

User Manual

ARMTracker

Management Software for Solar Charge Controller

Version: 1.0

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1. ARMTracker Overview

1.1. Introduction

ARMTracker is a monitoring software which can monitor multiple solar charger controller via serial port at the same time. The major functions of ARMTracker monitoring software include data log for devices, alarm messages, fault messages, and parameter setting for devices.

1.2. Features

- Automatic and real-time data acquisition of devices and secured data log saving
- Graphic display of device data for quick and easy reading
- Warning notifications or fault alarms via mobile messenger, tray message and e-mail
- Easy diagnosis from event statistics
- Supports online upgrade and manually upgrade

2. ARMTracker Install and Uninstall

2.1. System Requirement

- 512 MB physical memory at least (1 GB is recommended)
- 2GB hard disk space at least
- Administrator authority is required
- More than 32-bit colors and 1280 x 800 or above resolution display is recommended
- An available communication port is needed
- Platforms supported by software are listed below:
 - Windows XP/2000/2003/Vista/2008 (32-bit & 64-bit)
 - Windows 7/8 (32-bit & 64-bit)
 - Windows SBS 2011

2.2. Software Install

Step 1 After clicking install, it will display the installation in process. Refer to the diagram 2-1.

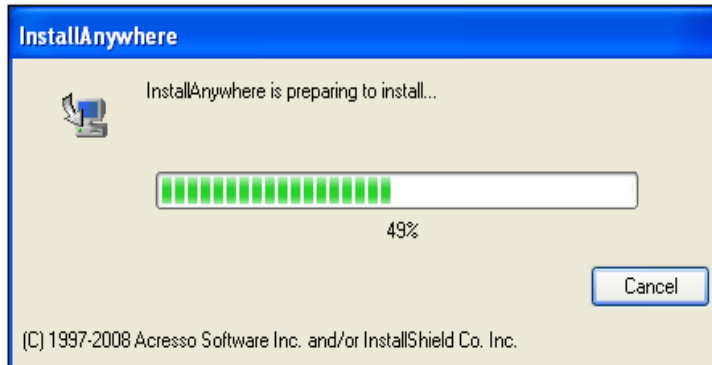


Diagram 2-1

Step 2 Choose wanted language and click "OK" as diagram 2-2.

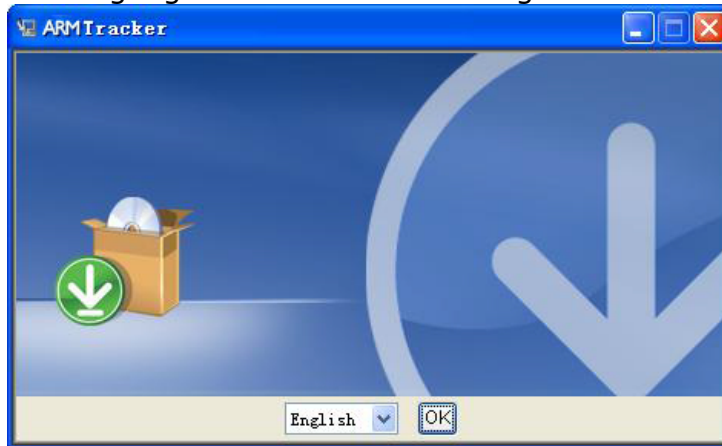


Diagram 2-2

Step 3 Click "Next" to proceed to the next screen as Diagram 2-3.

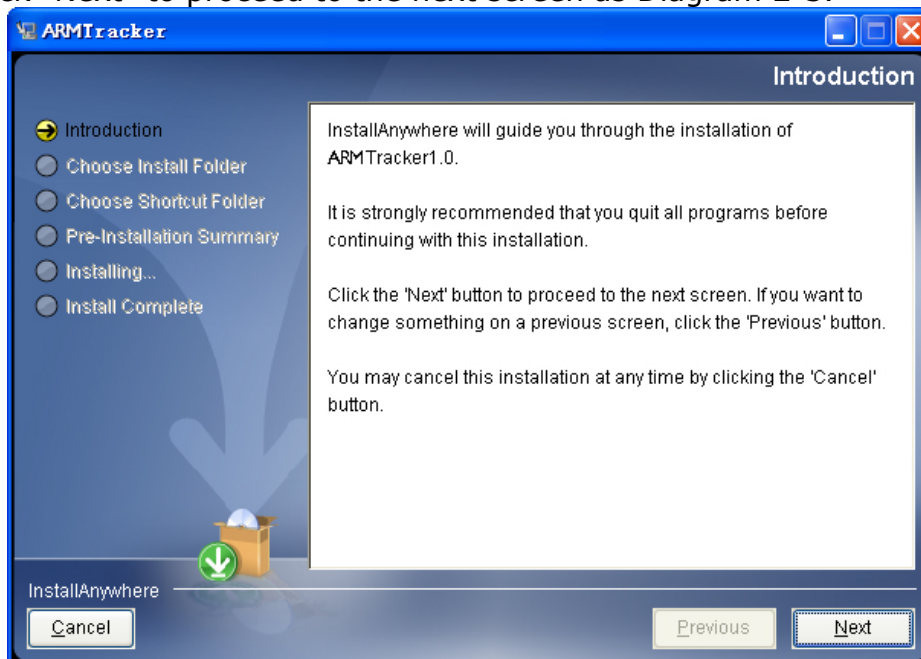


Diagram 2-3

Step 4 Click "Choose" button to change the default folder. After choosing the installed folder, click "Next" button. Refer to the following diagram 2-4.

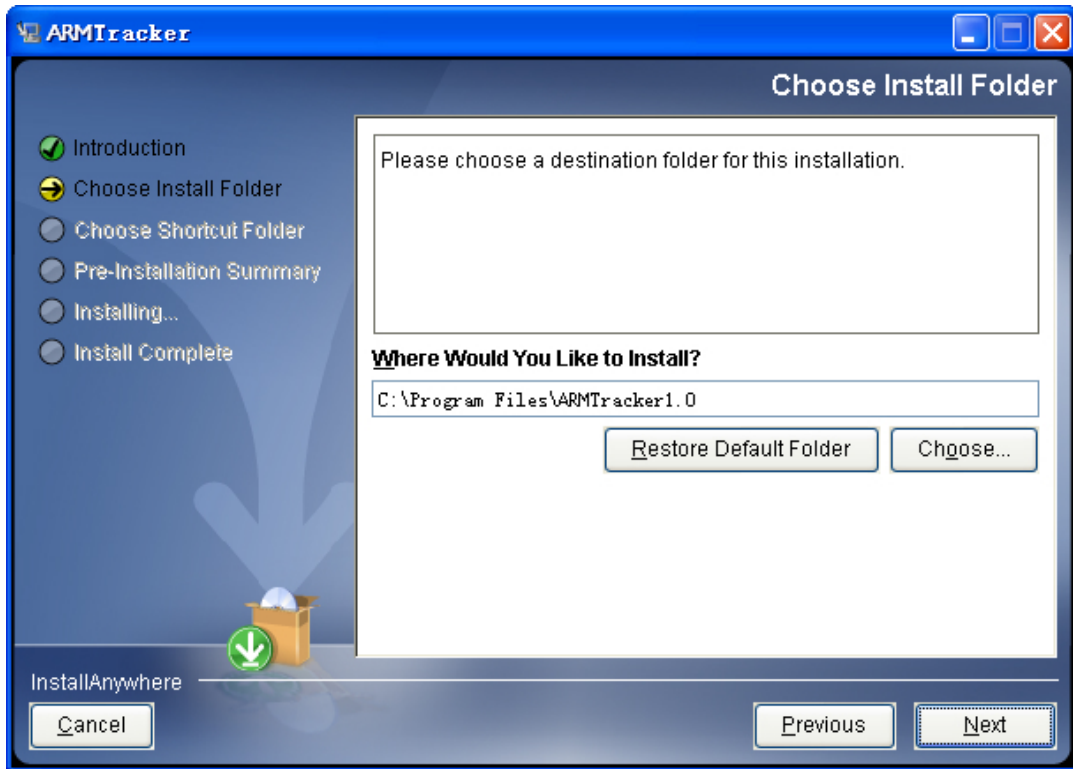


Diagram 2-4

Step 5 Choose the shortcut folder and click "Next" button. Refer to the following diagram 2-5.

