



User Manual

ECG Management System

Model: ECG-1000

About the User Manual

Thank you for purchasing our product!

In order to enable you to skillfully operate the system as soon as possible, a detailed user manual is attached. Please make sure to read all the content of the user manual when installing and using the system for the first time.

To improve the performance and reliability of the system, it may be improved from time to time, during which, we will try to modify or add data, and please forgive us as there may still be inconsistent with some descriptions. We look forward to your correction in case of any errors and omissions in this manual.

Version: 3.0 Date: 2023-10











All rights reserved © Shenzhen Biocare Bio-Medical Equipment Co., Ltd.



is trademark owned by Shenzhen Biocare Bio-medical Equipment Co., Ltd.

Information contained in this user manual is proprietary to Shenzhen Biocare Bio-Medical Equipment Co., Ltd. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form, in whole or in part, by any means electronic, mechanical or other otherwise, including photocopying and recording, for any purpose without written permission of Biocare.

Explanation of Symbols

Labels	Description
	Date of manufacture
	Serial number
	Catalogue number
	Manufacturer
	Unique device identifier
	Upward (according to ISO 780:2015)
	Fragile, handle with care (according to ISO 780:2015)
	Keep dry (according to ISO 780:2015)
	Stacking limit by number (according to ISO 780:2015)
	Upward (according to GB/T 191-2008)

Contents

Chapter 1 Overview	1
1.1 Product overview.....	1
1.2 Scope.....	1
1.3 Features.....	1
1.4 Operating environment.....	1
1.5 Operating environment.....	2
1.5.1 Hardware composition.....	2
1.5.2 Software environment.....	2
Chapter 2 System Installation and Hardware Connection	3
2.1 System installation.....	3
2.2 System uninstallation.....	6
2.3 Hardware connection.....	7
Chapter 3 Common Operation Guide	9
3.1 Mouse operation glossary.....	9
3.2 Common widget operation.....	9
Chapter 4 System Login and the Main Interface	11
4.1 Logging into the System.....	11
4.2 Main interface.....	12
4.2.1 Tool bar.....	12
4.2.2 Medical records list.....	13
4.3 System setting.....	13
Chapter 5 Software Basic Operation	17
5.1 New case.....	17
5.2 Start.....	18
5.3 Search.....	18
5.4 ECG Waveform Playback & Analysis.....	20
5.4.1 ECG Waveform Playback & Analysis Interface.....	20
5.4.2 Tool bar.....	22
5.4.3 Enlargement and fine tuning of superimposed and representative beat.....	26
5.4.4 Diagnosis function.....	27
5.4.5 Clear.....	29
5.4.6 ECG comparison.....	29
5.4.7 Settings.....	31
5.4.8 Report format.....	33
5.4.9 Print preview.....	34
5.4.10 Print.....	34
5.5 VCG Playback & Analysis.....	35
5.5.1 VCG display settings.....	36
5.5.2 VCG print setting:.....	38
5.5.3 Diagnosis.....	39

5.6 Rhythm Playback & Analysis 40

5.7 Case management 41

 5.7.1 Importing medical records..... 41

 5.7.2 Exporting medical records..... 41

 5.7.3 Editing medical records 42

 5.7.4 Deleting medical records 42

5.8 System 42

 5.8.1 User management 43

 5.8.2 Statistics 43

 5.8.3 Analysis library..... 45

 5.8.4 Language 46

 5.8.5 About us..... 46

Chapter 6 Maintenance 47

Chapter 7 Troubleshooting 49

 7.1 ECG uploading errors 49

 7.2 Printing errors..... 49

Appendix A Configuration List 51

 A.1 Packing list 51

 A.2 Notice 51

Appendix B Analysis Program Output Code and Interpretation..... 53

General Precautions

- ★ This software is intended for computer operating skilled doctors with ECG expertise.
- ★ Please read the following precautions thoroughly prior to using this Software.

Warning

- Users must configure the stability of power supply equipment to prevent unexpected power outage to ensure that the equipment continues to run.
 - The pacemaker on the patient may affect the ECG data detection and the accuracy of the analysis results. When the patient wears a pacemaker, the physician should identify and analyse according to waveforms.
 - The operators of this ECG management system need to strengthen training of professional and clinical knowledge to avoid mistakes, errors in judgment, violate or deviate from user manuals, procedures, settings, measurements or other information vague and so on.
-
-

Caution

- You should use the operating system for saving the data.
 - The software is only a reference, final diagnose should be decided by doctor.
 - This software needs and supports the use of the dongle.
 - Please close other software before using this software. Do not use other software at the same time on the same computer.
 - The computer should be used for this software specially, and it is prohibited to install games or other unrelated software to avoid interference.
 - The screen saver and power management of the computer must be disabled.
 - The ECG-1000 system features ECG data analysis. The analysis data (including reports) provided by this system are only used as the reference for medical staff to make diagnosis. The final diagnosis should be determined by the medical staff.
-
-

Explanation

- Installation and commissioning are by the customer service engineer of our company.
- This product is a single operating system by allowing the end-user, the recommended configuration and system environment allows only one user simultaneously.
- This product does not provide any call for external software interface.
- If you need maintenance, modification, please call our customer service consulting, customer service hot-line: 4006-232-813.
- No any unresolved problems exist in the software development process. The problems raised by users have been revised during the questionnaire.

- The Software has been tested rigorously according to *User Requirement Specification of ECG-1000 Management System*. Every functional module can achieve its intended use in the testing process. You can see more details in *Testing Report of ECG-1000 Management System*.
 - The manufacturer inspection qualified rate of this software is 100 percent.
-
-

Chapter 1 Overview

1.1 Product overview

ECG-1000 is composed of the installation U disk, the USB dog driver and a set of serial port cable. And The U disk includes ECG Management installation program and the dongle program modules.

1.2 Scope

ECG-1000 is used to collect, process, measure and restore the ECG data (12 and 15 leads).

1.3 Features

The main features include:

- 1) Medical records and management
 - a) Establish the new cases of patients;
 - b) Query the patient's clinical data and modify patient information;
 - c) List the medical records within a specified time;
- 2) ECG examination and analysis: ECG signal acquisition, display and automatic analysis of the following items:
 - a) 12-lead ECG
 - b) 15-lead ECG
 - c) VCG
 - d) Rhythm
- 3) Storage and playback of ECGs
- 4) ECG reports printing

1.4 Operating environment

Transport and storage conditions	
Ambient temperature range	-20 ℃~+55 ℃
Relative humidity range	≤ 95% No condensation
Atmospheric pressure range	70 kPa ~ 106 kPa
Normal working condition	
Ambient temperature range	5 ℃~40 ℃
Relative humidity range	≤ 95% No condensation
Atmospheric pressure range	70 kPa ~ 106 kPa

1.5 Operating environment

1.5.1 Hardware composition

Computer: recommended configuration: CPU: P4 1.8 GHz or above, HDD: 20 GB or above, memory: 1 GB or above. The computer should comply with IEC 60950-1 standards; the climate environment adaptability for working temperature ranges from 15 °C to 35 °C and relative humidity is 20% ~ 80%.

- a) High-resolution color display: 1024 × 768 or above;
- b) Printer: resolution \geq 600 dpi, laser printer or high-quality inkjet printer is recommended (do not use dot matrix printers).

1.5.2 Software environment

- a) Windows 7 or later.
- b) DirectX 9.0c drivers.

Chapter 2 System Installation and Hardware Connection

This chapter explains the installation procedure. In order to avoid damage to the system and inconvenience to the user due to improper operation, please ask qualified personnel to re-install the system. The following content is intended for the users that have some understanding of computer.

Explanation

The System requires installing the software on the computer first, and then connecting the ECG machine to the computer.

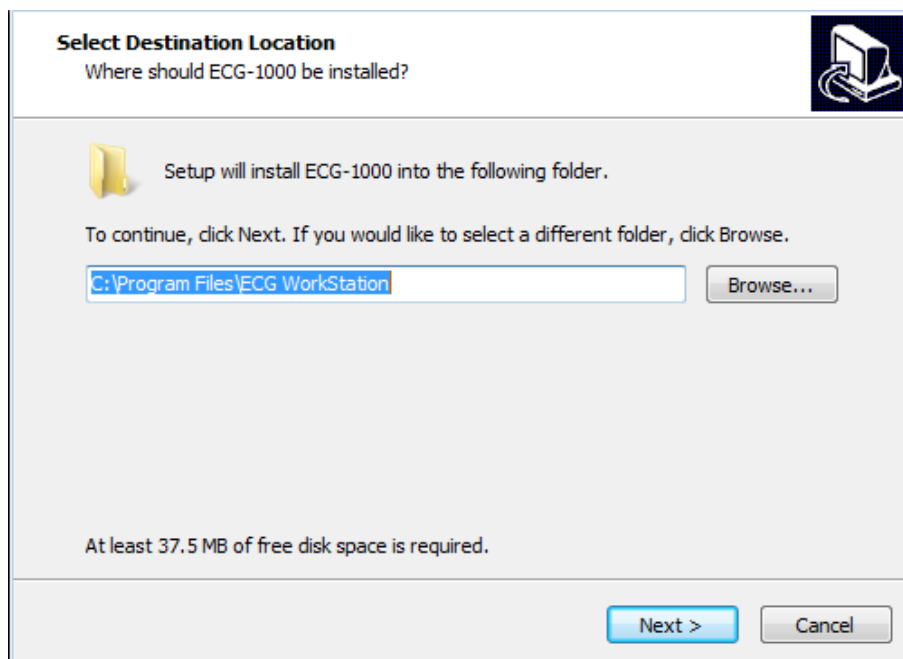
The System installation requires at least 37.5 of free disk space on the computer.

2.1 System installation

Before installing ECG-1000, make sure the following software has been installed to the host.

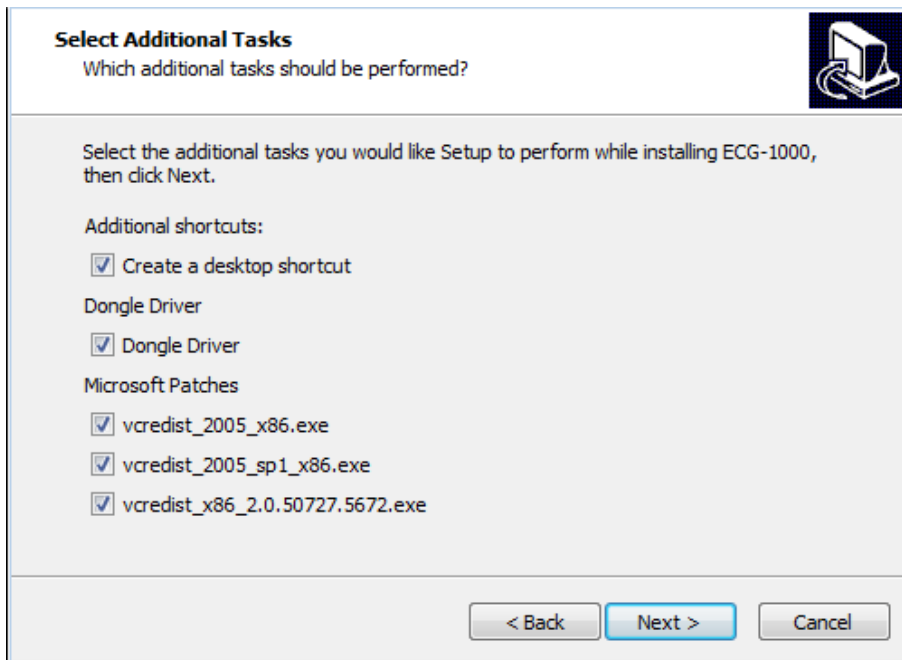
- Windows 7 or later
- DirectX 9.0c drivers

1. Open the ECG-1000 installer in the root directory (the installer name may be different depends on user custom functions; refer to Readme.txt in the U disk for details). And double-click “ECG1000_APP_BIOCARE.exe” to run the program:



2. Click [**Browse...**] to select the installation path and click [**Next**].

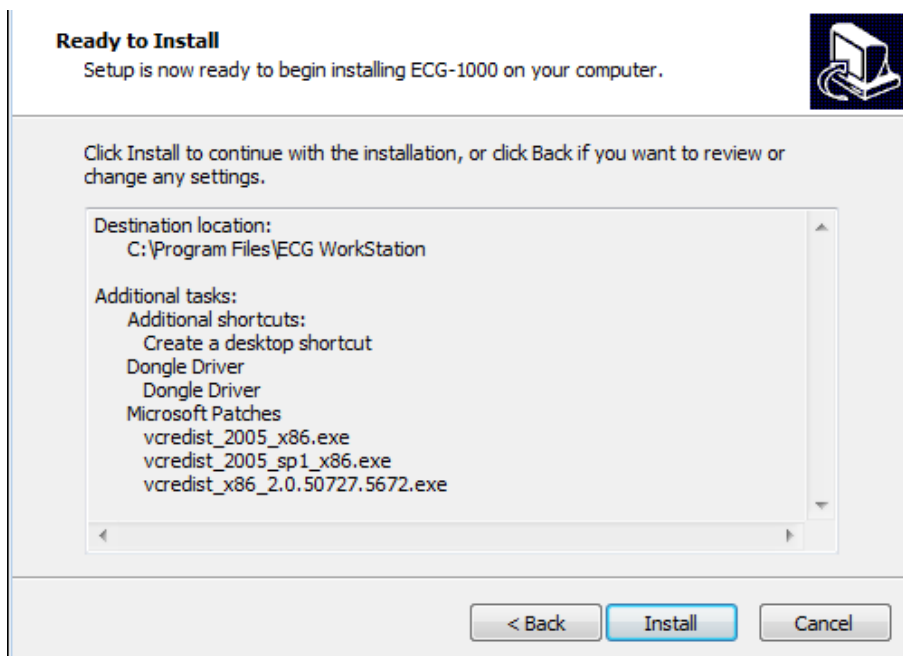
3. Select options to be installed, and click **[Next]** to install.



Explanation

You should select **[Dongle driver]** and **[Microsoft Patches]** when you install the software for the first time.

4. Click **[Install]** to continue.

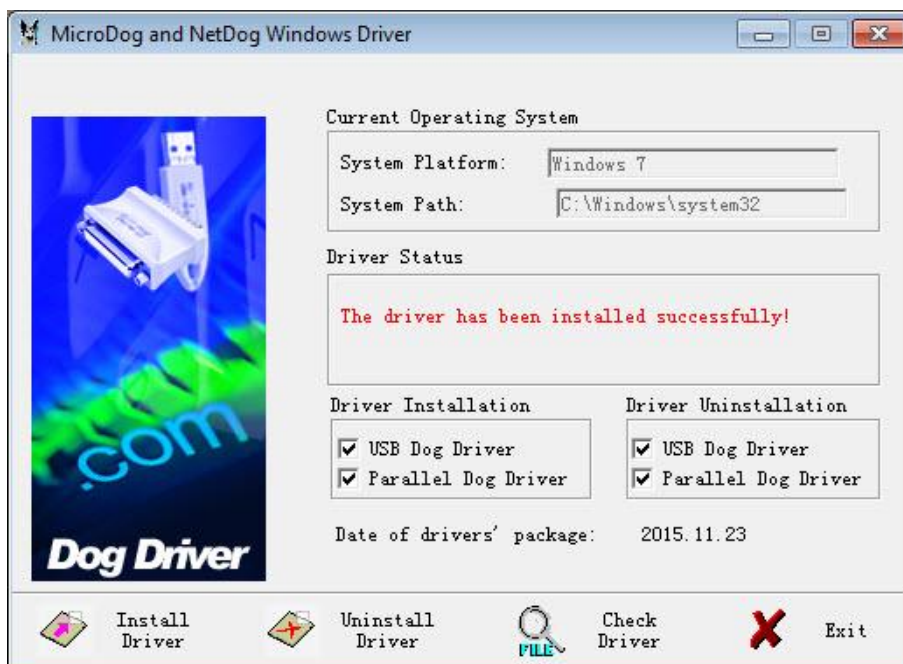


Prompt box of dongle installation will pop up during the installation process, as shown below.

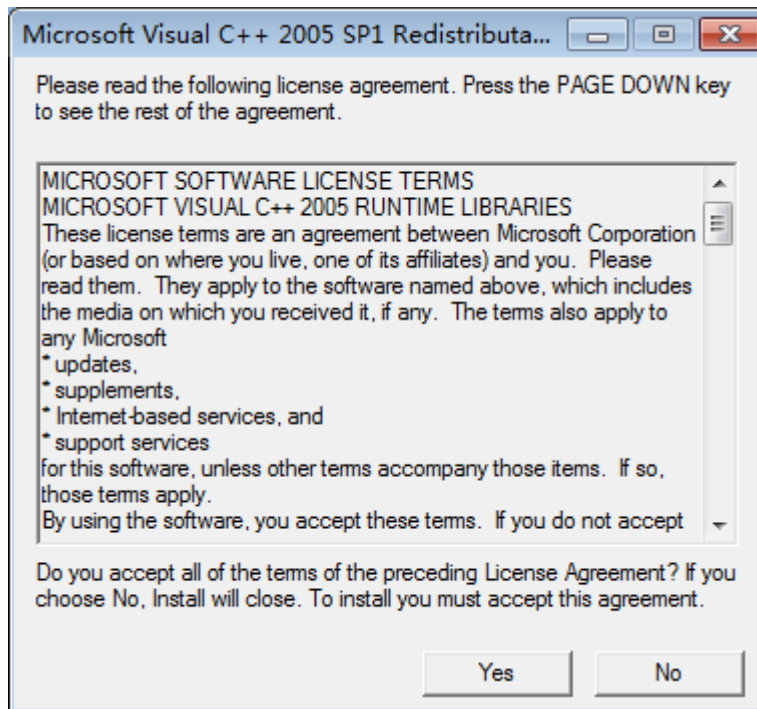
5. Click [**Install Driver**]. Wait for the installation to complete.



