



Precision Air Conditioner

Overseas department

CONTENTS

01 In-row PAC

02 Large Room PAC

03 Small Room PAC

04 Rack PAC

05 Energy Storage System Cooling

06 Energy Storage System Liquid Cooling

Product Overview (Split type)



Large Room AC



VCA Series

25kW~120kW inverter
25kW~100kW fixed freq.

Small station AC



VCA Series

5kW~32kW inverter
5kW~20kW fixed freq.

In-row AC



VCR Series

12.5kW~60kW
inverter

Rack AC



VCS Series

3.7kW~12.5kW
inverter

Outdoor unit



VCP Series

5kW~180kW

Product Overview (Integrated Type)

Rack AC



VCS Series

3.7kW
Inverter & fixed freq.

Energy Storage System Cooling



VCE Series

7~20 kW Inverter
3~5 kW fixed freq.

Energy Storage System Liquid Cooling



Front view

Rear view

VCEW Series

5~15 kW

01

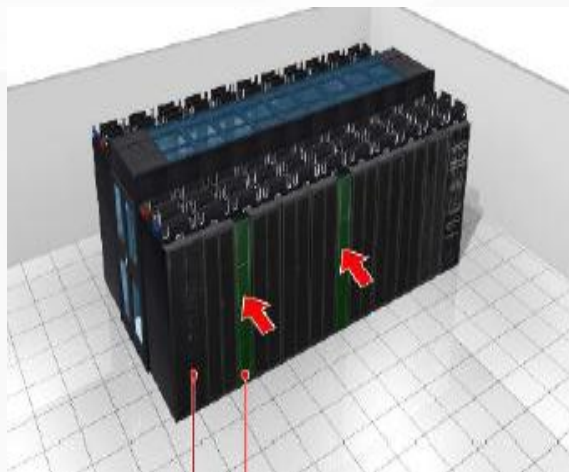
VCR Series In-row AC

◆ 12.5-30kW (300mm wide)

◆ 40-60kW (600 mm wide)

In-row AC

Applications



**Container
Data Center**

**High heat
density data
room**



**Medium and
Small Data
Center**



**Modular
Data Center**



◆ Cooling range Inverter

12.5kW @380V, 3 ϕ +N; 220V, 1 ϕ +N
25kW ~ 60kW @380V, 3 ϕ +N; 460V, 60Hz, 3 ϕ (N)
25kW, 40kW @208V, 3 ϕ (N)

◆ Cooling mode

- Air-cooled, **DX** mode (direct expansion)
- **CW** unit (chilled water)
- Energy saving unit

◆ Air supply mode

Horizontal (side) Air Supply (12.5kW-25kW)

Horizontal (front) Air Supply (12.5kW-60kW)



In-row AC
(12.5-25kW)

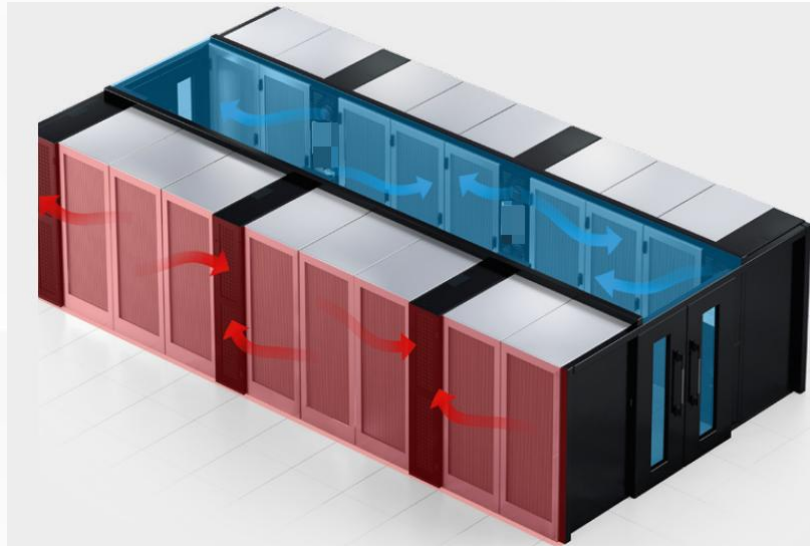


In-row AC
(12.5-30kW)



In-row AC
(40-60kW)

Applications



Reliable

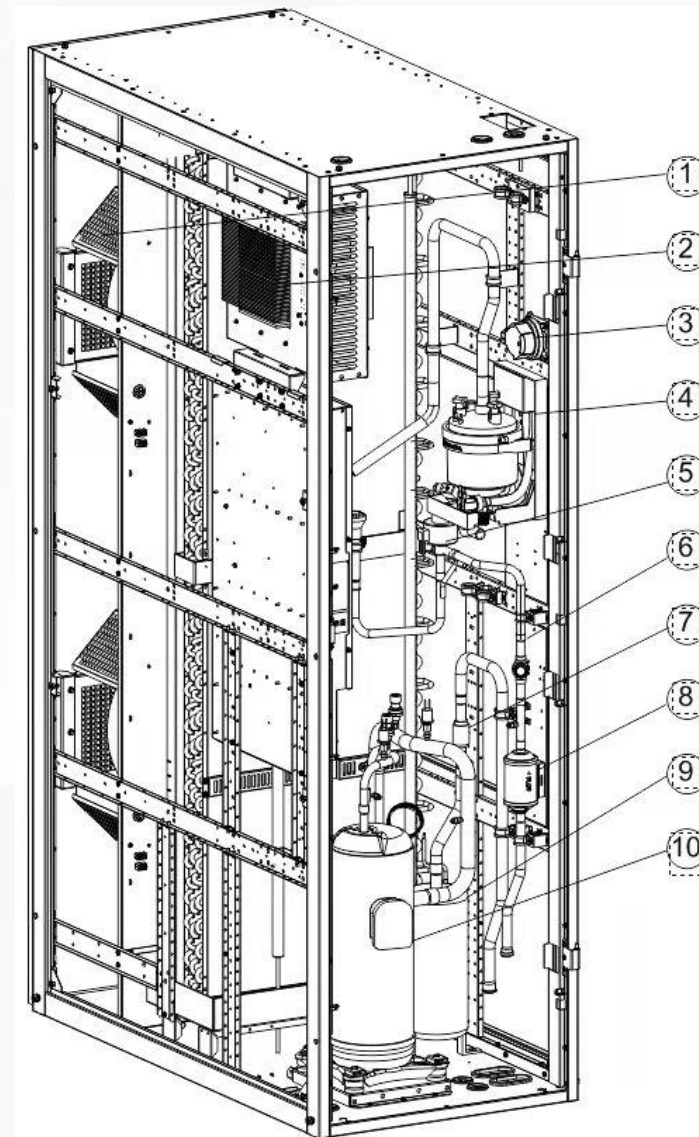
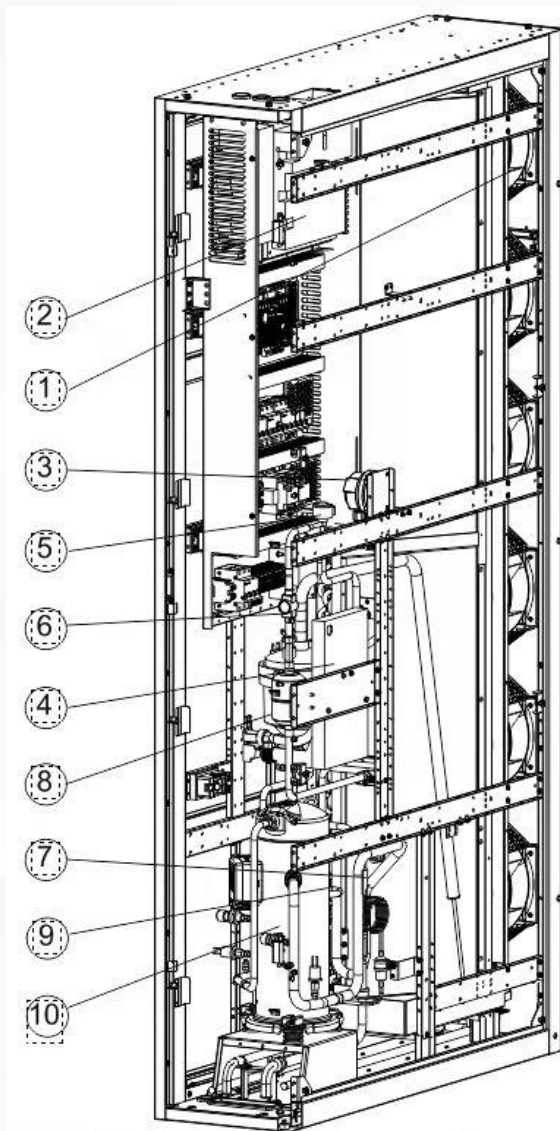
- Copeland & Mitsubishi scroll inverter compressor @25-60kW ★
- GMCC inverter compressor @12.5kW
- INVT controller & VFD ★
- Standard oil separator
- 30 days T&H curve display
- Volt & freq. real time display ★
- 3-level password protection
- CE certificate

Flexible

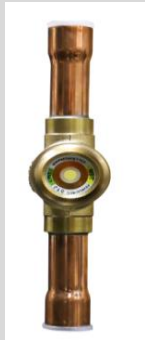
- Standard SNMP & RS485 for Supervision ★
- Customized EBM EC fan
- Optional dual input
- Energy saving unit (Refrigerant pump) ★
- Optional remote T&H sensor
- Easy pull-out electric control box
- 64+ unit rotation group working
- Optional air supply grille

Indoor unit

Num.	Device
1	EC Fan
2	Variable-frequency Drive
3	Differential pressure switch
4	Electrode Humidifier
5	Electronic expansion valve
6	Sight glass
7	Check valve
8	Filter driers
9	Oil separator
10	Compressor



Components



1

DC inverter scroll compressor

Can dynamically **adjust the cooling** output in the **range of 20%~100%**;

2

Backward inclined EC fan

High efficiency and **low noise**, according to the real-time heat load changes to adjust the speed output

3

Electronic expansion valve

Faster response, **more accurate flow rate adjustment**

4

Liquid sight glass

Can visually and effectively check the status of refrigerant in the pipeline of air conditioner system

5

Check valve

Prevent damage caused by refrigerant migration to the compressor during shutdown

Outdoor unit



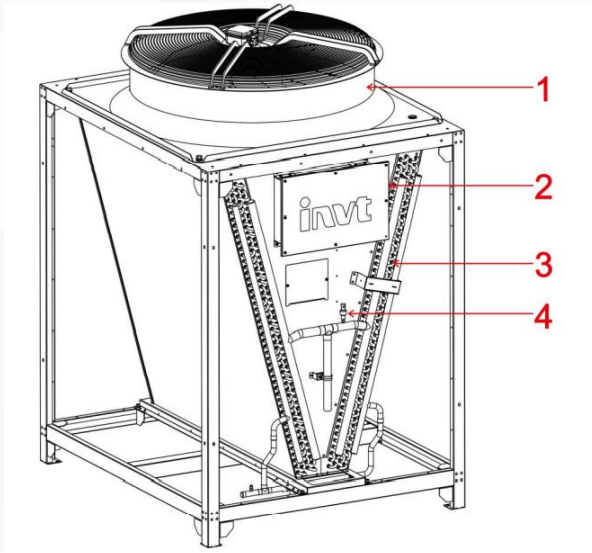
Conventional outdoor unit
(26-96kW)



Centralized outdoor unit
(45-180kW)

- ◆ Horizontal & vertical Installation
- ◆ Infinitely variable speed control
- ◆ 50 & 60 Hz
- ◆ Conventional type:
 - single system: 26-96
 - dual system: 56-96
- ◆ Centralized type:
 - single system: 45-96
 - dual system: 56-180

Outdoor unit



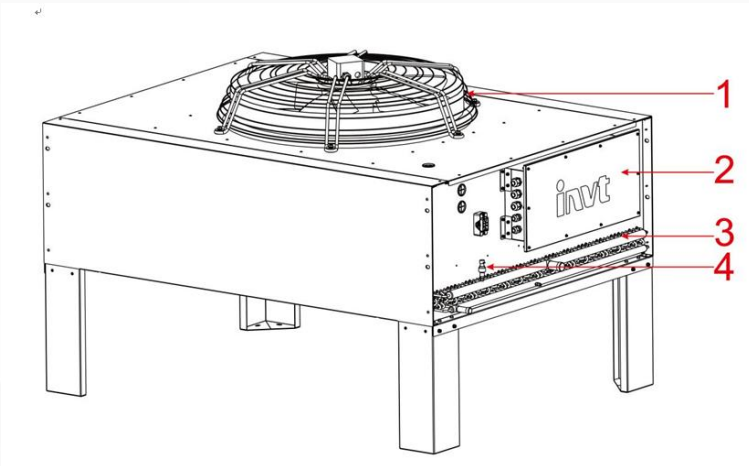
- ◆ Separate switch & VFD
- ◆ Smaller size than STULZ
- ◆ Optional Anti-corrosion coating

Installation conditions:

60m, support extending 100m

Installation drop:

-5 ~+20m,
support extending -20 ~+30m



- | | | | | | | | |
|---|--------------|---|----------------------|---|-----------|---|-----------------|
| 1 | AC axial fan | 2 | Electric control box | 3 | Condenser | 4 | Pressure sensor |
|---|--------------|---|----------------------|---|-----------|---|-----------------|



Home page



Temp and Hum curve



ID	Datetime	Event	Current Alarm
1	2022-01-10 07:50:18	Fan1 Fail	
2	2022-01-10 07:50:18	Heater Fail	

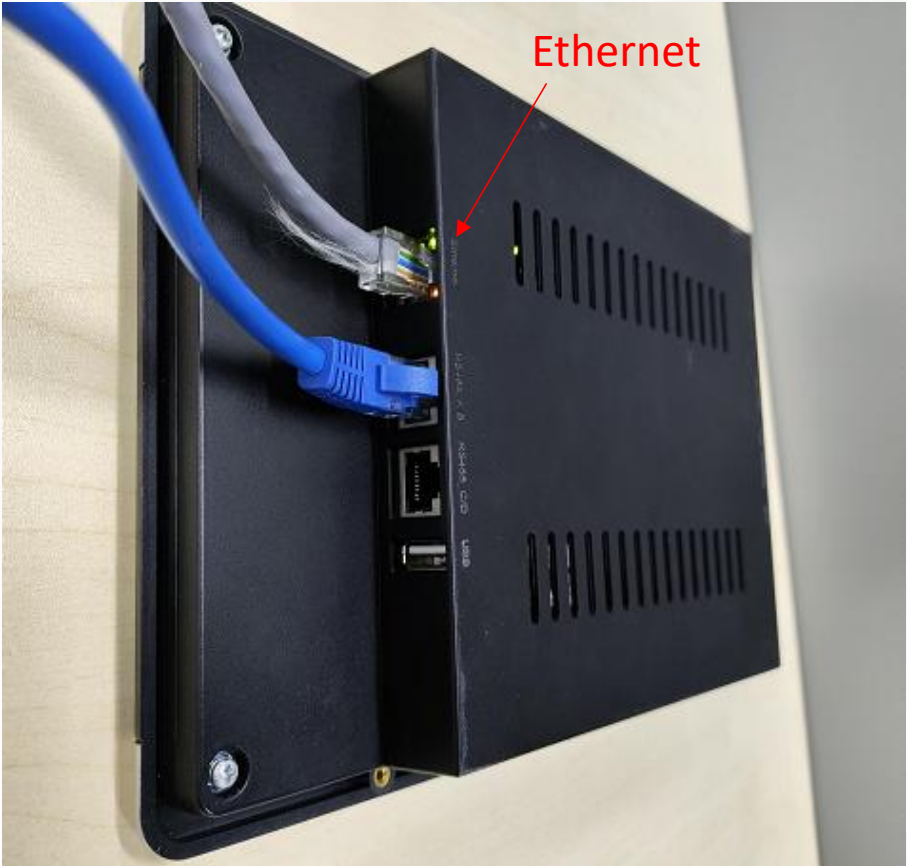
The screenshot shows the 'Alarm' page of the HMI interface. It displays a table of alarm logs with columns for ID, Datetime, Event, and Current Alarm. The 'Alarm' tab is selected in the bottom navigation bar.

Alarm logs

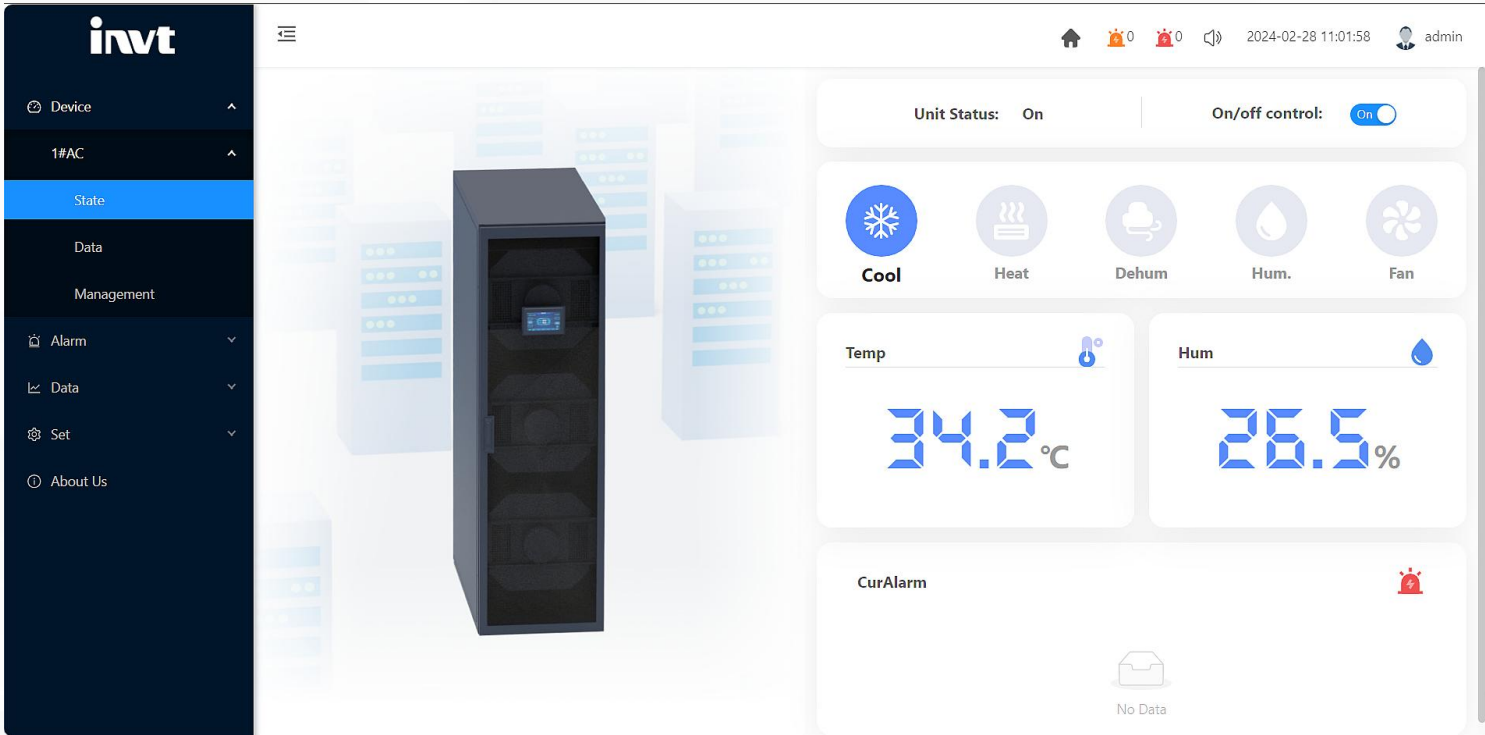


- Controller system **designed** & commissioning by **INVT team**
- 3-level **password protection**
- **Suction superheat & Condensation subcooling detection**

SNMP (Standard part)

