

UNICOOL

Variable Speed Package Air Conditioner for Computer & Equipment Environment
Capacity: 3.6kW-39kW



PRODUCT OVERVIEW

UNICOOL - second generation Wall Package Unit is a variable speed air conditioner with integrated free cooling (economizer), Which is a high efficiency cooling product of AIRSYS solutions, designed primarily to for electronic and mechanical equipment shelters, container data center, E-Houses.

UNICOOL has been serving worldwide sites with over 15 years experiences in being a reliable friend of IT facilities. It is designed to safely work across a range of operating conditions, with high efficiency, green refrigerant, various power supply and installation arrangements.

In this era of huge data generating and flowing to every corner, UNICOOL units are going to wherever bits and bytes are blazing with the enhanced design combining yesterday's experience and today's innovation.



UNIT IDENTIFICATION

01	02	03	04	05	06	07	08	09	10	11	12	13	14
UNI	.	DL	11	V1	B3	S	R410	.	230/1/60	.	AC	.	XXX

01	UNI	Product series name: UNICOOL: Packaged telecom air conditioner with fresh air free cooling, it can be abbreviated as "UNI."
02	.	Separator Character "."
03	DL	Air supply: DL: Bottom supply O: Top supply
04	11	Unit nominal cooling capacity by kW 7,11,15,28
05	V1	Compressor type & number V1: 1 Variable speed compressor
06	B3	Cabinet type and size code: 7 cabinet sizes: B2, B3, B4 and B5 & T2, T3, T4
07	S	Control configuration: S: Single control *M: Multiple control (optional)
08	R410	Refrigerant: R410=R410A
09	.	Separator Character "."
10	230/1/60	Power source:Voltage/Phase/Frequency 230/1/50 or 60, 415/3/50 or or 460/3/60
11	.	Separator Character "."
12	AC	Supply fan type: AC: AC powered EC Centrifugal fan DC:DC powered EC Centrifugal fan
13	.	Separator Character "."
14	XXX	Special design code

For example:

UNI.DL.11V1B3SR410.230/1/60.AC Stands for UNICOOL unit with bottom air supply, 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.

HOW TO SELECT THE MODEL

INSTRUCTIONS FOR CHOOSING THE UNIT TYPE

1	System Heat Load:					
2	Refrigerant:	R410a				
3	Operating Conditions:	Cooling rated at 95°F(35°C) outdoor and 80°/67°F(26.7/19.4°C) indoor @AHRI 390				
4	Cooling Capacity	7kW	11kW	15kW	28kW	
	Cabinet Size	B2/T2	B3/T3	B4/T4	B5	
	Compressor Type	Rotoary	Scroll	Scroll	Scroll	
5	Power Supply:	220V/1Ph/50Hz	•	•	•	•
		380V/3Ph/50Hz				•
		(208~230)V/1Ph/60Hz	•	•	•	•
		(208~230)V/3Ph/60Hz		•	•	•
		460V/3Ph/60Hz				•
6	Supply Fan:	Standard: AC Power EC Fan. Optional: DC Power EC Fan.				
7	Color:	Standard: Grey, Gold Optional: Black, White.				
8	Controller Location	Built-in Controller + PGD Display External Controller Box for Multiple Control				
9	Controller Configuration	Such as Controller Type, Communication Card, Clock Card, Damper Actuator, Temperature and Humidity Sensor, Smoke/ Fire Alarm, Clog-in Filter Alarm, AFPD Dust Sensor, Air Filter, Dehumidification, Dry Contact Qty, etc.				

As an international supplier of ICT refrigeration solutions, AIRSYS takes into consideration global variations in power supplies. As shown in the table above a variety of alternative power supply options are available to meet the needs of users in different regions.

WORKING RANGE AND CONTROL ACCURACY

Indoor:

Temp. range & accuracy: 18°C~35°C±1°C

Outdoor:

Standard configuration: -30°C~46°C, up to 53°C

Storage:

Temp.: -40°C~70°C

Humidity: 5~95%

APPLICATIONS

Communication base stations

High-tech electronic devices rooms

Power distribution stations

Industrial process control center

Container data center

Energy storage cabinet

CONTROLLER

VARIABLE CONTROLLER OPTIONS FOR DIFFERENT DEMANDS

BUILD-IN VS EXTERNAL

The 'Built-in Controller + PGD Displayer' combination is the most common and economic way to control and maintain the unit. It allows the air conditioners to work independently or cooperate with each other.

External controller with individual power supply provides availability when air conditioner fails and it's indoor installation reduces inconvenience to maintain or fix the unit from outside. Both 'Built-in Controller' and 'External Controller Box for Multiple Control' option provides possibility to have two or more units work together and realize Lead/Lag control.

STANDARD CONTROLLER COMPONENTS

- Controller platform
- Supply and return air temperature sensor
- Outdoor temperature sensor
- Humidity sensor
- Clock and calendar display
- RS485 with MODBUS RTU communication protocol
- pGD display: 6-keys keyboard can display graphical images and text



ASMUC MULTIPLE CONTROL BOX

Units	Model of Multiple Control Box
Units with AC power supply	ASMUC.6AC
Units with DC power supply	ASMUC.6DC

ADVANCED TECHNOLOGY & CLASSIC DESIGN

ENERGY SAVING

- Integrated with free cooling system, saving up to 90% of the energy requirements
- VFD technology - Variable speed compressor
- EC supply fan
- Auto-control optimizes system performance

RELIABILITY

- 24*7 uninterruptible operation design
- 15 years of global market verification
- Up to 50k units presenting and performing their abilities at different sites of the world
- Overcome locational and environmental constraints
- Classic line with low failure rate

INTELLIGENT CONTROL

With the 'mind' given to it, it can conduct self-diagnosis, react and cope with various situations, communicate with user and other units and deliver prominent energy efficiency.

SAFETY OPERATION

Highly safety performance guaranteed by functions and protections designed for the unit.

