InfraCool®

Rack Airflow Control

# User Manual

## WF-04-S, Intelligent Raised Floor Mount Fan Unit GUI

**Model : WF-66.4**

**Voltage :**
**230V / 208V**

Designed and manufactured by Austin Hughes

## Legal Information

First English printing, November 2020

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

## Safety Instructions

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

- Unplug equipment before cleaning. Don't use liquid or spray detergent; use a moist cloth.
- Keep equipment away from excessive humidity and heat. Preferably, keep it in an air-conditioned environment with temperatures not exceeding 40º Celsius (104º Fahrenheit).
- When installing, place the equipment on a sturdy, level surface to prevent it from accidentally falling and causing 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 dam aged by transient over-voltage.
- Keep all liquids away from the equipment to minimize the risk of accidental spillage. Liquid spilled on to the power supply or on other hardware may cause damage, fire or electrical shock.
- Only qualified service personnel should open the chassis. Opening it yourself could damage the equipment and 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.

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## Unpacking

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

# < Part 1 > Hardware
# < 1.1 > Key Features

### > > > Quad EC ( Electronically Communicated ) Fans

InfraCool WF-66.4 consists of four high performance and quality Ec fans. It provides unit DFM up to 2100 and unit MTBF up to 50,000 hours.

### > > > Maximize CRAC Efficiency & Minimize Rack Hot Spots

InfraCool WF-66.4 delivers strong cool air from underfloor via the contained aisle to the high density server racks to eliminate inside hot spots. Eventually, WF-66.4 not only maximizes CRAC efficency, but also saves the energy cost.

### > > > Retrofits or New Construction Aisle

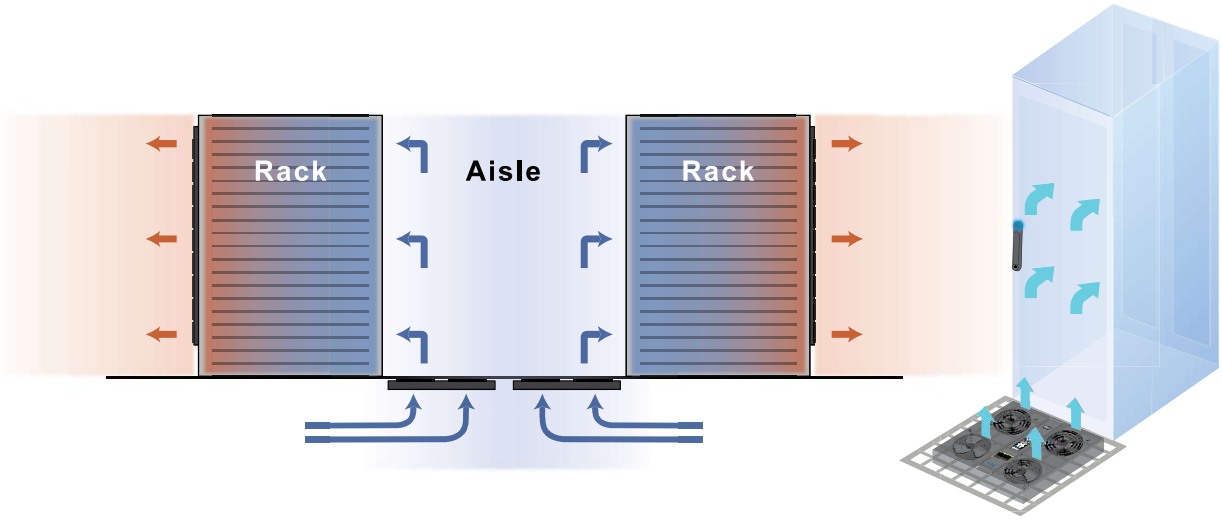
Well-designed mounting kit offers user a quick and easy installation. It is ideal for new project deployment or retrofit. User can just proceed with the installation on 600 x 600mm raised floor and no rack movement is required.

### > > > Individual Fan On / Off

Each EC fan is equipped with an individual on / off switch. It provides flexibility for users while the aisle environment or rack cooling requirement changes.

### > > > Overall Temperature Monitoring

By two temp. sensors and remote monitoring, it is easy to monitor the temperature status in rack level, aisle level and even air duct underfloor level. Eventually, user can be aware of overall temperature environment.



# < 1.2 > Specifications

| Intelligent EC Fan | 230V | 208V |
|---|---|---|
| No. of Fan | 4 | 4 |
| Fan dimensions | 200 x 200 x 60 mm | 200 x 200 x 60 mm |
| MTBF | 50,000 hrs | 50,000 hrs |
| Speed per fan | 2950 RPM | 2810 RPM |
| IP Remote Access | Yes | Yes |
| Noise | 77 dBA max. | 76 dBA max. |
| Operating frequency | 50 / 60 Hz | 50 / 60 Hz |

| Fan Control | | 230V | 208V |
|---|---|---|---|
| Main on / off switch | | ✓ | ✓ |
| Individual fan switch | On / Off | ✓ | ✓ |
| Unit CFM | Level 3 | 2172 | 2104 |
| Fan CFM | Level 3 | 543 | 526 |

