

User Manual

SolarTracker

Management Software for Inverter

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1. SolarTracker Overview

1.1. Introduction

SolarTracker is a monitoring software which can monitor multiple water pumps via RS232/RS485 converter at the same time. The major functions of SolarTracker monitoring software include data log for devices, alarm 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

2. SolarTracker 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 /8.1/10(32-bit & 64-bit)

2.2. Software Install

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

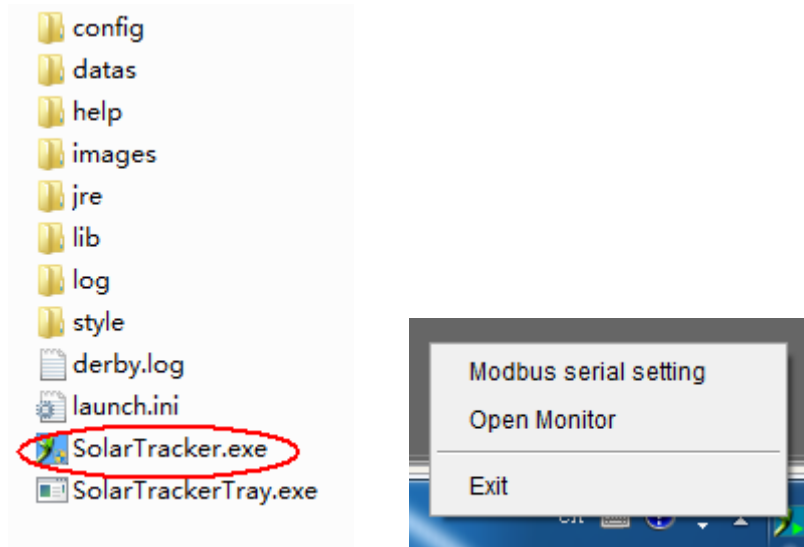
2.3. Software Uninstall

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

3. Tray Application

3.1. Startup

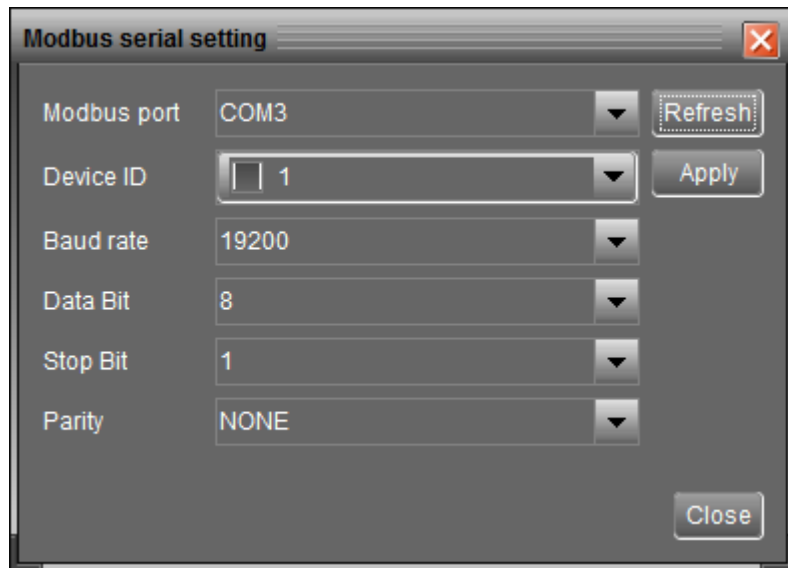
Simply double click the shortcut icon. Then, it will start the software and display a service icon located in tray. It will pop up function menu by clicking right button of the mouse.



3.2. Modbus Serial Setting

This function is to set Modbus communication port on PCs that are connected to device via RS232/RS485 converter. The settings include Modbus port, Baud rate, data bit, stop bit, parity and each Device ID in Modbus networks.

- Step 1** Select Modbus port to connect PC.
- Step 2** Select "Device ID" of connected inverter in Modbus network.
- Step 3** Select "Baud rate" of com. port. The default setting is 19200.
- Step 4** Modify "Data bit" of com. port. The default setting is 8.
- Step 5** Modify "Stop bit" of com. port. The default setting is 1.
- Step 6** Modify "Parity". The default setting is NONE.
- Step 7** Click "Apply" button to save all changes.



NOTE 1: Click “Refresh” button to refresh the port list.

NOTE 2: This software supports multiple com. ports in multiple Modbus networks.

NOTE 3: All configurations will be changed based on different port selection in Step 2.

NOTE 4: The default device ID of inverter is 1.





NOTE 5: If none of device ID is selected, it will be identified as not connecting with any Modbus network.

NOTE 6: If monitoring more than one Modbus network, please repeat from step 2 to step 7 to set all ports.

3.3. Open Monitor

Click “Open Monitor” to open the monitoring webpage of SolarTracker.

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 3-26:

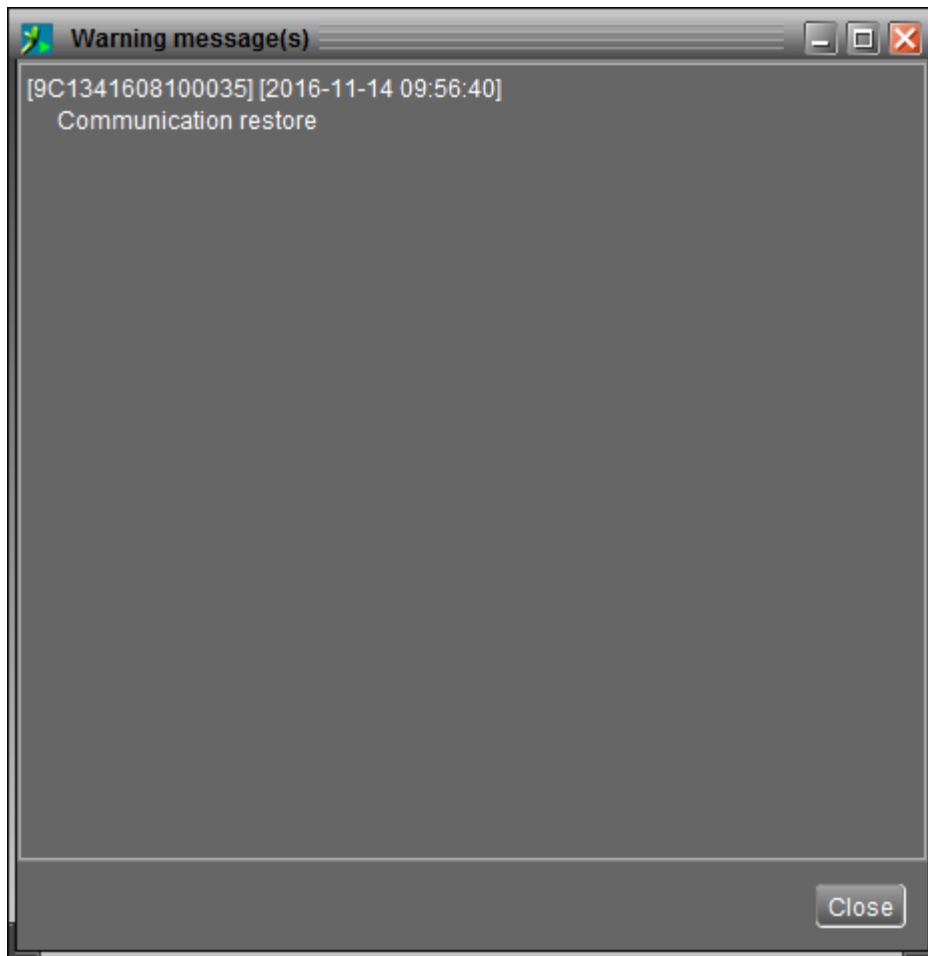


Diagram 3-26

3.6. Exit

Click "Exit" to exist monitor application.

4. GUI Interface

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

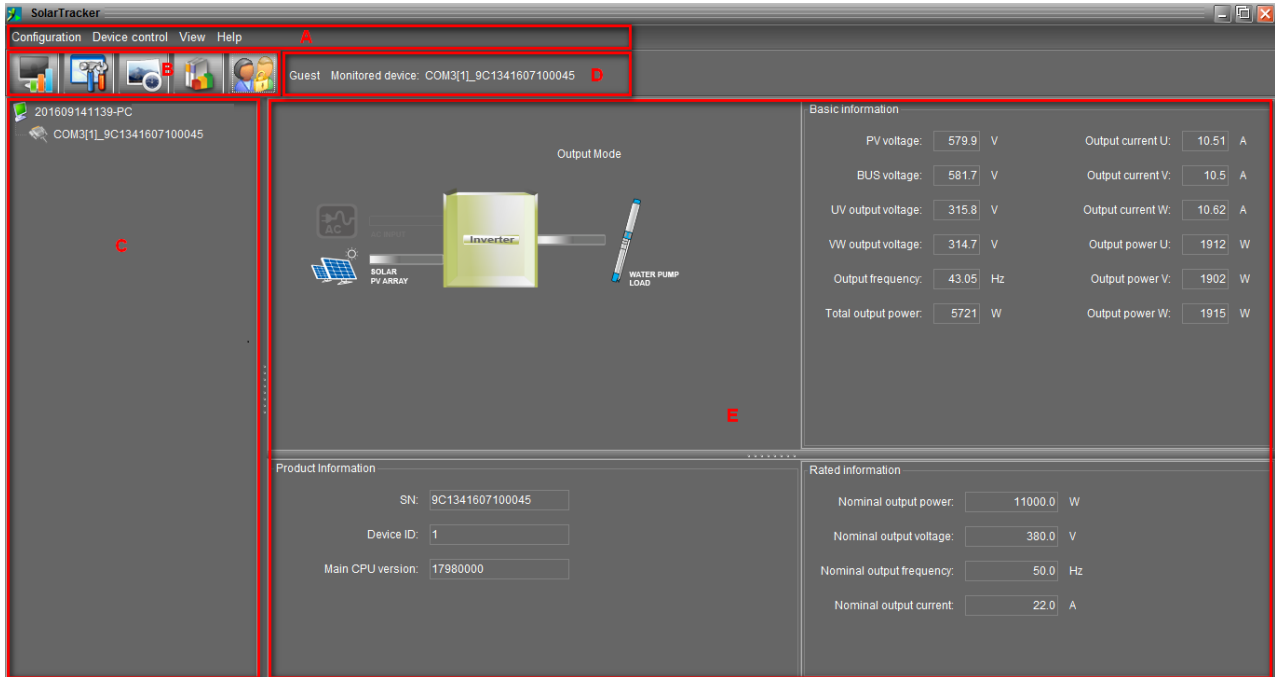


Diagram 4-1

- 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. Inverter Navigation** indicates all devices.
- D. Current Monitoring Information** displays User ID and monitored inverter ID.
- E. Main Window** displays power flow, operation information, device information and rated information of current monitored inverter. Refer to Diagram 4-2.