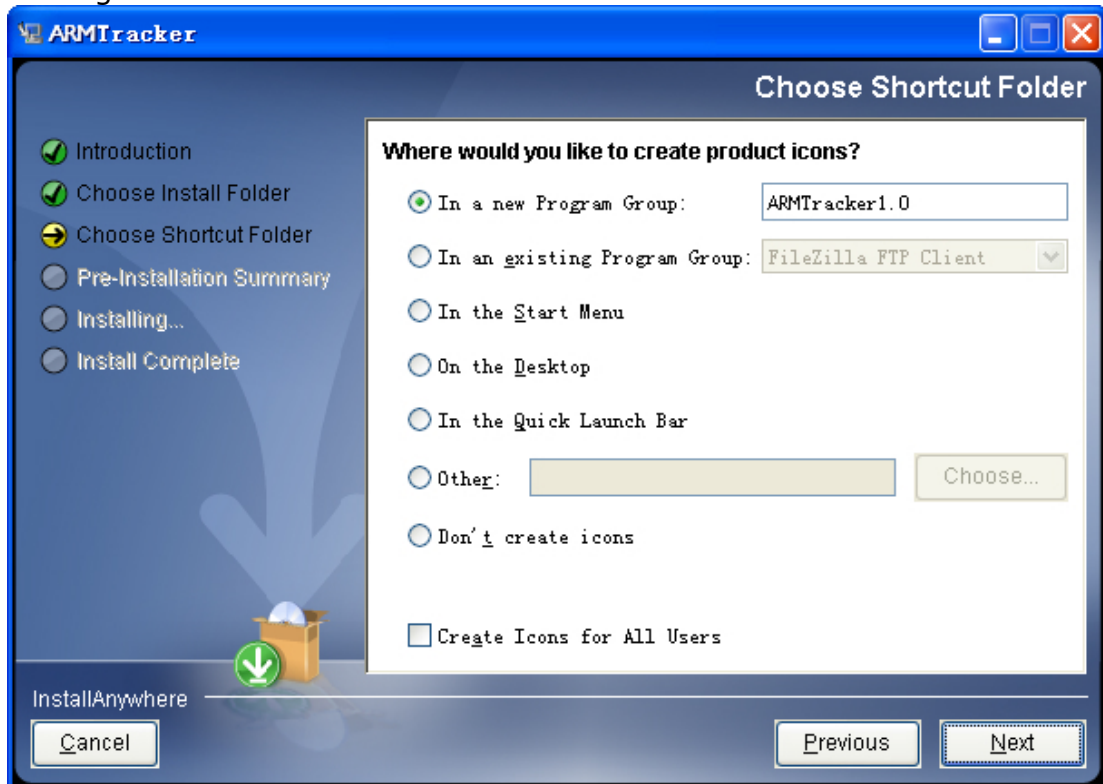


Diagram 2-5

Step 6 It will display the software summary before installation. Click "Install" button

to start the installation and refer to Diagram 2-6.

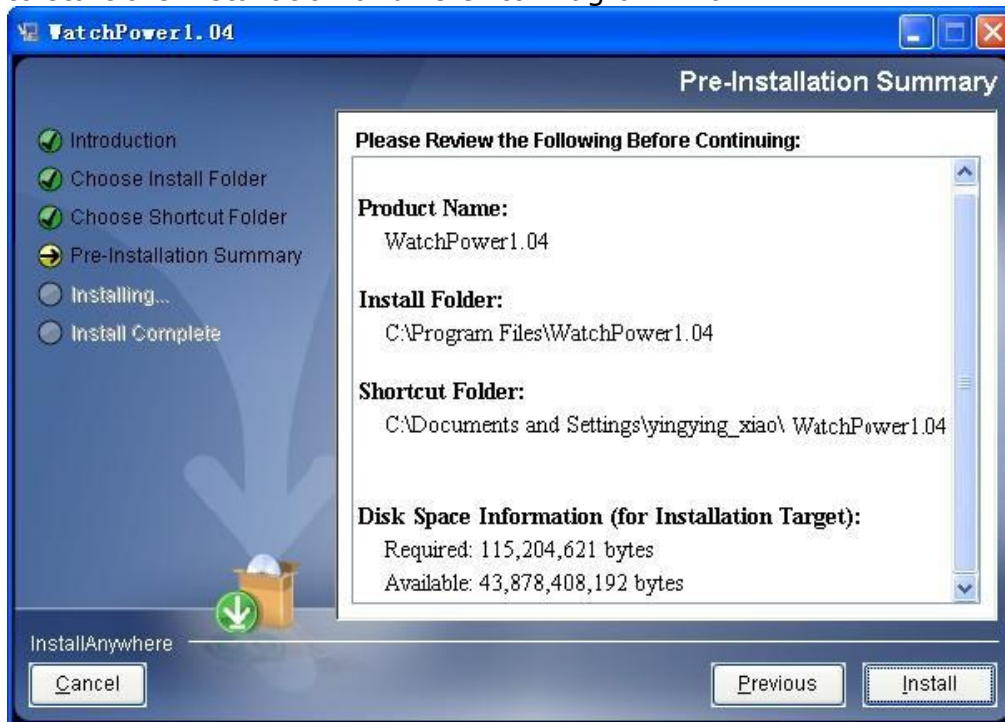


Diagram 2-6

Step 7 Click "Done" button to confirm the installation completely. Refer to Diagram 2-7.

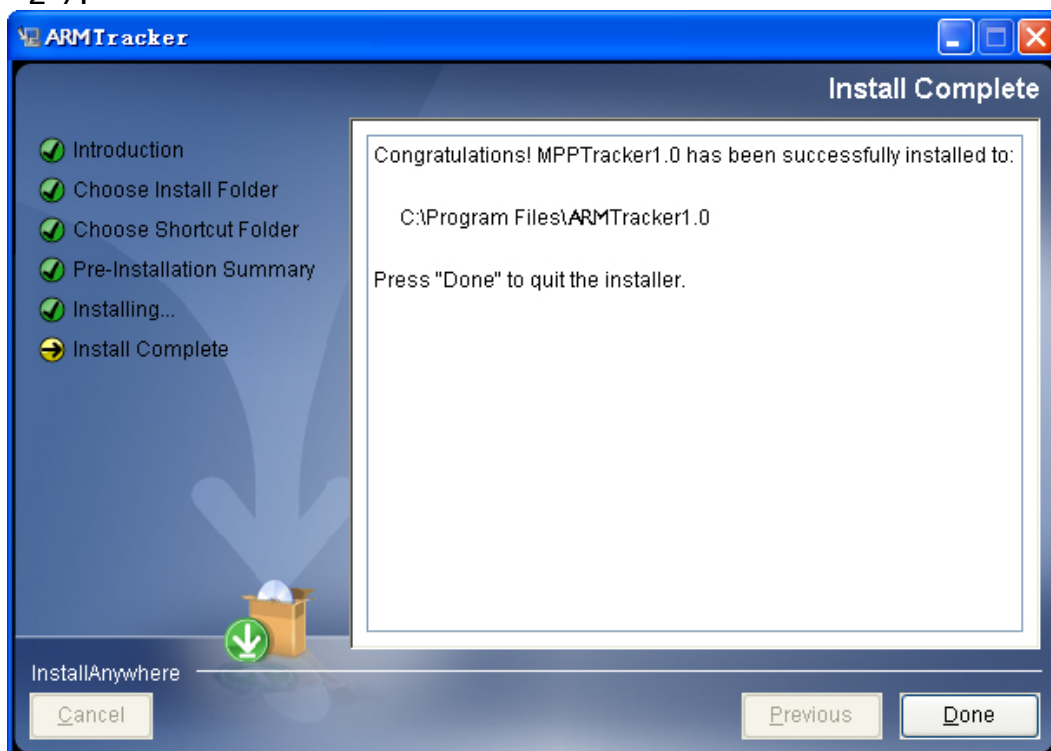


Diagram 2-7

Note: Please uninstall the previous version before installing the new version software.

2.3. Software Uninstall

Please choose Start >> All Programs >> ARMTracker1.0 >> Uninstall. Then, follow the on-screen instruction to uninstall the software.

Note: Before uninstalling software, you must stop all software programs first and log in as "Administrator"! Otherwise, it can't be uninstalled completely.

3. Tray Application

3.1. Startup

The Installer will leave a shortcut icon called "ARMTracker" on your desktop. Refer to Diagram 3-1. Simply double click the shortcut icon. Then, it will start the software and display a service icon located in tray. It will pop up function menu by clicking right button of the mouse. Refer to below diagram 3-2.



Diagram 3-1

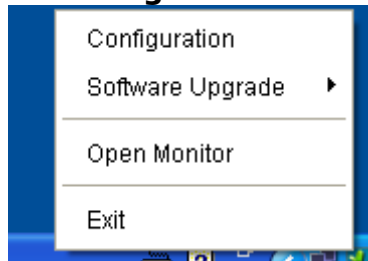


Diagram 3-2

3.2. Configuration

3.2.1. Software Upgrades

Refer to Diagram 3-3 for the detailed configuration for online upgrade:

- Specify the URL for update files: This is the directory to online update software. Please do not change it unless it's instructed by software manufacturer.
- Save files to: The directory to save files in your hard drive.
- Online auto-update: If selected, it will automatically check if there is any new version launched online every 1 hour.
- If applying online upgrade, please follow below for configuration:
 1. Select "Apply the proxy configuration".
 2. Enter IP address and port of server.
 3. If ID identification is requested, select "Enable authentication" and enter User Name and Password.
- Connection test: Click this button to test if all configurations are set up well.