EASY INSTALLATION & MAINTENANCE

- Outdoor Wall-mounted Package Design- no interior space is required.
- Plug-in wiring connection and easy removable components
- Accessible component easy to maintenance
- Lockable server breaker access- service safety
- Designed for easy lifting



ENERGY SAVING

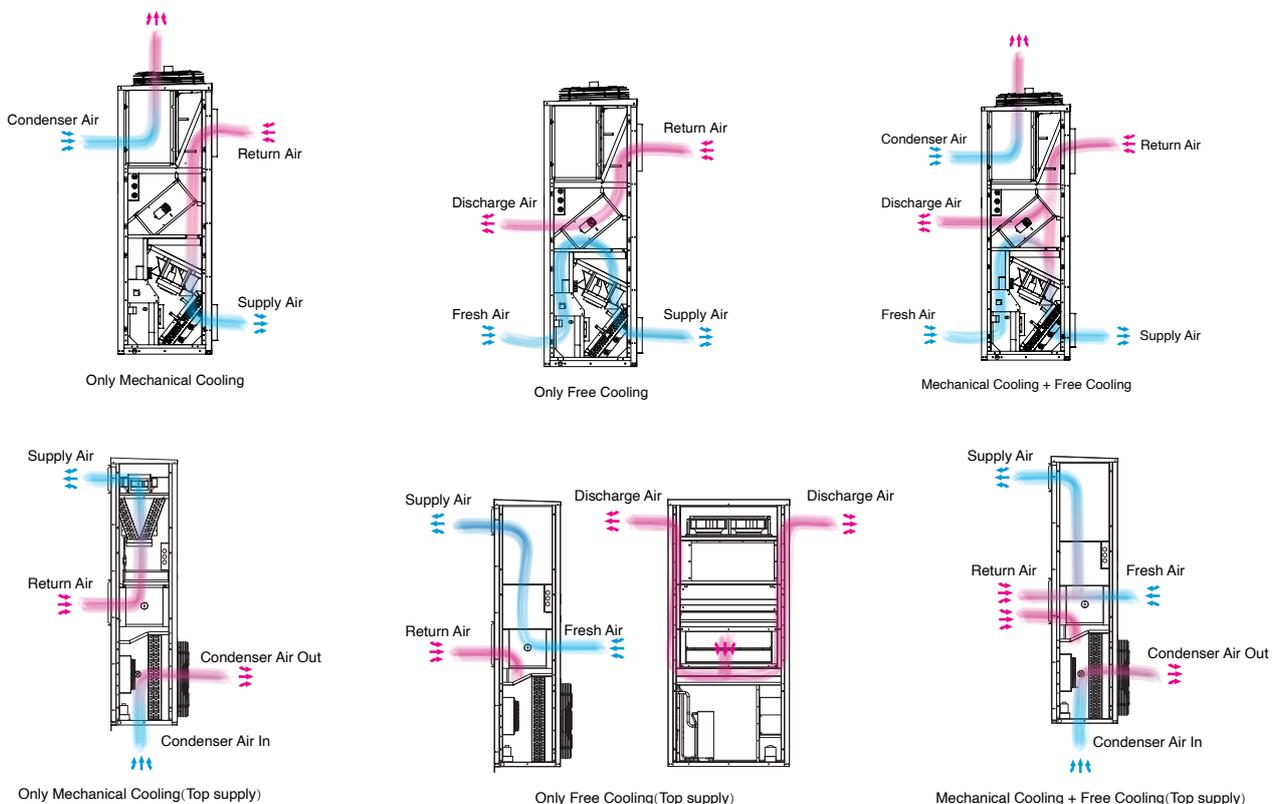
Free cooling system

Energy-saving Operation

Each unit is equipped with both mechanical cooling system and free cooling system as standard. The fresh air free cooling is designed to be the primary source of cooling.

When the outdoor and indoor temperature difference meets the free cooling requirement (2°C default, adjustable), the free cooling system will automatically bring in outside air to the room and stop the mechanical cooling system, therefore reducing power consumption.

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



Auto-control optimizes system performance

Flexible Function- Humidity Limitation

This Humidity limitation function can be enabled or disabled on site.

If it is enabled, when the humidity is higher than the setpoint, free cooling will be turned off in order to stabilize the inside humidity within the base station.

Flexible Function- Air Filter Protection

With AIRSYS patented product- Air filter protection device (AFPD), free cooling can be disabled automatically in harsh environments such as sand storms, dust and other adverse weather conditions to protect the filter which reduces both service costs and energy consumption.

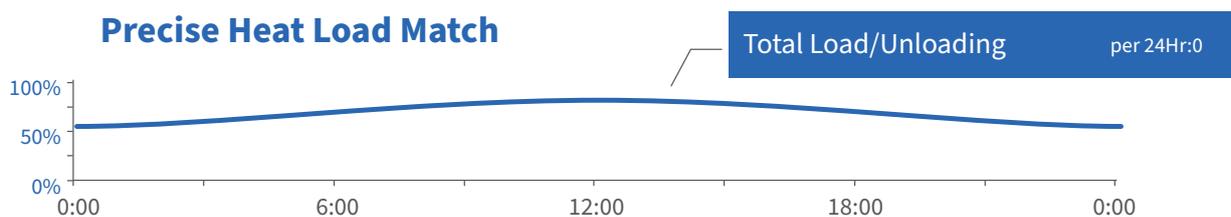
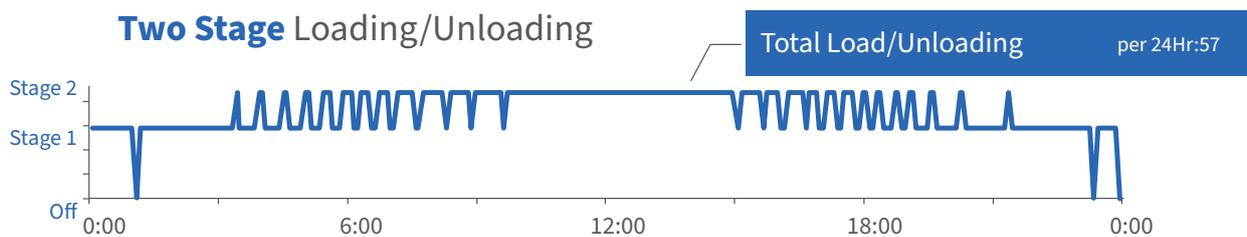
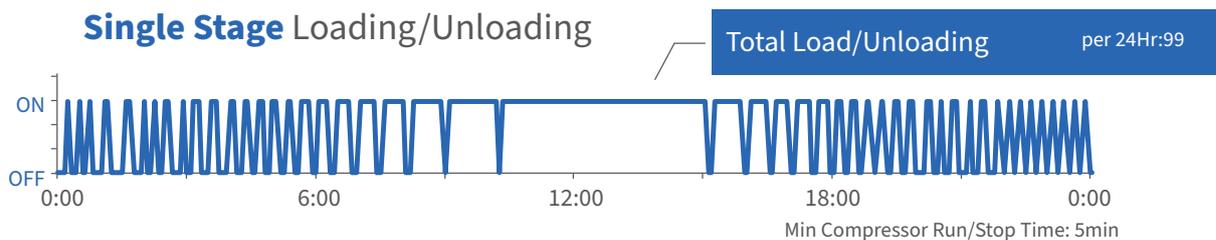
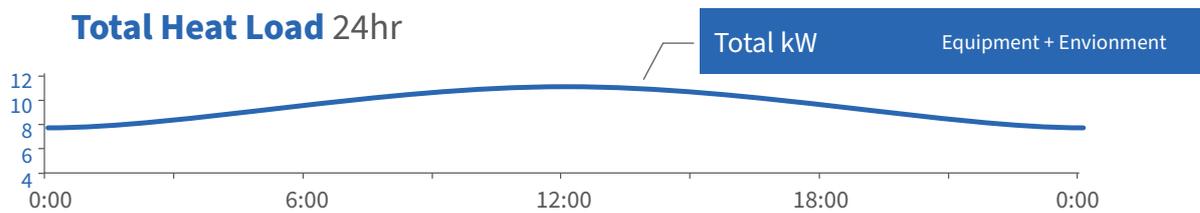
VFD technology