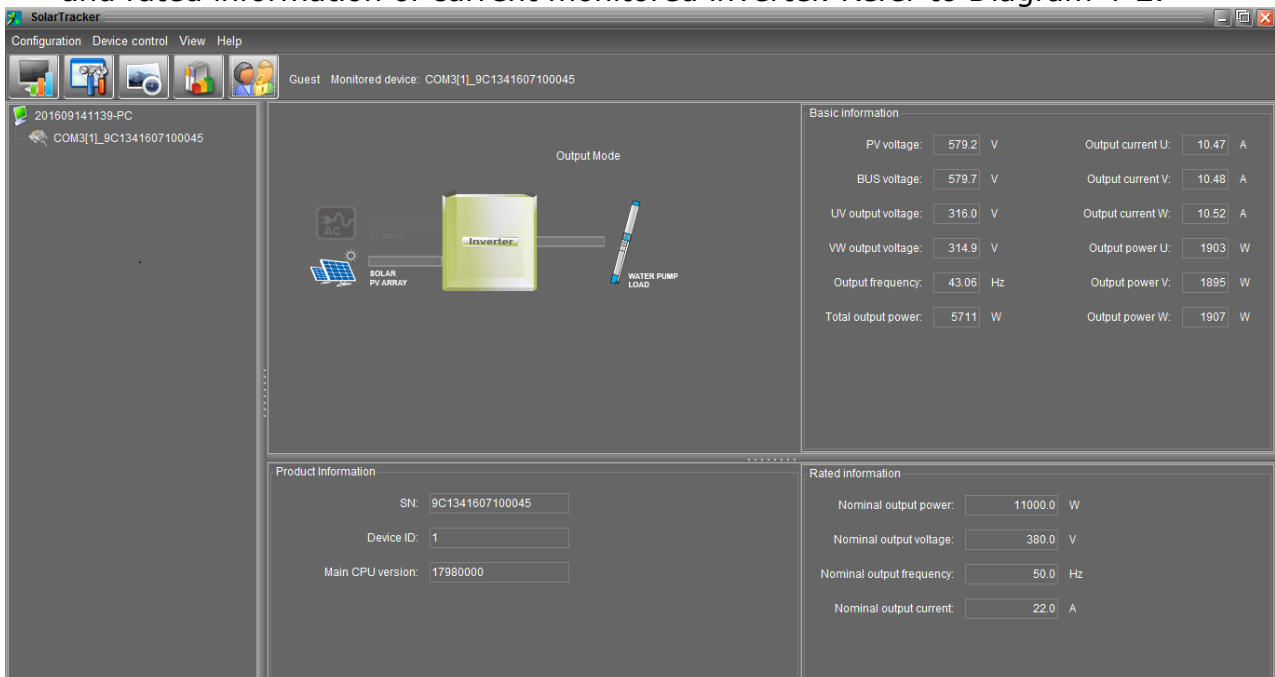


Diagram 4-2

1. Basic Information:

It displays information of PV voltage, BUS voltage, output voltage in UV phase, output voltage in VW phase, output frequency, total output power in watts, output current in U phase, output current in V phase, output current in W phase, output power in U phase, output power in V phase, Output power in W phase.

2. Product information:

Product information displays serial no, device ID and main CPU version.

3. Rated information:

Rated information displays information of Nominal output power, Nominal output voltage, Nominal output frequency, Nominal output current.

4.1. Configuration

4.1.1. Basic

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

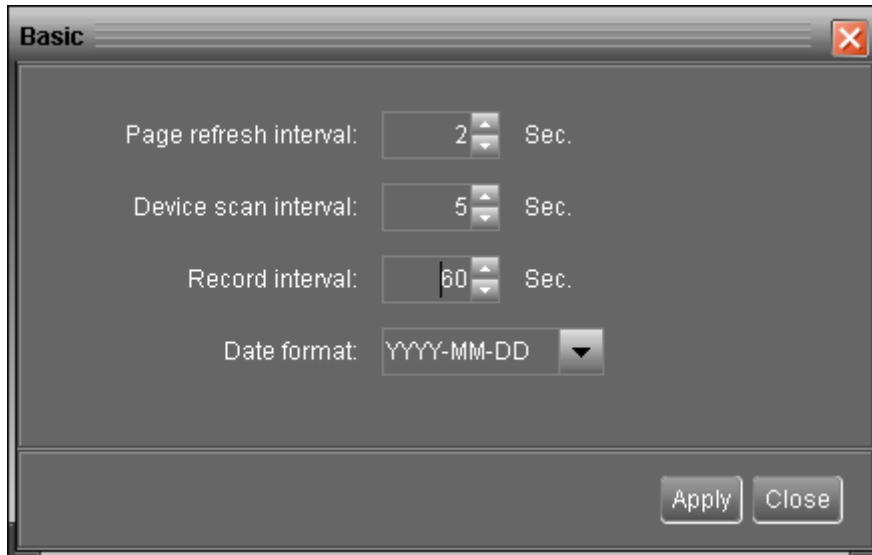


Diagram 4-3

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 inverters 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.
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 inverter status and information as Guest without login as an Administrator. A guest can not control or execute any setting.

Step 1 Select 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.

NOTE 1: Simply click "Login" button on the top right corner to log in the software.

NOTE 2: 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 inverter 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 Configuration >> SMS Setting. Refer to Diagram 4-5.

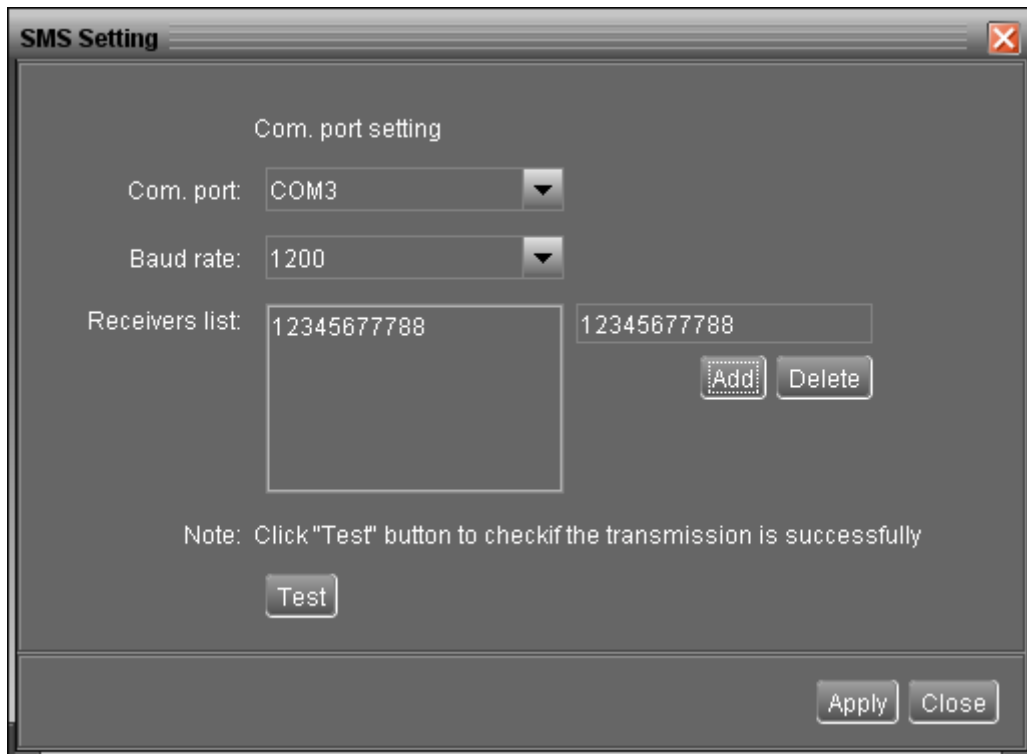


Diagram 4-5

- 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)

