AIRSYS
Expert In ICT Cooling

DATACOOL

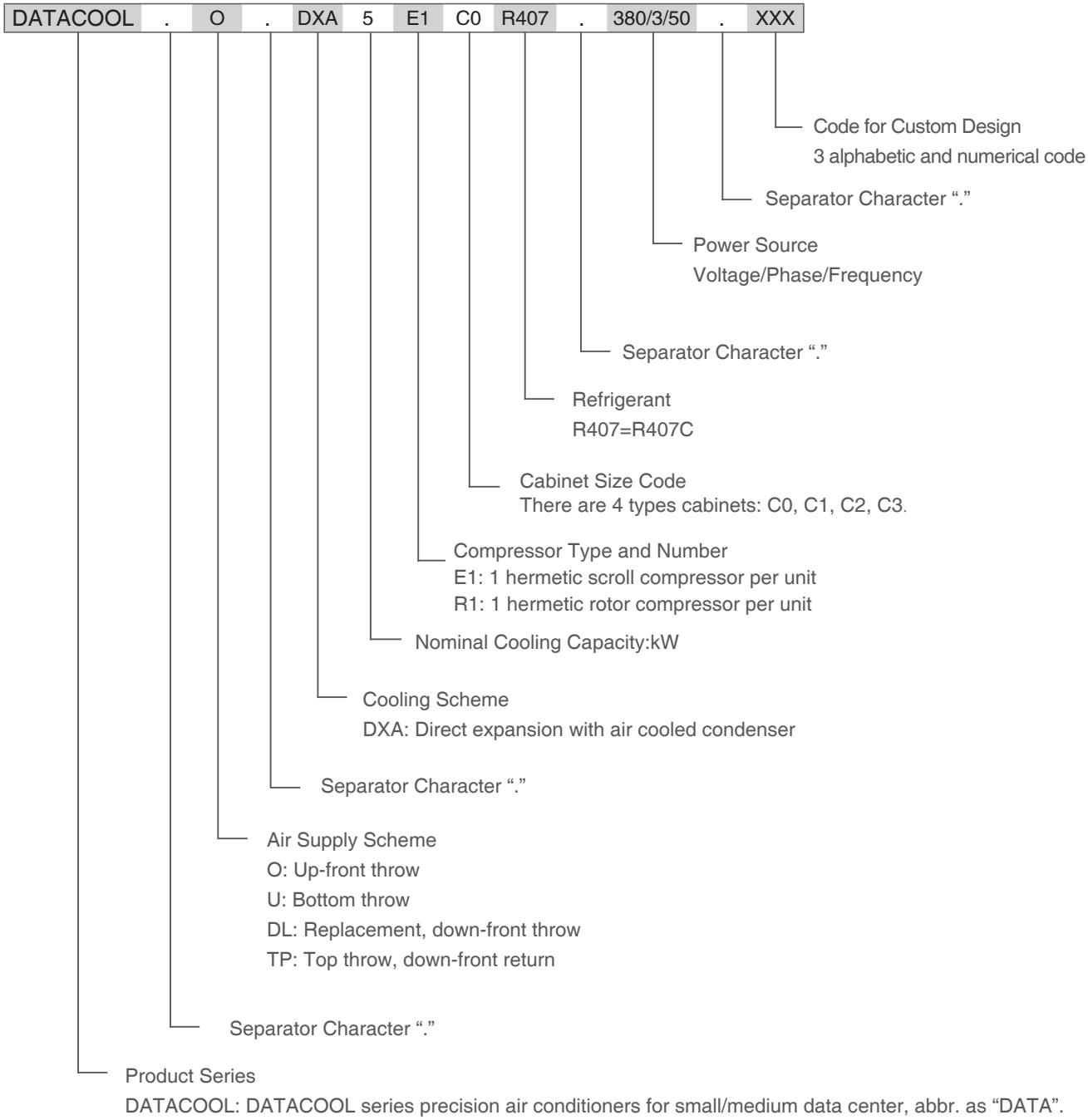
Precision Air Conditioner for Critical Application

Cooling Capacity: 5.0~30.5kW

DATACOOL product series is one of many data center cooling product family members that AIRSYS offers. It is specially designed for data center cooling application. It incorporates various cutting edge-features.

DATACOOL series provides precise humidity, temperature control which is typical of medium/small data centers. The series is designed to work for wide range of -45℃~45℃ and 24x7 operations. The products meet or exceed high efficiency, high reliability requirement typically seen in the marketplace.

Unit Identification



Example: DATACOOL.O.DXA5E1C0. This product name suggests that it is a DATACOOL series, up-front throw air flow, direct evaporative air-cooled with a remote air-cool condenser, nominal cooling capacity of 5kW. This unit has only 1 compressor with cabinet size of C0, charged R407C refrigerant.

Operation Range and Control Accuracy

Operating Range

Ambient Temperature

-15℃~+45℃; it can operate in as low as -40℃ when equipped with low-ambient enhancement option.

Refrigeration tubing horizontal length

The combined gas and liquid length in horizontal no more than 30 meters. (Please consult with the factory or dealer if range is over the limit.)

Refrigeration tubing vertical differences

Outdoor unit above the indoor unit: ≤20 meters

Outdoor unit below the indoor unit: ≤5 meters

(Please consult with the factory or dealer if range is over the limit.)

Control Precision

Temperature range:15℃~35℃; Precision:±1℃;

Relative humidity range: 35%~80%; Precision:±5%.

Application

ICT Applications

Small/Medium MCS

Call Centers or Text Message Process Centers

Micro-wave or Satellite Base Stations

Mobile Telecom-equipment Room

Small/Medium Data Centers or Computer Rooms

Network Operation Centers

UPS and Battery Housing

Hot Spots or Regions within Large Data Centers

CT and MRI Computer/Electronic Rooms

Medical Clinic Facilities

Industry Production or Processing Plants

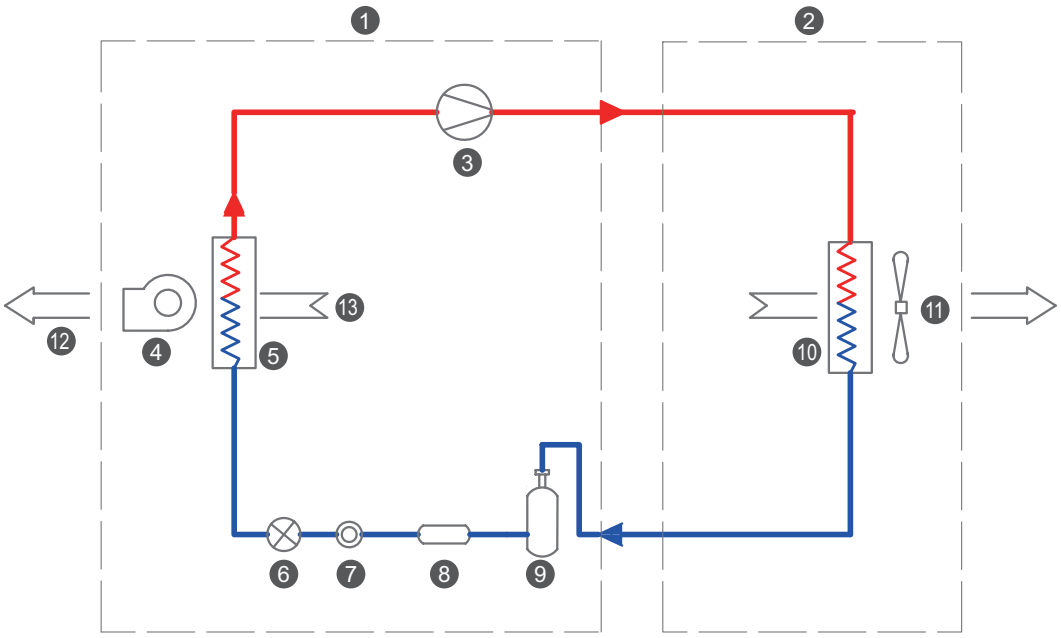
Precision Control Environment or Labs

Standard or Calibration Chambers

Precision Machine Shops

Museum and Records Keeping Environment

System Schematic



1 Indoor
2 Outdoor
3 Compressor
4 Indoor Fan
5 Evaporator
6 Expansion Valve
7 Sight Glass
8 Filter Dryer
9 Receiver
10 Condenser
11 Outdoor Fan
12 Supply Air
13 Return Air

Product Features

High Efficiency

DATACOOL product series was designed with high energy efficiency. The product adopts high-efficiency components (such as compressors and fan motors) and efficient structure design to achieve system EER above 2.9.

