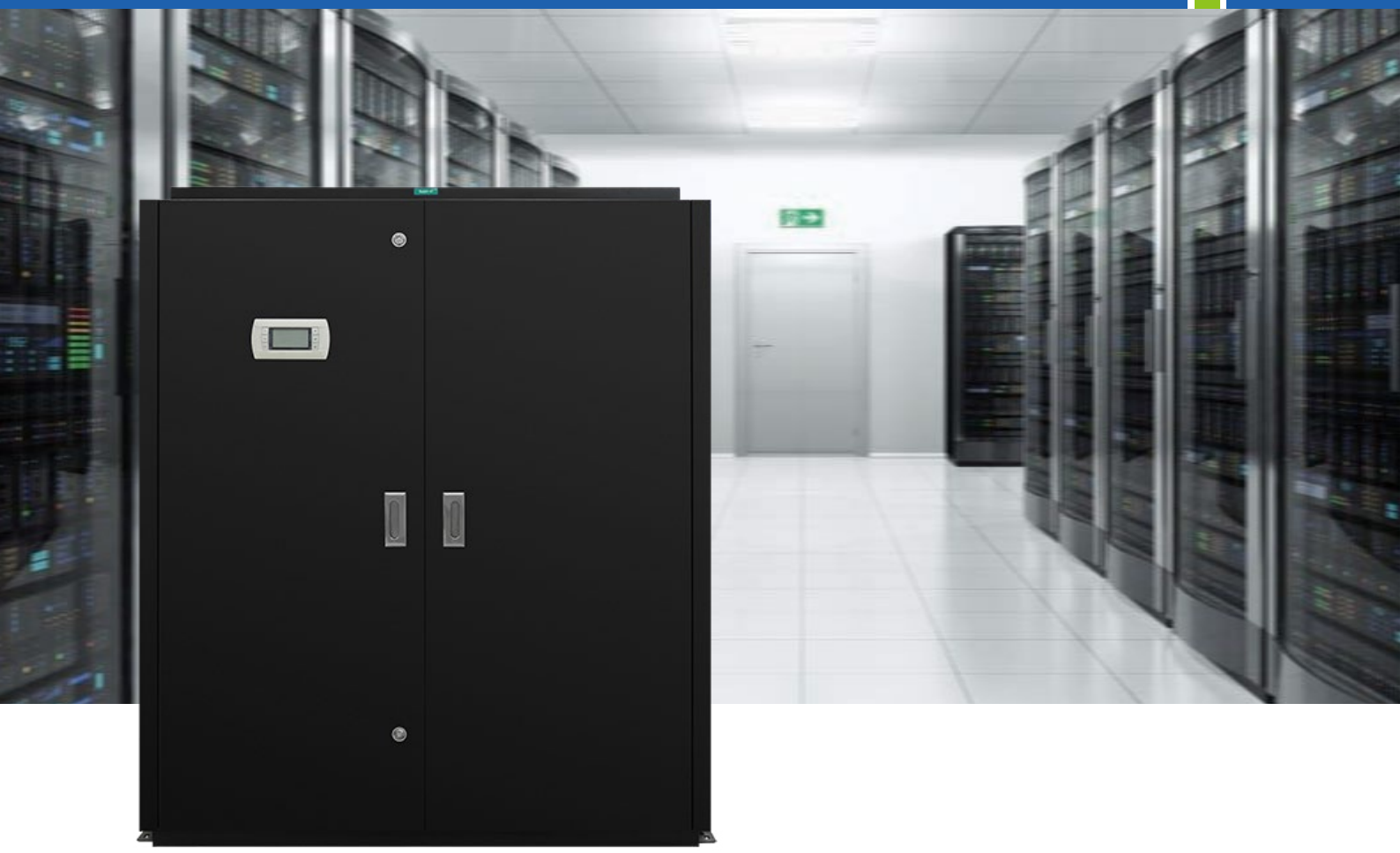
AIRSYS-P-SC-FREECOOL-HD-E1805V01.3

AIRSYS



FREECOOL-HD

High Density Intelligent Control Free Cooling Box

Air Volume: 2400~21600m^3/h

FREECOOL-HD 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, offering more options for different customers.