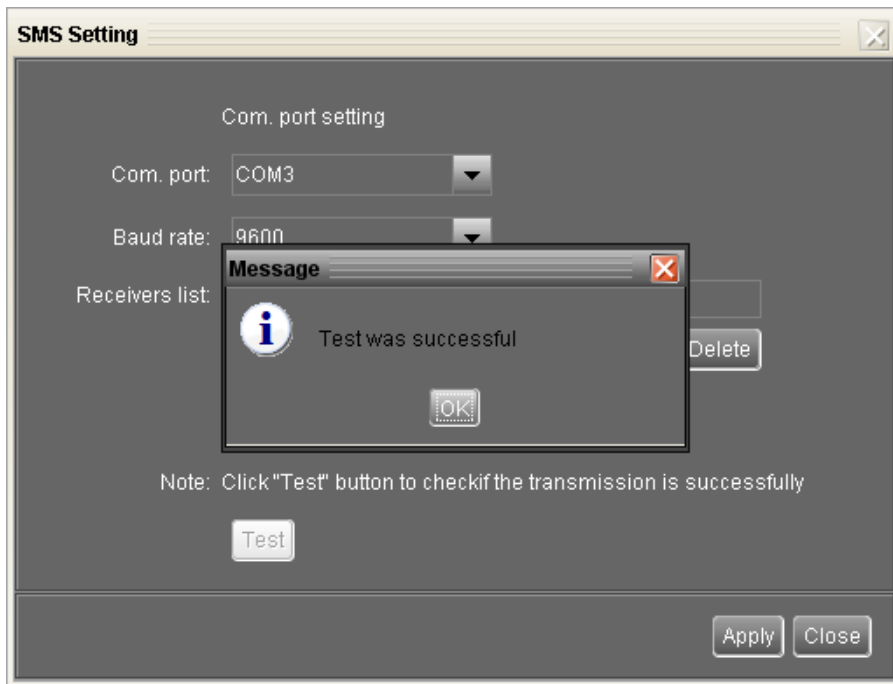


Diagram 4-6

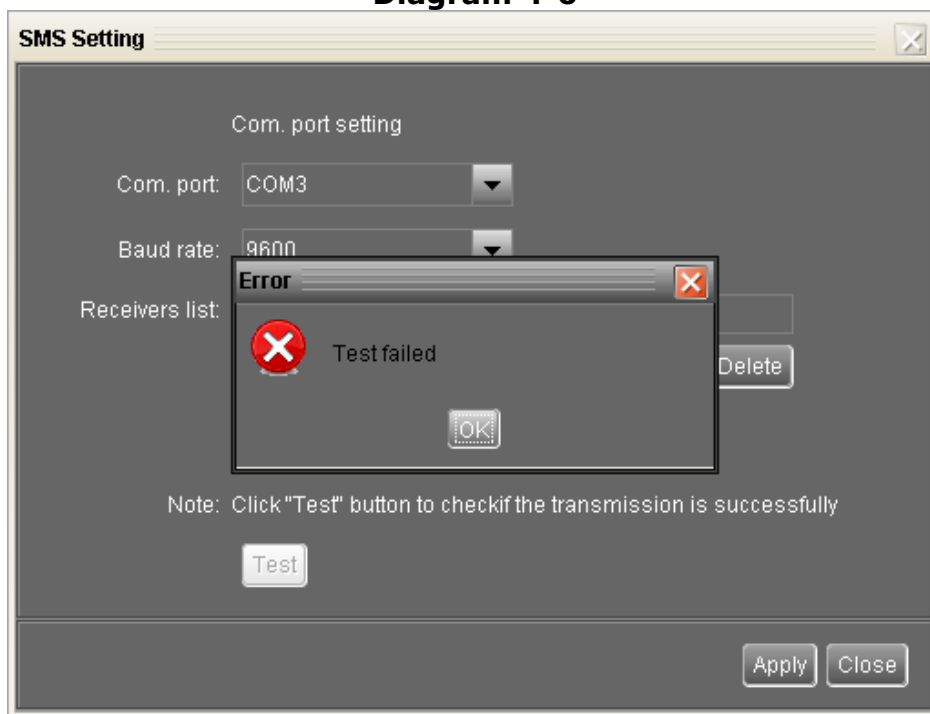


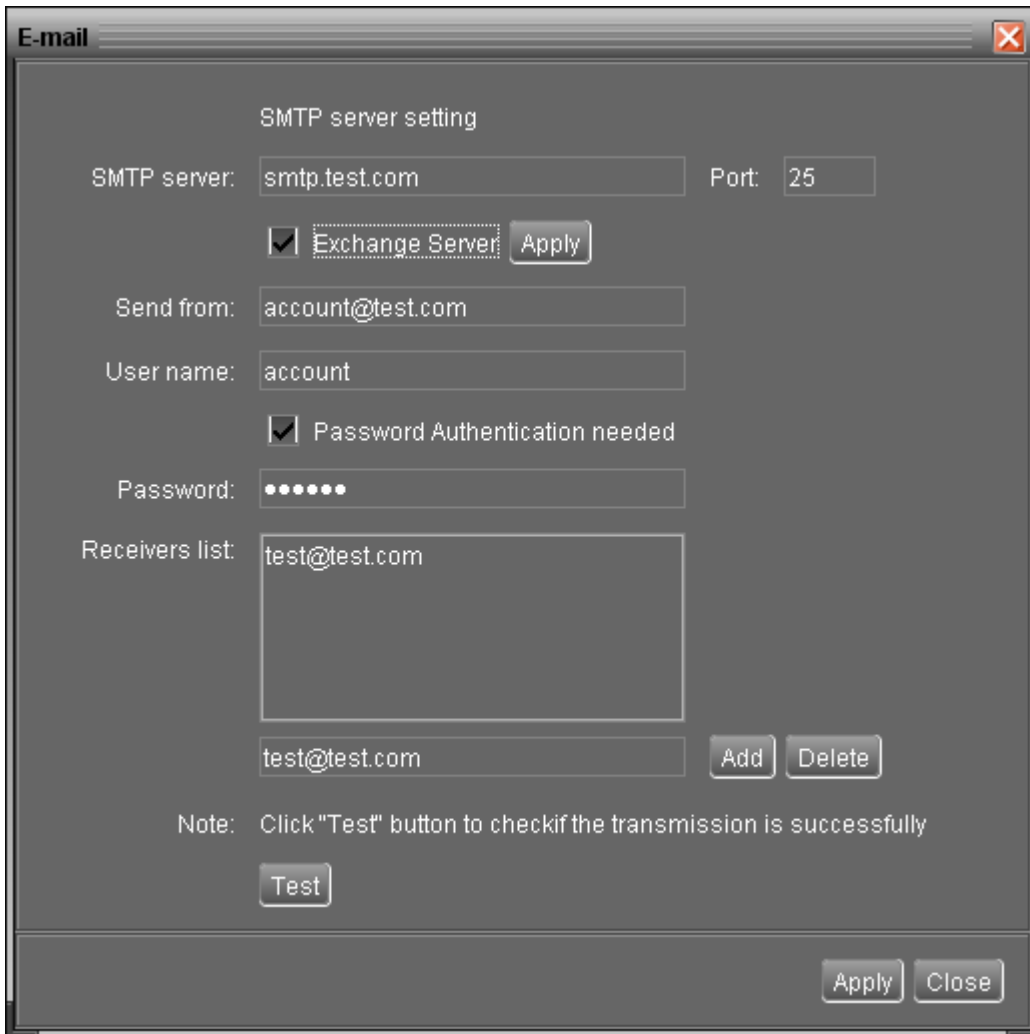
Diagram 4-7

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 Configuration >> E-mail. Refer to Diagram 4-8.