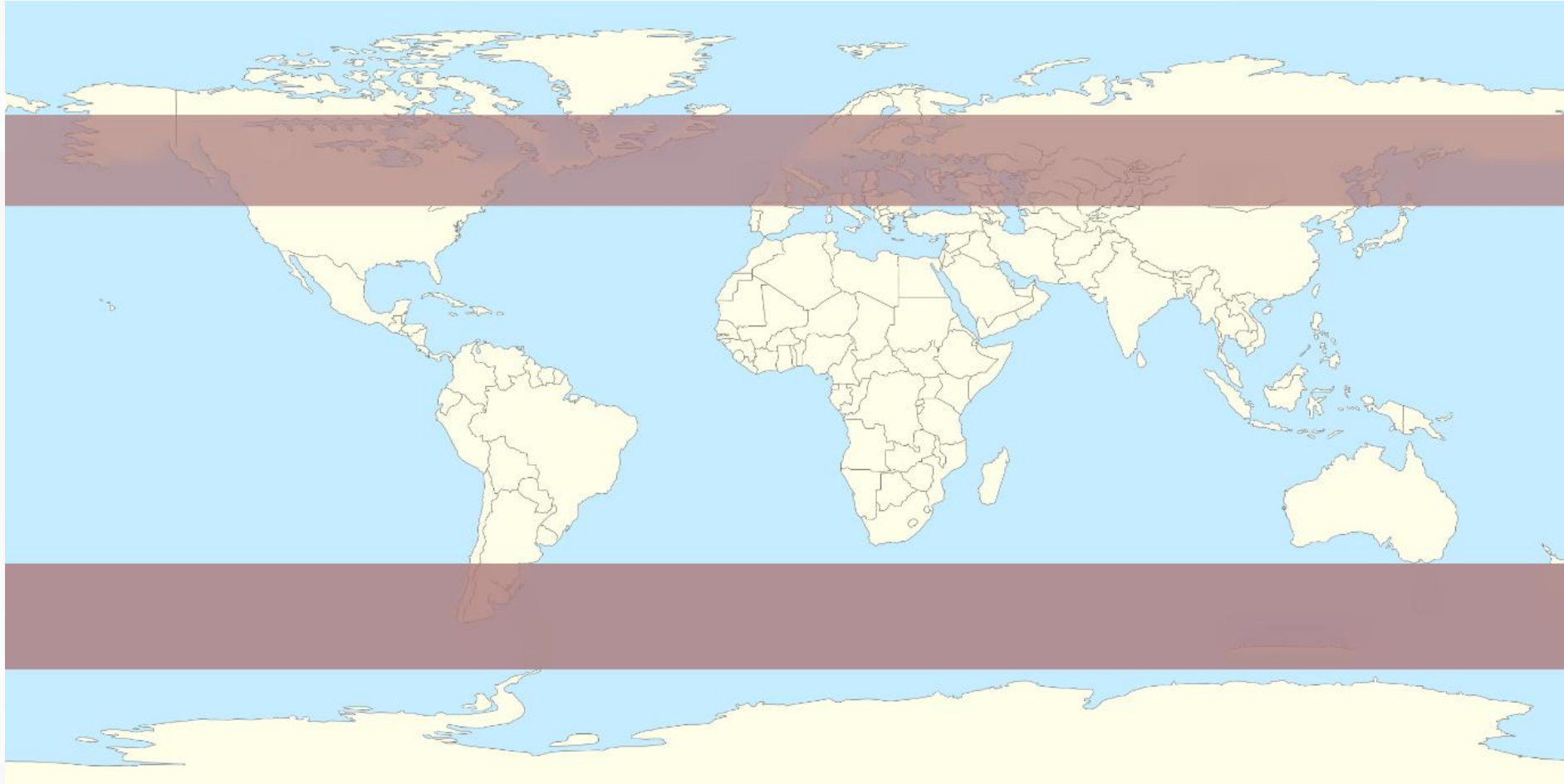


Screen rear side



SNMP web interface

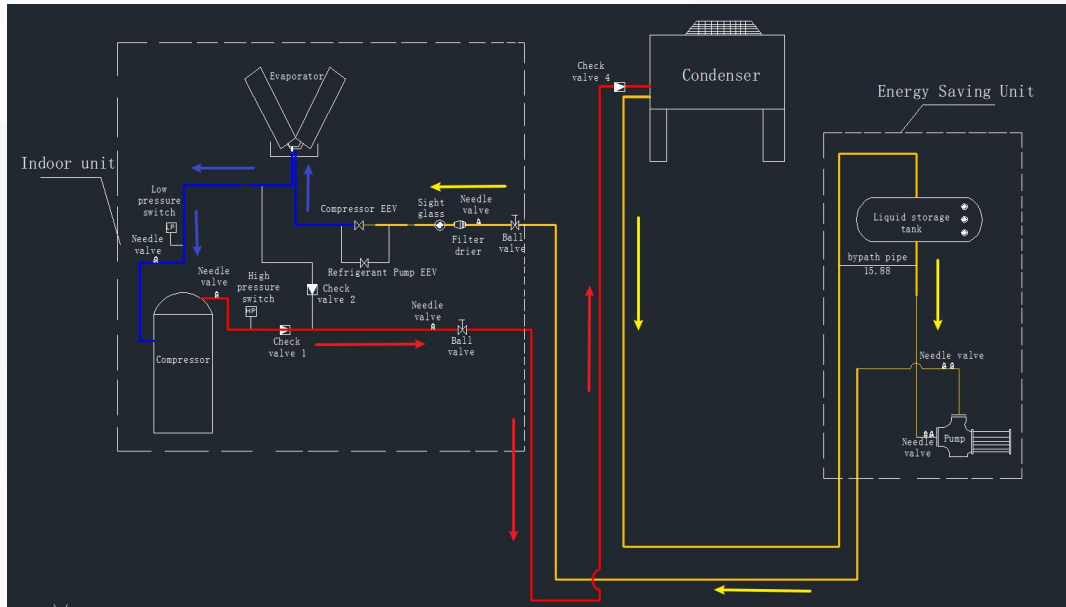
Energy saving unit



Mainly used in Russia, Europe, Canada & USA

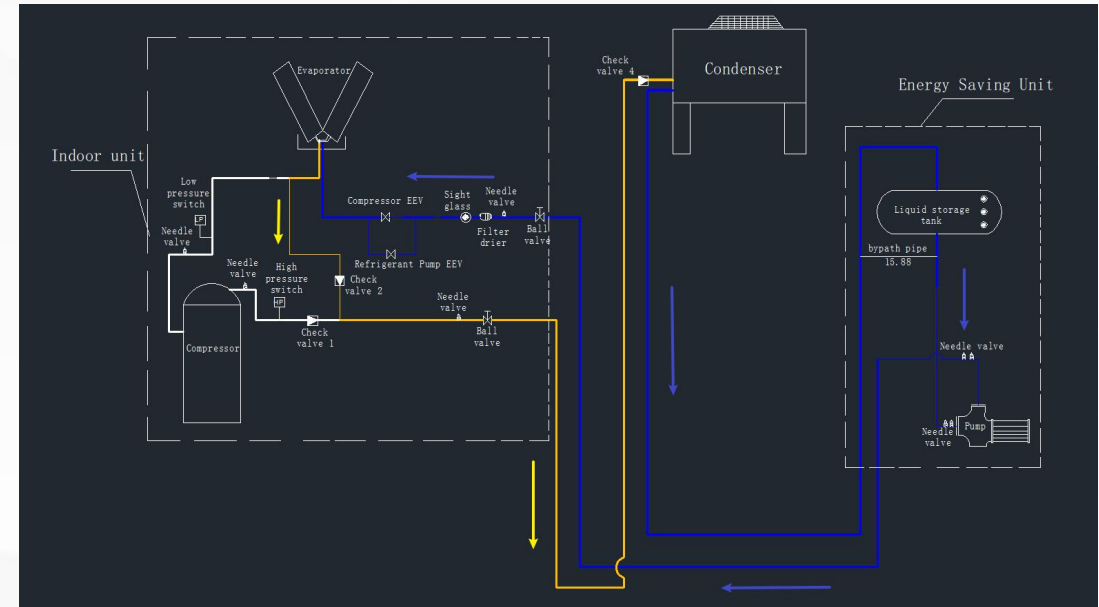
Latitude ($\pm$) 40~60 degrees

Energy saving unit



DX mode

Outside $> 20^{\circ}\text{C}$; Compressor power on

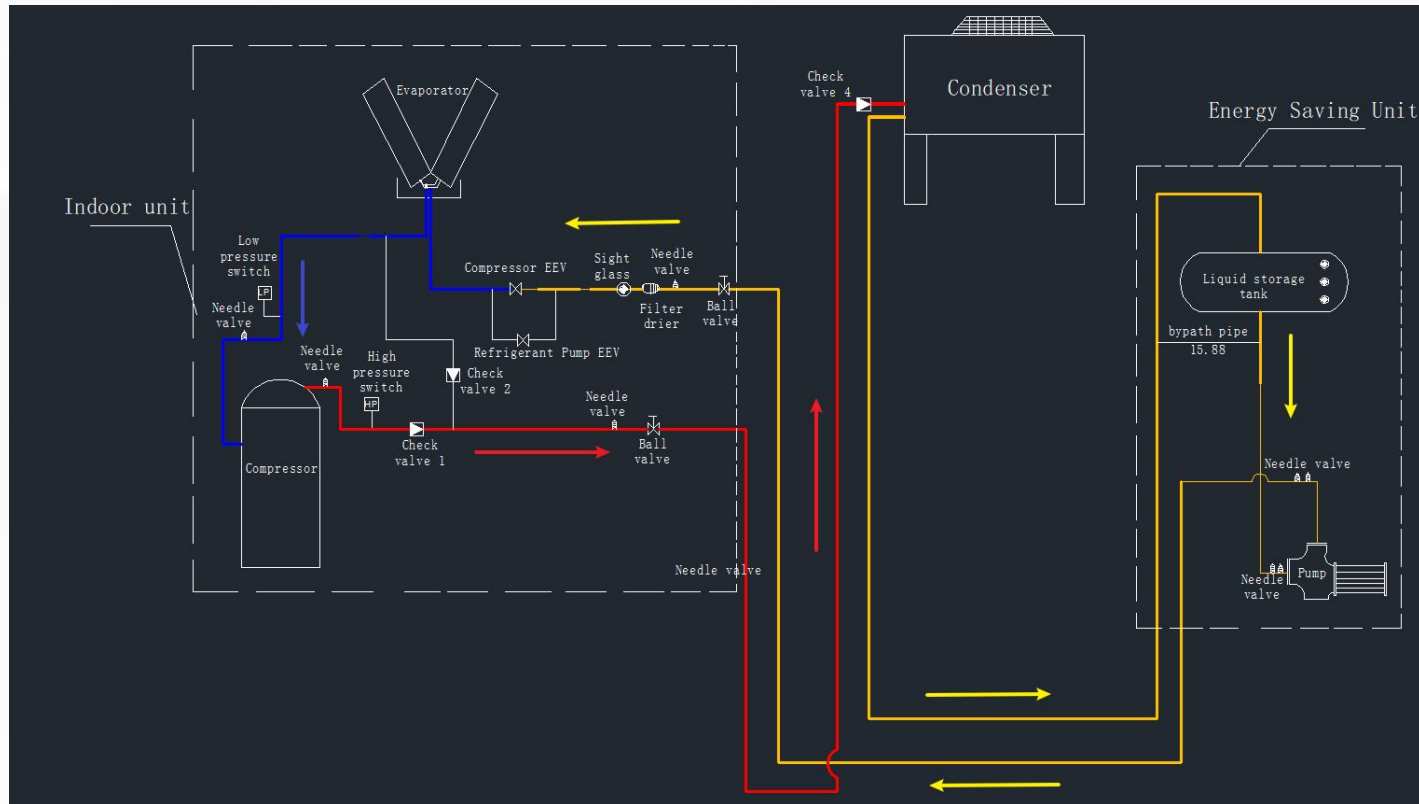


Free cooling

Outside $< 5^{\circ}\text{C}$; Refrigerant pump power on

Cooling diagram

Energy saving unit



Outside 5~20°C

Both compressor & pump power on

Mixed mode Cooling diagram



Outdoor unit + exterior module



Integrated outdoor unit

Differentiation



	12.5kW In-row AC	25kW In-row AC	30kW In-row AC	40kW In-row AC	50kW In-row AC	60kW In-row AC
Compressor	Inverter rotor	Inverter scroll				
Evaporator	“/” type				“V” type	
Fan	EC fan					
Humidifier	Electrode humidification					
Heater	PTC					
Screen	7" touch screen			Standard 7" touch screen, Optional 10" touch screen		

Specification parameters



	Unit	VCR012	VCR025	VCR030	VCR040	VCR050	VCR060
Configuration	—	Refrigeration type /Constant Temp & Humidity					
Total cooling capacity	kW	12.5	25.5	30.8	42.8	51.5	62.7
Sensible cooling capacity	kW	12.5	25.5	30.8	42.8	51.5	62.7
Refrigerant Type	—	R410A					
Compressor Type	—	DC inverter					
Expansion valve Type	—	Electronic expansion valve					
Air Filter	—	G4 filter					
Fan Type	—	EC Fan					
Fan Number	Pcs	4	6	6	2	3	3
Air volume	m3/h	2800	5000	5200	8500	10500	11500
Heating capacity	kW	3	4.5	4.5	6	6.5	6.5
Humidification capacity	kg/h	1.5	3	3	3	3	3
Width	mm	300	300	300	600	600	600
Depth	mm	1100/1200	1100/1200	1100/1200	1100/1200	1100/1200	1100/1200
Height	mm	2000	2000	2000	2000	2000	2000

Test conditions: indoor dry bulb temperature 37°C, relative humidity 24%, outdoor temperature 35°C

Comparison with competitors



- Backward inclined EC fan
- Standard oil separator and check valve
- Closed Hot and cold aisle, front and side air supply available
- Support up and down pipe entry

VS

- DC axial flow fan, loud noise, additional power module is required, and the risk of failure
- Without Standard oil separator and check valve
- The height cannot be completely combined with the standard cabinet
- No closed cold and hot aisle design



Comparison with competitors

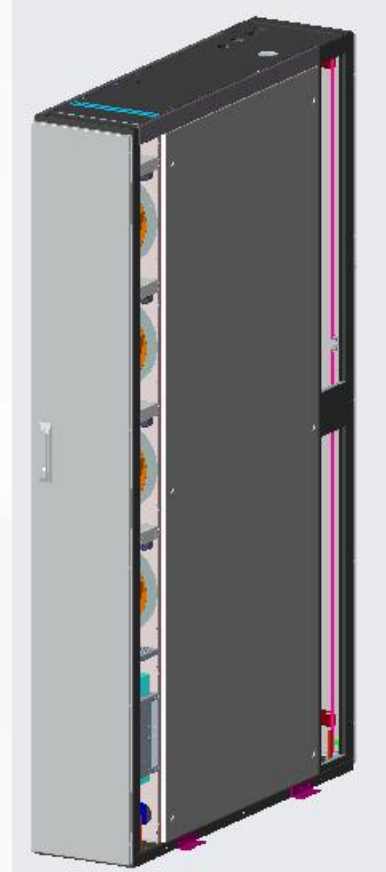


- Indoor fan: hot swappable
- Evaporator: **Two-stage evaporator design**, adding a water tray in the middle
- Display: **7 inches**/color/capacitive touch screen
- **Standard** check valve and sight glass
- Optional low temperature outdoor unit

VS

Other China brands

- Indoor fan: hot swappable
- Evaporator: **One-stage** evaporator with **risk of blowing water**
- Display: **key screen**
- Sight glass is **optional**, check valve needs to be installed on site
- No built-in design for cryogenic components



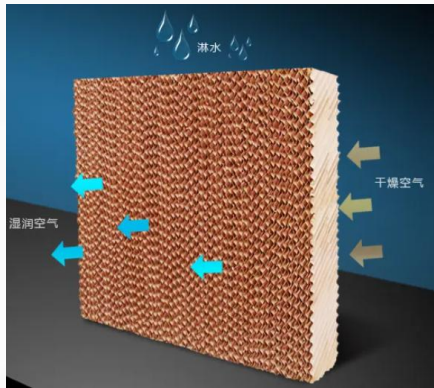
Comparison with competitors



VS

Electrode Humidifier

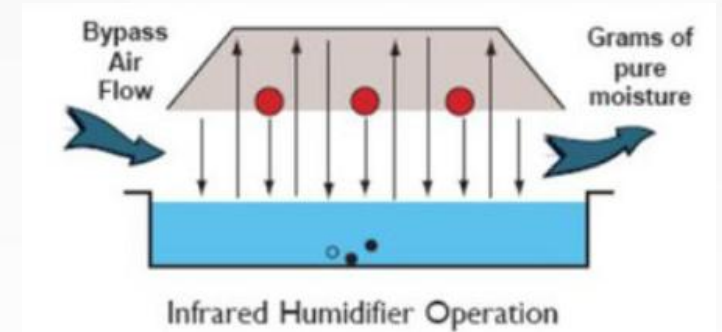
- Large humidification volume
- Simple maintenance and low cost



VS

Wet film humidifier

- Small humidification volume
- Energy saving (natural evaporation)



Infrared humidifier

- High energy consumption, difficult maintenance and high cost
- High humidification speed and small size

◆ Cooling range

25kW ~ 60kW @220V, 1φ +N
70kW ~ 80kW @380V, 3φ +N

◆ Air supply mode

Horizontal (side) Air Supply
Horizontal (front) Air Supply



In-row AC
(25kW)



In-row AC
(25-30kW)



In-row AC
(40-80kW)

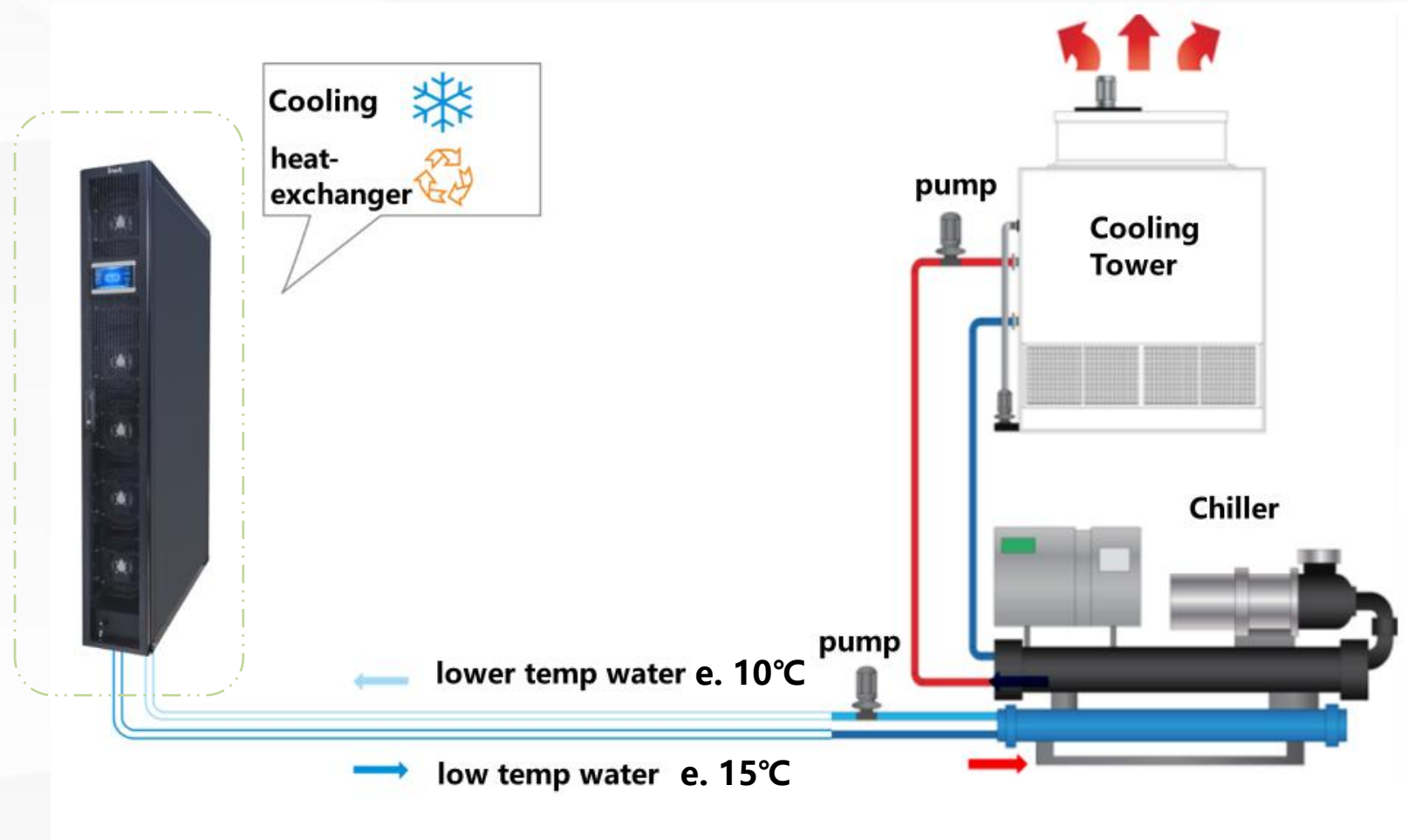
Specifications



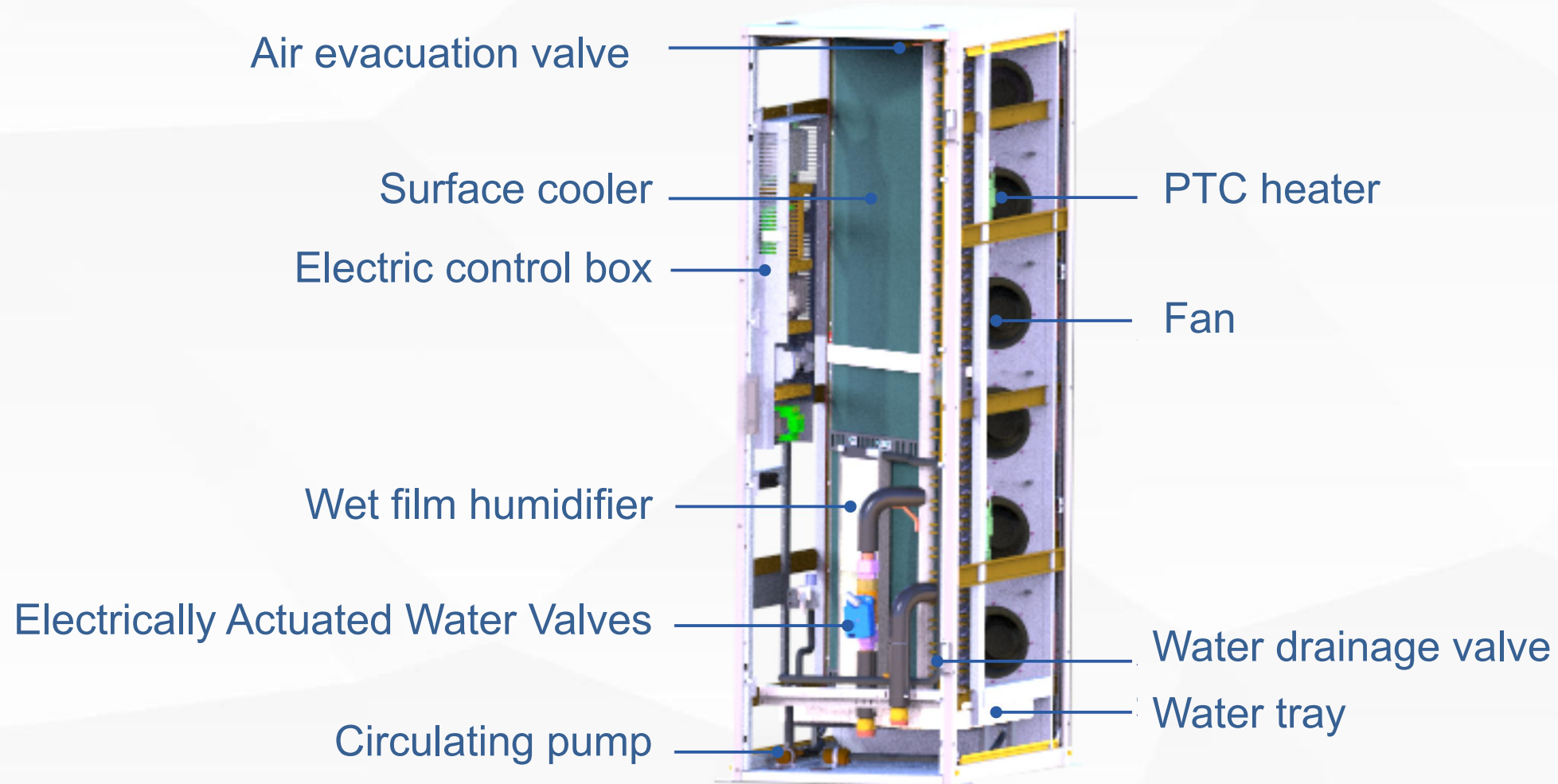
Model	VCR025	VCR030	VCR040	VCR050	VCR060	VCR070	VCR080
Cooling Capacity -kW	25.5	30.8	42.8	51.5	61.5	70.8	83.6
Sensible Cooling -kW	25.5	30.8	42.8	51.5	61.5	70.8	83.6
SHR	1.0						
Air volume -m ³ /h	5000	5500	7500	8500	9000	11500	12000
Water pipe diameter -mm	25		35			38	
Water pressure drop-kpa	60	75	65	75	80	75	90
Water flow rate -m ³ /h	5.1	5.76	8.26	8.95	11.01	13.04	14.37
Heating capacity -kW	4.0	4.5	5.5	5.5	5.5	6.0	6.5
Humidifier -kg/h	3.0						
Power grid	220V~ 50Hz					380V 3N~50Hz	
Full-load current (cooling type) -A	8.1	11.2	9.5	11.4	13.4	18.5	21.9
Full-load current (constant temp) -A	21.8	24.8	27.7	29.6	31.6	18.5	21.9
W×D×H -mm	300×1200×2000		600×1200×2000				
Height -kg	170	180	215	230	240	255	270