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Unit Identification

01 Product series name
FREECOOL-HD series high density fresh air free cooling unit, abbreviated as “FCU”

03 Installation type
INDOOR: The unit is indoor installed, abbreviated as “ID”;
OUTDOOR: The unit is outdoor installed, abbreviated as “OD”.
If outdoor installed unit is required, please feel free to contact us.

05 Unit structure
SPL: Split unit, the unit consists two independent parts: main unit and air discharge section

07 Air scheme
UP: Up flow
DN: Down flow

09 Fan quantity in the unit
F1 means the unit is equipped with 1 fan
F2 means the unit is equipped with 2 fans

11 Unit power supply
230/1/50: 230VAC/1Ph/50Hz
400/3/50：400VAC/3Ph/50Hz

13 Special design code

01	02	03	04	05	06	07	08	09	10	11	12	13
FREECOOL-HD	.	ID	.	SPL	.	UP	48	F2	.	230/1/50	.	XXX

02 Separator Character “.”

04 Separator Character “.”

06 Separator Character “.”

8 Nominal air volume with the unit 100 m^3/h, that means
“48” stand for the air nominal air flow 4800m^3/h

10 Separator Character “.”

12 Separator Character “.”

Working range & Applications

Working Environment:

Temperature: -30℃ ~55℃

Humidity: 5~95%

Storage Environment:

Temperature: -40℃ ~70℃

Humidity: 5~95%

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

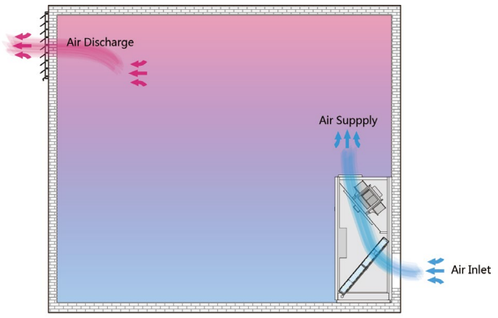
Operation principle

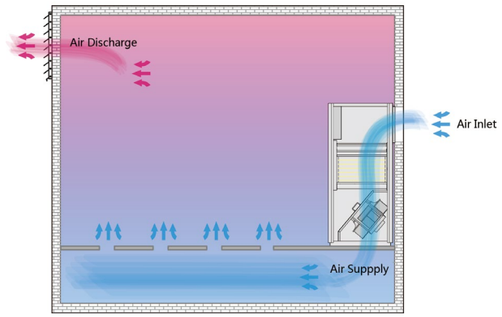
When FCU is applied in shelters, FCU will be the main cooling provider which will control air conditioners to work in cooperate, supplying required cooling capacity.

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 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 230V or 400VAC motor.

G4 disposable filters
G2 nylon pre-filter

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

Gravitational Pressure Relief Valve (air discharge)

Rain hood at air inlet

Rain hood at air outlet

Micro control system, include:

Micro-processor
PLD user terminal
Room temperature sensor
Outdoor temperature sensor

Optional components

Pressure transducer

Differential pressure switch for clogged filter

Electric heater

Supply air temperature

Electric motorized air discharge valve

Electric motorized non-return valve

Air inlet louver

Mounting plinth

Head Blower

Inverter for 24V to 48V

RS232 communication interface card

RS485 communication interface card

PCOWEB internet communication card

Clock card

Contactor for existing air conditioners (with1 or 2 existing air conditioners)

Additional room temperature sensor

Humidity sensor

Product Features

High energy efficiency

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

Good structure design and easy maintenance

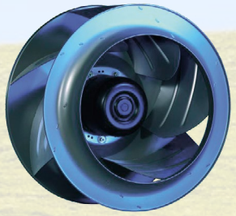
The main components such as: fan, motor, damper, controller and other related components can be accessed and maintained in front of the unit.