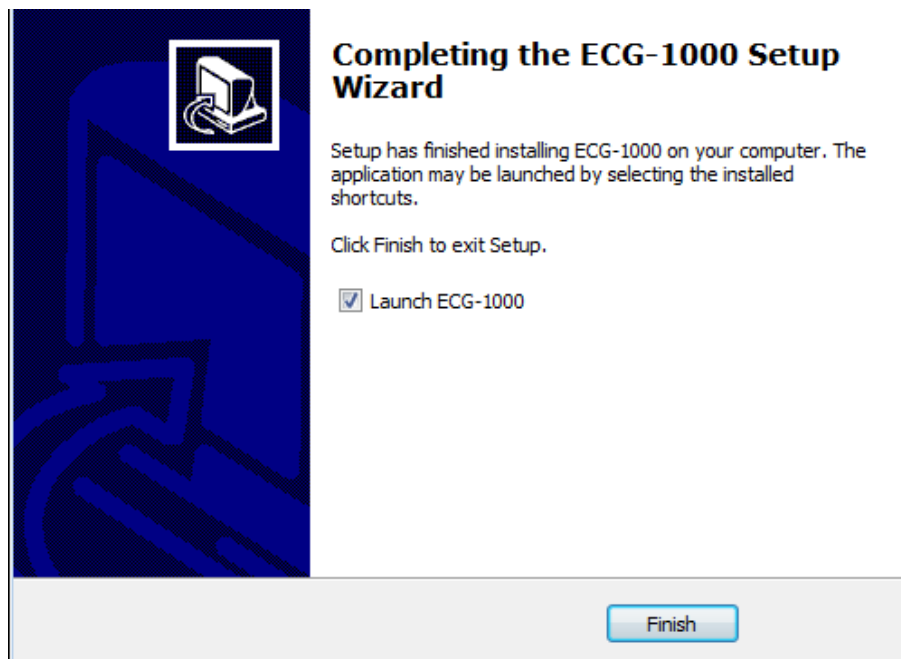
6. Click [**Exit**] to finish.



7. Click **[Yes]** to accept the agreement.



8. Finally, click **[Finish]** to complete the installation.









2.2 System uninstallation

Select **[Start] > [All Programs] > [Biocare] > [Uninstall ECG-1000]** to uninstall this System. In addition, users can uninstall this software by selecting **[Control Panel] > [Uninstall a program]**.

2.3 Hardware connection

Connecting the Computer with the ECG Machine

The data is transferred from ECG to computer by connecting data cable. There are three kinds of data cables for option, namely serial cable, USB cable and LAN cable, as shown below. Different ECG type has its own data cable.

	Connect to ECG	Connect to PC
Serial port		
USB port		
Network port		

Connecting the ECG machine with ECG-1000 Management System by network cable:

1. Connect the supplied data cable to the relevant port of the ECG Machine and the computer.
2. On the ECG Machine, select **[Menu] > [System Setting] > [Wired Network]** to set the network configuration. Make sure that the ECG's **[Local address]** and **[Server address]** are in the same sub-network segment (such as: local address: 192.168.001.xxx, server address: 192.168.001.xxx).
3. On the ECG Machine, select **[Menu] > [System Setting] > [Server Setting]** to input the Server IP of the computer and the Port number. (The default number is 8000.) (Please refer to the User Manual of the relevant ECG Machine.)

After connecting with the computer successfully,



displays on the ECG Machine.

Connecting the USB dongle with the computer:

Insert the enclosed USB dongle to the USB port of the computer.



⚠ Caution

Please use the enclosed accessories to guaranty the well performance and security. Please consult our After-sales Department before using accessories from other brand.

Chapter 3 Common Operation Guide

This chapter is about the common operation of the system, including the mouse concept in this manual and common operation widgets.

3.1 Mouse operation glossary

Common mouse operations include click, double click, right-click, and drag.

1. Click: the most commonly used mouse operation. Click is to press the left mouse button once.
2. Double click: also a commonly used mouse operation; double click is to press the left mouse button twice continuously and quickly.
3. Right click: used for pop-up menu; right-click is to press the right mouse button once. In some complex widgets or special occasions, right-click will pop up a menu for the operation.
4. Drag: select an object, hold down the left mouse button, move the mouse and release the left button until the top of the target and that is to complete a drag operation. Drag is a more complex operation.

3.2 Common widget operation

Common widgets include input boxes, drop down boxes, check boxes, buttons, tabs, etc.

1. Input box

The input box is the most commonly used input widget, which allows directly entry of numbers and characters, including words.

Commonly used input box:



Focus of widgets

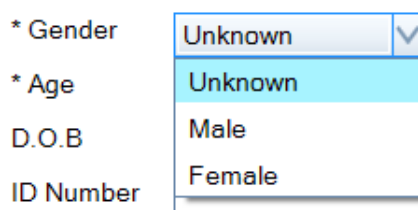
Some commonly used widgets have focuses, such as input boxes, drop-down boxes, check boxes, buttons. These widgets will respond to the keyboard only when the focus is gotten. The focuses of these widgets will shift when Enter is pressed.

Focus shift usually has three ways: Under normal circumstances, if the system does not have a special control, the focus will shift to the widget after clicking on a widget; when the widget has gotten the focus, it will generally show a dashed box.

For input boxes, a blinking cursor displays on the input box after getting the focus. At this time, you can enter through the keyboard, or else, the input box won't respond to keyboard input.

2. Drop-down box

Drop-down box is a widget that allows selecting a value from the provided range and it is also one of the most commonly used widgets.



For operation, click the Down arrow to show a drop-down list, which has the available values. You can select the value by clicking on the appropriate line from the drop-down list.

The drop-down box is generally controlled by the mouse; however, after getting the focus, it also responds to keyboard operation, including space, up and down arrows, and Enter. Using the keyboard effectively can improve the input speed.

3. Check box

The check box is used for the option of yes or no. You can click the small box to the left of the check box to select or deselect the option. When the option is deselected, the small box is blank. As shown below:

Check box: Auto login

Check box is generally operated by the mouse. After getting the focus, you can use the spacebar or click the left mouse button to select or deselect.

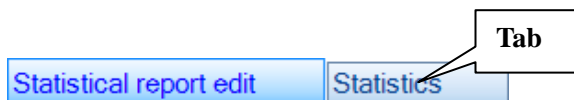
4. Button

Button is also one of the commonly used widgets. Generally, you can click on a button to execute the task. After getting the focus, you can press the spacebar or Enter key to activate the button.

Button is as shown: 

5. Tab

Tab is a widget that displays and inputs through multiple pages. You can select to display a different page through the tab.



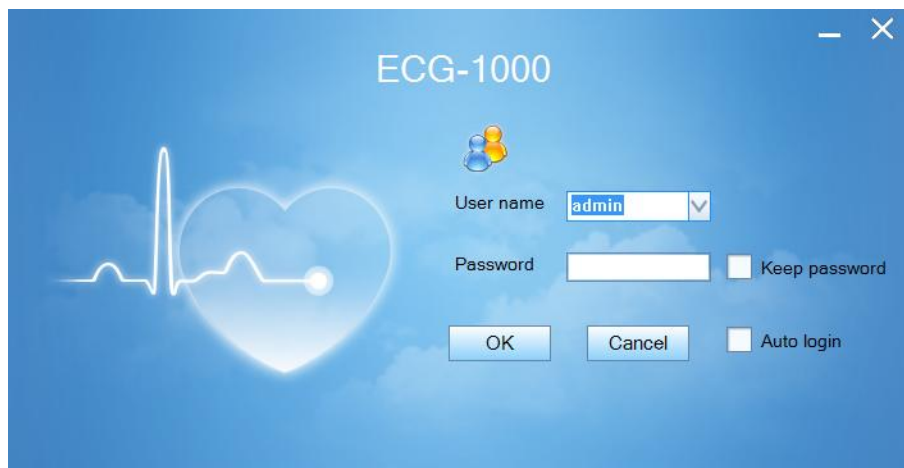
Chapter 4 System Login and the Main Interface

This chapter will describe the software operations and functions.

4.1 Logging into the System



On the desktop, double-click the **ECG-1000** icon to open ECG-1000.



The default user name: admin (administrator) and the default password: master. Click **[OK]** to enter the main interface of ECG-1000.

Keep password: Click the check box to store your password on the computer. The next time when you log in on the same computer, the password is pre-filled.

Auto login: Click the check box to store your account and password on the computer. The next time when you



log in on the same computer, double click **ECG-1000**.

To cancel **[Auto login]**, select **[System] > [System setting]**, click **Auto login** to cancel the option.

To add, change or delete accounts or passwords, select **[System] > [User management]**. Only the administrator has authority to change/delete other accounts.

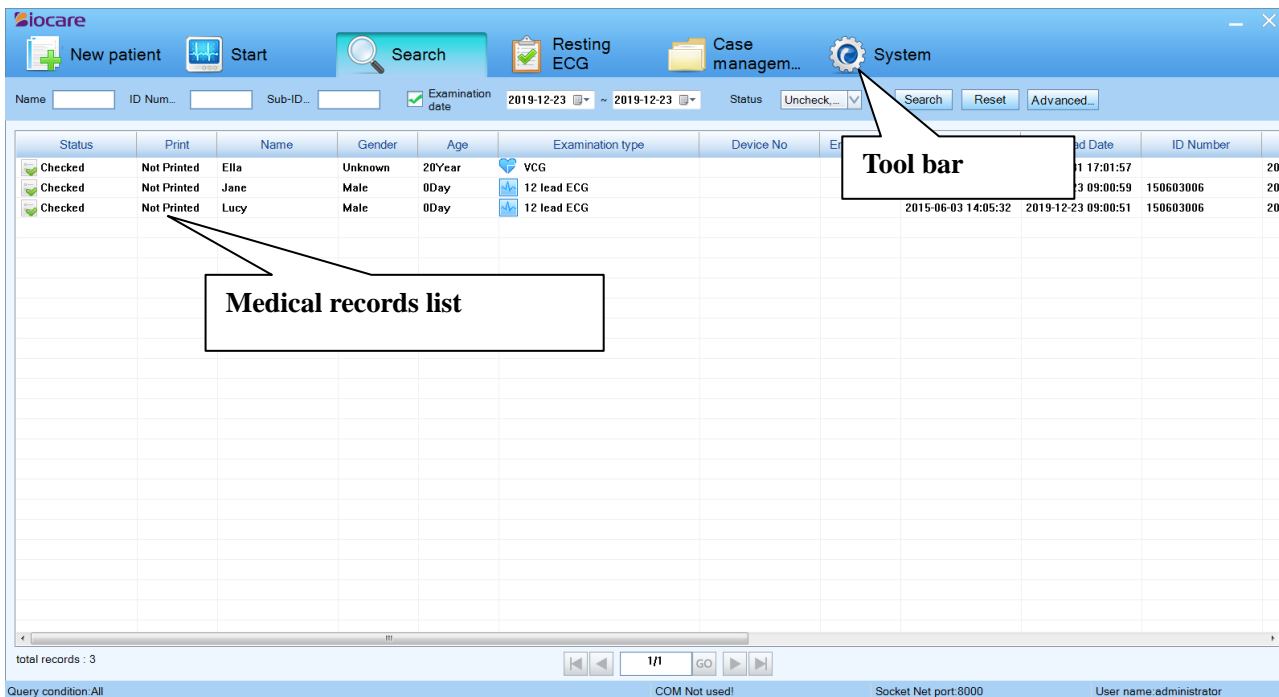
To exit the system, click at the right upper corner.

Warning

Please modify your password (limit length: 6-16 characters) as soon as possible after you login the ECG Management System the first time. And please keep your new password private. Our company shall not be responsible for any consequences and liabilities caused by password disclosure.

4.2 Main interface

The main interface of the system is shown below. You can select all the medical records, so that all ECG examinations will appear in the medical records list.



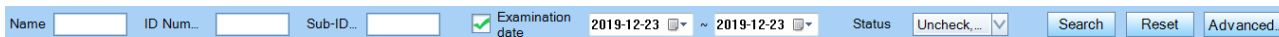
4.2.1 Tool bar



New Patient: Click to pop up the patient information interface and create a new medical record.

Start: Click the new medical records, acquire the ECG data;
 Click the old medical records, renew the ECG data.

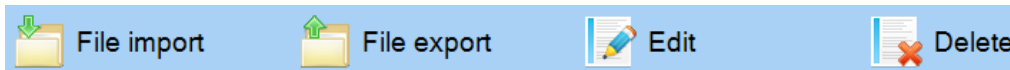
Search: Click to set up the search criteria and search for the desired medical records that saved. The search criteria include Name, ID number, Sub-ID No., Examination Date, Status, etc.



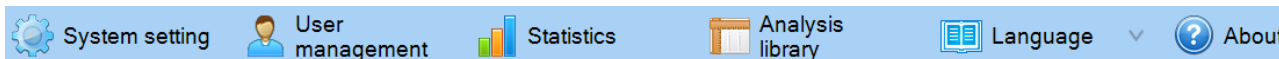
Resting ECG: [Resting ECG], [VCG], and [Rhythm].



Case Management: There are four options, [File import], [File export], [Edit] and [Delete].



System: There are six options, [System setting], [User management], [Statistics], [Analysis library], [Language] and [About]



4.2.2 Medical records list

Medical records list: display the medical records sequentially by State, Print, Name, Gender, Age, Examination type, etc. You can place the cursor on the right side of Check Date column, hold the mouse and drag to the right to expand the column width.

Status	Print	Name	Gender	Age	Examination type	Device No	Emergency	Examination time	Upload Date	ID Number
Checked	Not Printed	Ella	Unknown	20Year	VCG			2019-10-31 17:01:57	2019-10-31 17:01:57	20
Checked	Not Printed	Jane	Male	0Day	12 lead ECG			2015-06-03 14:05:32	2019-12-23 09:00:59	150603006
Checked	Not Printed	Lucy	Male	0Day	12 lead ECG			2015-06-03 14:05:32	2019-12-23 09:00:51	150603006

total records : 3

Select the medical record and Right-click; you can select to review and analyse Resting ECG, VCG or Rhythm records. Or you can select **[File export]** to export the desired medical records or select **[Edit]** / **[Delete]** to edit/delete records. For details, please refer to chapter *Case Management*.

4.3 System setting

Click **[System]** > **[System Setting]** in the Tool bar to pop up the setting window as below:

System setting

General setting | Acquisition device setting | GDT setting | Advanced setting

General setting

Data path: C:\Users\admin\AppData\Roaming\ECG-1 | ... | Open

Date format: YYYYMMDD_hhmmss

Font: System

Open the debug log: No


Report format naming: Name[Test ID]

Auto login

Other settings

Save | Cancel

General setting

[Data path]: Select a storage directory to save the ECG data. The default path is C:\Users\Administrator\AppData\Roaming\ECG-1000\. You can change it by click .

[Date format]: Select the date format.

[Font]: Modify the font of the system.

[Open the debug log]: Select to open the debug log or not.

Select **[Yes]** to open the debug log when operation errors.

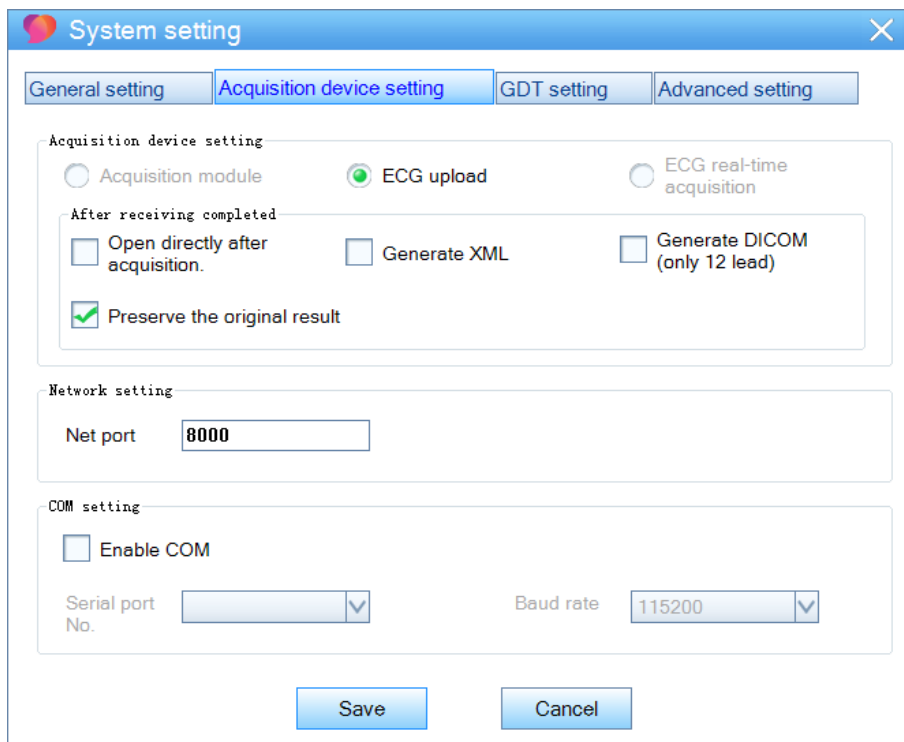
[Report format naming]: Set the naming format of the final report.

[Auto login]: Select to log in the system automatically or manually.

[Save]: Click to save all the changes and exit.

Acquisition device setting:

Click **[Acquisition device setting]** to open the following interface:



[ECG upload]: Default setting.

[Open directly after acquisition]: Click the check box to select to open the ECG analysis interface directly after acquisition or not.

[Enable COM]: Click the check box to select Serial port No. and Baud rate.

[Save]: Click to save all the changes and exit.