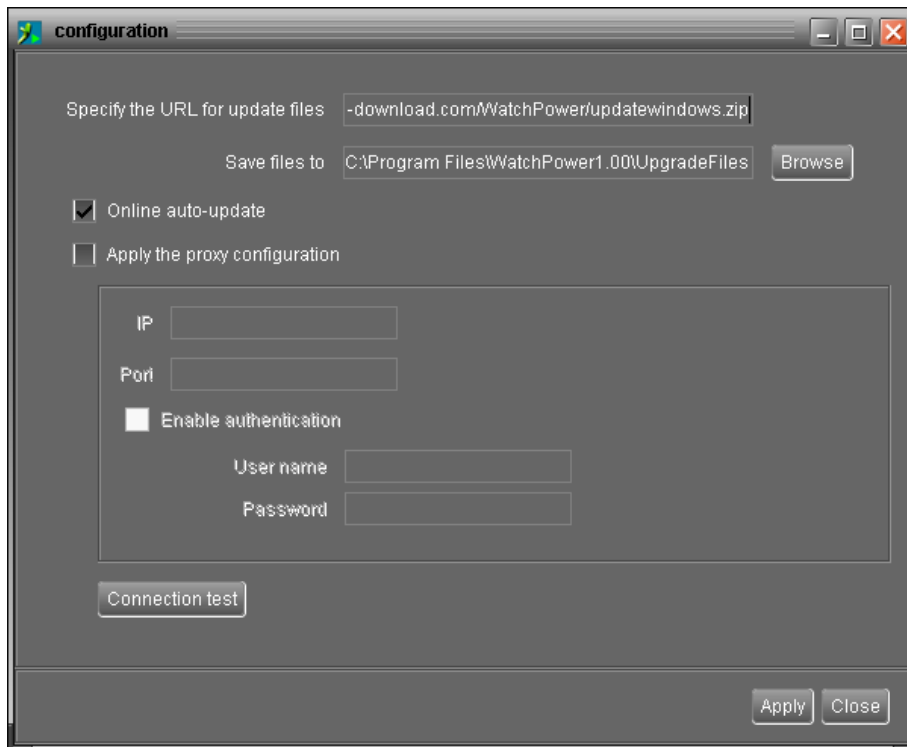


Diagram 3-3

3.2.2. Configuration Saved

Click "Apply" button to save all changes in Configuration page. Click "Cancel" to stop the change.

3.3. Software Upgrade

Software upgrades includes online upgrade and manually upgrade.

- Online Upgrade:
Click "Online Upgrade" to search the latest software version. If there is new version, it will automatically download and upgrade. Refer to Diagram 3-4.

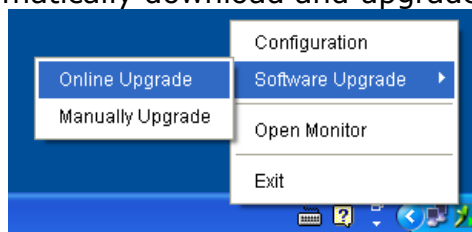


Diagram 3-4

- Manually Upgrade:
Users can manually upgrade the software. Follow below steps:
1. Click "Manually Upgrade" from function menu. Refer to Diagram 3-5.

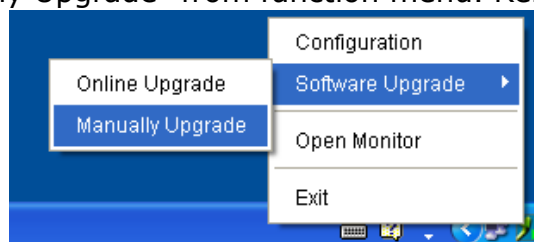


Diagram 3-5

2. Click "Browse" to choose file directory. Then, click "Upgrade" to upgrade software. Refer to Diagram 3-6.

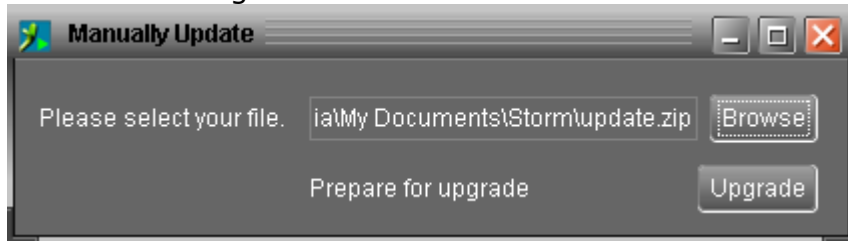






Diagram 3-6

3.4. Icon and Software Status

- Connecting devices:  and  will rotate as an animation
- When receiving event message with devices connected:  will flash for reminder
- When receiving event message without devices connected:  will flash for reminder

3.5. Message Board

Users can check message board for event list. Refer to Diagram 3-7:



Diagram 3-7

3.6. Exit

Click "Exit" to exist service application.

4. GUI Interface

There are five sections in GUI interface as marked in the illustration below:

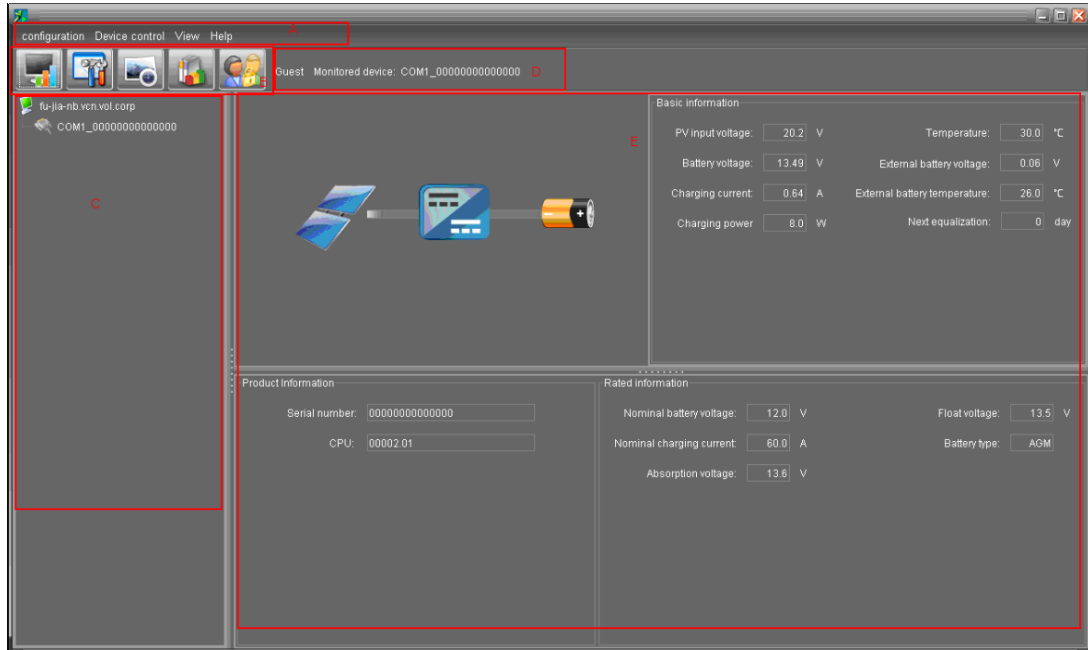


Diagram 4-1

- A. Function Menu** offers complete tool-set for navigating and setting the GUI.
- B. Shortcut Menu** provides short cuts to more commonly used functions.
- C. Navigation** indicates all devices.
- D. Current Monitoring Information** displays User ID, monitored device ID.
- E. Main Window** displays power flow, basic information, product information and rated information of current monitored device. Refer to Diagram 4-2.