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.

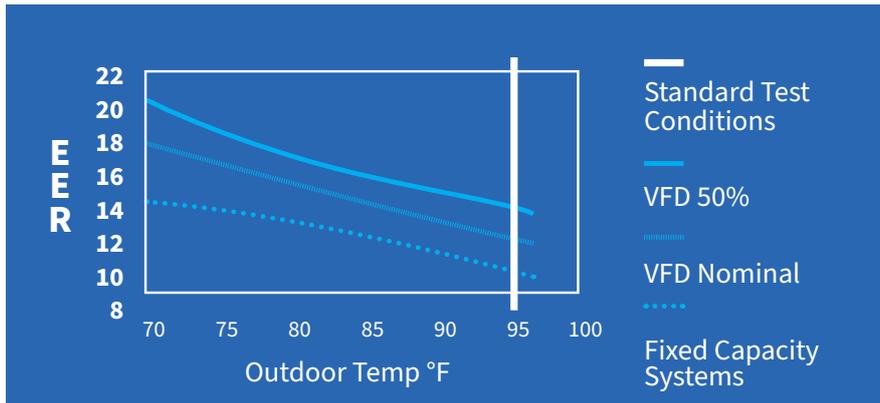
By precisely matching the heat load at all times, the Variable Capacity units minimizes sudden loading and unloading of the compressor, vastly extending the life and reliability of the entire cooling system.



COMPRESSOR

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
- Eliminate spike voltage on start up
- Reduced noise from sudden compressor loading

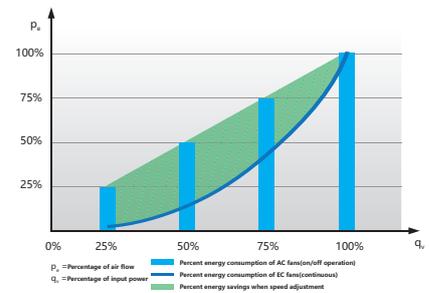
EC Fan

An EC fan refers to a centrifugal fan that utilizes an Electronically Commutated motor (or brushless DC motor). EC fans have numerous benefits including:

Energy Efficiency

EC fans have brushless DC motors and integrated control modules. Motor efficiencies of 85-90% are achievable; 30% to 50% higher than traditional AC fans.

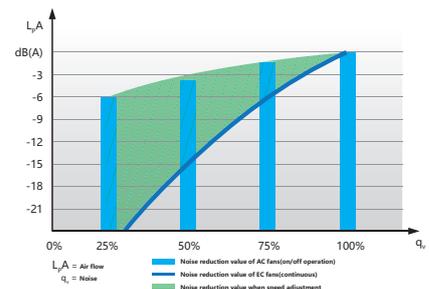
The difference in energy efficiency between variable speed EC fan control and traditional on/off fixed speed AC fans can be seen in the graph; the bars show the power consumption of fans which are switched in gradually as required while the blue curve shows the power consumption with infinitely variable speed control.



Lower Noise

In a given installation, switching off half the fans (and halving the air flow) will typically only reduce the generated noise by approximately 3 dB. Compare this to EC fans, where reducing fan speed to provide half the air flow typically yields a reduction of approximately 15 dB. This is possible as EC fans are able to operate across an infinitely controllable speed range, which in turn effectively avoids electromagnetic and rectifier noise (generated by other traditional motor and speed control devices), thus reducing the overall noise level.

In the graph, the bars indicate the sound pressure level of fans which are switched in gradually as required and the blue curve shows the sound pressure level with infinitely variable speed control.



As can be seen from the picture EC fan sound pressure level is 12dB lower compared to the traditional AC fan.

Compact, Integrated Electronic Control System

All EC fans have dedicated speed control modules and filters built into the motor assembly, making for a compact and self-contained solution. All that is required is to connect the main power supply and the sensor signals to the controller for complete speed control of between 10% and 100%. EC fans provide a simple, convenient solution and can also support group control and remote monitoring.



Wide Working Voltage

Wide AC input voltage range: 1~200-277VAC or 3~380-480VAC 50&60Hz

Wide DC input voltage range: 16-28VDC or 36-57VDC

RELIABILITY

1 Expert in Wall Package Units

UNICOOL units have gone through 15 years of global market verification. Up to 50k units are presenting and performing their abilities at different sites of the world. Low failure rate and high reliability has earned UNICOOL units good reputation and made it the classic line in both Airsys and the market.

2 Wide Working Range

To overcome locational and environmental constraints, the unit can work at minimum -30°C, maximum 53°C ambient temperature continuously and reliably. The storage temperature can vary between -40°C and 70°C.

3 24*7 Uninterruptible Operation

UNICOOL units combine precise temperature and humidity control with outstanding reliability and energy efficiency throughout 24*7 operation.