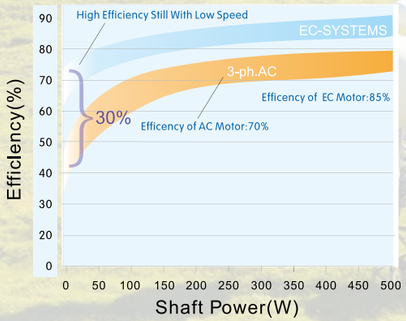
Strong structure

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

EC fan

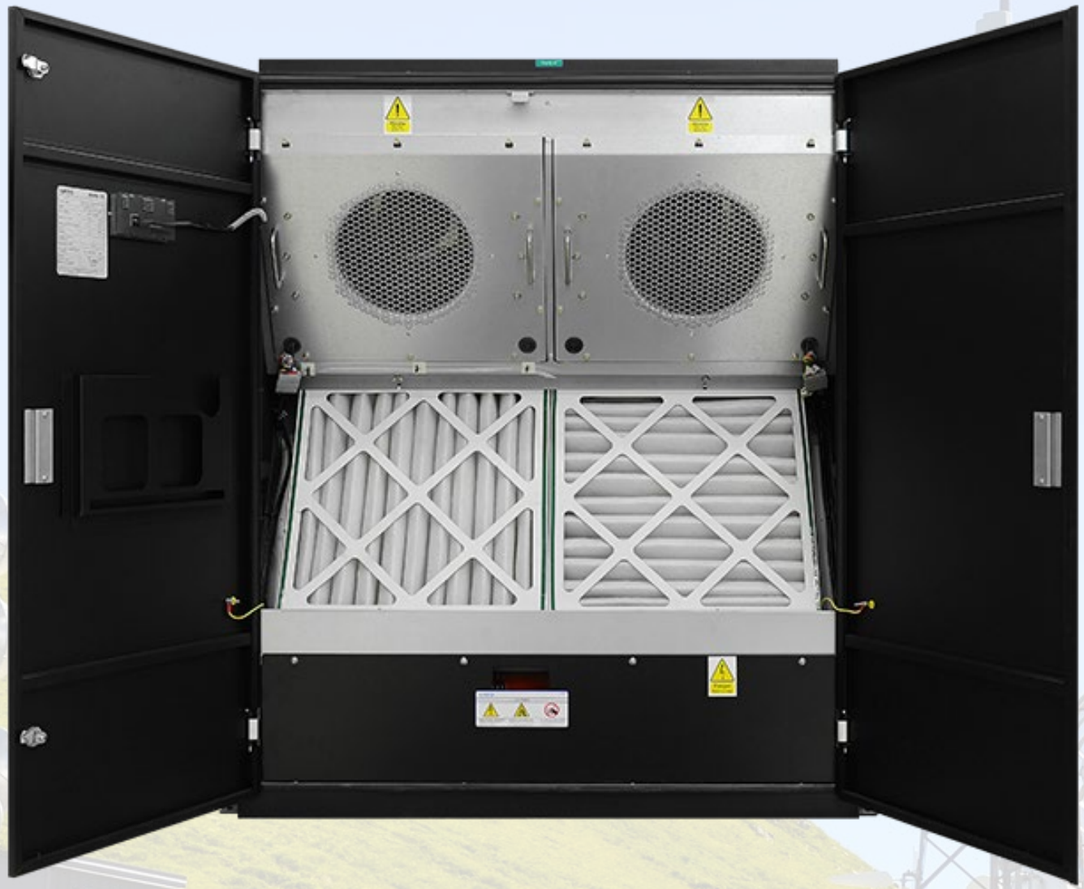
Fan is a core component in the unit. FREECOOL.DC unit is equipped with EC centrifugal fan with the following features:
High efficiency of motor
Fan rotation speed is adjustable; the energy consumption at low rotation speed is much lower than the high speed.
Emergency free cooling is available when the AC power fails.
Comparing with axial fan, it would not lose much air volume due to pressure drop.





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 alarms are 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 base station

Completely auto protection

The controller monitors the running status of all the components and will stop the running of relative component and raise 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 can analyze 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.

