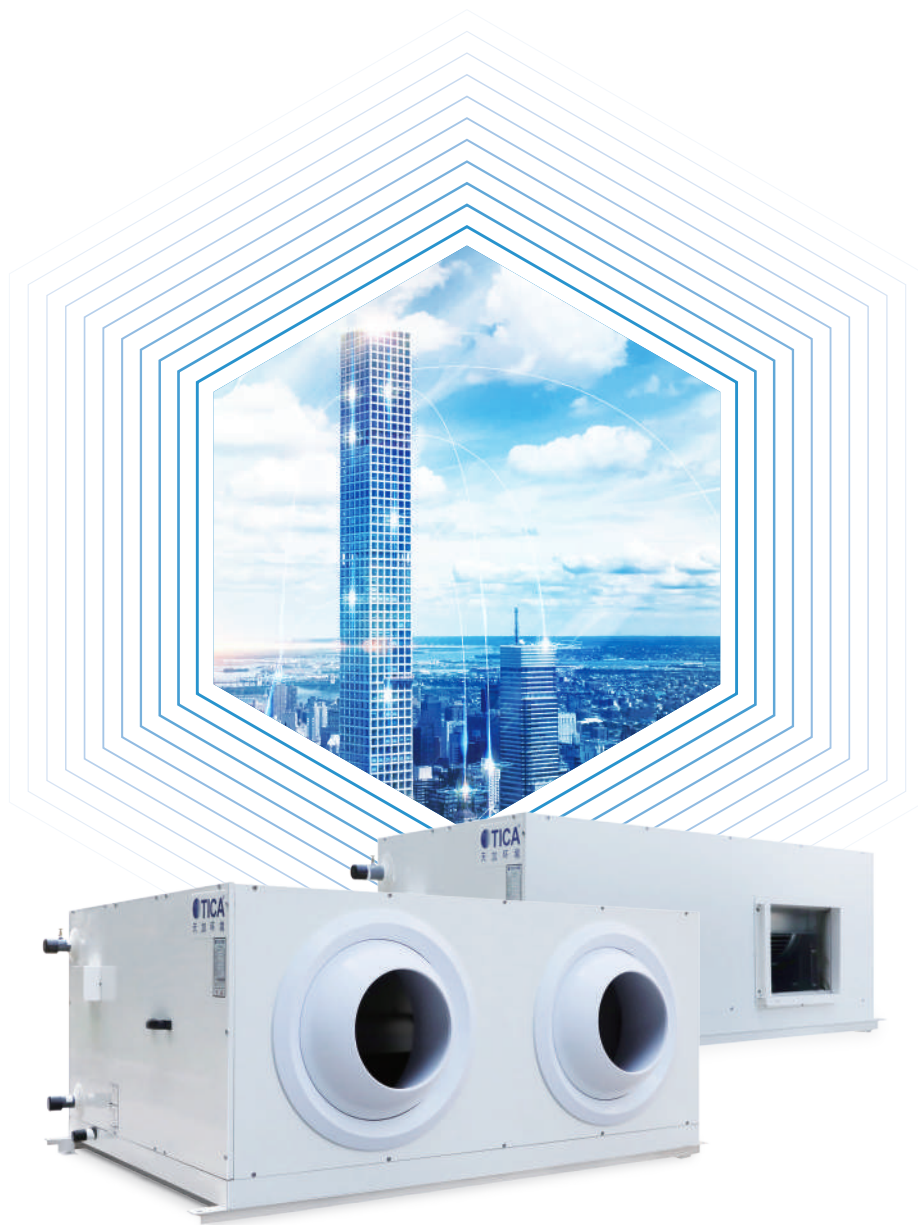


PRO
TICA PRO

A decorative horizontal strip at the bottom left of the page, featuring a collage of three images: a modern retail store interior with shelves, a multi-level atrium with a curved walkway, and a car on a production line.

AIR HANDLING UNIT CEILING TYPE

TFD

NO.A3422G02

Established in 1991

TICA is a professional enterprise specialized in R&D, manufacturing, sales and services of environment cleaning and thermal energy utilization.

TICA is a national high-tech enterprise, a single leading enterprise cultivated by the Ministry of Industry and Information Technology, a national brand cultivation enterprise of the Ministry of Industry and Information Technology, and a vice chairman member of China Refrigeration and Air-conditioning Industry Association. It has a national-recognized enterprise technology center, an enterprise academician workstation, and a post-doctoral research workstation. Its projects cover Beijing Bird's Nest Stadium, Water Cube, Wukesong Indoor Stadium, PetroChina, Sinopec, State Grid, Nanjing Panda, Hangzhou Xiaoshan International Airport, Hainan Airlines Group, Shangri-La Hotel, Manila Ocean Park, Abu Dhabi Al Muneera, SM City in Philippines and Unilever, etc.

TICA is also the outstanding provider of central air conditioners for China's subway networks and has successfully served nearly 60 key subway lines in major cities such as Beijing, Shanghai, Guangzhou, Shenzhen, Chengdu, Suzhou, Hangzhou and Tianjin. TICA is a professional supplier and service provider in China that specializes in system integration of clean environment. While for microelectronics, hospital operating rooms, biopharmaceutical industry and other professional purification areas, our market share has achieved over 40% in each.

TICA Quality For IAQ

TICA focuses on indoor air quality (IAQ) in clean environments. Product lines include return air purifiers, heat recovery ventilators, fresh air purifiers, air purifiers, as well as the clean air handling units and digital variable-capacity air handling units used in the professional purification field. Regarding core technology, TICA established an ISO class 1 super-clean environment integration system and won the first prize of CMIST.

TICA's product lines include modular chillers, VRF units, screw chillers, centrifugal chillers, and ORC low-temperature waste heat power generation systems. In 2015, TICA and United Technologies Corporation (UTC) established a global strategic joint venture cooperation relationship and acquired PureCycle, an ORC low-temperature power generation company owned by Pratt & Whitney under UTC. TICA obtained PureCycle trademarks and more than 100 patents and national copyrights. TICA's efficient centrifugal chillers, water-cooled screw chillers, and air-cooled screw chillers are manufactured with the technical license of Carrier under UTC.

TICA is characterized by excellent system integration capability. In the application of "Efficient Refrigeration System of Underground Railway Station", the integrated COP of the refrigeration room amounts to 6.0, and the research achievement reaches the international advanced level. In 2018, TICA merged and acquired an OFC central air conditioning enterprise **SMARTD**. TICA's excellent system integration capability and the **SMARTD** OFC water chillers help increase the integrated COP of the efficient equipment room to 6.7 to 7.0.

TICA---We're striving.

TICA aims to build itself into a world-leading system integration supplier and service provider that specializes in clean environment and thermal energy utilization.



Nanjing Headquarter



Guangzhou Base



Tianjin Base



Chengdu Base



Malaysia Base



SMARTD Base



TICA ENERGY Base

CONTENTS

Features	2
Overview	4
Nomenclature	4
Left-/Right-Hand Piping	4
Specifications	5
Air Pressures and Motor Powers	7
Jet Type Unit Design Selection	10
Standard Unit Dimensions	11
Electrical Wiring Diagram	15
Unit Installation	16
Routine maintenance	19

Features

1

Patented cabinet

The internal and external metal plates of the panel are bent, connected with broken bridge profiles, and molded by polyurethane foam. Panels are assembled through the patented *design to form a cabinet with a mechanical strength that reaches the D1 class of the European standard EN1886.

*Patent No.: CN217057914U Utility Model



2

Excellent leakproofness without cold bridging

Panels are assembled through multiple patented *cold bridge prevention technologies such as "corner sealing" and "U-shaped sealing" to form a cabinet that features strong air tightness.

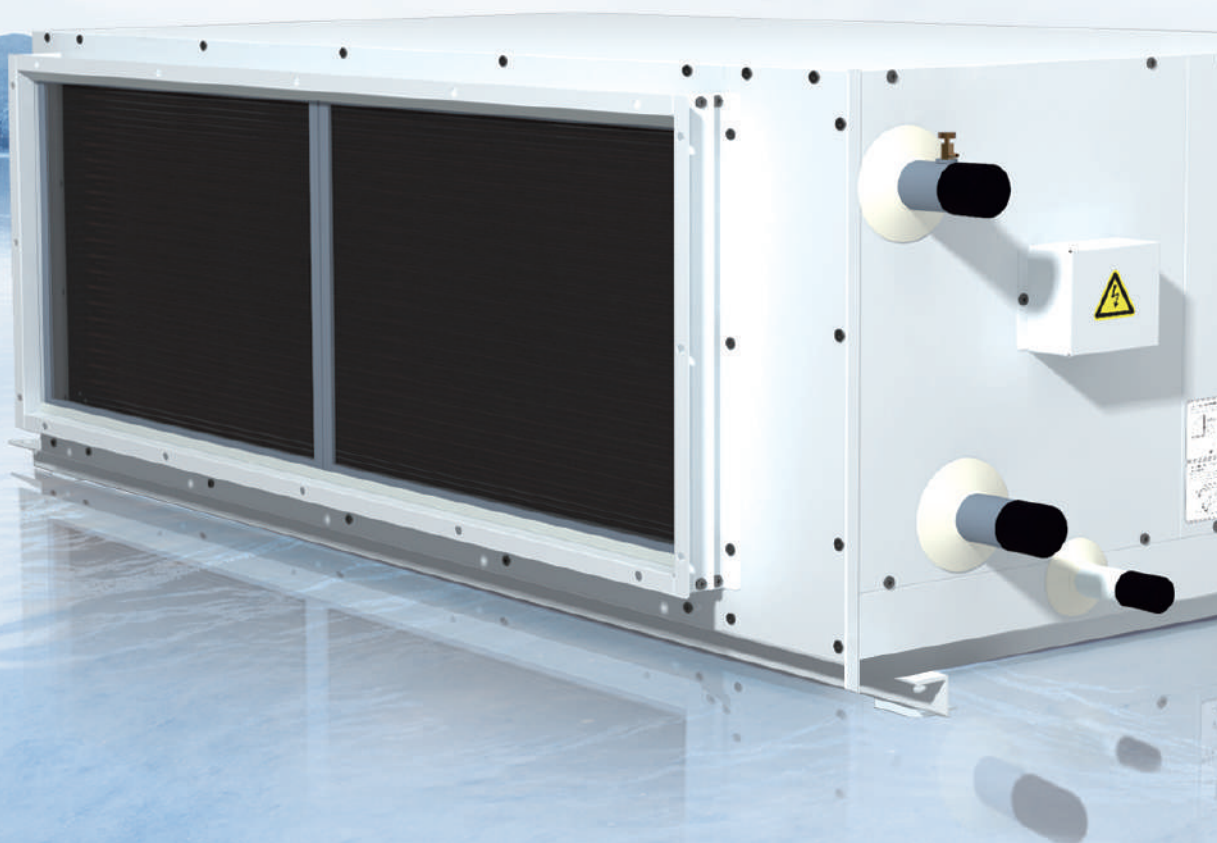
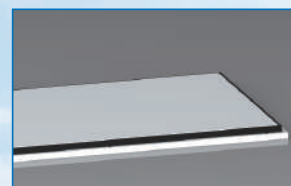
The air leakage rate of the cabinet can reach the L2 class of the European standard EN1886 (Ventilation for Buildings - Air Handling Units - Mechanical Performance), and the cold bridge factor can reach the TB2 class of the standard EN1886.



