

UNICOOL

First in Class, Precise in Cool

Cooling Solutions for the Information,
Communication and Technology Industries



ABOUT US

AIRSYS Cooling Technologies Inc., is a global cooling solutions provider with products and engineering services designed to provide a wide variety of solutions for schools, data centers, mobile shelters and outdoor telecom cabinets. Whether the products are used for sensible cooling telecommunication environments, or for human comfort, the AIRSYS team of highly trained technicians can assist our client's through every step of the deployment process from design through maintenance.

25th ANNIVERSARY

AIRSYS has reached an exciting milestone in 2020 with the company's 25th anniversary as an award-winning supplier of the world's most energy efficient cooling solutions.



RESEARCH AND DEVELOPMENT

As a global manufacturer of high-performance air-conditioning equipment, AIRSYS is committed to providing highly reliable and energy efficient cooling solutions for critical environments. At AIRSYS we are focused on progressive technologies for the HVAC industry. Through our large research and development division, we proudly develop new equipment that utilizes inverter driven technologies, coupled with precise controls to maximize the designed load calculations for a given space.

MANUFACTURING FACILITY

Located in the manufacturing belt of the Carolinas in Spartanburg County, AIRSYS operates out of a 60,000 square foot manufacturing facility and corporate headquarters. Our teams of highly trained technical, sales and field services staff are veteran HVAC industry insiders who all work together to provide 24/7 customer assistance for our clients.

PRODUCT OVERVIEW

AIRSYS was the first manufacturer to develop a Wall Packaged Unit (WPU) with a variable speed compressor. AIRSYS designed the UNICOOL Unit specifically for computer and equipment environments with the cooling capacity heavily shifted toward sensible heat removal.

Our goal was to develop a WPU that was not only extremely energy efficient, but also made with high quality components. The UNICOOL unit is designed to withstand extreme climate zones, and has proven to be reliable due to the quality craftsmanship that went into the design of this high-performance unit.



FEATURES

- Variable Capacity Compressor
- Designed for Sensible Heat Removal
- Designed for 24/7 Operation over 10 years
- Adaptive Free Cooling

NOMINAL COOLING PERFORMANCE (AHRI 390)

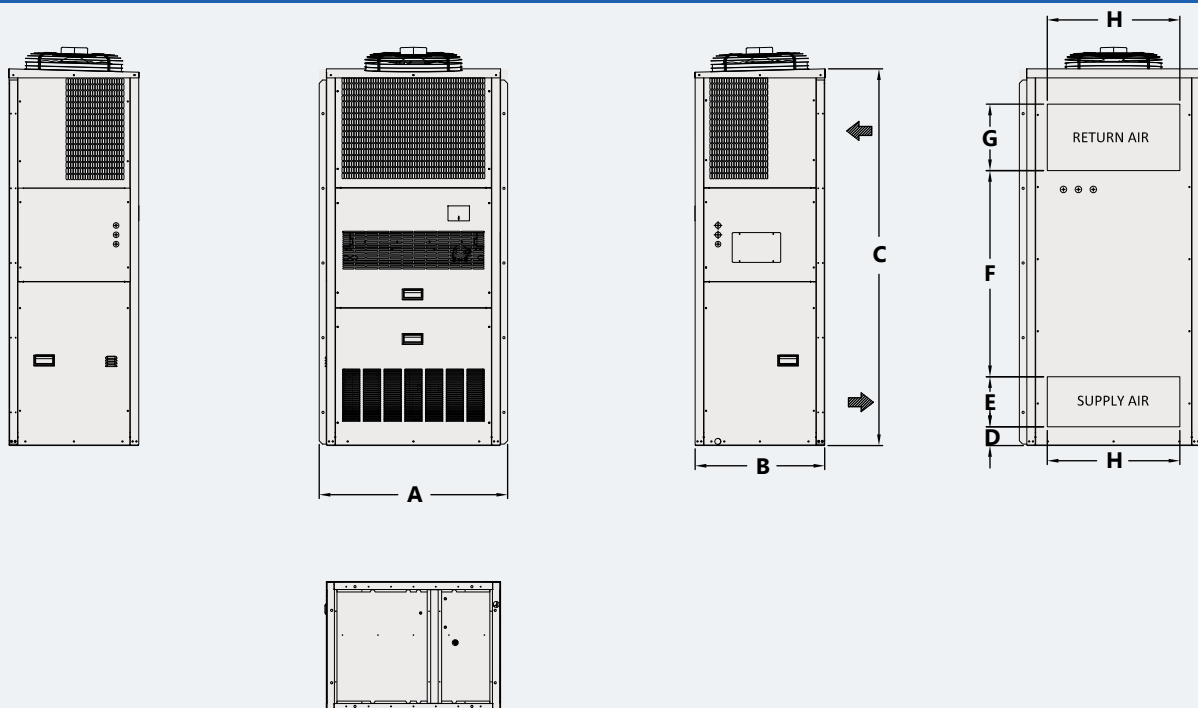
Model	Nominal Tonnage	Nominal Total Capacity	EER (Standard)	EER (90% Part Load)	EER (60% Part Load)	IPLV
11V1B3MR410AAC	2-4 Ton Variable	10.3kW / 35,200 BTUH	12.0	16.0	17.0	16.9
11V1T3MR410AAC	2-4 Ton Variable	10.2kW / 34,800 BTUH	11.5	15.5	16.5	16.4
15V1B4MR410AAC	3-6 Ton Variable	15.1kW / 51,500 BTUH	11.5	15.5	16.4	16.3
15V1T4MR410AAC	3-6 Ton Variable	14.8kW / 50,500 BTUH	11.0	15.0	16.0	15.5
28V2B5MR410AAC	3-10 Ton Variable	28.1kW / 96,000 BTUH	11.0	14.0	15.5	15.0
28V1B5MR410BAC	4-10 Ton Variable	28.1kW / 96,000 BTUH	11.5	15.0	16.0	15.9
28V1B5MR410CAC	4-10 Ton Variable	28.1kW / 96,000 BTUH	11.5	15.0	16.0	15.9

