InfraPower®

PDU Inspired by Your Data Center

User Manual

IPM-02 PDU management software

W kWh Monitored PDU
WS kWh Switched PDU

Designed and manufactured by Austin Hughes

FC CE RoHS REACH

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

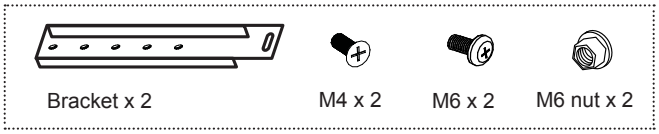
The equipment comes with the standard parts shown on the package contents. Check and make sure they are included and in good condition. If anything is missing, or damage, contact the supplier immediately.

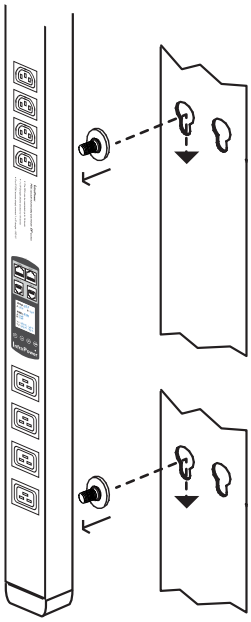
Package contents

(1) Vertical W / WS PDU x 1

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

- **VMB** mounting bracket set





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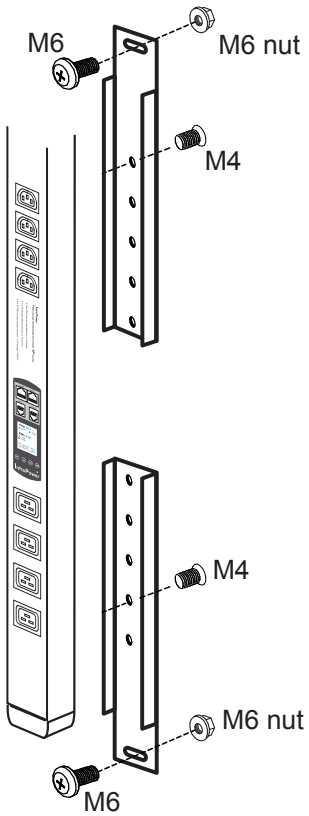

(2) Rackmount W / WS PDU x 1

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

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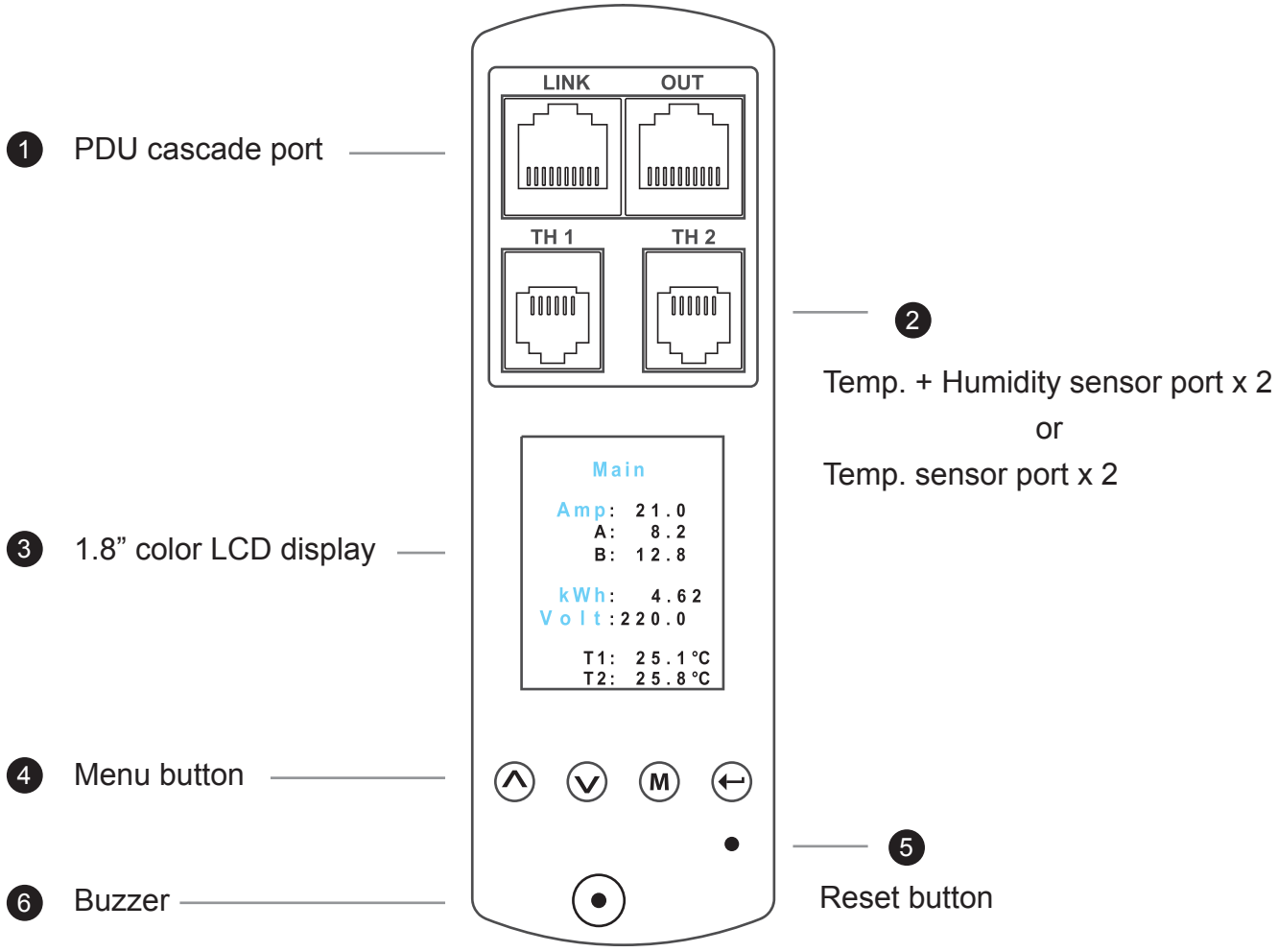
Part I. Hardware

< 1.1 > W / WS PDU Key Features

InfraPower®	kWh PDU	
	Monitored	Switched
	W	WS
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)

< 1.2 > 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.



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

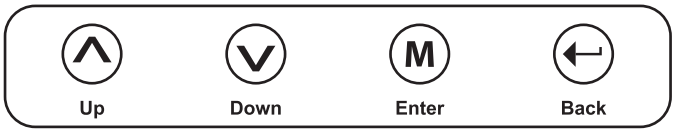
< 1.2 > W Meter Display & Setting

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

Main
Amp: 21.0
A: 8.2
B: 12.8
kWh: 4.62
Volt:220.0
T1: 25.1°C
T2: 25.8°C

Display 2

PDU ID
Group: 240
Level: 16

Display 3

Temp / Hum
T1: 25.1°c
T2: 25.8°c
H1: 78%
H2: 66%

Display 4

Circuit A
8.2Amp
Peak: 16.3
Load Amp
03:59:23
31-Dec-09

Display 5

Circuit B
12.8Amp
Peak: 17.2
Load Amp
23:59:40
31-Jan-11

Display 7

Power
Factor
0.9
Active Power
4.15kW
Apparent Power
4.62kVA

Display 8

Energy
Cumulative kWh
99999.99
From
23:59:00
30-Nov-06

Display 1.1

Amp
21.0
A 8.2
B 12.8

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

Outlet
Amp/kWh
Std.Outlet
C19 Outlet

Display 6.1

Outlet
01
IEC C13
1.0 Amp
0.22 kWh

Display 6.2

Outlet
02
5-20R
3.0 Amp
0.66 kWh

Display 6.3

Outlet
03
BS 1363
4.0 Amp
0.88 kWh

Display 6.4

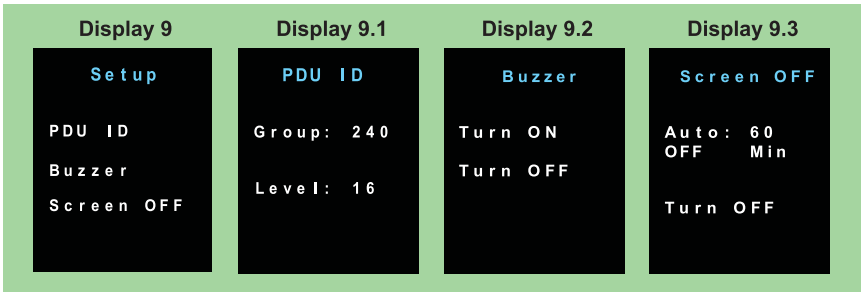
Outlet
04
Schuko
5.0 Amp
1.10 kWh

< 1.2 > W Meter Display & Setting

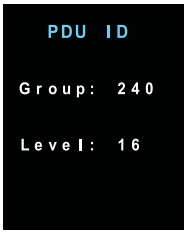
W meter allows the user to do some settings below :

Display for Local PDU Setting

- PDU Level
- Meter buzzer
- Meter screen



Display 9.1



PDU level setting :

Step 1 - Press the ⌃ & ⌄ button to display no.9 and press M to confirm

Step 2 - Press the ⌃ & ⌄ button to PDU ID and press M to confirm

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

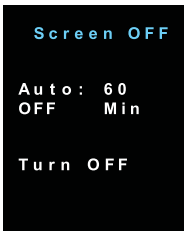
Step 4 - Press ↩ to exit

Display 9.2

Buzzer :

W meter allows the user to set the meter buzzer ON / OFF by meter's 4 buttons.
All PDUs are shipped with the buzzer in ON status.
When the PDU's circuit Amp is over alarm level, the buzzer will sound.
The user can press any button to stop the buzzer sound.

Display 9.3



Screen OFF :

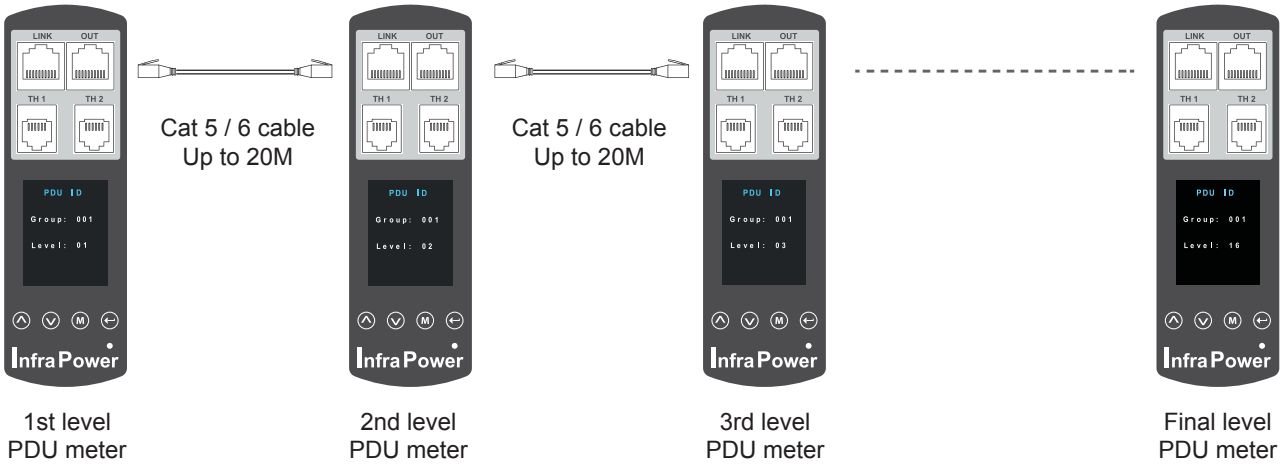
All PDUs are shipped with the metter LCD in always ON status.
W meter allows the user to turn off the meter LCD by time setting (1 - 60 mins, 0 = always ON)
When the meter is in OFF status, the user can press any button to make it ON.

< 1.3 > PDU Meter Setting & Cascade

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-S
- 1 x IP dongle allows access to 16 levels



For **PDU level setting**, please refer to previous page.

< 1.4 > 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.

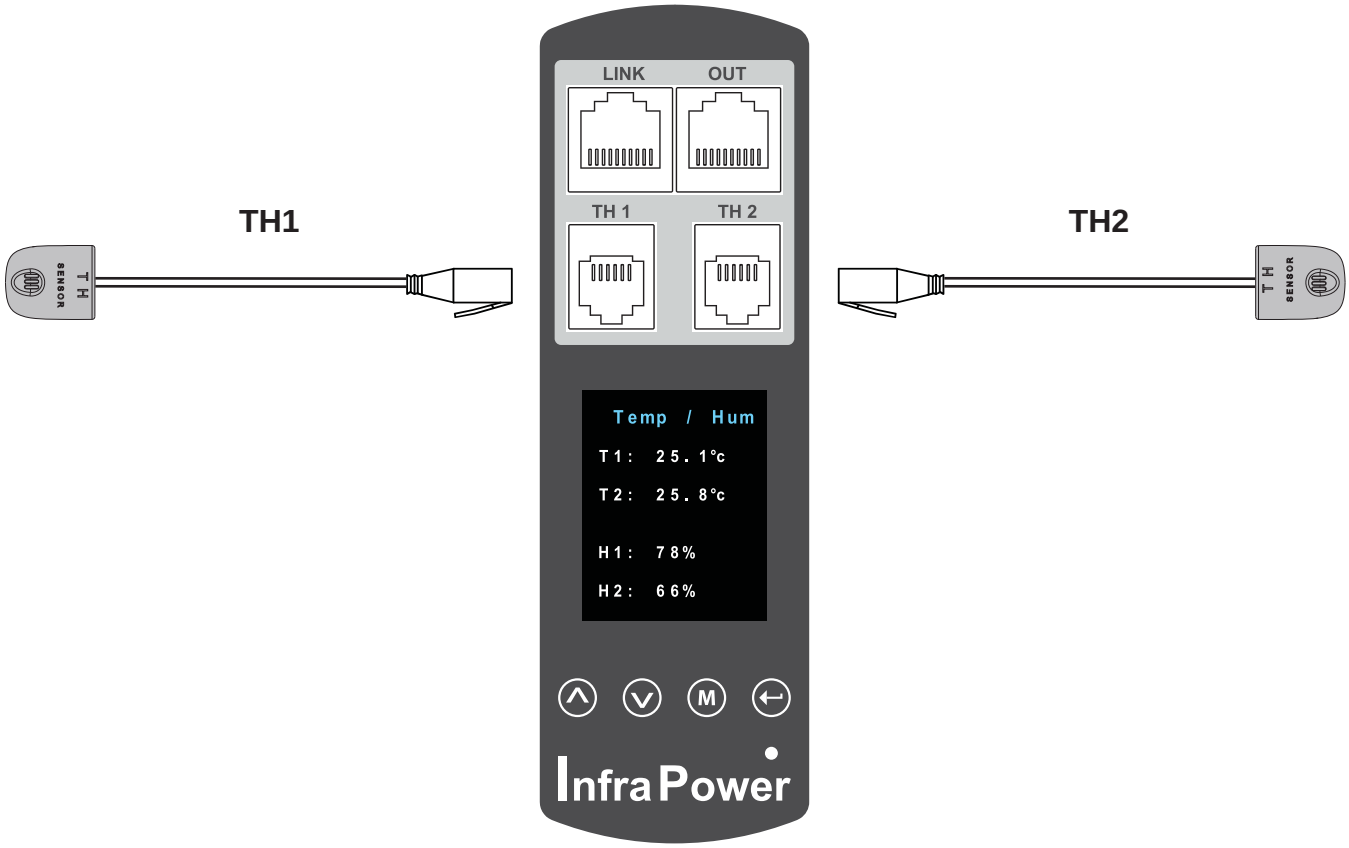
- low profile design with magnetic base for easy affixing to the rack cabinet
- Plug n Play
- sensor with 2M or 4M cord
- pair of sensors can be connected to a single W meter

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)



< 1.4 > 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	

< 1.5 > 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.