Energy-efficient Running Modes

This product series offers two running modes: standard and energy-saving mode. When application requires very accurate Temperature or RH control accuracy, standard mode can be chosen; otherwise energy-saving mode is chosen and can achieve 10% or above energy saving.

Condenser Fan Speed Control

Controlling the condenser fan speed will not only reduce the fan motor's energy but also the whole refrigeration systems.

Efficient Air Distribution

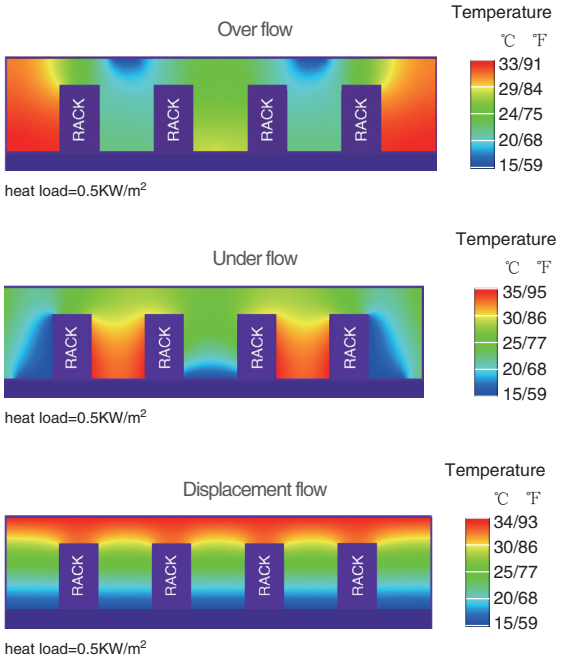
DATACOOL series offers 4 flow patterns: (up-front throw, bottom throw, replacement and top throw). Clients can choose the most suitable to match their data centers.

Up-front throw (return at the lower) mode does not need raised floor, which is the least demanding installation, and widely accepted in small electronic housing. Since hot air tends to go and stay at the top and cold air stays at the bottom, this mode's energy efficiency is lower by 2%~5% comparing with the other 3 modes. See the following charts.

Bottom throw requires raised-up floor. Comparing with up-front throw, it offers easier air distribution of hot passage and cold isle. This distribution results in higher energy saving benefits, also higher infrastructure cost. See the following chart.

Replacement flow allows air temperature and distribution close to its natural tendency as shown below. It reduces cooling capacity loss without hot and cold air mixing and doesn't require raised-up floor. It can achieve higher energy efficiency. Don't put any obstacles in front of the supply ducts, otherwise "air short circuit" may occur.

Top throw standard static pressure at the outlet is 50Pa. it usually apply to the site that need connect air duct, to achieve better temperature distribution and more flexible unit placement.



Filter

DATACOOL series use washable synthetic fiber filters with G4 rating, i.e. It can filter out 80% of 5μ large particles, 20% of 1μ, which should meet conventional data center requirements.

Matching Appearance

DATACOOL series main body frames and base are typically in black, following mainstream industry standards in terms with dimensions and styles.

Compact Structure

It offers compact structure, small foot-print, light weight and easy of moving and handling within confined space.

Reliability

DATACOOL series use only top quality parts and best brands for its compressors, fan motors, expansion valves and controllers to ensure system high availability and reliability.

Unit Systems are designed with three levels of access control to reduce risks by human errors or workmanship.

Units are also configured with various protection measures and alarms to reduce failure probability, such high/low pressure, compressor over-heat, humidifier, heater-over current, fan motor over-drive, high & low-temp protections and filter clogging etc.

Product Configurations

Standard Configuration

Steel frames, base & top powder painted in black

Steel front panel powder painted in black, heat and sound insulated plates

Scroll compressor

Backward curve, centrifugal fan with 3 phase AC powered electronic commuted motor

Copper tube aluminum finned evaporator

Thermal expansion valve

Sight glass

Dry filter

Liquid receiver

Electrode humidifier, 50 Hz unit available with multi-stage humidifier

Stainless steel fin electrical heater, 50 Hz unit available with multiple capacities

G4 air filter

Return air and RH sensor

Pressure switch/protection

Micro-controller system

Phase protection (only available for 3-phase unit)

Continuous control system for condensing pressure

Micro PC control system

Electrical panel for

MCBs of compressor, fan motor, heater, humidifier etc.

Contactors of compressor, fan motor, heater, humidifier etc.

Transformer(s) for auxiliary circuitry and microcontroller

Options

Backward curve, centrifugal fan with 3 phase, EC powered motor

Low-Ambient startup kit for -20℃ or lower

Filter clogging alarm

Supply air temperature sensor

Supply air pressure sensor

Install stands with adjustable legs

Floor water sensor/alarm kit

RS232 communication card

RS485 communication card

Pcoweb communication card

Clock card

Communication protocol converter

Heater/Humidifier Configuration Table(only available for 50Hz unit)

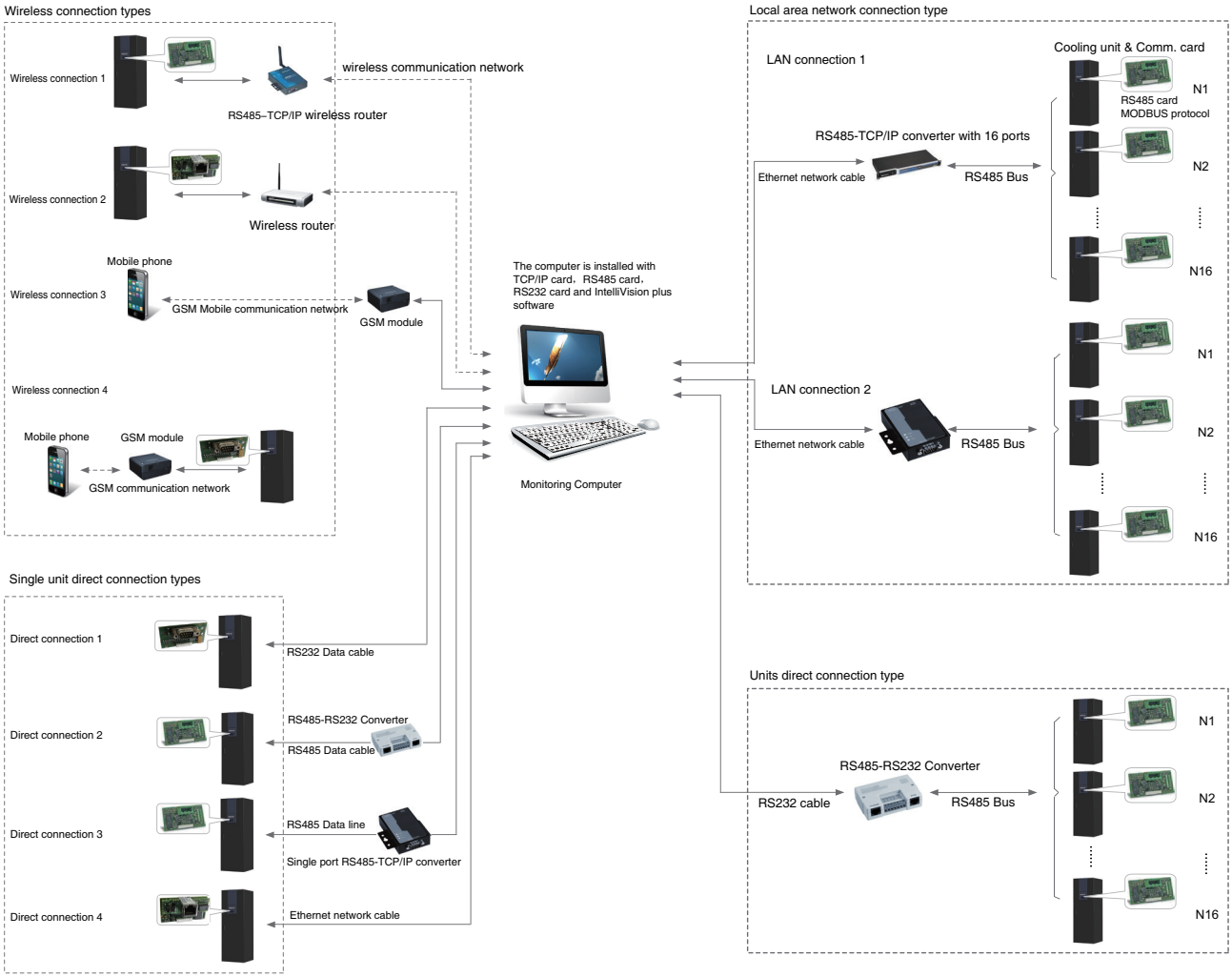
		5E1C0	7E1C0	13E1C0	7E1C1	10E1C1	13E1C1	15E1C2	18E1C2	22E1C3	25E1C3	30E1C3
Heater capacity (kW)	2.3	●	●	—	●	—	—	—	—	—	—	—
	4.5	—	—	●	○	●	●	—	—	—	—	—
	6	—	—	—	—	○	○	●	●	—	—	—
	9	—	—	—	—	—	○	○	○	●	●	●
	12	—	—	—	—	—	—	—	—	○	○	○
	13.5	—	—	—	—	—	—	—	—	○	○	○
Humidifier capacity (kg/h)	3	●	●	●	●	●	●	—	—	—	—	—
	5	—	—	—	—	—	—	●	●	●	—	—
	8	—	—	—	—	—	—	○	○	○	●	●
	10	—	—	—	—	—	—	—	—	○	○	○
	13	—	—	—	—	—	—	—	—	○	○	○
	15	—	—	—	—	—	—	—	—	○	○	○

