SolarPower

User Manual

For Grid-tie Inverter

Management Software for Solar Inverter

Table of Contents

1. SolarPower Overview

1.1. Introduction

SolarPower is a solar inverter monitoring software; it can monitor multiple devices via USB and Serial port at the same time. The major functions of SolarPower monitoring software include data log for device, power generation statistics, 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 and amount calculation for energy saving
- Supports online upgrade and manually upgrade

2. SolarPower Install and Uninstall

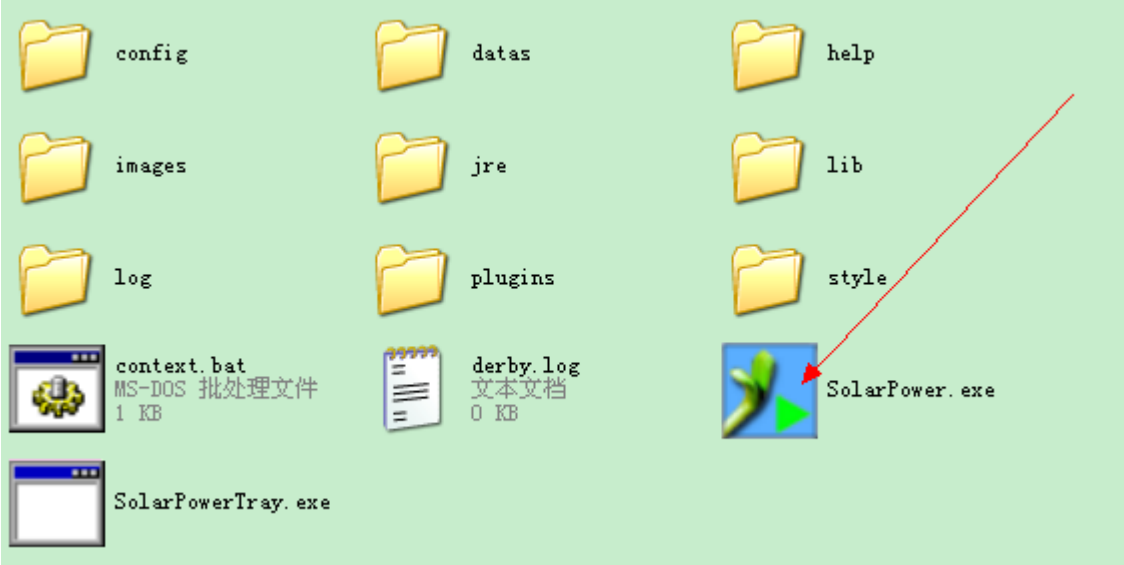
2.1. System Requirement

- 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 2003/XP/Vista/2008/2012 (32bit &x64bit)
  - Windows 7/8 (32bit& x64bit)
  - RedHat Linux 8,9
  - Linux RedHat Enterprise AS3, AS5, AS6(32bit &64bit)
  - Linux SUSE 10 (32bit &64bit)
  - Linux Cent OS 5.4 (32bit &64bit)
  - Ubuntu 8.x,9.x,10.x (32bit &64bit)

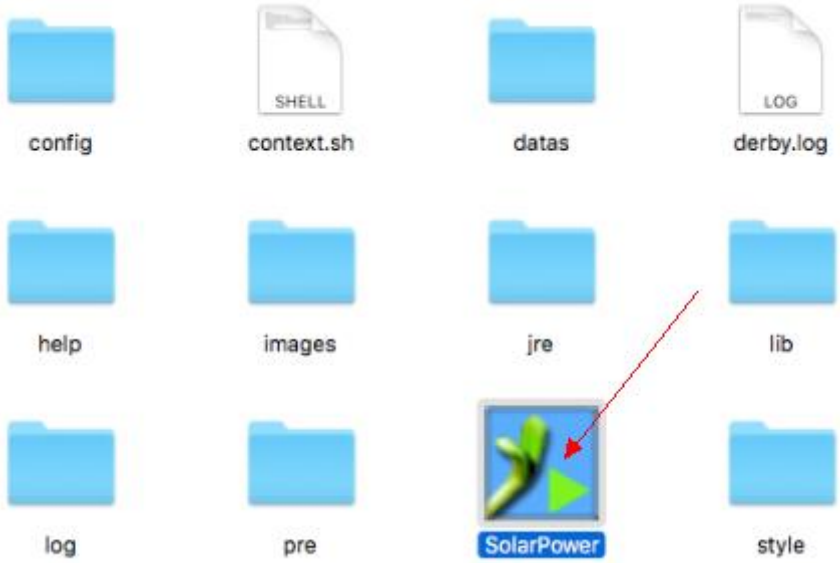
- Linux Fedora 5
- Linux OpenSUSE 11.2 (32bit &64bit)
- Linux Debian 5.x, 6.x (32bit &64bit)
- Mac OS 10.6(x64bit)
- Mac OS 10.7(x64bit)
- Mac OS 10.8(x64bit)

2.2. Software Install

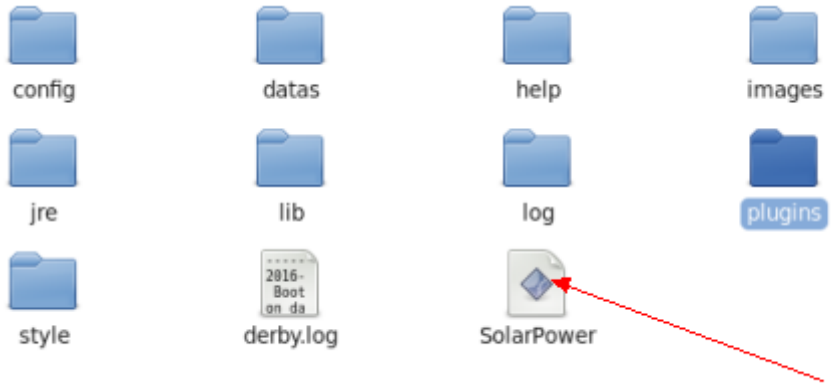
SolarPower is a portable application. It's no need to install this software. You may simply double click "SolarPower.exe" to automatically run this software after extracting files. Windows Version:



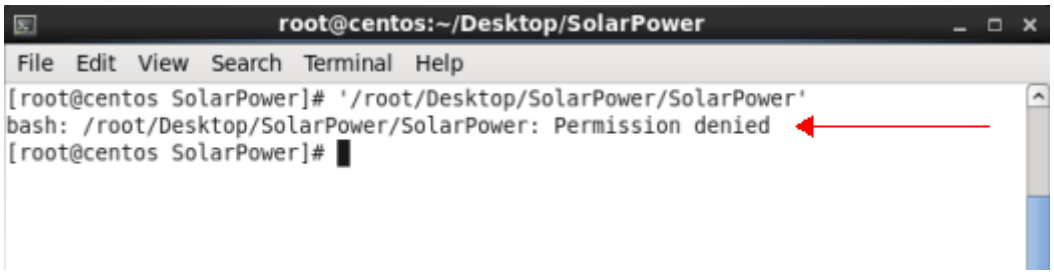
Macosx Version:



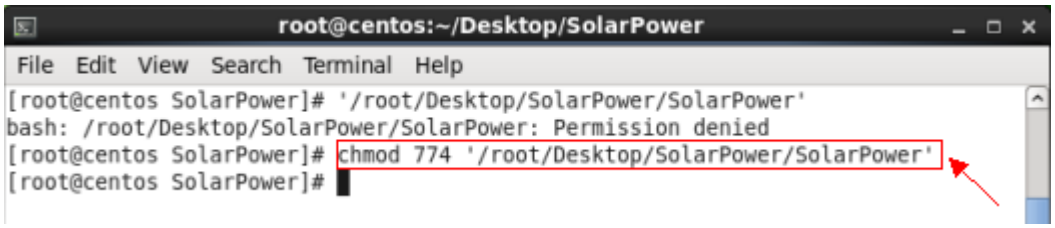
Linux Version:



NOTE: If it's not running after double clicking SolarPower in Linux OS, please check if there is authority to run SolarPower with terminal.



If it shows "Permission denied" in dialog, please send command for elevation of privilege to run SolarPower.



2.3. Software Uninstall

This software becomes portable software. It's easy to delete all files for software uninstallation.

3. Tray Application

3.1. Startup

The Installer will leave a shortcut icon called "SolarPower" on your desktop. Refer to Diagram 3-1. Simply double click the shortcut. 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

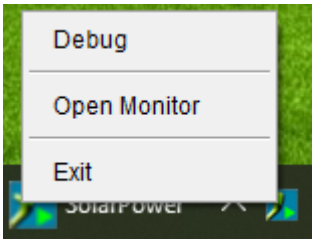


Diagram 3-2

3.2. 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

3.3. Message Board

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

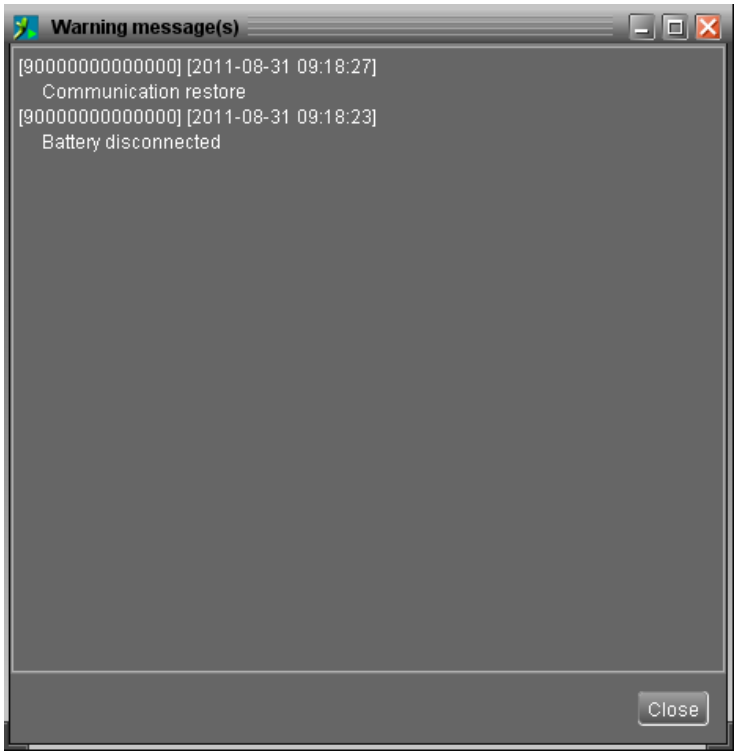


Diagram 3-3

3.4. Exit

Click "Exit" to exist service application.

