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User Manual

EM-1001 / 1002 Environmental Control Management Software

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:

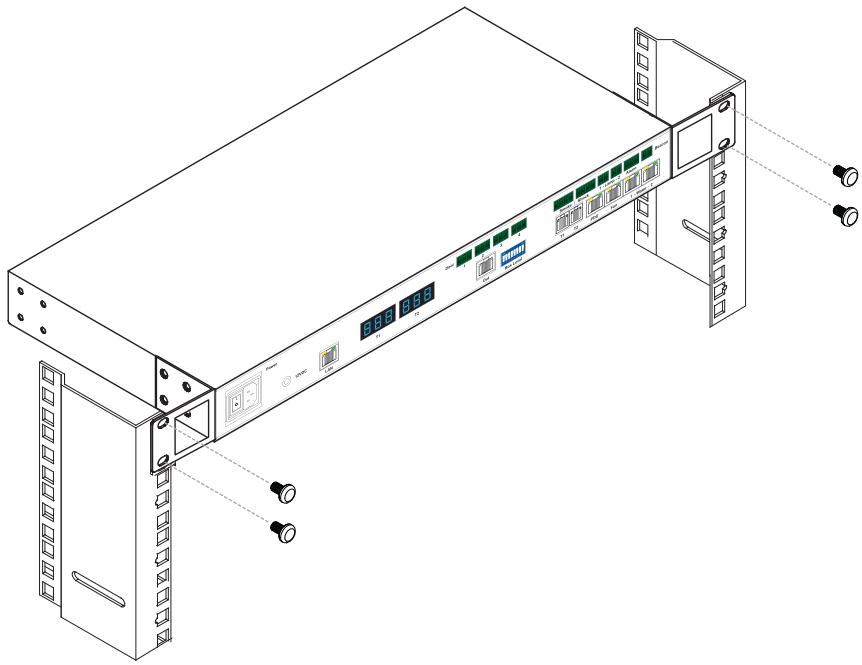
- Re-position or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Before Installation

- It is very important to locate the equipment in a suitable environment.
- The surface for placing and fixing the equipment should be stable and level or mounted into a suitable cabinet.
- Make sure the place has good ventilation, is out of direct sunlight, away from sources of excessive dust, dirt, heat, water, moisture and vibration.
- Position the equipment with respect to related facilities.

EM-1001 / 1002 Installation

- Suggest the installation at the rear top mounting of cabinet
- M6 screws set not provided.



Content

Content

Part I. Hardware

< 1.1 > Package Contents

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.

- EM-1001 Master Box x 1
- 6' Power cord x 1

OR

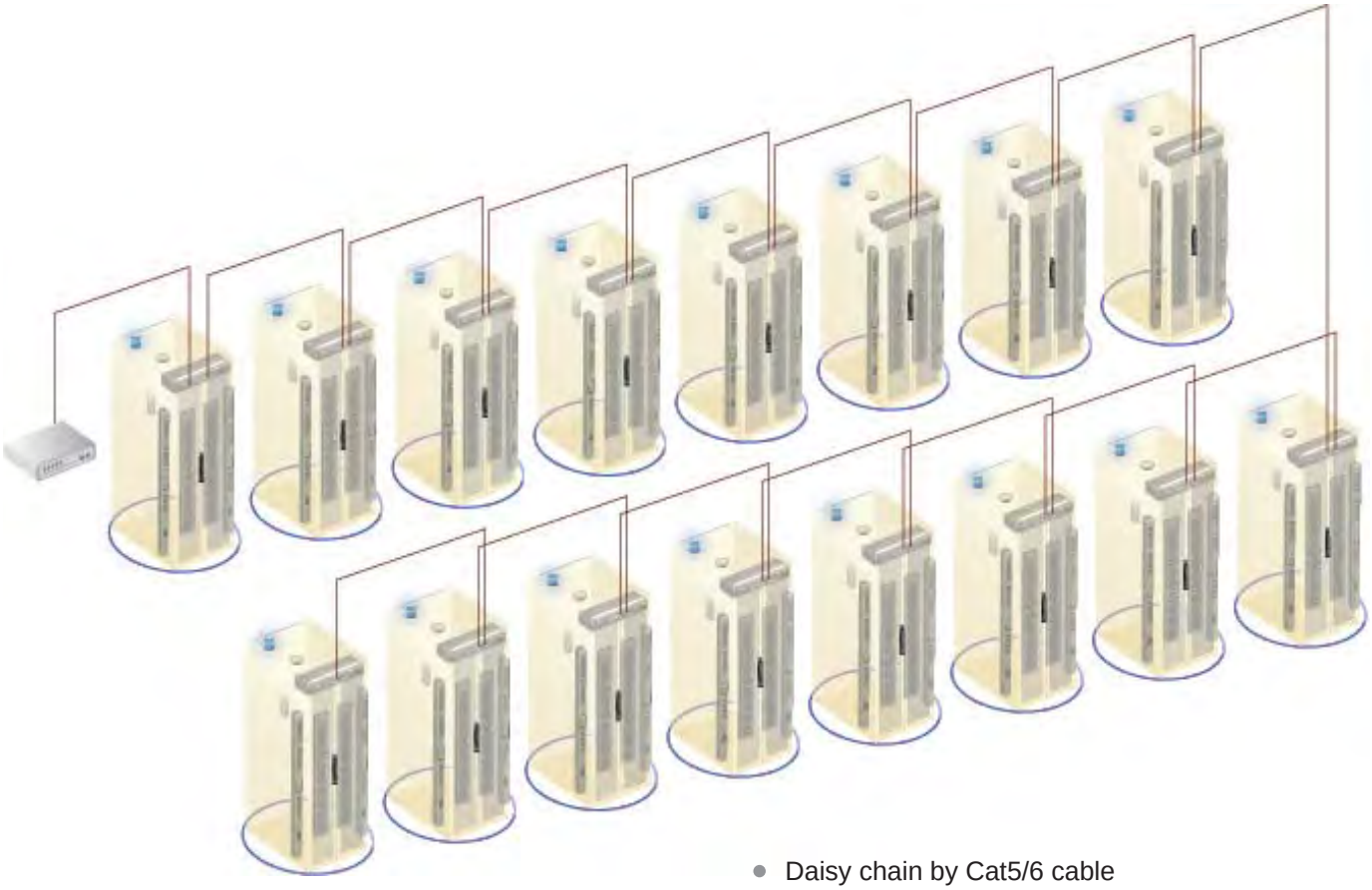
EM-1002 Slave Box x 1
- 6' Power cord x 1

< 1.2 > Features & Specifications

	EM-1001 (Master Box)	EM-1002 (Slave Box)
Daisy Chain	1st Level	2nd - 16th Level
SNMP	✔	via Master Box
LAN Port	✔	✘
Daisy Chain Port - LINK	✘	✔
Daisy Chain Port - OUT	✔	✔
Dual Power Input Option	✔	✔
Temperature LED	✔	✔
Temp-Humid Sensor	2	2
Smoke / Shock Sensor	2	2
Water Sensor	2	2
Door Sensor	4	4
LED Light Bar	2	2
LED Flashing Beacon	1	1
Alarm Board	1	1
Integrated PDU	4 (daisy chain)	4 (daisy chain)
Integrated Fan Unit	4 (daisy chain)	4 (daisy chain)
Product Dimension (W x D x H)	400 x 135 x 39.7 mm / 15.7 x 5.3 x 1.6 inch	
Net Weight	1.06 kgs / 2.3 lbs	
Power Consumption	Auto-sensing 100 to 240VAC, 50 / 60Hz, Max. 48 Watt	
Operating Temperature	0 to 55ºC Degree	
Storage Temperature	-5 to 60ºC Degree	
Relative Humidity	5~90%, non-condensing	
Mounting	1U Rackmount	
Safety Regulatory	FCC & CE certified	
Environmental	RoHS & REACH compliant	

< 1.3 > Daisy Chain Group

- EM-1001 as the 1st level master box
- The EM-1002 can be cascaded up to 16 levels
- Only 1 x IP for 16 x EM-1002 remote access

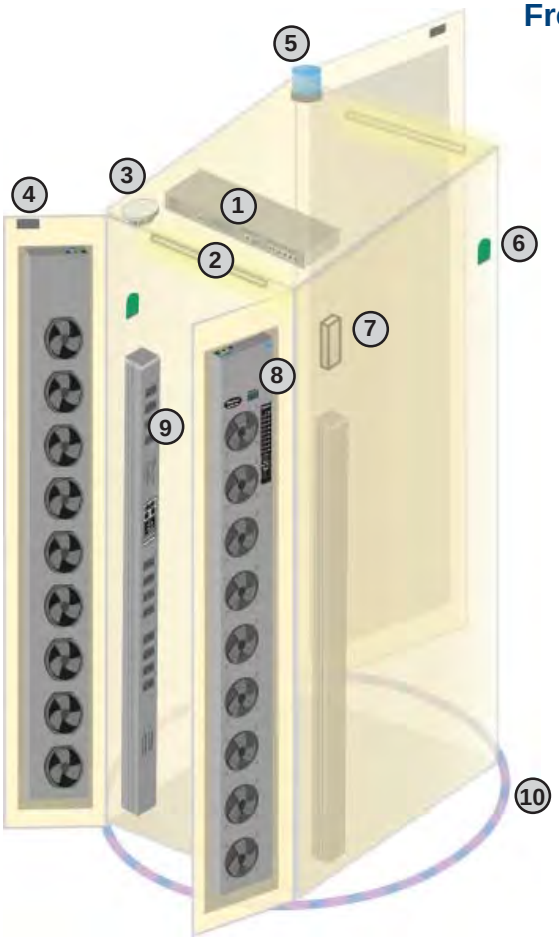


- Daisy chain by Cat5/6 cable
- Max. distance between 2 boxes is 20M
- Max. distance in a daisy chain group up to 300M

- One network can expand up to 30 daisy chain groups (master IP group).
- Each daisy chain group supports up to 16 Boxes
- Each network can monitor 480 Boxes
- Each Box supports PDU x 4 & fan unit x 4
- Up to 1920 PDUs & 1920 fan units can be installed under one Environmental Management network

< 1.3 > Installation Diagram

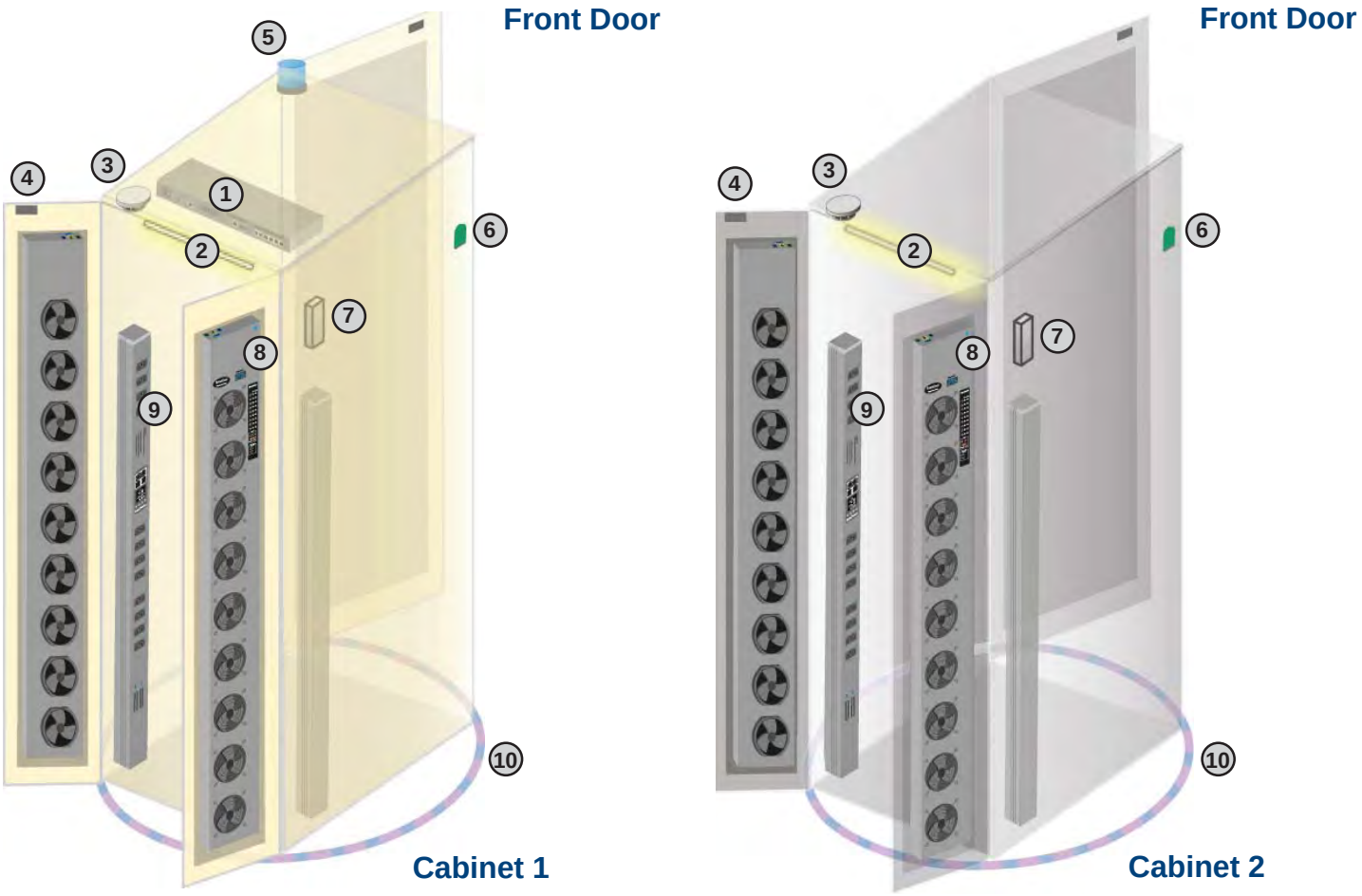
One Box One Cabinet



	Item	Qty.	Location
1	EM-1001 / 1002	1	rackmount on rear top
2	LED Light Bar	2	front & rear top inside
3	Smoke Sensor	1	rear inside top
4	Door Sensor	2	top corner of door
5	Flashing LED Beacon	1	front cabinet roof
6	Temp. & Humid. Sensor	2	any inside position
7	Shock Sensor	1	upper inside
8	Fan Unit	4	door mount or rackmount
9	PDU	4	vertical or rackmount
10	Water Sensor	1	surrounding cabinet on floor

< 1.3 > Installation Diagram

One Box Two Cabinets

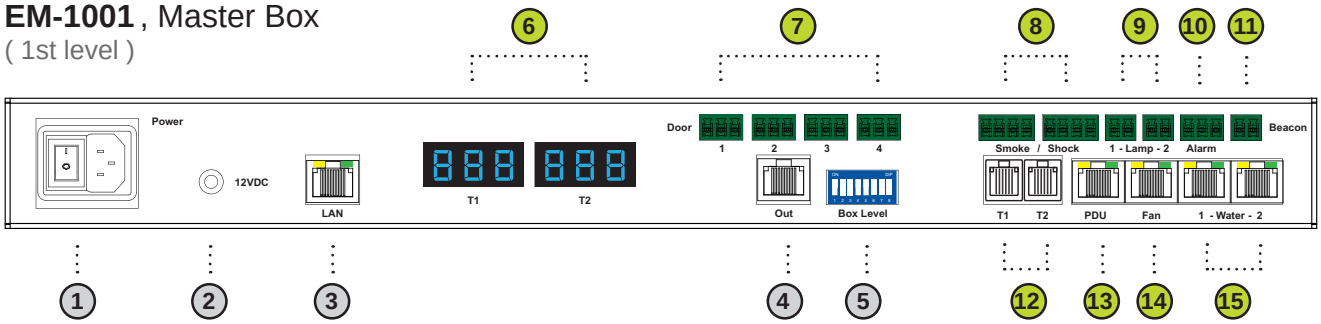


* either smoke sensor or shock sensor

	Item	Cabinet 1	Cabinet 2
①	EM-1001 / 1002	1	-
②	LED Light Bar	1	1
③	Smoke Sensor	1 *	1 *
④	Door Sensor	2	2
⑤	Flashing LED Beacon	1	-
⑥	Temp. & Humid. Sensor	1	1
⑦	Shock Sensor	1 *	1 *
⑧	Fan Unit	2	2
⑨	PDU	2	2
⑩	Water Sensor	1	1

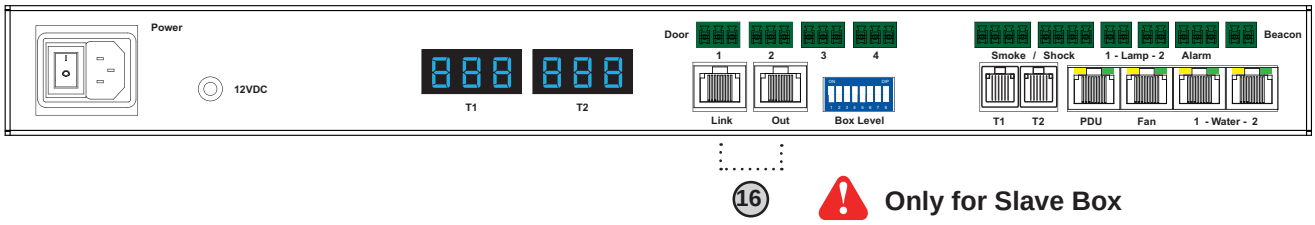
< 1.4 > Environmental Management Box

EM-1001 , Master Box
(1st level)



1. Power input
2. Dual power input (option)
3. LAN port (RJ-45 connect to network device)
4. OUT port (RJ-45 connect to level 2nd slave EC box)
5. Dip switch (level setting)
6. Temp. LED display x 2
7. Door sensor port x 4
8. Smoke / Shock sensor port x 2
9. LED Light Bar port x 2
10. Port for 3rd party alarm board x 1
11. LED beacon port x 1
12. Temp. & Humid. sensor port x 2
13. PDU port x 1
    (RJ-45, up to PDU daisy chain level x 4)
14. Fan unit port x 1
    (RJ-45, up to fan unit daisy chain level x 4)
15. Water sensor port x 2

EM-1002 , Slave Box
(From 2nd - 16th level)



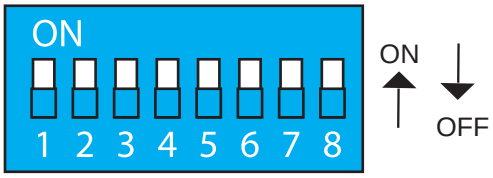
Only for Slave Box

16. Link & Out port
    (RJ-45 for daisy chain connection)

< 1.5 > Level Setting

Steps :

- Only **EM-1001** built-in IP remote access module.
- **EM-1001** MUST be set on the 1st daisy chain level according to the table below.
- For the 2nd - 16th levels (slave box), please make the level setting according to the table below.
- For the cabling connection, please refer to the next page.



Daisy chain level setting

Using the dip switch no. 1, 2, 3, & 4 to setup each box level as below :

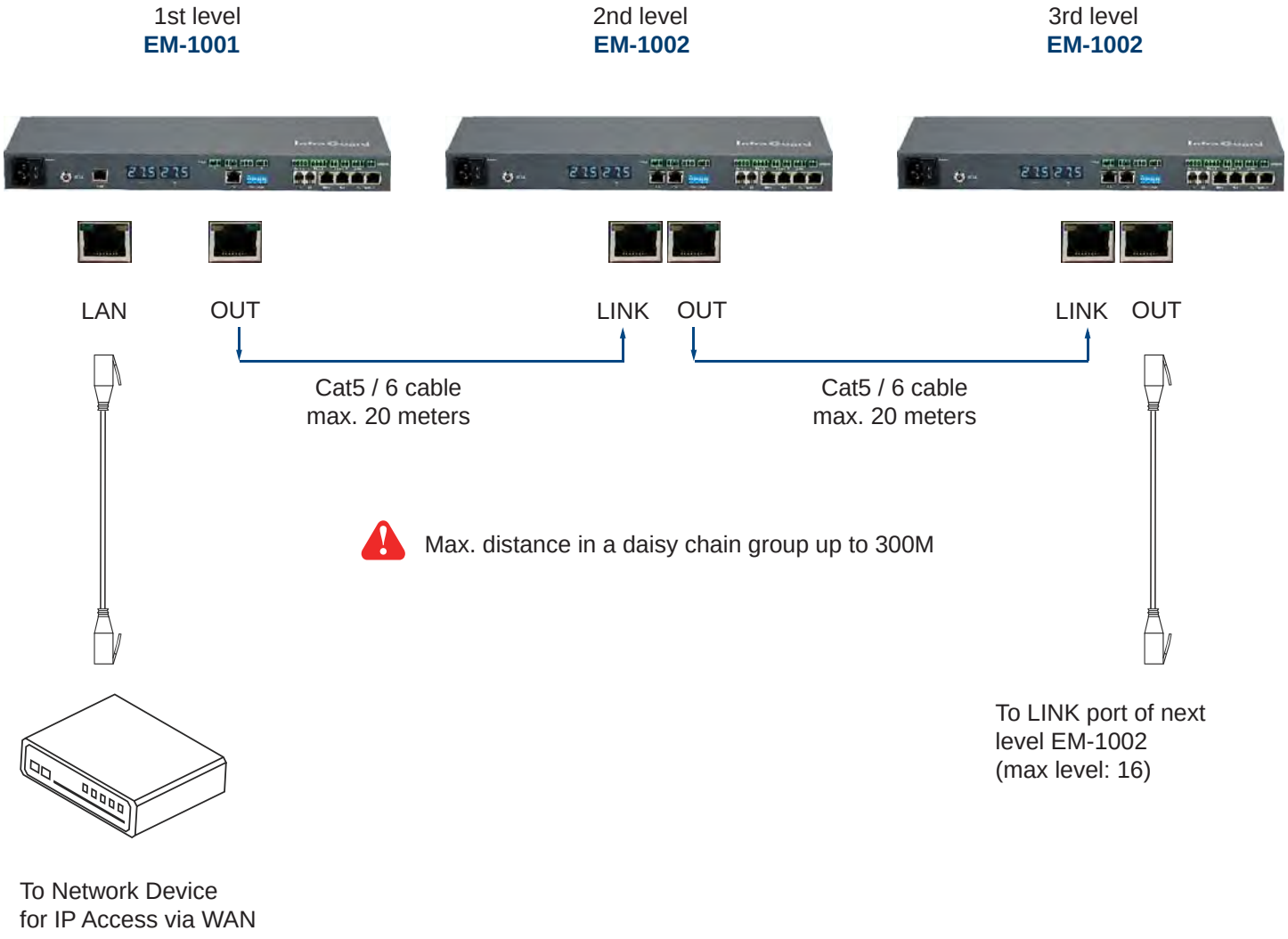
Cascaded EC boxes	Dip switch no.							
	1	2	3	4	5	6	7	8
1st level **Master** box	On	On	On	On	Off	Off	Off	Off
2nd level Slave EC box	Off	On	On	On	Off	Off	Off	Off
3rd level Slave EC box	On	Off	On	On	Off	Off	Off	Off
4th level Slave EC box	Off	Off	On	On	Off	Off	Off	Off
5th level Slave EC box	On	On	Off	On	Off	Off	Off	Off
6th level Slave EC box	Off	On	Off	On	Off	Off	Off	Off
7th level Slave EC box	On	Off	Off	On	Off	Off	Off	Off
8th level Slave EC box	Off	Off	Off	On	Off	Off	Off	Off
9th level Slave EC box	On	On	On	Off	Off	Off	Off	Off
10th level Slave EC box	Off	On	On	Off	Off	Off	Off	Off
11th level Slave EC box	On	Off	On	Off	Off	Off	Off	Off
12th level Slave EC box	Off	Off	On	Off	Off	Off	Off	Off
13th level Slave EC box	On	On	Off	Off	Off	Off	Off	Off
14th level Slave EC box	Off	On	Off	Off	Off	Off	Off	Off
15th level Slave EC box	On	Off	Off	Off	Off	Off	Off	Off
16th level Slave EC box	Off	Off	Off	Off	Off	Off	Off	Off

**** No. 5, 6, 7 & 8 dip switch reserved**

< 1.6 > Daisy Chain

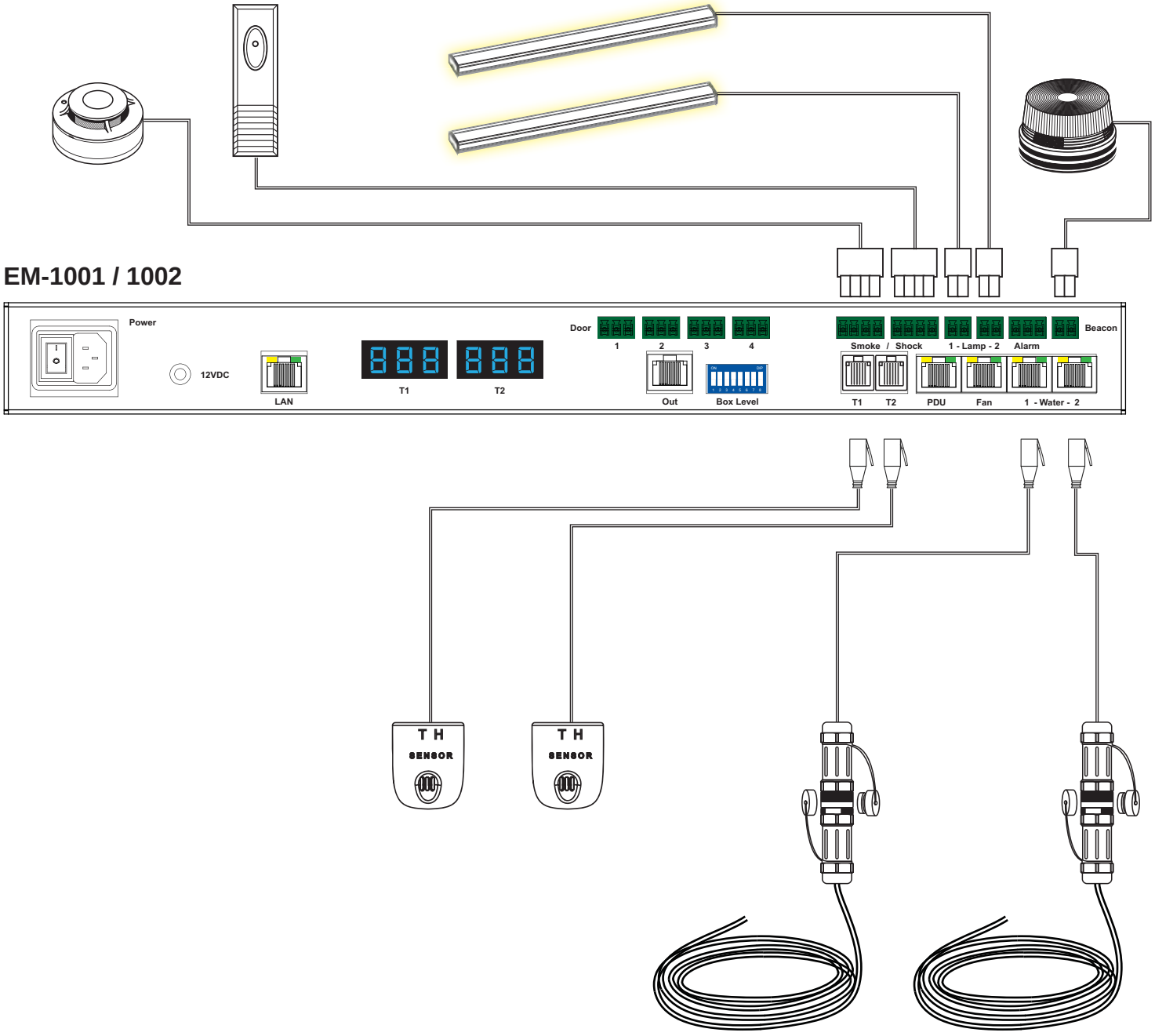
Remarks :

- Each Master IP group supports 16 daisy chain levels.
- The 1st level EC box must be **EM-1001.**
- 1 x EM-1001 allows access to 16 levels.
- For remote access, simply connect 1 x EM-1001.
- The 2nd - 16th level boxes must be EM-1002.

