1U-RTU Web GUI and SNMP user guide

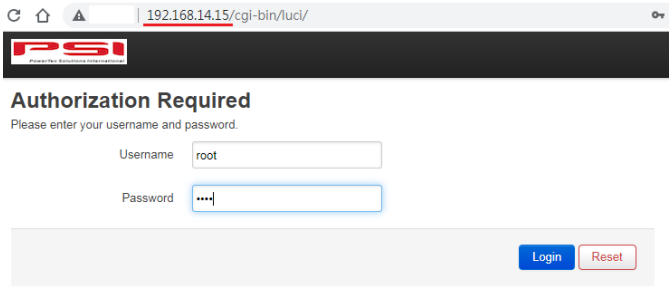
2022/05/12
v0.2

Chapter 1. Installation and Setup

1. Access the Web GUI and set up new password

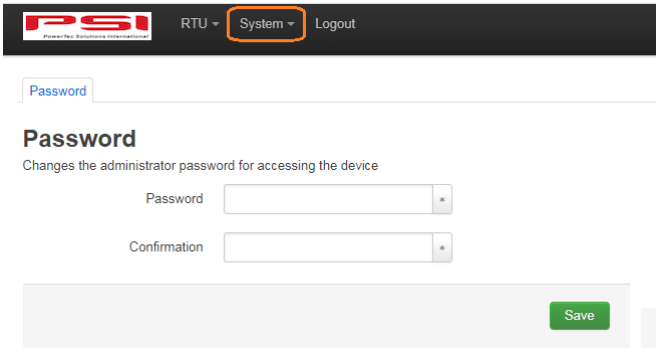
Step1. Access the Web GUI

- Please plug the Ethernet RJ45 cable between 1U-RTU network socket and your PC (we suggest this PC is also the one installed the SNMP Manager).
- For the first time to access the 1U RTU, please setup your PC IP address as 192.168.14.x domain, then access the 1U RTU via your Web browser http://192.168.14.15, default username is root, and password is root

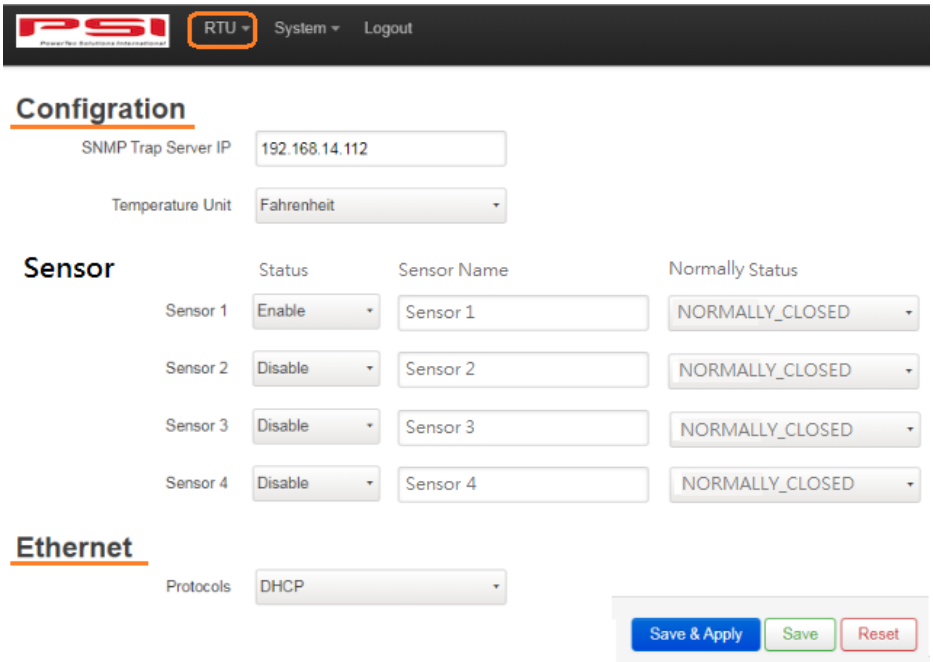


Step2. Set up new password

- Go to System -> Administration page, please input the new password and click the “Save” button. New password will work when users login next time.