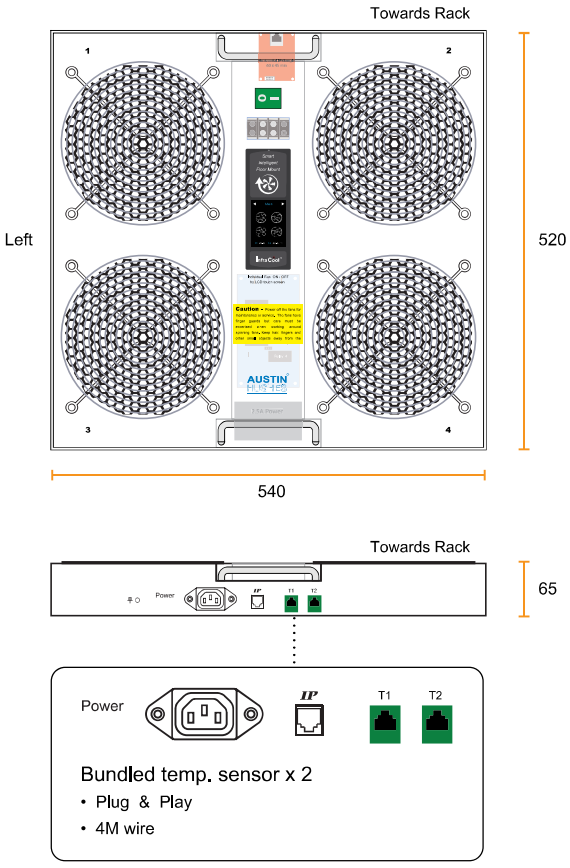
| Temperature Monitoring | |
|---|---|
| Temperature LED | 2 |
| Temperature port | 2 |
| Temperature sensor | 2 ( external ) |
| Measurement unit | Celsius ( °C ) or Fahrenheit ( °F ) |
| Measurement range | 0 to 99.9°C |
| Measurement accuracy | ± 1.5% |

| Physical | |
|---|---|
| Product ( W x D x H ) | 540 x 520 x 65 mm |
| Packing ( W x D x H ) | 718 x 674 x 133 mm |
| Net weight | 12 kg / 26.4 lb |
| Gross weight | 14 kg / 30.8 lb |
| Chassis color | Black |
| Chassis materials | Steel |
| Support bracket | Left & right side, set of 2 |

| Power | | 230V | 208V |
|---|---|---|---|
| Unit Power Consumption ( ±5% ) | Level 3 | 170W | 40W |
| Fan Power Consumption ( ±5% ) | Level 3 | 44W | 11W |
| Input voltage | | 200 ~ 230V | |

| Environment | |
|---|---|
| Operating temperature | 0 to 50°C |
| Storage temperature | -5 to 60°C |
| Operating humidity | 20 ~ 90%, non-conensing |
| Storage humidity | 5 ~ 90%, non-conensing |

| Environment | |
|---|---|
| EMC | FCC & CE certified |
| Safety | CE / LVD certifies |
| Envirnment | RoHS3 & REACH compliant |



- Power On/Off switch

- 2.8" color LCD touchscreen
- Individual fan switch x 4
- ON / OFF individual Fan just by Touch

## < 1.3 > Safty & Usage Warnings

### Before Installation

- Make sure the fan unit is installed under the 600 x 600mm raised floor & located in front of the server rack.
- The fan unit contains moving parts which may cause serious injury. Don't apply power until the installation is complete.
- The fan unit must be installed by a qualified electrician and comply with local and national regulations.
- Use the provided input power cord to connect the unit. The power voltage must be rated 208V or 230V.
- Never disassemble the unit. It contains potentially hazardous voltages.

### Usage Warnings

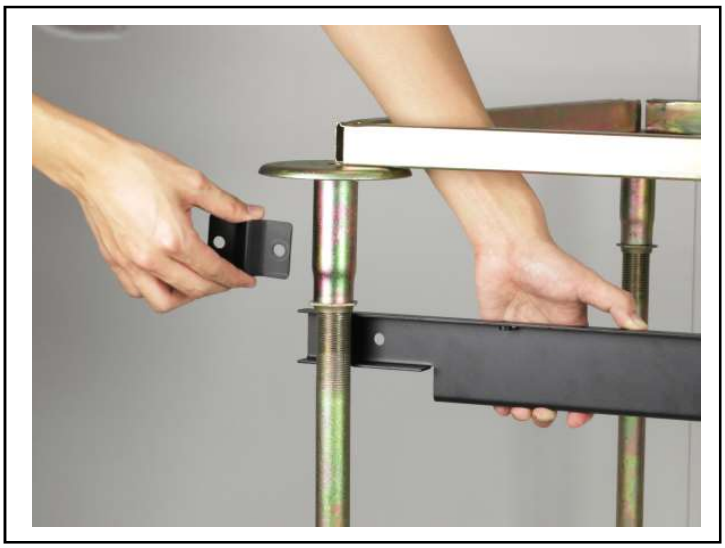
- Power off the fan unit before maintenence or service.
- The fan unit have finger guards but care must be excerised when working around spinning fans.
- During maintenence or service, keep hair, fingers and other small objects away from the spinning blades.
- Do not put any object on the raised floor which covers the raised floor mount fan unit. It will affect the cooling performance. If small objects drop into the fan unit, it will cause unit failure and even damage.