4 Environmental Resistance

Dual Layer Exterior Protection-Galvanized steel exterior coated with an additional layer of thermoset polymer provides two layers of protection against corrosion which can meet:

Mist resistance- 1000 hours, no blistering and loss of light (ASTM D1735)

Water immersion resistance-240 hours, no blistering and loss of light (ASTM D870)

UV resistance-12 months outdoor exposure without powdering (GR487)

Salt spray test- 500hrs (ISO 9227)

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

5 Strong Structure

supplied as an option.

The standard unit framework is supplied with corrosion protection treatment.

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

6 High Performance Components

EC Fan

When the pressure drop across the filter reaches 250Pa, the unit air flow will not be lower than 90% of design air flow at standard operating conditions.

Compressor

Highly reliable scroll compressors with more than 10 years lifespan.

Heat exchanger

Evaporator and condenser with high efficiency heat exchanging copper tube and enhanced aluminum fins which are also easy to clean.

High torque and low leakage air damper

The air filter is equipped with a high torque and low leakage air damper.

The time for opening and closing the damper is less than 35 seconds. The Air Leakage across the damper is less than 5% by volume of the air normally passing through the unit



EASY INSTALLATION & MAINTENANCE

Wall-mounted Package Design

Outdoor Wall-mounted Package Design occupies no interior space and allows IT facilities to be deployed best to the space.

The design can significantly reduce installation workload and cost as no piping, brazing and leakage testing at site. Only easy wiring and wall opening is required.

The compact optimized structure design provides the possibility to be lifted by forklift instead of hoist. (28kW unit excepted).

Easy Maintenance

The main components such as compressors, fans, motors, dampers and other related items are all easily accessible and maintained from the front of the unit.

The weight of each panel is less than 10kg for ease of removal and reinstatement.

Service port

Service ports are accessed without removing door assembly.

Lockable server breaker access

To guarantee service safety, circuit breaker door is hinged and lockable for tamper resistance.

Design for easy re-assembly

For maintenance-related parts, plug-in connections and easy removable components are applied.

Automatic Maintenance Sequential test

A maintenance test facility is provided to enable an engineer to press/select one button that will activate a self-test routine.

The self-test routine will check for the satisfactory operation of the fresh air damper and the compressor refrigerant circuits.

This is achieved by applying a dummy return air temperature signal, slowly ramping up from a point below the system set point to a high temperature level thereby testing the damper operation (via changes in the supply temperature).

The system stops the supply fan for a controlled period, to simulate the low pressure of refrigeration system and to check if the low pressure protection working normally.

The system stops the condenser fan for a controlled period, to simulate the high pressure of refrigeration system and to check if the high pressure protection working normally.



SAFETY OPERATION

Emergency Ventilation Function

The emergency ventilation function can be enabled or disabled on site.

If it is enabled, the emergency ventilation function will be engaged once the room temperature exceeds the heat-protection setpoint for internal equipment. The emergency will be triggered at any time other than when fire/smoke alarm has been triggered.

Voltage Protection-Control Protection

There is a voltage relay for protection. When the supply voltage is over the permitted range, the unit will be stopped.

For 3 phase units, if there is phase unbalance or phase absence, the unit will also be stopped for protection.

Random Restart When Power Recovered

Once power has been restored (following an outage), the unit will restart automatically with a random time delay between 1 to 60 seconds to avoid multiple items of equipment starting at the same time.



INTELLIGENT CONTROL

1 Fully Automatic Control

The unit is equipped with a full automatic control system; all control, protection, alarm functions are automatic with auto-restart.

2 Working Mode Auto-Alternated

The unit automatically selects between mechanical cooling and free cooling modes. In the event of either electrical or mechanical failure affecting the refrigeration system, the unit will be capable of automatic reversion to the fresh air cooling mode.

3 Automatic Self-Diagnosis

All the components connected to microprocessor are continuously tested. In case of malfunction, the failure is shown on the display with relevant information.

4 Comfort Mode for Service Engineer and Technicians

When a service engineer is working in the base station, HVAC comfort mode (72°F/22°C, adjustable) can be selected by pressing 2 buttons on the user terminal.

5 Running Data Logging

The controller has a memory of 1M for data logging. If the interval of data logging is less than 5 minutes, the controller can store at least 48 hours working data. Data output:

The RS485 communication card is standard configuration for the unit while pCOWeb card is optional which enable automatic download of logs. The format of the data should be CSV or Excel file.

6 Web Server Monitoring System

The unit can be equipped with a Web Server card with TCP/IP protocol and Ethernet network to realize remote control and monitoring. Each computer can be connected to the web server by Ethernet network and check the working status and control the unit in time everywhere. Lead-Lag auto alternated When lead or lag unit is failure, the lag or lead unit will work. Balance all units working time automatically If there are 2 units installed, the controller will alternate the working unit automatically according to the total working time of the units to balance the working time.

7 4 Levels of Password Protection

There are 4 levels of password protection for the control system:

Read only: for regular operation access
Read/write: Suitable for maintenance personnel

Maintenance & commissioning: Suitable for commissioning engineers
OEM: Suitable for the engineer from manufacturer



THE CONTROL FUNCTIONS

Parameters Display

- Current control temperature set
- Return air temperature
- Outside air humidity
- Outside air temperature
- Supply air temperature
- Damper position
- Software version
- Attend mode

Working Status Display

- Supply fan speed
- Main fan hours run
- Main fan minimum speed hours run
- Condenser fan low speed
- Condenser fan low speed hours run
- Condenser fan high speed
- Condenser fan high speed hours run
- Compressor working status
- Compressor hours run
- Compressor startup times
- Compressor total startup times within latest 48 hours
- Free cooling startup times
- Heater working status
- Heater working hours
- Heater startup times
- Free cooling working status
- Free cooling working hours
- Free cooling startup times
- Unit general failure alarm

Alarm Display

- Controller failure
- High pressure
- Low pressure
- Supply fan failure
- Filter clogged
- Free cooling system failure
- Low temperature
- High temperature
- Fire or smoke
- Temperature sensor defective

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.