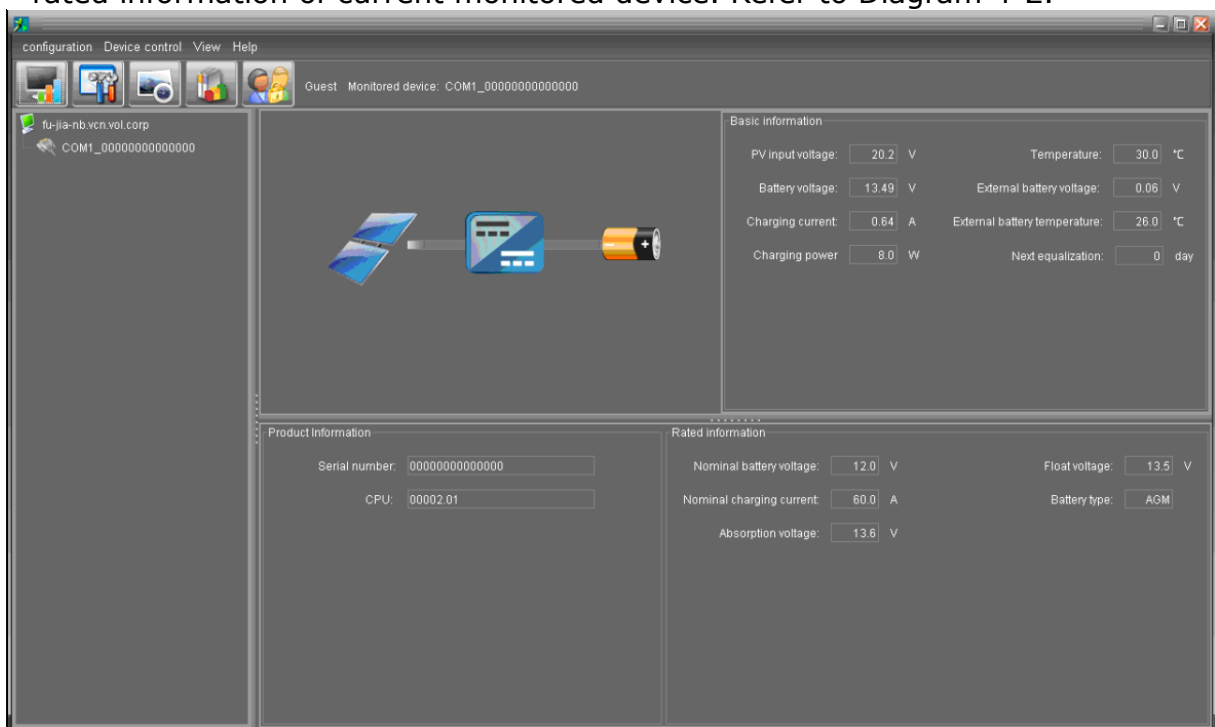


Diagram 4-2

1. Power flow:

There are three icons to represent solar panel, DC/DC and battery. It displays dynamic power flow with these three device icons.



Line Mode



Fault Mode

2. Basic Information:

It displays information of PV input voltage, battery voltage, charging current, output voltage, charging power, temperature, external battery voltage and external battery temperature.

3. Product information:

Product information displays Serial number and Main CPU version.

4. Rated information:

Rated information displays information of Nominal battery voltage, Nominal charging current, Absorption voltage, Float voltage and Battery type.

4.1. ARMTracker Configuration

4.1.1. Basic

It is to set up parameters for display. Select ARMTracker Configuration>>Basic. Refer to Diagram 4-3.

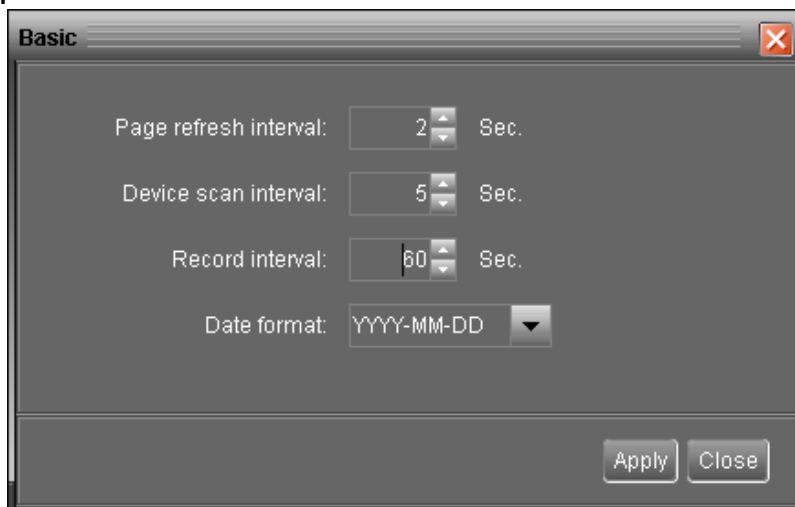


Diagram 4-3

1. Page refresh interval: This interval time will determine how long the web page is

refreshed. Setting range is from 5 to 600 seconds. The default setting is 5 seconds.

2. Devices scan interval: This interval time will determine how long to scan connected devices. The setting range is from 5 to 600 seconds. The default setting is 5 seconds.
3. Record interval: This interval time will determine how long to record monitoring data of device into database. The setting range is from 30 to 600 seconds. The increment of each click is 30 seconds. The default setting is 60 seconds.
4. Date format: This system supports 4 different formats, "YYYY-MM-DD", "YYYY/MM/DD", "MM-DD-YYYY" and "MM/DD/YYYY". The default setting is "YYYY-MM-DD".

If any change is made, simply click "Apply" button. Then, the setting will be saved.

4.1.2. Password

It's password configuration for administrator only. Before operating and configuring the software, please login first and modify the password. The default password is "administrator" at first log in. Users can only browse device status and information as Guest without login as an Administrator. A guest can not control or execute any setting.

Step 1 Select ARMTracker Configuration >> Password. Refer to Diagram 4-4.




Diagram 4-4

Step 2 Enter old password, new password and re-type new password to confirm new password. The new password should be at least 6 digits. Then, click "Apply" button to successfully modify password for administrator.

NOTE1: Simply click "Login" button on the top right corner to log in the software.

NOTE2: If password is forgotten, it's necessary to re-install the software.

4.1.3. SMS Setting

It's to enter SMS receiver list. In the event of an alarm occurring, a message about device status will be sent to the specified users via mobile phone. For the event receiving list, please configure in "Event Action" page (refer to section 4.1.5).

Step 1 Choose ARMTracker Configuration >> SMS Setting. Refer to Diagram 4-5.

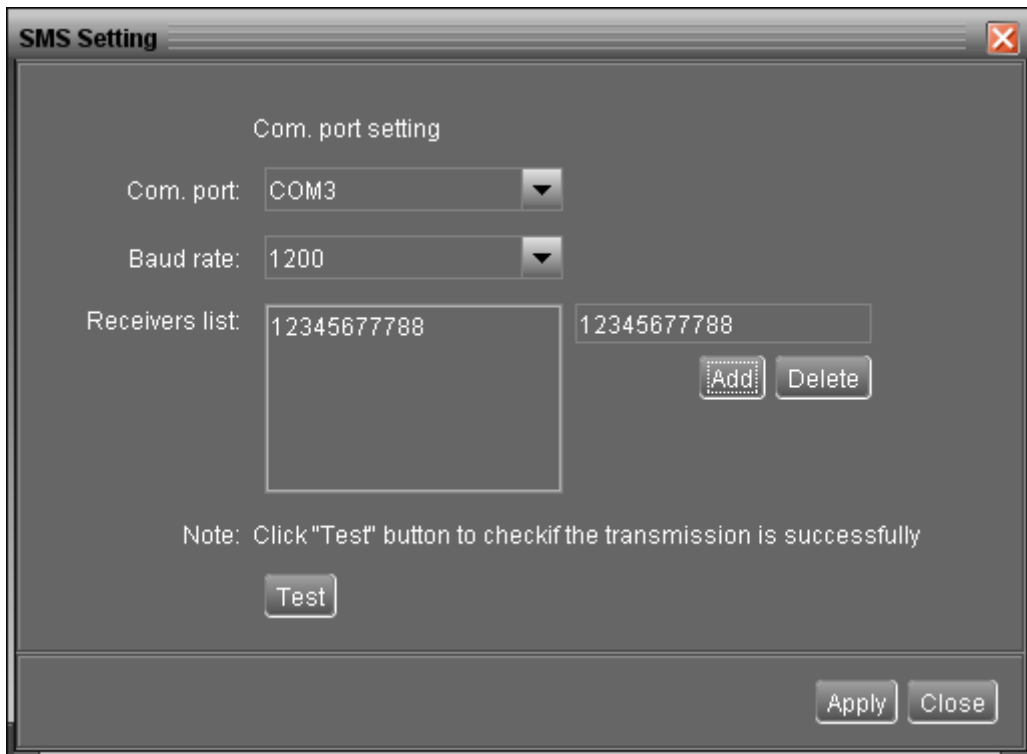


Diagram 4-5

- Step 2** Select communication port and baud rate.
- Step 3** Enter mobile phone numbers in "Phone no." column and click "Add" button to add phone no. in Receivers List. To delete numbers, simply select phone no. from "Receivers list" and click "Delete".
- Step 4** Click "Apply" button to save all changes. The "Test" button can be used to send a test SMS to make sure all setting is correct. If all parameters are set up correctly, system will send a test message to all receivers and pop up a successful message. (Refer to Diagram 4-6) Otherwise, it will pop up a failure dialog to indicate there is an error for parameter setting. (Refer to Diagram 4-7)