## < 1.4 > Package Content

1. Fan unit x 1
2. Temp. sensor w/ cable x 2
3. Support bracket, left & right side
4. Bracket fixing plate x 4
5. M8 screw & nut x 8 ( for fixing plate )
6. M5 screw x 4

**Bundled power cord x 1**

## < 1.5 > Installation



### Step 1

- Move the 600 x 600mm raised floor
- Refer to the package content, install the left & right side support bracket to the pedestals
- Fix the support bracket with 4 corner's fixing plate provided

### Step 2

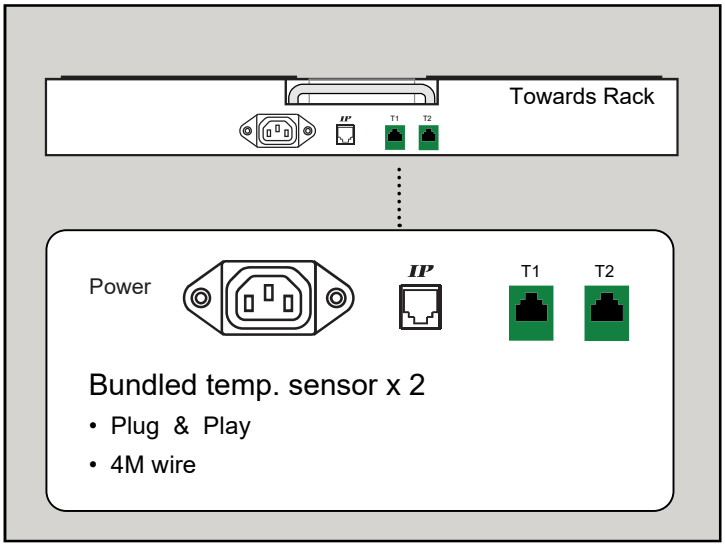
- Tighten four fixing plates with provided M8 screw & nut
- Keep the left & right side bracket in the same horizontal level

### Step 3

- Put the fan unit on the left & right bracket

## Step 4

- Fix the fan unit position on the support bracket with four provided M5 screws to against virbation & movement




## Step 5

- Connect power & temperature sensors
- Connect the Fan Unit to network device via the IP port

# < Part 2 > Software
## < 2.1 > Key Features

InfraCool WF-04-S is a FREE built-in GUI of each Intelligent Raised Floor Mount Fan Unit which allows remotely monitoring over IP.

## InfraCool WF-04-S

| Features | | |
|---|---|---|
| Capacity | IP Dongle Group | 1 |
| | Fan unit number | 1 |
| | Concurrent User | 1 |
| Features | Fan Unit ON / OFF | ✔ |
| | Individual Fan ON / OFF | ✔ |
| | Temp. Monitoring | ✔ |
| | Alarm Temp. Setting | ✔ |
| | Graphical User Interface | ✔ |
| | Remote Access via Web Browser | ✔ |