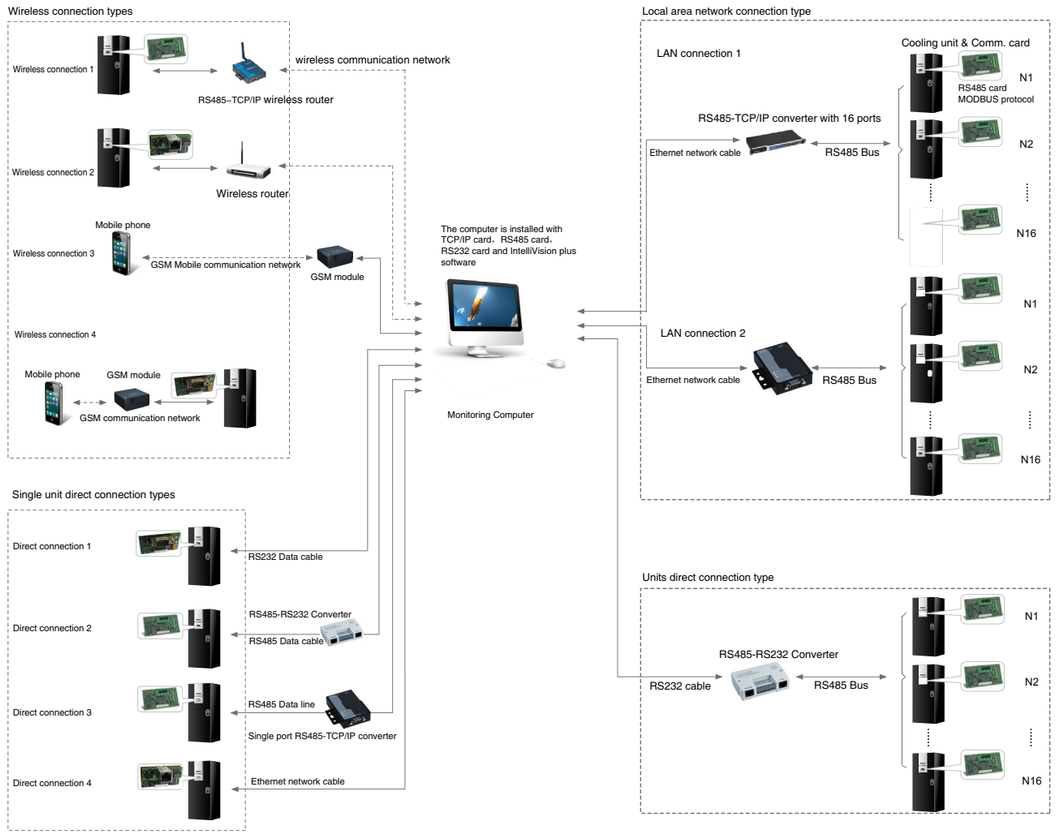
Humidity control(Optional)

Humidity sensor (optional) can prevent from introducing 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.

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



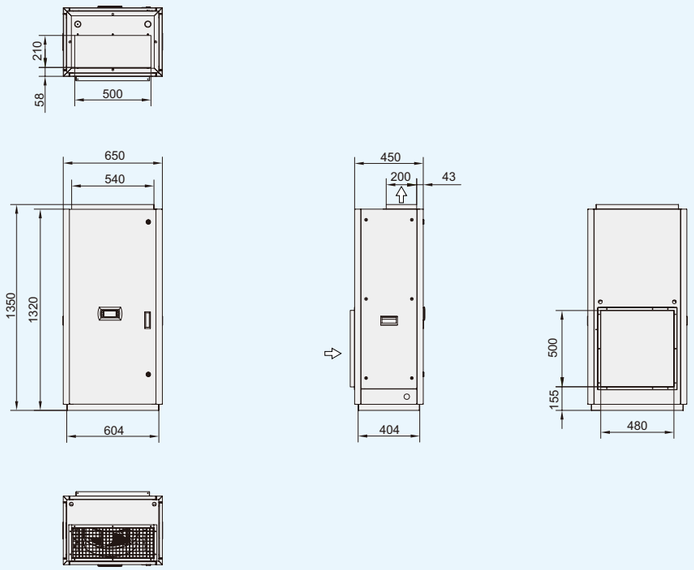
Technical Parameters

Model		24F1	48F2	72F1	144F2	216F3
Supply air scheme				UP/DN		
Air flow	m^3/h	2400	4750	7200	14400	21600
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/50Hz		400V/3Ph/50Hz		
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
Unit dimensions and weight						
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
Unit packaging dimensions and weight						
Width	mm	790	1240	990	1790	2590
Depth	mm	540	540	940	940	940
Height	mm	1480	1480	1960	1960	1960
Weight	kg	75	99	165	280	375