Note: “●” standard configuration, “○” option available，“—”no option available.

Remote Control and Monitoring Network

The unit can be remote controlled or monitored by many kinds of methods as follows:

- 3 kinds of local direct cable connection
- 3 kinds of LAN network connection
- 4 kinds of wireless network connection



Technical Parameters

380V/3Ph/50Hz

Unit Model		5E1C0	7E1C0	13E1C0	7E1C1	10E1C1	13E1C1	15E1C2	18E1C2	22E1C3	25E1C3	30E1C3
Supply air scheme(1)		O/U/DL/TP										
Cooling capacity												
Total (2)	kW	5.8	7.4	13.2	7.6	10.7	13.6	15.4	18.3	22.2	25.4	30.2
Sensible (2)	kW	5.2	6.6	11.7	6.9	9.8	12.5	14.2	16.8	20.4	23.4	27.8
Total (3)	kW	6.1	7.6	13.4	8.1	11.5	14.2	16.0	18.7	22.6	25.9	30.6
Sensible (3)	kW	5.5	6.8	12.1	7.8	10.8	13.3	15.0	17.4	21.0	24.1	28.5
Compressor												
Type		Rotor	Hermetic scroll									
Power input(2)	kW	1.6	1.9	3.6	1.9	2.7	3.5	3.7	4.6	5.2	5.9	6.9
Current (2)	A	7.2	3.6	6.1	3.4	4.9	5.6	6.5	8.0	9.7	11.2	12.7
Power input (3)	kW	1.7	2.0	3.7	1.9	2.9	3.6	3.8	4.8	5.3	6.0	7.1
Current (3)	A	7.4	3.8	6.3	3.5	5.1	5.7	6.7	8.2	9.9	11.5	12.9
Fan												
Qty. of fan	n.	1	1	1	1	1	1	1	1	2	2	2
Air volume	m^3/h	1650	1650	2630	2450	2450	2950	3450	3450	5100	6500	6500
External Static pressure(ESP)	Pa	0	0	0	30	30	30	30	30	50	50	50
Power input	kW	0.35	0.35	0.6	0.4	0.4	0.5	0.5	0.5	0.8	1.2	1.2
Current	A	1.7	1.7	2.7	0.6	0.6	0.9	0.9	0.9	1.3	2.1	2.1
Heater (4)												
Type		Finned stainless tube										
Heating capacity	kW	2.3	2.3	4.5	2.3	4.5	4.5	6.0	6.0	9.0	9.0	9.0
Working steps	n.	1	1	1	1	1	1	2	2	2	2	2
Humidifier (4)												
Type		Electrode										
Capacity	kg/h	3	3	3	3	3	3	5	5	5	8	8
Power input	kW	2.3	2.3	2.3	2.3	2.3	2.3	3.8	3.8	3.8	6.0	6.0
OD Model*Qty		CMD3x1	CMD4×1	CMD5×1	CMD4×1	CMD4×1	CMD5×1	CME5×1	CME8×1	CME8×1	CME10×1	CME10×1
Power supply												
Power source		380V/3Ph/50Hz										
Unit max. operating power input (5)	kW	4.9	5.0	9.7	5.3	8.5	9.7	11.8	12.9	16.9	18.2	19.5
Unit max. operating current input (5)	A	15.6	10.5	18.0	9.8	15.0	16.4	21.1	23.0	30.0	32.7	34.6
Unit piping connection												
Condensing water drainage Φ	in	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″
Humidifier water supply Φ	in	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″
Ref. connecting type		Bell mouth thread connection						Welding connection				
Refrigerant gas Φ	in	5/8″	5/8″	5/8″	5/8″	5/8″	5/8″	3/4″	3/4″	3/4″	7/8″	7/8″
Refrigerant liquid Φ	in	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	5/8″	5/8″
Unit external dimensions and Weight												
Length	mm	650	650	650	650	650	650	900	900	1300	1300	1300
Width	mm	580	580	580	650	650	650	750	750	750	750	750
Height	mm	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910
Weight	kg	120	135	155	142	165	180	255	290	370	460	490

(1) O: Up-front Throw (supplier coming out of up-front louver); D: Bottom Throw; DL: Replacement; TP: Top Throw;

(2) Return air temperature dry bulb 24℃, humidity at 50%, outdoor dry bulb temperature 35℃;

(3) Return air temperature dry bulb 28℃, humidity at 40%, outdoor dry bulb temperature 35℃;

(4) In this table, only showing the default heater/humidifier default capacities; please refer to “Heater/humidifier Configuration Table” for other options available for each model if you need;

(5) Max operating power and current: parameters are derived for in the extreme condition when ambient temperature at 45℃ and unit’s electrical heater running at its full capacity to de-humidify.

Technical Parameters

208~230V/3Ph/60Hz

Unit Model		7E1C0	10E1C0	13E1C0	15E1C2	18E1C2	22E1C3	25E1C3	28E1C3
Supply air scheme(1)					O/U/DL/TP				
Power source					208~230V/3Ph/60Hz				
Cooling capacity									
Total (2)	kW	7.6	10.2	13.2	15.6	18.4	23.6	26	30.5
Sensible (2)	kW	6.9	9.2	11.9	14.0	16.6	21.2	23.4	26.5
Compressor									
Type					Hermetic scroll				
Power input	kW	1.9	2.5	3.1	3.8	4.4	5.5	5.9	7.1
Current	A	6.5	7.7	9.5	11.9	14.2	16.6	19.5	22.8
Fan									
Qty. of fan	n.	1	1	1	1	1	2	2	2
Air volume	m^3/h	1650	2500	2630	4050	4050	5600	7300	7300
External Static pressure(ESP)	Pa	0	0	0	30	30	50	50	50
Power input	kW	0.4	0.6	0.6	1.2	1.2	1.5	2.0	2.0
Current	A	1.3	2.1	2.1	4.2	4.2	4.9	7.1	7.1
Heater									
Type					Finned stainless tube				
Heating capacity	kW	2.3	4.5	4.5	6.0	6.0	9.0	9.0	9.0
Working steps	n.	1	1	1	2	2	2	2	2
Humidifier									
Type					Electrode				
Capacity	kg/h	3	3	3	5	5	5	8	8
Power input	kW	2.3	2.3	2.3	3.8	3.8	3.8	6.0	6.0
OD Model*Qty		CMD4*1	CMD4*1	CMD5*1	CME5*1	CME8*1	CME8*1	CME10*1	CME10*1
Unit piping connection									
Condensing water drainage Φ	in	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″
Humidifier water supply Φ	in	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″
Ref. connecting type		Bell mouth thread connection			Welding connection				
Refrigerant gas Φ	in	5/8″	5/8″	5/8″	5/8″	7/8″	7/8″	7/8″	7/8″
Refrigerant liquid Φ	in	1/2″	1/2″	1/2″	1/2″	5/8″	5/8″	5/8″	5/8″
Unit external dimensions and Weight									
Length	mm	650	650	650	900	900	1300	1300	1300
Width	mm	580	580	580	750	750	750	750	750
Height	mm	1910	1910	1910	1910	1910	1910	1910	1910
Weight	kg	135	142	155	255	290	370	460	490

(1) O: Up-front Throw (supplier coming out of up-front louver); D: Bottom Throw; DL: Replacement; TP: Top Throw;

(2) Return air temperature dry bulb 26.7℃, humidity at 50%, condensing temperature 47℃.