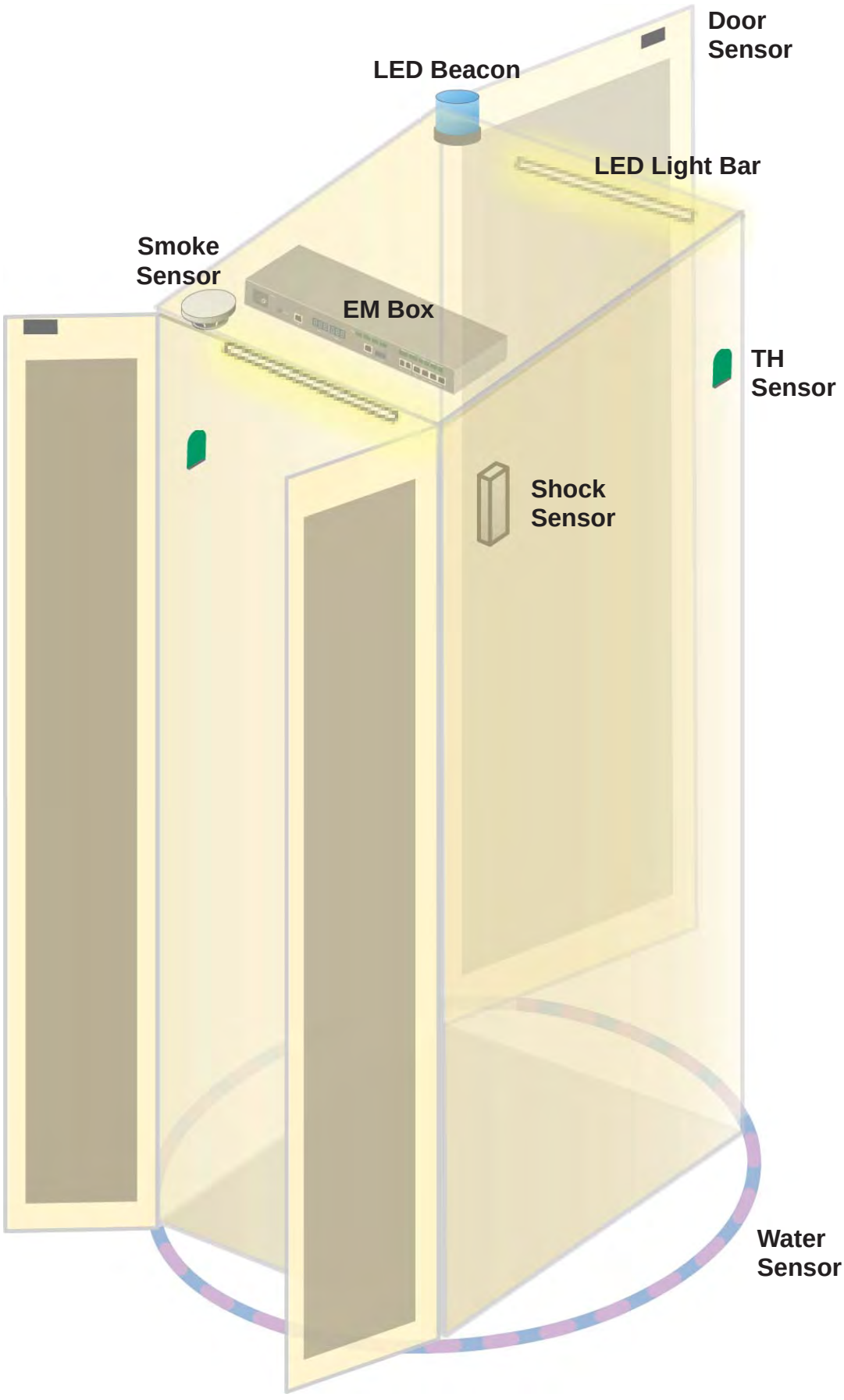


Part II. Sensor Installation & Specifications

< 2.1 > Overview



< 2.1 > Overview



< 2.2 > Door Sensor

		Inductive Door Sensor	Mechanical Door Sensor
Part no.		**EMS-502-2**	**EMS-501-2**
Sensitivity	Actuation	/	3.00 mm
	Travelling Distance	/	9.25 mm
	Operating Force	/	3.5±1 N
	Sensing distance	Max. 3mm	/
	Sensing object	Ferrous metal	/
Power Requirement	Voltage	12VDC, powered by sensor port	/
	Current Consumption	100mA	/
Housing	Material	Plastic	
	Color	Black	
Connection	Cable Length	sensor w/ 2m cable (standard) sensor w/ 4m cable (option)	
Environmental	Operating	-20 to 60°C Degree	
	Storage	-20 to 60°C Degree	-30 to 70°C Degree
	Relative Humidity	5~90%, non-condensing	
Dimensions	Product	32.5L x 12.2W x 9.2H mm	52W x 22.5L mm (with metal plate)
Weight	Net	6g	14g (with metal plate)
Supply includes	1	Inductive door sensor with 2m cable	Mechanical door sensor
	2	2mm Adhesive tape	Metal plate
	3	/	2m cable
Compatibility	EM-1001 / 1002 only		
Safety Regulatory	FCC & CE certified		
Environmental	RoHS2 & REACH compliant		

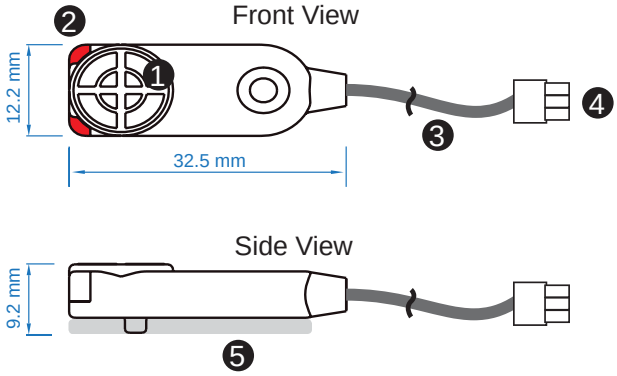
< 2.2 > Door Sensor

Optional door sensor is an essential accessories as users can be alerted by visual and audio alarm for unauthorized access.

Inductive Door Sensor, pair (EMS-502-2)

Features

- light weight / adhesive
- mini size (32.5 x 12.2 x 9.2 mm)
- no custom cutting required on door



❶	Sensor area
❷	Red LED (light up while door opening)
❸	2m cable
❹	Cable jack (connect to EC box)
❺	2mm adhesive tape

Package content

- Inductive sensor w/ 2m cable x 2
- 2mm adhesive tape x 6

Requirements

- cabinet frame made of ferrous metal (iron)
- sensing distance 3mm

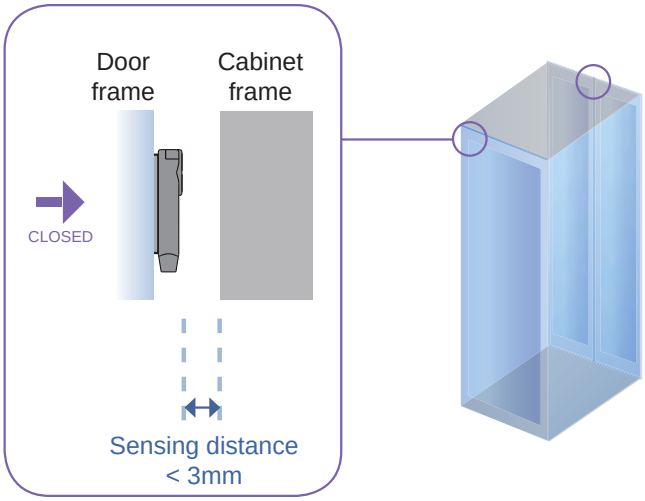
< 2.2 > Door Sensor

Installation steps

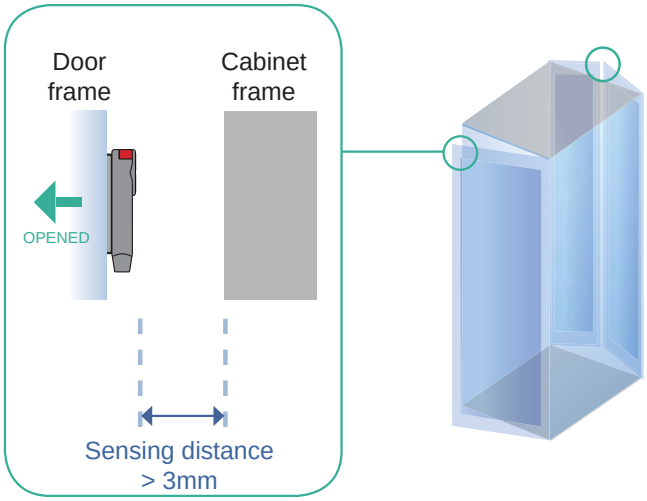
- connect to the EM-1001 / 1002
- guide & fix the cable with cable clips
- place the sensor at the top of the door, close to the opening side
- adjust the sensor with adhesive tape to ensure the sensing distance between door to frame within 3mm while door in close status

Sensor Operation

DOOR CLOSE
- close door
- inductive sensor detects the cabinet frame
- DOOR CLOSE SIGNAL sends out



DOOR OPEN
- open door
- inductive sensor lose detection with cabinet frame
- Red LED of sensor light up
- DOOR OPEN SIGNAL sends out



< 2.2 > Door Sensor

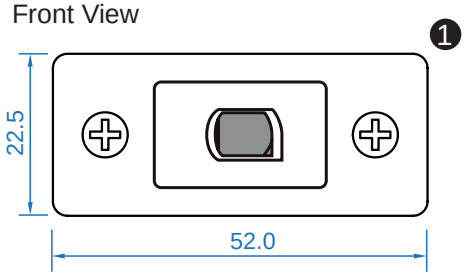
Mechanical Door Sensor (EMS-501-2)

Features

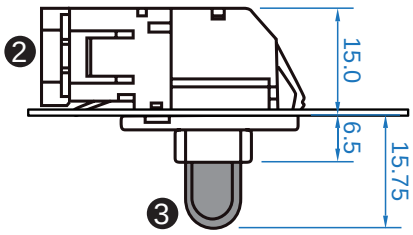
- low cost / precise
- cost efficient integration to new cabinet

unit : mm

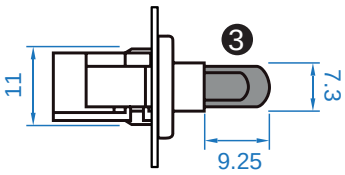
Front View



Top View



Side View



1	Steel mounting plate with 2 screw holes
2	Cable connector
3	Press button (total travel distance : 9.25 mm) (min. actuation distance : 3.00 mm)

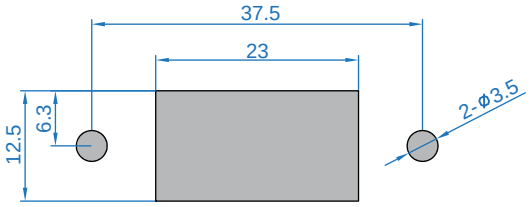
Package content

- Mechanical sensor w/ 2m cable x 2
- Mounting screws 6#32x4.5mm x 2

Requirements

- custom hole cutting required on doors
- ordering a sample for custom cutting is highly suggested
- min. actuation distance : 3.00 mm
- total travel distance : 9.25 mm

unit : mm



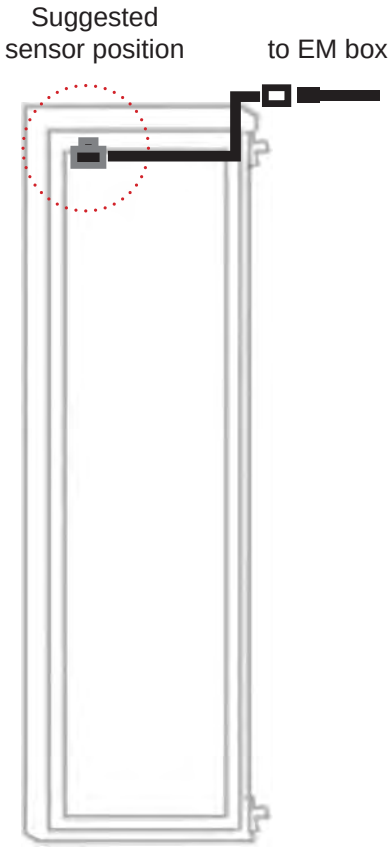
Dimension of door cutting hole

- circle hole x 2 for screw mounting
- rectangle hole x 1 for sensor installation

< 2.2 > Door Sensor

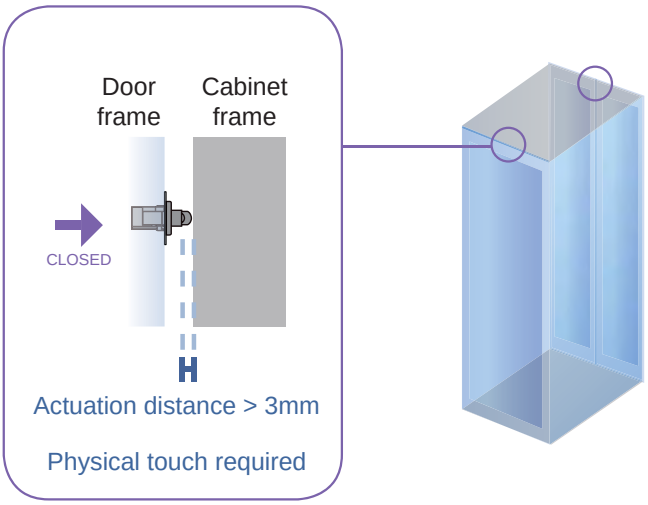
Installation steps

- connect to the EM box
- place the sensor at the top middle of the door
- install the sensor in the custom hole
- secure it with bundled mounting screws 6#32x4.5mm x 2

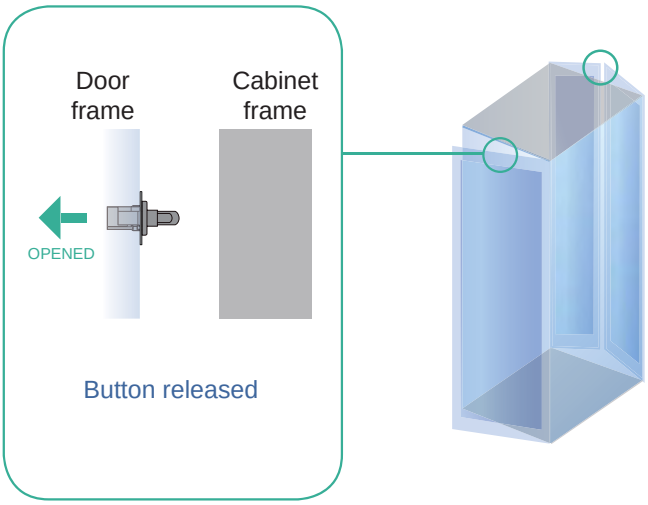


Sensor Operation

DOOR CLOSE
- close door
- Sensor button is pressed on
- DOOR CLOSE SIGNAL sends out



DOOR OPEN
- open door
- Sensor button is released
- DOOR OPEN SIGNAL sends out



< 2.3 > Temp. & Humidity Sensor

Each EM box provides Temp. & Humid. Sensor port x 2. If more TH sensors required, two temp. & humid. sensor ports on each integrated PDU can be applied.

		Temp. & Humid. Sensor	Temp. Sensor
Part no.		**EMS-102**	**EMS-101**
Temperature Sensitivity	Range	0 to 80°C (32 to 176°F)	
	Accuracy	±0.5°C typical (±1°F)	±1°C (±2°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	Green
Housing	Chassis & Cover	Plastic	
	Color	Dark gray	
	Installation	Magnetic base for unrestricted installation	
Connection	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 25W x 18H mm	
Weight	Net	66g	
Supply includes	1	TH Sensor	Temperature Sensor
	2	4-wired 3.5mm to RJ11 cable (2m, black color)	
Compatibility	W / WS / Wi / WSi series PDU		
	X-2000 series		
	EM-1001 / 1002		
Safety Regulatory	FCC & CE certified		
Environmental	RoHS2 & REACH compliant		

< 2.4 > Smoke Sensor

Smoke sensor comes with a RED LED. When smoke alarm triggers, the RED LED lights on with beep sound continuously.

		Smoke Sensor
Part no.		**EMS-201**
Sensitivity	Smoke sensitivity	0.15 ~ 0.3 dB/m
Alarm Output	Solid State Relay	24VDC@1A
	Alarm LED	Red
	Audio Alarm	80 dB
	Audio Alarm Pattern	Continuous beeps
Power Requirement	Voltage	12VDC, powered by sensor port
	Current Consumption	200uA
	Power ON LED	Red LED flashes every 6 seconds
Housing	Chassis & Cover	ABS plastic
	Color	Ivory White
Connection	Cable Length	1m / 3m (option)
Environmental	Operating	-5 to 50°C Degree
	Storage	-10 to 60°C Degree
	Humidity	5~90%, non-condensing
Dimensions	Product	103L x 103W x 55H mm
Weight	Net	165g
Supply includes	1	Smoke Sensor with 1m cable
Compatibility:		X-2000 series
		EM-1001 / 1002
Safety Regulatory		FCC & CE certified
Environmental		RoHS2 & REACH compliant

< 2.5 > Shock Sensor

Shock sensor comes with a RED LED. When shock alarm triggers, the RED LED lights on continuously.

		Shock Sensor
Part no.		**EMS-301**
Sensitivity	Detection radius	3.5 m
	Adjustable sensitivity	Internal micro knob with screwdriver cross slot
Alarm Output	Solid State Relay	12VDC@100mA
	Alarm hold time	Approx. 2.0 sec.
	Alarm LED	Red
Power Requirement	Voltage	12VDC, powered by sensor port
	Current Consumption	15mA
	Power consumption	0.18 Watt
Housing	Chassis & Cover	ABS plastic
	Color	White
Connection	Cable Length	1m / 3m (option)
Environmental	Operating	-5 to 55°C Degree
	Storage	-10 to 60°C Degree
	Humidity	5~90%, non-condensing
Dimensions	Product	26 x 85 x 24 mm
Weight	Net	40g
Supply includes	1	Shock Sensor with 1m cable
Compatibility		X-2000 series
		EM-1001 / 1002
Safety Regulatory		FCC & CE certified
Environmental		RoHS2 & REACH compliant

< 2.6 > Water Sensor

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		Water Sensor
Part no.		EMS-401
	Measurement Range	Wet or Dry (-20°C to 60°C)
	Rope Sensor Length	5m
Power Requirement	Voltage	5VDC, powered by sensor port
	Power consumption	125 mWatt
Connection	Extension cable length	3m (non-detection)
Environmental	Operating	-20 to 60°C Degree
	Storage	-20 to 80°C Degree
Weight	Net	450g (Sensor & extension cable)
Supply includes	1 2	Rope water sensor Extension cable
Compatibility		X-2000 series
		EM-1001 / 1002
Safety Regulatory		FCC & CE certified
Environmental		RoHS2 & REACH compliant

< 2.7 > LED Light Bar

LED light bar can be ON / OFF by door sensor OR always ON by management software setting.

		LED Light Bar
Part no.		**EMS-601-2**
Light	Color	Cool White
	Output	250 Lumens
	Color Temperature	5600-7000K
	Number of LED	18 High Output CREE SMD LED
	Life Expectancy	30,000 hrs
Power Requirement	Voltage	12VDC, powered by sensor port
	Current Consumption	0.375A
	Power consumption	4.5 Watt
Housing	Chassis	Extruded aluminum with silver powder coat
	Diffuser	Acrylic with milky white
	Installation	Magnetic base for unrestricted installation
Connection	Cable Length	2m / 3m (option)
Environmental	Operating	-20 to 50°C Degree
	Storage	-20 to 60°C Degree
	Relative Humidity	5~90%, non-condensing
Dimensions	Product	300L x 20W x 12H mm
Weight	Net	84g
Compatibility		X-2000 series
		EM-1001 / 1002
Safety Regulatory		FCC & CE certified
Environmental		RoHS2 & REACH compliant

< 2.8 > LED Beacon

The LED Beacon can be stuck firmly by the bundled adhesive tape.

		LED Beacon
Part no.		**EMS-602**
Notification	Len Color	Blue
	Light Source	White
	Flash Rate	120 flashes per minute
Power Requirement	Voltage	12VDC, powered by sensor port
	Current Consumption	0.175A
Housing	Cover Len	Polycarbonate
	Color	Blue
Connection	Cable Length	1m / 3m
Environmental	Operating	-20 to 50°C Degree
	Storage	-20 to 60°C Degree
	Relative Humidity	5~90%, non-condensing
Dimensions	Product	72L x 72W x 45H mm
Weight	Net	50g
Supply includes	1	LED Beacon with 1m cable
Compatibility		X-2000 series
		EM-1001 / 1002
Safety Regulatory		FCC & CE certified
Environmental		RoHS2 & REACH compliant

Part III. PDU / Fan Unit Installation & Specifications

< 3.1 > PDU

Under **EM-1001** network, each Box supports intelligent PDU x 4 in a daisy chain.
Each PDU comes with Temp. & Humid. sensor port x 2

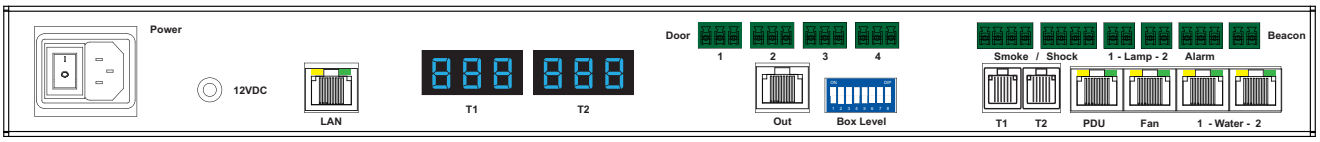
W series : monitored PDU

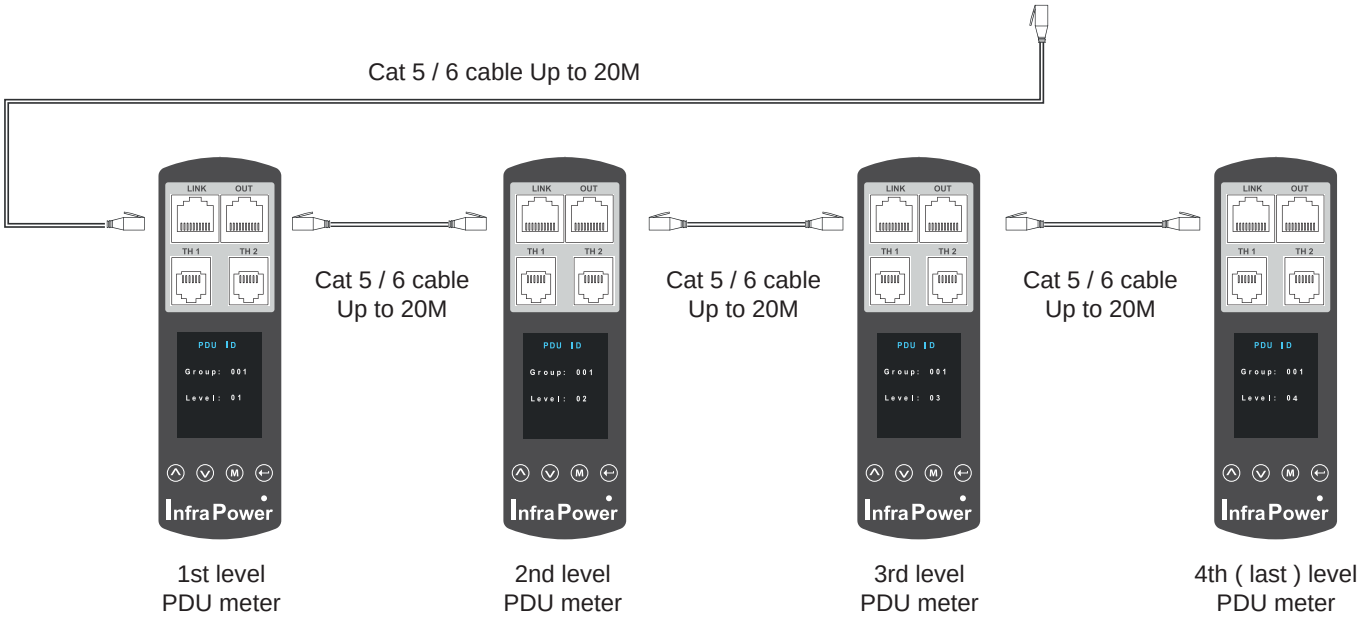
WS series : switched PDU

WSi series : outlet level measurement switched PDU

Please visit below link to select desired PDU & call for the PDU drawing & specifications.
http://www.rackmountmart.com/html/pdu-kwh.htm

EM-1001





Max. daisy chain distance from EC box to the 4th PDU up to 80M

PDU level setting :

Display 9.1

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

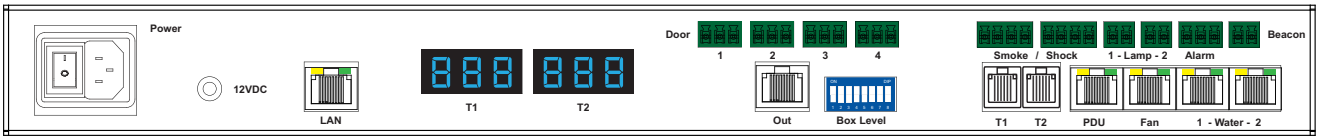
Step 4 - Press ↵ to exit

For details about PDU level setting, please refer to IPM-03 user manual < 3.1 > :
http://www.rackmountmart.com/dataSheet/IPM-03.pdf

< 3.2 > Fan Unit

Under **EM-1001** network, each Box supports RA4015 / RA4017 remote fan unit x 4 in a daisy chain.
Each fan unit comes with TEMP. sensor port x 1

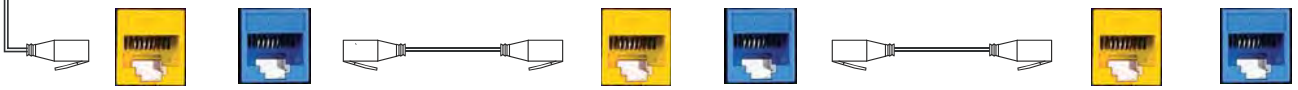
EM-1001



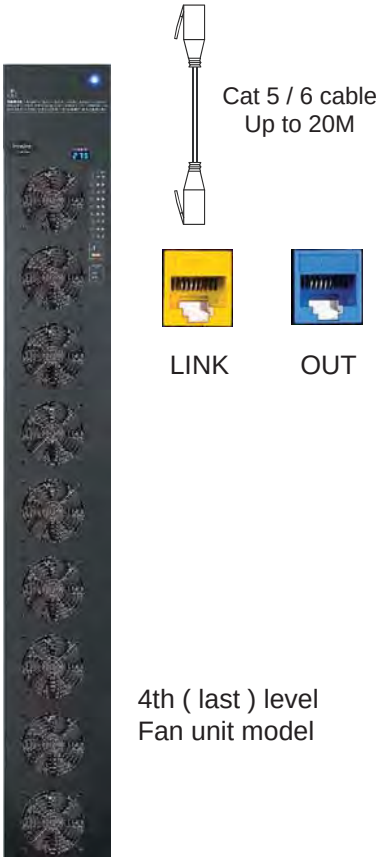
1st level
Fan unit model

2nd level
Fan unit model

3rd level
Fan unit model

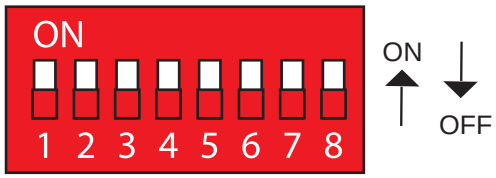


Max. daisy chain distance from EM box to the 4th fan unit up to 80M



4th (last) level
Fan unit model

< 3.2 > Fan Unit



Fan unit level setting :

Using the dip switch no. 1, 2, 3, 4, 5, 6 & 8 to setup each FAN unit level as below :

Cascaded FAN units	Dip switch no.						
	1	2	3	4	5	6	8
1st level Fan Unit Model	On	On	On	On	On	On	Off
2nd level Fan Unit Model	Off	On	On	On	On	On	Off
3rd level Fan Unit Model	On	Off	On	On	On	On	Off
4th level Fan Unit Model	Off	Off	On	On	On	On	Off

**** No. 7 dip switch only for audio alarm setting**

Using the dip switch no. 7 to setup each FAN unit audio alarm as below :

	Dip switch 7
Enable	On
Disable	Off

If enable the audio alarm, the buzzer will sound when the outside temperature is over the preset alarm temperature.