Test conditions: air return 37 °C, 24% ; chilled water inlet and outlet water temperature @ 10/15 °C

Principle



Construction



Features



Simplified components and control, low failure rate and better reliability

Simplification

Real time monitoring of each fan, and quick feedback of fan fault information in case of abnormalities to maintain normal operation of the unit

Speed
feedback

Leakage
Detection

Standard water leakage sensor, immediately performs corresponding actions

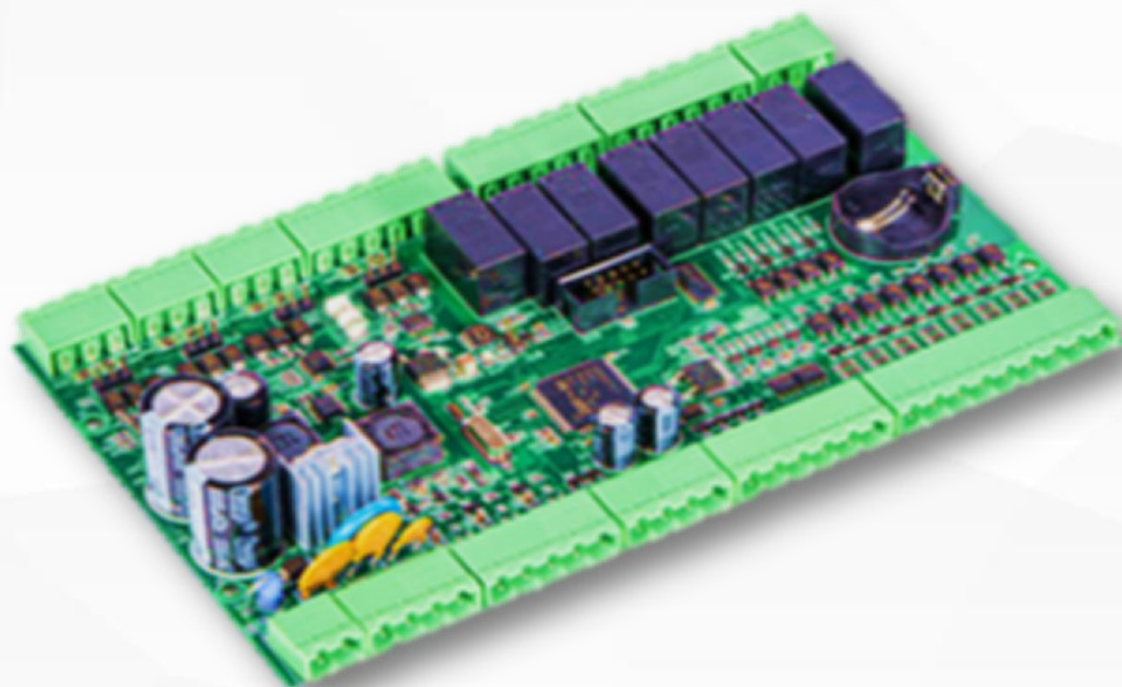
Actuated
Water Valve

After the water valve is closed for more than the set time, it will perform multiple opening actions to avoid long-term closure causing high opening torque and failure

Intelligent Control



- a. 7-inch touch HMI
- b. Real time display of temp & humi. curves
- c. 3-level password protection



- a. Standard RS485 & SNMP
- b. 64+ unit rotation group working
- c. Real time monitoring of various operating parameters, alarm processing and protection actions

High quality components



Electric two-way water valve

Johnson Controls Ltd.
BELIMO Ltd.



EC centrifugal fan

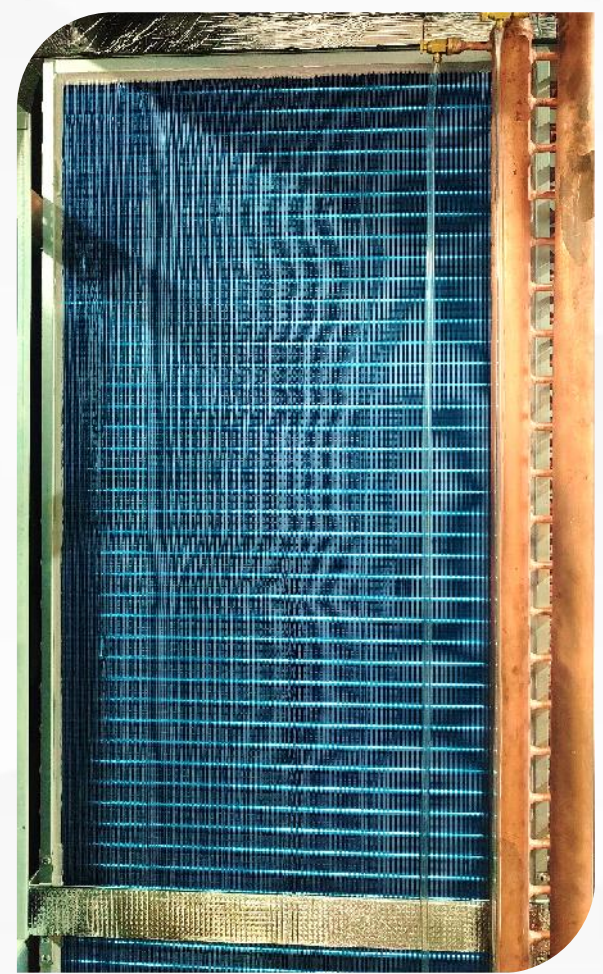
Fans-tech Ltd.



Wet film humidifier, low water quality requirements & maintenance costs



PTC heater, heating quickly & safety



Surface cooler,
Copper pipe & aluminum fins

Optional parts



AC axial fan,
large air volume



Surge Protective Device



Steam humidifier



Condensate drainage pump

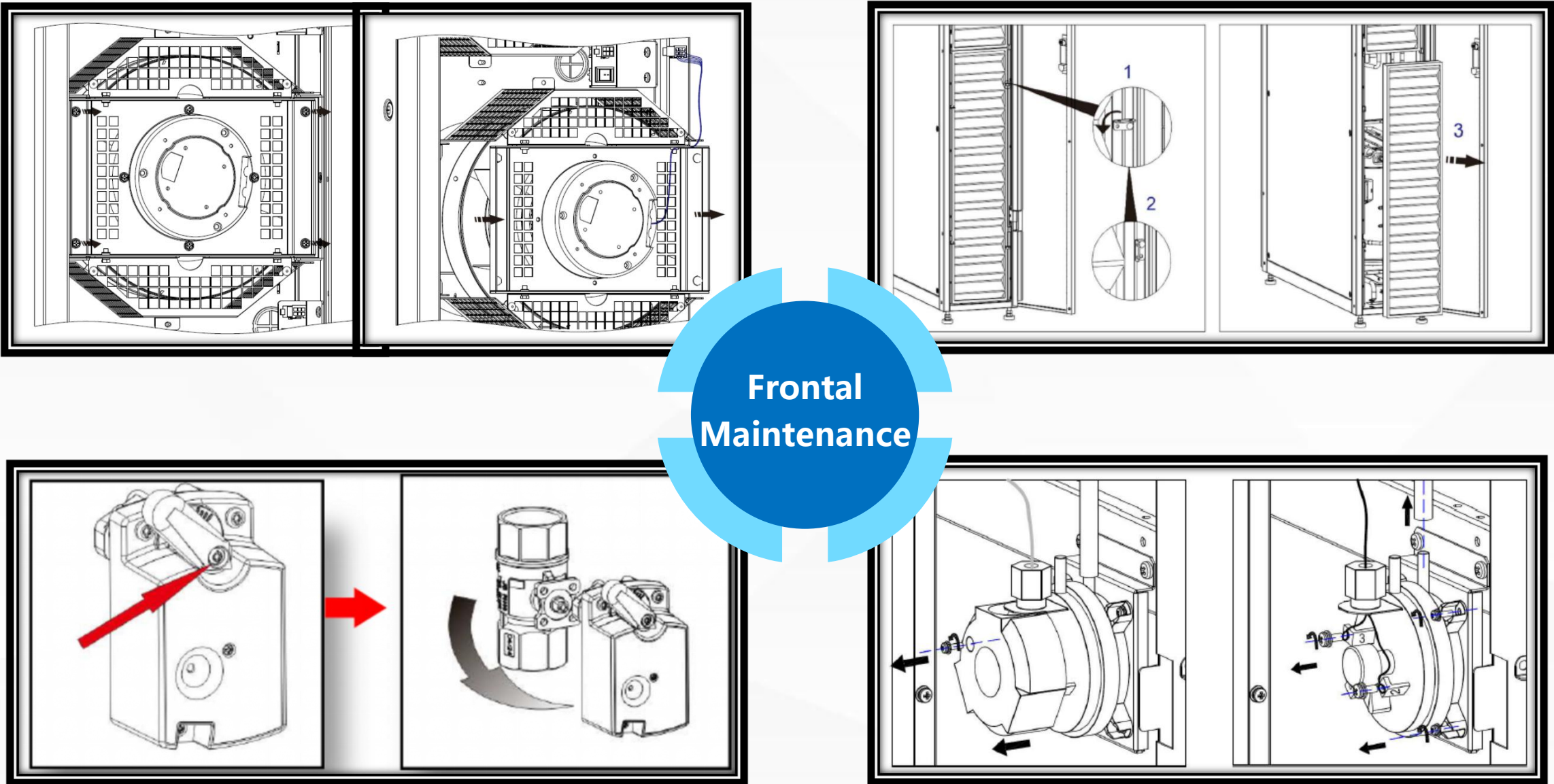


Electric three-way water valve,
Electronic Pressure Independent Valves (EPIV)



Dual power solution
Contactor, ATS

Frontal
Maintenance



Reasonable cooling capacity



Cooling capacity covers from 25 ~ 80kW, with a total of 7 models

Two fan solutions



2 options for centrifugal and axial fans on demand

Flexible size



Using a smaller dimension meet performance requirements

Ultra efficiency ratio



The real testing EER above 30

Advantage

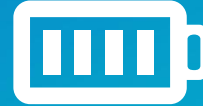


High temperature control accuracy



Temperature control accuracy @ $\pm 0.5^{\circ}\text{C}$

Favorable power compatibility



The air conditioner can work at $220\text{V} \pm 20\%$

Detailed design



Air evacuation valve directly to the water tray to avoid water splashing; Main and backup power recognized. Top and bottom piping entry, etc.

Humidifiers save energy



Wet film humidifier with circulating water pump solution, saving power consumption, saving water

02

VCA Series Large Room AC

◆ Downflow supply

◆ Upflow supply

◆ Top front supply

Large Room AC



Applications



Large-scale server room



Traditional Server Room



Large-scale data centers



High heat density data center



Large room AC



25kW ~ 60kW single sys. inverter
60kW ~ 120kW dual sys. inverter

Cooling range

3φ +N @380V 50/60Hz;
3φ (N) @460V 60Hz
3φ (N) @208V 60Hz @ 25,30,40,50,60(dual)

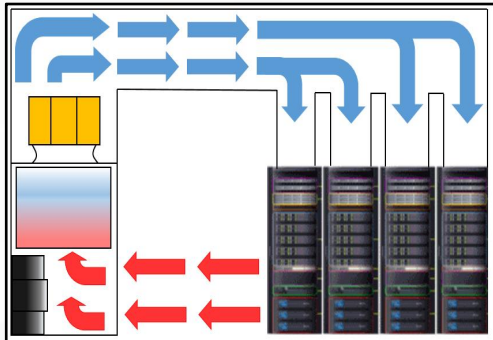
Cooling mode

Air-cooled, DX mode (direct expansion)
CW unit (chilled water)
Energy saving unit

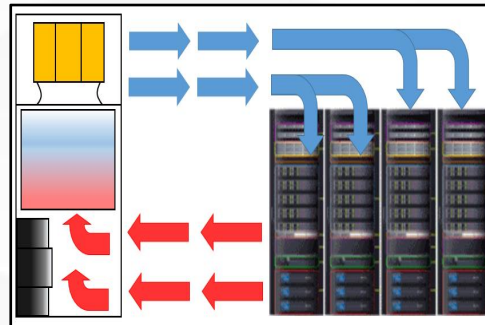
Air supply mode

Top Front Supply
Downflow Supply
Upflow Supply

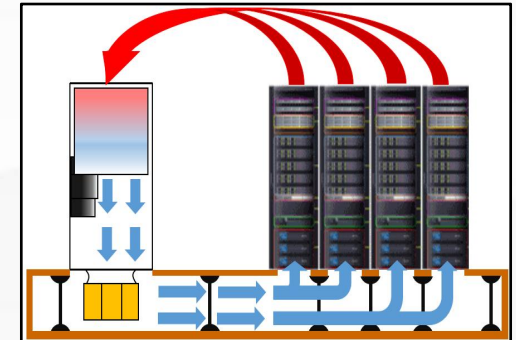
Applications



Upflow supply



Top front supply ★



Downflow supply
(fan sinking)

Features



Safety & Reliable

- Hitachi Scroll compressor (Copeland can be optional)★
- V or A type evaporator★
- INVT controller & VFD★
- Dual electric control box
- Real time monitoring of input power
- Modular framework★
- Outdoor unit's switch & VFD★
- 3-level password protection
- Standard oil separator

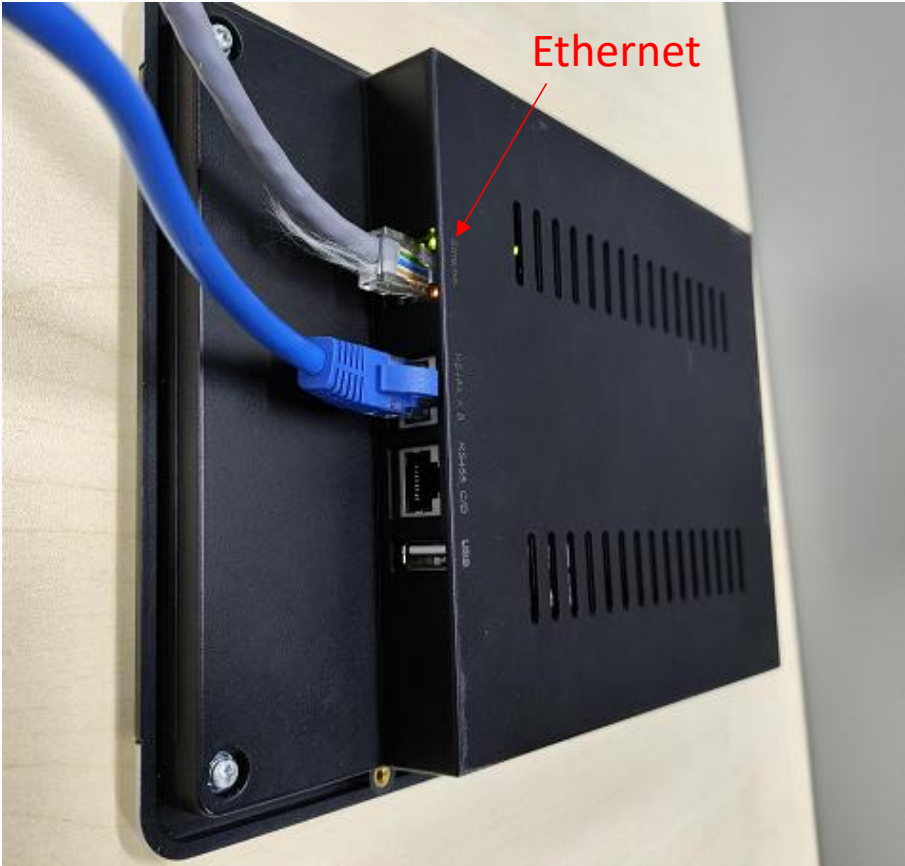
Intelligent

- 10-inch touch screen, free SNMP★
- RS485 interface for supervision
- T&H curve display more than 30 days
- 2000 historical alarm★
- Networking group support up to 64 units. (CAN comm.)

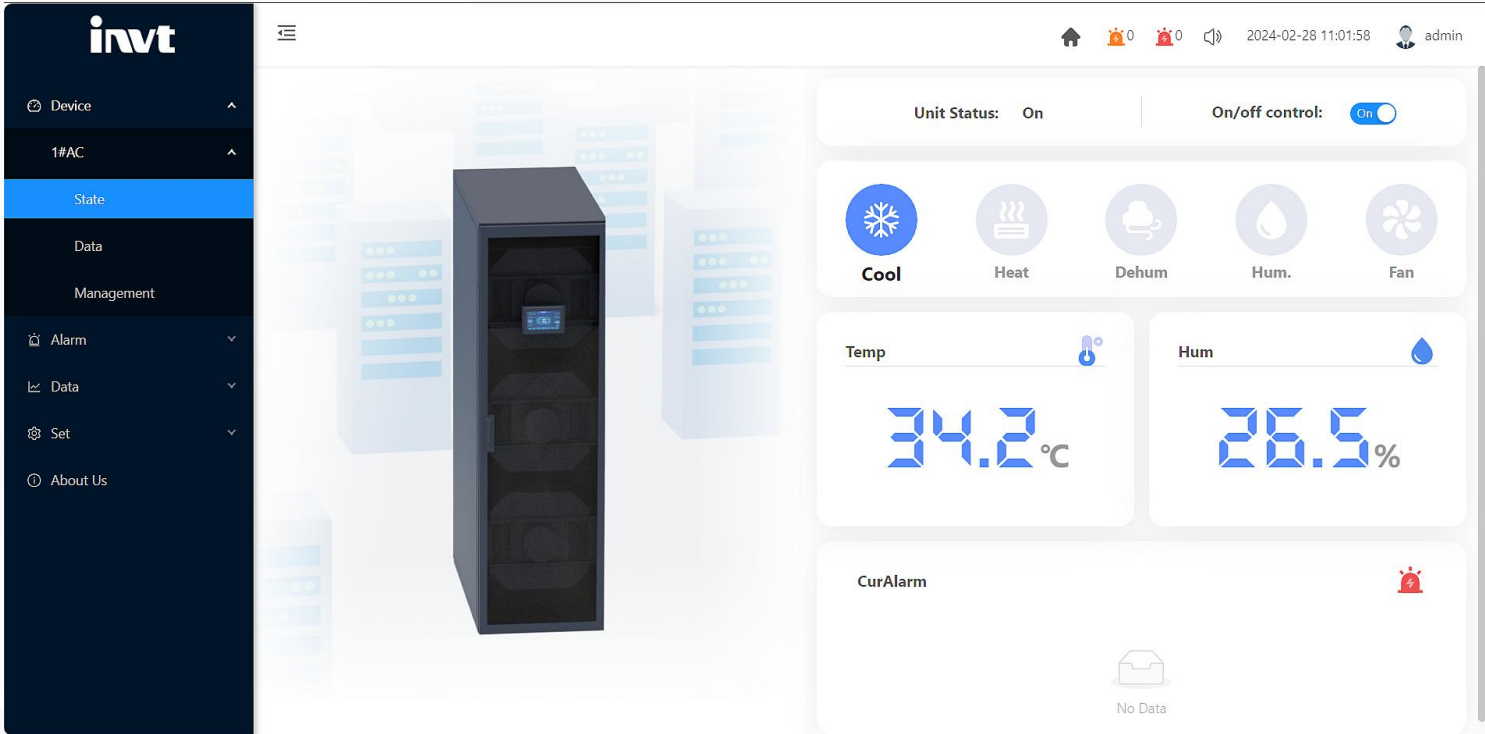
Customized

- Optional water leakage sensor, hood kit
- Optional built-in low-temperature kit
- Optional dual input
- Optional remote T&H sensor
- Optional anti-corrosion outdoor unit

SNMP (Standard part)

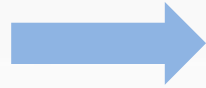


Display rear side



SNMP web interface

Modular design



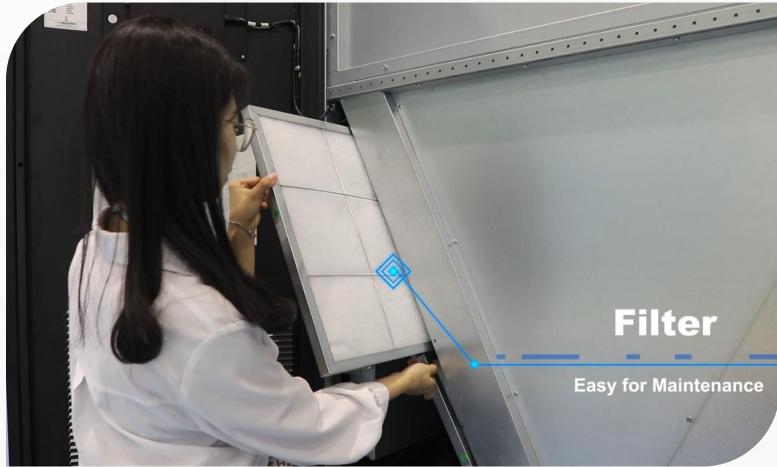
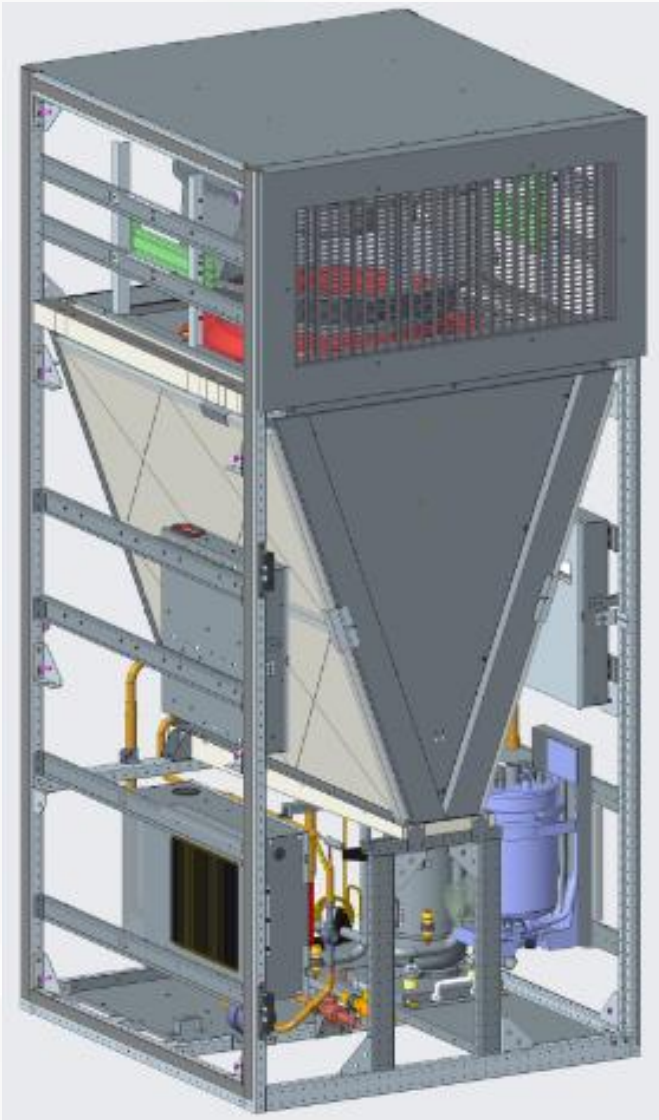
Modular design (dual system adopts
2 sets of evaporator coils, and
independent compressors and fans)

