AIRSYS

FREECOOL-HD

Intelligent Control Free Cooling Unit

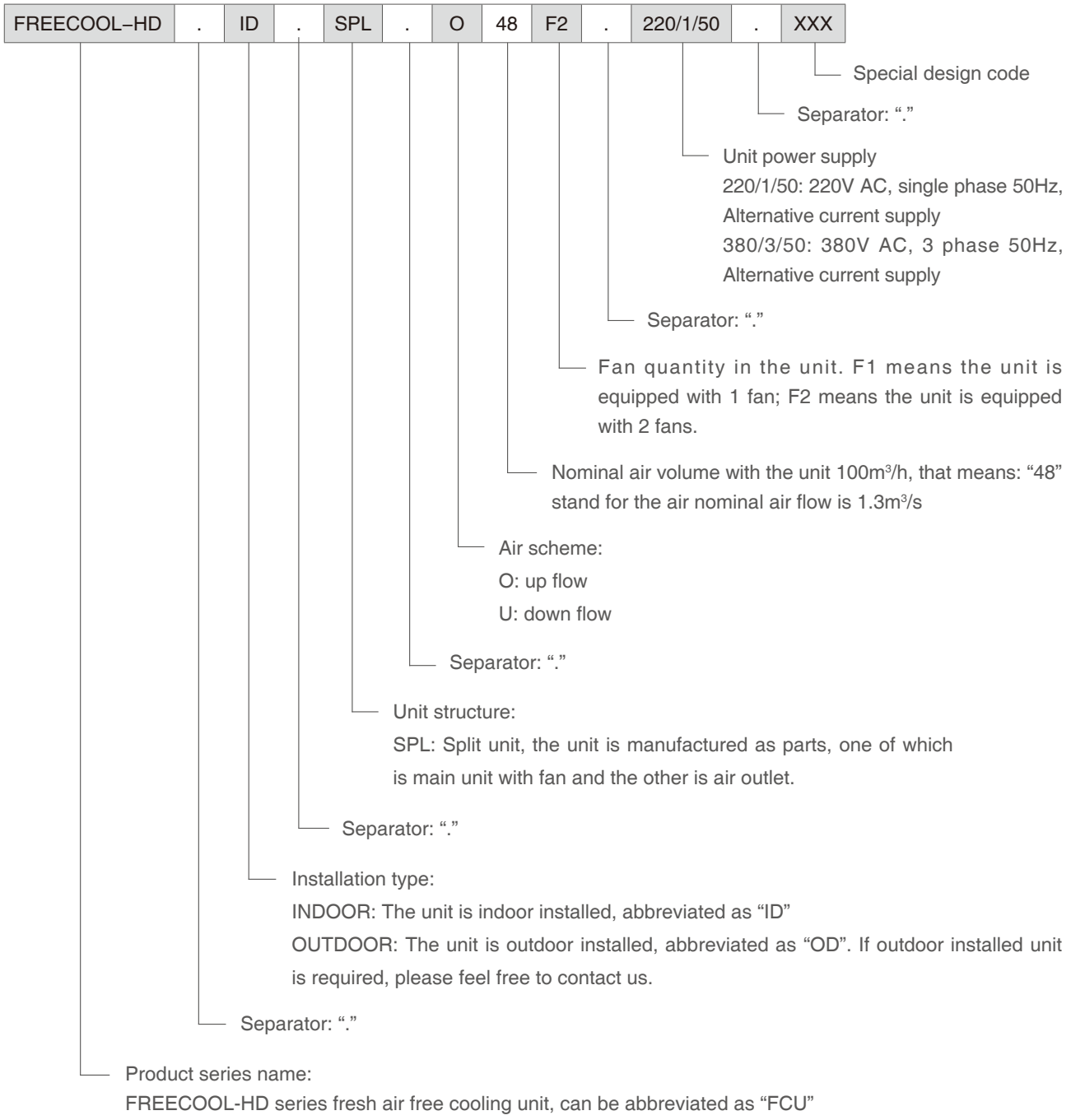
Air Volume: 2400~21600 m^3/h

FREECOOL intelligent ventilation unit is applied in small/ medium data center and electronic equipment room. The unit introduces outdoor fresh air with lower temperature to cool equipment room. By using the FREECOOL-HD unit, the running hours of other air conditioning units can be highly reduced, achieving power energy saving around 30~90%.The FREECOOL-HD unit using EC fans can adjust the air volume automatically according to the temperature difference with the lowest power consumption.

FREECOOL-HD unit with large air volume, high cooling density and luxuriant control functions, can meet all the precision control requirement of temperature and cleanness in equipment room.

FREECOOL-HD without refrigeration system realizes easy installation and convenient maintenance. The unit is available in 2 different air flow schemes: up flow and down flow, and 2 installation positions: outdoor and indoor, offering more options for different customers.

Unit identification



Working range

Working Environment
Temperature: -30℃~55℃
Humidity: 5~95%
Storage Environment
Temperature: -40℃~70℃
Humidity: 5~95%

Applications

Small to mid-size switching room for telecommunication
Small to mid-size data center and computer room
UPS and battery room
Industrial process control center

Product configuration

Standard components

Unit base and frame:

Unit base is made of folded sheet steel coated with black epoxy resin powder.

Unit frame is made of folded sheet steel and assembled by bolts or rivets.The surface of unit frame is coated with black epoxy resin powder

Backward curved,centrifugal fan directly coupled with 220V or 380VAC motor.

G4 disposable filters

G2 nylon pre-filter

Control box, includes: controller, contactor, relay and circuit breaker etc.

Micro control system, include:
- Micro-processor
- Room Temperature sensor (3 pcs)
- Temperature sensor at air outlet

Optional components

G4 washable main air filter

Pressure transducer

Differential pressure switch for filter clogged.

