

AIRSYS



UNICOOL

Intelligent Cooling Solution for
Telecoms Environments

Cooling Capacity: 11kW-28kW

Unit Identification

01 Product series name

UNICOOL: Packaged telecom air conditioner with fresh air free cooling, it can be abbreviated as "UNI."

03 Unit nominal cooling capacity by kW

11, 15, 28

05 Cabinet size code

3 cabinet sizes: B3, B4 and B5

07 Refrigerant

R410=R410A

09 Power source

Voltage/Phase/Frequency
A:230/50/1(Apply to 11kW&15kW)
B:415/50/3(Apply to 28kW)

11 Supply fan type

AC: AC powered EC Centrifugal fan

13 Special design code

01	02	03	04	05	06	07	08	09	10	11	12	13
UNICOOL	.	11	V1	B3	S	R410	.	A	.	AC	.	XXX

02 Separator Character "."

04 Compressor type & number

V1:1 Variable speed compressor

06 Control configuration

S: Single control
M: Multiple control (optional)

08 Separator Character "."

10 Separator Character "."

12 Separator Character "."

The UNICOOL is a packaged system providing direct fresh air free cooling, combined with variable speed mechanical cooling.

UNICOOL has been designed to withstand telecom base station environments and exploit low ambient conditions, providing free cooling, delivering an energy efficient, low OPEX, cooling solution.

For example:

UNI.11V1B3SR410.230/1/50.AC Stands for UNICOOL unit with 11kW nominal cooling capacity, equipped with 1 variable speed compressor, cabinet size is B3, single control, R410A refrigerant, the power supply is 230V/1Ph/50Hz, and supply fan is EC centrifugal fan.

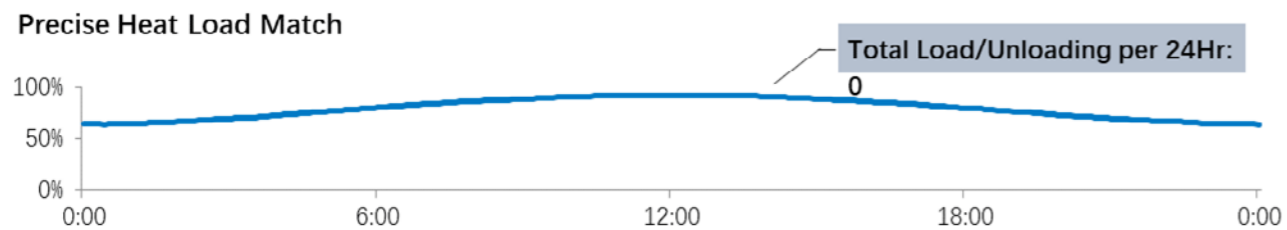
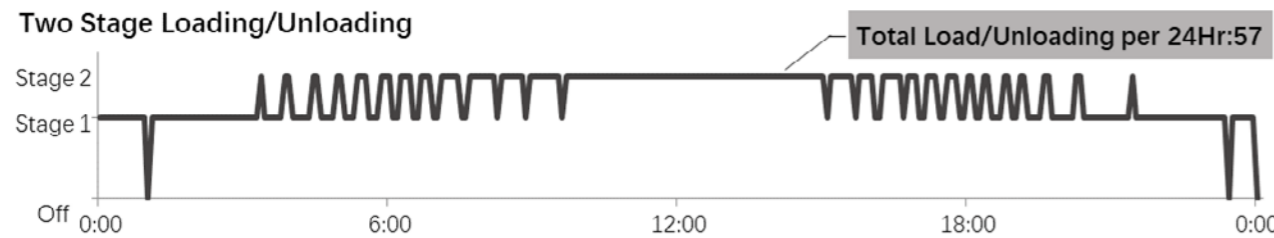
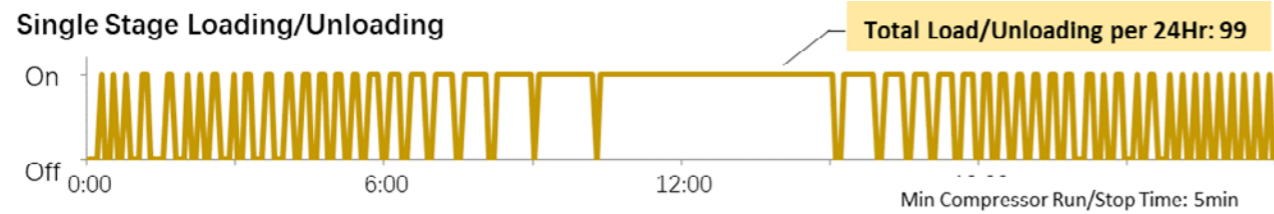
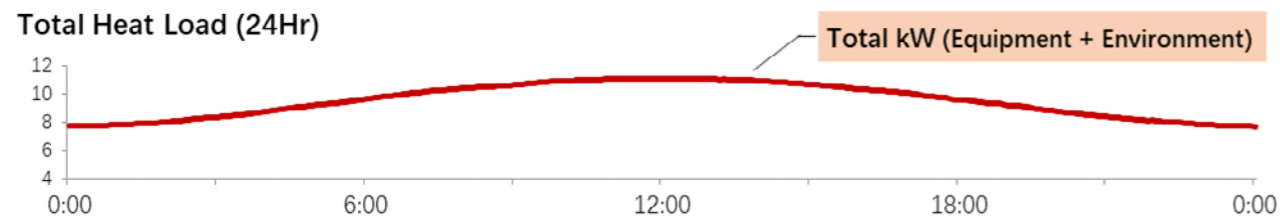
Note: *If Multi control units are ordered, one Multi-unit control box is required.