GDT setting:

The screenshot shows the 'System setting' dialog box with the 'GDT setting' tab selected. The dialog has a title bar with a close button (X) and four tabs: 'General setting', 'Acquisition device setting', 'GDT setting', and 'Advanced setting'. The 'GDT setting' tab contains the following fields and options:

- GDT setting
- GDT setting section:
 - GDT path: C:\Users\admin\AppData\Roaming\EKG-1 ...
 - Report path: C:\Users\admin\AppData\Roaming\EKG-1 ...
 - Input file name: EDP_EKG.GDT
 - Output file name: EKG_EDP.GDT
 - ECG ID: EKG
 - EDP ID: EDP
 - Auto export after sampling finishes
 - Output when making diagnosis

At the bottom of the dialog are 'Save' and 'Cancel' buttons.

Advanced setting:

The screenshot shows the 'System setting' dialog box with the 'Advanced setting' tab selected. The dialog has a title bar with a close button (X) and four tabs: 'General setting', 'Acquisition device setting', 'GDT setting', and 'Advanced setting'. The 'Advanced setting' tab contains the following fields and options:

- Third-party system section:
 - Automatically generate 3rd platform file
 - File type: User optional
 - File name: Name[Test I...]
 - Automatically generate 3rd platform patient information
 - Get Third-party data
 - Server address: [] Hospital: []
- HIS database section:
 - MySQL SqlServer
 - HIS Server IP: [] Net port: 1433
 - User name: [] Password: []
 - HIS table name: []

At the bottom of the dialog are 'Save' and 'Cancel' buttons.

⚠ Caution

Only after the ECG-1000 management system is able to communicate with the third-party platform can it get data from the third party platform.

--The Blank Page--

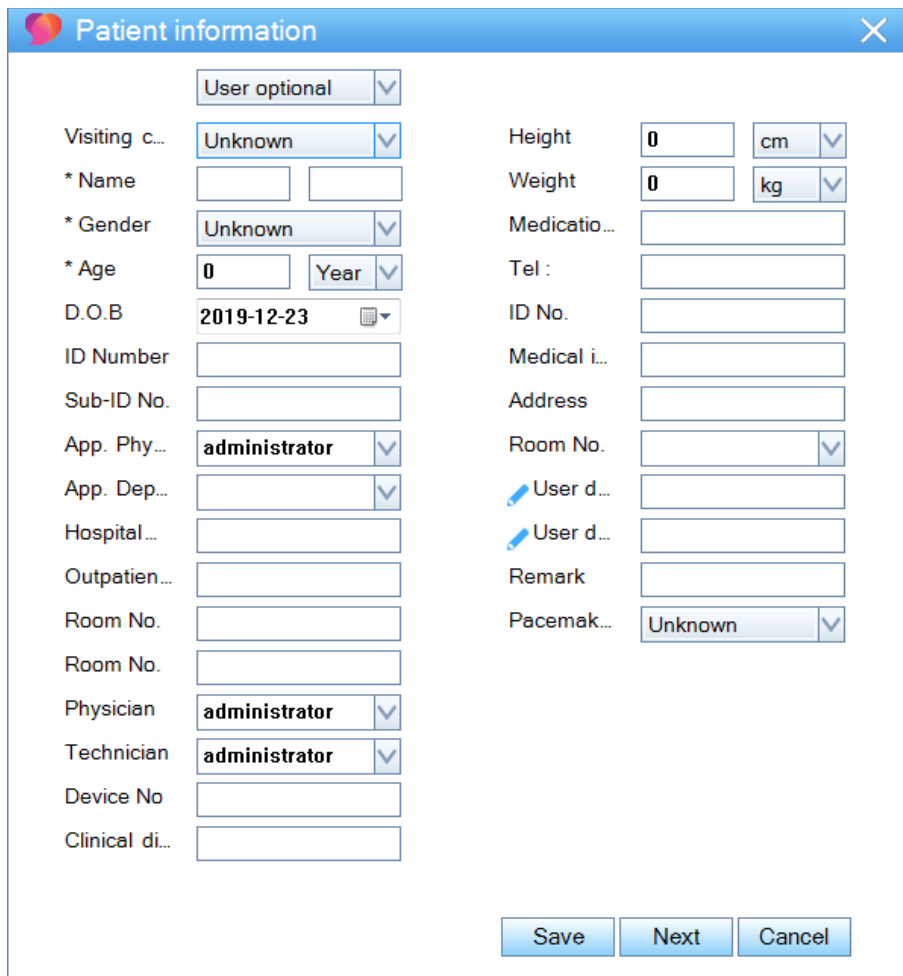
Chapter 5 Software Basic Operation

This chapter will explain software operations and functions in details according to the workflow.

5.1 New case

Create new medical records and upload ECG data on the main interface.

1. Click  to open the patient information window.



2. Input the patient information.
3. Click [**Next**]. [**Waiting...**] will display on the window.
4. On the ECG uploading window, select [**Upload**] to upload the ECG data to the System
After uploading, the ECG machine will display [**The file is uploaded successfully**].

If you select to auto-upload ECG data on the ECG machine, the Report will be uploaded automatically after saving.

Click [**Save**] to save a case without analyzing. And the case status is [**Uncheck**] for later analyzing.

5.2 Start

For unchecked medical records, click **[Start]** to upload the ECG data.

1. Select unchecked medical records, and then click **[Start]**.
2. On the ECG machine, select the report of that patient.
3. Enter the uploading window of the ECG machine, and click **[Upload]**.

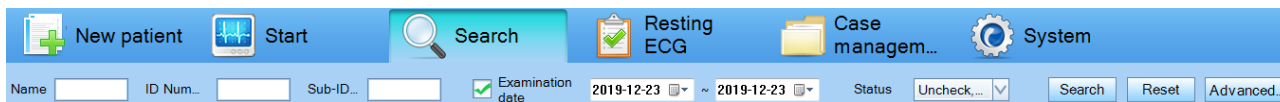
After uploading, the ECG machine will display **[The file is uploaded successfully]**.

If you select to auto-upload ECG data on the ECG machine, the Report will be uploaded automatically after saving.

And the state of the medical record changes to **[Checked]**.

5.3 Search

The system provides commonly used criteria to search for the exact ECGs rapidly.



Caution

To make sure the accuracy of the search result, click every time before searching.

[Name]: Input the patient’s name in the text box.

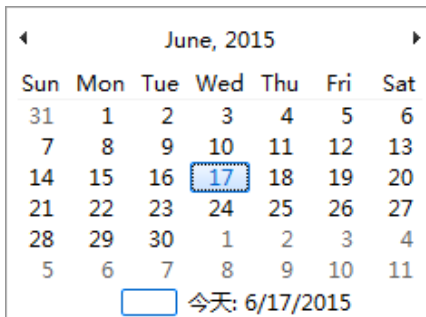
[ID Number]: Input the ID number in the text box.

[Sub-ID No.]: Input the sub-ID number in the text box.

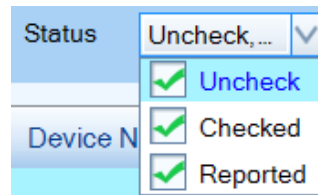
[Examination date]: Click the check box first to set up the time duration.

Click the date in , when the background color changes to blue, input the year/month/day.

Or you can click and select year/month/day in the pop-up window.



[Status]: Click the arrow button , and select a status.



Click to search the desired medical record that saved in the system. All the medical records that match the condition will display on the medical records list.

Advanced search

If the above options do not meet your needs, use the advanced search button to specify the search criteria.

The 'Advanced search' dialog box includes the following fields and controls:

- Visiting cat...:
- Name:
- Gender:
- Sub-ID No.:
- Examinati...:
- Outpatient...:
- Hospital N...:
- Room No.:
- Room No.:
- Medical in...:
- Device No:
- Status:
- Examinati...:
- App. Depa...:
- App. Physi...:
- Physician:
- Technician:
- Print:
- Diagnostic...:
- Sorting:
- Emergency

Buttons:

5.4 ECG Waveform Playback & Analysis

5.4.1 ECG Waveform Playback & Analysis Interface

On the ECG waveform playback & analysis interface, the system will analyze and calculate the parameters of the waveform, and you can check the parameters such as heart rate, and QT/QTc interval.

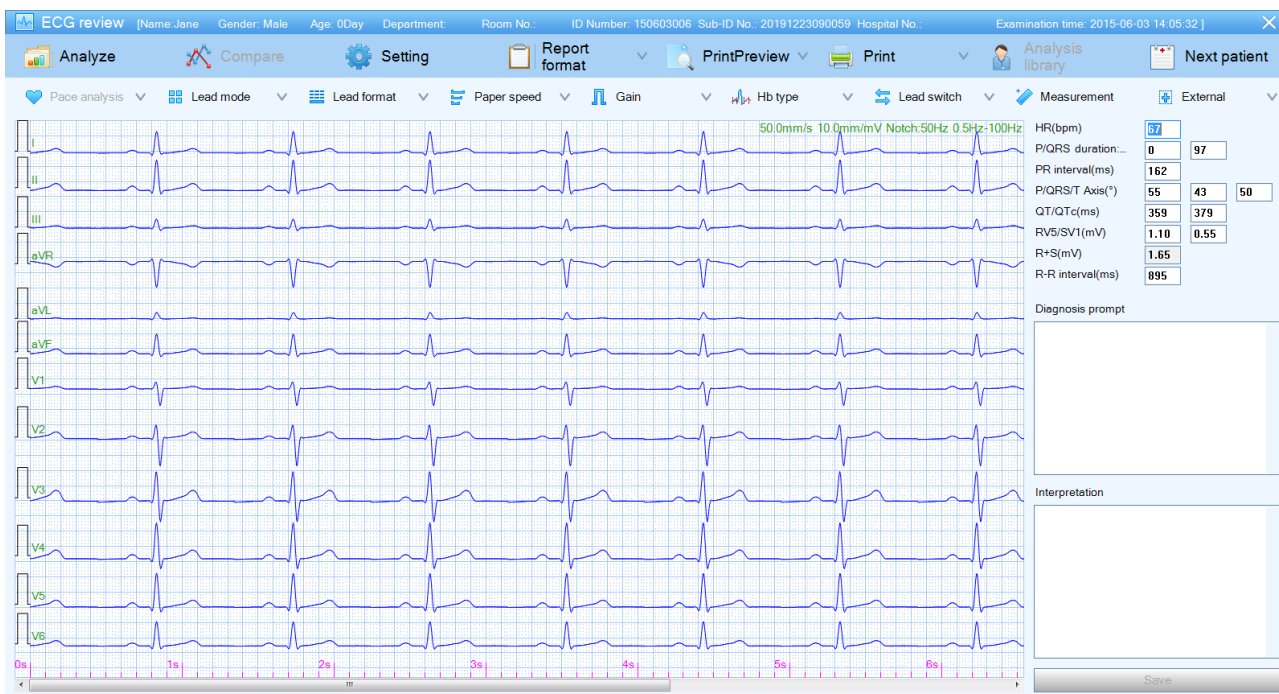
To open the ECG waveform playback & analysis interface

Double click the 12 lead, 15 lead or 12 lead + 3 lead VCG medical records;

Or, select ECG medical record and click  >  ;

Or, right-click the ECG medical record and select **[Resting ECG]** in the pop-up menu.

The analysis window is as shown below:

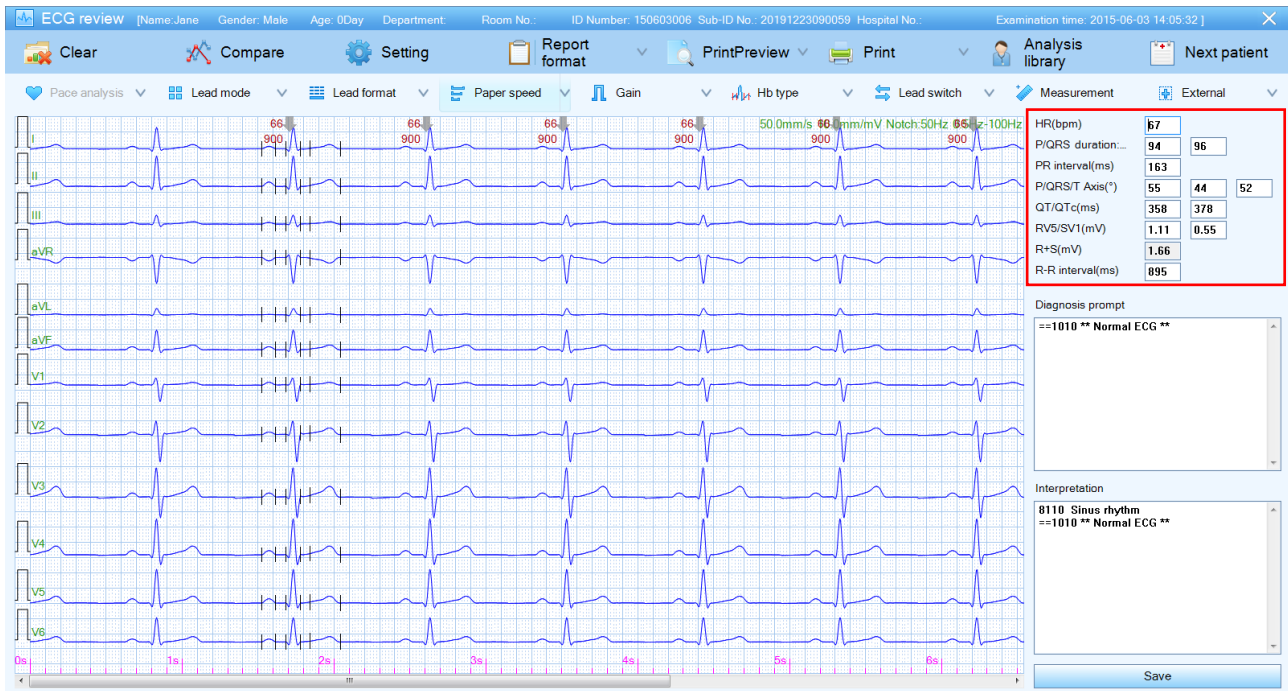


Explanation



To upload ECG data of 24 seconds, set up the **[Wave sample time]** on the ECG machine.

To analyze the ECGs

Click  **Analyze** .



The system turns on to display the complex wave by default. A single heart beat parameter can be calculated according to the current heart beat characteristics automatically identified by the system, and the complex wave is calculated according to the average of heart beats.

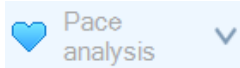
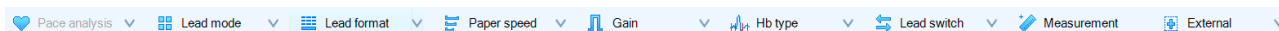
The heart beat with  is currently selected, while the heart beats with  are not selected; if complex wave is selected, ECG analysis data will not change; the data will change only when switch to the current heart beat.

Parameters in red box (including HR, P/QRS Duration, PR Interval, P/QRS/T Axis, QT/QTc and RV5/SV1) can be edited.

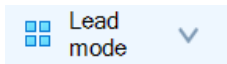
1. Double click the area that needs to be modified.
2. After editing, click other area to finish editing.
3. Click **[Save]**.

The edited parameters will be saved into file and be printed in the report.

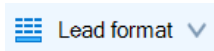
5.4.2 Tool bar



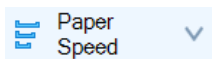
: In order to avoid multiple checking or omissive checking of pacemaker, doctor should select different level of pacemaker checking sensitivity, **[Weak]**, **[Normal]**, **[Strong]** or **[Off]** of the pace maker according to different situation.



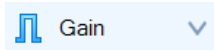
: Only when 12×1 of the Lead format is selected, the Lead mode is activated. You can toggle between **[Standard]** and **[Cabrera]**.



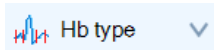
: Select the display format of ECG.



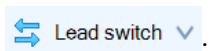
: Select the waveform speed.



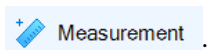
: Set the sensitivity.



: Select wave complex or current beat.

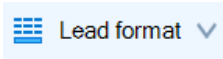


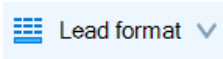
: Switch leads.



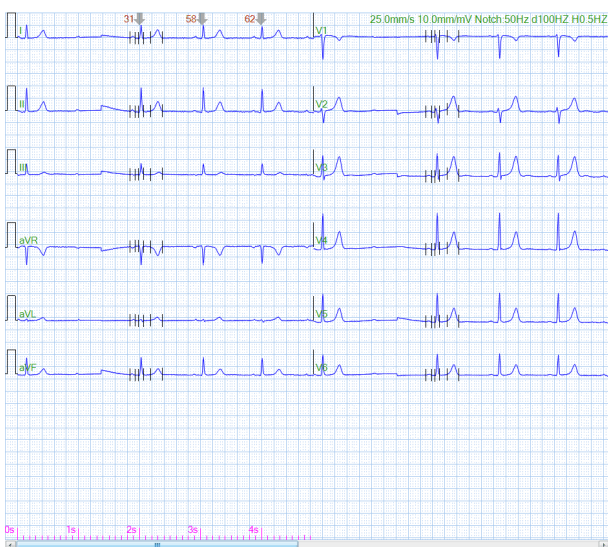
: Measure time difference, amplitude difference, discounted heart rate of the waveform.

Lead Format:

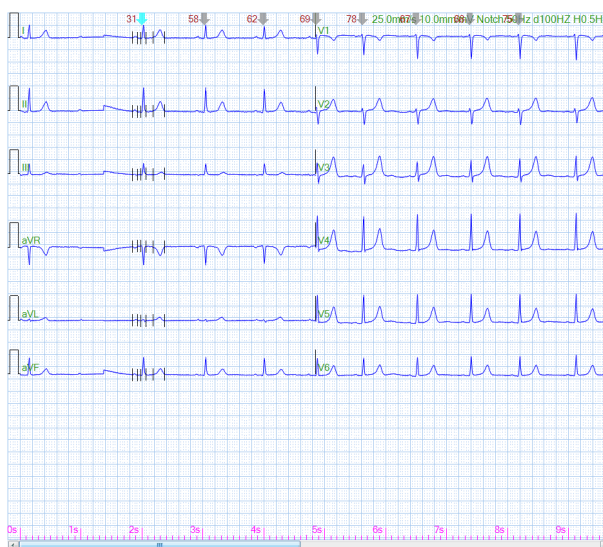


Click the arrow button in  to select ECG display format in the drop-down box.