Electric heater

Supply air temperature

Gravitational Pressure Relief Valve (air discharge)

Electric motorized air discharge valve

Electric motorized non-return valve

Air inlet louver

Mounting plinth

Head Blower

RS232 communication interface card

RS485 communication interface card

Clock card

Contactor for existing air conditioners (For existing air conditioners)

Additional room temperature sensor

Humidity sensor

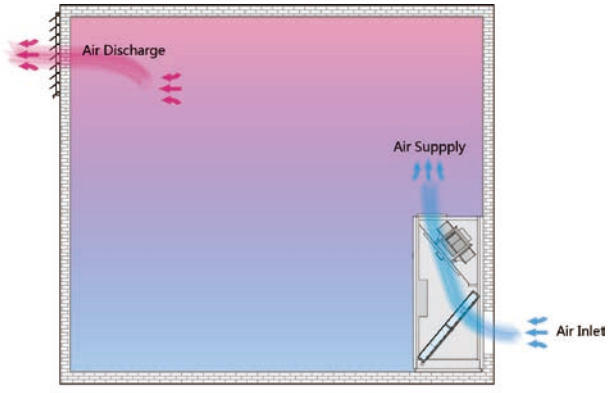
Operation principle

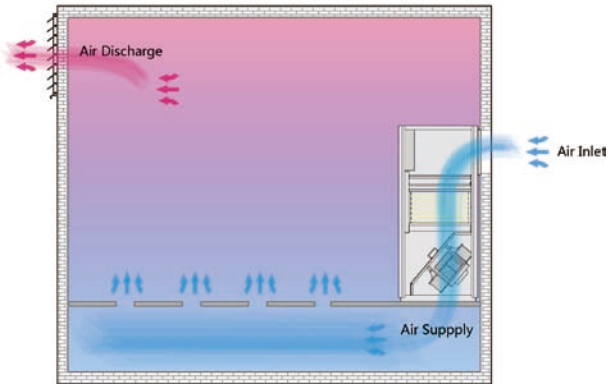
When FCU are applied in data center, FCU will be the main cooling providers which will control air conditioners to work in cooperate, supplying required cooling capacity.

When the outdoor temperature is lower than room temperature, FCU turns on to bring fresh air outdoor to cool the room. When FCU cannot provide enough cooling capacity, FCU will turn on the air conditioner to supply cooling in assist.

When air conditioner fails and the room temperature is higher than emergency setting temperature , FCU will switch on in emergency mode.

Below drawings show the air flow path of both over flow and under flow FCU unit.





Product highlights

High energy efficiency

Using the FREECOOL-HD unit, the running hours of other air conditioning units can be highly reduced.

Good structure design andeasy maintenance

The main components such as: fans, motor, damper, controller and other related components can be accessed and maintained in front of the unit.

Strong structure

The unit passed a transportation test to confirm the structure is strong enough to be able to transport on low grade ways.

Corrosion-proof

The unit framework is provided with corrosion protection treatment.The treatment is sufficient to provide protection for 15 years life cycle for inland installation.
If necessary, the treatment for sea air environment can be supplied as option.

EC fan

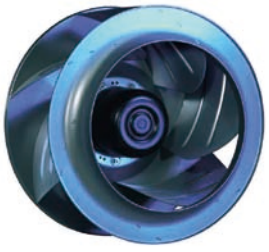
Fan is a core component in the unit. FREECOOL-HD unit is equipped with EC centrifugal fan with the following features:

High efficiency of motor

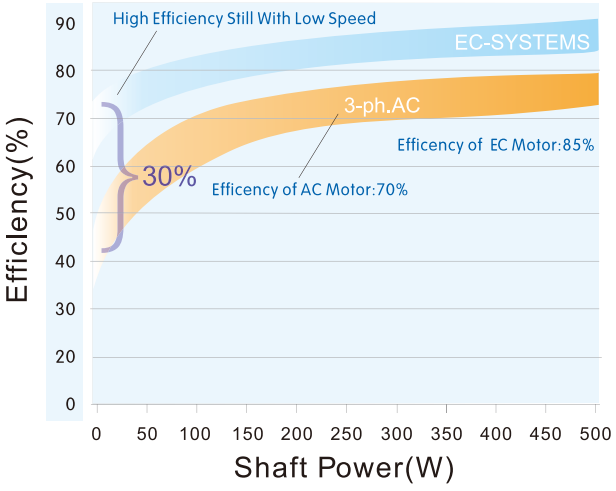
Fan rotation speed is adjustable; the energy consumption at low rotation speed is much lower than the high speed.

When air conditioner fails and the room temperature is higher than emergency setting temperature, FCU will switch on in emergency mode.

Comparing with axial fan, it would not lose much air volume due to pressure drop.



EC FAN



Intelligent Control

FREECOOL-HD unit is controlled by microprocessor. All the components in the unit work fully automatically, realizing maximum energy saving without manual operation.

All protections and alarmsare automatically raised.

Random restart when power recovered

After a power failure, when the power is recovered, the unit will restarts automatically with a random time delay between 1 to 60 seconds to avoid many equipment started at the same time.

Control to the other air conditioner

The FREECOOL-HD unit is able to control other air conditioner.

When the FREECOOL-HD unit can fully meet the cooling demand of base station, the controller can send a signal to stop the other air conditioner in the site.

Completely auto protection

The controller monitors the running status of all the components and will stop the running of relative component andraise an alarm if any failure.

Data log

The controller has a bigger memory to log the running data of a year. All these data can also be sent to the remote control and monitoring system so that the customers cananalyze the working performance and energy saving amount accordingly.

Remote control and monitoring (Optional)

The unit can be installed with a RS232 or RS485 communication card to realize remote control and monitoring by the BMS system with open communication protocol.

PCOWEB internet communication (Optional)

The unit can be equipped with a PCOWEB internet communication card with TCP/IP protocol and Ethernet work to realized remote control and monitoring. Each computer can be connected to the web server by Ethernet network and understand the working status and control the unit in time everywhere.