4. SolarPower GUI Interface

SolarPower GUI Interface has five sections 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. Solar Inverter Navigation indicates all devices.

D. Current Monitoring Information displays User ID, monitored inverter ID, time, and temperature.

E. Main Client Area

This function is to display power flow, basic information, and power generation of current monitored solar inverter. Refer to Diagram 4-2.

Diagram 4-2

1. Power flow:

Power flow chart includes solar module icon, solar inverter icon, and the utility icon. Solar module icon presents the numbers of MPP defined by solar inverter.

When this device successfully connects to the grid, there will be power flow animation from solar modules to the utility. If there any fault or abnormal situation occurs in solar inverter or the utility, the power flow animation will stop.

When fault occurs in solar inverter, the icon of solar inverter will flash until the fault is solved.

When there abnormal situation occurs in the utility, the utility icon will flash until the fault is solved.

2. Basic Information:

This page is to display the current working data based on different types of monitored inverter. The major displayed information includes grid voltage, grid frequency; PV input voltage and Output current and so on.

3. Power Information:

Power information displays real-time PV input power, power generation on recent date, month and year.

Power generation chart:

- Display hourly power generation on current date when selecting "per hour";
- Display daily power generation on current month when selecting "daily";
- Display monthly power generation on current year when selecting "monthly";
- Display annual power generation since the year to purchase the device when selecting "annual".

NOTE: This screen may be different for different types of solar inverters.

4.1. SolarPower Configuration

4.1.1. Basic

Select SolarPower Configuration>>Basic. This page is to set basic display. Refer to Diagram 4-3.

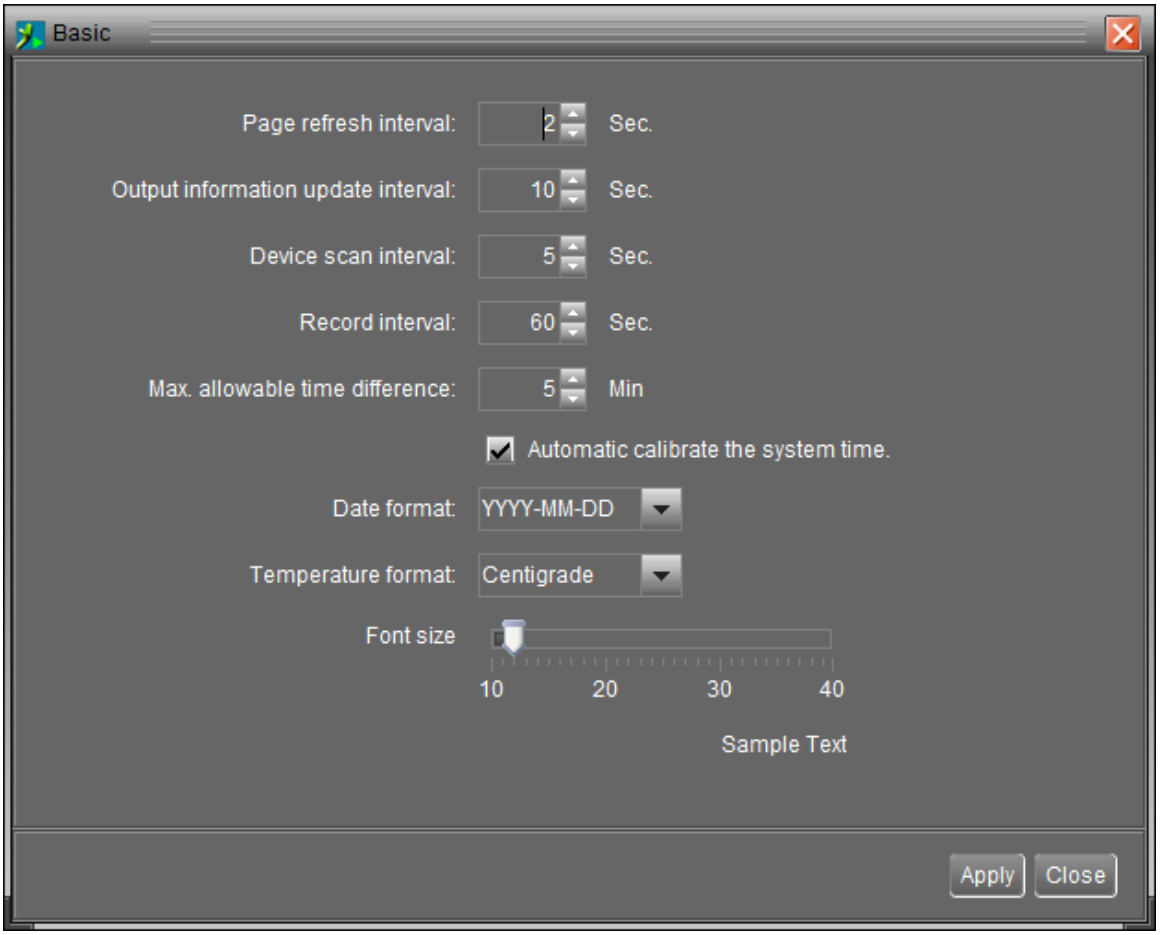


Diagram 4-3

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. Output information update interval: This interval time will determine how long the power generation data is updated. Setting range is from 10 to 600 seconds. The default setting is 20 seconds.
3. Devices scan interval: This interval time will determine how long the device scanning action will be executed. The setting range is from 5 to 600 seconds. The default setting is 5 seconds.
4. Record interval: This interval time will determine how long the monitoring data of solar inverters will be recorded into database. The setting range is from 30 to 600 seconds. The difference between each option is 30 seconds. The default setting is 60 seconds.
5. Max. device time difference: It will send alarm message when the maximum device time difference is longer than the setting time. The setting range is from 1 to 60 minutes. The default setting is 5 minutes.
6. Automatic calibrate system time: If you selected, it will automatic calibrate the system time.
7. 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".
8. Temperature format: This system supports Centigrade (°C) and Fahrenheit (°F). The default setting is Centigrade (°C).

If any change is made, simply click "Apply" button in the end of each item. 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 Solar Inverter status and information as Guest status without login as an Administrator. Guest can not control or executive any setting.

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

Diagram 4-4

Step 2 Enter old password, new password, and retype new password in confirm password column to modify password for administrator. (The 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. Price settings

This function is to calculate the total amount of power generation when entering unit price of electricity. The effective date is to determine when this unit price will be applied and not allowed to repeat.

Select SolarPower Configuration>>Price settings. Refer to Diagram 4-5.

1. Add electricity price: select effective data and enter unit price. The click "Add" button.
2. Delete electricity price: Select deleted item from the list and click "Delete" button to delete.

Diagram 4-5

4.1.4. SMS Setting

It's for entering SMS receiver list. In the event of an alarm condition occurring, a message about Solar Inverter status will be sent to the specified users via mobile phone. For the event receiving list, please configure in "Event Action" column (refer to section 4.1.6).

Step 1 Choose SolarPower Configuration >> SMS Setting. Refer to Diagram 4-6.

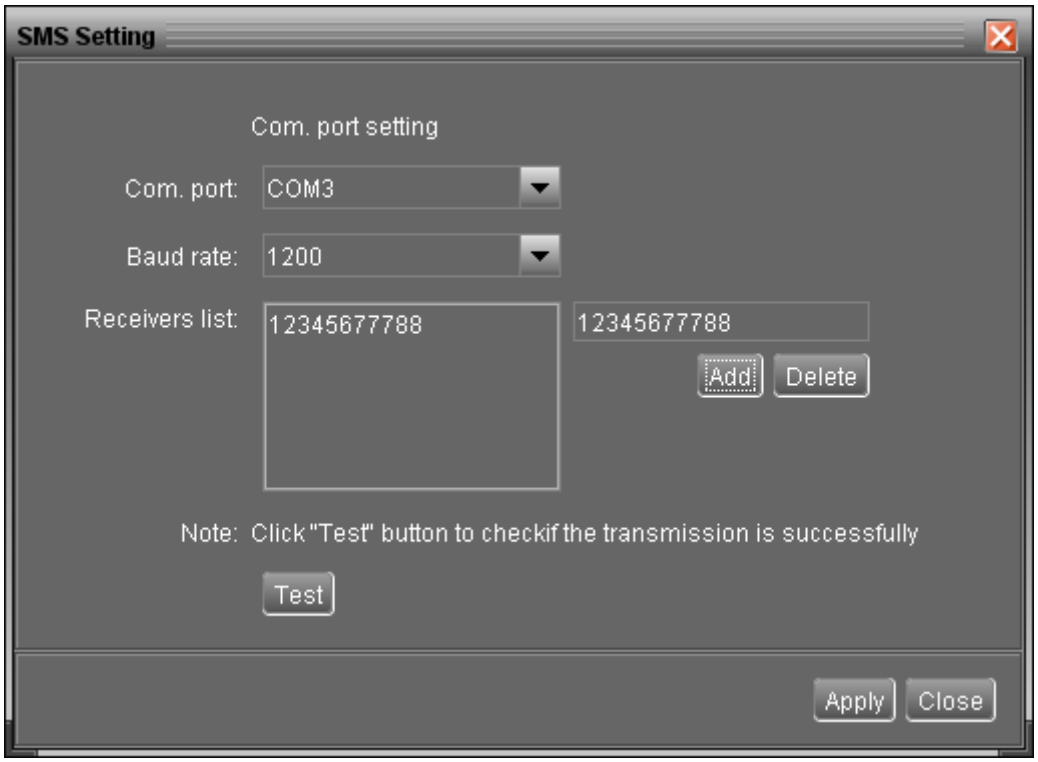


Diagram 4-6

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 tests SMS to confirm the correct operation. 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 4-7) Otherwise, it will pop up a failure dialog to indicate there is an error for parameter setting. (Refer to Diagram 4-8)

