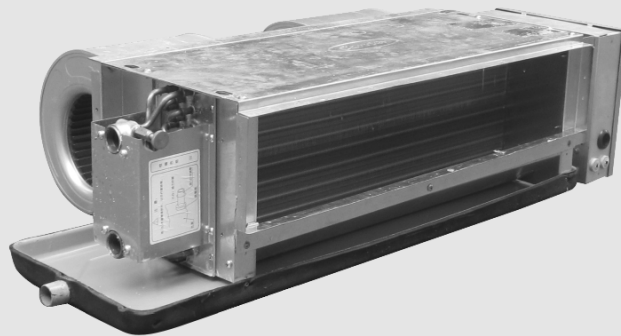




42CN Brushless DC FCU Single Control



42CN Brushless DC Motor Fan Coil Unit

Installation, Operation and Maintenance Instructions

Read the instructions thoroughly before installing, operating and maintaining the unit.
Carrier declines any liability for damage resulting from inappropriate operation that is out of the prescription in the instructions.

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General information

Read this instruction manual thoroughly before using the unit and keep it for further consultation even after installation.

Unit installation

- The installation must be carried out by a qualified installer.
- For safety reasons, installers are required to read the general information carefully.
- Follow all the instructions below to ensure safety.
- Inspect the unit for damage due to improper transport. Do not install or use damaged equipment.
- To prevent fire, explosion or injury, do not operate the unit near dangerous substances or close to naked light equipment.
- Ensure that national safety code requirements have been followed for the main supply circuit. Follow all current national safety code requirements. Ensure that a properly sized and connected ground wire is in place.
- Check that voltage and frequency of the mains power supply are those required for the unit to be installed; the available power must be adequate to operate any other appliances connected to the same line.
- Make sure that properly sized disconnecting and safety switches are installed.
- The manufacturer declines any liability for damage resulting from modifications or errors in the electrical or hydraulic connections. Failure to observe the installation instructions, or use of the unit under conditions other than those indicated in the unit installation manual, will immediately invalidate the unit warranty.
- After installation thoroughly test system operation and explain all system functions to the owner.
- All of the packaging materials used for your new appliance are compatible with the environment and can be recycled.
- Dispose of the packaging material in accordance with local requirements.

Unit operation

- In order to avoid electric shock, fire or injury, stop the unit and disconnect the safety switch in case of abnormal events (such as smell of burning) and call Carrier Service for further instructions.
- Do not place containers filled with liquids or other objects onto the unit.

Maintenance

WARNING: Disconnect the mains power supply prior to any maintenance operations or prior to handling any internal parts of the unit.

- A routine maintenance should be carried out on the unit to check the correct operation of the electric connections and protection devices.
- Maintenance operations must be carried out by specially trained personnel.
- Do not attempt to repair, move, modify or re-install the unit on your own. To avoid electric shock or fire make sure these operations are carried out by qualified personnel only.
- Contact the qualified service if one of the following events takes place:
 - Hot or damaged power supply cable;

- Unusual noise during operation;
- Frequent operation of the protection devices;
- Unusual smell (such as smell of burning).

Choosing the installation site

- The unit is for indoor installation.
- Choose an area free from obstructions which may cause irregular air distribution and/or return. Consider using an area where installation is easy.
- Check that the ceiling surface is flat enough to allow easy and safe installation of the unit. The ceiling structure should be strong enough to hook the unit and avoid deformation, rupture or vibration during operation.
- Look for a position in the room which assures the best possible air distribution.
- Install unit in a position where condensate can easily be piped to an appropriate drain.

Positions to avoid:

- Exposed to direct sun.
- Too close to heat sources.
- On humid positions with water hazard, e.g. laundry premises.
- Exposure to oil vapours (e.g. kitchens, workshops).
- Where curtains or furniture may obstruct free air circulation.

Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice.

Warnings: avoid...

- ...installation in areas full of dust.
- ...installation in areas with high frequency waves.
- ...any rise in the condensate drain piping.
- ...slack on electrical connections.
- ...disconnecting water connections after installation.
- ...only partial insulation of the piping.
- ...installation not correctly leveled which will cause condensate dripping.
- ...flattening or kinking pipes or condensate pipes.