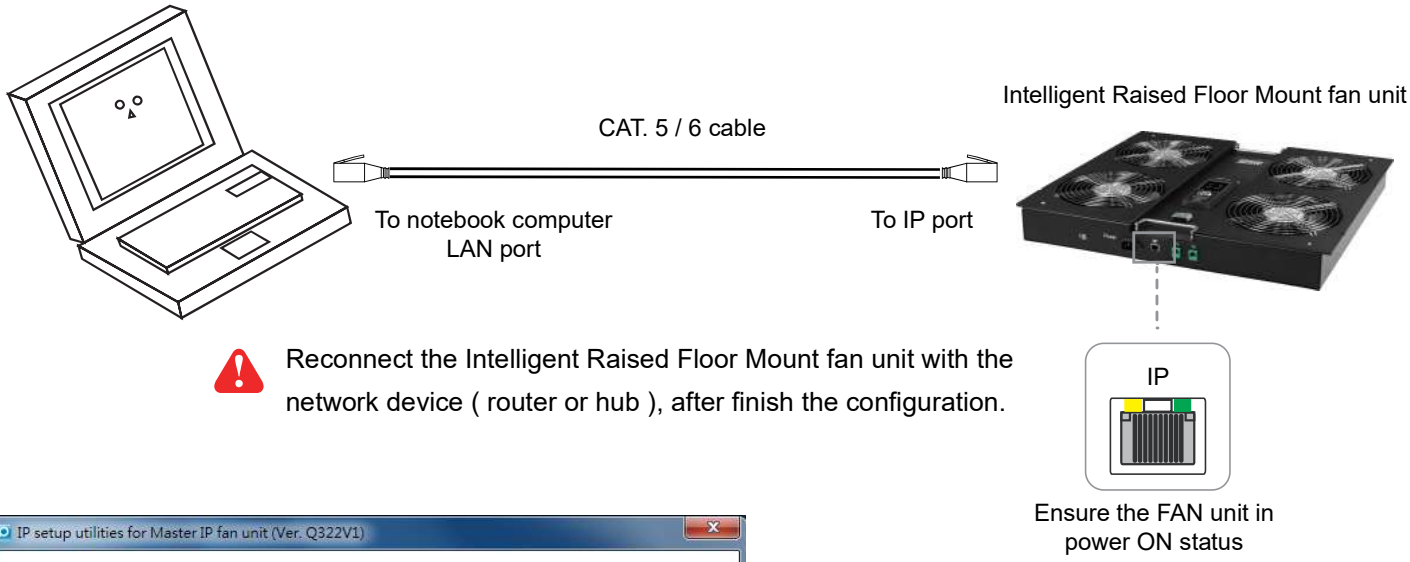
## < 2.2 > IP Configuration

The following steps show how the static IP setting only. For DHCP setting, please refer to < 2.5 > DHCP Setting.

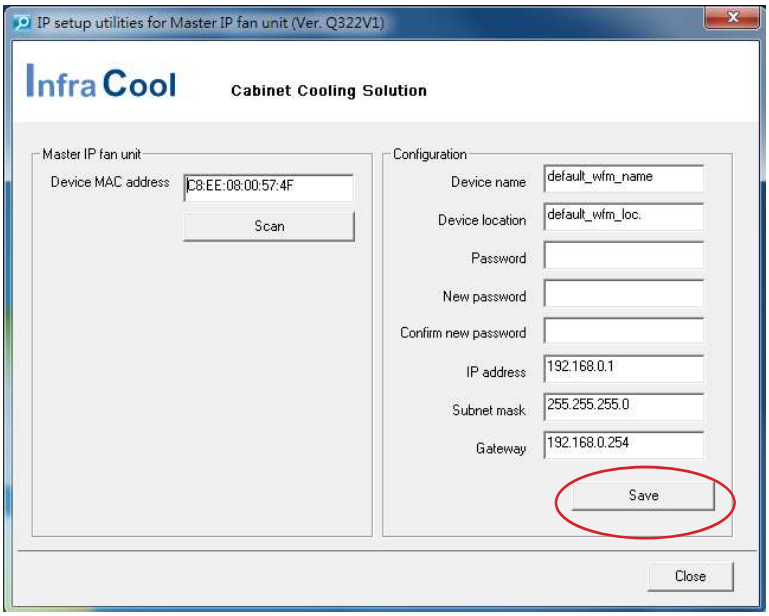
1. Prepare a notebook computer to download the IP setup utilities from the link :
   http://www.austin-hughes.com/support/utilities/infracool/IPSetupUtilities.msi

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

3. Connect the Fan Unit with the notebook computer using a piece of Cat 5 / 6 cable to configure the IP setting by IP setup utilities as below. Please take the procedure for all Fan Unit **ONE BY ONE**.




Reconnect the Intelligent Raised Floor Mount fan unit with the network device ( router or hub ), after finish the configuration.



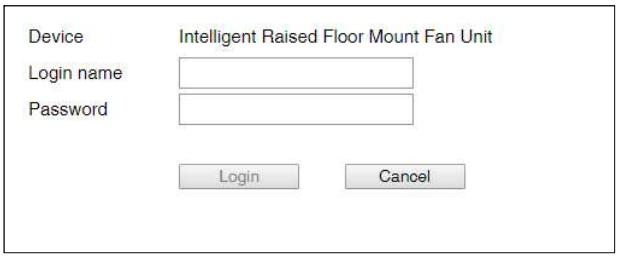

1. Write down the new IP address & password for login purpose, refer to < 2.3 >, < 2.4 > & <2.5>
2. Device name NOT EQUAL to login name of WF-04-S WEBUI. To change login name, pls refer to P.11 < Login >.

4. Click **Scan** to search the connected fan unit.
5. Enter the device name in the " **Device name** " field ( min. 4 char. / max. 16 char. ). **The default is default_wfm_name.**
6. Enter the device location in the " **Device location** " field ( min. 4 char. / max. 16 char. ).
   **The default is default_wfm_loc.**
7. Enter the password in the password field for authentication ( min. 8 char. / max. 16 char. ). **The default is 00000000.**
8. Enter the new password in the new password field ( min. 8 char. / max. 16 char. ).
9. Re-enter the new password in the Confirm new password field.
10. Change the desired IP address / Subnet mask / Gateway, then click **Save** to confirm the setting to Intelligent Raised Floor Mount fan unit.
11. The default IP address is as below:
    IP address : 192.168.0.1
    Subnet mask : 255.255.255.0
    Gateway : 192.168.0.254

## < 2.3 > WF-04-S Intelligent Raised Floor Mount Fan Unit GUI

Each Intelligent Raised Floor Mount Fan Unit provides a **FREE** built-in GUI, WF-04-S , which allows user , via a web browser , to see and manage the Intelligent Raised Floor Mount Fan Unit's data remotely over a TCP / IP Ethernet network.

