



LARGE SPACE DEDICATED AIR HANDLING UNIT



TFD-SC



Mission

Persist to maximize the value for customers through innovative technology and provide smart clean environment with green energy in order to improve the quality of life.

Vision

Becoming a world-wide leading system supplier and service provider in the fields of smart clean environment and green energy sources.

About us

Founded in 1991, TICA is a specialized enterprise that integrates R&D, manufacturing, sales, and service. TICA is a national high-tech enterprise, a single leading enterprise and 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.

TICA Climate Solutions focuses on the field of clean air processing in extreme environments and applications of energy-saving building cooling systems. It is a practitioner of China's green development and a global pilot in energy solutions for the whole lifecycle of buildings and industrial environments.

The major products of the Company are widely used in top-level projects such as Bird's Nest, Water Cube, giant aircraft C919, heavy-lift launch vehicle base, and Baihetan hydropower station.

TICA leads its peers in market share in the fields of specialized air processing systems for microelectronics, bio-pharmaceuticals, health care, rail transit, and more.

TICA has achieved a Seasonal Coefficient of Performance (SCOP) of 6.7 in the field of rail transit, improving energy efficiency by 80% compared with the national average, and by 65% compared with the U.S. figure.





Nanjing Base



Guangzhou Base



Tianjin Base



Chengdu Base



Kuala Lumpur Base



SMARTD HQ



Energy Base

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Product Characteristics

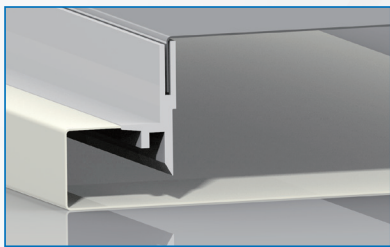
Large space dedicated air-conditioning products are specially developed for large spaces such as industrial plants and logistics warehouses. There are two types: Cold & hot water and direct evaporation. A total of four models are available for cold & hot water type, with air flow range of 4200 – 8500 m³/h, and a total of two standard IDU models for direct evaporation type, both of which can be used with DC inverter ODU. The unit consists of a filter, fan motor, coil and jet nozzle. The unit is equipped with a nylon filter as standard. An oil mist filter is optional for scenarios where oil pollution exists. The return air is designed at standard side and a bottom return air option is available as needed.



Structure of patented cabinet

Straight-jointed double-wall cabinet panels. Innovative cold bridge prevention design such as corner sealing and U-shaped sealing.

*Patent No.: CN217057914U Utility Model



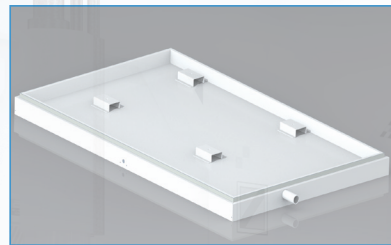
Patented leak-proof drain pan

Integrated foaming drain pan, patented leak-proof design.

The drain pan is treated with electrostatic spraying and anti-corrosion.

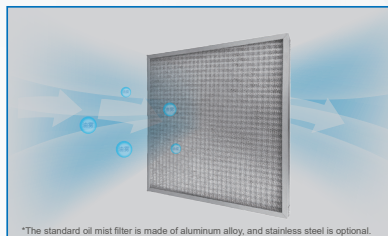
Drainage pipes are run at slope when delivered.

*Patent No.: CN217057921U Utility Model



Oil mist filter

For application scenarios that require oil filtration, customers can choose an oil mist filter. The filter uses a 7-layer diamond wave net structure with low resistance, which can remove oil mist particles efficiently, and can be repeatedly cleaned.



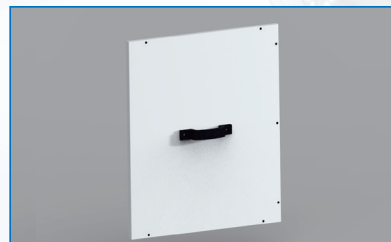
*The standard oil mist filter is made of aluminum alloy, and stainless steel is optional.