Convenient transportation,
needn't cutting copper pipes



Competitors adopt **non**
modular design

Frontal maintenance



Easy maintenance of air filter

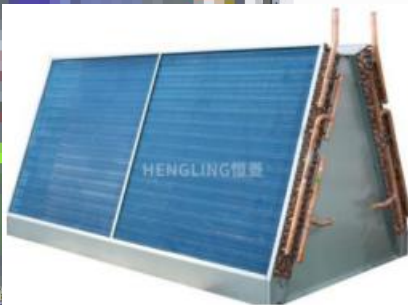
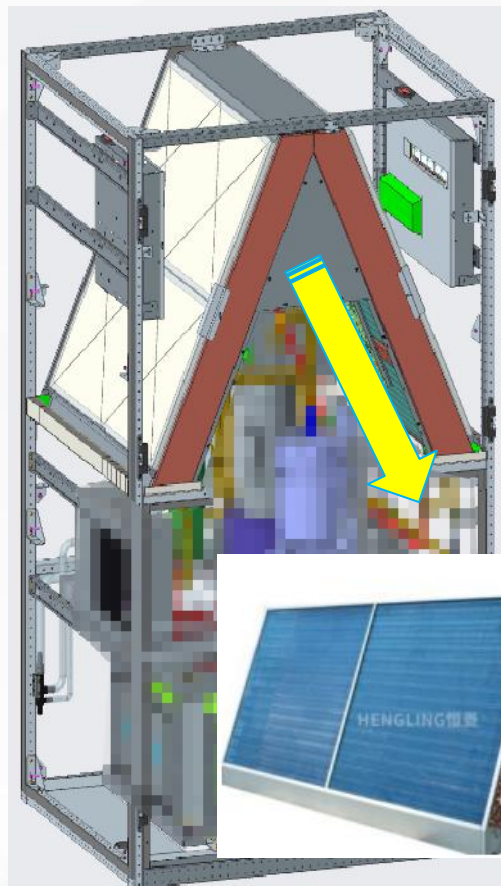
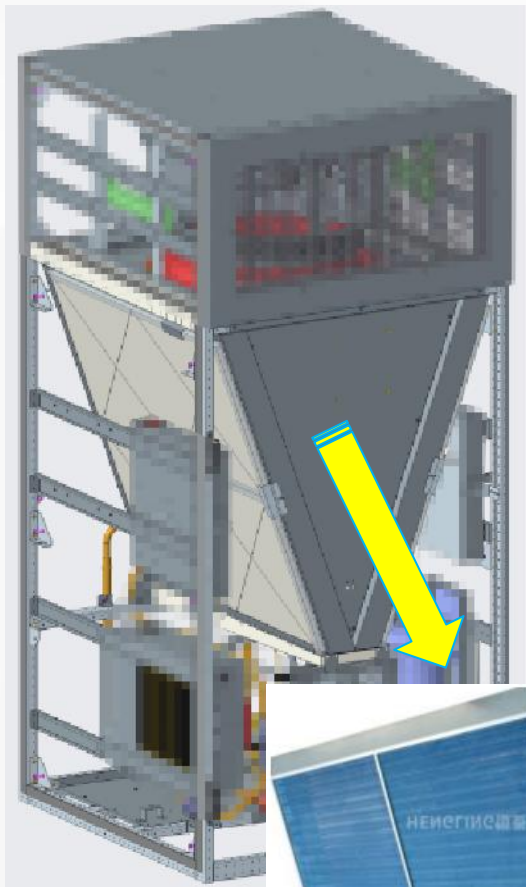


Pull & push electronic control box



Competitors solutions
Inconvenient maintenance

A or V type evaporator



Better airflow organization, smaller air resistance (reducing fans consumption)

Small footprint, 40kW: 900*995*1975mm; 120kW: 2200*995*1975mm



Competitors solutions

“/” type evaporator

40kW: 1315*890*1985mm

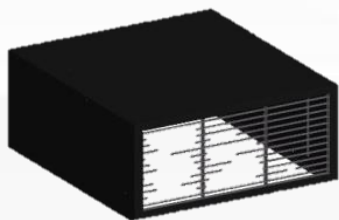
100kW: 2500*890*1985mm

Advantage summary

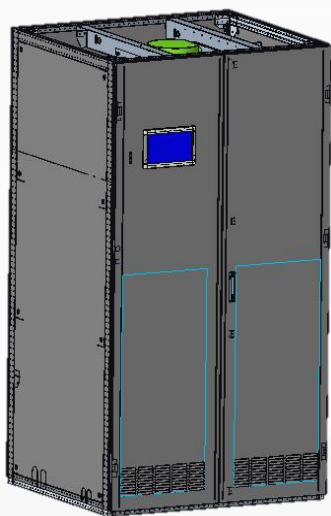


- EC fan: built-in drive, engineering plastic fan blade
- Compressor: DC inverter scroll compressor
- Evaporator: $\phi 9.52$ purple copper tube (not applicable to some models), aluminum fins, V-type or A-type★
- Humidifier: electrode humidifier
- Communication interface: RS485 and SNMP dual interface, support web browsing and alarm email notification function★
- Display: 10-inch, color, capacitive touch screen
- Temperature and humidity curves & data: simultaneously support the display of not less than 30 days temperature and humidity curves and historical temperature and humidity data
- Grid power monitoring: support input voltage, frequency real-time value display
- Expansion valve: electronic expansion valve
- Electrical control box: side suspension, pull-out, strong and weak electrical isolation, dual electrical control design
- Structure framework: modular design, disassembly and disassembly convenience, no cutting copper pipe★
- Air supply mode: no additional air cap to do front supply, the height does not exceed 2000mm
- Cooling capacity & energy efficiency: national standard working conditions real refrigeration capacity (24 °C / 50%) & first-class energy efficiency
- ★Unit size (width × depth × height) mm: 900/995/1975、1100/995/1975
1800/995/1975、2200/995/1975

Construction (upflow)



Hood kit



EC Fan

Filter

Weak
-current
box

Compressor
Inverter

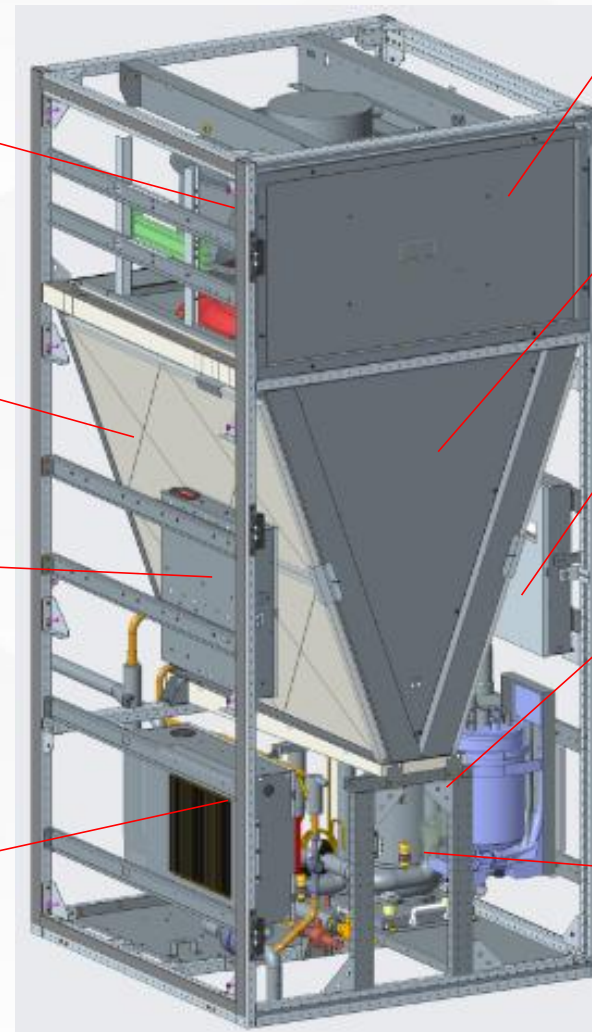
PTC heater

V type
Evaporator

Strong
-current
box

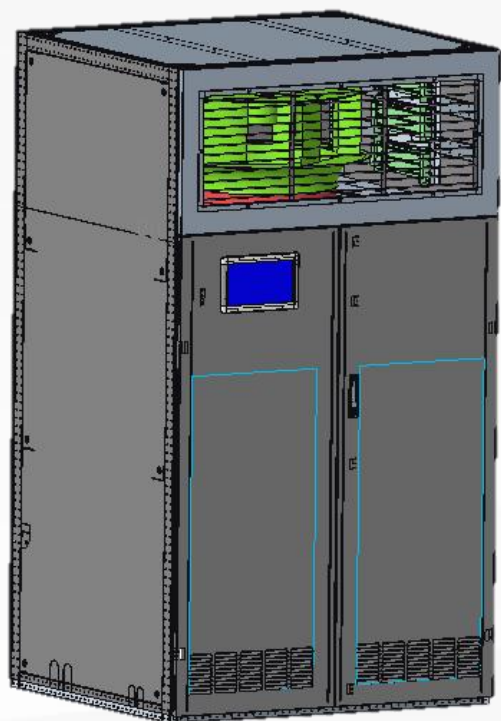
Electrode
humidifier

Compressor

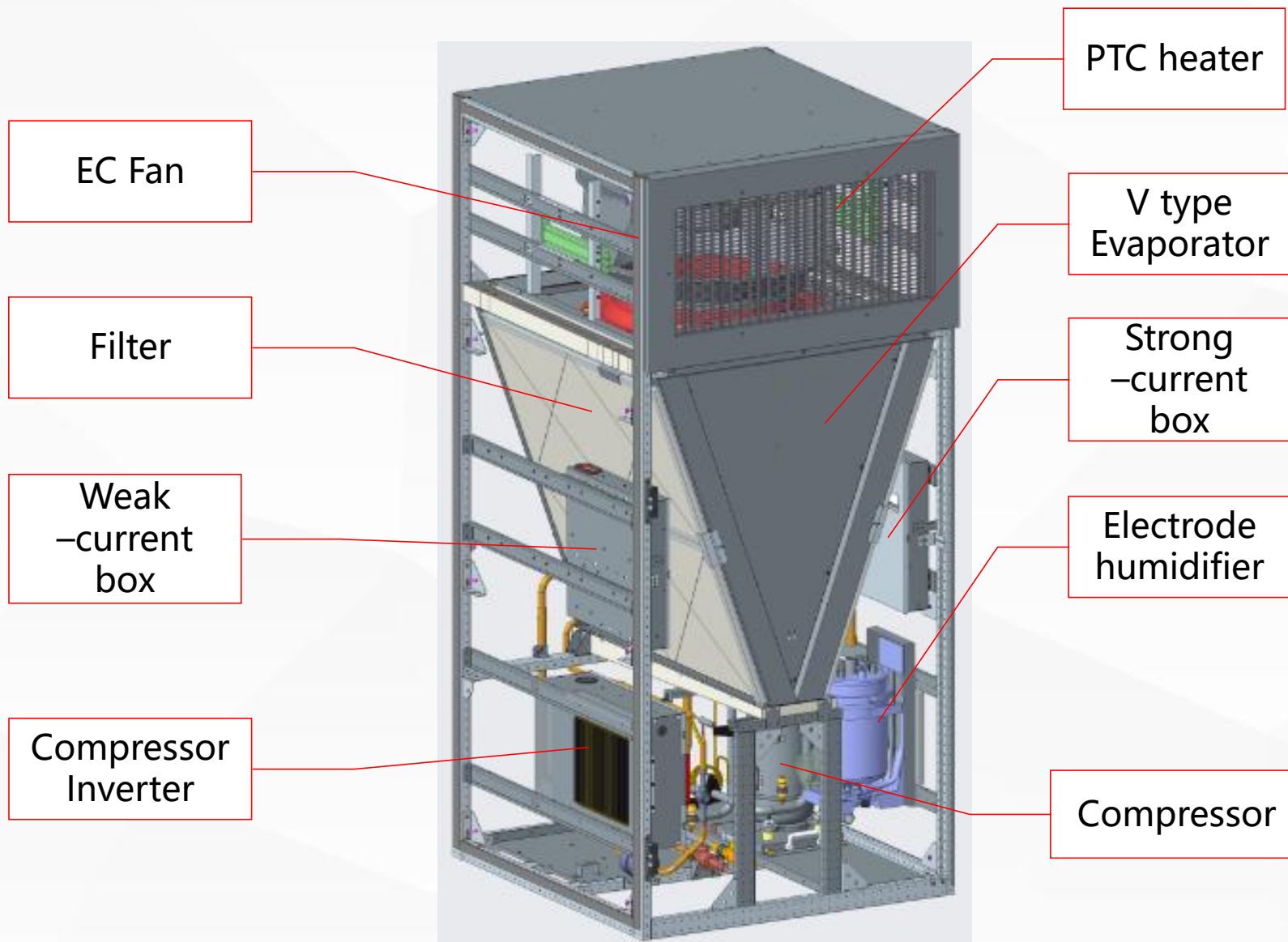


Noted: Hood kit can be optional,
400mm height support customizing

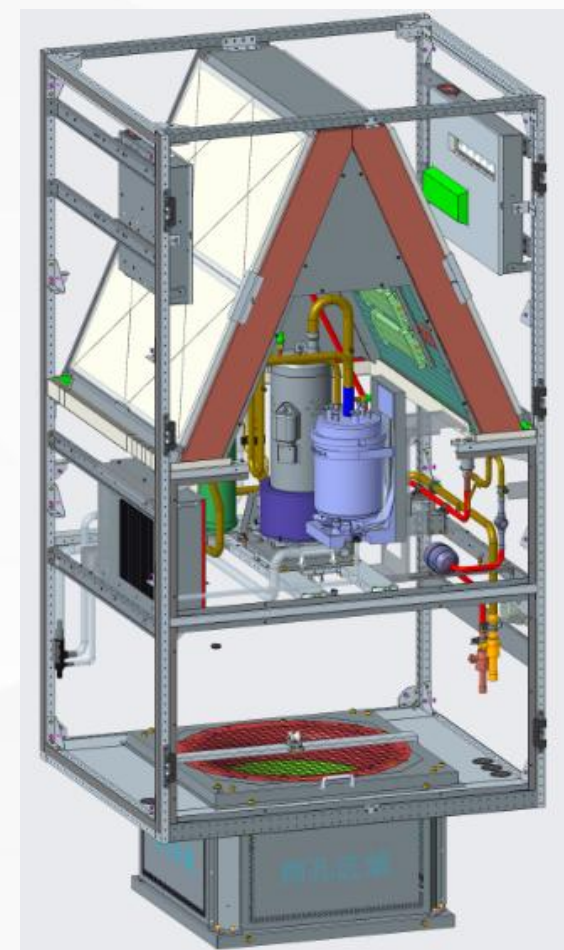
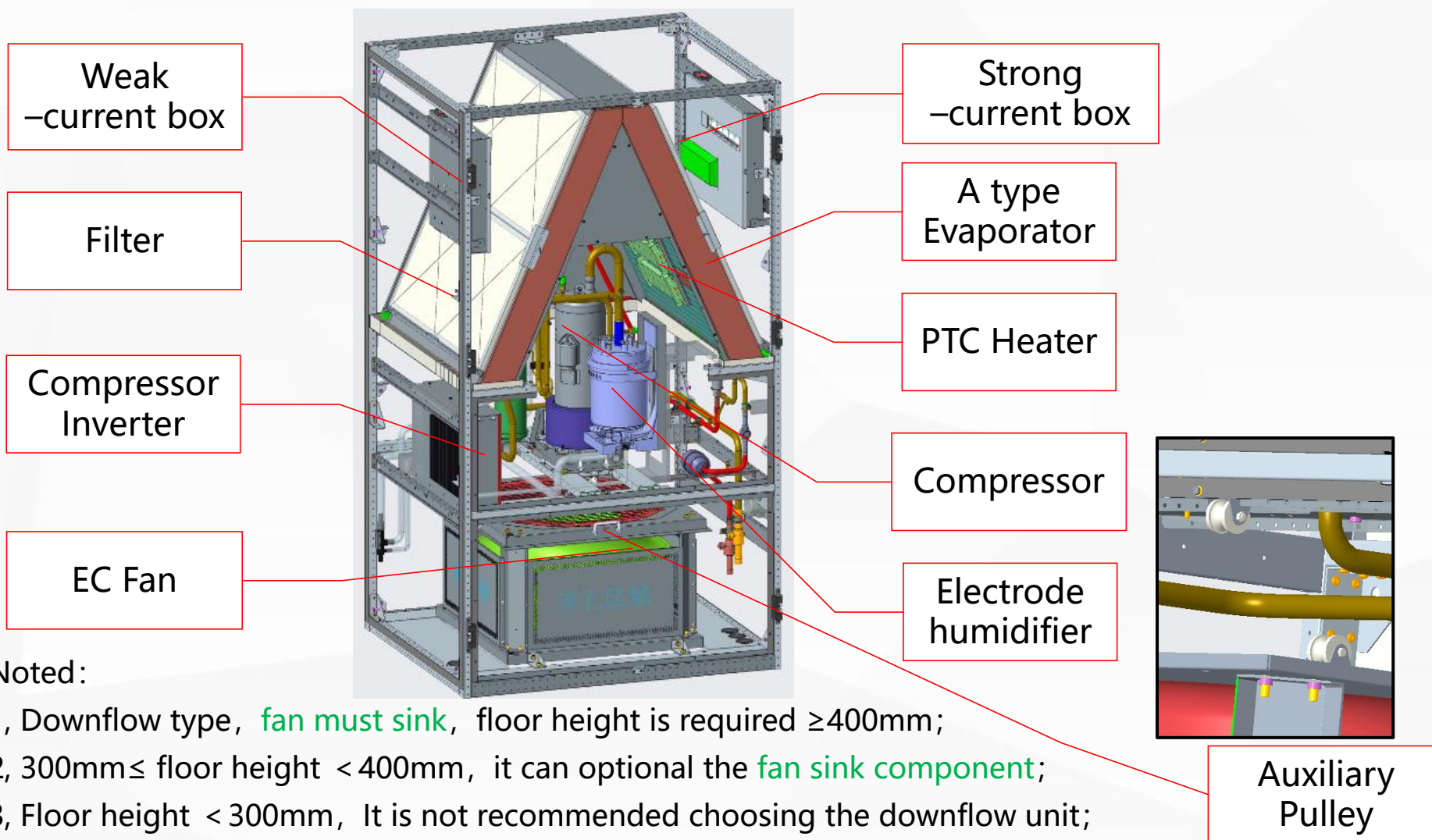
Construction (top front)



Standard type, 1975mm height



Construction (downflow)



Outdoor unit

(the same with in-row PAC)



Conventional outdoor unit (26-56kW)
(Single fan)



Conventional outdoor unit (60-96kW)
(Dual fan)



Centralized outdoor unit
(45-180kW)

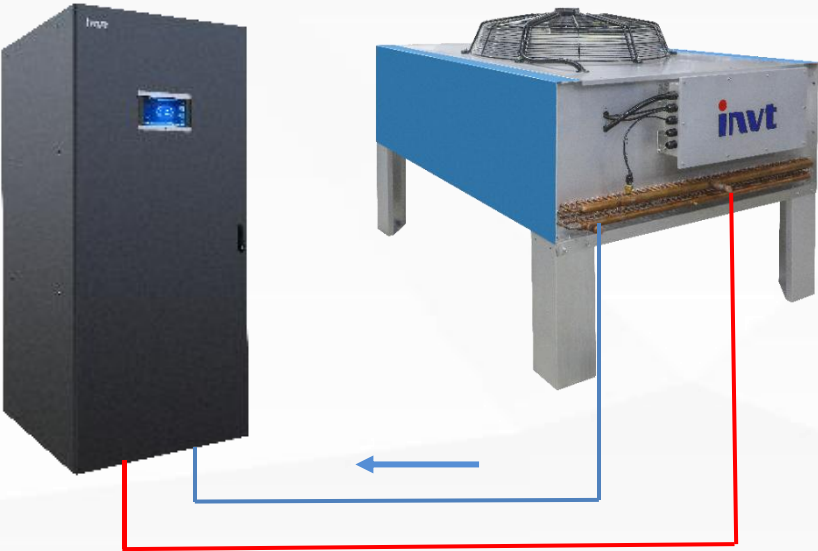


Centralized outdoor unit
(with energy saving unit)

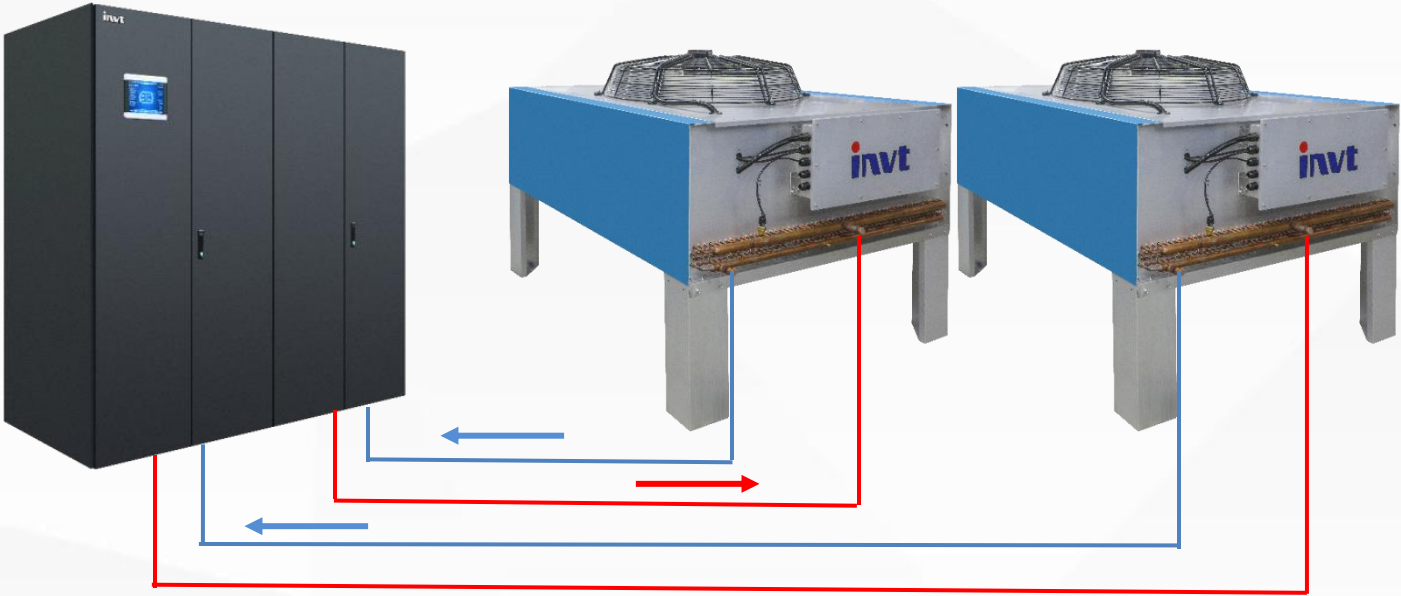
Optional exterior energy
saving unit solution



Single & dual system



Single system



Dual system

Parameters



Model	VCA025	VCA030	VCA035	VCA040	VCA045	VCA050	VCA060	VCA060 (Dual Sys.)	VCA070 (Dual Sys.)	VCA080 (Dual Sys.)	VCA090 (Dual Sys.)	VCA100 (Dual Sys.)	VCA110 (Dual Sys.)	VCA120 (Dual Sys.)
Configuration	Constant Temp & Humidity													
Total cooling capacity (kW)	27	30.5	36.2	41.1	45.3	51.1	60	61	72.4	82.2	90.6	102.2	110.3	120
Air volume (m³/h)	8500	9500	11000	12000	12500	13500	14000	19000	22000	24000	25000	26000	27000	28000
Heating capacity (kW)	6	6	6	9	9	9	9	9	9	12	12	12	12	12
Humidification capacity (kg/h)	5	5	5	10	10	10	10	10	10	10	10	10	10	10
AEER (W/W)	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Width (mm)	900	900	900	900	900	1100	1100	1800	1800	1800	1800	2200	2200	2200
Depth (mm)	995	995	995	995	995	995	995	995	995	995	995	995	995	995
Height (mm)	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975

1. Test conditions: indoor return air temperature 24°C, relative humidity 50%, outdoor temperature 35°C.
2. AEER test conditions: indoor return air temperature and humidity: 24°C/50%RH, outdoor temperature 35°C/25°C/15°C/5°C/-5°C respectively.

