



Evo Command

Installation & Operation Manual



Contents

1. Introduction	2
2. Unit Specifications	3
2.1 Running Range	3
2.2 Technical Data	4
2.3 Dimensions	5
3. Safety Instructions	6
4. Installation	6
4.1 Transit	6
4.2 Location of Install & Minimum Clearances	7
4.3 Water Loop Connection	8
4.4 Water Connection Diagrams	8
4.4.1 Hot Water Circuit Diagram	8
4.4.2 Heating (cooling) Water Circuit Diagram	8
4.5 Power Supply Connection	9
4.6 Cable & Switch	9
4.7 Initial Start-up of the Unit	10
5. Operation	11
5.1 Main Controller Interface	11
5.2 Functions of the Controller	12
5.2.1 Power On/Off	12
5.2.2 Mode Selection	12
5.2.3 Target Temperature Setting	12
5.2.4 Lock Screen Function	12
5.2.5 Setting a Timer	12
5.2.6 Temp Timer	12
5.2.7 Power Timer	12
5.2.8 Mute Timer	12
5.2.9 Settings Menu	13
6. Troubleshooting	15
7. Appendix	20
7.1 Controller Interface Diagrams	20
7.1.1 Wire Control Interface Diagram & Definition	20
7.1.2 Controller Interface Diagrams & Definitions	20
7.1.3 Input & Output Interface Instructions	23
7.2 Cable Specifications	24
8. Warranty	25

1. Introduction

This manual contains all the necessary information in regard to the installation, troubleshooting, operation and maintenance of this unit. Ensure instructions in this manual are adhered to at all times. Failing to comply with these recommendations will invalidate the warranty. This manual and all others are available for download on our website.



The Evo Command series is designed to handle even the largest water or air heating/chilling requirements. Its Monobloc design allows multiple units to be connected in parallel to meet the requirements of commercial and industrial applications regardless of size. The Evo Command series will heat water to 50°C and chill to 7°C in ambient air temperature ranges of -15°C to 43°C.

V STYLE EVAPORATOR DESIGN

The V-shape air exchanger extends the heat exchanging surface, improving the units work efficiency.

EST HIGH EFFICIENCY HEAT EXCHANGER

With the EST high efficiency heat exchanger, the Evo Command Series guarantees the highest efficiency.

BLUETEC COATED CONDENSER

EvoHeat's Bluetec hydrophilic coating on the condenser fins is the latest technology in corrosion protection allowing your new heat pump to maintain it's high efficiency for many years to come. The corrugated, louvered fin extends the heat exchange surface, resulting in more contact with the inlet air and improved efficiency of the evaporators.

REVERSE CYCLE

The Evo Command series is reverse cycle, providing both heating or cooling. Air operation range -15°C to 43°C Water operation range 7°C to 50°C Used for Commercial: water & air heating/cooling Suitable for Hotels and resorts, commercial buildings, sporting & leisure facilities, industrial liquid heating and chilling applications

LCD TOUCH SCREEN

Includes an LCD touch screen remote control with 10m lead

FLEXIBLE AND CUSTOMISABLE

The Evo Command Monobloc design means that multiple Evo Command Series heat pumps can operate together, to manage the heating for any type of commercial or industrial facility. They have a compact design with easy maintenance access.

304 STAINLESS STEEL CABINET

The Evo Command Series has a 304 stainless steel cabinet, ensuring long term corrosion resistance.

PREINSTALLED WATER CIRCULATION PUMP

The Evo Command series comes with a preinstalled Wilo Water circulation pump.

ANTI-FREEZE PROTECTION

The Evo Command Series has anti-freezing protection to ensure stable operation and large supply of hot water and heating for commercial applications.

2. Unit Specifications

The Evo Command series is reverse cycle, providing both heating or cooling. Air operation range -15°C to 43°C Water operation range 7°C to 50°C

Used for Commercial: water & air heating/cooling

Suitable for Hotels and resorts, commercial buildings, sporting & leisure facilities, industrial liquid heating and chilling applications

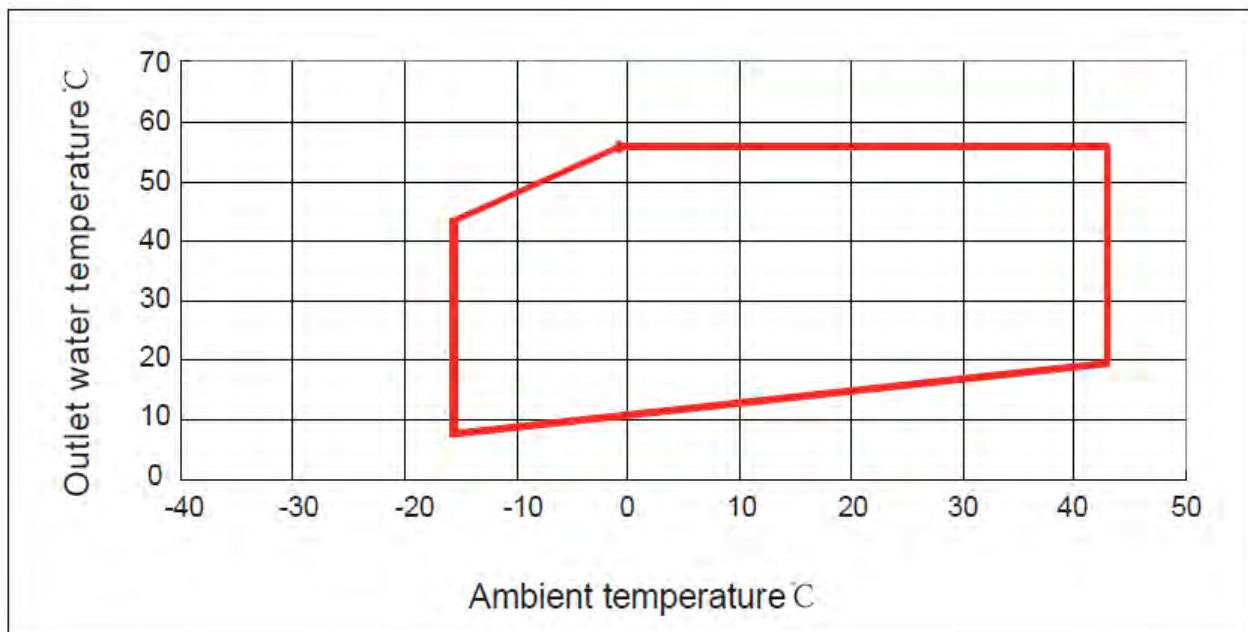
Functions

- Heating/Cooling
- Smart defrost
- Auto Protection
- Multiple Module Control
- Automatic Reset for Partial Failure
- Auto Alert
- Remote Control

Heat Pump Protection

- Water flow protection
- Compressor overload, discharge air temp protection
- Discharge air pressure over high protection Suction
- air pressure over low protection
- Water(out) temperature over high protection
- Water(out) temperature over low protection
- Suspend anti-freezing protection in winter
- Compressor frequent switching protection

2.1 Running Range



2.2 Technical Data

		Evo Command 70	Evo Command 140
Cooling Capacity*	kW	70	138
Heating Capacity**	kW	75	141
Power Consumption*	kW	17.8	38.5
Power Consumption**	kW	21.2	43.6
Current (Cooling/Heating)	A	32.5/38.0	70.3/78.4
Power Supply		380~400V/3N~/50Hz	
Compressor Quantity		1	2
Compressor Type		Scroll	
Fan Quantity		2	
Fan Motor Input	W	870 x 2	2200 x 2
Fan Speed	RPW	950	
Noise	dB(a)	67	70
Water Connection		DN65	DN80
Water Flow Volume	m ³ /h	12.0	23.7
Water Pressure Drop	KPa	71	
Max. Power Input	kW	27.6	58.1
Max. Running Current	A	48	99.1
Unit Dimensions	L x W x H	Subject to drawings of the heat pump	
Packing Size	L x W x H	Subject to data on the package	
Net Weight		Subject to data on the nameplate	
Gross Weight		Subject to data on the package	

*Cooling: outdoor temperature DB/WB35°C/24°C, outlet water 7°C

*Heating: outdoor temperature DB/WB7°C/6°C, outlet water 45°C, inlet water (return) 40°C.

The water inlet and outlet range of the unit is as follows:

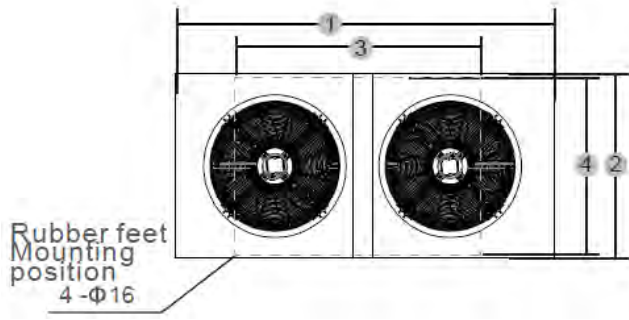
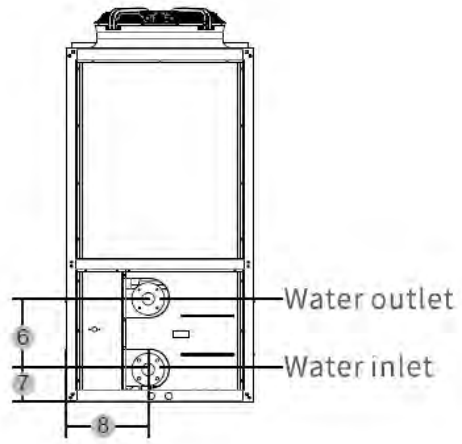
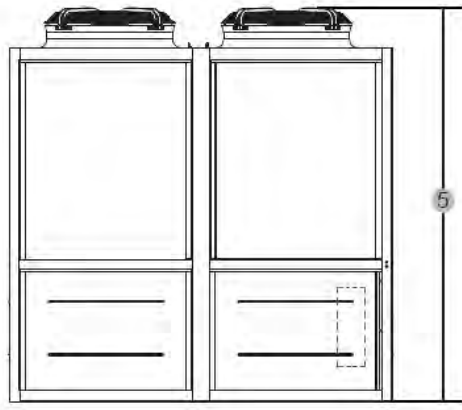
Refrigeration mode: the minimum temperature is 10°C and the maximum temperature is 35°C.