Model : RA4015-3-R

1U Fan Tray with 3 fans

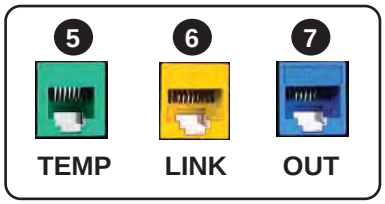
FC CE RoHS REACH

❷ - Unit CFM Status LED
- Unit CFM Setting

❹ - DIP switch for daisy chain level setting

❶
- Individual fan status
- Individual fan On / Off buttons

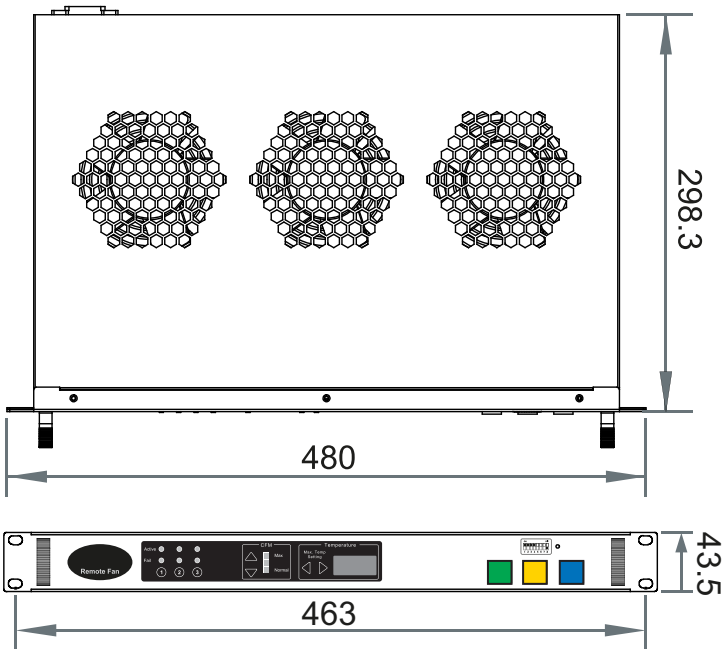
❸
- Buttons for Alarm Temp. Setting
- Temp. LED display



⑤ - Temp. port bundled w/ a temp. sensor

⑥ - Daisy chain LINK port for connecting to the out port of the last level fan unit

⑦ - Daisy chain OUT port for connecting to the link port of the next level fan unit



< 3.2 > Fan Unit

Model : RA4015-6-R

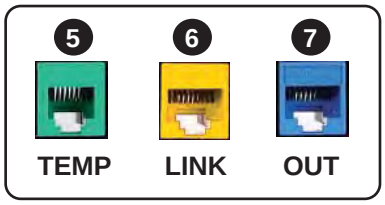
1U Fan Tray with 6 fans

2 - Unit CFM Status LED
- Unit CFM Setting

4 - DIP switch for daisy chain level setting

1 - Individual fan status
- Individual fan On / Off buttons

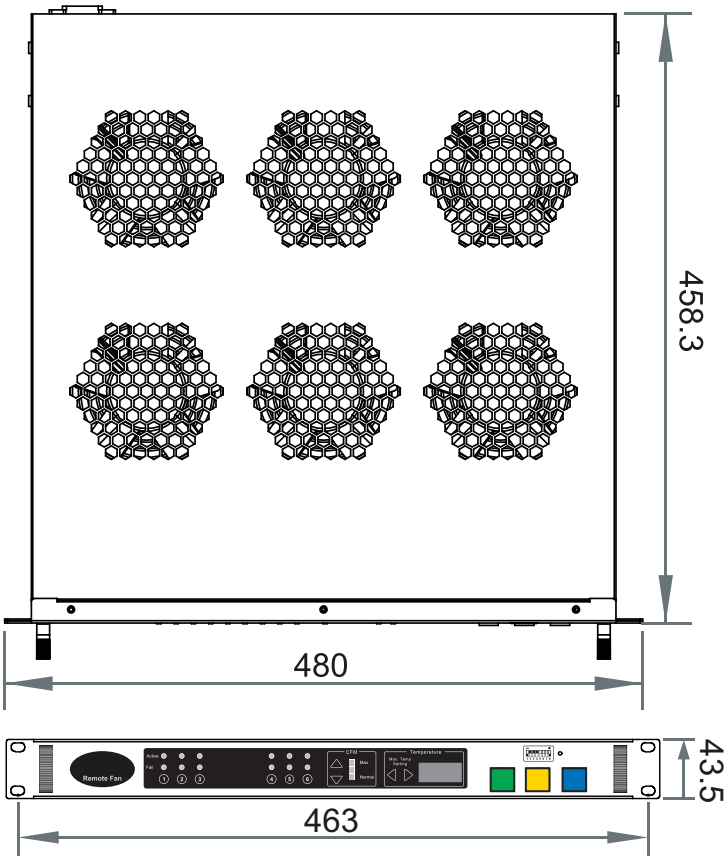
3 - Buttons for Alarm Temp. Setting
- Temp. LED display



⑤ - Temp. port bundled w/ a temp. sensor

⑥ - Daisy chain LINK port for connecting to the out port of the last level fan unit

⑦ - Daisy chain OUT port for connecting to the link port of the next level fan unit



Model : RA4015-9-R

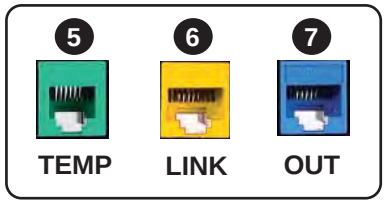
1U Fan Tray with 9 fans

2 - Unit CFM Status LED
- Unit CFM Setting

4 - DIP switch for daisy chain level setting

1 - Individual fan status
- Individual fan On / Off buttons

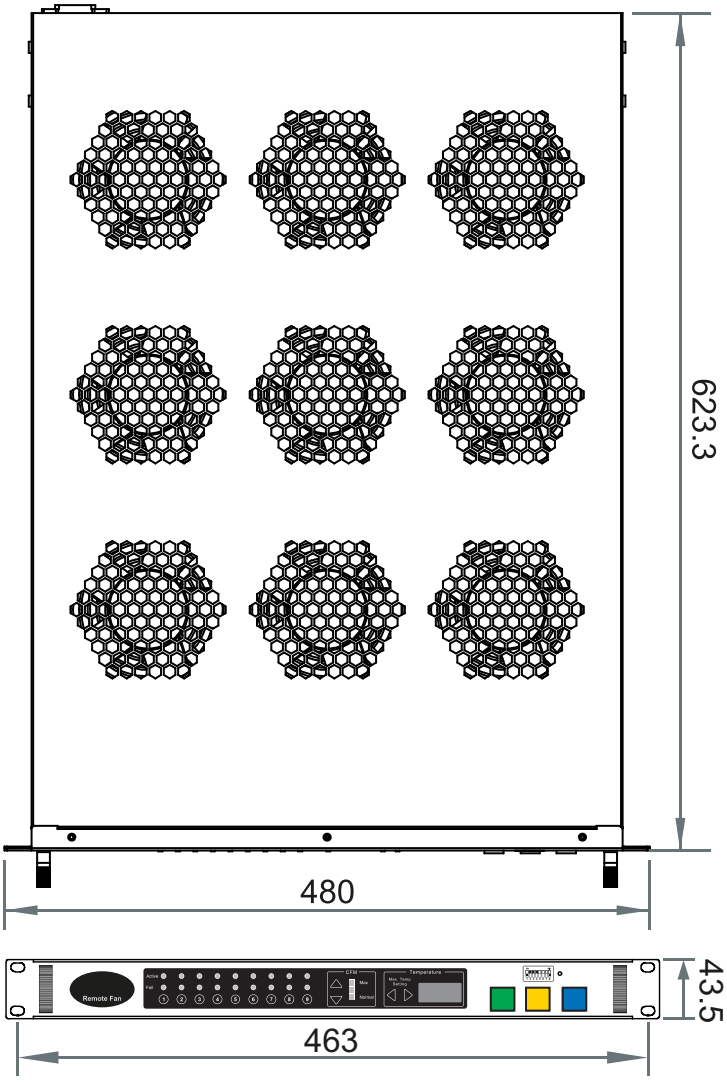
3 - Buttons for Alarm Temp. Setting
- Temp. LED display



⑤ - Temp. port bundled w/ a temp. sensor

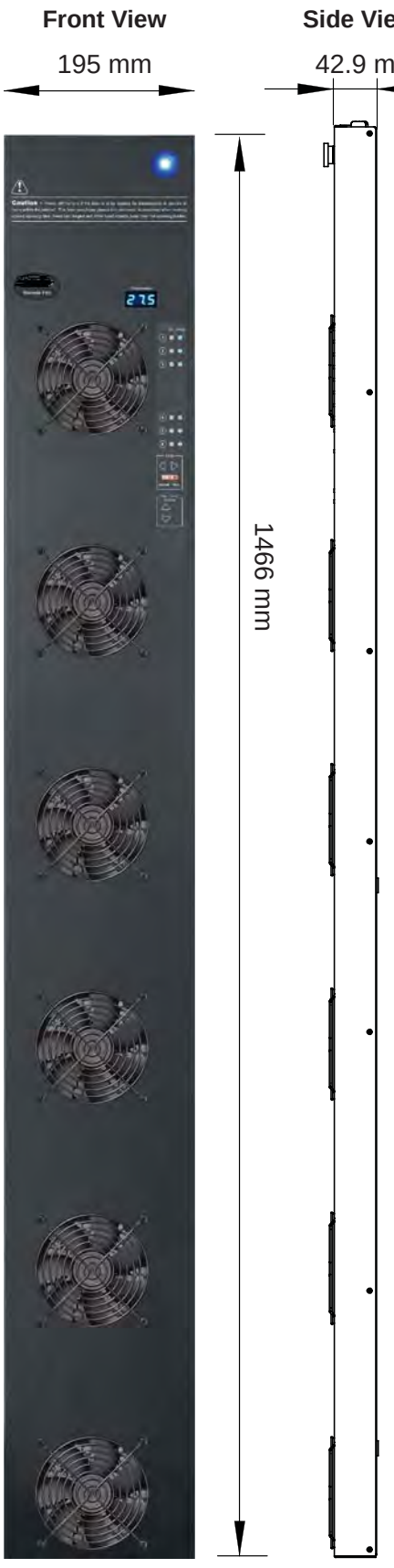
⑥ - Daisy chain LINK port for connecting to the out port of the last level fan unit

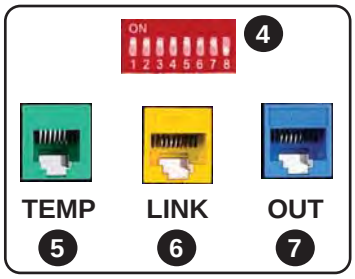
⑦ - Daisy chain OUT port for connecting to the link port of the next level fan unit



< 3.2 > Fan Unit

Model : RA4017-6-R 33U Door Mount Fan Panel with 6 fans



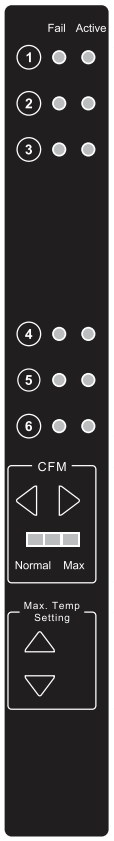


④ - DIP switch for daisy chain level setting

⑤ - Temp. port bundled w/ a temp. sensor

⑥ - Daisy chain **LINK** port for connecting to the out port of the last level fan unit

⑦ - Daisy chain **OUT** port for connecting to the link port of the next level fan unit



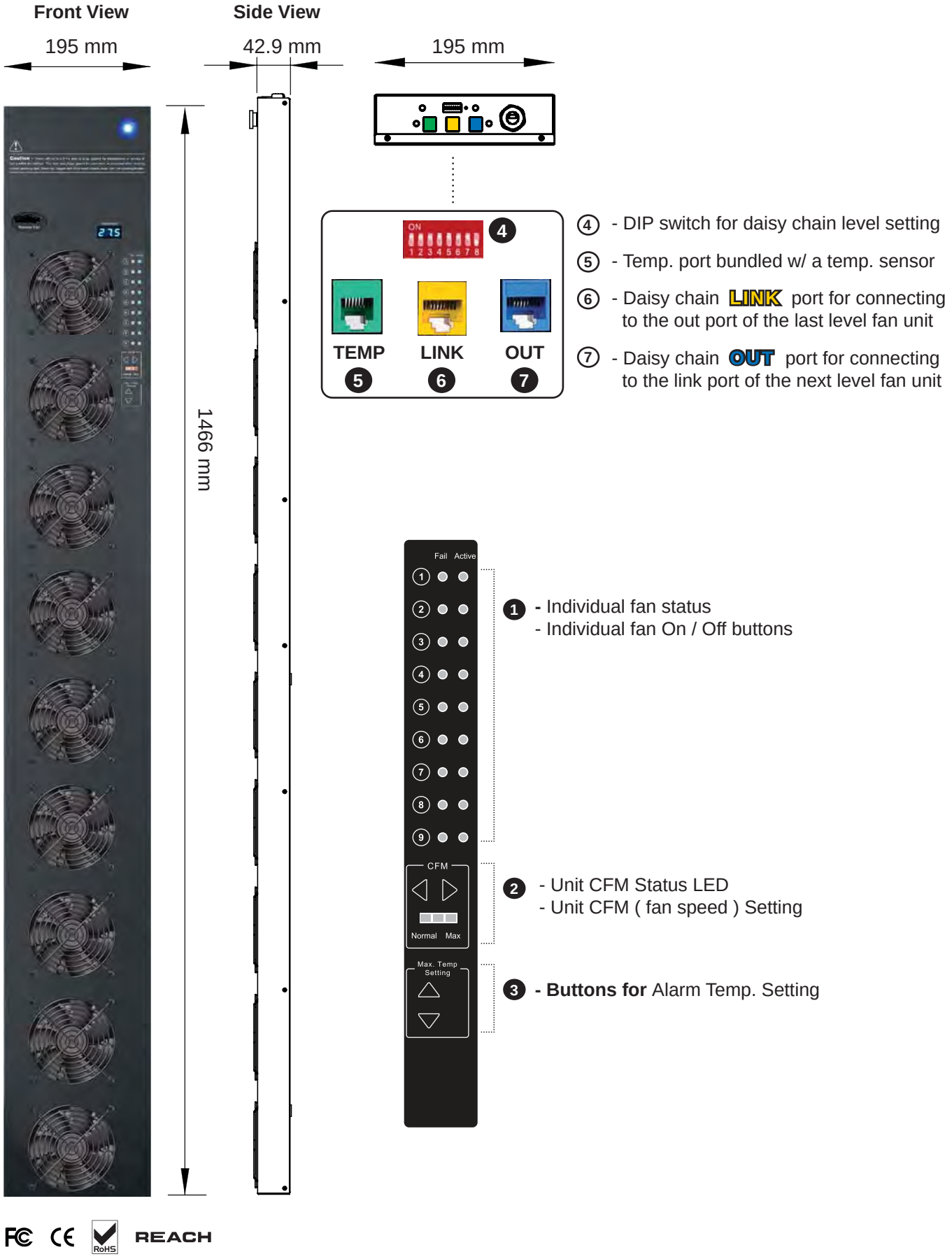
❶ - Individual fan status
- Individual fan On / Off buttons

❷ - Unit CFM Status LED
- Unit CFM (fan speed) Setting

❸ - **Buttons for** Alarm Temp. Setting

FC CE RoHS REACH

Model : RA4017-9-R 33U Door Mount Fan Panel with 9 fans



FC CE RoHS REACH

< 3.2 > Fan Unit

Remote Fan	Model	**RA4015_R**	**RA4017_R**
	No. of Fan	3 / 6 / 9	6 / 9
	Mounting	1U	Door mount
	CFM Level	Normal / High / Max.	
	Individual Fan ON / OFF	Yes	
	Individual Fan CFM	108 CFM	
	Unit CFM (Approximately)	324 / 648 / 972 CFM	648 / 972 CFM
	IP Remote Access	Not available, must be via Master IP fan on the 1st level	
	Daisy Chain Level	2nd to 16th level	

Temperature Sensor	Temperature Port	1 x temperature sensor port (sensor bundled)	
	Measurement Range	0 to 99.9°C	
	Measurement Accuracy	+/- 1.5%	
	Temperature Alarm	Yes	

Power	Input	100V or 240V AC at 50 or 60Hz via IEC type cord	
	Consumption	20W / 40W / 60W	40W / 60W

Environmental Conditions	Operating	0 to 50°C
	Storage	-5 to 60°C
	Relative Humidity	90%, non-condensing
	Shock	50G peak acceleration (11ms, half-sine wave)
	Vibration	58~100Hz / 0.98G (11ms / cycle)

Dimensions	**Model**	Product Dimension
	RA4015-3-R	480 x 298.3 x 43.5 mm 18.9 x 11.7 x 1.71 inch
	RA4015-6-R	480 x 458.3 x 43.5 mm 18.9 x 18 x 1.71 inch
	RA4015-9-R	480 x 623.3 x 43.5 mm 18.9 x 24.5 x 1.71 inch
	RA4017-6-R	195 x 42.9 x 1466 mm 7.7 x 1.7 x 57.7 inch
	RA4017-9-R	195 x 42.9 x 1466 mm 7.7 x 1.7 x 57.7 inch

Weight	**Model**	Net Weight
	RA4015-3-R	4 kgs / 8.8 lbs
	RA4015-6-R	6.8 kgs / 15 lbs
	RA4015-9-R	9 kgs / 19.8 lbs
	RA4017-6-R	4.3 kgs / 9.5 lbs
	RA4017-9-R	5 kgs / 11 lbs

Safety Regulatory	FCC & CE certified

Environmental	RoHS2 & REACH compliant

Part IV. Software

< 4.1 > Key Features

Software Management IGM-03 is a FREE environmental control management software to monitor up to 30 Master IP Groups remotely (max. 16 box levels in each Master IP Group), total 480 boxes.

Each box can connect a variety of sensors to provide an environmental monitoring solution to secure high levels of data center operational stability and flexibility.

To enhance the functionality, up to 1920 x kWh PDU / Fan Unit can be monitored through IGM-03 GUI as well.

5 concurrent user license is bundled to achieve the demand of multi-user / multi-tasking in nowadays' time sharing data center operation.

Software Management IGM-03

Features		
Capacity	Master IP Group (Just 1 IP for 16 EM box levels)	30
	Numbers of boxes	480
	Concurrent user	5
Device Overview	Status of Sensor, PDU, Fan Unit & Door	✔
	Device / Audio and Visual Output Setting	✔
Sensor Peripherals	Status Monitoring	✔
	Location of Sensor / Peripherals	✔
	Temp-Humid Alarm / Rising Alert Threshold Setting	✔
PDU	Energy Consumption kWh / Amp Monitoring	✔
	Outlet Level Measurement	✔
	PDU Outlet Schedule	✔
	Outlet Switch ON / OFF	✔
	Amp Alarm Threshold Setting	✔
	Amp Rising / Low Alert Threshold Setting	✔
	Temp-Humid / Circuit Breaker Monitoring	✔
Fan Unit	CFM & Temp. Monitoring	✔
	Unit CFM (fan speed) Setting	✔
	Auto CFM Control Setting	✔
	Individual Fan Kit ON / OFF	✔
	Fan Unit ON / OFF	✔
Event Log / Report	System & Device Event	✔
	Device Log / Reporting	✔

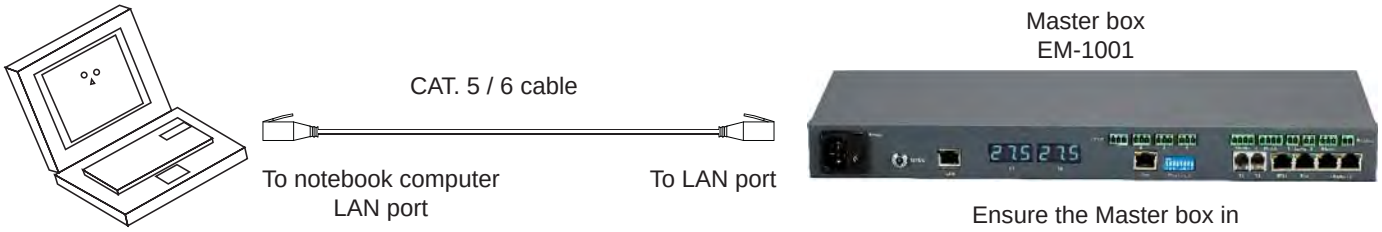
< 4.2 > Master IP Configuration

Please take the following steps to configure the EM-1001.

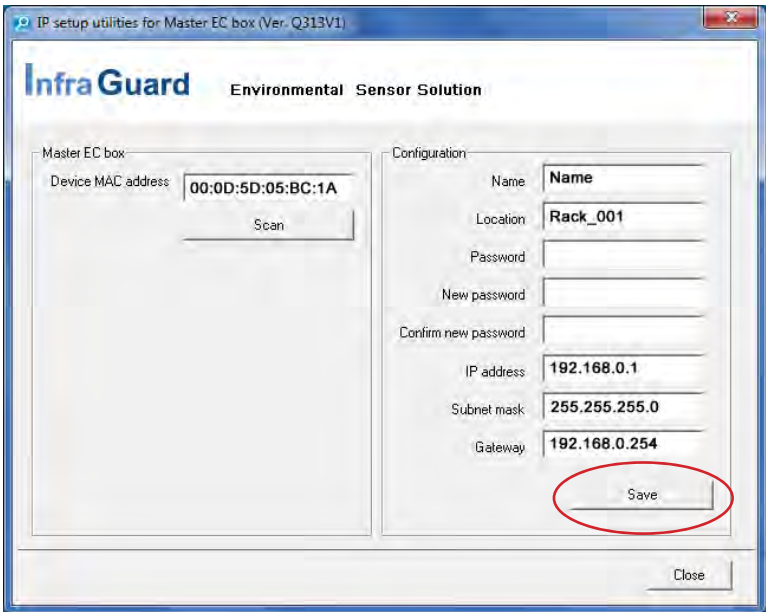
Step 1. Prepare a notebook computer to download the IP setup utilities from the link :
http://www.rackmountmart.com/downloads.html

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

Step 3. Go to each Master box with the notebook computer & a piece of CAT. 5 / 6 cable to set up the IP configuration by IP setup utilities as below. Please take the procedures for all Master boxes **ONE BY ONE**



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



Write down the new IP address & password for < Setup > purpose, refer to P.39

Step 4. Click **" Scan "** to search the Master box
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 mas**k " / " **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

< 4.3 > Hardware Requirements of The Management PC

Please prepare a management PC with the hardware requirements as below for Software Management - IGM-03

Recommended hardware requirements :

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

- The default service port of web server is 80.

- A dedicated PC to run Software Managemant - IGM-03 is recommended.

- Make sure the management PC is POWER ON & IGM-03 is under operation. Otherwise, daily data backup will NOT be proceeded.

