InfraPower®

PDU Inspired by Your Data Center

User Manual

PPS-02-S, IP dongle GUI software

W kWh Monitored PDU
WS kWh Switched PDU
Wi Outlet kWh Monitored PDU
WSi Outlet kWh Switched PDU

Designed and manufactured by Austin Hughes

Legal Information

First English printing, October 2002

Information in this document has been carefully checked for accuracy; however, no guarantee is given to the correctness of the contents. The information in this document is subject to change without notice. We are not liable for any injury or loss that results from the use of this equipment.

Safety Instructions

Please read all of these instructions carefully before you use the device. Save this manual for future reference.

- Unplug equipment before cleaning. Don't use liquid or spray detergent; use a moist cloth.
- Keep equipment away from excessive humidity and heat. Preferably, keep it in an air-conditioned environment with temperatures not exceeding 40º Celsius (104º Fahrenheit).
- When installing, place the equipment on a sturdy, level surface to prevent it from accidentally falling and causing dam age to other equipment or injury to persons nearby.
- When the equipment is in an open position, do not cover, block or in any way obstruct the gap between it and the power supply. Proper air convection is necessary to keep it from overheating.
- Arrange the equipment's power cord in such a way that others won't trip or fall over it.
- If you are using a power cord that didn't ship with the equipment, ensure that it is rated for the voltage and current labelled on the equipment's electrical ratings label. The voltage rating on the cord should be higher than the one listed on the equipment's ratings label.
- Observe all precautions and warnings attached to the equipment.
- If you don't intend on using the equipment for a long time, disconnect it from the power outlet to prevent being dam aged by transient over-voltage.
- Keep all liquids away from the equipment to minimize the risk of accidental spillage. Liquid spilled on to the power supply or on other hardware may cause damage, fire or electrical shock.
- Only qualified service personnel should open the chassis. Opening it yourself could damage the equipment and invali date its warranty.
- If any part of the equipment becomes damaged or stops functioning, have it checked by qualified service personnel.

What the warranty does not cover

- Any product, on which the serial number has been defaced, modified or removed.
- Damage, deterioration or malfunction resulting from:
  - ☐ Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product.
  - ☐ Repair or attempted repair by anyone not authorized by us.
  - ☐ Any damage of the product due to shipment.
  - ☐ Removal or installation of the product.
  - ☐ Causes external to the product, such as electric power fluctuation or failure.
  - ☐ Use of supplies or parts not meeting our specifications.
  - ☐ Normal wear and tear.
  - ☐ Any other causes which does not relate to a product defect.
- Removal, installation, and set-up service charges.

Regulatory Notices Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential instal-lation.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-position or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Unpacking

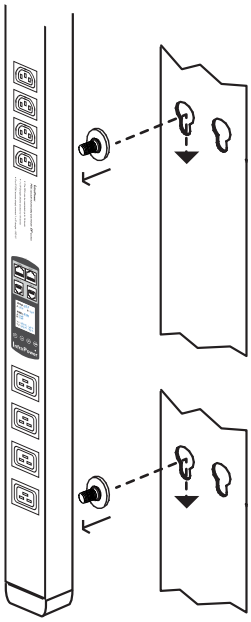
The equipment comes with the standard parts shown on the package contents. Check and make sure they are included and in good condition. If anything is missing, or damage, contact the supplier immediately.

Package contents

(1) Vertical W / Wi / WS / WSi PDU x 1

- **VMS** mounting screw, set of 2 or 3

- **VMB** mounting bracket set



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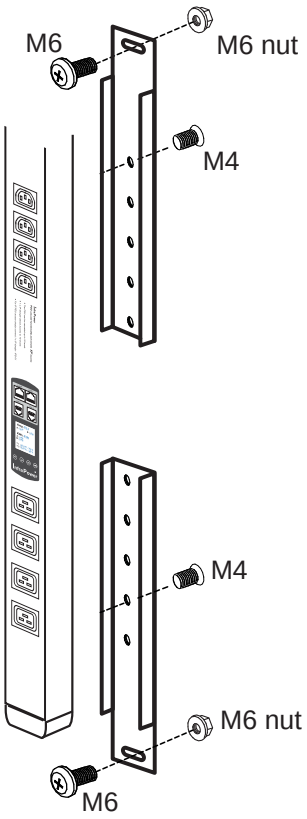


(2) Rackmount W / Wi / WS / WSi PDU x 1

All electrical power and power control wiring must be installed by a qualified electrician and comply with local and national regulations.

Power ON

- Connect the PDU into an appropriately rated receptacle
- When the PDU is power on, the LED display will light up. That means all outlets are activated
- Keep the equipments in the power off position until it is plugged into the PDU

Don’t exceed the outlet, branch or phase limitations

Content

< 1.1 > W / Wi / WS / WSi PDU Key Features

InfraPower®	kWh PDU		Outlet kWh PDU	
	Monitored	Switched	Monitored	Switched
	W	WS	Wi	WSi
Outlet Measurement			✔	✔
Circuit kWh Measurment	✔	✔	✔	✔
Temp-Humid Sensor port x 2	✔	✔	✔	✔
16 Levels in Single Daisy Chain	✔	✔	✔	✔
One IP Access 16 PDU Levels	✔	✔	✔	✔
SNMP Capability via IP Dongle	✔	✔	✔	✔
Hot-pluggable Meter w/ 1.8” Color LCD	✔	✔	✔	✔
Outlet Switch ON / OFF		✔		✔
Local kWh & Amp Meter	✔	✔	✔	✔
Vertical & Horizontal PDUs	✔	✔	✔	✔
Tool-less Mounting for Vertical PDU	✔	✔	✔	✔
Management Software Editions (Free)	IPM-03 IPM-02 PPS-02-S (via IPD-02S)	IPM-03 IPM-02 PPS-02-S (via IPD-02S)	IPM-03 - PPS-02-S (via IPD-02S)	IPM-03 - PPS-02-S (via IPD-02S)

< 1.2 > IP Dongle GUI Software PPS-02-S Key Features

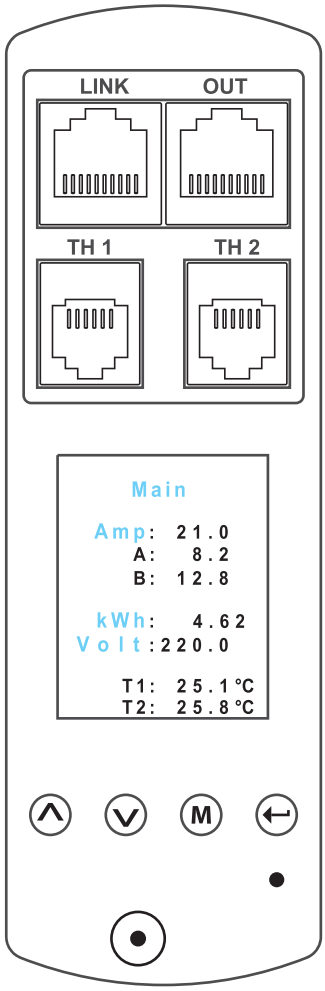
InfraPower Manager PPS-02-S is a **FREE** built-in GUI software of each IP dongle (IPD-02-S only) to remotely monitor the connected PDUs (max. up to 16 PDU levels)

InfraPower PPS-02-S

Features		
Capacity	IP Dongle Group (Just 1 for 16 PDU levels)	1
	PDU number	16
	Concurrent Users	1
Enhanced Features	Outlet Level kWh & Amp Measurement	✔
	Energy Consumption (kWh) Monitoring	✔
	Apparent Power (kVA) Monitoring	✔
	Power Factor Measurement	✔
	Circuit Breaker Monitoring	✔
	SNMP Capability via IP Dongle	✔
Basic Features	Aggregate Current (Amp) Monitoring	✔
	Individual Outlet Switch ON/OFF	✔
	Temp-Humid Monitoring	✔
	Alarm Threhold Setting	✔
	Remote Access via Web	✔
	Graphic User Interface	✔
PDU Series Support	WSi / Wi (Outlet Measurement)	✔
	WS / W	✔
IP Dongle Support	IPD-02-S / IPD-H02-S	✔

< 1.3 > W meter display & setting

All W series PDUs are equipped with a highly advanced and sophisticated component - W Meter. It provides the cascade ports for daisy chain up to 16 x PDU. Furthermore, for IP PDU access, simply connect 1 x IP Dongle for all daisy chain PDUs to save IP network address. Two sensor ports are integrated for temperature & humidity monitoring. Creatively, 1.8” color LCD display offers a real time local monitoring and detailed PDU status.



1 PDU cascade port

2 Temp. + Humidity sensor port x 2
or
Temp. sensor port x 2

3 1.8” color LCD display

4 Menu button

5 Reset button

6 Buzzer

Reset button is to re-power the meter. It will not affect any settings and memories.