Heating mode: the minimum allowable setting temperature of the unit is 9°C and the maximum temperature is 50°C.

The unit has the function of adaptive protection of outlet (return water) temperature in winter, so when heating in winter, with the decrease of ambient temperature, the outlet water temperature will decrease.

2.3 Dimensions

Unit: mm



25P Unit foot mounting dimensions: 1730 × 1020
 50P Unit foot mounting dimensions: 1860 × 1168

	1	2	3	4	5	6	7	8	
Evo Command 70	2170	1065	1730	1020	2250	400	185	466	DN65
Evo Command 140	2500	1210	1860	1168	2320	400	185	612	DN80



3. Safety Instructions



Incorrect handling could cause a serious hazard such as death, serious injury etc.

- When an abnormality (smell of burning, etc.) occurs, stop the unit and disconnect the power or turn off the breaker. If the unit continues to be operated in an abnormal condition, it may cause a fire or hazards.
- Do not insert fingers or objects into the fans or evaporator of the unit.
- Installation, repair or relocations must be done by a fully qualified person and not by the customer. If done incorrectly it may cause fire, electric shock, water leakage and other hazards.
- For unit cleaning or maintenance, switch off and disconnect the power of the unit.
- Do not spray insecticides or flammable sprays around the unit, it may cause a fire or damage the unit's cabinet.
- Do not install the unit near flammable gas or spray flammable substances near it.
- Ensure the heat pump is installed on a strong and stable platform.
- A circuit breaker must be installed for the unit.
- Use supply wires suitable for 75C.
- The heat pump located inside the unit is equipped with an over-load protection system. It does not allow for the unit to start for at least 3 minutes from a previous stoppage.
- Copper or iron must not be used as a fuse. An electrician must use the correct fuse for the heat pump.
- Make sure that the unit and power connection have good earthing.
- If the supply cord is damaged, it must be replaced by the manufacturer, our service agent or a similarly qualified person in order to avoid a hazard.

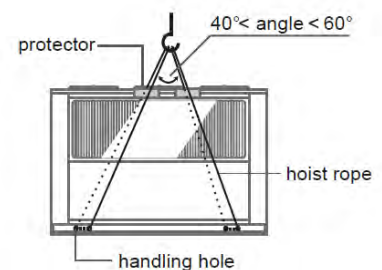
4. Installation

4.1 Transit

When the heat pump is transported the unit must be standing upright. If the unit is laid down, inner parts of the device may be damaged.

If the unit needs to be hung up during installation, an 8-metre cable must be used with soft padding between it and the unit to prevent damage to the heat pump cabinet.

A forklift can be used to lift the unit with a wooden pallet at the bottom.



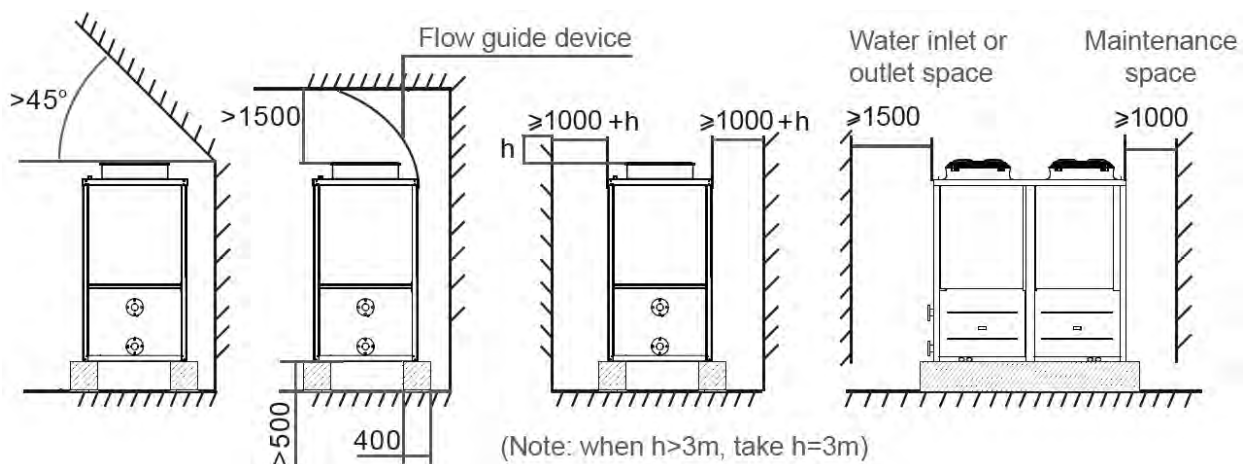
4.2 Location of Install & Minimum Clearances

The heat pump can be installed onto the concrete basement by using expansion screws, or onto a steel frame with rubber feet which can be placed on the ground or the roof. Ensure that the unit is placed horizontally.

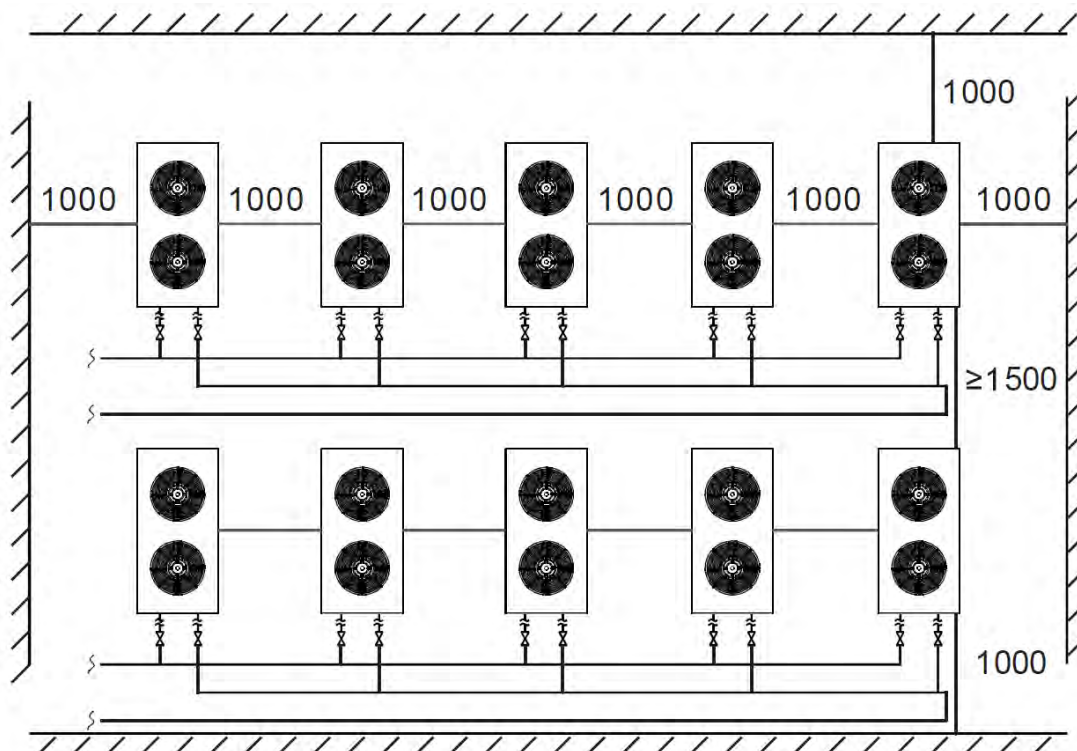
- The unit can be installed in any place outdoors which will be able to support the weight of a heavy unit such as a terrace, roof, the ground and any other places deemed suitable.
- The location must have good ventilation.
- The location must be free from heat radiation and other fire hazards.
- A pall is needed in winter to protect the unit from snow.
- There must be no obstacles near the inlet and outlet of the unit.
- The installation location must be protected from strong winds or air.
- There must be a water channel around the heat pump to drain condensing water.
- Leave enough space around the unit for maintenance.

This unit can be installed individually or combined with multiple units following spacing requirements.

Single Unit (mm):



Multiple Units (same pipe length):



Note:

- Do not cover the air outlet of the unit.
- If there is a barrier above the unit, keep it at least 3000mm above the unit.
- If there are objects stacked around the unit, their height should be at least 400mm lower than the top of the unit.
- When installed in a small room, measures should be taken to prevent leakage of the refrigerant. Once leakage volume exceeds the limit concentration, it may cause suffocation. Contact EvoHeat for specific measures.