3

Excellent thermal insulation performance

The panel is made of internal and external double-layer steel plates and polyurethane with low thermal conductivity through one foam molding with new generation 0-ODP environment-friendly foaming agent. The panel features excellent thermal insulation and noise reduction performance. The thermal insulation performance of the cabinet meets the T2 class of the EN1886 standard.



4

Patented leak-proof drain pan

The integrated foaming drain pan works as a bottom plate and drain pan at the same time. It is surrounded by a patented flat design to protect the cabinet from leakage. The water collection part accepts anti-corrosion treatment through electrostatic spraying process, and the drain pipe is designed with a gradient to ensure smooth condensate discharge and avoid bacteria breeding.

Patent No.: CN217057921U Utility Model



5

High-efficiency heat exchanger

The heat exchanger is designed using professional model selection software certified by AHRI to ensure that model parameters are consistent with performance of the actual heat exchanger and the heat exchanger can address model selection requirements of customers in different operating conditions. The coil is integrated with quality RoHS-certified copper tubes and hydrophilic aluminum fins through the advanced mechanical expansion tube process. The coil passes air tightness test before delivery to ensure no leakage.



6

Professional model selection and checking software

TICA uses a professional model selection software to select a unit model. Featuring user-friendly interfaces, the software facilitates model selection. The software can address the needs of customers for model checking in non-standard operating conditions, deliver optimal configuration solutions, output a professional model selection report, and raise design efficiency.



7

Stability and reliability, and easy maintenance

It adopts branded fan motors with high quality to ensure the unit performance and reliability in the long run.

The filter is easy to be replaced, the access board is equipped with a handle. The product is light and can be disassembled and installed without any special tool.



8

Intelligent integrated control

Mechanical & electrical integration control enables integrated control of fan motors and water valves. The control system is composed of low-voltage apparatuses and temperature controllers from internationally well-known brands.

The control cabinet is equipped with multiple protections, such as power supply misphase protection, power supply phase loss protection, and current overload protection, to ensure that the unit operates stably. In addition, the unit reserves diversified external interlocking.

Integrated control can save energy of the chiller, while ensuring comfortable room temperature.



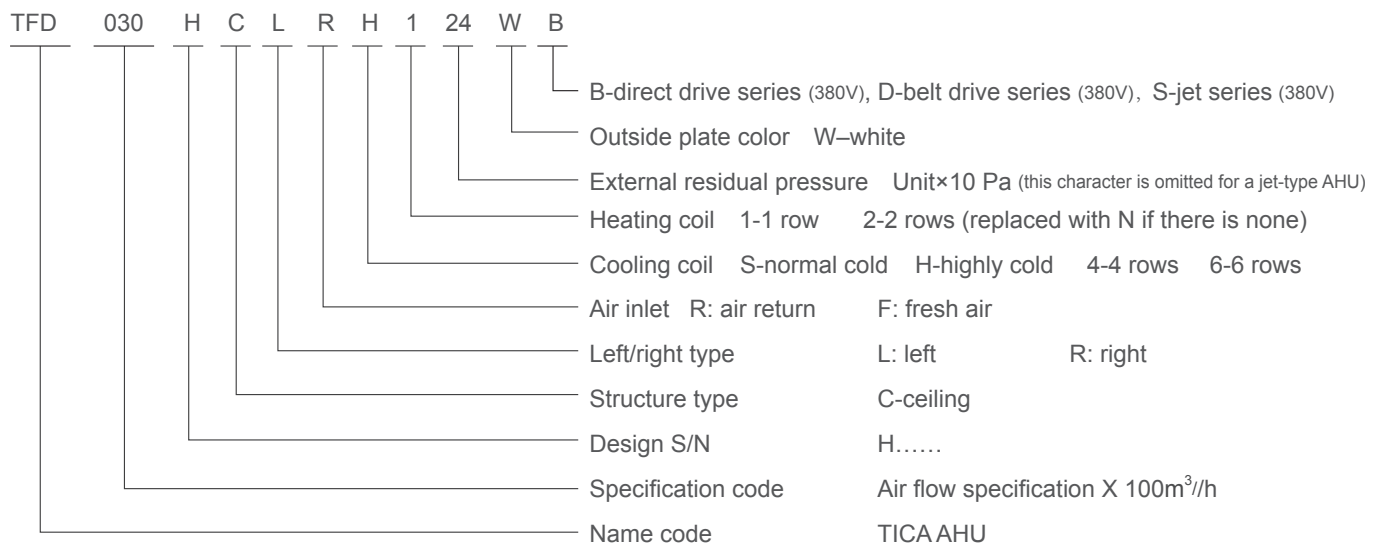
Overview

TFD ceiling type air handling unit (AHU) can be divided into three series: direct drive type (B), belt drive (D), and jet type (S). It uses 380V3N~50Hz three-phase AC power supply. The unit is mainly composed of filter, coil, and fan, and can meet requirements for different static pressures. The unit features compact structure, low weight, and excellent refrigeration performance. Heating coil, electric controller, and other components can be provided as required by customers. The unit is applied to scenarios that need centralized air processing, for example, shopping malls, hotels, and office buildings.

The S series jet type AHU is the new type air handling unit that TICA developed for customers. The unit adopts the ceiling structure and high-performance spherical nozzle, and can implement remote direct air supply without the duct, which saves space, reduces layer height, and greatly lowers the one-time investment costs. The spherical air supply nozzle is adjustable in a certain range to ensure that the cold and hot air are sent to the specified location, thus creating a comfortable air-conditioning environment. This unit is widely applied in

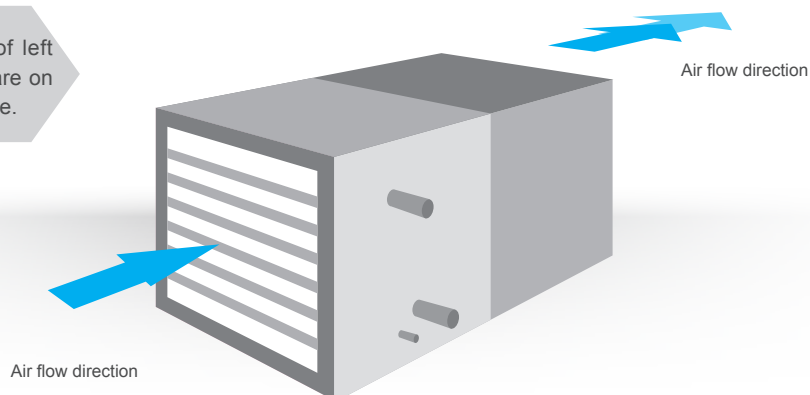
scenarios such as supermarkets, large-sized business buildings, factory workshops, stadiums, waiting halls, and exhibition halls. If the unit is installed near the sea shore, paper mill, steel mill, chemical plant, or other corrosive environment, please consult relevant plant(s) first in case that the corrosive environment may affect the operation stability of the unit.

Nomenclature



Left-/Right-Hand Piping

Facing the air flow, the unit is of left type if the water inlet and outlet are on the left. Otherwise, it is of right type.



Specifications

Specifications (Direct Drive and Belt Drive Series)

Return Air Condition

Model	Air Flow	Normal Cold					Highly Cold					Condensate Water Pipe Diameter	Power Supply	Driver Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Resistance	Chilled Water Pipe Diameter	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Resistance	Chilled Water Pipe Diameter			
TFD	m ³ /h	kW	kW	l/s	kPa	DN	kW	kW	l/s	kPa	DN	DN		
010	1000	5.1	10.2	0.24	18.9	32	7.2	12.4	0.34	49.1	32	25	380V 3 N-50 Hz	Direct drive
015	1500	8.3	15.2	0.40	48.7	32	11.0	18.5	0.52	68.6	32	25		
020	2000	11.5	21.2	0.55	61.8	32	14.9	25.3	0.71	66.4	32	25		
025	2500	14.4	26.0	0.69	59.4	32	18.2	30.8	0.87	68.1	32	25		
030	3000	17.5	32.0	0.83	53.2	32	22.0	37.3	1.05	70.1	32	25		
040	4000	23.4	41.5	1.13	76.5	32	30.1	49.1	1.43	75.3	32	25	380V 3 N-50 Hz	Belt drive
050	5000	28.3	51.4	1.37	68.4	32	35.2	61.8	1.68	75.8	40	25		
060	6000	34.5	61.7	1.64	67.4	32	43.7	73.9	2.08	77.7	40	25		
070	7000	40.3	71.3	1.92	78.5	32	49.4	85.3	2.35	77.8	40	25		
080	8000	46.2	83.1	2.20	77.2	32	57.6	98.3	2.74	78.1	40	25		
100	10000	59.9	108.1	2.85	77.1	40	75.1	135.3	3.58	55.8	50	25	380V 3 N-50 Hz	Belt drive
120	12000	69.3	131.7	3.30	78.1	40	85.8	161.1	4.09	76.9	50	25		
150	15000	85.3	162.8	4.06	89.8	50	108.5	189.7	5.17	77.5	50	32		

Note: 1. Cooling: The dry bulb temperature of inlet air is 27°C, the wet bulb temperature is 19.5°C, and the water inlet/outlet temperature is 7°C/12°C;
 2. Heating: The dry bulb temperature of inlet air is 15°C, the hot water inlet/outlet temperature is 60°C/50°C.
 3. The specifications are subject to change due to product improvement without prior notice.
 4. The water volume in the above table indicates the cold water supply volume. Because the hot water supply volume is smaller than cold water supply volume, cold water supply volume is provided in the table for your reference to select the water pump.