The buzzer only sounds when the circuit amp. over the alarm amp. setting.

For 1U / 2U rackmount PDU, 3 4 5 on the front, 1 2 on the rear

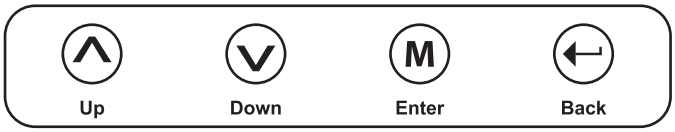
< 1.3 > W meter display

W meter 1.8” color LCD provides a sharp and highly visible reading for the local reading of Current (Amp), Voltage (Volt), Power (kW), Energy Consumption (kWh), Power Factor, Temperature & Humidity.

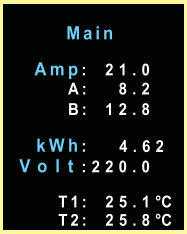
Display for PDU Monitoring

- Amp, Voltage & Power Factor
- kWh Energy Consumption
- Active & Apparent Power
- Temp. & Humidity

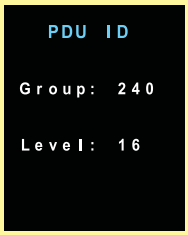
W Meter provides the buttons to select the displays



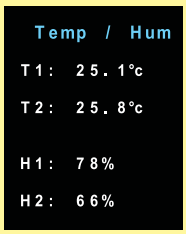
Display 1



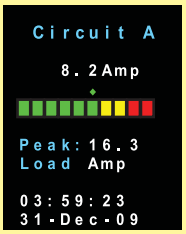
Display 2



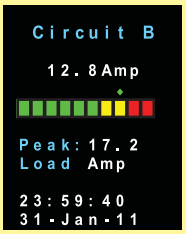
Display 3



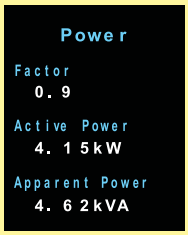
Display 4



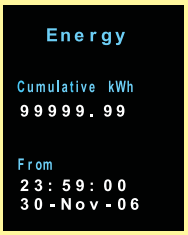
Display 5



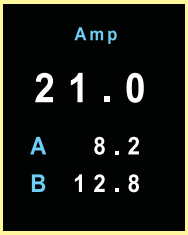
Display 7



Display 8



Display 1.1



Press (M) to change °C / °F

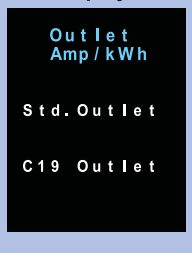
Display for Outlet Measurement

- Outlet Amp
- Outlet kWh

(Wi and WSi series PDUs only)

Display 6 only for Wi / WSi outlet measurement PDU

Display 6



Display 6.1

Display 6.2

Display 6.3

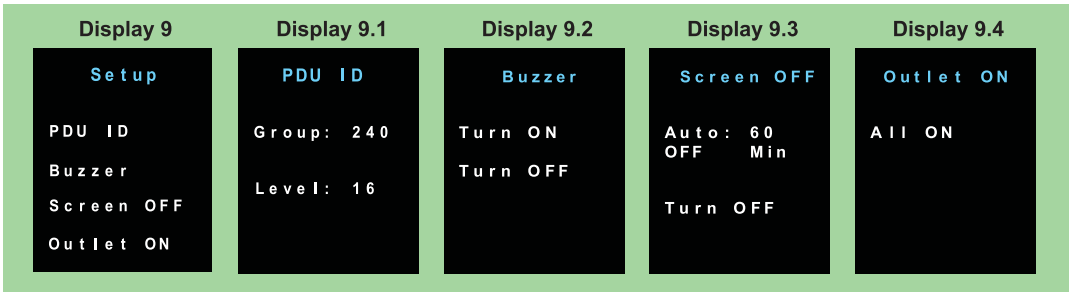
Display 6.4

< 1.3 > W meter setting

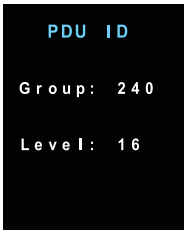
W meter allows the user to do some settings below :

Display for Local PDU Setting

- PDU Level
- Meter buzzer
- Meter screen
- PDU Outlet ON



Display 9.1



PDU level setting :

Step 1 - Press the ^ & v button to [display no.9] and press M to confirm

Step 2 - Press the ^ & v button to [PDU ID] and press M to confirm

Step 3 - In display 9.1, Press the ^ & v button to select PDU level no. & press M to confirm

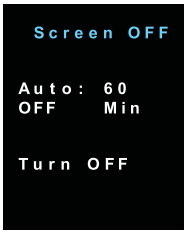
Step 4 - Press ↩ to exit

Display 9.2

Buzzer :

W meter allows the user to set the meter buzzer ON / OFF by meter's 4 buttons

Display 9.3



Screen OFF :

All PDUs are shipped with the metter LCD in always ON status.
W meter allows the user to turn off the meter LCD by time setting (1 - 60 mins, 0 = always ON)
When the meter is in OFF status, the user can press any button to make it ON.

Display 9.4

Outlet ON :

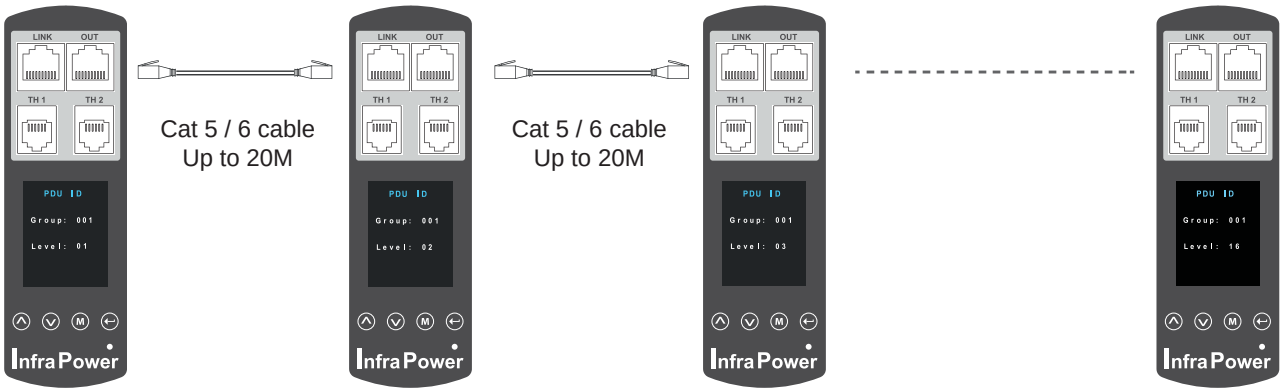
This is for WS kWh Switched / WSi outlet kWh Switched PDU models only. All Switched PDUs are shipped in outlet ON status.

< 1.4 > PDU cascade & connection

PDU Daisy Chain up to 16 Levels

The W meter built-in not only provides the local power monitoring, but also the connection ports for the PDU daisy chain. For daisy chain connection, each PDU just simply to be connected in series to the next by Cat5/6 cables. Maximum 16 PDUs are supported in one daisy chain group.

- The PDU can be cascaded up to 16 levels
- For IP PDU access simply connect 1 x IP dongle - IPD-02
- 1 x IP dongle allows access to 16 levels



1st level PDU meter | 2nd level PDU meter | 3rd level PDU meter | Final level PDU meter

For **PDU level setting**, please refer to the left side page.

< 1.5 > Temp. & Humidity Sensor Connection & Specification

W meter provides 2 sensor ports for Temp. & Humidity monitoring. The user can see the Temp. / Humidity reading not only from the local meter display but also from remote management software.

