InfraSolution® X

SmartCard Access Control for Racks

User Manual

X-2000
X-1000

X-600
Smartcard Handle

Designed and manufactured by Austin Hughes

Legal Information

First English printing, December 2022

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

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 damage 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 damaged 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 invalidate 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 A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in business, industrial and commercial environments.

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.

Notice : The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

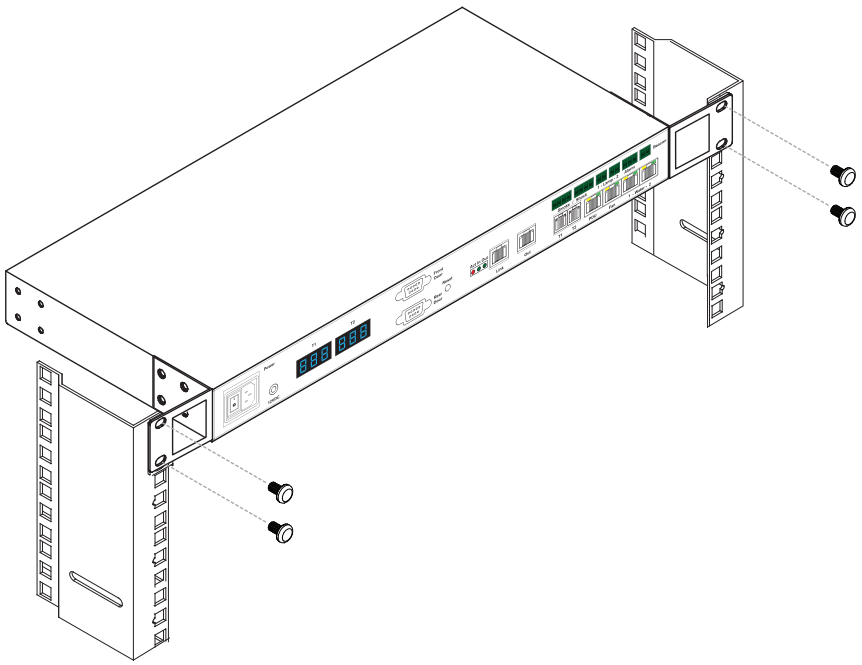
IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

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 rack.
- 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.

InfraBox Installation

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

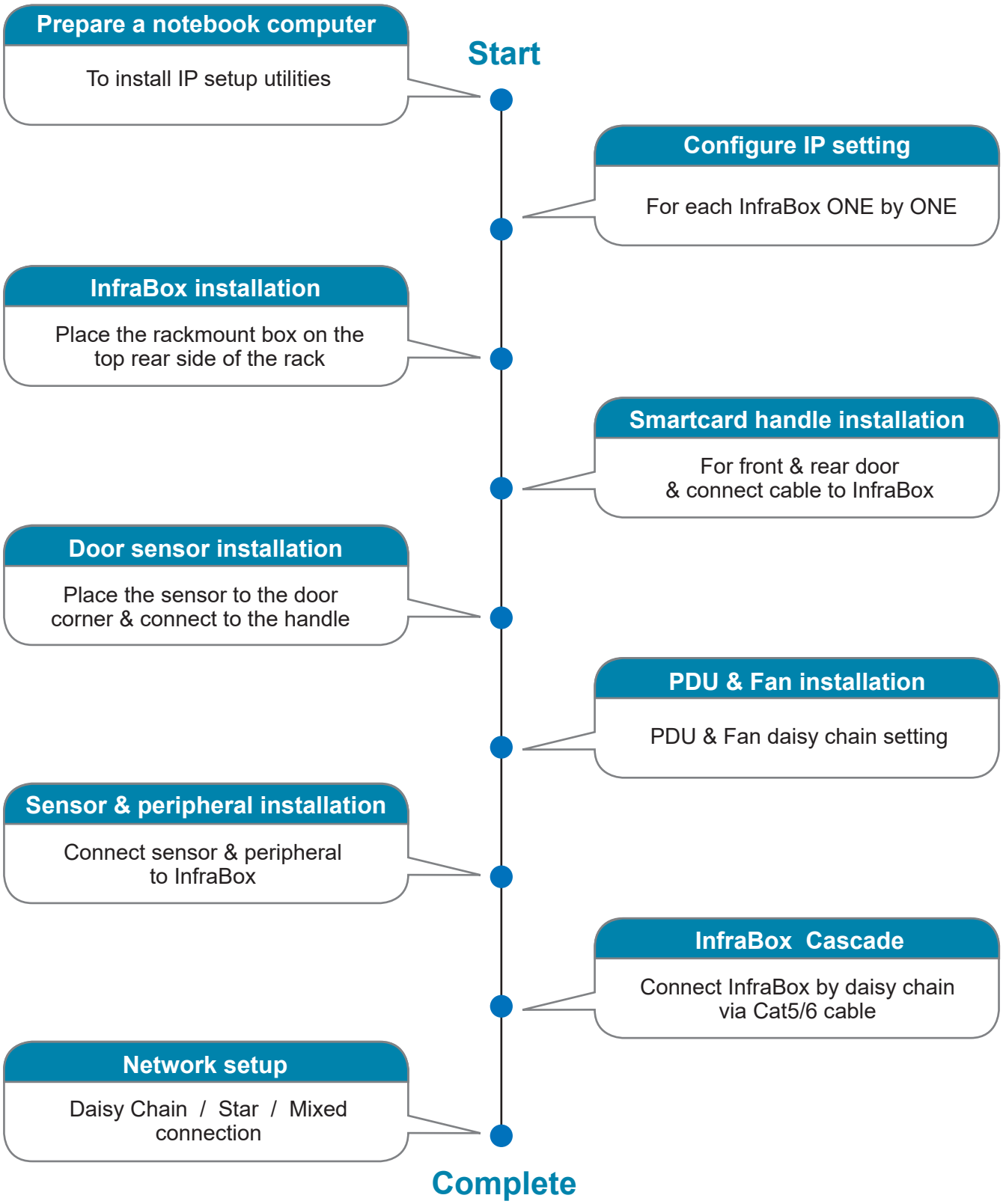


Content

Part I. Hardware & Network Setup

Part II. Software & System Setup

< 1.1 > Tips for hardware



Key Hardware

< 2.1 > 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.

- X-2000 **OR** X-1000 InfraBox, 1 pc
- 600 MiFARE **OR** Proximity smart card handle, pair
- Inductive **OR** Mechanical door sensor, pair
- Front door cable, 2-section with joint connector, 1 pc (3150mm)
- Rear door cable, 2-section with joint connector, 1 pc (2350mm)
- 6' Power cord, 1 pc
- Activated smartcard, 1 pc
- Key, 1 pc
- Cable clip, 8 pcs

X-2000

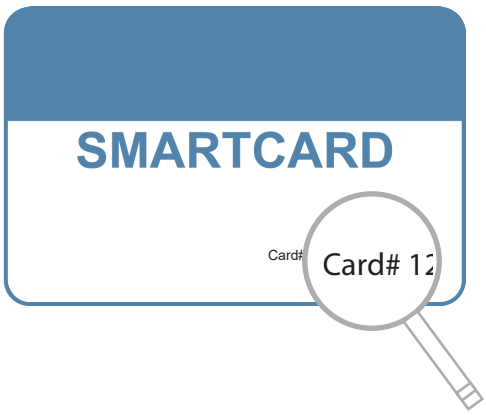
OR

X-1000

Patented and Worldwide
Patents Pending

X-600P **OR** X-600M

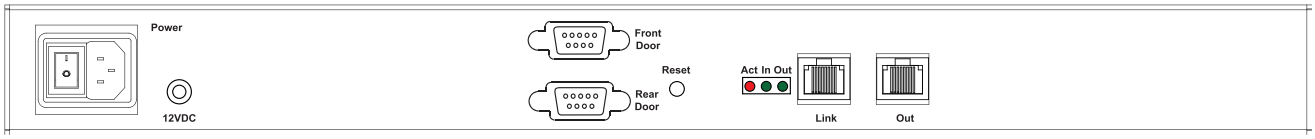
Handle mounting screw set :
- M5 x 12mm screw, 6 pcs



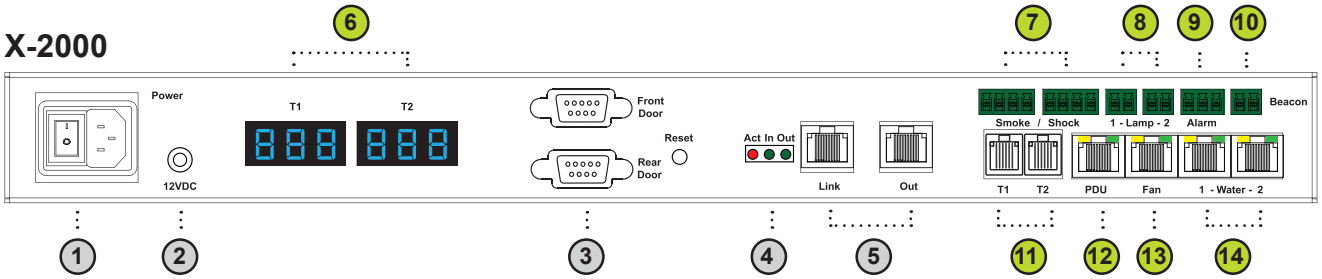
Each package bundled with smartcard x 1. The card on the bottom right shows card number information :

< 2.2 > InfraBox X-1000 / X-2000

X-1000



X-2000

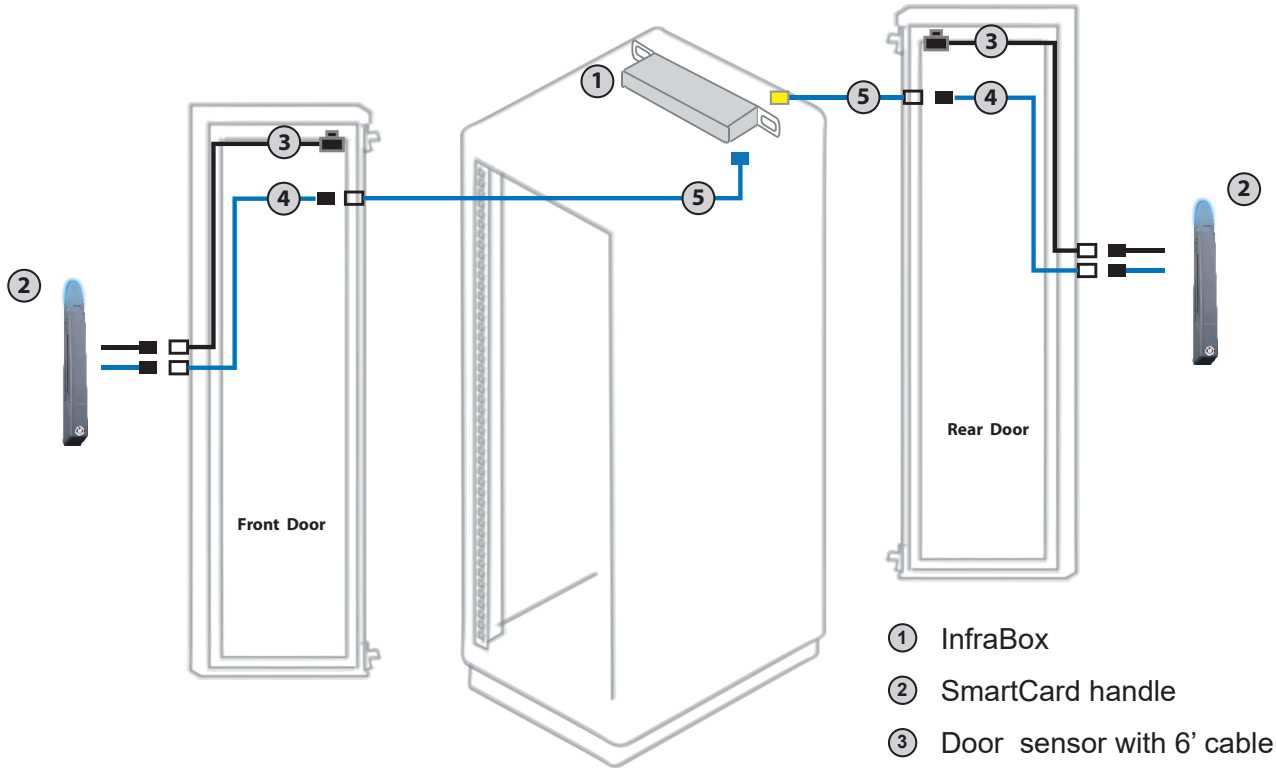


1. Power input
2. Dual power input (option)
3. Door cable DB-9 connector x 2
   Connect to the front and rear handle
4. “Act in Out” LED
5. Daisy chain RJ45 port x 2
   (Link & Out)
6. Temp. LED display x 2
7. Smoke / Shock sensor port x 2
8. LED Light Bar port x 2
9. Port for 3rd party alarm board x 1
10. LED beacon port x 1
11. Temp. & Humid. sensor port x 2
12. PDU port x 1 (RJ-45, up to PDU daisy chain level x 4)
13. Fan unit port x 1 (RJ-45, up to fan unit daisy chain level x 2)
14. Water sensor port x 2

X-1000 / X-2000 Specification

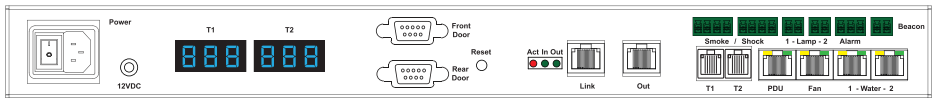
Product Dimension (W x D x H)	400 x 135 x 39.7 mm / 15.7 x 5.3 x 1.6 inch
Packing Dimension (W x D x H)	557 x 367 x 98 mm / 21.9 x 14.4 x 3.9 inch
Net / Gross Weight	1.06 kgs (2.3 lbs) / 2.2 kgs (4.8 lbs)
Power Consumption	Auto-sensing 100~240VAC, 50 / 60Hz 0.5A, Max. 48 Watt
Operating Temperature	0° to 55°C Degree
Storage Temperature	-5° to 60 °C Degree
Relative Humidity	5~90%, non-condensing
Mounting	1U Rackmount
Safety Regulatory	FCC & CE certified
Environmental	RoHS3 & REACH compliant by SGS

Key hardware Installation Diagram - InfraBox / Handle / Door Sensor

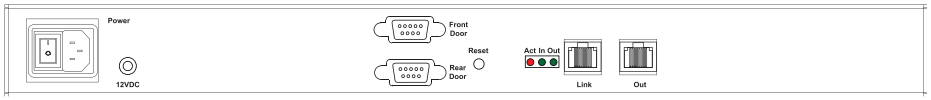


1. InfraBox
2. SmartCard handle
3. Door sensor with 6' cable
4. Door cable (door section)
5. Door cable (rack section)

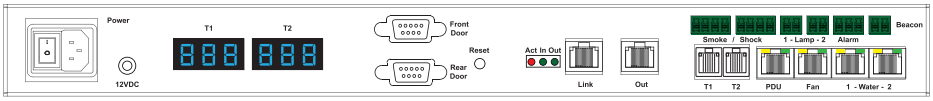
InfraBox Daisy Chain Connection



InfraBox X-2000



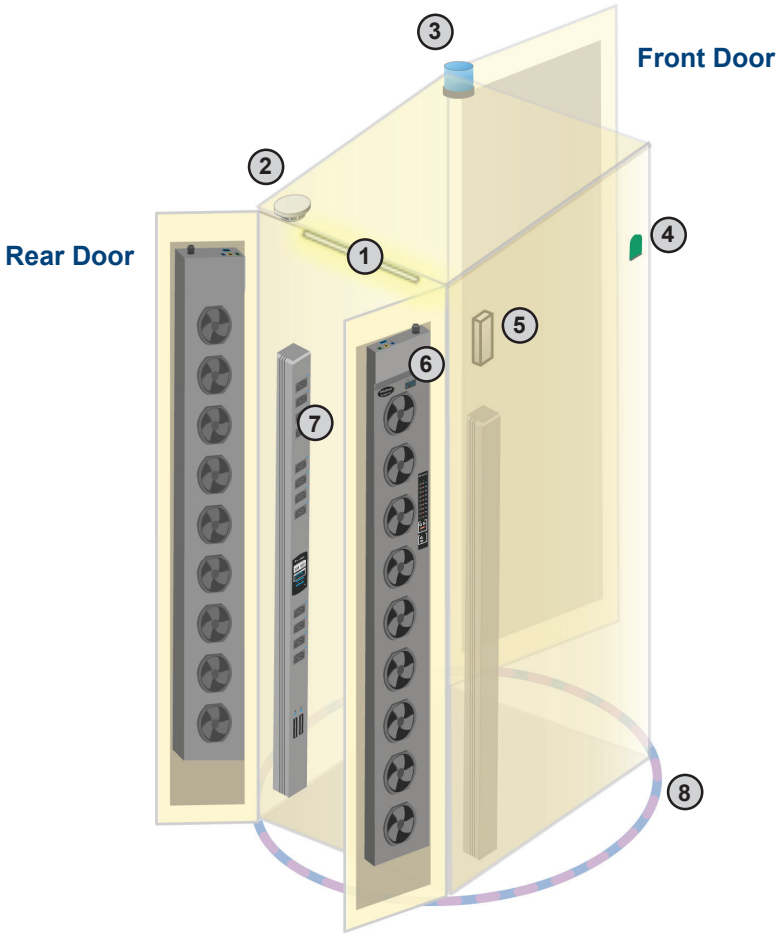
InfraBox X-1000



InfraBox X-2000

- **Up to 50 Infrabox in a single daisy chain**
- **Up to 100 meters in a single daisy chain**

Installation Diagram - PDU / Fan / Sensor / Peripheral



	Item	Qty.	Location
1	LED Light Bar	2	front & rear top inside
2	Smoke Sensor	1	rear inside top
3	Flashing LED Beacon	1	front rack roof
4	Temp. & Humid. Sensor	2	any inside position
5	Shock Sensor	1	upper inside
6	Fan Unit	2	door mount or rackmount
7	PDU	4	vertical or rackmount
8	Water Sensor	1	surrounding rack on floor

IP Setup for InfraBox

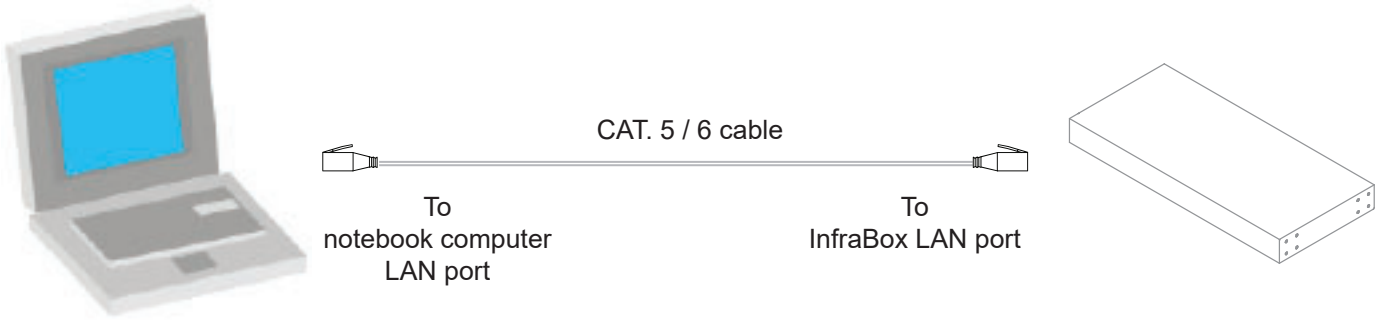
Before place the InfraBox to the rack, user **MUST** configure the IP setting for the InfraBox. It takes around 1-2 minutes to complete :

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

2. Double click the InfraBoxSetup.msi and follow the instruction to complete the utilities installation.

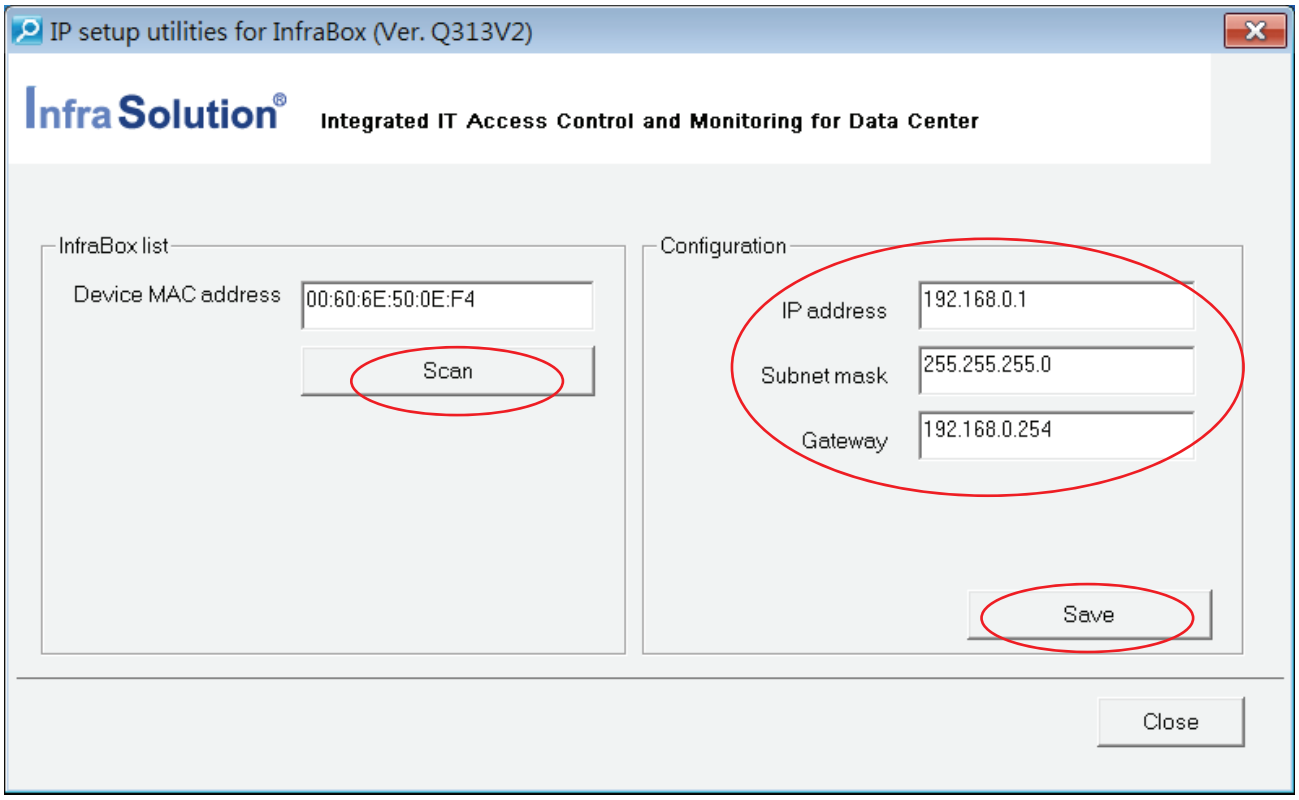
3. Power ON the InfraBox.

4. Go to each InfraBox with the notebook computer & a piece of CAT. 5 / 6 cable to configure the InfraBox as below.



IP Setup for InfraBox

Write down the new IP address for < 10.2 > MFP - Master Floor Plan



5. Click " **Scan** " to search the connected InfraBox.

6. Change the IP address / Subnet mask / Gateway, then Click " **Save** " to confim the setting of InfraBox.

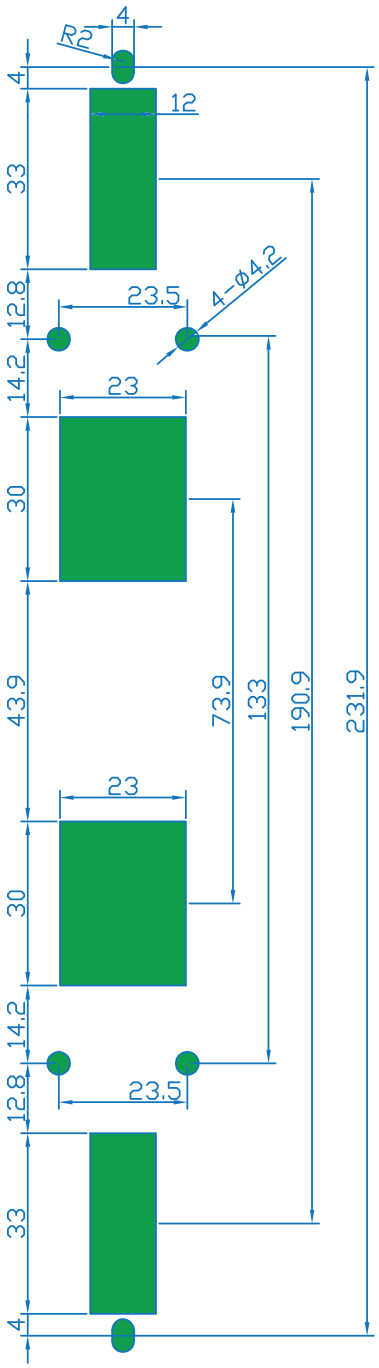
The default IP address is as below :
IP address: 192.168.0.1
Subnet mask: 255.255.255.0
Gateway: 192.168.0.254

Please take the procedure no. 3 to 6 for all InfraBoxes ONE BY ONE.

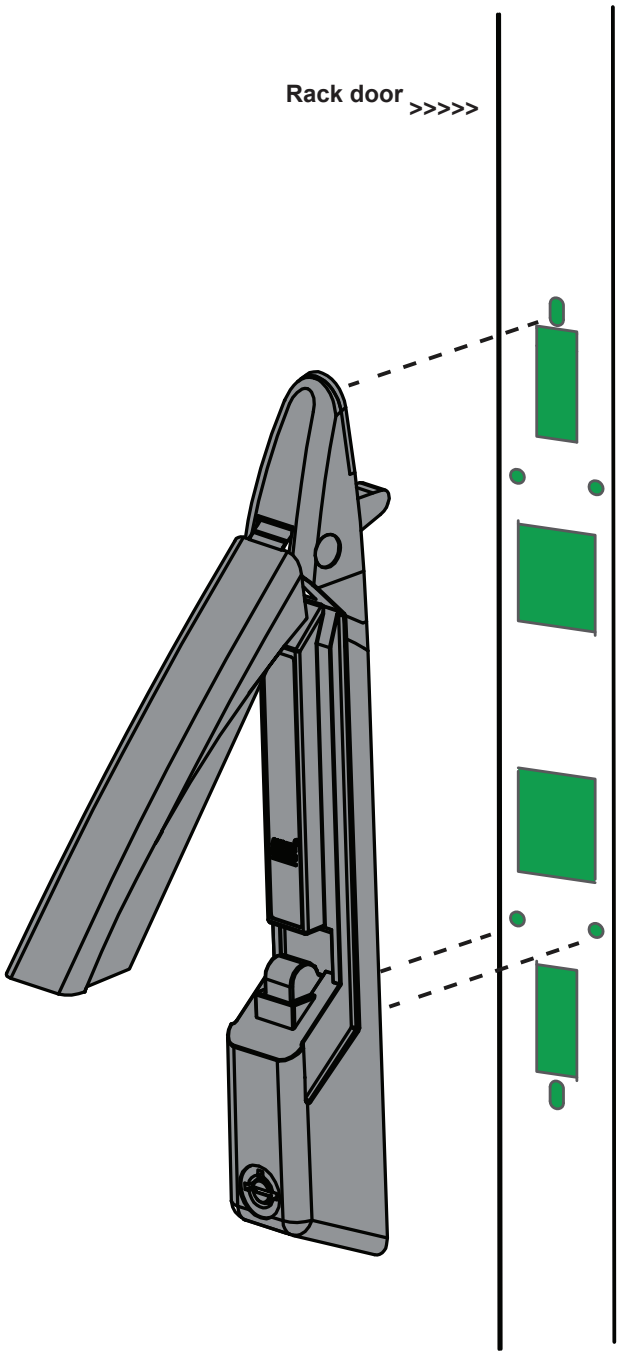
< 2.3 > Handle X-600P / X-600M

Custom Mounting Cut-out on Cabinet Door for Handle Installation :

- It is highly important to make a correct handle mounting cut-out on rack door.
- Please **100%** follow the diagram on the below to make the cut-out.