Specifications (Direct Drive and Belt Drive Series)

Return Air Condition(4/6Rows)

Model	Air Flow	4 rows					6 rows					Condensate Water Pipe Diameter	Power Supply	Driver Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	WPD	Chilled Water Pipe Diameter	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	WPD	Chilled Water Pipe Diameter			
TFD	m ³ /h	kW	kW	l/s	kPa	DN	kW	kW	l/s	kPa	DN	DN		
010	1000	5.9	12.1	0.28	3.2	32	8.0	14.4	0.38	7.8	32	25	380V 3N~50Hz	Direct drive
015	1500	9.5	18.2	0.45	10.0	32	12.3	21.5	0.59	21.5	32	25		
020	2000	13.1	24.5	0.63	20.0	32	16.6	28.8	0.79	44.7	32	25		
025	2500	16.8	30.6	0.80	35.8	32	20.6	34.1	0.98	23.8	32	25		
030	3000	19.7	36.0	0.94	38.3	32	24.1	40.5	1.15	27.1	32	25		
040	4000	25.9	47.6	1.24	27.9	32	33.5	56.1	1.60	27.2	32	25	380V 3N~50Hz	Belt drive
050	5000	31.6	59.5	1.51	48.8	32	38.8	70.1	1.85	48.0	40	25		
060	6000	37.9	67.6	1.81	31.5	32	47.8	82.1	2.28	20.0	40	25		
070	7000	45.1	79.8	2.15	48.0	32	54.6	96.2	2.61	32.1	40	25		
080	8000	51.0	95.4	2.44	31.5	32	63.7	109.4	3.04	20.0	40	25		
100	10000	65.8	122.1	3.14	26.0	40	82.0	140.9	3.92	47.0	50	25	380V 3N~50Hz	Belt drive
120	12000	76.0	143.1	3.63	37.4	40	94.5	166.8	4.51	24.2	50	25		
150	15000	94.4	178.9	4.51	38.0	50	119.3	208.5	5.70	24.2	50	32		

Note: 1. Cooling: The dry bulb temperature of inlet air is 27°C, the wet bulb temperature is 19.5°C, and the water inlet/outlet temperature is 7°C/12°C;

2. Heating: The dry bulb temperature of inlet air is 15°C, the hot water inlet/outlet temperature is 60°C/50°C.

3. The specifications are subject to change due to product improvement without prior notice.

4. The water volume in the above table indicates the cold water supply volume. Because the hot water supply volume is smaller than cold water supply volume, cold water supply volume is provided in the table for your reference to select the water pump.

Specifications (Direct Drive and Belt Drive Series)

Fresh Air Condition

Model	Air Flow	Normal Cold					Highly Cold					Condensate Water Pipe Diameter	Power Supply	Driver Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Resistance	Chilled Water Pipe Diameter	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Resistance	Chilled Water Pipe Diameter			
TFD	m ³ /h	kW	kW	l/s	kPa	DN	kW	kW	l/s	kPa	DN	DN		
010	1000	13.9	13.2	0.66	58.5	32	15.8	15.6	0.75	51.7	32	25	380V 3 N- 50 Hz	Direct drive
015	1500	18.7	18.4	0.93	40.9	32	24.5	23.7	1.17	69.7	32	25		
020	2000	27.0	27.5	1.29	77.3	32	31.2	31.3	1.49	57.9	32	25		
025	2500	30.8	31.8	1.47	54.6	32	40.3	39.3	1.92	69.6	32	25		
030	3000	39.9	40.9	1.90	72.8	32	45.8	45.1	2.18	71.3	32	25	380V 3 N- 50 Hz	Belt drive
040	4000	49.7	51.1	2.37	78.2	32	63.8	61.8	3.04	78.7	40	25		
050	5000	64.5	64.0	3.07	75.6	32	75.4	70.3	3.59	73.4	40	25		
060	6000	72.7	75.5	3.46	38.5	50	92.6	91.9	4.41	72.5	40	25		
070	7000	84.1	87.1	4.00	61.0	50	105.6	104.8	5.03	79.5	50	25		
080	8000	99.0	101.7	4.71	78.9	50	120.7	119.7	5.75	77.1	50	25		
100	10000	133.1	133.3	6.34	50.6	65	160.2	157.9	7.63	60.2	65	25		
120	12000	149.4	155.1	7.12	69.1	65	185.2	180.4	8.20	73.9	65	25		
150	15000	184.2	200.2	8.77	69.1	65	244.7	237.1	10.65	82.1	65	32		

Note: 1. Cooling: The dry bulb temperature of inlet air is 35°C, the wet bulb temperature is 28°C, and the water inlet/outlet temperature is 7°C/12°C;
 2. Heating: The dry bulb temperature of inlet air is 7°C, the hot water inlet/outlet temperature is 60°C/50°C.
 3. The specifications are subject to change due to product improvement without prior notice.
 4. The water volume in the above table indicates the cold water supply volume. Because the hot water supply volume is smaller than cold water supply volume, cold water supply volume is provided in the table for your reference to select the water pump.

Specifications (Direct Drive and Belt Drive Series)

Fresh Air Condition(4/6Rows)

Model	Air Flow	4 rows					6 rows					Condensate Water Pipe Diameter	Power Supply	Driver Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	WPD	Chilled Water Pipe Diameter	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	WPD	Chilled Water Pipe Diameter			
TFD	m ³ /h	kW	kW	l/s	kPa	DN	kW	kW	l/s	kPa	DN	DN		
010	1000	16.6	16.2	0.79	16.7	32	18.3	18.2	0.87	29.7	32	25	380V 3N~50Hz	Direct drive
015	1500	23.9	24.3	1.14	44.5	32	26.5	27.0	1.27	25.5	32	25		
020	2000	29.2	30.3	1.39	32.8	32	35.5	33.4	1.70	24.6	32	25		
025	2500	34.3	35.5	1.64	18.6	32	44.9	45.0	2.14	43.1	32	25		
030	3000	43.7	46.8	2.09	20.1	32	53.3	49.5	2.55	46.9	32	25		
040	4000	56.5	57.5	2.7	46.4	32	71.4	69.4	3.41	28.1	40	25		
050	5000	68.9	70.2	3.29	29.6	32	86.8	86.3	4.15	52.0	40	25	380V 3N~50Hz	Belt drive
060	6000	81.5	84.3	3.89	47.7	50	101.8	98.2	4.86	29.3	40	25		
070	7000	92.3	98.8	4.41	27.9	50	116.5	115.7	5.56	45.1	50	25		
080	8000	108.6	112.4	5.19	47.7	50	135.7	131.0	6.48	29.3	50	25		
100	10000	143.8	149.3	6.87	39.9	65	179.3	168.4	8.56	63.1	65	25		
120	12000	165.2	177.2	7.89	57.6	65	212.8	199.3	10.16	91.5	65	25		
150	15000	206.4	221.5	9.86	57.6	65	266.1	249.1	12.71	91.5	65	32		

Note: 1. Cooling: The dry bulb temperature of inlet air is 35°C, the wet bulb temperature is 28°C, and the water inlet/outlet temperature is 7°C/12°C;
 2. Heating: The dry bulb temperature of inlet air is 7°C, the hot water inlet/outlet temperature is 60°C/50°C.
 3. The specifications are subject to change due to product improvement without prior notice.
 4. The water volume in the above table indicates the cold water supply volume. Because the hot water supply volume is smaller than cold water supply volume, cold water supply volume is provided in the table for your reference to select the water pump.

Air Pressures and Motor Powers

Air Pressures and Motor Powers

Model TFD	Air Flow m ³ /h	Cooling coil	External Residual Pressure (Pa)								
			80	120	160	200	240	280	320	360	400
010	1000	S	0.18	0.18	0.25	0.32					
		H	0.18	0.25	0.32	0.32					
015	1500	S		0.32	0.32	0.32	0.37	0.45			
		H		0.32	0.32	0.37	0.45	0.45			
020	2000	S		0.32	0.32	0.37	0.37	0.45	0.45		
		H		0.32	0.37	0.37	0.45	0.45	0.55		
025	2500	S		0.45	0.55	0.55	0.75	0.75	0.75		
		H		0.55	0.55	0.75	0.75	0.75	0.75		
030	3000	S			0.55	0.75	0.75	0.75	0.75	1.1	1.1
		H			0.75	0.75	0.75	0.75	1.1	1.1	1.1
040	4000	S			1.1	1.1	1.1	1.1	1.1	1.1	1.5
		H			1.1	1.1	1.1	1.1	1.1	1.5	1.5
050	5000	S			1.1	1.1	1.1	1.1	1.5	1.5	1.5
		H			1.1	1.1	1.1	1.5	1.5	1.5	1.5
060	6000	S			1.1	1.1	1.5	1.5	1.5	1.5	2.2
		H			1.1	1.5	1.5	1.5	1.5	2.2	2.2
070	7000	S			1.5	1.5	2.2	2.2	2.2	2.2	2.2
		H			1.5	2.2	2.2	2.2	2.2	2.2	2.2
080	8000	S			2.2	2.2	2.2	2.2	2.2	3.0	3.0
		H			2.2	2.2	2.2	2.2	3.0	3.0	3.0
100	10000	S			2.2	3.0	3.0	3.0	3.0	3.0	3.0
		H			3.0	3.0	3.0	3.0	3.0	3.0	4.0
120	12000	S				3.0	3.0	3.0	4.0	4.0	4.0
		H				3.0	3.0	4.0	4.0	4.0	4.0
150	15000	S						4.0	4.0	5.5	5.5
		H						4.0	5.5	5.5	5.5

Specifications (Jet Type)