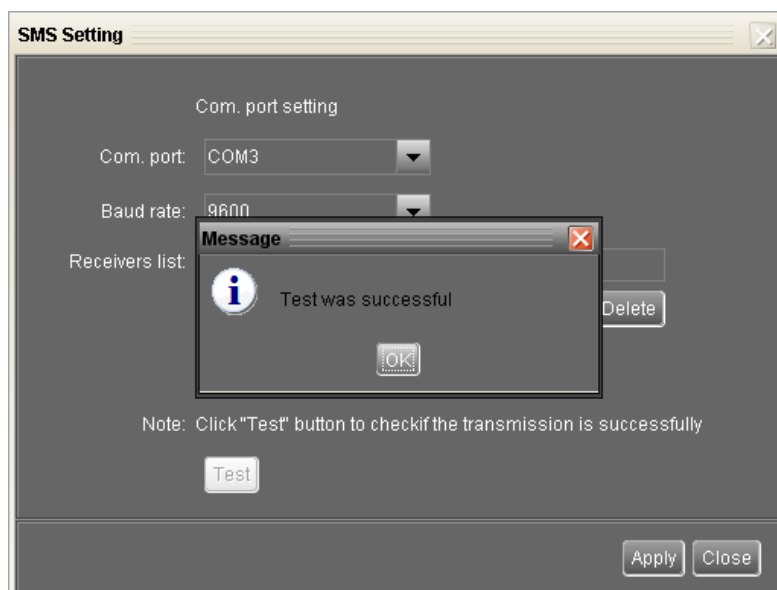


Diagram 4-6

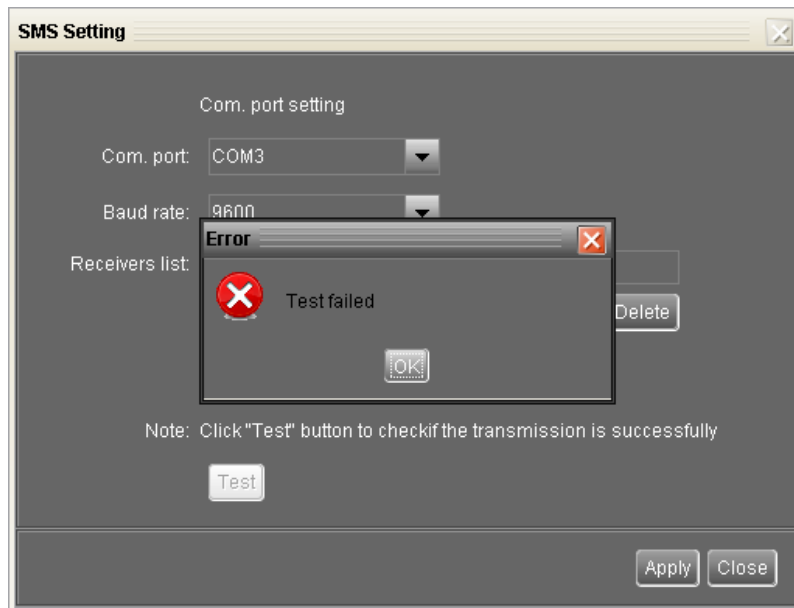


Diagram 4-7

NOTE: It's required to plug in a GSM modem if sending a SMS to mobile phone.

4.1.4. E-mail

This configuration is allowed to send an alarm mail from SMTP server. For the event receiving list, please configure in "Event Action" page (refer to section 4.1.5).

To use this function, the e-mail service must be correctly configured in the computer. All columns in this function page are default empty. This action can't be executed without the SMTP information, e-mail account and password. Besides, the sender account should be allowed for SMTP/POP3 forwarding.

Step 1 Select ARMTracker Configuration >> E-mail. Refer to Diagram 4-8.

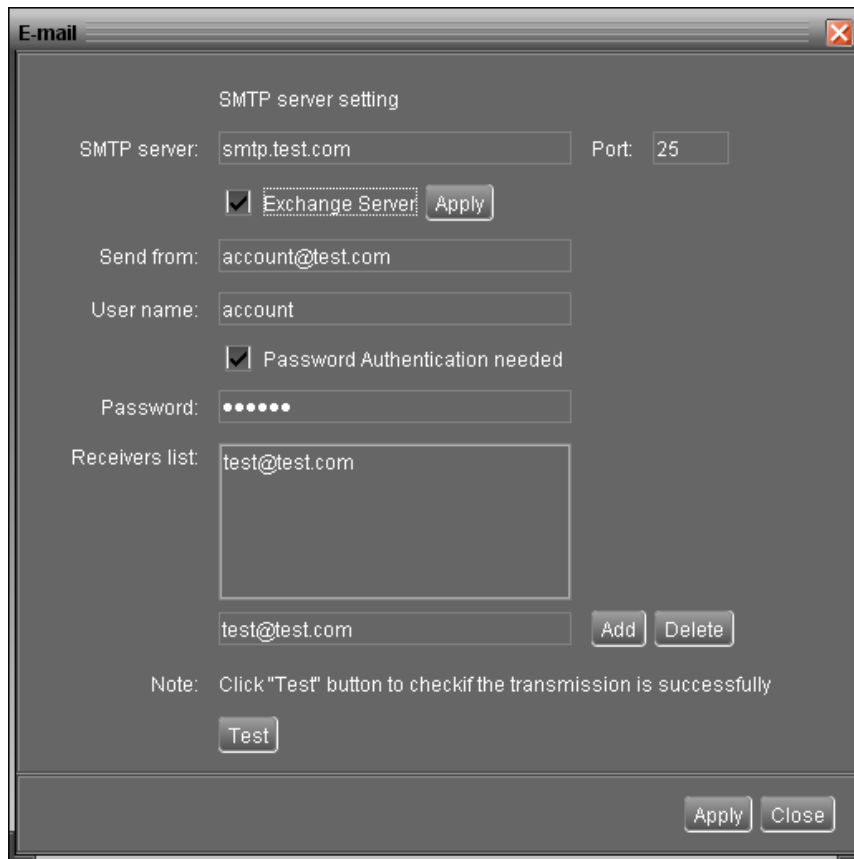


Diagram 4-8

Step 2 Enter SMTP server, Port, Send from E-mail address, User name and password. Click checkbox if password authentication is needed to verify password.

NOTE: If using Exchange Server for mailbox system, it's required to configure Exchange server domain name in SMTP server. Beside, please click checkbox of "Exchange server" and click "Apply" button.

Step 3 Enter receivers' e-mail accounts in E-mail column. Then, click "Add" to add into Receivers list. To delete e-mail account, simply select accounts from Receivers list and click "Delete" button.

Step 4 Click "Apply" to save all changes. The "Test" button can be used to send a test e-mail to all receivers to confirm correct operation. When the test e-mails are successfully sent to specific recipients, it will pop up a successful message on operated personal computer. Otherwise, it will pop up a failure dialog to indicate there is an error for parameter setting.

4.1.5. Event action

It's to configure response actions for events. It provides four response actions after events occur.

- 1. Event record:** It will record event to data log in software after events occur. This function is default selected.
- 2. Warning message(s):** It will send event message to tray.
- 3. SMS:** It will send event message to specific mobile phone numbers after events occur.

4. E-mail: It will send event e-mail to assigned e-mail accounts after events occur.

Step 1 Select ARMTracker Configuration >> Event actions. Refer to Diagram

4-9. **Step 2** Select action methods by clicking checkbox.

Step 3 Click "Apply" button to save all configurations.