Compressor Features

Precise Heat Load Match

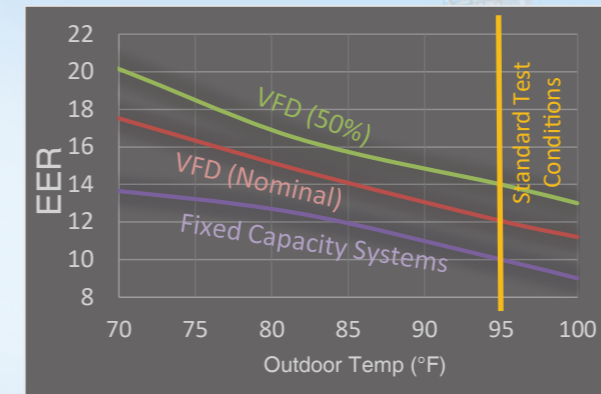
Just like an airplane experiences most of its stress during takeoff and landing, loading and unloading between stages of cooling introduces most of the mechanical stress on the compressor. The turn on of a fixed compressor wears down contactors and the resulting inrush current wears down other electronics. Even for properly sized units and properly set minimum compressor run/stop timer, the loading and unloading can reach one hundred times a day which would be > 30,000+ times per year.

By precisely matching the heat load at all times, the Variable Capacity units minimizes sudden loading and unloading of the compressor, vastly extending the life and reliability of the entire cooling system.



Synchronized Cooling Mode

With the Variable Capacity systems, buildings with one or more redundant HVAC can use the Synchronized Cooling Mode. Synchronized cooling mode allows any building with redundant units to achieve 14-16 EER while maintaining full redundancy except during emergency situations.



Turbo Boost Mode

In some situations, such as extreme high outdoor temperature or increased equipment load, the heat load of the building may exceed the nominal cooling capacity of the HVAC system. When this happens, Turbo Boost Mode can be engaged automatically to deliver up to 125% of the nominal cooling capacity at the expense of slightly lower efficiency.

Soft Start

Instead of sudden and numerous starts and stops, the variable compressor will ramp up capacity at startup and continuously modulate capacity to match the load of the shelter. Soft start has the following advantages:

- Minimize mechanical stress on compressor start up.
- Eliminate spike voltage on start up. This means generators no longer need to be sized to Locked Rotor Amps and a smaller generator and transfer switch system can be used.
- Reduced noise from sudden compressor loading

Engineered features

Integrated Free Cooling Economizer

Standard on all units, the highly configurable economizer features seamless transitions and a variable capacity up to 100% rated supply fan air volume.

EC Supply Fan

Quieter, more efficient variable speed EC fans are standard on all models providing a highly favorable energy efficiency curve when compared to conventional AC fans.

Extreme Temperature Range

Designed for operation between -35°C and 55°C ambient temperature.

Dual Layer Exterior Protection

Galvanized steel exterior coated with an additional layer of thermoset polymer provides two layers of protection against corrosion.

Air Filter Protection Device

The patented AIRSYS AFPD (Air Filter Protection Device) is field proven and engineered to protect air filters from dust and debris. In many locations, the AFPD will optimize Free Cooling during periods when the air is clean, thereby extending the life of the primary air filter.