Convenient installation and maintenance

The access panel is built with a handle and is designed lightweight.

It can be disassembled and assembled without special tools.

The unit is equipped with side air return as standard, and users can select the bottom air return as needed.





High-efficiency heat exchanger

AHRI certification for heat exchanger and RoHS certification for copper pipe. High-efficiency heat exchange, energy saving and reliability.



Intelligent integrated control

The mechanical & electrical integration control cabinet is optional for cold & hot water type, which enables integrated control of fan motors and water valves. The control system consists of low-voltage apparatuses and temperature controllers from internationally well-known brands.

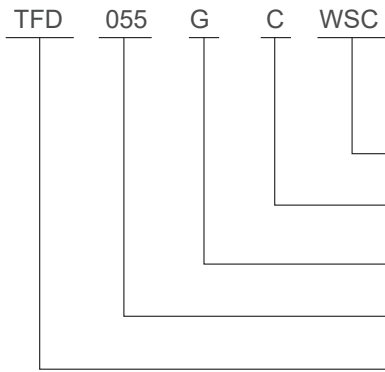
The control cabinet is equipped with multiple protections, such as power supply misphase protection, power supply phase loss protection, and current overload protection, to ensure that the unit operates stably. In addition, the unit reserves diversified external interlocking. The integrated control guarantees comfort indoor temperature while saving energy for the chiller.





Nomenclature

IDU model



Unit type: WSC - Cold & hot water type
DSC - Direct evaporation type

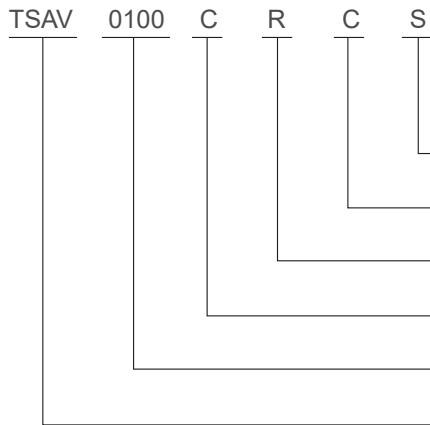
Structure type: C-Ceiling mounted

Design S/N: G.....

Specification code: Air flow specification × 100m³/h

Name code: Large space dedicated air handling unit

ODU model



Product category: S - Dedicated for large space

Sales area: C - China

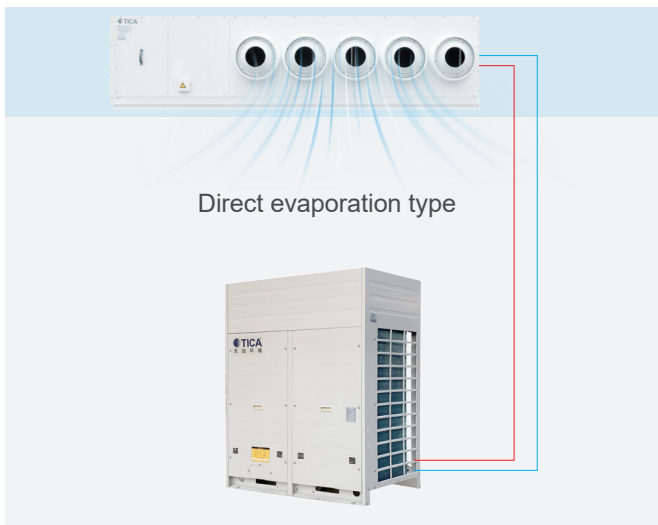
Functional form: R - Heat pump type

Design S/N: C.....