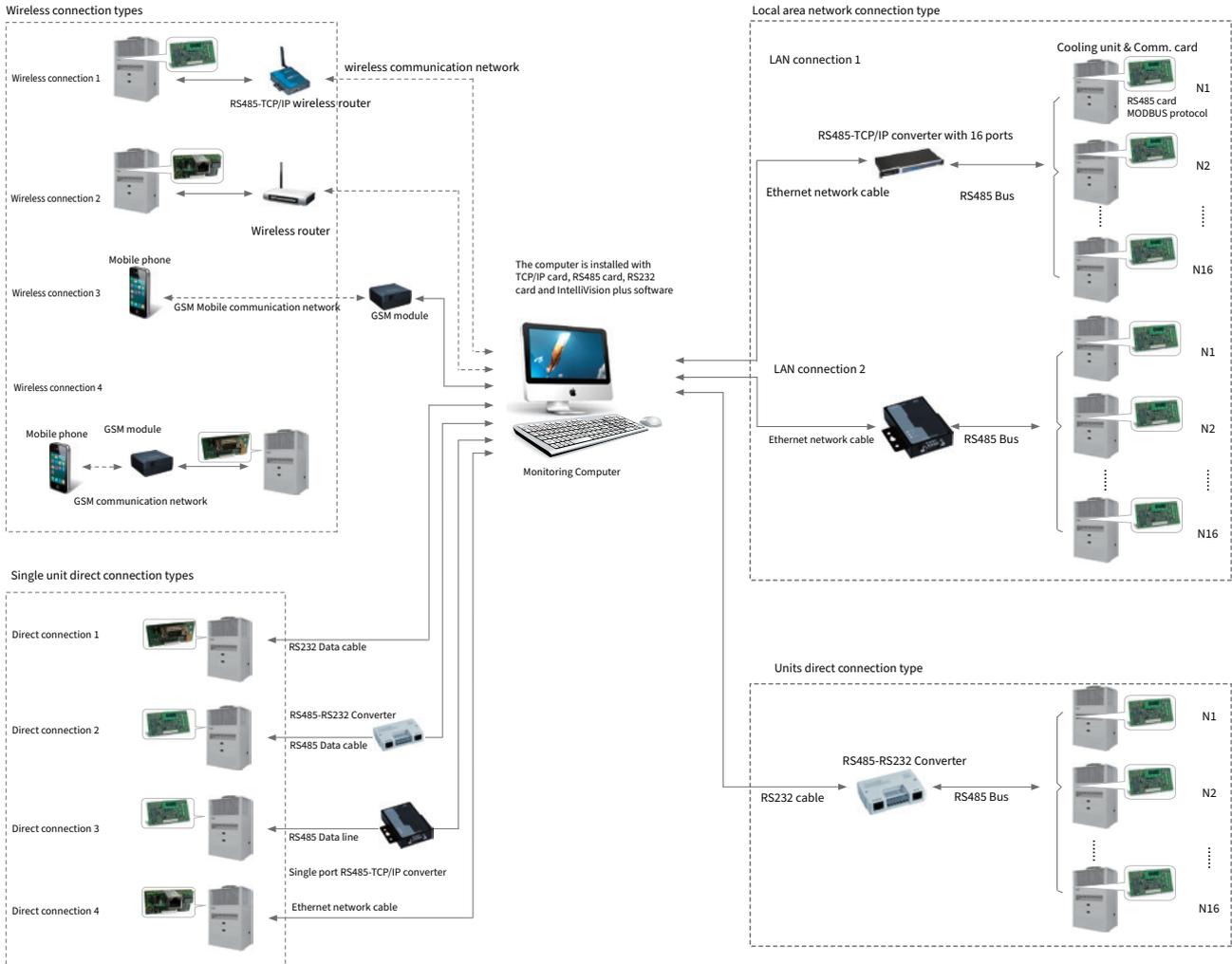
The unit can be remote controlled by many kinds of methods as follows:

4 kinds of wireless network connection with computer

3 kinds of local direct connection with computer

3 kinds of LAN network connection with computer

NETWORKING STRUCTURE CHART



MONITORING AND CONTROL METHOD	RELATED NETWORK CONFIGURATION	FARTHEST D
Wireless network connection		
Wireless connection 1: Wireless communication without unit server	RS485-TCP/IP converter; wireless router	No limitation
Wireless connection 2: Unit server based Wireless communication	Web server card; wireless router	No limitation
Wireless connection 3: Communication with remote computer by GSM mobile phone	GSM communication module	No limitation
Wireless connection 4: Communication with air conditioner directly by GSM mobile phone	GSM communication module; RS232 card	No limitation
Direct cable connection		
Direct connection 1: Direct connection by RS232 data line	RS232 communication card	1.5m
Direct connection 2: Direct connection by RS485 data line	RS485 communication card	1500m
Direct connection 3: Direct connection by Ethernet network line	Web server card	Can be extended by hub.
LAN network connection		
LAN connection 1: LAN network by multi-port protocol converter	RS485 communication card; Multi port RS485-TCP/IP protocol converter	Can be extended by hub.
LAN connection 2: LAN network by single port protocol converter	RS485 communication card; Single port RS485-TCP/IP protocol converter	1500m
LAN connection 3: LAN network by RS485-RS232 protocol converter	RS485 communication card; Single port RS232/RS485 protocol converter	1500m

UNIT MAIN COMPONENTS

STANDARD COMPONENTS

1 Unit Framework

The unit is made of folded galvanized steel exterior coated with an additional layer of thermoset polymer provides two layers of protection against corrosion.

2 Mechanical Cooling System

- Reliable compressor
- Filter dryer
- Thermodynamic expansion valve
- High efficiency evaporator / condenser coils
- Auto reset type reliable high/low pressure switch

3 Free Cooling System

- Air damper include
- Damper blade
- Damper actuator: 0~10V maximum~45S open or close time.

4 Supply Fan

AC powered EC centrifugal fan.

5 Condenser Fan

IP54 axial propeller fan with directly coupled motor, internal thermal protection and external current protection.

6 Supply Air Temperature Sensor

A supply air temperature sensor installed in the mixing box can be used to control the position of the air damper.

7 Air Filter

G4 main air filter, 2”disposable pleated type. G2 nylon filter, at outside air inlet.

8 Air Pressure Differential Switch

The filter clogged alarm will be triggered if the filter is clogged.