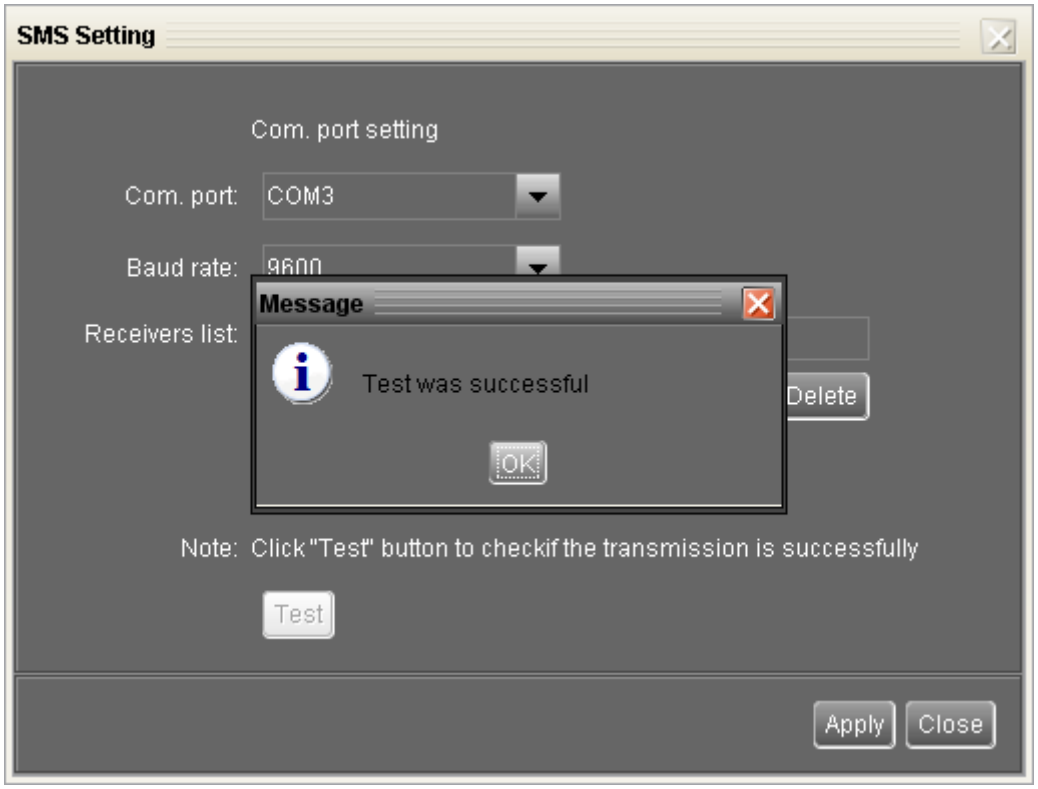


Diagram 4-7

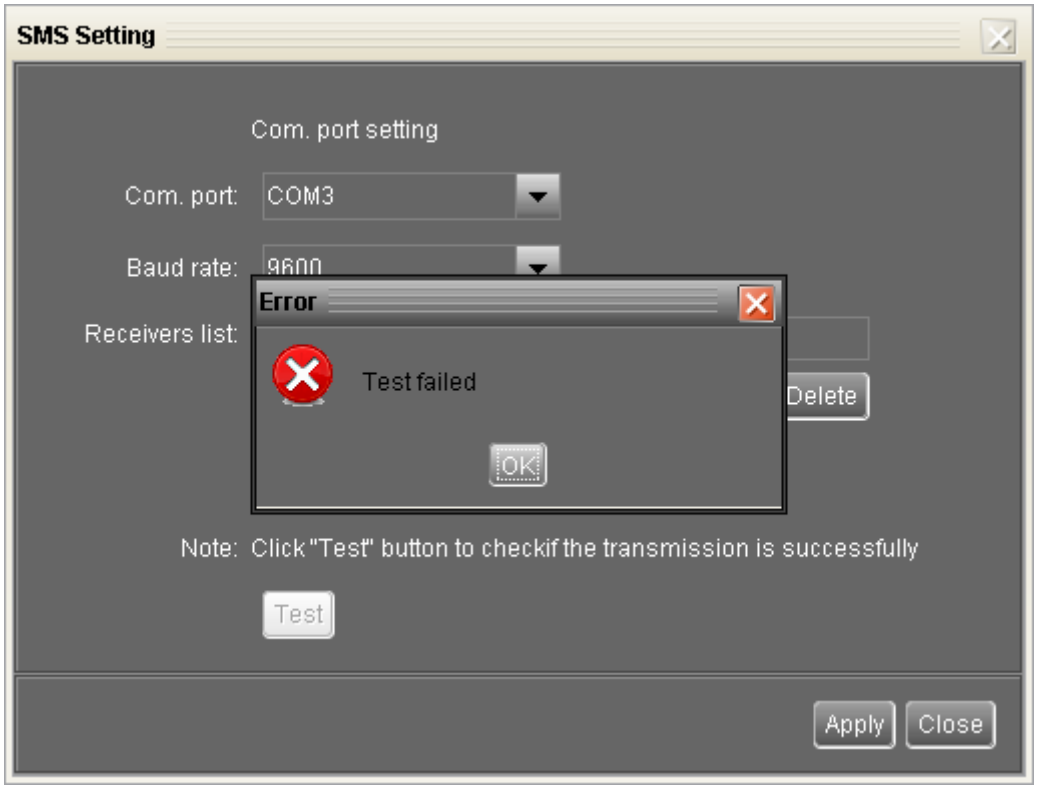


Diagram 4-8

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

4.1.5. E-mail

This feature enables the configuration to send alarm mail by SMTP server. For the event receiving list, please configure in "Event Action" column (refer to section 4.1.6).

To use this function, the e-mail service must be correct configured on the computer. All values 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 SolarPower Configuration >> E-mail. Refer to Diagram 4-9.

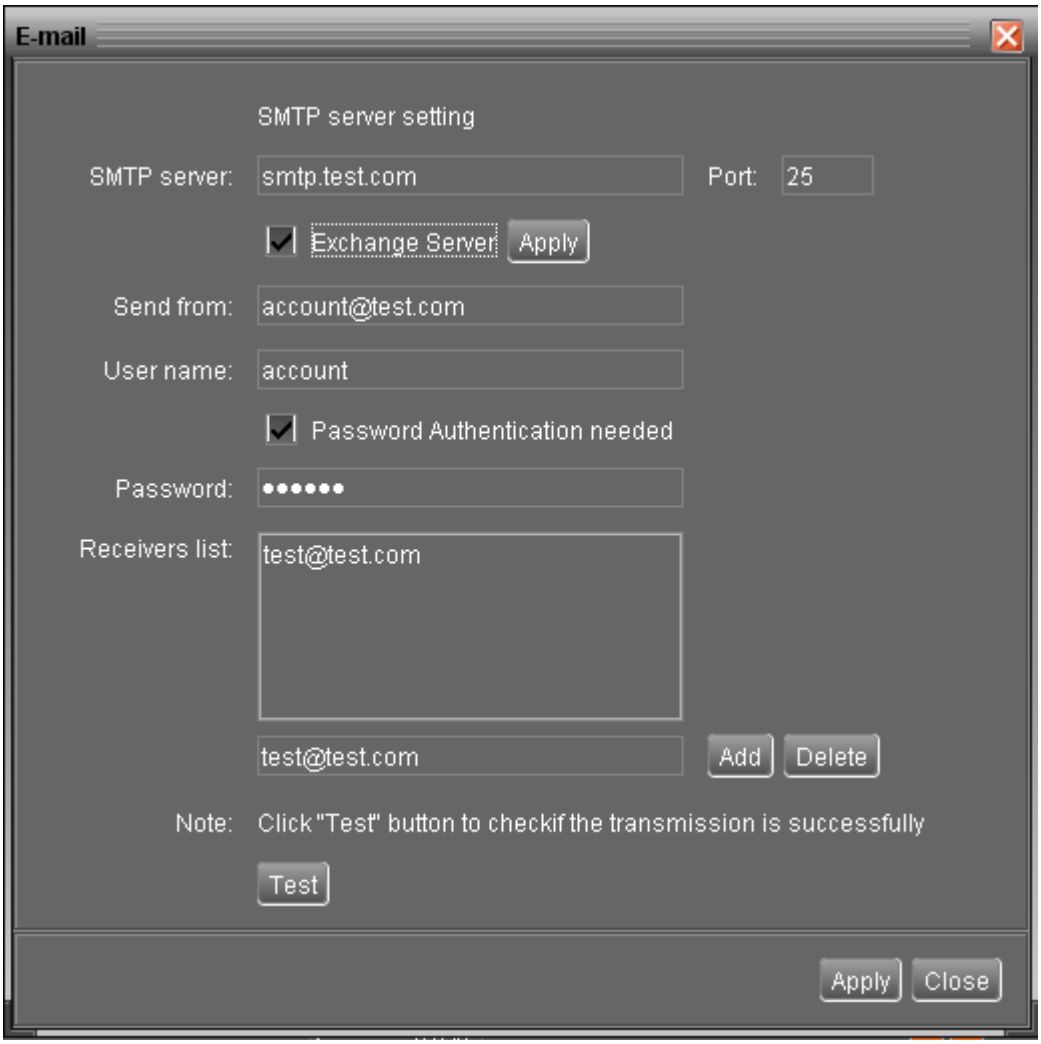


Diagram 4-9

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

NOTE: If using Exchange Server for mailbox system, it's required to configure Exchange

server domain name in SMTP sever and select "Exchange server", then click "Apply" button.

Step 3 Enter correct 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 PC. Otherwise, it will pop up a failure dialog to indicate there is an error for parameter setting.

4.1.6. Event action

It's to configure response actions for SOLAR INVERTER events. Software provides six 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 the event message to specific mobile phone numbers after events occur.

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

Step 1 Select SolarPower Configuration >> Event actions. Refer to Diagram 4-10.

Step 2 Select desired action methods by clicking checkbox.