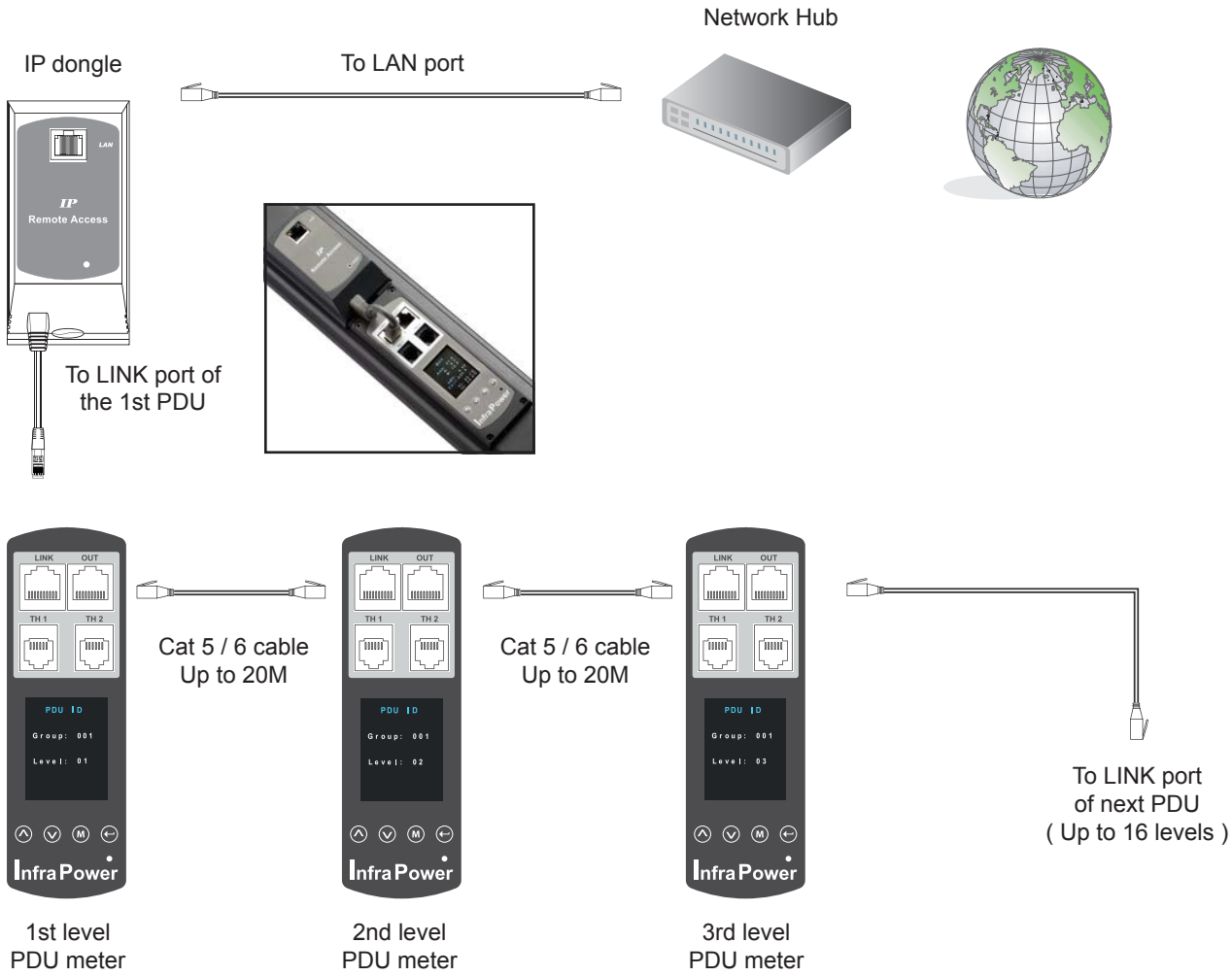
Hot-Pluggable design facilitates the IP dongle installation. Simply integrate the IP Dongle to the 1st PDU, then the entire daisy chain group can be remote over IP. Hence, administrator can remotely access all PDUs in the daisy chain group by one single IP via the IP Dongle.

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



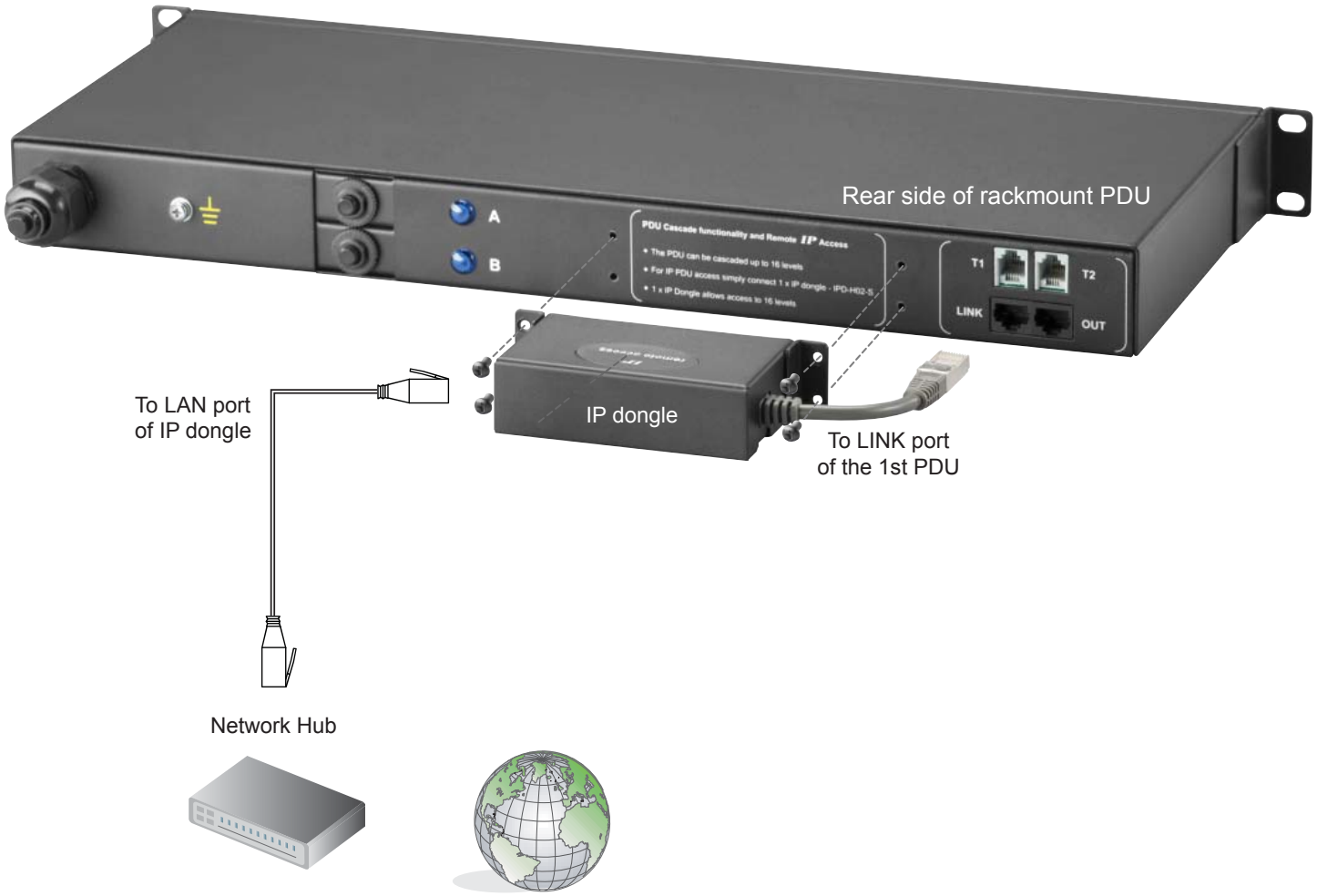
< 1.5 > IP dongle installation & connection

IP dongle for rackmount PDU

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

Horizontal IP dongle installation steps :

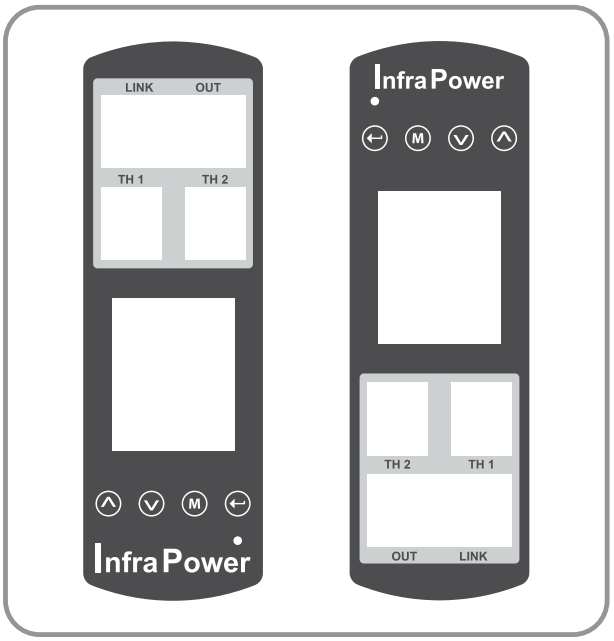
- fix the IP dongle on the rear side of rackmount PDU with 4 screws
- plug the RJ-45 connector of IP dongle into the LINK port of the 1st level PDU meter
- use the CAT. 5 / 6 cable to connect IP dongle to network device



< 1.6 > 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.



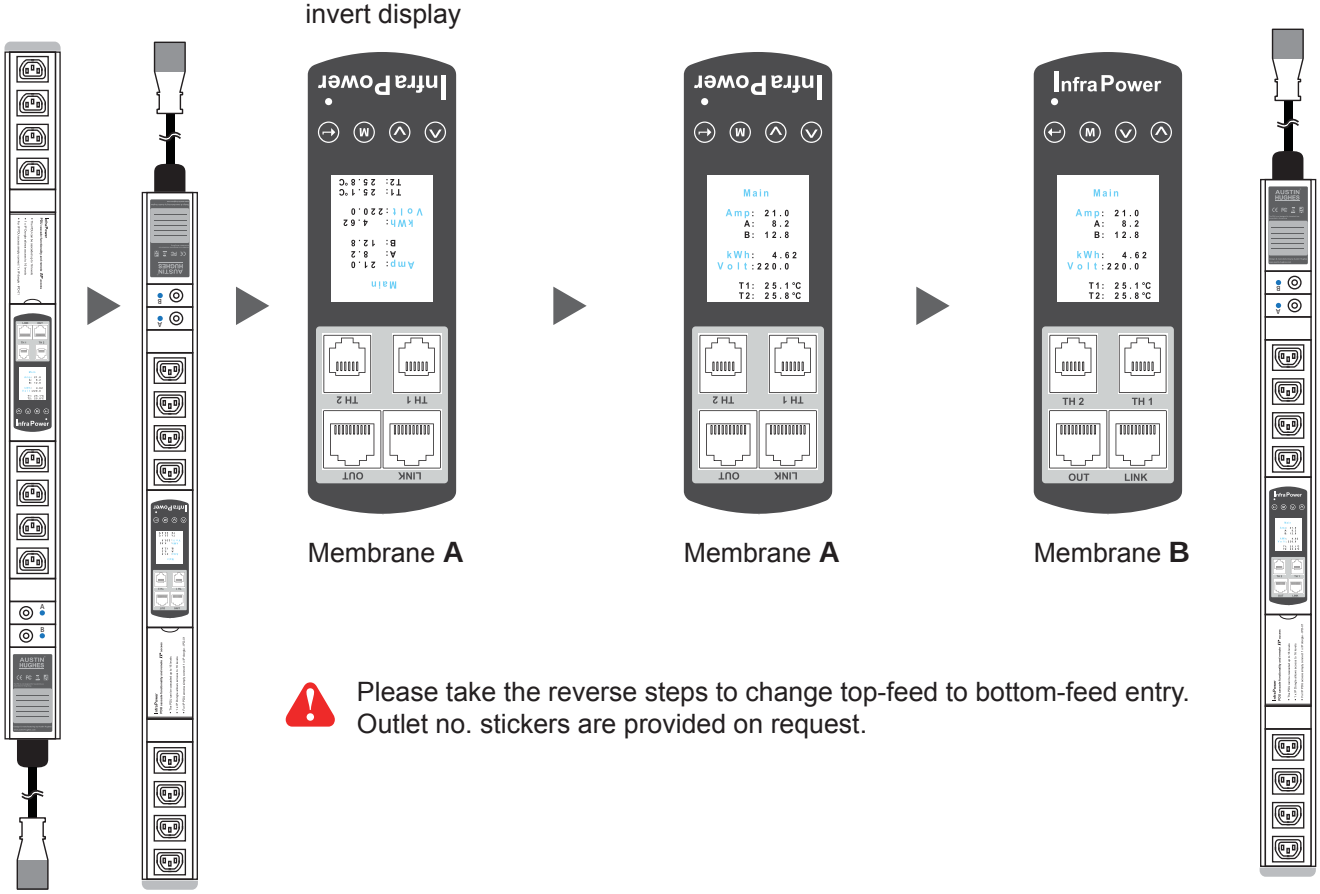
Meter Membrane **A** | Meter Membrane **B**

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.

Part II. Software

< 2.1 > Key Features

InfraPower Manger IPM-02 is a free PDU mangement software to remote & monitor up to 15 IP dongle group (max. 16 PDU levels in each IP dongle group), total 240 PDUs

5 concurrent user access are bundled for achieving the demand of multi-user / multi-tasking in nowadays' time-sharing date center operation.

InfraPower IPM-02

Features		
Capacity	IP Dongle Group (Just 1 for 16 PDU levels)	15
	PDU number	240
	Concurrent Users	5
Enhanced Features	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	✔
	Rising Alert Threshold Setting	✔
	Remote Access via Web	✔
	Graphic User Interface	✔
	Reporting	✔
PDU Series Support	WS / W	✔

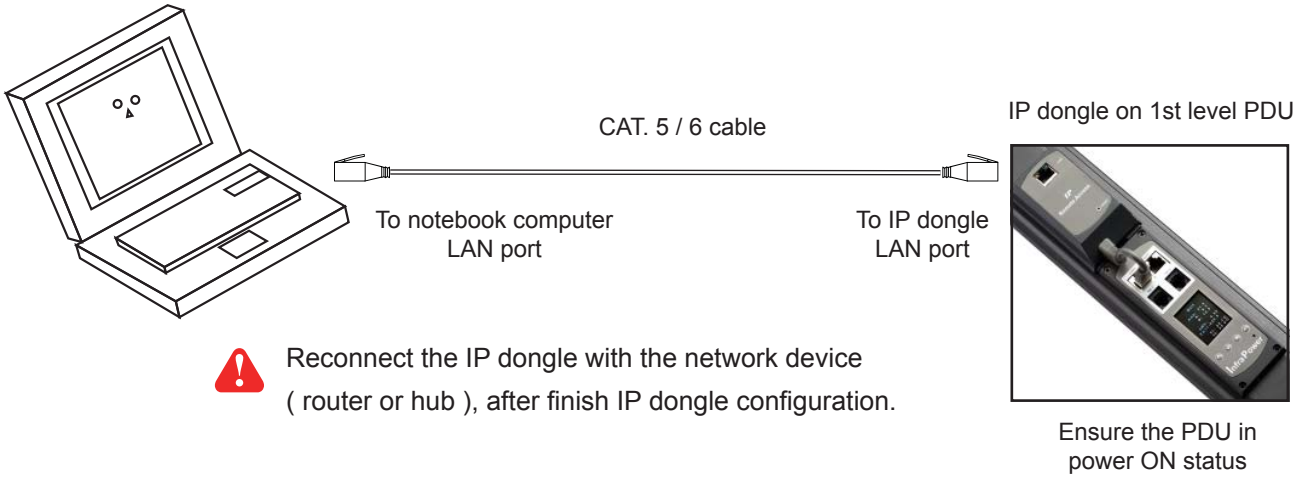
< 2.2 > IP dongle configuration

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

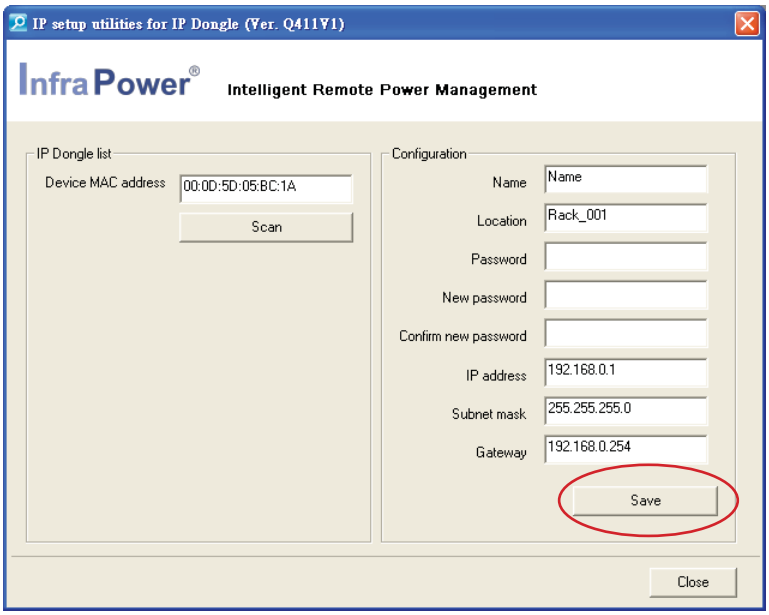
Step 1. Prepare a notebook computer to download the IP setup utilities from the link :
http://www.austin-hughes.com/support/utilities/infrapower/IPdongleSetup.msi

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.