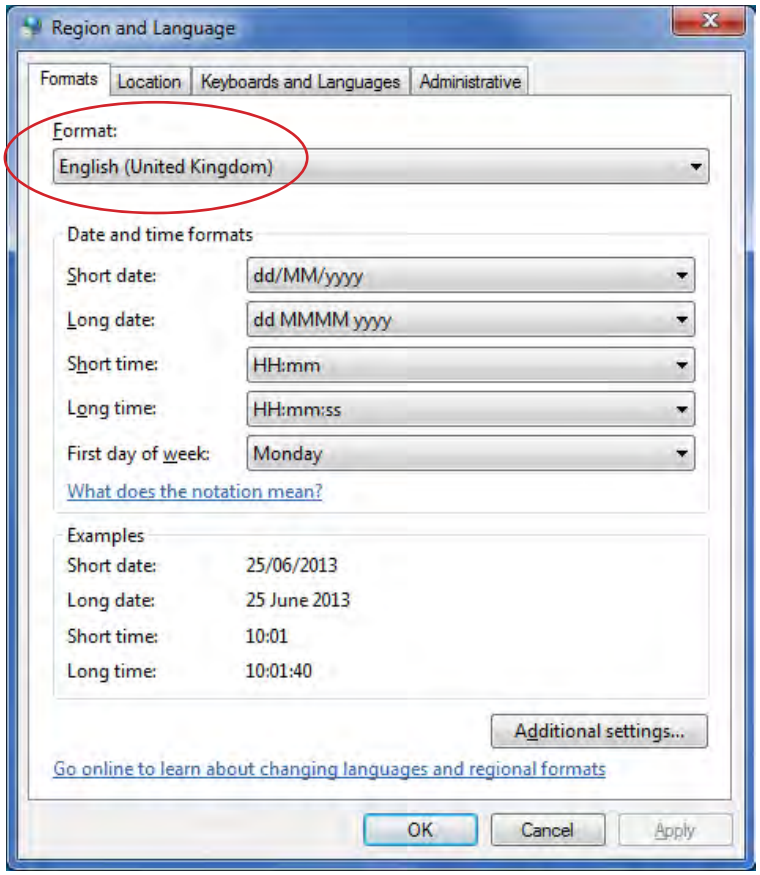
< 4.4 > Supported OS Platform & Language

Software Management – IGM-03 supports the OS platforms & languages as below:
- MS Windows 7 Professional with SP1 (English Edition)
- MS Windows 7 Ultimate with SP1 (English Edition)
- MS Windows 8 Professional (32bit & 64bit, English edition only)
- MS Windows Server 2003 R2 Standard Edition with SP2 (English Edition)
- MS Windows Server 2008 Standard Edition SP2 (English Edition)
- MS Windows Server 2008 R2 Standard Edition SP1 (English Edition)

Make sure users login the management PC as a member of " Administrator " Group before IGM-03 installation & 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)



< 4.5 > Software Download

Software download

Please download the InfraGuard Manager - IGM-03 to the management PC from the link http://www.rackmountmart.com/downloads.html

Double click the IGM-03.msi and follow the instruction to complete the installation.

click " **Next** "

click " **Install** "

click " **Finish** "

Complete

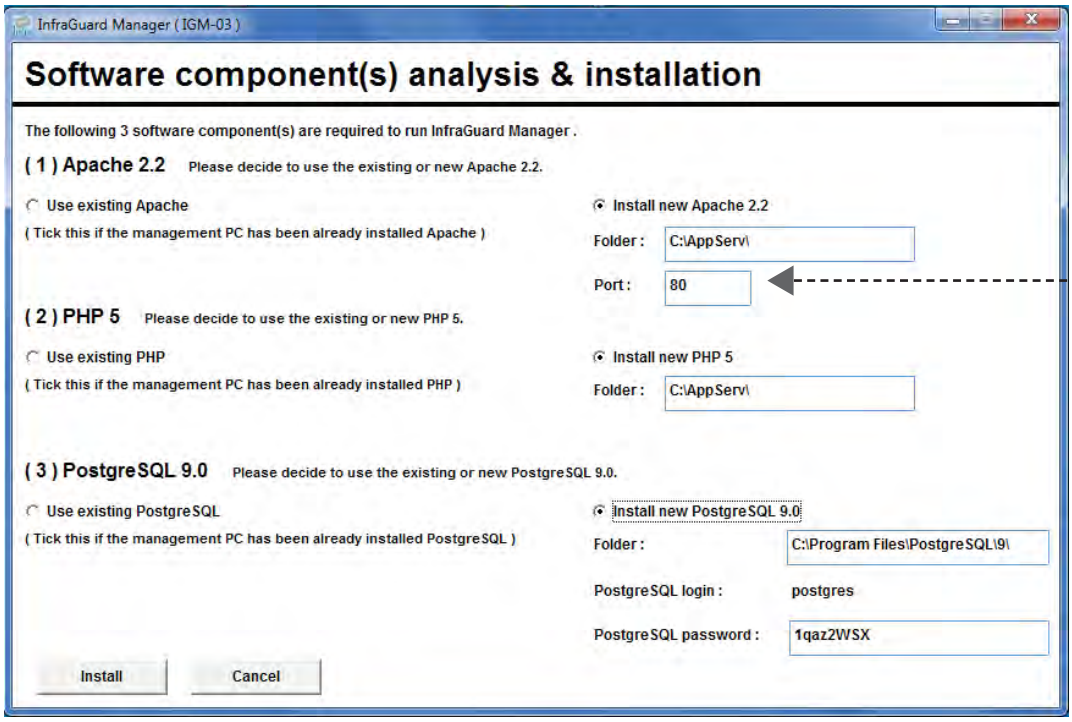
< 4.6 > First Time Start-up Setting

Step 1. Double Click InfraGuard Manager - IGM-03 and follow the instruction to complete start-up setting.

IGM-03
InfraGuard Manager

Step 2. Click " **Next** " in " **InfraGuard 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.

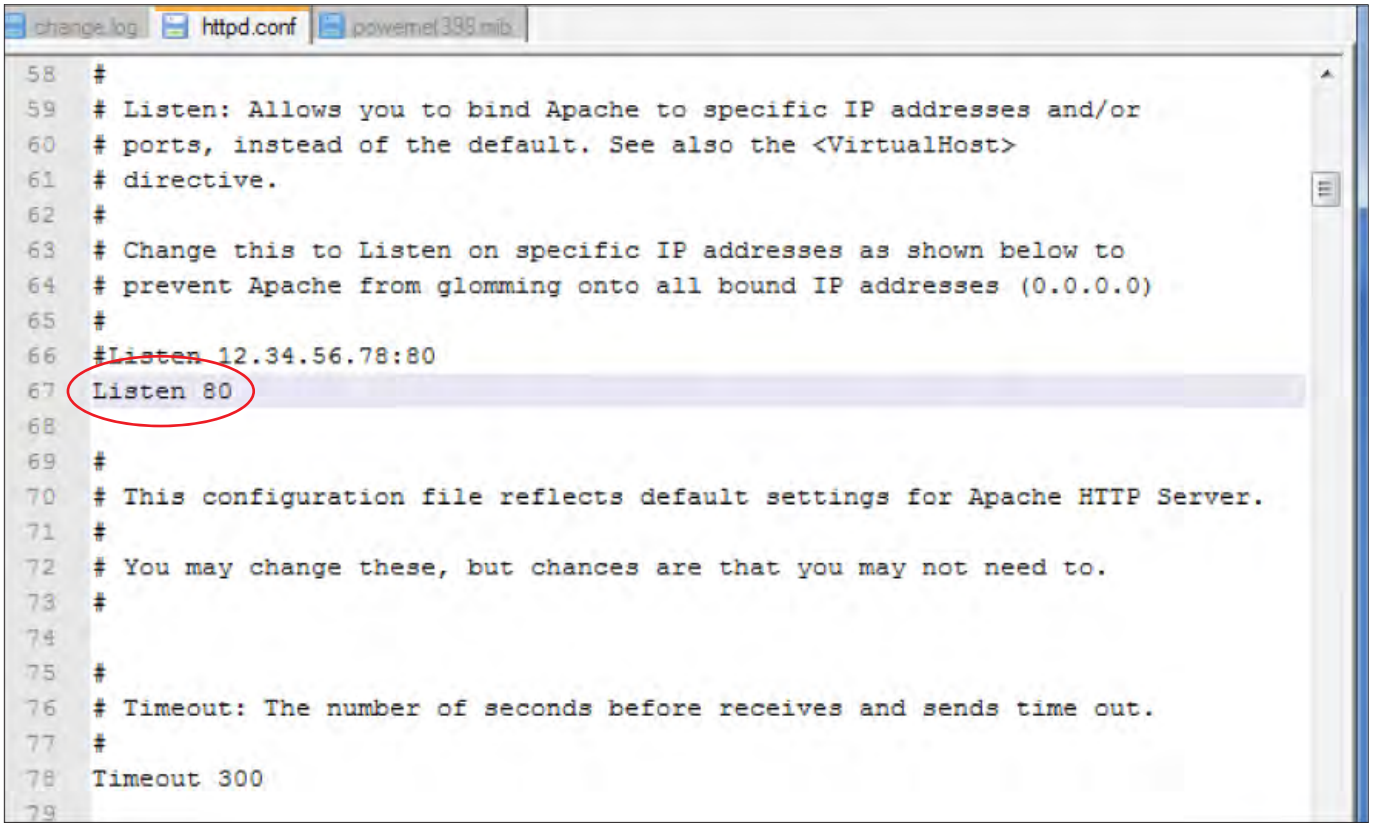
PostgreSQL password can be changed by user.
The password **MUST** contain at least three of the following four character groups:
- English uppercase characters (A through Z)
- English lowercase characters (a through z)
- Numerals (0 through 9)
- Non-alphabetic characters (such as !, $, #, %)

< 4.7 > Change Port no. of Web Server

If users want to use another port no. instead of 80, please take the following steps after InfraGuard Manager IGM-03 " **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** "

Complete

Part V. System Setup & Remote Access

< 5.1 > System Setup

Users can follow below step 1 - 3 to access the management PC and InfraGuard Manager IGM-03

Step 1. Open Internet Explorer (I.E.), version 8.0, 9.0 or 10.0

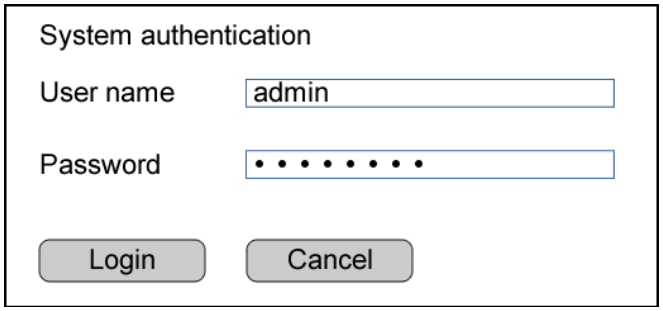
Step 2. Enter the URL of management PC into the address bar

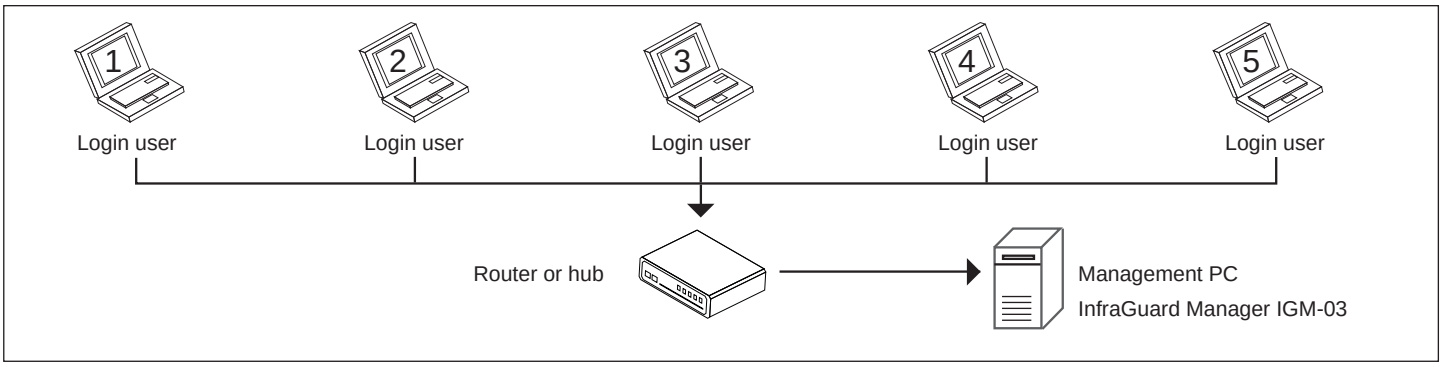
(If fail to access, please ask MIS to check if the port for web server is enable. Default port : 80)

e.g. http://192.168.0.1/IGM-03/

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** >

< 5.1 > 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

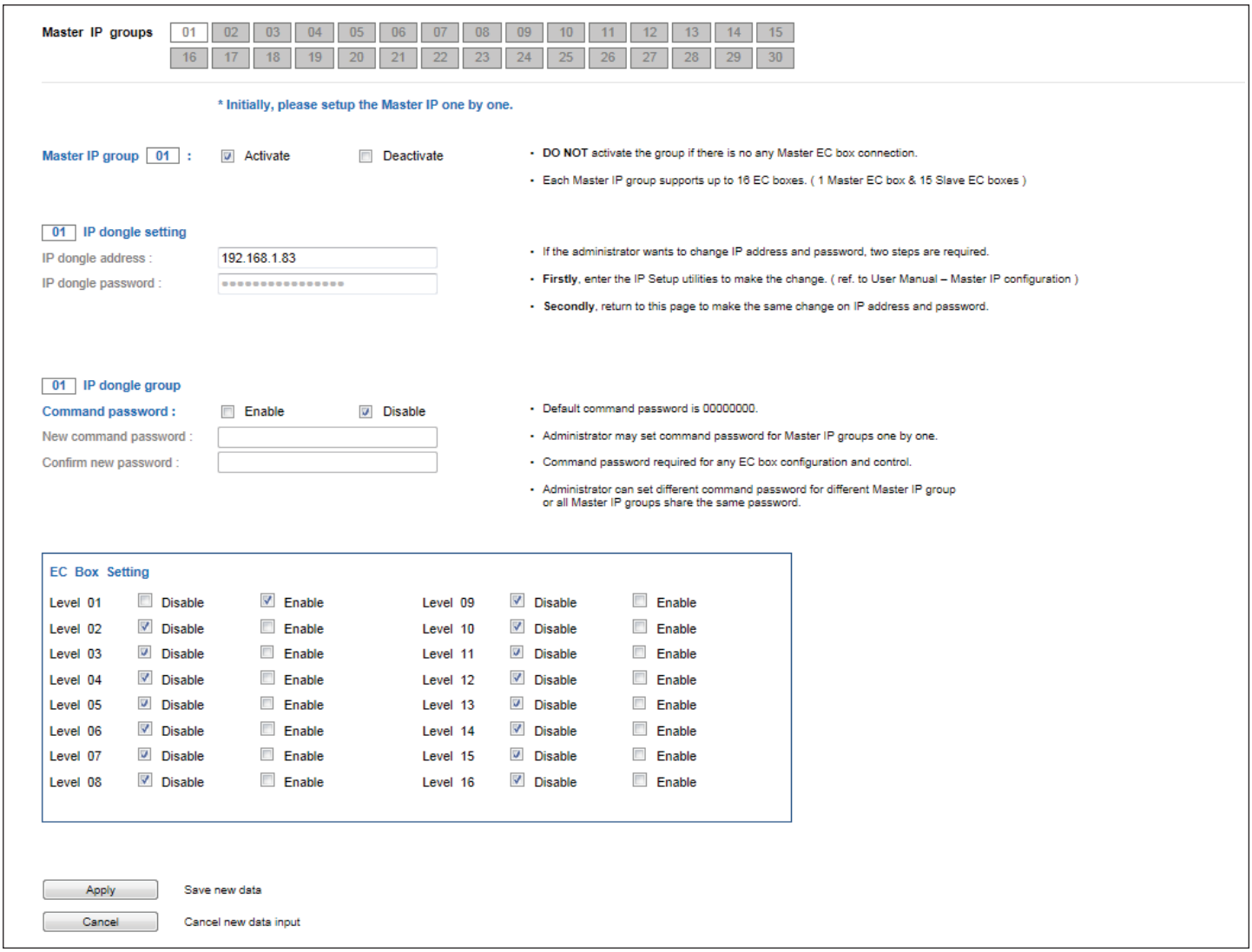
Step 4. Repeat Step 1 to 3 for other operators if necessary

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

< 5.1 > System Setup

In **< Setup >** page, administrator can
- Activate max. 30 Master IP groups
- Set the group command password
- Enable / disable the EC box levels

Step 1. " Activate " Master IP 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 Master IP group setup
Step 7. " **Enable** " the EC box connected to the Master IP group
Step 8. Click " **Apply** " to finish the EC box setting
Step 9. Repeat step 1 to 9 for other Master IP groups if necessary



< 5.1 > 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** " , " **SMTP port** "

Step 3. Input sender email account in " **User email** "

Step 4. Input sender name in " **User name** "

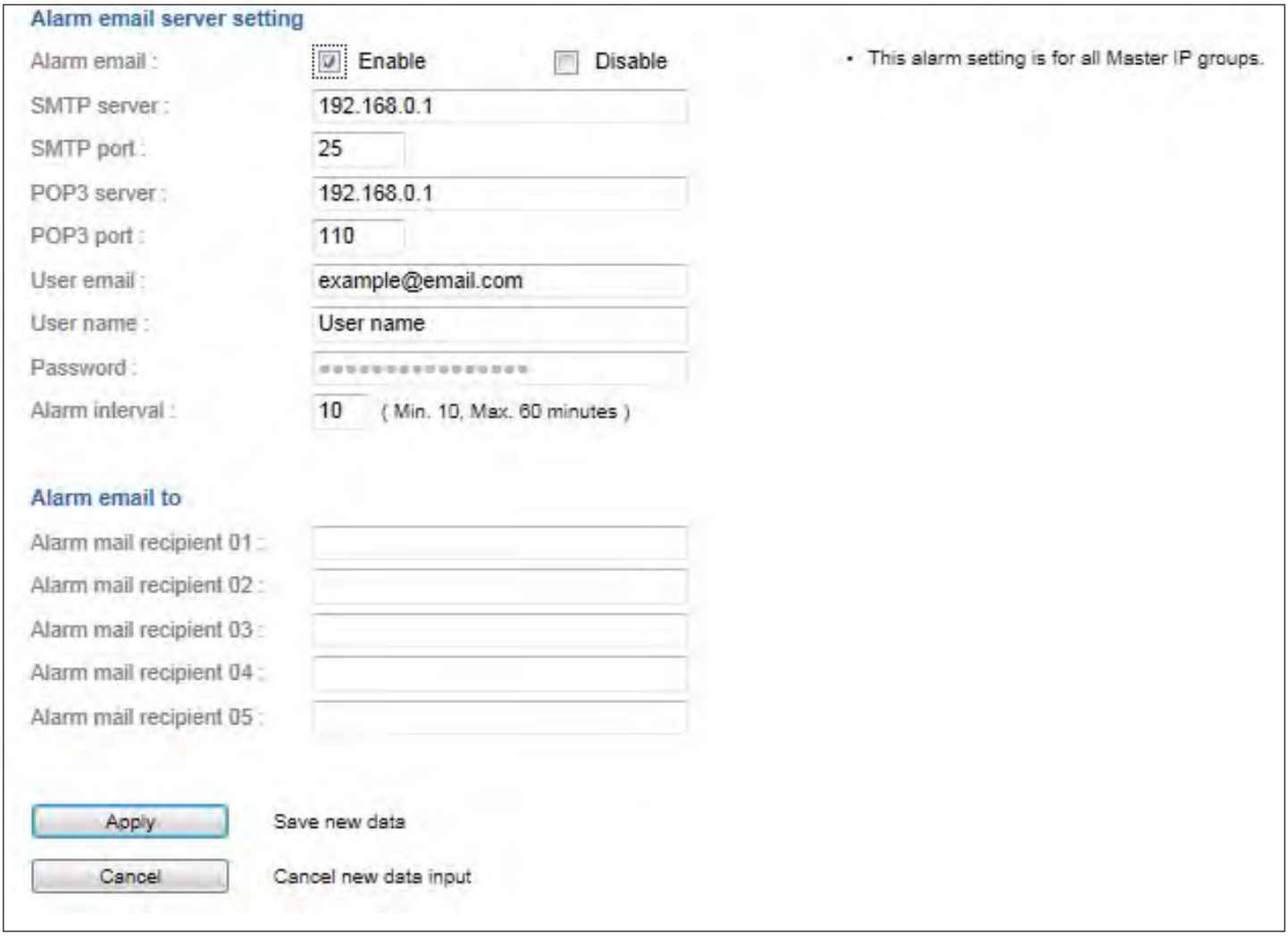
Step 5. Input sender email account password in " **Password** "

Step 6. Input the " **Alarm interval** "

Step 7. Input the alarm recipient email account in " **Email address 01** "

Step 8. Repeat step 7 from other alarm recipients if necessary

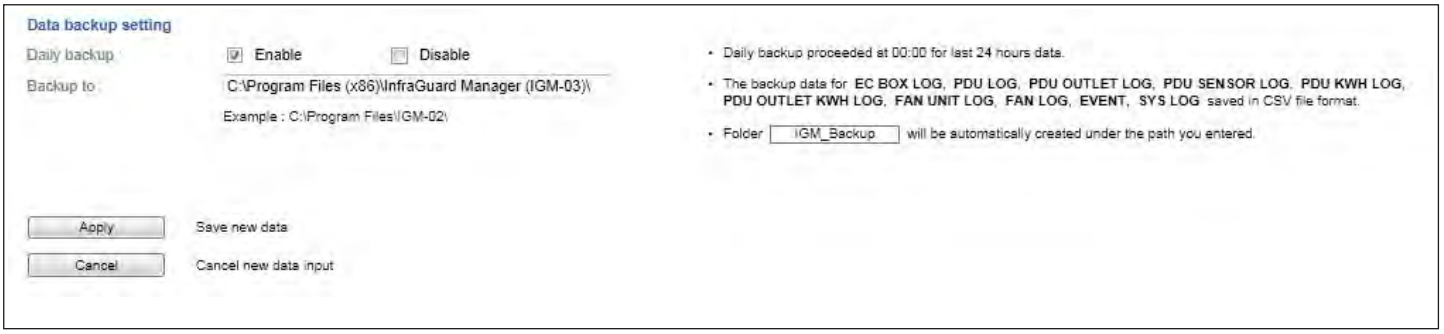
Step 9. Click " **Apply** " to finish the alarm email server settings



< 5.1 > System Setup

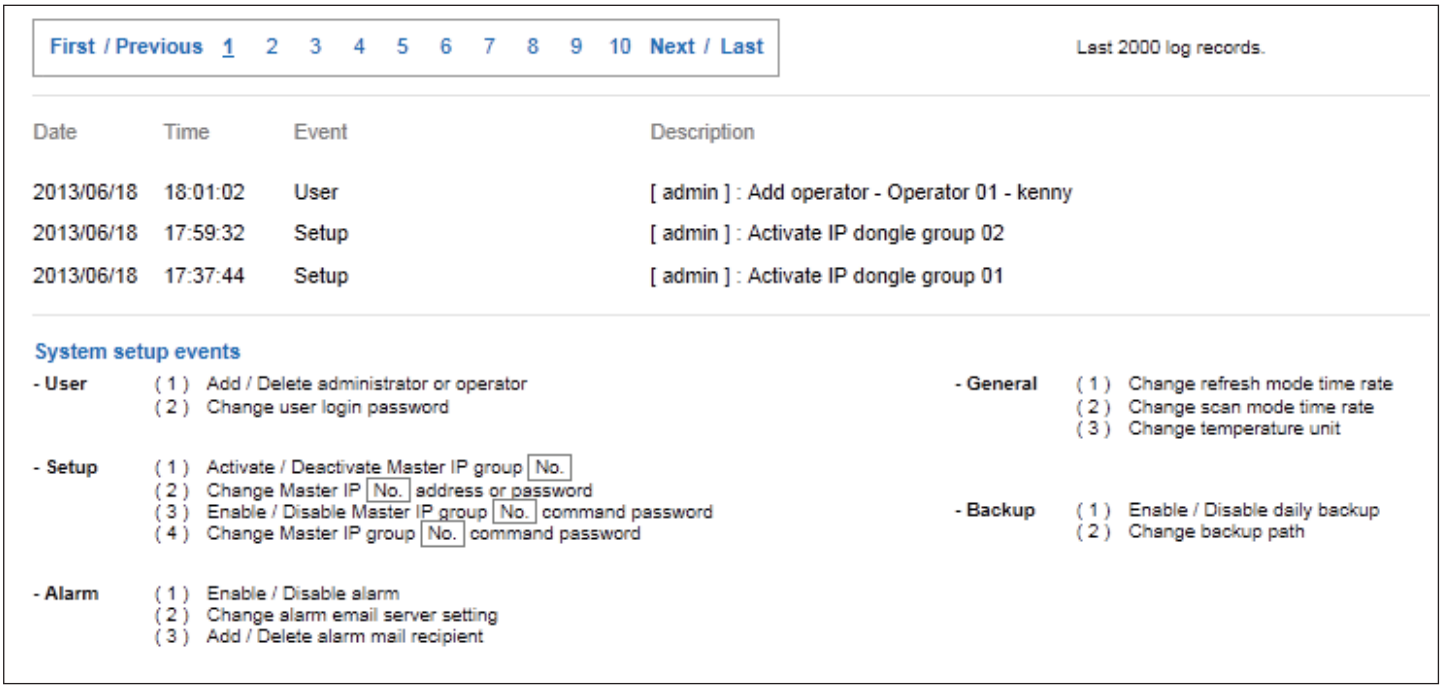
In < **General** > , administrator can change the " **Refresh rate** " , " **Scan rate** " & " **Temperature unit** " across all Master IP groups

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



< 5.1 > System Setup

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



< 5.2 > 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 & InfraGuard Manager IGM-03

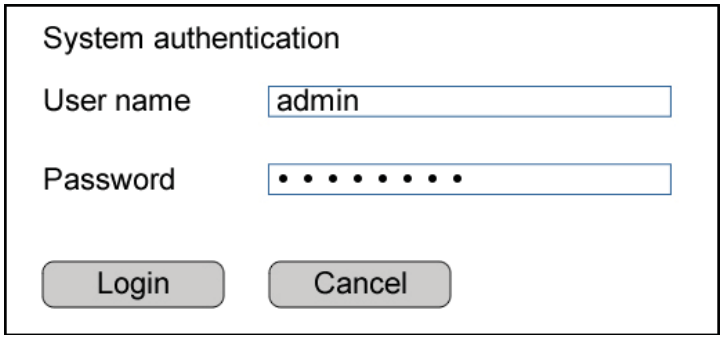
Step 1. Add the port of web server in the firewall settings of the management PC.
- Open " **Control Panel** "
- Select " **Windows Firewall "**
- Select " **Advanced settings "**
- Right Click " **Inbound Rules** " & select " **New Rule…** "
- Select " **Port** " & Click " **Next>** "
- Select " **TCP** " then " **All local port**s " & 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 InfraGuard Manager IGM-03 in the address bar
e.g. http://192.168.0.1/IGM-03/