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

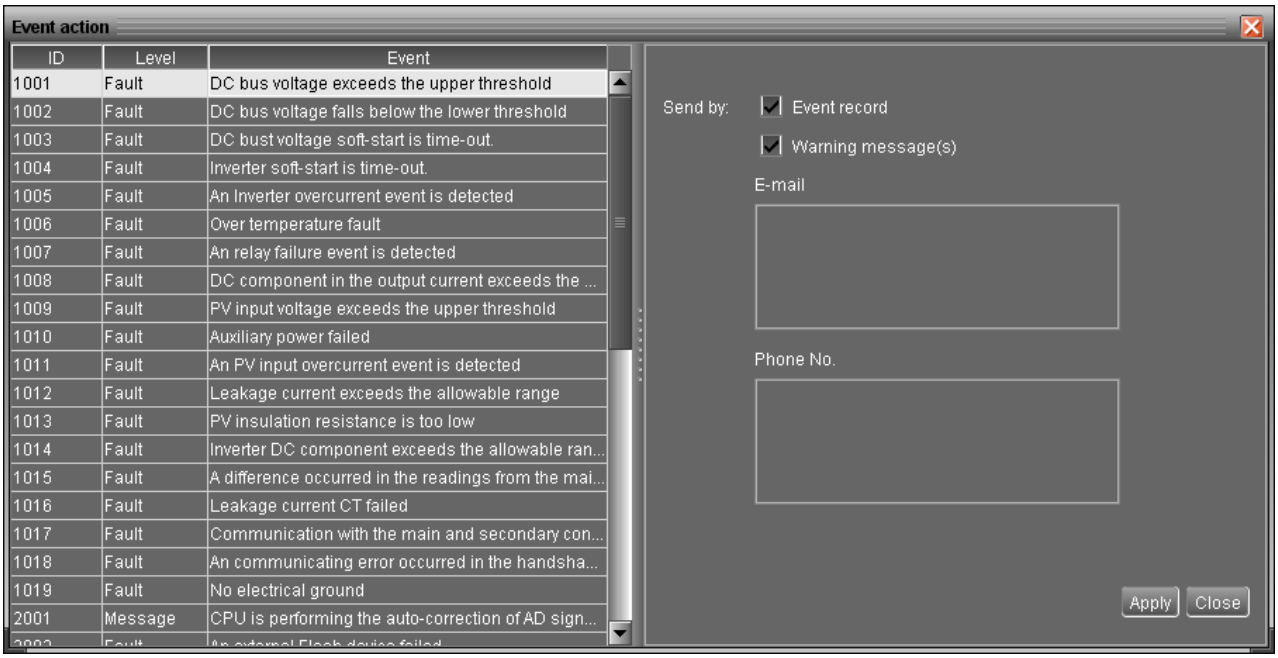


Diagram 4-10

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

NOTE2: Event list may be different based on different types of solar inverters.

4.1.7. Com. port Plug And Play Setting

To real-time monitor solar inverter device, the software will scan each com. port anytime. In this way, it will occupy com.port. This function will release some com.ports which not connects to solar inverter devices. To avoid any improper operation, in-used com.ports will display in disabled grey icons. Users can select "Allow scanned" or "forbid scanned" to re-scan or release com.ports based on their requirements.

Step 1: Select SolarPower configuration>> Com.port plug and play setting. Refer to Diagram 4-11.

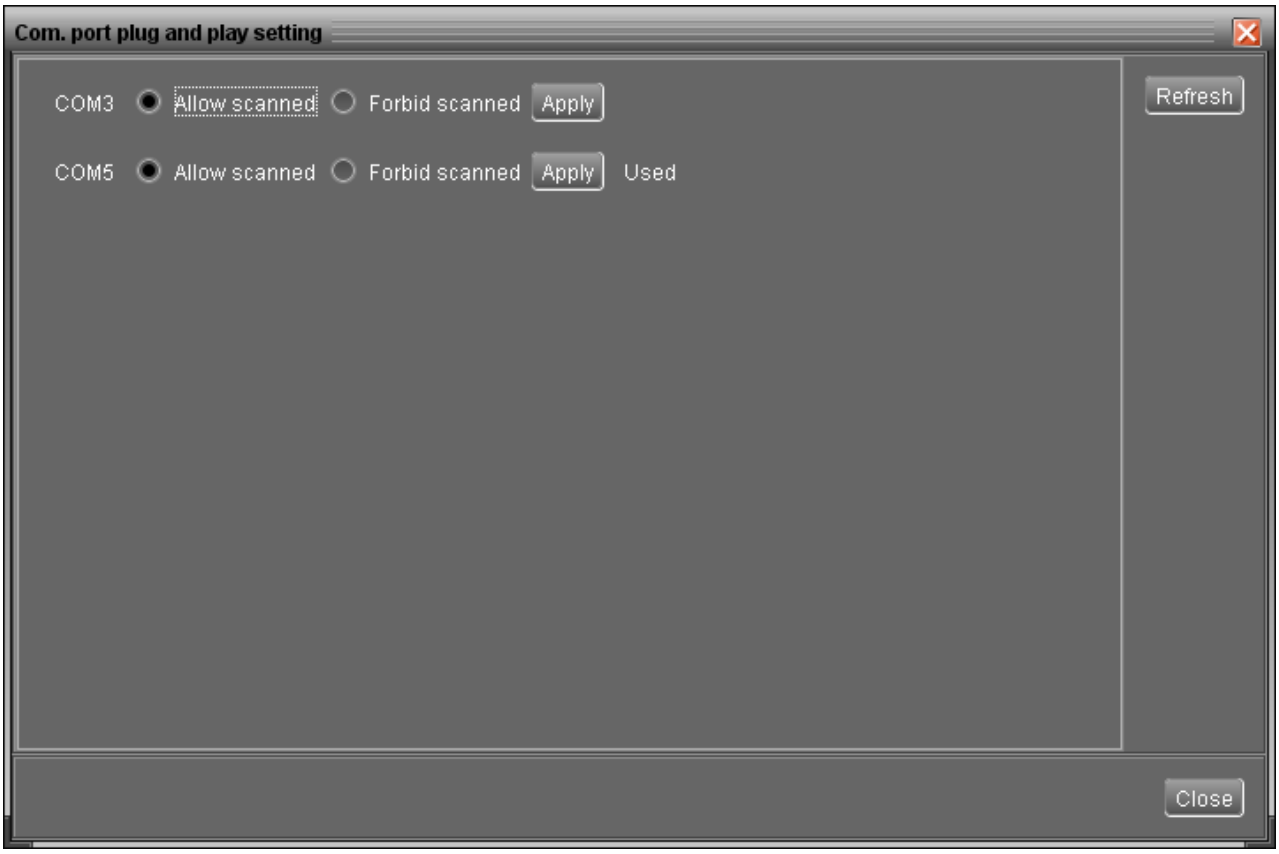


Diagram 4-11

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

Step 3: Click "Forbid scanned" 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

Select Device Control >> Parameter Setting or select shortcut icon  . Refer to Diagram 4-12.

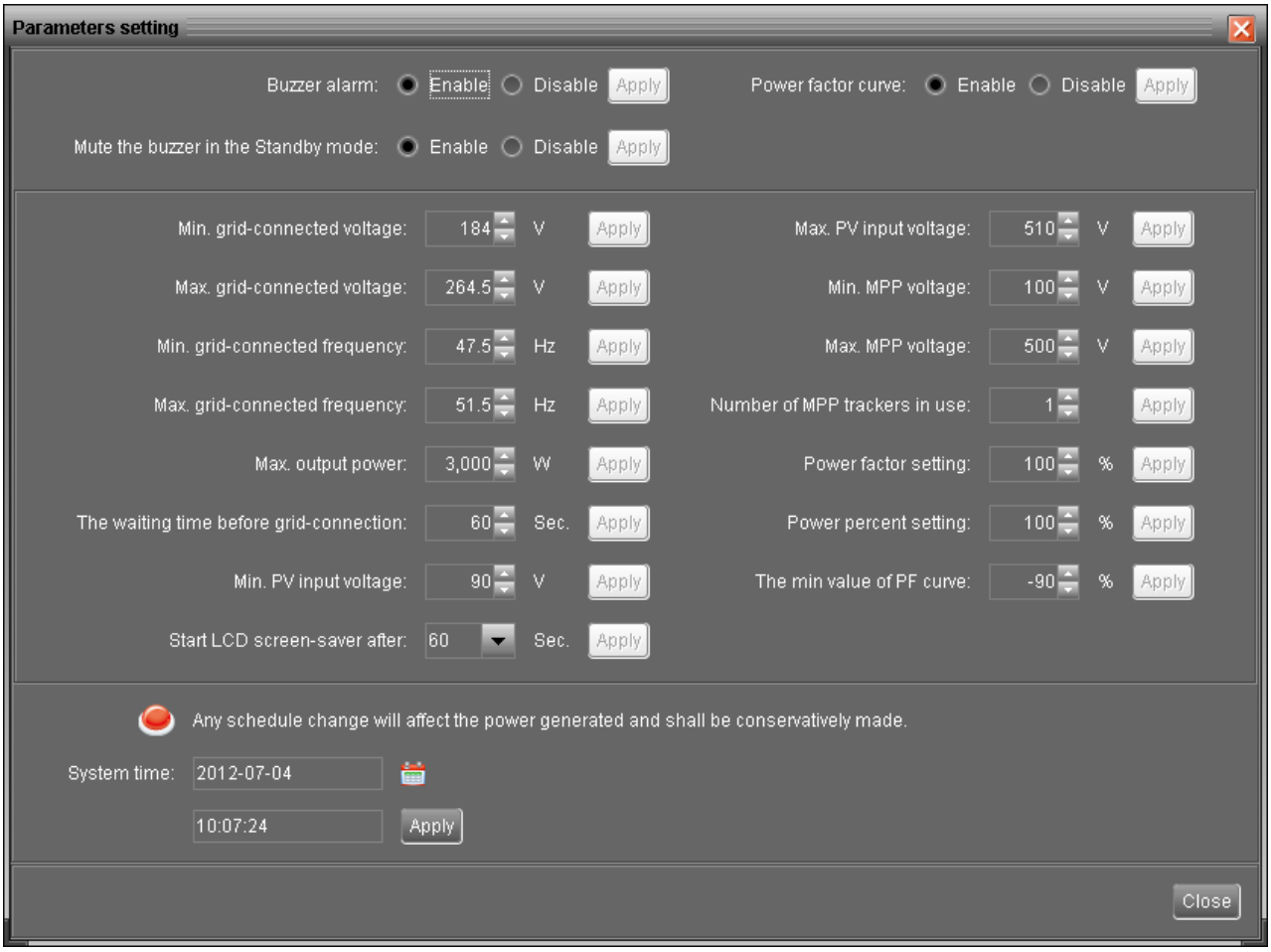


Diagram 4-12

Step 1 Select the functions by clicking "Enable" or "Disable" button. Or 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.