Humidity control (Optional)

Humidity sensor (optional) can prevent fromintroducing high humidity inside. With humidity sensor, free cooling unit will turn off when the humidity of outdoor air is higher than humidity limitation to avoid the BTS equipment working at high humidity air environment, which may cause failures and damages of electronic devices.

Control functions

Parameters display

Current control temperature set
Outside air humidity
Outside Air Temperature
Supply Air Temperature
Software Version

Working status display

Main Fan Speed
Main Fan Hours Run
Heater working status(Option)
Heater working hours(Option)
Heater startup times(Option)

Alarm display

Controller fail alarm
Supply fan failure
Filter clogged alarm
Low temperature alarm
High temperature alarm
Fire/smoke alarm
Temperature sensor failure

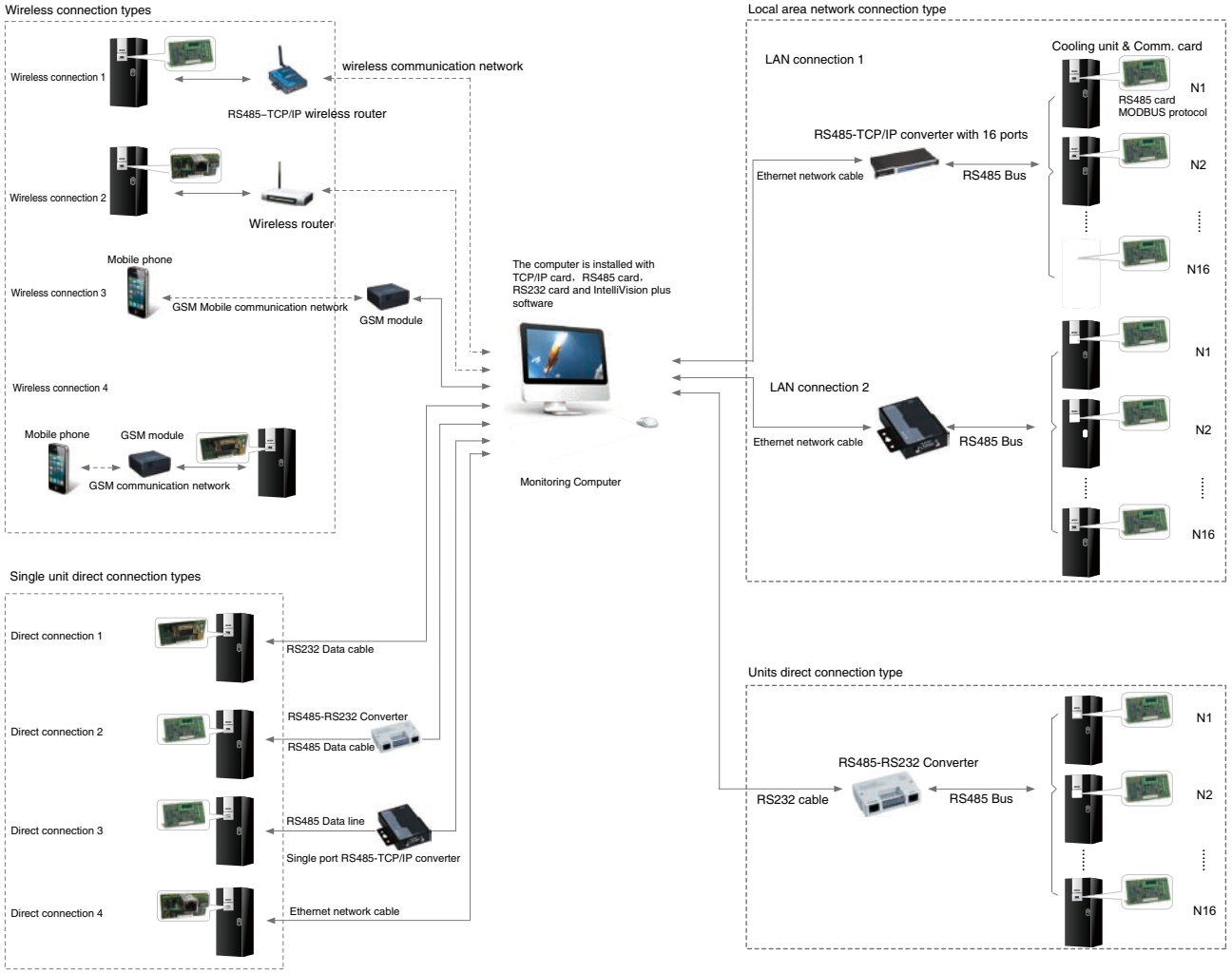
Other functions

Maintenance Test
Auto-Routiningevery28 day

Remote control and monitoring

The remote monitoring and control system can be easily connected with the units to realize remote real time monitoring and control and save the running data.

The unit can be remote controlled by many kinds of methods as follows:
4 kinds of wireless network connection with computer
3 kinds of local direct connection with computer
3 kinds of LAN network connection with computer