Return Air Condition

Model	Air Flow	Normal Cold						Highly Cold						Condensate Water Pipe Diameter	Power Supply	Driver Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Resistance	Motor Power	Chilled Water Pipe Diameter	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Resistance	Motor Power	Chilled Water Pipe Diameter			
TFD	m ³ /h	kW	kW	l/s	kPa	kW	DN	kW	kW	l/s	kPa	kW	DN	DN		
010	1000	5.1	10.2	0.24	18.9	0.18	32	7.2	12.4	0.34	49.1	0.18	32	25	380V 3 N- 50 Hz	Direct drive
020	2000	11.5	21.2	0.55	61.8	0.55	32	14.9	25.3	0.71	66.4	0.55	32	25		
030	3000	17.5	32.0	0.83	53.2	1.1	32	22.0	37.3	1.05	70.1	1.1	32	25		Belt drive
040	4000	23.4	41.5	1.13	76.5	1.1	32	30.1	49.1	1.43	75.3	1.1	32	25		
050	5000	28.3	51.4	1.37	68.4	1.5	32	35.2	61.8	1.68	75.8	1.5	40	25		
060	6000	34.5	61.7	1.64	67.4	1.5	32	43.7	73.9	2.08	77.7	1.5	40	25		
070	7000	40.3	71.3	1.92	78.5	2.2	32	49.4	85.3	2.35	77.8	2.2	40	25		
080	8000	46.2	83.1	2.20	77.2	2.2	32	57.6	98.3	2.74	78.1	3.0	40	25		
100	10000	59.9	108.1	2.85	77.1	3.0	40	75.1	135.3	3.58	55.8	3.0	50	25		
120	12000	69.3	131.7	3.30	78.1	3.0	40	85.8	161.1	4.09	76.9	3.0	50	25		

Note: 1. Cooling: The dry bulb temperature of inlet air is 27°C, the wet bulb temperature is 19.5°C, and the water inlet/outlet temperature is 7°C/12°C;
 2. Heating: The dry bulb temperature of inlet air is 15°C, the hot water inlet/outlet temperature is 60°C/50°C.
 3. The unit is not equipped with external static pressure. If a return air duct is required, please clarify the requirement when you make the order.
 4. The specifications are subject to change due to product improvement without prior notice.
 5. The water volume in the above table indicates the cold water supply volume. Because the hot water supply volume is smaller than cold water supply volume, cold water supply volume is provided in the table for your reference to select the water pump.

Fresh Air Condition

Model	Air Flow	Normal Cold						Highly Cold						Condensate Water Pipe Diameter	Power Supply	Driver Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Resistance	Motor Power	Chilled Water Pipe Diameter	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Resistance	Motor Power	Chilled Water Pipe Diameter			
TFD	m ³ /h	kW	kW	l/s	kPa	kW	DN	kW	kW	l/s	kPa	kW	DN	DN		
010	1000	13.9	13.2	0.66	58.5	0.18	32	15.8	15.6	0.75	51.7	0.18	32	25	380V 3 N- 50 Hz	Direct drive
020	2000	27.0	27.5	1.29	77.3	0.55	32	31.2	31.3	1.49	57.9	0.55	32	25		
030	3000	39.9	40.9	1.90	72.8	1.1	32	45.8	45.1	2.18	71.3	1.1	32	25		Belt drive
040	4000	49.7	51.1	2.37	78.2	1.1	32	63.8	61.8	3.04	78.7	1.1	40	25		
050	5000	64.5	64.0	3.07	75.6	1.5	32	75.4	70.3	3.59	73.4	1.5	40	25		
060	6000	72.7	75.5	3.46	38.5	1.5	50	92.6	91.9	4.41	72.5	1.5	40	25		
070	7000	84.1	87.1	4.00	61.0	2.2	50	105.6	104.8	5.03	79.5	2.2	50	25		
080	8000	99.0	101.7	4.71	78.9	2.2	50	120.7	119.7	5.75	77.1	3.0	50	25		
100	10000	133.1	133.3	6.34	50.6	3.0	65	160.2	157.9	7.63	60.2	3.0	65	25		
120	12000	149.4	155.1	7.12	69.1	3.0	65	185.2	180.4	8.20	73.9	3.0	65	25		

Note: 1. Cooling: The dry bulb temperature of inlet air is 35°C, the wet bulb temperature is 28°C, and the water inlet/outlet temperature is 7°C/12°C;
 2. Heating: The dry bulb temperature of inlet air is 7°C, the hot water inlet/outlet temperature is 60°C/50°C.
 3. The unit is not equipped with external static pressure. If a fresh air duct is required, please specify the requirement when you make the order.
 4. The specifications are subject to change due to product improvement without prior notice.
 5. The water volume in the above table indicates the cold water supply volume. Because the hot water supply volume is smaller than cold water supply volume, cold water supply volume is provided in the table for your reference to select the water pump.

Specifications

Return Air Condition(4/6Rows)

Model	Air Flow	4 rows					6 rows					Condensate Water Pipe Diameter	Power Supply	Driver Type
		Rated Cooling Capacity	ated Heating Capacity	Water Flow	WPD	Chilled Water Pipe Diameter"	"Rated Cooling Capacity"	Rated Heating Capacity	Water Flow	WPD	Chilled Water Pipe Diameter			
TFD	m ³ /h	kW	kW	l/s	kPa	DN	kW	kW	l/s	kPa	DN	DN		
010	1000	5.9	12.1	0.28	3.2	32	8.0	14.4	0.38	7.8	32	25	380V 3N~50Hz	Direct drive
020	2000	13.1	24.5	0.63	20.0	32	16.6	28.8	0.79	44.7	32	25		Belt drive
030	3000	19.7	36.0	0.94	38.3	32	24.1	40.5	1.15	27.1	32	25		
040	4000	25.9	47.6	1.24	27.9	32	33.5	56.1	1.60	27.2	32	25		
050	5000	31.6	59.5	1.51	48.8	32	38.8	70.1	1.85	48.0	40	25		
060	6000	37.9	67.6	1.81	31.5	32	47.8	82.1	2.28	20.0	40	25		
070	7000	45.1	79.8	2.15	48.0	32	54.6	96.2	2.61	32.1	40	25		
080	8000	51.0	95.4	2.44	31.5	32	63.7	109.4	3.04	20.0	40	25		
100	10000	65.8	122.1	3.14	26.0	40	82.0	140.9	3.92	47.0	50	25		
120	12000	76.0	143.1	3.63	37.4	40	94.5	166.8	4.51	24.2	50	25		

Note: 1. Cooling: The dry bulb temperature of inlet air is 27°C, the wet bulb temperature is 19.5°C, and the water inlet/outlet temperature is 7°C/12°C;
 2. Heating: The dry bulb temperature of inlet air is 15°C, the hot water inlet/outlet temperature is 60°C/50°C.
 3. The unit is not equipped with external static pressure. If a return air duct is required, please clarify the requirement when you make the order.
 4. The specifications are subject to change due to product improvement without prior notice.
 5. The water volume in the above table indicates the cold water supply volume. Because the hot water supply volume is smaller than cold water supply volume, cold water supply volume is provided in the table for your reference to select the water pump.

Fresh Air Condition(4/6Rows)

Model	Air Flow	4 rows					6 rows					Condensate Water Pipe Diameter	Power Supply	Driver Type
		Rated Cooling Capacity	ated Heating Capacity	Water Flow	WPD	Chilled Water Pipe Diameter"	"Rated Cooling Capacity"	Rated Heating Capacity	Water Flow	WPD	Chilled Water Pipe Diameter			
TFD	m ³ /h	kW	kW	l/s	kPa	DN	kW	kW	l/s	kPa	DN	DN		
010	1000	16.6	16.2	0.79	16.7	32	18.3	18.2	0.87	29.7	32	25	380V 3N~50Hz	Direct drive
020	2000	29.2	30.3	1.39	32.8	32	35.5	33.4	1.70	24.6	32	25		Belt drive
030	3000	43.7	46.8	2.09	20.1	32	53.3	49.5	2.55	46.9	32	25		
040	4000	56.5	57.5	2.7	46.4	32	71.4	69.4	3.41	28.1	40	25		
050	5000	68.9	70.2	3.29	29.6	32	86.8	86.3	4.15	52.0	40	25		
060	6000	81.5	84.3	3.89	47.7	50	101.8	98.2	4.86	29.3	40	25		
070	7000	92.3	98.8	4.41	27.9	50	116.5	115.7	5.56	45.1	50	25		
080	8000	108.6	112.4	5.19	47.7	50	135.7	131.0	6.48	29.3	50	25		
100	10000	143.8	149.3	6.87	39.9	65	179.3	168.4	8.56	63.1	65	25		
120	12000	165.2	177.2	7.89	57.6	65	212.8	199.3	10.16	91.5	65	25		

Note: 1. Cooling: The dry bulb temperature of inlet air is 35°C, the wet bulb temperature is 28°C, and the water inlet/outlet temperature is 7°C/12°C;
 2. Heating: The dry bulb temperature of inlet air is 7°C, the hot water inlet/outlet temperature is 60°C/50°C.
 3. The unit is not equipped with external static pressure. If a fresh air duct is required, please specify the requirement when you make the order.
 4. The specifications are subject to change due to product improvement without prior notice.
 5. The water volume in the above table indicates the cold water supply volume. Because the hot water supply volume is smaller than cold water supply volume, cold water supply volume is provided in the table for your reference to select the water pump.