- Buzzer alarm: If it's activated, when fault or warning occurs, it will sound continuously. Vice versa.
- Mute the buzzer in the Standby mode: If it's activated, the buzzer will not sound when the device is in the standby mode. Vice versa.
- Power factor curve: If it's activated, device will use the default power factor curve.
- Min. grid-connected voltage: The acceptable low voltage point for solar inverter to have grid connected.

- Max. grid-connected voltage: The acceptable high voltage point for solar inverter to have grid connected.
- Min. grid-connected frequency: The acceptable low frequency point for solar inverter to have grid connected.
- Max. grid-connected frequency: The acceptable high frequency point for solar inverter to have grid connected.
- Max. output power: The maximum output power from solar inverter.
- Start LCD screen-saver after: The maximum duration time to activate LCD backlight.
- The waiting time before grid-connection: The duration times to establish grid-connection after all conditions are met.
- Min. PV input voltage: The acceptable low voltage point for PV terminals when grid connection is established successfully.
- Max. PV input voltage: The acceptable high voltage point for PV terminals when grid connection is established successfully.
- Min. MPP voltage: The acceptable low voltage point from solar module.
- Max. MPP voltage: The acceptable high voltage point from solar module.
- Max. grid-connected average voltage: When the average voltage is higher than this setting, it will be identified as the utility is abnormal.
- Number of MPP trackers in use: This function is not allowed device to be connected with PV2 only. It's only applied for either connection with PV1 only or connection with PV1 and PV2 together.
- Power factor setting: The default power factor curve will invalid.
- Power percent setting: Limit the percent of the current power.
- The min. value of PF curve: Setting the min. value of PF curve.
- System time: It presents the device time zone. Any modification may effect the calculation of

power generation. Please conservatively make any change.

NOTE1: This screen may be different for different types of solar inverters.

NOTE2: All parameter setting should be made at standby mode.

4.2.2. Restore to the defaults

This function will restore all settings to the default and clear all data in database. Therefore, please conservatively execute this function.

Select Device control >> Restore to the defaults. Refer to Diagram 4-13.

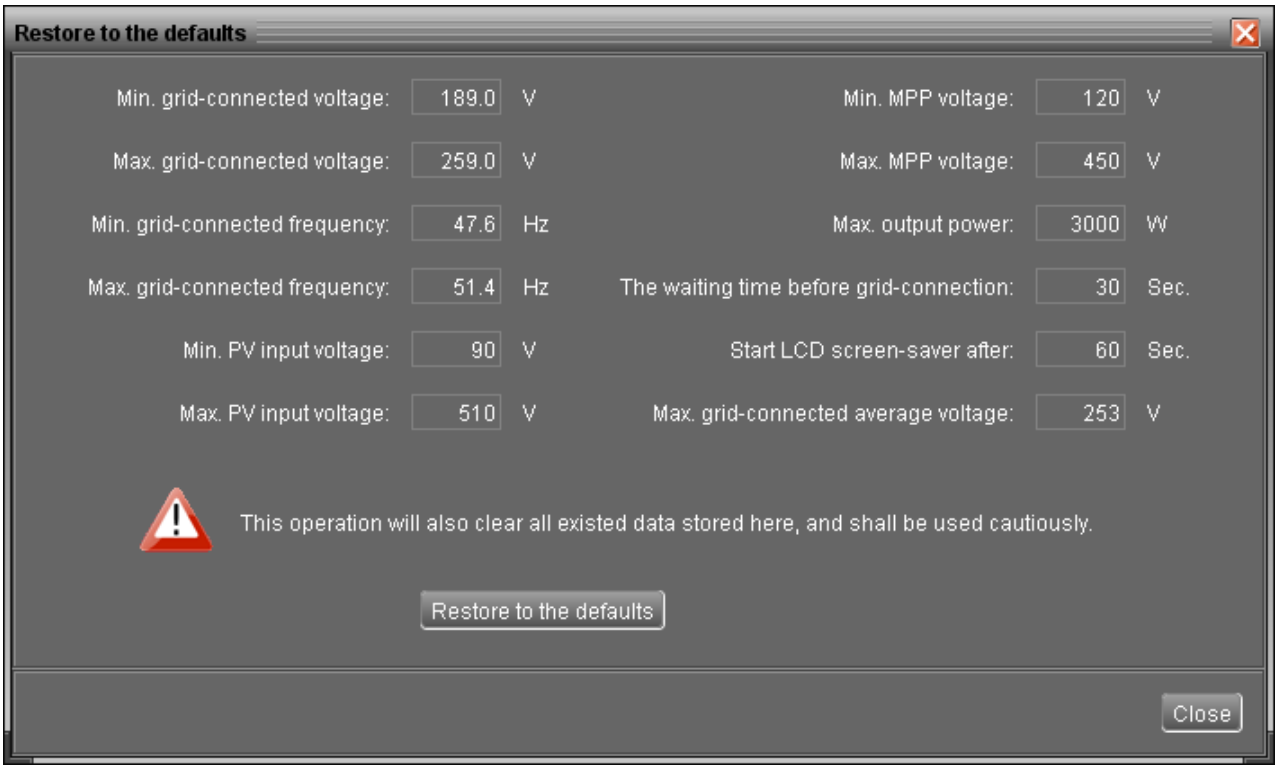


Diagram 4-13

NOTE: This screen may be different for different types of solar inverters.

4.2.3. Output synchronization data

This function will retrieve saved data in selected solar inverter units to re-save in the database. It can be saved either automatically or manually.

Select Device control >>Output synchronization data. Refer to Diagram 4-14.

Method 1: Automatic output synchronization data (Refer to A section in Diagram 4-14)

Set frequency (daily, weekly, monthly, and time) to automatically sync output data.

Add schedule: Click "Add" button to add schedule into calendar. Every device supports only one sync schedule.

Delete schedule: Select deleted schedule from the list and click "delete" button to remove.

Method 2: Manual output synchronization data. Refer to B section in Diagram 4-14.

There are two patterns to sync data.

Synchronize all data: It will save data of selected devices to the database immediately.

Synchronize data for selected date: It will save data of selected devices to the database during indicating period.

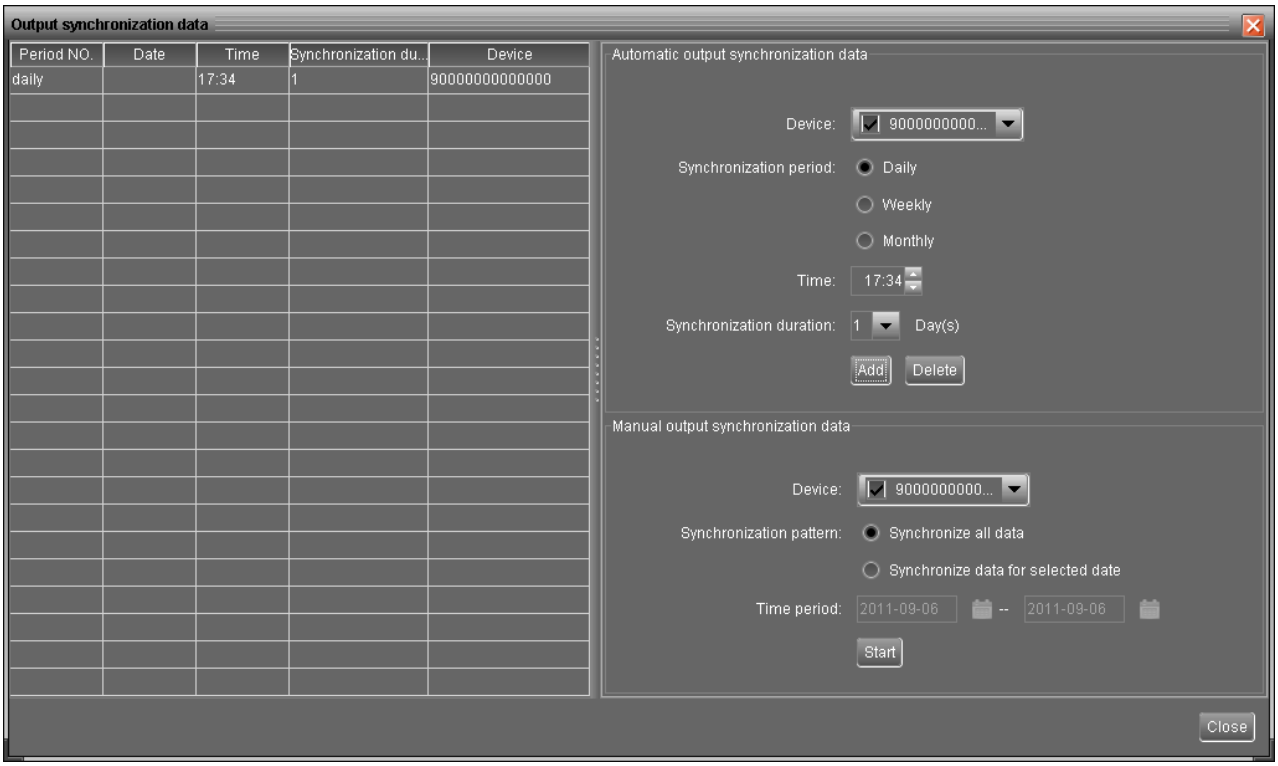


Diagram 4-14

NOTE: No matter it's automatic or manual sync, this action only sync data which is not updated to database before. If users want to update output data during specific time period, then please delete the data record of this period from power generation log.

4.2.4. Real-time control

Select Device control >> Real-time control. Refer to Diagram 4-15.

Grid self-test: Click "Start" button to initial self-test. If monitored inverter is equipped with self-test

function, it will take about 30 seconds to have an outcome message. If monitored inverter is not equipped with this function, then it will pop up a message to inform users.

Diagram 4-15

4.3. View

4.3.1. Power generation log data

This function is to browse, calculate, or delete power generation data in the datasheets.

- **Datasheets**

Select View >>Power generation log data>>Datasheets or click shortcut icon  . Refer to Diagram 4-16.

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

- **"Export excel":** When selected and click "Export", it will save listed table to local PC in .xls file.
- **"Delete":** Select specific data and click "Delete" button to delete the record.
- **"Export":** Click "Export" button to save listed table to local PC in .PDF file.