All Capacities, EER, and IPLV certified to AHRI 390 testing standard.



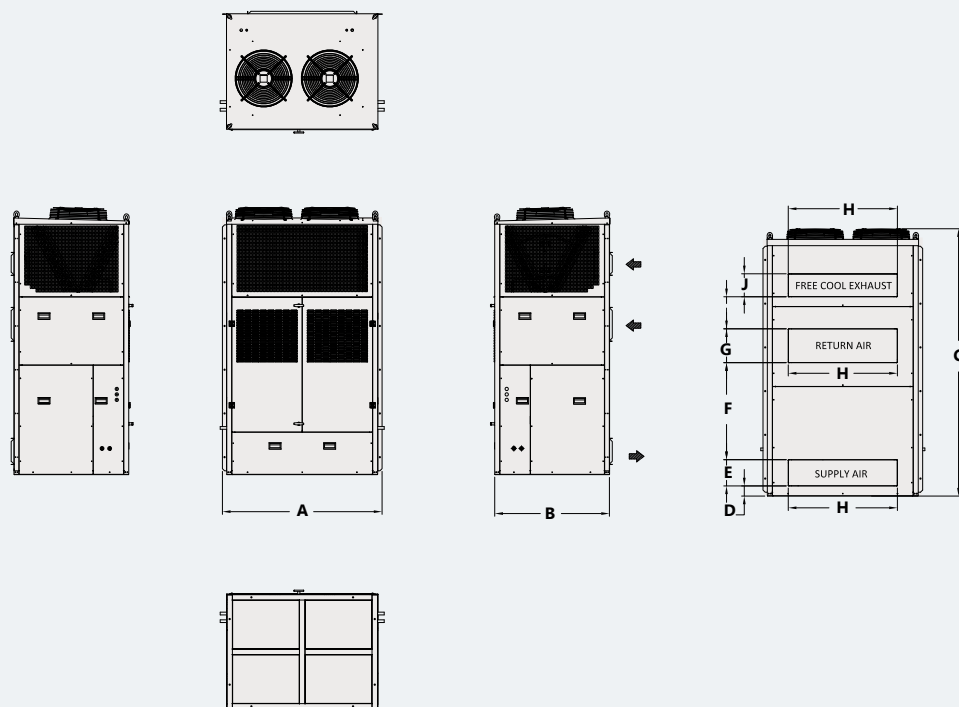
UNIT DIMENSIONAL DRAWINGS

B(7kW,11kW,15kW)