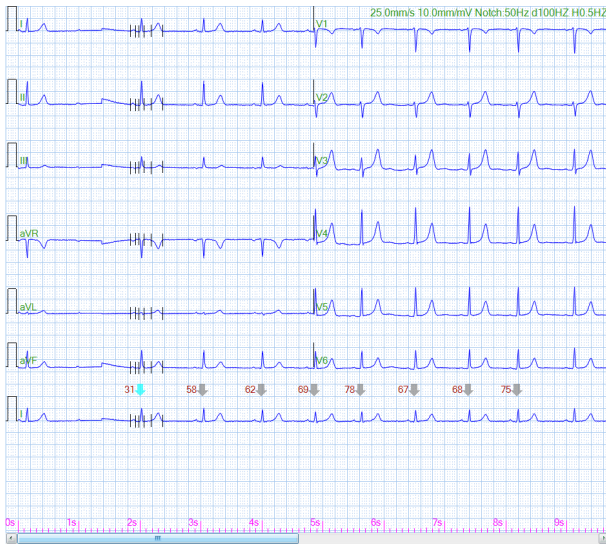
Lead format of 12 lead: 6*2 synchronous format (Horizontal), 6*2 real-time format (Horizontal), 6*2+1 real-time format (Horizontal), 3*4 +1 real-time format (Horizontal), 3*4 +3 real-time format (Horizontal), and 12*1 format (Vertical).



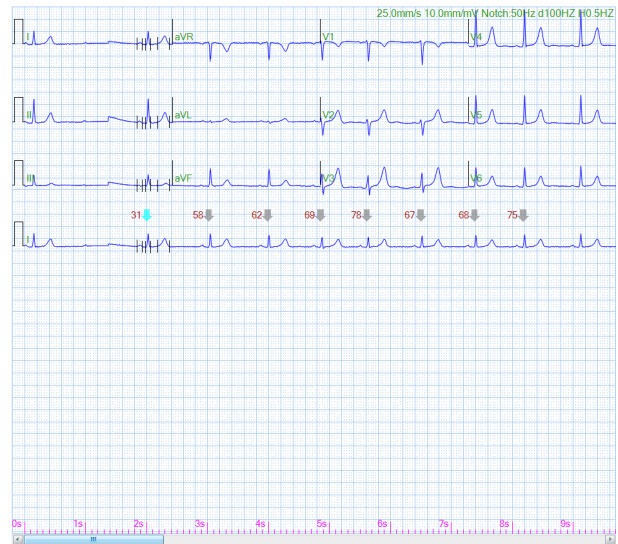
6 * 2 synchronous format (Horizontal)
on 12-lead playback & analysis interface



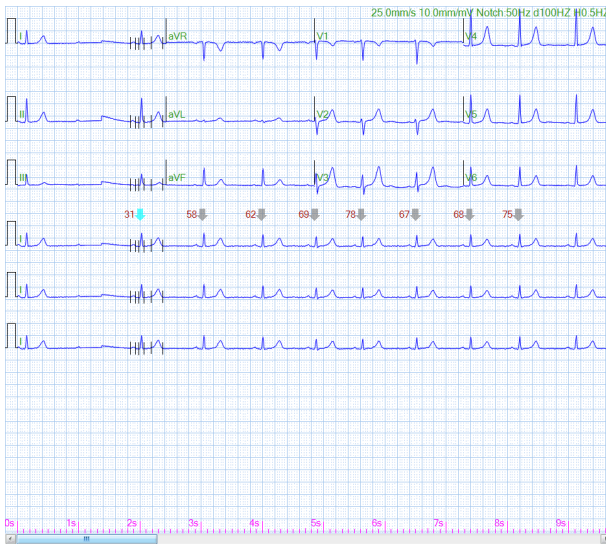
6 * 2 real-time format (Horizontal)
on 12-lead playback & analysis interface



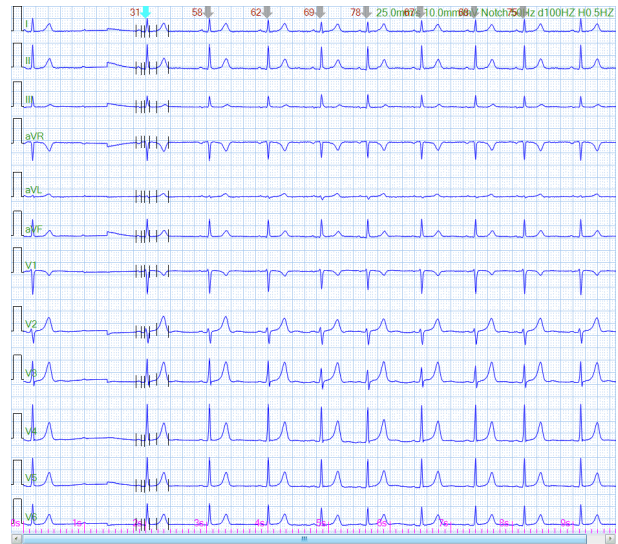
6 * 2 +1 real-time format (Horizontal)
on 12-lead playback & analysis interface



3 * 4 +1 real-time format (Horizontal)
on 12-lead playback & analysis interface



3 * 4 +3 real-time format (Horizontal)
on 12-lead playback & analysis interface



12 * 1 format (Vertical)
on 12-lead playback & analysis interface

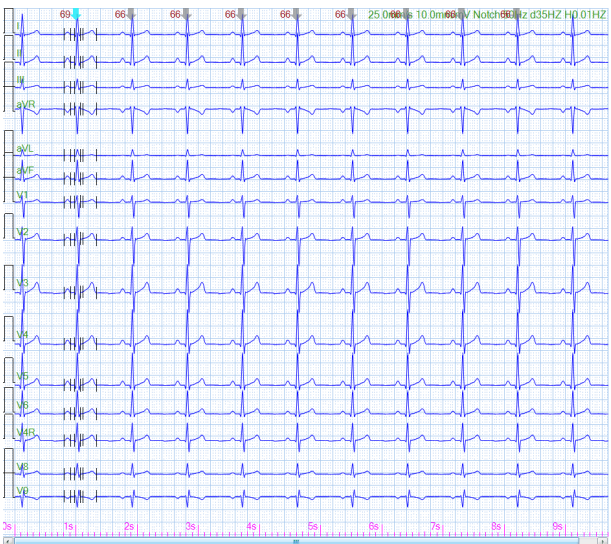
Lead format of 15 lead: 3*5 +1 real-time format (Horizontal), 3*5 +3 real-time format (Horizontal), 15*1 format (Vertical), and Extra leads (Horizontal).



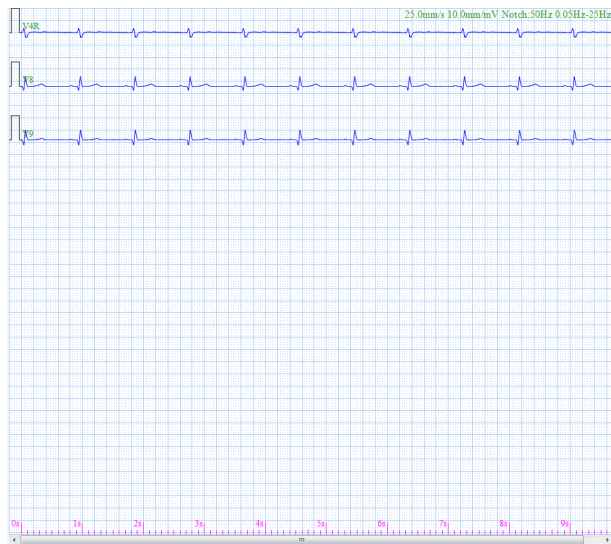
3 * 5 +1 real-time format (Horizontal)
on 15-lead playback & analysis interface



3 * 5 +3 real-time format (Horizontal)
on 15-lead playback & analysis interface





15 * 1 format (Vertical)
on 15-lead playback & analysis interface





Extra leads (Horizontal)
on 15-lead playback & analysis interface

Paper speed:

Click the arrow button  Paper Speed , and select the ECG waveform speed in the drop-down box: 12.5 mm/s, 25 mm/s, or 50 mm/s.



Gain:

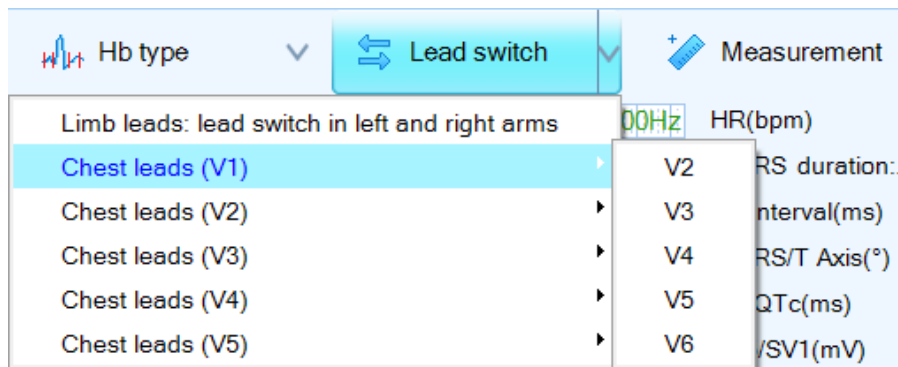
Click the arrow button  Gain , and select the ECG sensitivity in the drop-down box: 5 mm/mV, 10 mm/mV, 20 mm/mV or 40 mm/mV.



Hb type:

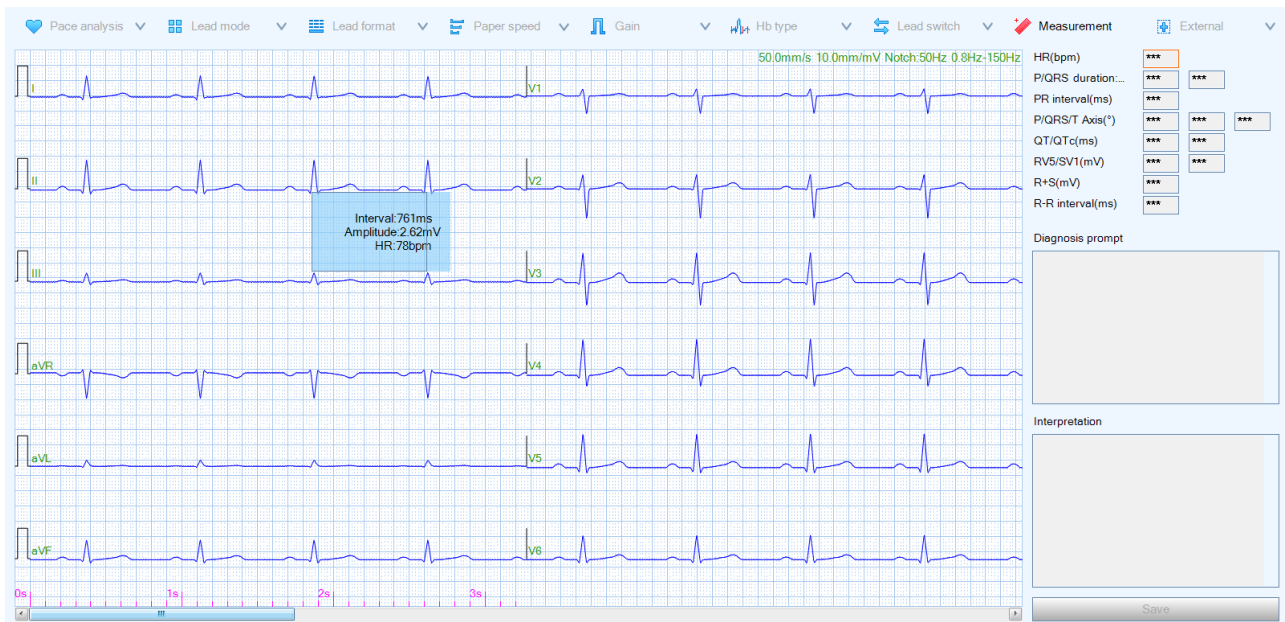
Click the arrow button  Hb type , and select **[Wave complex]** or **[Current beat]** in the drop-down box.


Lead switch:

Click the arrow button  Lead switch , and select **[Arm leads]** or **[Chest leads]** in the drop-down box. This function is mainly used when the leads are wrongly connected during acquisition.

**Waveform measurement**

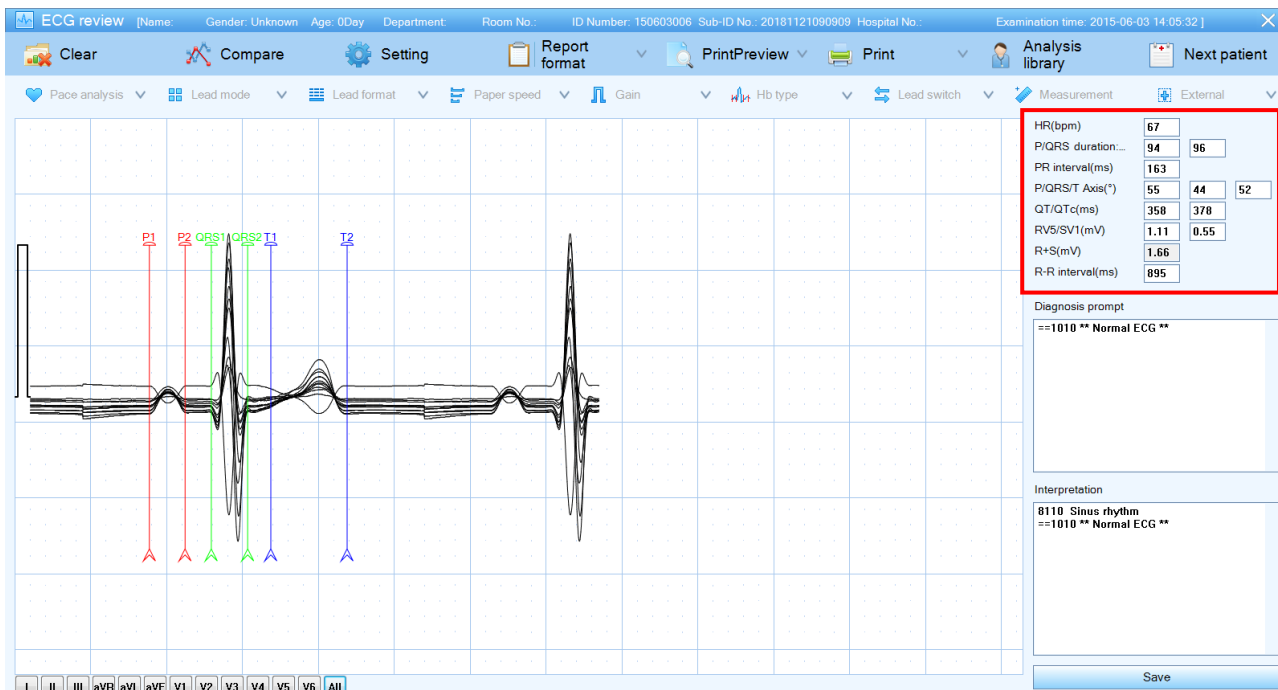
Click  Measurement, and the icon changes to  Measurement. Drag the mouse to measure the desired duration. The measurements will display on the interface.



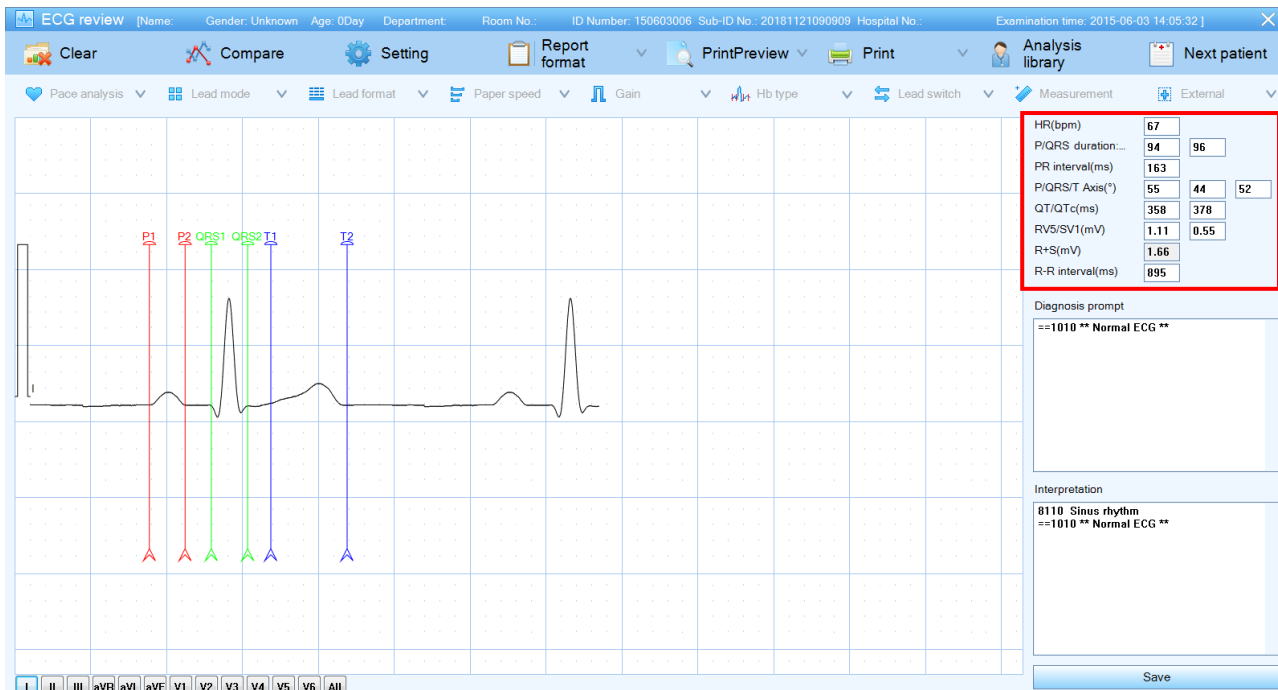
Click  Measurement again or right-click to stop measuring.