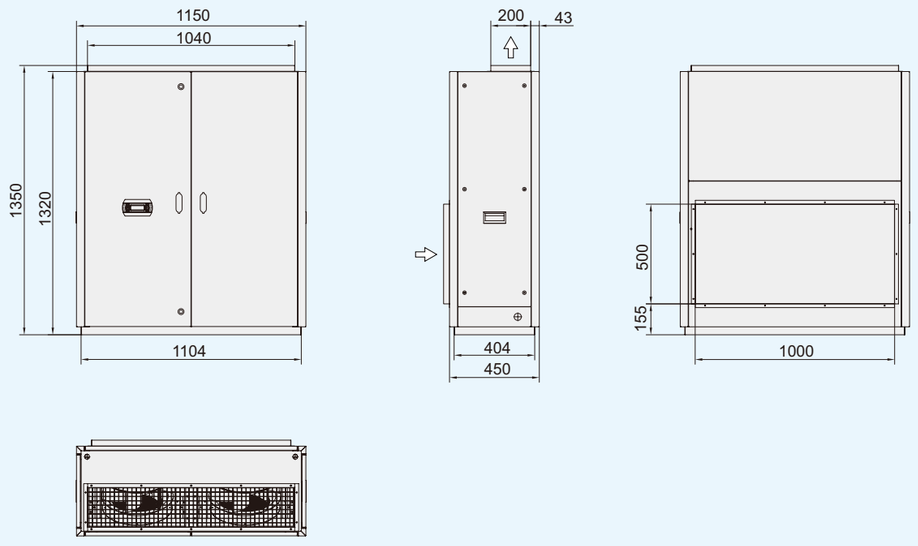
*The noise of 1 meter away from the unit.