Model	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	H (in)
UNI.7V1B2	39.72	27.32	79.45	3.98	10.55	43.46	14.02	27.95
UNI.11V1B3A	45.63	27.32	79.49	3.98	10.55	43.46	14.02	30.00
UNI.15V1B4B	53.50	31.26	79.534	3.98	10.55	43.46	14.02	34.64

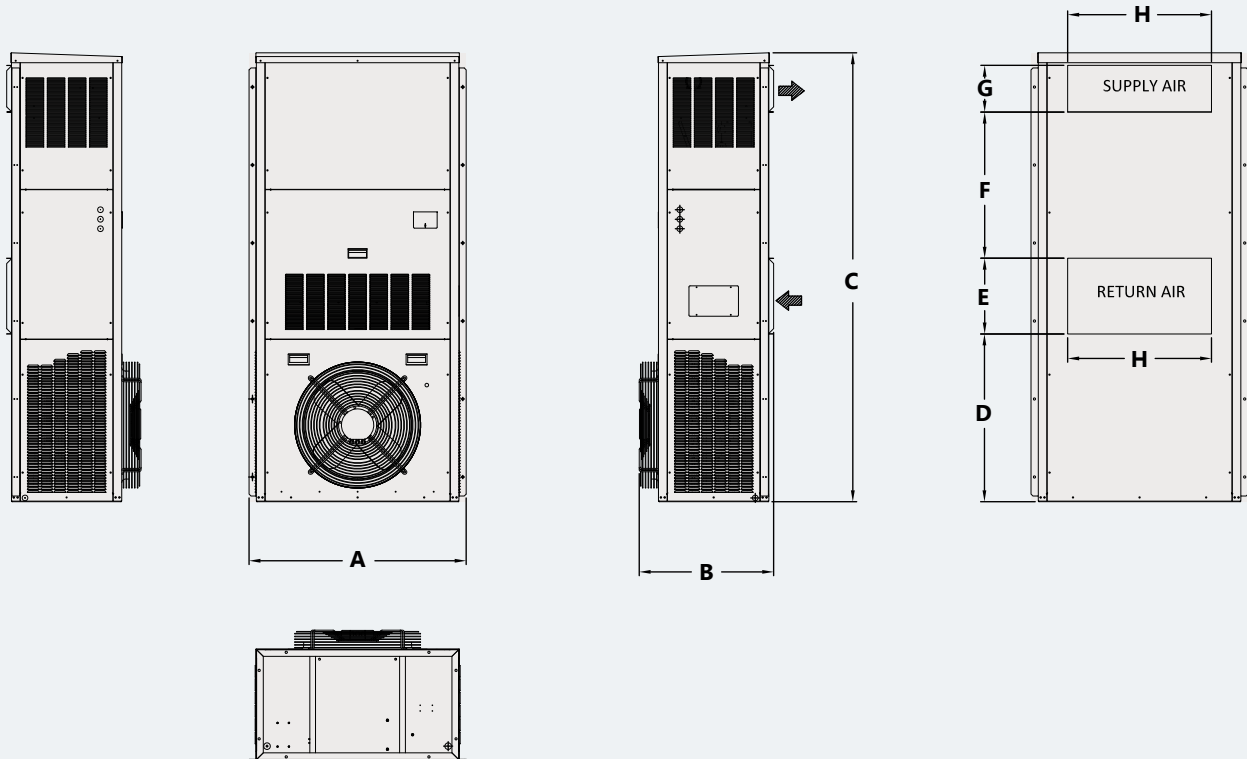
B5(28kW)



Model	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	H (in)	I (in)	L (in)
UNI.28V1B5	57.48	42.32	92.43	3.65	9.45	34.93	12.20	39.29	11.53	8.27