Installation

Receipt of unit

- Check that packaging is undamaged.
- Unpack unit and check immediately for damage during transportation.
- Verify that all components ordered are supplied.

Unit preparation

- It is advisable to keep unit packed until installation is complete.
- This unit should be installed on top the false ceiling.

- Drill four holes for the screw anchors close to the four side hooks.
- Hook the unit on the screw anchors in the ceiling with \varnothing 10 screw.
- Adjust the screws to make certain the fan coil is horizontally leveled.
- Make electrical and water connections.

Condensate drain

Coil surface condensation formed during the cooling cycle is collected in a pan purposely placed under the coil and then drained out through a drain pipe fitted on the coil connection side. A simple flexible tube which fits \varnothing 19 mm is recommended.

To facilitate correct condensate draining, make sure that the drain pipe is not bent or restricted and that it has the required slope (at least 2%) along its length.

Checking

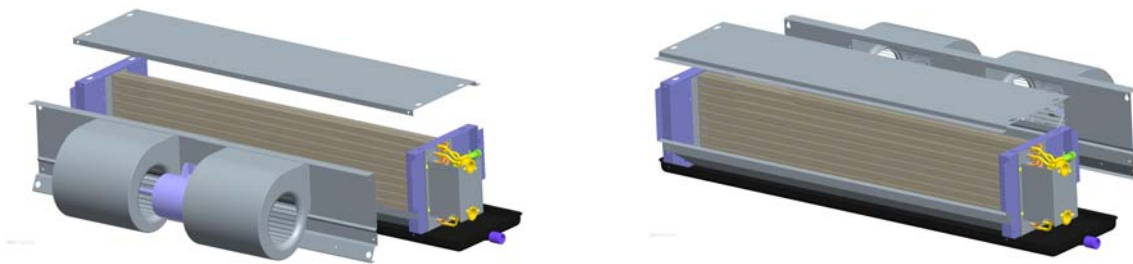
Before unit operation verify that the water flows into the internal condensate drain pan by pouring some water into it.

If problems are detected, check the drain pipe slope and look for possible obstructions.

Water connections

If the unit coil is supplied with left water connection, however field conversion of the connections is achieved quite simply as follows (Fig 1):

- Unscrew the fan deck assembly;
- Unscrew the cover pan, rotate it horizontally through 180°;
- Remove the angle iron to the other hand of the coil.
- Assembled the fan deck on the other hand of the coil.
- Position the control box panel opposite the coil connections.



(Fig 1)

NOTE:

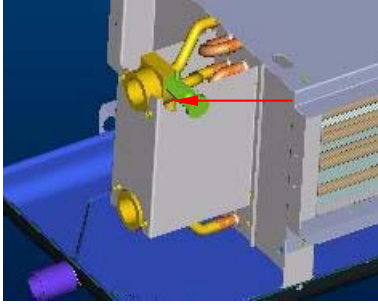
- All the connection pipes must be insulated with a condensation-proof material such as polyurethane, propylene or neoprene of 5 to 10 mm thickness.
- Before start-up, blow off all the air in coil through the air vent valve (Fig 2). The air in tube will result the reduction of the capacity and the abnormal noise in the coil.

Electrical connections

IMPORTANT:

DO NOT connect units of two or more different models into one switch. Verify the switch capacity before proceeding connections of multiple same model units into one switch.

- Make earth connection prior to any other electrical connections.
- Disconnect the power supply to all circuits prior to handling any electrical components.
- Before proceeding with the unit connection to the mains supply locate live (L) and neutral (N). Follow the diagram (Fig 3) in the wiring box when connect the wiring.