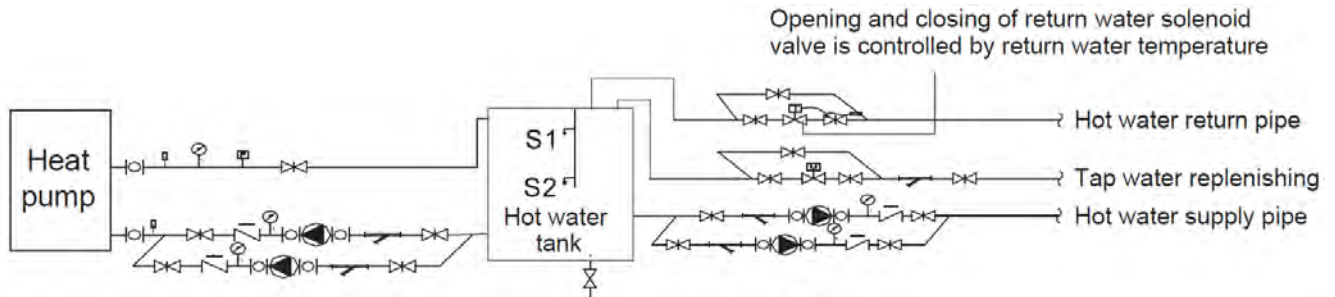
4.3 Water Loop Connection

When the water pipe is connected:

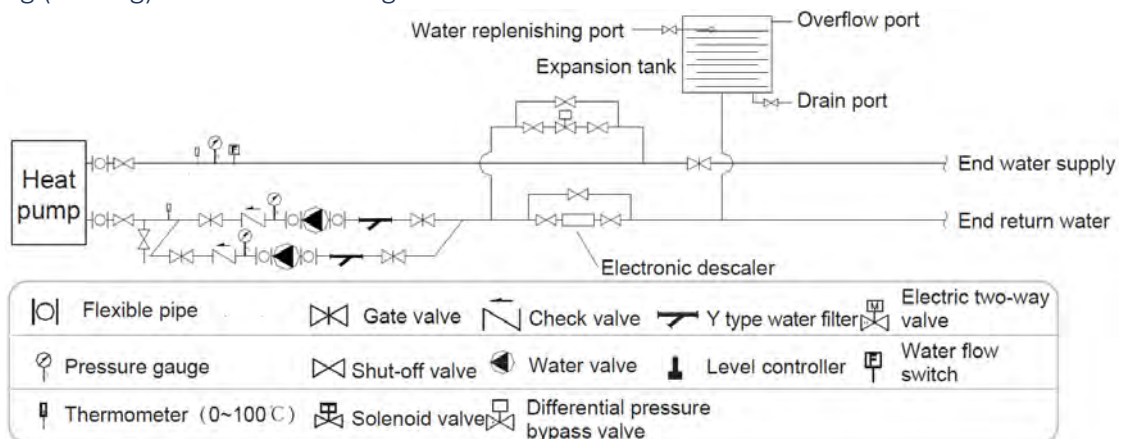
- Try to reduce the resistance to the water from the piping.
- The piping must be clear and free from dirt and blockage. A water leakage test must be carried out to ensure that there is no water leaking before the installation can be made.
- The pipe must be tested by pressure separately. DO NOT test it together with the unit.
- There must be an expansion tank on the top point of the water loop, and the water level inside the tank must be at least 0.5meters higher than the top point of the water loop.
- The flow switch is installed inside of the heat pump, check to ensure that the wiring and action of the switch is normal and controlled by the controller.
- Try to avoid any air from being trapped inside the water pipe, there must be an air vent on the top point of the water loop.
- There must be a thermometer and pressure meter at the water inlet and outlet for easy inspection during running.

4.4 Water Connection Diagrams

4.4.1 Hot Water Circuit Diagram



4.4.2 Heating (cooling) Water Circuit Diagram



- Be sure to install the Y filter at the water inlet of the unit. Pay attention to the installation position for easy removal and cleaning.
- Ensure that the circulating water inlet of the unit is at least 100mm away from the bottom of the water tank, and that the customer’s hot water supply pipe is at least 80mm away from the circulating water inlet.
- Tap water replenishment is controlled by a water level switch. When water is at a high level it is circularly heated to the set temperature of the unit and the unit will stop at this temperature. When water is at a low level the electromagnetic two-way valve opens for water replenishing while the unit is turned on.
- The water flow switch is not supplied with the unit and must be purchased separately.

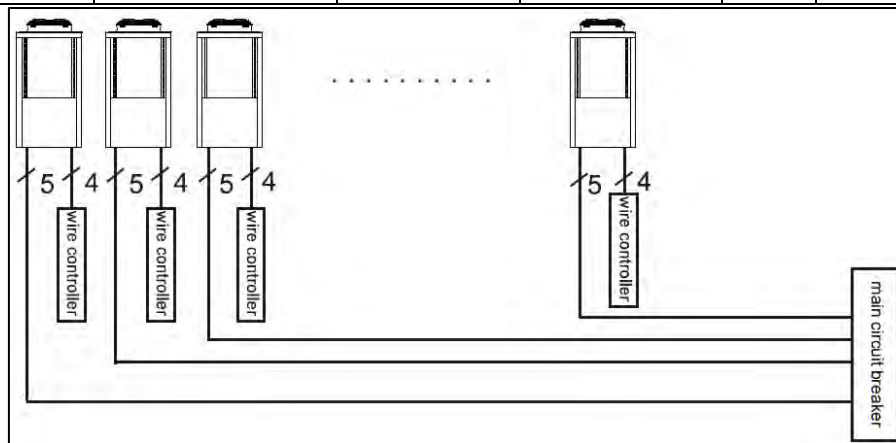
4.5 Power Supply Connection

- Open the front panel and open the power supply access.
- The power supply must go through the wire access and be connected to the power supply terminals in the controlling box. Then connect the 3-signal wire plugs of the wire controller and main controller.
- If an external water pump is required, please insert the power supply wire into the wire access and connect it to the water pump terminals.
- If an additional auxiliary heater is needed to be controlled by the heat pump controller, the relay (or power) of the aux-heater must be connected to the relevant output of the controller.

4.6 Cable & Switch

- The unit should use an independent power supply, wiring as required for Table 6.1. Power supply voltage must be in line with the rated voltage.
- Power supply circuit must be equipped with an All-pole disconnect device and have at least 3mm contact opening distance.
- Wiring is only to be performed with a professional technician in accordance with the circuit diagram.
- The Power supply circuit must have an earth wire. The earth wire of the power should be connected with the external earth wire safely. The external earth wire must be in order correctly.

Unit Model	Power Supply	Cable		MCB	Creepage Protector
		Section area	Earthing wire		
PASRW360S-PS-BP	380V/3N~50Hz	4 x 16mm	16mm	80A	30mA less than 0.1 second



4.7 Initial Start-up of the Unit

Beforehand Inspection

- Check the indoor unit, make sure that the pipe connection is done correctly, and the relevant valves are open.
- Check the water loop to ensure that the water inside of the expansion tank is filled to an appropriate level, and the water supply is working, and the water loop is full of water and free of trapped air. Make sure there is good insulation for the water pipe.
- Check the electrical wiring. Make sure that the power voltage is normal, the screws are fastened, the wiring is made in line with the diagram and that the earthing is connected.
- Check that the heat pump includes all the screws and components, and that they are in good order. When powering the unit on, review the indicator on the controller to see if there is any indication of failure. The gas gauge can be connected to the check valve to see the high pressure (or low pressure) of the system during trial running.

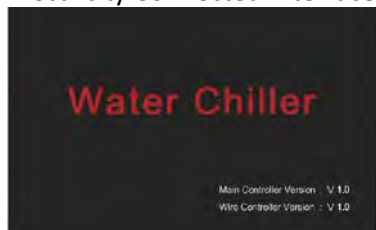
Trial Running

- Start the heat pump by pressing the 'UP' or 'DOWN' arrow key on the controller. Check whether the water pump is running, if it runs normally there will be 0.2MPa on the water pressure meter.
- When the water pump has ran for a minute, the compressor will start. Listen for any strange sounds from the compressor, if an abnormal sound occurs please stop the unit and check the compressor. If the compressor runs well, look for the pressure meter of the refrigerant.
- Check whether the power input and running current is in line with the manual. If not, stop and check.
- Adjust the valves on the water loop to make sure that the hot (cool) water supply to each door is good and meets the requirements of heating (or cooling).
- Review whether the outlet water temperature is stable.
- The parameters of the controller are set by the factory, the user must change these themselves.

5. Operation

5.1 Main Controller Interface

Electricity Connected Interface



Main interface of power-off



Power-on interface

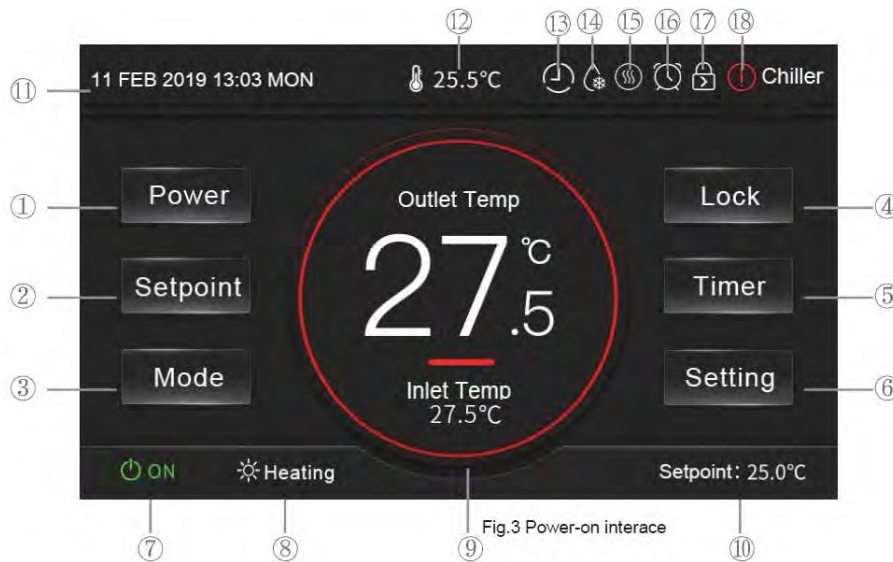


Fig.3 Power-on interface

No	Button	Function
1	Power	Switch the unit on or off.
2	Setpoint	Set the target temperature.
3	Mode	Selecting heating or cooling mode.
4	Lock	Lock or unlock the screen.
5	Timer	Press to enter the timer setting interface (Temp Timer, Power Timer)
6	Setting	Press to enter the function setting interface (status, parameter, failure, time)
7		Indicating that the unit is powered-on
8		Indicates if the unit is in heating or cooling mode.
9	Display Circle	Operating status: Blue = cooling mode; Red = heating mode; Grey = power-off mode.
10	Setpoint: 25.0°C	Shows the target temperature of the inlet water.
11	11 FEB 2019 13:03 MON	Displays the unit's set date and time.
12	25.5°C	Indicated the ambient temperature.
13		Temp Timer function is activated.
14		Defrost mode is activated.
15		Electric auxiliary heating mode is activated.
16		Power timer mode is activated.
17		Indicates the lock screen status.
18		Failure alarm icon. While present, the icon will blink until the failure is resolved.