2. Set up RTU IP address, and Temperature Unit

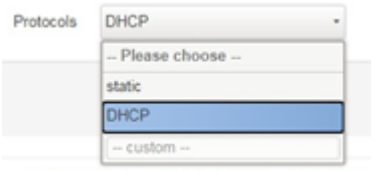


Step1. Set up IP address

- Go to RTU -> Configuration page, find the section of "Ethernet" and item "Protocols",

Option **static:** setup the static IP address, network mask, and default gateway for RTU.

Option **DHCP:** setup the RTU IP address is assigned from DHCP server.



- Click the "Save & Apply" will save this new set up and apply immediately

Note: IP changed will cause Web GUI disconnected, and users may need to input the new IP address on browser again to access the Web GUI

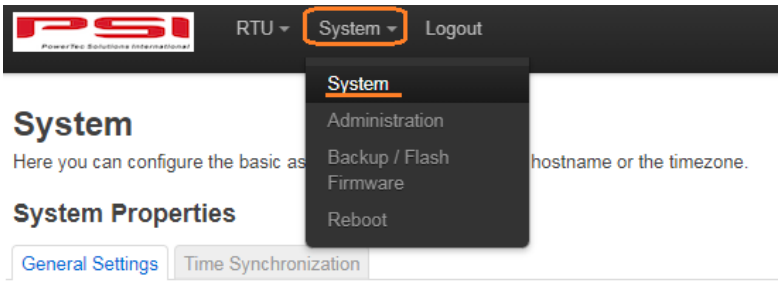
Step2. Set up the Temperature Unit

- Go to RTU -> Configuration page, find the section of "Configuration" and item "Temperature Unit".

Option **Fahrenheit**: to display the temperature status in Fahrenheit degree

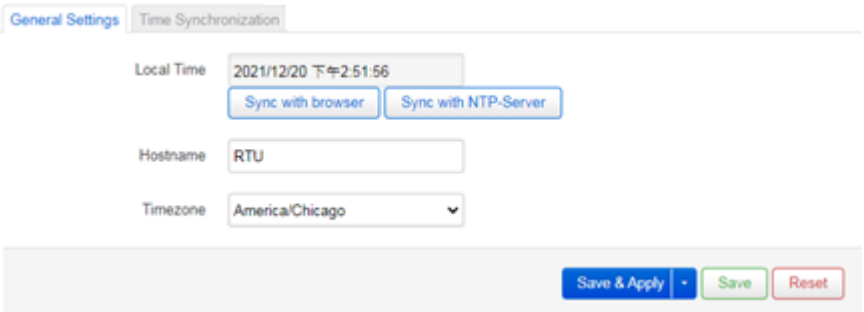
Option **Celsius**: to display the temperature status in Celsius degree

3. Set up the System Time for alarm log



Step1. Set up Local Time and Time zone

- Go to System -> System page, find the section of "System Properties" and "General Settings",



Local Time: will display RTU device current local time. This value will also be the Time header inside each alarm log.

- Please choose one of the options:

Option **Sync with browser:** click this button will apply your browser's local time (Normally it is the system time on your PC or laptop you are using the Chrome, Firefox, …etc.)

Option **Sync with NTP Server:** click this button will set up the RTU to query the network time with NTP server on cloud.

Note1: If users choose "**Sync with browser**", RTU will periodically sync-up the time whenever users access the Web GUI.

If users choose "**Sync with NTP Server**", it is better to make sure your firewall or router won't block the NTP protocol from/to cloud.

Note2: Every time RTU boot up or reboot needs to sync-up the time again from either PC browser or NTP server depends on your setup, otherwise RTU will use the factory default time as system time.