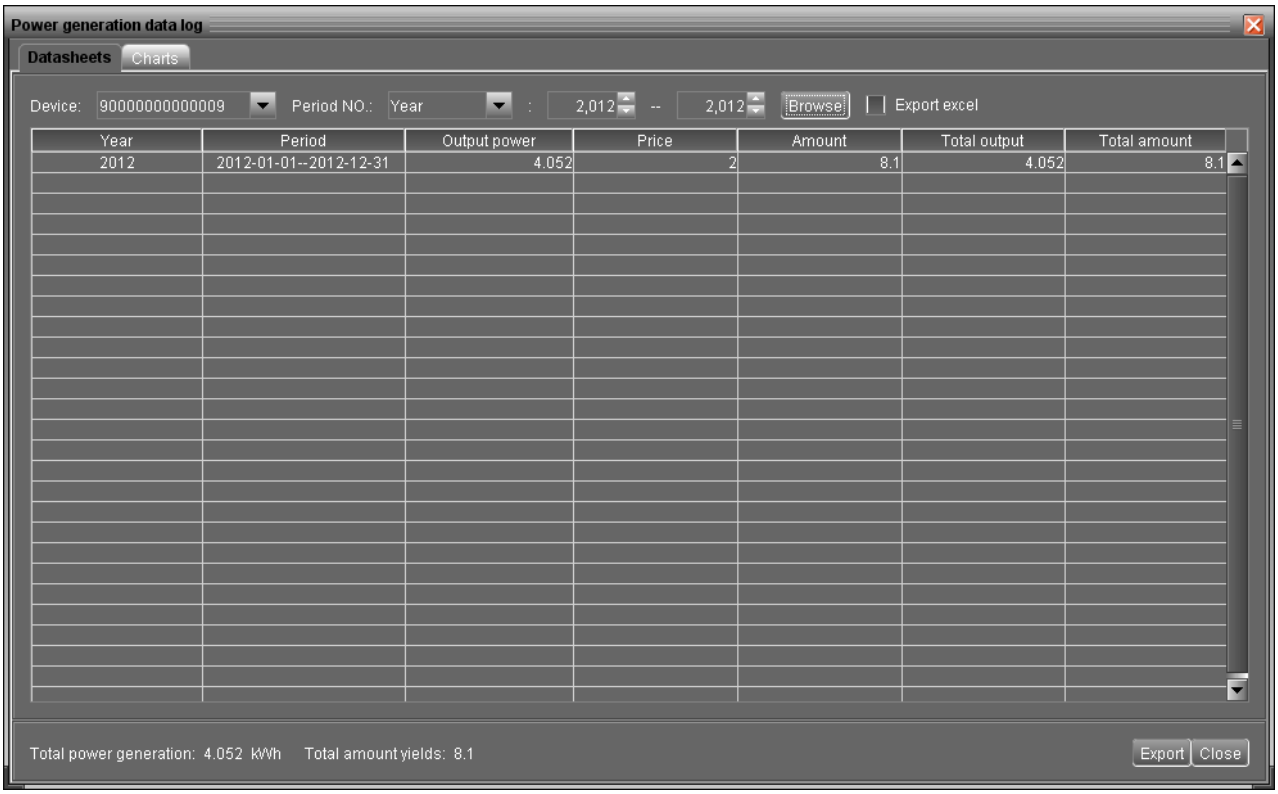


Diagram 4-16

- **Charts**

Select View >> Power generation log data >> Charts. Refer to Diagram 4-17.

Select browsed device and period. Click "Browse" to get result.

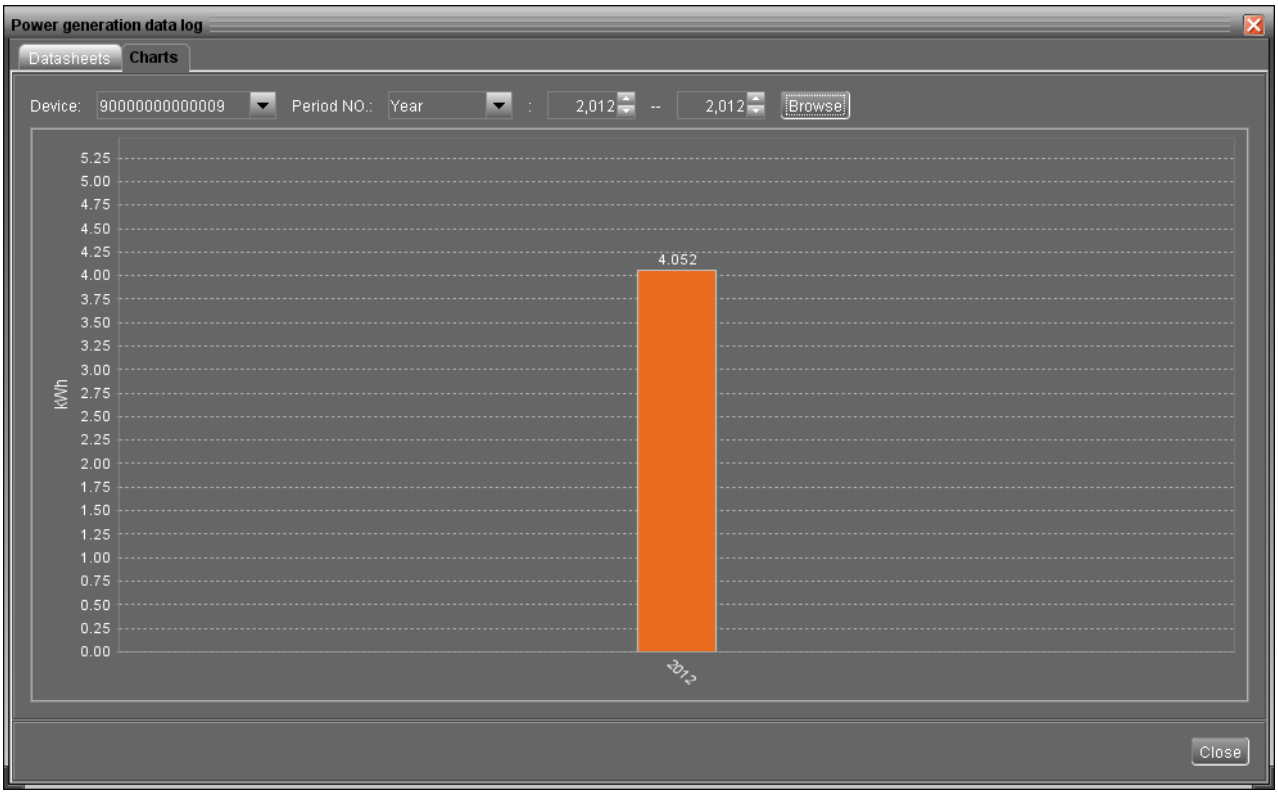


Diagram 4-17

4.3.2. Data

This function is to browse the working data of solar inverter saved in datasheets.

- Datasheets

Select View >>Data>>Datasheets or click shortcut icon  . Refer to Diagram 4-18.

Select browsed device and period to display in the screen. Click "Browse" to get result.

- **"Export excel":** When selected and click "Export", it will save listed table to local PC in .xls file.
- **"Print":** Print the listed data table.
- **"Delete":** Select specific data and click "Delete" button to delete the record.
- **"Delete all":** Click "Delete All" button to delete all records on the listed table.
- **"Export":** Click "Export" button to save listed table to local PC in .PDF file.

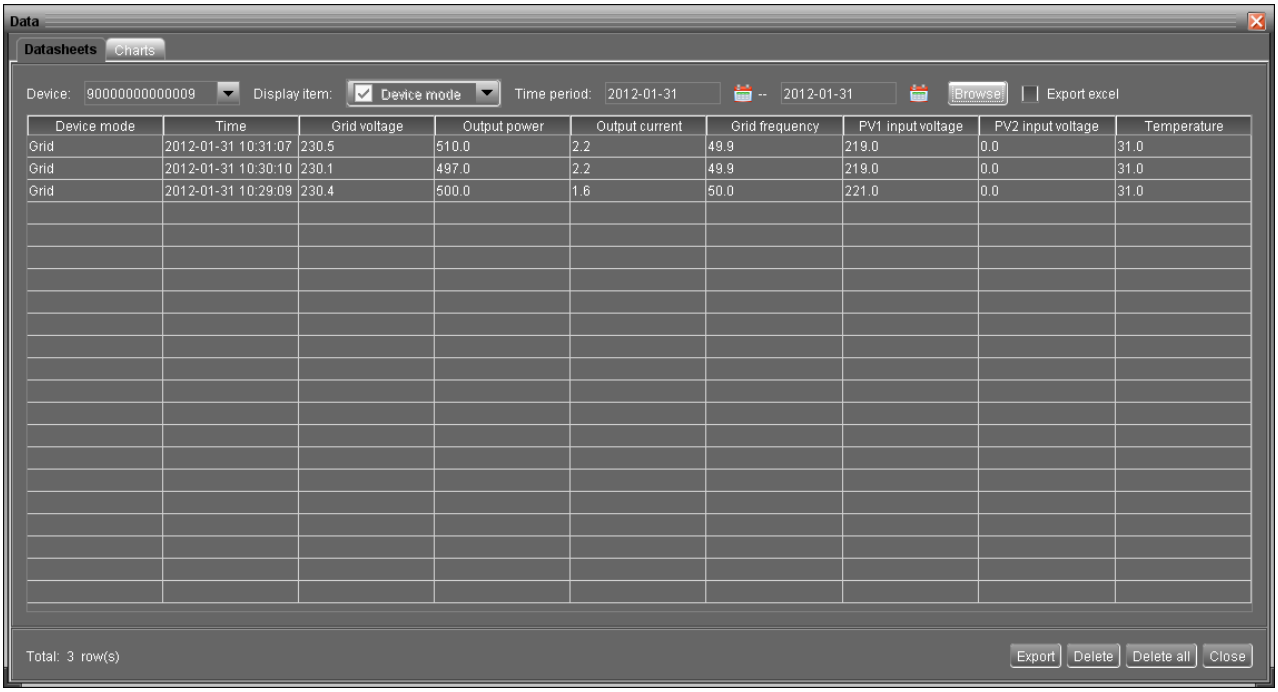


Diagram 4-18

- **Charts**

Select View >>Data>>Charts. Refer to Diagram 4-19.