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/IGM-03/

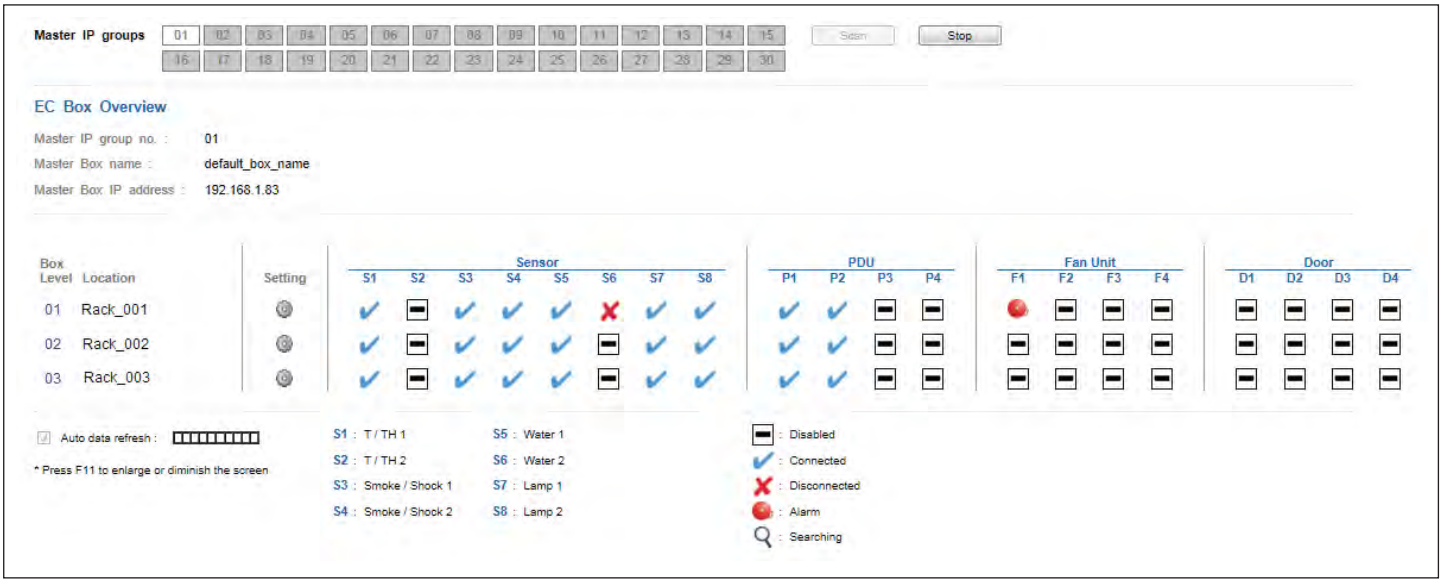
Step 4. System authentication page pops up automatically.
Input " **User name** ", " **Password** " & Click " **Login** "



Part VI. Devices Monitoring & Setting

< 6.1 > Devices Overview

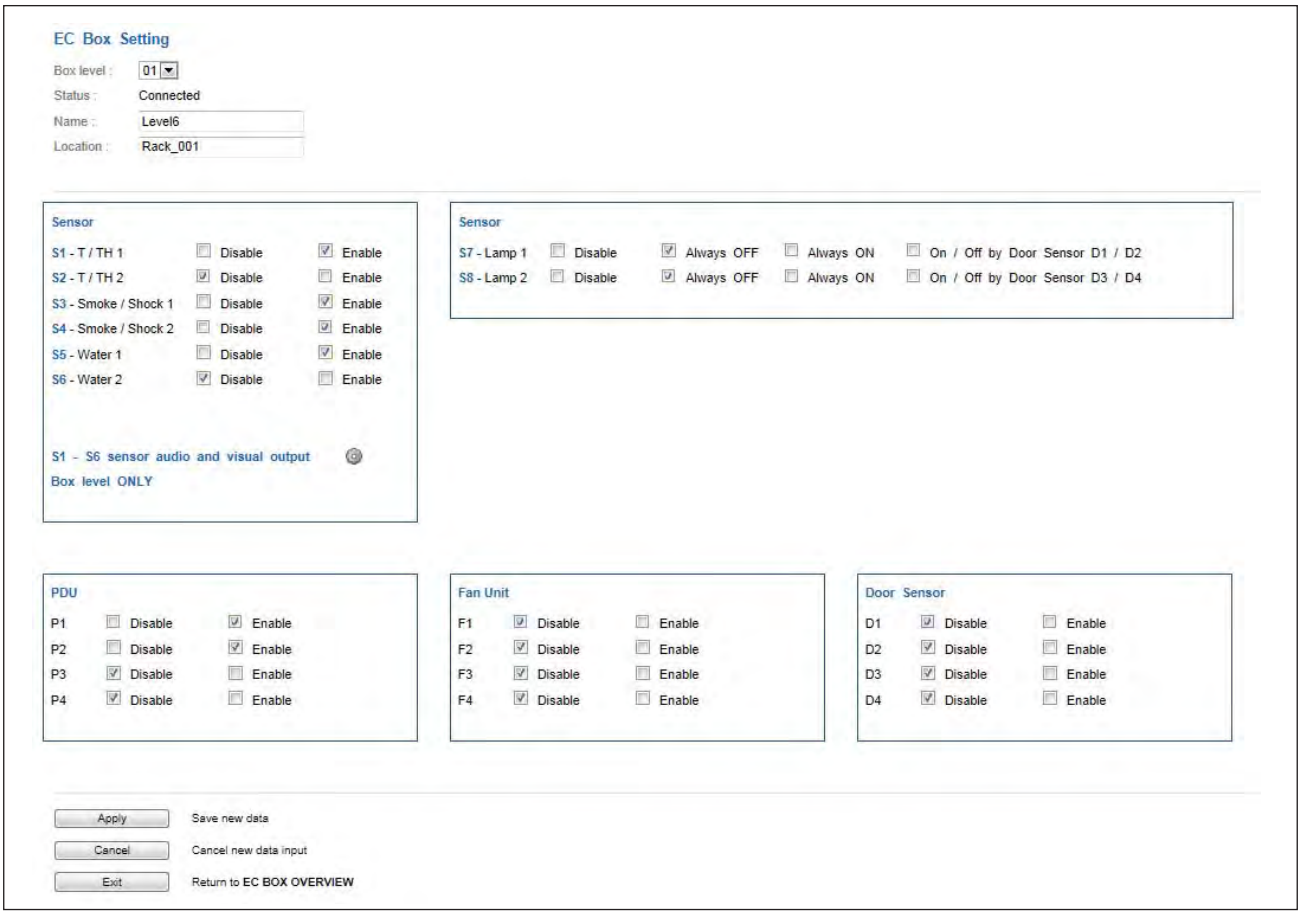
< EC Box Overview > provides a scan overview on the status of sensors, PDUs, fan units & doors based on Master IP group



In < **EC Box Device Setting** > user can disable or enable :

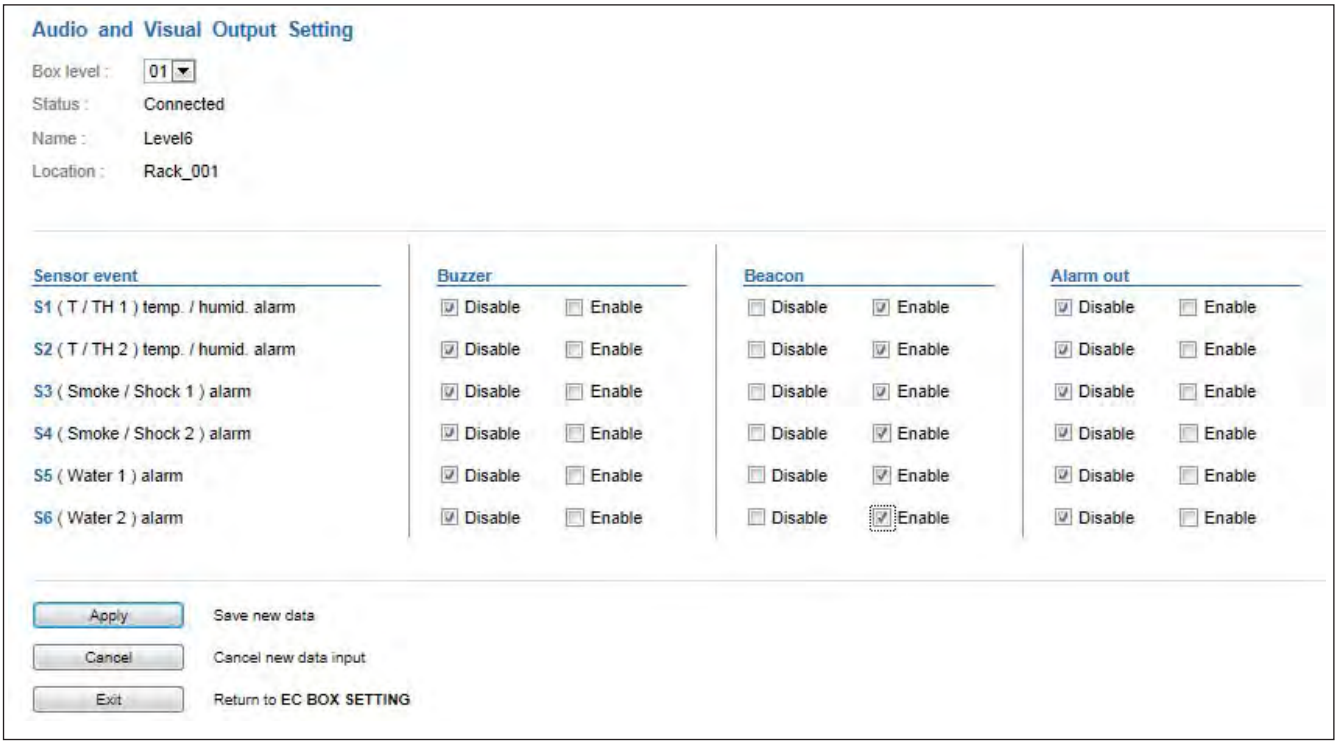
- T / TH sensor, Smoke / Shock sensor, Water sensor, Door sensor
- PDU, Fan unit, LED light bar
- Click " **Apply** " to finish the above settings

DO NOT Enable devices if not connected



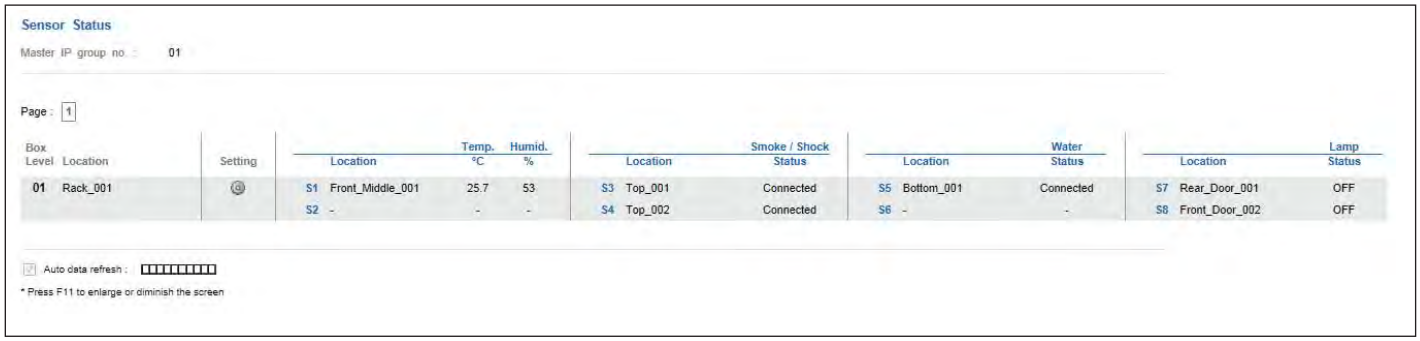
< 6.1 > Devices Overview

In < **Audio and Visual Output Setting** >, user can enable or disable " **Buzzer** ", " **Beacon** " & " **Alarm out** " output when sensor event is triggered



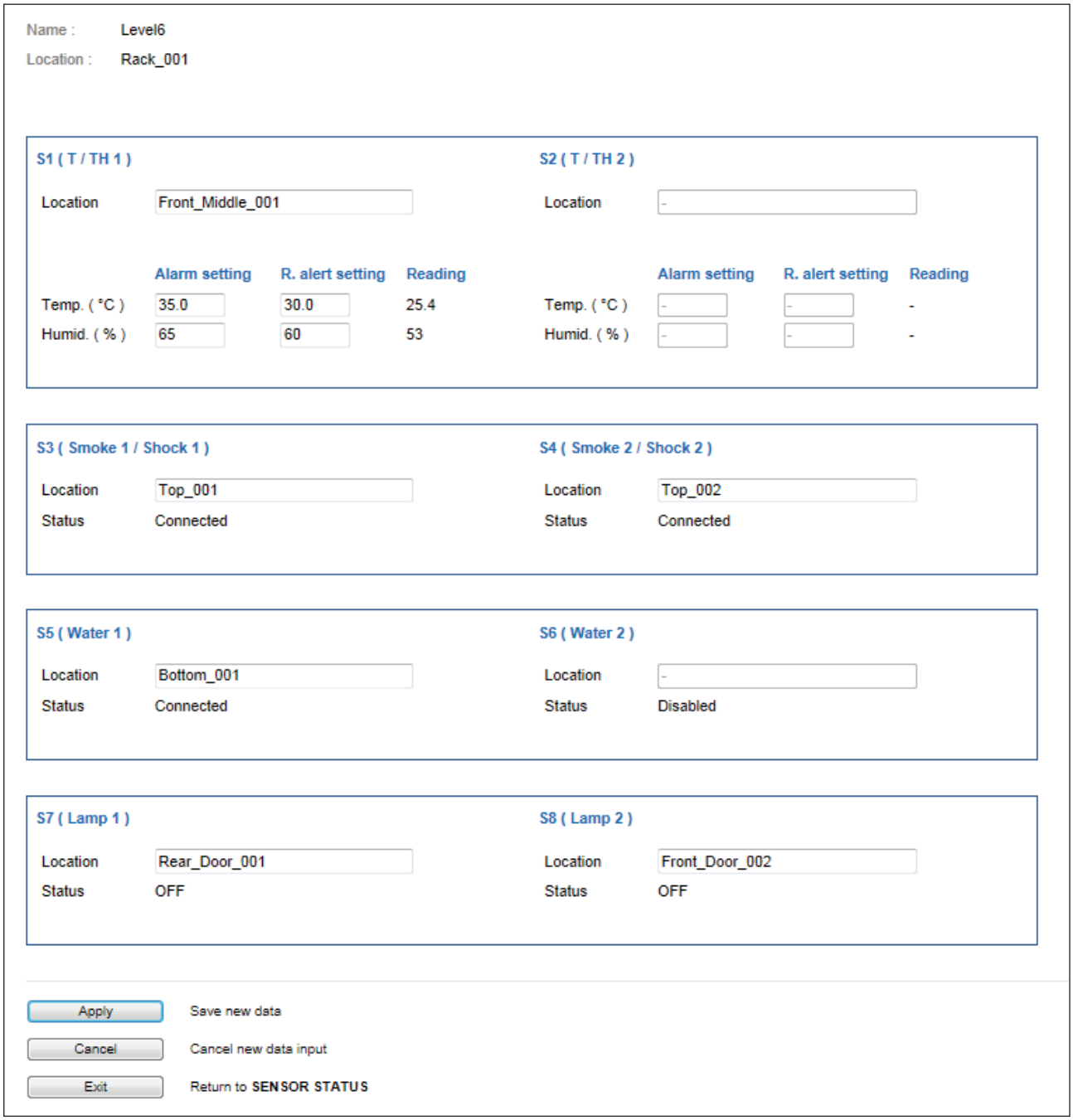
< 6.2 > Sensors

In < **Sensor Status** >, user can monitor sensors's status in details based on Master IP group



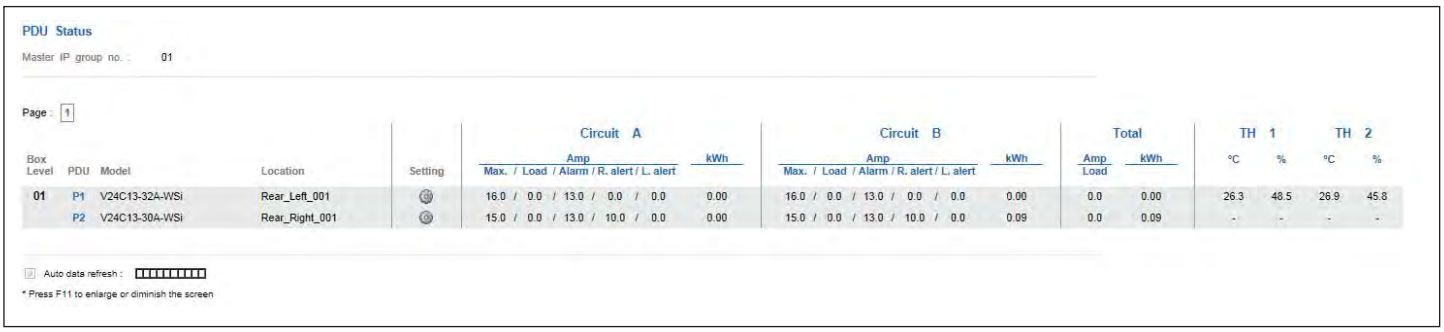
In < **Sensor Setting >**, user can modify

- " **Location** " of T / TH sensor, smoke / shock sensor, water sensor & LED light bar
- " **Alarm setting** " & " **Rising alert setting** " of T / TH sensor
- Click " **Apply** " to finish the above settings



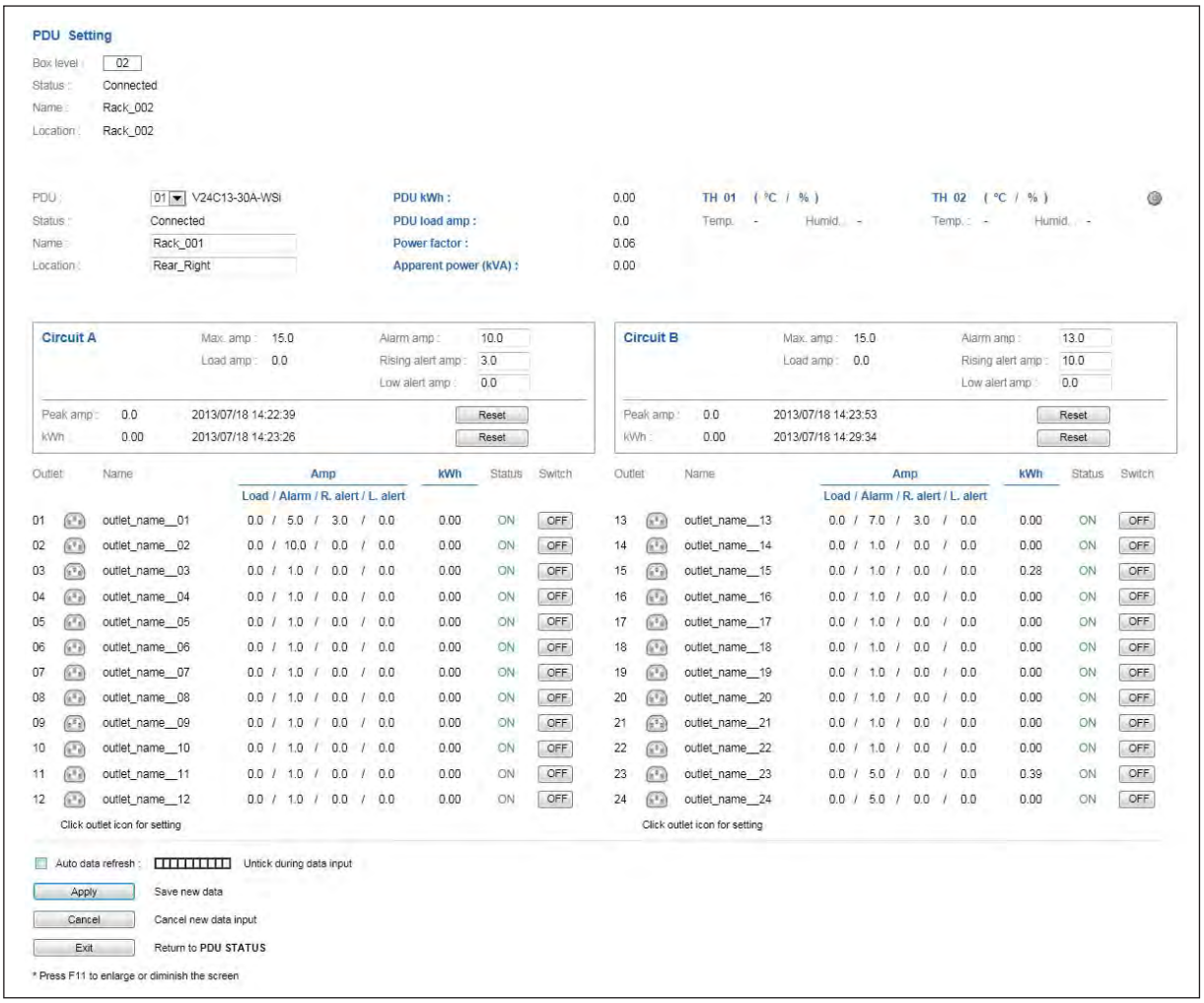
< 6.3 > PDU

In < **PDU Status** >, user can monitor PDU's status in details based on Master IP group



In < **PDU Setting** >, users can

- Change " **Name** " and " **Location** " of PDU
- Change " **Alarm amp.** " , " **Rising alert amp.** " & " **Low alert amp.** " of PDU's circuits
- Click " **Apply** " to finish the above settings
- Click " **Reset** " to reset peak amp. or kWh of PDU's circuits
- Click " **ON / OFF** " to switch On / Off outlet (Switched PDU models only)
- View On / Off status of outlets
- View aggregated current on the PDU
- View lastest loading & energy consumption of outlets (Outlet level measurement PDU models only)
- View the lastest T / TH reading connected to the PDU



< 6.3 > PDU

In < **Outlet Setting** >, user can

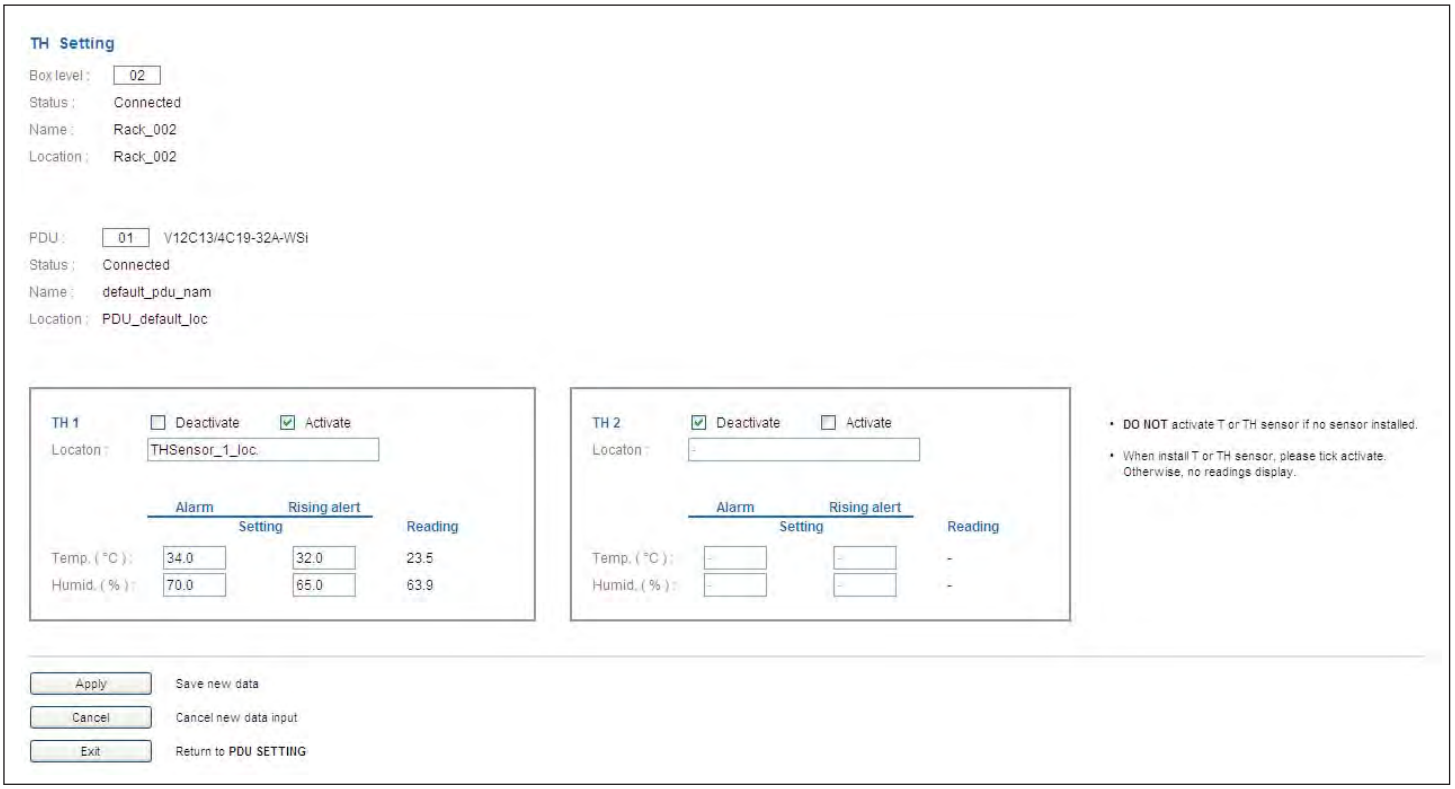
- Change " **Name** " of outlet
- Change " **Power up sequence delay** " of outlet (Switched PDU models only)
- Change " **Alarm amp.** " , " **Rising alert amp.** " & " **Low alert amp.** " of outlet (Outlet level measurement PDU models only)

- Click " **Apply** " to finish the above settings
- Click " **Reset** " to reset peak amp. or kWh of outlet (Outlet kWh Switched PDU only)