Competitors



VERTIV



- Evaporator: **Micro-channel Parallel Flow** (Frequency model)
- Humidifier: **Infrared humidifier**
- Display: **7 inches**, colorful, **Resistive touch screen**
- Electric control box: **Non-pull, single box**
- Framework: **To cut copper pipe** for dismantling
- The front air supply: **needs hood, height exceeds 2000mm**

Other China brand



- Display: **7 inches**, colorful, **Resistive touch screen**
- Size(mm): **1400/995/1975** (**40kW**)

03

VCA Series Small room AC

◆ 5.5kW / 7.5kW

◆ 12.5kW

◆ 17.0kW / 20.5kW

◆ 26kW / 32kW

Applications

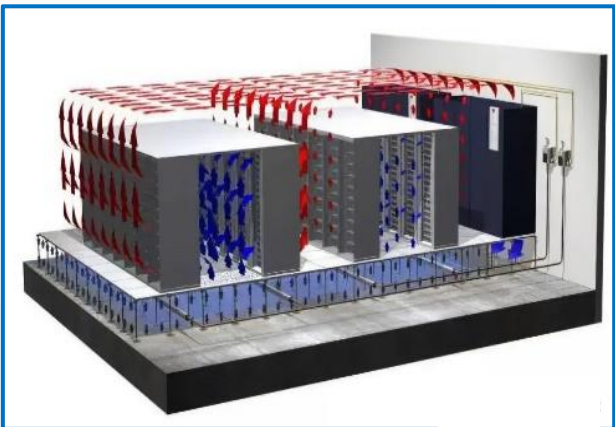


Communication
base stations

Industrial
control room



UPS and
battery room



Small Data
Center



Small room AC



Cooling range

5.5kW ~ 20.5kW Fixed freq. @50Hz
5.5kW ~ 32kW Inverter
5.5~12.5kW 1φ +N @220V , 3φ @208V
12.5~32kW 3φ +N @380V
17~32kW 3φ (N) @460V

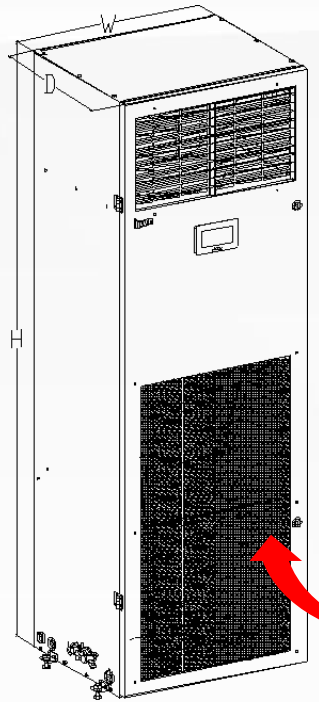
Cooling mode

Air-cooled, **DX** mode (direct expansion)
Customized **CW** unit (chilled water)

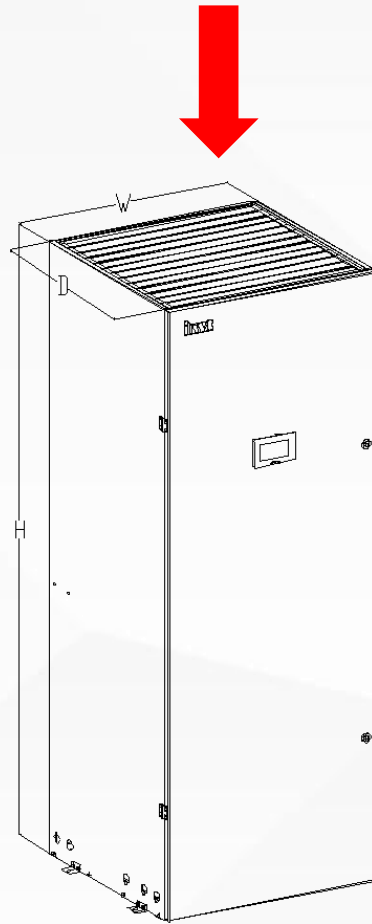
Air supply mode

Top Front Supply
Downflow Supply
Upflow Supply

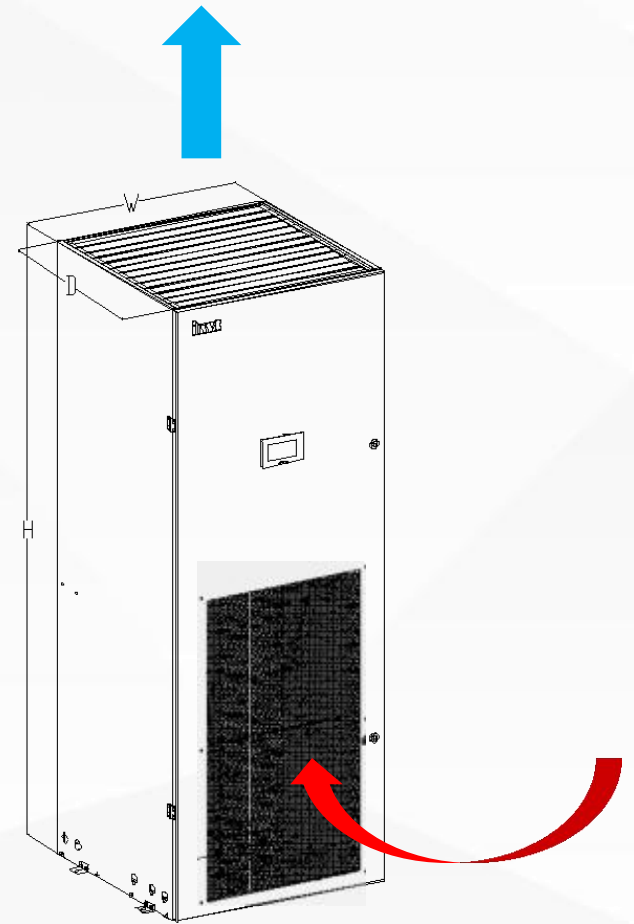
Applications



Top front supply
(Public)

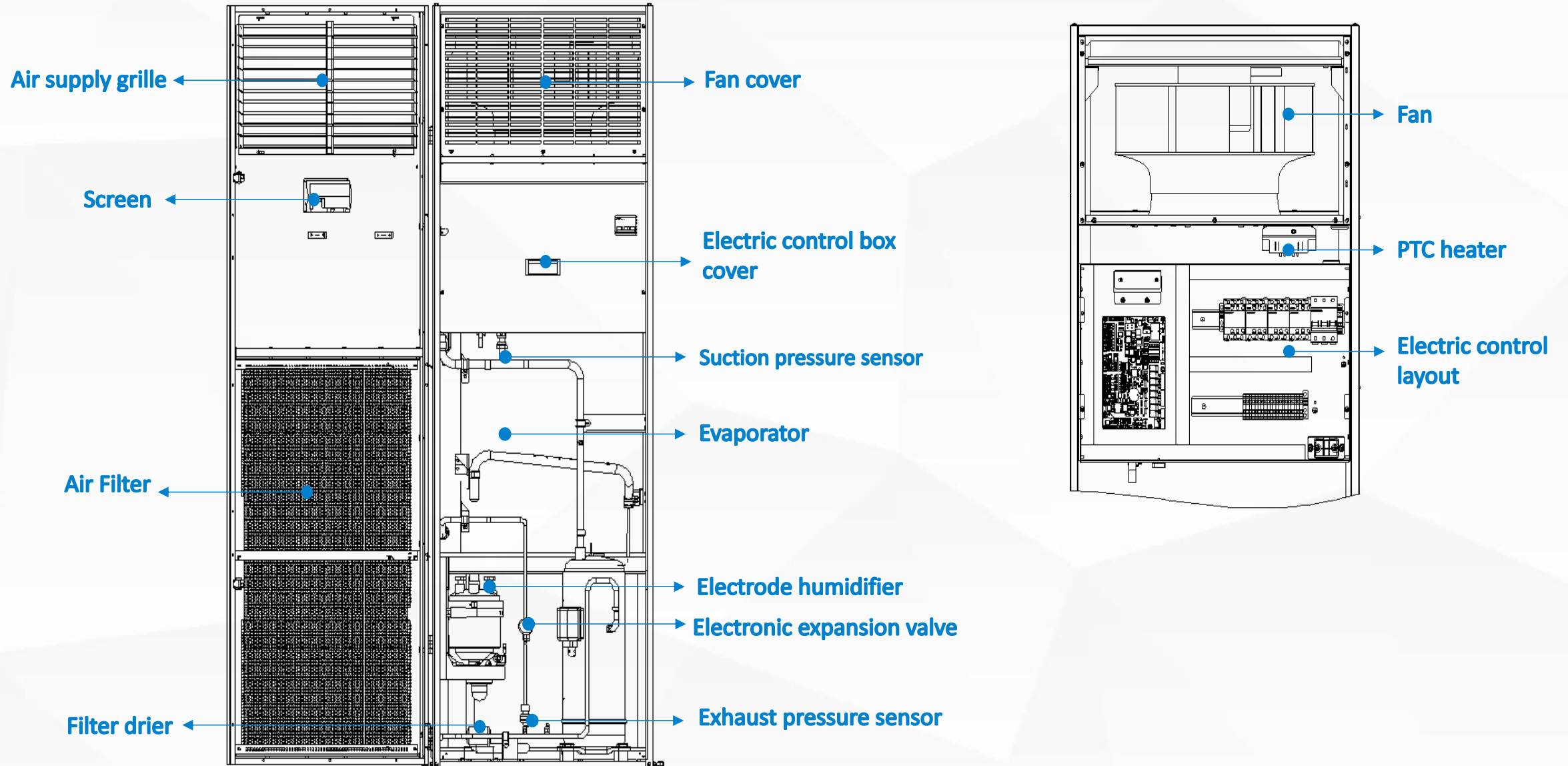


Downflow supply

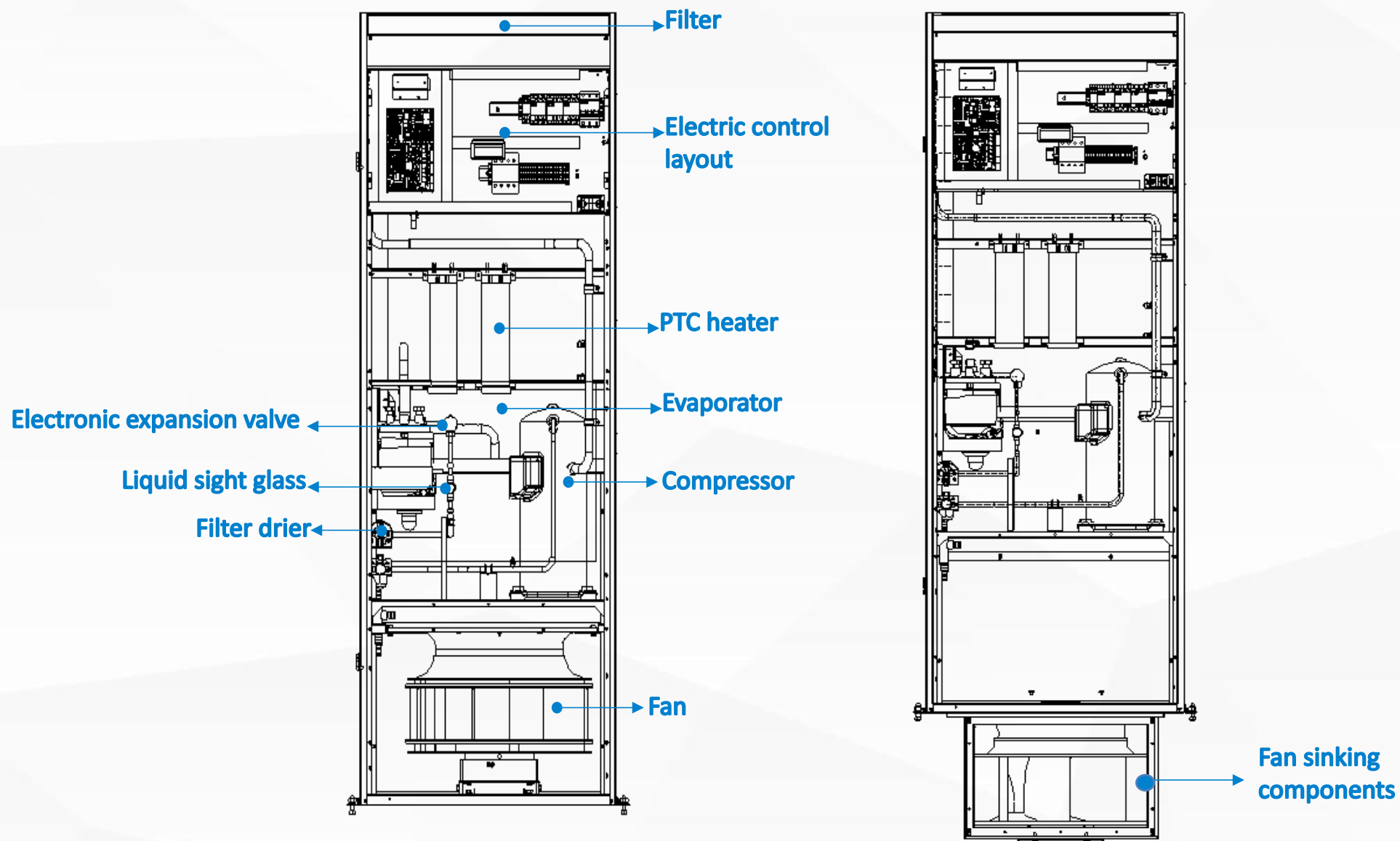


Upflow supply

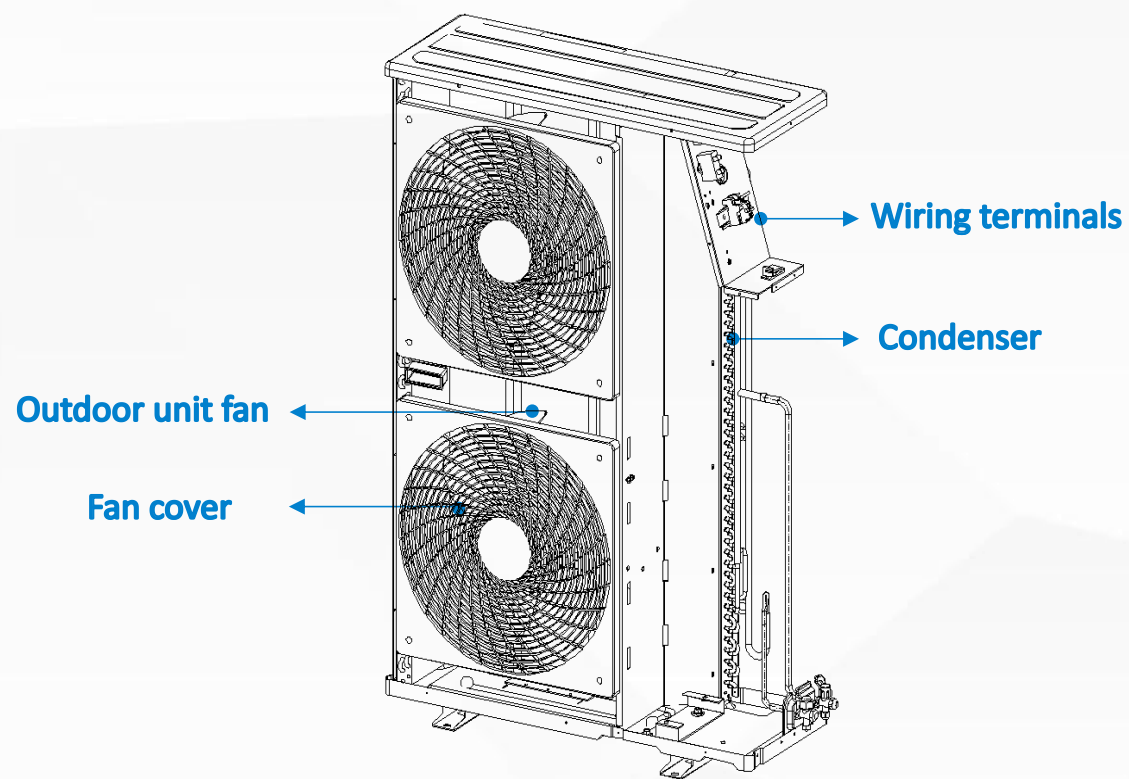
Internal structure



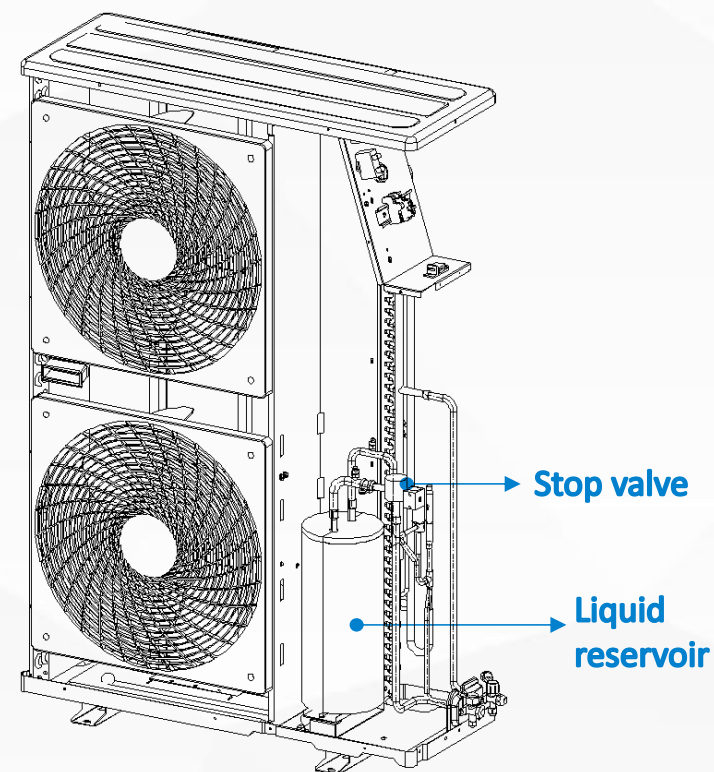
Internal structure



Internal structure



Normal temp type outdoor unit
@-20°C



Low temp type outdoor unit
@-40°C

Reliable

- Copeland & Hitachi scroll compressor @fixed freq. ★
- GMCC rotor compressor(optional Hitachi scroll compressor) @inverter
- INVT controller & VFD
- 30 days T&H curve display ★
- Volt & freq. real time display
- 3-level password protection ★
- 1000 history alarm storage ★

Flexible

- Standard 4.3 inch screen, optional 7 inch which supporting SNMP ★
- Standard RS485 for supervision
- Optional remote T&H sensor
- Optional water leakage sensor
- 64+ unit rotation group working
- Timing power on/off ★
- Optional dual input (contactor)
- AC or EC fan

Fixed freq.



	Unit	VCA005	VCA007	VCA012	VCA017	VCA020
Configuration	—	Refrigeration type /Constant Temp & Humidity				
Total cooling capacity	kW	5.5	7.5	12.5	17.0	20.5
Sensible heat ratio	W/W	0.9				
Refrigerant Type	—	R410A				
Expansion valve Type	—	Electronic expansion valve				
Air volume	m3/h	2000	2300	3200	5000	5500
Heating capacity	kW	3	3	3	6	6
Humidification capacity	kg/h	3	3	3	3	3
Width	mm	520	520	600	700	700
Depth	mm	420	420	520	700	700
Height	mm	1750	1750	1800	1900	1900
Grid type	-	220V/50Hz		380V/50Hz		
Refrigeration type full load current	A	10.5	14.9	10.8	14.3	14.6
Constant Temp & Hum type full load current	A	23	25	21.9	25.6	26.1
Weight	kg	62	65	100	120	130

Test conditions: indoor return air temperature 24°C, relative humidity 50%, outdoor temperature 35°C.