Multi-Unit Controller

The Variable Capacity WPU can be optionally configured with AIRSYS Multi-Unit Controller (ASMUC) which can control up to 6 units at a time and up to 16 with an extension module. All parameters are available remotely through IP/SMNP for monitoring and setpoints and other critical control parameters can be changed remotely.

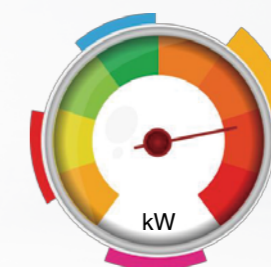


Fully Functional Standalone Mode

Under the Multi-unit control, the system can operate in fully functional Standalone Mode when communication is lost between HVAC and controller. This includes free cooling, mechanical cooling, dehumidification, and heating. Standard on all units, the highly configurable economizer features seamless transitions and a variable capacity up to 100% rated supply fan

Power monitoring

All variable capacity systems come with power monitoring tools that are displayed locally, in addition to being available via remote access. Power monitoring can be used to measure efficiencies across systems, regions, and networks and can be used for predictive maintenance.



Condenser Heat Exchange Meter

The ability to remove heat via the condenser coil is a critical element of HVAC performance. Monitoring heat exchange efficiency from the condenser coil facilitates intelligent maintenance decisions. Instead of cleaning coils on a schedule coils can be cleaned when they need it.

Performance Parameter Readout

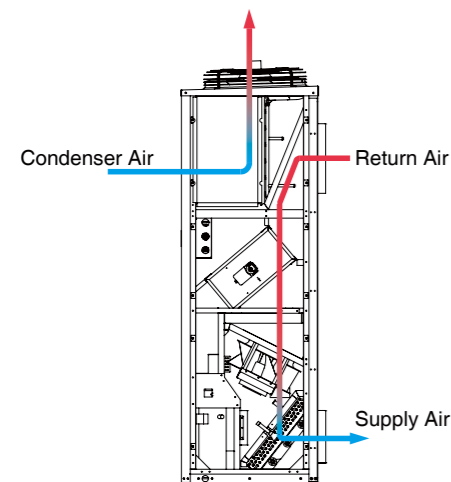
The system provides real-time performance parameter readings to the controller display, as well as remote monitoring. When coupled with remote monitoring, this feature can further enable predictive maintenance to save maintenance cost as well as improve system reliability. Some of the parameter readout includes:

- Superheat
- Sub cooling
- EEV Status
- Variable Compressor Capacity
- Discharge Pressure (High Pressure)
- Discharge Temperature
- Suction Pressure (Low Pressure)
- Suction Temperature

Working Flow Schematic Diagram

Only Mechanical Cooling

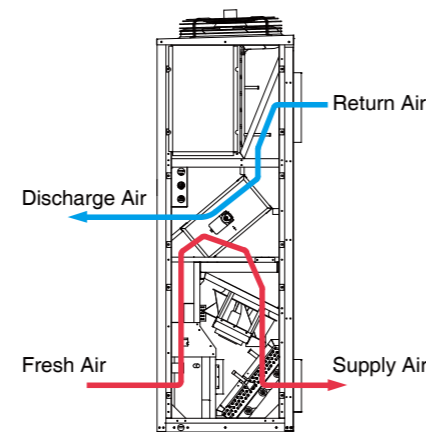
When the outdoor temperature and indoor temperature difference is small, the mechanical cooling system supplies 100% of the cooling capacity to meet required refrigeration requirements.



Only Mechanical Cooling

Only Free Cooling

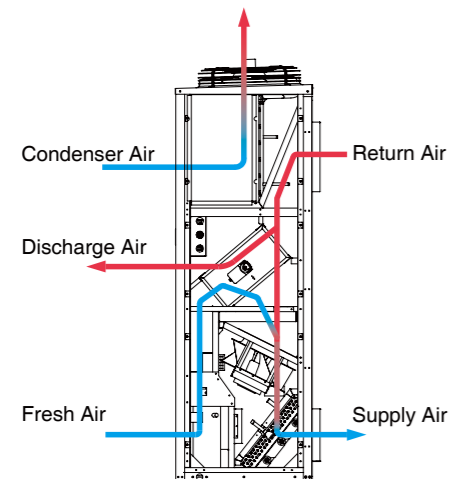
When the temperature difference between indoor and outdoor is higher than 10°C, the free cooling system will supply 100% of the cooling capacity, saving 90% energy.