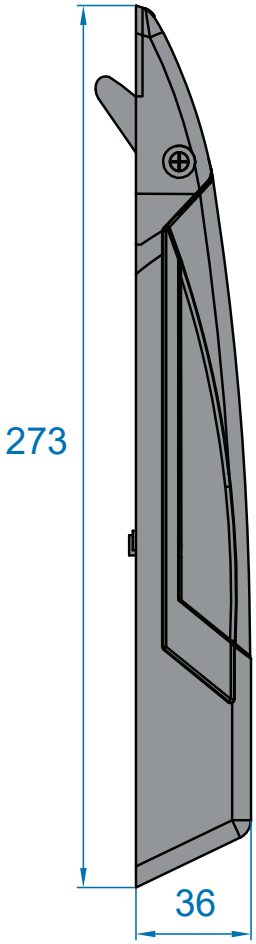
Unit : mm



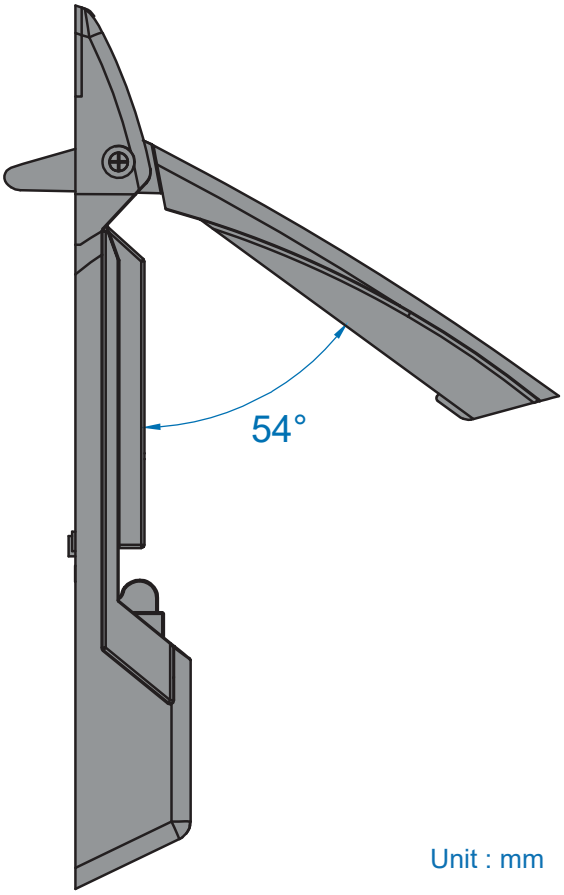
< 2.3 > Handle X-600P / X-600M

Dimension

Side View Close



Side View Open



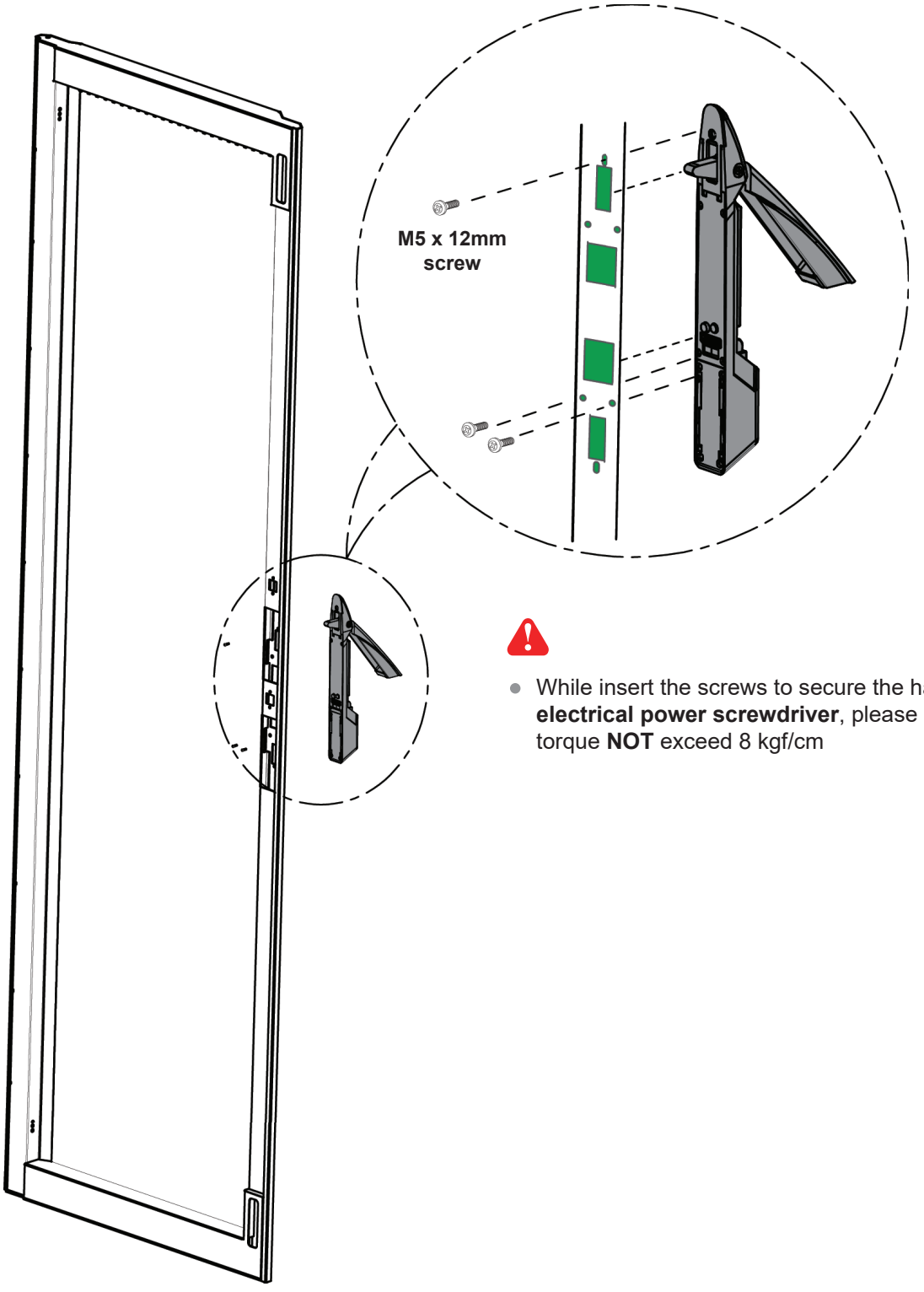
Unit : mm

X-600 handle design supports left side & right side open

Handle Installation Steps

1. **Mount X-600 handle to the custom handle mounting cut-out position.**

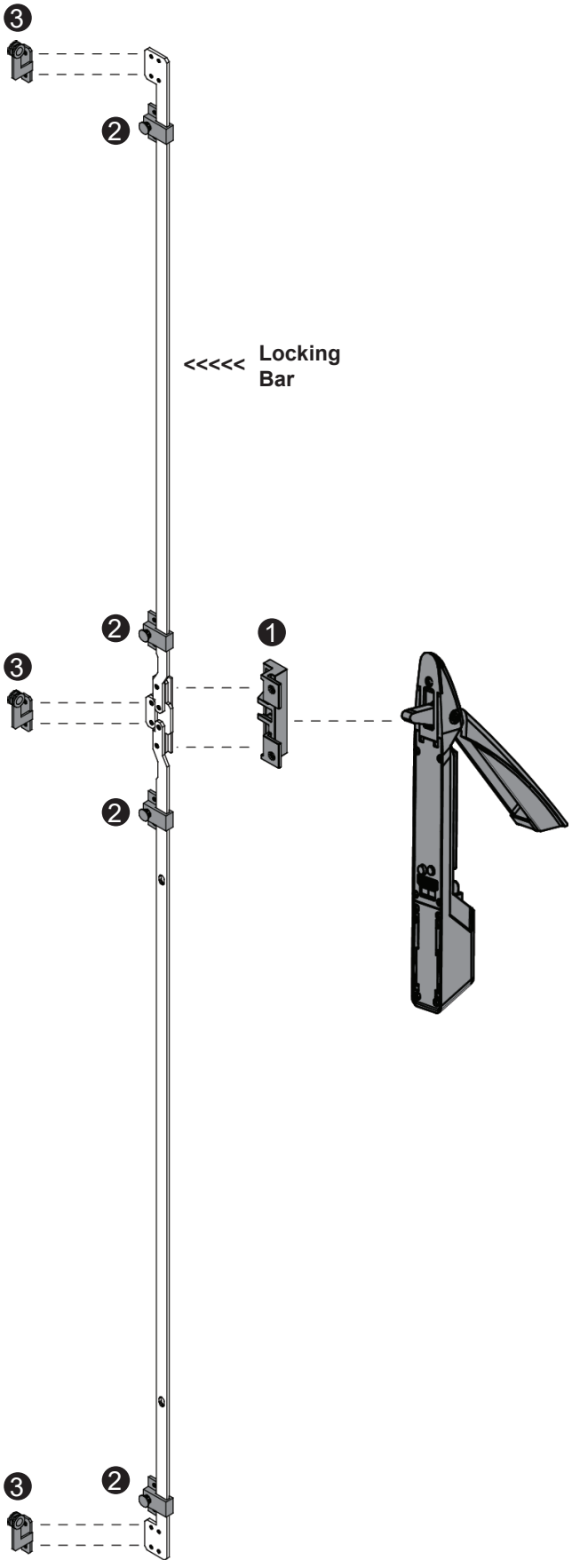
2. **Insert the bundled M5 x 12mm screw x 3 pcs to secure the handle in place.**



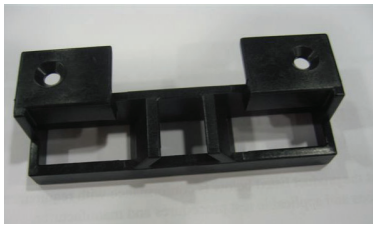
- While insert the screws to secure the handle with **electrical power screwdriver**, please set the torque **NOT** exceed 8 kgf/cm

Parts of Rack Door Locking Bar

Three parts available for rack manufacturer to produce the rack door locking bar system integrated with X-600 handle .



❶ **Locking bar handle bracket, pc**
Order part no. : 404 - 8 - 02111
material : alloy
(fixing screw not provided)



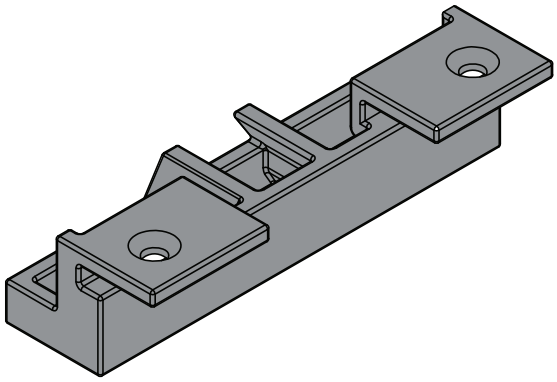
Dimension Diagram
on next page

❷ **Locking bar retaining bracket, pc**
Order part no. : 314 - 0 - 10010
material : alloy
(fixing screw not provided)

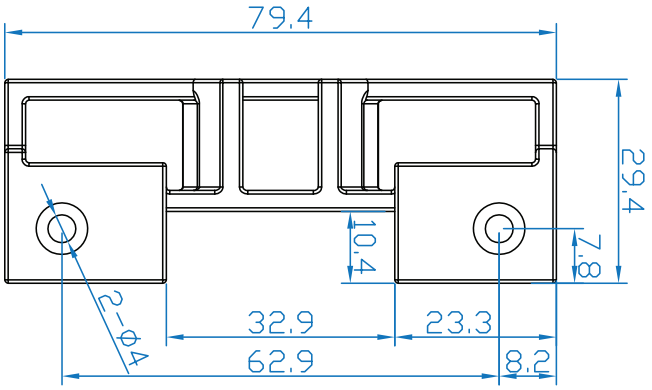
Dimension Diagram
on next page

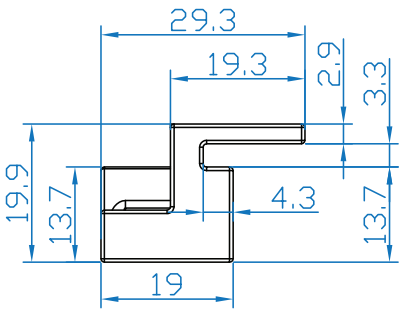
❸ **Locking bar roller, pc**
Order part no. : 314 - 0 - 10020
material : alloy
(fixing screw not provided)

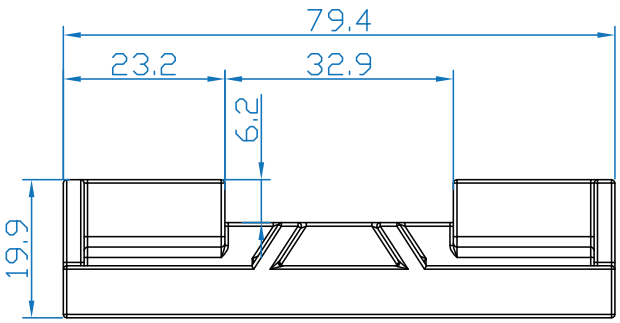
Dimension Diagram
on next page

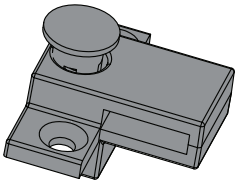


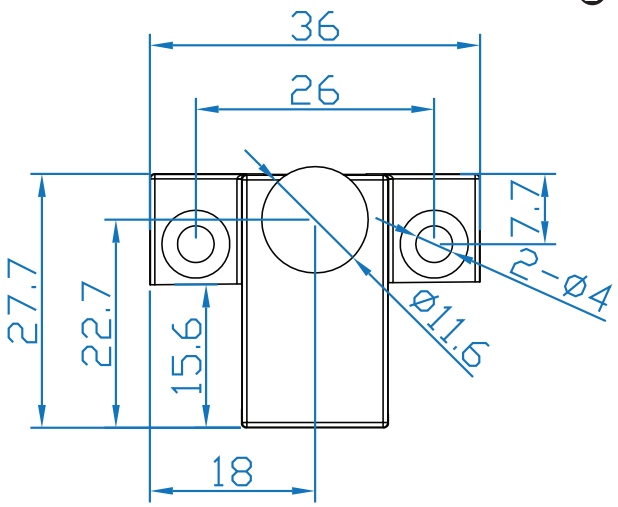
❶ **Locking bar handle bracket, pc**
Order part no. : 404 - 8 - 02111
material : alloy
(fixing screw not provided)





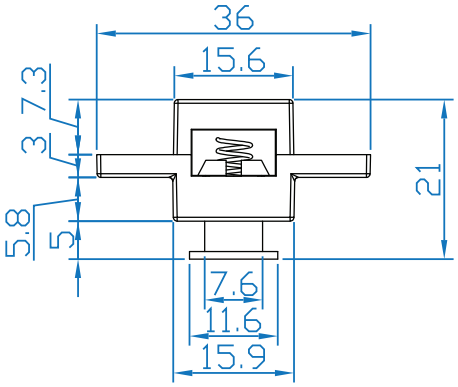


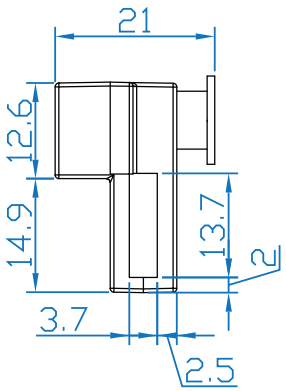


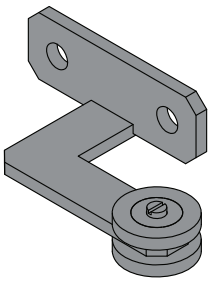


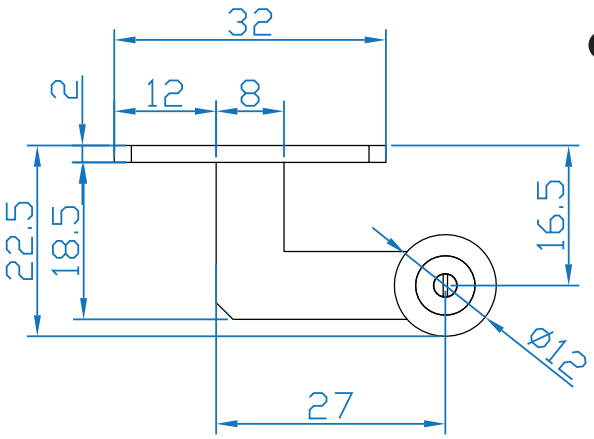
❷ Locking bar retaining bracket, pc

Order part no. : 314 - 0 - 10010
material : alloy
(fixing screw not provided)



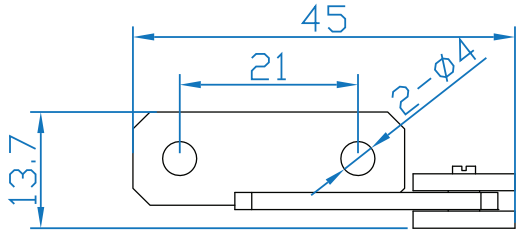


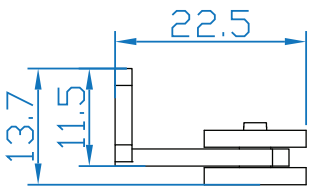




❸ Locking bar roller, pc

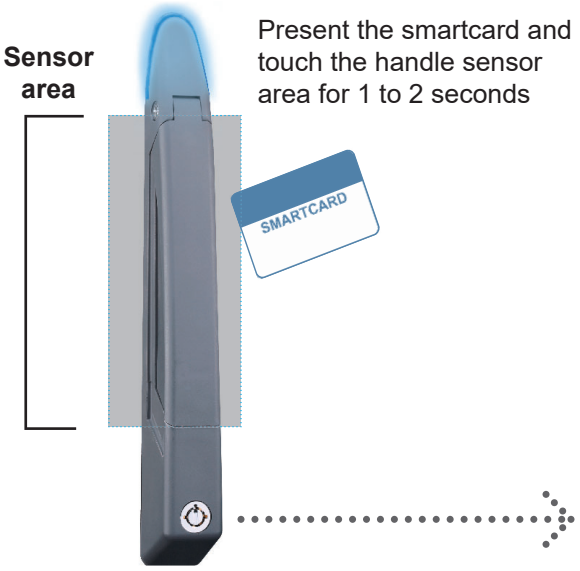
Order part no. : 314 - 0 - 10020
material : alloy
(fixing screw not provided)

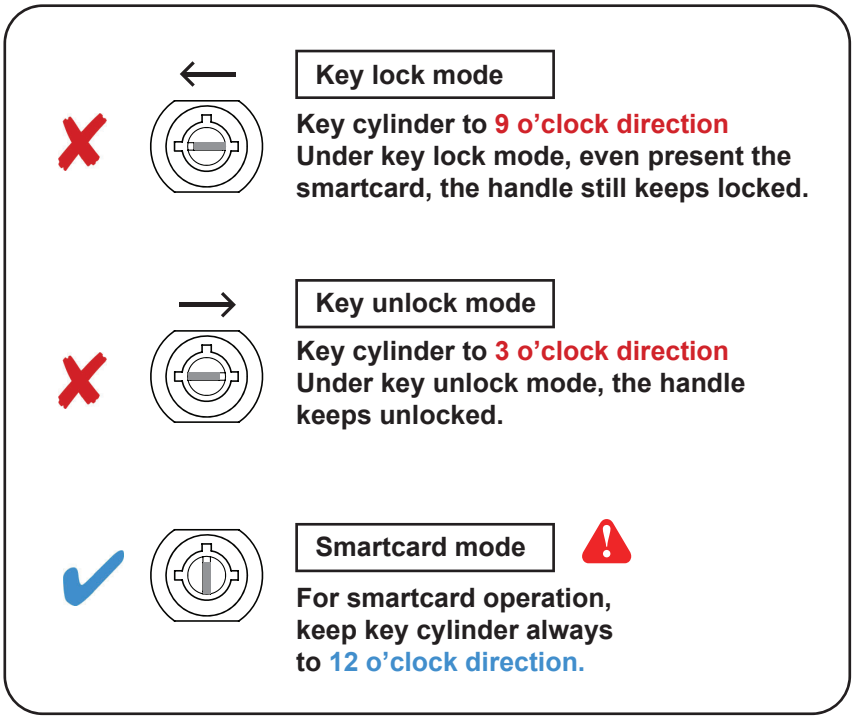




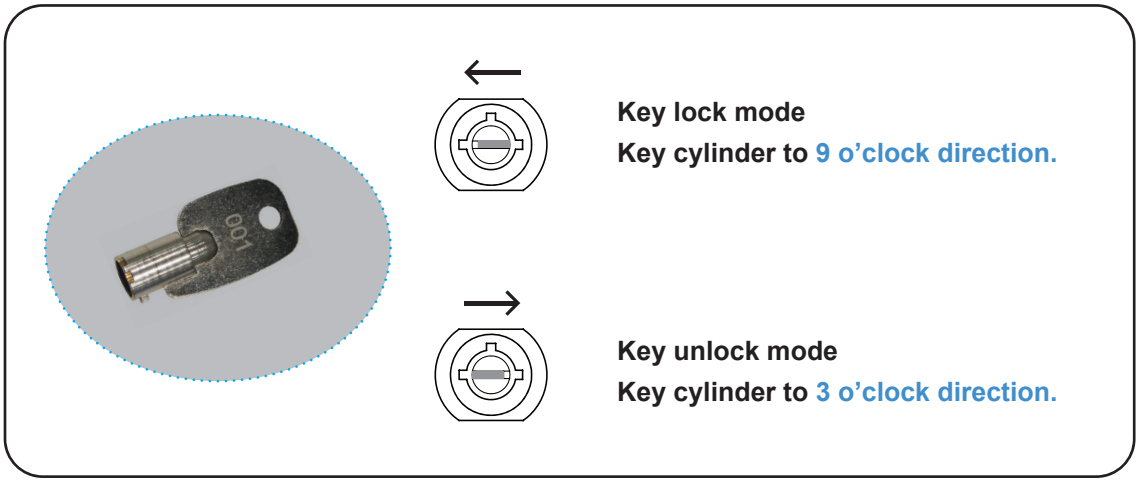
Important Note for Key lock

- Under Smartcard mode, always keep key cylinder to 12 o'clock direction.

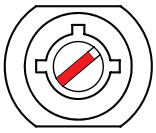




- Unless the smartcard handle is defective, lock / unlock the handle by key is NOT recommended
- Please insert & turn the key with push force



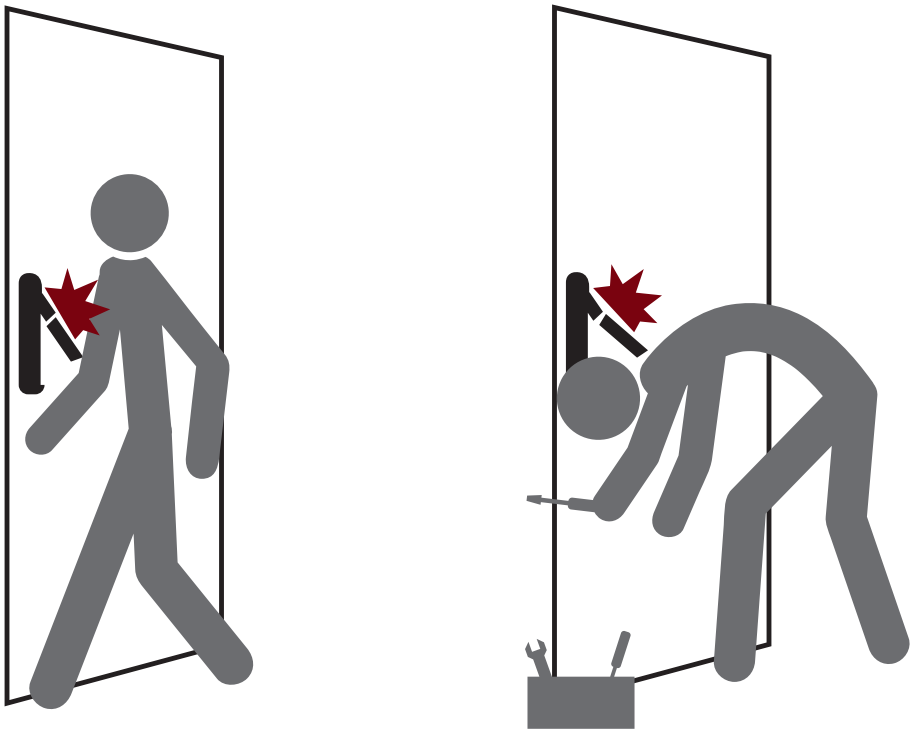
Maintenance Key (MK-001)



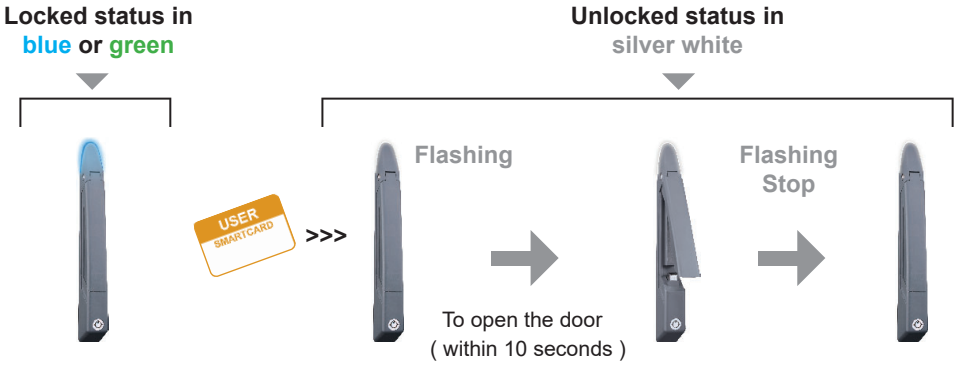
- Improper key usage may cause the cylinder stuck at abnormal direction 1 to 2 o' clock.
- Under this circumstance, the **maintenance key (MK-001)** is required to solve the problem.
- Please insert the **maintenance key** to the cylinder with push force for turning it to normal direction 9 or 12 or 3 o'clock.

Important Note for Handle

For your own safety, please return the handle to park position properly in case reckless collision.



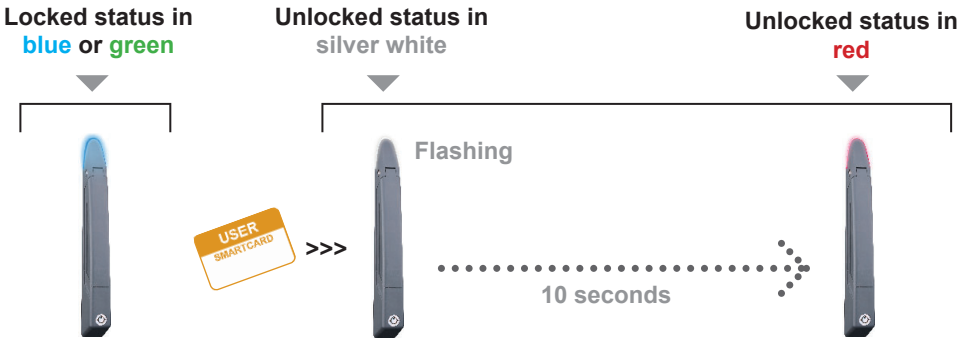
How to unlock the handle & open the door properly



Within 10 seconds after smartcard detection, users should :
- lift up the handle
- open the door
- return the handle to park position properly in case reckless collision causes handle damage.

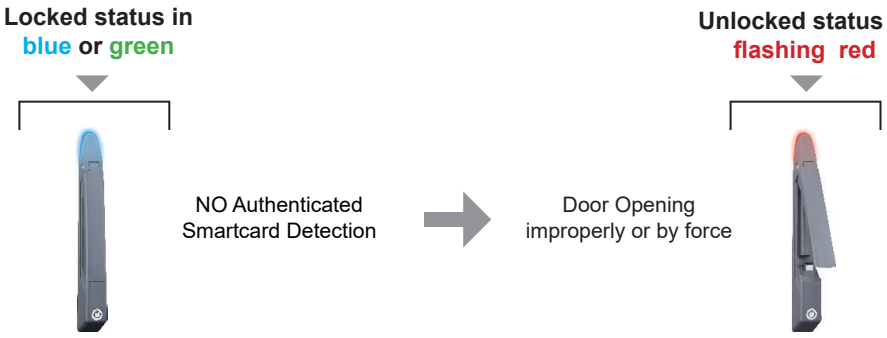
Over 10 seconds, the handle still **keeps unlock**.

Unlock the handle but NOT open the door



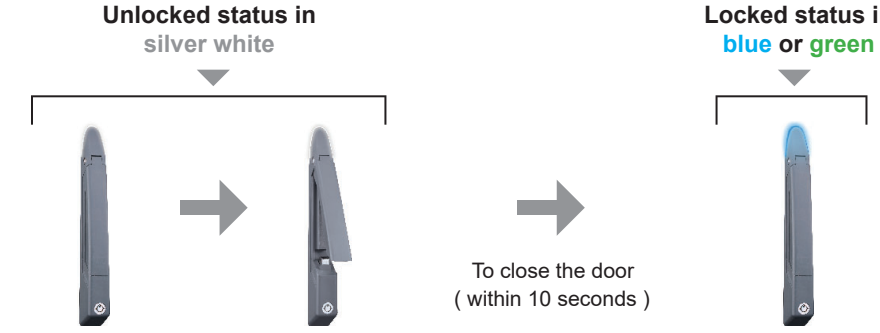
If DO NOT lift up the handle and open the door within 10 seconds, the LED will change to **RED** to draw user's attention that the handle in unlock status and rack security at risk now.

Unauthorized door-open



If the door is opened improperly or by **force**, handle LED will turn to **red flashing** with audio alarm 'beep' sound.

How to close the door properly



Users should :
- lift up the handle
- close the door
- return the handle to park position properly

Over 10 seconds, the handle will **auto-lock**.