9 Build- in Controller

- Controller platform
- Supply and return air temperature sensor
- Outdoor temperature sensor
- Humidity sensor
- Clock and calendar display
- RS485 with MODBUS TCP/IP communication protocol
- pGD user terminal

10 Wall Mounting Kits

The unit is designed to be installed hanging on the shelter wall and is enclosed with related mounting accessories such as: angle brackets, through wall bolts, sealing tape and supply and return grill etc.



OPTIONAL COMPONENTS

1 External Controller

- External Controller Box for single control
- External Controller Box for multiple Control

2 DC Powered EC Supply Fan

DC powered EC fans can be chosen to keep free cooling function and emergency ventilation when AC power failure

4 Air Filter Protection Device

The AFPD has been developed to maximize the filter working life and enable free cooling to function in harsh environments such as sand storms, dust and other adverse weather conditions. This reduces both service costs and energy consumption.

5 Spring Loaded Damper Actuator:

When there is power failure, the damper can be closed automatically within 20s.

6 Remote Communication Card

pCOWeb communication with SNMP, BACNET, Modbus485 TCP/IP Communication Protocol

7 Filter Options

Main filter: F5/F7 washable/ disposable

8 Coastal Environment Package

- Level 1: anti-corrosion coated condenser;
- Level 2: anti-corrosion coated condenser and corrosion resistant fasteners;
- Level 3: anti-corrosion coated condenser, corrosion resistant fasteners and whole stainless steel cabinet (customized option).

9 Dehumidification Function

- Indoor humidity sensor
- Electric heater

10 Wider Operation Temperature Range

- High temperature up to 53°C
- Low temperature down to -40°C

11 Color Option:

- White
- Black



UNIT SPECIFICATION

60Hz

Unit Model		UNI.7V1B2	UNI.11V1T3	UNI.11V1B3	UNI.15V1T4	UNI.15V1B4	UNI.28V2B5	UNI.28V1B5	UNI.28V1B5	
Max Input Power	kW	DL	O	DL	O	DL	DL	DL	DL	
Power supply										
Power Source		230V/1PH/60Hz						230V/3PH/60Hz		460V/3PH/60Hz
Max Input Power	kW	5	5.6	5.6	7.9	7.6	15.7		18.9	24.5
Rated Power	kW	2.14	3.03	2.94	4.6	4.48	4.73	4.64	8.35	8.7
Reted Current	A	9.3	13.2	12.8	20	19.5	20.5	20.2	24	10.9
Performance										
Total Capacity (1)	kW	7.2	10.2	10.3	14.8	15.1	28.1		28.1	28.1
Sensible Capacity (1)	kW	6	8.5	8.5	12.5	13.2	23.7		23.3	23.4
EER (1)		11.5	11.5	11.5	11	11.5	10.3		11.5	11
Max cooling Capacity (2)	kW	8.9	14.1	14.1	17	17.7	33.1		39	37.2
Max Sensible Capacity (2)	kW	7.4	10.4	10.3	13.9	14.5	26.7		28.4	30.8
Min Cooling Capacity (3)	kW	3.6	7	7.5	11.1	12.5	9.5		16.4	16.3
Min Sensible Capacity (3)	kW	2.6	6.7	6.4	9.7	10.2	9		12.5	14.1
Free Cooling Capacity (4)	kW	9.1	12.1	10.8	19	16.9	32.4		32.4	40.2
EER (4)		110.7	105.6	108.2	104.5	84.6	73.3		73.3	51.9
Electric Heater										
Heating Capacity	kW	5	5	5	5	5	5		5	5
Current	A	21.7	21.7	21.7	21.7	21.7	21.7		12.6	6.3
Compressor										
Type		Rotary				Scroll				
QTY	n.	1	1	1	1	1	2		1	1
Power Input (1)	kW	1.73	2.18	2.1	3.36	3.39	4	3.91	6.7	7.02
Current Input (1)	A	7.5	9.5	9.1	14.6	14.7	17.4	17	16.8	8.8
Power Input (2)	kW	2.07	4.1	4.1	5	5.5	5.15	/	13.94	11.2
Current Input (2)	A	9	17.8	17.8	21.7	23.9	22.4	/	35	14.1
Evaporator Fan										
Type		EC Centrifugal Fan								
QTY	n.	1	1	1	1	1	2		2	2
Power Input (1)	kW	0.18	0.39	0.34	0.57	0.68	0.74		1.06	1.04
Current Input (1)	A	0.8	1.7	1.5	2.5	3	3.2		4.6	1.3
Air Volume (1)	m ³ /h	1,844	2,800	2,500	4,100	3,900	5,900		6,900	6,900
Power Input (2)	kW	0.28	0.39	0.34	0.62	0.68	1.5		1.5	2.64
Current Input (2)	A	1.2	1.7	1.5	2.7	3	6.5		6.5	3.3
Air Volume(2)	m ³ /h	2,104	2,800	2,500	4,400	3,900	7,500		7,500	9,300
Condenser Fan										
Type		Axial Fan								
Qty		1	1	1	1	1	2		2	2
Power Input (1)	kW	0.23	0.46	0.51	0.67	0.41	0.71		0.59	0.64
Current Input (1)	A	1.0	2.0	2.2	2.9	1.8	3.1		2.6	0.8
Air Volume (1)	m ³ /h	3420	7,000	5,500	8,300	7,800	13,500		10,000	12,000
Power Input (2)	kW	0.26	0.46	0.62	0.67	0.43	1.5		1.5	1.96
Current Input (2)	A	1.1	2	2.7	2.9	1.8	6.5		6.5	2.5
Air Volume (2)	m ³ /h	3740	7,000	6,500	8,300	7,800	17,000		17,000	17,000
Refrigerant										
Type		R410A								
Control		Electronic Expansion Valve								
Qty	kg	3.1	5.3	3.7	5.6	4.6	5.7	5.9	15	15
Air Filter										
Preliminary Air Filter (G2)	n.	1	1	1	1	1	2		2	2
Main Air Filter (G4)	n.	1	2	2	2	2	3		2	2
Dimensions										
Width	mm	1010	1141	1159	1355	1359	1460		1460	1460
Depth	mm	698	680	698	912	794	1075		1075	1075
Height	mm	2148	2360	2148	2360	2110	2448		2448	2448
Width (Package)	mm	1036	1200	1186	1384	1384	1642		1642	1642
Depth (Package)	mm	718	740	720	940	818	1262		1262	1262
Height (Package)	mm	2280	2490	2280	2490	2280	2555		2555	2555
Weight										
Weight	kg	229	293	287	390	380	632		590	590
Weight (With Packaging)	kg	253	313	311	420	410	662		620	620

(1) — Cooling rated at 95°F outdoor and 80°/67°F indoor Rated Capacity.