Unit Dimension Drawing

Indoor installed up flow units FCU.ID.SPL.UP24F1

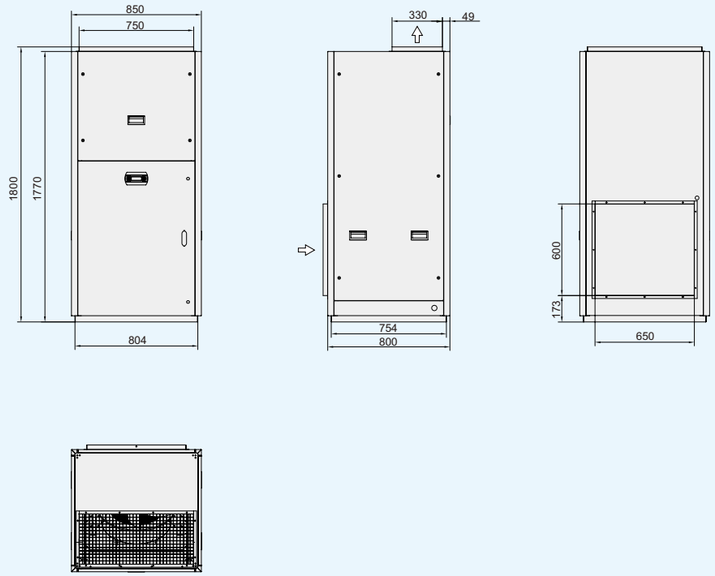


Indoor installed up flow units FCU.ID.SPL.UP48F2

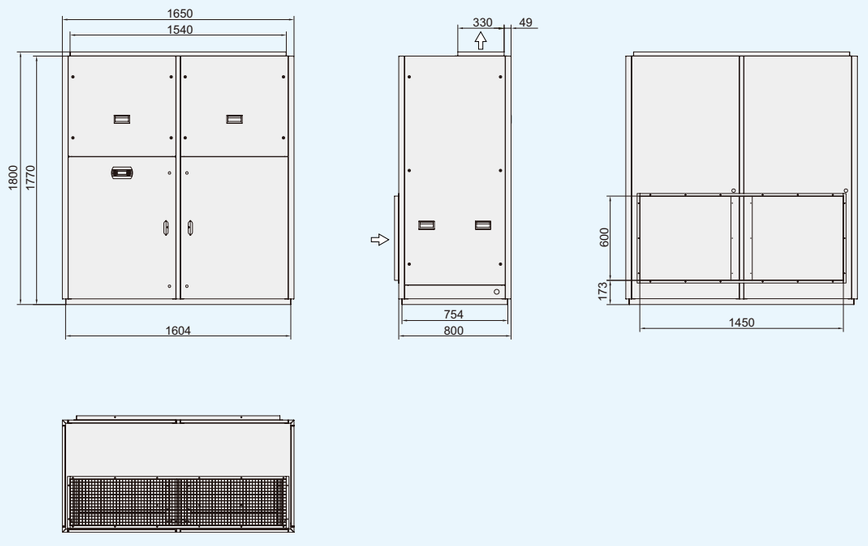


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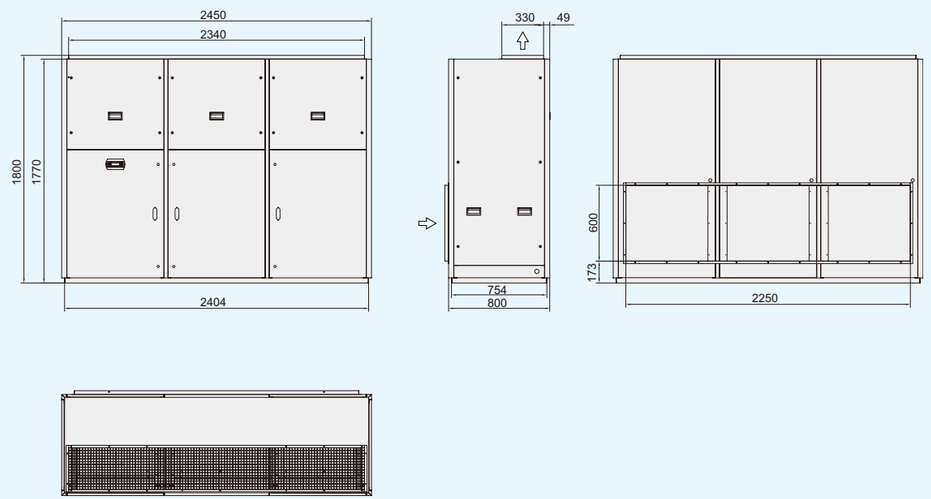
Indoor installed up flow units FCU.ID.SPL.UP72F1



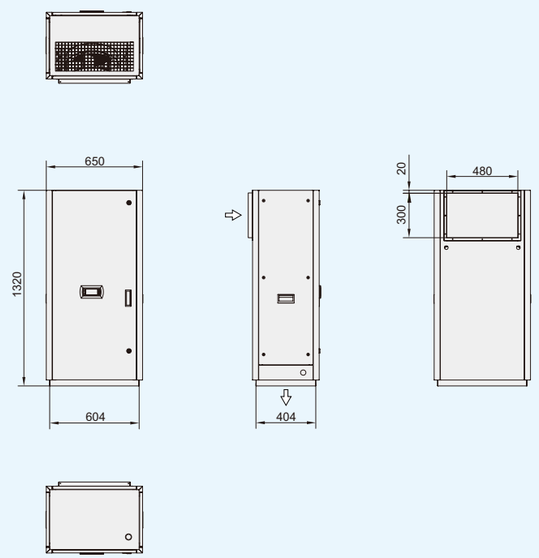
Indoor installed up flow units FCU.ID.SPL.UP144F2