Write down the new IP address & password for < Setup > purpose, refer to P.20

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

< 2.3 > Hardware Requirements of the Management PC

Please prepare a management PC with the hardware requirements as below for InfraPower Manager - IPM-02

Recommended hardware requirements :

- Processor:	Dual Core 2GHz or above
- Memory:	2GB RAM
- Available Disk Space:	500GB
- Drive:	DVD ROM drive
- Display:	1440 x 900 or higher resolution monitor

- The default service port of web server is 80.

- A dedicated PC to run InfraPower Manager - IPM-02 is recommended.

- Make sure the management PC is POWER ON & IPM-02 is under operation. Otherwise, daily data backup will NOT be proceeded.

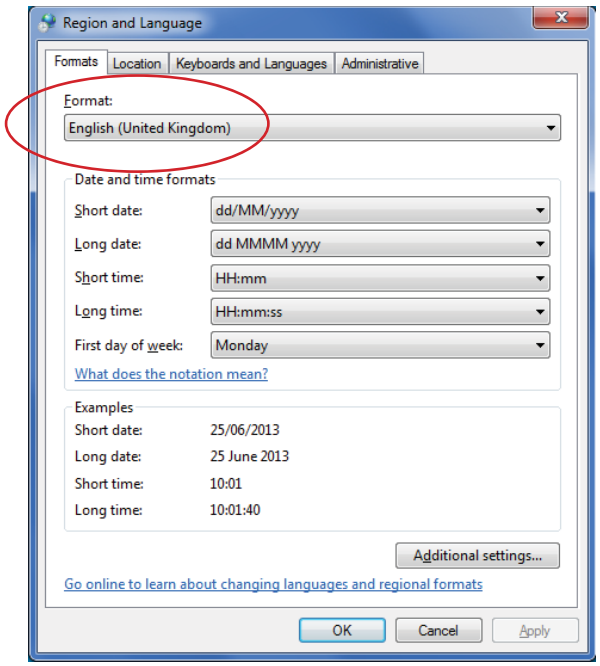
< 2.4 > Supported OS Platform & Language

InfraPower Manager – IPM-02 supports the OS platforms & languages as below:
- MS Windows XP Professional with SP3 (32bit only)
- MS Windows 7 Professional with SP1
- MS Windows 7 Ultimate with SP1
- MS Windows Server 2003 R2 Standard Edition with SP2
- MS Windows Server 2008 Standard Edition SP2
- MS Windows Server 2008 R2 Standard Edition SP1

Ensure the user logins in the management PC as a member of "Administrators" Group before IPM-02 Installation and execution.

User can select the following languages under Control Panel > Region and Language in English Edition OS:

1) Arabic (Saudi Arabia)
2) Chinese (Traditional, Hong Kong S.A.R.)
3) Dutch (Netherlands)
4) English (Australia)
5) English (United Kingdom)
6) English (United States)
7) French (France)
8) German (Germany)
9) German (Switzerland)
10) Italian (Italy)
11) Japanese (Japan)
12) Korean (Korea)
13) Norwegian (Norway)
14) Portuguese (Portugal)
15) Russian (Russia)
16) Spanish (Spain)
17) Turkish (Turkey)



< 2.5 > Software Download

InfraPower Manager, IPM-02, is a **PDU** management software to enhance the features and benefits of the WS kWh switched and W kWh Monitored PDUs by providing a centralized and remote management platform, and total reporting with detailed logs & event occurrences.

InfraPower Manager IPM-02 can support max. 5 concurrent login users and manage multi- IP dongles max. 15, hence the concurrent login users can access & remote PDUs max. 240 (15 IP dongles x 16 level PDUs).

Software download

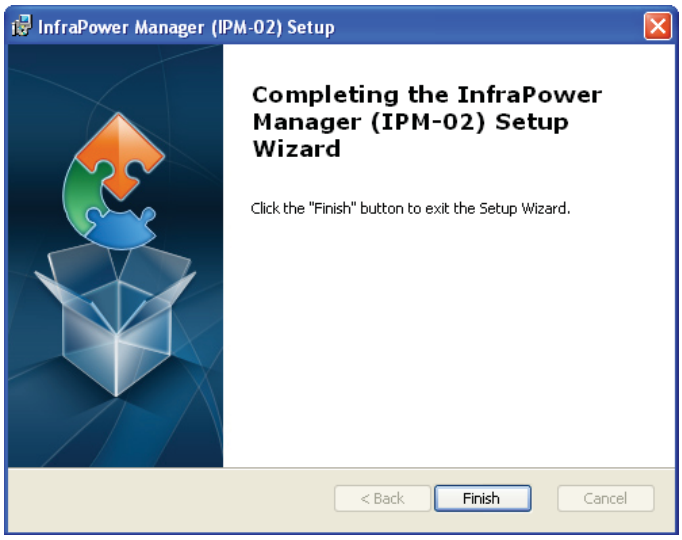
Please download the free InfraPower Manager - IPM-02 to the management PC from the link **http://www.austin-hughes.com/support/software/infrapower/IPM-02.msi**

Double click the IPM-02.msi and follow the instruction to complete the installation.

IPM-02.msi

click " **Next** "

click " **Install** "



click " **Finish** "

Complete

< 2.6 > First Time Start-up Setting

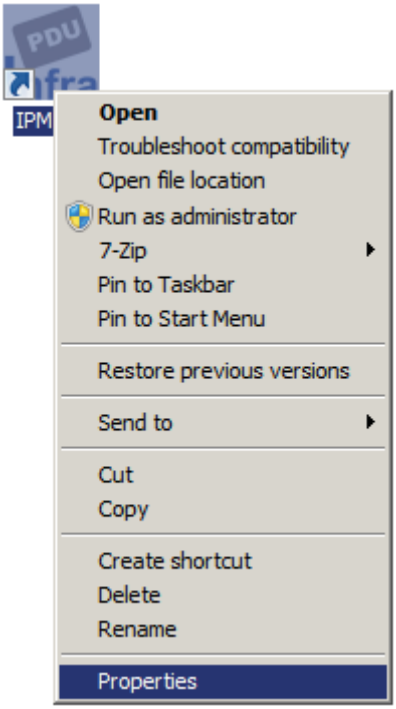
Step 1. Double Cick the InfraPower Manager - IPM-02 and follow the instruction to complete start-up setting.

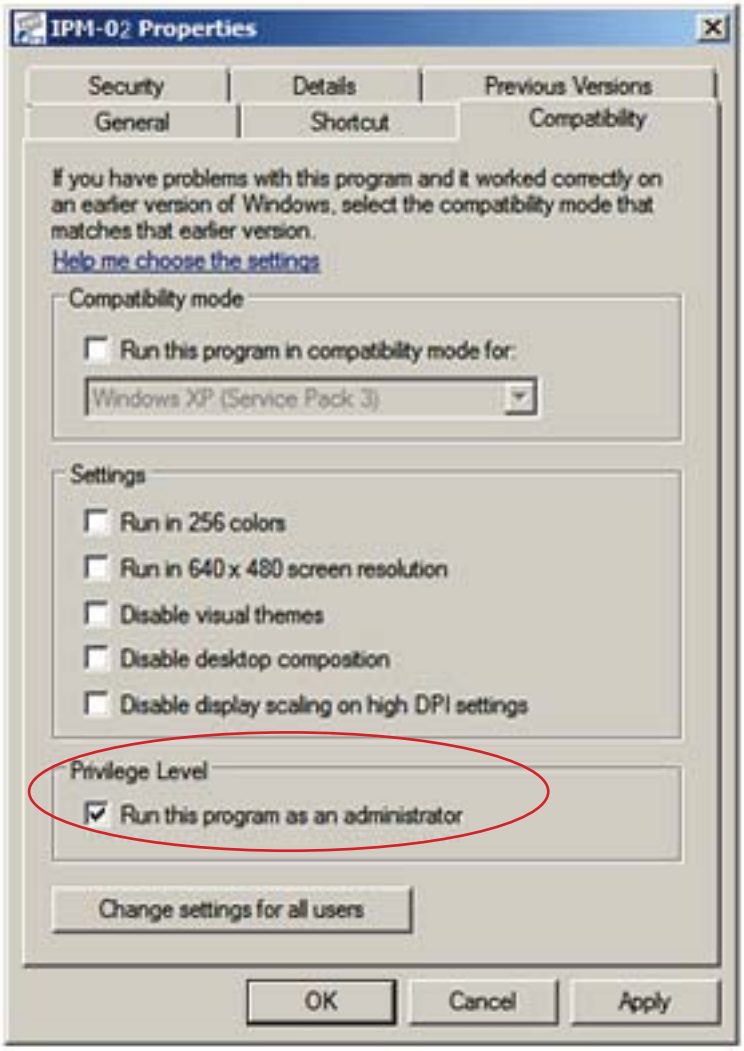
IPM-02
InfraPower Manager

For MS Windows 7 and MS Windows server 2008,

it requires to run a program with administrator rights before execution:

- Right click InfraPower Manager - IPM-02 , and then select **Properties**.
- Click the **Compatibility** tab.
- Tick the box **Run this program as an administrator**, and then click OK.

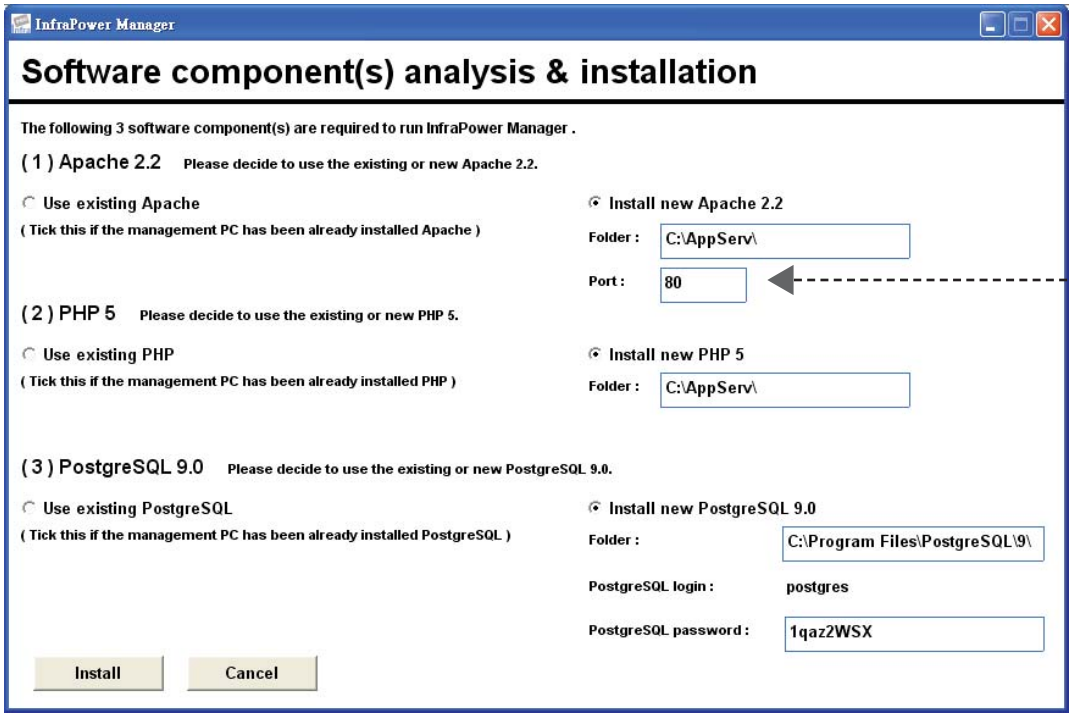




< 2.6 > First Time Start-up Setting

Step 2. Click " **Next** " in " **InfraPower Manager start-up setting** " box

Step 3. Input the fields of the following window & Click " **Install** "



If the port of web server is not 80, please input the appropriate no. here and follow the instruction in " Change port no. of web server" next page to make the change effective.

PostgreSQL password can be changed by user.
The password **MUST** contain at least three of the following four character groups:

- English uppercase characters (A through Z)
- English lowercase characters (a through z)
- Numerals (0 through 9)
- Non-alphabetic characters (such as !, $, #, %)

Complete

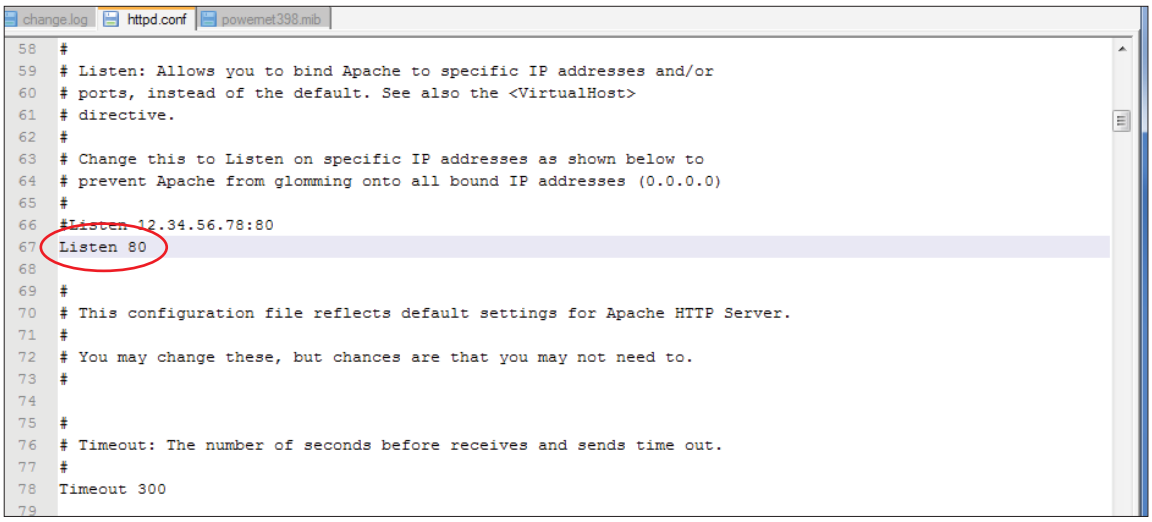
< 2.7 > Change Port no. of Web Server

Change port no. of web server.

If users want to use another port no. instead of 80, please take the following steps after InfraPower Manager IPM-02 " **First time start-up setting** " is completed.

Step 1. Go to the path of web server being installed. (Default: C:\AppServ\Apache2.2\conf\ )

Step 2. Open " **httpd.conf** " & change " **Listen 80** " to " **Listen xx** " where xx means the port users want to use save the change



Step 3. Restart Apache services.
Go to Control Panel > Administrative Tools > Services > Apache2.2 & Click " **Restart** "

Step 4. Refresh the Web browser.