< 6.3 > PDU

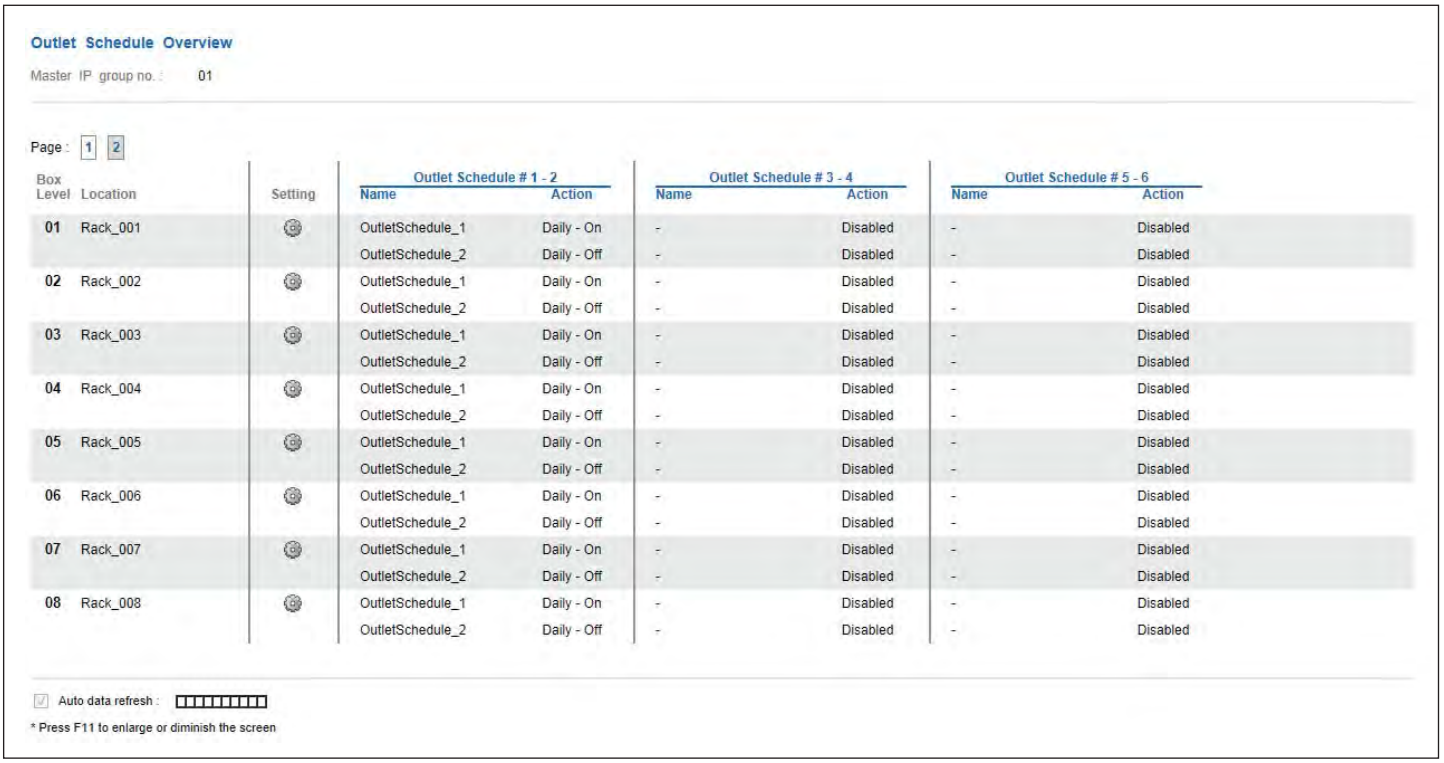
In < **TH setting** >, user can

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



< 6.3 > PDU

< **Outlet Schedule Overview** > provides a scan overview on all settings of PDU's outlet schedules based on Master IP group



Outlet Schedule Overview

Master IP group no. : 01

Page : 1 2

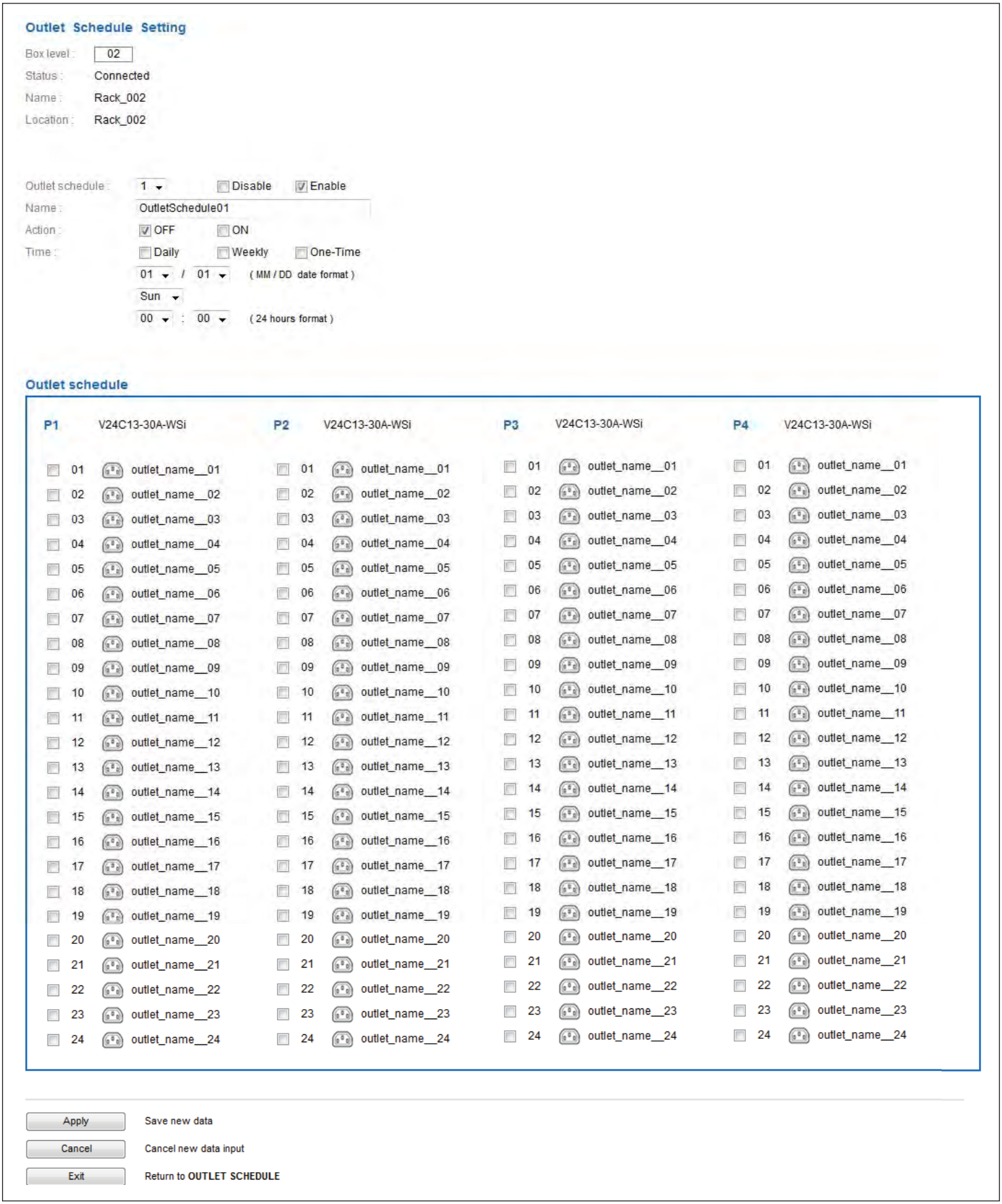
Box Level	Location	Setting	Outlet Schedule # 1 - 2		Outlet Schedule # 3 - 4		Outlet Schedule # 5 - 6	
			Name	Action	Name	Action	Name	Action
01	Rack_001		OutletSchedule_1	Daily - On	-	Disabled	-	Disabled
			OutletSchedule_2	Daily - Off	-	Disabled	-	Disabled
02	Rack_002		OutletSchedule_1	Daily - On	-	Disabled	-	Disabled
			OutletSchedule_2	Daily - Off	-	Disabled	-	Disabled
03	Rack_003		OutletSchedule_1	Daily - On	-	Disabled	-	Disabled
			OutletSchedule_2	Daily - Off	-	Disabled	-	Disabled
04	Rack_004		OutletSchedule_1	Daily - On	-	Disabled	-	Disabled
			OutletSchedule_2	Daily - Off	-	Disabled	-	Disabled
05	Rack_005		OutletSchedule_1	Daily - On	-	Disabled	-	Disabled
			OutletSchedule_2	Daily - Off	-	Disabled	-	Disabled
06	Rack_006		OutletSchedule_1	Daily - On	-	Disabled	-	Disabled
			OutletSchedule_2	Daily - Off	-	Disabled	-	Disabled
07	Rack_007		OutletSchedule_1	Daily - On	-	Disabled	-	Disabled
			OutletSchedule_2	Daily - Off	-	Disabled	-	Disabled
08	Rack_008		OutletSchedule_1	Daily - On	-	Disabled	-	Disabled
			OutletSchedule_2	Daily - Off	-	Disabled	-	Disabled

Auto data refresh :

* Press F11 to enlarge or diminish the screen

< 6.3 > PDU

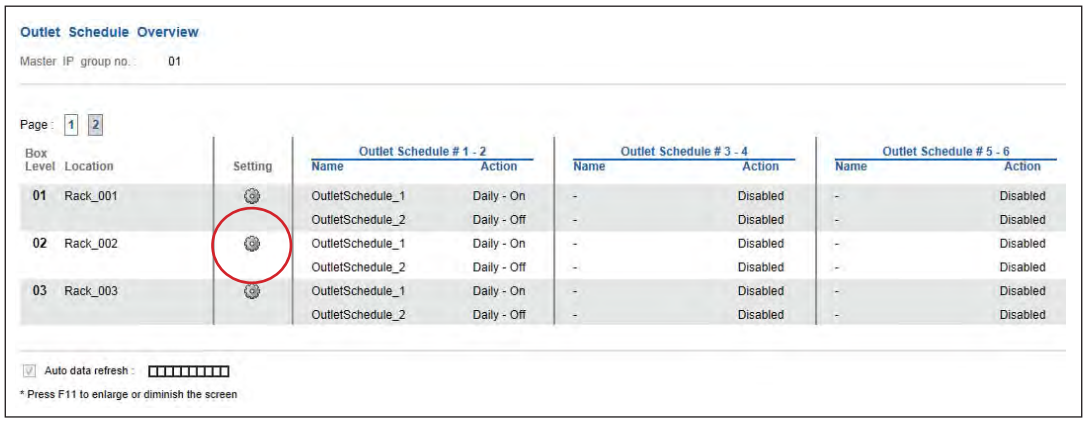
In < **Outlet Schedule Setting** >, user can set max. 6 outlet On / Off schedules in each Box.
The outlet schedule can be set on one-time, daily or weekly basis.
To set the outlet schedule, please follow the steps in next page



< 6.3 > PDU

PDU outlet schedule is a function allowing users to set a specific time to switch either ON or OFF the outlets on daily, weekly or one-time basis.
Each box provides **6 schedule tasks**. Users can follow the steps below to enable the PDU outlet schedule

Step 1. Go to < **Outlet Schedule Overview** > page, Click " **Setting** "

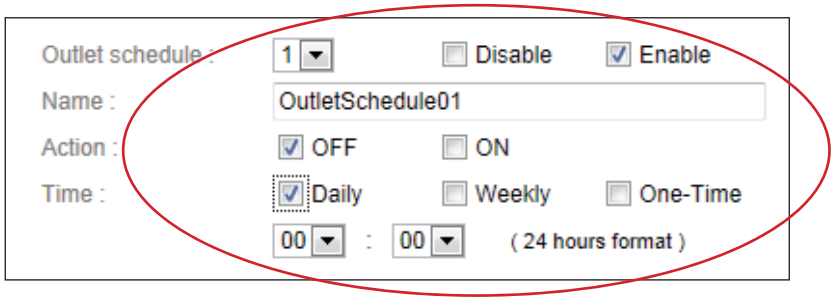


Step 2. In < **Outlet Schedule Setting** > page, Select " **Oultet schedule 1** " & Tick " **Enable** "

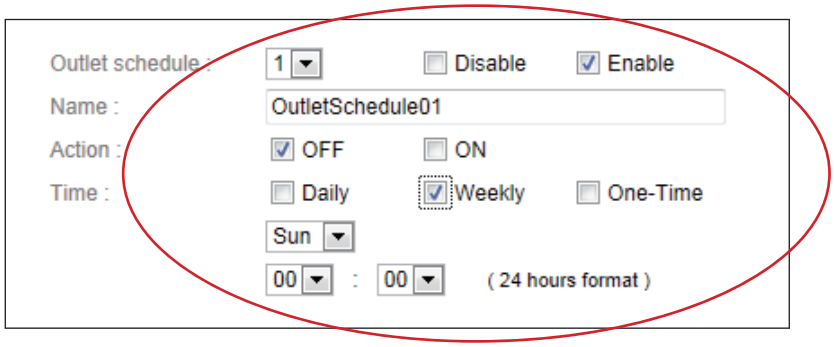
Step 3. Provide the name of the outlet schedule

Step 4. Select the action (either ON or OFF)

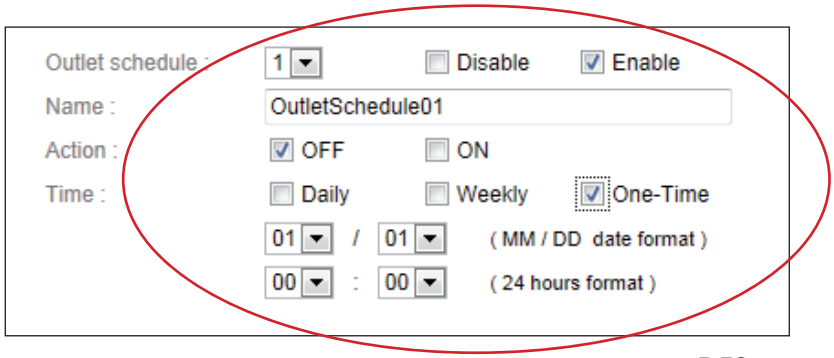
Step 5. Select the time for outlet schedule.



Daily ON / OFF Schedule

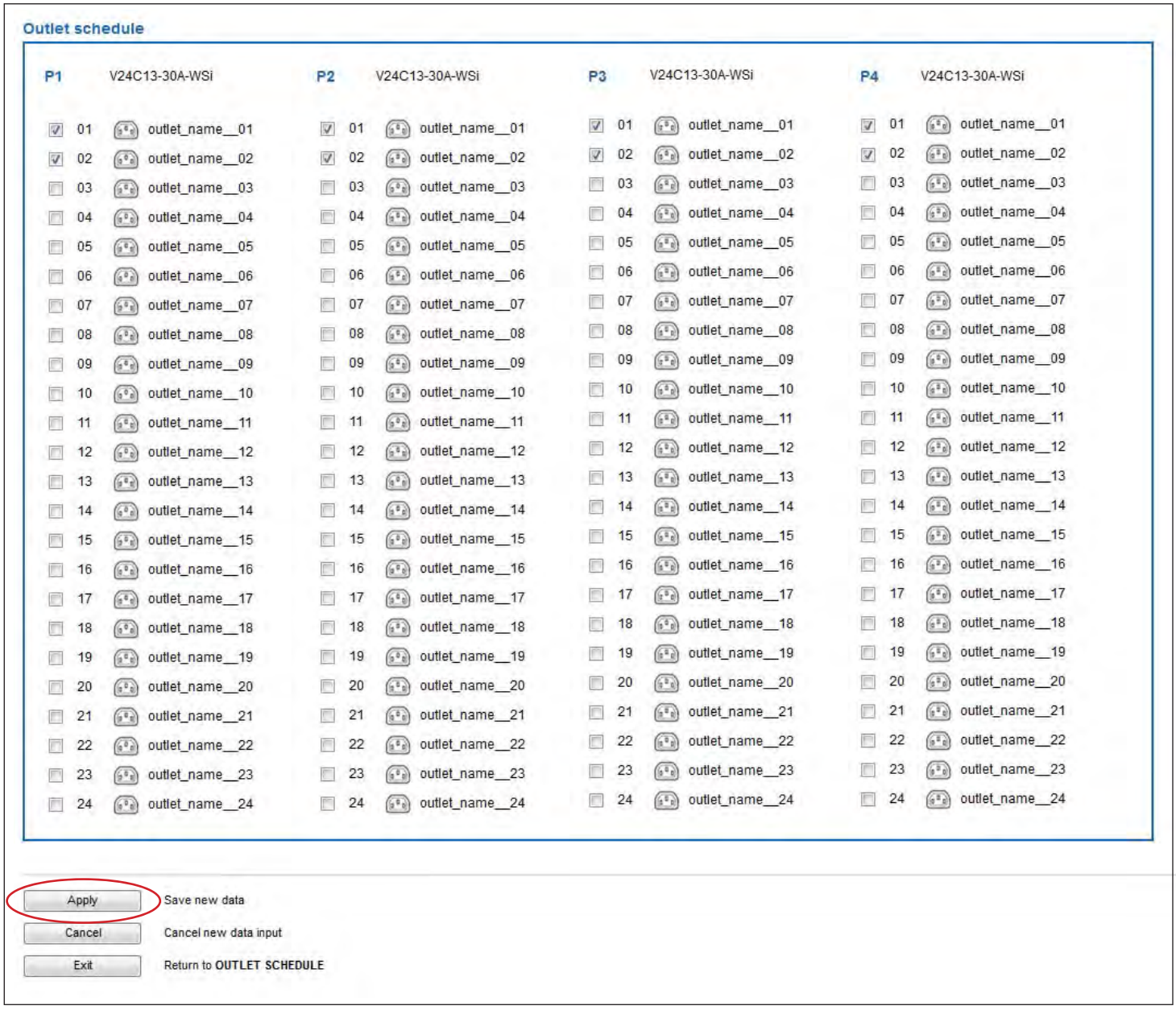


Weekly ON / OFF Schedule



One-time ON / OFF Schedule

Step 6. Tick the outlets of the connected PDU (s) to switch ON / OFF based on the action you selected



Step 7. Click " **Apply** " to save the settings

Step 8. Repeat step 2 to 7 for Outlet Schedule 2 to 6 if necessary

If the outlet schedule task is " **One-Time** ", that specific task will be disabled automatically once the action is completed.

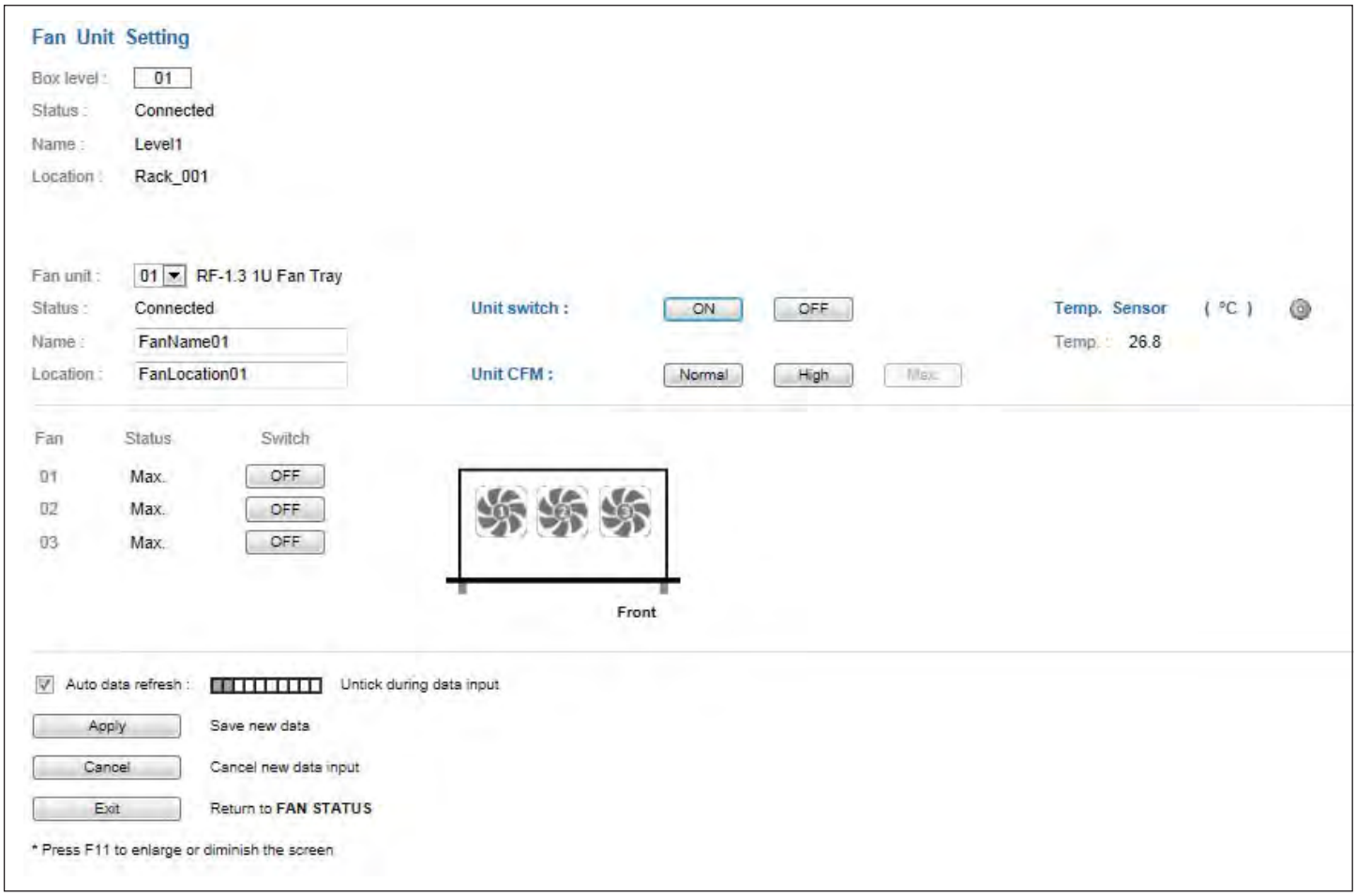
To cancel the outlet schedule, tick " **Disable** " & Click " **Apply** " to finish the changes.

< 6.4 > Fan Unit

< **Fan Unit Status** > provides a scan function to monitor the Fan unit status based on Master IP group

In < **Fan Unit Setting** >, user can

- Change " **Rack** " & " **Position** " & Click " **Apply** "
- Switch ON / OFF fan unit
- Change fan unit CFM (normal / high / max.)
- Switch ON / OFF individual fan



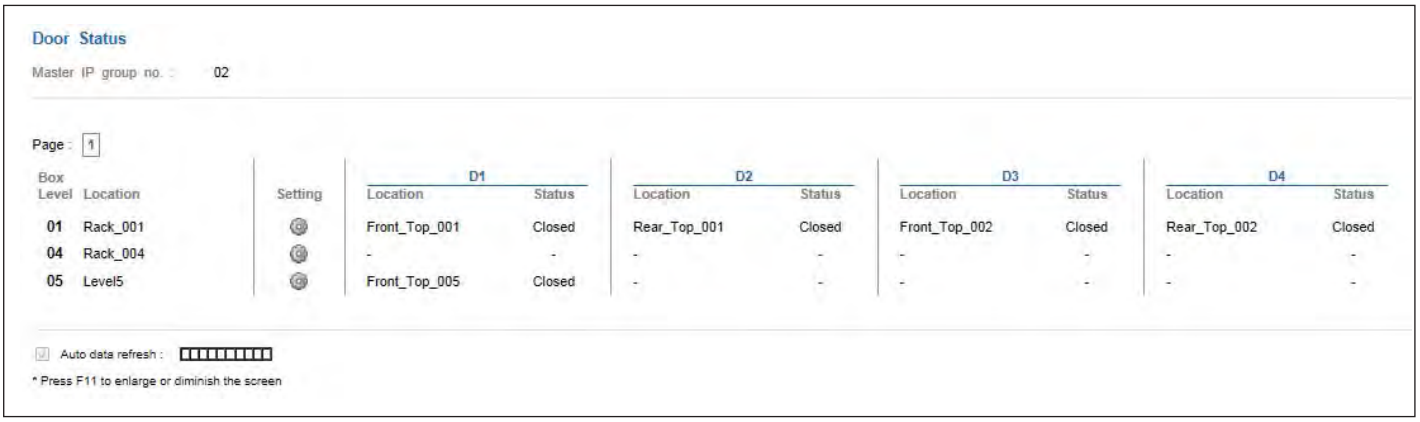
< 6.4 > Fan Unit

In < **Temp Setting** >, user can

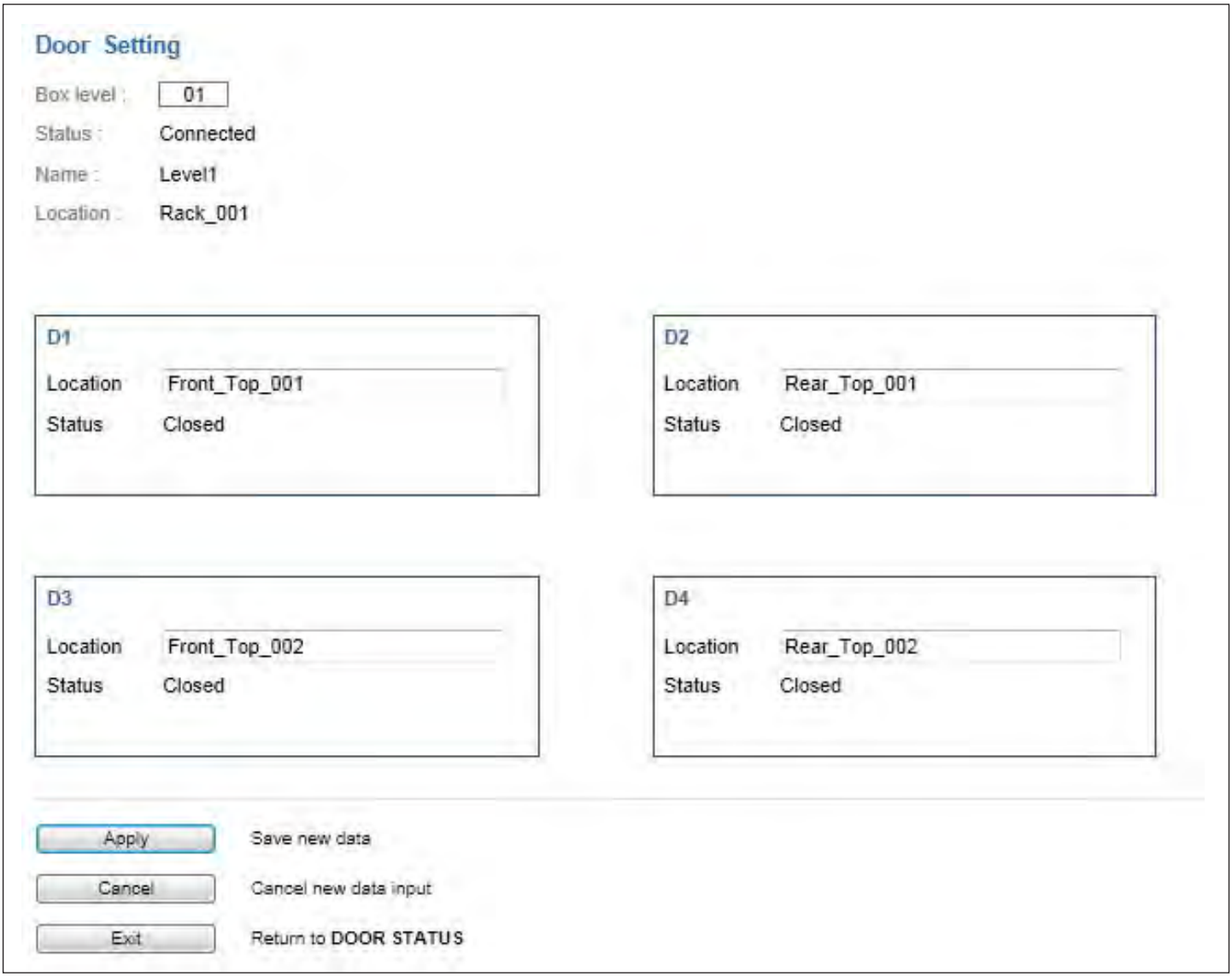
- " **Activate** " or " **Deactivate** " temp. sensor
- Change " **Location** " of temp. sensor
- " **Enable** " or " **Disable** " auto CFM control
- Change " **Alarm temp.** " & " **Rising alert temp.** " of temp. sensor
- Click " **Apply** " to finish the above settings