(Fig 2)



(Fig 3)

- Follow wiring diagrams and comply with the national and local standards (Fig 8 for single motor unit, Fig 9 for dual motor unit).
- Ensure the jumper is set correctly, before running the unit. Jumper DIP1&DIP2 following setting table 1&3 for single motor and setting table 1&4 for dual motor.
- For unit with electric heater, the heater's power supply should be connected individually; directly connection with the power leads L&N should be forbidden.
- Connect communication line to terminal block V, G, A, B, according to the wiring diagram. Connect hydraulic valve control line to 1&2 for two pipes or to 1~4 for four pipes.
- Before power supply, ensure that unit installation OK, water valve connection right, fan no jammed, fan duct no blocked, power supply cable OK, no things cover the electric heater. Eliminate all risk factors.
- Voltage at the unit operation must be $220V \pm 10\%$, frequency $50 \text{ Hz} \pm 1\text{Hz}$. Check power input before operation to avoid damage to motor.
- Ensure that the mains supply connection is made through a switch that disconnects all poles, with contact gap of a least 3 mm.
- After the unit installation, do the protections to make sure the control box waterproof, dustproof and anti-static and check the ground connection is correct.
- For the unit power supply, it is recommended to use cables with a minimum size of 1.5mm^2 .
- After making all electrical connections the cover panel of the control box should be fixed.

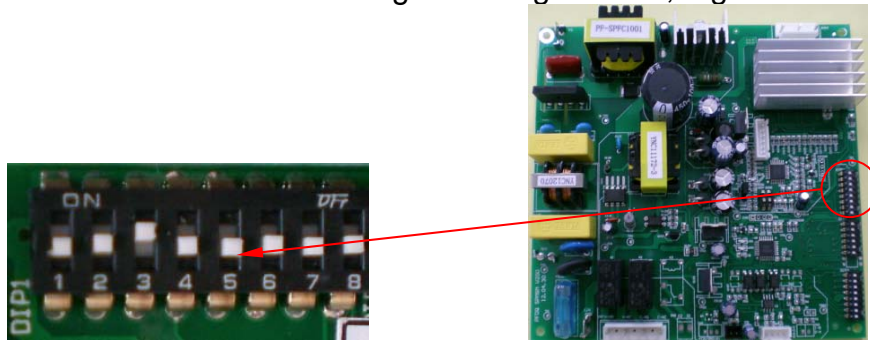
Jumper

According to service condition, user jump drive board DIP1&DIP2 under power-down, DIP3 doesn't need to set for normal driver board.

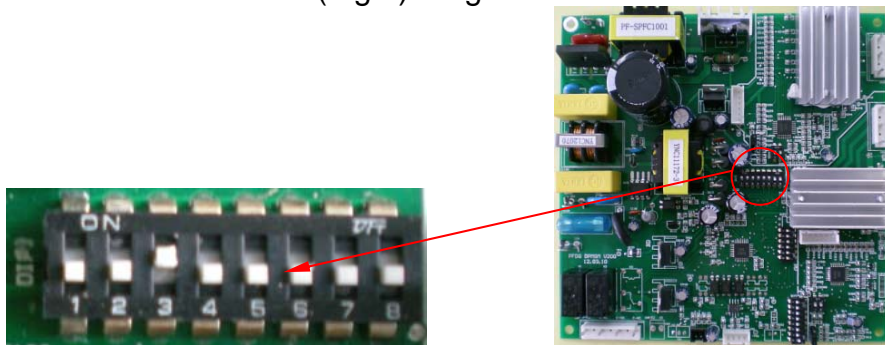
1. DIP1 setting

DIP1-1, DIP1-2, DIP1-3 have been set as the unit type in the factory; any change in the field application should follow Table 1 for reset. DIP1-6, DIP1-7, DIP1-8 is used for setting

minimum RPM of auto fan mode, details see Table 2. Jumper switch up is ON and down is OFF. The position of DIP1 shows below: Fig 4 for single motor; Fig 5 for dual motor.