Complete

Part III. System Setup & Remote Access

< 3.1 > System setup

Users can follow below step 1 - 3 to access the management PC and InfraPower Manager IPM-02

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

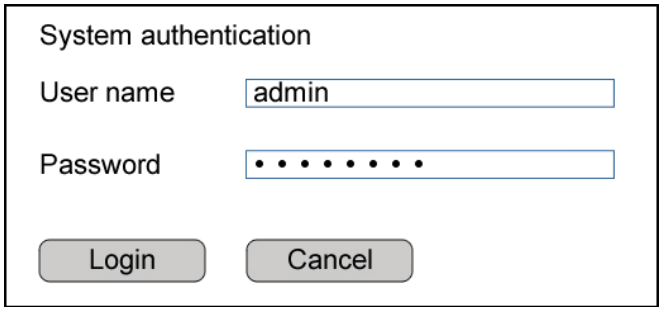
Step 2. Enter the URL of management PC into the address bar

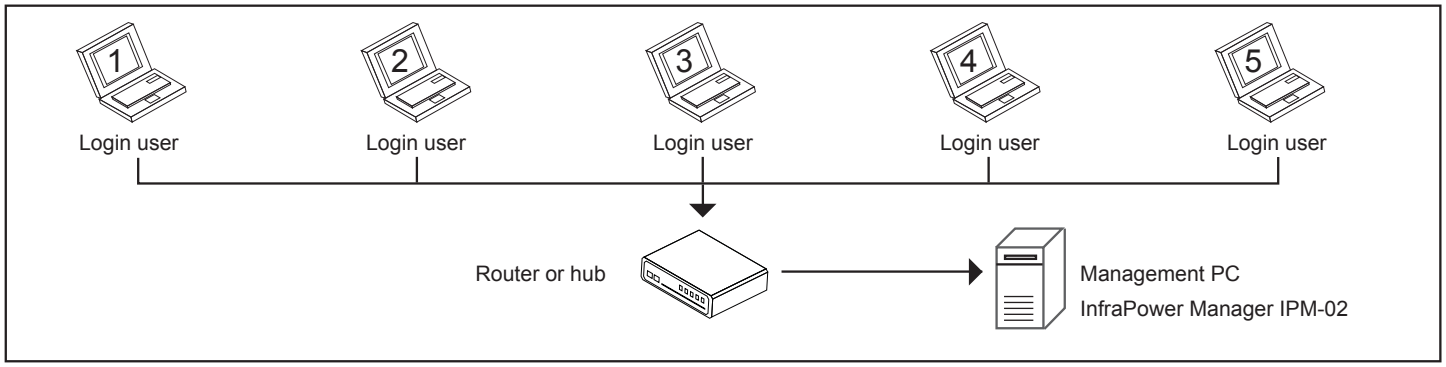
(If fail to access, please ask MIS to check if the port for web server is enable. Default port : 80)

e.g. http://192.168.0.1/IPM-02/

Step 3. Enter " **User name** " . Default is " **admin** "

Enter " **Password** " . Default is " **00000000** "





Then users should go to < **User** >, < **Setup** >, < **Alarm** >, < **General** > & < **Backup** > for initial system setup

Only Administrator is authorised to access < **User** >, < **Setup** >, < **Alarm** >, < **General** > & < **Backup** >

< 3.1 > System setup

In < **User** > page, administrator can create 4 more operators.

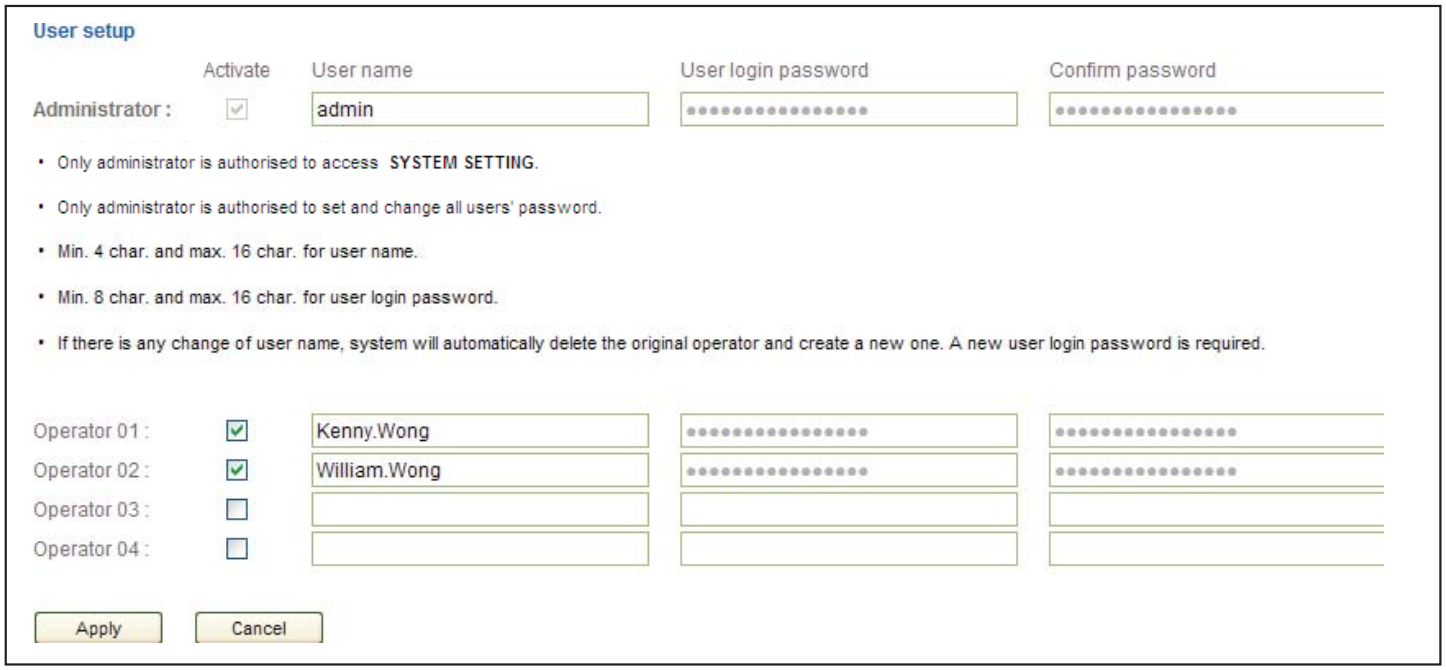
Step 1. Tick " **Operator 1:** "

Step 2. Input " **User name** " & " **User login password** "

Step 3. Input user login password in " **Confirm password** " again

Step 4. Repeat Step 1 to 3 for other operators if necessary

Step 5. Click " **Apply** " to save the user setup



< 3.1 > System setup

In **< Setup >** page, administrator can activate max. 15 IP dongle groups & set the group command password

Step 1. " Activate " IP dongle group 01

Step 2. Input **" IP address "** & **" password "** of the IP dongle

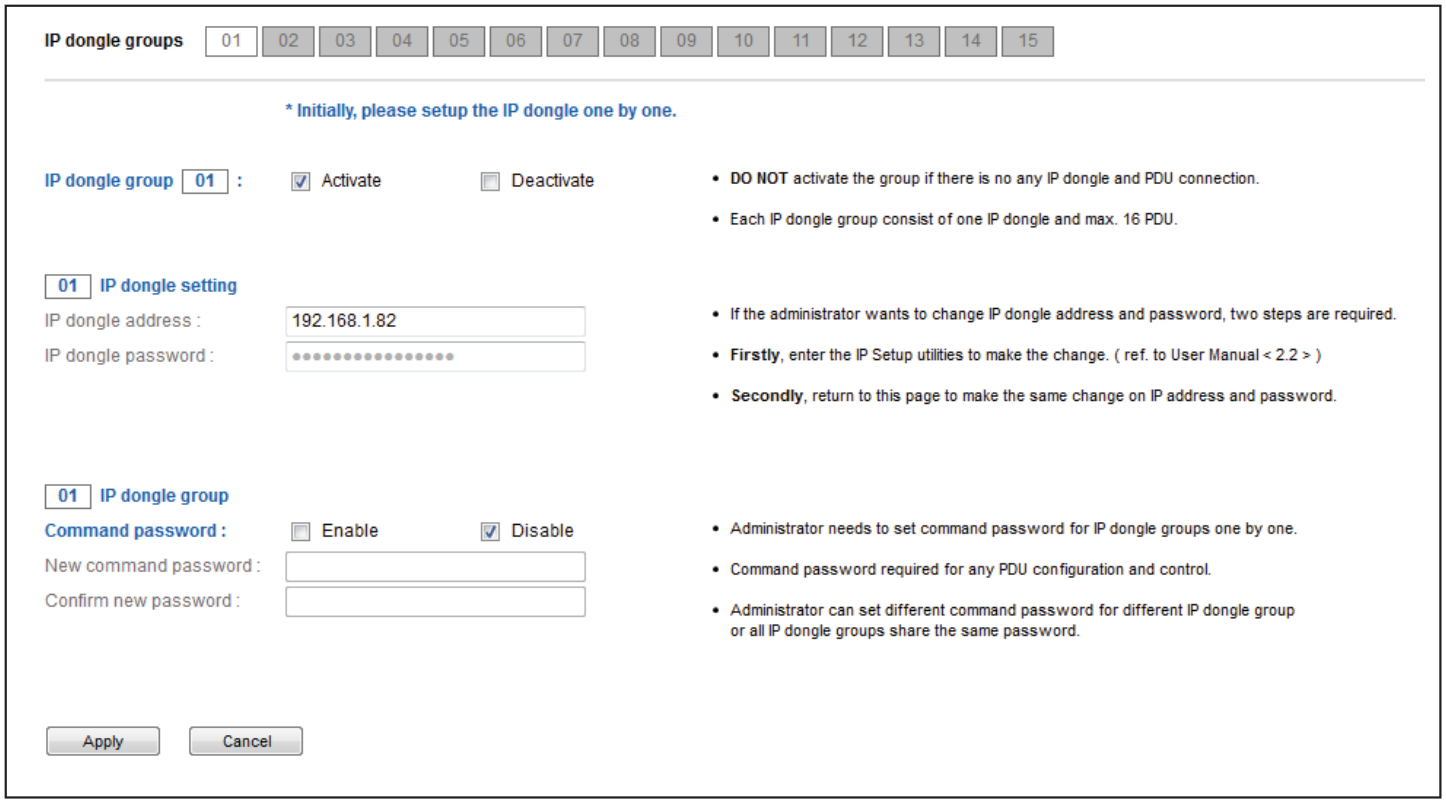
Step 3. " **Enable** " Command password

Step 4. Input " **New command password** ". Default is " **00000000** "

Step 5. Input new command password in " **Confirm new password** " again.

Step 6. Click " **Apply** " to finish the IP dongle group setup

Step 7. Repeat step 1 to 6 for other IP dongle groups if necessary



< 3.1 > System setup

In < **Alarm** > , administrator can configure the alarm email server & max. 5 email recipients to receive alarm notifications from the software

Step 1. **“ Enable “** alarm email

Step 2. Input **“ SMTP server ”** and **“ SMTP port “**

Step 3. Input **“ User email “**

Step 4. **“ Enable “** or **“ Disable “** the **“ SMTP authentication “**

Step 5. Input **“ User name “** and **“ Password “**

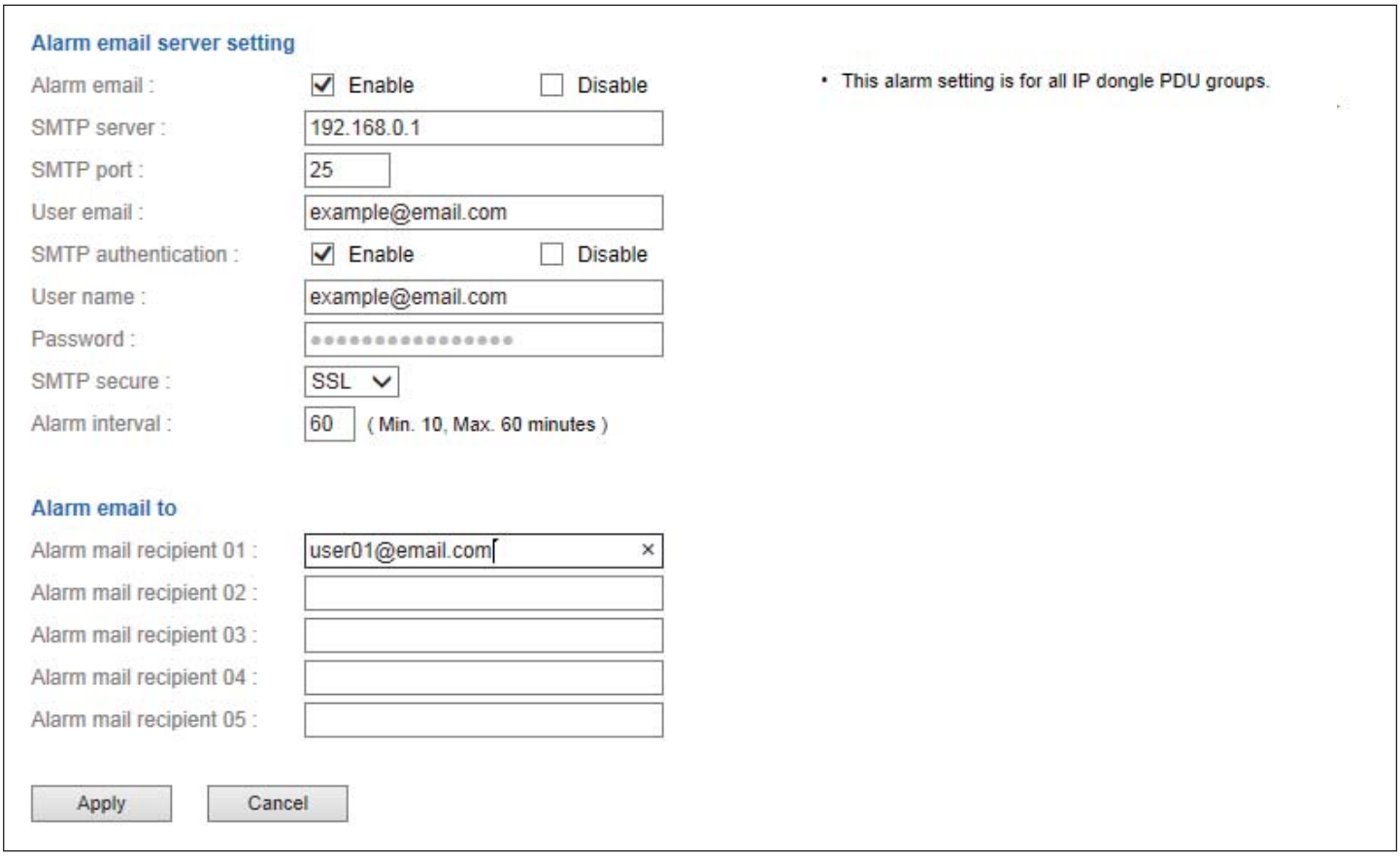
Step 6. Select the **“ SMTP secure “** (None / SSL / TLS)

Step 7. Input the **“ Alarm interval “**

Step 8. Input the alarm recipient email account in **“ Alarm mail recipient 01 “**