Only Free Cooling

Mechanical Cooling + Free Cooling

When the outdoor and indoor temperature difference reaches set point value, the built-in free cooling system will bring fresh air into the room to avoid the compressor working, which reduces the power consumption.



Mechanical Cooling + Free Cooling

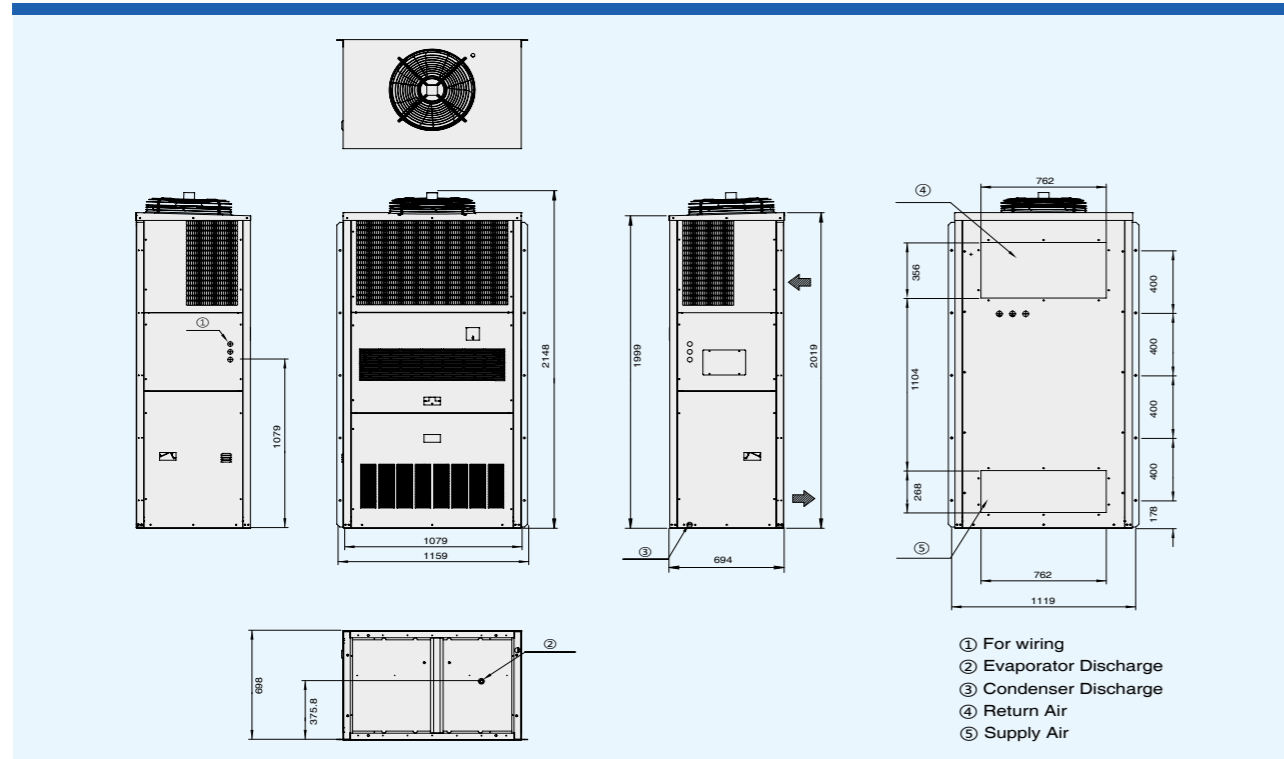
Technical Parameters

Unit mode		11V1B3	15V1B4	28V1B5
Air flow scheme(1)		DL		
Cooling Capacity				
Total cooling capacity(2)	kW	11.0 @ 45rps	15.6 @ 55rps	28.4 @ 67rps
Sensible cooling capacity(2)	kW	9.1	13.4	23.3
Max cooling capacity(3)	kW	14.1 @ 64rps	19.2 @ 70rps	37.1 @ 100rps
Min cooling capacity(4)	kW	7.0 @ 30rps	10.5 @ 30rps	12.9 @ 30rps
Free cooling capacity(5)	kW	10.2	16.9	28.0
Compressor				
Type		Hermetic Inverter Scroll Compressor		
Qty	n.	1	1	1
Power input(2)	kW	2.6	3.2	5.2
Current(2)	A	11.8	15.1	7.3
Power input(3)	kW	4.1	5.4	9.0
Current(3)	A	18.6	24.5	12.5
Refrigerant				
Charge	kg	R410A 3.7	R410A 4.6	R410A 15.0
Supply fan				
Type		AC powered EC Centrifugal Fan		
Qty	n.	1	2	2
Power input(2)	kW	0.4	0.9	1.4
Current(2)	A	2.9	5.8	6.4
Air volume(2)	m ³ /h	2450	3937	6535
Condenser fan				
Type		Axial Fan		
Qty	n.	1	1	2