Technical parameters

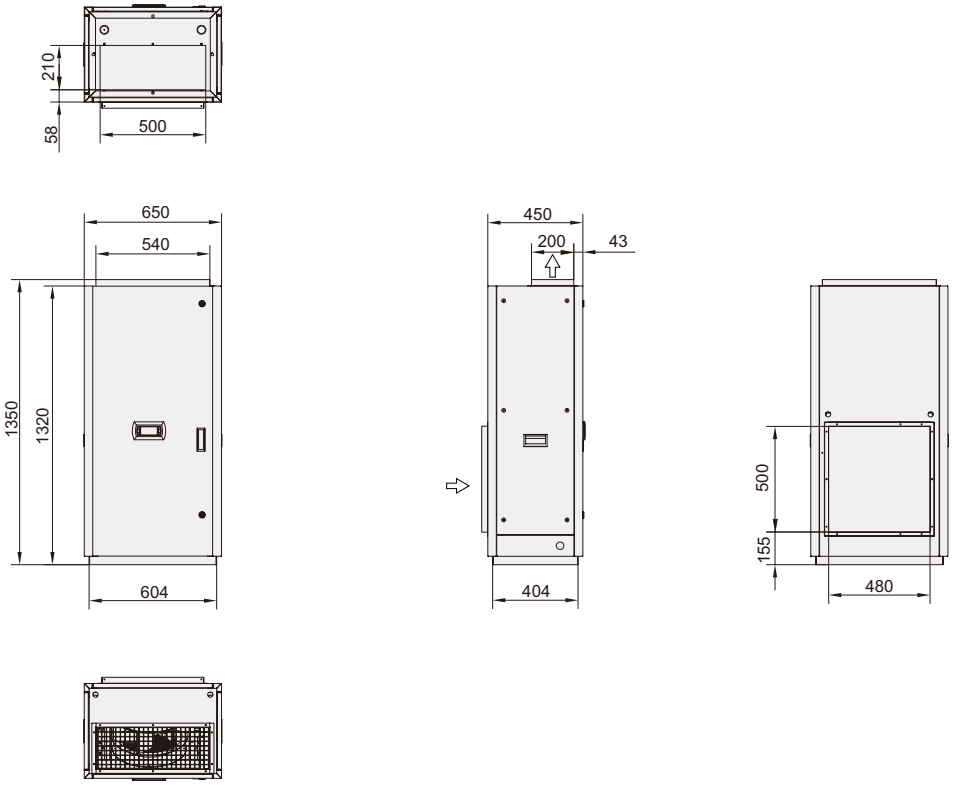
FREECOOL-HD

Model		24F1 ID	48F2 ID	72F1 ID	144F2 ID	216F3 ID
Supply air scheme				O/U		
Air flow	m^3/h	2400	4750	7200	14400	21600
Air flow	m^3/s	0.67	1.3	2.0	4.0	6.0
Cooling capacity						
△t=5℃	kW	4.0	7.9	12.0	24.0	36.0
△t=10℃	kW	8.0	15.8	24.0	48.0	72.0
△t=12℃	kW	9.6	19	28.8	57.6	86.4
Power supply		230V/1Ph/(50/60Hz)		400V/3Ph/(50/60Hz)		
Fan		Single inlet backward curved centrifugal fan				
Qty.	n.	1	2	1	2	3
Power input	kW	0.5	1.0	2.1	4.2	6.3
Current	A	3.1	6.1	3.2	6.4	9.4
Noise (*)	dB(A)	55	59	61	63	65
Dimensions						
Width	mm	700	1150	850	1650	2450
Depth	mm	450	450	800	800	800
Height	mm	1320	1320	1770	1770	1770
Weight	kg	65	89	150	260	350

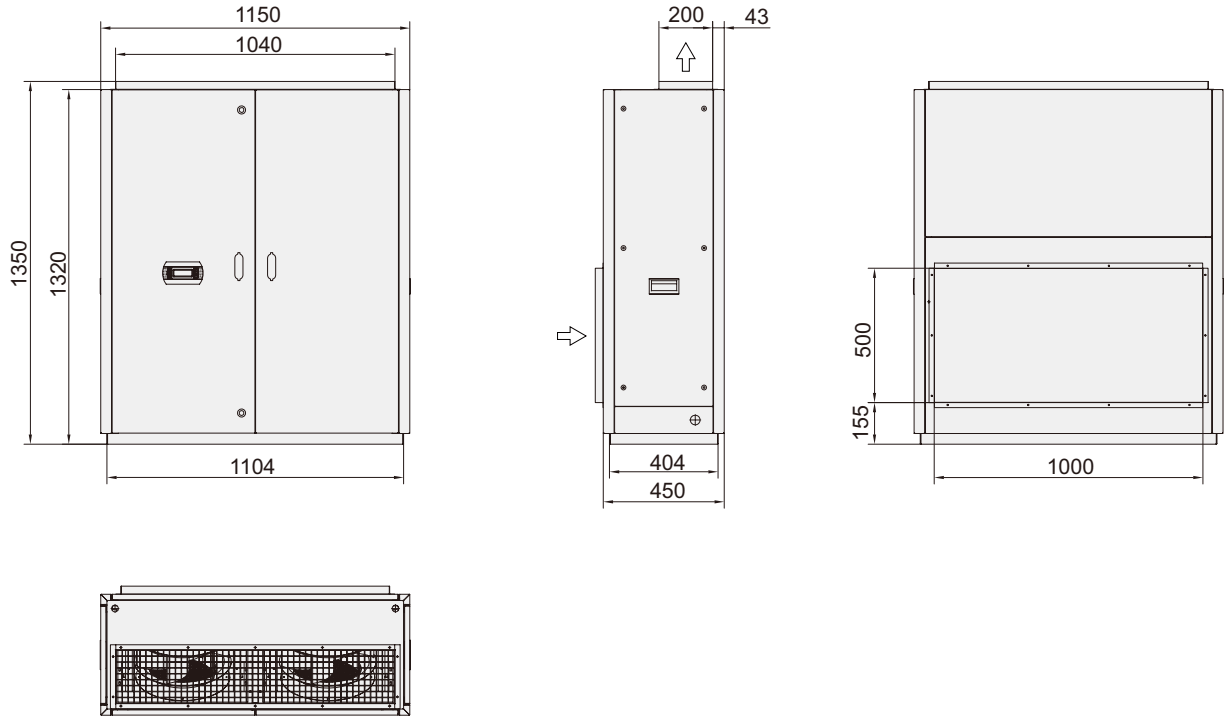
* The noise of 1 meter away from the unit