< 6.5 > Door

< **Door Status** > provides a scan function to monitor the door sensor status based on Master IP group



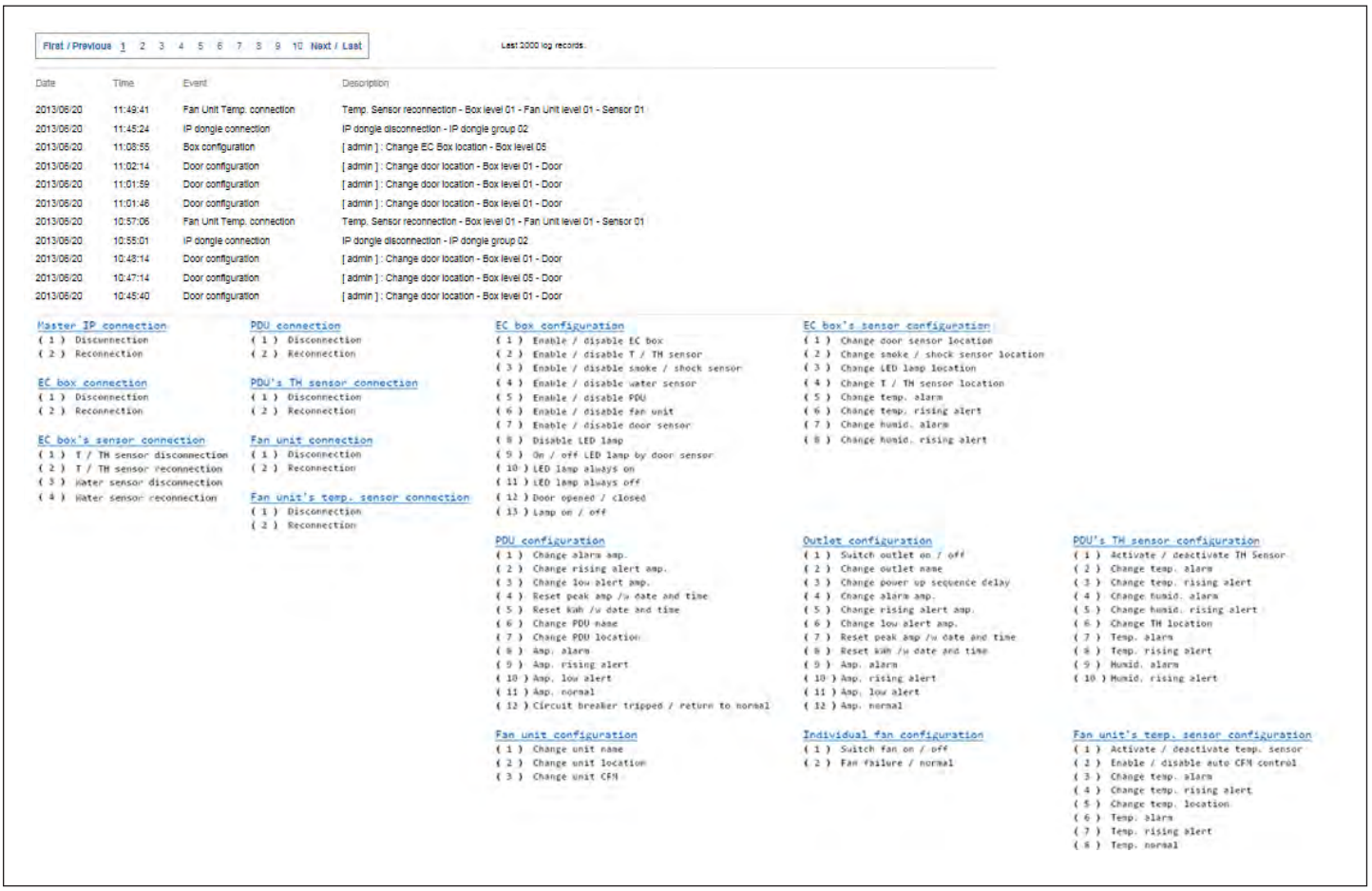
In < **Door Setting** >, user can change " **Location** " of door sensor & Click " **Apply** " to finish the settings



Part VII. Events / Log / Report

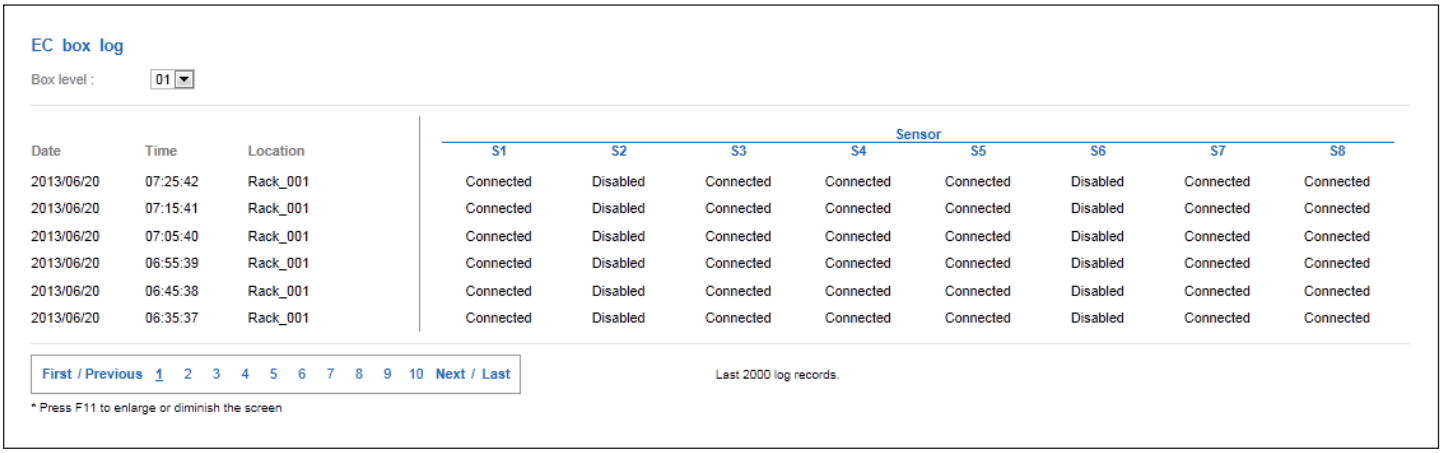
< **Event** > provides past 2000 events of the following devices in an Master IP group

- EC box configuration & connection
- Sensor configuration & connection
- PDU configuration & connection
- PDU's outlet & TH sensor configuration
- Fan unit configuration & connection
- Fan unit Temp. sensor configuration



Part VII. Events / Log / Report

< **EC Box log** > provides past 2000 log records of each EC box in a Master IP group. The software will generate an EC box log in every 10 mins



EC box log

Box level : 01

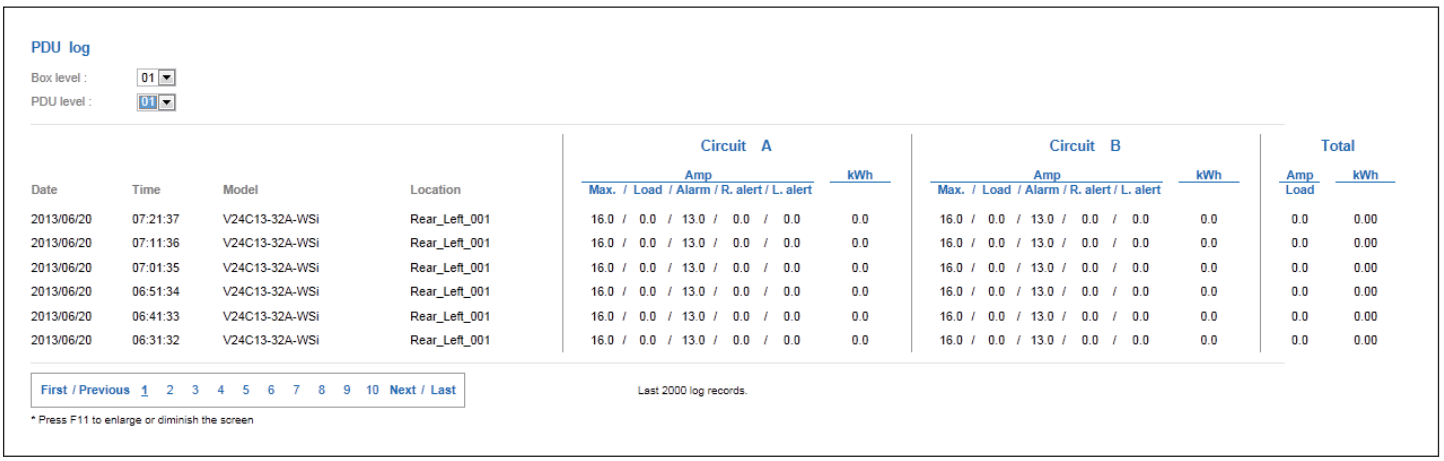
Date	Time	Location	Sensor							
			S1	S2	S3	S4	S5	S6	S7	S8
2013/06/20	07:25:42	Rack_001	Connected	Disabled	Connected	Connected	Connected	Disabled	Connected	Connected
2013/06/20	07:15:41	Rack_001	Connected	Disabled	Connected	Connected	Connected	Disabled	Connected	Connected
2013/06/20	07:05:40	Rack_001	Connected	Disabled	Connected	Connected	Connected	Disabled	Connected	Connected
2013/06/20	06:55:39	Rack_001	Connected	Disabled	Connected	Connected	Connected	Disabled	Connected	Connected
2013/06/20	06:45:38	Rack_001	Connected	Disabled	Connected	Connected	Connected	Disabled	Connected	Connected
2013/06/20	06:35:37	Rack_001	Connected	Disabled	Connected	Connected	Connected	Disabled	Connected	Connected

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

Last 2000 log records.

* Press F11 to enlarge or diminish the screen

< **PDU log** > provides past 2000 log records of PDUs connect in each EC box. The software will generate a PDU log in every 10 mins



PDU log

Box level : 01

PDU level : 01

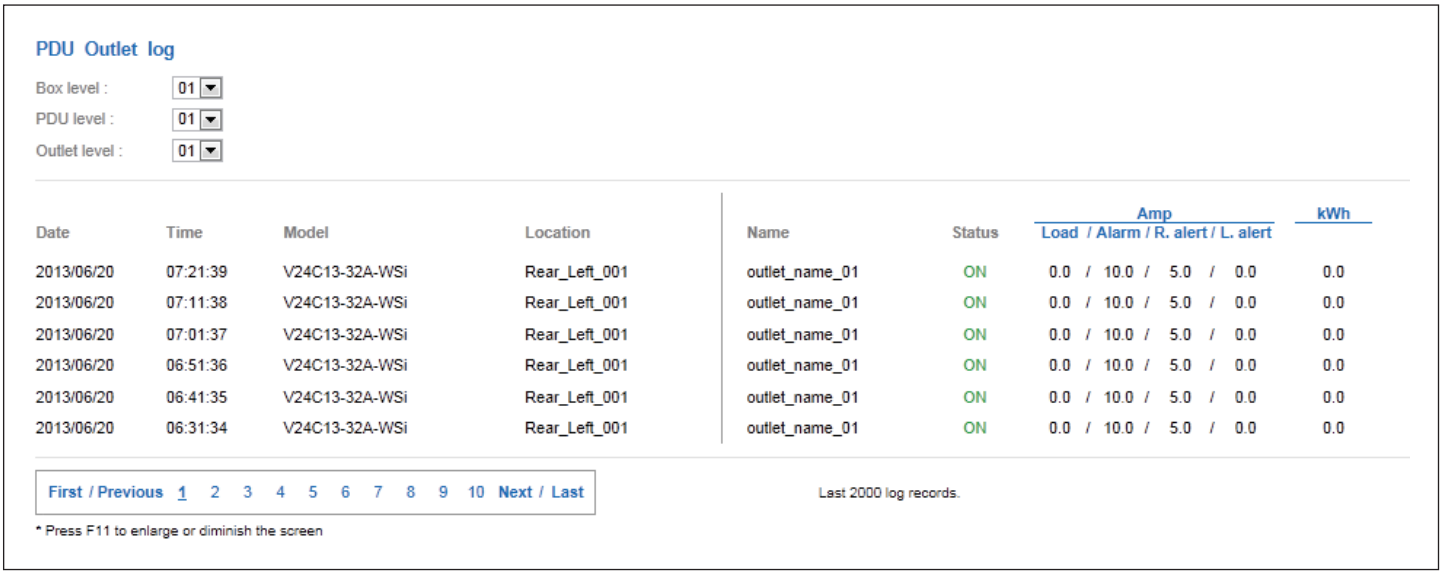
Date	Time	Model	Location	Circuit A		Circuit B		Total	
				Amp (Max. / Load / Alarm / R. alert / L. alert)	kWh	Amp (Max. / Load / Alarm / R. alert / L. alert)	kWh	Amp (Load)	kWh
2013/06/20	07:21:37	V24C13-32A-WSi	Rear_Left_001	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	0.0	0.00
2013/06/20	07:11:36	V24C13-32A-WSi	Rear_Left_001	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	0.0	0.00
2013/06/20	07:01:35	V24C13-32A-WSi	Rear_Left_001	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	0.0	0.00
2013/06/20	06:51:34	V24C13-32A-WSi	Rear_Left_001	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	0.0	0.00
2013/06/20	06:41:33	V24C13-32A-WSi	Rear_Left_001	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	0.0	0.00
2013/06/20	06:31:32	V24C13-32A-WSi	Rear_Left_001	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	16.0 / 0.0 / 13.0 / 0.0 / 0.0	0.0	0.0	0.00

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

Last 2000 log records.

* Press F11 to enlarge or diminish the screen

< **PDU Outlet log** > provides past 2000 log records of each PDU's outlet. The software will generate an outlet log record in every 10 mins



PDU Outlet log

Box level : 01

PDU level : 01

Outlet level : 01

Date	Time	Model	Location	Name	Status	Amp (Load / Alarm / R. alert / L. alert)	kWh
2013/06/20	07:21:39	V24C13-32A-WSi	Rear_Left_001	outlet_name_01	ON	0.0 / 10.0 / 5.0 / 0.0	0.0
2013/06/20	07:11:38	V24C13-32A-WSi	Rear_Left_001	outlet_name_01	ON	0.0 / 10.0 / 5.0 / 0.0	0.0
2013/06/20	07:01:37	V24C13-32A-WSi	Rear_Left_001	outlet_name_01	ON	0.0 / 10.0 / 5.0 / 0.0	0.0
2013/06/20	06:51:36	V24C13-32A-WSi	Rear_Left_001	outlet_name_01	ON	0.0 / 10.0 / 5.0 / 0.0	0.0
2013/06/20	06:41:35	V24C13-32A-WSi	Rear_Left_001	outlet_name_01	ON	0.0 / 10.0 / 5.0 / 0.0	0.0
2013/06/20	06:31:34	V24C13-32A-WSi	Rear_Left_001	outlet_name_01	ON	0.0 / 10.0 / 5.0 / 0.0	0.0

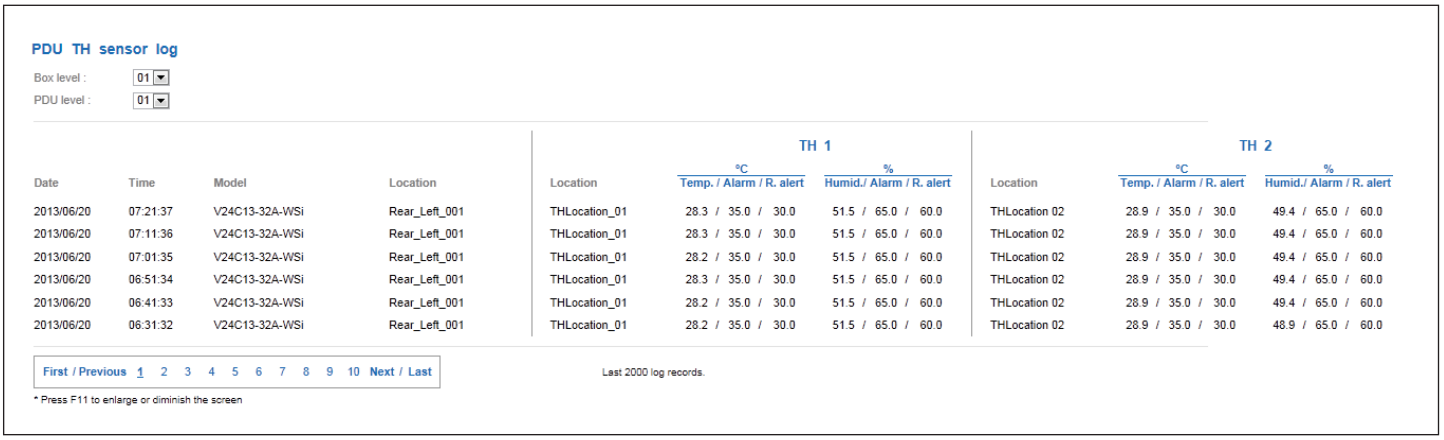
First / Previous 1 2 3 4 5 6 7 8 9 10 Next / Last

Last 2000 log records.

* Press F11 to enlarge or diminish the screen

Part VII. Events / Log / Report

< **PDU TH Sensor log** > provides past 2000 TH log records of each PDU. The software will generate an outlet log record in every 10 mins



PDU TH sensor log

Box level : 01
PDU level : 01

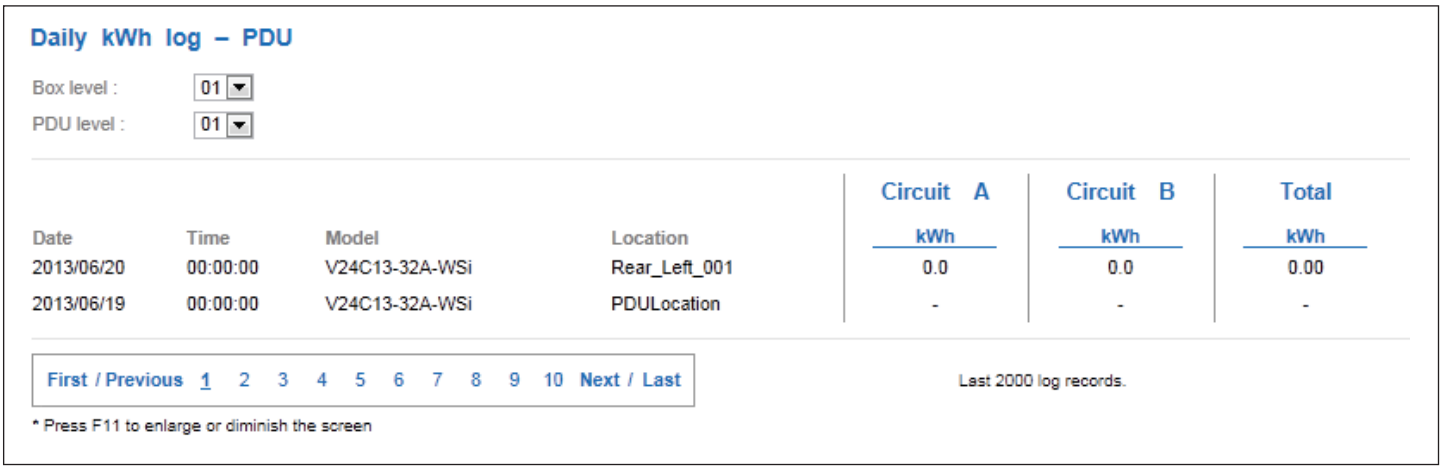
Date	Time	Model	Location	TH 1 Location	TH 1 °C Temp. / Alarm / R. alert	TH 1 % Humid./ Alarm / R. alert	TH 2 Location	TH 2 °C Temp. / Alarm / R. alert	TH 2 % Humid./ Alarm / R. alert
2013/06/20	07:21:37	V24C13-32A-WSi	Rear_Left_001	THLocation_01	28.3 / 35.0 / 30.0	51.5 / 65.0 / 60.0	THLocation 02	28.9 / 35.0 / 30.0	49.4 / 65.0 / 60.0
2013/06/20	07:11:36	V24C13-32A-WSi	Rear_Left_001	THLocation_01	28.3 / 35.0 / 30.0	51.5 / 65.0 / 60.0	THLocation 02	28.9 / 35.0 / 30.0	49.4 / 65.0 / 60.0
2013/06/20	07:01:35	V24C13-32A-WSi	Rear_Left_001	THLocation_01	28.2 / 35.0 / 30.0	51.5 / 65.0 / 60.0	THLocation 02	28.9 / 35.0 / 30.0	49.4 / 65.0 / 60.0
2013/06/20	06:51:34	V24C13-32A-WSi	Rear_Left_001	THLocation_01	28.3 / 35.0 / 30.0	51.5 / 65.0 / 60.0	THLocation 02	28.9 / 35.0 / 30.0	49.4 / 65.0 / 60.0
2013/06/20	06:41:33	V24C13-32A-WSi	Rear_Left_001	THLocation_01	28.2 / 35.0 / 30.0	51.5 / 65.0 / 60.0	THLocation 02	28.9 / 35.0 / 30.0	49.4 / 65.0 / 60.0
2013/06/20	06:31:32	V24C13-32A-WSi	Rear_Left_001	THLocation_01	28.2 / 35.0 / 30.0	51.5 / 65.0 / 60.0	THLocation 02	28.9 / 35.0 / 30.0	48.9 / 65.0 / 60.0

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

Last 2000 log records.

* Press F11 to enlarge or diminish the screen

< **Daily kWh log - PDU** > 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 PDU kWh log will not be recorded at 00:00 if the PDU connected is less than 24 hours



Daily kWh log – PDU

Box level : 01
PDU level : 01

Date	Time	Model	Location	Circuit A kWh	Circuit B kWh	Total kWh
2013/06/20	00:00:00	V24C13-32A-WSi	Rear_Left_001	0.0	0.0	0.00
2013/06/19	00:00:00	V24C13-32A-WSi	PDULocation	-	-	-

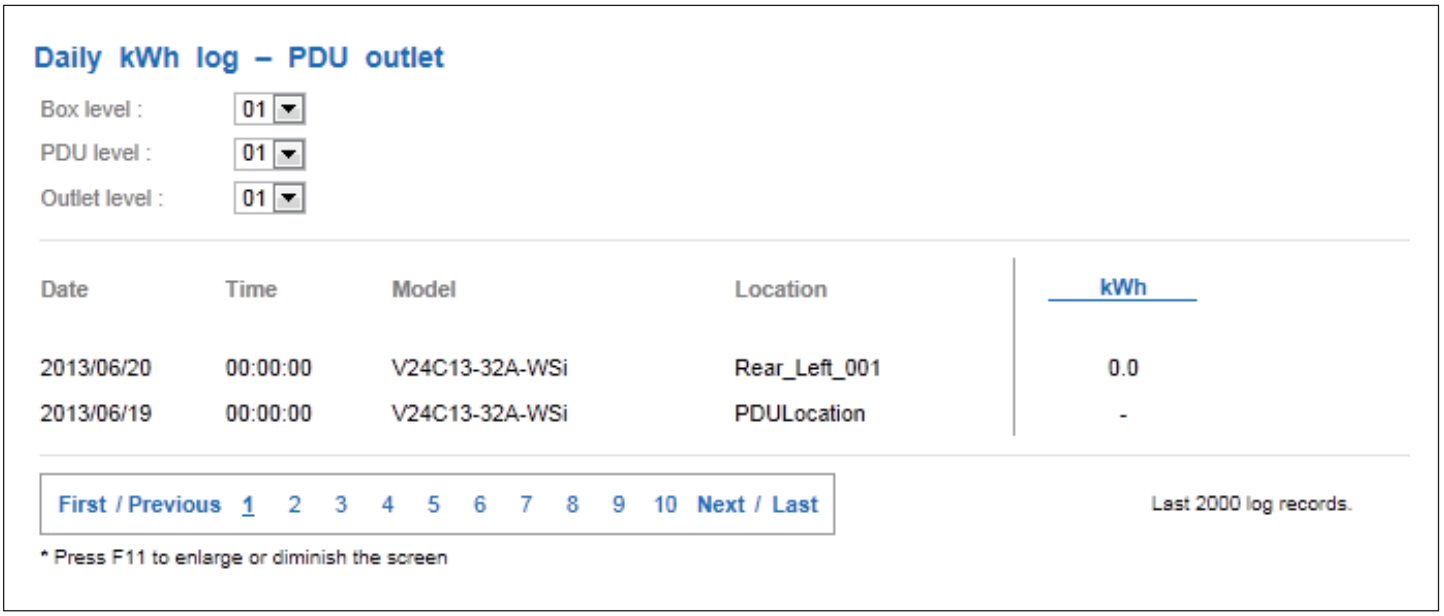
First / Previous 1 2 3 4 5 6 7 8 9 10 Next / Last

Last 2000 log records.