Cooling capacity: 0100-10HP

Name code: Air-cooled inverter air conditioning unit (ODU)

Solution



Specifications

Cold & Hot Water Type

Model		TFD042GCWSC	TFD055GCWSC	TFD074GCWSC	TFD085GCWSC
Air flow	m ³ /h	4200	5500	7400	8500
Rated cooling capacity	kW	42	62	80	84
Rated heating capacity	kW	46	66	84	90
Water flow	L/s	1.8	3.0	3.8	4.2
Water resistance	kPa	33	62	57	78
Power supply	—	380 V 3N~ 50 Hz			
Motor power - Rating	kW-P	1.1-4	1.5-4	2.2-4	3.0-4
Filter	—	Nylon filter (standard)/oil mist filter (optional)			
Dimensions	Length	mm	2360	2860	3460
	Width	mm	1080	1080	1180
	Height	mm	700	780	870
Weight	kg	200	240	320	320
Chilled water pipe diameter	—	DN40	DN40	DN50	DN50
Condensate water pipe diameter	—	DN25	DN25	DN25	DN25

- Notes: 1. Cooling: The inlet dry bulb temperature is 30°C, wet bulb temperature is 24°C, and the inlet/outlet water temperature is 7°C/12°C.
 2. Heating: The dry bulb temperature of inlet air is 18°C, the hot water inlet/outlet temperature is 60/50°C.
 3. The cold & hot water type comes standard without control. If the mechanical & electrical integration control cabinet is needed, please consult TICA.

Direct Evaporation Type

Model	IDU		TFD042GCDSC	TFD085GCDSC	
	ODU		TSAV0100CRCS	TSAV0260CRCS	
Air flow	m ³ /h		4200	8500	
Rated cooling capacity	kW		25.0	73.5	
Rated heating capacity	kW		26.0	81.5	
Power supply	—		380 V 3N~ 50 Hz		
Motor power - Rating	kW-P		1.1-4	3.0-4	
Filter	—		Nylon filter (standard)/oil mist filter (optional)		
Dimensions	Length	mm	2360	3460	
	Width	mm	1080	1180	
	Height	mm	700	870	
Weight	kg		200	320	
Condensate water pipe diameter	—		DN25	DN25	
Compressor type	—		Hermetic DC inverter		
Power supply	—		380 V 3N~ 50 Hz		
Dimensions	Length	mm	985	1500	
	Width	mm	466	860	
	Height	mm	1264	1690	
Weight	kg		125	375	
Noise	dB(A)		63	62	
Input power of the entire unit	Cooling	kW	11	19.4	
	Heating	kW	9	19.2	
Rated current of the entire unit	Cooling	A	17	22	
	Heating	A	15	20	
Refrigerant	Model	—	R410A		
	Charge amount	kg	7.5	14	
Connection pipe	Connection mode		Welding		
	Dimensions	Liquid pipe	Φmm	Φ12.7	Φ15.88
		Gas pipe	Φmm	Φ22.23	Φ28.58

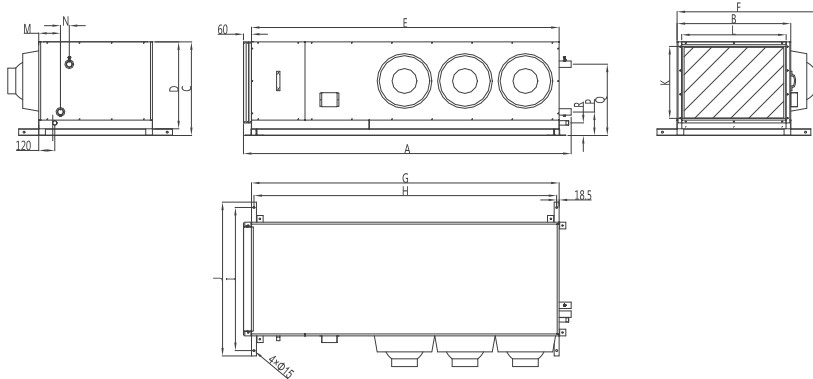
- Notes: 1. Rated operating conditions of cooling capacity: The indoor inlet dry bulb temperature is 30°C, and the wet bulb temperature is 24°C; the outdoor inlet dry bulb temperature is 35°C and the wet bulb temperature is 28°C.
 2. Rated operating conditions of heating capacity: The indoor inlet dry bulb temperature is 18°C; the outdoor inlet dry bulb temperature is 7°C and the wet bulb temperature is 6°C.
 3. If there is a difference between the actual operating conditions and the rated one, please make corrections according to the "Specifications Under Variable Operating Conditions."