Frequency conversion



	Unit	VCA005	VCA007	VCA012	VCA017	VCA020	VCA026	VCA032
Configuration	—	Refrigeration type / Constant Temp & Humidity						
Total cooling capacity	kW	5.5	7.5	12.5	17.0	20.5	26	32
Sensible heat ratio	W/W	0.9						
Refrigerant Type	—	R410A						
Expansion valve Type	—	Electronic expansion valve						
Air volume	m3/h	2000	2300	3200	5000	5500	7500	9000
Heating capacity	kW	3	3	3	6	6	6	6
Humidification capacity	kg/h	3	3	3	3	3	3	3
Width	mm	520	520	600	700	700	900	900
Depth	mm	420	420	520	700	700	800	800
Height	mm	1750	1750	1800	1900	1900	1975	1975
Grid type	-	220V 50/60Hz		380V 50/60Hz				
Full load current	A	27	30	25	29	32	34	38
Weight	kg	62	65	100	120	130	160	160

Test conditions: indoor return air temperature 24°C, relative humidity 50%, outdoor temperature 35°C.

04

VCS Series Rack AC

◆ Split-type
(3.7-12.5kW)

◆ Integrated-type (3.7kW)

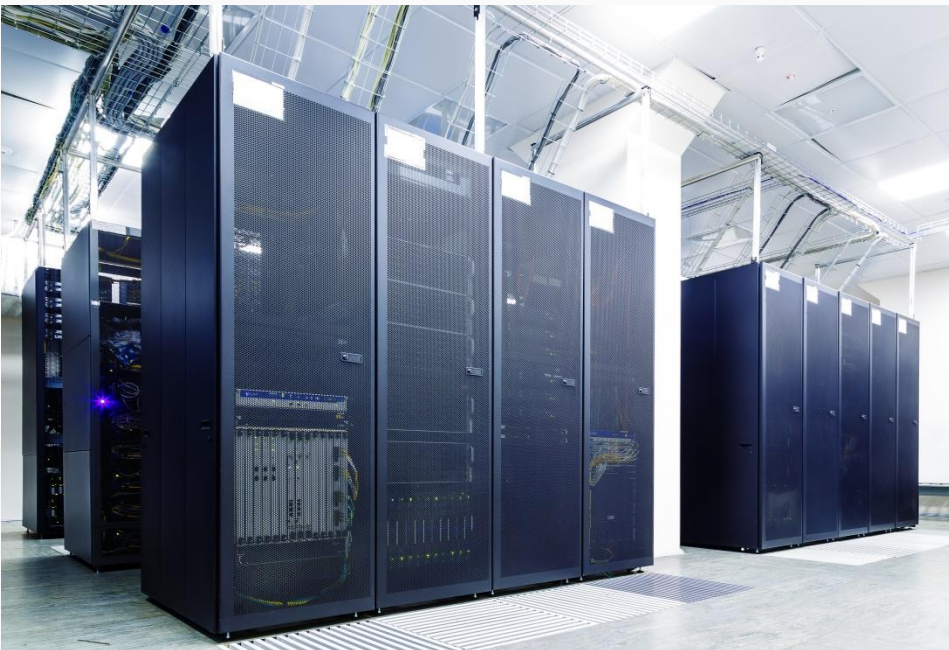
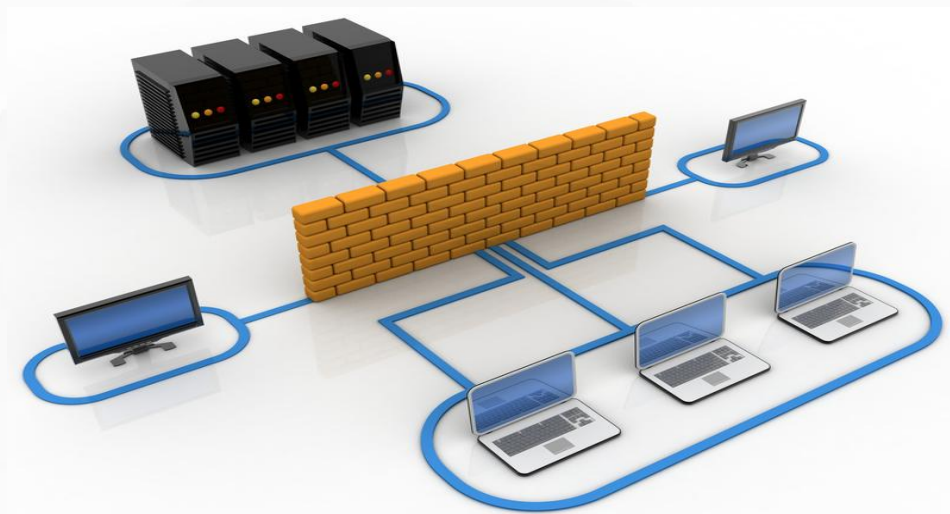
Rack AC

Applications



Micro Data Center

- ✓ Single-cabinet or double-cabinet micro-unit data center
- ✓ Single row micro data center



Edge Computer Data Center

◆ Cooling range

3.7kW ~ 12.5kW

inverter

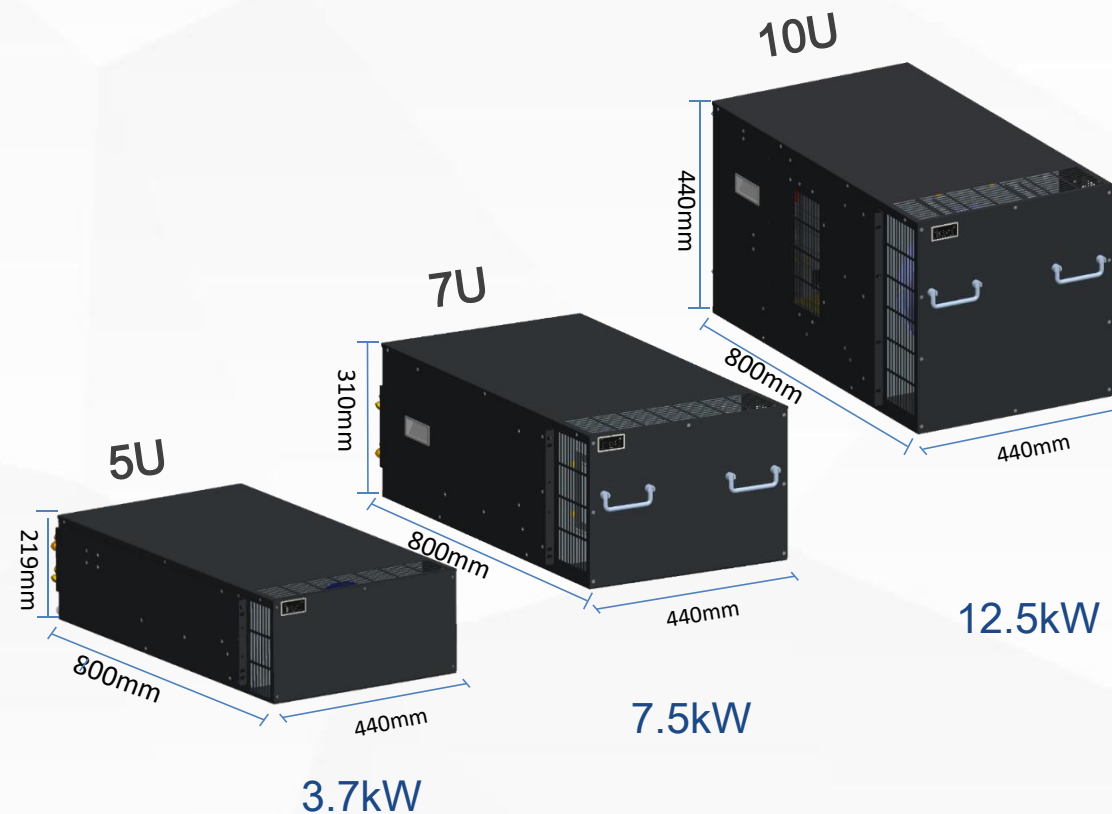
◆ Cooling mode

Air-cooled , DX mode(direct expansion) ,

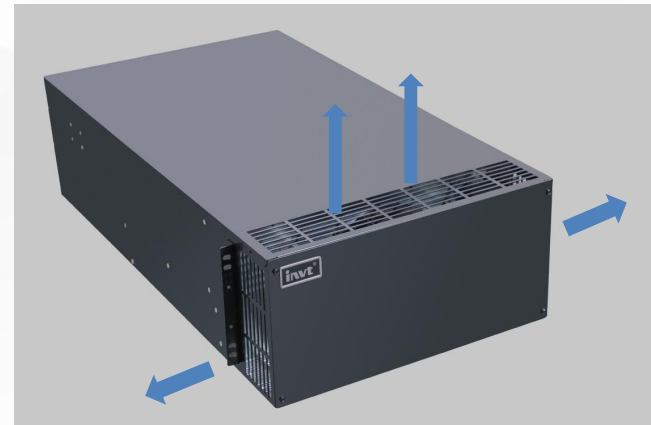
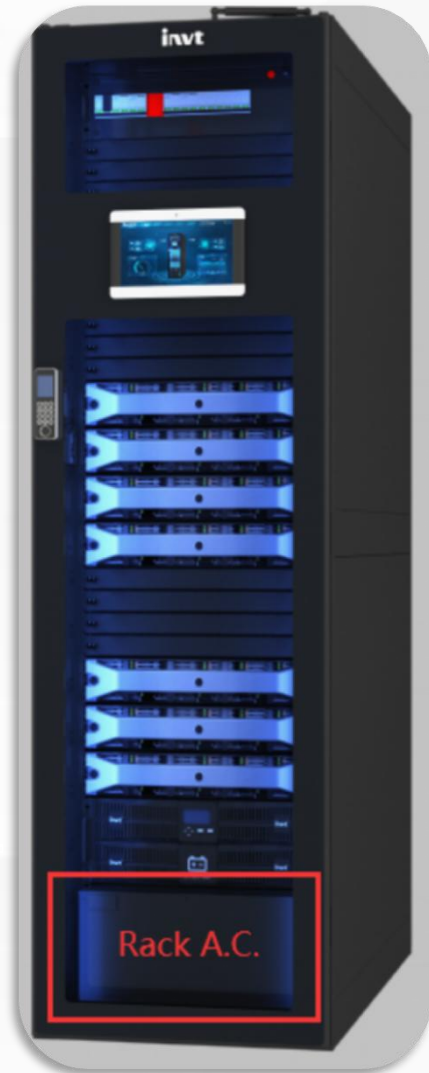
1-phase 220~240V 50&60Hz

◆ Air supply mode

Upflow and Horizontal Airflow Supply



Split-type



Adaptability

- In-rack installation, no welding
- RS485, Group working, timing on/off
- -40 ~ + 45C

Flexible

- R410a pre-charged
- Optional manual operator
- Optional condensate pump

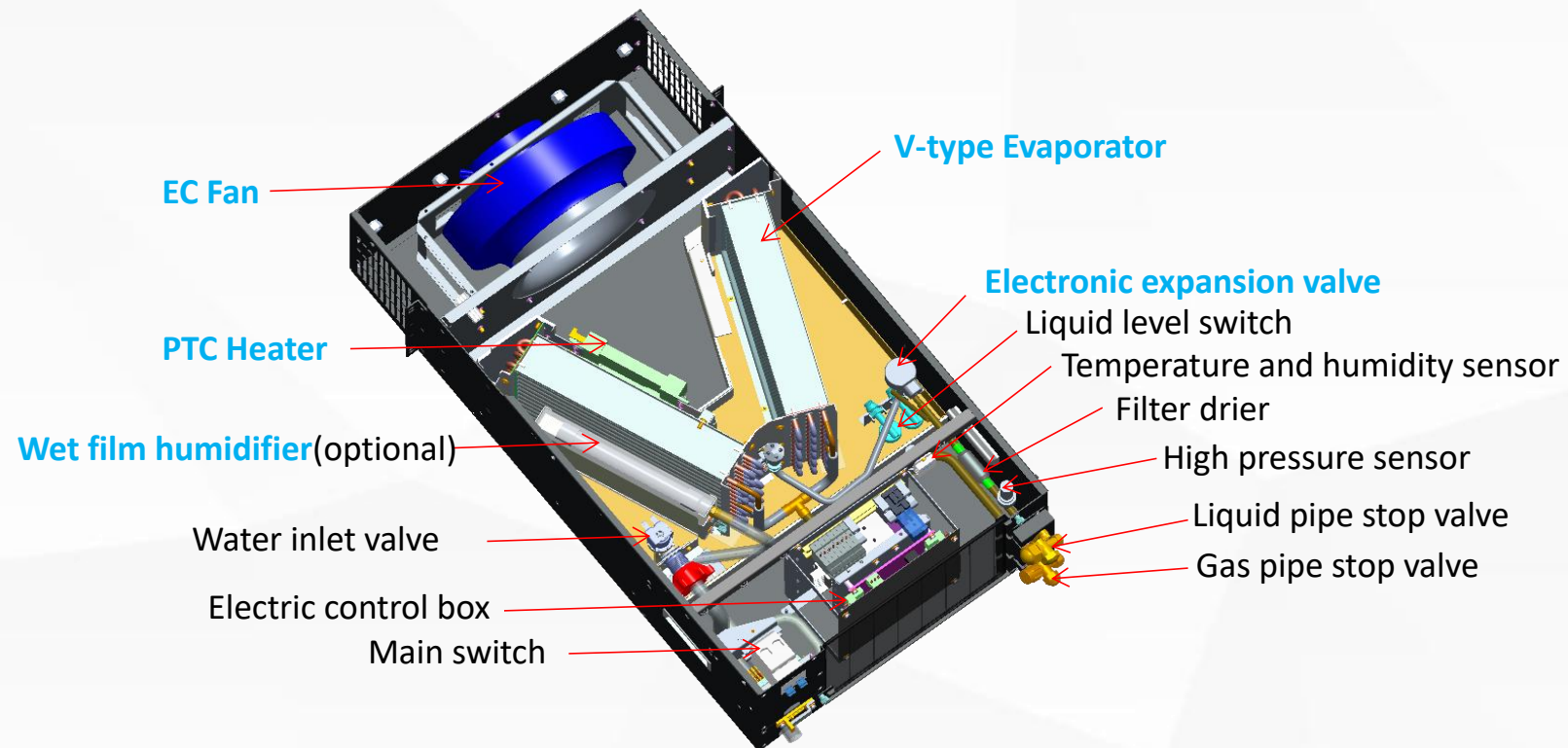
Reliable

- GMCC inverter compressor
- Fans-tech EC fans
- EEV
- CE certificate

Indoor unit



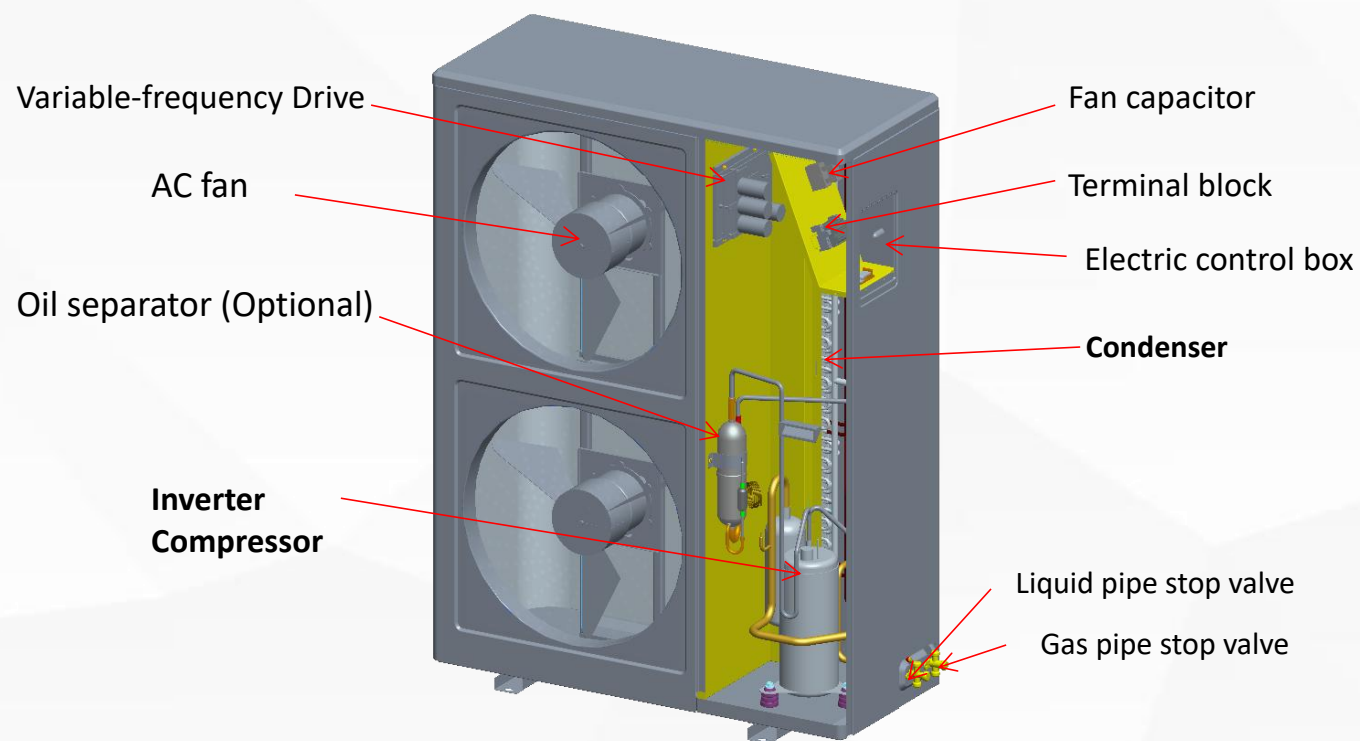
Internal structure of split-type indoor unit
(Compressor at the outdoor unit)



Outdoor unit

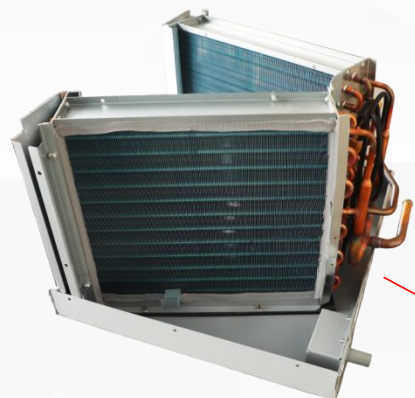
Internal structure of split-type outdoor unit

IP X4



Pre-charged R410A

Indoor & outdoor unit



"V" type evaporator

Small footprint and large heat exchange area.

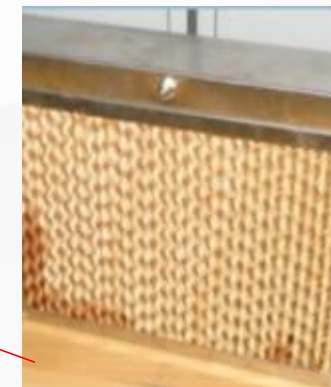


Inverter rotor compressor



EC Centrifugal Fan

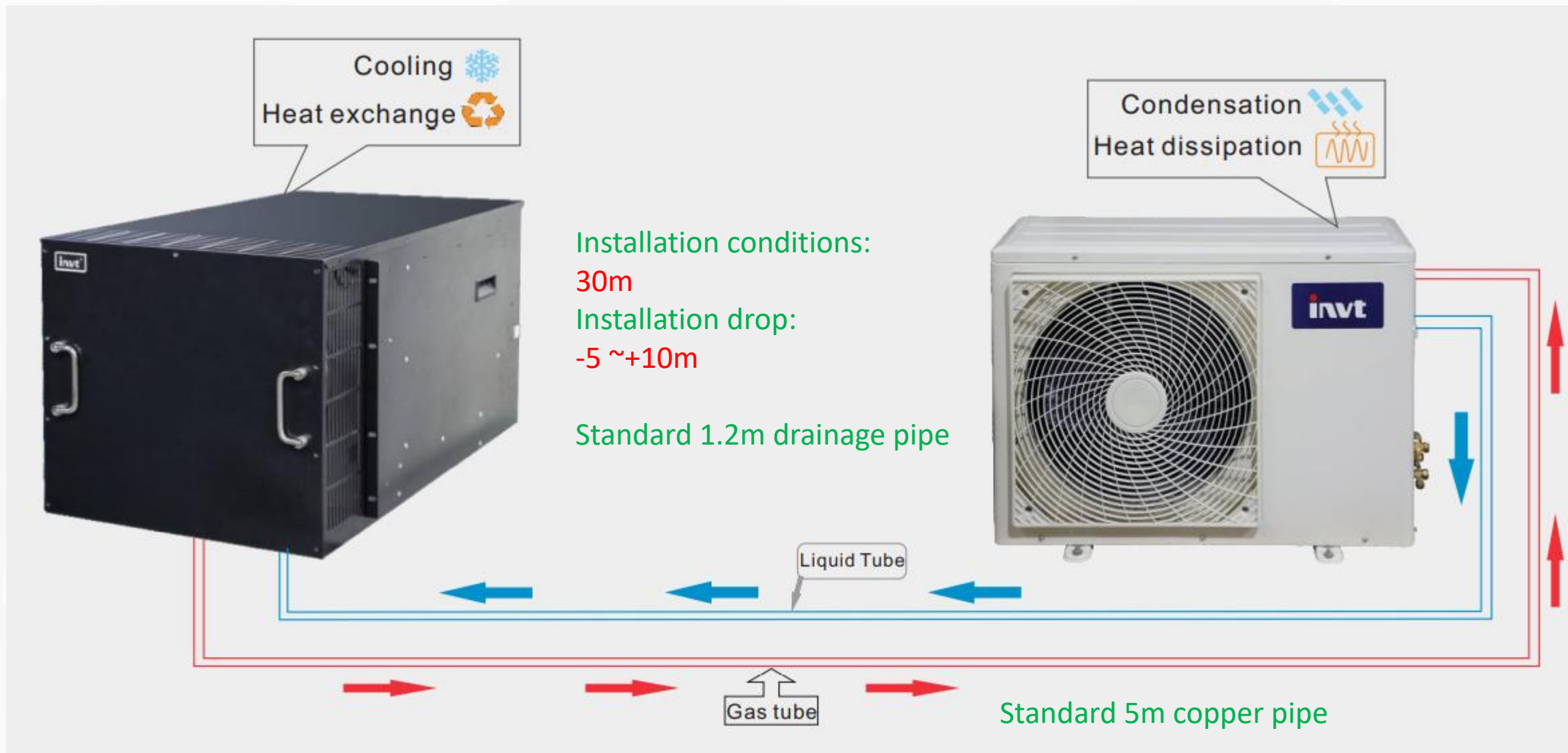
Adopting backward inclined centrifugal EC fan, saves more than 40% energy than ordinary fans.