Hostname: Please input the device/hostname of this RTU device.

Timezone: Please select the time zone you locate.

- Please click "Save & Apply" button to save and apply your above selections.

4. Setup Sensors

Step1. Set up sensor name, normally status, and enable/disable

- Go to RTU -> Configuration page, find the section of "Sensor",

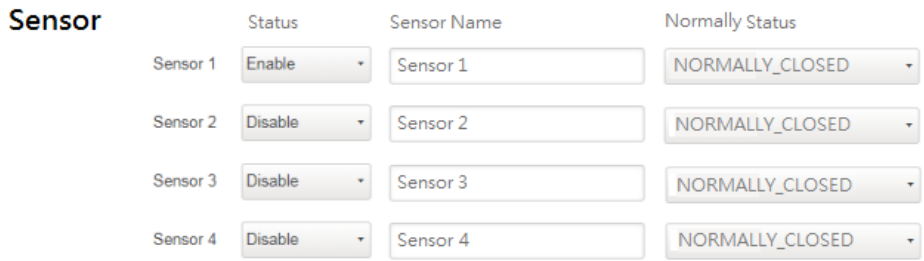
Status: to enable or disable this sensor function

Sensor Name: please input the name of sensor you like. Up to 11 characters

Normally Status: set up the normally status (to define what condition to trigger the alarm)

Option **NORMALLY_CLOSED:** mean CLOSED is normally status, and RTU will trigger alarm whenever sensor detects it is OPEN.

Option **NORMALLY_OPEN:** mean OPEN is normally status and RTU will trigger alarm whenever sensor detects it is CLOSED.

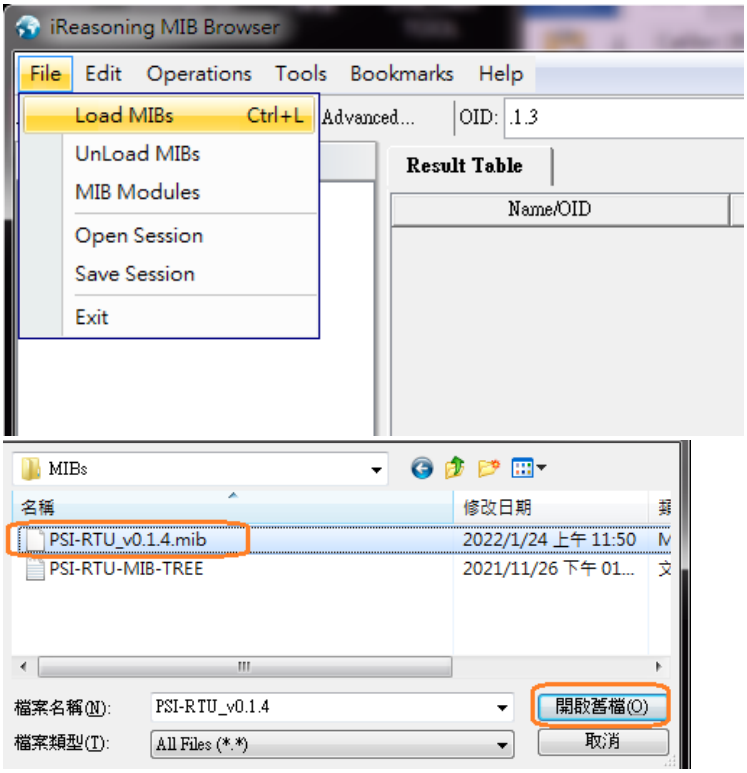


- Please click "Save & Apply" button to save and apply your above selections.