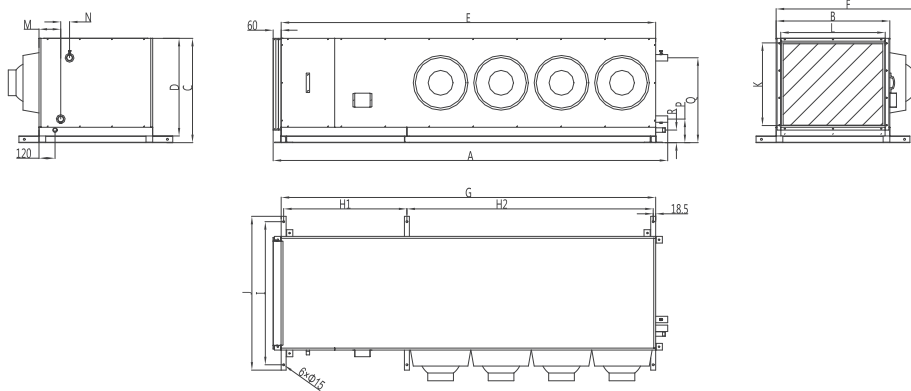
Dimensions

IDU

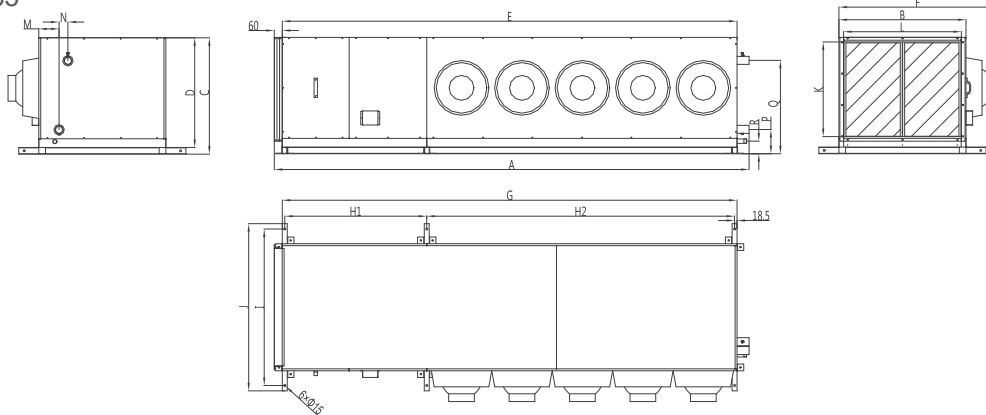
TFD 042



TFD 055



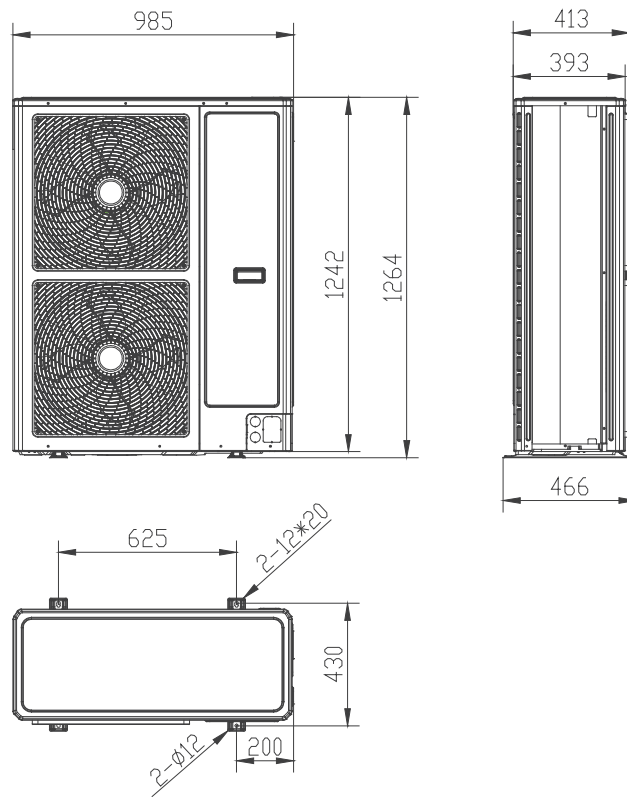
TFD 074/085



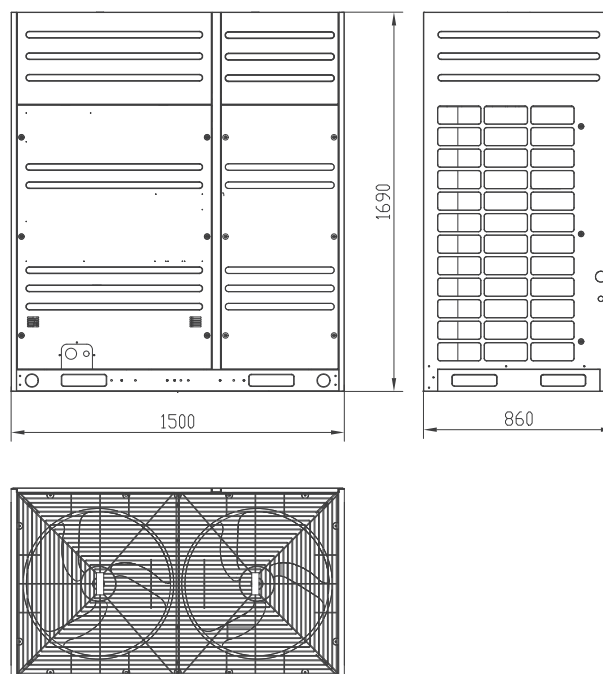
Model	A	B	C	D	E	F	G	H	H1	H2	I	J	K	L	M	N	P	Q	R	Number of nozzles
042	2450	850	700	650	2300	1080	2300	2263	—	—	1070	1150	538	781	162.5	66	175	533	94	3
055	2950	850	780	730	2800	1080	2800	—	921.5	1841.5	1070	1150	618	781	162.5	66	176	635	94	4