5.4.3 Enlargement and fine tuning of superimposed and representative beat

For analyzed data, double-click on any part of the waveform playback & analysis interface to open the superimposed beat enlarging window; and double-click the corresponding beat to open the representative beat enlarging window.



Superimposed Beat Enlargement and Fine-tuning Interface



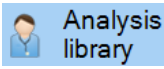
Representative Beat Enlargement and Fine-tuning Interface

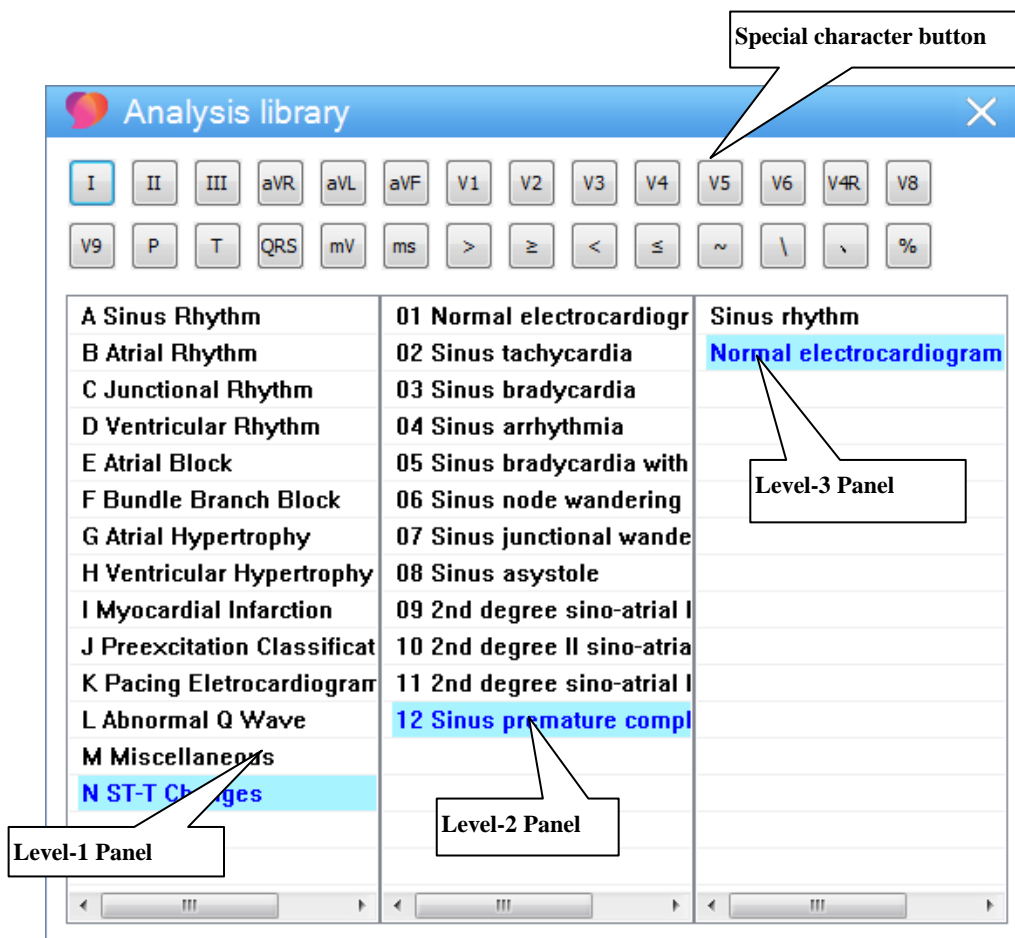
You can also select the relevant Lead key at the left bottom corner to switch the lead to be displayed. And drag the vertical line P1, P2, QRS1, QRS2, T1, and T2 to adjust slightly. Select either a lead or select all the leads, move the vertical lines to obtain more accurate P, Q, and T point, and then the analysis results will change according to

the new settings. After analysis, double-click to return to the previous interface, and the new analysis results will be displayed.

Parameters in red box (including HR, P/QRS duration, PR interval, P/QRS/T axis, QT/QTc interval and RV5/SV1) can be edited. Click the text box to input the parameters; and click other area to exit editing. The edited parameters will be saved and printed in the report.

5.4.4 Diagnosis function

After waveform playback and analysis, click  on the Tool bar to open the Analysis library window.



Special character button

User can input special characters by clicking these buttons.

As shown in the above figure, the analysis library displays in three levels: the level-1 panel displays the symptom type; click a symptom type in level-1 panel and the symptom type of next level will be displayed in level-2 panel; click a symptom type in level-2 panel, the symptom details will be displayed in level-3 panel.

Double-click a symptom in level-3 panel, and display it into ECG diagnosis. Doctors can modify and typeset the result, or input own diagnosis.

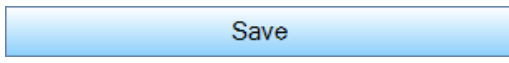
Diagnosis prompt

P I, II upright, P aVR inversion, P wave, P-R interval, QRS complex, ST-T no abnormal changes.

Interpretation

8110 Sinus rhythm
==1010 ** Normal ECG **
normal electrocardiogram

Save



: Click to save the Diagnosis and Interpretation to the report.

After saving, the status of the medical records changes to **[Reported]**.

 **Explanation**

To edit and modify the Analysis library, please refer to Chapter *Analysis library*.

5.4.5 Clear

Click  **Clear** to clear the analyzed results. And click  **Analyze** to re-analyze.

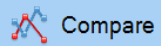

5.4.6 ECG comparison

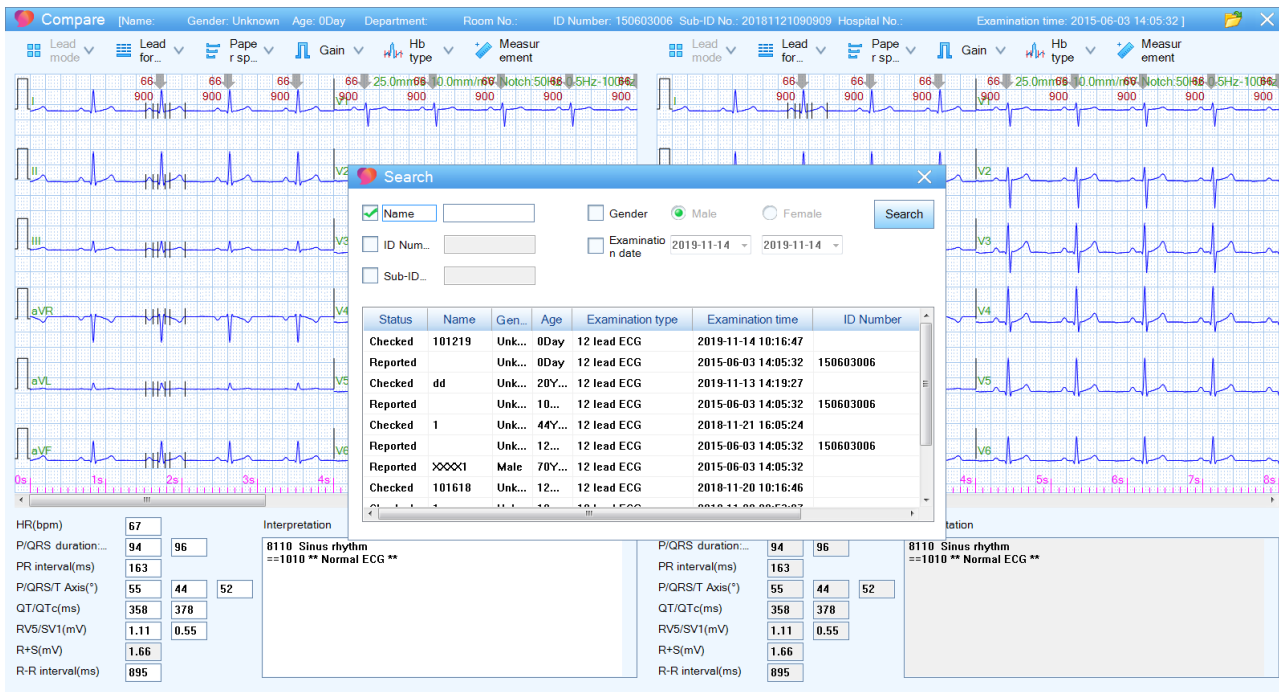
You can open two ECGs on the same interface and compare the current ECG with the previous ECG in details. The current ECG displays on the left side, and you can open a recent ECG on the right side to compare.



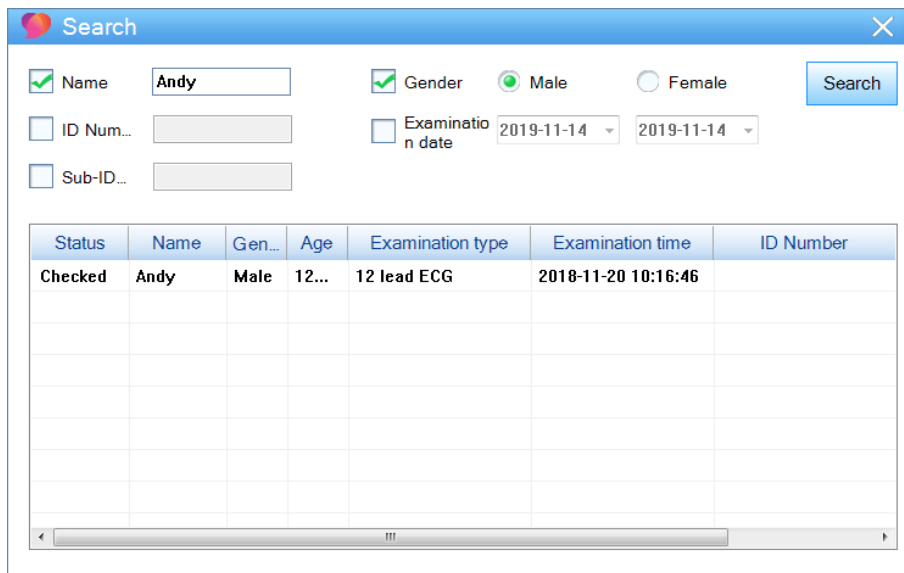
Caution

The diagnostic results in this interface cannot be modified. Double-click a heartbeat to enter the heart beat enlarging interface for measurement and analysis, but the modified analysis and measurement results will not be saved.


1. On ECG playback & analysis interface, click  **Compare**.
2. Click the  button in the top right corner to open the medical records list.



3. If you want to search other medical records, click the check box and input the information.
 Example: To search Andy, male, enter the exact name as the figure below and click the **[Search]** button. The results are listed as follows:




The matching medical records will be displayed in the list, which sequentially displays the status of the medical record, name, gender, age, etc.

4. Double-click a medical record in the list to import it into the ECG Comparison Interface.
5. Click  to exit and compare two ECGs.



5.4.7 Settings

Click  **Setting** in the Tool bar to pop up the setting window as below:

Setting

Display setting | Normal value setting | Frontal plane axis deviation chart

Rhythm setting

Rhythm lea... | Rhythm lea... | Rhythm lea...

Color setting

Small grid line... | Defa... | Lead name co... | Defa...
 Big grid line c... | Defa... | Heart rate font... | Defa...
 Waveform col... | Defa...

Line setting

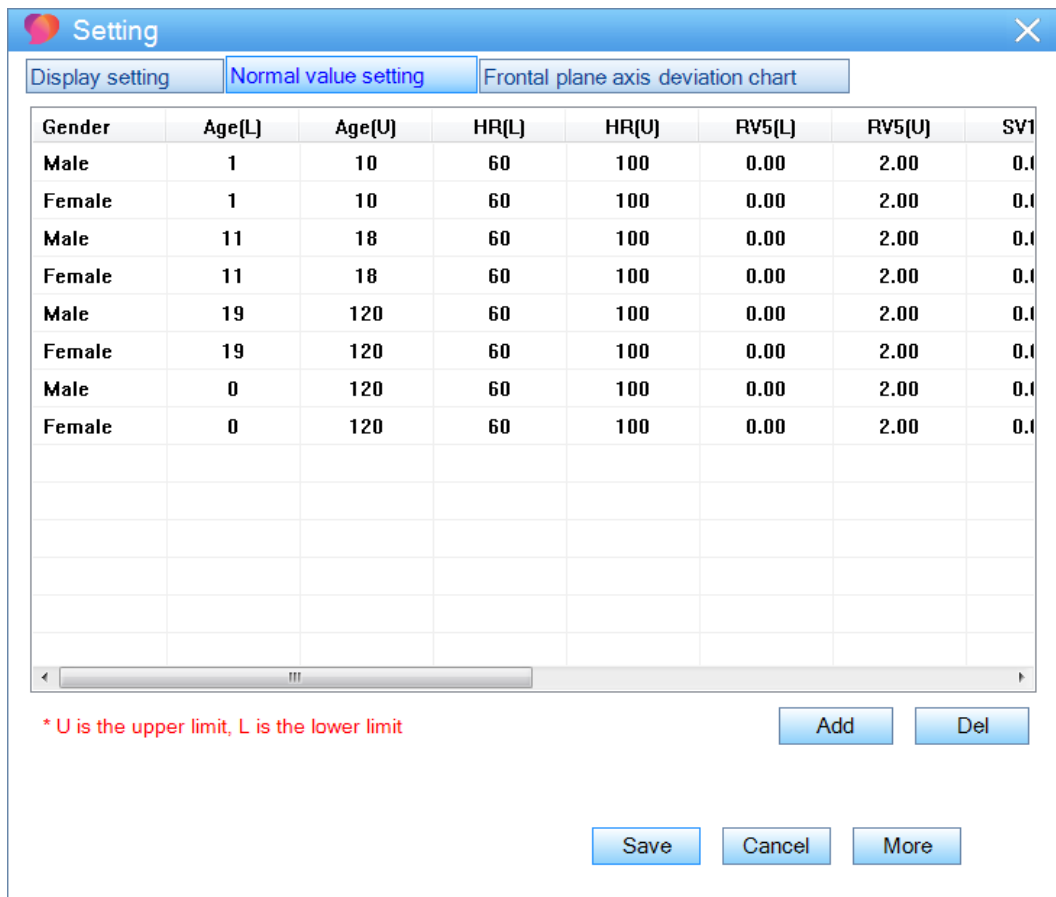
Small grid line re... | Point | Small grid line wi... | 1 mm |
 Big grid line reco... | Line | Big grid line width | 2 mm |
 Baseline width | 2 mm |

Print setting

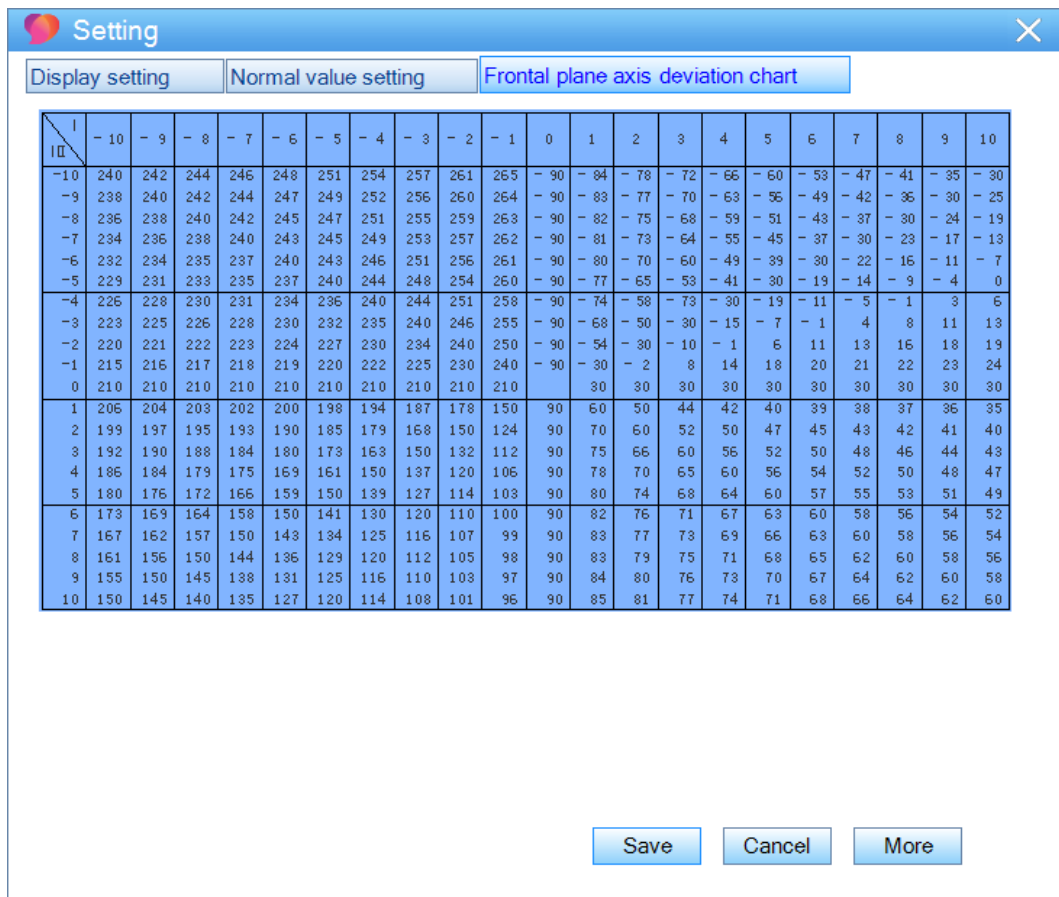
Patient informati... App. Physician Doctor signature Color printing
 Examination time Interpretation Print templates | 1 | R-R interval
 Report time Measurement r... Recording pa... | A4 |
 Print time Hospital | |
 Upload Date Logo | |

Save | Cancel | More

[Display setting]: Select to change Rhythm lead, grid color, grid width and select information that displayed in the report.