Indoor installed up flow units FCU.ID.SPL.UP216F3

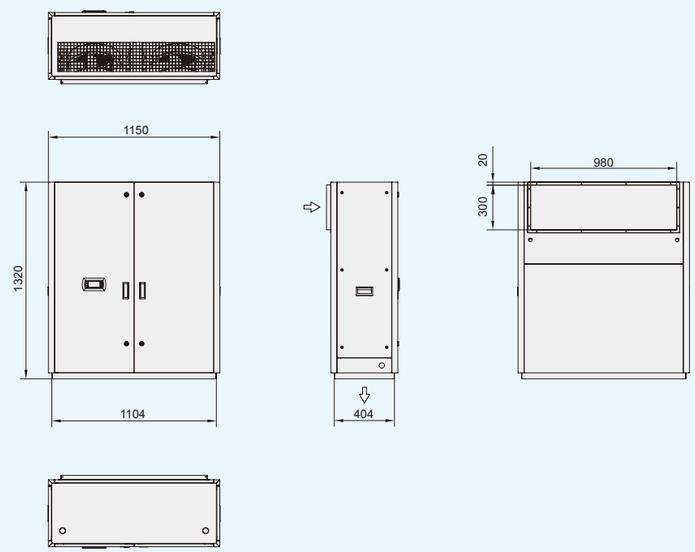


Indoor installed down flow units FCU.ID.SPL.DN24F1

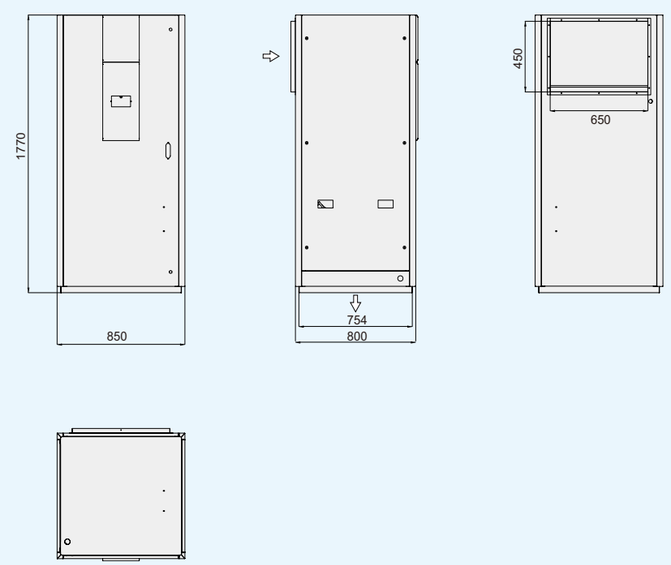


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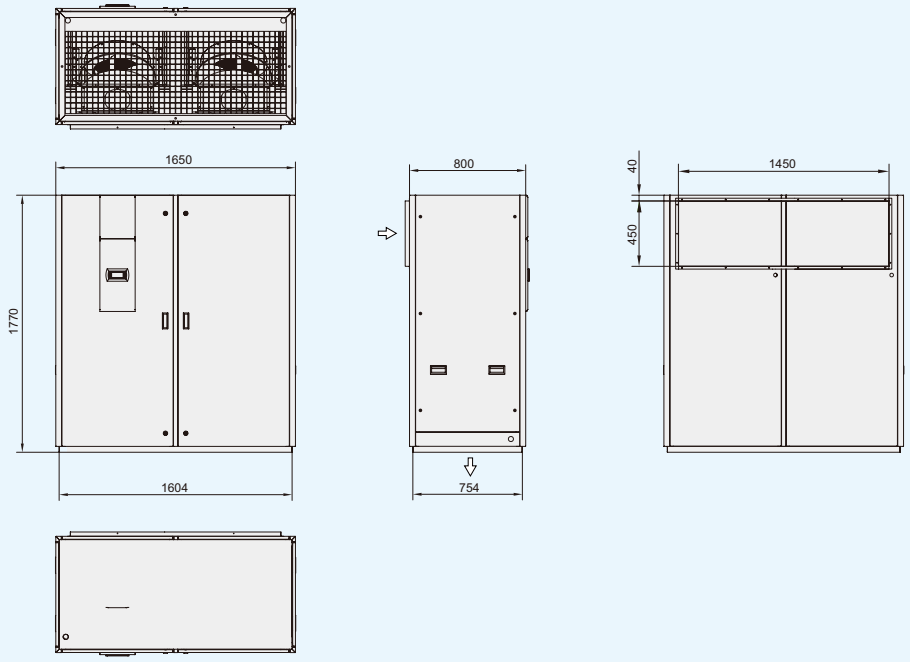
Indoor installed down flow units FCU.ID.SPL.DN48F2