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

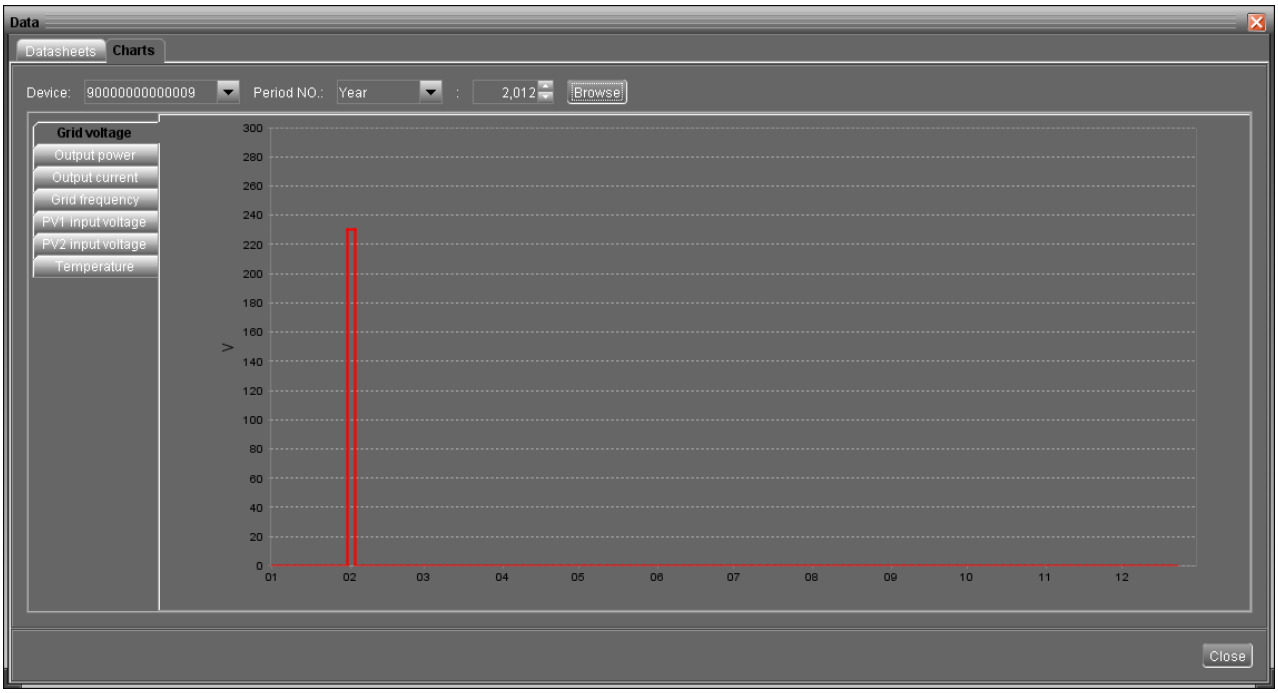


Diagram 4-19

4.3.3. Fault data log

Select View >>Fault data log or click shortcut icon  . Refer to Diagram 4-20.

Fault data log is to record last data before solar inverter occurs fault.

- **"Export excel":** When selected and click "Export", it will save listed table to local PC in .xls file.
- **"Delete":** Select specific data and click "Delete" button to delete the record.
- **"Delete all":** Click "Delete All" button to delete all records on the listed table.
- **"Export":** Click "Export" button to save listed table to local PC in .PDF file.

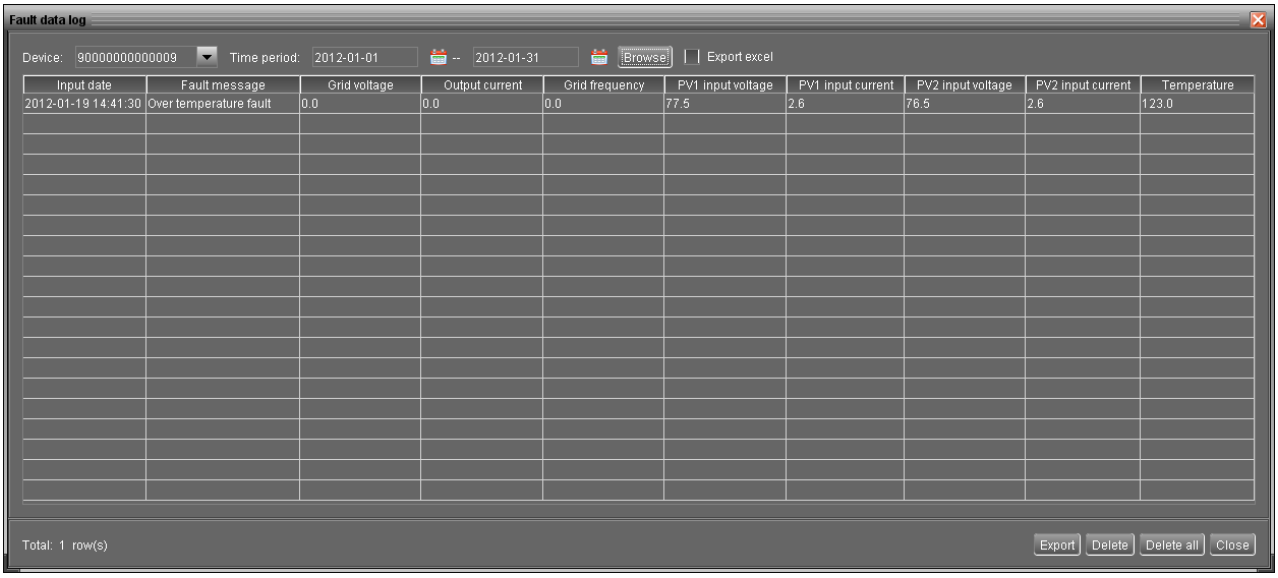


Diagram 4-20

4.3.4. Event log

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

It's to record history events. Users can browse event list according to date. It lists all detailed information and statistics for history events. Refer to Diagram 4-21.

- **"Export excel":** When selected and click "Export", it will save listed table to local PC in .xls file.
- **"Delete":** Select specific data and click "Delete" button to delete the record.
- **"Delete all":** Click "Delete All" button to delete all records on the listed table.
- **"Export":** Click "Export" button to save listed table to local PC in .PDF file.

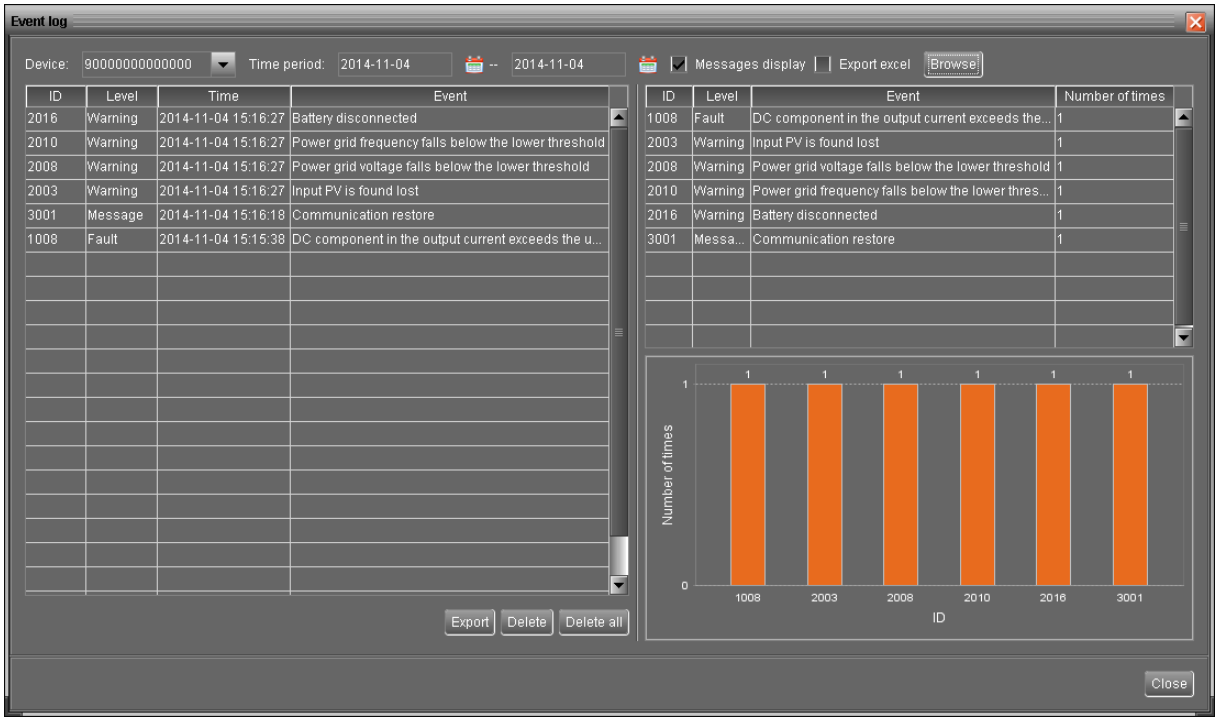


Diagram 4-21

4.3.5. Monitored Device Information

Select View >> Monitored Device Information or click shortcut icon  .This screen will display basic information of monitored device, including Product information, Rated information, and Purchasing information. Refer to Diagram 4-22.

- Product information include: Model type, Topology, Main CPU processor version, Secondary CPU processor version, Output phase, Nominal input voltage, Nominal output voltage, and so on.
- Rated information include: Nominal output power, Nominal grid-connected voltage, Nominal grid-connected frequency, Nominal grid-connected current, Maximum input current for each PV, Number of maximum-power-tracing units, and so on.
- Purchasing information include: Purchasing date, Warranty for device, Device P/N, and so on.