(2) — Cooling rated at 95°F outdoor and 80°/67°F indoor Max Capacity.

(3) — Cooling rated at 95°F outdoor and 80°/67°F indoor Min Capacity.

(4) — Optional function. Measured at DT (Tinside-Toutside) = 21.6°F.

UNIT SPECIFICATION

50Hz

Unit Model		UNI.7V1B2	UNI.11V1T3	UNI.11V1B3	UNI.15V1T4	UNI.15V1B4	UNI.28V2B5	
Max Input Power	kW	DL	O	DL	O	DL	DL	
Power supply								
Power Source		230V/1PH/50Hz						
Max Input Power	kW	5.6	5.6	5.6	7.9	7.6	15.7	
Rated Power	kW	2.17	3.09	3.06	4.6	4.55	4.73	4.64
Reted Current	A	9.4	13.4	13.3	20	19.8	20.5	20.2
Performance								
Total Capacity (1)	kW	7.2	10.2	10.3	14.8	15.1	28.1	
Sensible Capacity (1)	kW	6	8.5	8.5	12.5	13.2	23.7	
EER (1)		11.3	11.3	11.5	11	11.3	10.3	
Max cooling Capacity (2)	kW	8.9	14.1	14.1		17.7	33.1	
Max Sensible Capacity (2)	kW	7.4	10.4	10.3	13.9	14.5	26.7	
Min Cooling Capacity (3)	kW	3.6	7	7.5	11.1	12.5	9.5	
Min Sensible Capacity (3)	kW	2.6	6.7	6.4	9.7	10.2	9	
Free Cooling Capacity (4)	kW	9.1	12.1	10.8	19	16.9	32.4	
EER (4)		110.7	105.6	108.2	104.5	84.6	73.3	
Electric Heater								
Heating Capacity	kW	5	5	5	5	5	5	
Current	A	21.7	21.7	21.7	21.7	21.7	21.7	
Compressor								
Type		Rotary	Scroll					
QTY	n.	1	1	1	1	1	2	3.91
Power Input (1)	kW	1.78	2.31	2.21	3.36	3.51	4	17
Current Input (1)	A	7.7	10	9.6	14.6	15.3	17.4	/
Power Input (2)	kW	2.15	4.31	4.35	5	5.73	5.15	/
Current Input (2)	A	9.3	18.7	18.9	21.7	24.9	22.4	/
Evaporator Fan								
Type		EC Centrifugal Fan						
QTY	n.	1	1	1	1	1	2	
Power Input (1)	kW	0.18	0.39	0.34	0.57	0.68	0.74	
Current Input (1)	A	0.8	1.7	1.5	2.5	3	3.2	
Air Volume (1)	m ³ /h	1844	2,800	2,500	4,100	3,900	5,900	
Power Input (2)	kW	0.28	0.39	0.34	0.62	0.68	1.5	
Current Input (2)	A	1.2	1.7	1.5	2.7	3	6.5	
Air Volume(2)	m ³ /h	2,104	2,800	2,500	4,400	3,900	7,500	
Condenser Fan								
Type		Axial Fan						
Qty		1	1	1	1	1	2	
Power Input (1)	kW	0.21	0.39	0.51	0.67	0.36	0.71	
Current Input (1)	A	0.9	1.7	2.2	2.9	1.6	3.1	
Air Volume (1)	m ³ /h	3200	5,900	5,500	8,300	6,500	13,500	
Power Input (2)	kW	0.21	0.39	0.51	0.67	0.36	1.5	
Current Input (2)	A	0.9	1.7	2.2	2.9	1.6	6.5	
Air Volume (2)	m ³ /h	3200	5,900	5,500	8,300	6,500	17,000	
Refrigerant								
Type		R410A						
Control		Electronic Expansion Valve						
Qty	kg	3.1	5.3	3.7	5.6	4.6	5.7	5.9
Air Filter								
Preliminary Air Filter (G2)	n.	1	1	1	1	1	2	
Main Air Filter (G4)	n.	1	2	2	2	2	2	
Dimensions								
Width	mm	1010	1141	1159	1355	1359	1460	
Depth	mm	698	680	698	912	794	1075	
Height	mm	2148	2360	2148	2360	2110	2448	
Width (Package)	mm	1036	1200	1186	1384	1384	1642	
Depth (Package)	mm	718	740	720	940	818	1262	
Height (Package)	mm	2280	2490	2280	2490	2280	2555	
Weight								
Weight	kg	229	293	287	390	380	632	
Weight (With Packaging)	kg	253	313	311	420	410	662	

(1) — Cooling rated at 95°F outdoor and 80°/67°F indoor Rated Capacity.

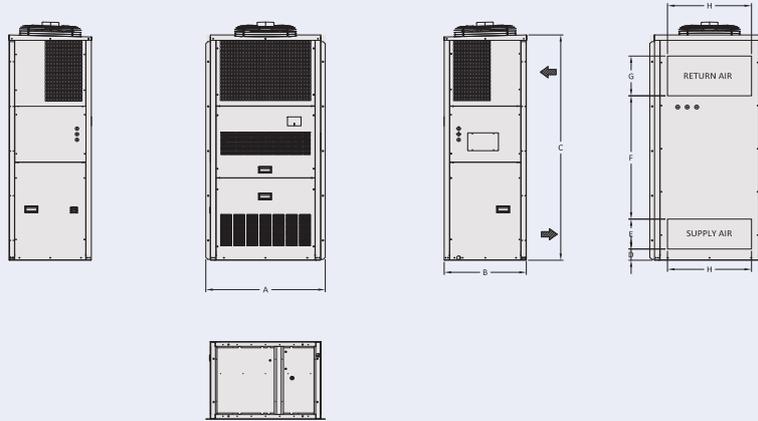
(2) — Cooling rated at 95°F outdoor and 80°/67°F indoor Max Capacity.