< 2.4 > Door Sensor Installation **Inductive Sensor**

Inductive Door Sensor, pair (S-DSI)

Features

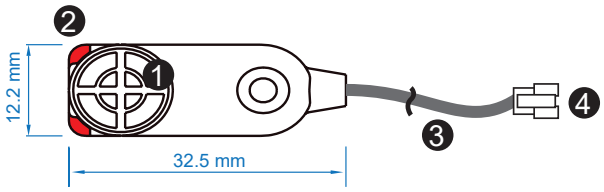
- light weight
- mini size (32.5 x 12.2 x 9.2 mm)

Requirement

- cabinet frame made of iron
- sensing distance 3mm

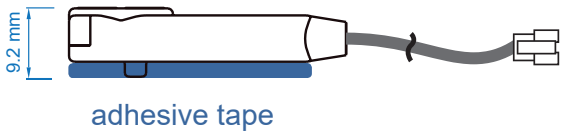
Package content

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



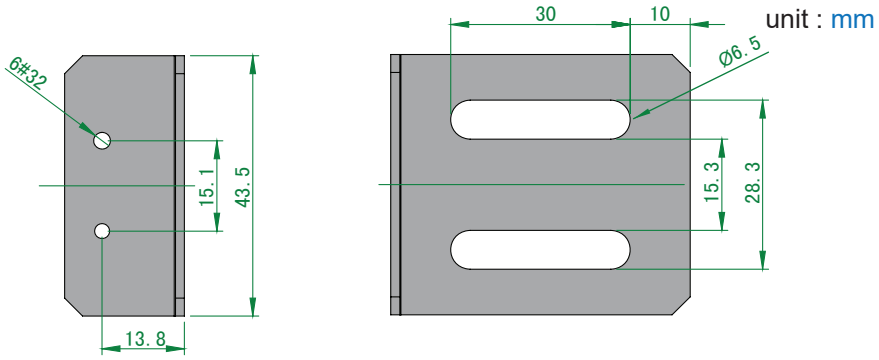
❶	Sensor area
❷	Red LED (light up while door opening)
❸	2m cable
❹	Cable jack (connect to handle)

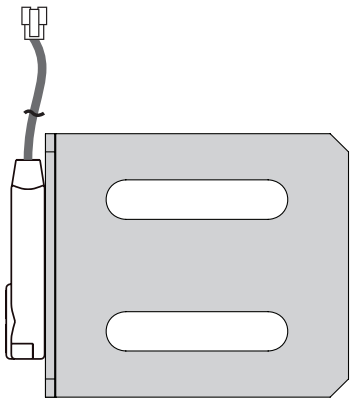
Mounting by adhesive tape (no custom cutting required on door)



Mounting by bundled bracket

- Ø6.5mm hole cutting required on door frame



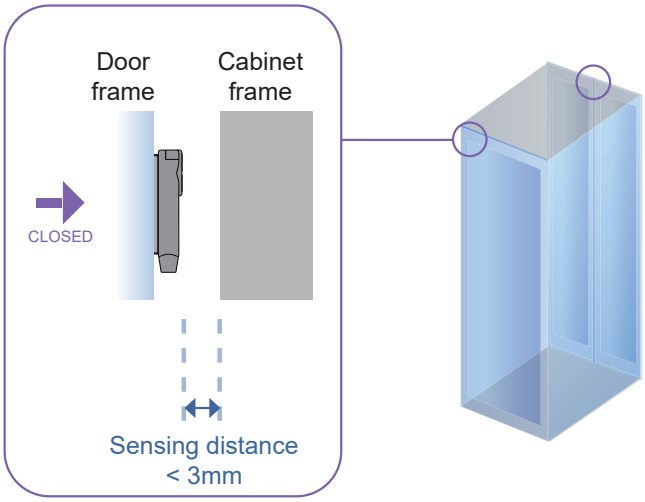


Installation steps

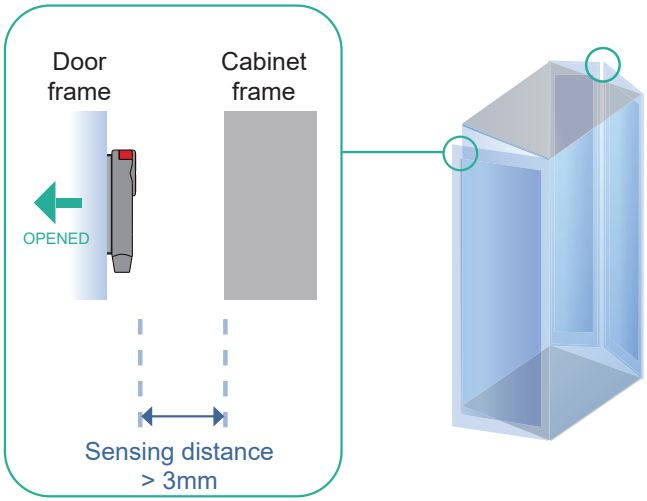
- connect to the handle
- guide & fix the cable with cable clips (bundle with handle package)
- place the sensor at the top of the door, close to the opening side
- adjust the sensor with adhesive tape or mounting bracket to ensure the sensing distance between door to frame within 3mm while door in close 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



< 2.4 > Door Sensor Installation IR Sensor

IR Door Sensor, pair (S-DIR)

Features

- Magnetic base for easy setup
- No custom cutting required on doors
- Light weight & mini size (33 x 19 x 7 mm)
- 2m cord

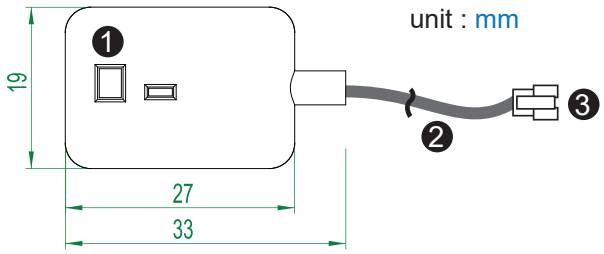
Requirement

- rack frame made of ferrous metal (iron)
- sensing distance
- door close : < 40mm
- door open : > 50mm

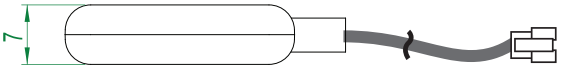
Package content

- IR sensor w/ 2m cable x 2
- reflective label x 2 (opposite to the IR door sensor for a better response, size: 30 x 40 mm)

Front View



Side View

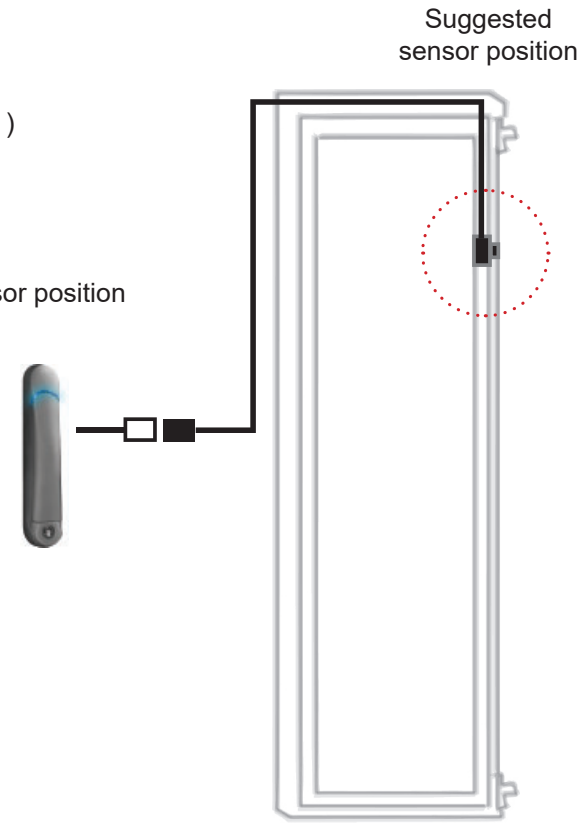


❶	Sensor area
❷	2m cable
❸	Cable jack (connect to handle)

Installation steps

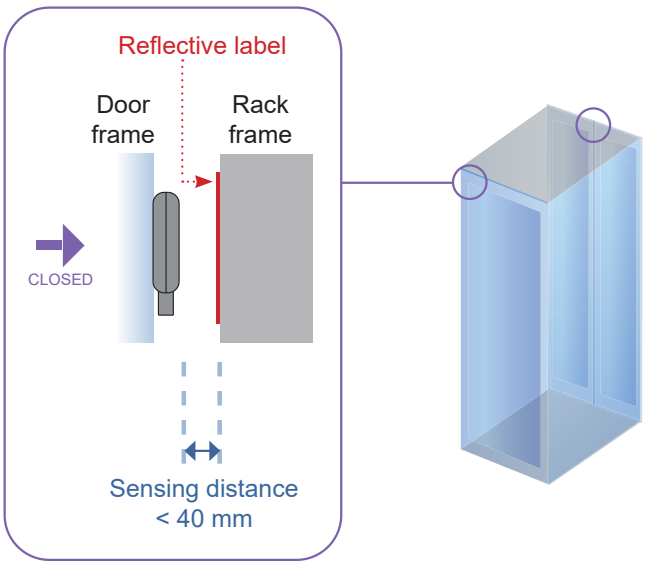
- connect to the handle
- guide & fix the cable with cable clips (bundle with handle package)
- place the sensor at the top of the door, close to the hinge side
- adjust the sensor to ensure the sensing distance between door to frame within 5mm while door in close status
- stick the reflective label on the rack frame just opposite to the sensor position

sensing distance
door close : < 40mm
door open : > 50mm

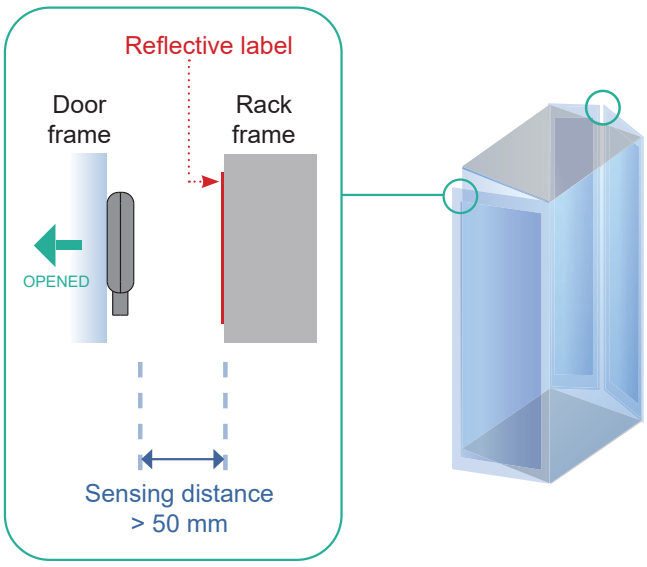


Sensor Operation

DOOR CLOSE
- close door
- IR sensor detects the rack frame
- DOOR CLOSE SIGNAL sends out



DOOR OPEN
- open door
- IR sensor lose detection with rack frame
- DOOR OPEN SIGNAL sends out



sensing distance
door close : < 40mm
door open : > 50mm

< 2.4 > Door Sensor Installation **Mechanical Sensor**

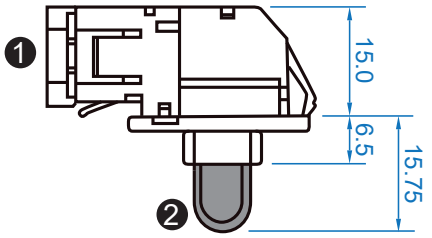
Mechanical Door Sensor, pair (S-DSW)

- Low cost / precise
- Size (36.3 x 15 x 30.75 mm)
- 2m cord

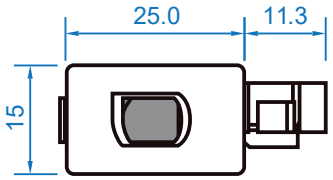
Package content

- Mechanical sensor w/ 2m cable x 2
- Mounting bracket x 2

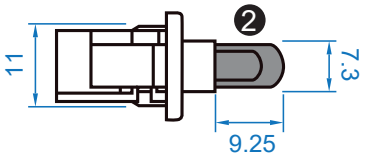
Top View



Front View



Side View

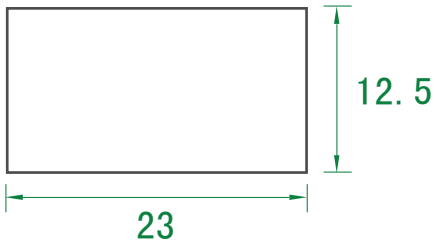


unit : mm

1	Cable connector
2	Press button (total travel distance : 9.25 mm) (min. actuation distance : 3.00 mm)

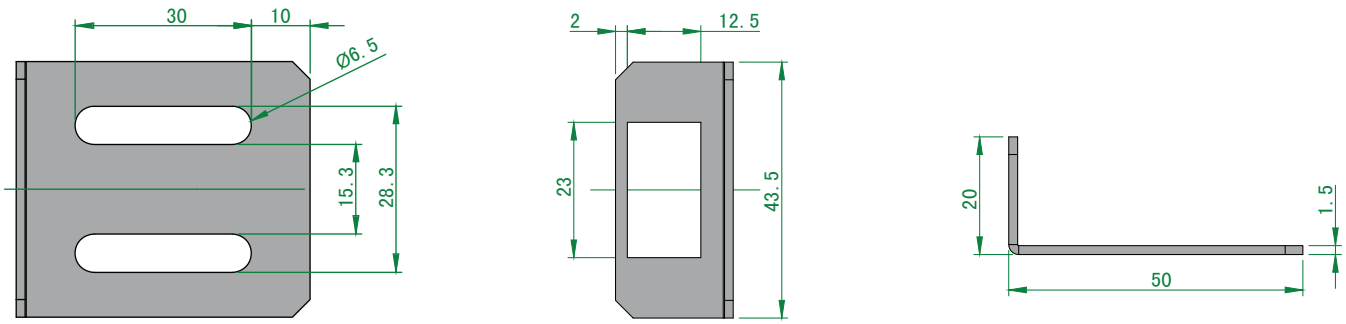
Mounting by custom cutout on door frame

- Cutout size (23 x 12.5 mm)



Mounting by bundled bracket

- Ø6.5mm hole cutting required on door frame



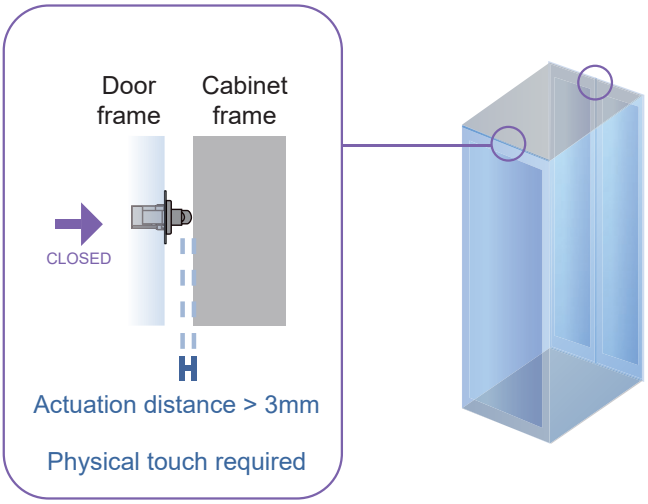
unit : mm

Installation steps

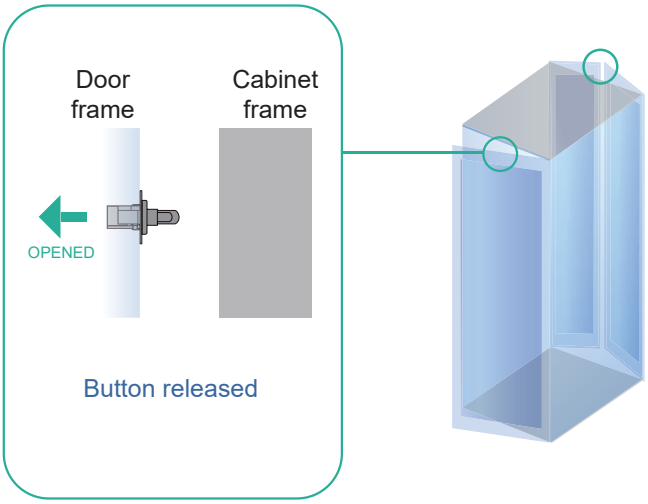
- connect to the handle
- place the sensor at the top middle of the door
- secure it with mounting screws x 2

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



< 2.4 > Door Sensor Installation

Specification

		Inductive Door Sensor	Mechanical Door Sensor
Part no.		**S-DSI**	**S-DSW**
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)
	Packing	/	/
Weight	Net / Gross	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	X-2000 series		
Safety Regulatory	FCC & CE certified		
Environmental	RoHS3 & REACH compliant by SGS		

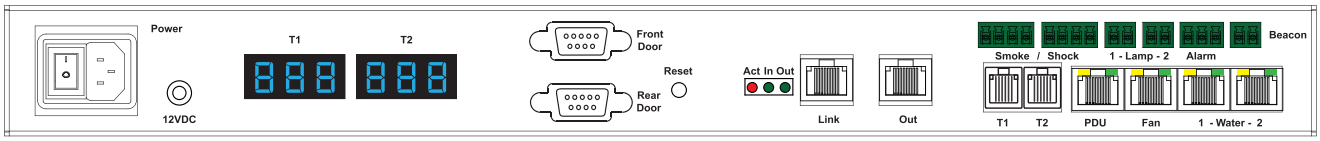
PDU & Fan Unit

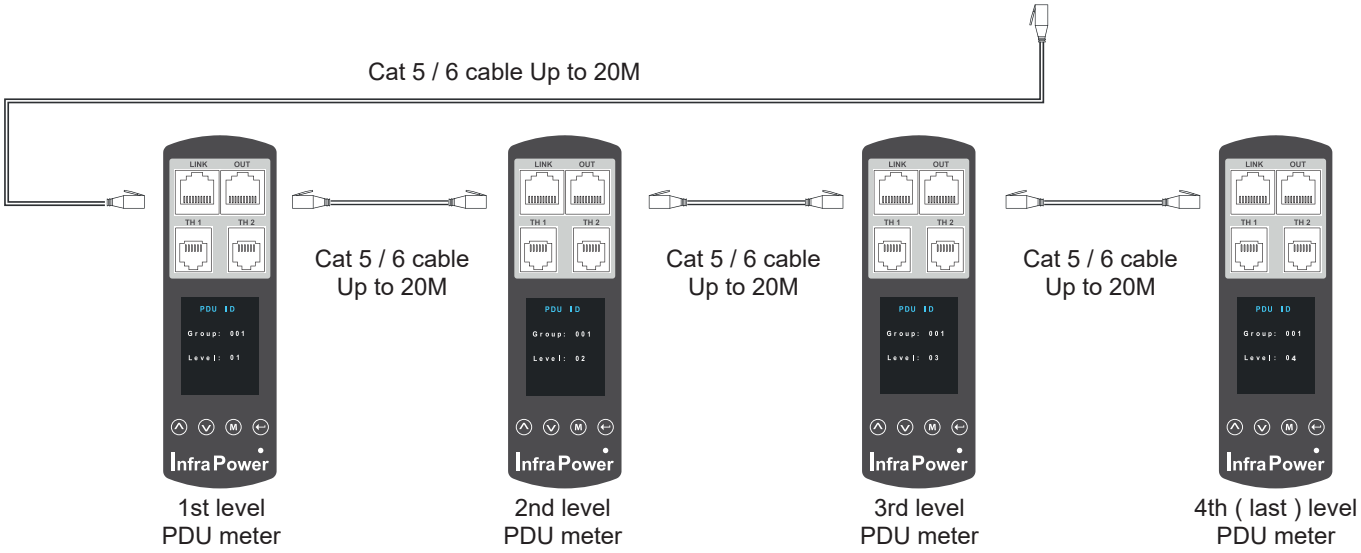
< 3.1 > PDU

Under an **InfraSolution X** network, each InfraBox supports **InfraPower** 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 & download the PDU drawing & specifications.
http://www.austin-hughes.com/solutions/intelligent-kWh-pdu.html#Single_Phase

InfraBox





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

PDU level setting :

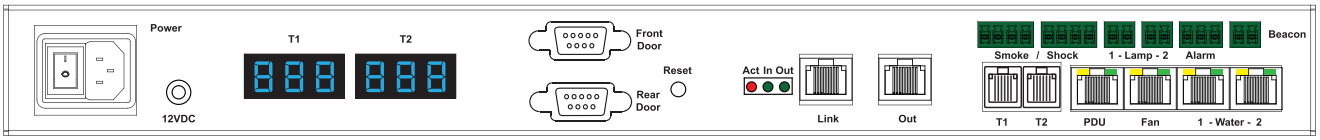
For details about PDU level setting (meter with 1.8” LCD),
please refer to IPM-04 user manual < 1.2 > Meter Reading & Setting :
www.austin-hughes.com/UM-IPM-04-1P-WMeter

For details about PDU level setting (meter with 2.8” touch LCD),
please refer to IPM-04 user manual < 1.3 > Meter (PDU) Cascade :
www.austin-hughes.com/UM-IPM-04-1P-3Meter

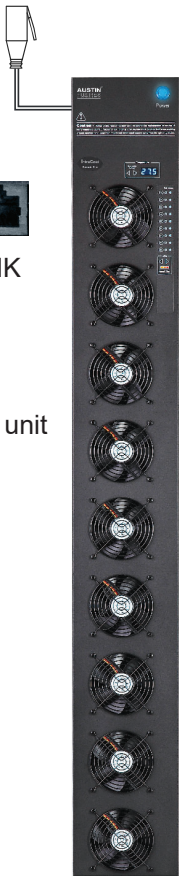
< 3.2 > Fan Unit

Under an **InfraSolution X** network, each InfraBox supports **InfraCool** remote fan unit x 2 in a daisy chain.
Each fan unit comes with TEMP. sensor port x 1

InfraBox X-2000



2nd (last) level **F**an unit



OUT LINK

Cat 5 / 6 cable
Up to 20M

OUT LINK

1st level Fan unit

Max. daisy chain distance from InfraBox to the 2nd fan unit up to 40M

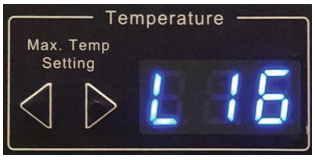
Please visit below link to select desired Fan unit models
http://www.austin-hughes.com/solutions/intelligent-fan-units.html#RMounted

Fan unit level setting :

Please follow the steps below to set the daisy chain level for expansion fan units

Step 1. Press and hold the " ① " button for 5 seconds.

Step 2. Press ◁ or ▷ arrow button to set the daisy chain level

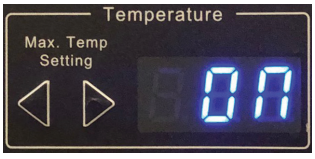


Audio alarm setting :

Please follow the steps below to setup each FAN unit audio alarm

Step 1. Press and hold the " ② " button for 5 seconds.

Step 2. Press ◁ or ▷ arrow button to enable / disable the audio alarm



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

Fan Specification :

Expansion Serial Fan	Model	**RF-1.6 / 1.9**	**RF-33.9**
	No. of Fan	6 / 9	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	972 CFM
	IP Remote Access	Not available, must be via Master IP fan on the 1st level	
	Daisy Chain Level	For Level 2 - 16	
	MTBF	50,000 hrs	
	Individual Fan Noise Level	41 dB	

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	Auto sensing, 100V or 240V AC at 50 or 60Hz via IEC cord	
	Consumption	20W / 40W / 60W	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	Packing Dimension
	RF-1.6	480 x 458.3 x 43.5 mm 18.9 x 18 x 1.71 inch	550 x 550 x 120 mm 21.7 x 21.7 x 4.7 inch
	RF-1.9	480 x 623.3 x 43.5 mm 18.9 x 24.5 x 1.71 inch	550 x 730 x 120 mm 21.7 x 28.7 x 4.7 inch
	RF-33.9	195 x 42.9 x 1466 mm 7.7 x 1.7 x 57.7 inch	263 x 106 x 1650 mm 10.4 x 4.2 x 65.0 inch

Weight	**Model**	Net Weight	Gross Weight
	RF-1.6	6.8 kgs / 15 lbs	8 kgs / 17.6 lbs
	RF-1.9	9 kgs / 19.8 lbs	11 kgs / 24.2 lbs
	RF-33.9	5 kgs / 11 lbs	7.4 kgs / 16.3 lbs

Casing Color	Black

Regulatory	FCC & CE

Environmental	RoHS3 & REACH compliant by SGS

Environmental Sensor & Peripherals

< 4.1 > Temp. & Humidity Sensor

Each InfraBox 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.		**IG-TH01-2M**	**IG-T01-2M**
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	InfraPower	W / WS / Wi / WSi series PDU	
	InfraSolution	X-2000 series	
	InfraGuard	EC-300M & EC-300	
Safety Regulatory		FCC & CE certified	
Environmental		RoHS3 & REACH compliant by SGS	

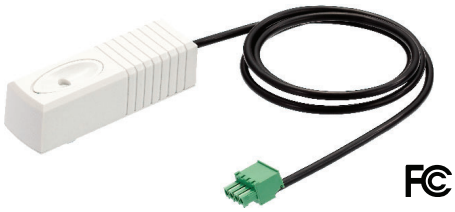
< 4.2 > Smoke Sensor

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

		Smoke Sensor
Part no.		**IG-S01-1M**
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:	InfraSolution	X-2000 series
	InfraGuard	EC-300M & EC-300
Safety Regulatory	FCC & CE certified	
Environmental	RoHS3 & REACH compliant by SGS	

< 4.3 > Shock Sensor

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



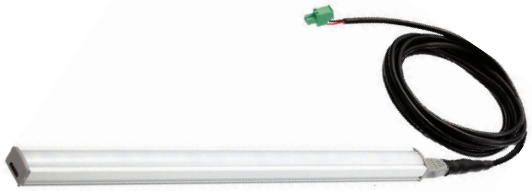
		Shock Sensor
Part no.		**IG-V01-1M**
Sensitivity	Detection radius	3.5 m
	Adjustable sensitivity	Internal micro knob with screwdriver cross slot
Alarm Output	Solid State Relay	12VDC@100mA
	Alarm hold time	Approx. 2.0 sec.
	Alarm LED	Red
Power Requirement	Voltage	12VDC, powered by sensor port
	Current 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	InfraSolution	X-2000 series
	InfraGuard	EC-300M & EC-300
Safety Regulatory	FCC & CE certified	
Environmental	RoHS3 & REACH compliant by SGS	

< 4.4 > Water Sensor

		Water Sensor
Part no.		**IG-W01-3M**
	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	Rope water sensor
	2	Extension cable
Compatibility	InfraSolution	X-2000 series
	InfraGuard	EC-300M & EC-300
Safety Regulatory	FCC & CE certified	
Environmental	RoHS3 & REACH compliant by SGS	

< 4.5 > LED Light Bar

Under InfraSolution X software, the LED light bar can be enabled / disabled / always ON.
When the LED light bar is enabled & connected, it will be ON within 10 seconds after the handle lock is released.



		LED Light Bar
Part no.		**CLB-IX-002-2M**
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	InfraSolution	X-2000 series
	InfraGuard	EC-300M & EC-300
Safety Regulatory	FCC & CE certified	
Environmental	RoHS3 & REACH compliant by SGS	

< 4.6 > LED Beacon

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

		LED Beacon
Part no.		**IG-FB03-1M**
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	InfraSolution	X-2000 series
	InfraGuard	EC-300M & EC-300
Safety Regulatory	FCC & CE certified	
Environmental	RoHS3 & REACH compliant by SGS	

Network Connection

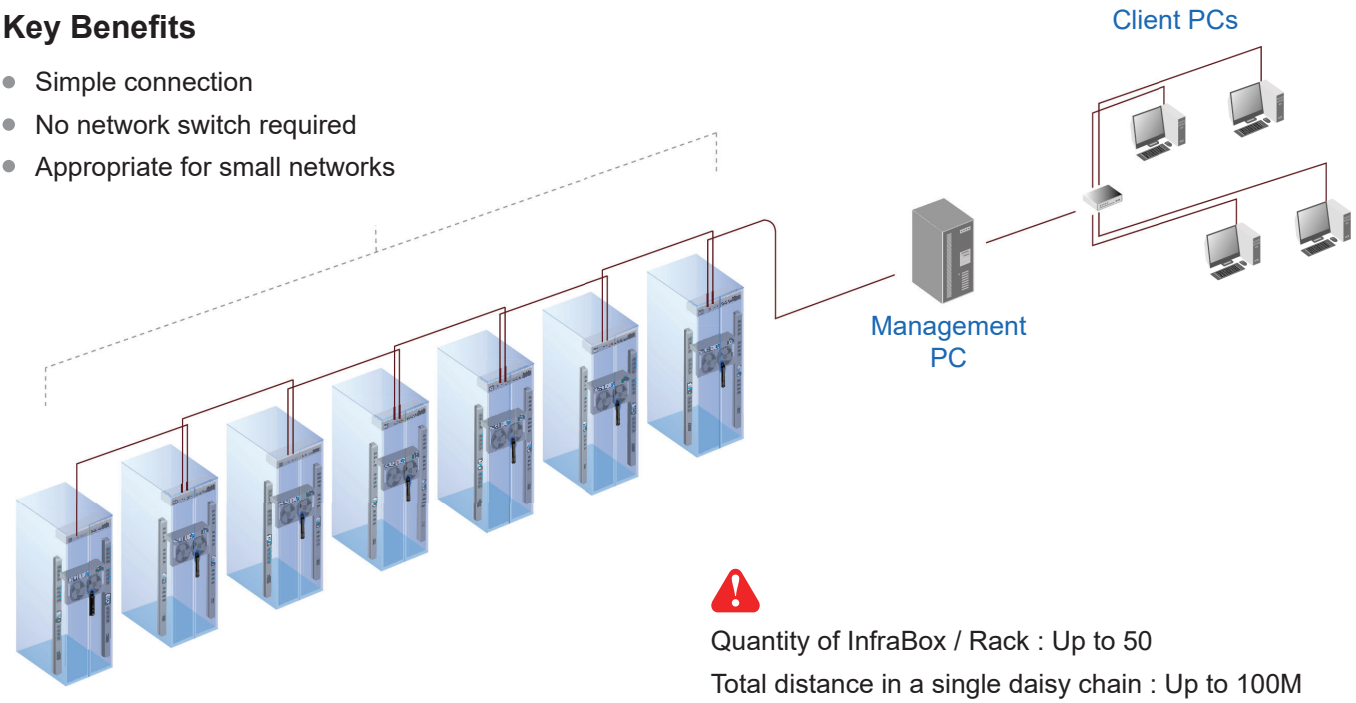
InfraSolution X provides 3 connection ways - **Daisy Chain**, **Star** , **Mixed**.
Which connection applied is subject to the site scale, environment and users' requirements.