Dimensions drawing

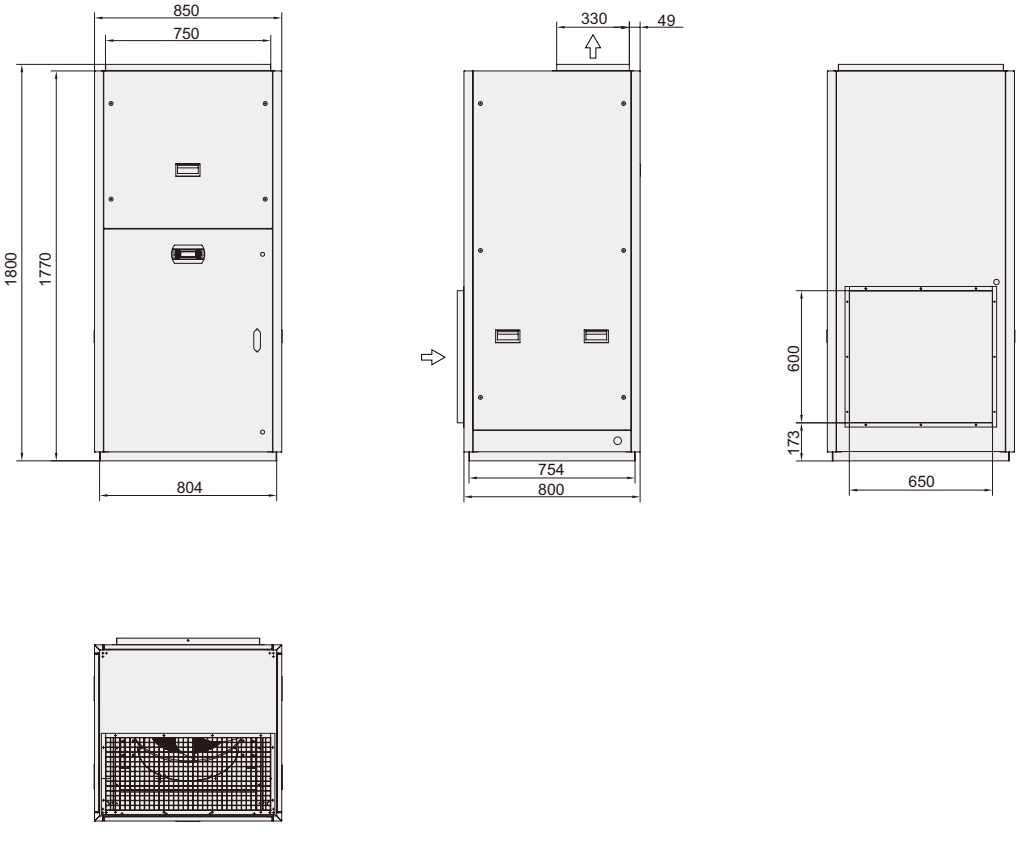
Indoor installed up flow units FCU.ID.SPL.O24F1



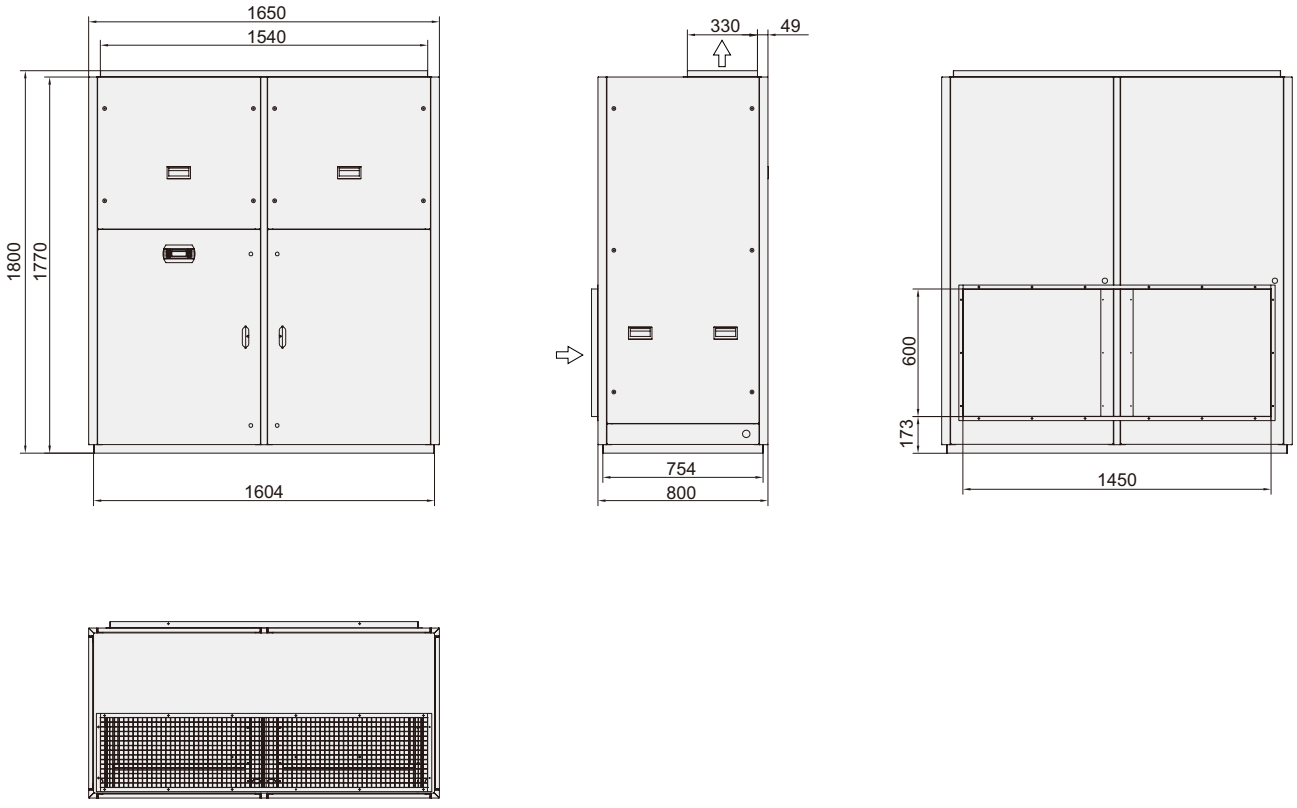
Indoor installed up flow units FCU.ID.SPL.O48F2