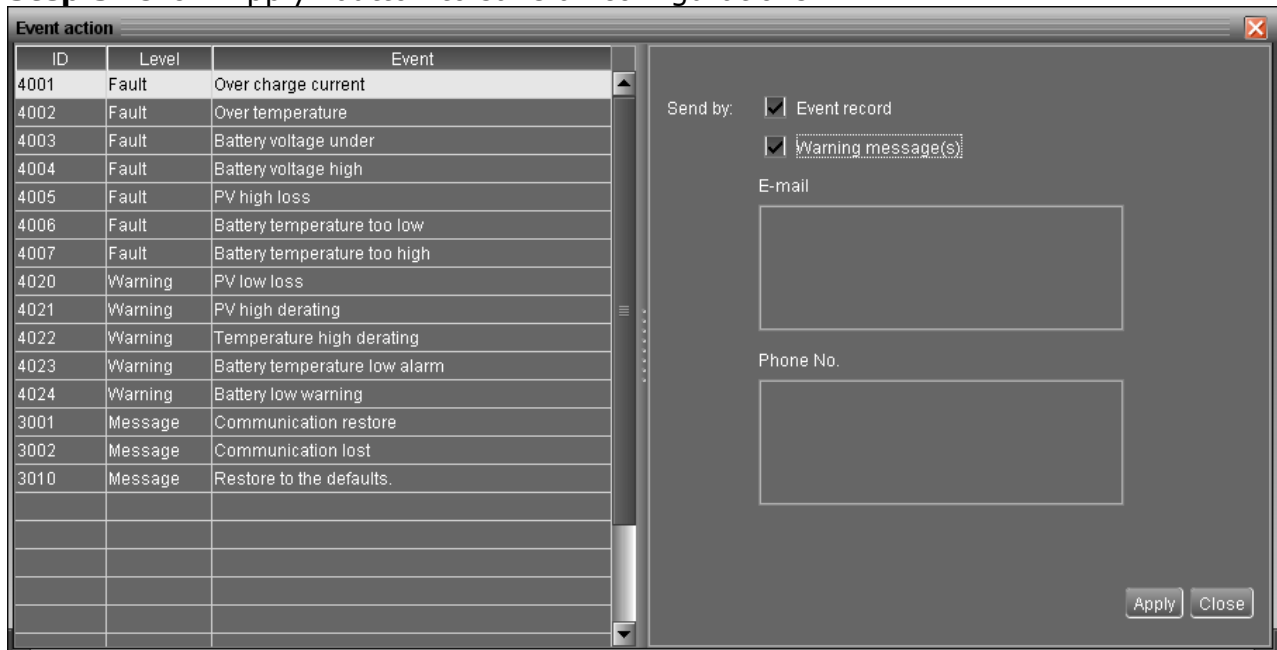


Diagram 4-9

NOTE1: When modifying receiver list in SMS or e-mail pages, it's necessary to refresh event action page to reload the updated receiver list.

4.1.6. Com. port Plug And Play Setting

To real-time monitor device, it will scan each com. port anytime. In this way, it will occupy communication ports. This function will release some communication ports which are not connected with devices. To avoid any improper operation, in-used communication ports will be displayed in disabled grey icons. Users can select "Allow scanned" to re-scan or "No scanning" to release communication ports based on requirements.

Step 1: Select ARMTracker configuration>> Com. port plug and play setting. Refer to Diagram 4-10.



Diagram 4-10


Step 2: Click "Refresh" to reload the status of com. ports.

Step 3: Click "No scanning" to stop scanning on this com. port. Click "Allow scanned" to start scanning on this com. port.

4.2. Device control

4.2.1. Parameter Setting

This page is to activate some features and set up parameters for solar charge controller.

Select Device Control >> Parameter Setting or select shortcut icon . Refer to Diagram 4-11.

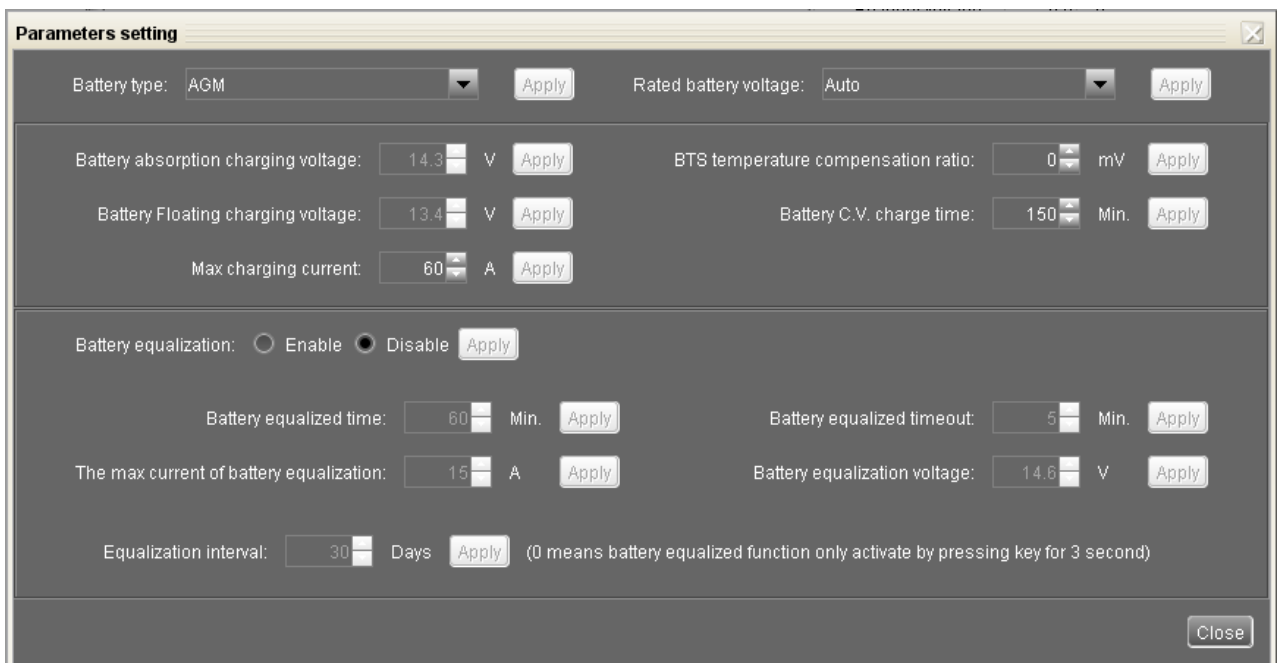


Diagram 4-11

Step 1 Activate/Shut down functions by clicking "Enable" or "Disable" button. Some

parameters are allowed to change the numbers by clicking up-down arrows or modify the numbers directly in the number column.

Step 2 Click "Apply" button to save the settings. Each function setting is saved by clicking each "Apply" button.

- Battery type: Select connected battery type. There are three options, AGM, Flooded and Customized. Please refer to product manual for charging parameters of AGM and Flooded battery. When "Customized" is selected in battery type, users can modify and set up charging voltage in absorption and float stage by clicking up-down arrow.
- Rated battery voltage: There are four options to select: Auto, 12V, 24V and 48V. Please refer to product manual for correct setting value.
- Battery absorption charging voltage: Click up-down arrow to set up battery absorption charging voltage for each 12-V battery. The setting range is 12.00~15.00.
- Battery floating charging voltage: Click up-down arrow to set up battery floating charging voltage for each 12-V battery. The setting range is 12.00V~15.00V.
- Max charging current: Click up-down arrow to set up maximum charging current. Maximum charging current in different solar charge controller model may be different. Please refer to product manual for the details.
- BTS temperature compensation ratio: It will derate battery charging voltage based on this ratio when temperature is between 25°C and 50°C.

Derating battery charging voltage = (current temperature - 25°C) x battery numbers in series connection x BTS ratio

If BTS ratio is 1mV, current temperature is 30°C and it's 48VDC (12V x 4 pcs in series), the derating battery charging voltage is 10mV = (30°C-25°C) x 4 x 1mV.

- Battery equalization: Enable or disable battery equalization function. It's necessary to enable this function in software before executing this function in device.
- Battery equalized time: Click up-down arrow to set up duration time for battery equalization. The setting range is 5~300 minutes.
- Battery equalized timeout: Click up-down arrow to set up the extended time to continue battery equalization. The setting range is 5~560 minutes.
- Equalization interval: Click up-down arrow to set up the cycle for battery equalization. The setting range is 0~60 days. When 0 is selected, it means this function is only activated by pressing power switch on the unit.
- Battery equalization voltage: Click up-down arrow to set up the battery equalization voltage for each 12V battery. The setting range is 12.00V ~ 15.50V.
- The max current of battery equalization: Click up-down arrow to set up the max.

current in equalized stage. The setting range is 5A~60A.

4.2.2. Restore to the defaults

This function is allowed to restore all settings back to default value and clear all data in database.