* Press F11 to enlarge or diminish the screen

Part VII. Events / Log / Report

< **Daily kWh log - PDU outlet** > provides past 2000 daily energy consumption log records of each PDU's outlet. The record is logged at 00:00 everyday (+ / - 5 mins) for previous day (Outlet level PDU models only)
The PDU outlet kWh log will not be recorded at 00:00 if the PDU connected is less than 24 hours



Daily kWh log – PDU outlet

Box level : 01
PDU level : 01
Outlet level : 01

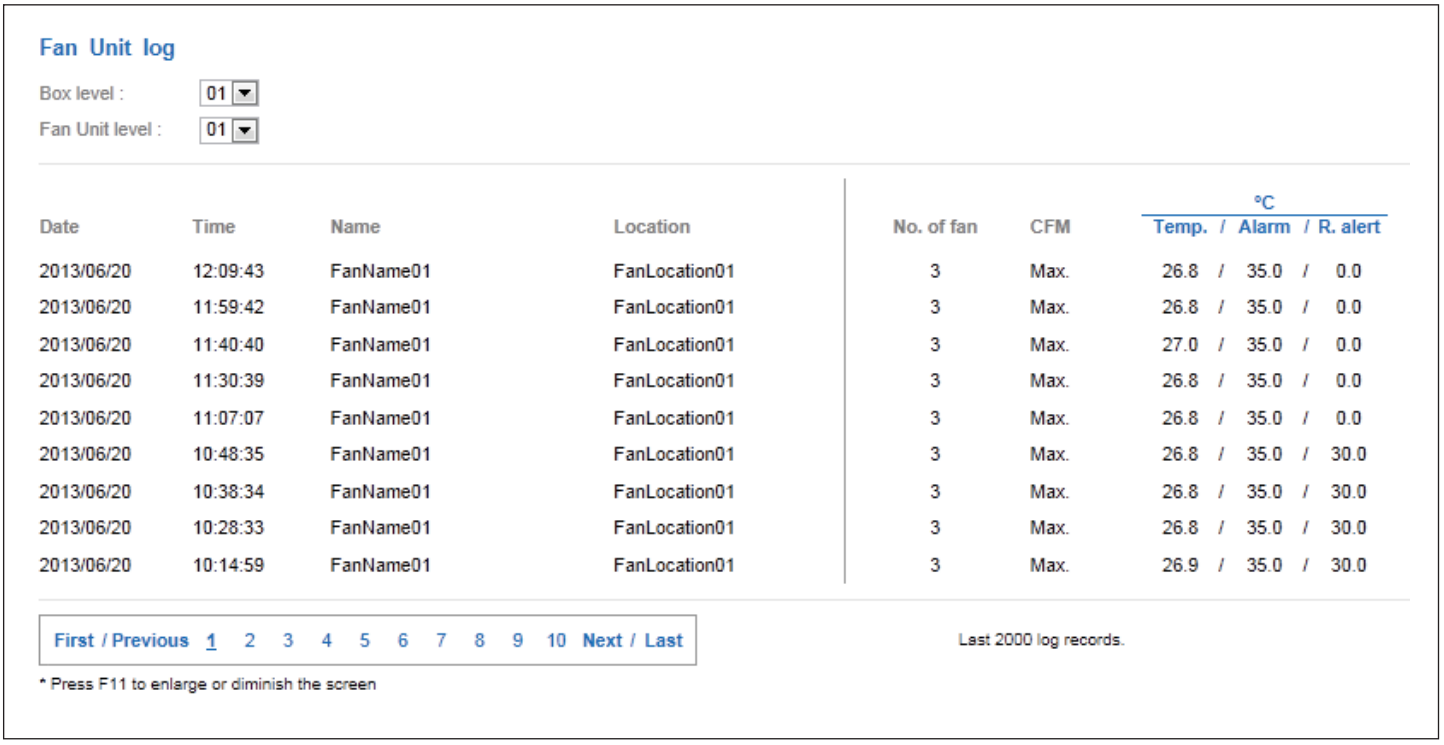
Date	Time	Model	Location	kWh
2013/06/20	00:00:00	V24C13-32A-WSi	Rear_Left_001	0.0
2013/06/19	00:00:00	V24C13-32A-WSi	PDULocation	-

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

Last 2000 log records.

* Press F11 to enlarge or diminish the screen

< **Fan Unit log** > provides past 2000 log records of each Fan unit. The software will generate a Fan unit log record in every 10 mins



Fan Unit log

Box level : 01
Fan Unit level : 01

Date	Time	Name	Location	No. of fan	CFM	°C Temp. / Alarm / R. alert
2013/06/20	12:09:43	FanName01	FanLocation01	3	Max.	26.8 / 35.0 / 0.0
2013/06/20	11:59:42	FanName01	FanLocation01	3	Max.	26.8 / 35.0 / 0.0
2013/06/20	11:40:40	FanName01	FanLocation01	3	Max.	27.0 / 35.0 / 0.0
2013/06/20	11:30:39	FanName01	FanLocation01	3	Max.	26.8 / 35.0 / 0.0
2013/06/20	11:07:07	FanName01	FanLocation01	3	Max.	26.8 / 35.0 / 0.0
2013/06/20	10:48:35	FanName01	FanLocation01	3	Max.	26.8 / 35.0 / 30.0
2013/06/20	10:38:34	FanName01	FanLocation01	3	Max.	26.8 / 35.0 / 30.0
2013/06/20	10:28:33	FanName01	FanLocation01	3	Max.	26.8 / 35.0 / 30.0
2013/06/20	10:14:59	FanName01	FanLocation01	3	Max.	26.9 / 35.0 / 30.0

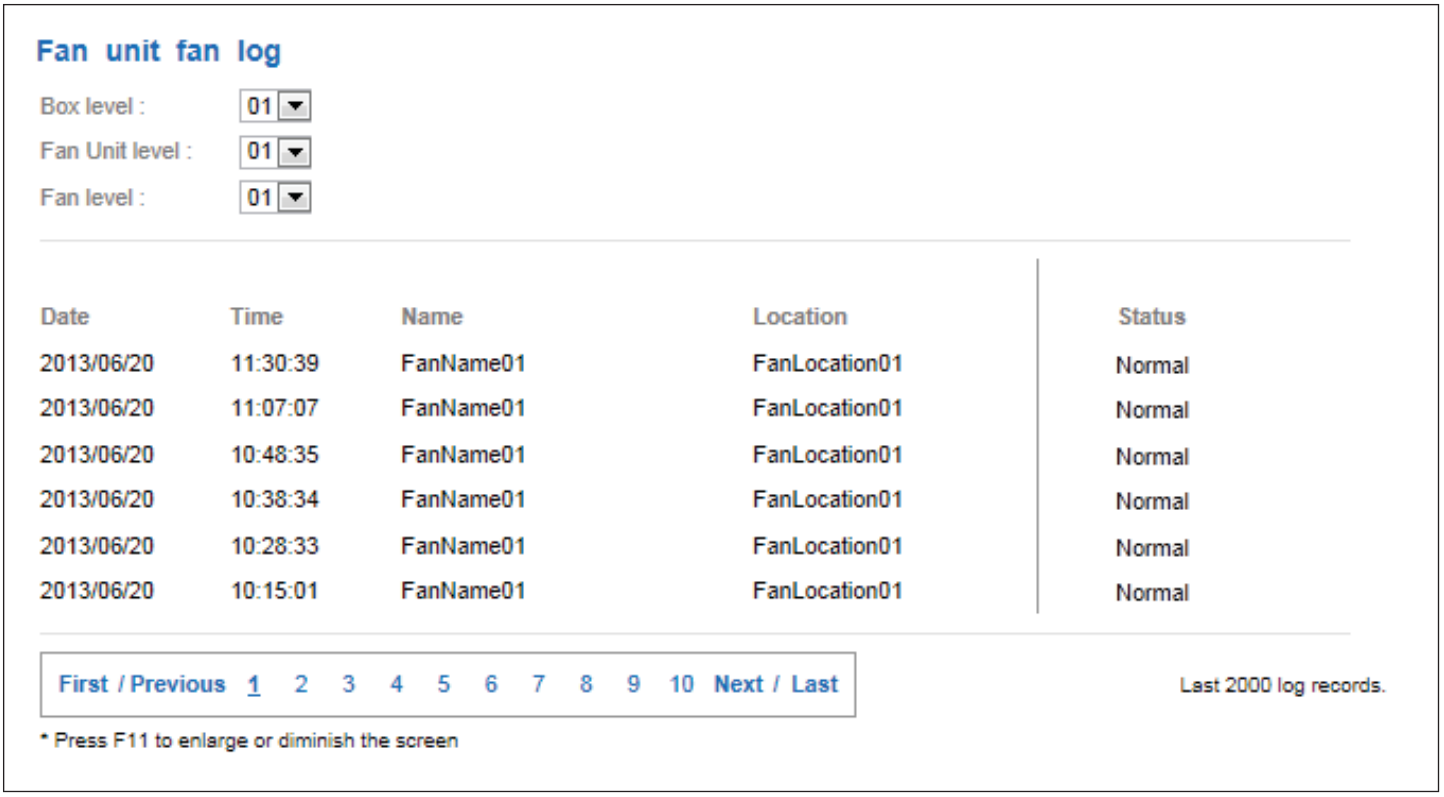
First / Previous 1 2 3 4 5 6 7 8 9 10 Next / Last

Last 2000 log records.

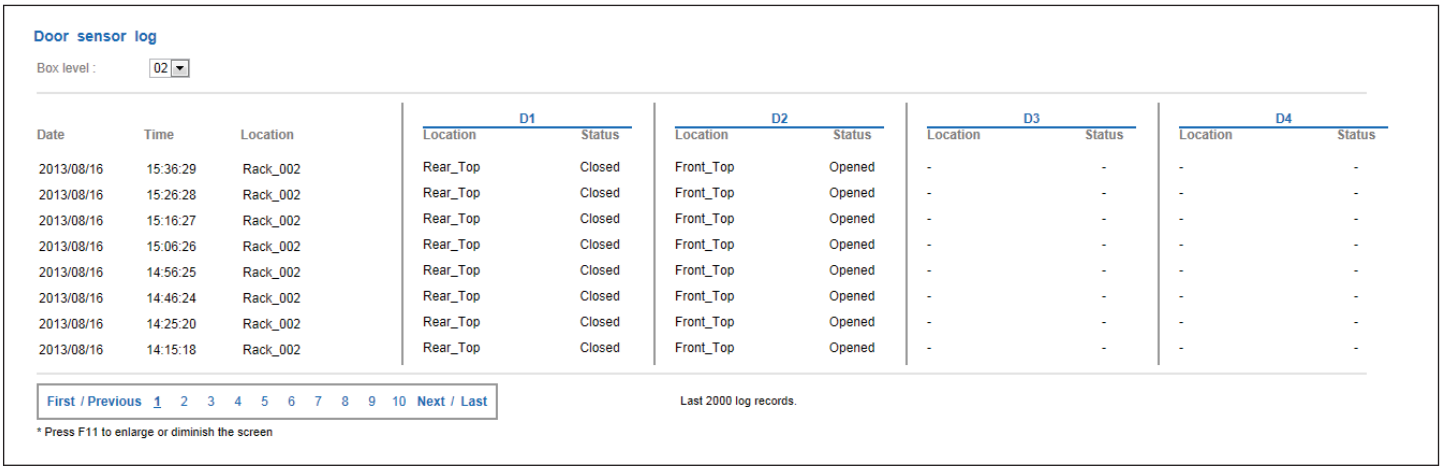
* Press F11 to enlarge or diminish the screen

Part VII. Events / Log / Report

< **Fan Unit fan log** > provides past 2000 log records about an individual fan of each Fan unit. The software will generate a fan log record in every 10 mins



< **Door sensor log** > provides past 2000 log records about the door sensor. The software will generate a door log record in every 10 mins



Part VII. Events / Log / Report

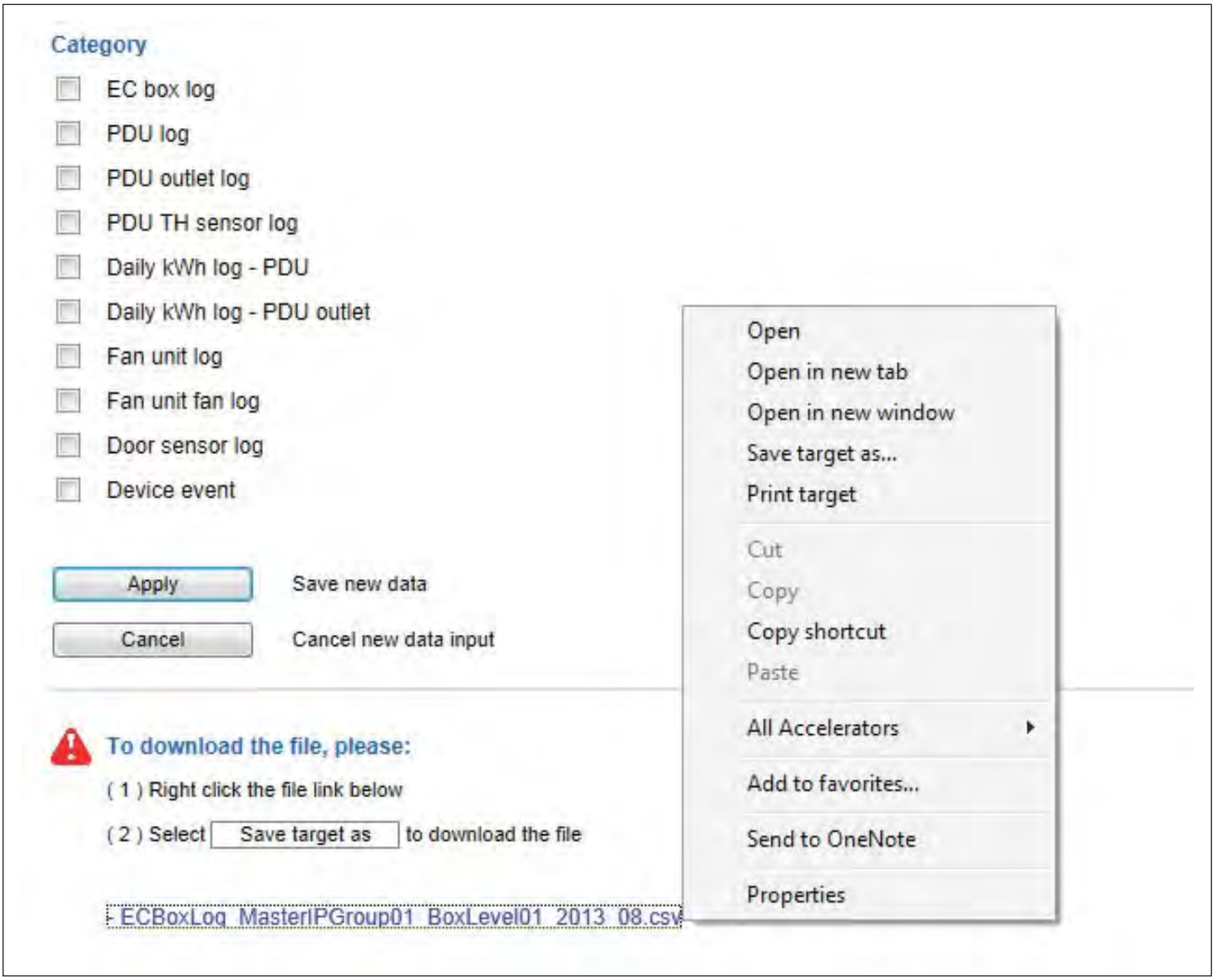
< **Report** > provides monthly report for EC box log , PDU log , PDU Outlet log , PDU TH sensor log , Daily kWh log – PDU , Daily kWh log – PDU outlet , Fan unit log , Fan unit fan log , Door sensor log , Device event in CSV format

Please take the following steps to export the log category you want :

Step 1 - Select the category, period and target

Step 2 – Click " **Apply** " and Click " **OK** " from the pop up window. It takes a few mins to complete

Step 3 – Right Click the file name below and SELECT Save target as to download the log file



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

Part VIII. SNMP

The EM-1001 master box can manage the connected EM-1002 slave box in a single daisy-chain up to 16 levels via SNMP v2c (Simple Network Management Protocol).

Only EM-1001 master box 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/infraguard/IGM-MIB.mib

(II). Enabling SNMP Support

The following procedure summarizes how to enable the EC-300M master box for SNMP support.

Step 1. Connect the EC-300M master box to a computer.
(Please refer to < 4.2 > Master IP Configuration)

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

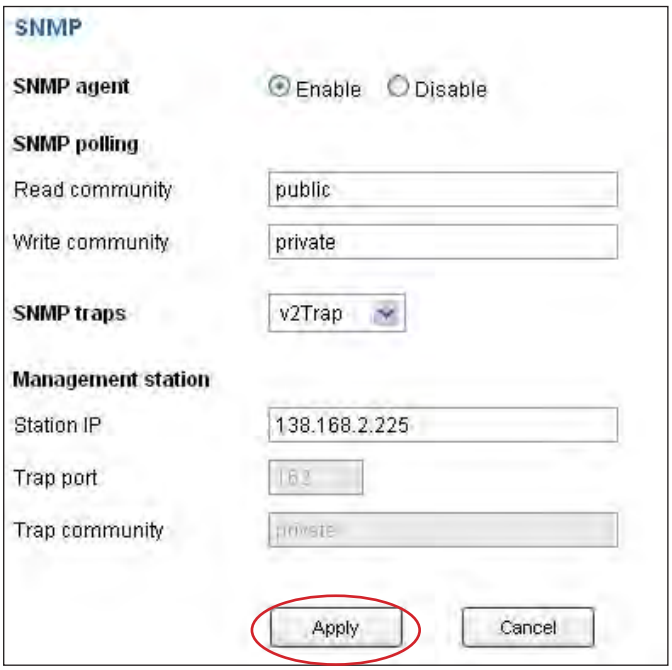
Step 3. Enter the configured IP address of EC-300M master box into the I.E. address bar.
Default IP address is " **192.168.0.1** "

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

Part VIII. SNMP

Step 5. Select SNMP from the left navigation pane

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

Part IX. FAQ

IGM-03

1. What is – IGM-03 ?
IGM-03 is a FREE environmental sensor management software to monitor up to 30 Master IP Groups remotely (max. 16 box levels in each Master IP Group), total 480 boxes. Each box can connect a variety of sensors to provide an environmental monitoring solution to secure high levels of data center operaional stability and flexibility.

To enhance the functionality, up to **1920 x kWh PDU / Fan Unit** can be monitored through IGM-03 GUI as well.

2. What OS platform does IGM-03 support ?
MS Windows XP Professional with SP3 (32 bit, English edition only)
MS Windows 7 Professional with SP1 (32 & 64 bit, English edition only)
MS Windows 7 Ultimate with SP1 (32 & 64 bit, English edition only)
MS Windows 8 Professional with SP3 (32 & 64 bit, English edition only)
MS Windows Server 2003 R2 Standard edition with SP2 (32 & 64 bit, English edition only)
MS Windows Server 2008 Standard edition with SP2 (32 & 64 bit, English edition only)
MS Windows Server 2008 R2 Standard edition with SP1

Ensure users login to the management PC as a member of " Administrators " group before IGM-03 installation and execution

3. Why user cannot 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 IGM-03 support ?
PostgreSQL

5. What is the PostgreSQL default password for IGM-03 ?
1qaz2WSX

6. How can I receive alarm email and get full log report ?
Make sure IGM-03 is executed and the alarm server is enabled and configured properly

7. What is the default user name and password of IGM-03 ?
Default user name " **admin** " and password " **00000000** "

8. What is the command password of IGM-03 ?
Each Master IP group has its command password. It will be requested for any device configuration and control connected to the EC Box. The administrator can set different password for each Master IP group or all Master IP groups use the same command password.

Part IX. FAQ

Sensors

1. How accurate is the Temp. & Humid. sensor ?
It is accurate to +/- 0.5 °C (typical) and +/- 4.5% RH (typical)

2. How accurate is the Temp. sensor ?
It is accurate to +/- 1.0 °C (typical)

3. What is sensitivity of smoke sensor ?
0.15 ~ 0.3 dB/m

4. What is the detection radius of shock sensor ?
3.5m

5. What is the lumen of the LED light bar ?
250 lumen

Master EC Box

1. What is the Master Box ?
The Master Box has a built-in IP remote module which provides a simple and economical way to consolidate management of max. 16 Slave boxes, by a single IP connection to the network.

2. What is the IP Setup Utilities ?
This is a Windows based application used to assign the IP address of Master Box. You can download the IP Setup Utilities from the link below:
http://www.rackmountmart.com/downloads.html

3. Does the EC Box has dual power input ?
Yes. (MUST order before delivery)

Others

1. Where can I find the Catalogue / User manual / Model list of EM-1001 / 1002?
Please visit www.RackmountMart.com

2. How can I get a further support ?
Please send an email to support@rackmountmart.com or sales@rackmountmart.com

Part X. Troubleshooting

EC Box Disconnection

1. GUI shows **a certain level EC Box** **disconnected**

Step 1 - EC Box power off ?

Check the EC Box is power ON or not

Step 2 - EC Box level setting duplicated in the same Master IP group ?

Check and make sure EC Box level is unique and not duplicated in the same Master IP group.

(Please refer to user manual < 1.5 > for details)

The other EC box with same level shows " **Searching** " in < **Overview** > page

Step 3 - This level EC Box is enabled in < **Setup** > page but not connected to the daisy chain ?

Make sure to enable the EC Box in < **Setup** > page ONLY when it is connected to the daisy chain

2. GUI shows **from a certain level EC Box to the last one** **disconnected**

Step 1 - Cable disconnected, loose or defective ?

Check the Cat. 5 / 6 cable connection between the first disconnected EC Box and the previous one. 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 EC Box failed ?

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

3. GUI shows the whole group of EC Boxes disconnected

Step 1 - Cable disconnected, loose or defective ?

Check the Cat. 5 / 6 cable connection to EC Boxes and network device. 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 - Master EC Box failed ?

i. Check if the network setting of the Master EC Box is correct or not. If duplicate IP address is in the network, it may cause such problem

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

Part X. Troubleshooting

Replacement, Removal Or Addition For EC Box

1. How to replace the failed Master Box with a new one ?

Step 1 - Prepare a new Master Box and set it to 1st level.
(Please refer to user manual < 1.5 > for details)

Step 2 - Configure the IP address of the new Master Box as the failed one
(Please refer to user manual < 4.2 > for details)

Step 3 - Disable alarm email in **< Alarm >** page

Step 4 - Power off and remove the failed Master Box from connection

Step 5 - Install the new Master Box to the connection and power it on

Step 6 - Click " **Start Connection** " in **< Overview >** page for the relevant Master IP group

Step 7 - Configure the new Master Box in **< EC Box Setting >** page such as Name, Location

Step 8 - Enable alarm email in **< Alarm >** page

2. How to replace a failed certain level slave Box with a new one ?

Step 1 - Prepare a new slave Box and set the slave Box level accordingly
(Please refer to user manual < 1.5 > for details)

Step 2 - Prepare an appropriate length Cat. 5 / 6 cable

Step 3 - Disable alarm email in **< Alarm >** page

Step 4 - Use a Cat. 5 / 6 cable to bridge over the failed slave Box which will be replaced to minimize log / data loss

Step 5 - Power off and remove the failed slave Box from connection

Step 6 - Install the new slave Box, cancel the cable-bridging and reconnect the slave Box to the previous and next one

Step 7 - Power on the new slave Box

Step 8 - Configure the new slave Box in **< EC Box Setting >** page such as Name, Location

Step 9 - Enable alarm email in **< Alarm >** page

Ignore step 2 and 4 if the failed slave Box is in the last level

3. How to move out a slave Box (without a replacement) ?

Step 1 - Prepare an appropriate length Cat. 5 / 6 cable

Step 2 - Disable alarm email in **< Alarm >** page

Step 3 - Use the Cat. 5 / 6 cable to bridge over the removed slave Box to minimize log / data loss

Step 4 - Power off and remove the slave Box from connection

Step 5 - Reconfigure and reset the level for the affected slave Box (es) which next to the removed slave Box

Step 6 - Disable the removed slave Box in **< Setup >** page

Step 7 - Enable the Box (es) in **< Setup >** page based on the new level setting in Step 5

Step 8 - Click " **Apply** " to save the setting change

Step 9 - Enable alarm email in **< Alarm >** page

Ignore step 1, 3, 5 and 7 if the removed slave Box is in the last level

4. How to add an extra slave Box to an existing Master IP group ?

Step 1 - Prepare a new slave Box and set the slave Box level accordingly
(Please refer to user manual < 1.5 > for details)

Step 2 - Prepare an appropriate length Cat. 5 / 6 cable

Step 3 - Disable alarm email in **< Alarm >** page

Step 4 - Install, connect and power on the new slave Box

Step 5 - Reconfigure and reset the level for the affected slave Box (es) which next to the added slave Box

Step 6 - Enable the added slave Box in **< Setup >** page

Step 7 - Enable the Box (es) in **< Setup >** page based on the new level setting in Step 5

Step 8 - Click " **Apply** " to save the setting change

Step 9 - Configure the new slave Box in **< EC Box Setting >** page such as Name, Location

Step 10 - Enable alarm email in **< Alarm >** page

Ignore step 3, 5, 7 and 11 if the added slave Box is in the last level

Part X. Troubleshooting

IGM-03

1. Try to login IGM-03 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 or not. 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 < 5.2 >)

Part XI. Optional Accessories

Temp. + Humid. Sensor

- One sensor for temperature & humidity
- Low profile and light weight design with a magnetic base for easy affixing to cabinet

Part no. :

EMS-102-2 with 2M cord
EMS-102-4 with 4M cord

Temp. Sensor

- Detection for temperature
- Low profile and light weight design with a magnetic base for easy affixing to cabinet

Part no. :

EMS-101-2 with 2M cord
EMS-101-4 with 4M cord

Water Sensor

- Fluid leakage detection
- 5M rope round the cabinet bottom to detect any fluid flowing to the cabinet area
- IP65 cable joint connectors provided

Part no. :

EMS-401-3 with 3M cord

Smoke Sensor

- Safely operated smoke detection

Part no. :

EMS-201-1 with 1M cord
EMS-201-3 with 3M cord

Shock Sensor

- Alert the physical vibration on the cabinet

Part no. :

EMS-301-1 with 1M cord
EMS-301-3 with 3M cord

LED Beacon

- Highly visible for alerting user to alarm status

Part no. :

EMS-602-1 with 1M cord
EMS-602-3 with 3M cord

Inductive Door Sensor

- Light weight, mini size & adhesive
- No custom cutting required on doors
- Easy for existing cabinet retrofit or integration to new cabinet

Part no. :

EMS-502-2 with 2M cord
EMS-502-4 with 4M cord

Mechanical Door Sensor

- Low cost
- Precise
- Cost efficient integration to new cabinet
- Custom cutting required on door

Part no. :

EMS-501-2 with 2M cord
EMS-501-4 with 4M cord

LED Light Bar

- Auto ON / OFF by door sensor detection
- Manual ON / OFF by software remote
- Magnetic base for easy affixing to cabinet
- Dimension (W x D x H) : 20 x 300 x 12 mm

Part no. :

EMS-601-2 with 2M cord
EMS-601-3 with 3M cord