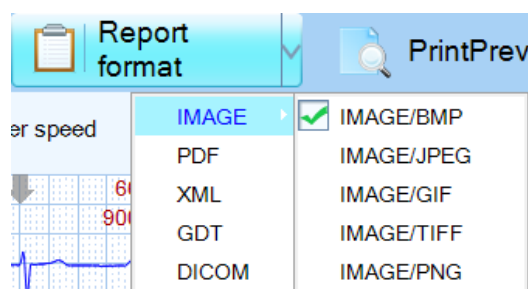
[Normal value setting]: Set up the normal values of the heart rate of different ages, R wave amplitude, S-wave amplitude, PR interval, QRS electrical axis, and QTc interval; when the analysis results exceed the normal values, it will display in red specified in display setting.



[Frontal plane axis deviation chart]: Display the Frontal plane axis deviation chart.

5.4.8 Report format

Click the arrow button in , and select the report format to be saved.



[IMAGE]: To generate a picture in BMP/JPEG/GIF/TIFF/PNG format, and automatically save in the PIC directory under the data directory.

[PDF]: To generate report in PDF format and the file will be automatically saved in the PDF directory under the data directory.

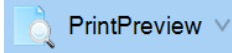
[XML]: To generate XML, export data to XML format and automatically save in the XML directory under the data directory.

[GDT]: To generate GDT, export data to GDT format and automatically save in the GDT directory under the data directory.

[DICOM]: To generate DICOM, export data to DICOM format and automatically save in the DICOM directory under the data directory.

To change the storage directory, click **[System] > [System setting] > [General setting] > [Data path]**, you can customize a storage disk with larger space.

5.4.9 Print preview

Click the  in the Tool bar to enter the preview interface. And click the **[Print]** at the left corner of the interface to print the report.

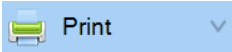


Caution

All the parameters and diagnosis must be confirmed by a doctor.

After printing, the printing status of the medical records changes to **[Printed]**.

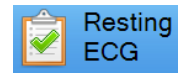
5.4.10 Print

Click . And select a printer in the pop-up window. Click **[OK]** to print the report.

5.5 VCG Playback & Analysis

Caution

Only if you connect the System to an ECG machine with VCG feature, such as iE 15, etc. then you can collect VCG data and perform the VCG analysis on the System.



In the medical records list, double click a VCG file or select a VCG file and then select



to enter the playback & analysis interface.

Or right-click on VCG files and then select [VCG].

The screenshot shows the VCG playback and analysis interface. At the top, there is a header bar with patient information: "Record No.: Name: 4 Sex: Female Age: 4Y". To the right of the header, there are buttons for "Diagnosis", "Print preview", and "Print". Below the header, the interface is divided into several sections:

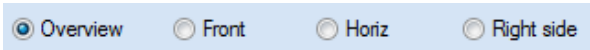
- Patient information:** Located at the top left, containing the patient's name, sex, and age.
- VCG print setting:** Located at the top right, containing buttons for "Diagnosis", "Print preview", and "Print".
- VCG display panel:** The main area on the left, displaying three vector loops on a grid. Each loop is labeled "Three in one" and has a scale of "2 ms/point" and "10 mm/mV".
- Complex wave and the results of analyze:** Located on the right side, showing three complex waves labeled "X", "Y", and "Z". Above the waves, it displays "Paper speed: 50 mm/s" and "Gain: 10 mm/mV".
- Vector loop display setting:** Located at the bottom right, containing various settings for the vector loop display, including "Overview", "Front", "Horiz", "Right side", "merge", "GRS", "P", "T", "Playback mode" (Static, Mode 1, Mode 2), and "Gain" (1).

5.5.1 VCG display settings

Patient information: Display patient ID, ECG type and other information of the patient.

VCG display panel: Display VCG in different modes and different loops.

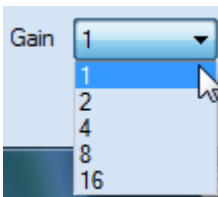
Vector loop display setting:



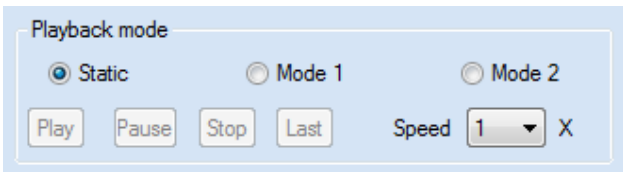
VCG is displayed in the loop in the form of Overview, Front, Horiz or Right side.



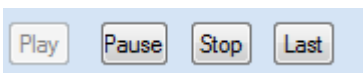
VCG is displayed in merged loop, QRS loop, P loop or T loop.



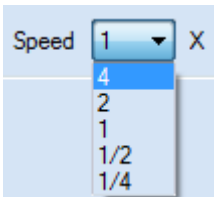
Gain represents the amplification factor for VCG displayed in the loop. There are five factors.



It is the playback mode of VCG. Static is to display the VCG motion track in the loop directly. Mode1 is to display the VCG motion track in the loop dynamically. Mode 2 is that a red mark displays dynamically along the VCG motion track.

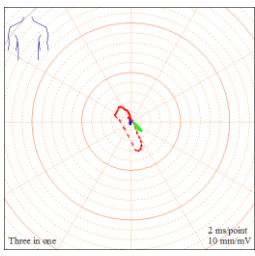
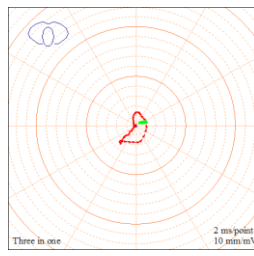
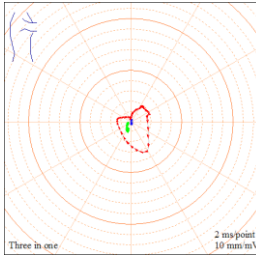
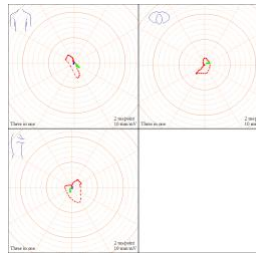
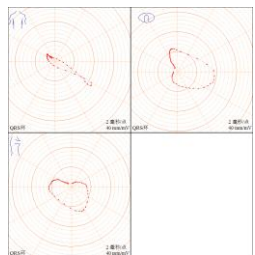
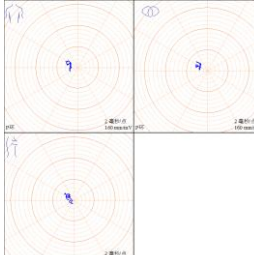
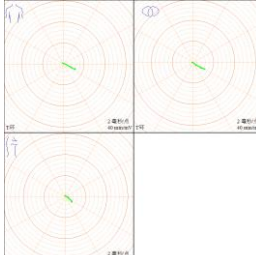
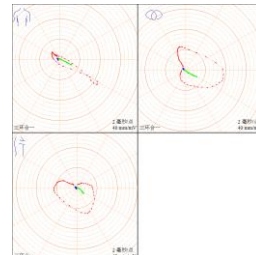


The control buttons of VCG motion track in the loop; it can only be used in Mode 1 and Mode 2.



The speed control of the playback of VCG, there are five factors.

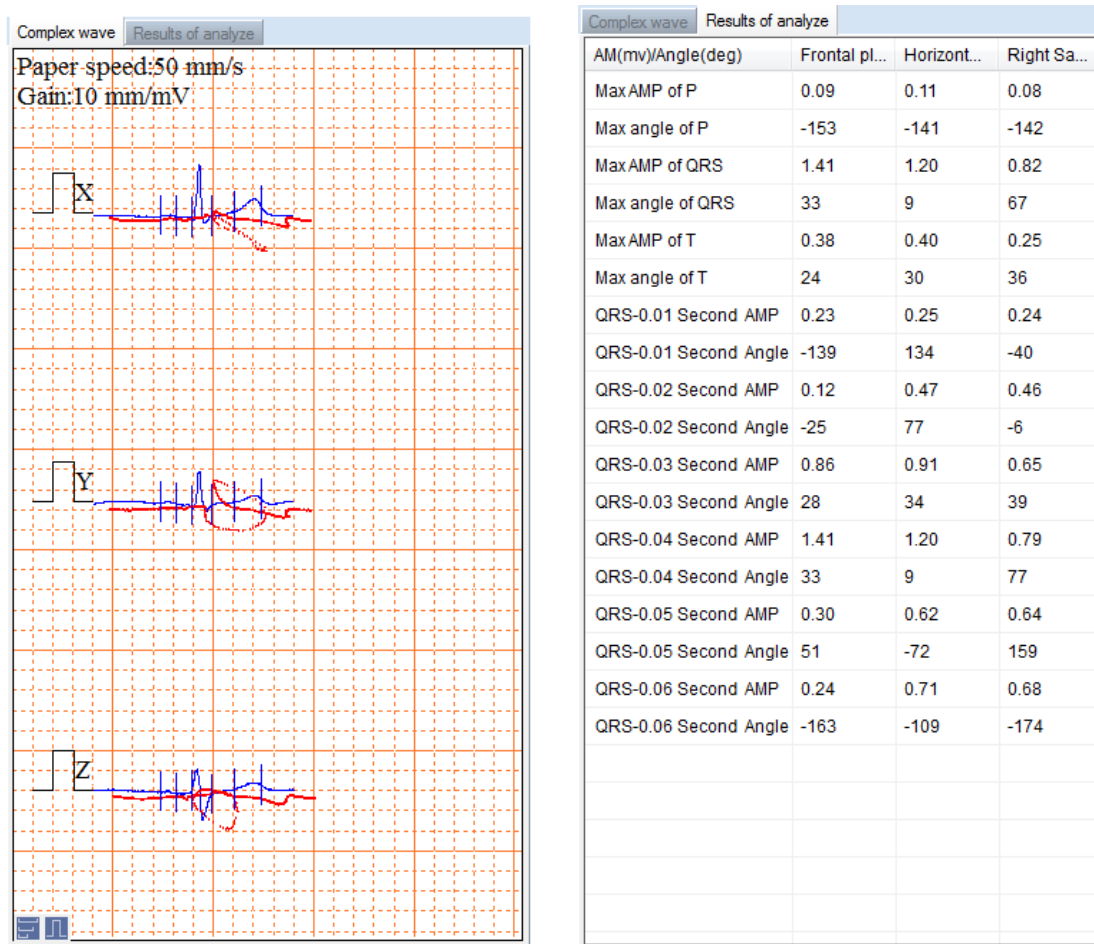
There are four kinds of display mode and four kinds of display loop for VCG, as shown in the table:

VCG display panel			
Front (X-Y)	Horiz (X-Z)	Right side (Z-Y)	Overview
			
QRS loop	P loop (Gain: 16mm/mV)	T loop	Merged loop
			

When it is displayed overview, double click the graph, it will be enlarged to the whole interface. Double click again, it will restore to original state.

Complex wave and the results of analyze panel

Display Complex wave (X, Y, and Z) and Results of analyze.



In the process of the playback of VCG wave, user can adjust Paper speed and Gain.

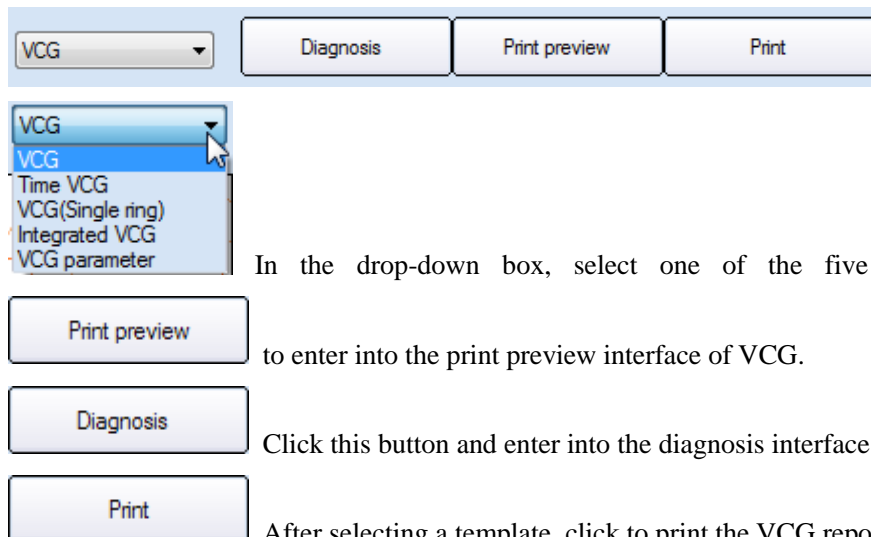


: Click to adjust Paper speed. There are three kinds of speed, 12.5 mm/s, 25mm/s and 50mm/s.



: Click to adjust Gain. There are three kinds of speed, 5 mm/mV, 10mm/mV and 20mm/mV.

5.5.2 VCG print setting:



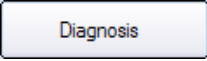
In the drop-down box, select one of the five print templates, and then click

to enter into the print preview interface of VCG.

Click this button and enter into the diagnosis interface and input the diagnosis.

After selecting a template, click to print the VCG reports.

5.5.3 Diagnosis

After wave playback and analysis, click  to enter into the diagnosis interface.

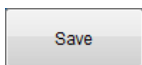
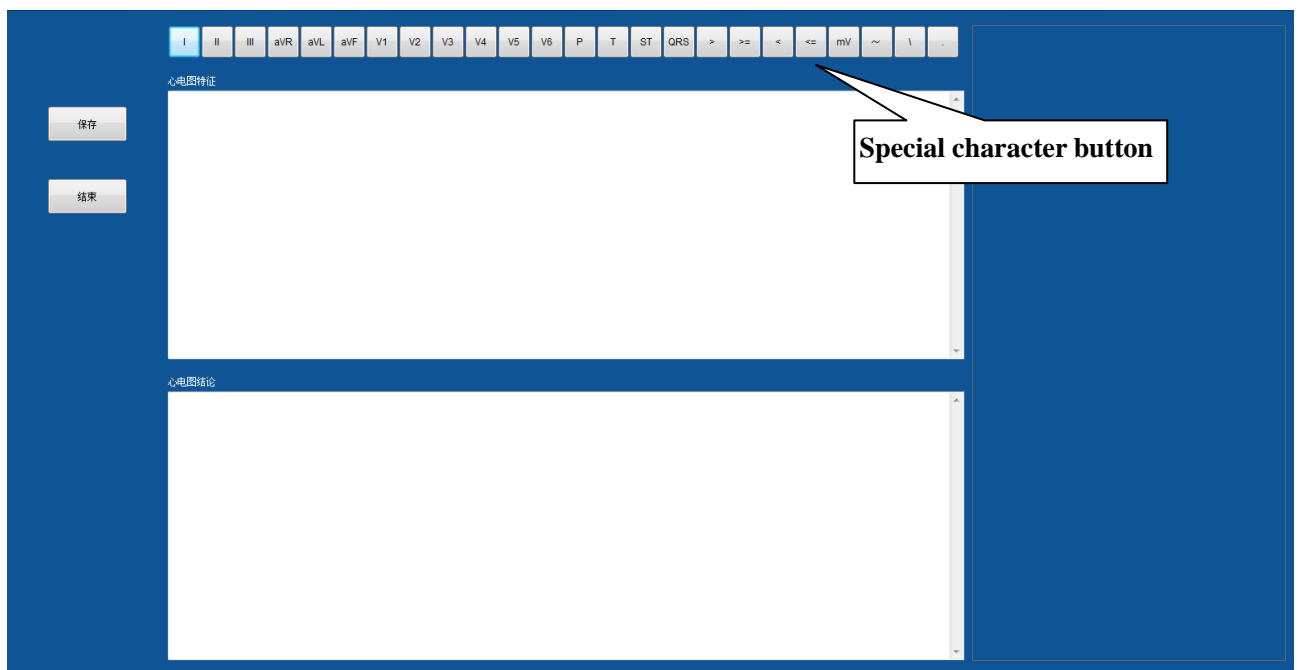
Features of ECG

This interface records the features of ECG. And you can also input the features of ECG. To input special character conveniently, special character buttons are designed. User can input special characters by clicking these buttons.

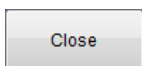


Results of ECG

As shown in the following figure, you can input own ECG diagnostic result.



Save all the content and analysis results.