The screenshot shows a window titled "E-mail" with a close button in the top right corner. The window contains the following fields and controls:

- SMTP server setting**:
 - SMTP server:
 - Port:
 - Exchange Server
- Send from:
- User name:
- Password Authentication needed
- Password:
- Receivers list:
-
- Note: Click "Test" button to checkif the transmission is successfully
-
-

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 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.

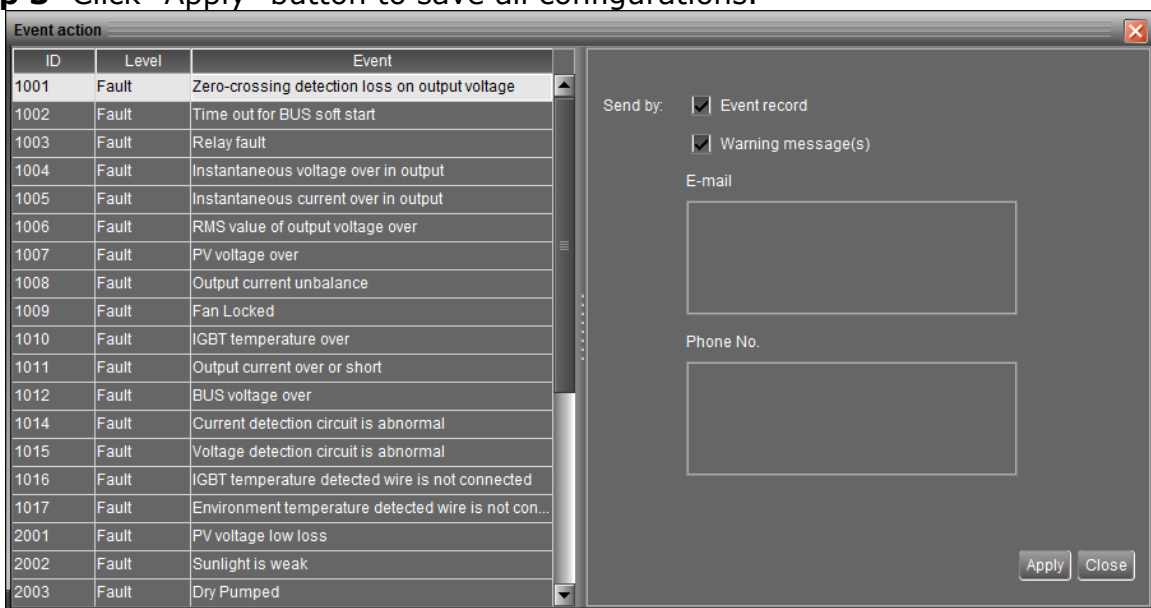


Diagram 4-9

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 inverter 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 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 functions and set up operation parameters for inverters.

Select Device Control >> Parameter Setting or select shortcut icon . Refer to Diagram 4-2-1.

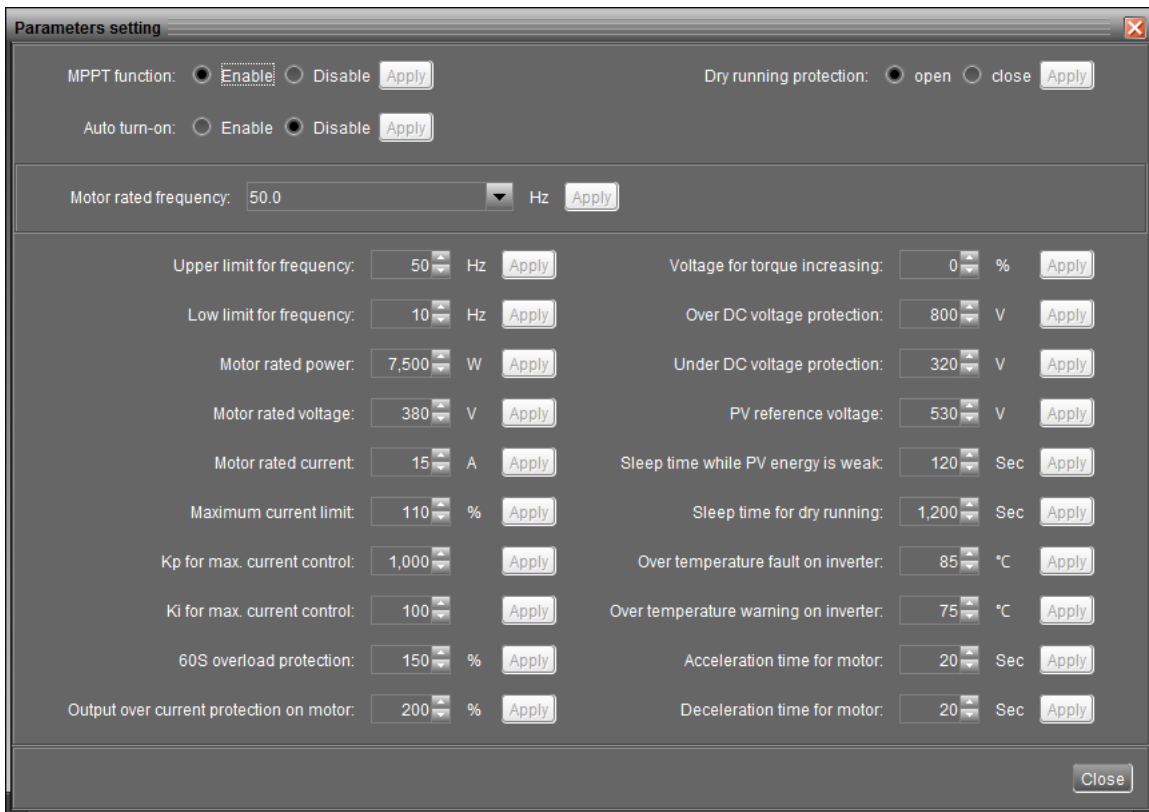


Diagram 4-2-1

Step 1 Activate and 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.