Power input(2)	kW	0.6	0.4	1.4
Current(2)	A	2.8	1.7	6.6
Air volume(2)	m ³ /h	6500	8200	12000
Electric heater(7)				
Type		Stainless steel		
Heating Capacity	kW	4.5	4.5	4.5
Current	A	19.6	19.6	6.6
Air filter				
Preliminary filter		Nylon Net Pre-filter (Washable)		
Main filter		G4 Plate air filter (Disposable)		
Noise(6)	dB	65	65	68
Power supply				
Power source		230V/1Ph/50Hz	230V/1Ph/50Hz	415V/3Ph/50Hz
Maximum power	kW	5.3	6.8	12.1
Maximum current	A	24.3	32.0	17.5
Unit dimensions & weight				
Width	mm	1160	1360	1460
Depth	mm	700	795	1075
Height	mm	2150	2110	2450
Weight	kg	287	380	590
Package unit dimension & weight				
			Total package	
Width	mm	1190	1390	1640
Depth	mm	720	820	1260
Height	mm	2280	2280	2555
Weight	kg	311	410	620

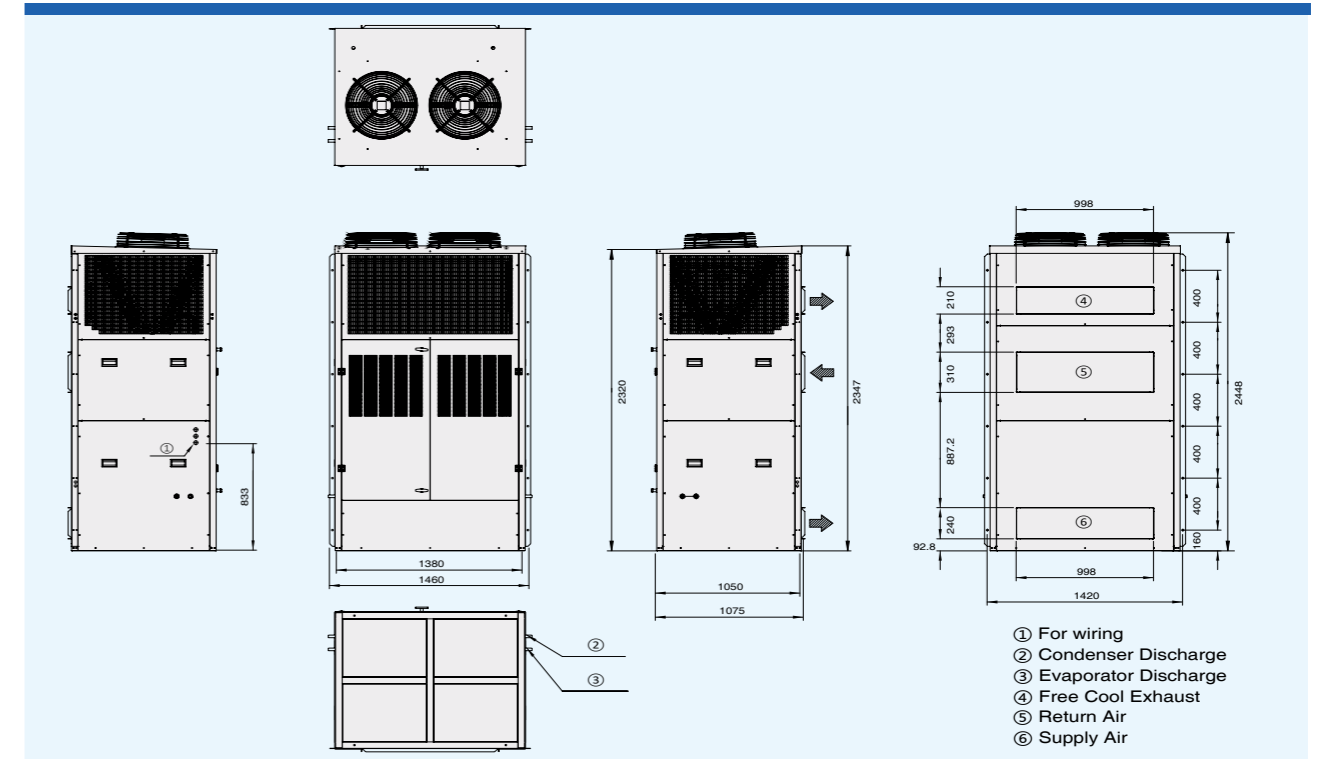
(1) DL: Down supply/Up return;
 (2) The cooling capacity@Tindoor 24°C, RH50% and Toutdoor 35°C;
 (3) The cooling capacity@Tindoor 24°C, RH50% and Toutdoor 35°C, at the speed of compressor in table;
 (4) Same as (3);
 (5) The cooling capacity @indoor temperature and outdoor temperature difference(ΔT) is 12°C;
 (6) 1m above the ground and 1m away from the front panel in test chamber;
 (7) Optional.