5.2 Functions of the Controller

5.2.1 Power On/Off

In the main interface, press the 'Power' button to power the unit on or off.

5.2.2 Mode Selection

In the main interface, pressing the 'Mode' button will allow you to select heating or cooling mode. The status bar (8) will display the unit's current operating state. The display circle (9) will appear as blue for cooling mod, or red for heating mode.

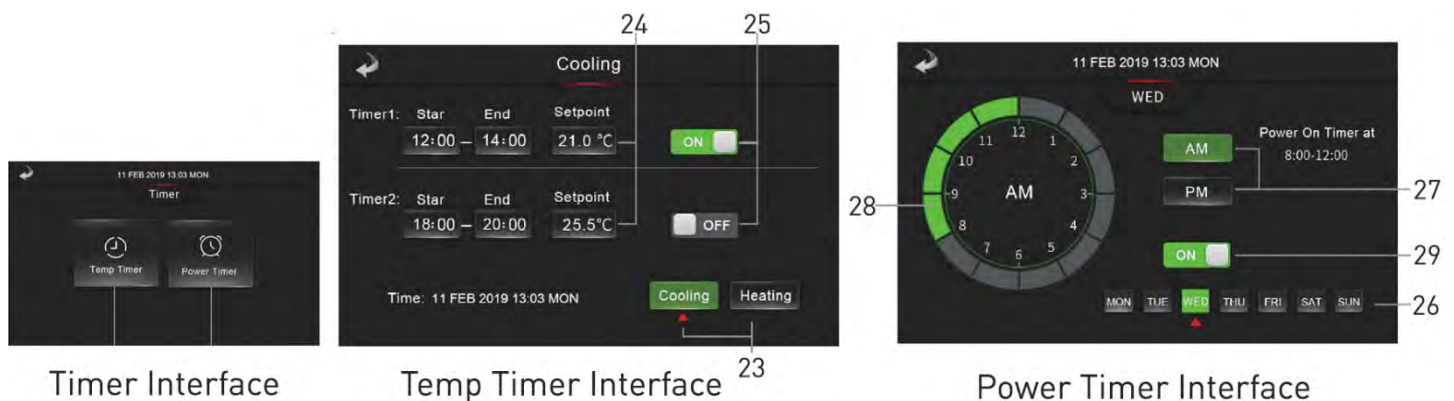
5.2.3 Target Temperature Setting

To adjust the target temperature's value, select the running mode (cooling or heating), then press 'Setpoint' (2) to jump to the parameter setting screen. Enter the required parameter according to the effective range which is displayed at the bottom of the screen.

5.2.4 Lock Screen Function

From the main interface, press the 'Lock' button to lock the controller screen. The status icon lock symbol (17) will appear on the top of the screen. To unlock the screen, press 'Lock' again and enter the password 22 which will unlock the screen and remove the lock icon from the top of the controller.

5.2.5 Setting a Timer



After pressing the 'Timer' button from the main interface, select from Temp Timer or Power Timer.

5.2.6 Temp Timer

This function enabled time-sharing temperature control, which is two segments of staggered peak temperature control, and allows the target temperature of two segments of different time periods to be set according to different modes.

Press (23) to select from cooling or heating mode, then enter the start time, ending time and the target temperature setpoint value (24). Press (25) to enable or disable the settings.

5.2.7 Power Timer

This function allows you to set the opening time of the unit for each day of the week.

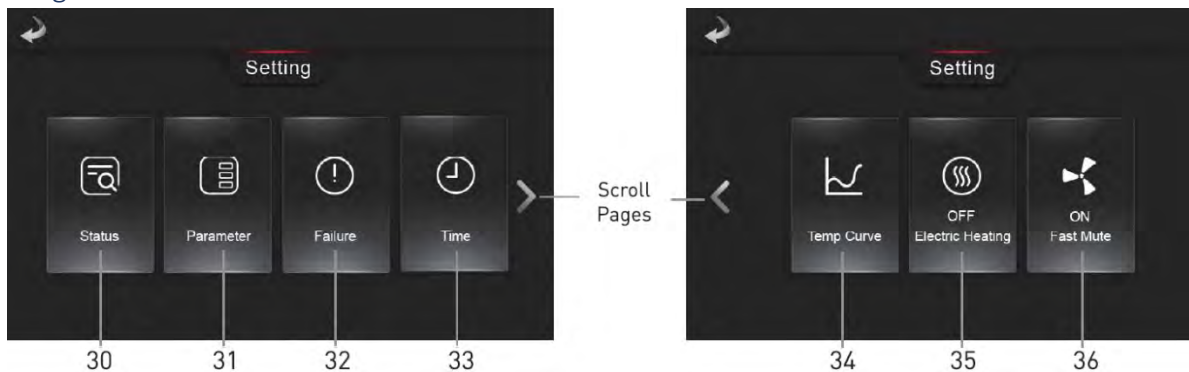
Press (26) to select the day of the week, then (27) to select AM or PM, after this press (28) to select the time, and finally select (29) to enable or turn off the setting.

5.2.8 Mute Timer

From the Timer menu, then press the Mute Timer button. Enter the start and end for the timer, then press the on/off button to enable or disable the function. When this function is enabled, a mute icon will appear on the main screen.

Note*: If the unit does not have the mute timer option, the function is not available.

5.2.9 Settings Menu



After pressing the 'Setting' button on the main menu, you can select from a range of functions.

5.2.9.1 Status

Press Status (30) to choose from Running Status or Unit Status.

Running Status

See below image.

Unit Status

Enter the password 22 to inquire the unit status parameter. Press one of the 4 buttons to inquire the relevant parameters.

Running Status	
Power	ON
Mode	Cooling
Outlet Water Temp	48.5°C
Inlet Water Temp	46.5°C
Ambient Temp	30.0°C
Running Day(s)	135

Running Status Screen

Load				
	Load	Switch	Temp	Unit Info
O01	Comp. 1			ON
O02	Comp. 2			---
O03	Fan 1 High Speed			ON
O03	Syst 1: Fan			---
O04	Fan 2 High Speed			ON
O04	Syst 2: Fan			---

Unit Status Screen

5.2.9.2 Parameter

After pressing the parameter button (31) from the settings menu, enter the password 22 to jump to the Installer Parameter interface for inquiring about relevant parameters.

Installer Parameter		
H05	Mode	YES
A06	Low Water Flow Prot. Point	6 m³/h
A08	Excess Water Temp Diff Prot.	2.0 °C
F08	Timer Mute Start	5 h
F09	Timer Mute End	10 h
F16	Advance	2 min

Page Up (indicated by an upward arrow next to the F08 and F09 rows)

Page Down (indicated by a downward arrow next to the F08 and F09 rows)

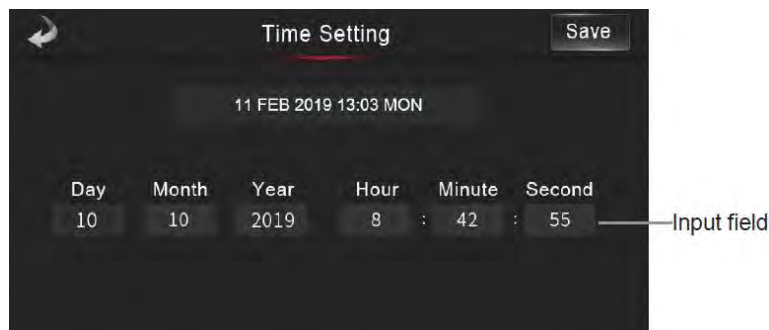
1/5 (page indicator next to the F09 row)

5.2.9.3 Failure

When a failure is occurring, the red failure alarm icon will be flashing from the main menu. From settings, press the Failure button to view the failure records. Once maintenance has been completed, press the 'Clear' button to delete the failure record history.

5.2.9.4 Time

To change the date and time of the unit, click on the input field and enter the correct values. Press 'save' in the top right corner to save the settings.



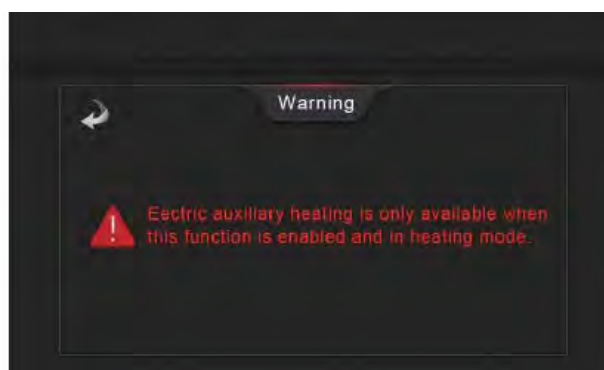
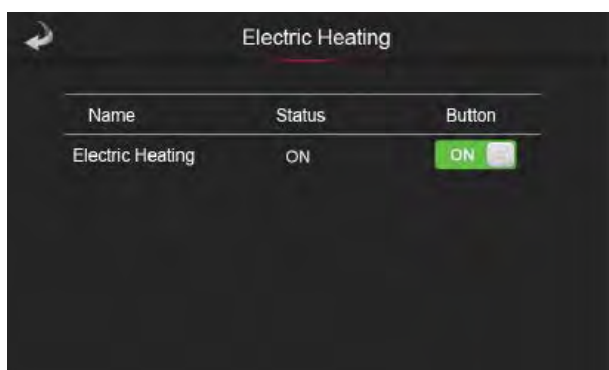
5.2.9.5 Temp Curve

Press (34) to view the inlet/outlet temperature curve.