- MPPT function: If enabled, this function is to track maximum solar power point. Vice versa.
- Auto turn-on: If enabled, this function is to auto turn on the inverter while connecting to the power source. Vice versa.
- Dry running protection: If enabled, this function will stop inverter running when the water level is low. Vice versa.
- Motor rated frequency: Set up rated frequency for motor, 50 Hz or 60 Hz.
- Low limit for frequency: Set up the acceptable low point for output frequency. The setting range is from 6 to setting value in Upper limit for frequency.
- Upper limit for frequency: Set up the acceptable high point for output frequency. The setting range is from setting value in Low limit for frequency to rated frequency of the connected motor.
- Motor rated power: Set up nominal power for the motor. Setting range is from 10W ~ 11000 W.

- Motor rated voltage: Set up rated voltage for the motor. The setting range is from 323V to 506V.
- Motor rated current: Set up rated current for the motor. The setting range is from 0.1A to 60A.
- Maximum current limit: Set up the maximum current limit in the percentage of the nominal current. The setting range is from 10% to 200%.
- Kp for max. current control: Set up the proportional factor of the maximum current control. The setting range is from 50 to 6000.
- Ki for max. current control: Set up the integral factor of the maximum current control. The setting range is from 5 to 1000.
- 60S overload protection: Set up the overload percentage of the nominal current for 60-second overload protection. The setting range is from 110% to 250%.
- Output over current protection on motor: Set up the overload percentage of the detected output current for connected motor. The setting range is from 110% to 250%.
- Voltage for torque increasing: Set up the percentage of the nominal voltage for torque increasing. The setting range is from 0 % to 10%.
- Under DC voltage protection: Set up the lowest point for acceptable PV voltage. The setting range is from 320V to the setting value in over DC voltage protection.
- Over DC voltage protection: Set up the highest point for acceptable PV voltage. The setting range is from setting value in under DC voltage protection to 800V.
- PV reference voltage: When MPPT function is disabled, this value will become the reference number of the PV voltage control loop. The setting range is from 320V to 800V.
- Sleep time while PV energy is weak: Set up sleep duration while PV energy is weak. Inverter will auto turn on when sleep time reaches setting time. The setting range is from 10 seconds to 3600 seconds.
- Sleep time for dry running: Set up sleep duration for dry running. Inverter will start running when sleep time reaches setting time. The setting range is from 10 seconds to 7200 seconds.
- Over temperature fault on inverter: Set up over temperature point for IGBT. The setting range is from 60°C to 100°C.
- Over temperature warning on inverter: Set up over temperature warning point for IGBT. The setting range is from 10°C to 100°C.
- Acceleration time for motor: Set up the acceleration time for motor. The setting range is from one second to 3600 seconds.
- Deceleration time for motor: Set up the deceleration time for motor. The setting

range is from one second to 3600 seconds.

4.2.2. Restore to the defaults

This function is allowed to restore all settings back to default values.

Select Device control >> Restore to the defaults. Refers to Diagram 4-2-2.

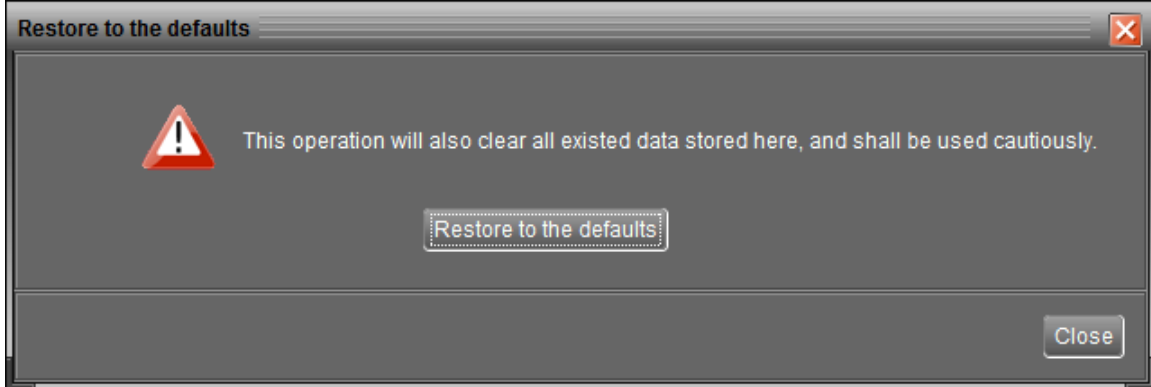


Diagram 4-2-2

NOTE: This screen may be different for different model of inverter.