Unit Dimension Drawing

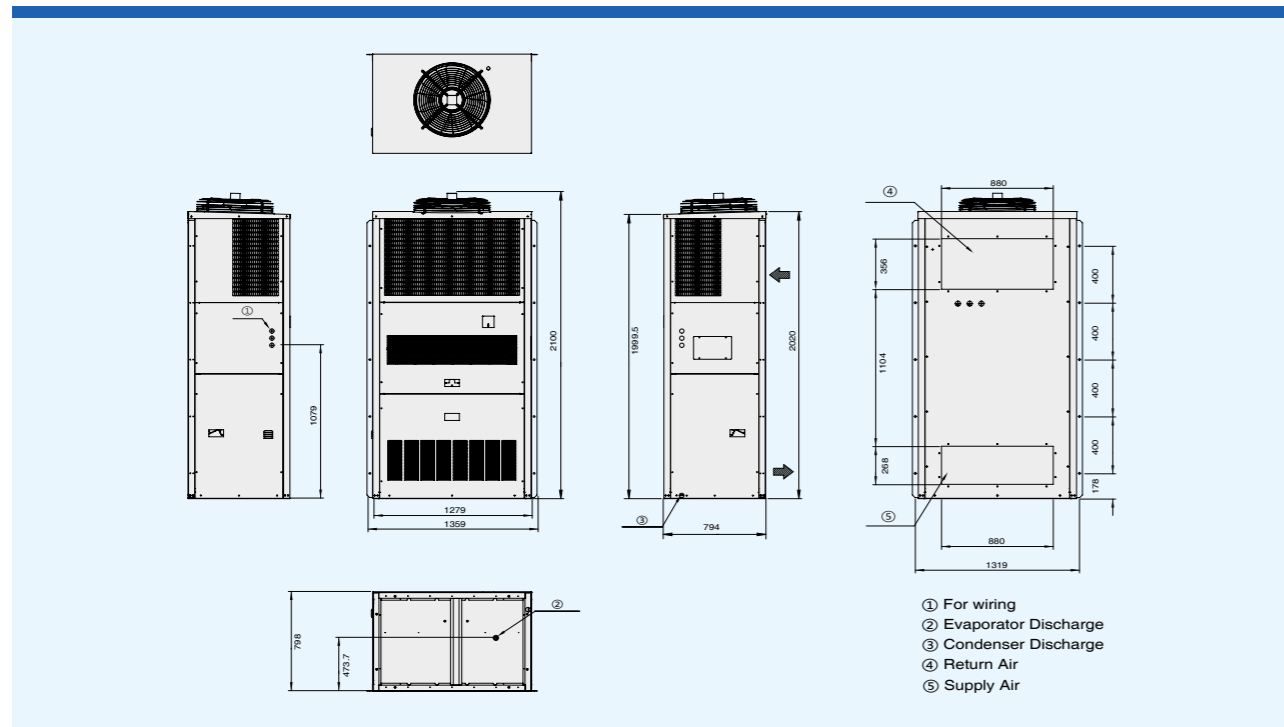
11V1B3



28V1B5



15V1B4





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Product design and specification subject to change without prior notice.