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Technical Parameters

208~230V/1Ph/60Hz

Unit Model		5R1C0	5E1C0	7E1C0	10E1C0	13E1C0
Supply air scheme(1)				O/U/DL/TP		
Power source				208~230V/1Ph/60Hz		
Cooling capacity						
Total (2)	kW	5.4	5.6	7.6	10.2	13.2
Sensible (2)	kW	5.0	5.0	6.9	9.2	11.9
Compressor						
Type		Rotor		Hermetic scroll		
Power input	kW	1.6	1.5	1.9	2.5	3.1
Current	A	6.9	6.4	8.5	11.1	14.9
Fan						
Qty. of fan	n.	1	1	1	1	1
Air volume	m^3/h	1650	1650	1650	2500	2630
External Static pressure(ESP)	Pa	0	0	0	0	0
Power input	kW	0.35	0.35	0.35	0.55	0.55
Current	A	1.7	1.7	1.7	2.7	2.7
Heater						
Type				Finned stainless tube		
Heating capacity	kW	2.3	2.3	2.3	4.5	4.5
Working steps	n.	1	1	1	1	1
Humidifier						
Type				Electrode		
Capacity	kg/h	3	3	3	3	3
Power input	kW	2.3	2.3	2.3	2.3	2.3
OD Model*Qty		CMD3*1	CMD3*1	CMD4*1	CMD4*1	CMD5*1
Unit piping connection						
Condensing water drainage Φ	in	3/4″	3/4″	3/4″	3/4″	3/4″
Humidifier water supply Φ	in	1/2″	1/2″	1/2″	1/2″	1/2″
Ref. connecting type				Bell mouth thread connection		
Refrigerant gas Φ	in	5/8″	5/8″	5/8″	5/8″	5/8″
Refrigerant liquid Φ	in	1/2″	1/2″	1/2″	1/2″	1/2″
Unit external dimensions and Weight						
Length	mm	650	650	650	650	650
Width	mm	580	580	580	580	580
Height	mm	1910	1910	1910	1910	1910
Weight	kg	120	120	135	142	155

(1) O: Up-front Throw (supplier coming out of up-front louver); D: Bottom Throw; DL: Replacement; TP: Top Throw;

(2) Return air temperature dry bulb 26.7℃, humidity at 50%, condensing temperature 47℃.

Technical Parameters

380V/3Ph/60Hz

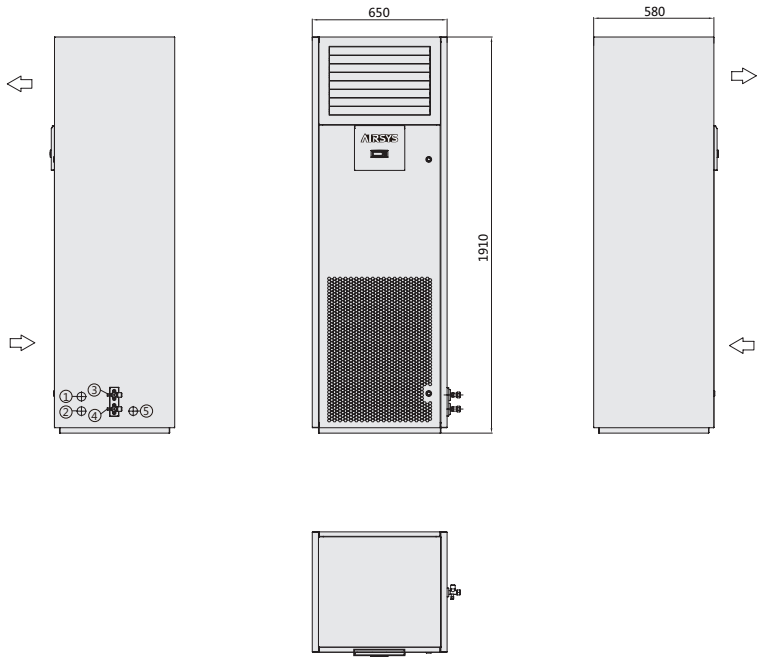
Unit Model		10E1C0	13E1C0	15E1C2	18E1C2	22E1C3	25E1C3	28E1C3
Supply air scheme(1)					O/U/DL/TP			
Power source					380V/3Ph/60Hz			
Cooling capacity								
Total (2)	kW	10.2	13.2	15.6	18.4	23.6	26	30.5
Sensible (2)	kW	9.2	11.9	14.0	16.6	21.2	23.4	26.5
Compressor								
Type					Hermetic scroll			
Power input	kW	2.5	3.1	3.5	4.4	5.5	5.9	7.1
Current	A	4.2	6.0	6.6	8.6	10.2	12.1	13.8
Fan								
Qty. of fan	n.	1	1	1	1	2	2	2
Air volume	m^3/h	2500	2630	4050	4050	5600	7300	7300
External Static pressure(ESP)	Pa	0	0	30	30	50	50	50
Power input	kW	0.55	0.55	1.2	1.2	1.5	2.0	2.0
Current	A	2.7	2.7	2.9	2.9	3.5	4.8	4.8
Heater								
Type					Finned stainless tube			
Heating capacity	kW	4.5	4.5	6.0	6.0	9.0	9.0	9.0
Working steps	n.	1	1	2	2	2	2	2
Humidifier								
Type					Electrode			
Capacity	kg/h	3	3	5	5	5	8	8
Power input	kW	3.5	3.5	5.8	5.8	5.8	9.1	9.1
OD Model*Qty		CMD4*1	CMD5*1	CME5*1	CME8*1	CME8*1	CME10*1	CME10*1
Unit piping connection								
Condensing water drainage Φ	in	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″	3/4″
Humidifier water supply Φ	in	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″	1/2″
Ref. connecting type		Bell mouth thread connection		Welding connection				
Refrigerant gas Φ	in	5/8″	5/8″	5/8″	7/8″	7/8″	7/8″	7/8″
Refrigerant liquid Φ	in	1/2″	1/2″	1/2″	5/8″	5/8″	5/8″	5/8″
Unit external dimensions and Weight								
Length	mm	650	650	900	900	1300	1300	1300
Width	mm	580	580	750	750	750	750	750
Height	mm	1910	1910	1910	1910	1910	1910	1910
Weight	kg	142	155	255	290	370	460	490

(1) O: Up-front Throw (supplier coming out of up-front louver); D: Bottom Throw; DL: Replacement; TP: Top Throw;

(2) Return air temperature dry bulb 26.7℃, humidity at 50%, condensing temperature 47℃.