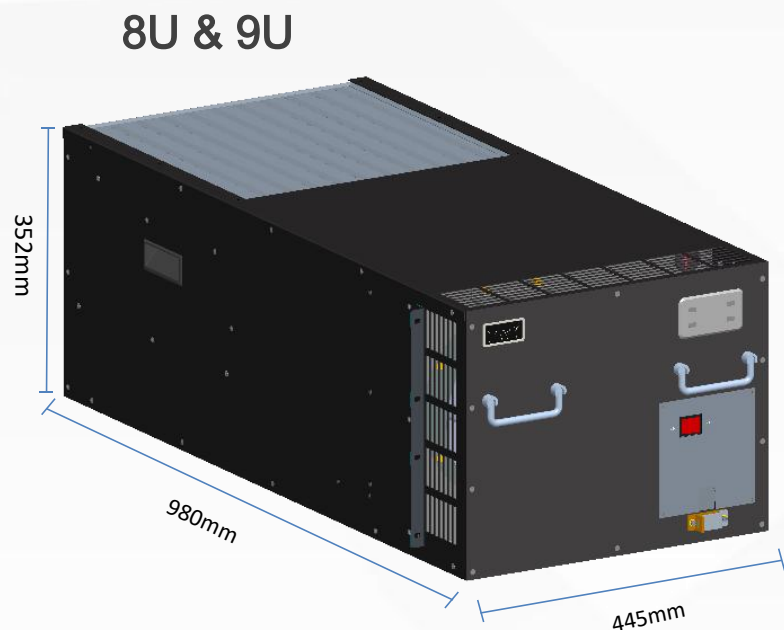
Wet film humidifier

Rack AC

Operation principle



Rack AC



3.7kW

Integrated-type

Cooling range

3.7kW fixed freq. (8U)
inverter (9U)

Cooling mode

Air-cooled, DX mode
1-phase 220~240V 50&60Hz

Air supply mode

Upflow Air Supply,
Horizontal Airflow Supply

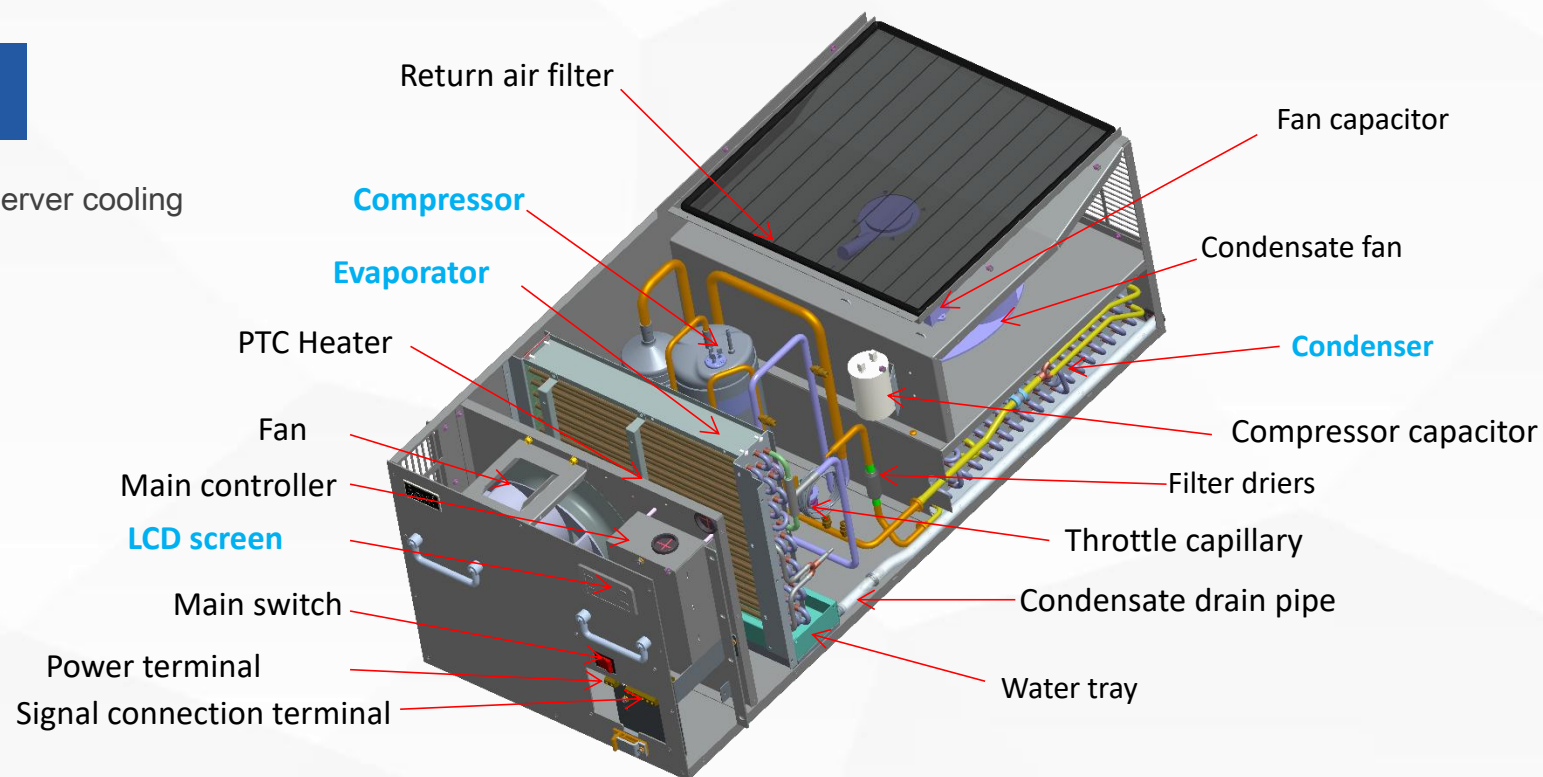
Integrated-type

High efficiency and energy saving

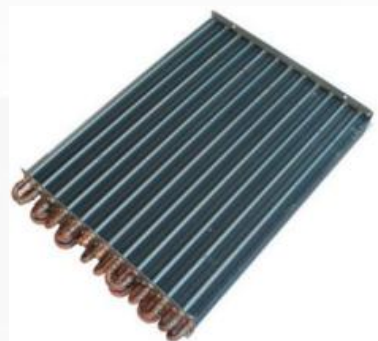
Embedded in standard cabinets, it can achieve near-server cooling without outdoor units, decrease data center PUE.

Easy installation

Integrate the evaporator and condenser, simplify installation, plug-and-play.



Integrated-type



“/” type Evaporator



PTC heater

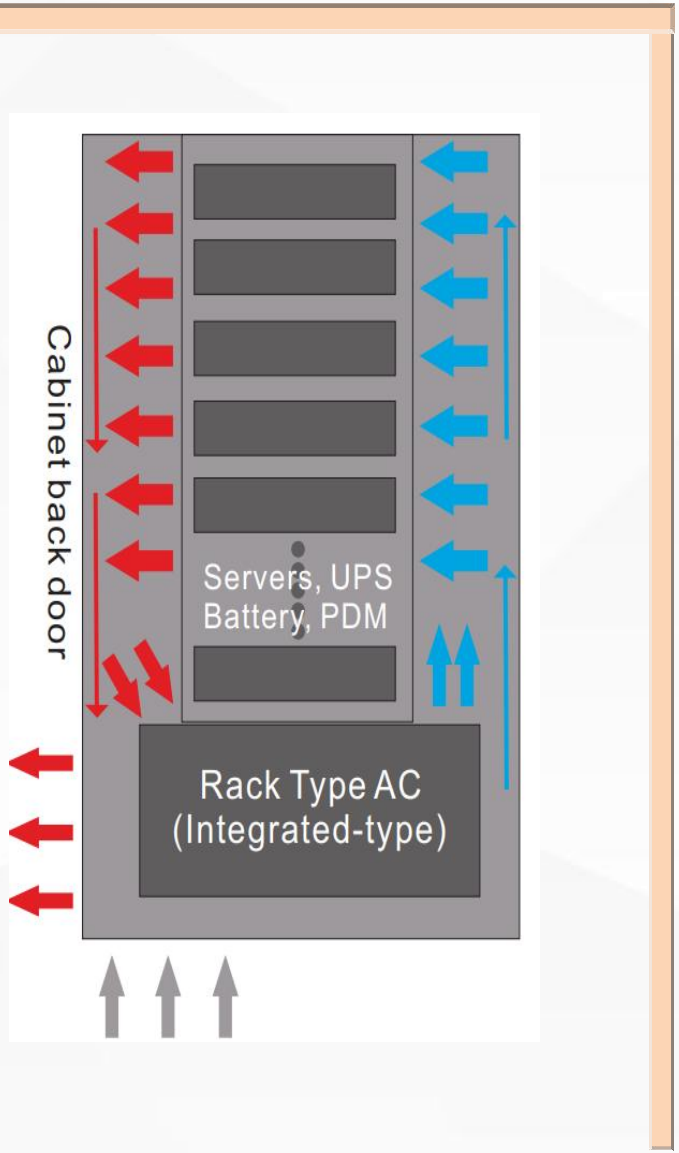
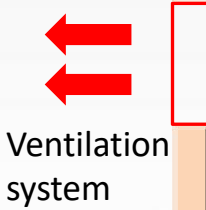
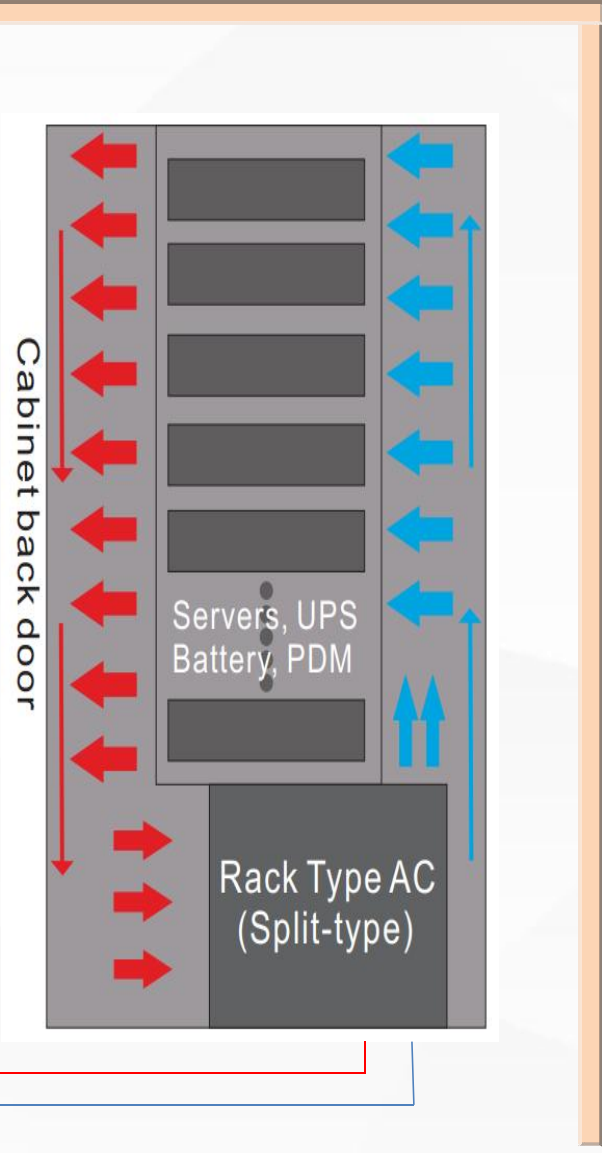


Fixed Frequency
Or Inverter Rotor
Compressor



AC / EC Fan

Different applications



Outside

room

room

Differentiation

	3.7kW (Integrated-type)	3.7kW (Integrated-type)	3.7kW (Split-type)	7.5kW (Split-type)	12.5kW (Split-type)
Compressor	Fixed Frequency Rotor	Inverter rotor	Inverter rotor		
Evaporator	“/” type		“V” type		
Fan	AC fan	EC fan	EC fan		
Humidifier	/		Wet Film Humidification		
Heater	PTC		PTC		
Screen	LCD screen (1.2 inch)		LCD screen (4.3 inch)		

Specification parameters



VCS***	Unit	3.7	7.5	12.5	3.7 (Integrated)	3.7 (Integrated)
Unit configuration	-	Constant Temp & Hum			Constant Temp	Constant Temp
Total cooling capacity 2)	kW	3.7	7.5	12.5	3.7	3.7
Sensible cooling capacity 2)	kW	3.7	7.5	12.5	3.7	3.7
Air volume	m3/h	700	1350	2300	700	700
Sensible heat ratio	%	100%	100%	100%	100%	100%
Standard distribution heating 3)	kW	1	2	3	1	1
Humidification capacity	kg/h	0.5	0.5	0.5	-	-
Compressor type (standard)	/	DC inverter			Fixed freq.	DC inverter
Voltage	V	220	220	220	220	220
Frequency	Hz	50	50	50	50	50
Phase	P	1	1	1	1	1
Full load current	A	13.6	28.8	29	13	13.5
Unit weight	kg	30	39	58	47	65
Unit width	mm	440	440	440	440	440
Unit depth	mm	800	800	800	970	980
Unit height	mm	219 (5U)	310 (7U)	440 (10U)	350 (8U)	400 (9U)
Outdoor Unit						
VCP***	Unit	5	10	18	/	/
Voltage	V	220	220	220	/	/
frequency	Hz	50	50	50	/	/
Phase	P	1	1	1	/	/
Unit width	mm	886	882	995	/	/
Unit depth	mm	340	380	440	/	/
Unit height	mm	605	720	1256	/	/

Test conditions: indoor return air temperature 37°C, humidity 27%, outdoor temperature 35°C.

05

Energy Storage System Cooling

- ◆ 3-7 kW fixed freq.
- ◆ 7-20 kW inverter

Applications



**Container
Data Center**

Base Station



**Energy Storage
Container**



Small Data Center



Energy Storage System Cooling

Shelter air conditioner



VCE Series Indoor type Inverter

7.5kW-10kW 220V 50/60Hz
12.5kW-20kW 3-phase @380V 50/60Hz



VCE Series Outdoor type Inverter

7.5kW-10kW 220V 50/60Hz
12.5kW-20kW 3-phase @380V 50/60Hz
Fixed frequency
3-7.5kW 220V 50/60Hz

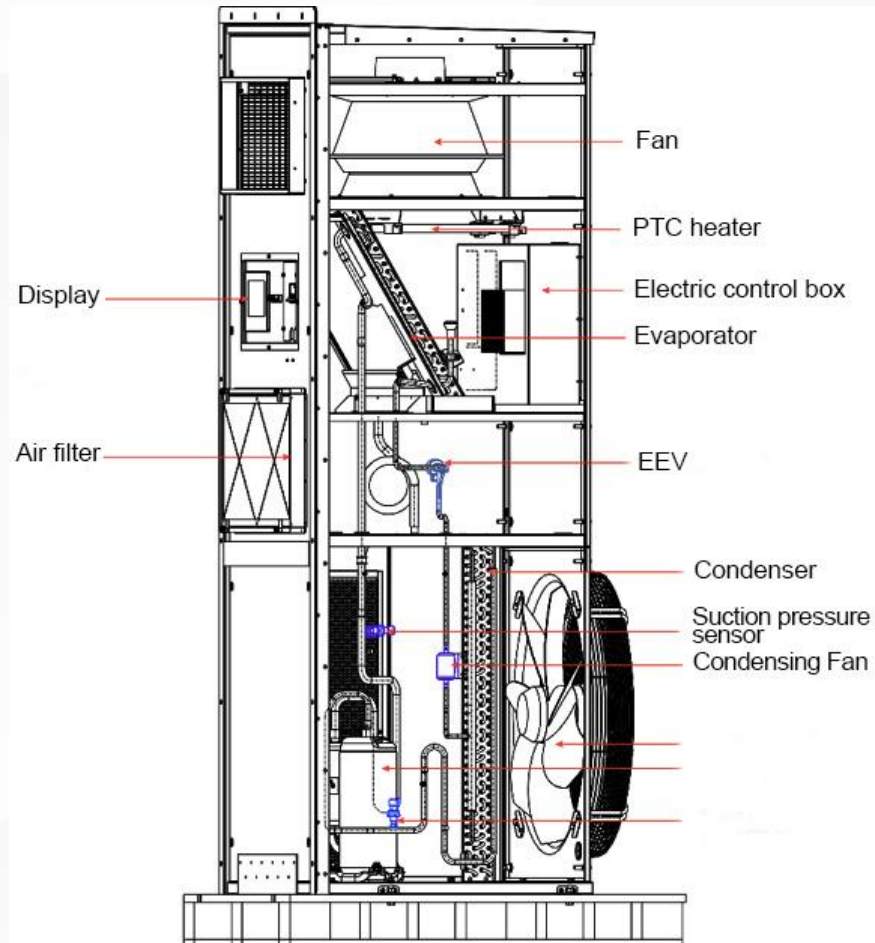
Energy Storage System Cooling



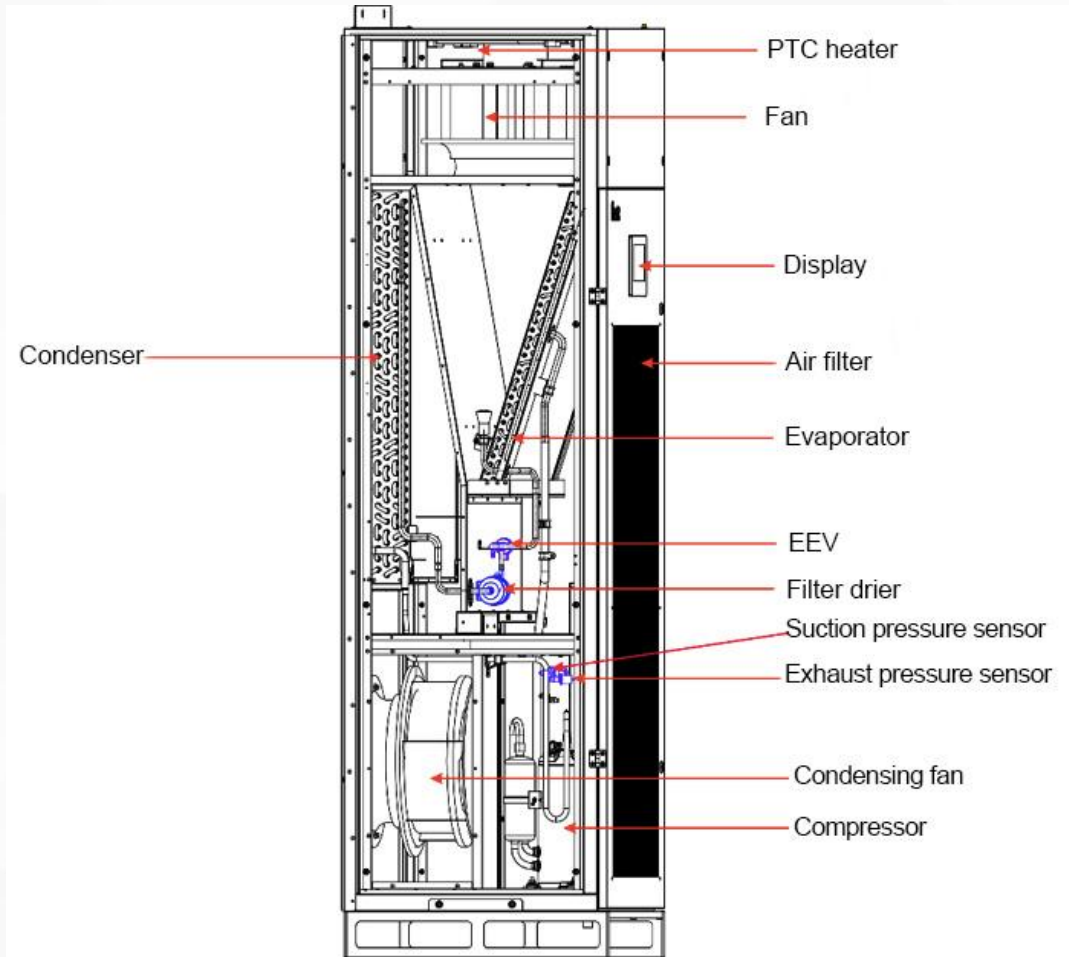
- Design function——Refrigeration, dehumidification, heating, air supply, etc.
- Structure type——Indoor type and outdoor type
- Installation method: Ground mount/Wall hanging/Base mount
- Air supply mode: Upper roof air supply/upper front horizontal air supply
- Return air mode: Lower front return air
- Application environment: $-40^{\circ}\text{C}\sim+50^{\circ}\text{C}$
- Unit configuration: Constant temperature/cooling only

Energy Storage System Cooling

Structure diagram



Outdoor type



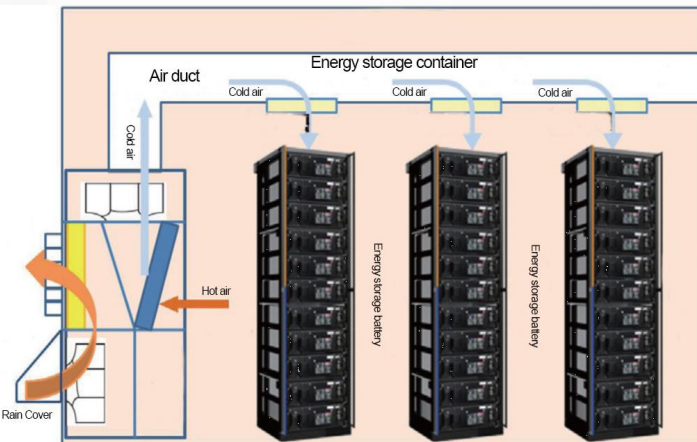
Indoor type

Energy Storage System Cooling

Features

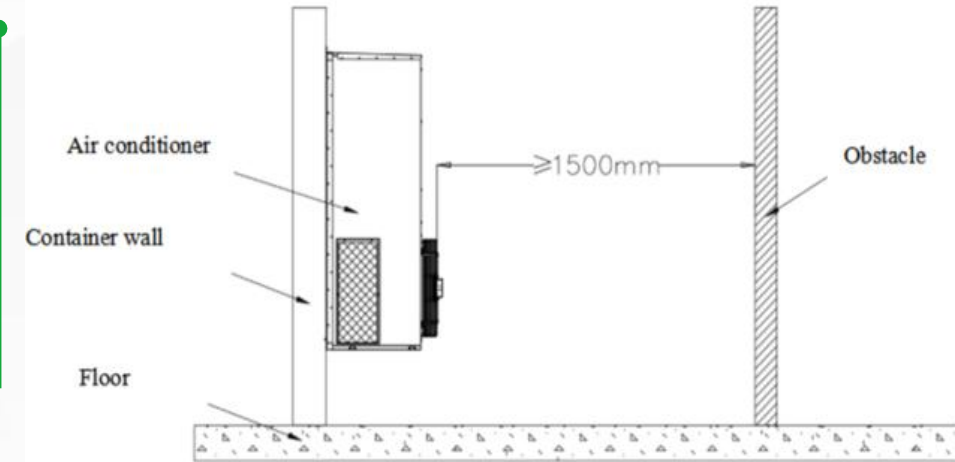
Intelligent

- Independent cooling and temp control of lithium battery cells
- The unit can be switched on/off at any time in a week
- Standard RS485 communication interface, supporting remote monitoring



Safe and reliable

- IP55
- EC fan is designed with large air volume and high residual pressure to cope with the increase of air duct on site.
- The exterior of the unit is sprayed with outdoor powder to improve the weather resistance and corrosion resistance of the unit
- R410a & R134 pre-charge



Flexible

- All in one design, no welding on-site, easy to install
- High humidification speed and small size
- High-pressure spray waterproof test.