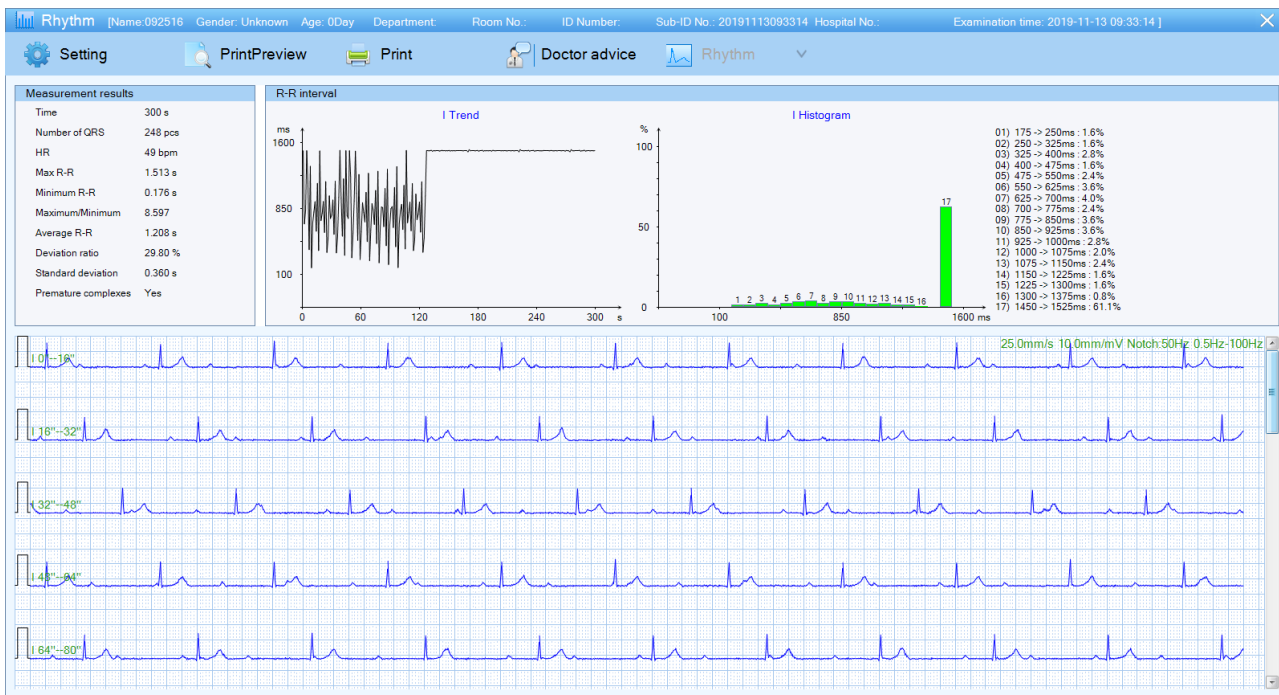
Close and back to previous interface.

5.6 Rhythm Playback & Analysis


In the medical records list, double-click Rhythm file to enter the Rhythm playback & analysis interface.


Or select the Rhythm file and click  Resting ECG >  Rhythm.


Or select the Rhythm file and right-click to select **[Rhythm]**.





You can scroll the scroll bar to review the remaining rhythm waveform.

 **Setting** : Click to set up display and print settings.

 **PrintPreview** : Click to preview the Rhythm print report.

 **Print** : Click to print the Rhythm print report.

 **Doctor advice** : Click to edit Rhythm report and diagnosis.

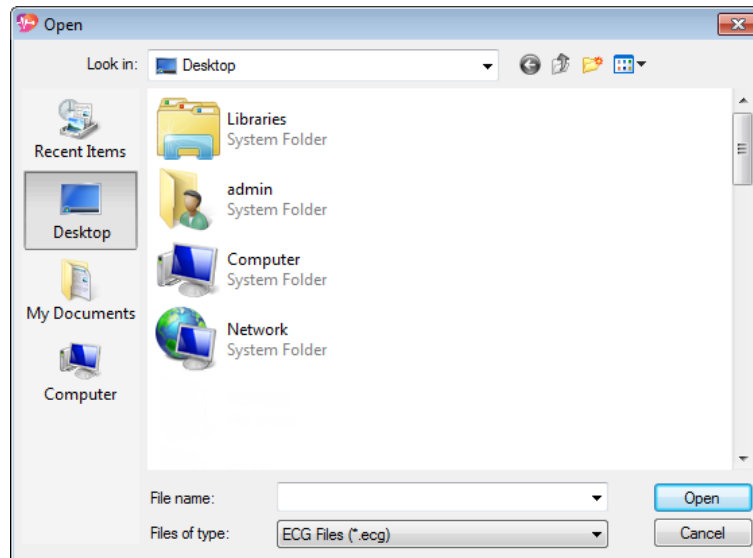
 **Rhythm** : In Three-rhythm mode, click to select rhythm lead.

5.7 Case management

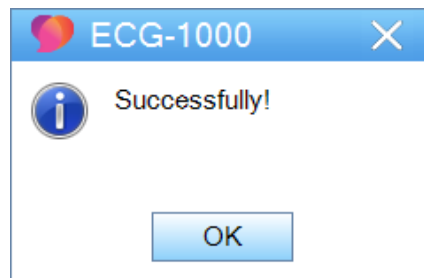
5.7.1 Importing medical records

Import the ECG files into the system in the following steps:

1. On the main interface, select  > .

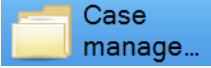
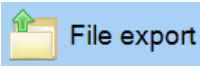


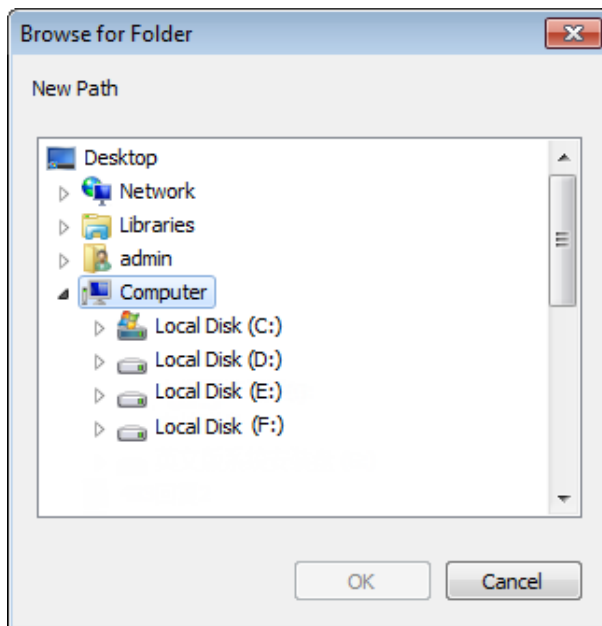
2. Select the desired file, and double-click or click **[Open]**.
Press and hold “Ctrl” button to import more than one record.
3. Click **[OK]** on the pop-up window.



5.7.2 Exporting medical records


Export the ECG files from the system to a specified location.

1. In the medical records list, select the desired medical record; or press and hold “Ctrl” button to select more than one medical record.
2. In the Tool bar, select  > .



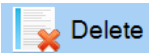
- 3. Select a storage path and file. Click **[OK]**.
- 4. Click **[OK]** on the pop-up window.

5.7.3 Editing medical records

In the medical records list, select a record to be modified and click  **Edit**. Modify the patient information and click **[Save]** to save the modified information and display in the Patient Information interface.

You can also right-click the record and select **[Edit]** in the pop-up list.


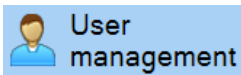
5.7.4 Deleting medical records

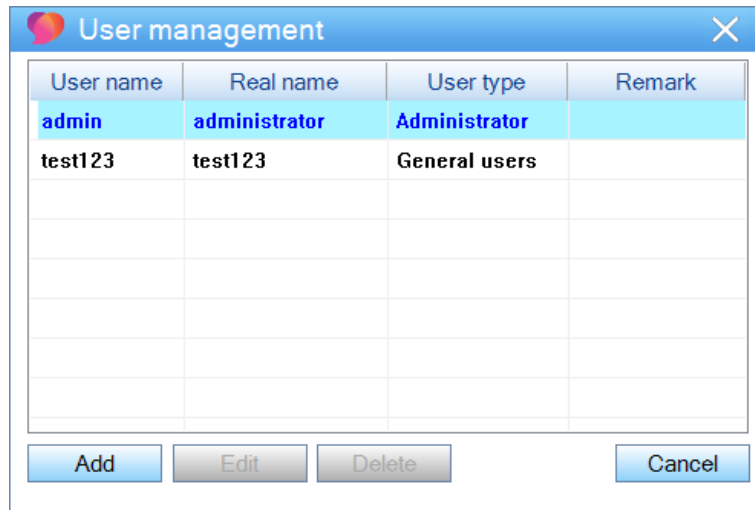
In the medical records list, select the medical records. You can press and hold “Ctrl” button to select more than one record. And click  **Delete** to delete medical records. Or you can right-click and select **[Delete]** in the pop-up list.

5.8 System

There are six options for system setting: System setting, User Management, Statistics, Analysis library, Language and About.

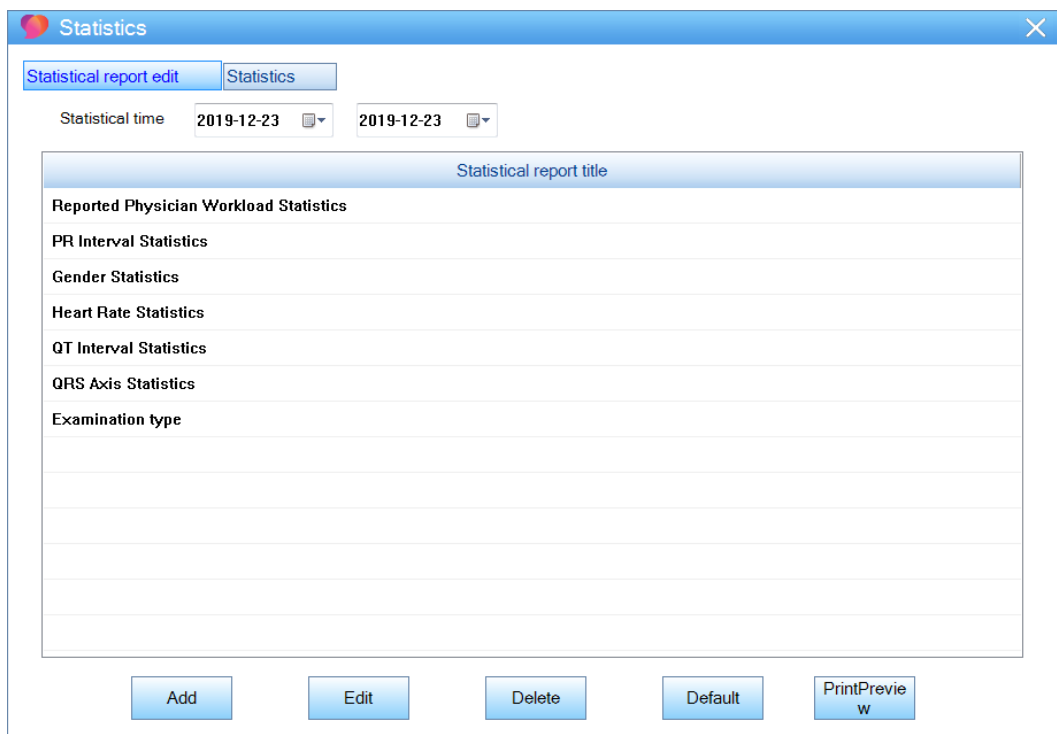
5.8.1 User management

Click  >  to create an account for each doctor. You can use **[Add]**, **[Delete]**, **[Edit]** to modify user's information and privileges. (Only the administrator can manage and change other user's information.)



5.8.2 Statistics

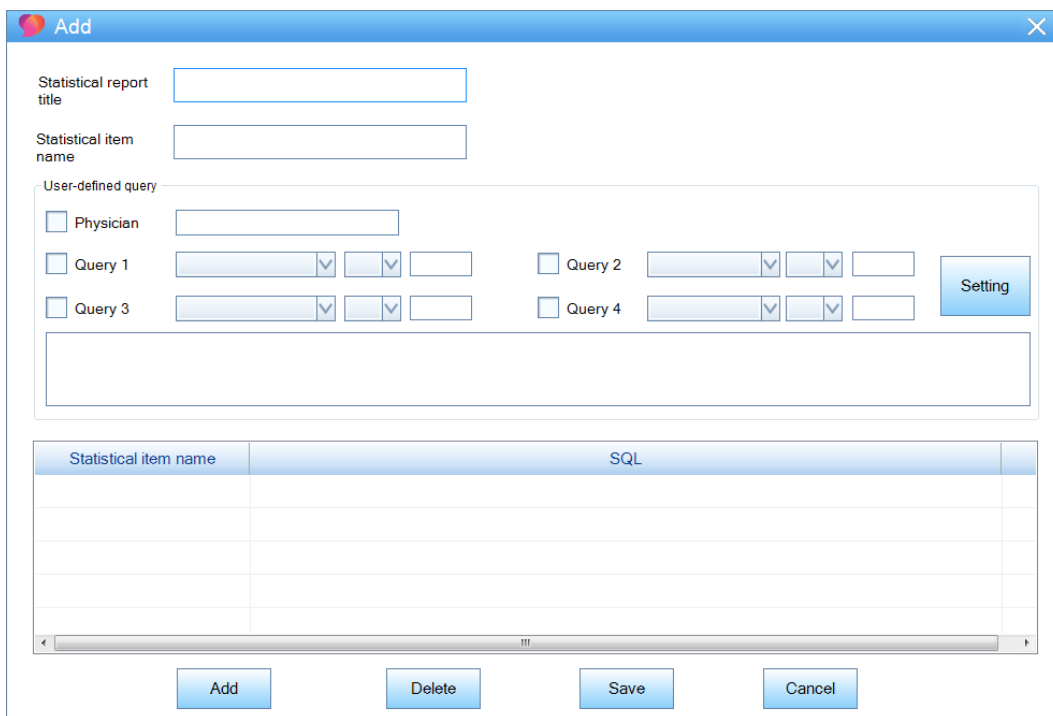
Click the  in the Tool bar to enter the statistics window.



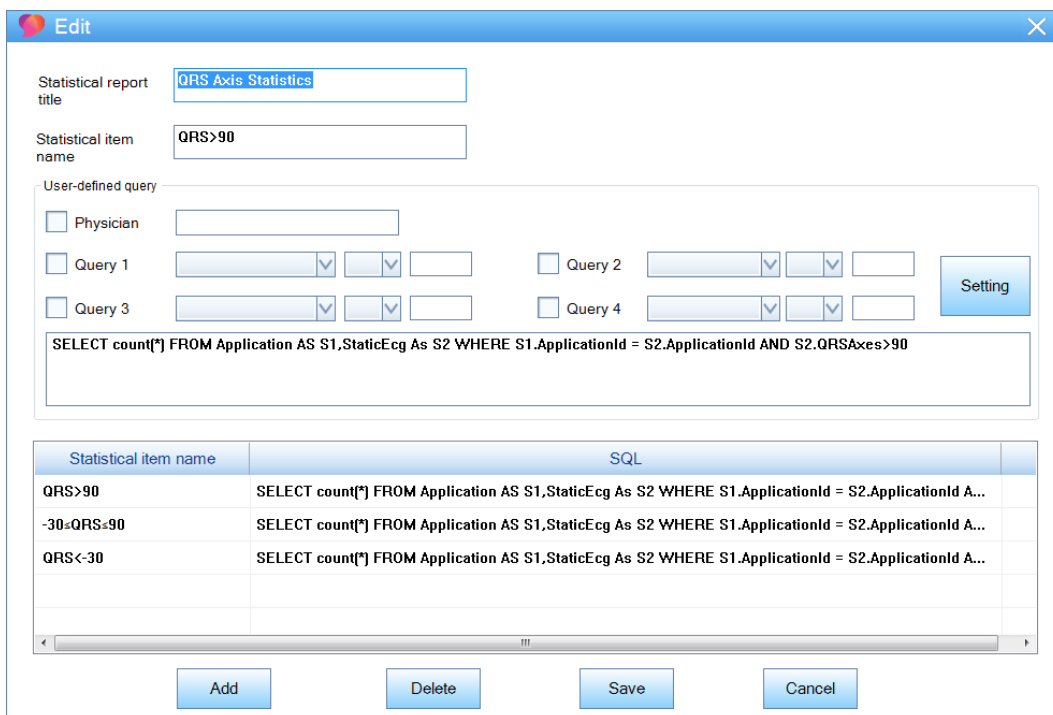
Seven report statistics are provided by default, which are Reported Physician Workload Statistics, PR Interval Statistics, Gender Statistics, Heart Rate Statistics, QT Interval Statistics, QRS Axis Statistics, and Examination type.

Click **[Add]/[Edit]** to enter Add/Edit Report window; click **[Delete]** to delete report; click **[Default]** to restore default settings.

The Edit Report window supports adding, editing and deleting reports.

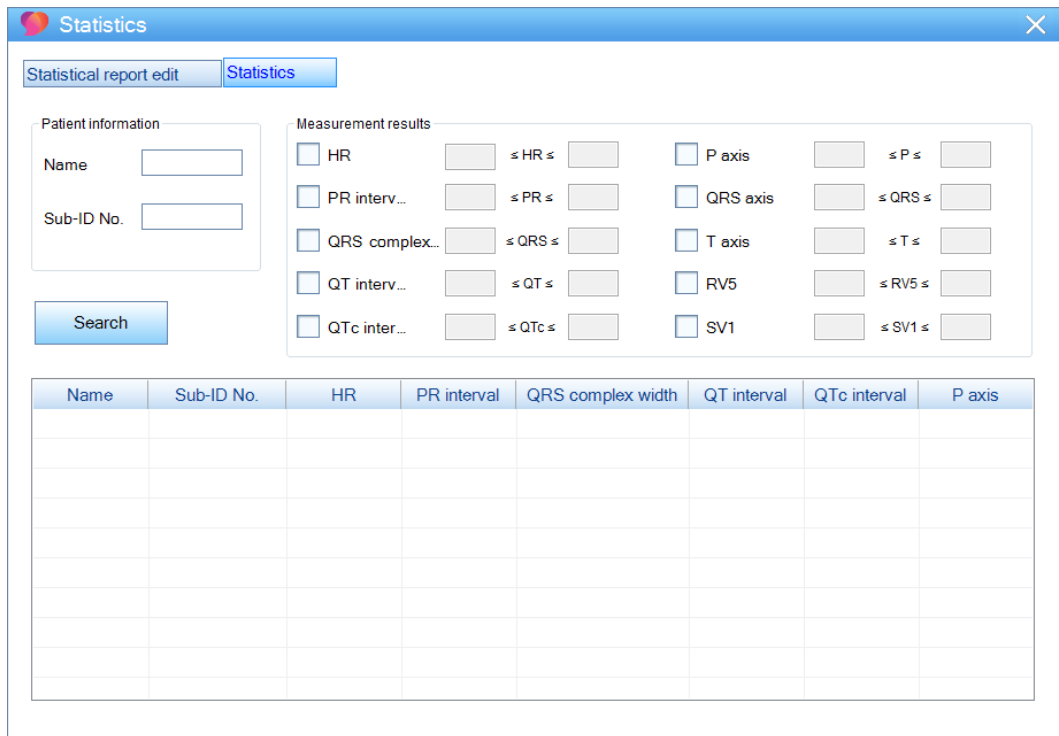


Add Report Window



Edit Report Window

Click [**Statistics**] tab to open statistics inquiry window.