Select Device control >> Restore to the defaults. Refers to Diagram 4-12

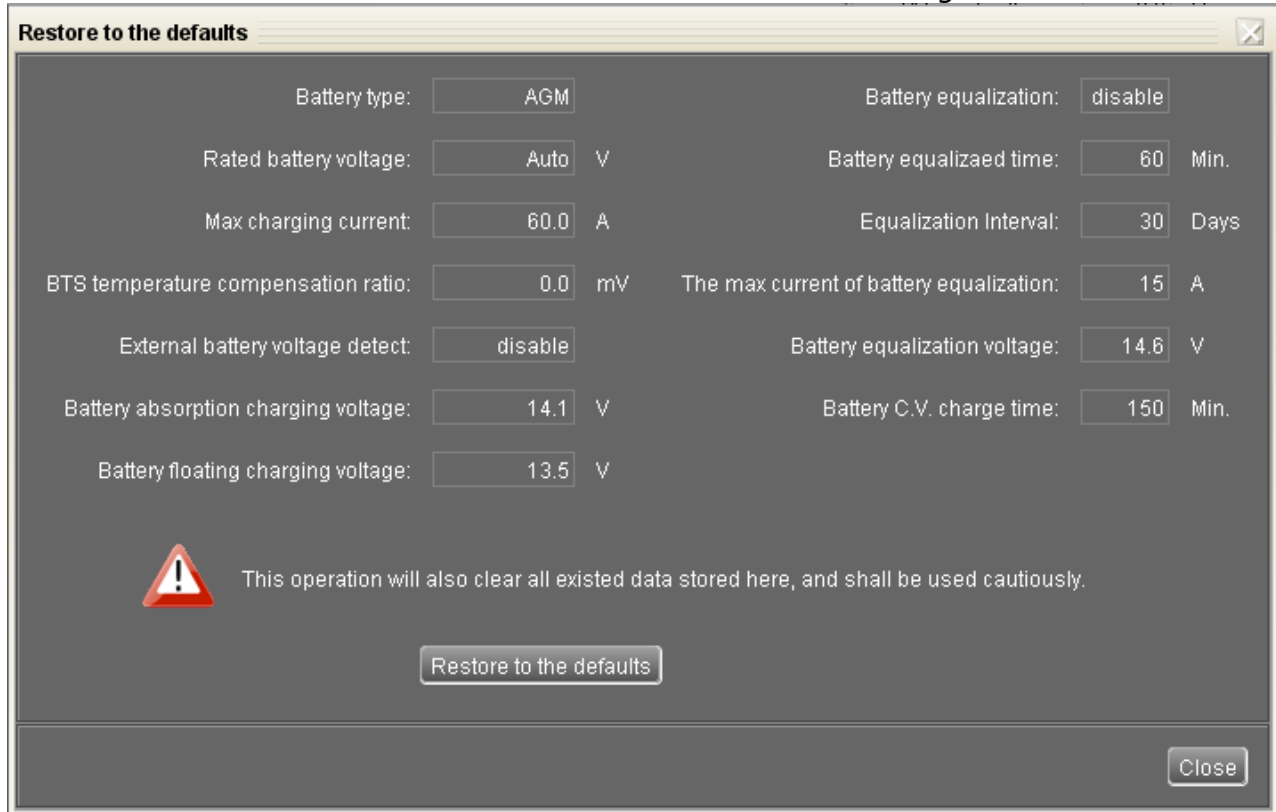


Diagram 4-12

4.3. View

4.3.1. Data

This function is to browse the working data of solar charge controller saved in table or chart format.

- Datasheets



Select View >>Data>>Datasheets or click shortcut icon. Refer to Diagram 4-17. Select browsed device and period to display in the screen. Click "Browse" to get result.

- **"Print"**: Print the listed data table.
- **"Delete"**: Select specific data and click "Delete" button to delete the record. Otherwise, the record can not be deleted.
- **"Delete all"**: Click "Delete All" button to delete all records in the listed table.
- **"Export"**: Click "Export" button to save listed table to local PC in .PDF file.

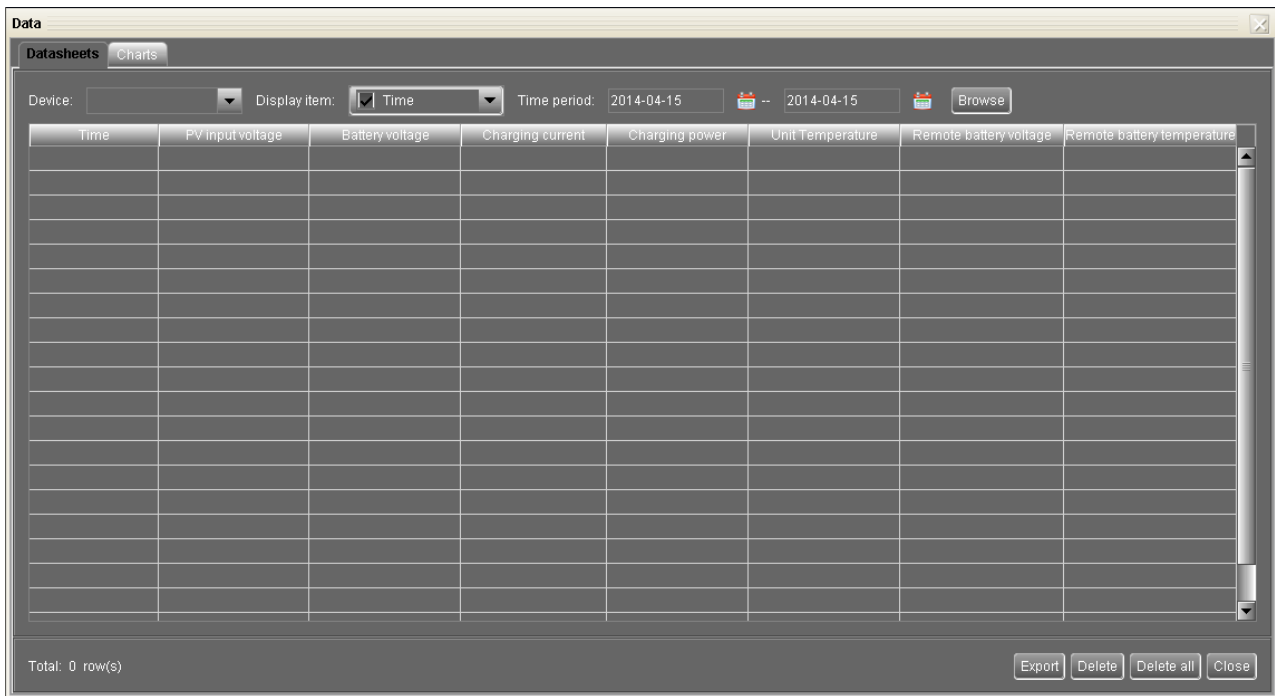


Diagram 4-17

- **Charts**

Select View >>Data>>Charts. Refer to Diagram 4-18.

Select browsed device and period. Then, click "Browse" to get the result.

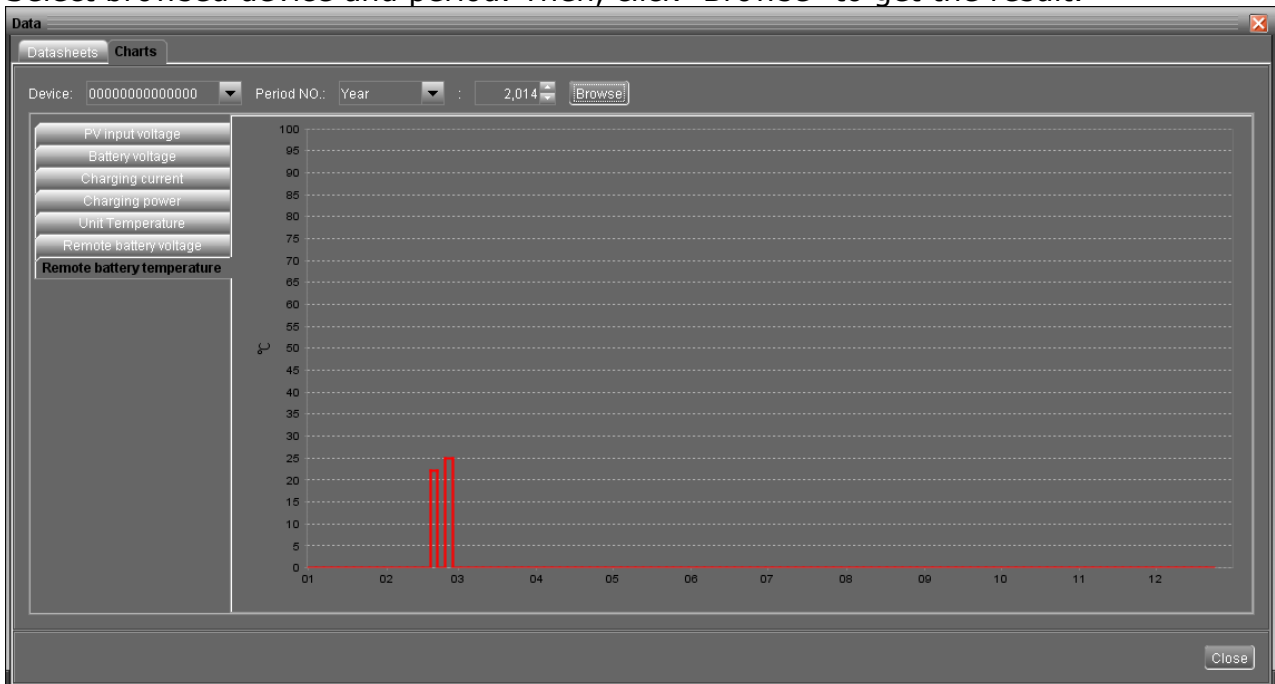


Diagram 4-18

4.3.2. Event log

Select View >>Event log or click shortcut icon  to enter event log.

It's to browse history events according to time duration selected. It lists all detailed information and statistics for history events. Refer to Diagram 4-20.

- **"Delete"**: Select specific data and click "Delete" button to delete the record.