5. Setup SNMP

Step1. *Load SNMP MIB file*:

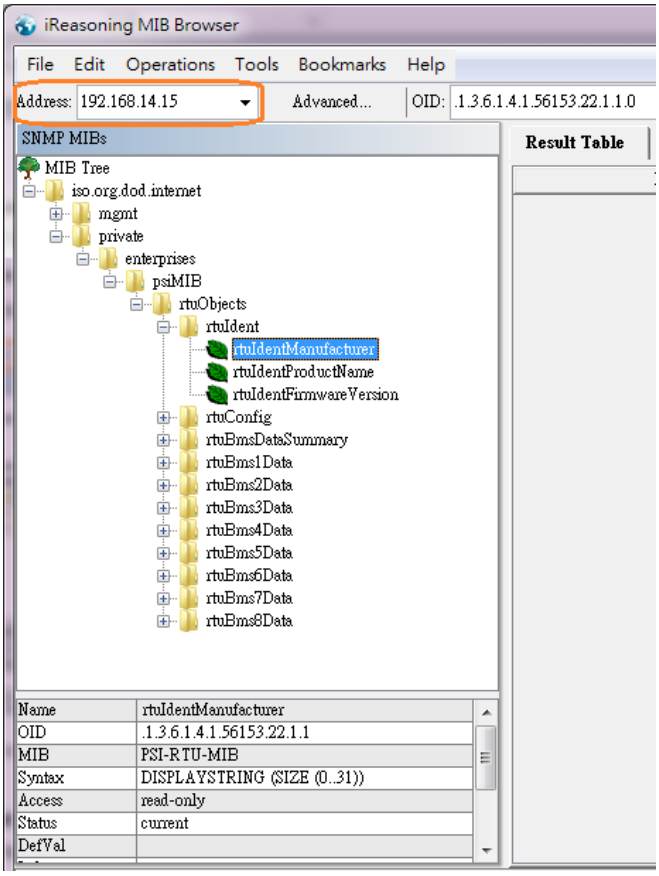
1U-RTU implements private MIB, so users need to load the related MIB file to the SNMP Browser or SNMP Manager. Here is the example on iReasoning:



Step2. *Access the RTU SNMP parameters*:

Once MIB file is loaded, you may find there is related 1U-RTU tree under the private tree.

To access the 1U-RTU SNMP parameters, users need to input the 1U-RTU IP address for the target device and just operate the actions of GET, WALK to query the data like below screenshot:



The default commit of 1U-RTU is “public”

Step3. *Setup Trap Server IP address for Trap notification*:

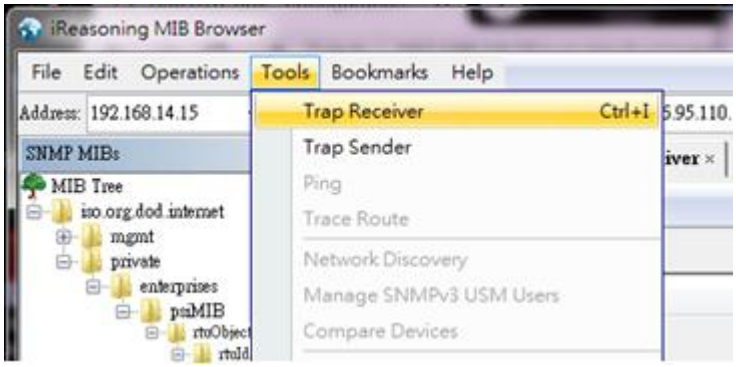
- Go to RTU -> Configuration page, find the section of “Configuration” and item “SNMP Trap Server IP”.

  Please input the IP address of SNMP server to receive the SNMP Trap notification from RTU.

Note: We suggest users to assign SNMP server IP address and RTU device IP address are in the same IP domain/subnet.

- Please click “Save & Apply” button to save and apply your above selections.