< 5.1 > Daisy Chain

Connect all InfraBoxes by Cat5/6 cable, and no any network switch required

Key Benefits

- Simple connection
- No network switch required
- Appropriate for small networks



Quantity of InfraBox / Rack : Up to 50

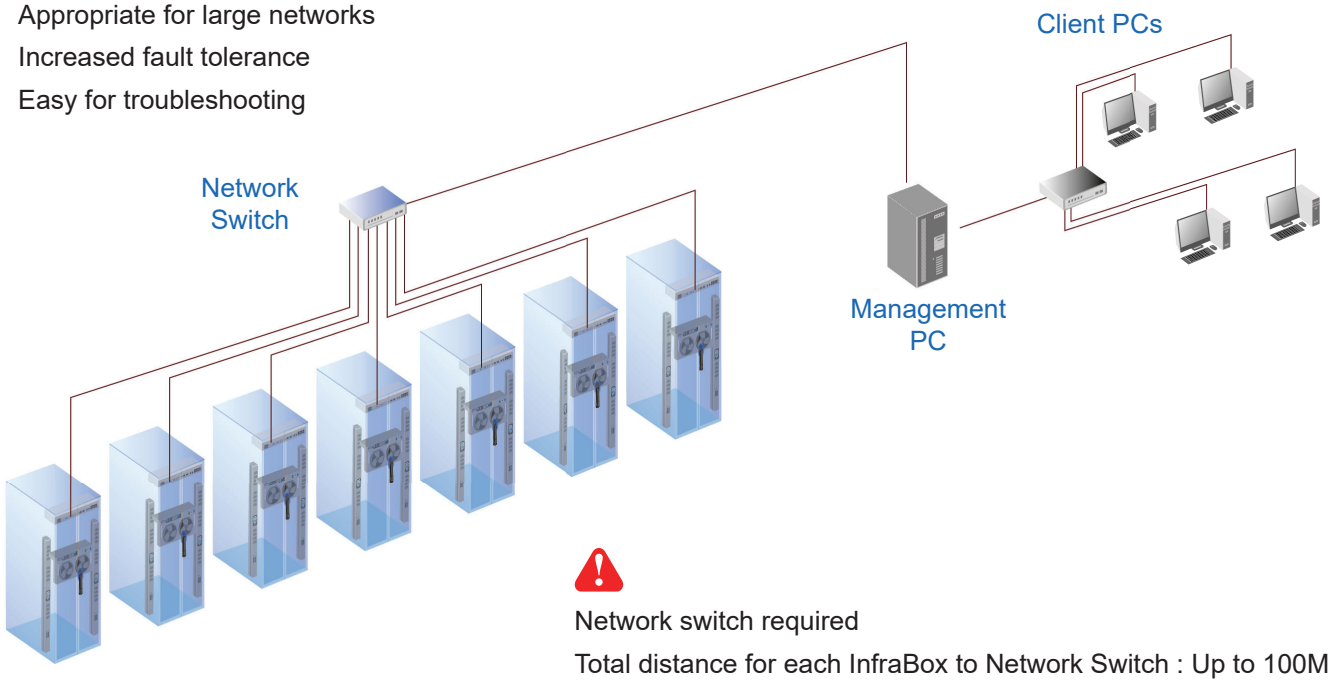
Total distance in a single daisy chain : Up to 100M

< 5.2 > Star

Connect to network switch by a point-to-point connection

Key Benefits

- Appropriate for large networks
- Increased fault tolerance
- Easy for troubleshooting



Network switch required

Total distance for each InfraBox to Network Switch : Up to 100M

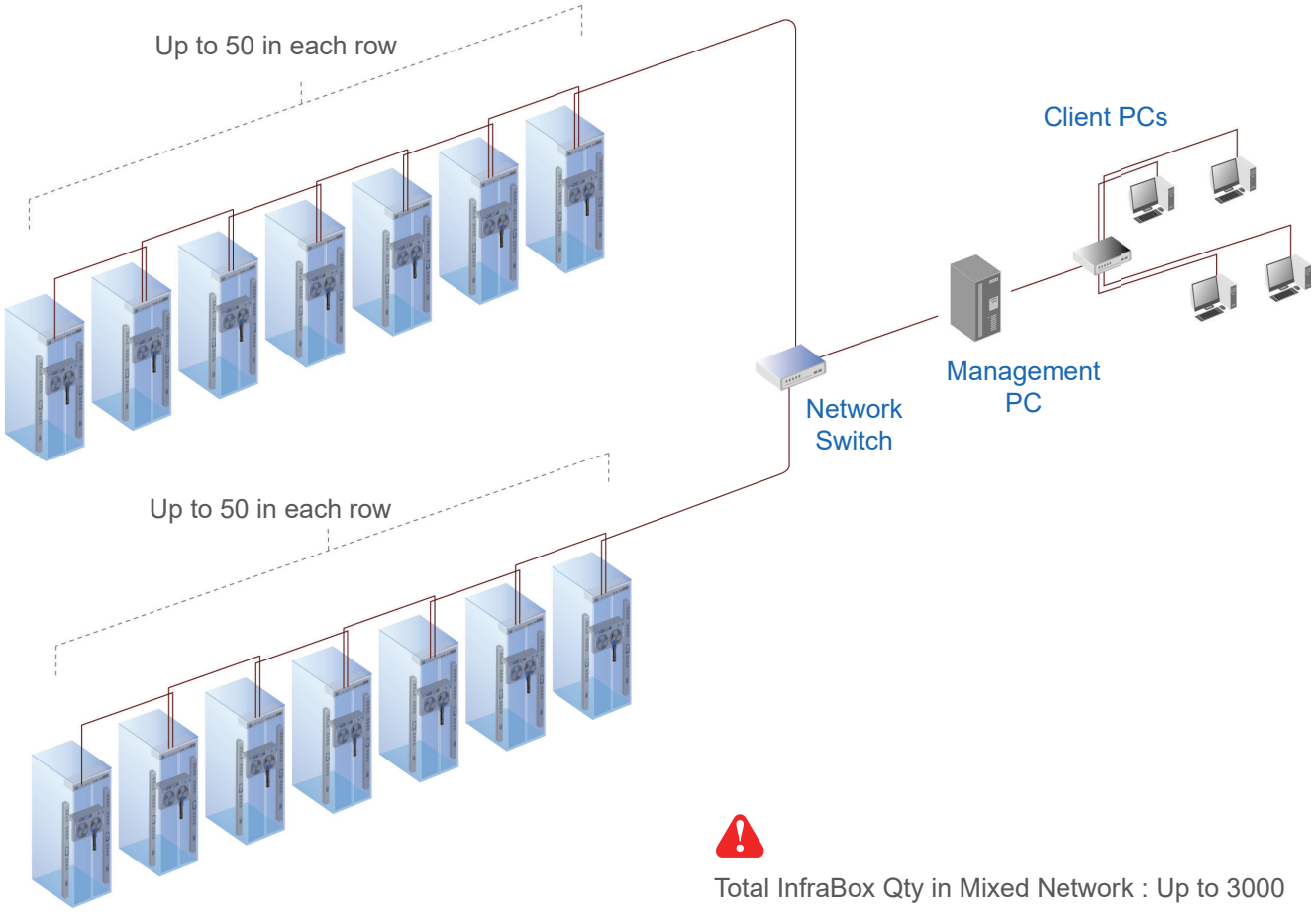
Network Connection

< 5.3 > Mixed

Combining daisy chain with star connection

Key Benefits

- Most effective and practical for large scale of networks
- Take all advantages of Daisy Chain and Star connection
- Flexible to meet a variety of network environments and needs



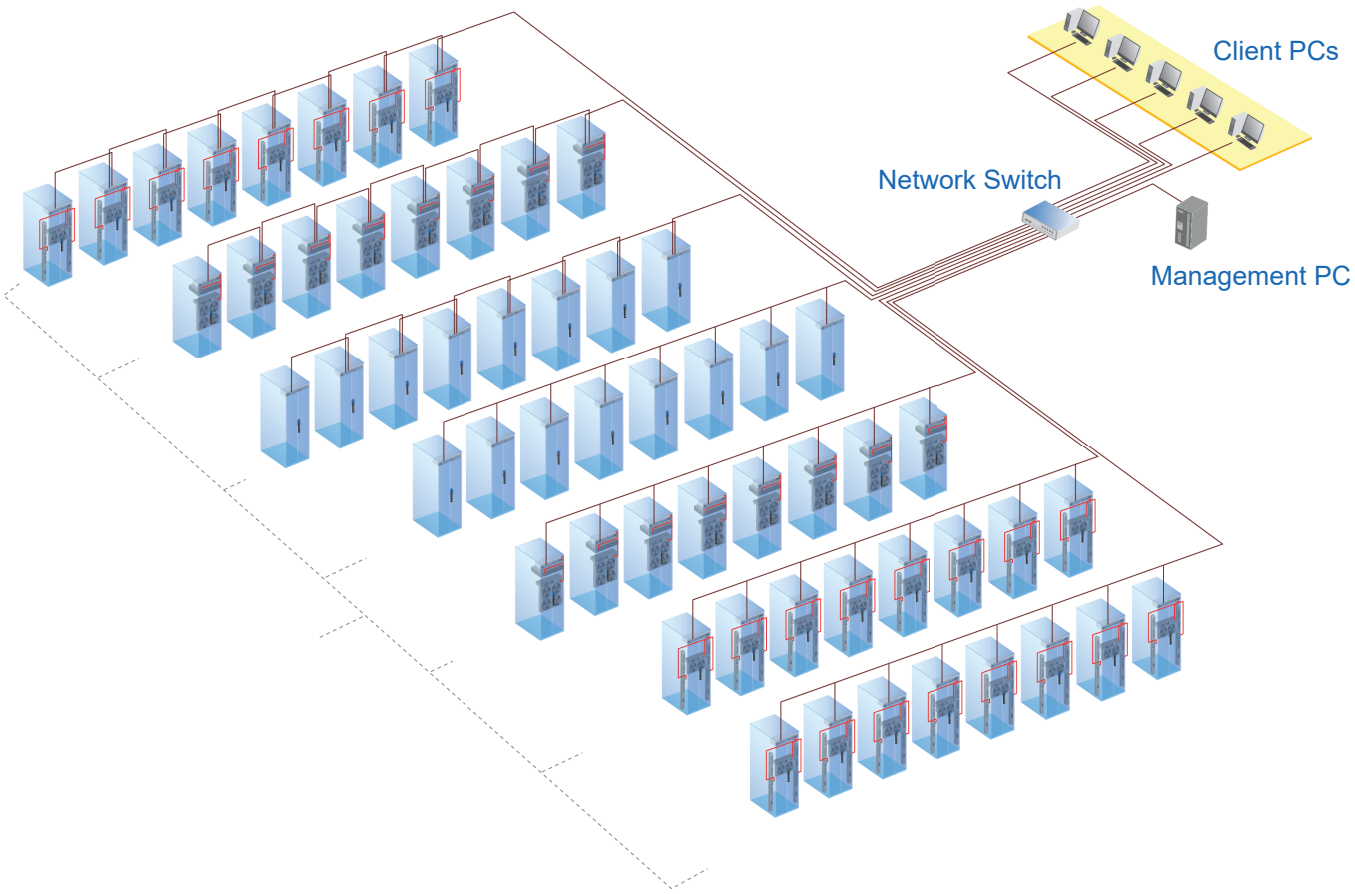
Total InfraBox Qty in Mixed Network : Up to 3000

Application

< 6.1 > Data Center

By mixed connection, InfraSolution X can be scalable up to 3000 racks. X-2000 and X-1000 InfraBoxes can be coexisted in the same network. Users are enabled to manage and remotely access all racks under a centralized and user friendly GUI.

- Connect the 1st InfraBox in each daisy chain to the network switch
- Connect the management PC and client PCs via the network switch
- Up to 3000 Infraboxes / Racks

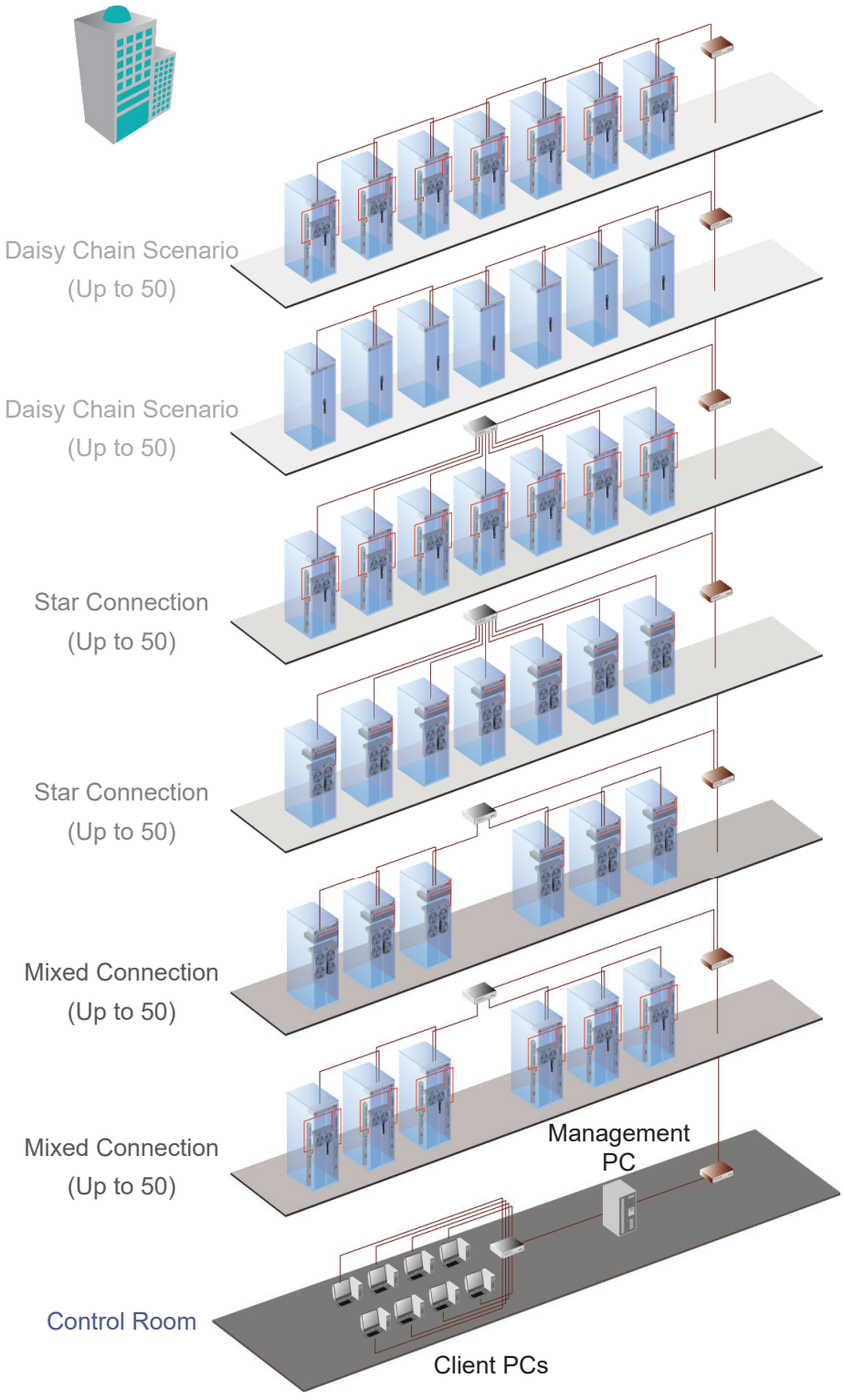


< 6.2 > Intelligent Building

It is essential for a Multi-Storey Intelligent Building to be applied with a centralized management system for the building's mechanical and electrical equipment such as security, power, ventilation, and lighting systems, etc.

InfraSolution X system allows equipment to be distributed throughout a building simply by deploying an Ethernet network. To keep capital costs down, InfraSolution X can also be cascaded between boxes up to 100m over a Cat5/6 cable. Signal weakness problem for long distance between InfraBoxes can be solved by applying network hubs with repeater function.

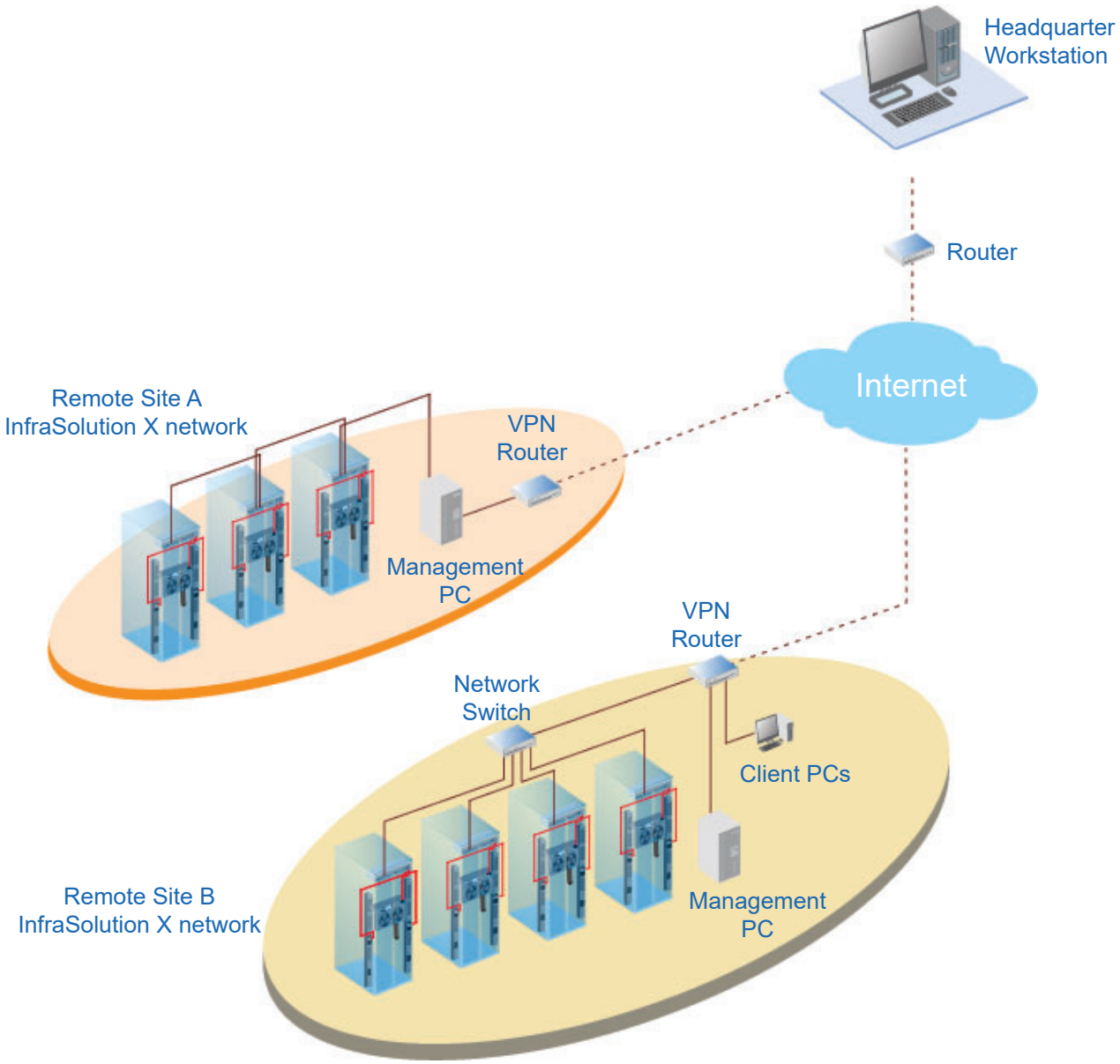
- Connect the InfraSolution X network in each floor via the network ethernet / fiber switch
- Up to 3000 Infraboxes / Racks



< 6.3 > Remote Site

InfraSolution X can be also applied to the remote site for access and monitoring over IP anytime and anywhere.

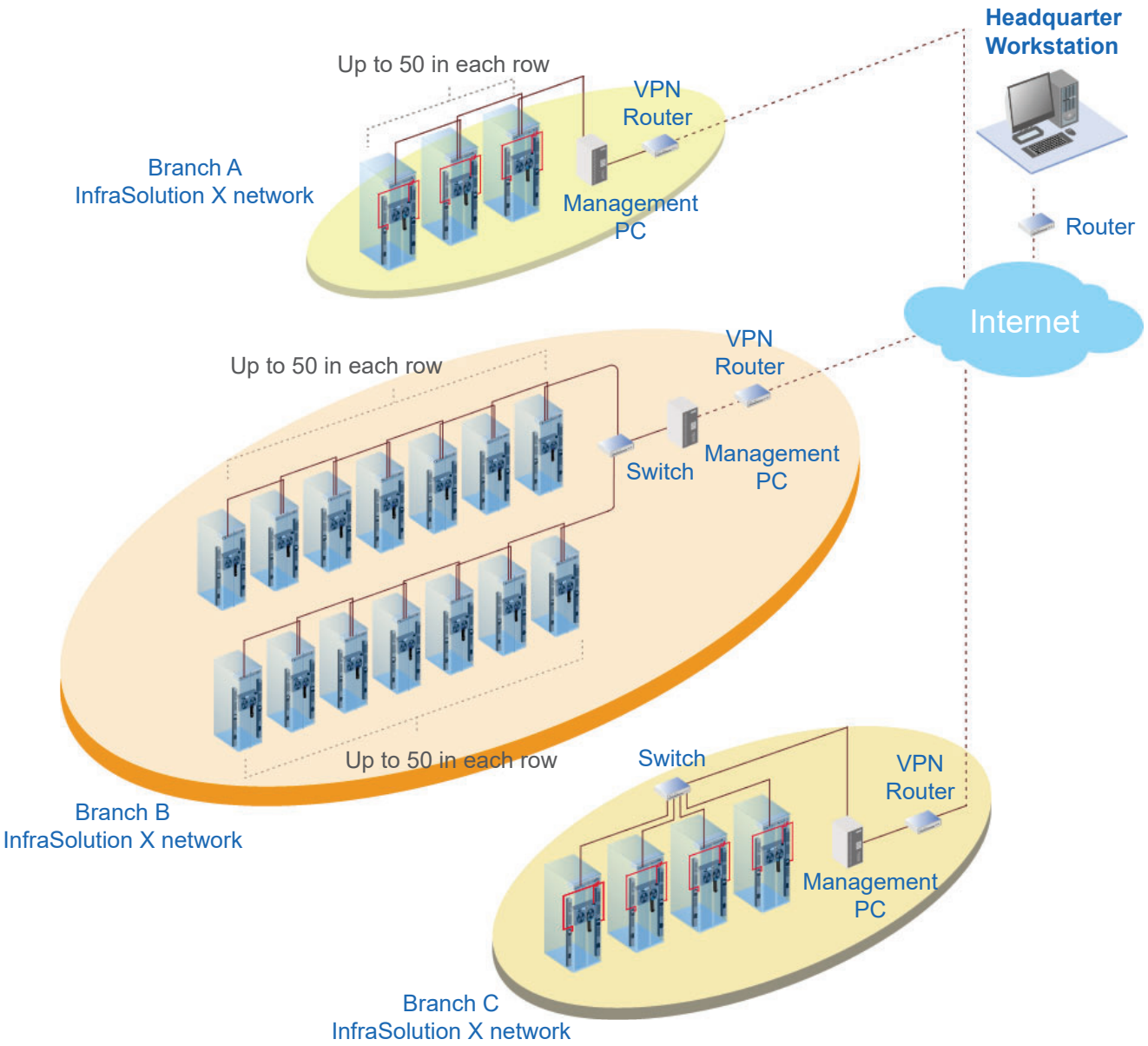
InfraSolution X Software License is required for each remote site / management PC



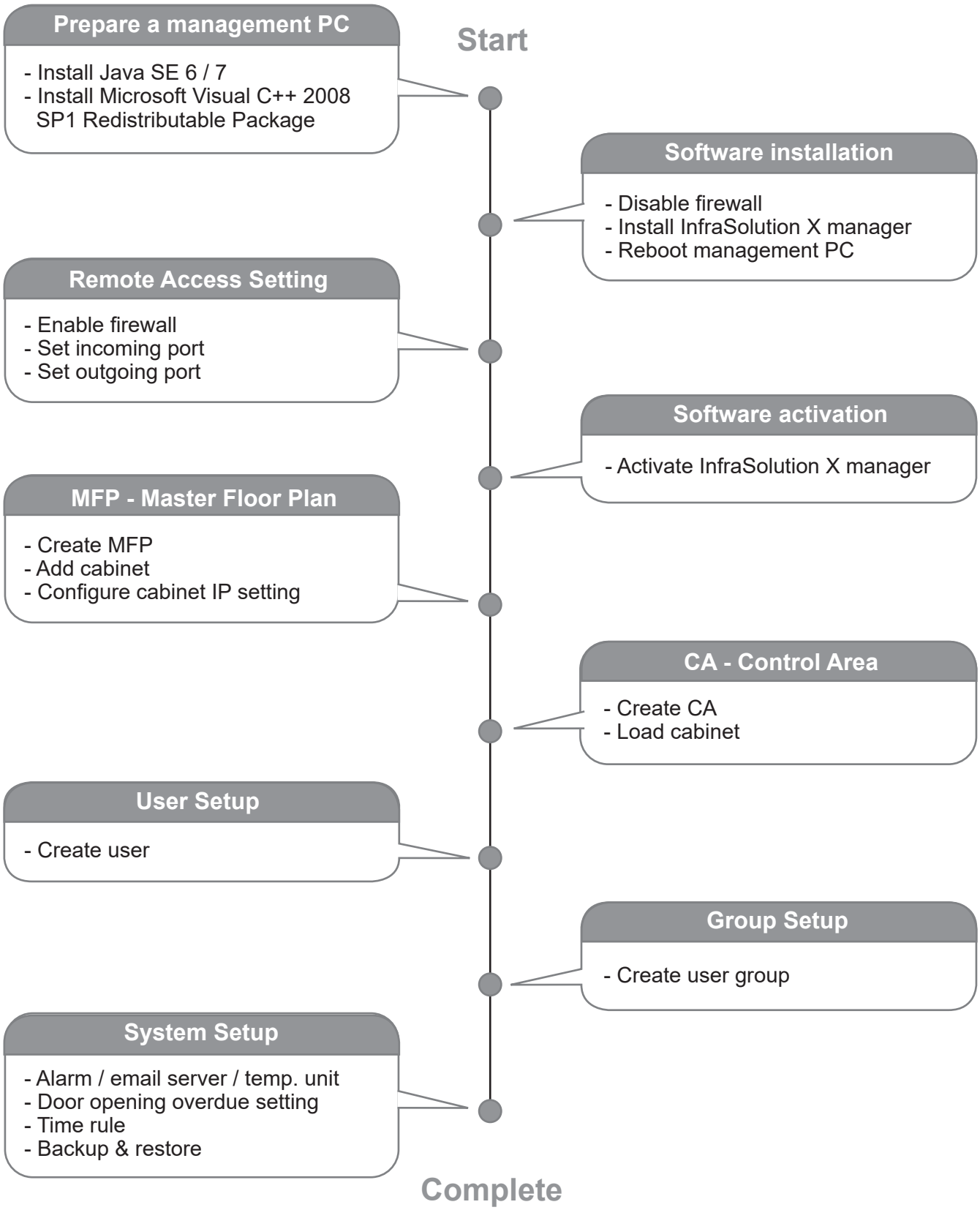
< 6.4 > Branches

For a global or scalable company, it is vital to remote access and monitor the network of their nationwide and worldwide branches. InfraSolution X provides an ideal solution to keep an eye on rack access security and environmental condition.

InfraSolution X Software License is required for each remote site / management PC



< 7.1 > Tips for System Setup



< 8.1 > Key Word

MFP - Master Floor Plan

- An actual cabinet floor plan.
- Only in MFP, you can create cabinet & configure the IP setting for the cabinet.
- If you want to monitor & control cabinets & their devices, you need to build the control area.
- MFP can be more than one. No. of MFP is subject to the site scale & plan by floor, zone, building, branches or remote sites.

CA Loading

- There is a button in MFP - CA Loading. It is to provide a quick and efficient path for the user to move cabinet to build the control area.

CA - Control Area

- You can build a Control Area for some specific cabinets which you want to monitor, configure & control.
- All cabinets in the CA should be loaded from the MFP by CA Loading button.
- CA can be more than one. How many CA is subject to your plan.
- CA has 2 modes : Edit mode & View mode.
- Under Edit mode, you can configure not only cabinets but also devices such as PDU, fan unit & sensors.
- View mode is designed for users with limited authority so they can ONLY monitor the status of cabinet & device.

User Setup

- To build a user list. Afterward, you can use the list to build the user group.
- Each user has his own login name & password for remote system login.
- Each user also has his own smartcard for cabinet access.
- However, before users join a user group in next step, they can do nothing.

User Group

- You can form a user group from the user list.
- You can define the user group with authority and which control area / areas to monitor & access.
- Each user subordinated to ONLY ONE user group.
- If the user wants to join another user group, a new login name, password & smartcard MUST BE assigned.
- Each user group must select ONE time rule. All group users can access the cabinet and remote system login according to the time period of the selected time rule.
- Without time rule assignment, all group users can do nothing.

Time Rule

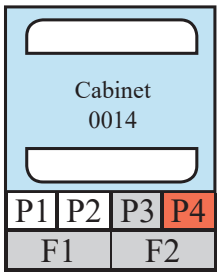
- Time rule is designed for security. It tries to restrict the users with a time period to access the system and cabinet.
- In system setup section < 11.5 >, you can set time rules up to 32.
- Afterward, all time rules will be shown in user group for their selection.
- Only one time rule can be assigned to one user group.

< 8.1 > Cabinet Icon

Cabinet Icon layer

Cabinet icon has two layers, the layer one by default shows on all control area under view mode for status monitoring. User can click cabinet icon to switch to layer two.

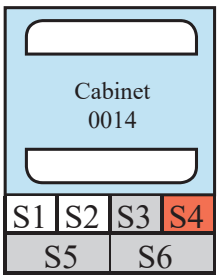
Layer one



- show PDU status (**P1**, **P2**, **P3**, **P4**)
- if PDU is enabled & connected, **P** icon in WHITE color
- if PDU is enabled BUT disconnected, **P** icon in RED color
- if PDU is on alarm status, **P** icon also in RED color
- if PDU is disabled, **P** icon in GREY color

- show Fan unit status (**F1**, **F2**)
- if Fan unit is enabled & connected, **F** icon in WHITE color
- if Fan unit is enabled BUT disconnected, **F** icon in RED color
- if Fan unit is on alarm status, **F** icon also in RED color
- if Fan unit is disabled, **F** icon in GREY color

Layer two

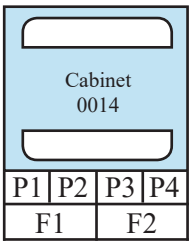


- show TH sensor status (**S1**, **S2**)
- if TH sensor is enabled & connected, **S1**, **S2** icon in WHITE color
- if TH sensor is enabled BUT disconnected, **S1**, **S2** icon in RED color
- if TH sensor is on alarm status, **S1**, **S2** icon also in RED color
- if TH sensor is disabled, **S1**, **S2** icon in GREY color

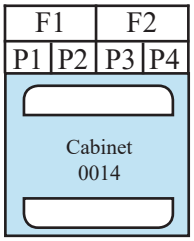
- show smoke & shock sensor status (**S3**, **S4**)
- if smoke & shock sensor is enabled & connected, **S3**, **S4** icon in WHITE color
- if smoke & shock sensor is on alarm status, **S3**, **S4** icon also in RED color
- if smoke & shock sensor is disabled, **S3**, **S4** icon in GREY color

- show water sensor status (**S5**, **S6**)
- if water sensor is enabled & connected, **S5**, **S6** icon in WHITE color
- if water sensor is on alarm status, **S5**, **S6** icon also in RED color
- if water sensor is disabled, **S5**, **S6** icon in GREY color

Door direction

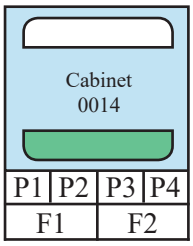


Front door



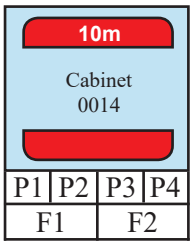
Front door

Door status



Door close status in white

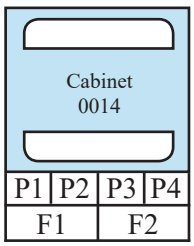
Door open status in green



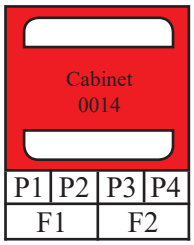
Door open overdue status in red
(show overdue time)

Door alarm status in red
(unauthorized open)

Connection status



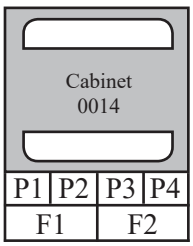
Normal connection status
(color in blue)



Disconnection status
(color in red)

Non-configure cabinet

In grey color



In MFP master floor plan, the grey cabinet icon shows that the cabinet has not been configured with IP setting yet.

In CA control area, the grey cabinet icon shows that the cabinet has been deleted in master floor plan.
The user should remove this non-function cabinet from control area.

Software Installation & Activation

< 9.1 > Key Features

InfraSolution X Manager X-ISM is a LICENSED rack management software to monitor up to 3000 racks remotely.
Each InfraBox connects a pair of smartcard handles to secure the rack access control.

Each InfraBox can also connect a variety of sensors to provide an environmental monitoring solution.

To enhance the functionality, up to 12000 x kWh PDU / 6000 x Fan Unit can be monitored through InfraSolution X Manager as well.

Up to 100 concurrent users can access the management software remotely to achieve the demand of multi-user / multi-tasking in nowadays' time sharing data center operation.

InfraSolution X Manager X-ISM

Features		
Capacity	InfraBox	3000
	Concurrent user	100
System Setup	Backup / Restore Setting	✔
	Time Rule Setting	✔
	Alarm Mail Server Setting	✔
	Audio and Visual Alarm Output Setting	✔
Rack Overview Door	Status of Door, PDU, Sensor & Fan unit	✔
	Door open by remote	✔
	Last door open & close record	✔
Sensor Peripherals	Status Monitoring	✔
	Temp-Humid Alarm Threshold Setting	✔
PDU	Energy Consumption kWh / Amp. Monitoring	✔
	Outlet Level Measurement	✔
	PDU Outlet Grouping / Schedule	✔
	Outlet Switch ON / OFF	✔
	Amp. Alarm Threshold Setting	✔
	Amp. Rising / Low Alert Threshold Setting	✔
	Temp-Humid Monitoring	✔
Fan Unit	CFM & Temp. Monitoring	✔
	Unit CFM (fan speed) Setting	✔
	Auto CFM Control Setting	✔
	Individual Fan Kit ON / OFF	✔
	Fan Unit ON / OFF	✔
Chart / Event / Reporting	System & Device Event Reporting	✔
	Temp-Humid Line Chart of InfraBox	✔

< 9.2 > CD Key Box

A licensed software, InfraSolution X Manager X – ISM, is bundled with a CD Key.
The CD Key Box consists of a software CD and a software license certificate

AUSTIN HUGHES

SOFTWARE LICENSE CERTIFICATE

ISSUE DATE: <today>
S/N: 2-130812-000000-XMS01

Dear customer:

Thank you for purchasing SOFTWARE from Austin Hughes Electronics Ltd. Please take good care of SOFTWARE CD Key. This LICENSE CERTIFICATE will serve as the main document to prove your legal right to use legitimate software.