- **“Delete all”**: Click “Delete All” button to delete all records in the listed table.
- **“Export”**: Click “Export” button to save listed table to local PC in .PDF file.

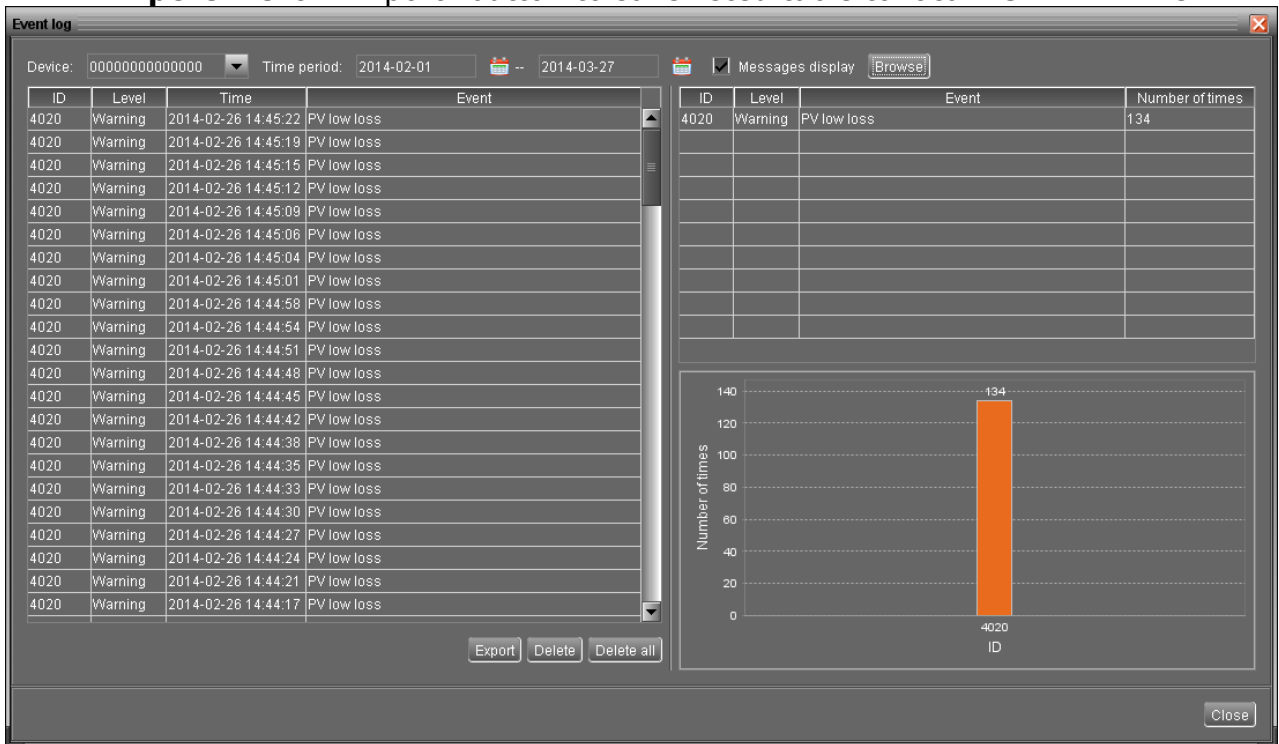





Diagram 4-20

4.4. Log in and Log out

This short cut icon  is to display the login status. When icon  is displayed, it means user status is guest. When icon  is displayed, it means user logins as administrator.

Click icon  and enter password to login the software. The default password is “administrator”. Refer to Diagram 4-22.

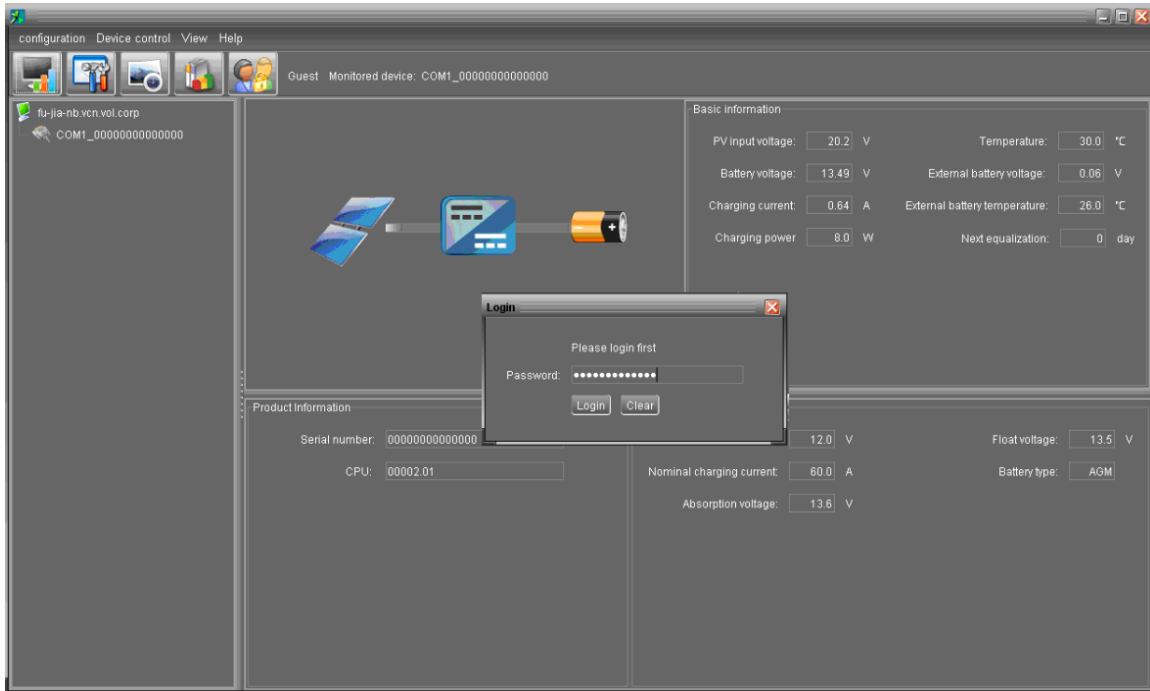



Diagram 4-22

Click icon  to log out. Then, the status will become to "guest". Refer to Diagram 4-23.

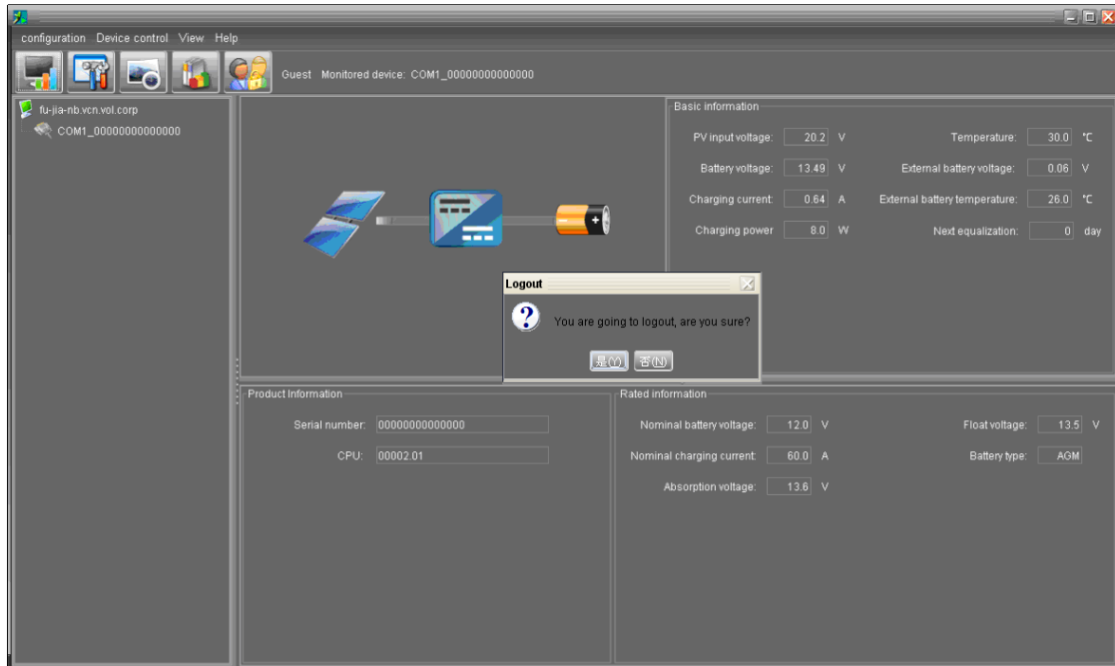


Diagram 4-23

4.5. Help

- **About:** Click "Help" menu and select "About" item. It represents the copyright information about software
- **Help:** Click "Help" menu and select "Online help" item. It will open the help manual. Before operating software, please read manual carefully.