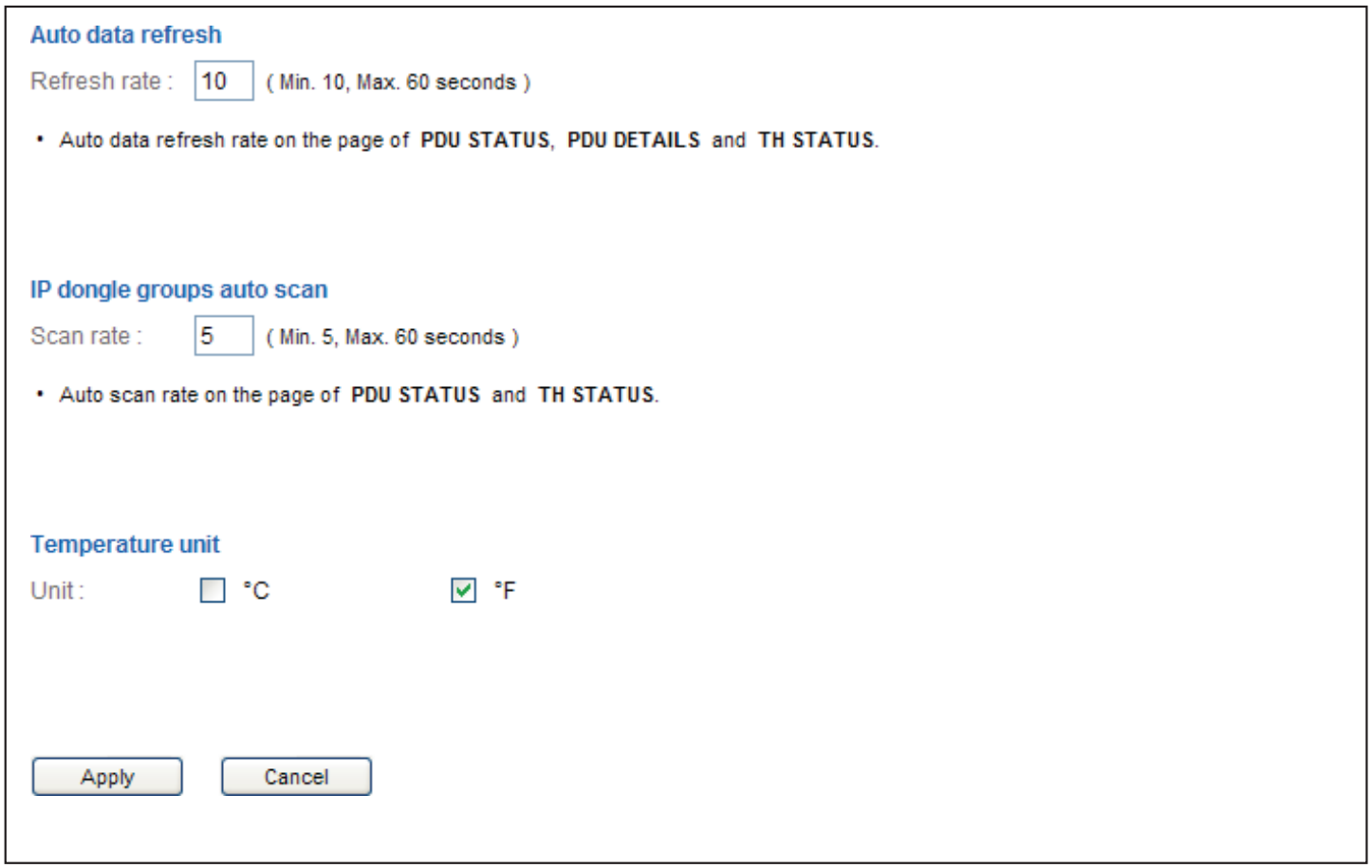
Step 9. Repeat step 8 for other alarm recipients if necessary

Step 10. Click **“ Apply “** to finish the alarm email server setting

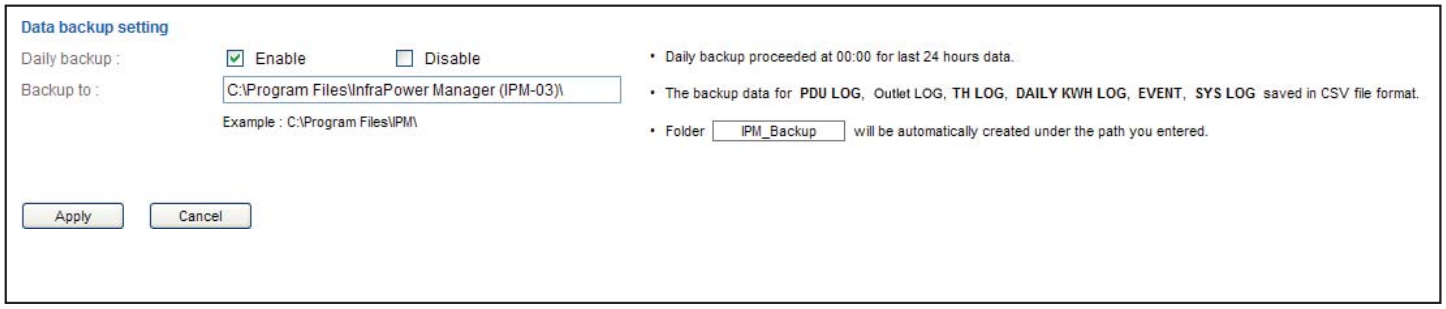


< 3.1 > System setup

In < **General** > , administrator can change the " **Refresh rate** " , " **Scan rate** " & " **Temperature unit** " across all IP dongle groups



In < **Backup** > , administrator can " **Enable** " or " **Disable** " the daily data backup. When " **Enable** ", the backup path can be changed



< 3.1 > System setup

< Sys log > provides past 2000 event records of **< User >**, **< Setup >**, **< Alarm >**, **< General >** & **< Backup >**

First / Previous 1 2 3 4 5 6 7 8 9 10 Next / Last

Last 2000 log records.

Date	Time	Event	Description
2012/05/24	15:38:18	User	[admin] : Add operator - Operator 01 - Kenny.Wong
2012/05/24	15:38:18	User	[admin] : Add operator - Operator 02 - William.Wong
2012/05/17	17:43:18	Setup	[admin] : Disable command password - IP dongle group 01
2012/05/17	17:36:23	Setup	[admin] : Enable command password - IP dongle group 01

System setup events

- **User**
  - (1) Add / Delete operator
  - (2) Change user login password
- **Setup**
  - (1) Activate / Deactivate IP dongle group No.
  - (2) Change IP dongle No. address or password
  - (3) Enable / Disable IP dongle group No. command password
  - (4) Change IP dongle group No. command password
- **Alarm**
  - (1) Enable or Disable alarm
  - (2) Change alarm email server setting
  - (3) Add / Delete alarm mail recipient
- **General**
  - (1) Change refresh mode time rate
  - (2) Change scan mode time rate
  - (3) Change temperature unit
- **Backup**
  - (1) Enable / Disable daily backup
  - (2) Change backup path

< 3.2 > Remote Access

After administrator completes < System Setup >, up to 4 additional users can access the management PC remotely. User can follow the steps below to access management PC & InfraPower Manager IPM-02

Step 1. Add the port of web server in the firewall settings of the management PC.

- Open " **Control Panel** "
- Select " **Windows Firewall** "
- Select " **Advanced settings** "
- Right Click " **Inbound Rules** " & select " **New Rule…** "
- Select " **Port** " & Click " **Next>** "
- Select " **TCP** " then " **All local ports** " & Click " **Next>** "
- Select " **Allow the connection** " & Click " **Next>** "
- Tick all three options & Click " **Next>** "
- Input the " **Name** " & " **Description** " of the port & Click " **Finish** "

Step 2. Open the web browser of remote client PC

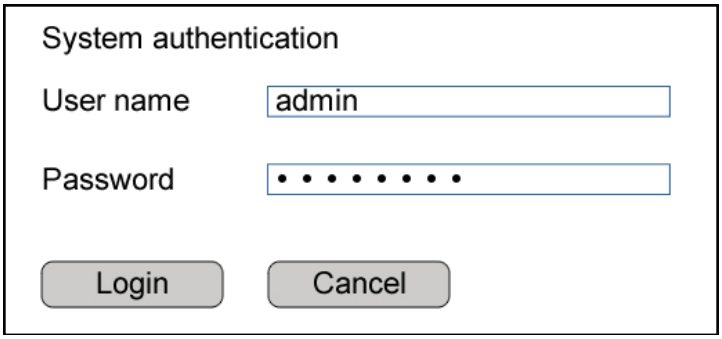
Step 3. Input the URL of InfraPower Manager IPM-02 in the address bar

e.g. http://192.168.0.1/IPM-02/

If the port no. of web server is not 80, please enter the appropriate port no. follow the IP address e.g. http://192.168.0.1:81/IPM-02/

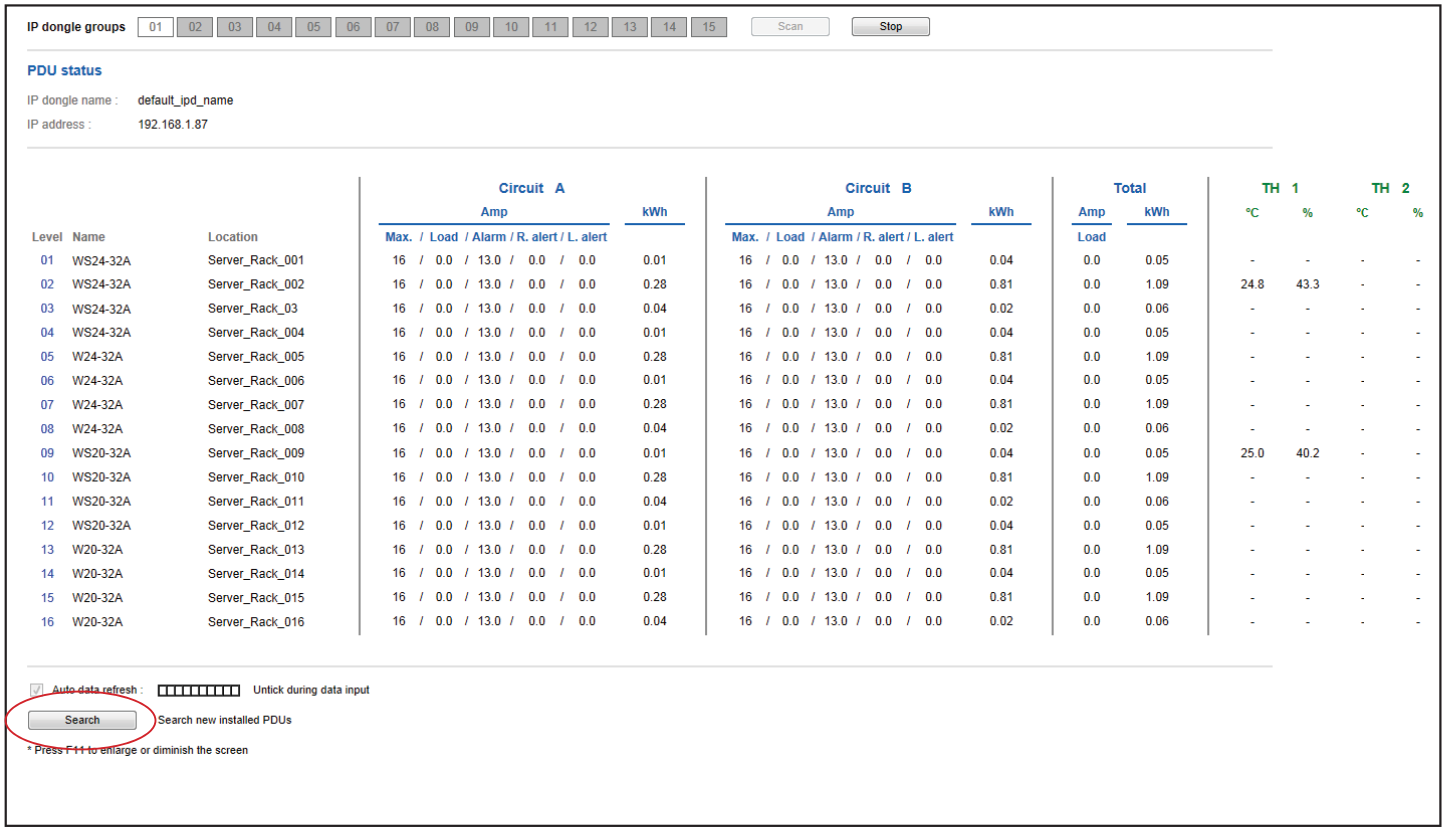
Step 4. System authentication page pops up automatically.

Input " **User name** ", " **Password** " & Click " **Login** "



< Status > provides

- **< Search >** function to search new installed PDUs in each IP dongle group. The real time clock of the PDUs will be synchronized from the management PC during searching process (If search fails, please refer to P.35 for IP dongle firmware upgrade)
- Scan function to monitor the PDUs' status of each IP dongle group **ONE by ONE**



IP dongle groups: 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 Scan Stop

PDU status

IP dongle name : default_ipd_name

IP address : 192.168.1.87

			Circuit A						Circuit B						Total		TH 1		TH 2	
			Amp					kWh	Amp					kWh	Amp	kWh	°C	%	°C	%
Level	Name	Location	Max.	Load	Alarm	R. alert	L. alert		Max.	Load	Alarm	R. alert	L. alert		Load					
01	WS24-32A	Server_Rack_001	16	0.0	13.0	0.0	0.0	0.01	16	0.0	13.0	0.0	0.0	0.04	0.0	0.05	-	-	-	-
02	WS24-32A	Server_Rack_002	16	0.0	13.0	0.0	0.0	0.28	16	0.0	13.0	0.0	0.0	0.81	0.0	1.09	24.8	43.3	-	-
03	WS24-32A	Server_Rack_03	16	0.0	13.0	0.0	0.0	0.04	16	0.0	13.0	0.0	0.0	0.02	0.0	0.06	-	-	-	-
04	WS24-32A	Server_Rack_004	16	0.0	13.0	0.0	0.0	0.01	16	0.0	13.0	0.0	0.0	0.04	0.0	0.05	-	-	-	-
05	W24-32A	Server_Rack_005	16	0.0	13.0	0.0	0.0	0.28	16	0.0	13.0	0.0	0.0	0.81	0.0	1.09	-	-	-	-
06	W24-32A	Server_Rack_006	16	0.0	13.0	0.0	0.0	0.01	16	0.0	13.0	0.0	0.0	0.04	0.0	0.05	-	-	-	-
07	W24-32A	Server_Rack_007	16	0.0	13.0	0.0	0.0	0.28	16	0.0	13.0	0.0	0.0	0.81	0.0	1.09	-	-	-	-
08	W24-32A	Server_Rack_008	16	0.0	13.0	0.0	0.0	0.04	16	0.0	13.0	0.0	0.0	0.02	0.0	0.06	-	-	-	-
09	WS20-32A	Server_Rack_009	16	0.0	13.0	0.0	0.0	0.01	16	0.0	13.0	0.0	0.0	0.04	0.0	0.05	25.0	40.2	-	-
10	WS20-32A	Server_Rack_010	16	0.0	13.0	0.0	0.0	0.28	16	0.0	13.0	0.0	0.0	0.81	0.0	1.09	-	-	-	-
11	WS20-32A	Server_Rack_011	16	0.0	13.0	0.0	0.0	0.04	16	0.0	13.0	0.0	0.0	0.02	0.0	0.06	-	-	-	-
12	WS20-32A	Server_Rack_012	16	0.0	13.0	0.0	0.0	0.01	16	0.0	13.0	0.0	0.0	0.04	0.0	0.05	-	-	-	-
13	W20-32A	Server_Rack_013	16	0.0	13.0	0.0	0.0	0.28	16	0.0	13.0	0.0	0.0	0.81	0.0	1.09	-	-	-	-
14	W20-32A	Server_Rack_014	16	0.0	13.0	0.0	0.0	0.01	16	0.0	13.0	0.0	0.0	0.04	0.0	0.05	-	-	-	-
15	W20-32A	Server_Rack_015	16	0.0	13.0	0.0	0.0	0.28	16	0.0	13.0	0.0	0.0	0.81	0.0	1.09	-	-	-	-
16	W20-32A	Server_Rack_016	16	0.0	13.0	0.0	0.0	0.04	16	0.0	13.0	0.0	0.0	0.02	0.0	0.06	-	-	-	-