- This curve function records the water inlet outlet temperature.
- Temperature data is collected every 5 minutes, and the 12 sets of temperature data are saved every hour. Timekeeping is made from the latest data saving. If the power is disrupted before all 12 data sets have been collected the data will not be saved.
- Only curve for the electricity status is recorded, the outage status will not be saved.
- The value of the abscissa indicates the time from the point on the curve to the current time point. The leftmost point on the first page (0 on the abscissa is the latest temperature record).
- Temperature curve record is provided with power off memory function; in the case of a disturbed curve recording and display, when the unit is next powered on the wire controller will automatically clear the history curve record and the curve recording function will restore to a normal state.

5.2.9.6 Electric Heating

In the settings menu, the Electric Heating option will display as 'OFF Electric Heating'. Make sure that the unit is firstly in heating mode, then press the electric heating button to head to its interface. Click the button to turn it on to activate the electric auxiliary heating mode. Turn off the function by tapping the button again.



5.2.9.7 Fast Mute

The button will initially display as 'OFF Fast Mute' or 'ON Fast Mute'. Press this button to either enable or disable this function.

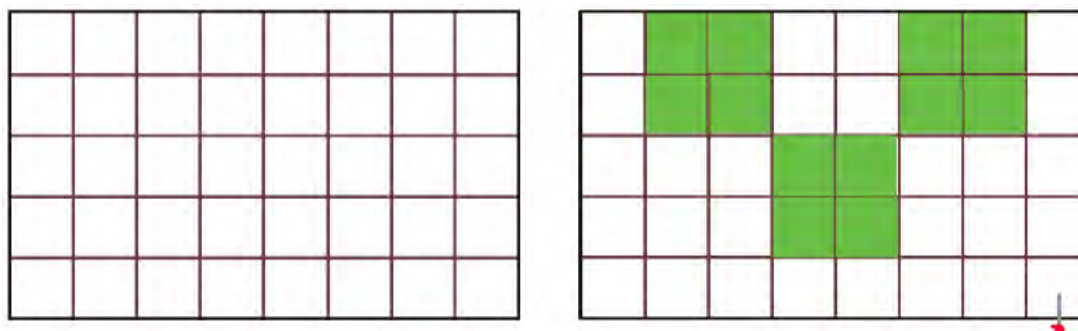
5.2.9.8 Display Calibration

Enter the Unit status menu in the following order (see 5.7.1 Status for password):

Main Interface → Setting → Status → Unit Status

Click the screen in the bottom left corner over 10 times within 4 seconds to bring up the display calibration interface. Click the blank squares to check whether there are bad spots within the screen. Green spots are normal.

To exit, click the screen in the bottom right corner.



6. Troubleshooting

Electronic Failure codes and troubleshooting table

Protection/Fault	Codes	Causes	Removal Methods
Communication Fault	E08	Abnormal communication between wire controller and the main board	Inspect whether the wire controller, the main board and the connection thereof are reliable
The Wire Controller Does Not Match The Mainboard	E084		
DC Fan Board 1 Communication Fault	E081	Communication of the speed regulation module 1 with main board is abnormal	Check the speed regulation module 1 and the main board and if their connections are normal and reliable board and if their connections are normal and reliable.
Syst1: High Pressure Prot.	E11	The high-voltage switch of the system is disconnected	Inspect System 1 voltage switch and refrigerating circuit for any failure
Syst2: High Pressure Prot.	E21	The high-voltage switch of the system is disconnected	Inspect System 2 voltage switch and refrigerating circuit for any failure
Syst1: Low Pressure Prot.	E12	The low-voltage switch of the system is disconnected	Inspect System 1 voltage switch and refrigerating circuit for any failure
Syst2: Low Pressure Prot.	E22	The low-voltage switch of the system is disconnected	Inspect System 2 voltage switch and refrigerating circuit for any failure
Water Flow Switch Prot.	E032	The water system has none or little water	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any damages
Electric Heater Overload Prot.	E04	Electric heating overheat protection switch is disconnected	Inspect whether the electric heating is under operation condition of over 150°C for a long time
Primary Antifreezing Prot. In Winter	E19	Excessively low environment temperature	
Secondary Antifreezing Prot. in Winter	E29	Excessively low environment temperature	
Syst1: User Side Antifreezing Prot.	E171	The water flow of the system is insufficient	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Syst2: User Side Antifreezing Prot.	E271	The water flow of the system is insufficient	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage

Water(Out) High Temp Prot.	E065	Excessively high water outlet temperature	
Fan 1 Thermal Overload Prot.	E103	Fan 1 thermal overload	Check if fan 1 is running normally
Fan 2 Thermal Overload Prot.	E203	Fan 2 thermal overload	Check if fan 2 is running normally
Syst1: Exhaust Air High Temp Prot.	P182	The system compressor is overloaded	Inspect whether the operation of System 1 compressor is normal
Syst2: Exhaust Air High Temp Prot.	P282	The system compressor is overloaded	Inspect whether the operation of System 2 compressor is normal
Water In/Out Large Temp Diff Prot.	E06	The water flow of the system is insufficient, the pressure difference of the water system is small	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Water(Out) Low Temp Prot.	E071	Excessively low water outlet temperature	
Low Water Flow Prot.	E035	The system has no water or too low volume of water	Check if the water flow of water pipe meets the requirements and if the water pump is damaged.
Syst1: Refrigerant Leakage Abnormal	E131	System 1 refrigerant leakage	Check if the refrigerant in the system leaks
Syst2: Refrigerant Leakage Abnormal	E231	System 2 refrigerant leakage	Check if the refrigerant in the system leaks
Syst1: 4-Way Valve Abnormal Switch	E121	SYS1 four-way valve switching failed	Check if the four-way valve commutation state is the desired state
Syst2: 4-Way Valve Abnormal Switch	E221	SYS2 four-way valve switching failed	Check if the four-way valve commutation state is the desired state
Syst1: Low Pressure Prot. 3+	E12	The low-voltage switch of the system is disconnected	Inspect System 1 voltage switch and refrigerating circuit for any failure
Syst2: Low Pressure Prot. 3+	E22	The low-voltage switch of the system is disconnected	Inspect System 2 voltage switch and refrigerating circuit for any failure
Water Flow Switch Prot. 3+	E032	The water system has none or little water	Inspect whether the water flow of the water pipe water pump for any damages conforms to related requirements and check the water pump for any damages
Electric Heater Overload Prot. 3+	E04	Electric heating overheat protection switch is disconnected	Inspect whether the electric heating is under operation condition of over 150°C for a long time
Syst1: User Side Antifreezing Prot. 3+	E171	The water flow of the system is insufficient	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Syst2: User Side Antifreezing Prot. 3+	E271	The water flow of the system is insufficient	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Water(Out) High Temp Prot. 3+	E065	Excessively high water outlet temperature	
Low Water Flow Prot. 3+	E035	The system has no water or too low volume of water	Check if the water flow of water pipe meets the requirements and if the water pump is damaged.
Syst1: Exhaust Air High Temp Prot. 3+	P182	The system compressor is overloaded	Inspect whether the operation of System 1 compressor is normal
Syst2: Exhaust Air High Temp Prot. 3+	P282	The system compressor is overloaded	Inspect whether the operation of System 2 compressor is normal
Water In/Out Large Temp Diff Prot. 3+	E06	The water flow of the system is insufficient, the pressure difference of the water system is small	Inspect whether the water flow of the water pipe conforms to related requirements and check the water pump for any blockage
Water(Out) Low Temp Prot. 3+	E071	Excessively low water outlet temperature	
Water In Sensor Fault	P01	The temperature sensor is open or short circuited	Check and replace inlet water temperature sensor

Water Out Sensor Fault	P02	The temperature sensor is open or short circuited	Check and replace inlet water temperature sensor
Syst1: Coil Temp Sensor1 Fault	P150	The temperature sensor is open or short circuited	Check and replace the system 1 coil 1 temperature sensor
AT Sensor Fault	P04	The temperature sensor is open or short circuited	Check and replace the ambient temperature sensor
Syst1: Suction Temp Sensor Fault	P17	The temperature sensor is open or short circuited	Check and replace the system 1 return air temperature sensor
Syst1: User Side Antifreezing 1 Sensor Fault	P191	The temperature sensor is open or short circuited	Check and replace the system 1 use side antifreeze 1 temperature sensor
Syst2:Coil Temp Sensor1 Fault	P250	The temperature sensor is open or short circuited	Check and replace the system 2 coil 1 temperature sensor
Syst1: Coil(Out) Temp Sensor Fault	P152	The temperature sensor is open or short circuited	Check and replace the system 1 coil outlet temperature sensor
Syst2: Coil(Out) Temp Sensor Fault	P252	The temperature sensor is open or short circuited	Check and replace the system 2 coil outlet temperature sensor
Syst1: EVI(In) Temp Sensor Fault	P101	The temperature sensor is open or short circuited	Check and replace the system 1 EVI inlet temperature sensor
Syst1: EVI(Out) Temp Sensor Fault	P102	The temperature sensor is open or short circuited	Check and replace the system 1 EVI outlet temperature sensor
Syst1: Exhaust Air Temp Sensor Fault	P181	The temperature sensor is open or short circuited	Check and replace the system 1 exhaust temperature sensor
Water Level Sensor Fault	E036	Open circuit or short circuit of the water level sensor	Inspect and replace water level sensor
Syst1: Low Pressure Sensor Fault	PP11	The sensor is open or short circuited	Check and replace the system 1 low pressure sensor
Syst2: Suction Temp Sensor Fault	P27	The temperature sensor is open or short circuited	Check and replace the system 2 return air temperature sensor
Syst2: User Side Antifreezing 1 Sensor Fault	P291	Temperature sensor fault	Check if the temperature sensor is working properly
Syst1: High Pressure Sensor Fault	PP12	The sensor is open or short circuited	Check and replace the system 1 high pressure sensor
Syst2: High Pressure Sensor Fault	PP22	The sensor is open or short circuited	Check and replace the system 2 high pressure sensor
Syst2: Exhaust Air Temp Sensor Fault	P281	Open circuit or short circuit of the temperature sensor	Inspect and replace System 2 exhaust temperature sensor
Syst2: Low Pressure Sensor Fault	PP21	Open circuit or short circuit of the sensor	Inspect and replace System 2 low-voltage sensor
Water Tank Temp Fault	P03	Open circuit or short circuit of the temperature sensor	Inspect and replace water tank temperature sensor
Syst2: EVI(In) Temp Sensor Fault	P201	Open circuit or short circuit of the temperature sensor	Inspect and replace System 2 enthalpy inlet temperature sensor
Syst2: EVI(Out) Temp Sensor Fault	P202	Open circuit or short circuit of the temperature sensor	Inspect and replace System 2 enthalpy outlet temperature sensor
Low AT Power-Off Prot.	TP	Excessively low environment temperature	
Syst1: Coil Temp Sensor2 Fault	P154	The temperature sensor is open or short circuited	Check and replace the system 1 coil 2 temperature sensor
DC Fan Board 2 Communication Fault	E082	Communication of the speed regulation module 2 with main board is abnormal	Check the speed regulation module 2 and the main board and if their connections are normal and reliable.
Syst2: Coil Temp Sensor2 Fault	P254	The temperature sensor is open or short circuited	Check and replace the system 2 coil 2 temperature sensor
Syst1: Comp. Communication Fault	F151	Communication failure with system 1 compressor drive board	1. Check if the communication line is normal; 2. Check is the system 1 compressor drive board is normal
Syst1: Comp. Start Fault	F152	System 1 compressor failed to start	1. Check if the compressor line is normal; 2. Check is the system 1 compressor is blocked