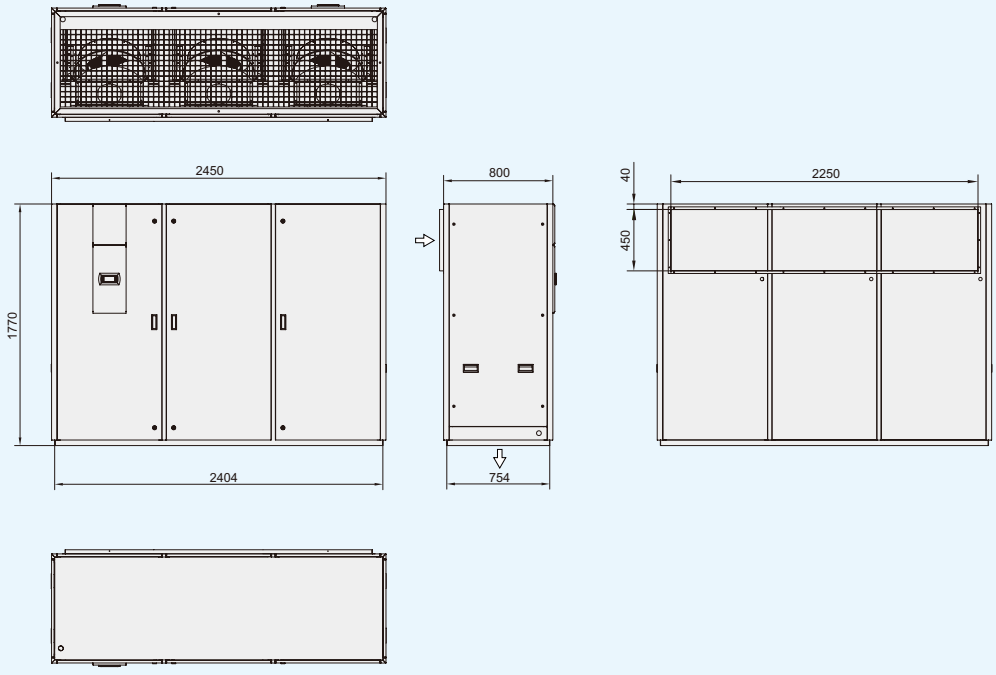
Indoor installed down flow units FCU.ID.SPL.DN72F1



Indoor installed down flow units FCU.ID.SPL.DN144F2



Indoor installed down flow units FCU.ID.SPL.DN216F3





Head Quarter

Airsys Refrigeration Engineering Technology (Beijing) Co., Ltd.
Add: 10th floor, Hongkun Shengtong building , 19, Ping Guo Yuan Xi Xiao Jie, Shijingshan, Beijing, China 100043
Tel: +86 10 6865 6161

Shanghai

Shanghai Airserve HVAC Systerm Service Co., Ltd.
Add: Floor 2, Building #7,No.658, Daduhe Rd., Putuo District, Shanghai, China, 200333
Tel: +86 21 6245 2626 Fax:+86 21 6245 9622

Australia & Asia Pacific

AIRSYS Singapore Pte. Ltd
Add: 12 Lorong Bakar Batu #06-01 Singapore (348745)
Tel: +65-62787188 Fax: +65-68416301

Brazil & South America

AIRSYS BRASIL LTDA.
Add: Av. Moaci, 395 Conj 35/36 04083-000 - Planalto Paulista Sao Paulo - SP
Tel: +55(11) 2597 6817

Germany & EMEA

AIRSYS Deutschland GmbH
Add: Dahlweg 120, D-48153 Münster
Tel: +49 (0) 1757535054

North America

AIRSYS North America, LLC
Add: 915 De La Vina, Santa Barbara, CA 93101, USA
Tel: +1 (805) 312 7563
Call Centre: +1 (855) 874 5380

Turkey

AIRSYS Klima Sanayi ve Ticaret A.Ş.
Add: Barbaros Mah. Evren Cad. Erzurumlular Sk. No:23 Ataşehir / İSTANBUL
Tel: +90 (216) 470 62 80
Fax: +90 (216) 470 62 90

UK

AIRSYS (UK) Ltd.
Add: 245 Europa Boulevard, Warrington, UK. WA5 7TN
Tel: +44 (0) 1925 377 272
Call Centre: +44(0) 8456099950