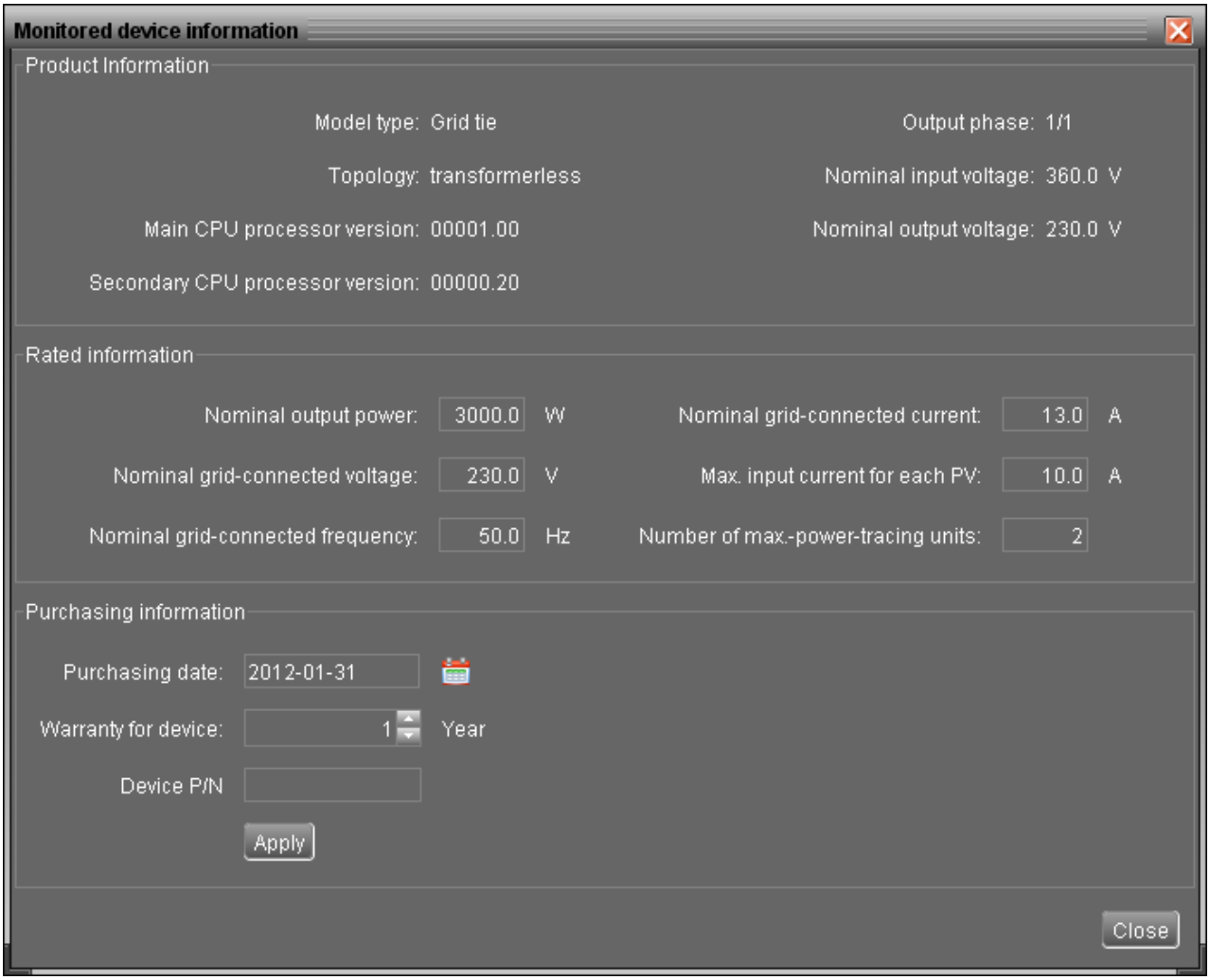


Diagram 4-22

NOTE: This screen may be different for different types of solar inverters.

4.4. Log in and Log out

Icon  to display users don't log in SolarPower

Icon  to display users has logged in SolarPower

Click icon  and enter password to login the software. The default password is "administrator". Refer to Diagram 4-23.

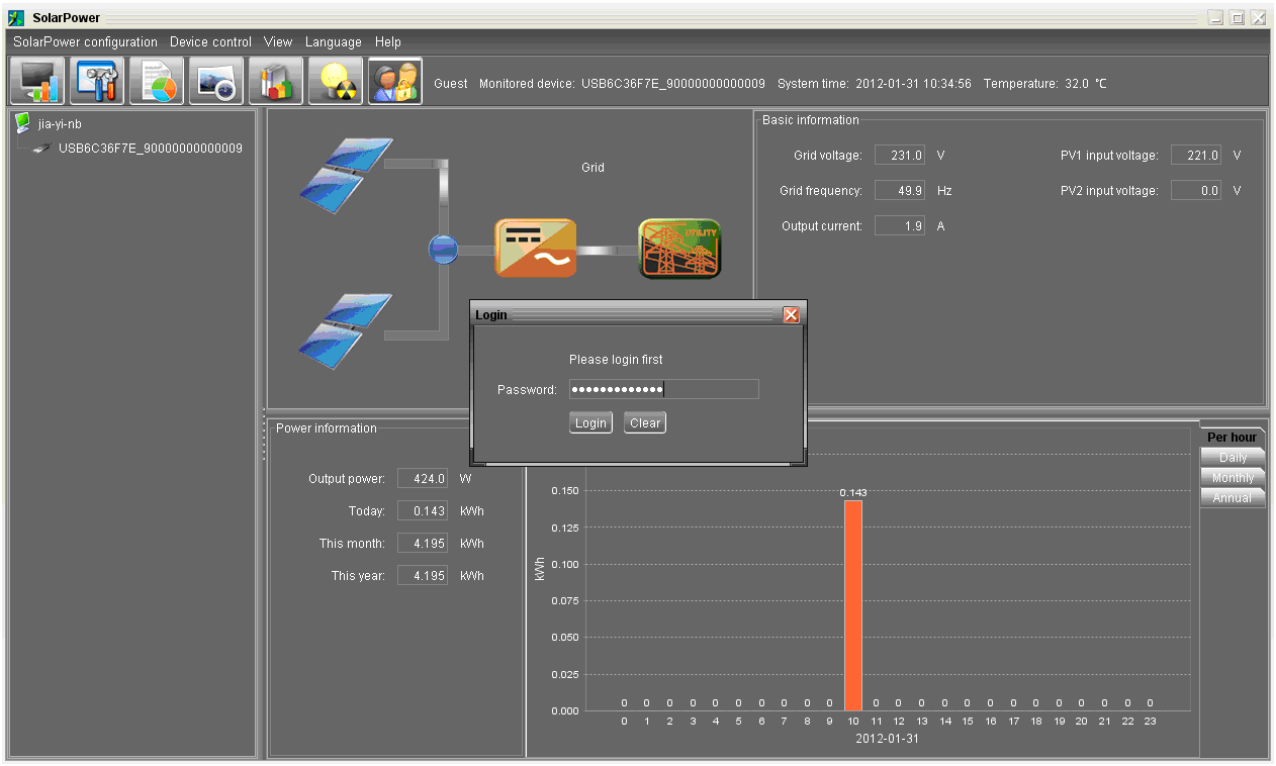


Diagram 4-23

Click icon  to log out. Refer to Diagram 4-24.

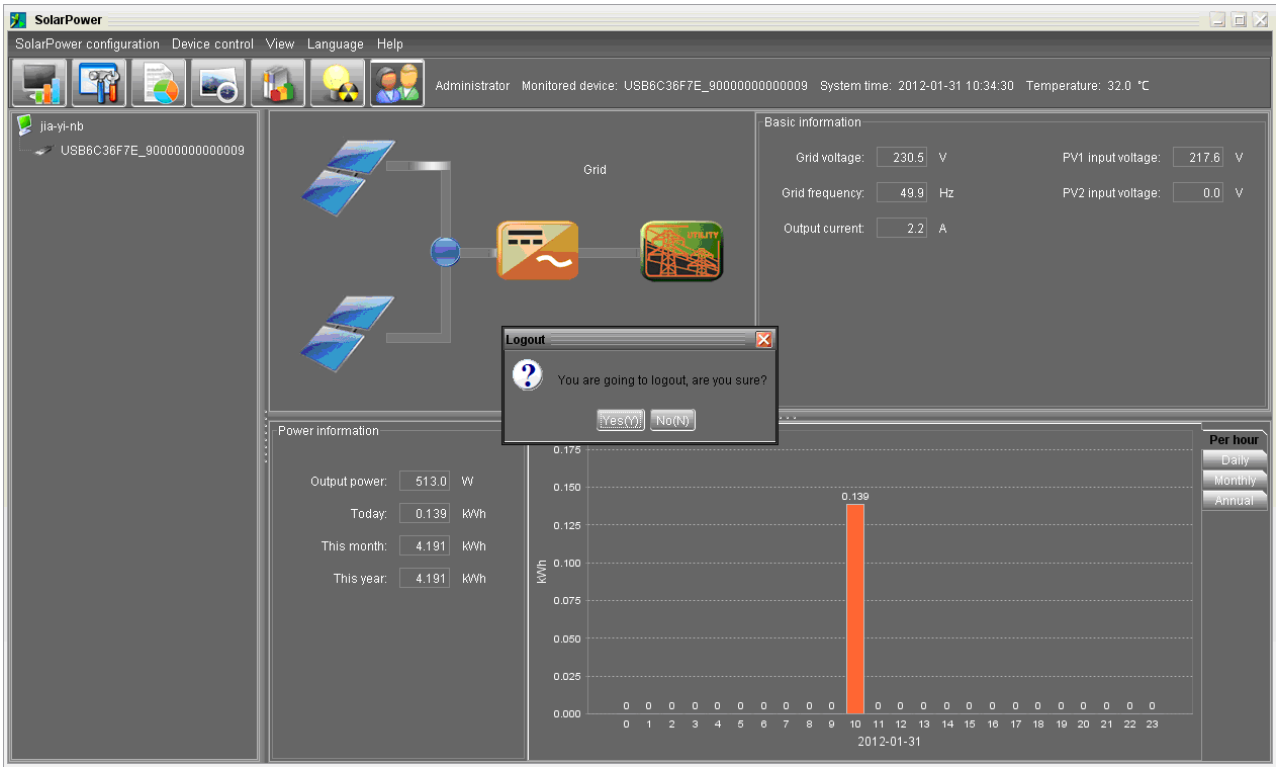


Diagram 4-24

4.5. Language

Currently, software offers 13 languages for selection:

√ Chinese (Simplified)

√ Chinese (Traditional)

√ English

√ German

√ Italian

√ Polish

√ Portuguese

√ Russian

√ Spanish

√ Ukrainian

√ French

√ Turkish

√ Japanese

When first using the software, it will search proper language to display according to OS language.

4.6. 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.