(3) — Cooling rated at 95°F outdoor and 80°/67°F indoor Min Capacity.

(4) — Optional function. Measured at DT (Tinside-Toutside) = 21.6°F.

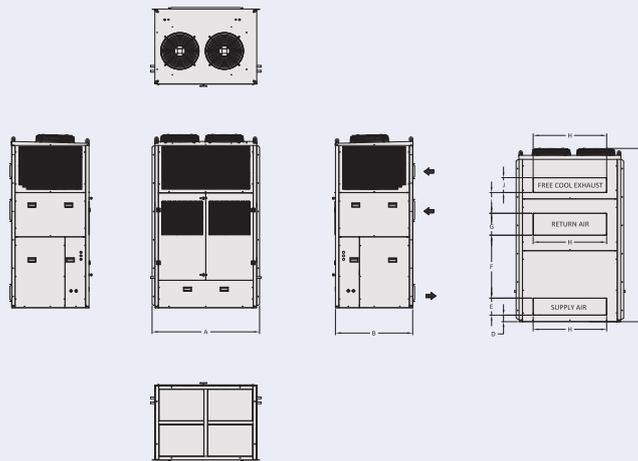
UNIT DIMENSION DRAWING

B2/B3/B4



Model	UNI.7V1B2		UNI.11V1B3		UNI.15V1B4	
	mm	in	mm	in	mm	in
A	1009	39.72	1159	45.63	1359	53.50
B	694	27.32	694	27.32	794	31.26
C	2018	79.45	2019	79.49	2020.3	79.534
D	101	3.98	101	3.98	101	3.98
E	268	10.55	268	10.55	268	10.55
F	1104	43.46	1104	43.46	1104	43.46
G	356	14.02	356	14.02	356	14.02
H	710	27.95	762	30.00	880	34.64

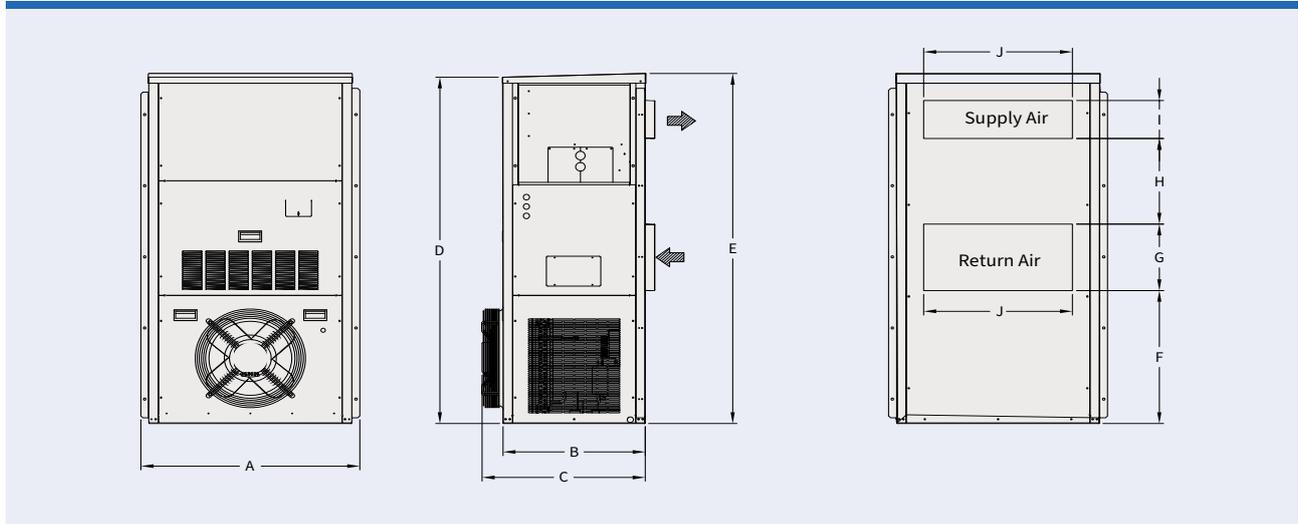
B5



Model	UNI.28V1B5	
	mm	in
A	1460	57.48
B	1075	42.32
C	2347.6	92.43
D	92.8	3.65
E	240	9.45
F	887.2	34.93
G	310	12.20
H	998	39.29
I	293	11.53
J	210	8.27

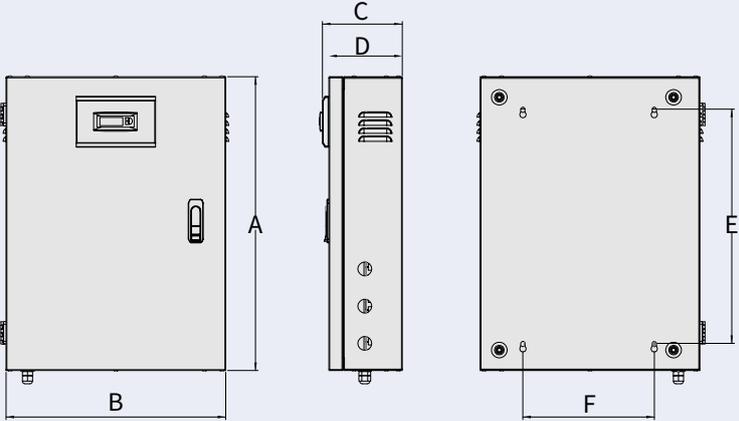
DIMENSIONED DRAWINGS

T2/T3/T4



Model	UNI.7V1T2		UNI.11V1T3		UNI.15V1T4	
	mm	in	mm	in	mm	in
A	1046	41.19	1141	44.94	1355	53.38
B	680	26.75	580	22.81	800	31.5
C	780	30.69	681.5	26.81	911.5	35.88
D	1850	72.81	2340	92.13	2340	92.13
E	1870	73.63	2360	92.94	2360	92.94
F	710	27.94	882	34.75	885	34.81
G	255	14	398	15.69	398	15.69
H	457	18	768	30.25	768	30.25
I	203	8	246	9.69	246	9.69
J	711	28	756	29.75	756	29.75

CONTROLLER BOX



Controller Box Size	A	B	C	D	E	F
mm	552	410	149	137	440	245
in	21.75	16.13	5.88	5.38	17.31	9.63



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Product design and specification subject to change without prior notice.