074/085	3550	950	870	820	3400	1180	3400	—	1061.5	2301.5	1170	1250	708	881	151.5	66	181	698	94	5

ODU

TSAV0100CRCS



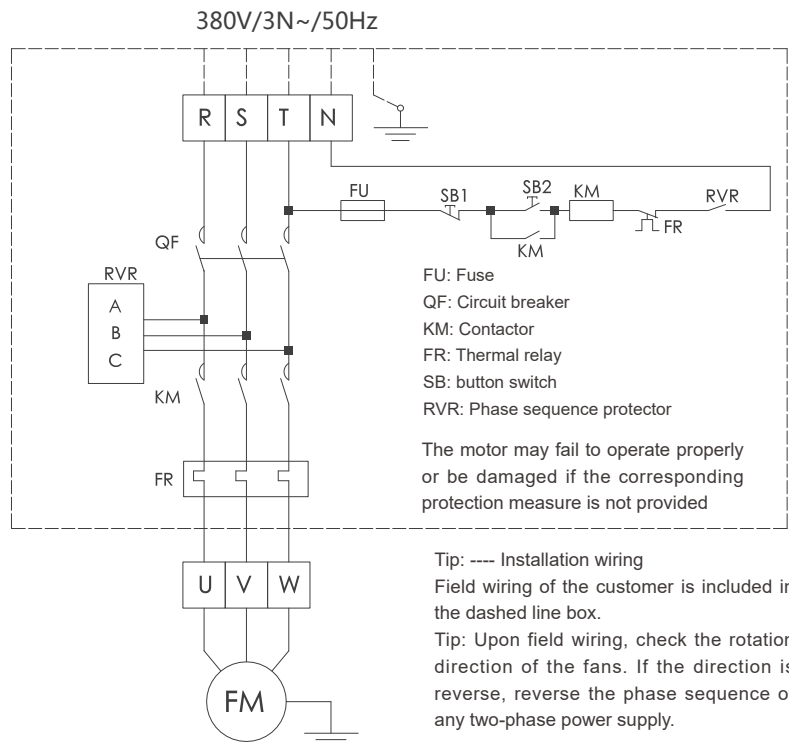
TSAV0260CRCS





Electrical Wiring Diagram

IDU of Cold & Hot Water Type



- Notes: 1. The dashed line indicates user installation wiring, which is not required for a standard unit. The wiring must be tightened.
 2. The wiring 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 (Cold & Hot Water Type)