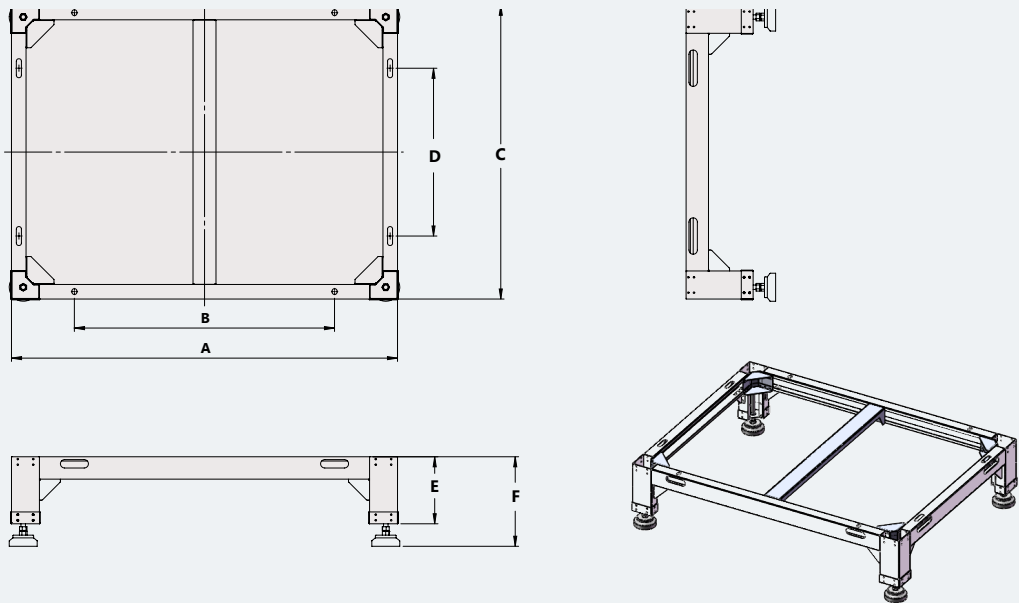
UNIT DIMENSIONAL DRAWINGS

T(7kW,11kW,15kW)



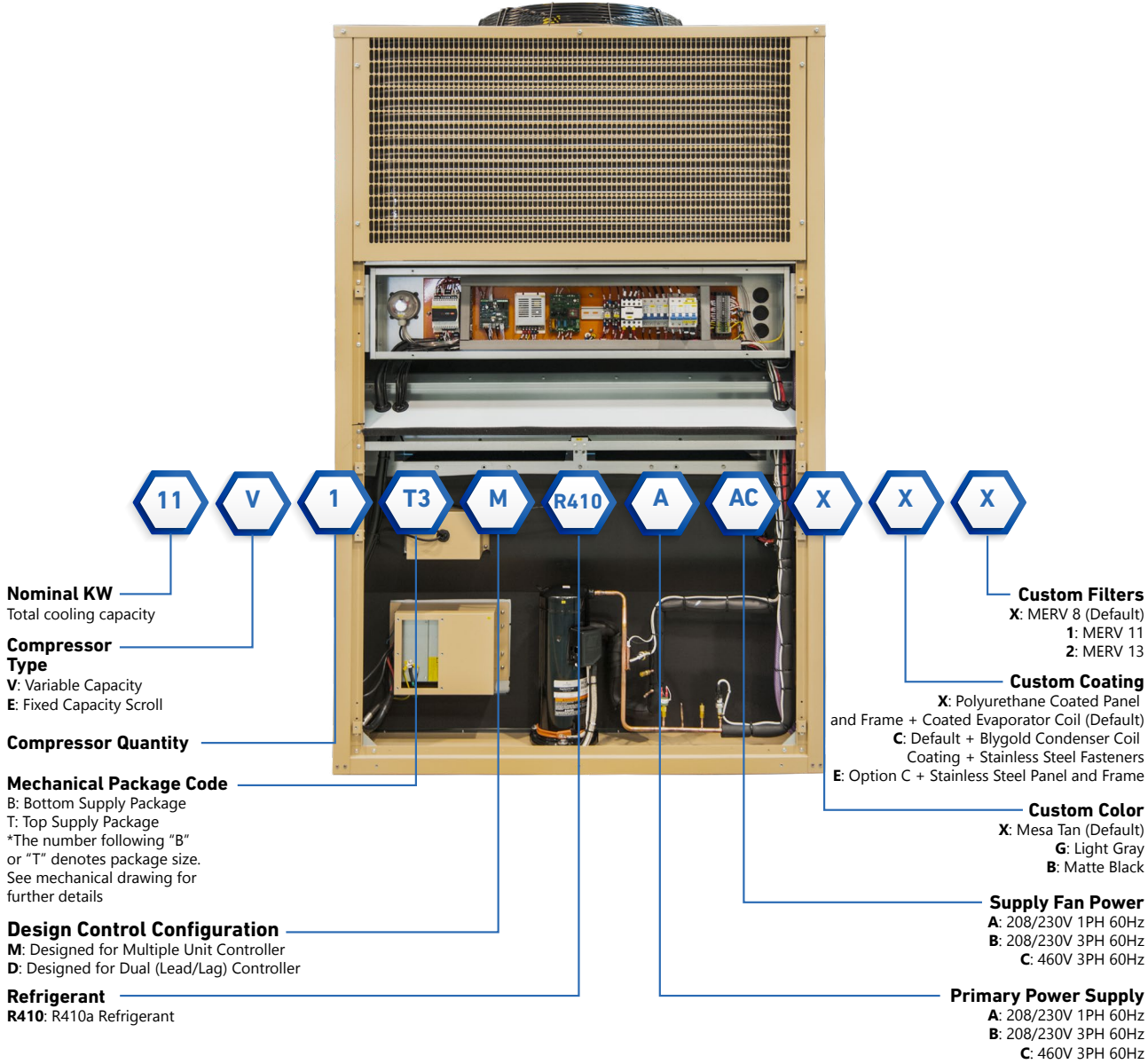
Model	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	H (in)
UNI.7V1T2	41.18	30.71	73.62	27.95	13.98	30.24	7.99	27.99
UNI.11V1T3	44.92	26.83	92.91	34.72	15.67	30.24	9.68	29.76
UNI.15V1T4	53.35	35.88	92.91	34.72	15.67	30.24	9.68	29.76