Specifications

Return Air Condition (with Heating Coil)

Model	Air Flow	1 row				2 rows			
		Rated Heating Capacity	Water Flow	Water Resistance	Water Pipe Diameter	Rated Heating Capacity	Water Flow	Water Resistance	Water Pipe Diameter
TFD	m ³ /h	kW	l/s	kPa	DN	kW	l/s	kPa	DN
010	1000	3.0	0.1	0.17	32	6.2	0.2	0.87	32
015	1500	4.3	0.1	0.19	32	9.9	0.3	2.1	32
020	2000	6.7	0.2	0.59	32	13.4	0.4	3.0	32
025	2500	8.2	0.2	0.63	32	16.4	0.4	3.3	32
030	3000	10.9	0.3	1.4	32	20.2	0.5	5.3	32
040	4000	14.8	0.4	1.5	32	27.7	0.7	6.5	32
050	5000	19.1	0.5	2.5	32	35.2	0.9	11.6	32
060	6000	23.2	0.6	3.0	32	43.0	1.1	14.2	32
070	7000	27.6	0.7	4.3	32	49.7	1.2	18.2	32
080	8000	31.5	0.8	4.0	32	57.3	1.4	18.2	32
100	10000	42.6	1.1	8.4	32	76.4	1.8	34.0	32
120	12000	49.4	1.3	9.9	32	87.3	2.4	38.8	32
150	15000	60.8	1.6	10.0	32	108.3	2.6	37.7	32

Note: 1. Heating: The dry bulb temperature of inlet air is 15°C, the hot water inlet/outlet temperature is 60°C/50°C.
 2. The specifications are subject to change due to product improvement without prior notice.
 3. The Heating coil resistance is 20 Pa/row. The external residual pressure of a standard unit does not include the Heating coil resistance. Otherwise, the external residual pressure of the unit is deducted by 20 Pa/row.

Fresh Air Condition (with Heating Coil)

Model	Air Flow	1 Row				2 Rows			
		Rated Heating Capacity	Water Flow	Water Resistance	Water Pipe Diameter	Rated Heating Capacity	Water Flow	Water Resistance	Water Pipe Diameter
TFD	m ³ /h	kW	l/s	kPa	DN	kW	l/s	kPa	DN
010	1000	4.3	0.2	0.64	32	7.3	0.2	0.87	32
015	1500	6.3	0.2	0.69	32	11.6	0.3	2.1	32
020	2000	8.9	0.3	1.3	32	16.5	0.5	4.5	32
025	2500	10.9	0.3	1.4	32	20.2	0.5	4.9	32
030	3000	13.7	0.4	2.5	32	25.3	0.7	9.9	32
040	4000	18.3	0.5	2.3	32	33.7	0.9	10.3	32
050	5000	24.2	0.7	4.7	32	42.9	1.1	16.7	32
060	6000	29.1	0.8	5.1	32	51.4	1.3	19.2	32
070	7000	33.9	0.9	6.9	32	61.0	1.5	27.1	32
080	8000	39.3	1.1	7.2	32	69.7	1.7	25.7	32
100	10000	52.4	1.4	13.0	32	93.0	2.3	52.5	32
120	12000	60.7	1.6	14.5	32	106.2	2.6	56.7	32
150	15000	73.8	1.9	13.7	32	130.7	3.2	54.7	32

Note: 1. Heating: The dry bulb temperature of inlet air is 7°C, the hot water inlet/outlet temperature is 60°C/50°C.
 2. The specifications are subject to change due to product improvement without prior notice.
 3. The Heating coil resistance is 20 Pa/row. The external residual pressure of a standard unit does not include the Heating coil resistance. Otherwise, the external residual pressure of the unit is deducted by 20 Pa/row.

Jet Type Unit Design Selection

The thermal performance parameter calculation of the jet type air handling unit adopting the spherical nozzle is the same with that of the ordinary ceiling type unit. Design selection mainly includes the calculation of air flow organization. For a specified project, the proper jet type air handling unit needs to be selected after the air supply distance, unit installation height, air supply temperature, and air supply volume are determined, and the cold and hot air flow supplied by the unit must meet the following requirements:

1. The cold and hot air are sent to the specified location.
2. The cold jet flow does not drop down during the supply process to avoid causing uncomfortable feelings to people.
3. The hot air can be sent to the required height and location.
4. The air side temperature difference meets the design requirement.

Design selection must consider the mutual impact of the multiple air supply nozzles of the unit. The spread of the jet flow is approximately 0.4 times wider than the jet range. An appropriate configuration is to make the unit deployment density slightly smaller than the diffusion width. If the unit is installed closely to the ceiling, the impact of adhesion should also be considered. The jet range of the attached air flow is 1.4 times larger than the common air flow.

Jet range recommendation

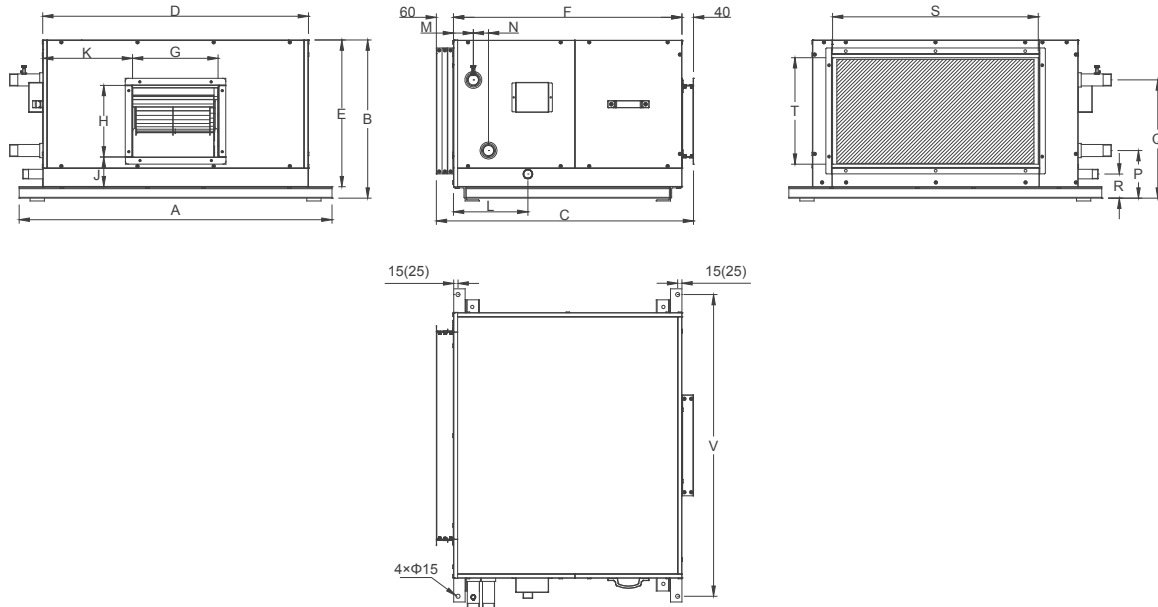
Based on the performances of the unit and the spherical nozzle, the recommended horizontal air supply range (unit: m) of various types of air handling units is as follows:

Model TFD	010	020	030	040	050	060	070	080	100	120
Jet range	14	21	21	21	25	22	28	30	28	31
Distance	20	27	27	27	31	28	34	36	34	37

- Notes:**
1. The maximum spread width of the unit jet flow is about 40% of the jet range. Therefore, unit deployment should take into consideration the air flow spread angle, and the distance between units should not be too large.
 2. The units can be deployed on a single side or on opposite sides. If neither the deployment can meet the jet range, an induction fan can be adopted to continue the air supply. The induction fan is deployed by every 4 to 6 meters in vertical direction, and by every 6 to 10 meters in horizontal direction.
 3. Range: distance when the air side fan speed is 0.5m/s. Distance: distance when the air side fan speed is 0m/s1

Standard Unit Dimensions

010-025 models in direct drive series



Model	External Residual Pressure	Coil Type	A	B	C	D	E	F	Air Outlet Flange				M				N				Air Return Flange		Unit Weight		
									G	H	J	K	L	Normal Cold	Highly Cold	Normal Cold	Highly Cold	P	Q	R	S	T	V	Normal Cold	Highly Cold
TFD010	80/120	Normal cold/highly cold	727	553	900	560	513	800	227	221	105	167	260	70	70	53	73	165	413	84	357	400	687	50	57
	160	Normal cold							227	221	105	167													
	160	Highly cold							302	232	105	129													
TFD015	200/240	Normal cold/highly cold	847	553	900	680	513	800	302	232	105	129	260	70	70	53	73	165	413	84	477	400	807	57	63
	80	Highly cold							283	275	105	199													
	120	Normal cold							283	275	105	199													
	120	Highly cold							302	232	105	189													
	160	Normal cold/highly cold							302	232	105	189													
	200	Normal cold							302	232	105	189													
	200	Highly cold							260	248	105	210													
	240	Normal cold							260	248	105	210													
	240	Highly cold							302	275	105	189													
TFD020	280	Normal cold/highly cold	977	553	900	810	513	800	302	275	105	189	260	70	70	53	73	165	413	84	607	400	937	71	81
	120	Normal cold/highly cold							283	275	105	264													
	160	Normal cold							283	275	105	264													
	160	Highly cold							260	248	105	275													
	200/240	Normal cold/highly cold							260	248	105	275													
	280	Normal cold							260	248	105	275													
	280	Highly cold							302	275	105	254													
	320	Normal cold							302	275	105	254													
	320	Highly cold							283	275	105	264													
TFD025	360	Normal cold	1097	553	900	930	513	800	283	275	105	264	260	70	70	53	73	165	413	84	727	400	1057	76	86
	80	Highly cold							290	248	105	320													
	120/160	Normal cold/highly cold							290	248	105	320													
	200	Normal cold							290	248	105	320													
	200	Highly cold							302	275	105	314													
	240/280/320	Normal cold/highly cold							302	275	105	314													
360	Normal cold	302	275	105	314																				