The control cabinet is installed on the side of the 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 flow.

ODU Wiring Specification

ODU model	Power supply	Voltage range	Circuit breaker (A)	Power wire (recommended)	Length	Earth line	Communication line
TSAV0100CRCS	380 V 3N – 50 Hz	418/342V	30A	6mm ²	≤20m (Determined based on actual requirements)	6mm ²	0.75 – 1.25 mm ² polyethylene shielded twisted pair
TSAV0260CRCS			60A	16mm ²		16mm ²	

Note: The recommended power cord specifications are those of copper core cables with fixed single-core PVC insulated cables laid in the air and used at the ambient temperature of 40°C. Please refer to the power cord specifications of the wire manufacturer if your installation conditions are different or de-rate the unit if it is necessary.

IDU Wiring Specification

ODU model	Power supply	Voltage range	Circuit breaker (A)	Power wire (recommended)	Length	Earth line	Communication line
TFD042GCDSC	380 V 3N~ 50 Hz	418/342V	10	15mm ²	≤20m	15mm ²	0.75 – 1.25 mm ² polyethylene shielded twisted pair
TFD085GCDSC			10	15mm ²	≤20m	15mm ²	

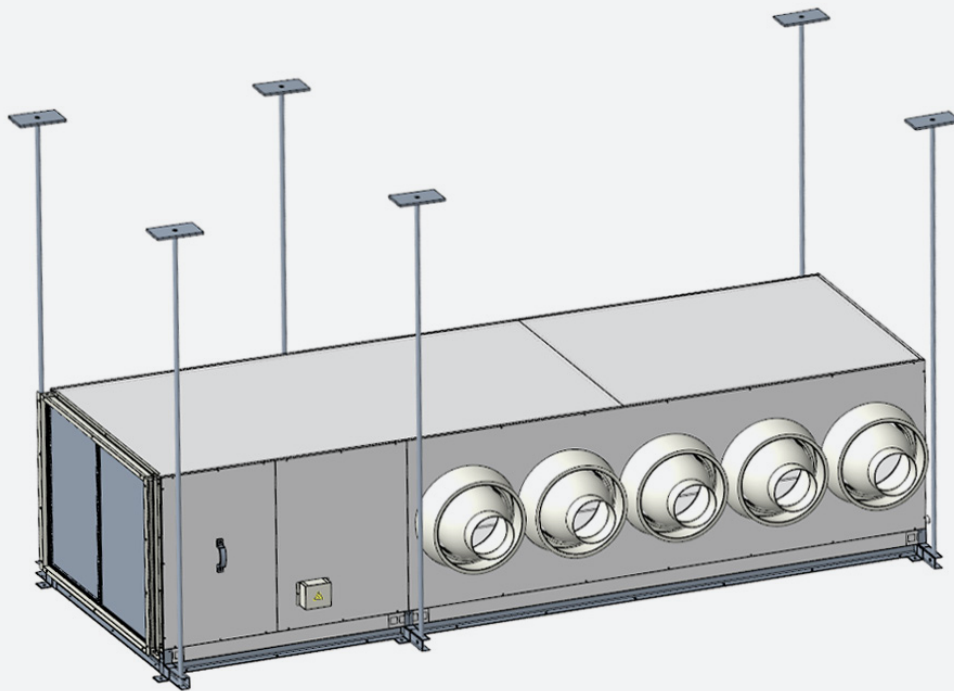
Specifications Under Variable Operating Conditions