Each web browser window supports only one Intelligent Raised Floor Mount Fan Unit. If user installs more than one, multi windows will be required.



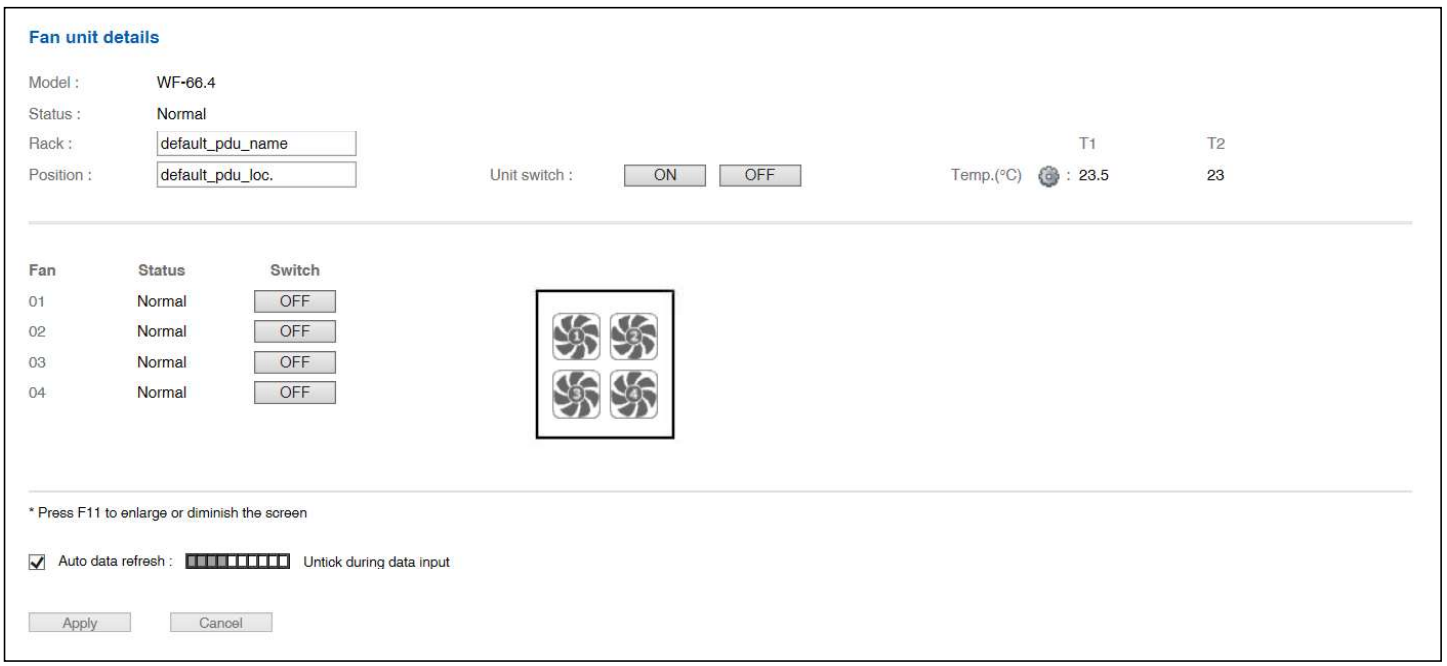

**Step 1**. Open Internet Explorer ( I.E. ), version 11

**Step 2**. Enter the configured IP address of the Intelligent Raised Floor Mount Fan Unit into the I.E. address bar ( Please refer to < 2.2 > IP Configuration )

**Step 3**. Enter " **Login name** " , " **Password** " & Click " **Login** "
Default Login name : 00000000
Password : the one you set in Step. 7 of <2.2> IP Configuration

In < **Fan unit details** >,

- Change " **Rack** " and " **Position** " of Fan Unit and Click " **Apply** " to finish the settings
- Switch ON / OFF Fan Unit
- Switch ON / OFF Individual Fan
- Click " ⚙ " to enter " **Temp Setting** " page