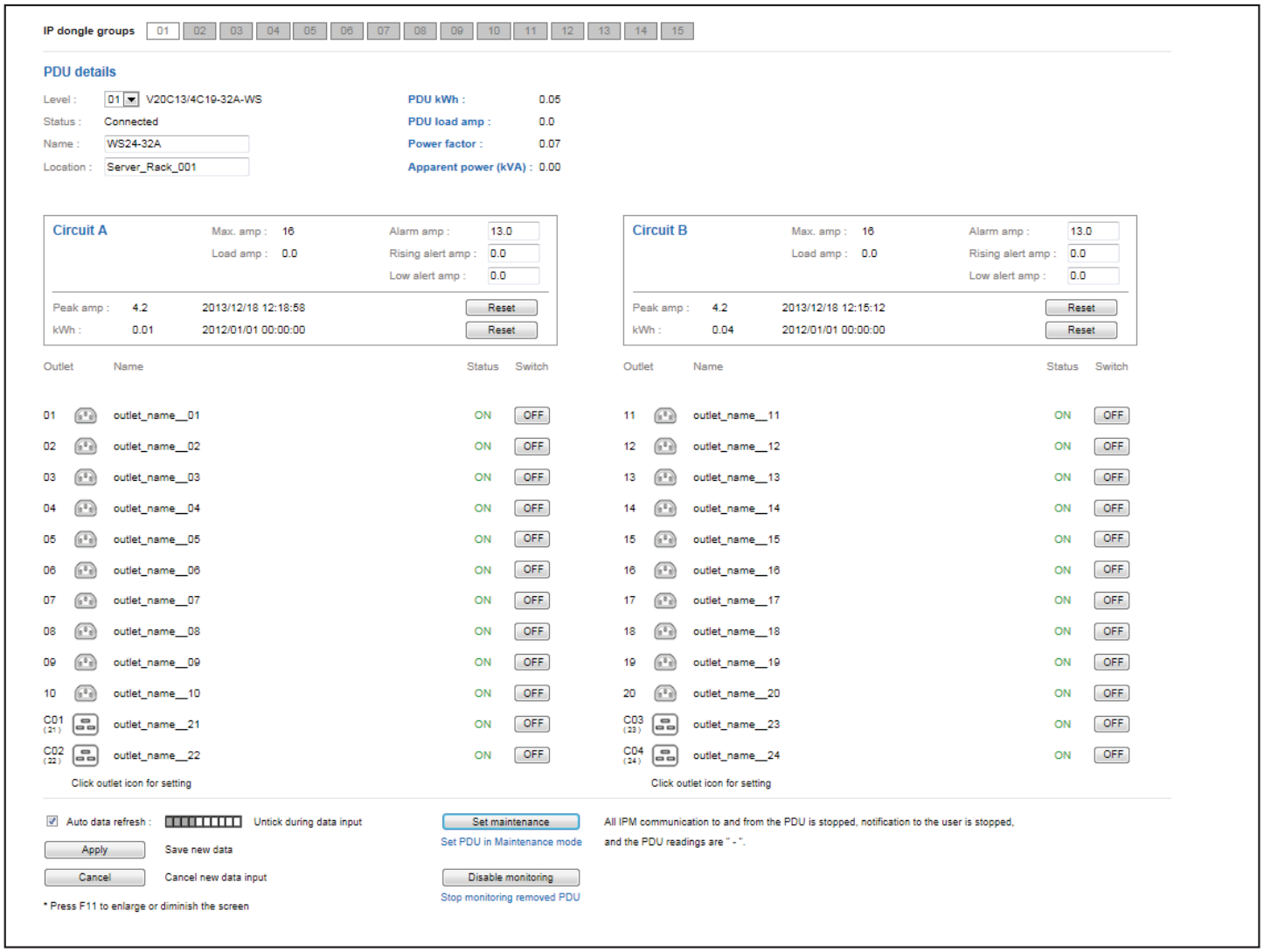
Auto data refresh : Untick during data input

Search — Search new installed PDUs

* Press F11 to enlarge or diminish the screen

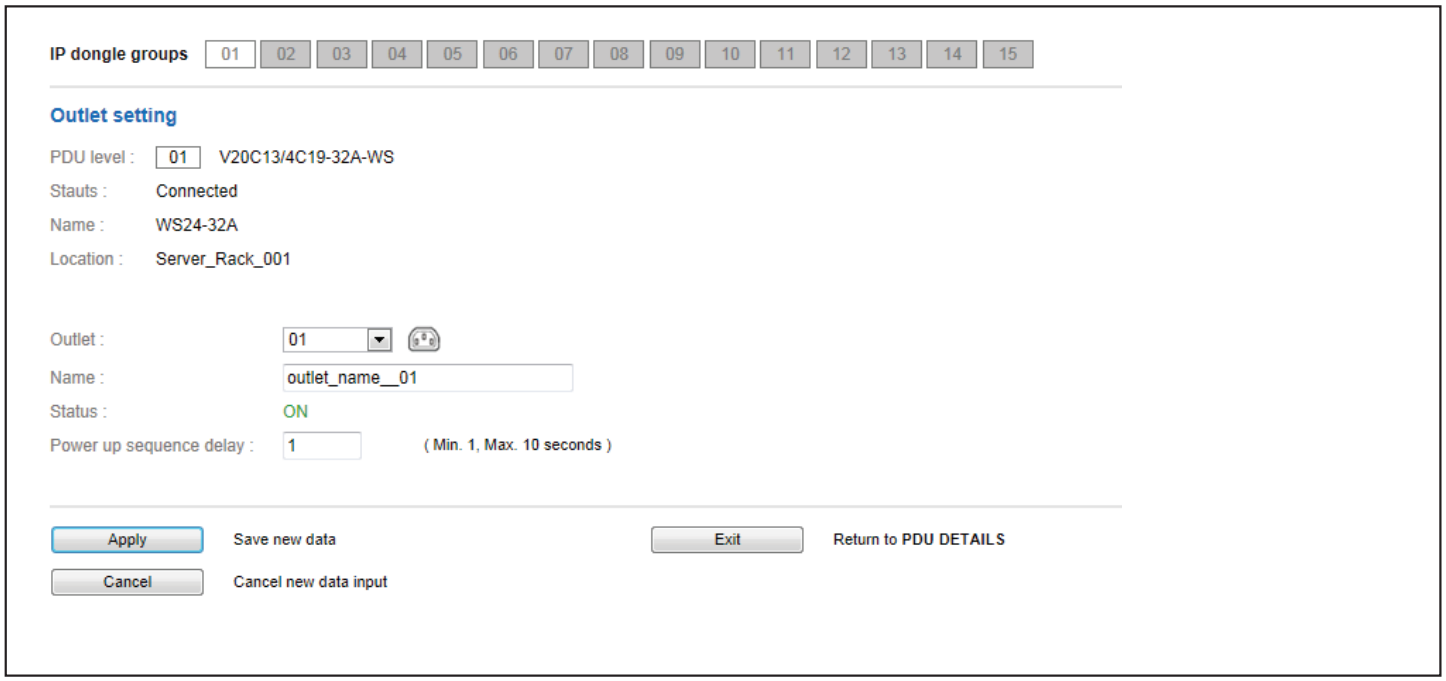
In < **Details** >,

- Change " **Name** " and " **Location** " of PDU & Click " **Apply** "
- Change " **Alarm amp.** " , " **Rising alert 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 PDU only)
- View On / Off status of each PDU's outlet
- View aggregated current on the PDU



In < **Outlet setting** >,

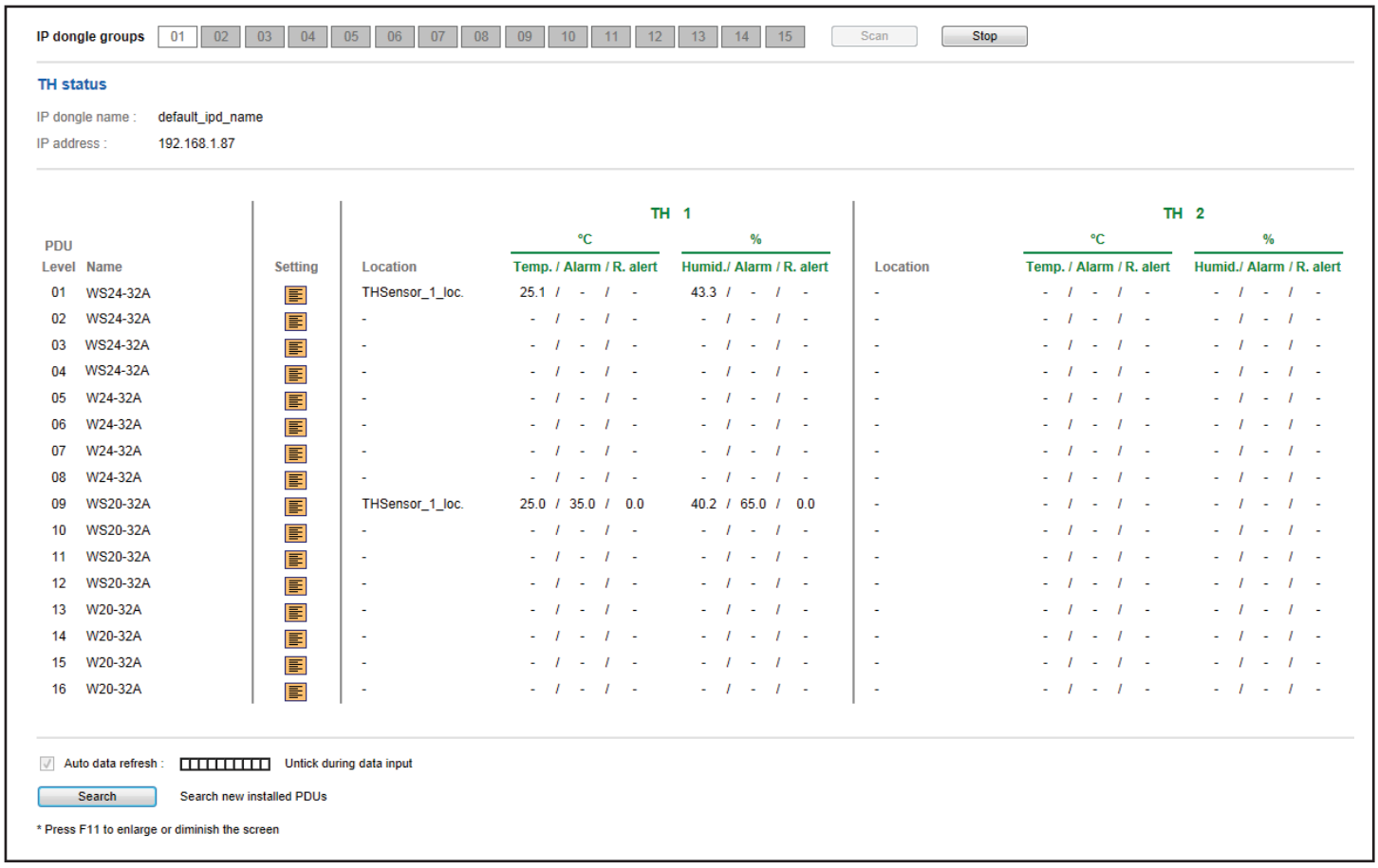
- Change PDU's outlet name
- Change " **Power up sequence delay** " of PDU's outlet (WS kWh Switched PDU only)
- Click " **Apply** " to finish the above settings



In < **TH status** >,

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

⚠ The GUI does not show the readings if the TH sensors are not installed & activated.



IP dongle groups 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 Scan Stop

TH status

IP dongle name : default_ipd_name

IP address : 192.168.1.87

PDU Level	Name	Setting	Location	TH 1 °C Temp. / Alarm / R. alert	TH 1 % Humid./ Alarm / R. alert	Location	TH 2 °C Temp. / Alarm / R. alert	TH 2 % Humid./ Alarm / R. alert
01	WS24-32A		THSensor_1_loc.	25.1 / - / -	43.3 / - / -	-	- / - / -	- / - / -
02	WS24-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
03	WS24-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
04	WS24-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
05	W24-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
06	W24-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
07	W24-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
08	W24-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
09	WS20-32A		THSensor_1_loc.	25.0 / 35.0 / 0.0	40.2 / 65.0 / 0.0	-	- / - / -	- / - / -
10	WS20-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
11	WS20-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
12	WS20-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
13	W20-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
14	W20-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
15	W20-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -
16	W20-32A		-	- / - / -	- / - / -	-	- / - / -	- / - / -

Auto data refresh : Untick during data input

Search Search new installed PDUs

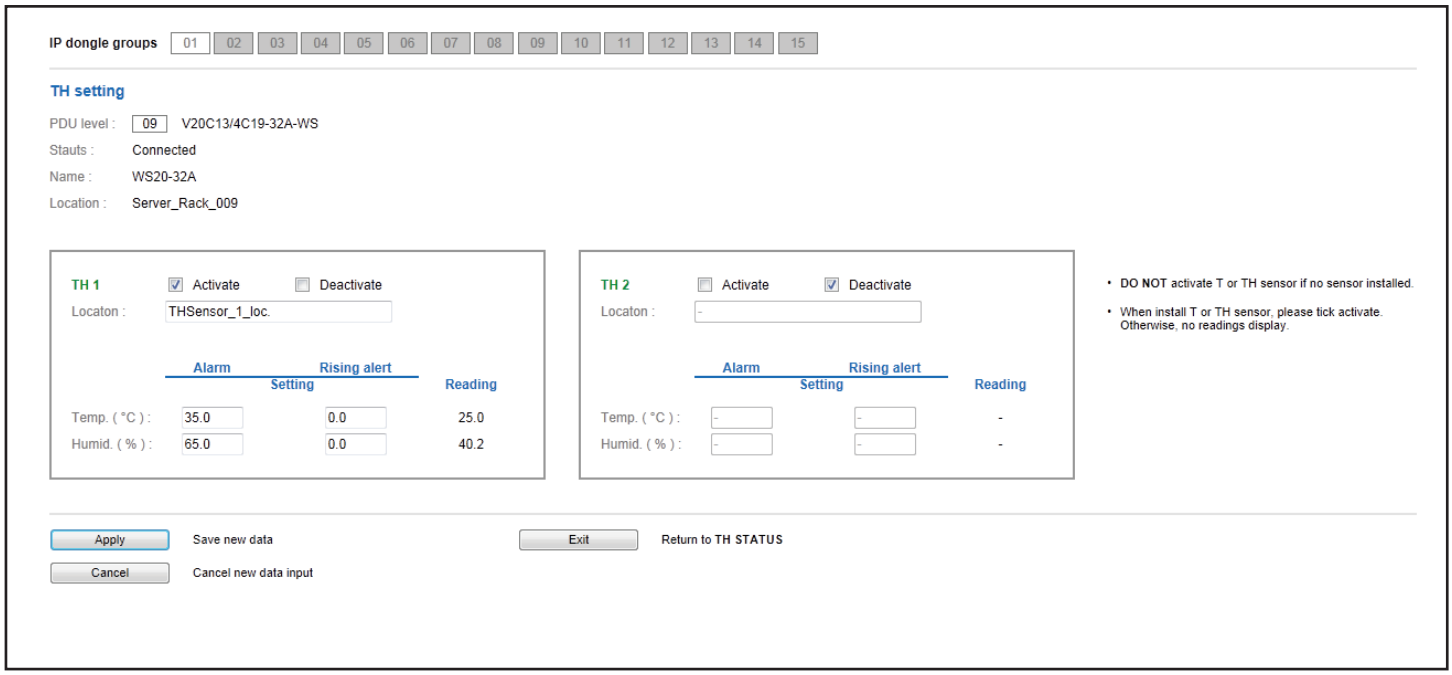
* Press F11 to enlarge or diminish the screen

In < **TH setting** >,

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

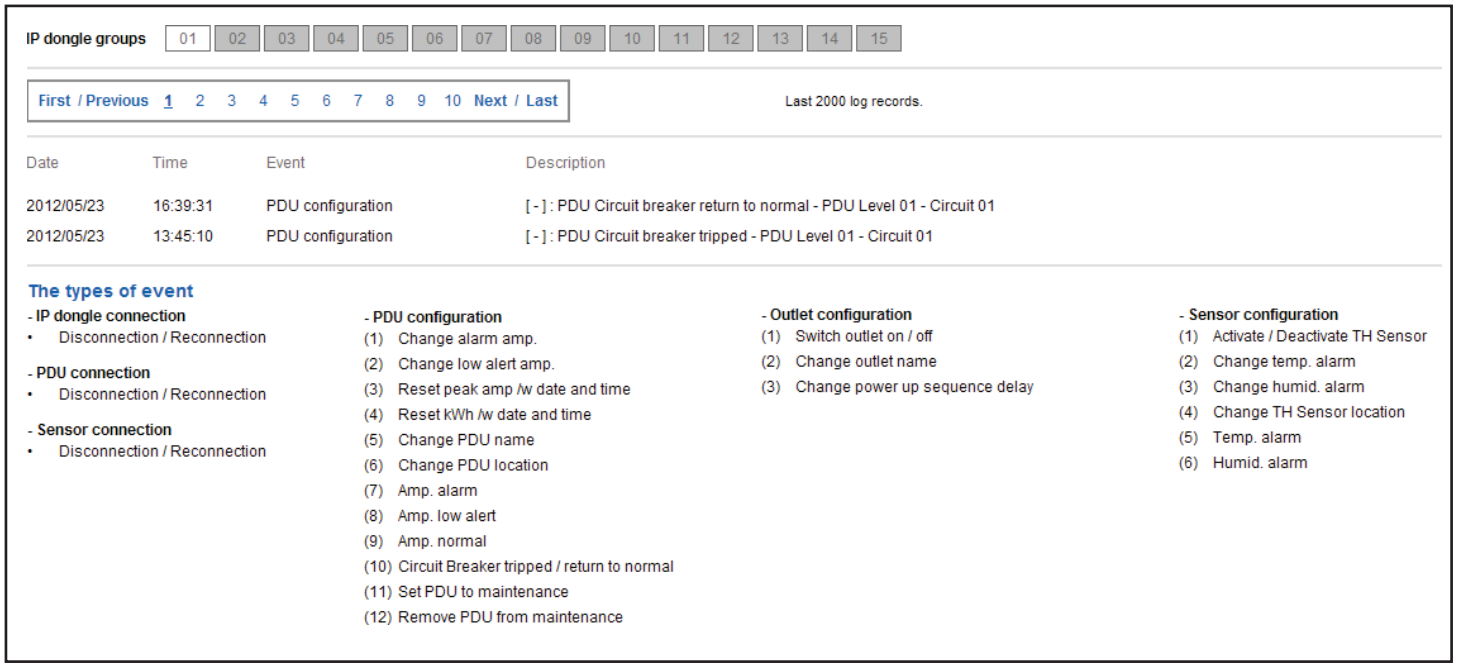
The default TH setting is Deactivate .