Cooling capacity correction coefficient under different operating conditions						
Indoor air inlet temperature (°C)		Outdoor air inlet DB temperature (°C)				
DB temperature	WB temperature	25	30	35	40	43
23	17	0.97	0.93	0.88	0.84	0.81
27	21	1.05	0.99	0.94	0.92	0.87
30	24	1.10	1.06	1.00	0.94	0.90
32	26	1.12	1.10	1.05	0.98	0.92
35	28	1.15	1.13	1.09	1.03	0.96

Heating capacity correction coefficient under different operating conditions							
Indoor air inlet DB temperature (°C)	Outdoor air inlet DB temperature (°C)						
	-15	-12	-7	2/1	7/6	10/8.5	15/13
14	0.56	0.63	0.69	0.89	1.02	1.14	1.26
16	0.54	0.62	0.68	0.88	1.01	1.12	1.25
18	0.53	0.61	0.67	0.87	1.00	1.10	1.24
21	0.52	0.59	0.65	0.85	0.97	1.06	1.22
22	0.52	0.58	0.64	0.83	0.97	1.06	1.21

Installation Requirements

Ceiling installation: Confirm the strength of the selected boom and the load-bearing capacity of the floor or beam before installation on a roof. The air outlet and overhaul side of the unit should be clear of obstructions, and the drainage outlet of the unit should facilitate the discharge of condensed water at a certain slope.

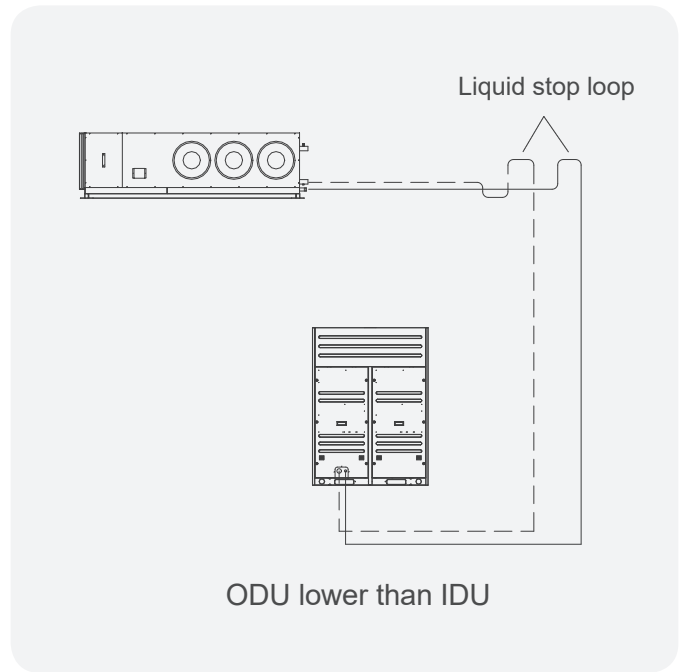
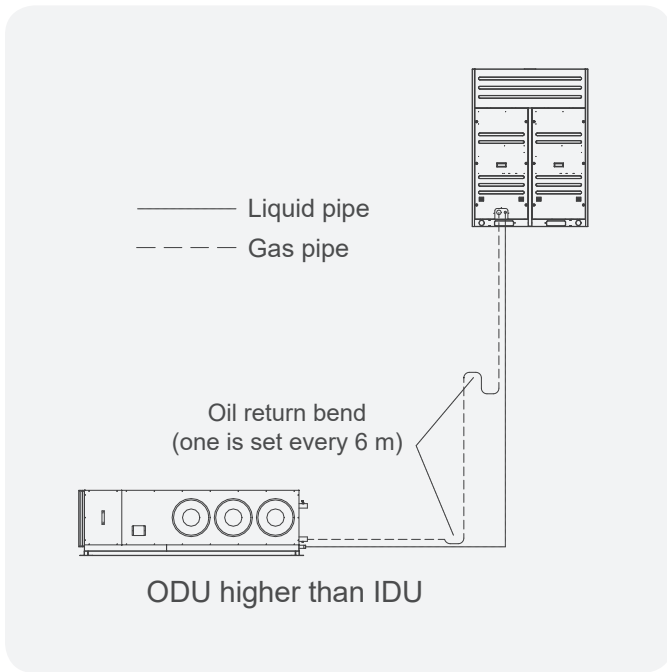