4.2.3. Real-time control

Select Device control >> Real-time control. Refers to Diagram 4-2-3

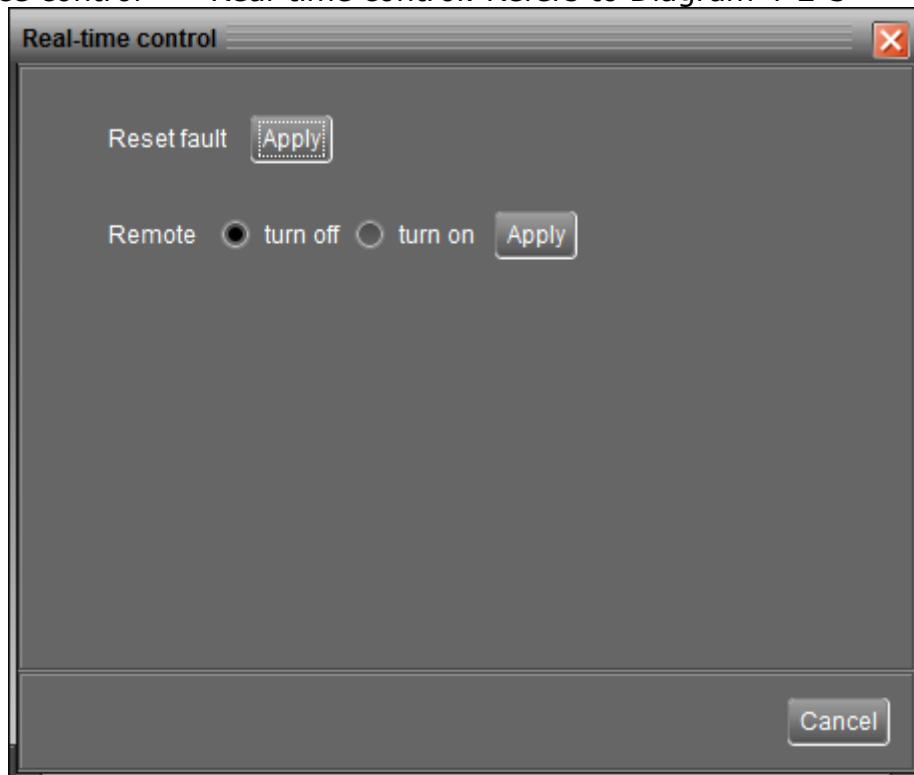


Diagram 4-2-3

- Reset fault: Apply "Reset fault" to clear all faults and warning message. If the inverter is on fault, after resetting all logs, the inverter will enter to standby mode.
- Remote turn on/off: Apply "Remote" function to turn on or turn off the current inverter.

4.3. View

4.3.1. Data

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

- Datasheets



Select View >>Data>>Datasheets or click shortcut icon. Refer to Diagram 4-3-1. 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.
- **"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 .xls file.

Device mode	Time	PV voltage	BUS voltage	UV output voltage	VW output voltage	Output frequency
Standby Mode	2016-11-14 09:58:25	349.6	350.0	0.0	0.0	0.0
Standby Mode	2016-11-14 09:57:23	349.5	349.9	0.0	0.0	0.0
Standby Mode	2016-11-14 09:51:35	349.6	350.0	0.0	0.0	0.0
Standby Mode	2016-11-14 09:50:35	349.5	349.9	0.0	0.0	0.0

Diagram 4-3-1

- Charts

Select View >>Data>>Charts. Refer to Diagram 4-3-2.

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

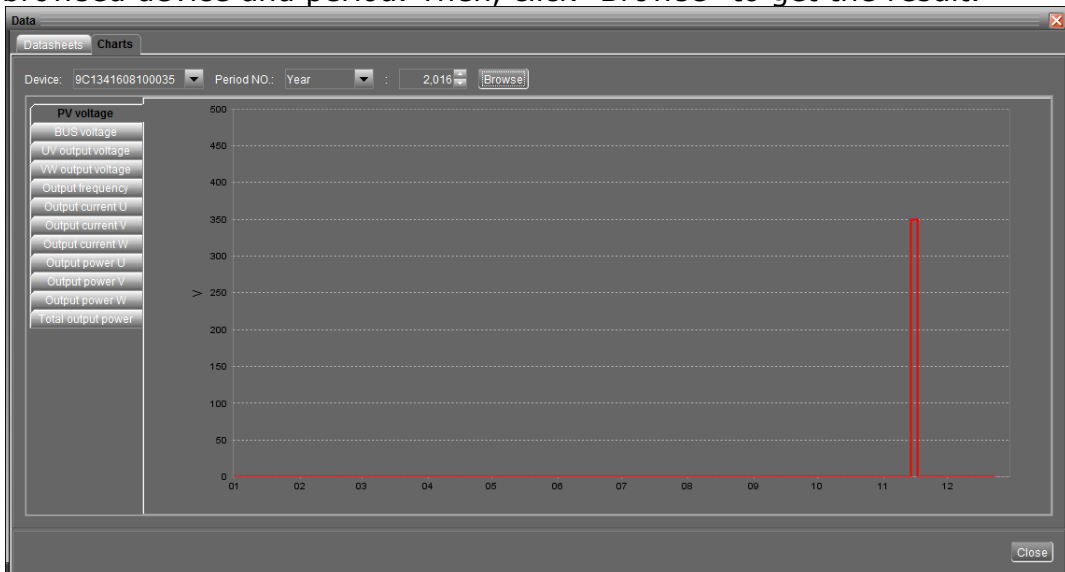


Diagram 4-3-2

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 4-3-3.

- **"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 .xls file.

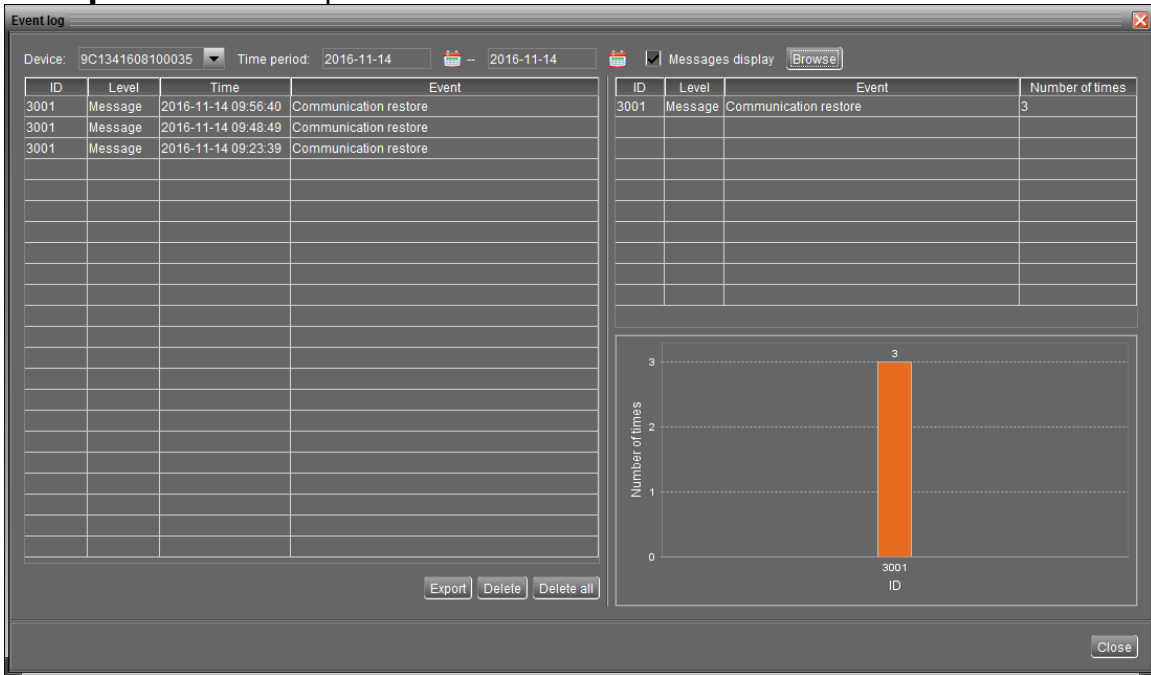


Diagram 4-3-3

4.4. Log in and Log out




This short cut icon is to display the login status.