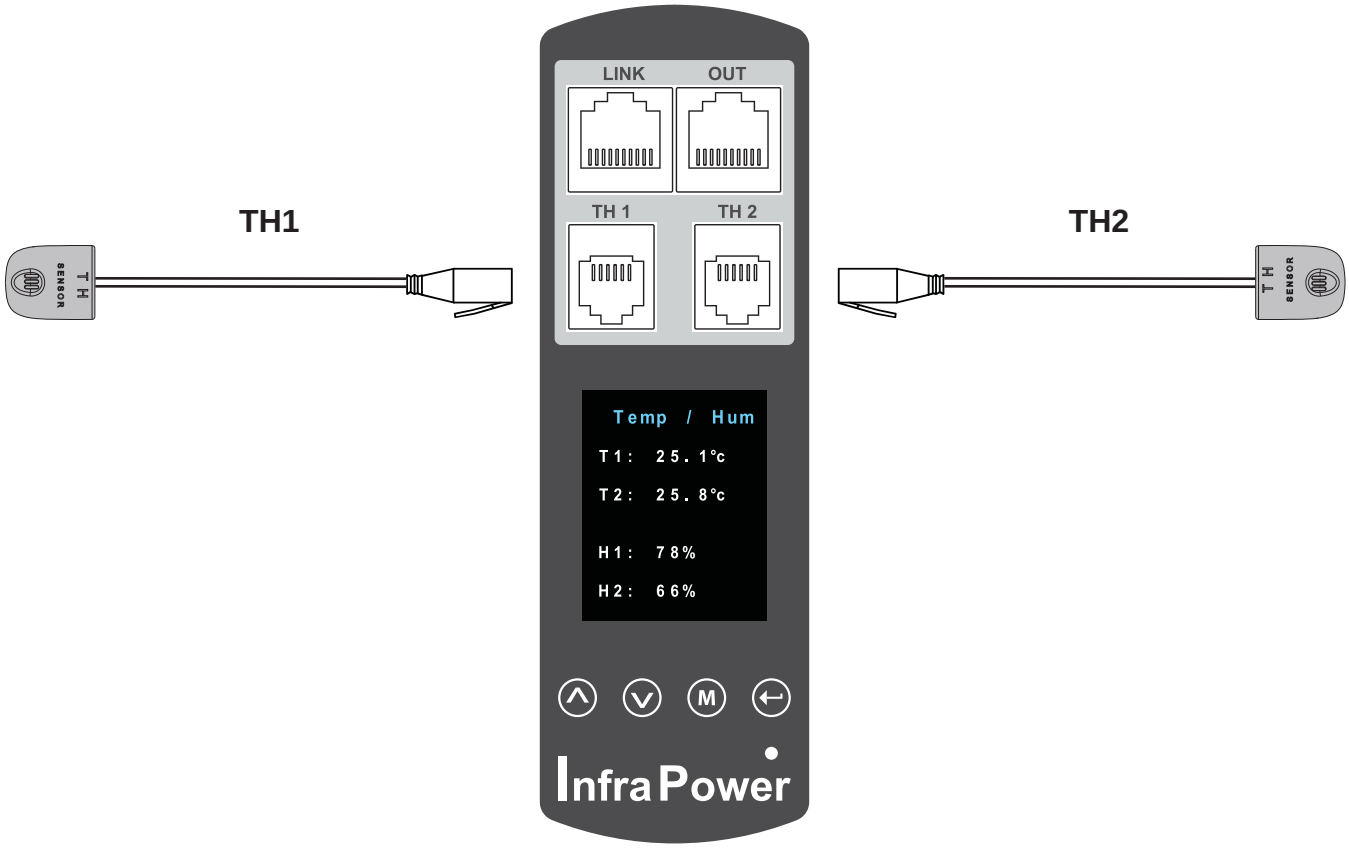
- low profile design with magnetic base for easy affixing to the rack cabinet
- Plug n Play
- sensor with 2M or 4M cord
- pair of sensors can be connected to a single W meter

Temp. & Humid. Sensor

Model :
IG - TH01 - 2M (2M cord)
IG - TH01 - 4M (4M cord)

Temp. Sensor

Model :
IG - T01 - 2M (2M cord)
IG - T01 - 4M (4M cord)



< 1.5 > Temp. & Humidity Sensor Connection & Specification

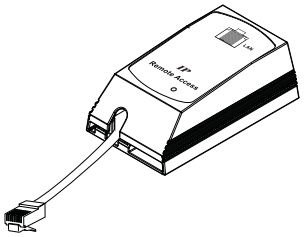
		Temp. & Humid. Sensor	Temp. Sensor
Part no.		**IG - TH01**	**IG - T01**
Temperature Sensitivity	Range	0 to 80°C (32 to 176°F)	
	Accuracy	±1.0°C typical (±2°F)	±1.5°C (±3°F)
	Resolution	0.1°C (0.2°F)	
	Response Time	5 to 30 sec	
Relative Humidity Sensitivity	Range	0 to 100% R.H	/
	Accuracy	0 to 100, ±8.0% R.H 20 to 80, ±4.5% R.H.	/
	Resolution	1% R.H.	/
	Response Time	8 sec	/
Power Requirement	Voltage	12VDC, powered by sensor port	
	Current Consumption	20mA	
	Power consumption	0.24 Watt	
	Power on indicator	Red LED	Green LED
Housing	Chassis & Cover	plastic	
	Color	Dark gray	
	Installation	Magnetic base for unrestricted installation	
Cable	Cable Length	TH sensor w/ 2m cable (standard) TH sensor w/ 4m cable (option)	T sensor w/ 2m cable (standard) T sensor w/ 4m cable (option)
	Cable Specification	4-wired 3.5mm to RJ11	
	Cable Color	Black	Beige
Environmental	Operating	0 to 80°C Degree	
	Storage	-5 to 80°C Degree	
	Humidity	0~100%, non-condensing	
Dimensions	Product	30L x 25Wx 18H mm	
Weight	Net	10g	
Compatibility	InfraPower	W / WS / Wi / WSi series PDU	
	InfraSolution	X-2000 series	
	InfraGuard	Cabinet sensor system	
Safety Regulatory	FCC & CE certified		
Environmental	RoHS2 & REACH compliant		

< 1.6 > IP dongle installation & connection

IP Dongle Access to 16 PDU Levels

Patented IP Dongle provides IP remote access to the PDUs by a true network IP address chain. Only 1 x IP dongle allows access to max. 16 PDUs in daisy chain - which is a highly efficient application for saving not only the IP remote accessories cost, but also the true IP addresses required on the PDU management.

Hot-Pluggable design facilitates the IP dongle installation. Simply integrate the IP Dongle to the 1st PDU, then the entire daisy chain group can be remote over IP. Hence, administrator can remotely access all PDUs in the daisy chain group by one single IP via the IP Dongle.

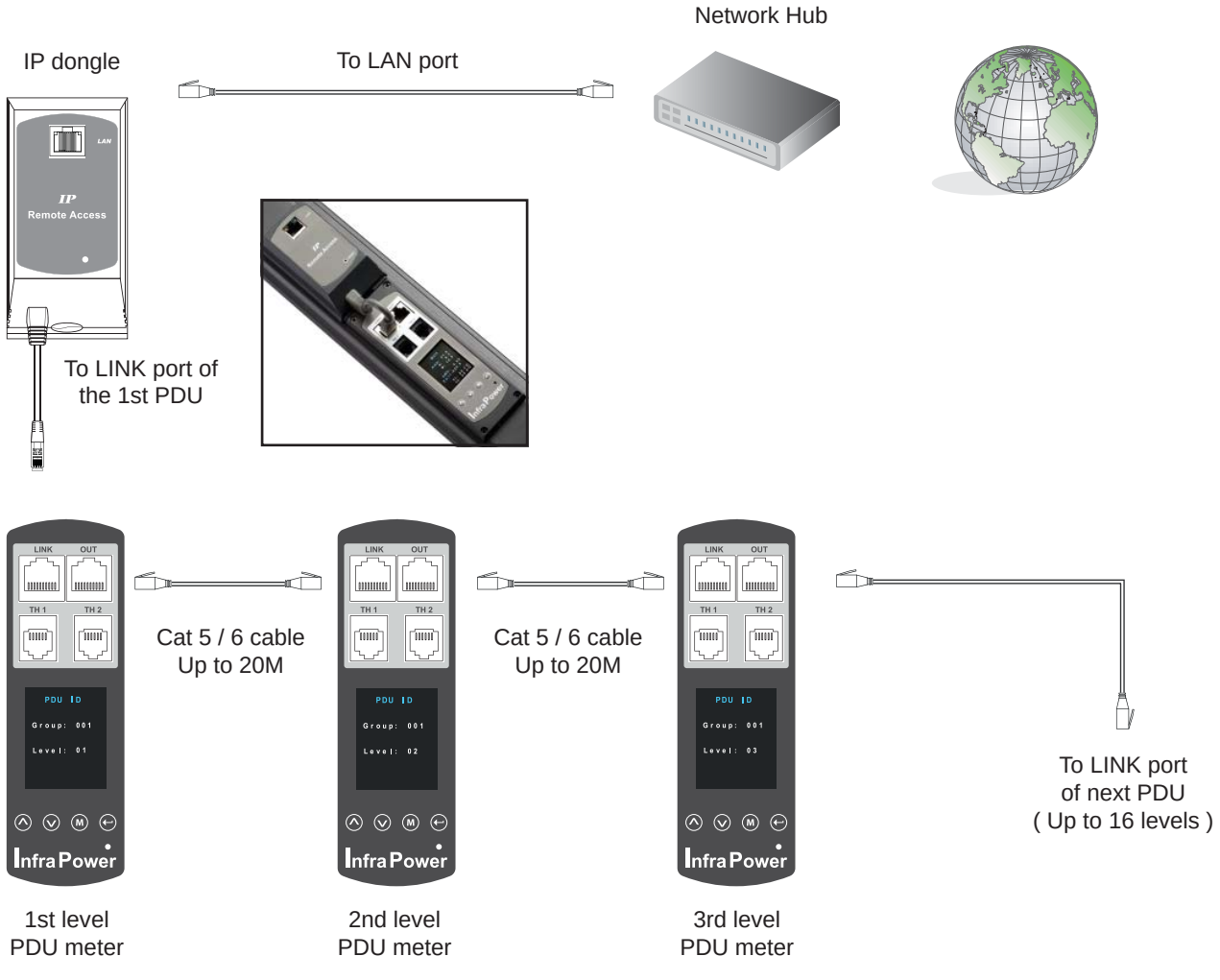


IP dongle for vertical PDU

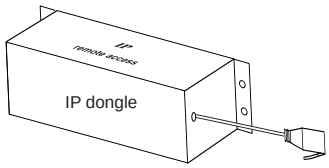
Model :
IPD-02-S (with SNMP feature)