28V1B5 ADJUSTABLE STAND



Model	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)
UNI.28V1B5	54.33	36.61	41.34	23.62	9.43	12.60 ~ 16.54

MODEL NUMBER NOMENCLATURE



For Example:
Model UNI.11V1B3MR410.AAC stands for a 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/60Hz, and supply fan is EC centrifugal fan.

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

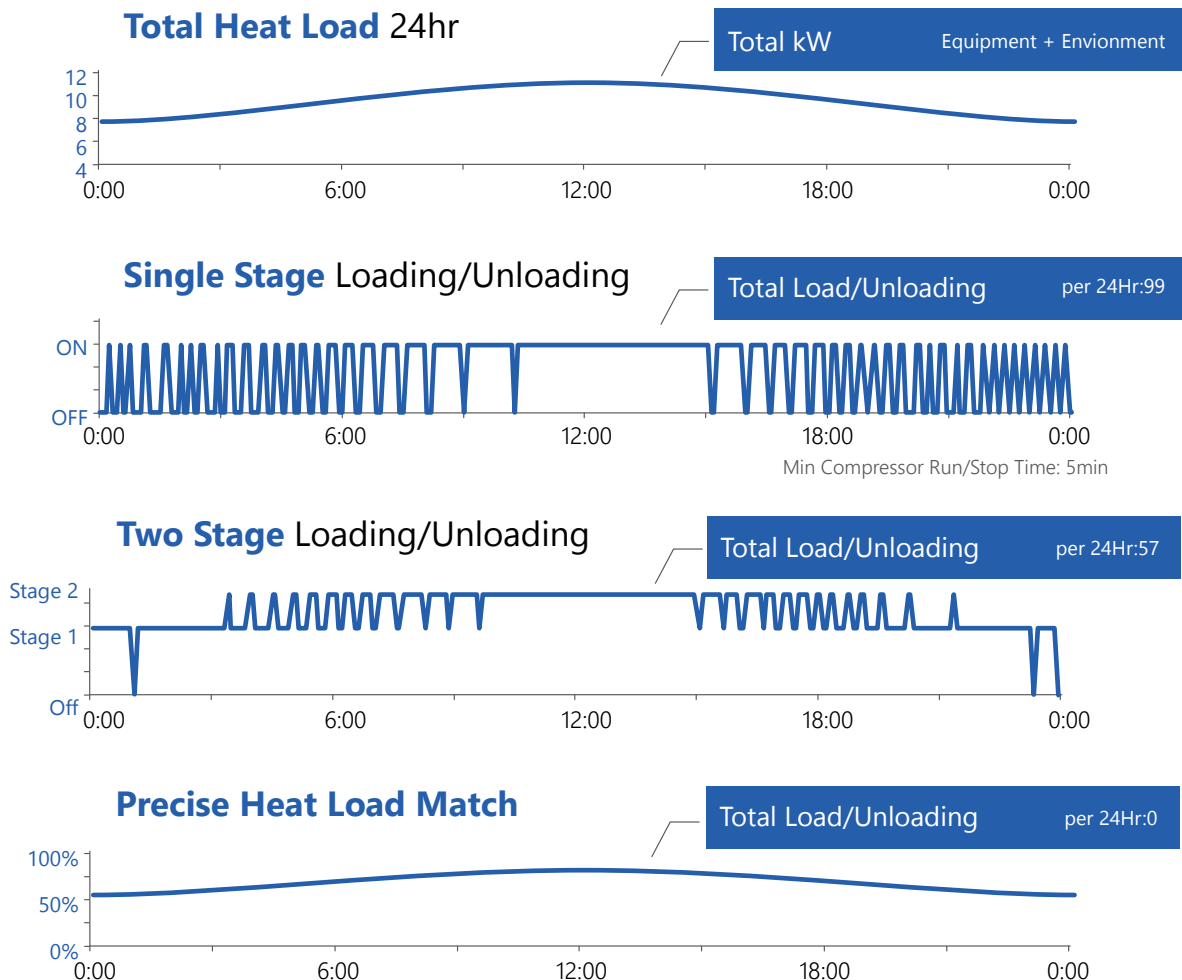
ENGINEERED FEATURES

VARIABLE CAPACITY COMPRESSOR

Precise Heat Load Match

Loading and unloading between stages of cooling introduces most of the mechanical stress on a 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.

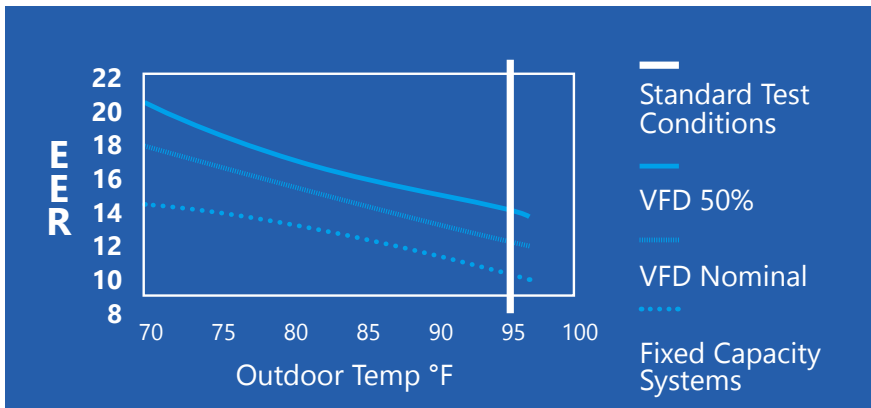
Our UNICOOL units precisely match the heat load at all times through variable capacity compressor technology, which minimizes sudden loading and unloading of the compressor, vastly extending the life and reliability of the entire cooling system.



ENGINEERED FEATURES

Synchronized Cooling Mode

With variable capacity systems, buildings with one or more redundant HVAC units can use Synchronized Cooling Mode, which 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. This means generators no longer need to be sized to Locked Rotor Amps and a smaller generator and transfer switch system can be used. Soft start has the following advantages:

- Minimizes mechanical stress during the start up of the compressor
- Eliminates spike voltage on start up
- Reduced noise from sudden compressor loading



1 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.

2 EC Supply Fans

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.

3 Extreme Temperature Range

Designed for operation between -31°F and 131°F ambient temperature.

4 Dual Layer Exterior Protection

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

5 Multi-Unit Controller

The Variable Capacity Wall Packaged Unit (WPU) can be optionally configured with AIRSYS Multi-Unit Controller (ASMUC) which can control up to six 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.

6 Quality Components

The research and development team at AIRSYS spared no expense in making sure the top components in the industry went into the design of the UNICOOL unit. Carel controls, EBM Papst fans, Ziehl-Abegg fans, Belimo damper actuators and Copeland Scroll Compressors all come standard in each unit.

7 Fully Functional Standalone Mode

Under the Multi-unit control, the system can operate in a fully functional Standalone Mode when communication is lost between the HVAC unit and the 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.

8 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.



ENGINEERED FEATURES

9 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 as needed through remote monitoring.