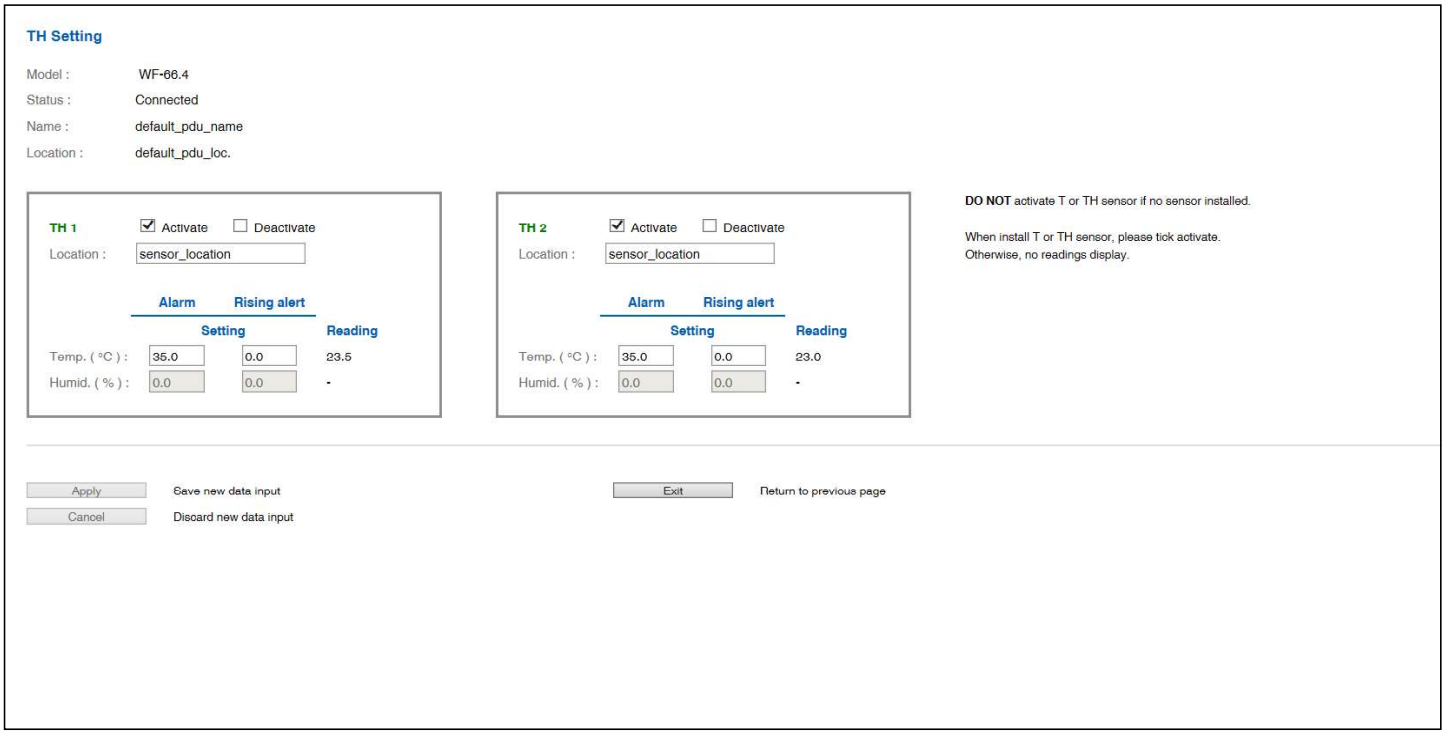
## < 2.3 > WF-04-S Intelligent Raised Floor Mount Fan Unit GUI

In < **TH Setting** >,

- " **Activate** " or " **Deactivate** " Temp. sensor and Click " **Apply** " to finish
- If Temp. sensor is activated , change " **Location** " , " **Alarm Setting** " & " **Rising alert Setting** " of Temp. sensor and Click " **Apply** " to finish the settings

The default Temp. setting is Deactivate

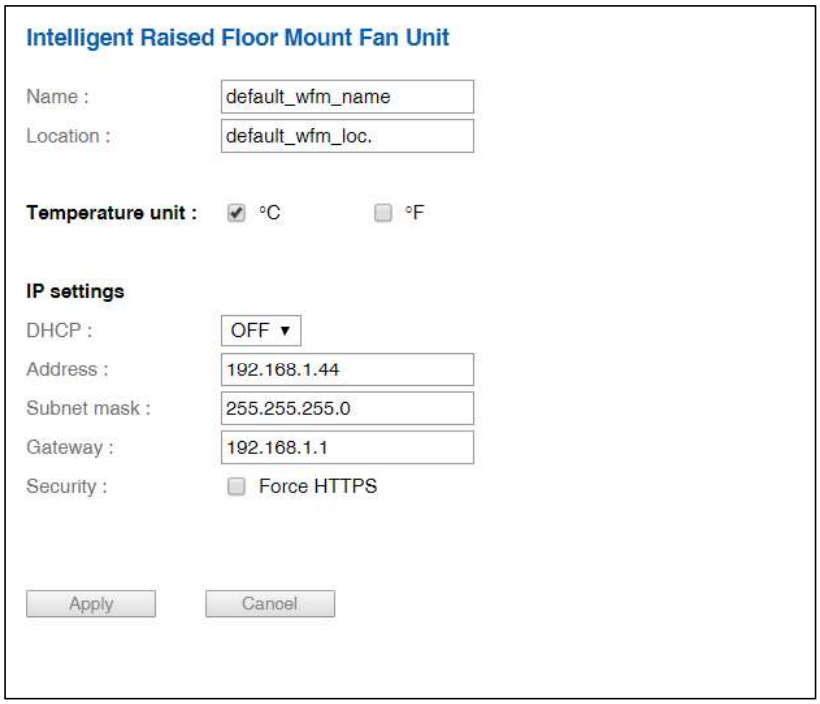
- When install Temp. sensor, please tick Activate . Otherwise, no reading display.
- DON'T activate Temp. sensor if no sensor installed.