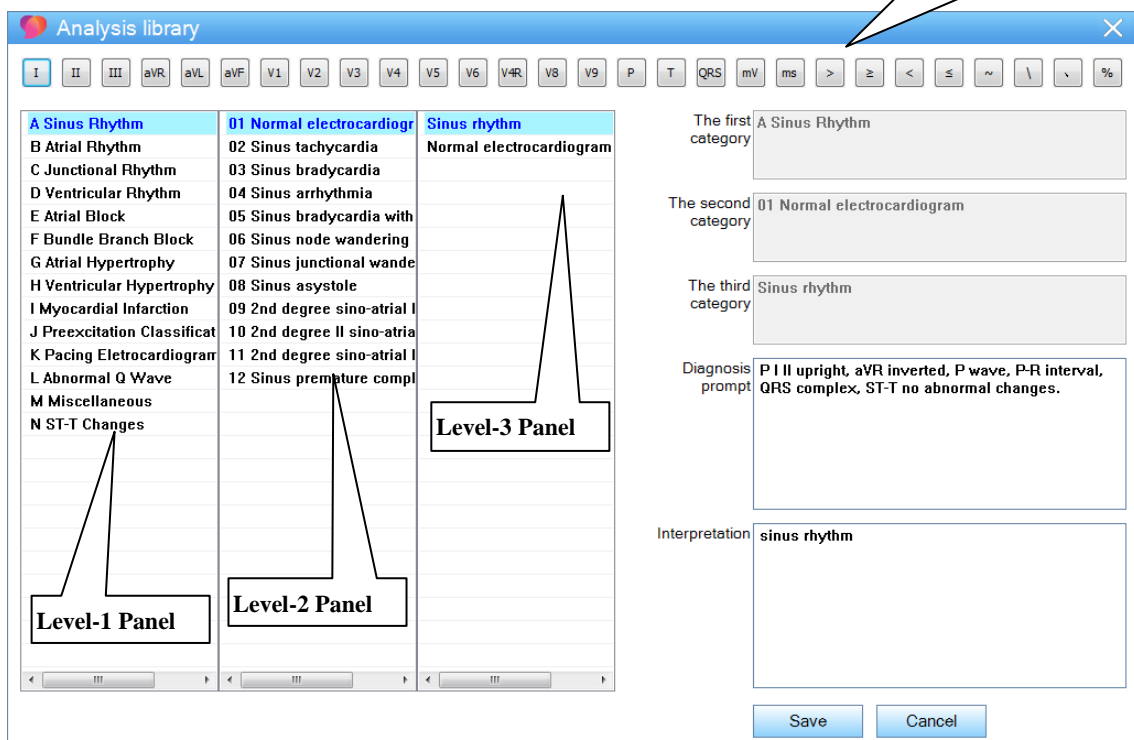
The inquiry window allows statistics and query of analysis, including HR, PR interval, QRS complex width, QT interval, QTc interval, P axis, QRS axis, T axis, RV5, SV1, etc.

Input patient information, measurement upper limit and lower limit, and click [**Search**]. All the statistics that meet the value will display in the list below.

5.8.3 Analysis library

The Analysis library allows you to add, modify, and delete the diagnosis.

Special character button



Special character button

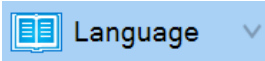
User can input special characters by clicking these buttons.

As shown in the above figure, the Analysis library display in three categories: the Level-1 Panel displays the symptom type; the Level-2 Panel displays the symptom; the Level-3 Panel displays the symptom details. Click a symptom type to display the symptom, click a symptom to display the symptom details.

Click a symptom details in the Level-3 Panel to input it in ECG diagnosis. Doctors can modify and typeset the result, or input own diagnosis directly.

Click  to save the changes.

5.8.4 Language

Click the arrow button in , and select a proper language in the drop-down list.

5.8.5 About us

Click  to display the software information.


Chapter 6 Maintenance

1. When the sampling and monitoring are stopped, please close the sub-window of ECG-1000 software timely; if the system won't be used for a long time, turn off the computer and disconnect it from AC power.
2. After using the software, please disconnect the computer from power, and cover with a clean, soft cloth to prevent dust from entering.
3. Do NOT store the computer on which the system installed in moist environment.

--The Blank Page--

Chapter 7 Troubleshooting

7.1 ECG uploading errors

1. “Uploading successfully!” appears on the ECG machine, but no medical records display on the system.
Cause: Windows Firewall blocks the ECG files.
Solution: Turn off the Windows Firewall or set up to Allow a program or feature through Windows firewall. (Please refer to the User Manual of the computer.)
2. At the bottom of the main interface, a notification “Failed!” about the Socket displays.
Cause: The Socket is used by other program.
Solution: Turn off other software, and re-uploading ECG file.
3. “Network connected failed” displays on the ECG machine, while no  notification icon displays.
Cause 1: The network setting is incorrect.
Solution: Set up the network setting according to the steps in Chapter *Hardware connection*.
Cause 2: Failed to connect the ECG machine to the computer.
Solution: Reconnect the ECG machine to the computer, or change a new connection cable.

7.2 Printing errors

1. A blank page displays when preview the report.
Cause: The Memory is occupied by other software.
Solution: Turn off other software, and operate again.
2. Print failed.
Cause: The printer is not installed correctly or not connected to the computer successfully.
Solution: Reinstall the printer or reconnect it to the computer.

--The Blank Page--

Appendix A Configuration List

A.1 Packing list

The standard package should contain the following items:

Table A-1 ECG-1000 Packing List

No.	Name	Qty.	Unit
1	Installation U disk (including the User Manual)	1	PCS
2	USB Dongle	1	PCS
3	Serial port line	1	PCS
4	Certification	1	PCS
5	Packing list	1	PCS

A.2 Notice

Caution

- Please open the package according to instructions on the packing box.
 - After unpacking, check the included accessories and files according to the packing list.
 - If you find the included components are different from the packing list or the System does not work properly, please contact our Custom Service.
 - To ensure good performance and safe operation of the system, please use the accessories supplied by the manufacturer.
 - To make sure that we can provide service for you in time, please fill in the Warranty Card (duplicate) and send to us.
 - The package box should be well preserved for the regular inspection and maintenance of the equipment.
-
-

--The Blank Page--

Appendix B Analysis Program Output Code and Interpretation

8	Cardiac arrhythmia (37 Types)
8002	Marked rhythm irregularity
8110	Sinus rhythm
8102	Sinus arrhythmia
8108	Marked sinus arrhythmia
8120	Sinus tachycardia
8130	Sinus bradycardia
8200	Atrial rhythm
8210	Atrial fibrillation
82101	Atrial fibrillation with rapid ventricular response
82102	Atrial fibrillation with slow ventricular response
82103	Atrial fibrillation with aberrant conduction, or ventricular premature complexes
82108	Atrial fibrillation with rapid ventricular response with aberrant conduction, or ventricular premature complexes
82109	Atrial fibrillation with slow ventricular response with ventricular premature complexes
8220	Atrial tachycardia
8250	Atrial flutter
82503	Atrial flutter with aberrant conduction or ventricular premature complexes
82505	Cannot rule out atrial flutter
8300	Junctional rhythm
8320	Junctional tachycardia
8400	Supraventricular rhythm
8420	Supraventricular tachycardia
8430	Supraventricular bradycardia
8470	With occasional supraventricular premature complexes
8474	With frequent supraventricular premature complexes
8475	With frequent supraventricular premature complexes in a pattern of bigeminy
8500	Ventricular rhythm
8520	Ventricular tachycardia

85201	Ventricular Fibrillation
8570	With occasional ventricular premature complexes
8574	With frequent ventricular premature complexes
8575	With frequent ventricular premature complexes in a pattern of bigeminy
86006	Electronic atrial pacemaker
86007	Electronic ventricular pacemaker
8901	Undetermined regular rhythm
8902	Undetermined rhythm
8970	With occasional ectopic premature complexes
8974	With frequent ectopic premature complexes
8975	With frequent ectopic premature complexes in a pattern of bigeminy
6	AV block (9 types)
611	Possible third degree AV block
621	Second degree AV block, Wenckebach type
622	Second degree AV block, Mobitz type II
623	First degree AV block
631	Short PR interval
641	Type-A WPW syndrome
642	Type-B WPW syndrome
643	Atypical WPW syndrome
644	Intermittent WPW syndrome
7	Intraventricular Conduction Disturbances (8 types)
711	Left bundle branch block
712	Incomplete left bundle branch block
721	Right bundle branch block, plus possible RVH
722	Right bundle branch block
723	Incomplete right bundle branch block
724	RSR' in lead V1/V2, consistent with right ventricular conduction delay
731	Left anterior fascicular block
732	Left posterior fascicular block
741	Nonspecific intraventricular conduction block
742	Nonspecific intraventricular conduction delay

1	Myocardial infarction (77 types)
1113	Cannot rule out anterior myocardial infarction, probably old
1114	Cannot rule out anterior myocardial infarction, age undetermined
1121	Possible anterior myocardial infarction, possible acute
1122	Possible anterior myocardial infarction, probably recent
1123	Possible anterior myocardial infarction, probably old
1124	Possible anterior myocardial infarction, age undetermined
1131	Anterior myocardial infarction, possible acute
1132	Anterior myocardial infarction, probably recent
1133	Anterior myocardial infarction, probably old
1134	Anterior myocardial infarction, age undetermined
1213	Cannot rule out anteroseptal myocardial infarction, probably old
1214	Cannot rule out anteroseptal myocardial infarction, age undetermined
1221	Possible anteroseptal myocardial infarction, possible acute
1222	Possible anteroseptal myocardial infarction, probably recent
1223	Possible anteroseptal myocardial infarction, probably old
1224	Possible anteroseptal myocardial infarction, age undetermined
1231	Anteroseptal myocardial infarction, possible acute
1232	Anteroseptal myocardial infarction, probably recent
1233	Anteroseptal myocardial infarction, probably old
1234	Anteroseptal myocardial infarction, age undetermined
1313	Cannot rule out anterolateral myocardial infarction, probably old
1314	Cannot rule out anterolateral myocardial infarction, age undetermined
1321	Possible anterolateral myocardial infarction, possible acute
1322	Possible anterolateral myocardial infarction, possible recent
1323	Possible anterolateral myocardial infarction, possible acute
1324	Possible anterolateral myocardial infarction, age undetermined
1331	Anterolateral myocardial infarction, possible acute
1332	Anterolateral myocardial infarction, probably recent
1333	Anterolateral myocardial infarction, probably old
1334	Anterolateral myocardial infarction, age undetermined
1413	Cannot rule out septal myocardial infarction, probably old

1414	Cannot rule out septal myocardial infarction, age undetermined
1421	Possible septal myocardial infarction, possible acute
1422	Possible septal myocardial infarction, probably recent
1423	Possible septal myocardial infarction, probably old
1424	Possible septal myocardial infarction, age undetermined
1431	Septal myocardial infarction, possible acute
1432	Septal myocardial infarction, probably recent
1433	Septal myocardial infarction, probably old
1434	Septal myocardial infarction, age undetermined
1513	Cannot rule out lateral myocardial infarction, probably old
1514	Cannot rule out lateral myocardial infarction, age undetermined
1521	Possible lateral myocardial infarction, possible acute
1522	Possible lateral myocardial infarction, probably recent
1523	Possible lateral myocardial infarction, probably old
1524	Possible lateral myocardial infarction, age undetermined
1531	Lateral myocardial infarction, possible acute
1532	Lateral myocardial infarction, probably recent
1533	Lateral myocardial infarction, probably old
1534	Lateral myocardial infarction, age undetermined
1613	Cannot rule out inferior myocardial infarction, probably old
1614	Cannot rule out inferior myocardial infarction, age undetermined
1621	Possible inferior myocardial infarction, possible acute
1622	Possible inferior myocardial infarction, probably recent
1623	Possible inferior myocardial infarction, probably old
1624	Possible inferior myocardial infarction, age undetermined
1631	Inferior myocardial infarction, possible acute
1632	Inferior myocardial infarction, probably recent
1633	Inferior myocardial infarction, probably old
1634	Inferior myocardial infarction, age undetermined
16132	Cannot rule out inferior myocardial infarction with posterior extension, probably old
16142	Cannot rule out inferior myocardial infarction with posterior extension, age undetermined
16212	Possible inferior myocardial infarction with posterior extension, possible acute

16222	Possible inferior myocardial infarction with posterior extension, probably recent
16232	Possible inferior myocardial infarction with posterior extension, probably old
16242	Possible inferior myocardial infarction with posterior extension, age undetermined
16312	Inferior myocardial infarction with posterior extension, possible acute
16322	Inferior myocardial infarction with posterior extension, probably recent
16332	Inferior myocardial infarction with posterior extension, probably old
16342	Inferior myocardial infarction with posterior extension, age undetermined
1711	posterior myocardial infarction, possible acute
1712	posterior myocardial infarction, age undetermined
173	Abnormal Q wave? [Lat. Inf.]
174	Abnormal Q wave? [Ant.]
175	Abnormal Q wave? [Ant. Lat.]
176	Abnormal Q wave? [Ant. Inf.]
177	Abnormal Q wave?
3	Myocardial hypertrophy (12 types)
311	Possible right ventricular hypertrophy
312	Right ventricular hypertrophy
313	Right ventricular hypertrophy, probably repolarization abnormality
321	Minimal voltage criteria for LVH
322	Possible left ventricular hypertrophy
323	Left ventricular high voltage(moderate)
324	Left ventricular high voltage(severe)
325	Left ventricular hypertrophy, probably repolarization abnormality
331	Possible left atrial enlargement
332	Left atrial enlargement
341	Possible right atrial enlargement
342	Right atrial enlargement
3120	Biventricular hypertrophy
3121	Biventricular hypertrophy with repolarization abnormality
5	ST-T abnormality (9 types)
51	ST abnormality, possible subendocardial ischemia
52	T wave abnormality, possible subendocardial ischemia

53	T wave abnormality
54	ST depression
55	Nonspecific ST elevation
561	Possible acute pericarditis
562	Acute pericarditis
571	ST elevation, possible acute myocardial infarction
572	Tall T wave, possible hyperkalemia
2	ECG Shaft (6 types)
21	Moderate left axis deviation
22	Abnormal left axis deviation
23	S1-S2-S3 pattern
24	Abnormal right axis deviation
25	Moderate right axis deviation
26	Indeterminate axis
2101	ST depression, possible digitalis effect
2102	Minimal ST depression
2103	Moderate ST depression
2104	Marked ST depression, possible subendocardial injury
2105	Marked ST depression, possible subendocardial injury or Digitalis effect
2106	Marked ST depression, consistent with subendocardial injury
2107	Junctional ST depression, probably normal
2108	Abnormal junctional ST depression
2111	Possible anterior injury or acute infarct
2112	Anterior injury or acute infarct
2113	Possible anteroseptal injury or acute infarct
2114	Anteroseptal injury or acute infarct
2115	Possible anterolateral subepicardial injury
2116	Anteroseptal subepicardial injury
2117	Possible septal subepicardial injury
2118	Septal subepicardial injury
2119	Possible lateral subepicardial injury
21110	Lateral subepicardial injury

21111	Possible inferio injury or acute infarct
21112	Inferio injury or acute infarct
2121	T wave abnormality, possible anterior ischemia
2122	T wave abnormality, possible anterior ischemia or digitalis effect
2123	T wave abnormality, consistent with anterior ischemia
2124	T wave abnormality, possible anterolateral ischemia
2125	T wave abnormality, possible anterolateral ischemia or digitalis effect
2126	T wave abnormality, consistent with anterolateral ischemia
2127	T wave abnormality, possible lateral ischemia
2128	T wave abnormality, possible lateral ischemia or digitalis effect
2129	T wave abnormality, consistent with lateral ischemia
21210	T wave abnormality, possible inferio ischemia
21211	T wave abnormality, possible inferio ischemia or digitalis effect
21212	T wave abnormality, consistent with inferio ischemia
2131	ST elevation, probably early repolarization
2132	Early repolarization
2133	ST elevation, consistent with subepicardial injury, pericarditis, or Early repolarization
2141	Possible acute pericarditis
2142	acute pericarditis
2151	Nonspecific ST&T wave abnormality
2152	Nonspecific ST&T wave abnormality, probably digitalis effect
2153	Tall T waves, possible hyperkalemia
2154	Nonspecific T wave abnormality
2155	Nonspecific T wave abnormality, probably digitalis effect
2161	Nonspecific ST elevation
9	Others (11 types)
911	Low voltage
912	Low voltage in limb leads
913	Low voltage in chest leads
941	Long QT interval
942	Short QT interval
971	Dextrocardia?

972	Limb leads reversed?
973	Abnormal QRS-T angle
974	Consistent with pulmonary disease
981	Artifacts present
982	Cannot be analyzed, re-record recommended
10	Output category (5 types)
1010	Normal ECG
1011	Borderline ECG
1012	Atypical ECG
1013	Abnormal rhythm ECG
1014	Abnormal ECG

Note: Analysis output code may be subject to some changes without notice. Please forgive us if this will make any inconvenience with you.



Shenzhen Biocare Bio-Medical Equipment Co., Ltd.

Address: #16-1, Jinhui Road, Jinsha Community, Kengzi Sub-District,
Pingshan New District, 518122 Shenzhen, PEOPLE'S REPUBLIC OF CHINA

Tel: 86 -755 -33005899 Fax: 86-755-27960643

Website: <http://www.biocare.com.cn>