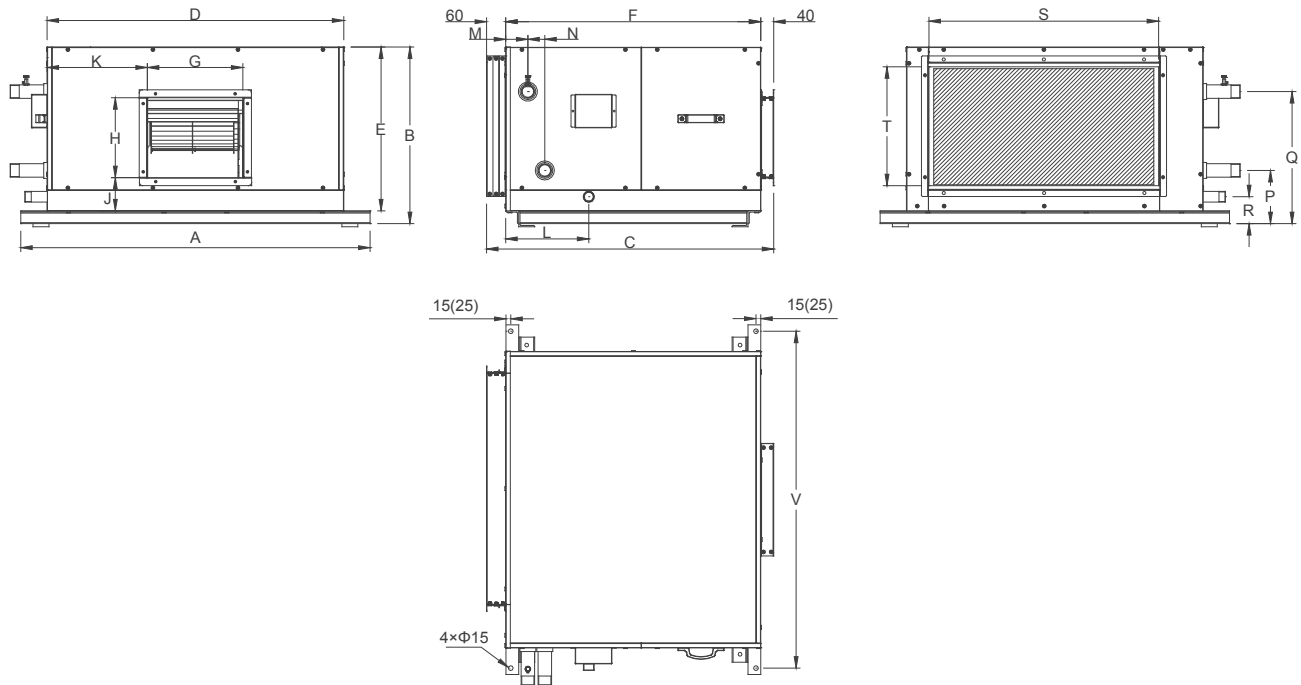
Note: 1. The unit of size is mm, and that of weight is kg.

2. It is the left type unit, and the right type unit is the mirror image of the drawing

3. The above weight and size do not include the built-in control cabinet. (The weight is for reference only, and it will vary with different configurations).

4. The value 15 (25) is the distance between the lifting hole and the outer edge of the unit base. It is 15 for 080 type and earlier types, and is 25 for types later than 080.

030-050 models in belt drive series



Model	Operating Conditions	A	B	C	D	E	F	Air Outlet Flange		J	K	L	M		N		P	Q	R	Air Return Flange		V	Unit Weight	
								G	H				Normal Cold	Highly Cold	Normal Cold	Highly Cold				S	T		Normal Cold	Highly Cold
TFD030	Air return	1097	609	950	930	569	850	302	262	121	468	285	70	70	53	73	175	507	84	727	455	1057	90	121
	Fresh air												70	70	53	73	175	507	84					
TFD040	Air return	1367	609	950	1200	569	850	331	289	105	625	285	70	70	53	73	175	507	84	977	455	1327	99	129
	Fresh air												70	70	53	73	175	507	84					
TFD050	Air return	1567	619	950	1400	569	850	331	289	105	825	285	70	70	53	73	175	507	84	1177	455	1527	128	158
	Fresh air												83	83	88	88	183	508	84					

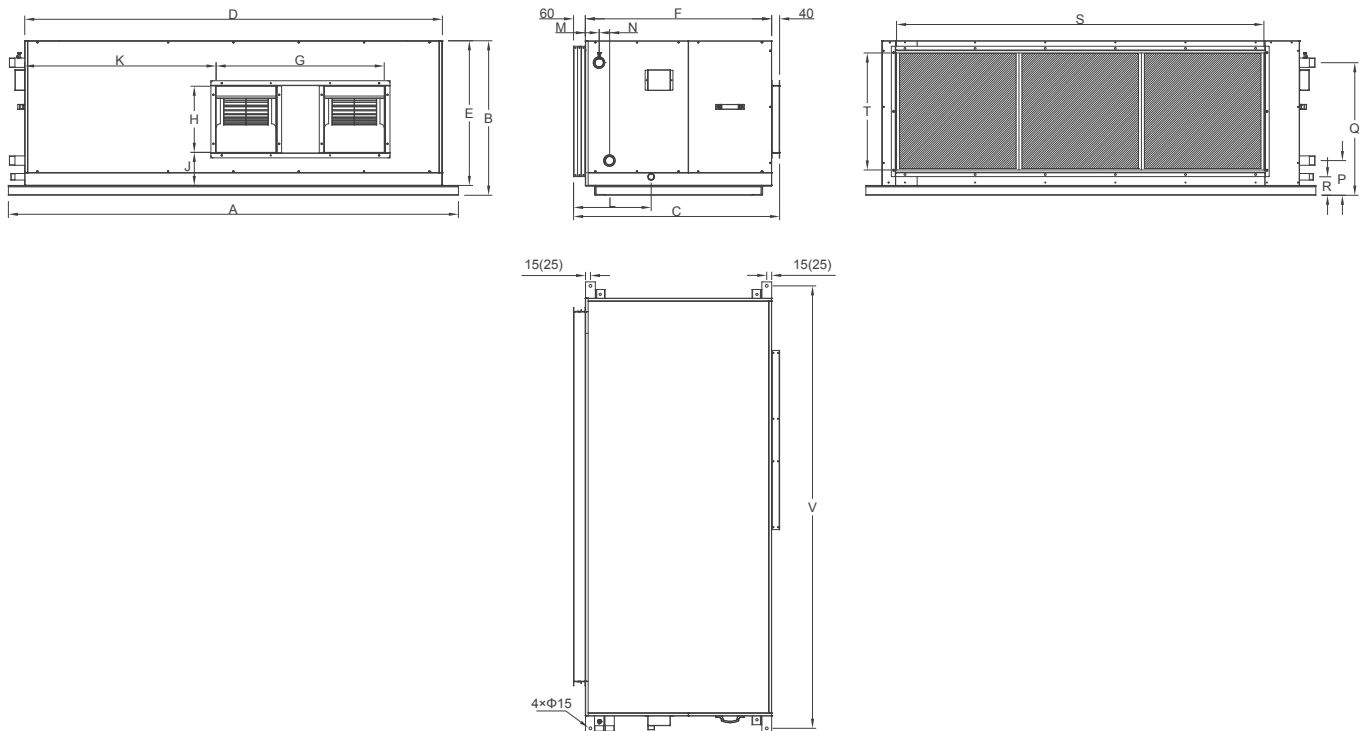
Note: 1. The unit of size is mm, and that of weight is kg.

2. It is the left type unit, and the right type unit is the mirror image of the drawing.

3. The above weight and size do not include the built-in control cabinet. (The weight is for reference only, and it will vary with different configurations).

4. The value 15 (25) is the distance between the lifting hole and the outer edge of the unit base. It is 15 for 080 type and earlier types, and is 25 for types later than 080.

060-150 models in belt drive series



Model	Operating Conditions	A	B	C	D	E	F	Air Outlet Flange		J	K	L	M		N		P	Q	R	Air Return Flange		V	Unit Weight	
								G	H				Normal Cold	Highly Cold	Normal Cold	Highly Cold				S	T		Normal Cold	Highly Cold
TFD060	Air return	1767	619	950	1600	569	850	840	262	145	596	285	70	70	53	73	175	507	94	1377	455	1727	139	180
	Fresh air												83	83	88	88				193	518			
TFD070	Air return	2007	619	950	1840	569	850	840	262	145	755	285	70	70	53	73	175	507	94	1617	455	1967	192	222
	Fresh air												83	83	88	88				193	518			
TFD080	Air return	1767	787	950	1600	737	850	840	262	145	596	285	70	70	53	73	175	675	94	1377	623	1727	231	271
	Fresh air												83	83	88	88				177	654			
TFD100	Air return	2297	787	1050	2130	737	950	862	341	165	974	335	70	83	53	88	193	670	94	1887	623	2257	279	309
	Fresh air												83	83	88	88				193	670			
TFD120	Air return	2487	787	1050	2320	737	950	1114	341	165	860	335	70	83	83	88	175	675	94	2077	623	2447	287	311
	Fresh air												83	83	88	88				193	670			
TFD150	Air return	2487	935	1120	2320	885	1020	1040	404	165	917	370	90	73	95	108	158	823	94	2077	623	2447	372	414
	Fresh air												73	73	108	108				166	823			

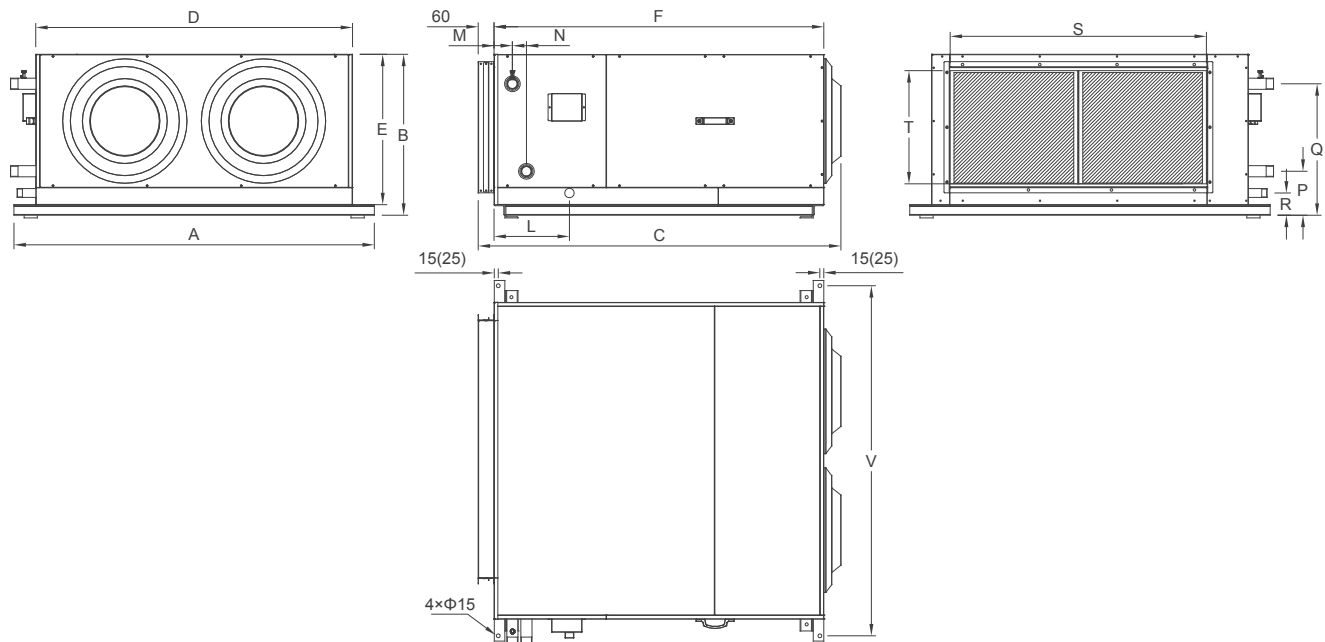
Note: 1. The unit of size is mm, and that of weight is kg.