Note: Some SNMP browser might need to enable the Trap Receiving function. For example of iReasoning, users need to enable it like:

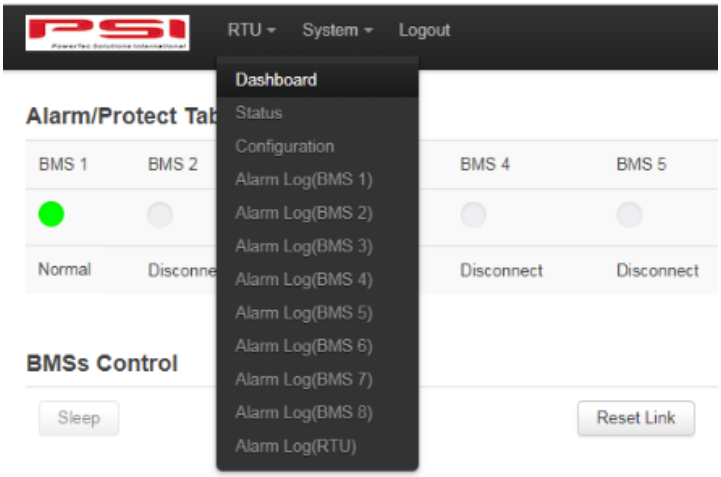


Chapter 2. Status Monitor

1. RTU overall status monitor

Once login, Web GUI will go to the overview page to display RTU latest status directly. This is the same page on RTU -> Dashboard

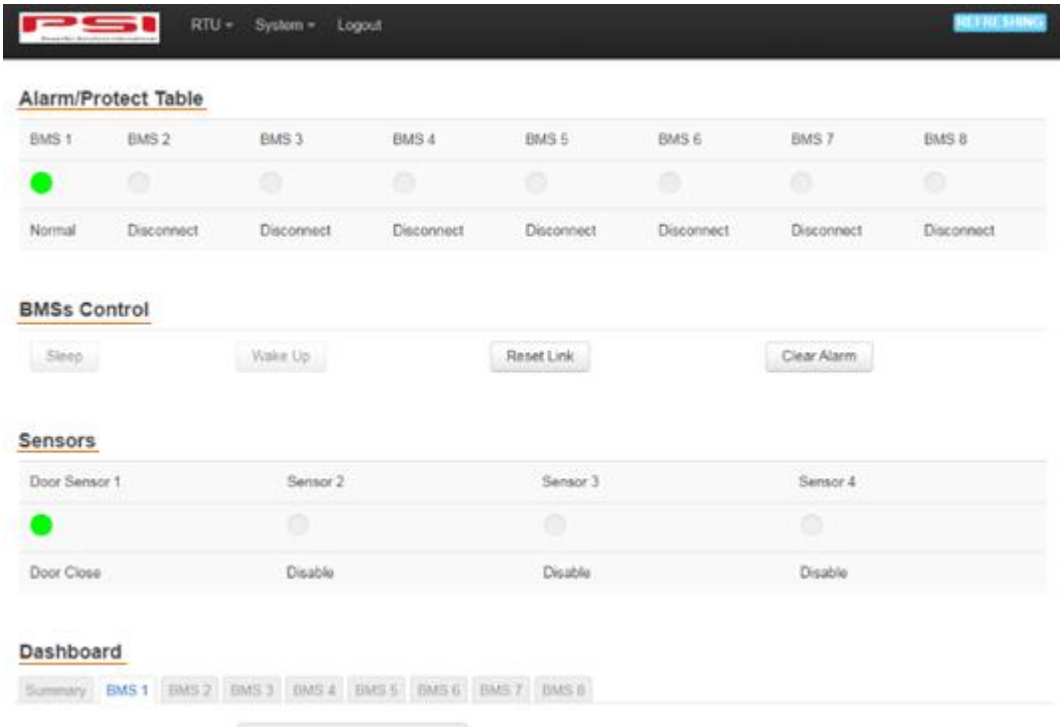
Subpages in RTU page:



Under RTU page, there are subpages for Dashboard, Status, Configuration, Alarm Log (BMS 1), …Alarm Log (BMS 8), and Alarm Log (RTU):

1.1. RTU -> Dashboard page:

This page will show the real time status and parameters about BMSs and Sensors, and indicate those BMSs and Sensors are operating normally or any warning occurs.