It means user status is guest.



It means user logins as administrator.

Click icon  and enter password to login the software. The default password is "administrator". Refer to Diagram 4-4-1.

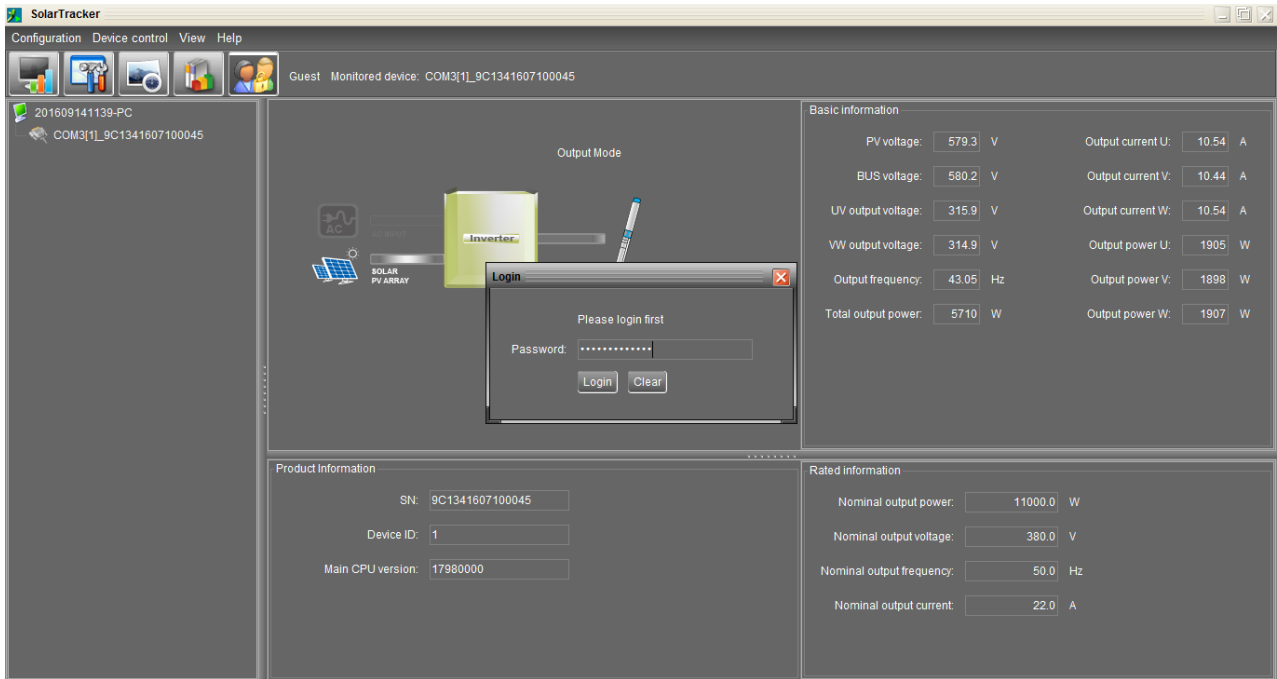



Diagram 4-4-1

Click icon  to log out. Then, the status will become to "guest". Refer to Diagram 4-4-2.

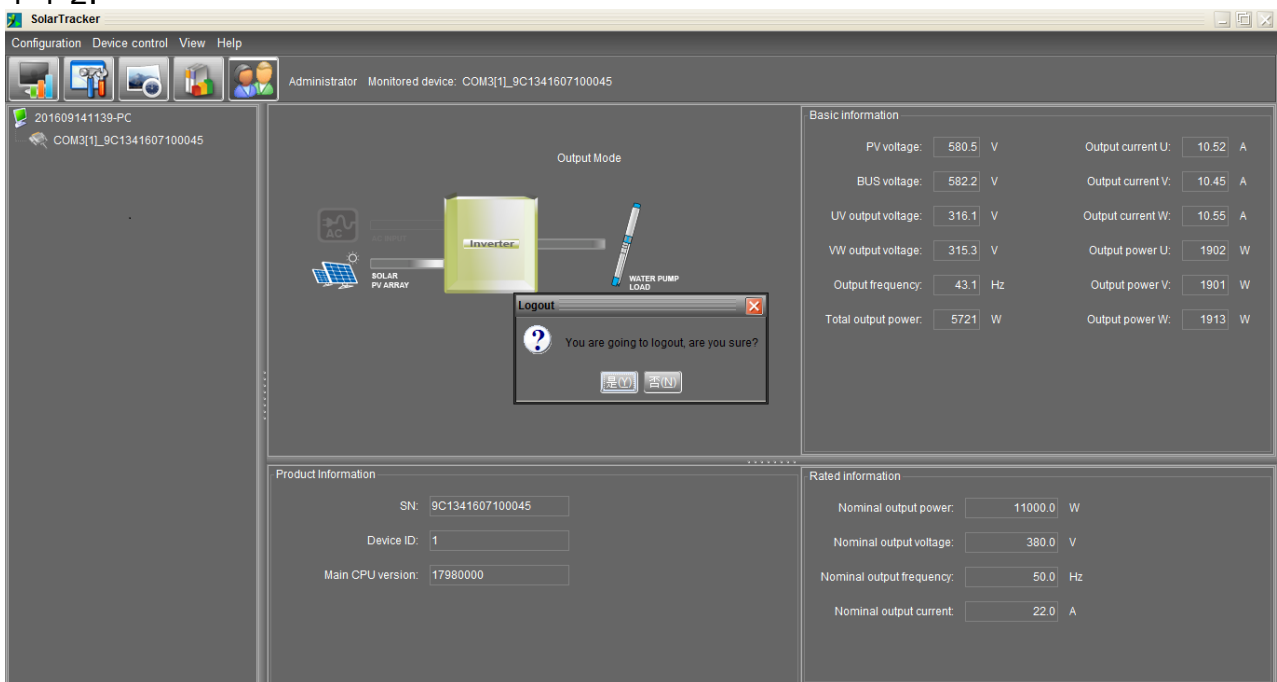


Diagram 4-4-2

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.