Vertical IP dongle installation steps :

- slide the IP dongle on the plate above the meter
- plug the RJ-45 connector of IP dongle into the LINK port of the 1st level PDU meter
- use the CAT. 5 / 6 cable to connect IP dongle to network device



< 1.6 > IP dongle installation & connection

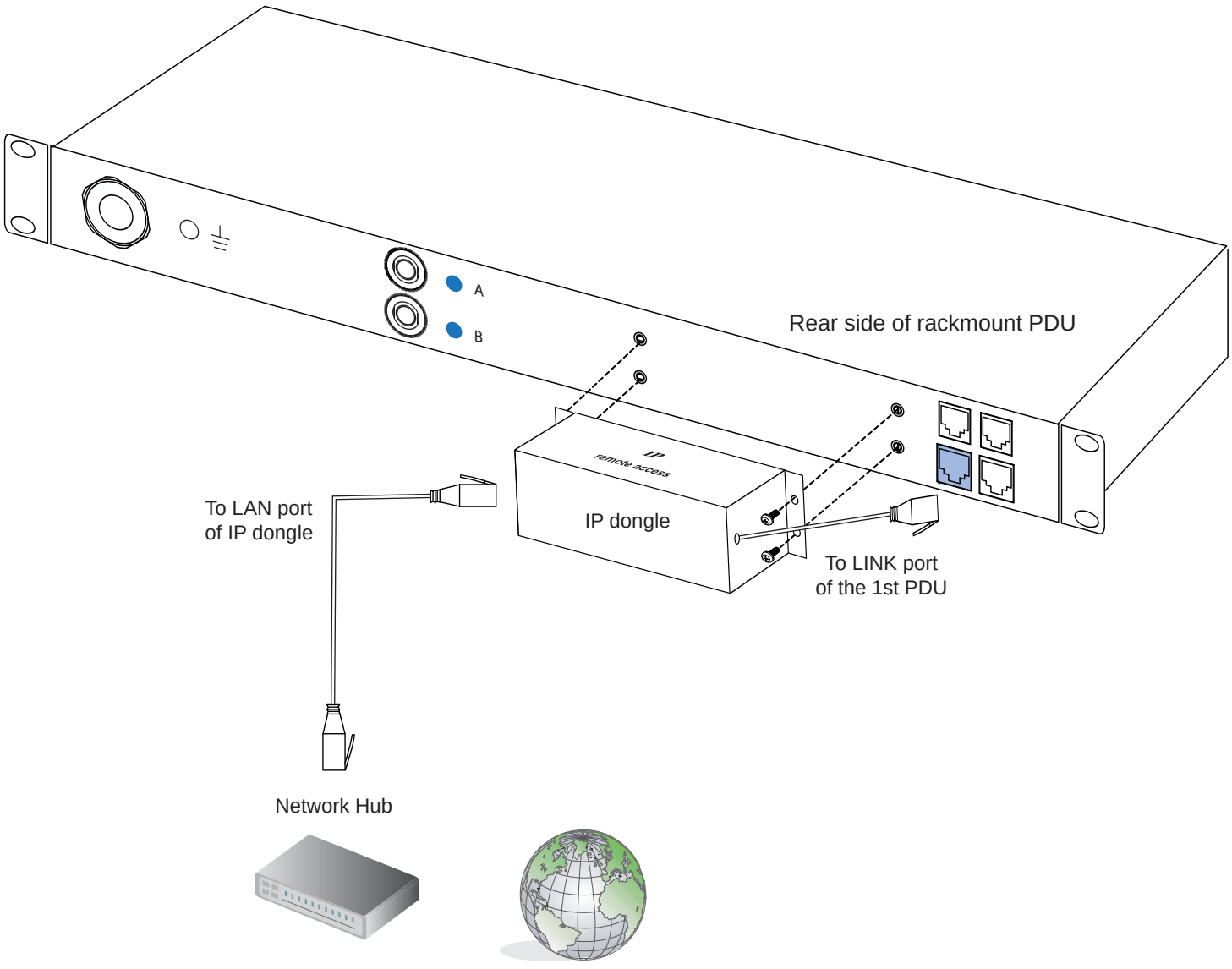


IP dongle for rackmount PDU

Model :
IPD-H02-S (with SNMP feature)

Horizontal IP dongle installation steps :

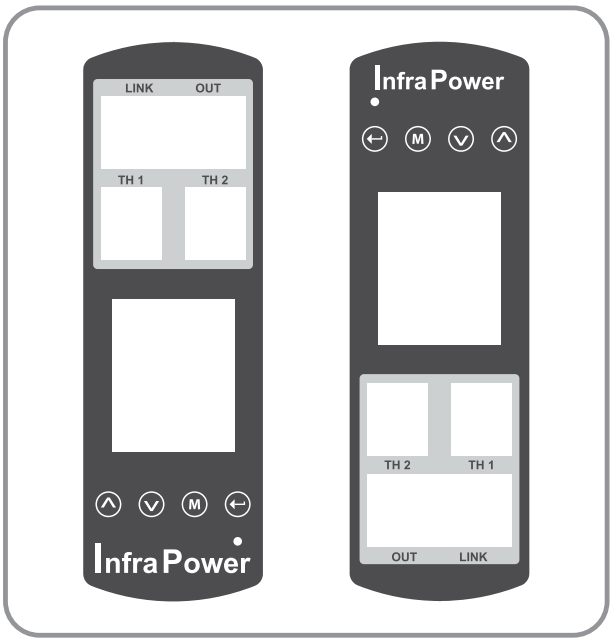
- fix the IP dongle on the rear side of rackmount PDU with 4 screws
- plug the RJ-45 connector of IP dongle into the LINK port of the 1st level PDU meter
- use the CAT. 5 / 6 cable to connect IP dongle to network device



< 1.7 > Easy Change on PDU Power Feed Position

Power Feed Entry Flexibility - By Meter Setting

Customization of top feed power entry is available on request. The change of the power feed entry position is possible after installation. The W series meter provides the flexibility to simply turnover on top feed PDUs with the use of meter inversion buttons and an alternative membrane.