Please do not disclose the SOFTWARE CD Key to the unauthorized person.

You may install and use one copy of the SOFTWARE, or in its place, any prior version for the same operating system (O.S.), on a single computer (Management PC).

Please read End User License Agreement (EULA) for more details or visit the link below:
http://www.austin-hughes.com/index/eula.html

RESELLER : ABC COMPANY

CONTACT PERSON : Peter Chan

License Information	
Software Model	InfraSolution X Manager X-ISM
CD KEY	XXXXXX–XXXXXX–XXXXXX–XXXXXX–XXXXXX–XXXXXX
NO. OF CLIENTS	10
NO. OF NODES	50

Software download : http://www.austin-hughes.com/downloads/IPDL/software.html

Software activation : http://www.austin-hughes.com/activations

Technical support : support@austin-hughes.com

Austin Hughes Electronics Ltd P. 1 / 1 SLC_Q313V1

< 9.3 > Management PC & Client PC Requirement

Management PC requirement

Management PC requirement is highly related to the no. of rack. Please refer to the table below :

No. of Cabinet	Processor	Memory	Hard Disk	LCD Resolution	No. of days log file kept in database
2 - 200	Quad Core Xeon x 1	4GB	1TB x 2	1660 x 1200, 1600 x 900, 1920 x 1080	31
201 - 500	Quad Core Xeon x 1	8GB	1TB x 2	1660 x 1200, 1600 x 900, 1920 x 1080	31
501 - 1000	Quad Core Xeon x 1	16GB	2TB x 4	1660 x 1200, 1600 x 900, 1920 x 1080	15
Over 1000	Quad Core Xeon x 2	32GB	4TB x 4	1660 x 1200, 1600 x 900, 1920 x 1080	7

- The default service port of web server is 80.
- A dedicated PC to run InfraSolution X Manager X- ISM is recommended.
- If the PC is a notebook computer, the power adapter MUST be plugged in & power ON.
- Make sure the management PC is POWER ON & X-ISM is under operation.
  Otherwise, daily data backup will NOT be proceeded.

To legally access Microsoft server software, a Client Access License (CAL) may be required.

For more information, please visit the link below :

http://www.microsoft.com/licensing/about-licensing/client-access-license.aspx

Client PC requirement

Processor	Memory	Hard Disk	LCD Resolution
Dual Core x 1	2GB	500GB	1660 x 1200, 1600 x 900, 1920 x 1080

For better view of cabinet status, an appropriate LCD size is necessary.
Please refer to the table below :

No. of Cabinet in CA	Preferred LCD Size
2 - 100	21" (1920 x 1080)
101 to 300	46" (1920 x 1080)

< 9.4 > OS Platform & Web Browser

OS platform

- MS Windows Server 2008 R2 (English Edition)
- MS Windows Server 2012 (Standard Edition)
- MS Windows Server 2016 (Standard Edition)

Web browser

- I.E. Version 11.0

Make sure users login the management PC as a member of " Administrator " Group before X-ISM installation & execution.

< 9.5 > Prerequisite before software installation

Components / OS Platform	Windows 2008 server standard, 64bit	Windows 2008 server R2 / 2012	Windows 2012 / 2016 server
Java SE 6 / 7 (i586)			
Java SE 6 / 7 (x64)	✔	✔	✔
Microsoft Visual C++ 2008 SP1 Redistributable Package (X86)		✔	✔
Microsoft Visual C++ 2008 SP1 Redistributable Package (X64)	✔	✔	✔

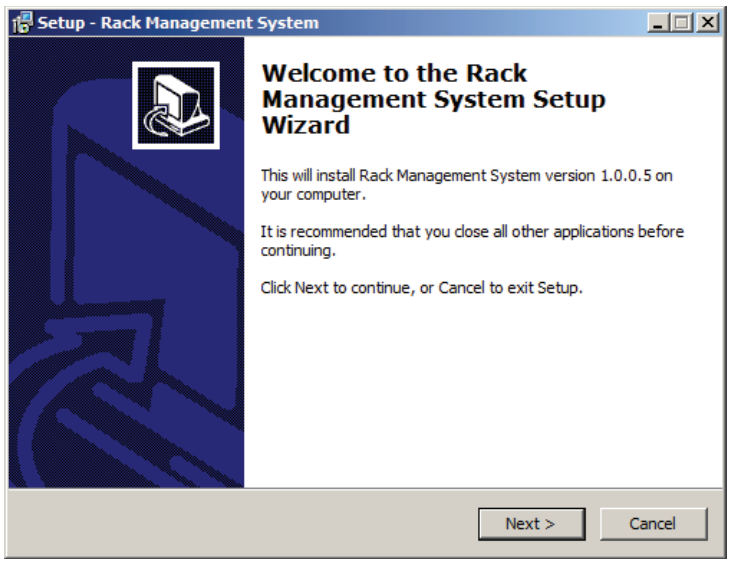
The firewall setting of the management PC MUST be OFF

< 9.6 > Software Installation

After the InfraBox installation, please follow the steps below to install the

InfraSolution X Manager - Matrix Server

1. Double click the X-ISM.exe in software CD come with the CD Key Box and follow the instruction to complete the installation.



click " **Next** "

click " **Install** "

click " **Finish** " . . . . . **Complete**

The management PC must reboot before proceed to Software Activation

< 9.7 > Remote Access

After software installation, administrator can turn on firewall of the management PC and set the inbound & outbound rules of firewall.

Inbound rules :

1. Open " **Control Panel** "
2. Select " **Windows Firewall** "
3. Select " **Advanced settings** "
4. Right Click " **Inbound Rules** " & select " **New Rules…** "
5. Select " **Port** " & Click " **Next>** "
6. Select " **TCP** " then input " **80, 4000, 5432, 18081** " in " **Specific local ports:** "
7. Select " **Allow the connection** " & Click " **Next>** "
8. Tick all three options & Click " **Next>** "
9. Input the " **Name** " & " **Description** " of the port & Click " **Finish** "

Outbound rules :

1. Open " **Control Panel** "
2. Select " **Windows Firewall** "
3. Select " **Advanced settings** "
4. Right Click " **Outbound Rules** " & select " **New Rules…** "
5. Select " **Port** " & Click " **Next>** "
6. Select " **TCP** " then input " **4001, 4003, 4006, outgoing SMTP port** " in " **Specific remote ports:** "
7. Select " **Allow the connection** " & Click " **Next>** "
8. Tick all three options & Click " **Next>** "
9. Input the " **Name** " & " **Description** " of the port & Click " **Finish** "

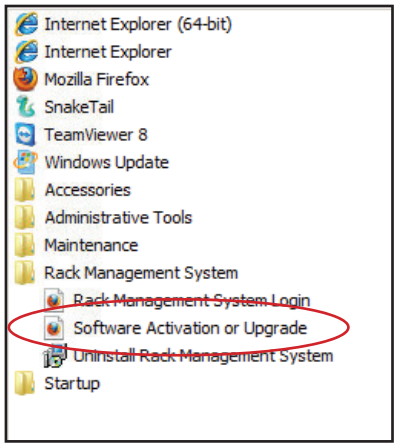
The port no. of outgoing SMTP port depends on the mail server setting in < 11.2 >

< 9.8 > Software Activation

After software installation is completed, please follow the steps below to do the software activation

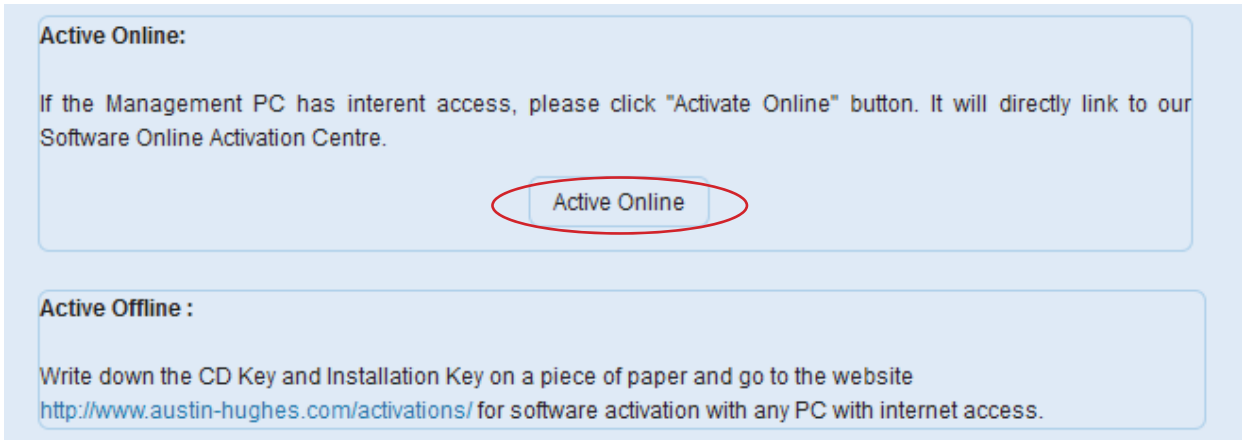
1. Click " **Start** " & Select " **Software Activation or Upgrade** "

2. The " **Software Activation / Upgrade** " web page pops up

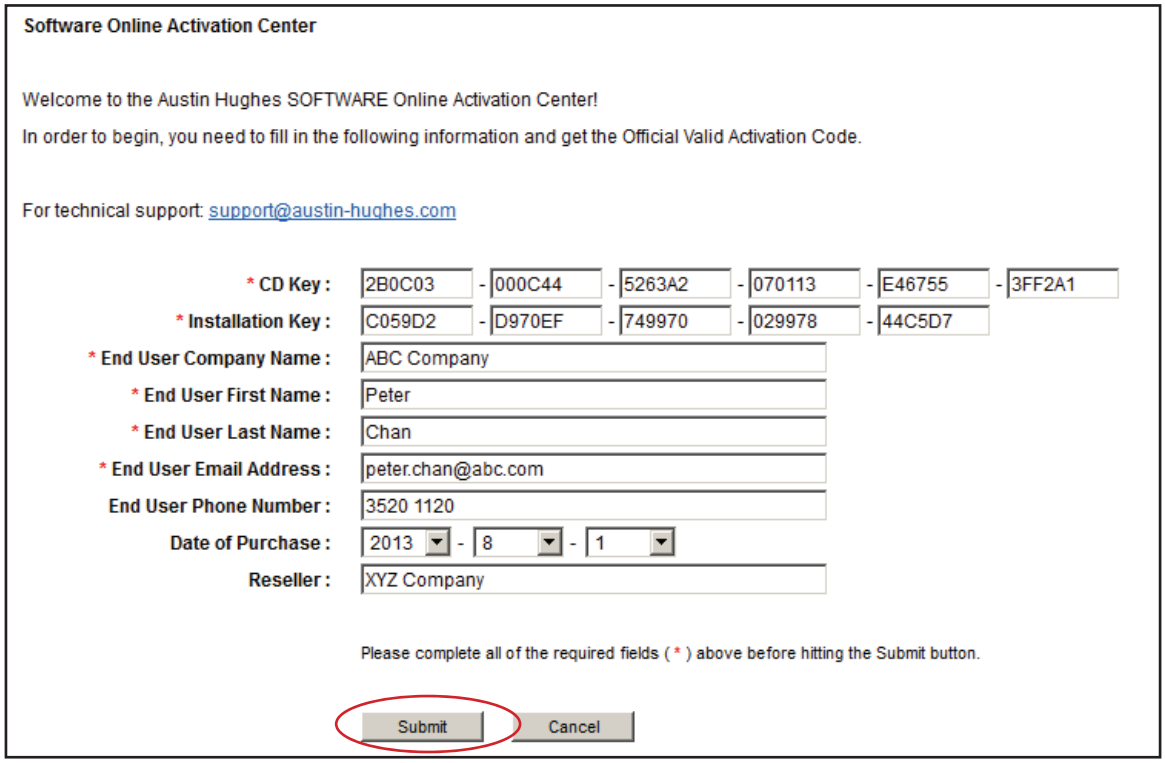


3. Input " **CD Key** " & Click " **Submit** ". The " **Installation Key** " will be generated automatically.

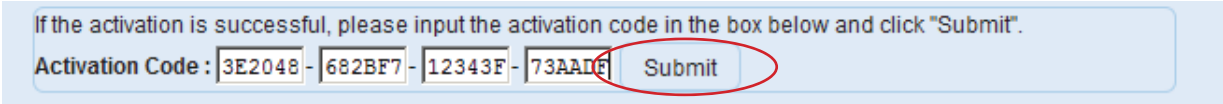
4. Click " **Activate Online** " & go to " **Software Online Activation Centre** " directly



5. Fill in all necessary information & Click " **Submit** ". Then Click " **OK** " from the pop up window to get the " **Activation Code** "



6. Input the " **Activation Code** " & Click " **Submit** " in the " **Software Activation / Upgrade** " web page to complete the software activation



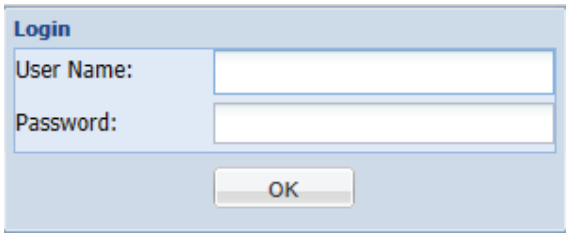
7. Once the software activation is completed, the following web page will be displayed.

Complete

Operation Setup

After the software is activated, user can follow below steps to access the management PC and InfraSolution X Manager – Matrix Server

1. Open the web browser of remote client PC
2. Enter " ***http:// ManagementPC IP address/RMS_2013/RMS_2013.html*** "
3. Enter the login name & password



Default login name : admin

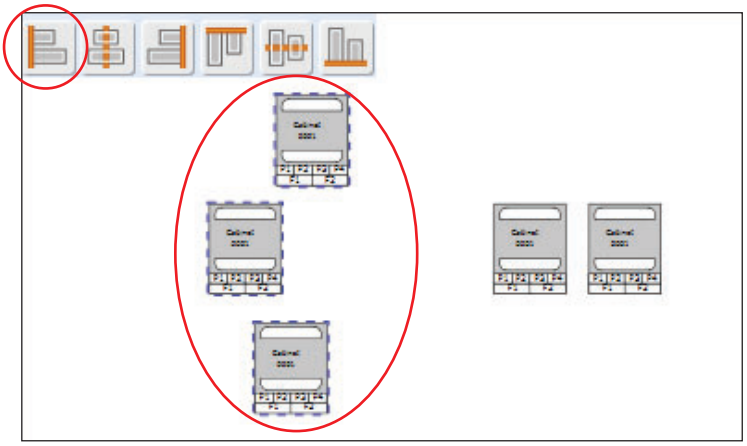
Default login password : admin

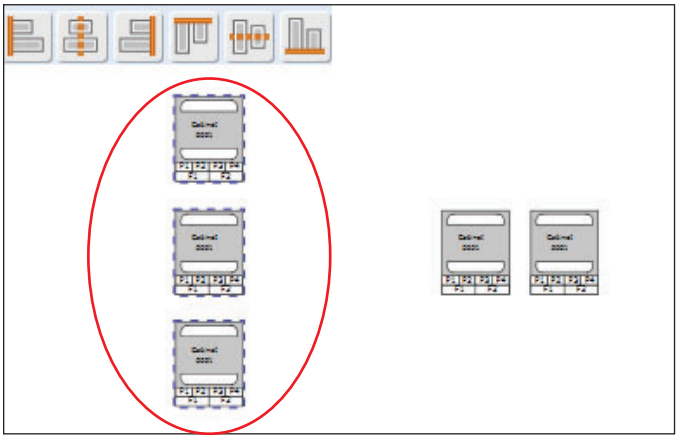
< 10.1 > Cabinet Alignment

In MFP & CA, the system provides alignment function for user to arrange the cabinet in a neat way

Alignment - Left

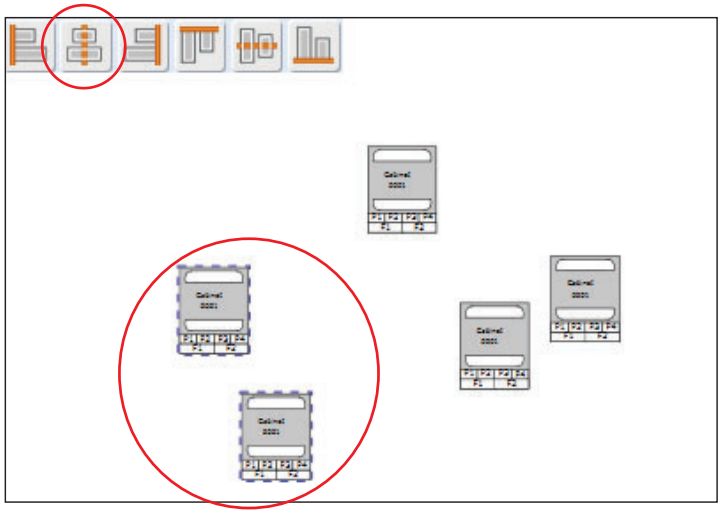
1. Press < Shift > to select the 3 highlighted cabinets
2. Release < Shift >
3. Press < Align Left >

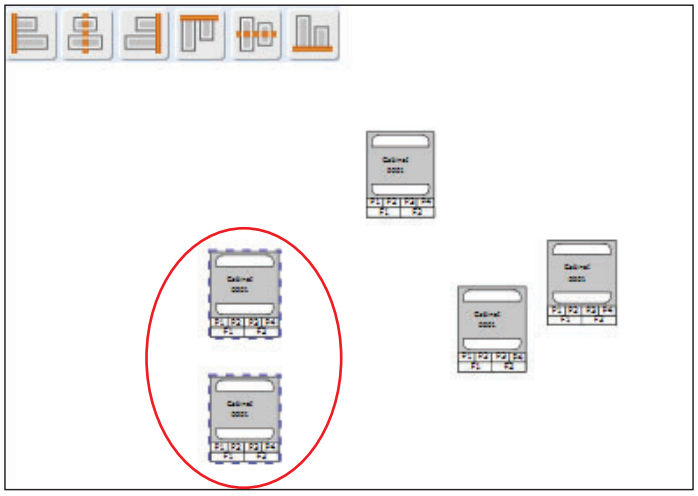




Alignment - Center

1. Press < Shift > to select the 2 highlighted cabinets
2. Release < Shift >
3. Press < Align Center >

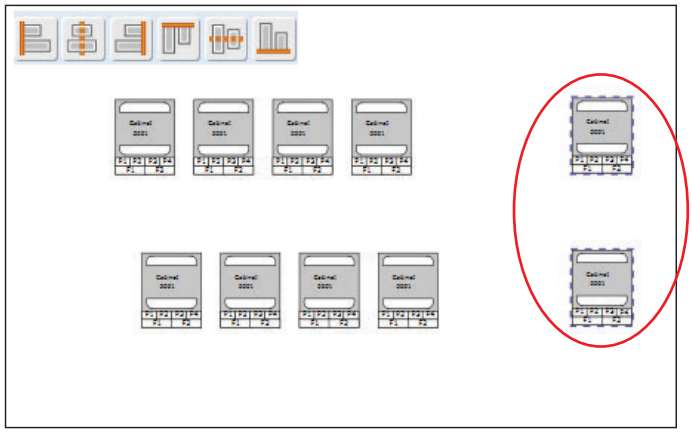




< 10.1 > Cabinet Alignment

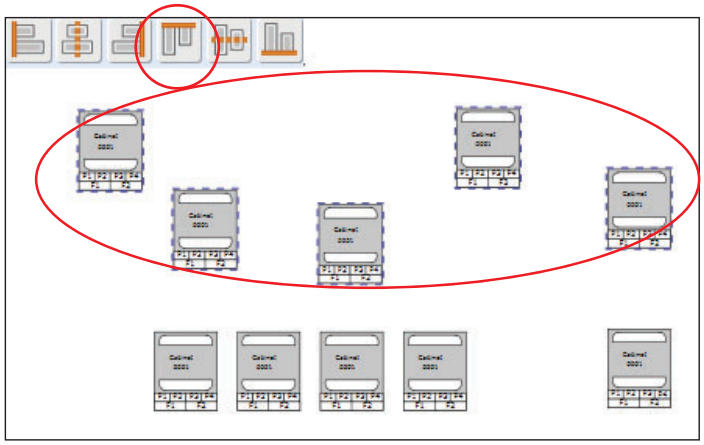
Alignment - Right

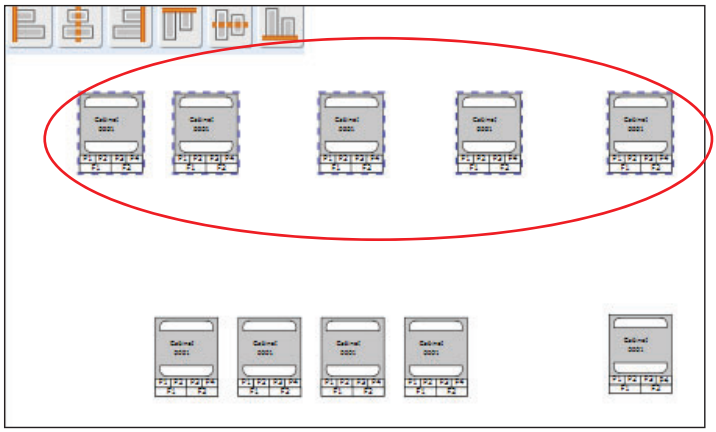
1. Press < Shift > to select the 2 highlighted cabinets
2. Release < Shift >
3. Press < Align Right >



Alignment - Top

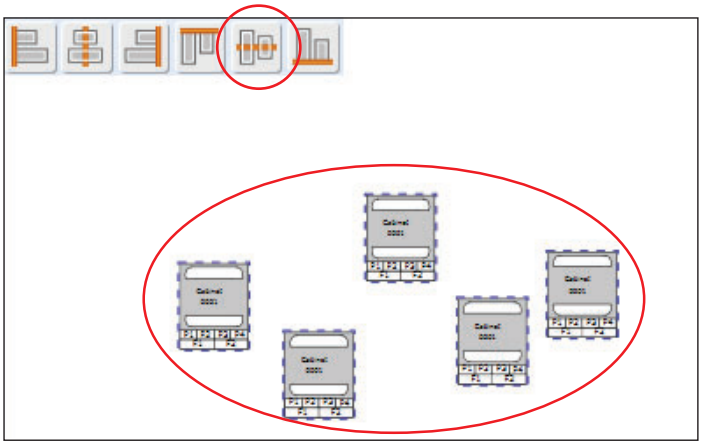
1. Press < Shift > to select the 5 highlighted cabinets
2. Release < Shift >
3. Press < Align Top >





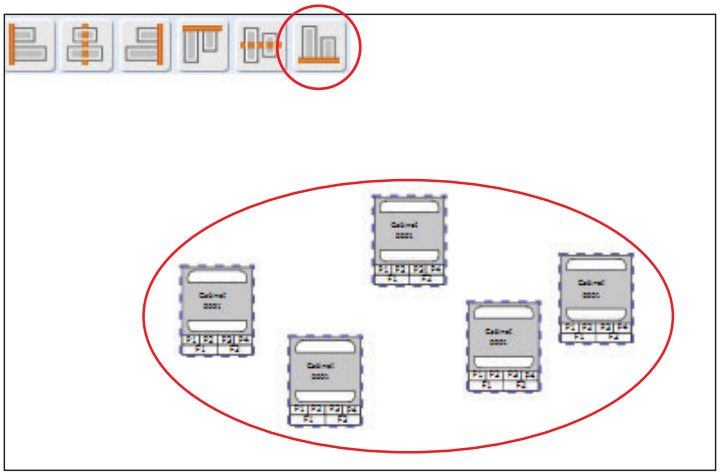
Alignment - Middle

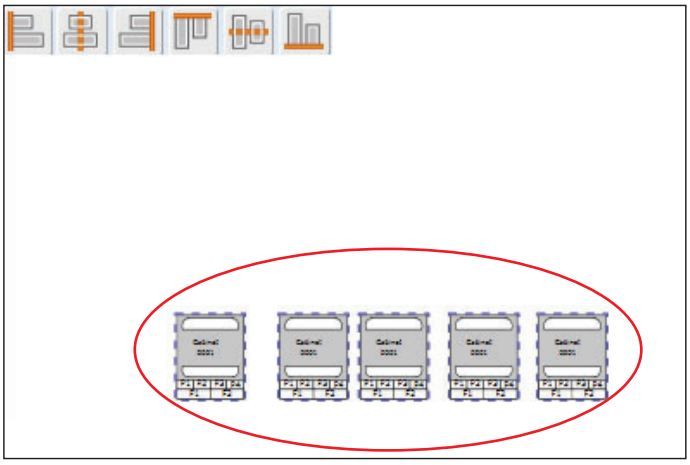
1. Press < Shift > to select the 5 highlighted cabinets
2. Release < Shift >
3. Press < Align Middle >



Alignment - Bottom

1. Press < Shift > to select the 5 highlighted cabinets
2. Release < Shift >
3. Press < Align Bottom >





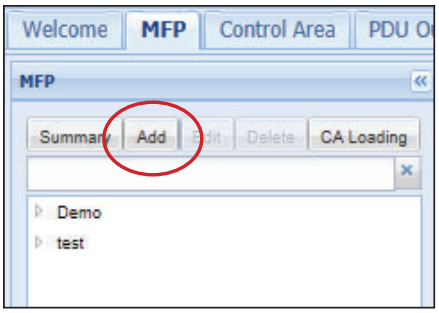
< 10.2 > MFP - Master Floor Plan

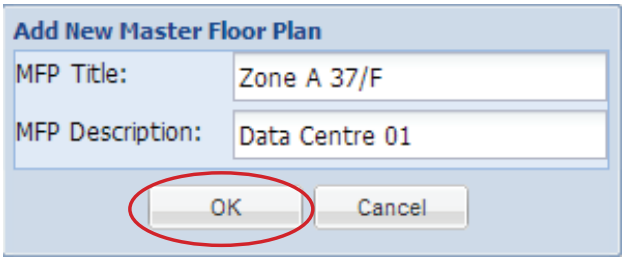
- An actual cabinet floor plan.
- Only in MFP, you can create cabinet & configure the IP setting for the cabinet.
- If you want to monitor & control cabinets & their devices, you need to build the control area.
- MFP can be more than one. No. of MFP is subject to the site scale & plan by floor, zone, building, branches or remote sites.

Ensure ONLY one user configures the cabinet IP in the same MFP at the same time

Add MFP

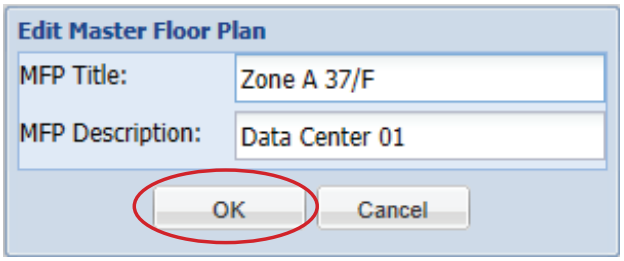
1. Click " **MFP** " tab
2. Click " **Add** "
3. Input the MFP title & Description (min. 1 char / max. 32 char)
4. Click " **OK** " to finish





Edit MFP

1. Select the MFP you want to edit
2. Click " **Edit** "
3. Edit the MFP title / Description
4. Click " **OK** " to finish



Add Cabinet

1. Select the MFP you want to add cabinet (s)
2. Click “  “ to add cabinet. (1 / 5 / 10 cabinets at one time)
3. Click “  “ & Click “ **Yes** “ to confirm cabinet addition

Cabinet IP configuration

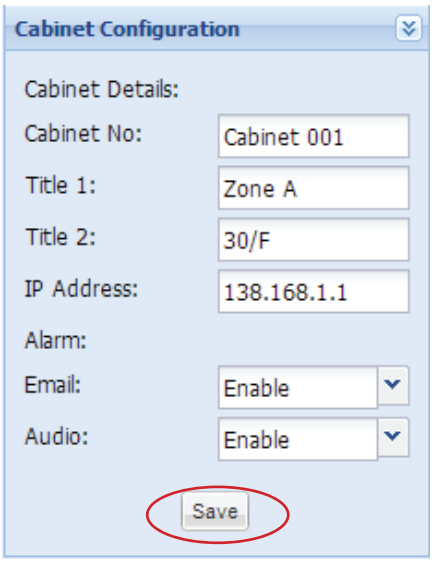
1. Select a cabinet
2. Input : “ **Cabinet No.** “ (min 4 char / max. 16 char.),
   “ **Title 1** “ (min. 2 char / max. 8 char),
   “ **Title 2** “(min. 2 char / max. 8 char),
   “ **IP address** “, Enable / Disable the email & audio alarm

   (If email alarm is “ **Disable** “ , NO alarm email will be sent to user.)
3. Click “ **Save** “ to finish the cabinet IP configuration

Repeat step 1 to 3 for all cabinets ONE BY ONE.

Once the cabinet is configured, the IP address CANNOT BE edited.

Users need to delete cabinet in the MFP & create a new one.



Delete Cabinet

1. Select the cabinet you want to delete in the MFP
2. Click “  “ & Click “ **Yes** “ to confirm the cabinet deletion

Delete MFP

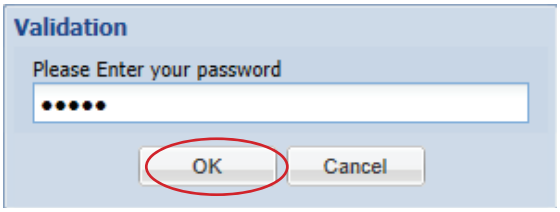
1. Select the MFP you want to delete
2. Select all cabinets in the MFP to clear first
3. Click “  “ & Click “ **Yes** “ to confirm to clear all cabinet
4. Then select the MFP & Click “ **Delete** “
5. Click “ **Yes** “ in the confirmation window to confirm MFP deletion

< 10.3 > CA - Control Area

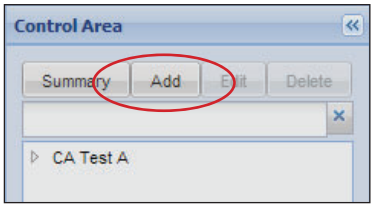
- You can build a Control Area for some specific cabinets which you want to monitor, configure & control.
- All cabinets in the CA should be loaded from the MFP by CA Loading button.
- CA can be more than one. How many CA is subject to your plan.
- CA has 2 modes : Edit mode & View mode.
- Under Edit mode, you can configure not only cabinets but also devices such as PDU, fan unit & sensors.
- View mode is designed for users with limited authority so they can ONLY monitor the status of cabinet & device.