2. It is the left type unit, and the right type unit is the mirror image of the drawing.

3. The above weight and size do not include the built-in control cabinet. (The weight is for reference only, and it will vary with different configurations).

4. The value 15 (25) is the distance between the lifting hole and the outer edge of the unit base. It is 15 for 080 type and earlier types, and is 25 for types later than 080.

Jet Type Unit

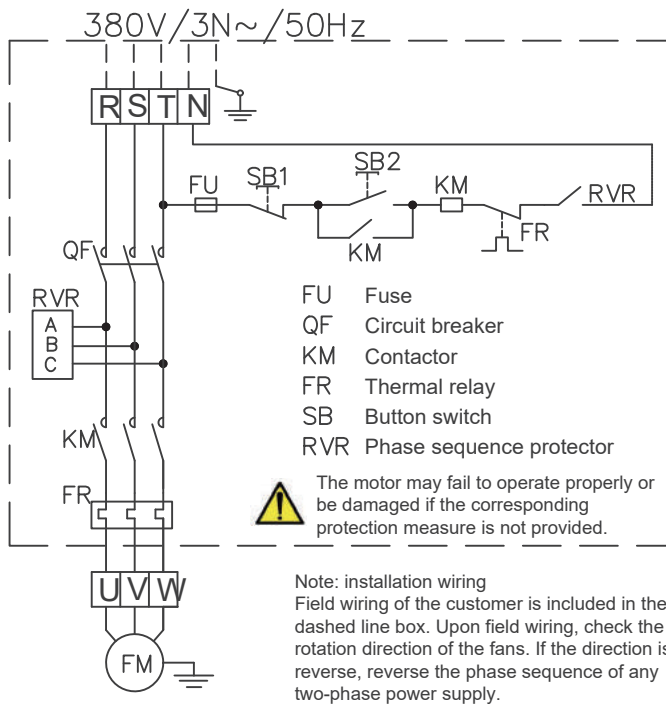


Model	Operating Conditions	A	B	C	D	E	F	L	M		N		P	Q	R	Air Return Flange		V	Number of Air Outlets	Jet Air Outlet Specification	Outer Diameter	Inner Diameter	Unit Weight	
									Normal cold	Highly Cold	Normal Cold	Highly Cold				S	T						Normal Cold	Highly Cold
TFD010	Air return	727	553	1310	560	513	1200	260	70	70	53	73	165	413	84	357	400	687	1	Φ315	360	180	50	57
	Fresh air								70	70	53	73	165	413	84								71	81
TFD020	Air return	977	553	1310	810	513	1200	260	70	70	53	73	165	413	84	607	400	937	1	Φ315	360	180	71	81
	Fresh air								70	70	53	73	165	413	84									
TFD030	Air return	1097	609	1370	930	569	1250	285	70	70	53	73	175	507	84	727	455	1057	1	Φ400	472	250	90	121
	Fresh air								70	70	53	73	175	507	84								99	129
TFD040	Air return	1367	609	1370	1200	569	1250	285	70	70	53	73	175	507	84	977	455	1327	2	Φ400	472	250	99	129
	Fresh air								70	70	53	73	175	507	84								128	158
TFD050	Air return	1567	619	1370	1400	569	1250	285	70	70	53	73	175	507	84	1177	455	1527	2	Φ400	472	250	128	158
	Fresh air								83	83	88	88	183	508	84								139	180
TFD060	Air return	1767	619	1370	1600	569	1250	285	70	70	53	73	175	507	94	1377	455	1727	2	Φ400	472	250	139	180
	Fresh air								83	83	88	88	193	518	94								192	222
TFD070	Air return	2007	619	1370	1840	569	1250	285	70	70	53	73	175	507	94	1617	455	1967	3	Φ400	472	250	192	222
	Fresh air								83	83	88	88	193	518	94								231	271
TFD080	Air return	1767	787	1400	1600	737	1250	285	70	70	53	73	175	675	94	1377	623	1727	2	Φ500	595	285	231	271
	Fresh air								83	83	88	88	177	654	94								279	309
TFD100	Air return	2297	787	1500	2130	737	1350	335	70	83	53	88	193	670	94	1887	623	2257	2	Φ500	595	285	279	309
	Fresh air								83	83	88	88	193	670	94								287	311
TFD120	Air return	2487	787	1500	2320	737	1350	335	70	83	83	88	175	675	94	2077	623	2447	3	Φ500	595	285	287	311
	Fresh air								83	83	88	88	193	670	94									

Note: 1. The unit of size is mm, and that of weight is kg.
 2. It is the left type unit, and the right type unit is the mirror image of the drawing.
 3. The above weight and size do not include the built-in control cabinet. (The weight is for reference only, and it will vary with different configurations).
 4. The value 15 (25) is the distance between the lifting hole and the outer edge of the unit base. It is 15 for 080 type and earlier types, and is 25 for types later than 080.

Electrical Wiring Diagram

Schematic Diagram



Note:

1. The dashed line indicates user installation wiring, which is not required for a standard unit. The wiring must be tightened;
2. The grounding terminal is inside the junction box. make sure to connect it firmly according to requirements;
3. If a control cabinet is required, clarify the requirement when placing an order.

Control Cabinet Description

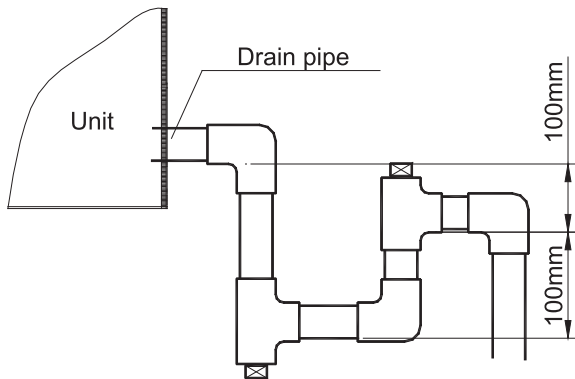
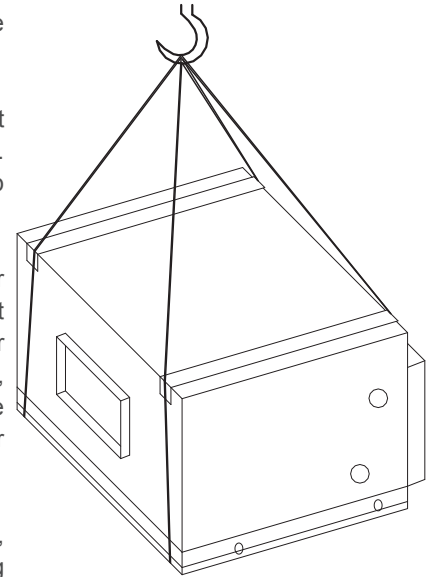
The control cabinet is installed on the side of the TFD unit, when the control cabinet is delivered. The temperature controller is delivered together with the control cabinet. On site, the control cabinet is installed on the interior wall of the operation room to perform remote control. Field wiring includes the power cable of the control cabinet, and the signal cable between the temperature controller and control cabinet.



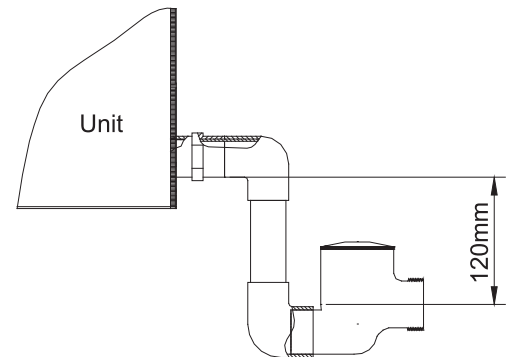
- Other Notes:
1. This control function is optional.
 2. The water valve must be prepared by customers according to the pipe diameter. A 220V three-wire boolean valve is required.
 3. In all fresh air scenarios, anti-freezing measures must be considered. Valves are not recommended.
 4. The control system only controls valve on/off, and cannot adjust its opening degree.
 5. The control system only controls fan motor on/off, and cannot adjust air volume.

Unit Installation

- Carefully check the unit for damage before unit installation. If any of the following cases occurs, contact the distributor as soon as possible for repairing or replacement: The unit is seriously bruised or deformed; The unit panel or shell has clearly visible scratches; The fan or motor gets loose.
- For safety reasons, a ceiling-mounted unit must be reliably installed. Be sure to lift the unit as shown in the right figure, or load, unload, and move the unit with a forklift. The mounting point must be firm and strong enough to bear the unit weight and keep the unit horizontal.
- Before wiring, ensure that the voltage, frequency, and phase amplitude of the power supply comply with those of the unit, and that the power voltage deviation does not exceed $\pm 10\%$ of the rated voltage. Before starting the fan, rotate the fan impeller manually in the fan cabinet to check whether there is any metal friction sound. If yes, eliminate the cause. Connect the power supply, start the fan, and check whether the impeller rotates in the right direction. If not, change the phase sequence of the power supply line.
- It is recommended that an air plenum be installed at the air inlet and outlet of the unit, an air flow regulating valve be set on the air pipe, and a fire valve be installed according to fire protection requirements. If an electric air flow regulating valve is installed, the air valve actuator should be opened before the fan, and closed after the fan.



