




# TICA<sup>®</sup> FCU Installation and Operation Manual

 **Note: Installation and maintenance require qualified personnel who are familiar with local standards and rules of installation and maintenance and are experienced with this type of machines. .**

 **Caution: Mind the sharp edges and surfaces to avoid scratch.**

 **Warning: Machines in operation and power source are dangerous, which may cause injuries or death. All power sources must be cut off before repairs.**

Air-conditioning units are prohibited from being installed in combustible or explosive environments.

Air-conditioning units are prohibited from being installed in laundry mats.

## I. Acceptance and installation of equipment

All series of our FCUs are tested and inspected before delivery to the customers. In delivery to the building site, all FCUs are packed in carton boxes and transported in proper form in order to keep the unit in good condition until it reaches its destination. If the cartons are found damaged obviously, please check the unit immediately. If the unit is found damaged, please inform both the forwarders and the recipients to check together.

The unit should be kept indoors and protected carefully to prevent moisture and weathering from harming the units. When the units are taken out of cartons, please prevent dust, packaging, and any foreign objects from dropping on the surface of the unit, in the fan casing and heat exchangers, which can cause damage to the unit.

## II. Preparative work

Before installing the unit, please check task hereinafter without fail:

- (1) If the position of the electrical interface connection, chilled water and condensing pipes are correct.;
- (2) If enough space is left for installation of the unit and regular maintenance;
- (3) If enough tension is left for suspender structure to support weight of unit and if the position of suspender bolts are right;
- (4) If the size of air-return pipe or air-out pipe are installed for high static pressure units, and if resistance is in accordance with the scope of operating pressures.

## III. Unit location

The fan coil unit has a hoisting waist hole at the top, and it is recommended that the customer fix the unit with  $\phi 8$  full thread screw with flat washer, spring washer and nut (provided by the installation company).

Caution:

- (1) In order to fix unit, besides nut, lock washer and flat washer on the bottom, a nut and washer is recommended on the top, to make the unit steadier when operating. .
- (2) Due to the drain pans designed incline, fan coil casing should be installed level, to ensure proper drainage.

## IV. Unit installation

The installation includes water pipe, electric control and connecting pipe. The installation protection is applicable to all fan coil units. The fan coil series installation is basically the same except that some individual work in special environment or the customer's requirements for valve, motor, coil and some optional coil accessories are slightly different from the unit installation.

- (1) Water system

The inlet pipes for chilled water of the FCUs are below, while outlet pipes are above. All the pipes must be installed according to engineering drawings in the process of installation. Flexible nozzles are recommended for water pipes connected to the unit. All main water pipes must have enough bracing to support the weight of water and the pipe itself. When pipes are fixed, enough clearance must be left to contain expansion when hot water passes and contract when cold water passes.

- (2) Direction of pipe connection

The FCU series when facing the air-out supply duct, the drain is on the left is left-type, vice-versa is right-type. The user shall indicate when selecting the unit, and the factory shall produce as required. In the event of an error, the TCR Horizontal Concealed model can change the direction of the connection in the field. The method is as follows: First remove the fan assembly (including fan, motor and base plate), then remove the top plate and the air inlet flange, then rotate the top plate by 180 degrees for reinstallation, and finally install the air inlet flange and the base plate in the exchange position. (10% decay in cooling/heating capacity)

- (3) Connection of pipeline

- When installing, you must insure that connecting of screw thread is absolutely tight (It is best to use teflon raw tape. After pressure testing, the pipeline should be sealed with insulation.
- The valve body of the pipeline should be in scope of unit drain pan, otherwise, insulation of drain pan should be added in order to prevent condensing water from destroying unit and area around it.
- Condensing water pipes should be insulated, and the gradient is advised to not less than 1:75 in order for favorable drainage.

**Note: Pipe wrenches shall be selected according to the pipe diameter to avoid excessive force and damage to the parts.**

#### (4) Electrical Installation

- Please insure the connection of electric systems is by professional personnel with electrical experience.
- All wiring of electricity must be in accord with regulation of national standards and local standards.
- Before connection, please read wiring diagram of electricity offered with unit.

**Note: It is forbidden to use one temperature controller to control multiple fan coil units to avoid motor burnout. The grounding bolts provided by the unit must be reliably connected to the grounding system of the building. The grounding wire shall not be connected to the gas pipe and water pipe. Poor grounding may cause electric shock.**

#### (5) Duct connection

- The design and installation of air duct shall be carried out in accordance with relevant national standards.
- Return air box unit is not provided in the factory. When the air duct is matched on site, the internal dimensions of air duct shall be matched with fan fixing plate and fix firmly. Internal insulation is not recommended to avoid interference with the fan and abnormal noise.
- The unit air outlet and the air outlet grille, and the return air outlet and the return air grille shall be connected by soft connection.

### V. Pressure test of Water system

To ensure the sealing of the water system, the water system shall be subjected to a pressure test after installation. The manual exhaust valve on the coil can be used to exhaust the air in the coil during the test. (Residual air in the coil will be concentrated on the top of the coil, giving off abnormal noise, which will affect the heat exchanger performance even more). Once all the air is released and some water comes out of the air exhaust valve close valve tightly. The test of pressure for water system must conform to test scheme carried out in advance, adding pressure slowly and equally, when pressure is stable, inspect each connection of pipeline carefully to see if there is leaking.