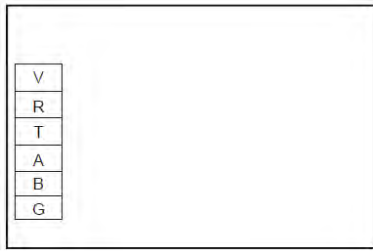
Syst1: Start IPM Prot.	F153	System 1 compressor starting current is too large	1. Check if the starting high pressure is excessive; 2. Check if the system 1 compressor is blocked
Syst1: Running IPM Prot.	F154	System 1 compressor running current is too large	Check if the pressure ratio is too high
Syst1: Comp. Overcurrent Prot.	F156	System 1 compressor running current is too large	Check if the pressure ratio is too high
Comp. 1 IPM Over-Temp. Prot.	F155	System 1 compressor drive board has poor heat dissipation	Check if there is a gap in the installation of the fluorine-cooled heat sink
Press 1 Bus Over Voltage Prot.	F157	Voltage is too high	Check if the input voltage is higher than 480V
Press 1 Bus Under Voltage Prot.	F158	Voltage is too low	Check if the input voltage is lower than 250V
Syst2: Comp. Communication Fault	F251	Communication failure with system 2 compressor drive board	1. Check if the communication line is normal; 2. Check if the system 2 compressor drive board is normal.
Syst2: Comp. Start Fault	F252	System 2 compressor failed to start	1. Check if the compressor line is normal; 2. Check if the system 2 compressor rotor is locked
Syst2: Start IPM Prot.	F253	System 2 compressor starting current is too large	1. Check is the starting high pressure is excessive; 2. Check is the system 1 compressor is blocked
Syst2: Running IPM Prot.	F254	System 2 compressor running current is too large	Check if the pressure ratio is too high
Syst2: Comp. Overcurrent Prot.	F256	System 2 compressor running current is too large	Check if the pressure ratio is too high
Press 2 IPM Over-Temp Prot.	F255	System 2 compressor drive board has poor heat dissipation	Check if there is a gap in the installation of the fluorine-cooled heat sink
Press 2 Bus Over Voltage Prot.	F257	Voltage is too high	Check if the input voltage is higher than 480V
Press 2 Bus Under Voltage Prot.	F258	Voltage is too low	Check if the input voltage is lower than 250V
Fan 1 Phase Loss Prot.	F101	System 1 fan failed to start	Check if the system 1 fan line is normal
Fan 1 Zero Speed Prot.	F102	System 1 fan failed to start	Check if the system 1 fan rotor is locked
Fan 1 Start IPM Prot.	F103	System 1 fan starting current is too large	Check if the system 1 fan rotor is locked
Fan 1 Running IPM Prot.	F104	System 1 fan running current is too large	Check if the system 1 fan rotor is locked
Fan 1 Overcurrent Prot.	F105	System 1 fan running current is too large	Check if the system 1 fan rotor is locked
Fan 1 Over-Temp Prot.	F106	System 1 fan drive board has poor heat dissipation	Check the heat dissipation condition
Fan 1 Bus Over Voltage Prot.	F107	Voltage is too high	Check if the input voltage is higher than 480V
Fan 1 Bus Under Voltage Prot.	F108	Voltage is too low	Check if the input voltage is lower than 250V
Fan 2 Output Phase Loss Prot.	F201	System 2 fan failed to start	Check if the system 2 fan line is normal
Fan 2 Output Zero Speed Prot.	F202	System 2 fan failed to start	Check if the system 2 fan rotor is locked
Fan 2 Start IPM Prot.	F203	System 2 fan starting current is too large	Check if the system 2 fan rotor is locked
Fan 2 Running IPM Prot.	F204	System 2 fan running current is too large	Check if the system 2 fan rotor is locked
Fan 2 Overcurrent Prot.	F205	System 2 fan running current is too large	Check if the system 2 fan rotor is locked

Fan 2 Over-Temp Prot.	F206	System 2 fan drive board has poor heat dissipation	Check the heat dissipation condition
Fan 2 Bus Over Voltage Prot.	F207	Voltage is too high	Check if the input voltage is higher than 480V
Fan 2 Bus Under Voltage Prot.	F208	Voltage is too low	Check if the input voltage is lower than 250V
Abnormal Power Fault	EE1		
Syst1: High Suction Temp Prot.	E077	SYS1 return air temperature is too high	Check if the return air temperature sensor is normal
Syst2: High Suction Temp Prot.	E078	SYS2 return air temperature is too high	Check if the return air temperature value is greater than the protection value
Syst1: High Suction Temp Prot. 3+	E077	SYS1 return air temperature is too high	Check if the return air temperature sensor is normal
Syst2: High Suction Temp Prot. 3+	E078	SYS2 return air temperature is too high	Check if the return air temperature value is greater than the protection value