Meter Membrane **A**

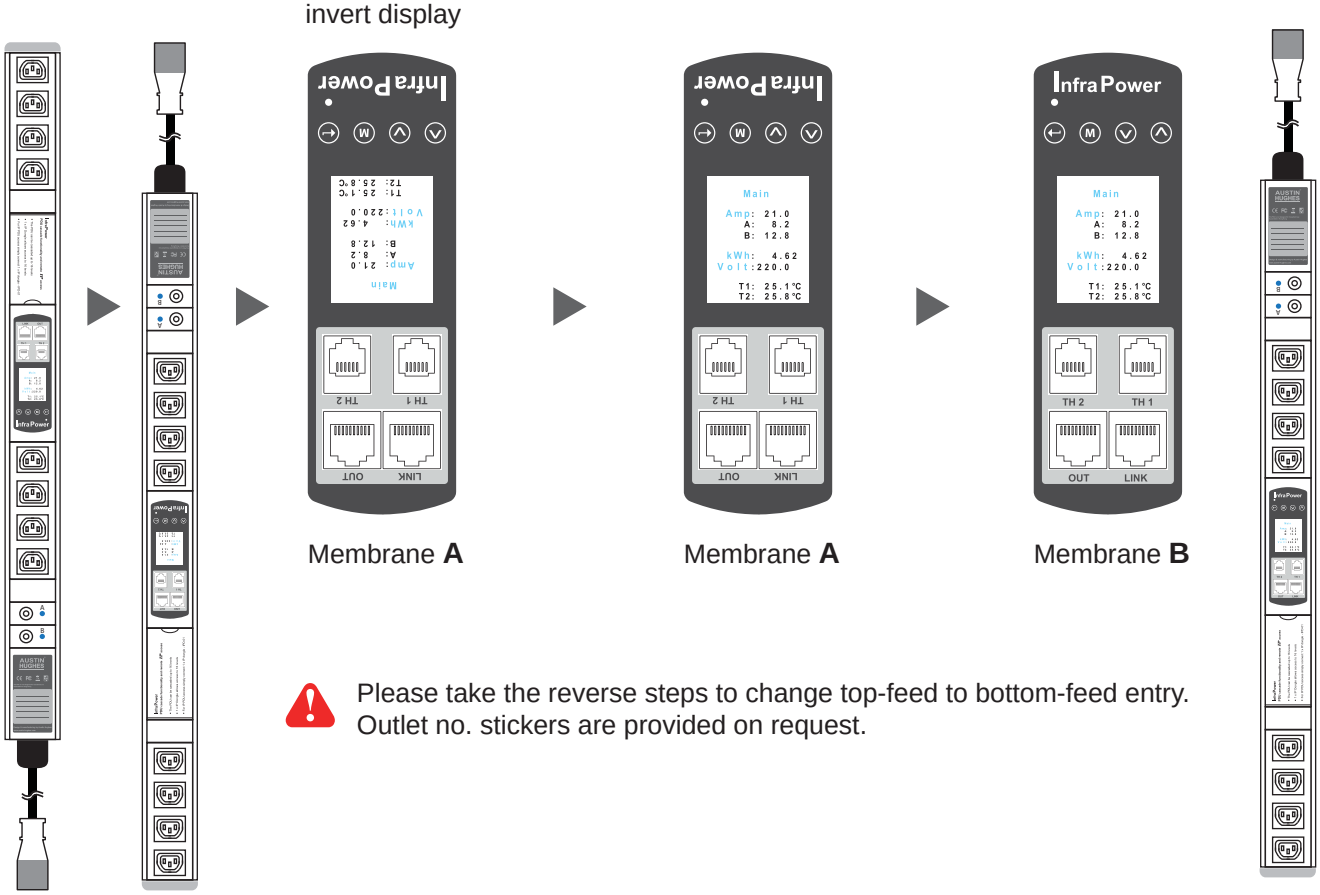
Meter Membrane **B**

1 Turn the PDU upside-down

2 Press first button ⌃ & last button ⊖ to invert display

3 Replace the meter membrane

4 Completed



Membrane **A**

Membrane **A**

Membrane **B**

Please take the reverse steps to change top-feed to bottom-feed entry. Outlet no. stickers are provided on request.

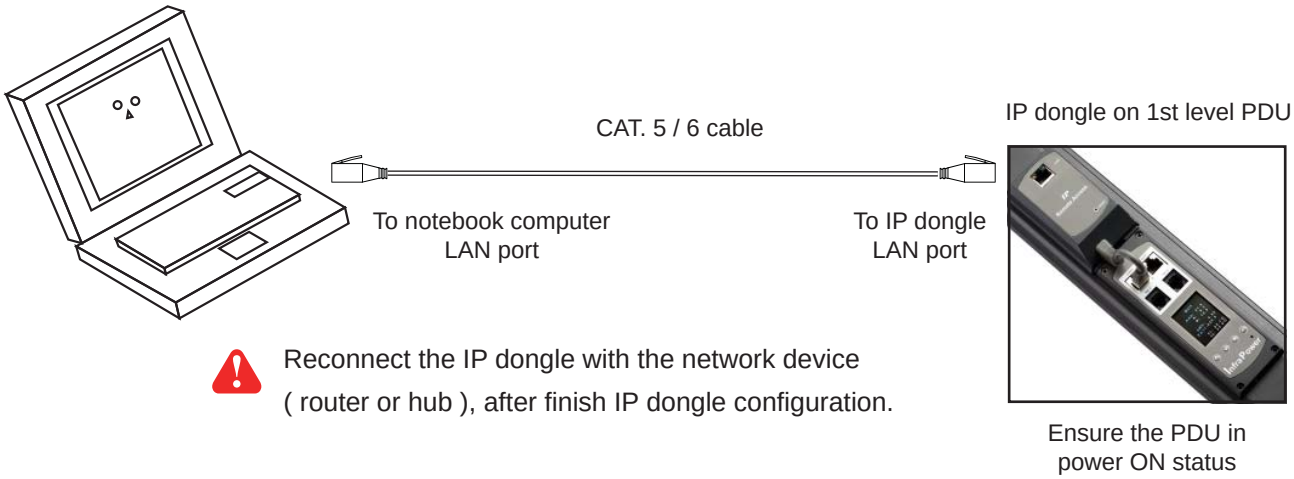
< 1.8 > IP dongle configuration

After the completion of IP dongle connection, please take the following steps to configure the IP dongle :

Step 1. Prepare a notebook computer to download the IP setup utilities from the link :
http://www.austin-hughes.com/support/utilities/infrapower/IPdongleSetup.msi

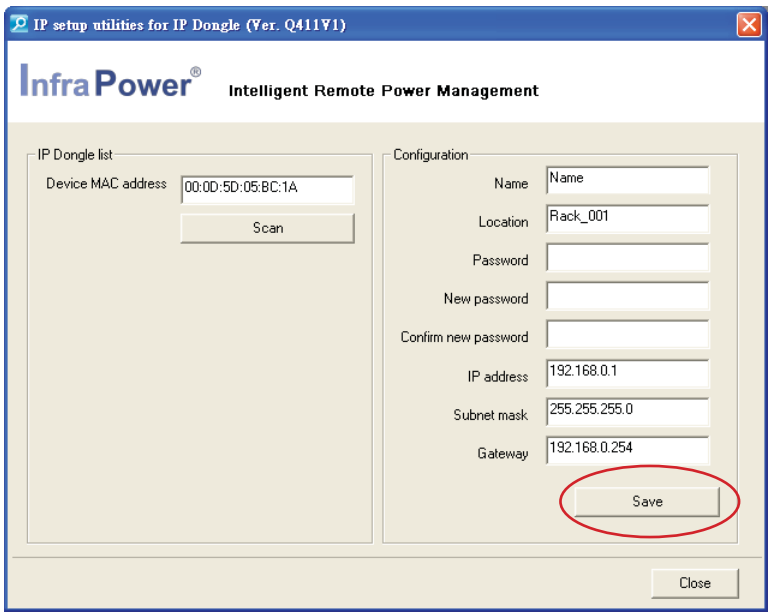
Step 2. Double Click the IPDongleSetup.msi and follow the instruction to complete the installation

Step 3. Go to each first level PDU with the notebook computer & a piece of CAT. 5 / 6 cable to configure the IP dongle by IP setup utilities as below. Please take the procedure for all IP dongles **ONE BY ONE**



Reconnect the IP dongle with the network device
(router or hub), after finish IP dongle configuration.

Ensure the PDU in
power ON status



Step 4. Click **“ Scan ”** to search the connected IP dongle
Step 5. Enter device name in “ **Name** ” (min. 4 char. / max. 16 char.). Default is “ **Name** ”
Step 6. Enter device location in “ **Location** ” (min. 4 char. / max. 16 char.). Default is “ **Rack_001** ”
Step 7. Enter password in “ **Password** ” for authentication (min. 8 char. / max. 16 char.) Default is **“ 00000000 ”**
Step 8. Enter new password in “ **New password** ” (min. 8 char. / max. 16 char.)
Step 9. Re-enter new password in “ **Confirm new password** ”
Step 10. Change the desired “ **IP address** ” / “ **Subnet mask** ” / “ **Gateway** ”, then Click **“ Save ”** to confirm the changes
The default IP setting is as below:

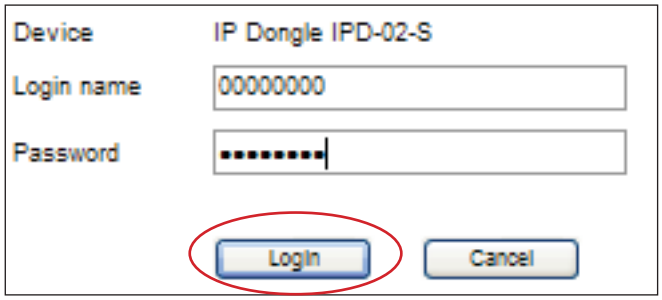
IP address :	192.168.0.1
Subnet mask :	255.255.255.0
Gateway :	192.168.0.254

< 1.9 > PPS-02-S IP dongle GUI software

Each IP dongle (IPD-02-S) provides a **FREE** built-in GUI software, PPS-02-S, which allows user, via an I.E. web browser, to see PDU's data and remotely manage the PDU over a TCP / IP Ethernet network.