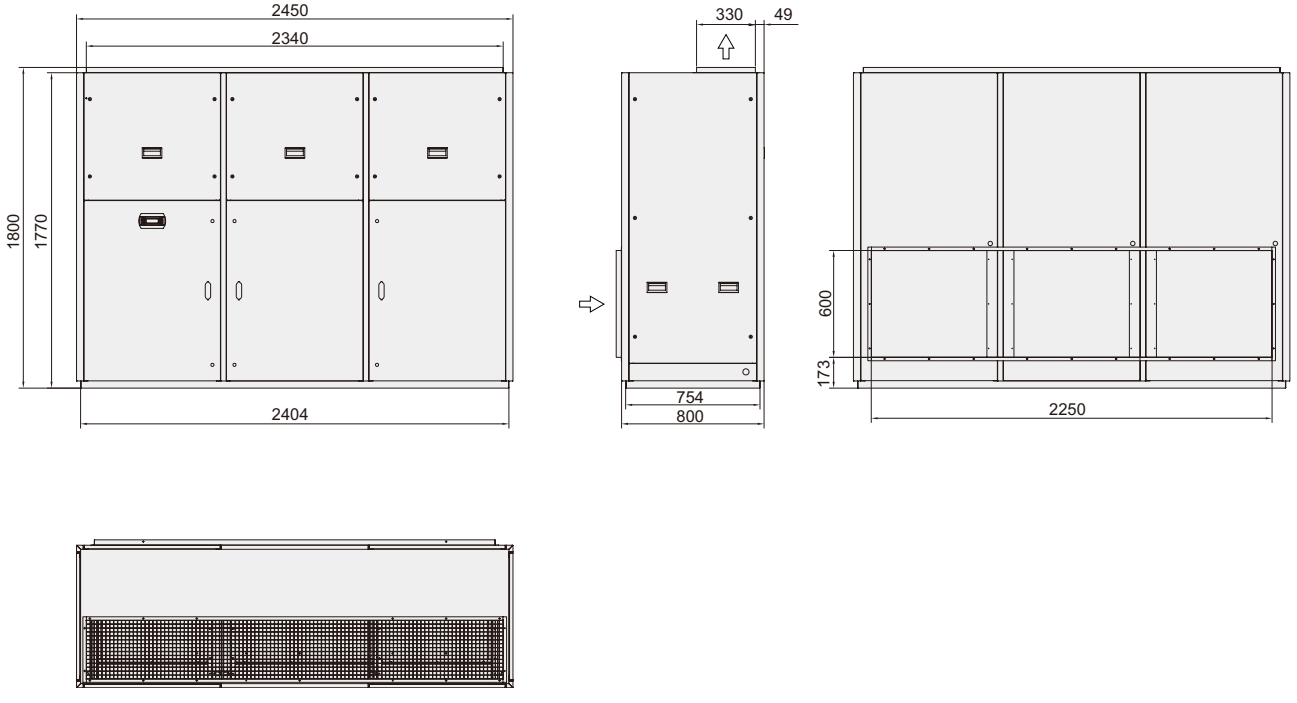
Indoor installed up flow units FCU.ID.SPL.O72F1



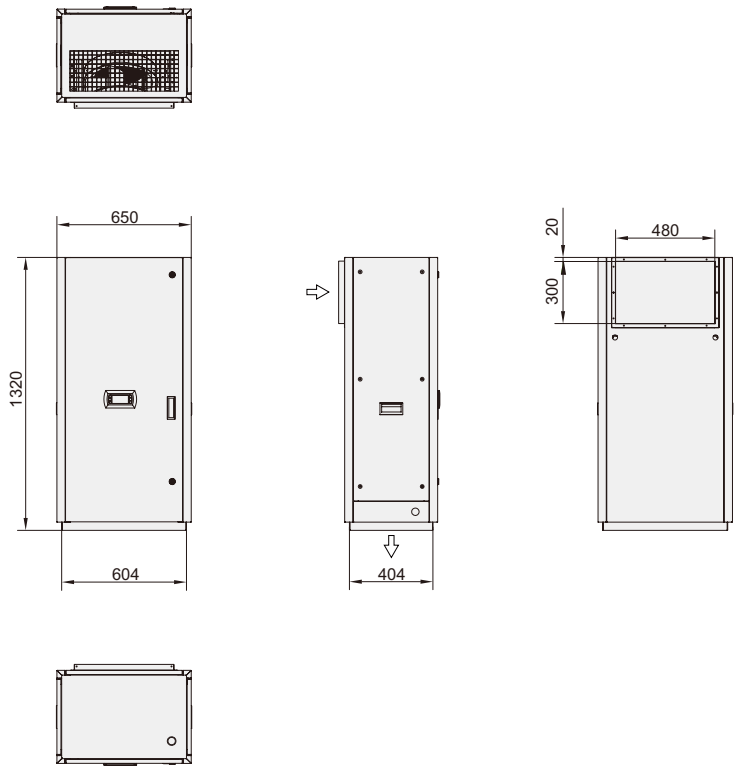
Indoor installed up flow units FCU.ID.SPL.O144F2