(Fig 4) Single Motor



(Fig 5) Dual Motor

| Site | Function | Description | |
|--------|--------------------------|------------------------|------------------------------|
| DIP1-1 | Unit type | OFF-2 pipes | ON-4 pipes |
| DIP1-2 | Heater | OFF-Without heater | ON-With heater |
| DIP1-3 | Motor power | OFF-45W | ON-75W |
| DIP1-4 | Control sensor selection | OFF-Temp.sensor on PCB | ON-Temp.sensor on controller |
| DIP1-5 | Re-power start type | OFF-Keep OFF | ON-Keep the status as before |

(Table 1)

| DIP1-6 | DIP1-7 | DIP1-8 | RPM |
|--------|--------|--------|-----|
| OFF | OFF | OFF | 300 |
| OFF | OFF | ON | 400 |
| OFF | ON | OFF | 450 |
| OFF | ON | ON | 500 |
| ON | OFF | OFF | 550 |
| ON | OFF | ON | 600 |
| ON | ON | OFF | 650 |
| ON | ON | ON | 700 |

(Table 2)

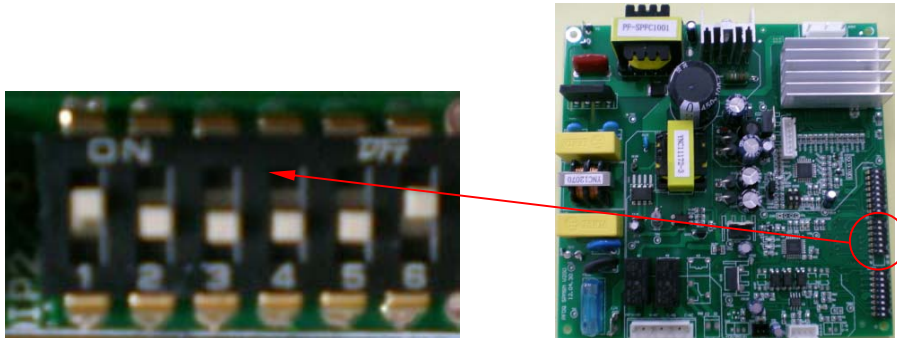
2. DIP2 Setting

Default setting by factory at minimum rpm:

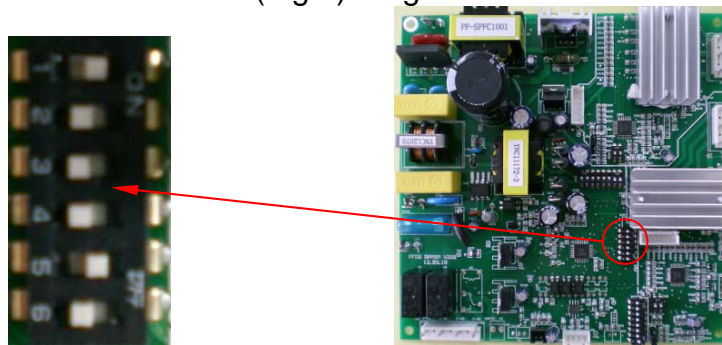
Single motor: 790rpm

Dual motor: 960rpm

The rpm should be reset on job site follow the table below for different unit sizes, table 3 for single motor, table 4 for dual motor. The position of DIP2 shows below: Fig 6 for single motor, Fig 7 for dual motor.



(Fig 6) Single Motor



(Fig 7) Dual Motor

| UNIT | ESP | RPM | DIP2-6 | DIP2-5 | DIP2-4 | DIP2-3 | DIP2-2 | DIP2-1 |
|---------|------|------|--------|--------|--------|--------|--------|--------|
| 42CN002 | 12Pa | 790 | ON | OFF | OFF | OFF | OFF | ON |
| | 30Pa | 930 | ON | OFF | OFF | OFF | ON | OFF |
| | 50Pa | 1070 | ON | OFF | OFF | OFF | ON | ON |
| 42CN003 | 12Pa | 820 | ON | OFF | OFF | ON | OFF | OFF |
| | 30Pa | 980 | ON | OFF | OFF | ON | OFF | ON |
| | 50Pa | 1140 | ON | OFF | OFF | ON | ON | OFF |
| 42CN004 | 12Pa | 850 | ON | OFF | OFF | ON | ON | ON |
| | 30Pa | 990 | ON | OFF | ON | OFF | OFF | OFF |
| | 50Pa | 1130 | ON | OFF | ON | OFF | OFF | ON |
| 42CN005 | 12Pa | 960 | ON | OFF | ON | OFF | ON | OFF |
| | 30Pa | 1090 | ON | OFF | ON | OFF | ON | ON |
| | 50Pa | 1220 | ON | OFF | ON | ON | OFF | OFF |
| 42CN006 | 12Pa | 990 | ON | OFF | ON | ON | OFF | ON |
| | 30Pa | 1110 | ON | OFF | ON | ON | ON | OFF |
| | 50Pa | 1250 | ON | OFF | ON | ON | ON | ON |