- When install T or TH sensor, please tick Activate . Otherwise, no readings display.
- DON'T activate T or TH sensor if no sensor installed.

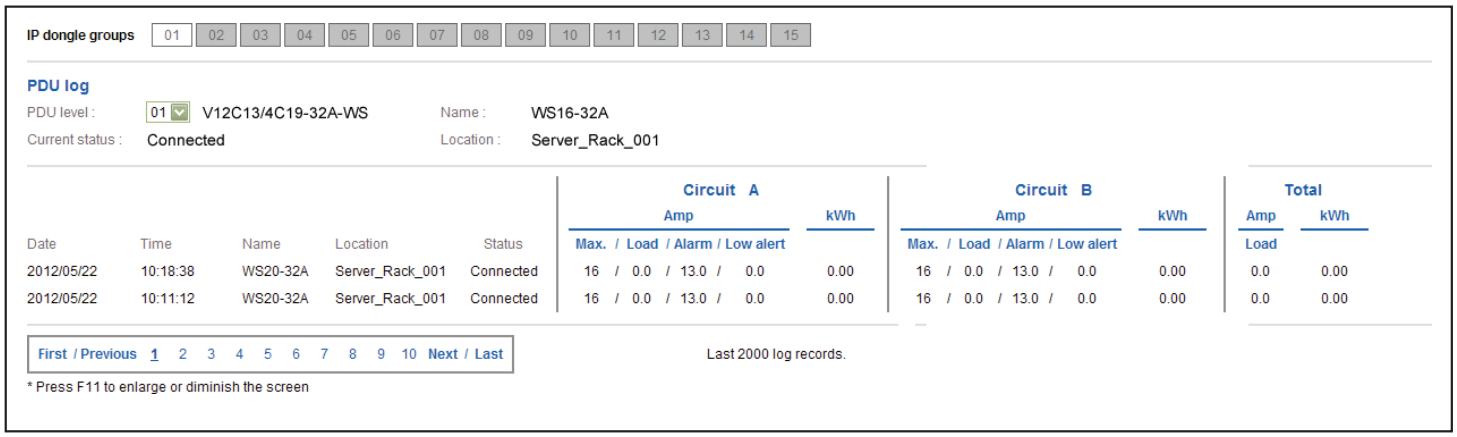


Part V. Events / Log / Report

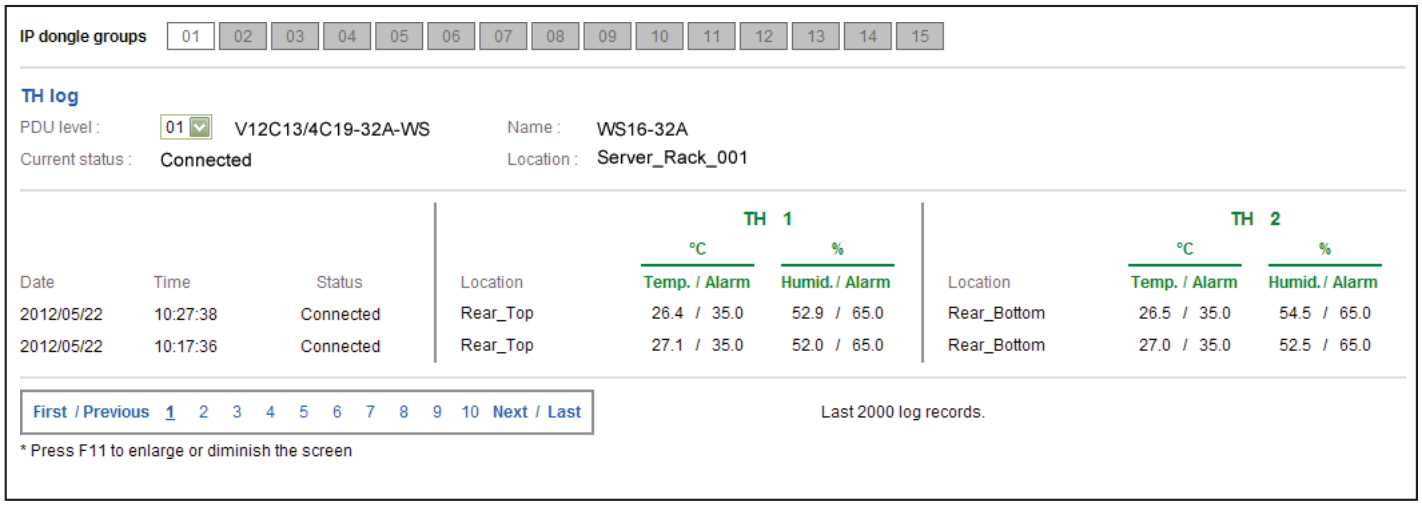
< Event > provides past 2000 event records of PDUs' configuration & connection / outlet configuration / sensors' configuration & connection in an IP dongle group



< PDU log > provides past 2000 log records of each PDU. The software will generate a PDU log record every 10 mins.

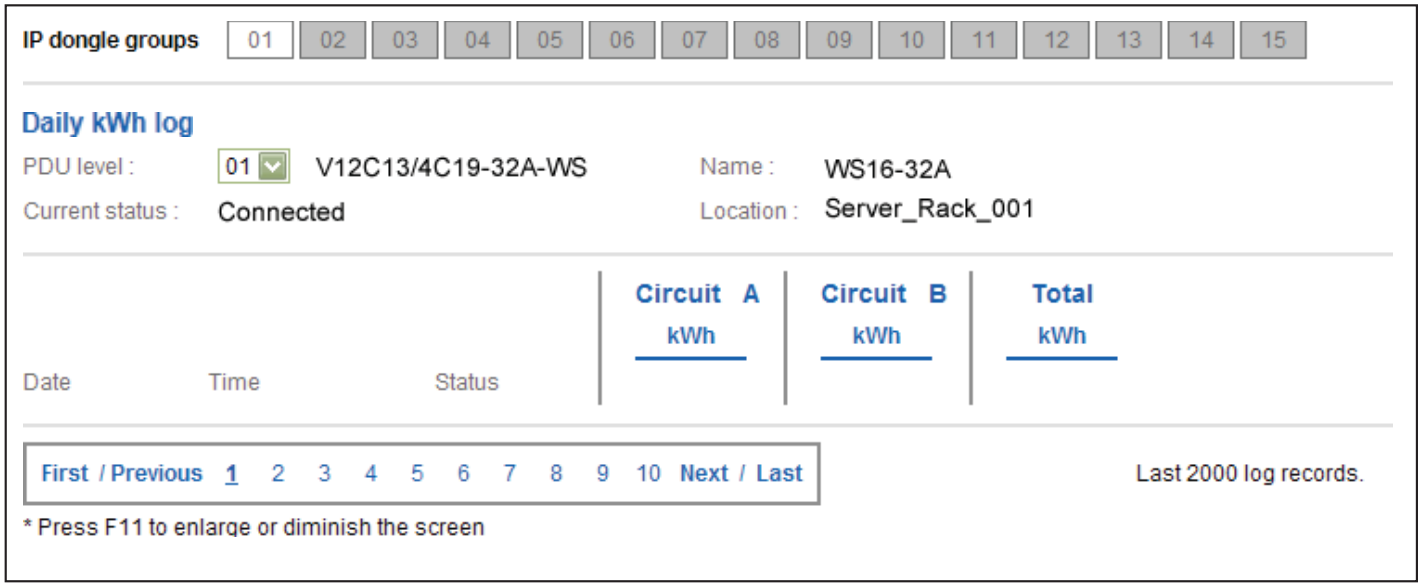


< TH log > provides past 2000 TH log records of each PDU. The software will generate a TH log record every 10 mins.



< Daily kWh log > provides past 2000 daily energy consumption log records of each PDU. The record is logged at 00:00 everyday (+/- 5 mins.) for previous day

⚠ The daily kWh log will not be recorded at 00:00 if the PDU connected less than 24 hours



Complete

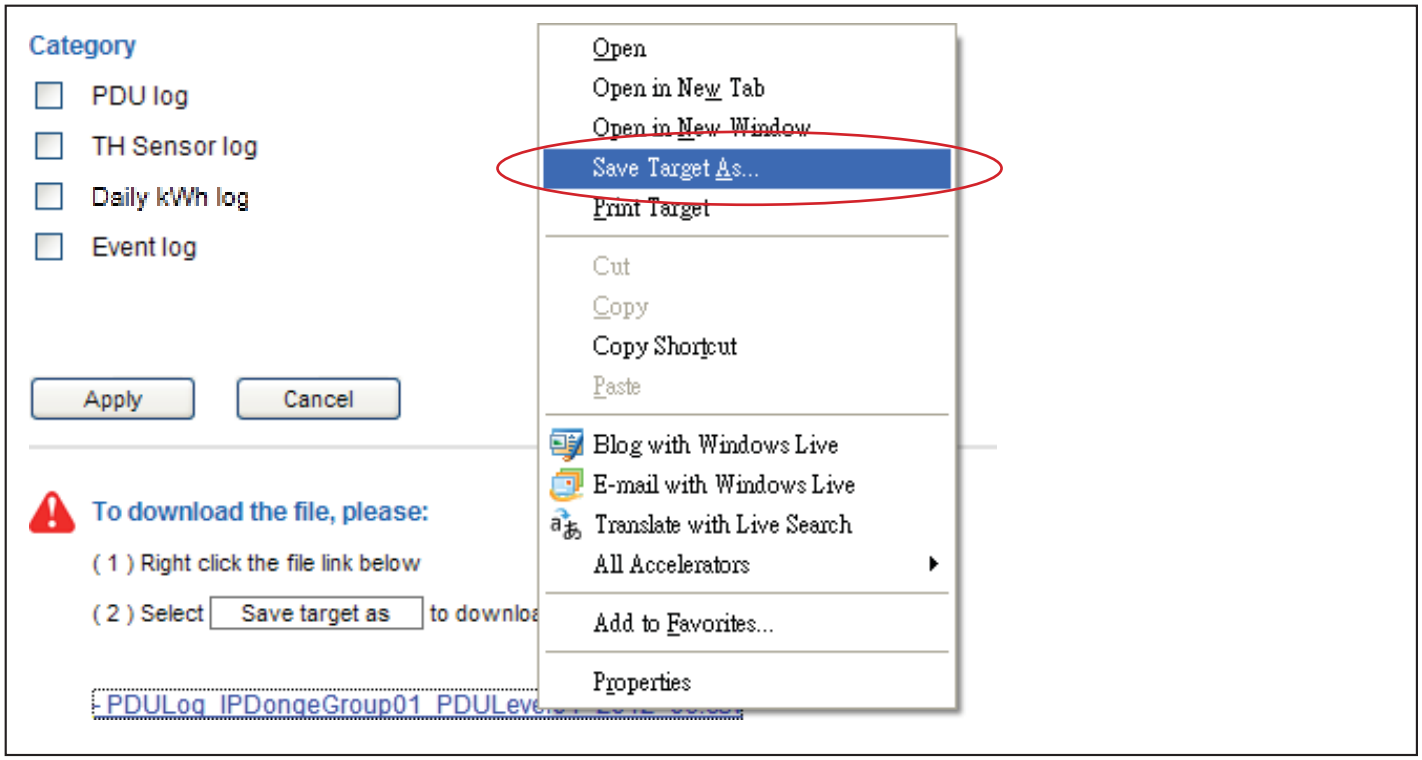
< Report > provides monthly report for PDU log , TH Sensor log , Daily kWh log & Event log which can be exported in CSV format.

Please follow the steps below to export the log category you want :

Step 1. Select " **Category** " , " **Period** " & " **Target** "

Step 2. Click " **Apply** " & Click " **OK** " from the pop up window

Step 3. Right Click the file name below & Select " **Save target as** " to download the log file



Step 4. Click " **Close** " to complete or " **Open** " to view the content of log file

Complete

Part VI. SNMP Setup / Firmware Upgrade

< SNMP Setup >

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.

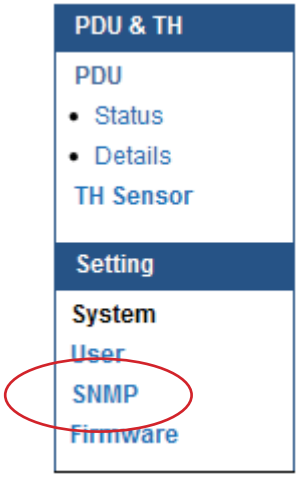
Step 1. Connect the IP dongle to a computer. (Please refer to P.12)

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

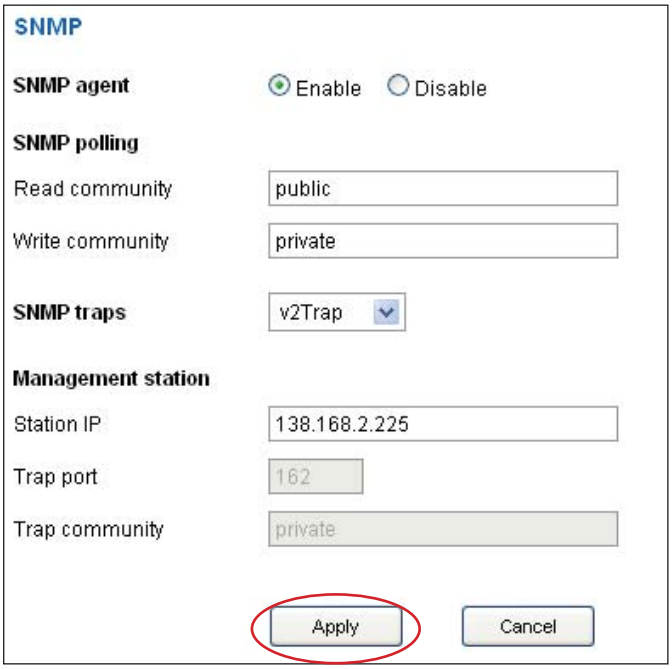
Step 3. Enter the configured IP dongle address into the I.E. address bar.
Default IP address is " **192.168.0.1** "

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

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

< Firmware Upgrade >

If fail to search the PDU, please take the following steps to 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

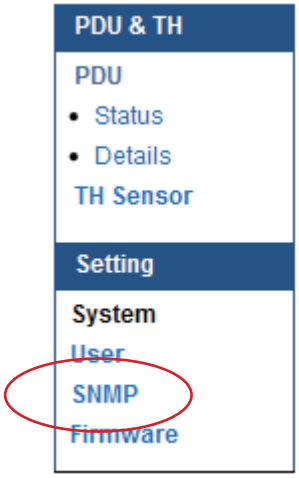
Step 2. Connect the IP dongle to the computer.