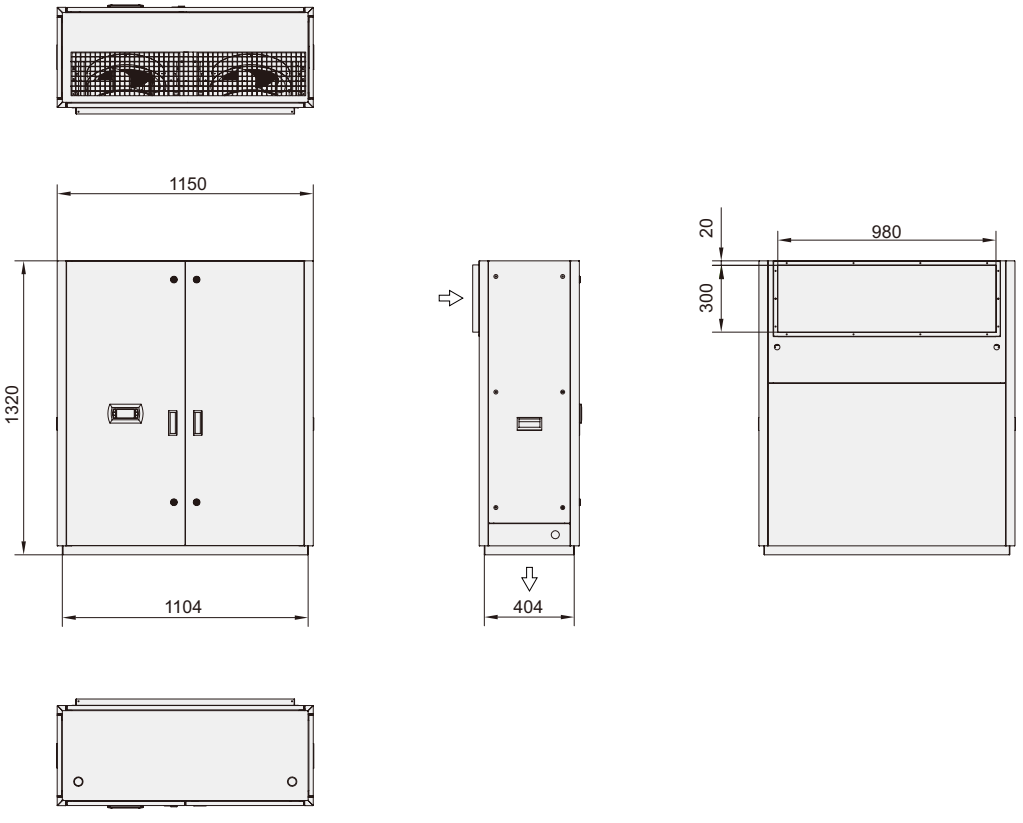
Indoor installed up flow units FCU.ID.SPL.O216F3



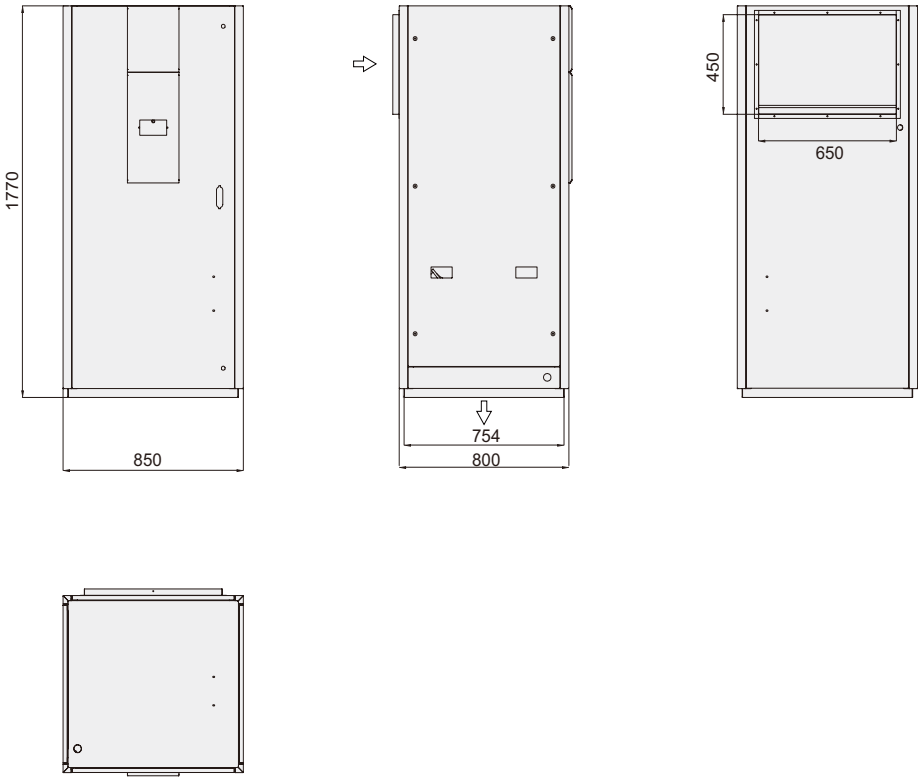
Indoor installed down flow units FCU.ID.SPL.U24F1