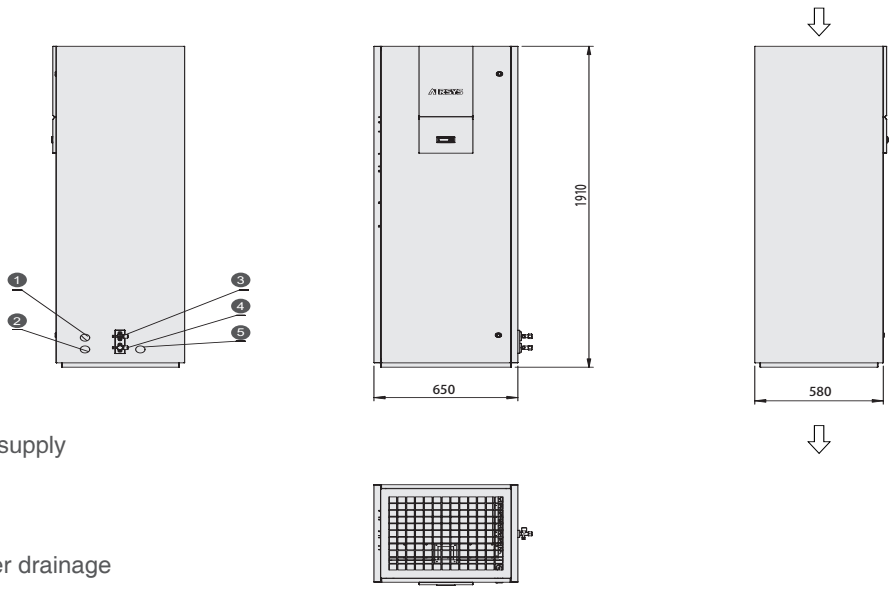
Unit Dimension Drawing

C0 Up-front throw (air) unit dimension drawing



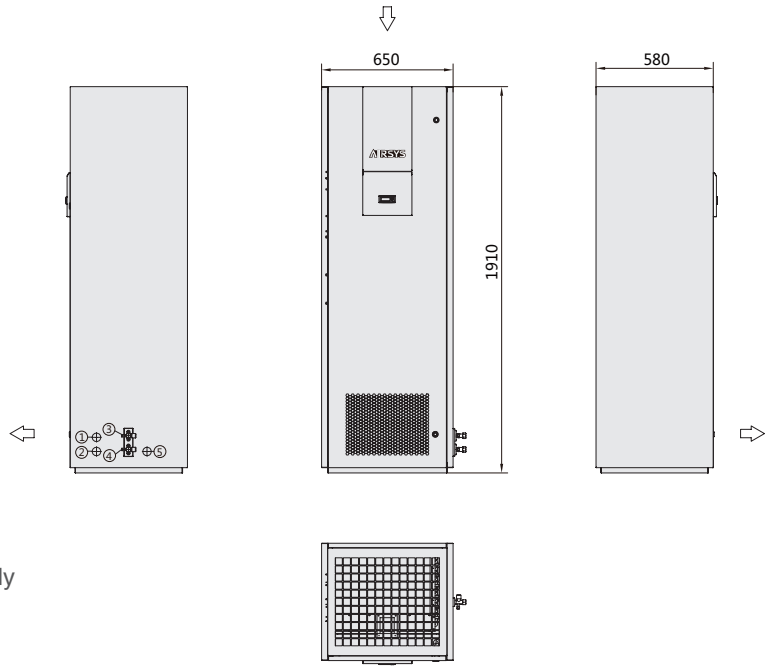
1. Cable holes
2. Humidifier water supply
3. Liquid pipe
4. Gas pipe
5. Condensing water drainage

C0 Bottom throw (air) unit dimension drawing



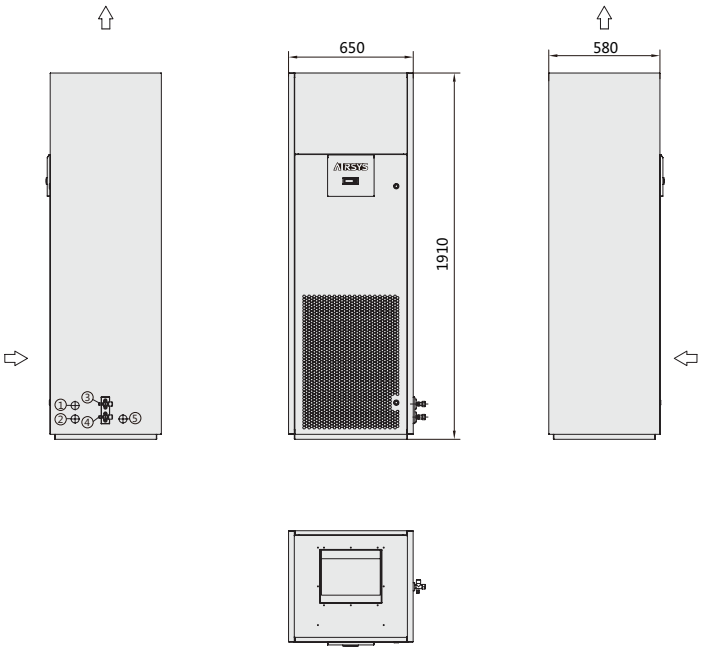
1. Cable holes
2. Humidifier water supply
3. Liquid pipe
4. Gas pipe
5. Condensing water drainage

C0 Replacement (air) unit dimension drawing



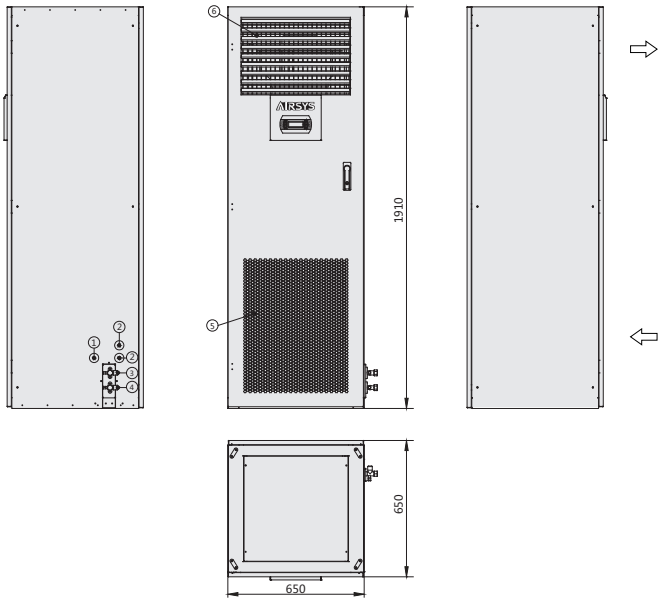
1. Cable holes
2. Humidifier water supply
3. Liquid pipe
4. Gas pipe
5. Condensing water drainage

C0 Top throw (air) unit dimensions



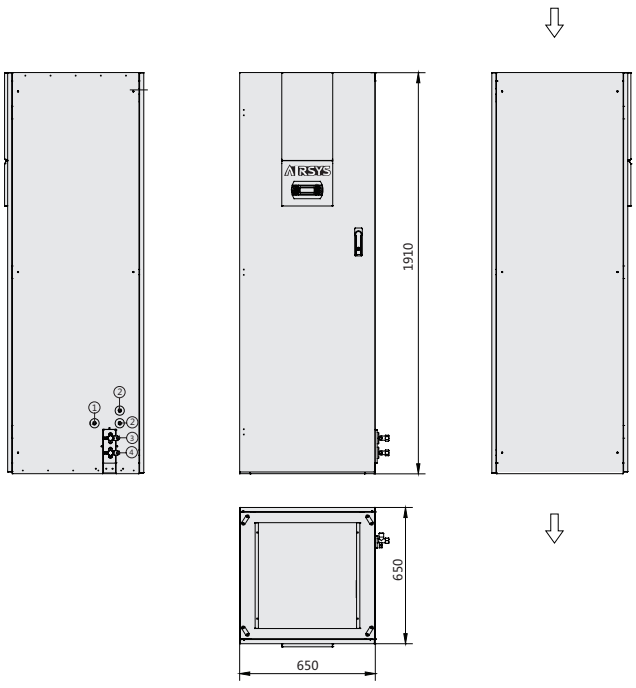
1. Cable holes
2. Humidifier water supply
3. Liquid pipe
4. Gas pipe
5. Condensing water drainage

C1 Up-front throw (air) unit dimension drawing



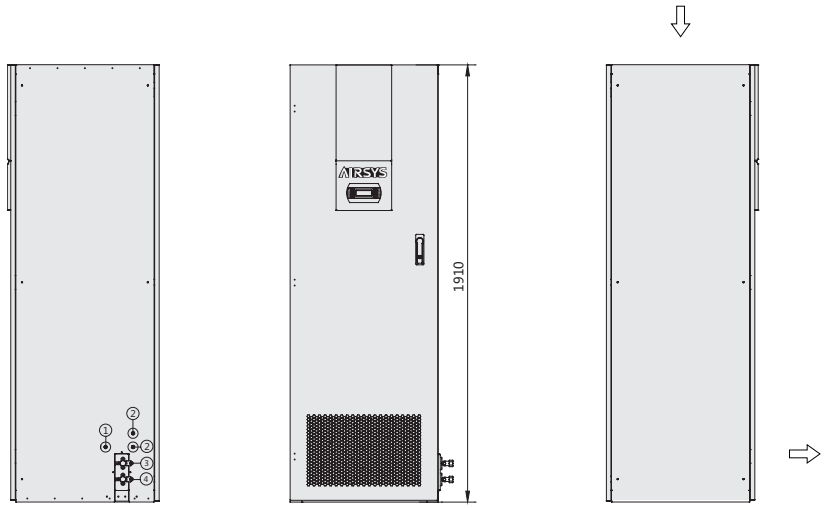
1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe
5. Return air intake
6. Supply air outlet