Step 3. Open the Internet Explorer (I.E.) version 8.0 or above

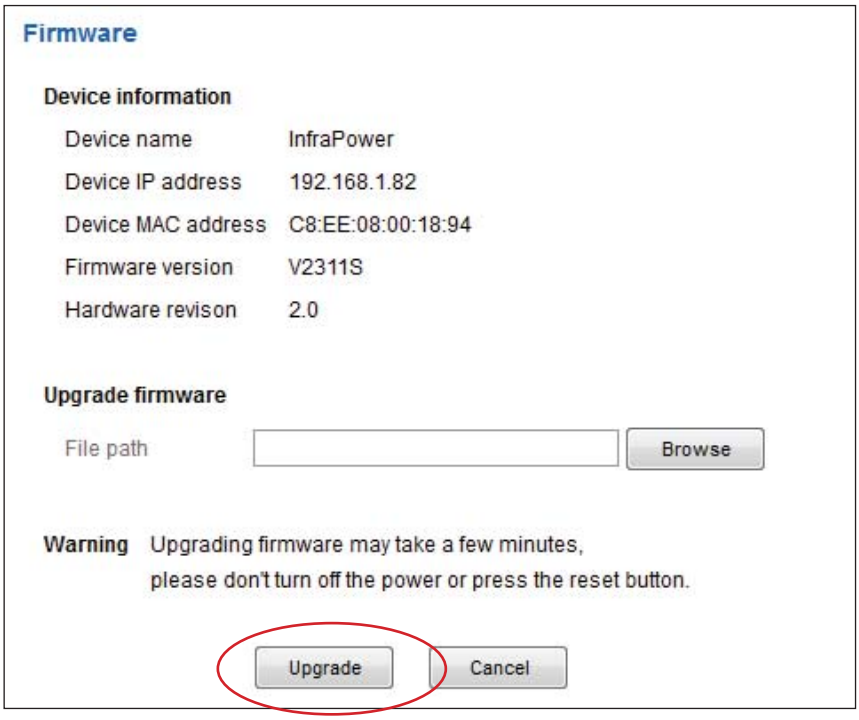
Step 4. Enter the configured IP dongle address into the I.E. address bar.
Default IP address is " **192.168.0.1** "

Step 5. Enter " **Login name** " & " **Password** ". Default login name & password are " **00000000** "

Step 6. Select the Firmware from the left navigation



Step 7. The firmware upgrade window appears as below :



Step 8. Click " **Browse** " and select the firmware file (xxx.img) from the specific path in the pop up window and Click " **Open** "

Step 9. Click " **Upgrade** " to start the upgrade process. It takes a few minutes to complete.

Step 10. Once complete, UI will return to the login page.

Part VII. FAQ

InfraPower Manager - IPM-02

1. What is InfraPower Manager?

The InfraPower Manager IPM-02 is a Windows based system to consolidate management of max. 240 PDUs via 15 IP dongles, using a simple web interface which monitors and controls the WS kWh switched / W kWh Monitored PDUs in the data center. Authorized users have a secure control over outlets to power ON / OFF at the managed device level. It also provides the detailed PDU, daily energy consumption and event logged records, and sends alarm email once ampere & Temp. / Humid. over the predefined alarm threshold.

Please find the link below:

http://www.austin-hughes.com/support/software/infrapower/IPM-02.msi

2. Which OS platform does IPM-02 support?

- MS Windows XP Professional with SP3 (32bit only)
- MS Windows 7 Professional with SP1
- MS Windows 7 Ultimate with SP1
- MS Windows Server 2003 R2 Standard Edition with SP2
- MS Windows Server 2008 Standard Edition SP2
- MS Windows Server 2008 R2 Standard Edition SP1

Ensure the user logins in the management PC as a member of "Administrators" Group before IPM-02 Installation and execution.

3. Why user can't login to the Management PC remotely ?

Make sure the port for web server is added in the firewall setting and the services of web server is started in the management PC.

4. Which database does the IPM-02 support?

PostgreSQL

5. What is the PostgreSQL default password for IPM-02?

1qaz2WSX

6. How can I receive alarm email and get full log report?

Ensure that IPM-02 is executed and the alarm server is configured properly and being enabled.

7. What is the default user name & password of IPM-02?

Default user name "admin" & password "00000000"

8. What is the command password of IPM-02?

Each IP dongle group has its command password. It will be requested for any PDU configuration and control. The administrator can set different command password for different IP dongle group or all IP dongle groups use the same password.

9. The WS kWh switched / W kWh Monitored PDUs can't be found by IPM-02?

Please double check the cable connection and the level setting of each PDU. If a cascade chain has duplicate the level PDUs, it will cause this problem.

10. Is it possible to manage the WS kWh switched / W kWh Monitored PDUs from different workstations?

Yes, the InfraPower manager supports 5 concurrent login users from different workstations.

11. Any alternatives if I need to monitor more than 15 IP dongle groups?
You can install IPM-03 which can monitor up to 30 IP dongle groups or install another copy of IPM-02 in another management PC.

IP dongle

1. What is the IP dongle?
The IP dongle provides a simple and economical way to consolidate management of max. 16 pcs WS kWh switched / W kWh Monitored PDUs, by a single IP connection to the network.

2. What is the IP setup utilities?
This is a windows application used to assign the IP address of IP dongle. You can download the IP setup utilities from the link below:
http://www.austin-hughes.com/support/utilities/infrapower/IPdongleSetup.msi

3. Does the IP dongle support DHCP (Dynamic Host Configuration Protocol)?
No, the IP dongle only works with static IP-address.

4. Will the reset of IP dongle affect the power to the outlets?
No, the IP dongle operates on a separate circuit, so the power to the outlets will remain unchanged.

5. How can I replace a failed IP dongle?
As the IP dongle is hot swappable, without power disconnection, you can unplug the RJ45 connector and slide out the failed IP dongle from the WS kWh switched / W kWh Monitored PDU. Then replace a new one for the PDU and re-configure the IP address to fit your network setting. (Please refer to user manual < 2.2 > for details)

Temp. Humidity sensor

1. How accurate is the Temp. & Humid. sensor?
It is accurate to ± 1°C (typical) & ± 4.5% RH (typical).

2. How accurate is the Temp. sensor?
It is accurate to ± 1.5°C (typical).

3. How to install the Temp. / Temp. & Humid. sensor ?
Plug in the Temp. / Temp. & Humid. sensor ONLY AFTER the PDU is ON.

Part VII. FAQ

Meter for WS kWh switched & W kWh Monitored PDU

1. What is feature of the W kWh Monitored PDU?
The W kWh Monitored PDU offers simple & highly reliable power distribution to multiple equipments, and built-in a 1.8” LCD meter indicates the total energy consumption of equipment connected to the PDU. The digital ampere meter has an interface which can connect to an IP dongle to the ethernet network, which allows managers to real-time remote monitor the PDU load thru the InfraPower manager (IPM-02).

2. What is feature of the WS kWh Switched PDU?
The WS kWh Switched PDUs offers the same features as W kWh Monitored PDUs, with an addition remote control power capability to individual PDU outlets. The remote outlet power control allows power on/off functionality for power recycling to reboot locked-up equipment and to avoid unauthorized use of individual outlets.

3. Can the WS kWh switched & W kWh Monitored PDUs cascade together?
Yes, the WS kWh switched & W kWh monitored model PDUs can connect together as a cascade chain.

4. If one of the cascaded WS kWh switched / W kWh Monitored PDU loses power, will it affect other PDUs in the same chain?
No, the other cascaded WS kWh switched & W kWh Monitored PDUs in upper & lower level will not be affected.

5. What is the maximum cabling distance between two cascaded PDUs?
Up to 20 meter (66 feet) of CAT. 5 / 6 cable.

6. What is the maximum cascade level of the WS kWh switched & W kWh Monitored PDU in a chain?
16 levels

Others

1. What is the default outlet status of WS Switched PDU ?
The default outlet status is ON.

2. Will the PDU settings remain unchanged after power OFF?
Yes, the settings will remain unchanged such as PDU Name, Location, Alarm amp., Low alert amp., Outlet Name.....

3. Does the InfraPower PDU has the overpower protection?
Yes, the PDU provides the resettable fuse or optional circuit breaker for the overpower protection.

4. What is the standard inlet cable length of InfraPower?
3 meter (9.9 feet).

5. Where can I find the Catalogue / User manual /Model list / Wire diagram of InfraPower PDUs?
Please visit the www.austin-hughes.com

6. How can we get a further support?
Please send the email to support@infra-power.com or sales@infra-power.com

Part VIII. Troubleshooting

PDU disconnection

1. GUI shows a certain level PDU disconnected

Step 1 - PDU power off ?

Check the PDU is power ON or not.

Step 2 - PDU level setting duplicated in the same PDU group ?

Check and make sure PDU level is unique and not duplicated in the same PDU group. (Please refer to to user manual < 1.2 > display 9.1 for details)

2. GUI shows from a certain level PDU to the last one disconnected

Step 1 - Cable disconnected, loose or defective ?

Check the Cat. 5/6 cable connection to PDUs and network devices. Make sure the connectors are firmly attached. And check if any defects on your cable or not. If yes, replace a new one.

Step 2 - The first disconnected PDU failed ?

Unplug the Cat. 5/6 cable on the first disconnected PDU, then plug it to the second disconnected PDU to check if the problem caused by the first disconnected PDU.

3. GUI shows the whole group of PDU(s) disconnected

Step 1 - Cable disconnected, loose or defective ?

Check the Cat. 5/6 cable connection to PDUs and network devices. Make sure the connectors are firmly attached. And check if any defects on your cable or not. If yes, replace a new one.

Step 2 - IP dongle failed ?

i. Check if the network setting of the IP dongle is correct or not. If duplicated IP address is in a network, it may cause such problem.

ii. Disconnect the IP dongle from the network and try to direct connect the Cat. 5/6 cable from IP dongle < LAN > port to a computer network port and use IP Setup utilities to check if the IP dongle can be found or not. If it cannot be found, the IP dongle may be failed.

Step 3 - 1st level PDU failed ?

Move the IP dongle from 1st level PDU to 2nd level PDU to check if the problem caused by 1st level PDU's failure or not. If yes, replace 1st level PDU.

Part VIII. Troubleshooting

Replacement, Removal or addition for PDU & IP dongle

1. How to replace the failed IP dongle ?

Step 1 - Prepare a new IP dongle.
Step 2 - Disable alarm email in **<Alarm>** page.
Step 3 - Replace the failed IP dongle with the new one on 1st level PDU.
Step 4 - Configure the setting of the new IP dongle same as the old one.
(Please refer to user manual < 2.2 > for details)
Step 5 - Click **Start Connection** in **<Status>** page for the relevant IP dongle.
Step 6 - Enable alarm email in **<Alarm>** page again.

2. How to replace the failed 1st level PDU with a new one ?

Step 1 - Prepare a new PDU and set the PDU to 1st level.
(Please refer to user manual < 1.2 > display 9.1 for details)
Step 2 - Disable alarm email in **<Alarm>** page.
Step 3 - Power off & unplug the device(s) which connected to the PDU.
Step 4 - Power off & remove the failed 1st level PDU from connection.
Step 5 - Install the IP dongle on the new 1st level PDU.
Step 6 - Install and connect the new PDU.
Step 7 - Power on the new PDU and connect to the device(s).
Step 8 - Click Start Connection in **<Status>** page for the relevant IP dongle.
Step 9 - Configure the new PDU in **<Details>** and **<TH Sensor>** page such as **Alarm Amp** , **Name**, **Location**…
Step 10 - Enable alarm email in **<Alarm>** page.

3. How to replace a failed certain level PDU with a new one ?

Step 1 - Prepare a new PDU and set the PDU level accordingly.
(Please refer to user manual < 1.2 > display 9.1 for details)
Step 2 - Prepare an appropriate length Cat. 5/6 cable.
Step 3 - Click Set maintenance in **<Details>** page for the failed PDU.
Step 4 - Use the Cat. 5/6 cable to bridge over the failed PDU which will be replaced to minimize log/ data loss.
Step 5 - Power off & unplug the device(s) which connected to the failed PDU.
Step 6 - Power off & remove the failed PDU from connection.
Step 7 - Install the new PDU, cancel the cable-bridging and reconnect the PDU to the last and next one.
Step 8 - Power on the new PDU and connect to the device(s).
Step 9 - Click Remove maintenance in **<Details>** page for the new PDU.
Step 10 - Configure the new PDU in **<Details>** and **<TH Sensor>** page such as **Alarm Amp**, **Name**, **Location**…

⚠ Ignore step 2 & 4 if the failed PDU is in the last level.

4. How to move out a PDU (without a replacement) ?

Step 1 - Prepare an appropriate length Cat. 5/6 cable.
Step 2 - Click **Disable Monitoring in <Details>** page to stop monitoring the removed PDU.
Step 3 - Use the Cat. 5/6 cable to bridge over the removed PDU to minimize log/data loss.
Step 4 - Power off & unplug the device(s) which connected to the PDU.
Step 5 - Power off & remove the PDU from connection.
Step 6 - Enable alarm email in **<Alarm>** page.

If the removed PDU NOT in the last level, you MUST reconfigure and reset the level for the affected PDU(s) which next to the removed PDU.

Ignore step 1 & 3 if the removed PDU is in the last level.

5. How to add an extra PDU to an existing PDU group ?

Step 1 - Prepare a PDU and set the PDU level accordingly.
(Please refer to < 1.2 > display 9.1 for the PDU level setting)
Step 2 - Prepare an appropriate length Cat. 5/6 cable.
Step 3 - Click Set maintenance in **<Details>** page for the affected PDU(s) which next to the added PDU.
Step 4 - Install and connect the new PDU.
Step 5 - Power on the new PDU.
Step 6 - Reconfigure & reset the level for the affected PDU(s) which next to the added PDU.
Step 7 - Click Remove maintenance in **<Details>** page for the affected PDU(s).
Step 8 - Click **Search** in **<Status>** page to search the new installed PDU.
Step 9 - Configure the new PDU in **<Details>** and **<TH Sensor>** page such as **Alarm Amp** , **Name**, **Location**…
Step 10 - Enable alarm email in **<Alarm>** page.

Ignore step 3, 6 & 7 if the added PDU is in the last level

Part VIII. Troubleshooting

1.8” meter LCD display

1. LCD meter no display.

Step 1 - Check PDU is power ON or not.

Step 2 - Press any button on the LCD meter. The SCREEN OFF function may be enable. (Please refer to user manual < 1.2 > display 9.3 for details)

Step 3 - If the LCD meter still no display please call your dealer for support.

2. The whole LCD meter display turn white?

Step 1 - Use a pin to press the reset button to re-power the meter. Don’t worry, it will not affect any settings & memories.

Step 2 - If the LCD meter still turn white, please call your dealer for support.

InfraPower Manager IPM-02

1. Try to login InfraPower Manager IPM-02 but the web browser only shows “ HTTP 404 Not Found ”

Step 1 - Services for Web server in management PC started ?
Make sure the services is started. Go to Control Panel -> Administrative Tools -> Services -> Apache2.2 and make sure the status is “ Started ”.

Step 2 - Port for web server in management PC is occupied by other service ?
Check if the port for web server is used by other service. If yes, please release the port of that particular service and assign another port for it.

Step 3 – Port for web server is added in the firewall of management PC ?
Check if the port is added in the firewall. If not, please add and enable the connection in the firewall. Please refer to user manual < 3.2 > for details.

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