(Table 3)

| UNIT | ESP | RPM | DIP2-6 | DIP2-5 | DIP2-4 | DIP2-3 | DIP2-2 | DIP2-1 |
|---------|------|------|--------|--------|--------|--------|--------|--------|
| 42CN008 | 12Pa | 960 | N/A | ON | OFF | OFF | OFF | ON |
| | 30Pa | 1090 | N/A | ON | OFF | OFF | ON | OFF |
| | 50Pa | 1240 | N/A | ON | OFF | OFF | ON | ON |
| 42CN010 | 12Pa | 1060 | N/A | ON | OFF | ON | OFF | OFF |
| | 30Pa | 1160 | N/A | ON | OFF | ON | OFF | ON |
| | 50Pa | 1320 | N/A | ON | OFF | ON | ON | OFF |
| 42CN012 | 12Pa | 1060 | N/A | ON | OFF | ON | ON | ON |
| | 30Pa | 1180 | N/A | ON | ON | OFF | OFF | OFF |
| | 50Pa | 1280 | N/A | ON | ON | OFF | OFF | ON |

(Table 4)

Room Controller

User should operate room controller following specification.

- User main power supply: 220~230VAC, 50/60Hz

- User should comply with below demand,

Triple valve contact rating: $\leq 1A/250VAC$, interlock point contact rating: $\leq 3A/250VAC$

- Error codes see table 5

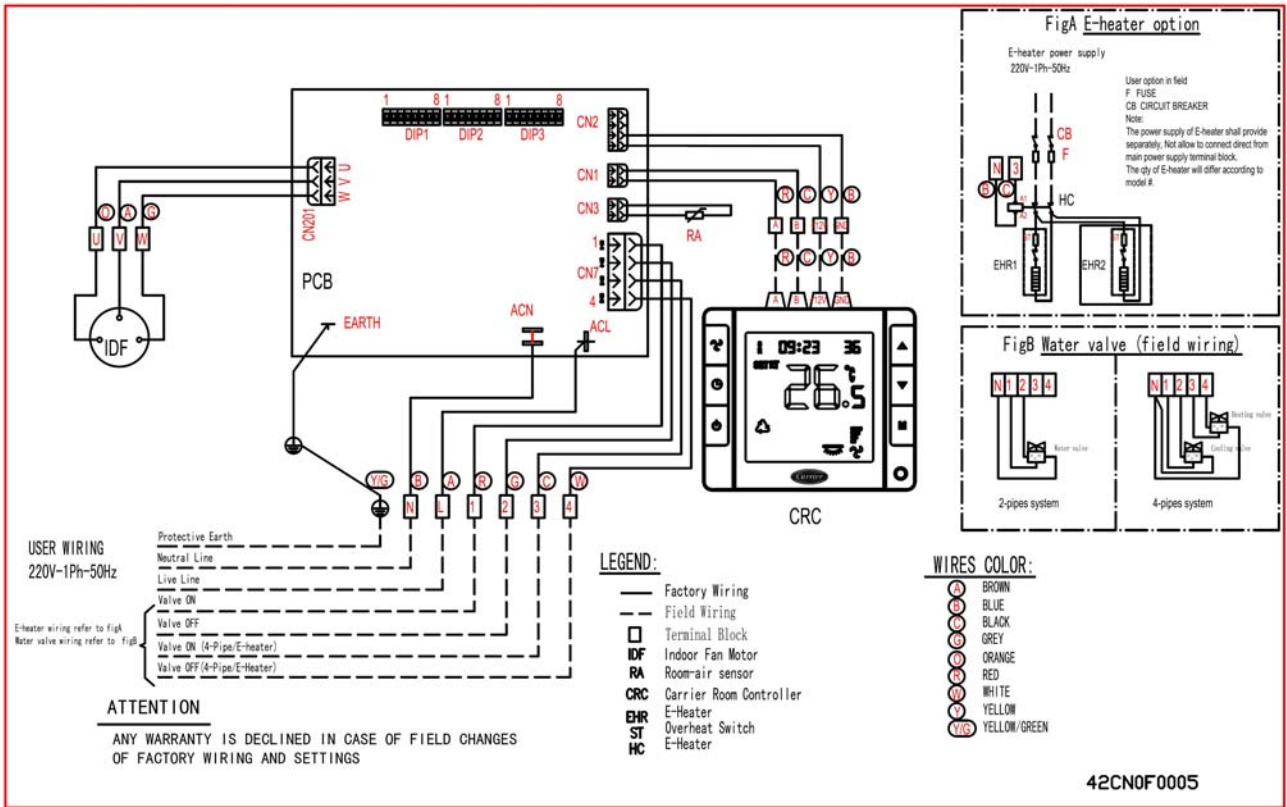
| Error | Code | Reset type |
|--------------------------------------|------|------------|
| Motor start error | E1 | Auto |
| Motor overload | E2 | Auto |
| Control and driver communicate error | E3 | Auto |
| Sensor on controller error | E4 | Auto |
| Sensor on driver error | E5 | Auto |