Direct Evaporation Type

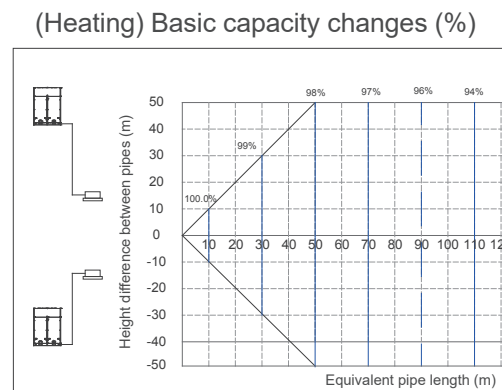
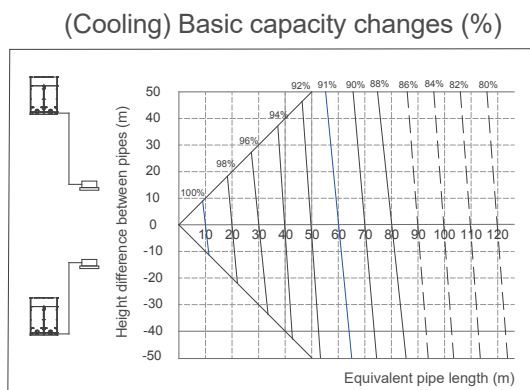
Parameters of IDU and ODU Connecting Pipes

Model		Refrigerant pipeline size		Limit length/height difference of connecting pipe
ODU	IDU	Liquid pipe	Gas pipe	
TSAV0100CRCS	TFD042GCDSC	12.7	22.23	50m/20m
TSAV0260CRCS	TFD085GCDSC	15.88	28.6	100m/30m

Depending on the installation positions of the IDU and ODU, liquid stop loops or oil return bends should be installed on the system (make sure there is an oil return bend every 6 meters of height difference between the IDU and ODU).



Impact on the Cooling Capacity by Pipe Extension



The ODU is installed higher than the IDU if the height difference is at the positive side, and vice versa if it is at the negative side.

Equivalent Lengths of Elbow and Oil Trap

Outer diameter of connection pipe (mm)	9.52	12.7	15.88	19.05	22.23	28.6	31.75	34.925
Elbow (m)	0.2	0.25	0.3	0.35	0.4	0.5	0.65	0.8
Oil trap (m)	1.4	1.8	2	2.4	2.8	3.7	4.8	6



Five-Year Warranty

We offer a free five-year warranty for TICA standard products manufactured and sold by TICA. For things covered and not covered, please refer to the latest warranty policy we published. In the event of malfunctions or spare parts damages during the free warranty period of TICA products caused by product quality issues (excluding appearance, cleanness and other items subject to environment and climate conditions), the purchaser may obtain a free maintenance service or replacement of the parts (except for consumable parts and materials).
 Warranty provider: Local service agency assigned by TICA air conditioning service center
 TICA Hotline: 4008-601-601

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:

Check Item		Monthly	Quarterly	Yearly	Concerns	
Air-side cabinet	Air inlet section	Check whether the filter is dirty and clogged	★	★	★	The final pressure drop 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 1,500 hours. If the fan operates continuously for 24 hours, replace the lubricating grease every 500 to 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 ★----Items that must be maintained or replaced. ☆---- Determine the items to be maintained 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: 1. During pipe connection, ensure the pressure of the cold water coil and hot water coil is 1.6 Mpa.

2. 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.

3. 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.

4. Reserve sufficient space to facilitate daily maintenance.



An environmental technology process brand

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Note: Due to constant improvement and innovation of TICA's products, the product models, specifications and parameters contained in this document are subject to change without prior notice.