7. Appendix

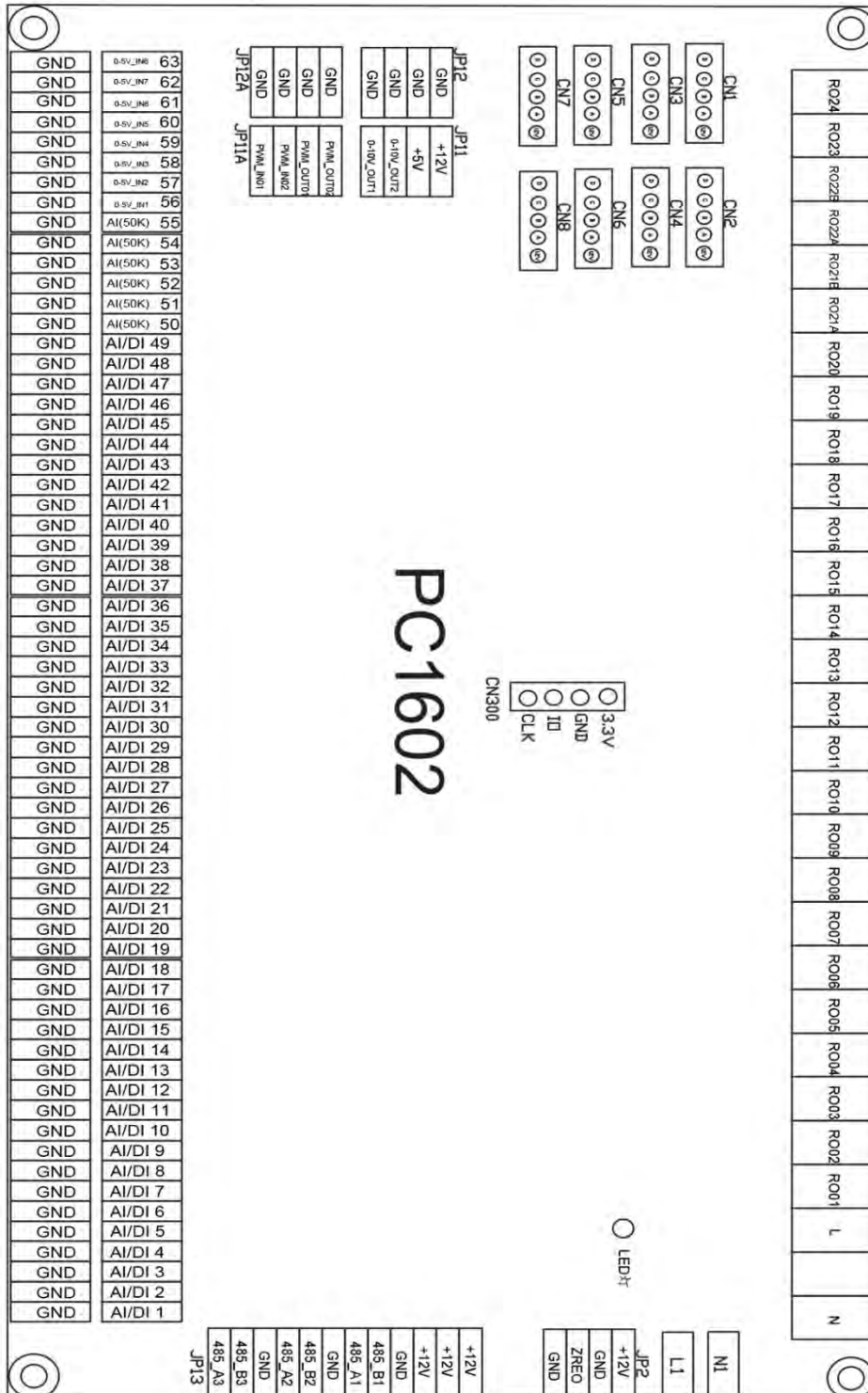
7.1 Controller Interface Diagrams

7.1.1 Wire Control Interface Diagram & Definition



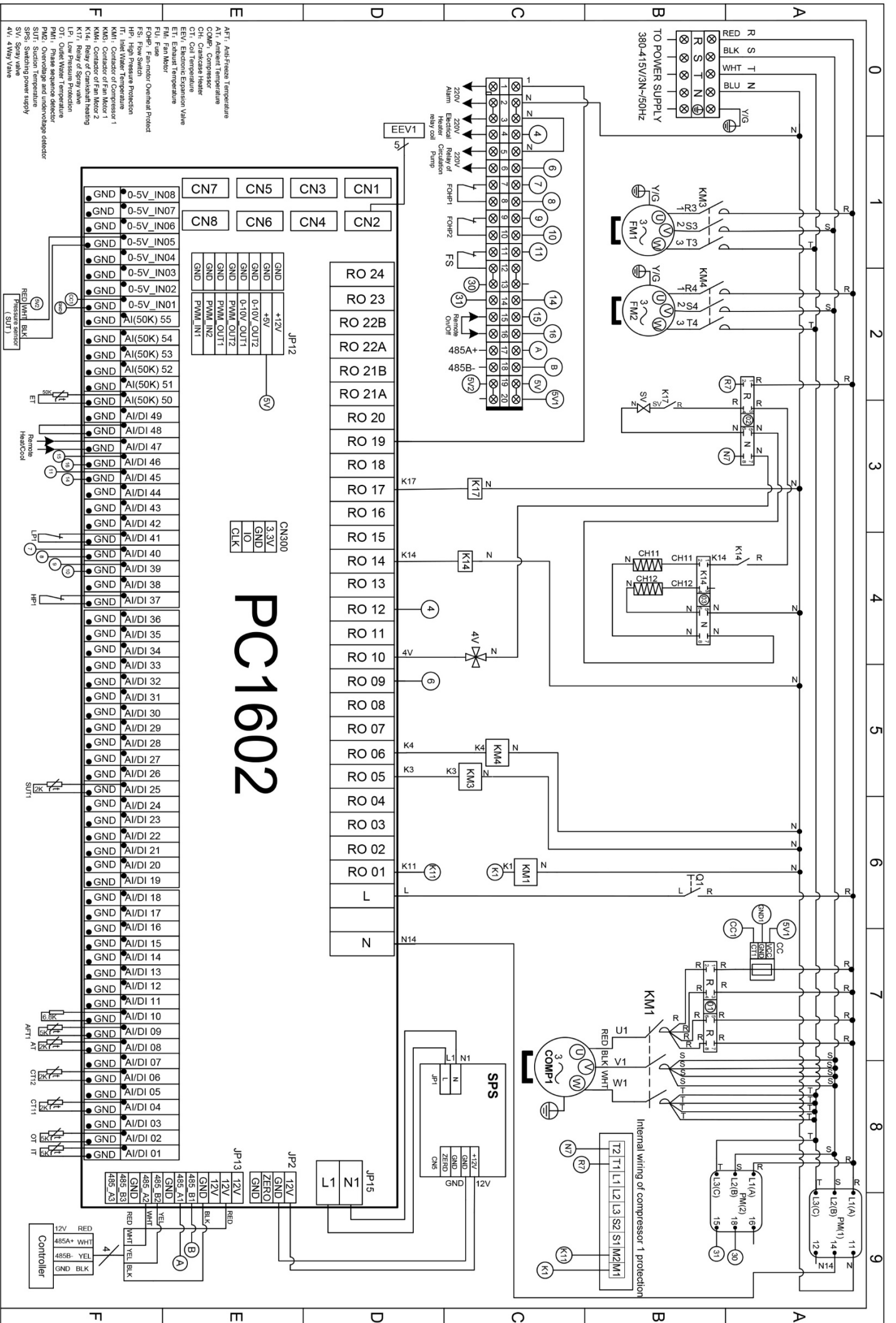
Sign	Meaning
V	12V (power+)
R	No use
T	No use
A	485A
B	485B
G	GND(power-)

7.1.2 Controller Interface Diagrams & Definitions



EVO COMMAND 70 -SS304

CODE:

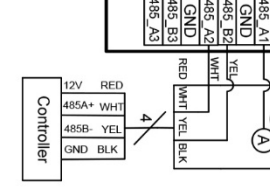


PC1602

CN1	GND	+12V
CN2	GND	+5V
CN3	GND	0-10V_OUT2
CN4	GND	0-10V_OUT1
CN5	GND	PWM_OUT2
CN6	GND	PWM_OUT1
CN7	GND	PWM_IN2
CN8	GND	PWM_IN1

CN300	3.3V
	0
	CLK

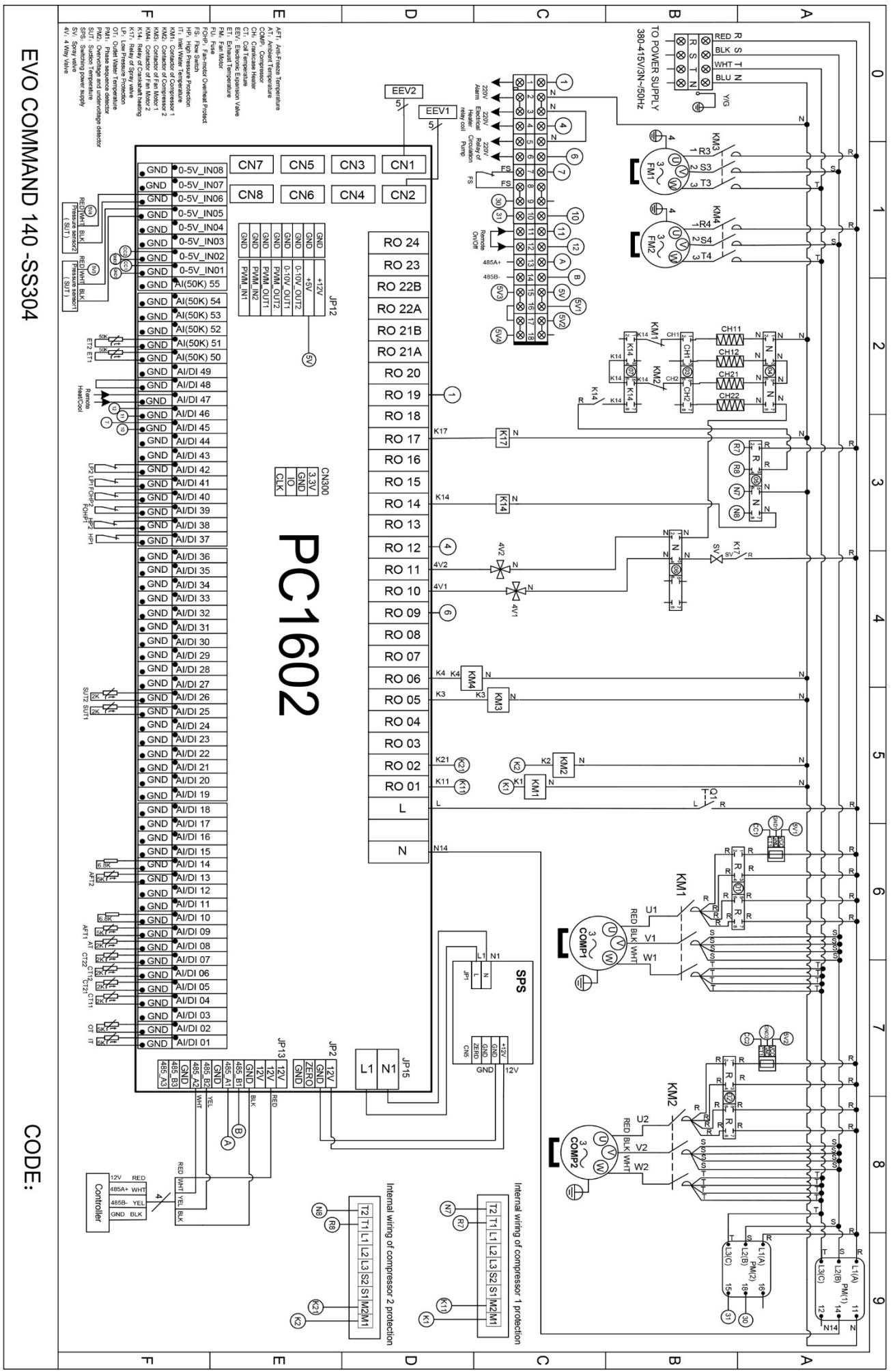
0-5V_IN08	GND
0-5V_IN07	GND
0-5V_IN06	GND
0-5V_IN05	GND
0-5V_IN04	GND
0-5V_IN03	GND
0-5V_IN02	GND
AI(50K)_55	GND
AI(50K)_54	GND
AI(50K)_53	GND
AI(50K)_52	GND
AI(50K)_51	GND
AI(50K)_50	GND
AI/DI_49	GND
AI/DI_48	GND
AI/DI_47	GND
AI/DI_46	GND
AI/DI_45	GND
AI/DI_44	GND
AI/DI_43	GND
AI/DI_42	GND
AI/DI_41	GND
AI/DI_40	GND
AI/DI_39	GND
AI/DI_38	GND
AI/DI_37	GND
AI/DI_36	GND
AI/DI_35	GND
AI/DI_34	GND
AI/DI_33	GND
AI/DI_32	GND
AI/DI_31	GND
AI/DI_30	GND
AI/DI_29	GND
AI/DI_28	GND
AI/DI_27	GND
AI/DI_26	GND
AI/DI_25	GND
AI/DI_24	GND
AI/DI_23	GND
AI/DI_22	GND
AI/DI_21	GND
AI/DI_20	GND
AI/DI_19	GND
AI/DI_18	GND
AI/DI_17	GND
AI/DI_16	GND
AI/DI_15	GND
AI/DI_14	GND
AI/DI_13	GND
AI/DI_12	GND
AI/DI_11	GND
AI/DI_10	GND
AI/DI_09	GND
AI/DI_08	GND
AI/DI_07	GND
AI/DI_06	GND
AI/DI_05	GND
AI/DI_04	GND
AI/DI_03	GND
AI/DI_02	GND
AI/DI_01	GND