10 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, such as sites near dirt roads, freeways, farmlands, and any source of airborne particulates, the AFPD will optimize Free Cooling during periods when the air is clean thereby extending the life of the primary air filter. This has the dual impact of optimizing efficiency while reducing maintenance costs.

11 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 costs, as well as improve overall system reliability. Some of the parameter readout includes:

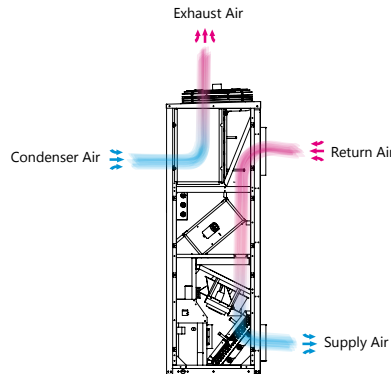
- Superheat
- Sub-Cooling
- EEV Status
- Variable Compressor Capacity
- Discharge Pressure (High Pressure)
- Discharge Temperature
- Suction Pressure (Low Pressure)
- Suction Temperature



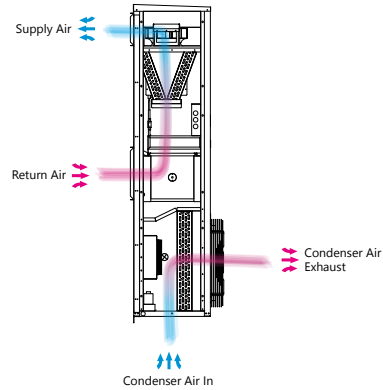
AIR FLOW DIAGRAMS

Mechanical Cooling

When the outdoor temperature and indoor temperature difference is minimal, the mechanical cooling system will supply 100% of the cooling capacity to meet the refrigeration requirements.



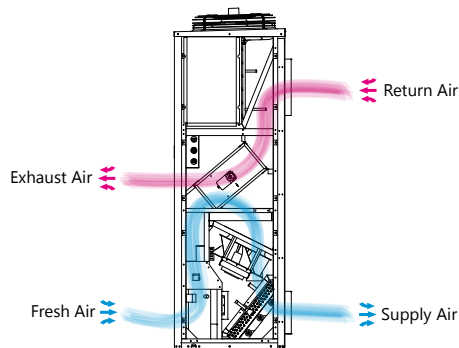
Mechanical Cooling (Bottom Supply)



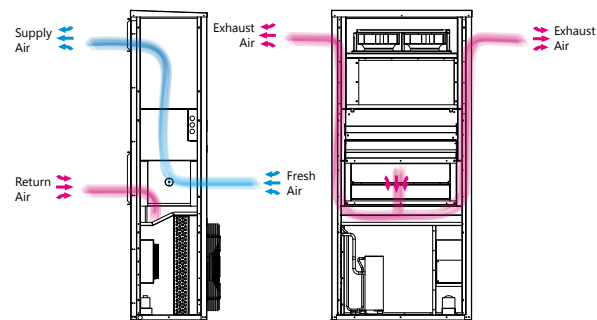
Mechanical Cooling (Top Supply)

Free Cooling

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



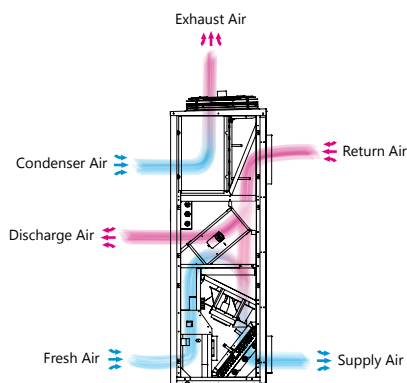
Free Cooling (Bottom Supply)



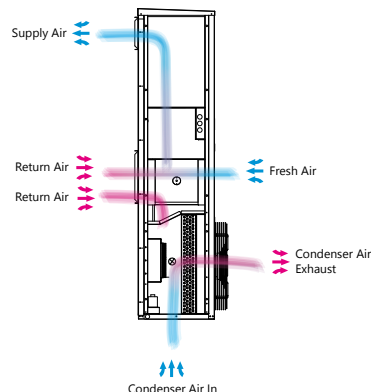
Free Cooling (Top Supply)

Mechanical Cooling + Free Cooling

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



Mechanical Cooling + Free Cooling (Bottom Supply)



Mechanical Cooling + Free Cooling (Top Supply)