## < 2.3 > WF-04-S Intelligent Raised Floor Mount Fan Unit GUI

In < **Intelligent Raised Floor Mount Fan Unit** >,

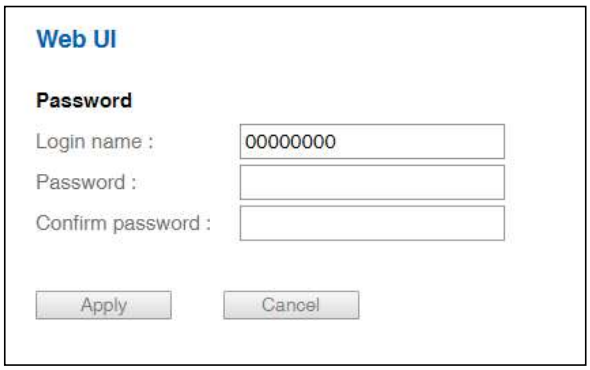
- Change Fan Unit " **Name** " & " **Location** "
- Change temperature unit displayed in GUI
- Change the IP address, subnet Mask & gateway of the Fan Unit ( For static IP setting only )
- Select " **ON** " in " **DHCP** " to enable DHCP setting. ( Please refer to < 2.5 > for DHCP setting )
- Tick " **Force HTTPS** " to provide data transmission security.
- Click " **Apply** " to finish the above settings.



## < 2.3 > WF-04-S Intelligent Raised Floor Mount Fan Unit GUI

In < **Login** >,

- Change " **Login name** " OR " **Password** "
- Re-enter password in " **Confirm password** ". ( For change password ONLY )
- Click " **Apply** " & " **OK** " on the pop up window to make the changes effective.



## < 2.4 > Intelligent Raised Floor Mount Fan Unit Firmware Upgrade

**< Firmware Upgrade >**

For function enhancement of Intelligent Raised Floor Mount Fan Unit GUI :

**Step 1**. Click the following link to go to the Management software download page :
http://www.austin-hughes.com/resources/infracool/software

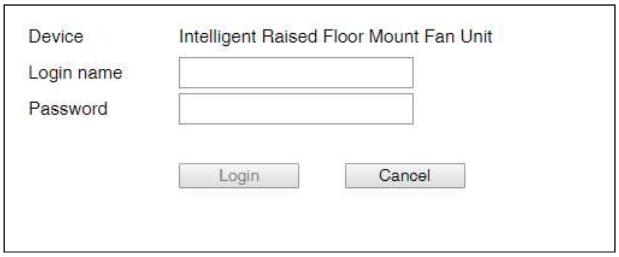
**Step 2.** Select the firmware for Intelligent Raised Floor Fan Unit

**Step 3**. Connect the Fan Unit to the computer.
( Please refer to < 2.2 > IP Configuration )

**Step 4**. Open the Internet Explorer ( I.E. ) version 11.0

**Step 5**. Enter the configured IP address into the I.E. address bar.
Default IP address is " **192.168.0.1** "

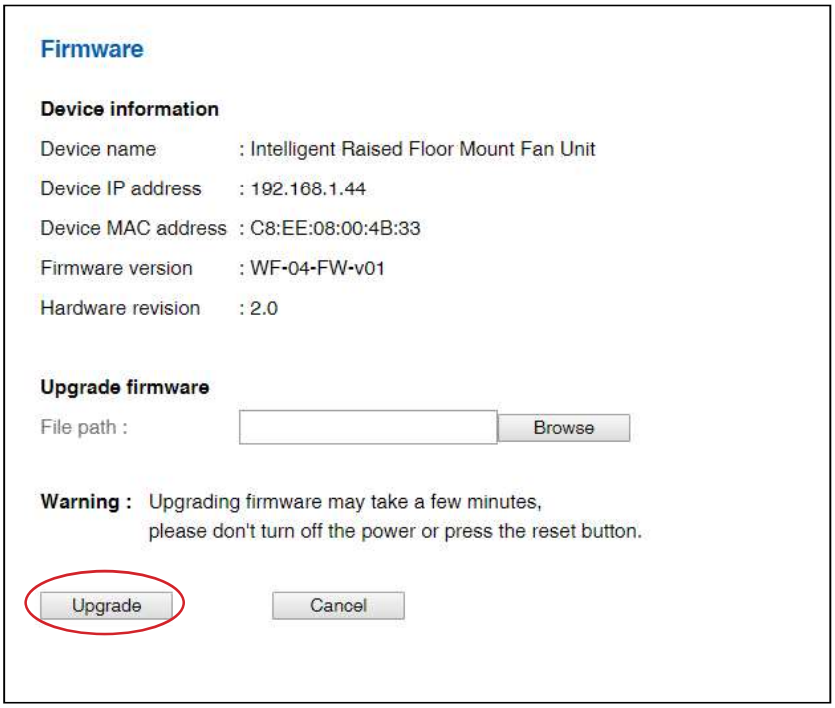
**Step 6**. Enter " **Login name** " & " **Password** ".
Default Login name : 00000000
Password : the one you set in Step. 7 of <2.2> IP Configuration