Each I.E. supports only one IP dongle (IPD-02-S). If user installs more IP dongles, multi windows will be required

PPS-02-S is a management software with very limited features. User can use more advanced software, InfraPower Manager IPM-03



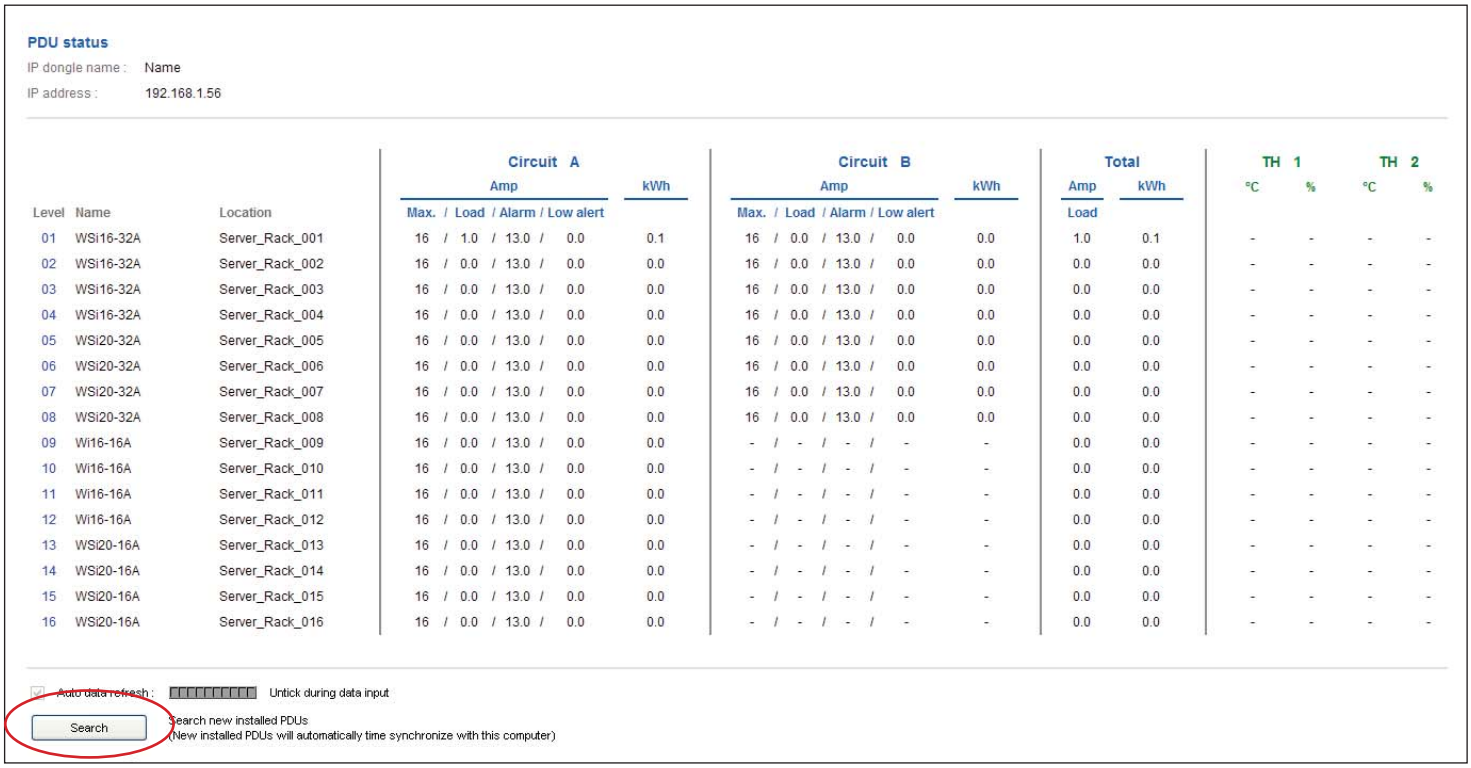
Step 1. Open Internet Explorer (I.E.), version 8.0 or above

Step 2. Enter the configured IP dongle address into the I.E. address bar (Refer to P.11)

Step 3. Enter " **Login name** " , " **Password** " & Click " **Login** " (Refer to P.11)

In < **Status** >,

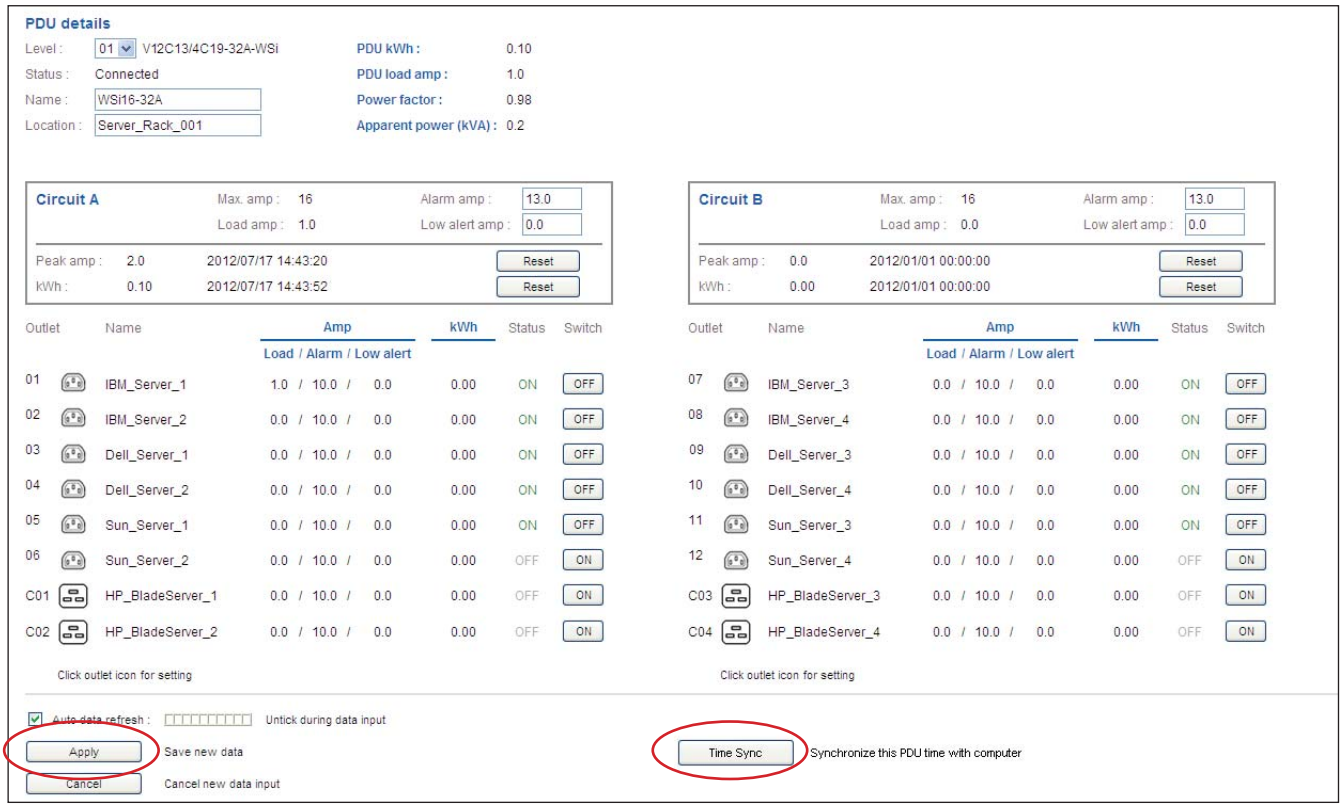
- Click " **Search** " to search all new installed PDUs
  (If search fails, please refer to P.17 for IP dongle firmware upgrade)
- View all installed PDUs' status
- View latest loading on each PDU's circuits
- View aggregate current & energy consumption on each PDU
- View status & lastest reading of Temp. & Humid sensors connected to each PDU



< 1.9 > PPS-02-S IP dongle GUI software

In < **Details** >,

- Change " **Name** " and " **Location** " of PDU & Click " **Apply** "
- Change " **Alarm amp.** " & " **Low alert amp.** " of PDU's circuits & Click " **Apply** "
- Click " **Reset** " to reset peak amp. or kWh of PDU's circuits
- Click " **ON** / **OFF** " to swich ON / OFF outlet (WS kWh switched and WSi Outlet kWh Switched PDU only)
- View On / Off status of each PDU's outlet
- View aggregated current on the PDU
- View lastest loading & energy consumption of each PDU's outlet
  (Wi kWh Monitored & WSi Outlet kWh Switched PDU only)
- Click " **Time Sync** " update PDU's real time clock from the computer logged in the IP Dongle