#### Caution:

1. The pressure test of the system and commission of the above must conducted in conditions with no frost (lowest temperature higher than 0°C), otherwise, the water in the coil (system) must be drained after the pressure test and commissioning, and the corresponding anti-freezing measures must be considered, otherwise, the coil will be frozen and cracked. The water in the coil (system) must also be drained when no heating in winter, and anti-freezing measures must be considered.
2. If leak is found, repairing with water pressure is not permitted; otherwise, it will lead permanent damage to FCU.

### VI. Inspect before running

Before the units running, inspection procedures hereinafter must be completed:

- (1) All operating personnel read the handbook carefully;
- (2) Horizontal installation to ensure normal drainage;
- (3) The drain pan, coil and body are all cleaned properly.;
- (4) Power supply of unit and controlled line of unit are all connected properly; wire of power supply connected properly; grounded properly;
- (5) Pipe of chilled water are connected properly, and no leaking after water;
- (6) Impeller of units is all running easily, no jamming; filters are fixed well;
- (7) Inlet pipes, outlet pipe and drainpipes are all applied with proper thickness insulation, with no condensation.;
- (8) Air conduit system of unit flow smoothly with no leaking;
- (9) The return air filter is installed properly.;
- (10) The supply/return valve has been opened, the air in the system has been drained, and the exhaust valve has been tightened without water leakage.

### VII. Servicing and maintenance

#### Good-quality products need your meticulous maintenance to work with long-term stability!

- (1) If the unit is not equipped with solenoid valve and temperature controller, low-temperature chilled water still flows in the water loop when the unit is stopped, which will cause the unit shell temperature to be far lower than the ambient air dew point temperature, resulting in condensation. And may wet ground or smallpox, damage decoration. Therefore, it is recommended to **install solenoid valve and temperature controller for each unit**. If no solenoid valve is installed, close the hand valve to prevent condensation when the unit is shut down.。
- (2) Air filters are used to remove harmful substances such as dust, coal ash, pollen and other unclean substances from the air. Too dirty filter screen not only can not play a filtering role, but also due to the excessive air resistance, the unit air volume is reduced, affecting its cooling (heating) capacity. So the filter must be cleaned regularly. The cleaning cycle will be different in different places of use, generally with one month as the appropriate. Maintenance should be performed more frequently when the system is operating at high load or when the environment is dirty. The method of cleaning the filter screen is: Clean the dust on the filter screen which is not too dirty with a vacuum cleaner, and then install it back to the original place. Clean the dirty filter screen with water, and install it back after the filter screen is dry. The filter screen must also be regularly sterilized, at least twice a year, to prevent cold and other germs breeding.
- (3) The dirty coil will seriously affect the cooling capacity. Use an elastic nylon brush to clean the dirt between the fins (do not damage the fins), and then use a vacuum cleaner to absorb the dust on the coil, or use compressed air to blow away the dirt. Since the fan coil unit is generally equipped with air filter during installation, if the customer is properly maintained, the coil is not required to be cleaned.
- (4) Before the unit is operated, it is necessary to check and remove sundries in the drain pan to ensure that the condensate water of the unit is discharged smoothly.
- (5) The chilled water temperature shall not be lower than 3°C when the unit is in cooling operation. During heating operation, the maximum hot water temperature shall not exceed 65°C (60°C recommended). During the shutdown period of the unit, the system shall be filled with water to reduce rust, but the water in the system shall be drained out when it is not used in winter, and the anti-freezing measures shall be

taken to avoid frost cracking.

**TICA reminds you that untreated chilled and cooling water will cause system scaling, corrosion and breeding bacteria; Supporting water treatment equipment is recommended.**

**VIII. Packing list**

No.	Content	Unit	Quantity
1	Fan coil unit	set	1
2	IOM	copy	1
3	Certificate	pcs	1

**IX. Environmental Protection Description**

- This product complies with the environmental protection requirements of the Measures for the Administration of the Restricted Use of the Hazardous Substances Contained in Electrical and Electronic Products.
- Environmental protection service life: In the environmental protection service life, the user's normal use of this product will not cause serious pollution to the environment or cause serious damages to persons and properties. The service life is specified by TICA. The environmental protection service life is not equivalent to the service life of safe use.
- Recycling: When this product is not needed or its service life ends, recycle it according to the related national regulations on recycling of waste electrical and electronic products. Do not discard it at will.

Names and content of hazardous substances in products						
Part name	Hazardous substance					
	Plumbum (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr(VI))	Polybrominated Biphenyl (PBB)	Polybrominated Diphenyl Ether (PBDE)
Motor	×	○	○	○	○	○
Fan	○	○	○	○	○	○
Heat exchanger	×	○	○	○	○	○
Unit body and components	○	○	○	○	○	○
Filter(Optional)	○	○	○	○	○	○
Electric heating(Optional)	○	○	○	○	○	○

This table is prepared according to the provisions of SJ/T 11364.

○: It indicates that the content of this hazardous substance in all homogeneous materials in this part is below the limit requirement defined in GB/T 26572.

×: It indicates that the content of this hazardous substance in at least one homogeneous material in this part exceeds the limit requirement defined in GB/T 26572. Moreover, substitution cannot be implemented at present due to technical reasons, and it will be improved gradually along with technical progress in the future.



The number in this identification indicates that the environmental protection service life of the product under the normal use status is 15 years. Some parts may also have the identification of environmental protection service life, and their environmental protection service life is subject to the number in the identification. The product configuration may be different due to different models or product improvements. The actual configuration of sold products should prevail.