**Step 7.** Select the " **Firmware** " from the left navigation pane

## < 2.4 > Intelligent Raised Floor Mount Fan Unit Firmware Upgrade

**Step 8.** The firmware upgrade window appears as below :




**Step 9.** Click " **Browse** " and select the firmware file ( xxx.img ) from the specific path in the pop up window and Click " **Open** "

**Step 10.** Click " **Upgrade** " to start the upgrade process. It takes a few minutes to complete.

**Step 11.** Once complete, UI will return to the login page.

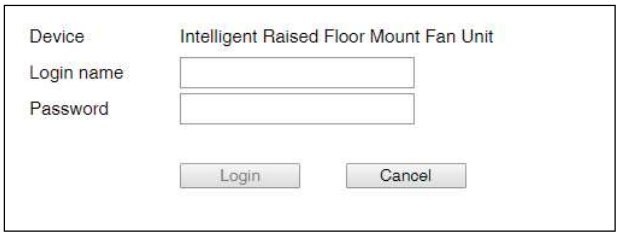
## < 2.5 > DHCP Setting

**Step 1.** Connect the Fan Unit to the computer
( Please refer to < 2.2 > IP Configuration )

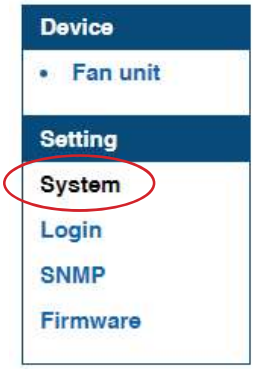
**Step 2.** Open the Internet Explorer ( I.E. ) version 11.0

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

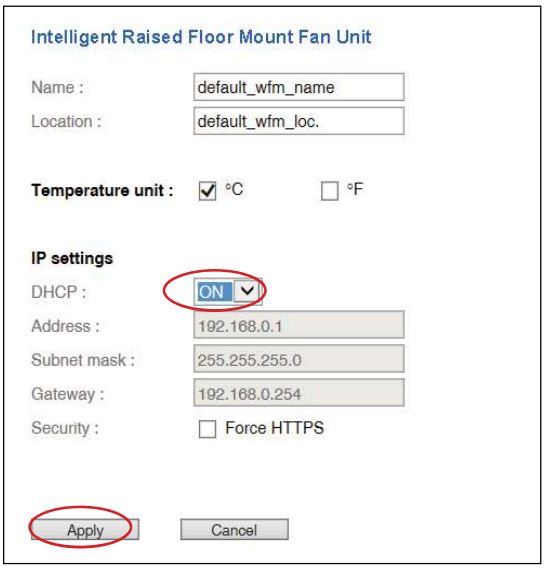
**Step 4.** Enter the " **Login name** " & " **Password** " .
Default Login name : 00000000
Password : the one you set in Step. 7 of <2.2> IP Configuration




**Step 5.** Select " **System** " from the left navigation pane



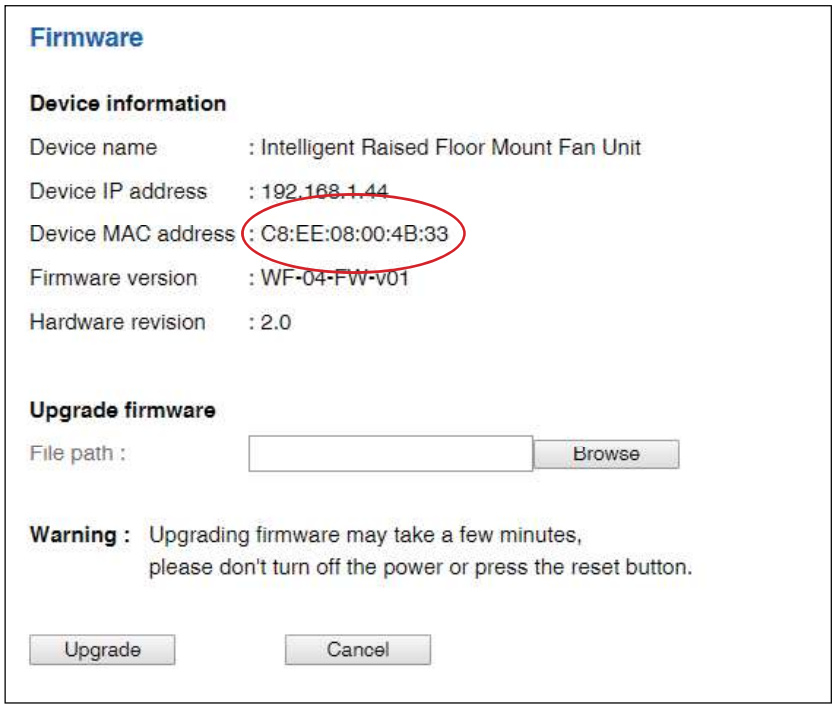

**Step 6.** Select " **ON** " from " **DHCP** " & click " **Apply** " to save the settings



## < 2.5 > DHCP Setting

**Step 7.** Select " **Firmware** " from the left navigation pane

**Step 8.** Record the " **Device MAC address** "




**Step 9.** Assign an IP address to the Intelligent Raised Floor Mount Fan Unit from your DHCP server.

**Complete**

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