Add CA

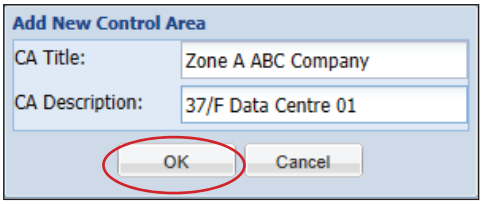
1. Click " **Control Area** " tab
2. Click "  " & input the login password in validation window to enter " **Edit Mode** "



3. Click " **Add** "

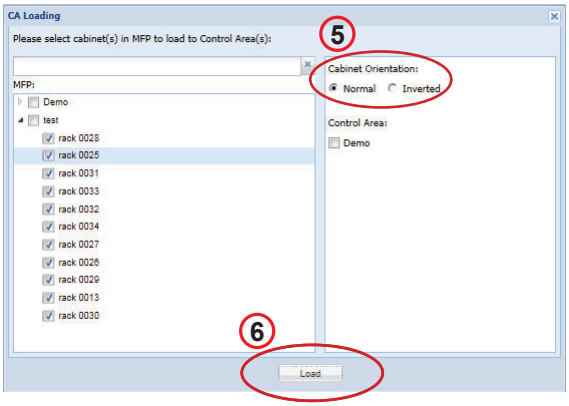


4. Input the CA title & Description (min. 1 char / max. 32 char)
5. Click " **OK** " to finish CA addition



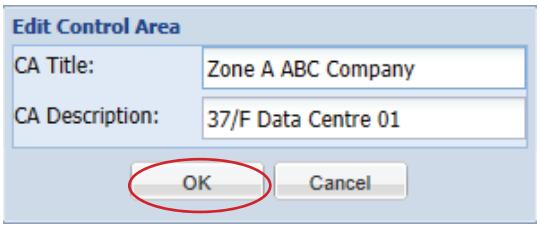
Load Cabinet

1. Go back to " **MFP** " tab
2. Select the MFP where the cabinet(s) you want to load to CA
3. Click " **CA loading** "
4. You can load whole MFP cabinets or part of them by tick
5. In " **Cabinet Orientation** ", you can select Normal if the rear door at bottom side, or select Inverted if the rear door at top side
6. Click " **Load** " button to finish CA loading.



Edit CA

1. In **< CA – Edit Mode >**, select the CA you want to edit
2. Click " **Edit** "
3. Edit the CA title / Description
4. Click " **OK** " to finish



Delete CA

1. In **< CA – Edit Mode >**, select the CA you want to delete & Click " **Delete** "
2. Click " **Yes** " in the confirmation window
3. Input login password in validation window to confirm CA deletion

Remove Cabinet from CA

Cabinet removal from CA

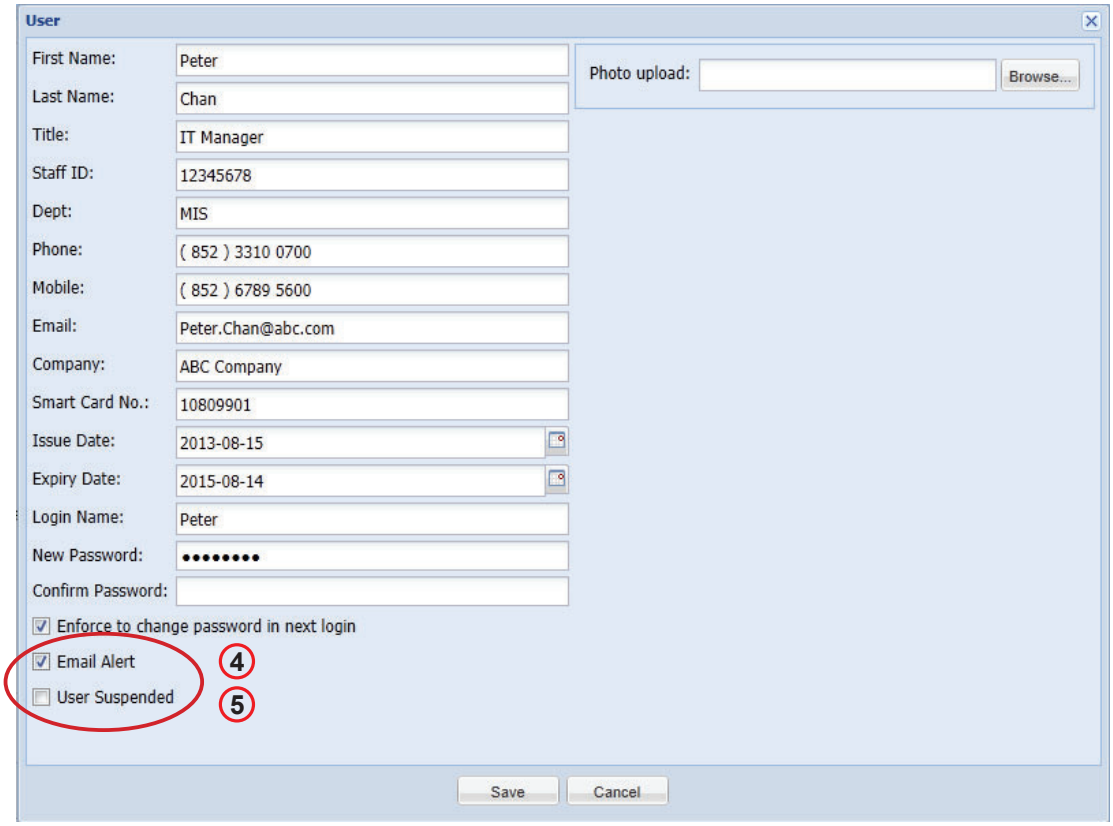
1. In **< CA – Edit Mode >**, select the CA you want the cabinet(s) to be removed
2. Select the cabinet(s)
3. Click "  "
4. Click " **Yes** " in the confirmation window to confirm the cabinet removal

< 10.4 > User Setup

- To build a user list. Afterward, you can use the list to build the user group.
- Each user has his own login name & password for remote system login.
- Each user also has his own smartcard for cabinet access.
- However, before users join a user group in next step, they can do nothing.

Add User

1. Click " **User Setup** " tab
2. Click " **Add** "
3. In the user window, please input all the fields.
4. If you want to receive device alarm email, tick " **Email Alert** " (Default : untick)
5. If you want to suspend the user authority and access temporarily, tick " **User Suspended** " (Default : untick)
6. Then click " **Save** " to finish



Edit User

1. Select the user you want to edit
2. Click " **Edit** " in **" User Details "** window
3. Edit the field (s) you want
4. Click " **Save** " & Click " **Yes** " in the confirmation window to confirm user edition.

Delete User

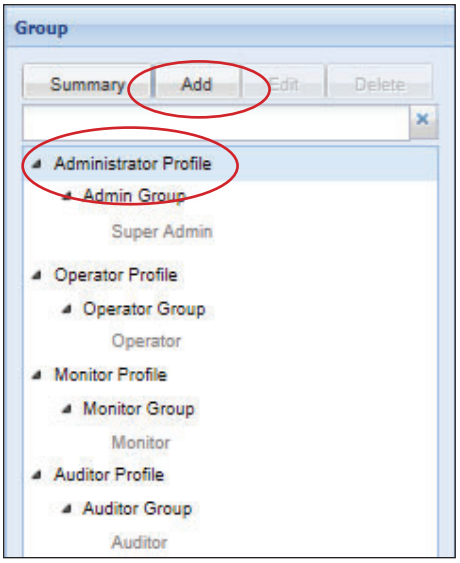
1. Select the user you want to delete
2. Click " **Delete** " in **" User Details "** window & Click **" Yes** " in the warning window to confirm user deletion

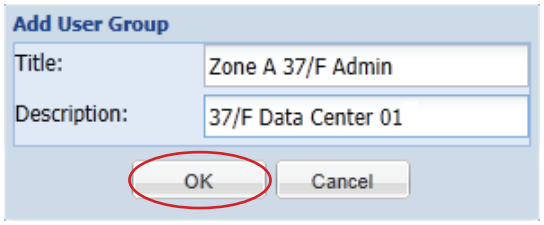
< 10.5 > Group Setup

- You can form a user group from the user list.
- You can define the user group with authority and which control area / areas to monitor & access.
- Each user subordinated to ONLY ONE user group.
- If the user wants to join another user group, a new login name, password & smartcard MUST BE assigned.
- Each user group must select ONE time rule. All group users can access the cabinet and remote system login according to the time period of the selected time rule.
- Without time rule assignment, all group users can do nothing.

Add group

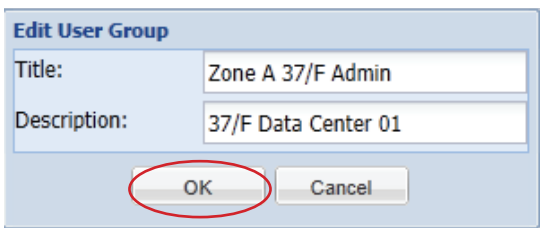
1. Select the Group Profile where a group you want to add
2. Click " **Add** "
3. Input the Group Title & Description (min. 1 char / max. 32 char)
4. Click " **OK** " to finish





Edit group

1. Select the group title you want to edit
2. Click " **Edit** "
3. Edit the Title / Description
4. Click " **OK** " to finish

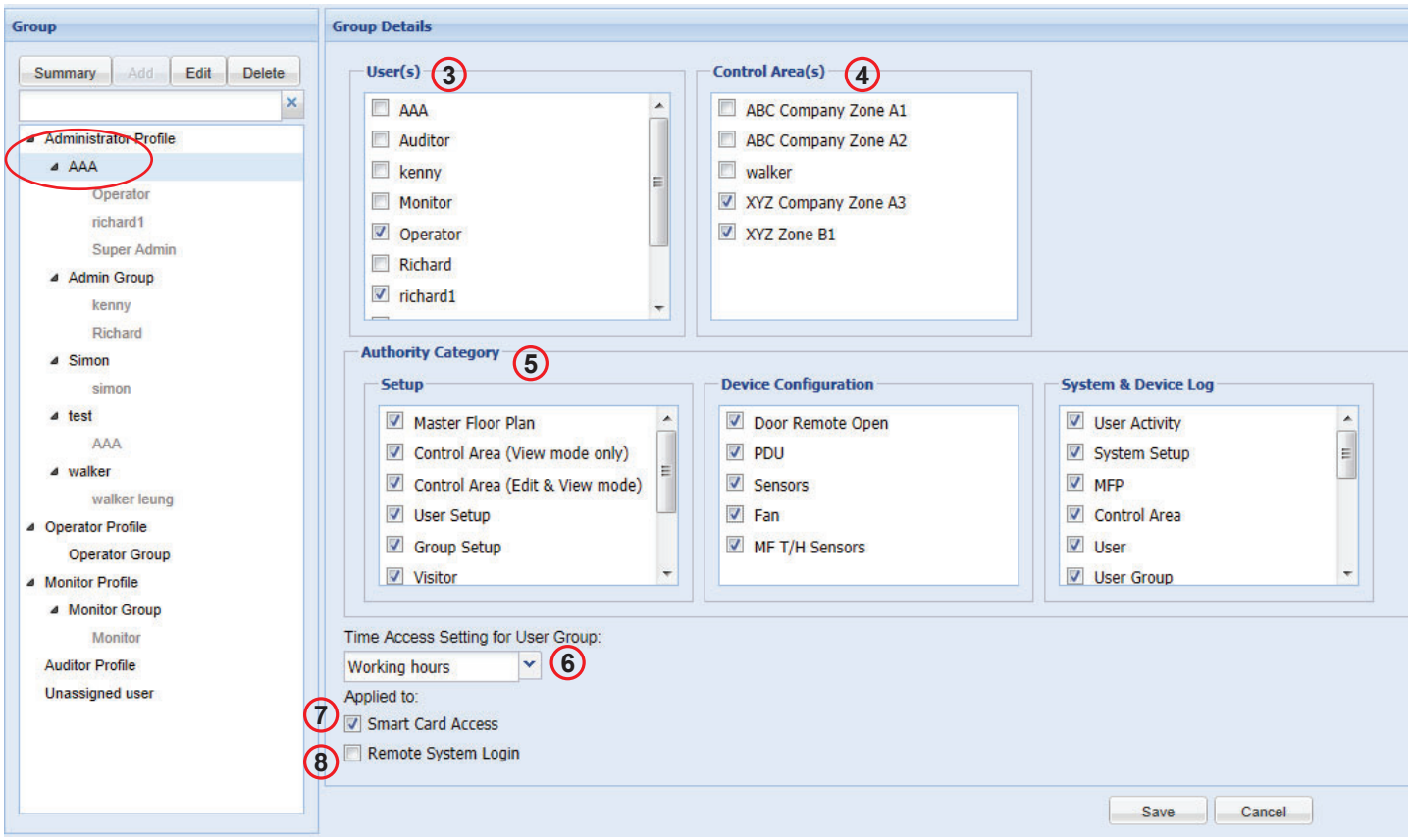


< 10.5 > Group Setup

Assign group authority

To assign authority to User group, please take the steps below :

1. Select the group
2. Click " **Edit** "
3. Tick the user(s) you want to assign to the group
4. Tick the Control Area(s) you want the group to control & monitor
5. Assign appropriate " **Setup** " , " **Device Configuration** " , " **System & Device Log** " authority to the group
6. Select one of the time rule in " **Time Access Setting for User Group:** "
7. ⚠ Tick " **SmartCard Access** ", otherwise the group user CANNOT access the cabinets by smartcard (Default : untick)
8. ⚠ If you want the group user can NOT access the software out of the time rule, please tick " **Remote System Login** " (Default : untick)
9. Click " **Save** " & " **Yes** " in the warning window to finish Group authority assignment



Delete group

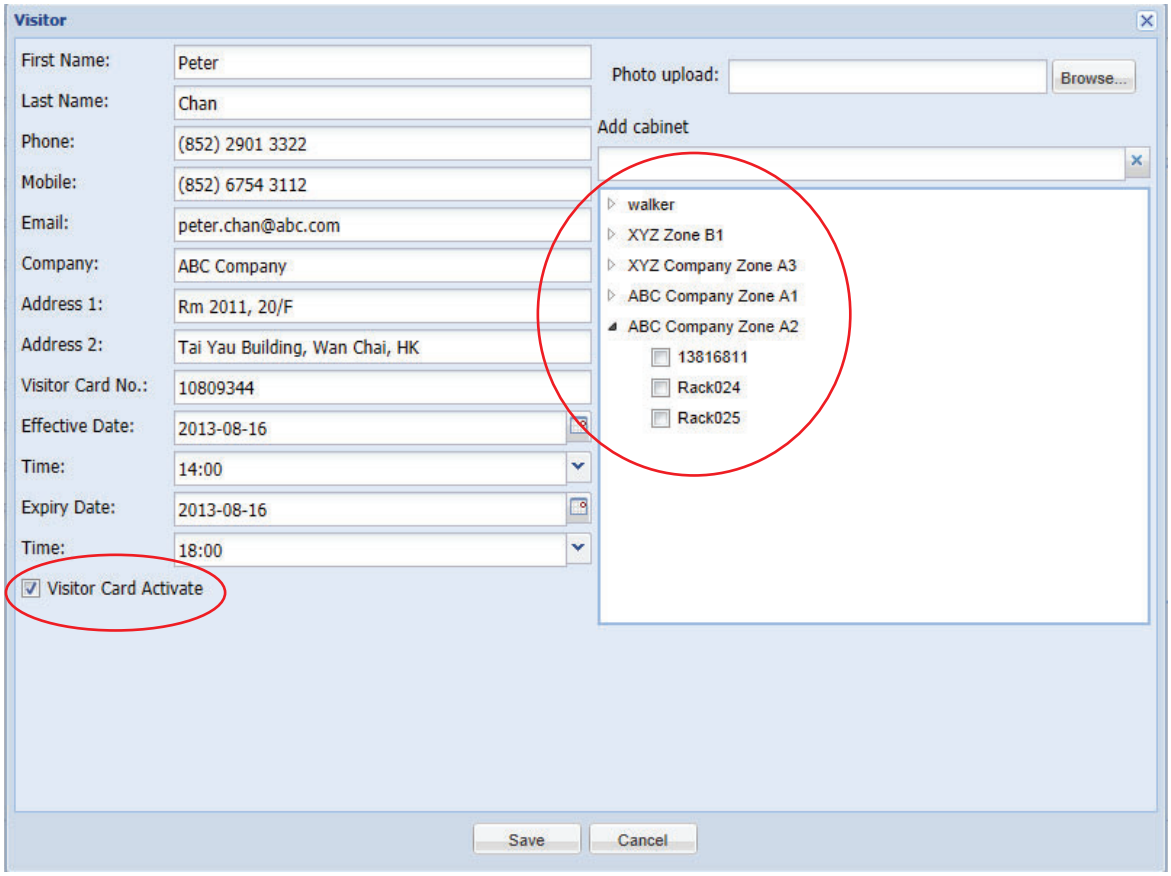
1. Select the group you want to delete
2. Click " **Delete** " & Click " **Yes** " to finish.

⚠ The deleted group's users will be moved to the unassigned user list simultaneously.

< 10.6 > Visitor

Add Visitor

1. Go to " **Visitor** " tab
2. Click " **Add** "
3. Input all the fields in the following window
4. Tick the cabinet(s) to allow visitor to access by smartcard
5. Tick " **Visitor Card Activate** " to activate the smartcard to access the cabinets under a specific time period
6. Click " **Save** " to finish Visitor addition



Edit Visitor

1. Select the visitor you want to edit
2. Click " **Edit** " in " **Visitor Details** " window
3. Edit the field(s) you want
4. Click " **Save** " & Click " **Yes** " to finish

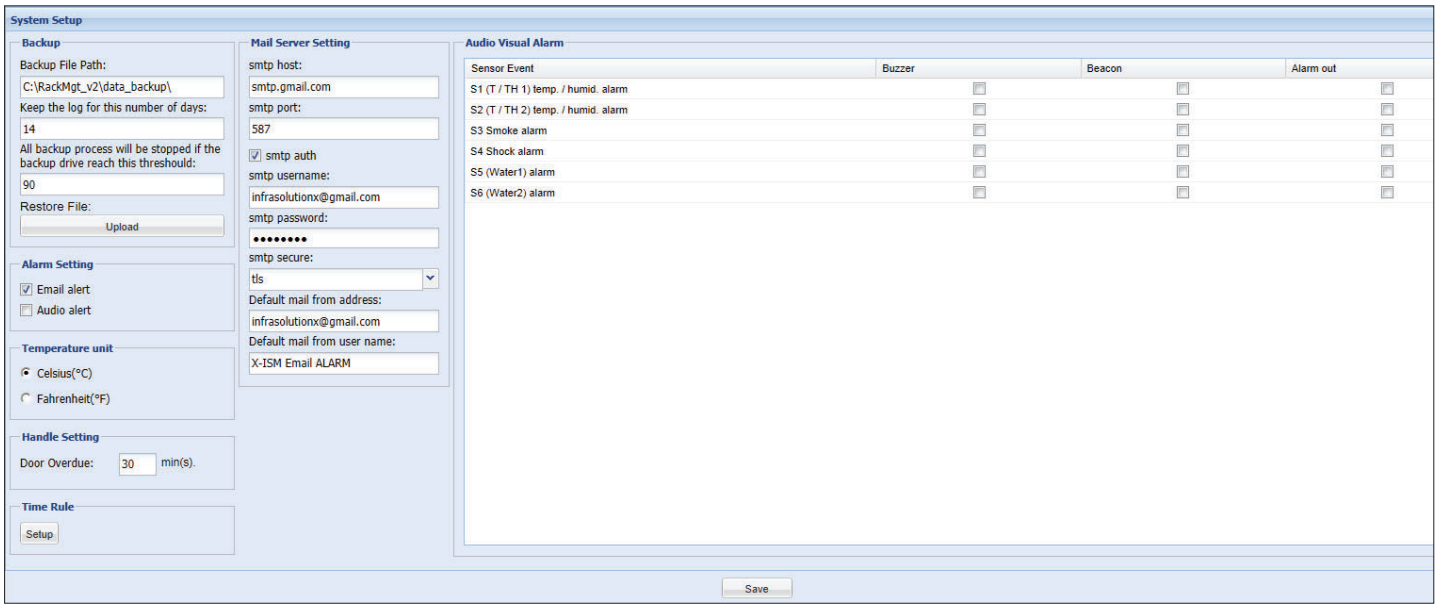
Delete Visitor

1. Select the visitor you want to delete
2. Click " **Delete** " in " **Visitor Details** " window & Click " **Yes** " to finish

System Setup

In System Setup tab, it provides the following settings which apply to the whole system.

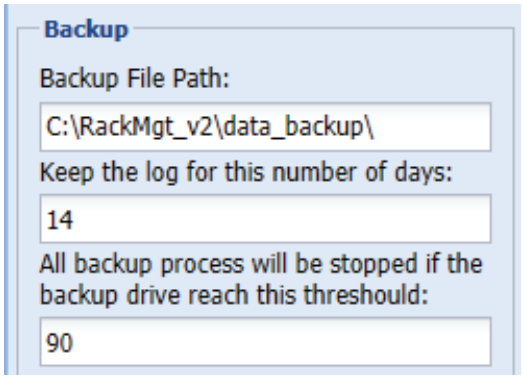
(1) Backup & Restore
(2) Alarm Setting, Mail Server Setting, Audio Visual Alarm
(3) Temperature unit
(4) Door opening overdue setting
(5) Time Rule



< 11.1 > Backup & Restore

Backup

You can set
- the backup path of device configuration & system setting
- the time period the system & event log kept in the system
- the drive space used in term of percentage before the backup process STOP



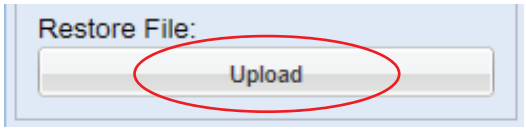
Those event log over the defined time period will be saved as CSV format which located at " **Backup File Path** " *\logbackdist* folder

The system setup backup file will be saved in the " **Backup File Path** " *\sysbackdist* folder

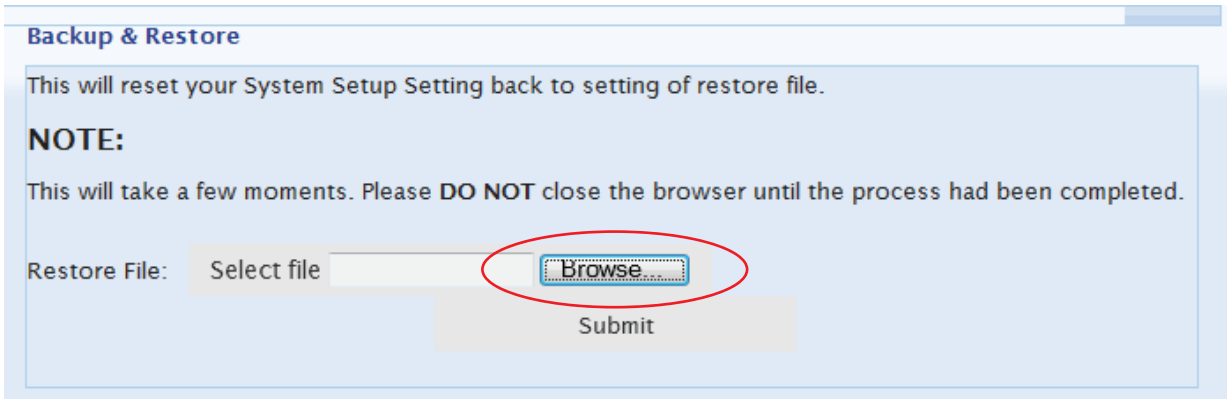
Restore

Restore MUST BE done at the management PC side NOT client side

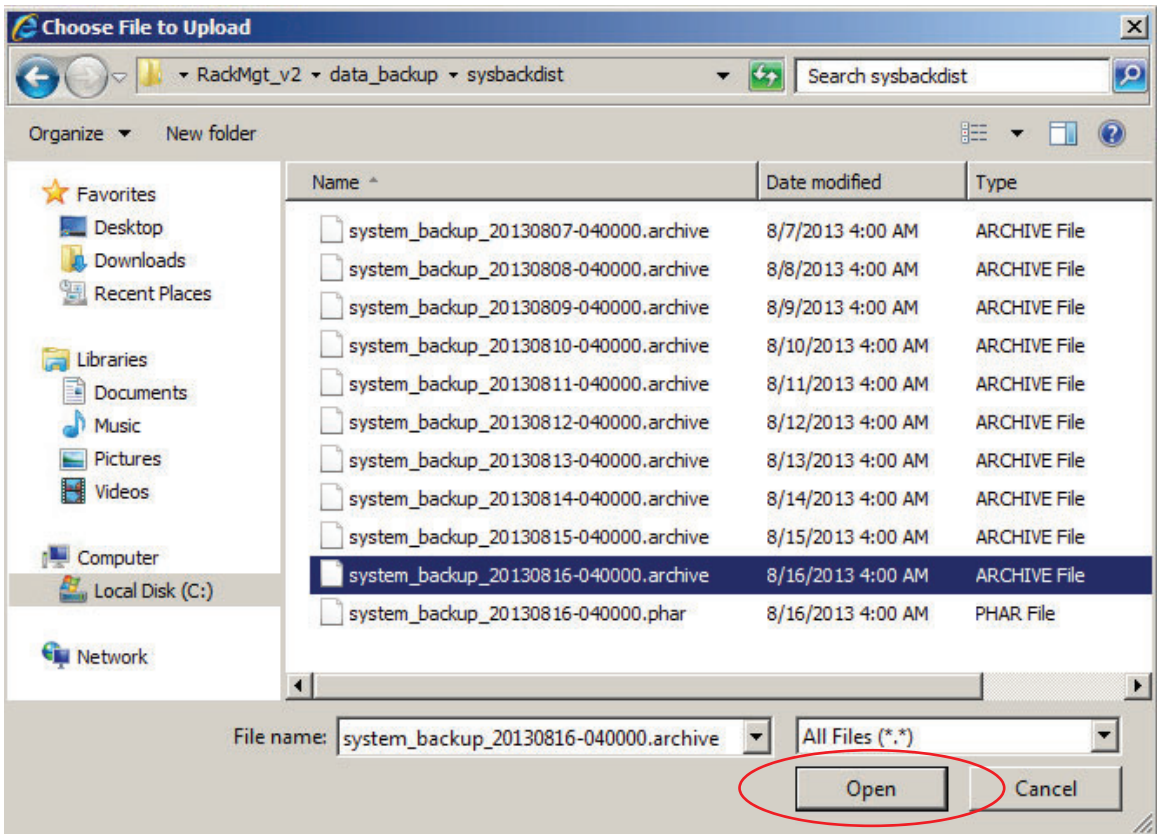
1. Click " **Upload** " button



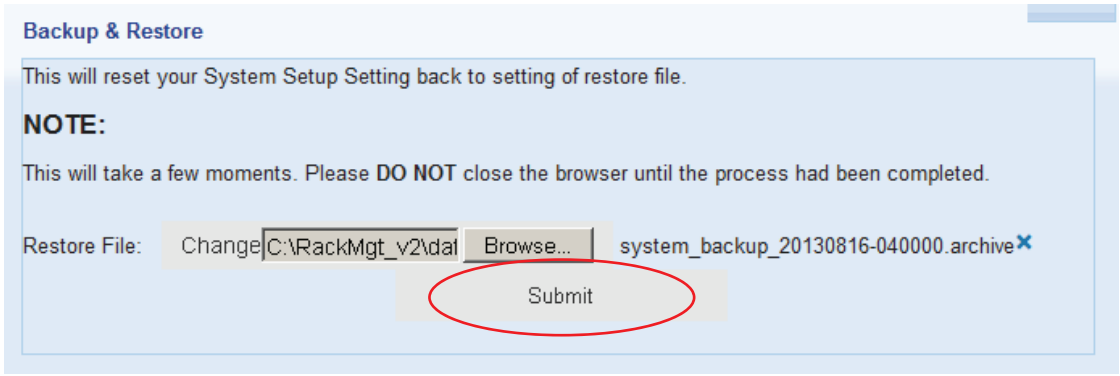
2. Click " **Browse** " to select the file you want to restore



3. Select the file & Click " **Open** "



4. Click " **Submit** " to start to restore. When restore is completed, " **Restore succeeded** " will be displayed in the web page



Complete

After system restore, users need to activate the software again if the backup file is from a different management PC

< 11.2 > Alarm Setting / Mail Server Setting / Audio visual Alarm

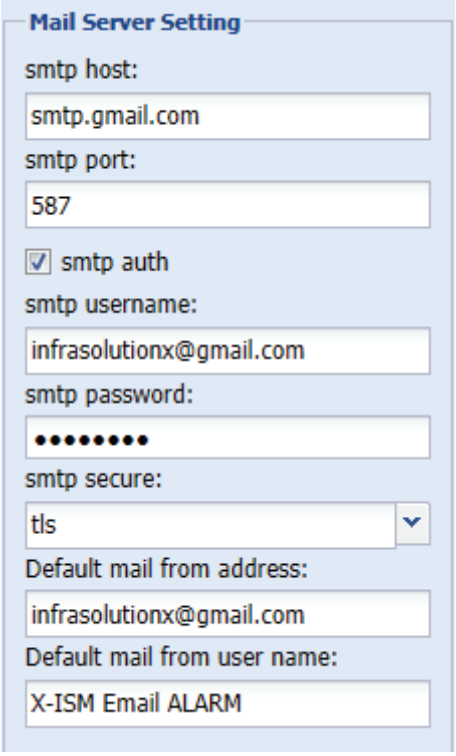
Alarm Setting

System will send out device alarm email to user if enable “ Email Alert “

Default : Untick

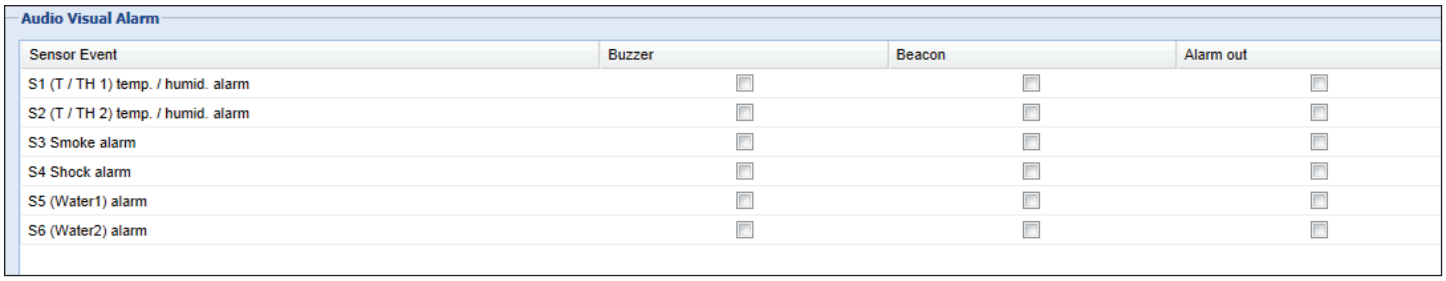
Mail Server Setting

It is used to setup the sender account to send out the device alarm email to the user



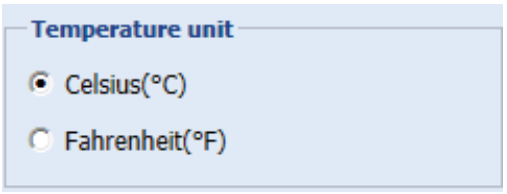
Audio Visual Alarm

Enable or disable “ **Buzzer** “ , “ **Beacon** “ & “ **Alarm out** “.
By this setting, all sensors under alarm status WILL or WILL NOT trigger audio visual alarm accordingly.