A. Section **Alarm/Protect Table:** will display the overall status of all BMSs

Each BMS status will be displayed via a Status icon with Status line like:

Status icon	***Status line***	***Description***
Blank	Disconnected	BMS is not existed or Modbus link drop.
Green	Normal	BMS is on-line and works normally

Red	Alarm	Alarm occurs
Yellow	Sleep	BMS enter sleep mode (for BAK BMS only)
Green circle	Join	New BMS joins the Modbus line, please press the “Reset Link” button to re-collect the status

B. Section **BMSs Control:** to synchronize the Modbus link status of all BMSs via some buttons:

Sleep: send command to let all BMSs sleep (for BAK BMS only)

Wake Up: to wake-up all BMSs (for BAK BMS only)

Reset Link: to synchronize the Modbus link status with BMSs, especially when new BMS added or any BMS removed

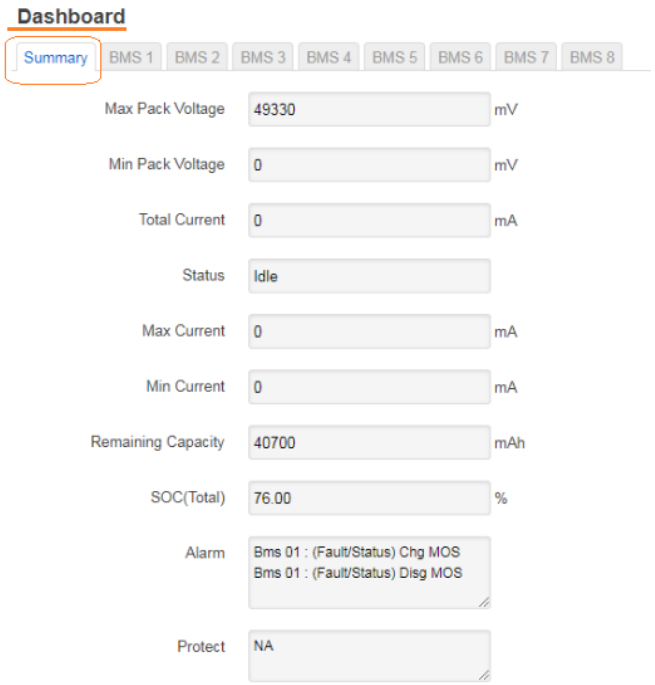
Clear Alarm: to clear all alarm status and let BMS status icon as green Normal. If alarm still existed, status icon will become red agai

C. Section **Sensors:** will display the overall status of all sensors like:

Status icon	***Status line***	***Description***
Blank	Disable	Sensor is disabled
Green	Close Or Open	The sensor is in normal status, and same as **Normally Status** selection you set up. For example: A. sensor is in open circuit and you set **NORMALLY_OPEN** B. sensor is in close circuit and you set **NORMALLY_CLOSED**
Red	Close Or Open	Alarm occurs. The sensor is in the opposite circuit status as **Normally Status** selection you set up.

D. Section **Dashboard:** There are Summary subpage and BMS1, BMS2, …BMS8 subpages

- ***RTU -> Dashboard*** page, ***Summary*** subpage: displays total status of all BMSs



Max Pack Voltage (mV): The maximum voltage in BMS packs 1~8

Min Pack Voltage (mV): The minimum voltage in BMS packs 1~8

Total Current (mA): The sum current of all BMSs, is equal to I(pack 1)+I(pack 2)+….I(pack 8)

Status: The total status is in charging, discharging, or idle

Max current (mA): The maximum current in BMS packs 1~8

Min Current (mA): The minimum current in BMS packs 1~8

Remaining Capacity (mAh): The total remaining capacity of all BMSs,
is equal to A-hr(pack 1) + A-hr (pack 2)….A-hr(pack 8)