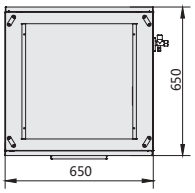
C1 Bottom throw (air) unit dimension drawing



1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe

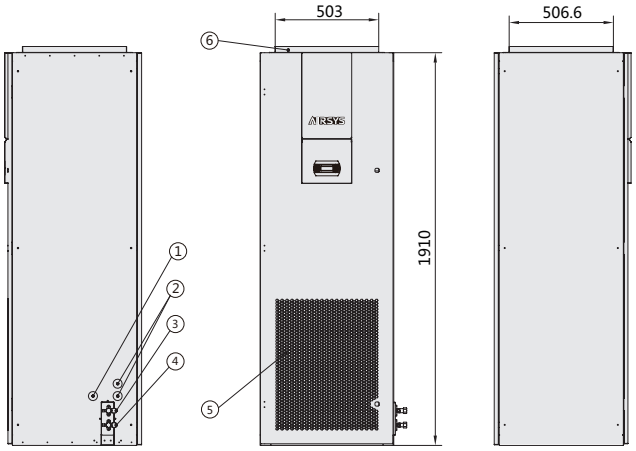
C1 Replacement (air) unit dimension drawing

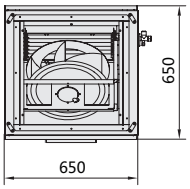




1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe

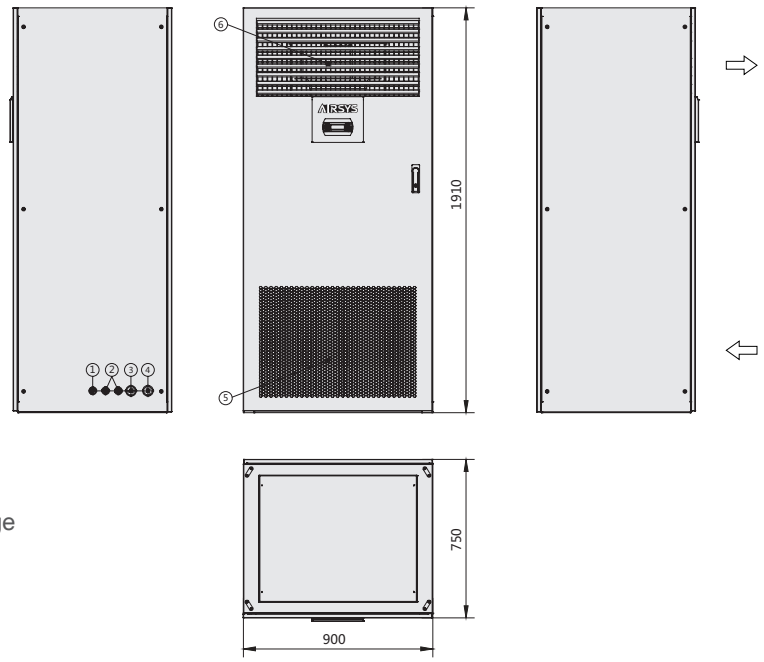
C1 Top throw (air) unit dimensions





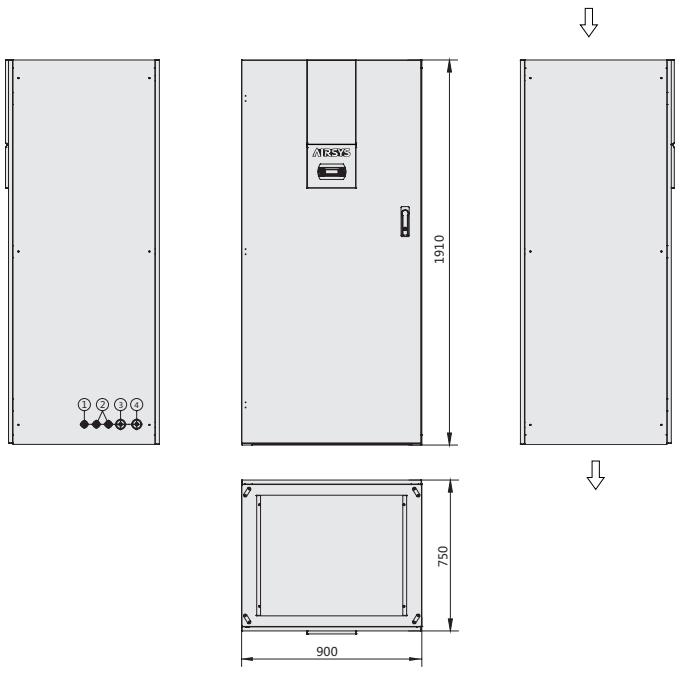
1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe
5. Return air intake
6. Supply air outlet

C2 Up-front throw (air) unit dimension drawing



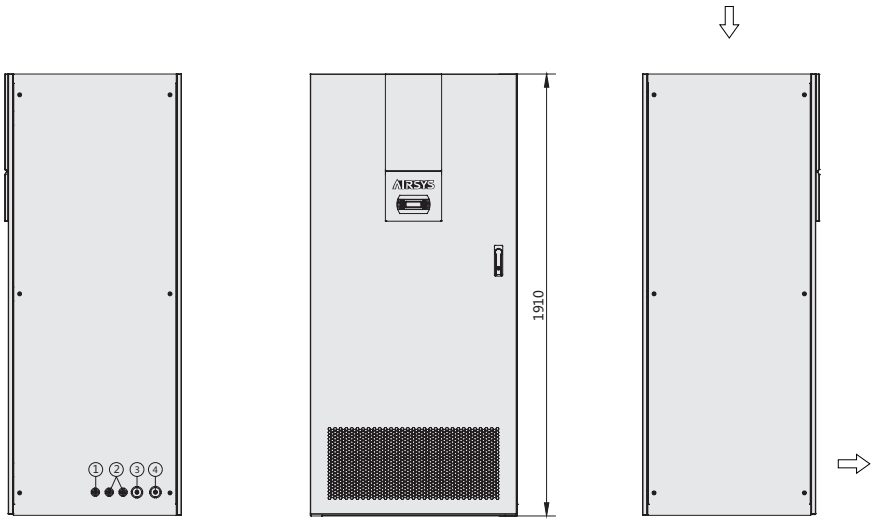
1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe
5. Return air intake
6. Supply air outlet

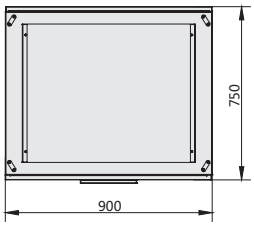
C2 Bottom throw (air) unit dimension drawing



1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe

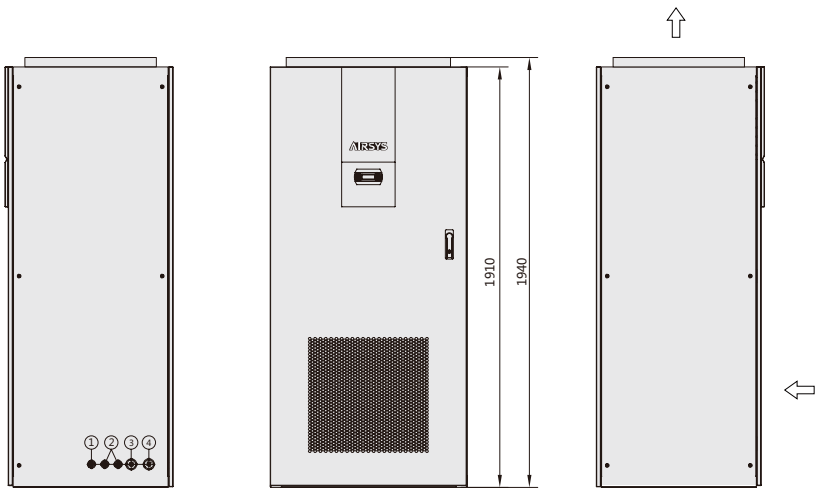
C2 Replacement (air) unit dimension drawing