< 11.3 > Temperature unit

Select the temperature unit °C / °F displaying in the system



Default : Celsius

< 11.4 > Door Opening Overdue Setting

Set the door opening overdue time after the cabinet door is open.
When time overdue, user can view overdue timing with mins in cabinet icon.

Default : 2 mins
(Min. 1 min / max. 9999 mins).

< 11.5 > Time Rule

- Time rule is designed for security. It tries to restrict the users with a time period to access the system and cabinet.
- In this section, you can set time rules up to 32.
- Afterward, all time rules will be shown in user group for their selection.
- Only one time rule can be assigned to one user group.

1. Click " **Setup** " under time rule section

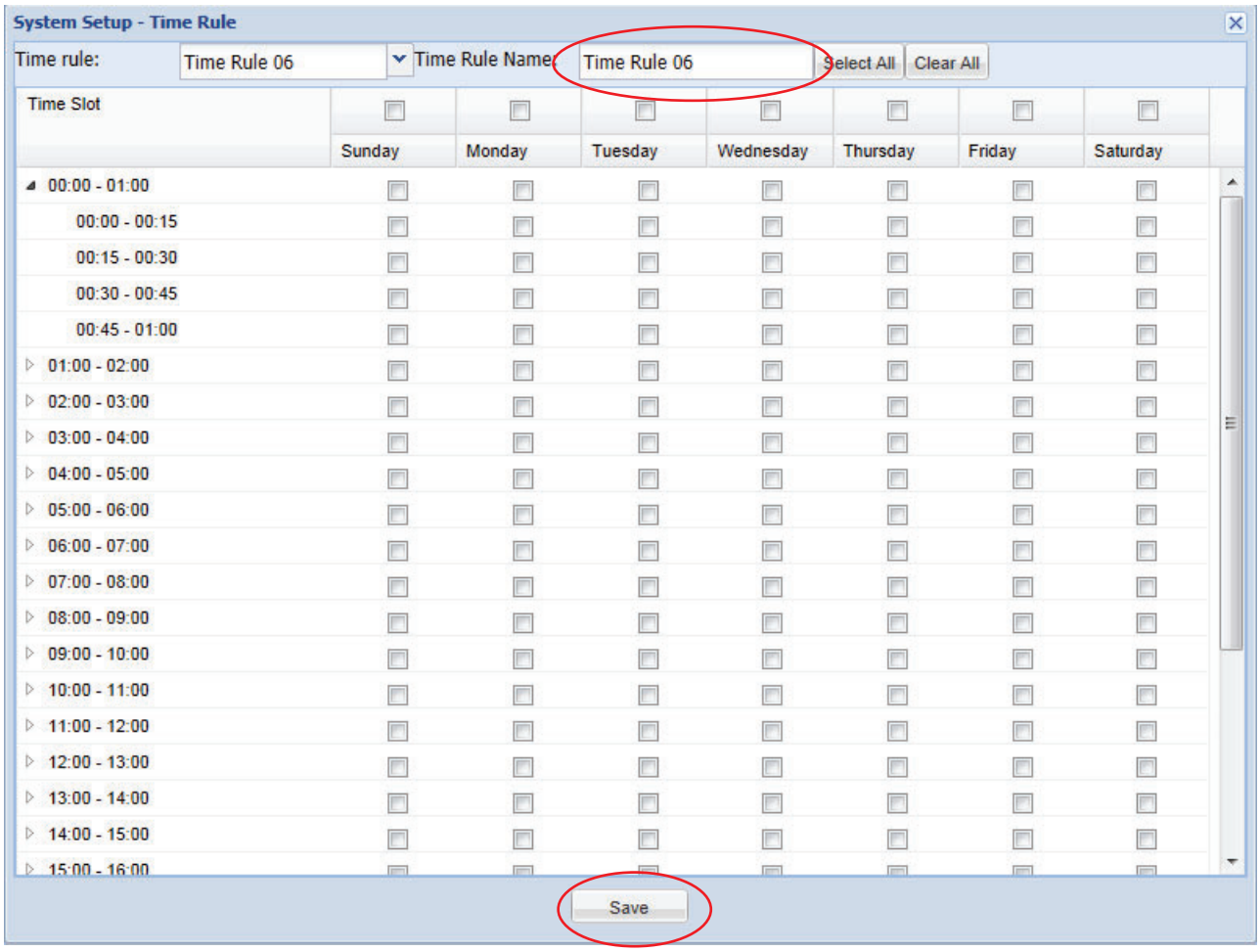
2. Select time rule no. (1 - 32)

3. Edit the " **Time Rule Name "**

4. Tick the time slot to set date-time period & weekday for the time rule

5. Click " **Save** " to finish

6. Repeat step 2 to 5 for other time rules

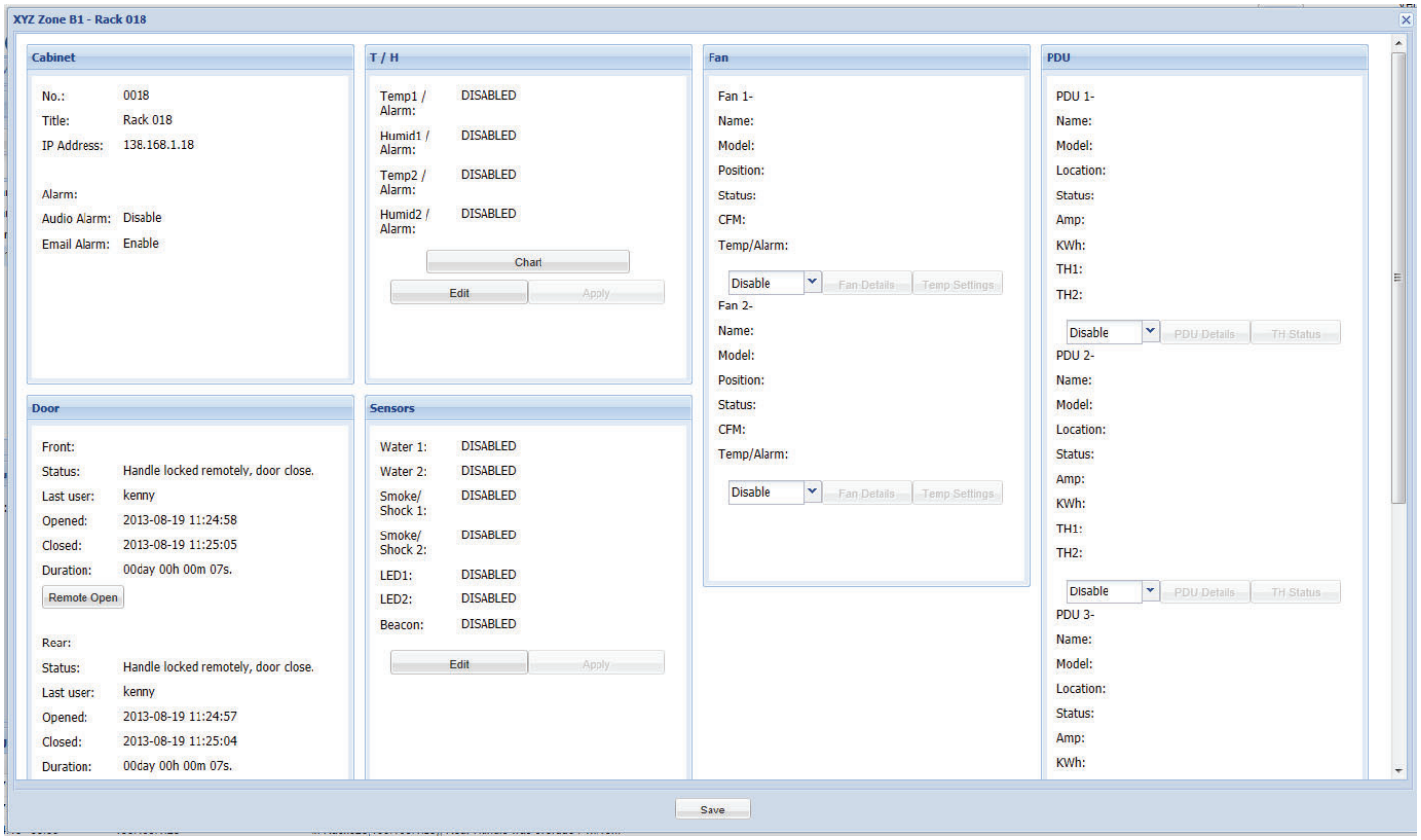


Operation & Usage

< 12.1 > Individual Cabinet Devices Enable & Disable

Enter **CA – Edit Mode** to enable / disable individual cabinet sensor & device :
- TH Sensors / Sensors / PDU / Fan

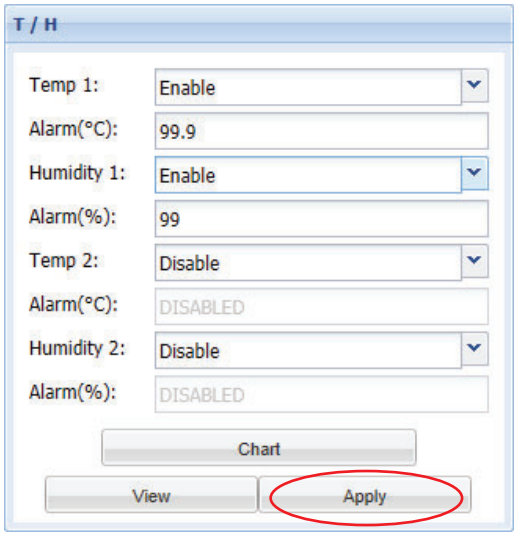
1. Double click the cabinet icon & show the window below



2. Click " **Edit** " in T / H pane

3. Disable if no TH sensors connection (default : disable)
OR
Enable if TH sensor connected and set alarm level

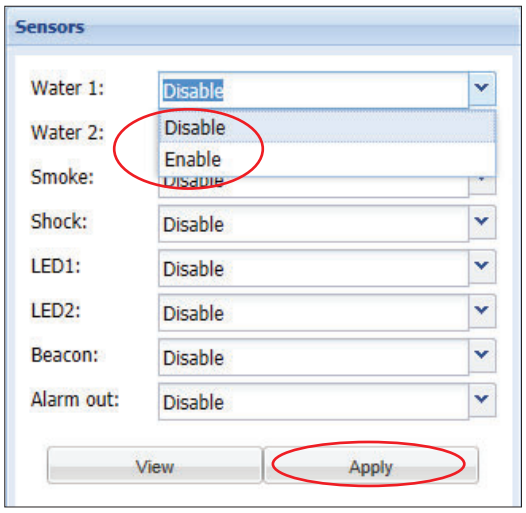
4. Click " **Apply** " to finish



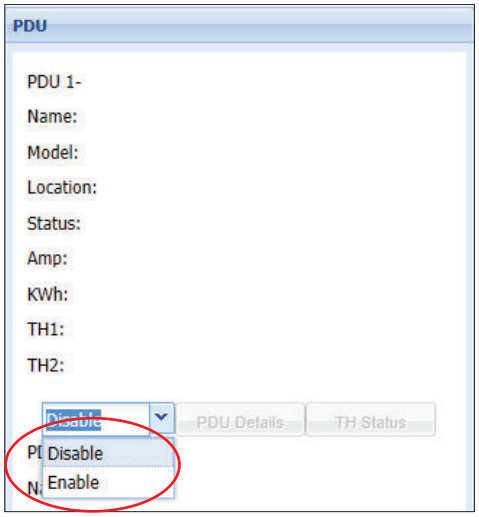
5. Click " **Edit** " in Sensors pane

6. Disable if no sensors connection (default : disable)
   OR
   Enable if sensor connected

7. Click " **Apply** " to finish



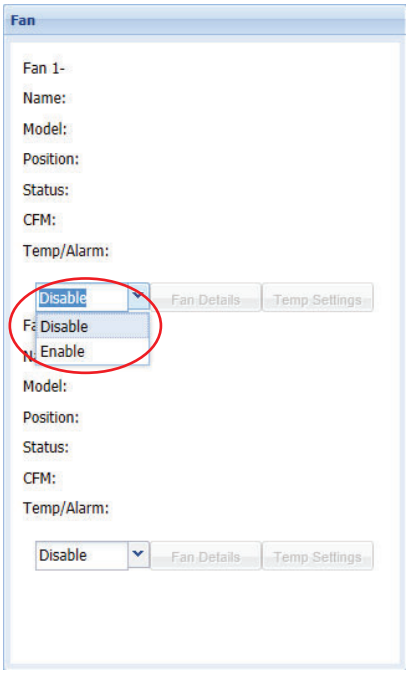
8. In PDU pane, disable if no PDU connection (default : disable)
   OR
   Enable if PDU connected



9. In Fan pane, disable if no Fan connection (default : disable)
   OR
   Enable if Fan connected

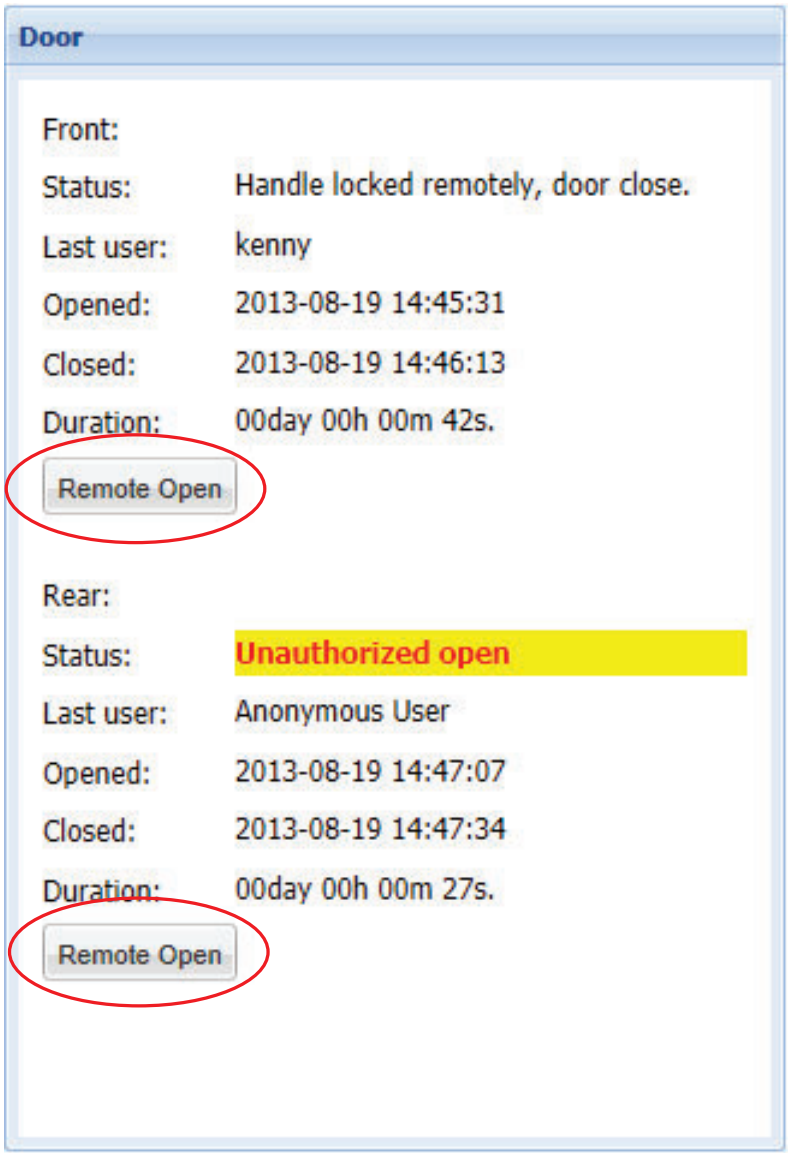
10. Click " **Save** " to finish the PDU & Fan section

When enable or disable PDU & fan,
the InfraBox will reboot to make the changes effective



< 12.2 > Individual Cabinet Door Open by Remote

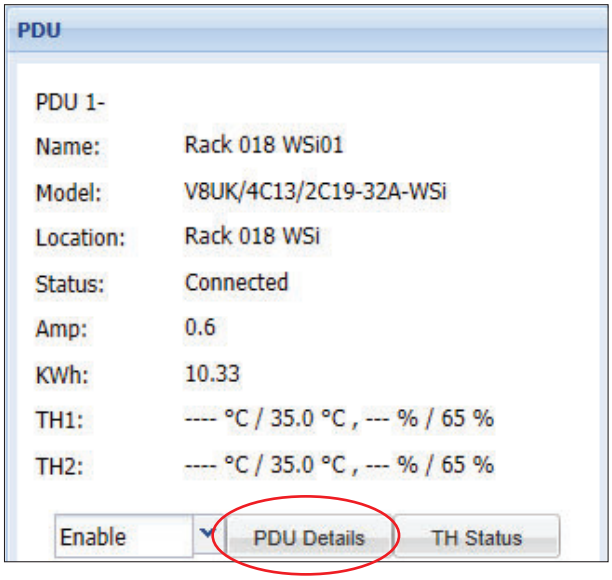
In Door pane, you can proceed
- door open by remote
- view the record of last door open & close record



Intentionally
Left
Blank

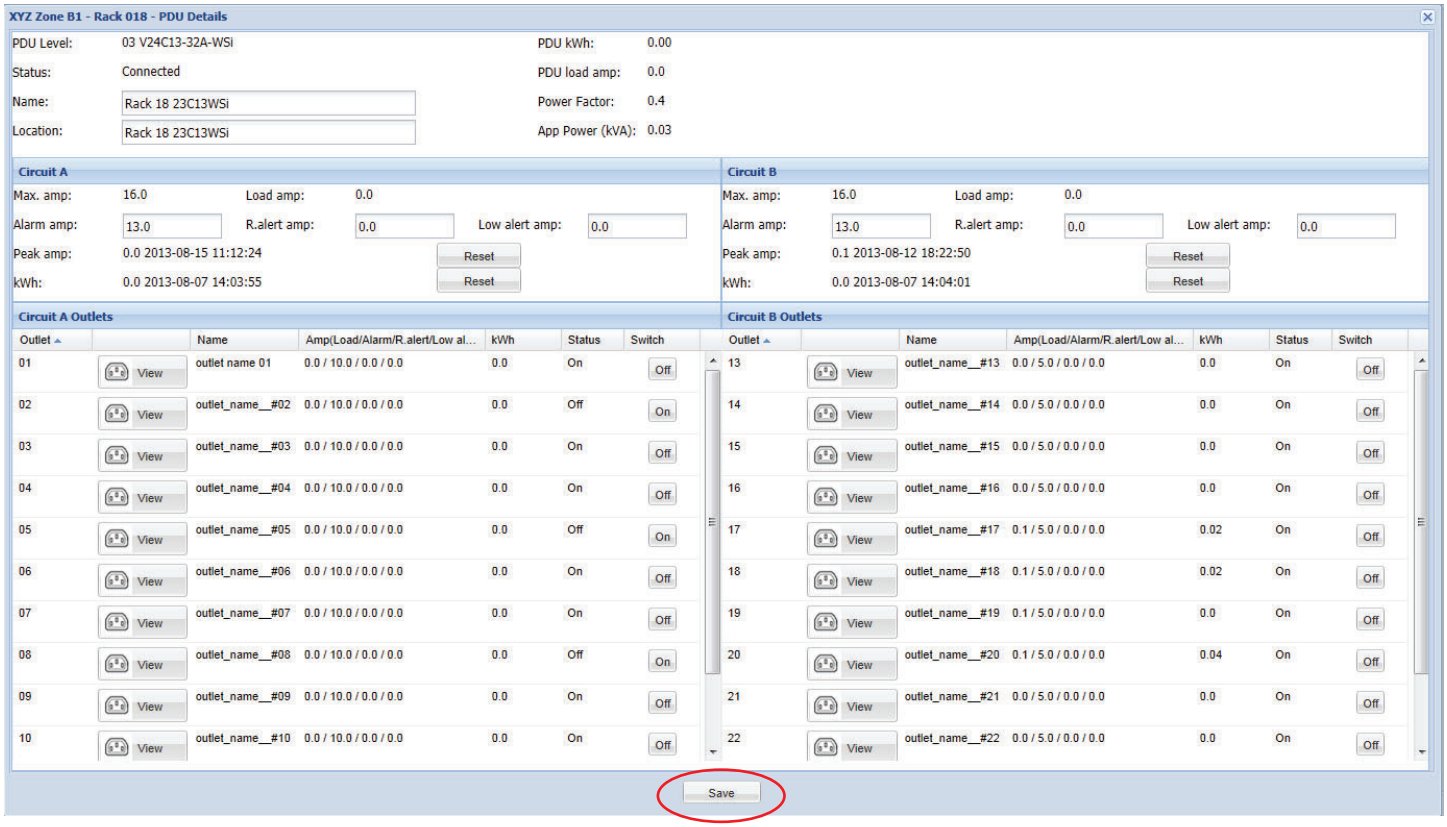
< 12.3 > Individual Cabinet PDU Configuration & Control

In PDU pane, Click “ **PDU Details** “ to go to PDU Details page



In “ **PDU Details** “ , you can

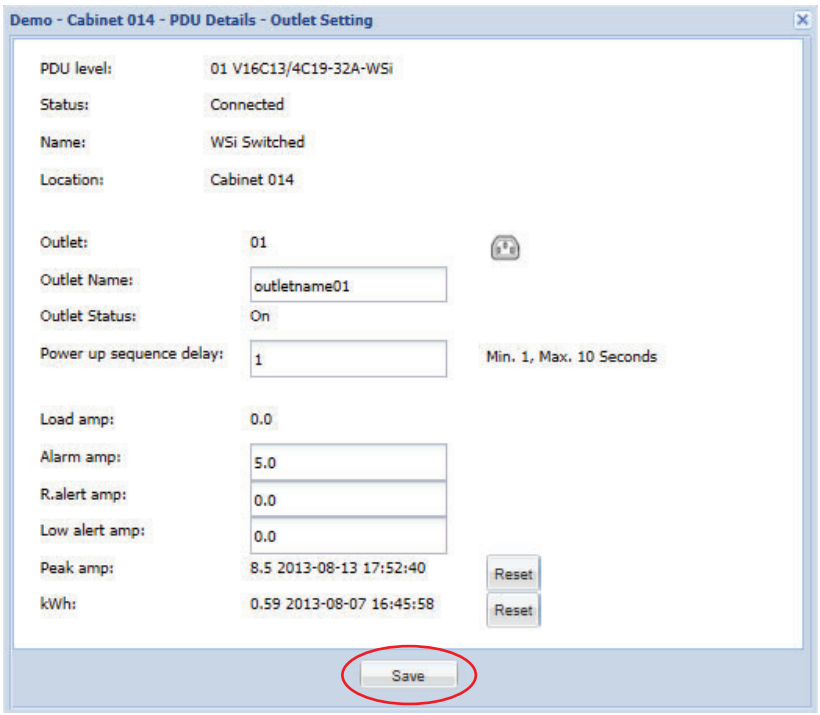
- Change “ **Name** “ & “ **Location** “ of PDU
- Change “ **Alarm amp.** ” , “ **R. alert amp.** “ & “ **Low alert amp.** “ of PDU’s circuits
- Click “ **Save**” to finish
- Click “ **Reset** “ to reset peak amp. & kWh of PDU’s circuits
- Click “ **On / Off** “ to switch on / off PDU’s outlet (Switched PDU models only)



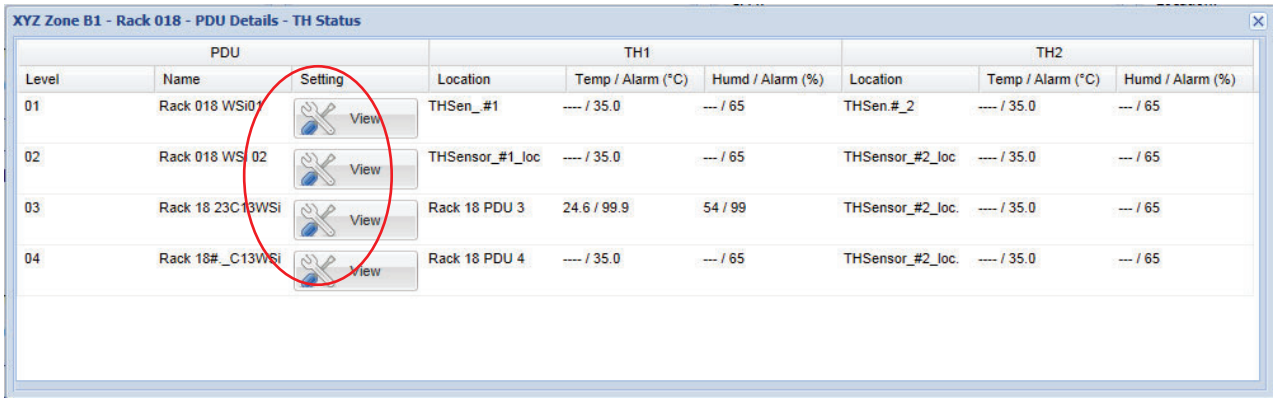
In “ **PDU Details** “ , you can Click outlet icon to go to Outlet Setting page

In “ **Outlet Setting** “ , you can

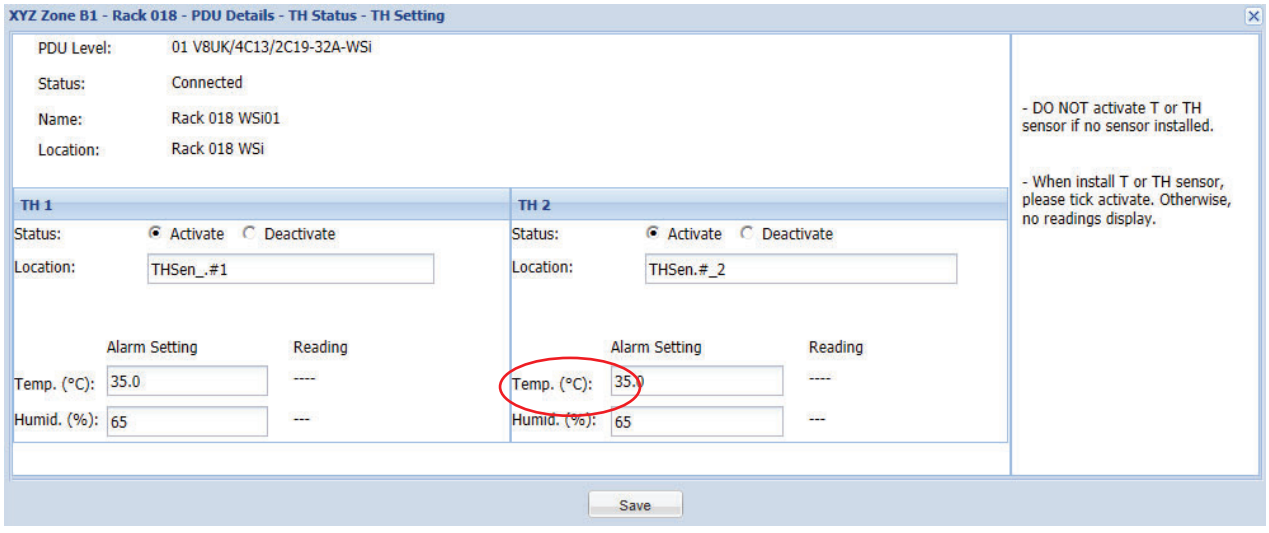
- Change the “ **Name** “ of PDU outlet
- Change “ **Power up sequence delay** “ of PDU outlet (Switched PDU models only)
- Change “ **Alarm amp.** “ , “ **R. alert amp.** “ & “ **Low alert amp.** “ of PDU outlet (Outlet level measurement PDU models only)
- Click “ **Save**” to finish
- Click “ **Reset** “ to reset peak amp. & kWh of PDU outlet (Outlet kWh Switched PDU only)



To configure the TH sensors of PDU, you can Click “ **View** “ button in “ **TH Status** “ to go the TH Setting page

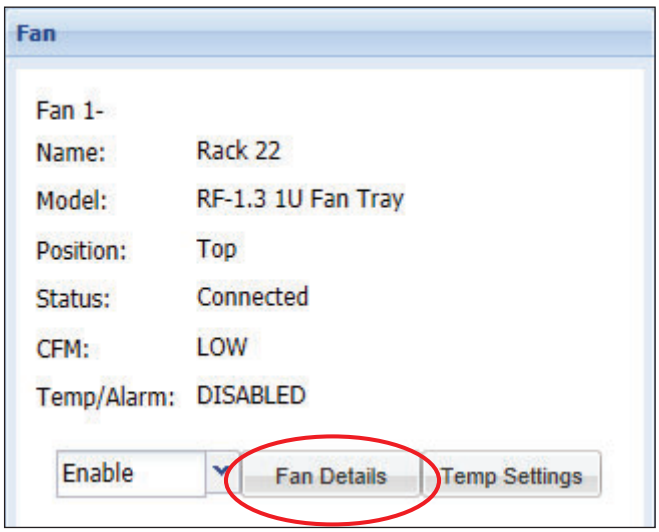


In “ **TH Setting** “ , you can
- Activate / Deactivate TH sensors of PDU
- Change “ **Location** “ , “ **Alarm Setting** “ of TH sensors
- Click “ **Save** “ to finish