SOC (Total) in **(%)**: The total SOC of all BMSs, is equal (remaining capacity)/(total capacity)

Alarm: list alarm events from all BMSs

Protect: list protect events from all BMSs

- ***RTU -> Dashboard*** page, ***BMS1, BMS2, …, BMS8*** subpages: displays parameters of each BMS

Pack Voltage (mV): The latest voltage of this BMS pack

Current (mA): The latest current of this BMS pack (positive value means charging, negative means discharging, 0 means idle)

Charge Status: Charging, Discharging, or Idle

Remaining Capacity (mAh): The remaining capacity this BMS pack

Average Temperature (°F): shows the average temperature of this BMS pack

RSOC (%): The Relative SOC of this BMS pack

Alarm: list alarm events from this BMS pack

Protect: list protect events from this BMS pack

Temperature (°F): shows 4 temperature sensors inside this BMS pack

Cell Voltage (mV): shows 16 cell voltages inside this BMS pack

Manufacture Name: shows the manufacture name, or the product name

Manufacture SN: shows the product serial number

Main MCU Firmware version: indicates the BMS MCU firmware version

Hardware Version: indicates the BMS hardware version

Note:

Charge Status should match the Current value (positive value means Charging, negative means Discharging, and 0 means Idle)

1.2. RTU -> Status page:

This page will show the parameters of this RTU

Hostname	RTU
Model	RTU
Firmware Version	PSI-RTU v0.0.9 r11306-c4a6851c72 / LuCI openwrt-19.07 branch git-21.044.30835-34e0d65
Ethernet Proto	dhcp
Ethernet IP	
Ethernet NetMask	
Ethernet GateWay	

Hostname: Host name of this RTU to identify for network protocol like DHCP

Model: the product name of this RTU

Firmware Version: indicates the firmware version of this RTU

Ethernet Proto: shows the IP assignment is via manual static or DHCP

Ethernet IP: shows the IP address of this RTU

Ethernet Netmask: shows the subnet mask method of this RTU

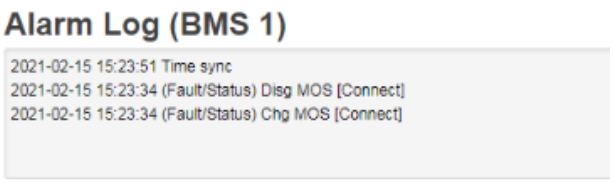
Ethernet Gateway: shows the gateway for this RTU

2. Alarm events monitor

Event may be reported from each BMS or system, so events are displayed on different BMS1~BMS8 or RTU subpages

2.1. RTU -> Alarm Log (BMS1..BMS8) page:

This page will list all Alarm events reported from this BMS pack

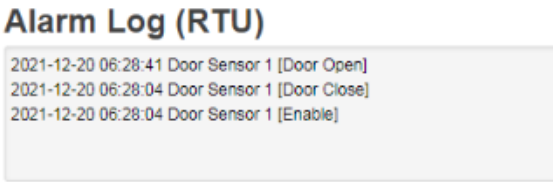


Events will be listed from new to old.

Each event is displayed with time header, then alarm content with status/severity level.