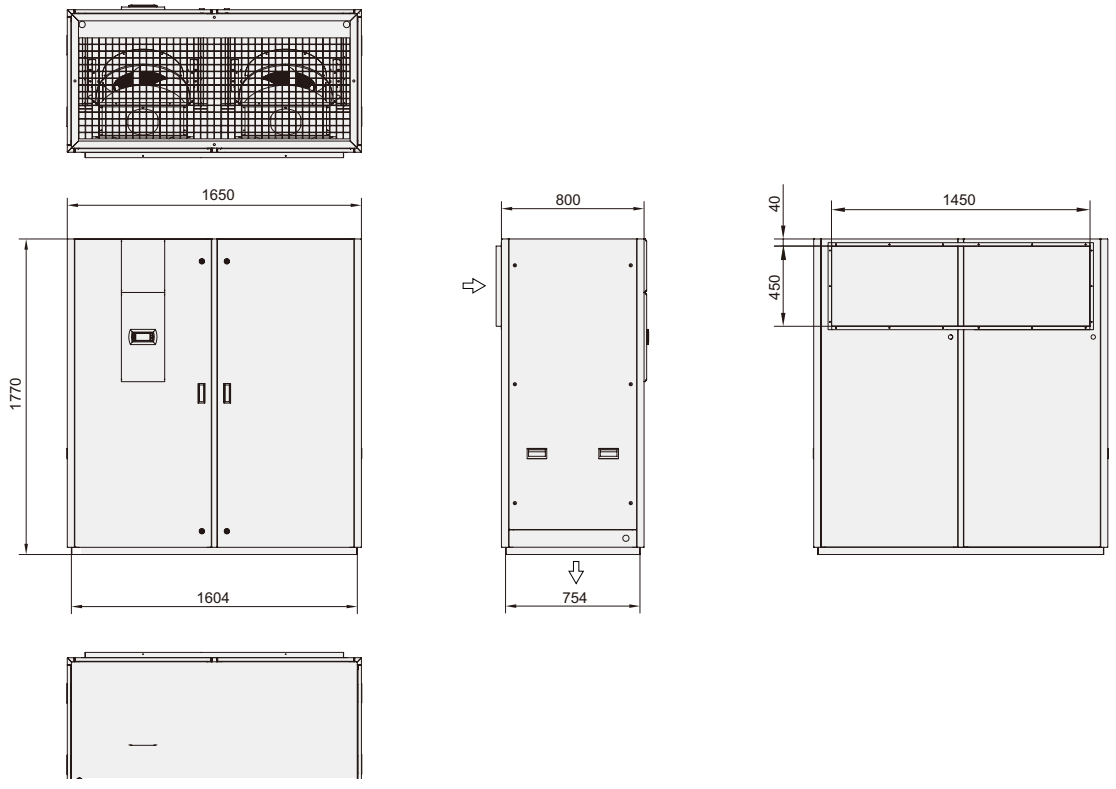
Indoor installed down flow units FCU.ID.SPL.U48F2



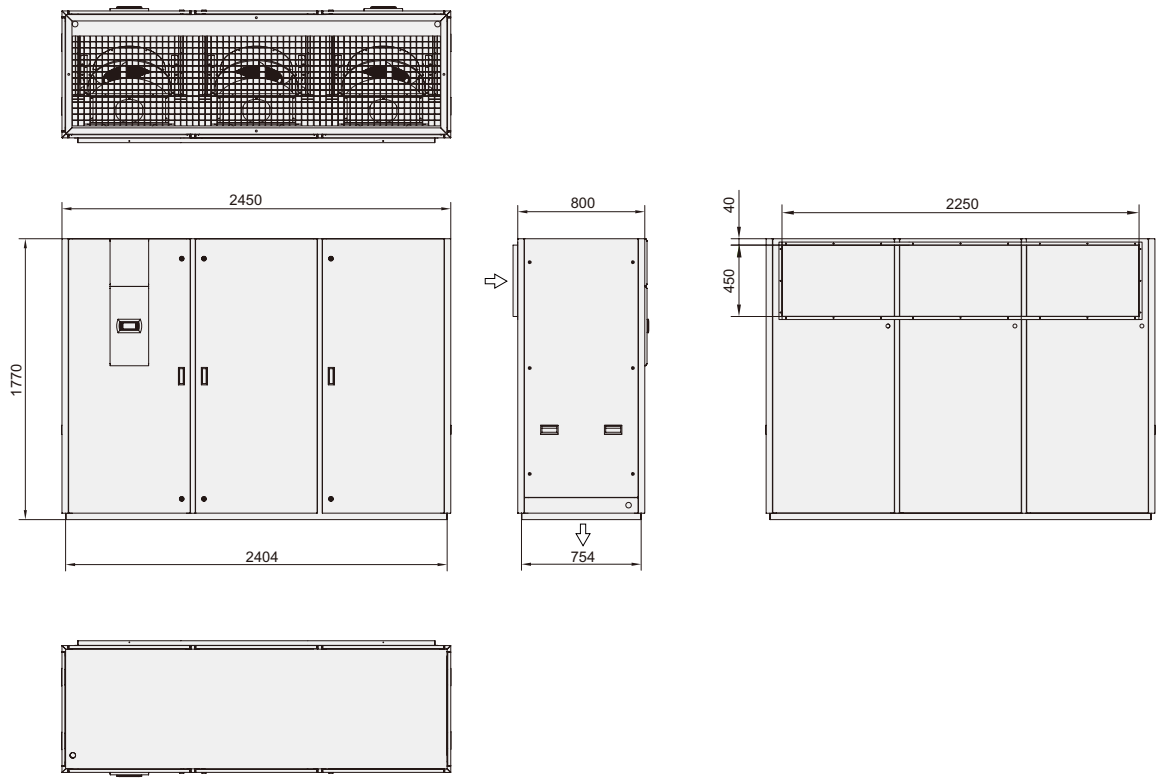
Indoor installed down flow units FCU.ID.SPL.U72F1



Indoor installed down flow units FCU.ID.SPL.U144F2



Indoor installed down flow units FCU.ID.SPL.U216F3



AIRSYS

AIRSYS is a cooling product and solution provider for ICT (Information & Communication Technology) industry.

The products include:

Air conditioner and Chiller for IT room and large data center

Intelligent Control system (BAS) for IT room and data center

Air conditioning equipments for telecom shelters

Intelligent control system for shelter cooling.

Air conditioner and heat exchanger for telecom cabinets

The solution include:

- Cooling system design
- System integration
- Installation and Commissioning
- Operation and Maintenance

AIRSYS is also a global leader in providing cooling solution for Medical Imaging System.

AIRSYS Refrigeration Engineering Technology (Beijing) Co. Ltd.

Add: No.28, LuGuDong Str., Shijingshan District, Beijing, China Post code: 100040
Tel:+86–10–6865 6161 Fax:+86–10–6865 2453
Callcenter :+86-400-820-5515
www.air-sys.com