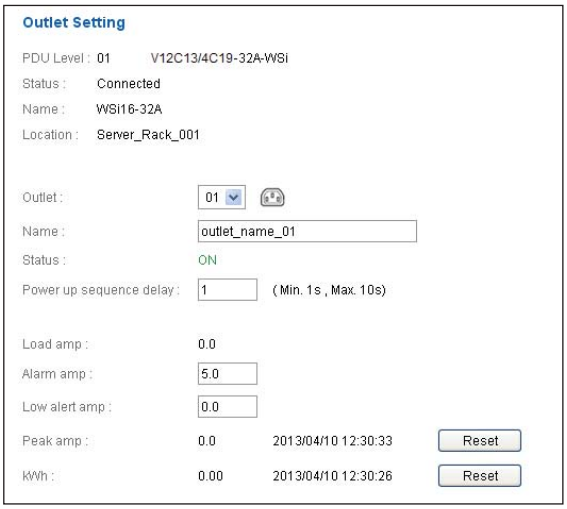


In < **Outlet setting** >,

- Change PDU's outlet name
- Change " **Power up sequence delay** " of PDU's outlet (WS kWh switched and WSi Outlet kWh Switched PDU only)
- Change " **Alarm amp.** " & " **Low alert amp.** " of PDU's outlet
  (Wi kWh Monitored & WSi Outlet kWh Switched PDU only)

⚠ Click " **Apply** " to finish the above settings

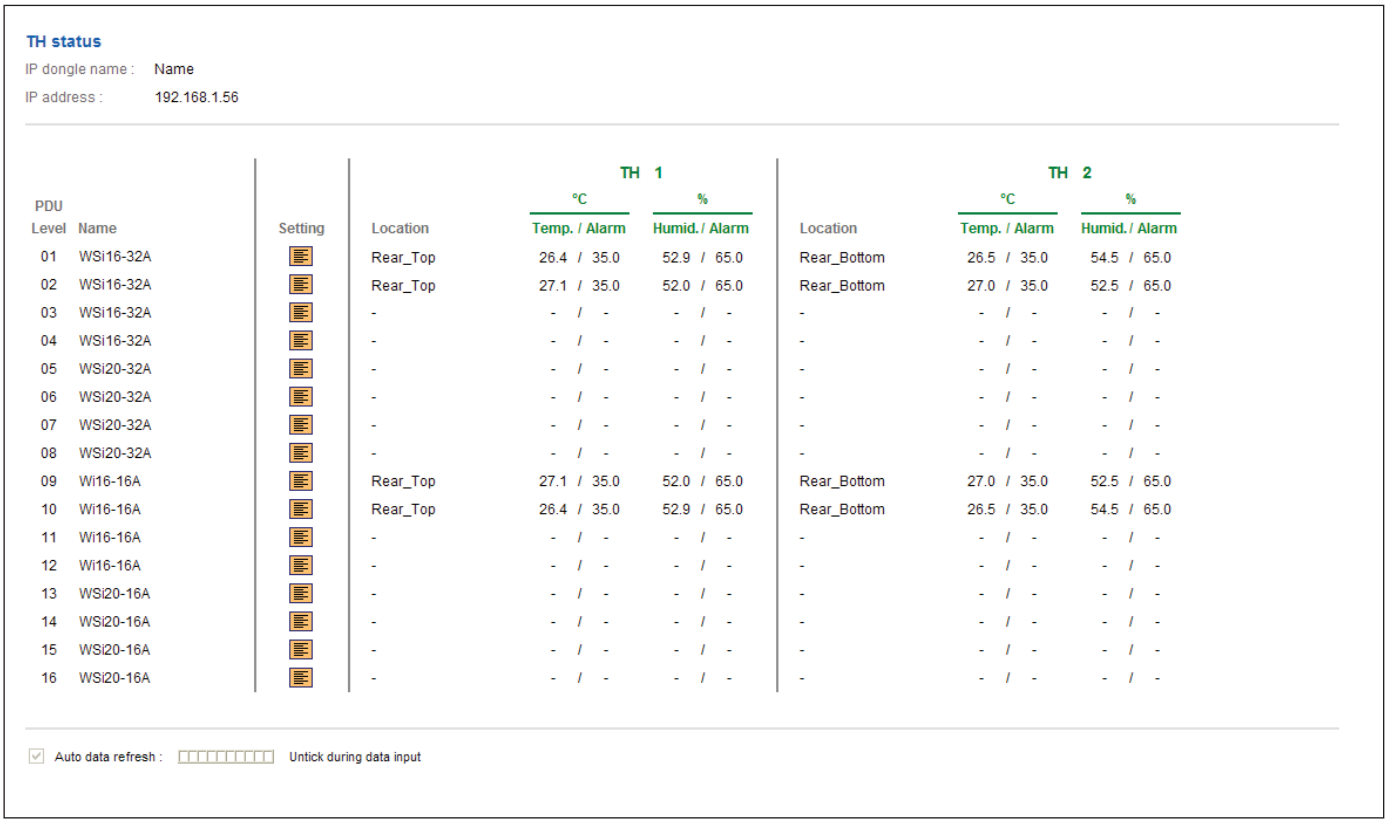
- Click " **Reset** " to reset peak amp. or kWh of PDU's outlet (Wi kWh Monitored & WSi Outlet kWh Switched PDU only)



< 1.9 > PPS-02-S IP dongle GUI software

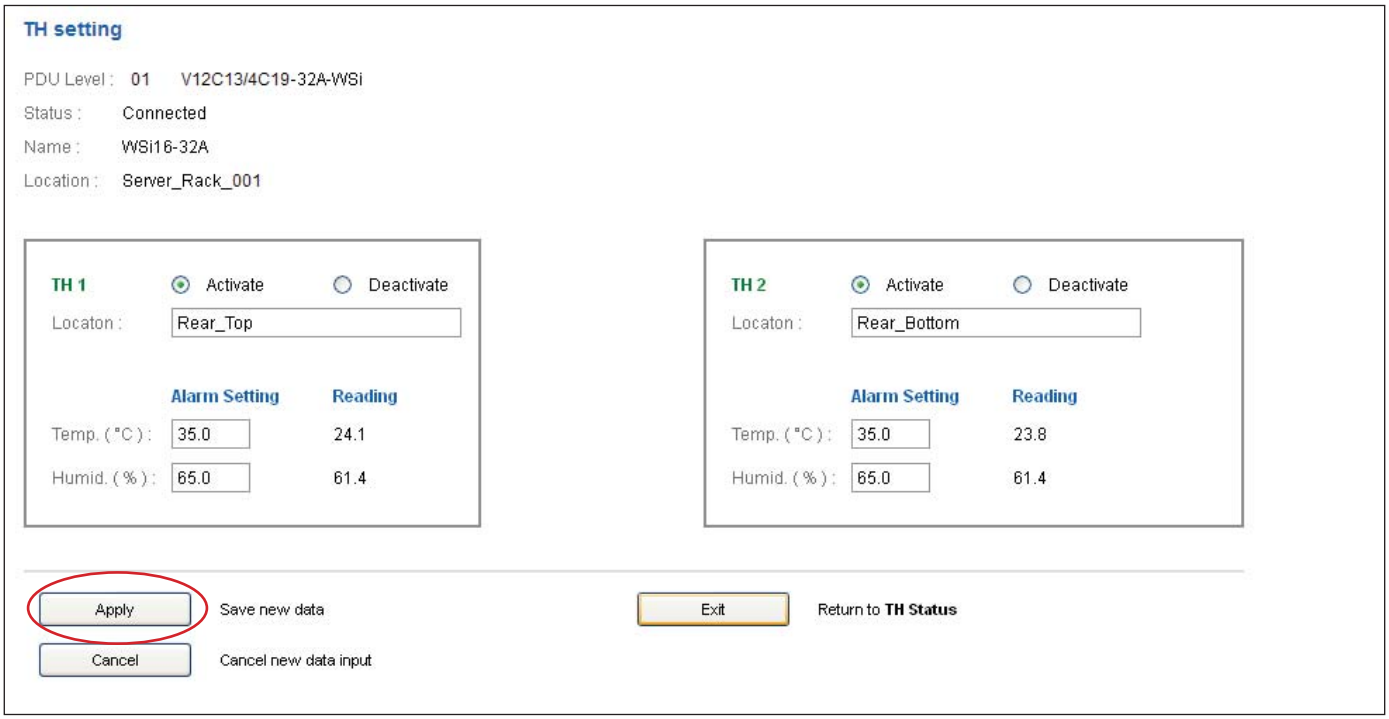
In < **TH status** >,

- View status, location, lastest reading & alarm setting of Temp. & Humid sensors connected to each PDU