2.2. RTU -> Alarm Log (RTU) page:

This page will list most events inside RTU and reported from sensors



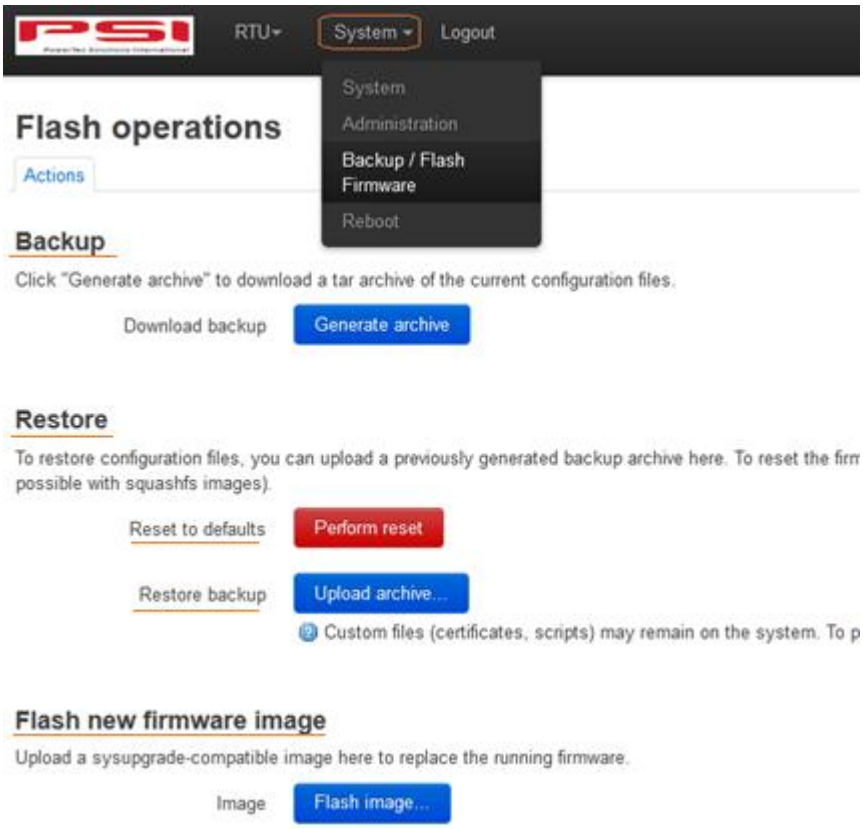
Events will be listed from new to old.

Each event is displayed with time header, then event content with status/severity level.

Chapter 3. RTU System Management

This chapter will show how to do firmware upgraded, and configuration backup/restore.

- Please visit the page on System -> Backup/Flash Firmware



1. Backup and Restore RTU configuration file

- Please find section “Backup” and “Restore” on this page:

Backup: users can back up the 1U RTU system configuration via clicking “Generate archive” and save to a text file

Restore – Restore backup: users can click the “Upload archive …” and select the old backup file from your PC then restore it as the 1U RTU configuration

Restore – Reset to defaults: users can click the “Perform reset” to reset 1U RTU configuration back to the factory default

Note:

Actions of **Restore backup** and **Reset to defaults** may change the 1U RTU IP address.

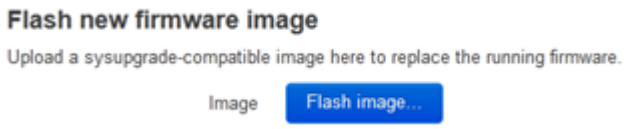
If Web GUI does not redirect to the proper Web page after 5 minutes later, please manually input http://192.168.14.15 again or the correct IP address which stored in the backup file to access the Web.

2. Upgrade Firmware on RTU

- Please find section “Flash new firmware image” on this page:

Flash new firmware image: users can upgrade the 1U RTU firmware to the newer version.

Please click the “Flash image…” button



Then click the button “Browse...” to choose the new firmware file location, and then click the “Upload” button to start the process.

If GUI pop-up a reminding page like below, we suggest NOT to check the “Keep settings and retain …” icon, then click “Continue” to continue the upgrading.

Note1:

A. If user check this “Keep settings and retain …” icon, RTU will keep old configuration after firmware upgraded
B. If user not to check this “Keep settings and retain …” icon, RTU will reset the configuration to factory default after firmware upgraded

Note2:

Whole upgrading process might take more than 5 minutes and back to the login page. If browser does not redirect to the home page, please try to input the 192.168.14.15 or the proper IP address again after 5 minutes