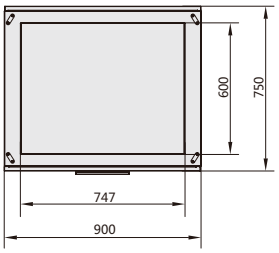




1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe

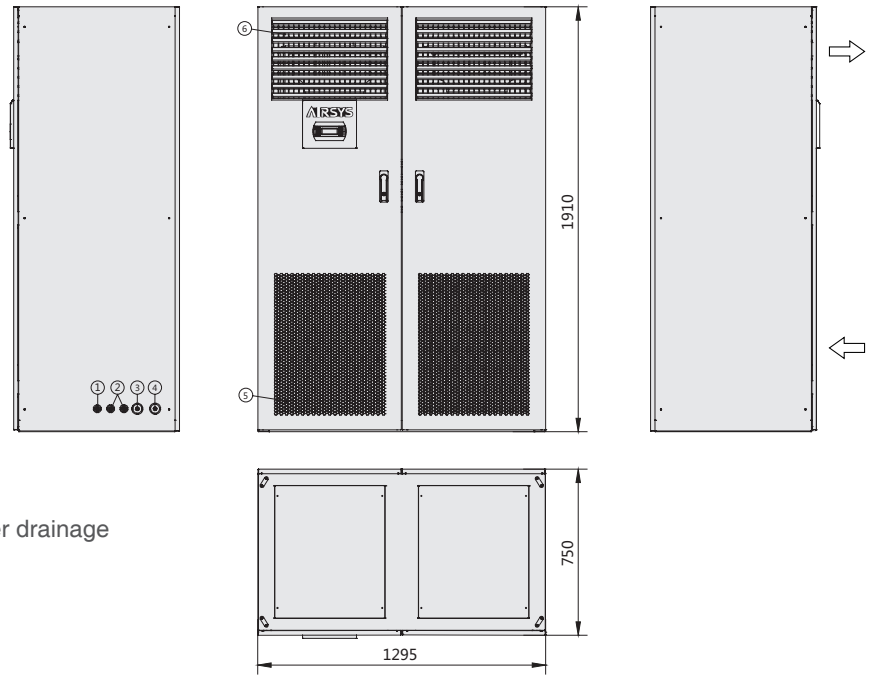
C2 Top throw (air) unit dimensions





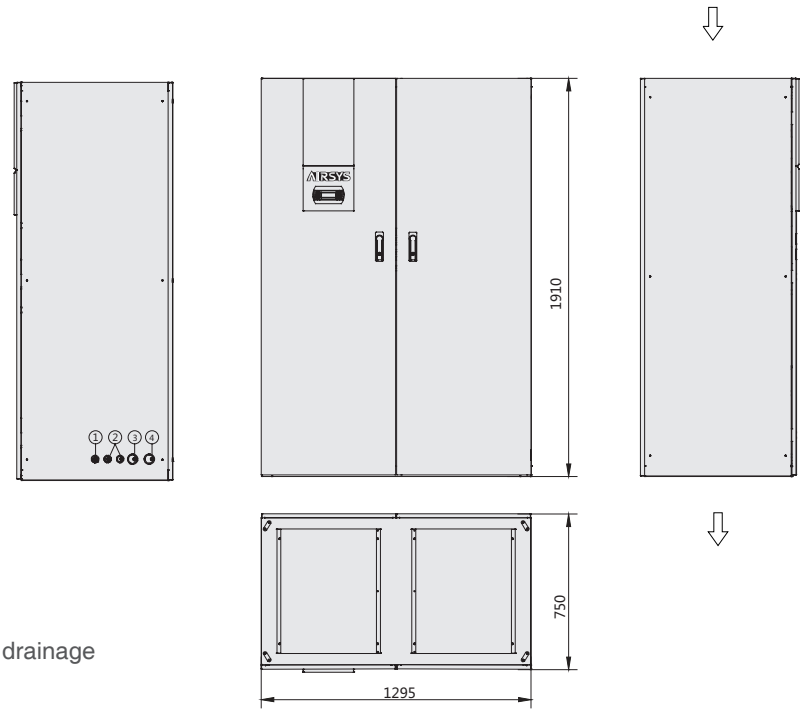
1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe

C3 Up-front throw (air) unit dimension drawing



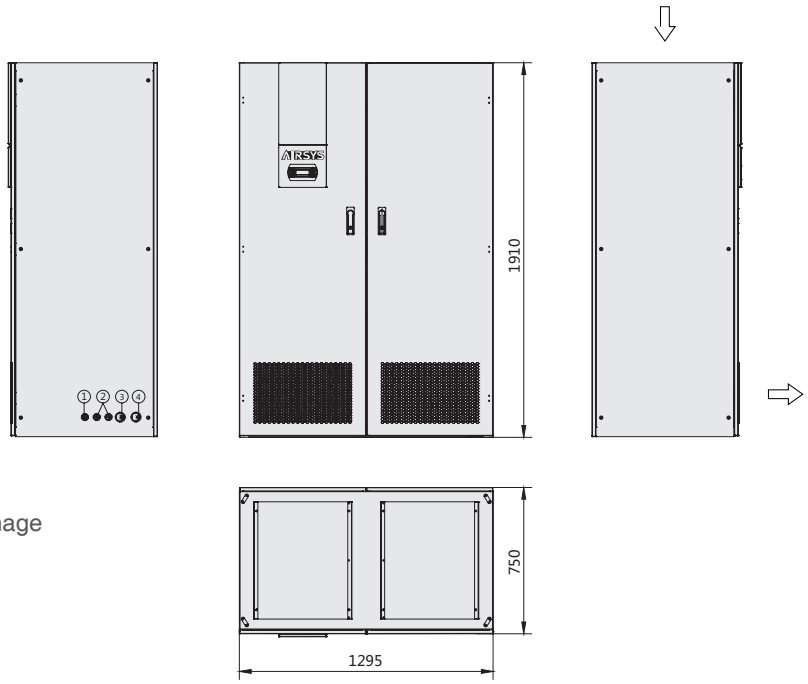
1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe
5. Return air intake
6. Supply air outlet

C3 Bottom throw (air) unit dimension drawing



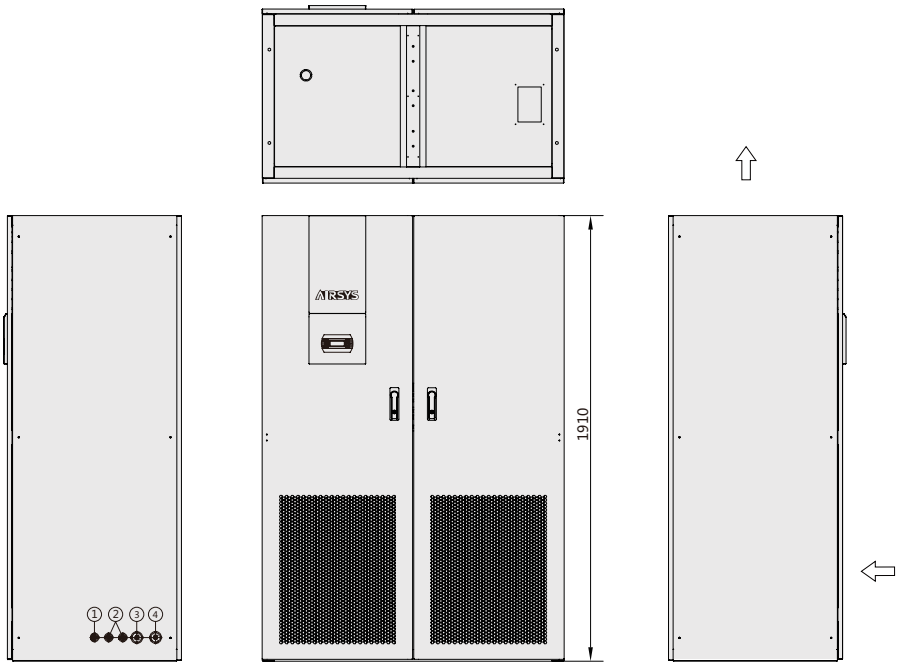
1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe

C3 Replacement (air) unit dimension drawing



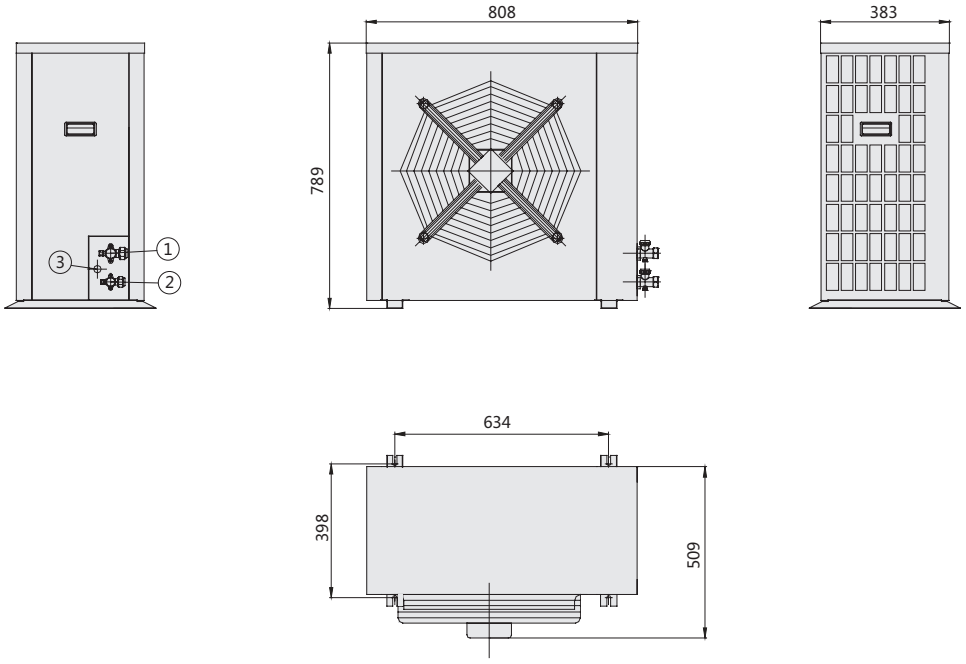
1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe

C3 Top throw (air) unit dimension drawing



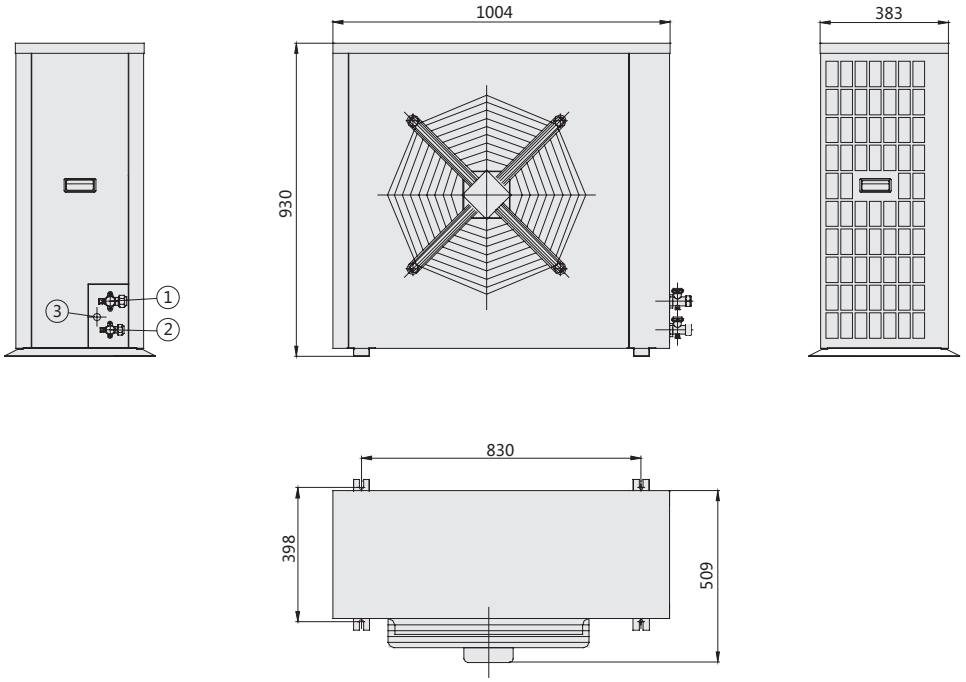
1. Condensing water drainage
2. Cable holes
3. Gas pipe
4. Liquid pipe

CMD3/CMD4 dimension drawing



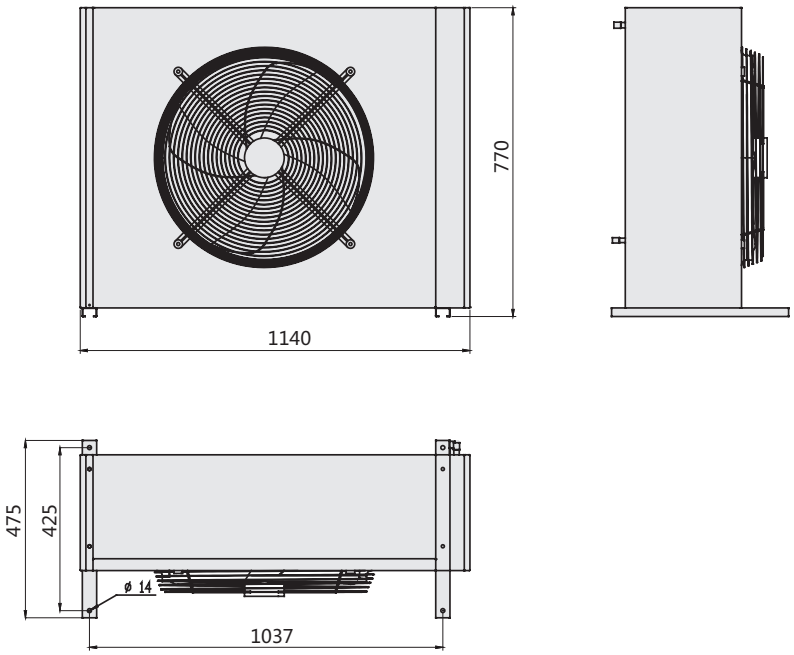
1 Gas pipe
2 Liquid pipe
3 Cable holes

CMD5 dimension drawing

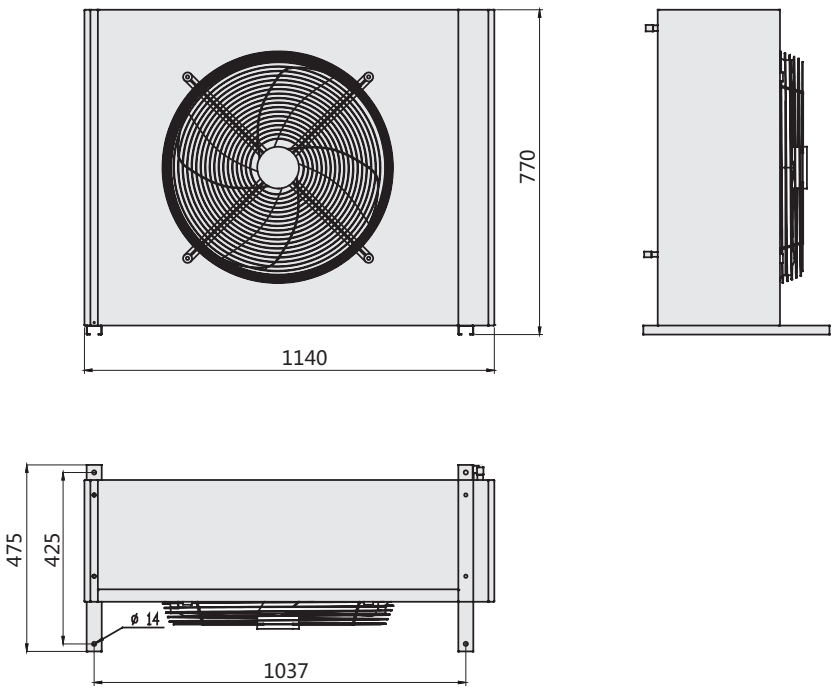


1 Gas pipe
2 Liquid pipe
3 Cable holes

CME5 Dimension drawing



CME8 / CME10 dimensions



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