(Table 5)

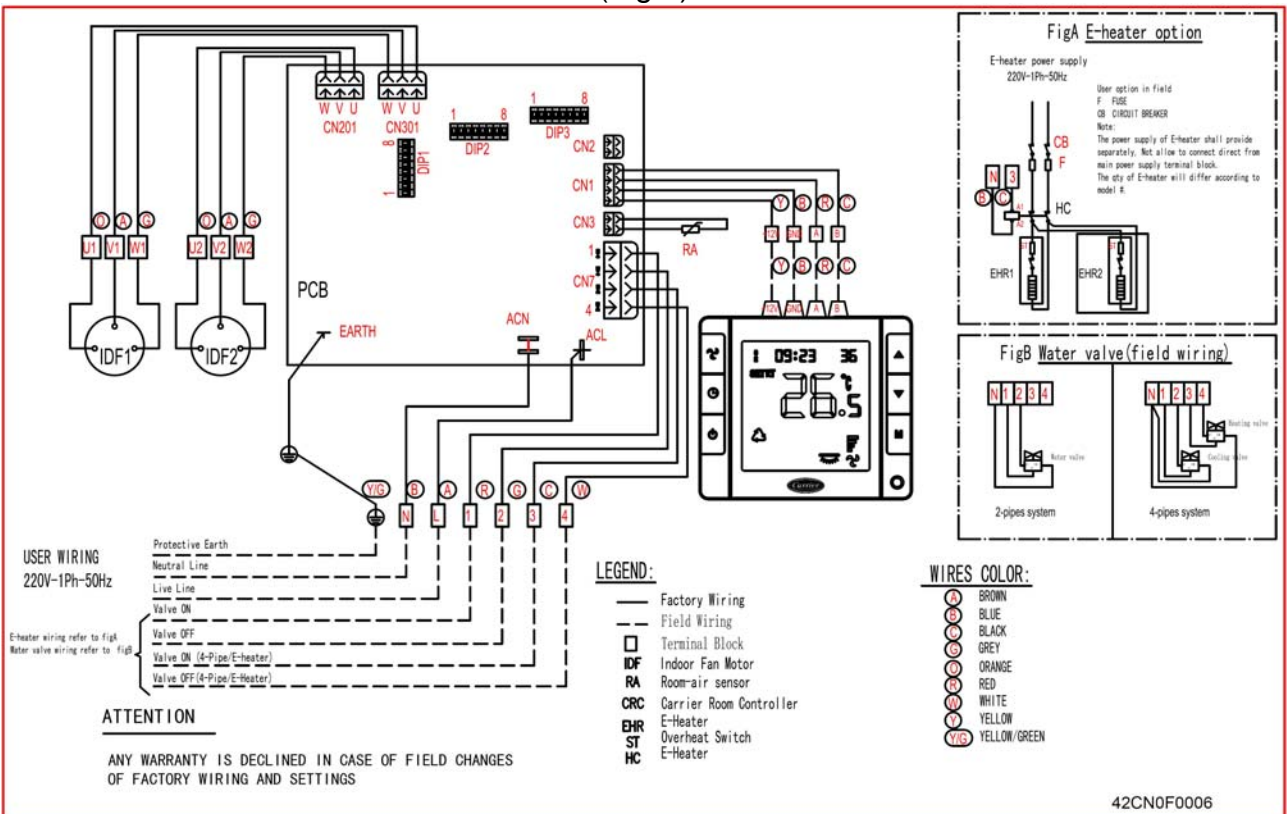
Operation

Driver board and room controller connection specification:

1. Connect the driver board and room controller with standard RS-485 twisted-pair shielded wire.
2. Communication cable: 1 (Black)→contact B, 2 (Red)→contact A, 3 (Blue)→contact GND, 4 (Yellow)→contact +12V.
3. Make sure all the wires well insulated, without improper connection or short circuit.



(Fig 8)



(Fig 9)

Maintenance

IMPORTANT:

- Keep fan coil unit installation space clean to avoid dust entering unit, which may lead to damage or comfort issue.
- Disconnect the mains power supply prior to any maintenance operations or prior to handling any internal parts of the unit.

Condensate draining

During the summer season check that the condensate drain is free from dust and lint that could clog it, causing condensate water overflow.

Heat exchanger coil

At the beginning of any winter and summer season it is advisable to check that the coil fins are not clogged with dust, lint or other foreign matter, Clean the heat exchanger after having removed the supply grille, taking care not to damage the fins.

During the winter season protect the coils to prevent damage. The coil should add anti-freeze and drain any residual water out when the environment temperature below freezing point.

Motor

The motor is permanently lubricated, therefore no periodical maintenance is required.

Air Filter

Take off the filter under the front panel. Clean or replace it every 6 months, shorten the period of necessary. Clean the filters with vacuum cleaner or soap solution. Rinse and allow them to dry before re-installing.

Service Clause

1. Quality Assurance

Carrier's promises:

- (1). In the warranty period, Carrier is responsible to repair freely within the warranty scope.
- (2). The free warranty period is the 18 months since the invoice has been billed or the 12 months since the Carrier personnel have been entrusted to make commissioning.