In < **TH setting** >,

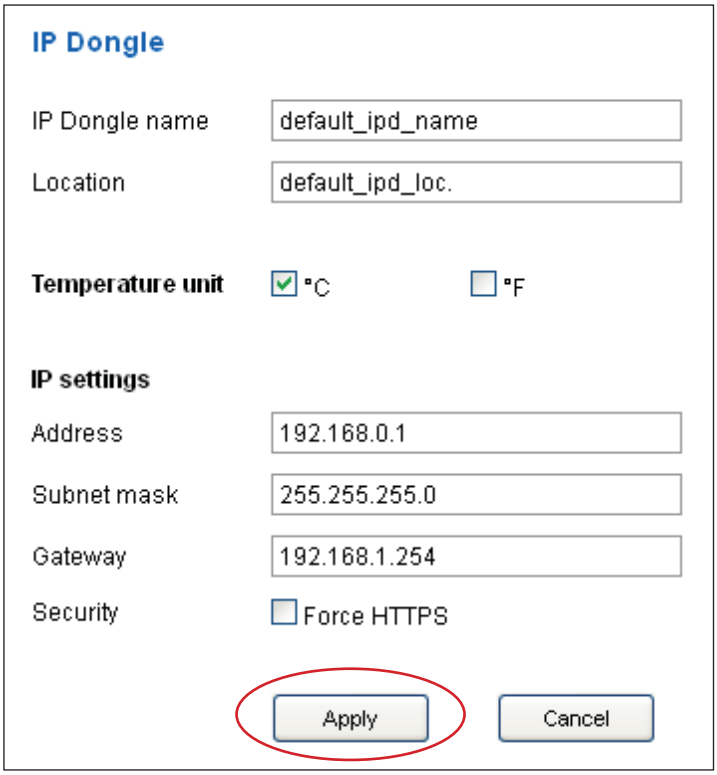
- " **Activate** " or " **Deactivate** " Temp. & Humid sensors
- Change " **Location** " & "**Alarm Setting** " of Temp. & Humid sensors
- Click " **Apply** " to finish the above settings



< 1.9 > PPS-02-S IP dongle GUI software

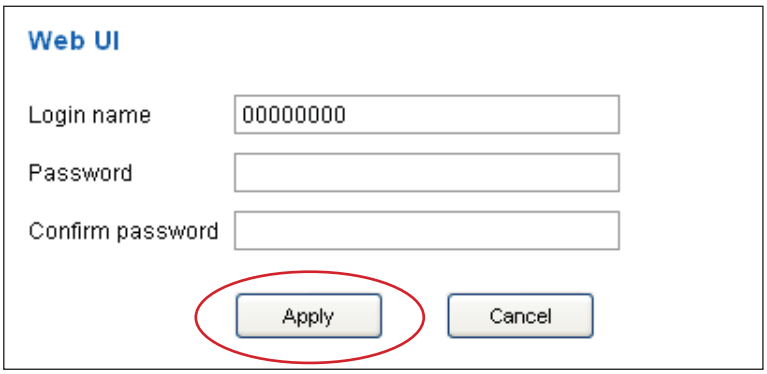
In < **System** >,

- Change IP dongle name & location
- Change temperature unit displayed in UI
- Change IP dongle's IP address, subnet mask & gateway
- Tick **" Force HTTPS "** to provide data transmission security.
- Click " **Apply** " to finish the above settings



In < **Login** >,

- Change " **Login name** " OR " **Password** "
- Re-enter password in " **Confirm password** "
- Click " **Apply** " to finish the above settings



< 1.9 > PPS-02-S IP dongle GUI software

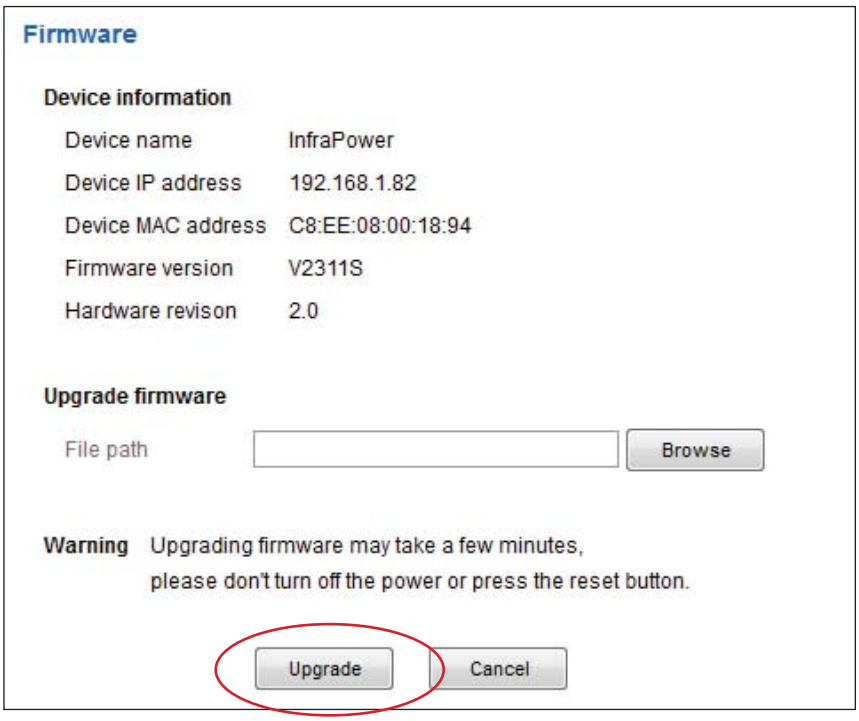
In < **Firmware** >, you can upgrade the IP dongle firmware.

Step 1. Download the IP dongle firmware from the link :
http://www.austin-hughes.com/support/software/infrapower/V2395S.img

Step 2. Click " **Browse** " and select the firmware file (xxx.img) from the specific path in the pop up window and Click " **Open** "

Step 3. Click " **Upgrade** " to start the upgrade process. It takes a few minutes to complete.

Step 4. Once complete, UI will return to the login page.



< 1.10 > SNMP Management

The IP dongle can manage the connected W series PDUs in a single daisy-chain up to 16 PDUs via SNMP v2c (Simple Network Management Protocol).

Only IP dongle model : IPD-02-S or IPD-H02-S can support SNMP

(I). Accessing MIB Files

Use the World Wide Web (WWW) to download the SNMP MIB file at this URL:
http://www.austin-hughes.com/support/utilities/infrapower/IPD-MIB.mib

(II). Enabling SNMP Support

The following procedure summarizes how to enable the IP Dongle for SNMP support.

Step 1. Connect the IP dongle to a computer. (Please refer to P.12)

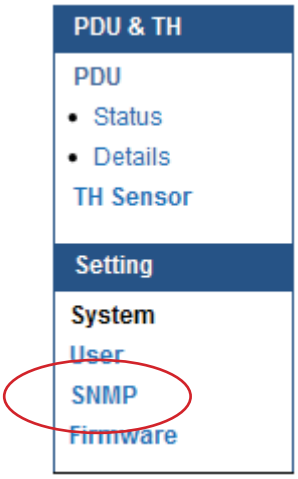
Step 2. Open the Internet Explorer (I.E.) version 8.0 or above

Step 3. Enter the configured IP dongle address into the I.E. address bar.
Default IP address is " **192.168.0.1** "

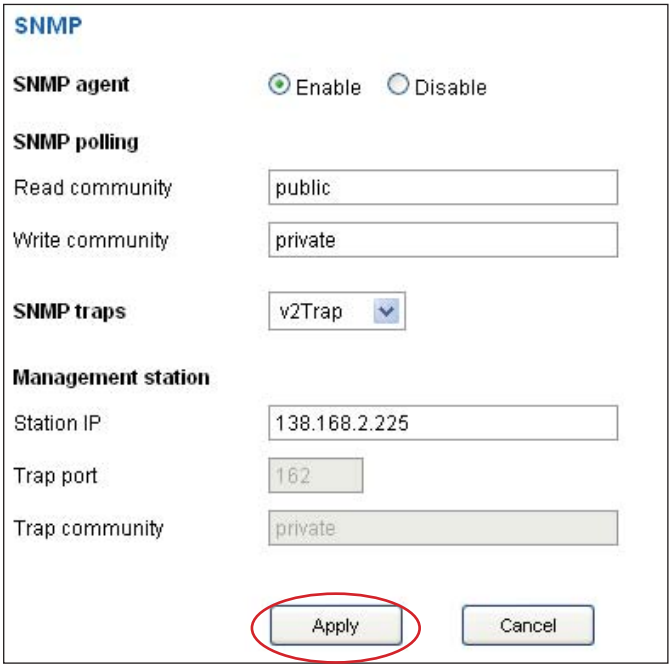
Step 4. Enter " **Login name** " & " **Password** ". Default login name & password are " **00000000** "

< 1.10 > SNMP Management

Step 5. Select the SNMP from the left navigation



Step 6. The SNMP Settings window appears as below:



Step 7. Click " **Enable** " in " **SNMP Agent** " to start the SNMP agent service

Step 8. Input " **Read Community** ". Default is " **public** "

Step 9. Input " **Write Community** ". Default is " **private** "

Step 10. Select " **disabled** " or " **V2Trap** " in " **SNMP Traps** "

If select " **V2Trap** " , please input IP address of the SNMP management station in " **Station IP:** "

Step 11. Click " **Apply** " to finish the SNMP settings

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