Parameters

Outdoor type



Model	VCE003	VCE004	VCE005	VCE007	VCE007	VCE010	VCE012	VCE015	VCE020
Configuration	Constant Temp								
Total cooling capacity (kW)	3.0	4.0	5.0	7.0	7.5	10.0	12.5	15.5	20.5
Air volume (m ³ /h)	900	1400	1400	2000	2500	3000	3200	5000	6000
Heating capacity (kW)	6	6	6	9	9	9	9	9	9
EER (W/W)	2.78	2.85	2.98	2.38	2.93	2.21	3.01	2.74	2.28
Power supply	220V 1PH 50-60Hz				220V 1PH 50-60Hz 208V 3PH 50-60Hz		380V 3PH 50-60Hz		
Rated Power (kW)	1.08	1.40	1.68	2.94	2.57	4.53	4.11	5.66	8.99
Weight (kg)	70	90	95	125	173	175	210	218	238
Size (mm)	500*250*1300	620*300*1350	620*300*1350	650*350*1600	700*600*1950	700*600*1950	800*700*2100	800*700*2100	800*700*2100

1. Test conditions: indoor return air temperature 35°C, relative humidity 25%, outdoor temperature 35°C.

Parameters



Indoor type

Model	VCE007	VCE010	VCE012	VCE015	VCE020
Configuration	Constant Temp				
Total cooling capacity (kW)	7.5	10.0	12.5	15.5	20.5
Air volume (m ³ /h)	2500	3000	3200	5000	6000
Heating capacity (kW)	5.5	6	6	6	9
EER (W/W)	2.64	2.34	2.65	2.68	2.29
Power supply	220V 1PH 50-60Hz 208V 3PH 50-60Hz		380V 3PH 50-60Hz		
Rated Power (kW)	2.7	4.27	4.72	5.81	8.96
Weight (kg)	163	165	185	215	234
Size (mm)	700*550*1800	700*550*1800	800*650*1800	800*650*1800	800*650*2100

1. Test conditions: indoor return air temperature 35°C, relative humidity 25%, outdoor temperature 35°C.

06

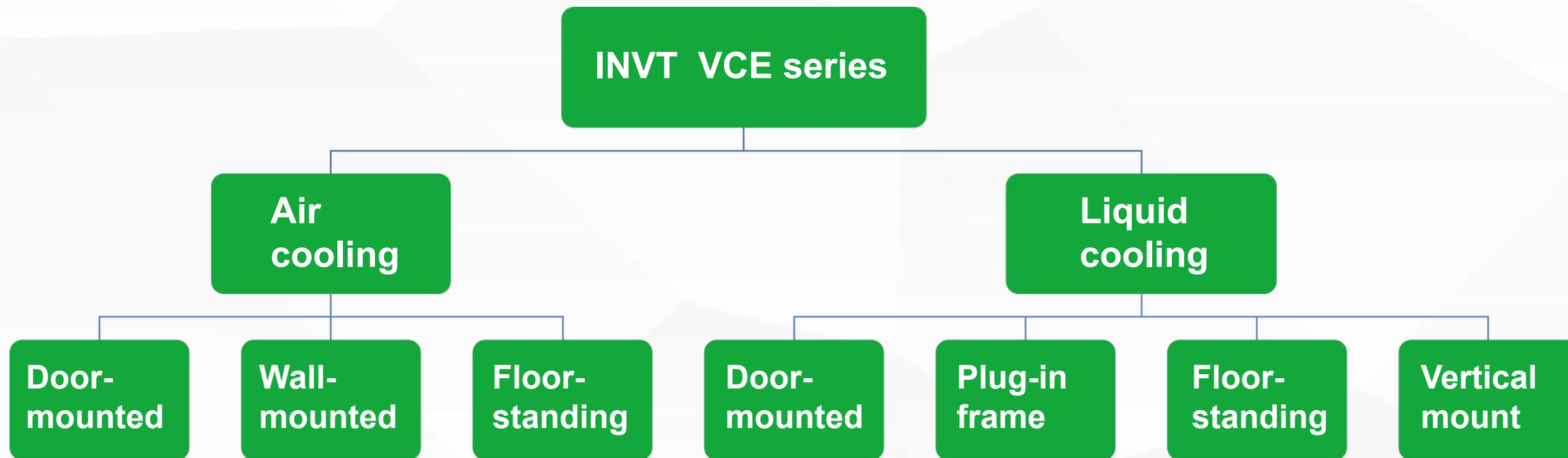
Energy Storage System Liquid Cooling

◆ 5-15 kW

Energy Storage System Liquid Cooling

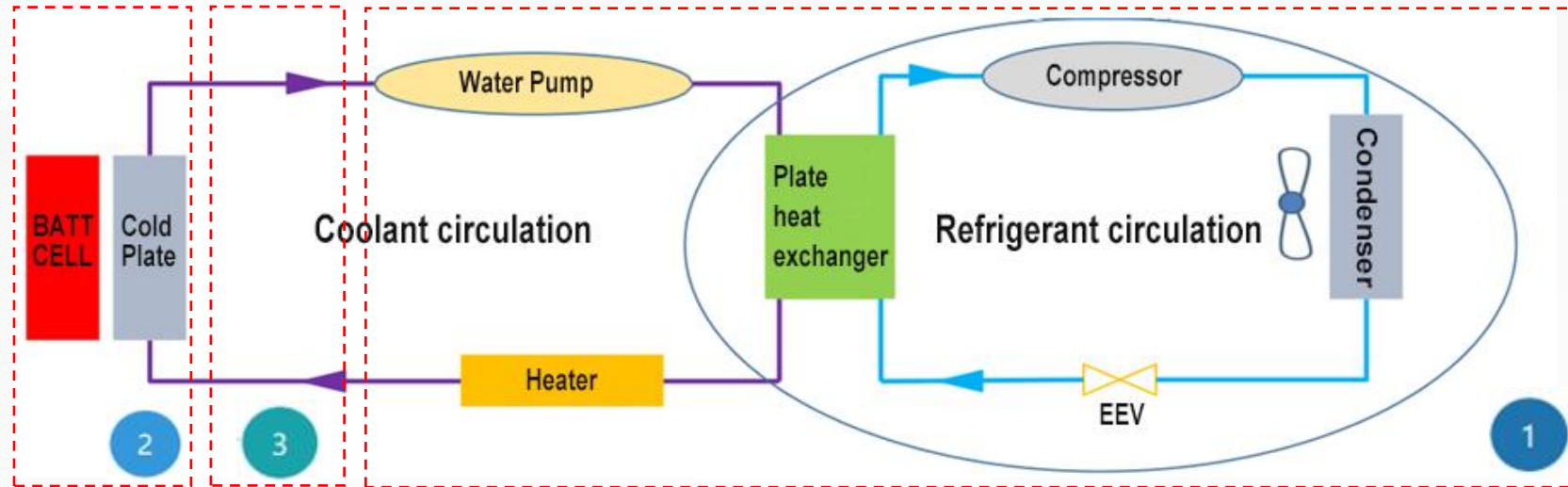


Energy Storage Cooling Portfolio



Energy Storage System Liquid Cooling

Liquid cooling diagram



Energy Storage System Liquid Cooling

- 1 Liquid cooled temperature control unit
- 2 Energy storage battery cold plate
- 3 Circulating pipeline



Composed of key components such as liquid cooled temperature control unit, energy storage battery cold plate, circulation pipeline, etc.

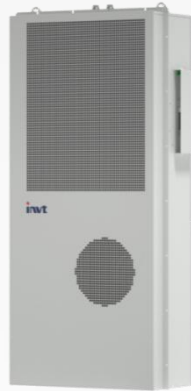
Energy Storage System Liquid Cooling



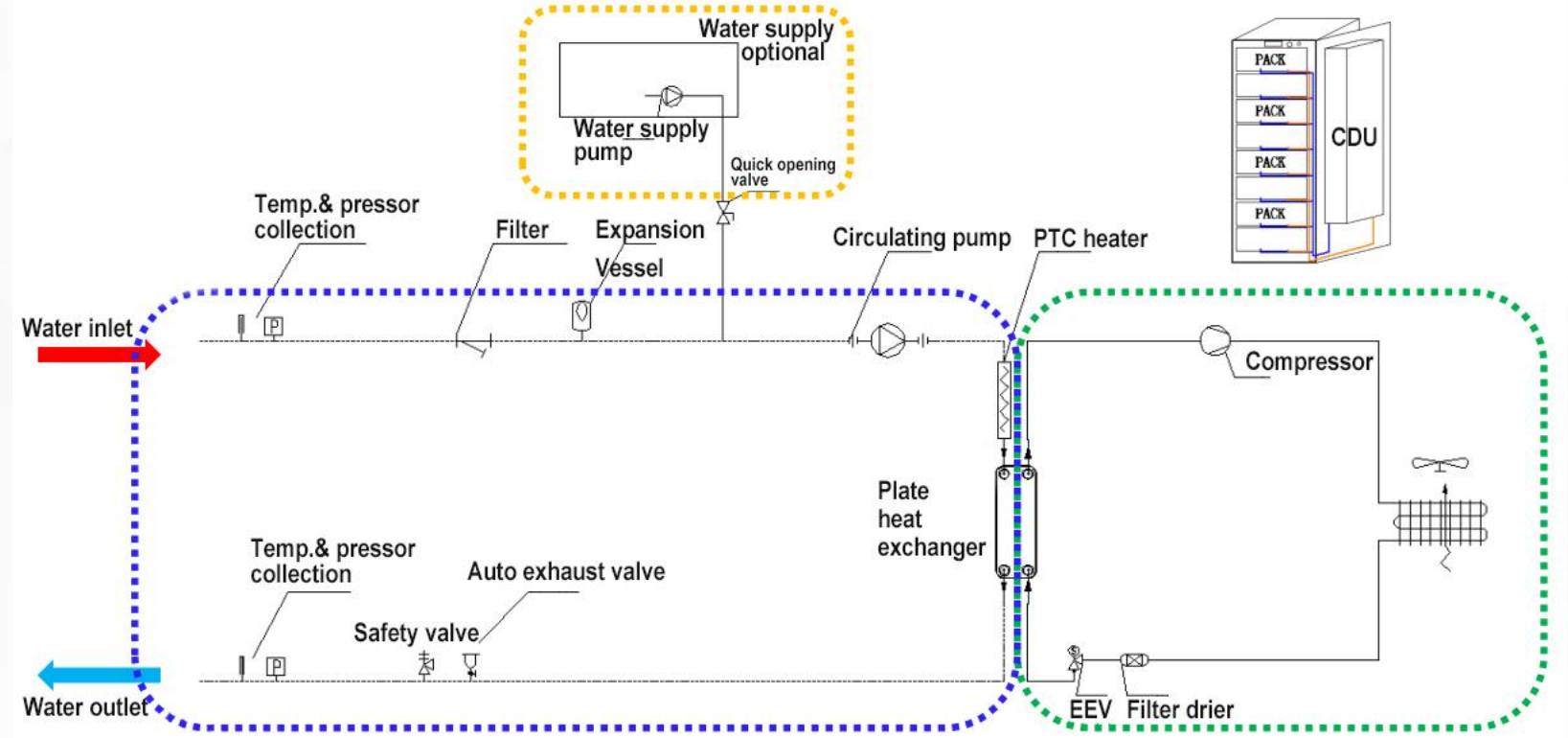
Product Introduction



Front view



Rear view

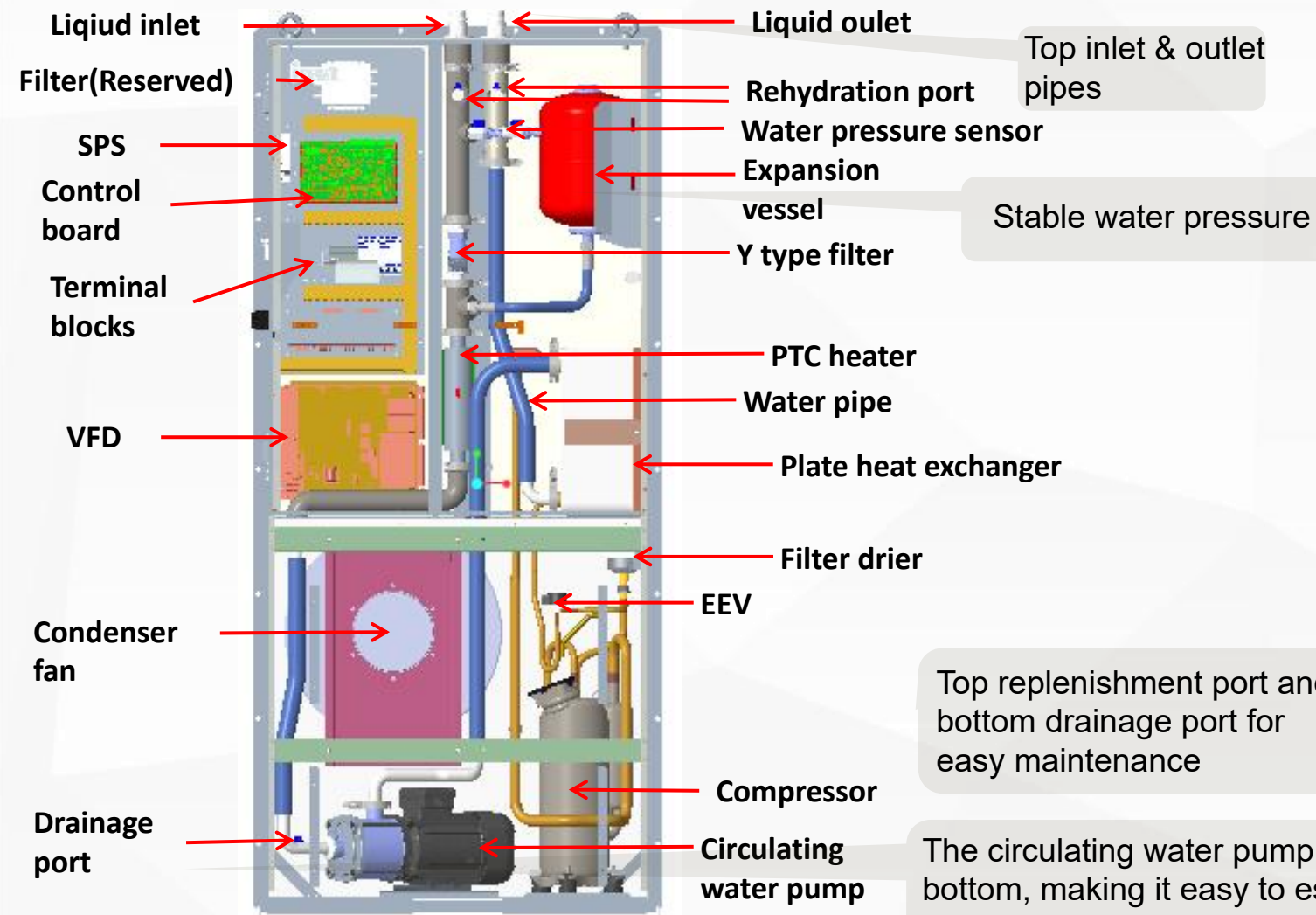


Liquid cooling thermal management system schematic

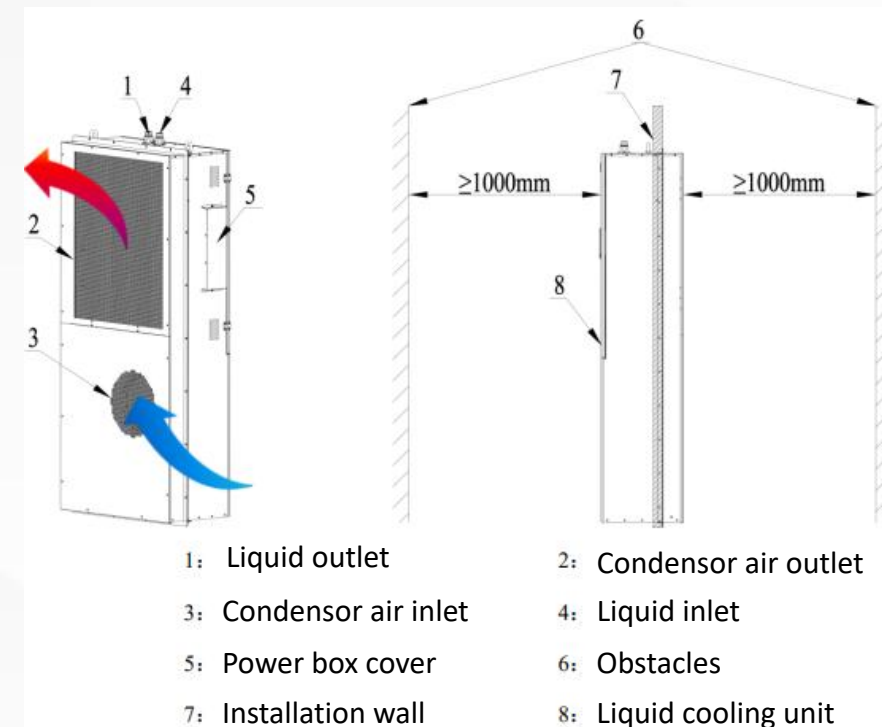
- Capacity: 5kW, 7.5kW, 10kW, 12.5kW, 15kW
- Work Mode: idle, cooling, heating
- Environment: -30°C~55°C
- Heater: Standard PTC heater
- Installation: Wall-mounted/Floor-standing/base installation
- Connection method: Top pipe entry
- Comm: Standard RS485/CAN, SNMP optional
- Water system circulation: Closed loop system
- Temperature control: default water supply , optional water return.
- Alarm info: low flow, high water pressure, water system leakage

Energy Storage System Liquid Cooling

Structure diagram



Installation space

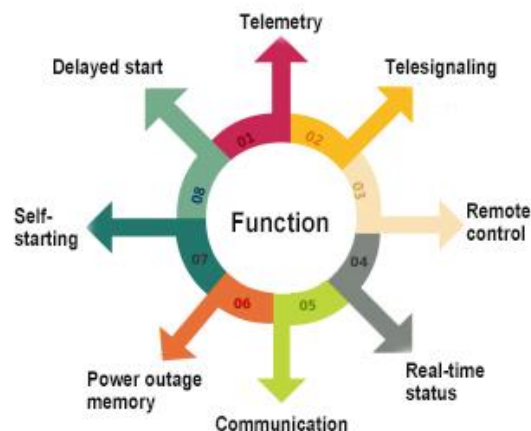


Energy Storage System Cooling

Features

Intelligent

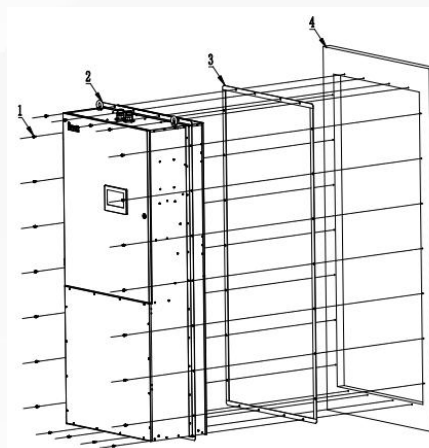
- Automatic switching of operating mode
- Independent cooling and heating setting control
- Intelligent Screen Display, Standard RS485
- Default water supply temperature control



Using Functions

Safe and reliable

- IPX5
- Pipeline stress and vibration verification
- Wide voltage operation ($> \pm 15\%$)
- Strict temperature ($+55^{\circ}\text{C}$ & -30°C) verification



Flexible

- Integrated design
- Standard filters and maintain sewage regularly
- No need for welded pipes
- Condensate direct discharge design

Parameters



Model	Unit	VCEW005	VCEW007	VCEW010	VCEW012	VCEW015
Power	V, Hz	380V 3N~ 50	380V 3N~ 50	380V 3N~ 50	380V 3N~ 50	380V 3N~ 50
Cooling capacity	kW	5.0	7.5	10.0	12.5	15.0
Circulating water flow rate	m³/h	3.8	3.8	4.2	4.2	4.8
External circulation lift	kPa	100	100	110	110	160
Heating capacity	kW	2.5	2.5	3.6	3.6	4
Water outlet temperature	°C	10-35	10-35	10-35	10-35	10-35
Standard water outlet temp.	°C	15	15	15	15	15
Number of compressors	-	1	1	1	1	1
Refrigerant	-	R134a				
Refrigerant medium	-	Coolant (Such as: ≤50% ethylene glycol solution)				
Environment	°C	-30°C~ 55°C				
IP level	-	IPX5				
FLA	A	17.6	21.7	23	28.8	16.5
Installation type	-	Wall/ door-mounted	Wall/ door-mounted	Wall/ door-mounted	Wall/ door-mounted	Wall/ door-mounted
Noise	dB(A)	75	75	75	75	75
Size (W*D*H)	mm	700*265*1500	700*265*1500	750*400*1700	750*400*1700	800*400*1800
Weight	kg	140	150	195	195	205

Full Series





Thank you

July 16, 2024