- (3). The free warranty period is in accordance with the earlier expired period of the above two warranty periods

2. Countrywide Maintenance

When your products need to be maintained, contact the local Carrier maintenance center. Skilled maintainers who have been trained by Carrier are available at all the maintenance centers, where special equipment and spare parts are also available.

3. Important

- (1). For the repairs to failures caused by any reasons, warranty card is required.
- (2). If the warranty range is exceeded, Carrier promises to repair with a certain amount of fee. Contact the maintenance department of Carrier for details.

Carrier Product Maintenance Record Warranty Card

First Maintenance Record

Maintenance Date:

Failure Description:

Maintenance Description:

Maintainer Signatory: _____

Second Maintenance Record

Maintenance Date:

Failure Description:

Maintenance Description:

Maintainer Signatory: _____

Third Maintenance Record

Maintenance Date:

Failure Description:

Maintenance Description:

Maintainer Signatory: _____

Product Warranty Card

(User counterfoil sheet)

*This page is the basic evidence of warranty. Please fill it carefully and keep it safely.

User's Company:

Tel:

Address:

Zip Code:

Contract Number:

Product Type:

Serial Number:

Ex Factory Date:

Shanghai Yileng Carrier Air Conditioning Equipment Co., Ltd.

Inspection Dedicated Seal

1. This card is effective after sealed by Carrier
2. After the user has filled this card, return a copy to Carrier to file.



2012.10 99TH42CN02D

Product Manufacturer:

Shanghai Yileng Carrier Air Conditioning Equipment Co.,Ltd.

868 Yangtai Road, Baoshan, Shanghai, China

We will make renovation continuously to make the products better fit the clients. We reserve the right to change the data without notice.