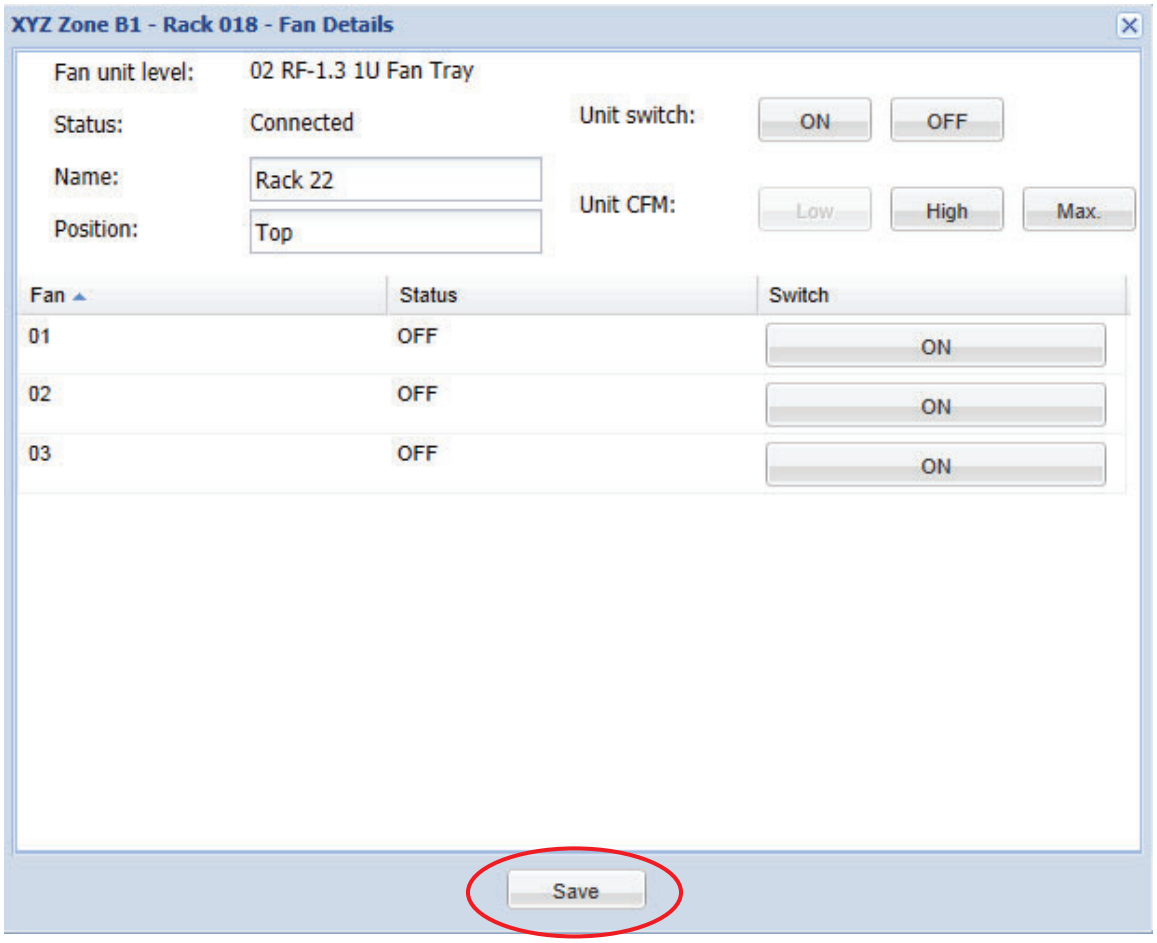


< 12.4 > Individual Cabinet Fan Unit Configuration & Control

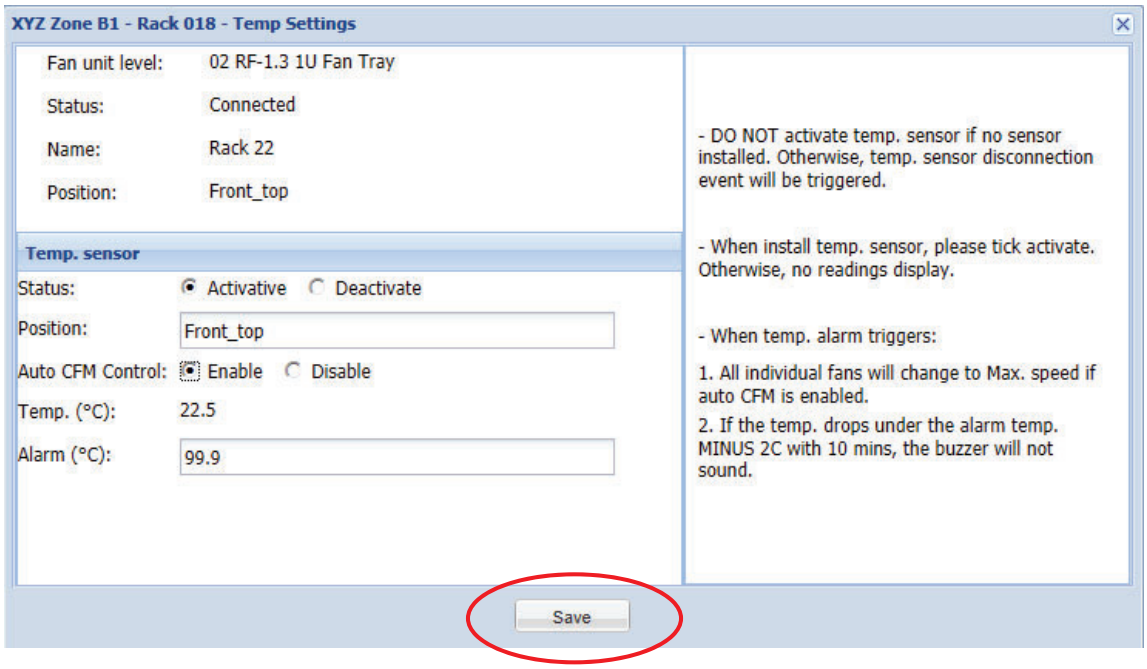
In Fan pane, Double Click “ **Fan Details** “ to go to Fan Details page



In “ **Fan Details** “ , you can
- Change “ **Name** “ & “ **Position** “ of Fan unit
- Change “ **Unit CFM** “
- Click “ **Save**” to finish
- Switch ON / OFF Fan unit

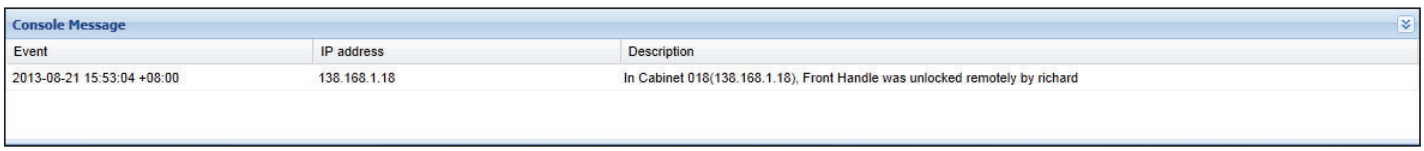


In Fan pane, Double Click “ **Temp Settings** “ to go to Temp Settings page.
You can
- Activate / Deactivate Temp. sensor
- Change “ Position “ of Temp. sensor
- Enable / Disable Auto CFM Control
- Change the “ **Alarm** “ of Temp. sensor
- Click “ **Save** ” to finish



< 12.5 > Console Message

In the bottom side of the web page, you can view the console message pane.
All action related to the cabinet doors will be shown in this area.



To collapse and hide the console message pane, Click 

To expand and display the console message pane , Click 

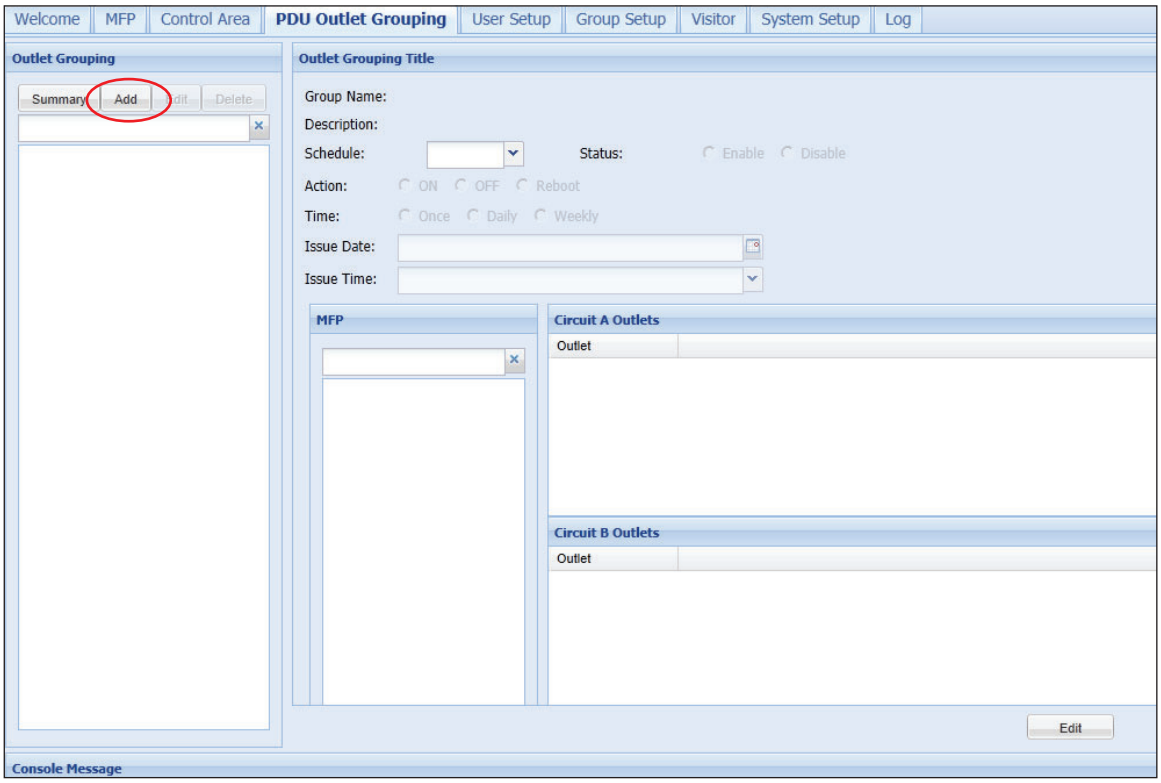
< 12.6 > PDU Outlet Grouping

PDU Outlet Grouping is a feature which you can assign different PDUs for scheduled outlet ON / OFF / Reboot.
Each PDU CAN ONLY BE ASSIGNED to one PDU Outlet Grouping.
In each PDU Outlet Grouping, there are 6 outlet ON / OFF / Reboot schedules on Once, Daily & Weekly basis

To add a PDU outlet grouping, please follow the steps below:

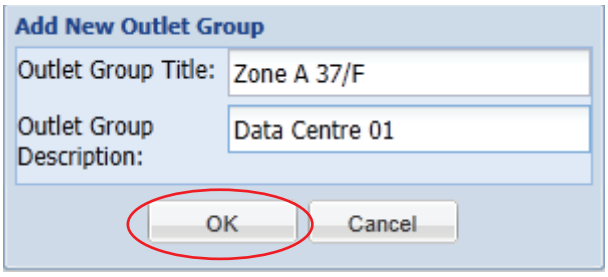
1. Click " **PDU Outlet Grouping** " Tab

2. Click " **Add** "



3. Input " **Outlet Group Title** " & " **Outlet Group Description** "

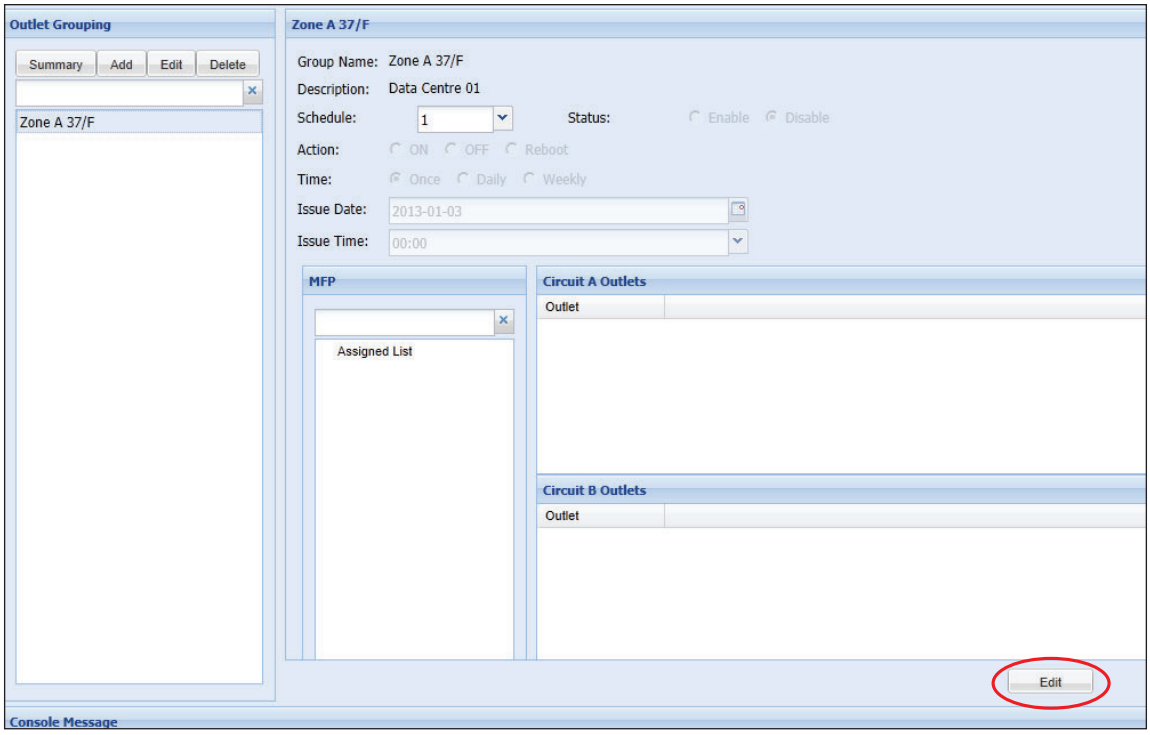
4. Click " **OK** " in " **Add New Outlet Group** " window to finish



To enable an outlet schedule, please follow the steps below :

1. Select one of the outlet group

2. Click " **Edit** "



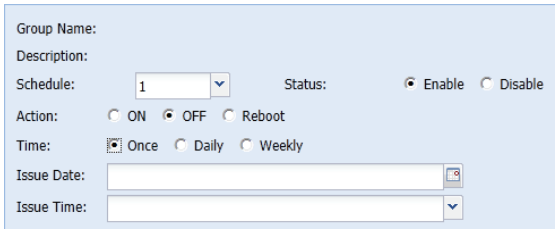
3. Select schedule 1

4. Select " **Enable** "

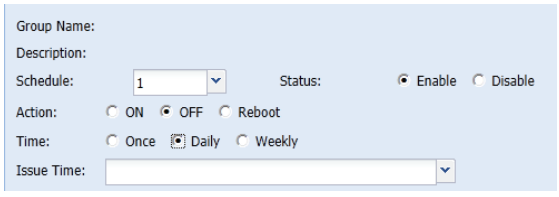
5. Select " **Action** " (ON / OFF / Reboot)

6. Select " **Time** " (Once / Daily / Weekly)

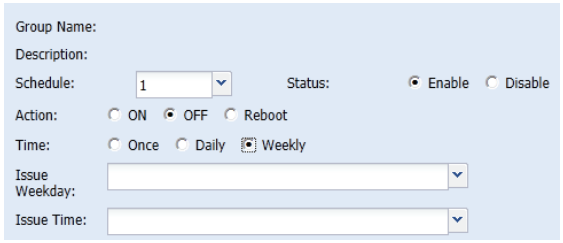
7. Select " **Issue Date** " & " **Issue Time** "



once



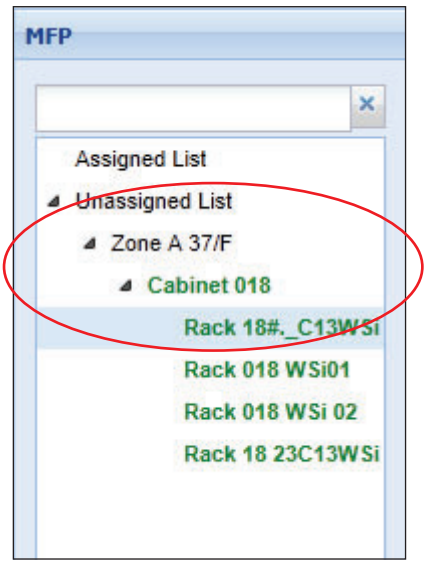
Daily



Weekly

< 12.6 > PDU Outlet Grouping

8. Select the PDU you want to add to this schedule by Clicking " **Unassigned List** " > " **MFP** " > " **Cabinet** " > " **PDU** " in MFP pane

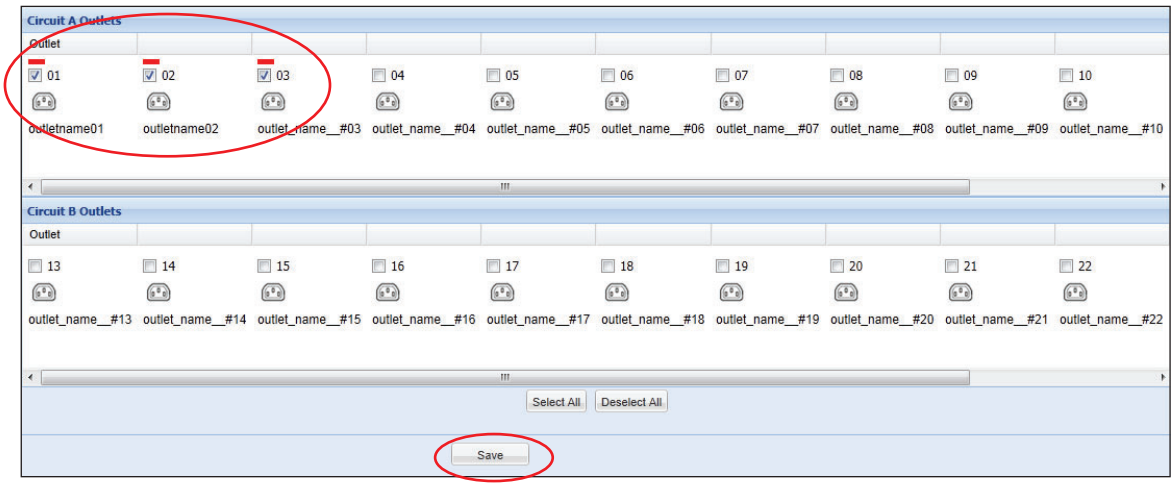


If the PDU already assigned to another outlet schedule in the same outlet grouping, you can select the PDU in the " **Assigned List** "

9. Tick the outlet of the selected PDU for the schedule

10. Repeat step 9 for outlet (s) of other PDU (s) you want to add to the same schedule

11. Click " **Save** " to finish



12. Repeat Step 2 to 11 for other schedules if necessary

If the outlet schedule is " **Once** ", the schedule will be disabled automatically once the action is completed. To cancel the outlet schedule, select " **Disable** " of the selected schedule & Click " **Save** " to finish

< 12.7 > Device & System Event Log

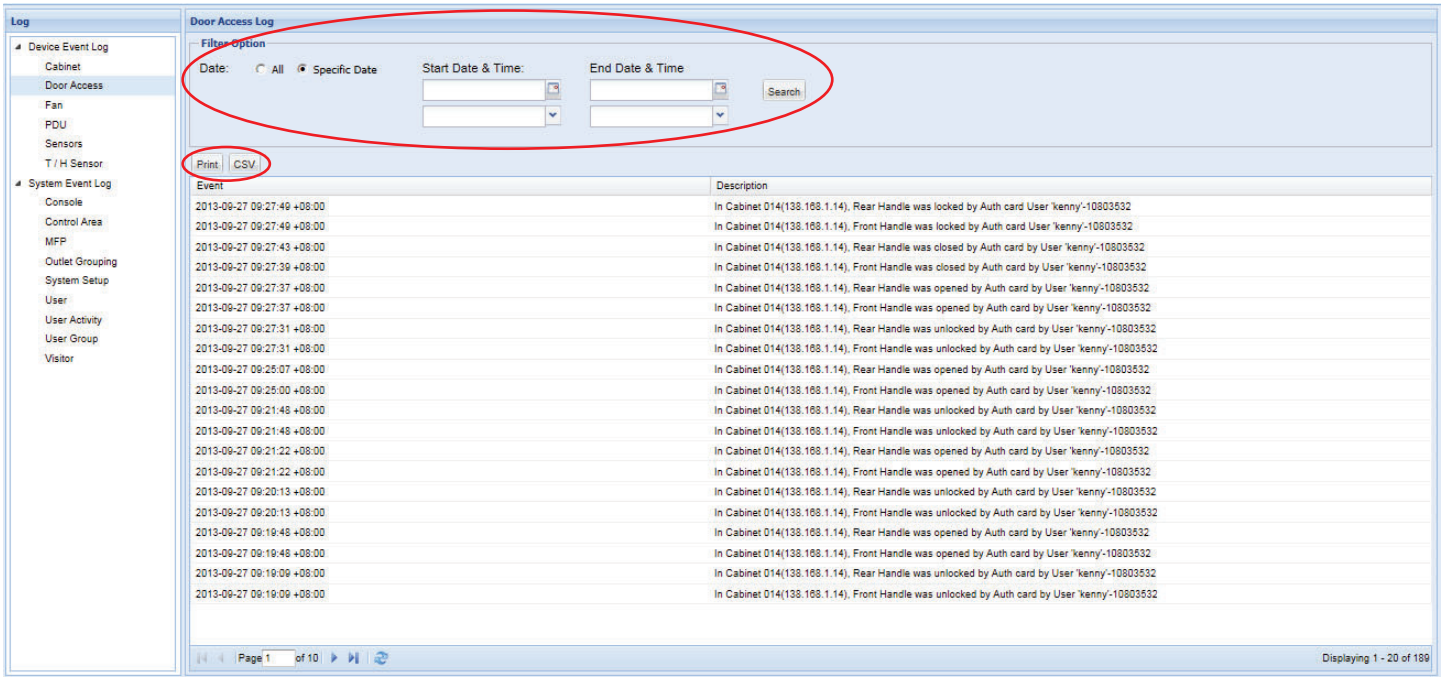
In " **Log** " tab, it provides device & system events for you to view, print or export in CSV format.
Device event log includes:
- Cabinet
- Door Access
- Fan
- PDU
- Sensors
- T / H Sensor

System event log includes:
- Console
- Control Area
- MFP
- Outlet Grouping
- System Setup
- User
- User Activity
- User Group
- Visitor

You can view all the log records or the log records in a specific time period.

You can print the event log records by Clicking " **Print** ".

You can export the event log records in CSV format by Clicking " **CSV** ".



< 13.1 > SNMP

(I). Accessing MIB Files

Use the World Wide Web (WWW) to download the SNMP MIB file at this URL:
https://www.austin-hughes.com/resource_cat/product-resources/rack-access-resources/

(II). Enabling SNMP Support

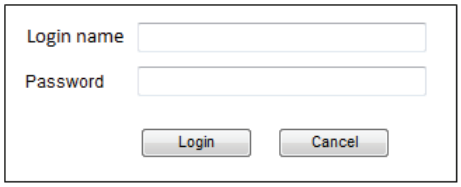
The following procedure summarizes how to enable the InfraBox for SNMP support.

1. Connect the InfraBox to a computer.

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

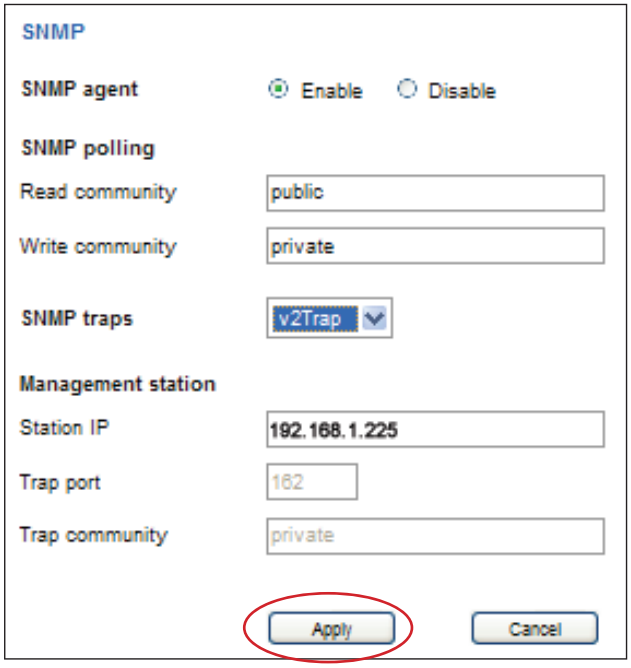
3. Enter the configured IP address of InfraBox into the I.E. address bar. (refer to P.7)
Default IP address is " **192.168.0.1** "

4. Enter " **Login name** " & " **Password** ".
Default login name & password are " **00000000** "
To change login name and password of XMS-02-S, please refer to P.43 < Login >



5. Select SNMP from the left navigation pane

6. The SNMP Settings window appears as below:



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

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

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

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

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

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

< 14.1 > FAQ & Troubleshooting

InfraSolution X Manager – X-ISM

1. What is InfraSolution X Manger – X-ISM?
InfraSolution X Manager X-ISM is a LICENSED rack management software to monitor up to 3000 racks remotely.

Each InfraBox connects a pair of smartcard handles to secure the rack access control.

Each InfraBox can also connect a variety of sensors to provide an environmental monitoring solution.

To enhance the functionality, up to 1920 x kWh PDU / 960 x Fan Unit can be monitored through InfraSolution X Manager as well.

Up to 100 concurrent users can access the management software remotely to achieve the demand of multi-user / multi-tasking in nowadays' time sharing data center operation.

2. What OS platform does X-ISM support?
MS Windows 2008 Server R2 Standard edition with SP1 (English edition only)
MS Windows 2012 / 2016 Server (Standard edition)

3. What are the default ports used in X-ISM ?

UDP port: 8890 for searching InfraBox
TCP port: 4000, 4001, 4003, 4006 & 18081 for InfraBox commnunication
TCP port: 80 for HTTP
TCP Port: 25 for email alarm service (can be edited by user)

4. What is the login name & password of default administrative account?
Default login name " **admin** " & password " **admin** "

5. How many racks & remote clients does X-ISM support?
3,000 racks and 100 remote clients (max.)

6. How can I receive the alarm email?
- Enable email alert in System Setup
- Configure mail server setting in System Setup
- Enable email alert in User Setup
- Enable email alarm in Rack IP configuration

7. After close the web browser, I cannot login the software UI again using the same user account immediately?
Ensure clicking the " logout " button to exit. If clicking the " close " button, you need to wait around 1 min before you can login again.

InfraBox

1. Does the InfraBox has dual power input?
(MUST order before delivery)

2. How many PDUs does InfraBox support?
4 PDUs max. (for InfraBox X-2000 only)

3. How many fan units does InfraBox support?
2 fan units max. (for InfraBox X-2000 only)

4. Does the InfraBox have a built-in UI ?
Yes, a built-in UI provides a general remote rack access monitoring & control. You can also monitor & control up to 4 PDUs and a variety of sensors (X-2000 model ONLY).
However, this built-in UI can ONLY manage ONE InfraBox , no any event log. If need a complete monitoring control AND event log reporting for some hundred racks , the licensed X-ISM rack management software is absolutely required.

5. Can I use the built-in UI and InfraSolution Manager software simultaneously ?
No, only either one

6. What is the default IP setting of InfraBox ?
The default IP setting is as below :
IP address: 192.168.0.1
Subnet mask: 255.255.255.0
Gateway: 192.168.0.254

7. What is the IP Setup utilities ?
This is a windows application used to assign the IP address of the InfraBox.
Please find the link below:
http://www.austin-hughes.com/support/utilites/InfrasolutionX/InfraBoxSetup.msi

8. What is the default ports used in IP setup utilities ?
- UTP port : 8880, 8881, 8882, 8883, 8884, 8888, 8889, 8890 & 8891

9. How can I replace the failed InfraBox ?
Power off the faulty InfraBox. Unplug the cables, unscrew the InfraBox and take it out.
Before install the new InfraBox to rack, please follow the InfraBox IP setup procedure in user manual P.6. After install the new InfraBox to rack, plug all the connection cables required and power on.

10. Does the InfraBox have firmware built-in ?
Yes

11. How can I get the updated InfraBox firmware ?
Please find the link below :
http://www.austin-hughes.com/resources/software/infrasolutionX
Please select " **Management Software "** at the right side selection column, and you will find the firmware files.

12. Can I remotely update the InfraBox firmware ?
Yes

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

6. How long is the LED light bar ON after the handle lock is released?
within 10 seconds

Others

1. Can I use a notebook computer as a management PC?
Yes, but ensure the power adapter is plugged in & power ON.

2. Where can I find the Catalogue / User manual / Model list of InfraBox?
Please visit www.austin-hughes.com

3. How can I get a further support?
Please send an email to support@austin-hughes.com or sales@austin-hughes.com

< 14.1 > FAQ & Troubleshooting

InfraBox Disconnection

1. GUI shows a certain InfraBox in a DAISY CHAIN / MIXED network disconnected

Step 1 - InfraBox power off?

Check the InfraBox is power ON or not

Step 2 - Can ping the IP address?

i. Make sure the IP address can be found and configured using the " **IP setup utilities for InfraBox** "

ii. Make sure the IP address of the InfraBox is the same as the IP address of the rack configuration in the InfraSolution X Manager GUI

2. GUI shows the whole daisy chain group of InfraBoxes in a DAISY CHAIN / MIXED network disconnected

Step 1 - Cat. 5 / 6 cable disconnected, loose or defective?

Check the Cat. 5 / 6 cable connection between the first InfraBox 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 - First InfraBox failed?

Disconnect the InfraBox 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 the InfraBox can be found or not. If it cannot be found, the InfraBox may be failed

3. GUI shows a certain InfraBox in a STAR network disconnected

Step 1 - InfraBox power off?

Check the InfraBox is power ON or not

Step 2 - Can ping the IP address?

i. Make sure the IP address can be found and configured using the " **IP setup utilities for InfraBox** "

ii. Make sure the IP address of the InfraBox is the same as the IP address of the rack configuration in the InfraSolution X Manager GUI

Step 3 - Cat. 5 / 6 cable disconnected, loosed or defective?

Check the Cat. 5 / 6 cable connection between the InfraBox 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.

Replacement of InfraBox

1. **How to replace a failed InfraBox in a DAISY CHAIN network with a new one?**

   Step 1 - Configure the IP address of the new InfraBox as the failed one
   (Please refer to user manual < 2.2 > InfraBox X-1000 / X-2000 for details)

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

   Step 3 - Use a Cat. 5 / 6 cable to bridge over the failed InfraBox which will be replaced to minimize data loss

   Step 4 - Remove all connected handles, sensors, PDUs and fan units from the failed InfraBox

   Step 5 - Power off and remove the failed InfraBox from connection

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

   Step 7 - Power on the new InfraBox

   Step 8 - Reconnect the removed handles, sensors, PDUs and fan units to the new InfraBox

   Step 9 - Configure the new InfraBox in < **CA – Edit Mode** >

   Ignore step 2 and 3 if the InfraBox is in the last position of the daisy chain

2. **How to replace a failed InfraBox in a STAR network with a new one?**

   Step 1 - Configure the IP address of the new InfraBox as the failed one
   (Please refer to user manual < 2.2 > InfraBox X-1000 / X-2000 for details)

   Step 2 - Remove all connected handles, sensors, PDUs and fan units from the failed InfraBox

   Step 3 - Power off and remove the failed InfraBox from connection

   Step 4 - Install the new InfraBox to the connection and power it on

   Step 5 - Reconnect the removed handles, sensors, PDUs and fan units to the new InfraBox

   Step 6 - Configure the new InfraBox in < **CA – Edit Mode** >