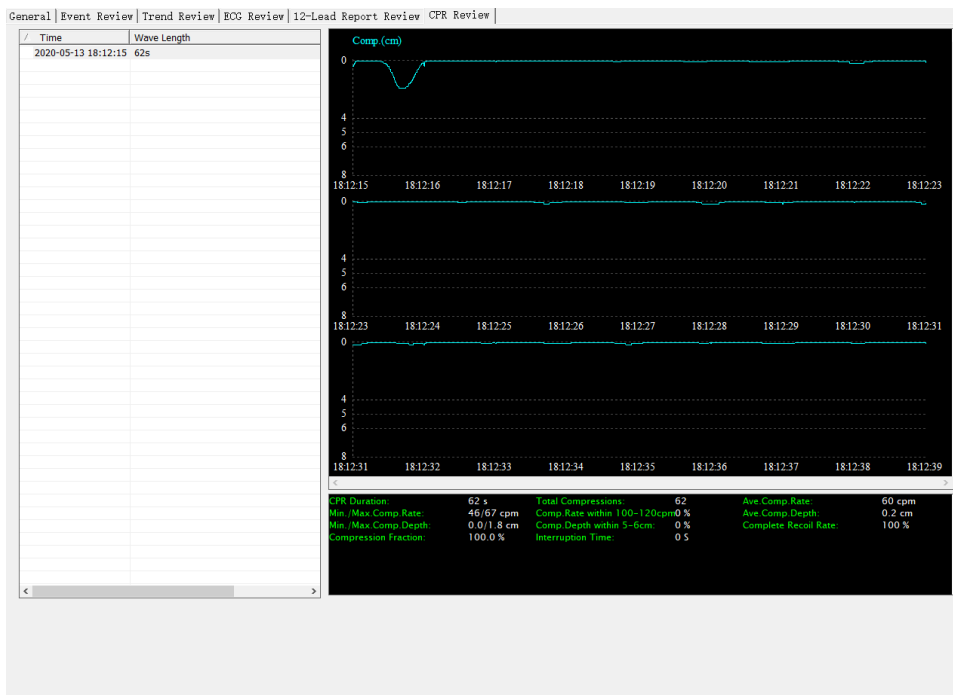
You can also preview or print all the 12-lead reports by selecting the **[Print]** button.

NOTE

- For the 12-lead report acquired by a defibrillator not configured with 12-lead analyzing function, the 12-lead ECC parameters and diagnosis result are blank.

4.6 CPR Review

To review the CPR data, select an Archive ID from the Patient List, and then select [CPR Review] from the Attribute Page.



NOTE

- The CPR data is generated only when the CPR sensor is connected to the equipment and used for compressions. Otherwise, the CPR Review screen is blank.
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