U-shaped water seal installation diagram



Ball-type water seal installation diagram

- Before connecting a water pipe, remember to clean it. Connect pipes according to the cold (hot) water inlet and outlet directions marked on the unit, and be sure to install a valve and filter on the water inlet pipe of the unit to adjust the flow. Cut off the cold (hot) water source during maintenance, and prevent impurities from entering the heat exchanger and causing blockage. The water inlet and outlet pipes must be insulated with heat preservation pipes.
- When connecting a water inlet or outlet pipe, use a pipe wrench to fix the pipe to avoid torsion on the pipe. Use Teflon tape for sealing to avoid water leakage. Connect the condensate water generated in the unit at a certain water seal height, and discharge the water to the sewer with a drain pipe, as shown in the figures above.
- Do not place the weight of air pipes and water pipes on the unit.
- Be sure to ground the unit reliably. Ensure that the electrical circuit is in good condition and meets electrical safety requirements.
- Only professionals who are familiar with this product and understand related local regulations can install the unit. During installation, do not collide into, press or scratch the unit.

Installation Notes

1. Never run the unit where acid, alkali, salt spray and other corrosive gases are present, as it will damage the unit casing, pipeline or electrical components.
2. Keep the surroundings around the unit clean and dry and ensure smooth ventilation for the unit. Clean the air-side heat exchanger periodically (once every 1–2 months) to maintain excellent heat transfer effect and save energy.
3. Install the drainage pipe according to this manual. Ensure smooth drainage. Take thermal insulation measures and prevent generation of condensing water. Make sure to check the drainage pipe before the unit operates. If it is blocked, clear the foreign matter so that condensing water can be discharged smoothly.
4. Check whether wiring of the unit power supply and electrical system is secure, and whether electrical components work abnormally. If an exception occurs, repair or replace electrical components. Regularly check whether the unit is grounded reliably.
5. The minimum starting voltage of the unit must be kept above 90% of the rated voltage, the voltage must be within $\pm 10\%$ of the rated voltage range during operation, and the voltage difference between the phases should be within the range of $\pm 2\%$. An adverse impact will be caused to the unit when the voltage is too high or too low. Make sure that the power supply is stable. Otherwise, when the unit starts, it may generate excessive current, thus damaging the motor.
6. The unit can be maintained and repaired only when the unit is powered off and the power supply is cut off.
7. After the unit is faulty, find out the cause and remove the fault before restarting the unit. Do not restart the unit if the fault is not removed.
8. Never short circuit the protective device of the unit, as it may damage the unit.
9. Protect the internal cables of the unit to prevent the insulation layer from being damaged by sharp objects.
10. The wire and cable should be far away from the heat source. Do not move them frequently, and do not bend or twist them violently.
11. Control cabinet installation and usage:
 - 1) The control cabinet is embedded with AC strong power supply. Therefore, exercise caution during operation.
 - 2) The control line of the unit must be separated from the power cord of power supply to prevent interference.
 - 3) It is necessary to use the power supply that meets requirements. The use of a substandard power supply may damage the control cabinet.
 - 4) Do not place wires in the control cabinet or store long exposed wires inside the control cabinet. After the control cabinet door is repaired, install and reset it timely to prevent rainwater from entering.
 - 5) Be sure to control the running status of the air-conditioning unit through the control cabinet. It is forbidden to insert and remove the power plug to switch on/off the unit. Do not frequently shut down the unit by using the emergency stop switch.
 - 6) Do not use sharp objects when operating the controller's display. Do not impose excessive force, lest the controller panel may be damaged.
 - 7) Do not wipe the surface of the controller's display with solvent or strong chemicals. If there is slight dust, gently clear it with a clean soft cloth or cotton yarn. If the surface is seriously dirtied, use a clean soft cloth or cotton yarn to remove the dirt and then let it air dry.
 - 8) When a control cabinet alarm is reported or displayed, do not repair the cabinet yourself. Dial service hotline of TICA or contact your local service provider.
12. Periodically (recommended twice a month) check the dust accumulation on the filter of the unit. For units equipped with a differential pressure detection device, the user should clean or replace the filter in time when the

final resistance reaches the specified value. TICA recommends that the final resistance value be:

Filtering efficiency specification	Recommended final resistance (Pa)
G3 (primary efficiency)	100-200
G4 (primary efficiency)	150-250
M5-M6 (medium efficiency)	250-300

13. Ensure that the heat exchanger coil fins and copper pipes are free of scratches or distortion. Keep the coil clean and brush the fins of the coil with a nylon brush. A vacuum cleaner must be used for cleaning before brushing. If compressed air is available, use a high pressure air pipe or a spray nozzle to clean the coil. After the coil is cleaned, the outer surface should be free of dust, and the heat exchange effect on the inner surface should reach the originally-designed heat exchange capacity. In addition to cleaning fins, after the coil has been used for 2-3 years, clear the water scale inside. If possible, use softened water to produce cold/hot water for the unit coil.

14. Make sure to check the drainage pipe before the unit operates. If it is blocked, clear the foreign matter so that condensing water can be discharged smoothly.

15. After the unit has operated for one week, readjust tightness of the belt. After that, perform routine check every three months.

16. After the unit has operated for a period of time, the wiring pile head of electric wire will get loose. Check and tighten the wiring pile head in three days after the unit is turned on for the first time.

17. The fan and motor bearings need to be checked regularly (three times per month recommended). Check the motor bearing sealing ring (e.g., V-sealing ring), and replace it when necessary; check whether the installed and connected parts get loose; check the bearing operating status by listening to abnormal noises, detecting vibration, and monitoring the oil consumption or bearing vibration measuring element. In case of any abnormality, stop the unit immediately, and locate and eliminate the cause in time. Take heating measures or use special tools to install, remove or replace bearings. Do not knock or pry bearings.

18. Fan bearing maintenance:

For the fan with an oil injection nozzle, charge lubricating grease that complies with specifications to the bearing regularly.

If the user selects the grease of a brand for charging, the grease of this brand should be always used.

The validity period of lubricating grease depends on the grease type, bearing rotating speed, shaft diameter and operating environment. Normally, the lubricating grease should be replaced after the fan has operated for about 1500 hours; if the fan operates continuously for 24 hours, replace the lubricating grease every 500 to 700 hours of operation.

How to charge lubricating grease: Keep the shaft rotating when charging lubricating grease, stop charging when seeing one layer of fresh grease overflowing, and use a hand to rotate the wind wheel fast to discharge excess grease.

Routine maintenance

TICA recommends the user record the routine operating data of air-conditioning equipment and regularly carry out maintenance.

1. Before using the unit for the first time, check the functioning of the air side equipment and other parts of the water system.
2. (Recommended) Use the following service schedule to maintain the unit:

Item		Monthly	Quarterly	Year	Requirements		
Air-side cabinet	Air inlet section	Check whether the filter is dirty and clogged.	★	★	★	The final resistance of the unit reaches the requirements. (For the alarm values, see the technical manual.)	
		Electronic dust removal filter	☆	☆	★	Check whether the filter is dirty and clogged.	
	Coil section	Cooling coil	☆	☆	★	Check whether the surface is full of dust, oil stain, impurities, etc.	
		Steam coil	☆	☆	★	Check whether the steam gauge pressure of the gas supply pressure is between 0.02 Mpa and 0.4 Mpa. Check whether the steam trap is dirty and clogged.	
		Condensate water drain pan and drainage pipe	☆	☆	☆	Check whether they are dirtied and clogged. Check whether water drainage is smooth.	
		Wet film humidifier	☆	☆	☆	For all types of humidifiers, see the technical instructions.	
	Fan section	Measure the belt tension.	☆	☆	☆	Check for cracks.	
		Inspection of fan and motor bearing	★	★	★	Normally, the lubricating grease should be replaced after the fan has operated for about 1500 hours; if the fan operates continuously for 24 hours, replace the lubricating grease every 500 - 700 hours of operation.	
	Electrical control and electrical	Electrical control cabinet	Fuse	☆	☆	☆	Disconnection
			Contactors	☆	☆	☆	Serious contact electrocorrosion or noise during running.
Sensor			☆	☆	☆	Measured value still varies from the actual value even after calibration.	
High pressure switch			☆	☆	☆	Controller false alarm.	
Check whether the wiring point is loose.			★	★	★	The contactor gets loose or can flexibly rotate when turning the connecting cable.	
Checking power supply			★	★	★	Rated voltage $\pm 10\%$, phase-to-phase unbalance $< 2\%$.	
Checking phase			☆	☆	☆	No phase loss or reverse phase	

Notes: ① ★-----Required maintenance or replacement items;

☆----- Determine the maintenance items according to actual conditions

- ② Daily and monthly inspections should be performed and recorded by the user.
- ③ The replacement of consumable parts and materials is determined by the service life or operation duration of the unit. For units that operate all year around and those for the purpose of process, the operation duration should prevail; for units under normal operation and those for comfort, the service life should prevail.
- ④ It is recommended that the unit should be fully maintained every one year or every 1000 hours of machine operation. For clean units with purification requirements, shorten the maintenance time interval according to the user's cleaning requirements. For units with severe environmental conditions, they should be maintained monthly according to the inspection conditions.

3. The following maintenance methods are recommended when the equipment will not be used for a long term.

When the unit will not be used for a long term or will stop in winter, turn off the power supply, and drain water from the water system and steam coil of the unit.

If necessary, the maintenance methods before the equipment is put into use can be carried out.

Other Notes: During pipe connection, ensure the pressure of the cold water coil and Heating coil is 1.6Mpa.

For all fresh air unit, install a preheater at the fresh air inlet to prevent the inner coil freezing when the fresh air temperature is below 0°C.

When stopping a unit, drain all pipe water, blow out residual water, and add antifreezing solution in the pipe when the coil is at the freezing temperature.

Make sure to reserve sufficient space to facilitate daily maintenance.



An environmental technology process brand

TICA PRO LLC

141014, Russia, Moscow oblast, Mytishchi,
Very Voloshinoy Ulitsa, office 705 and 805

Tel.: +7(495)822-29-00

E-mail: info@tica.ru

www.tica.ru



DISCLAIMER NOTE: Data provided herein are not binding and might change without prior notice.