- AFT: Anti-Freeze Temperature
- AT: Ambient Temperature
- COMP: Compressor
- CH: Crankcase Heater
- CT: Coil Temperature
- CTV: Electronic Expansion Valve
- EM: Fan Motor
- FM: Fan Motor
- FU: Fuse
- FOPR: Fan-rotate Overhaul Protect
- FS: Flow Switch
- HP: High Pressure Protection
- HT: Inlet Water Temperature
- KM: Contactor of Compressor 1
- KM2: Contactor of Fan Motor 2
- K14: Relay of Combustion Heating
- K17: Relay of Spray valve
- LP: Low Pressure Protection
- OT: Outlet Water Temperature
- PM: Phase sequence detector
- PM1: Overriding and undervoltage detector
- SPS: Switching Power Supply
- SV: Spray valve
- 4V: 4Way Valve

Note:

- (1) JP13_1 represents + 12V, 485_A1, 485_B1, GND on the JP13 terminal;
- (2) JP13_2 represents + 12V, 485_A2, 485_B2, GND on the JP13 terminal;
- (3) JP13_3 represents + 12V, 485_A3, 485_B3, GND on the JP13 terminal.



EVO COMMAND 140 -SS304

CODE:

7.1.3 Input & Output Interface Instructions

No.	Sign	Meaning	No.	Sign	Meaning
1	AI/DI1	Water inlet temperature	55	AI 55(50K)	No use
2	AI/DI2	Water outlet temperature	56	0-5V_IN1	System 1 Compressor current
3	AI/DI3	No use	57	AI/0-5V_IN2	System 2 Compressor current
4	AI/DI4	System 1 coil temperature 1	58	0-5V_IN3	No use
5	AI/DI5	System 2 coil temperature 1	59	0-5V_IN4	No use
6	AI/DI6	System 1 coil temperature 2	60	0-5V_IN5	System 1 low pressure sensor
7	AI/DI7	System 2 coil temperature 2	61	0-5V_IN6	System 2 low pressure sensor
8	AI/DI8	Ambient temperature	62	0-5V_IN7	No use
9	AI/DI9	System 1 antifreeze temperature 1	63	0-5V_IN8	No use
10	AI/DI10	System 1 antifreeze temperature 2	64	PWM_IN1	No use
11	AI/DI11	No use	65	PWM_IN2	Flow meter
12	AI/DI12	No use	66	PWM_OUT1	No use
13	AI/DI13	System 2 antifreeze temperature 1	67	PWM_OUT2	No use
14	AI/DI14	System 2 antifreeze temperature 2	68	0-10V_OUT1	No use
15	AI/DI15	No use	69	0-10V_OUT2	No use
16	AI/DI16	No use	70	+5V	No use
17	AI/DI17	No use	71	+12V	12V output
18	AI/DI18	No use	72	JP13_1	Wire controlled color display
19	AI/DI19	No use	73	JP13_2	Centrally controlled color display
20	AI/DI20	No use	74	JP13_3	DTU module
21	AI/DI21	No use	75	CN1	System 1 electronic expansion valve (big)
22	AI/DI22	No use	76	CN2	System 2 electronic expansion valve (big)
23	AI/DI23	No use	77	CN3	System 1 electronic expansion valve (small)
24	AI/DI24	No use	78	CN4	System 2 electronic expansion valve (small)
25	AI/DI25	System 1 suction temperature	79	CN5	System 1 EVI electronic expansion valve
26	AI/DI26	System 2 suction temperature	80	CN6	System 2 EVI electronic expansion valve
27	AI/DI27	No use	81	CN7	No use
28	AI/DI28	No use	82	CN8	No use
29	AI/DI29	System 1 EVI inlet temperature	83	RO01	System 1 Compressor output
30	AI/DI30	System 2 EVI inlet temperature	84	RO02	System 2 Compressor output
31	AI/DI31	No use	85	RO03	No use
32	AI/DI31	No use	86	RO04	No use
33	AI/DI33	System 1 EVI outlet temperature	87	RO05	fan 1 output (high speed)
34	AI/DI34	System 2 EVI outlet temperature	88	RO06	fan 2 output (high speed)
35	AI/DI35	No use	89	RO07	fan 1 output (low speed)
36	AI/DI36	No use	90	RO08	fan 2 output (low speed)
37	AI/DI37	System 1 high pressure switch	91	RO09	Circulating water pump output
38	AI/DI38	System 2 high pressure switch	92	RO10	System 1 four-way valve output
39	AI/DI39	Fan 1 overload protection switch	93	RO11	System 2 four-way valve output
40	AI/DI40	Fan 2 overload protection switch	94	RO12	Electric heating output
41	AI/DI41	System 1 low pressure switch	95	RO13	Chassis heating belt output
42	AI/DI42	System 2 low pressure switch	96	RO14	crankshaft heating belt output
43	AI/DI43	System 1 pressure relief switch	97	RO15	No use
44	AI/DI44	System 1 pressure relief switch	98	RO16	No use
45	AI/DI45	Water flow switch	99	RO17	Spray valve output
46	AI/DI46	Emergency switch	100	RO18	No use
47	AI/DI47	Mode switch	101	RO19	Alarm output
48	AI/DI48	Electric heating overload protection switch	102	RO20	No use
49	AI/DI49	No use	103	RO21A	No use
50	AI 50(50K)	System 1 exhaust temperature	104	RO21B	No use
51	AI 51(50K)	System 2 exhaust temperature	105	RO22A	No use
52	AI 52(50K)	No use	106	RO22B	No use
53	AI 53(50K)	No use	107	RO23	No use
54	AI 54(50K)	No use	108	RO24	No use

7.2 Cable Specifications

Single Phase Unit

Nameplate Maximum Current	Phase Line	Earth Line	MCB	Creepage Protector	Signal Line
< 10A	2 x 1.5mm ²	1.5mm ²	20A	10mA less than 0.1sec	n x 0.5mm ²
10~16A	2 x 2.5mm ²	2.5mm ²	32A		
16~25A	2 x 4mm ²	4mm ²	40A		
25~32A	2 x 6mm ²	6mm ²	40A		
32~40A	2 x 10mm ²	10mm ²	63A		
40~63A	2 x 16mm ²	16mm ²	80A		
63~75A	2 x 25mm ²	25mm ²	100A		
75~101A	2 x 25mm ²	25mm ²	125A		
101~123A	2 x 35mm ²	35mm ²	160A		
123~148A	2 x 50mm ²	50mm ²	225A		
148~186A	2 x 70mm ²	70mm ²	250A		
186~224A	2 x 95mm ²	95mm ²	280A		

Three Phase Unit

Nameplate Maximum Current	Phase Line	Earth Line	MCB	Creepage Protector	Signal Line
< 10A	3 x 1.5mm ²	1.5mm ²	20A	10mA less than 0.1sec	n x 0.5mm ²
10~16A	3 x 2.5mm ²	2.5mm ²	32A		
16~25A	3 x 4mm ²	4mm ²	40A		
25~32A	3 x 6mm ²	6mm ²	40A		
32~40A	3 x 10mm ²	10mm ²	63A		
40~63A	3 x 16mm ²	16mm ²	80A		
63~75A	3 x 25mm ²	25mm ²	100A		
75~101A	3 x 25mm ²	25mm ²	125A		
101~123A	3 x 35mm ²	35mm ²	160A		
123~148A	3 x 50mm ²	50mm ²	225A		
148~186A	3 x 70mm ²	70mm ²	250A		
186~224A	3 x 95mm ²	95mm ²	280A		

If the unit is to be installed outdoors, use a UV resistant cable.

8. Warranty



Please refer to the EvoHeat website for warranty details

- Australia: www.evoheat.com.au
- South East Asia: www.evoheat.com.sg

1. Warranty terms are from date of purchase.
2. This warranty excludes any defect or injury caused by or resulting from misuse, abuse, neglect, accidental damage, improper voltage, vermin infestation, incompetent installation, any fault not attributable to faulty manufacture or parts, any modifications which affect the reliability or performance of the unit.
3. This warranty does not cover the following:
 - a. Natural Disasters (hail, lightening, flood, fire etc.)
 - b. Rust or damage to paintwork caused by a corrosive atmosphere
 - c. When serviced by an unauthorized person without the permission of Evo Industries
 - d. When a unit is installed by an unqualified person
 - e. Where a unit is incorrectly installed
 - f. When failure occurs due to improper or faulty installation
 - g. Failure due to improper maintenance (refer Operating Instructions)
 - h. 'No Fault Found' service calls where the perceived problem is explained within the
 - i. Costs associated with delivery, handling, freighting, or damage to the product in transit.
4. If warranty service is required you should:
 - a. contact Evo Industries Australia on 1300 859 933 or via our Contact page on our web site
 - b. provide a copy of your receipt as proof of purchase
 - c. have completed the online warranty registration or provide a completed warranty card.
5. Onsite technical service is available within the normal operating area of your Evo Industries authorized Service Centre. Service outside this area will incur a traveling fee.
6. Unless otherwise specified to the purchaser, the benefits conferred by this express warranty and additional to all other conditions, warranties, rights and remedies expressed or implied by the Trade Practices Act 1974 and similar consumer protection provisions contained in legislation of the States and Territories and all other obligations and liabilities on the part of the manufacturer or supplier and nothing contained herein shall restrict or modify such rights, remedies, obligations or liabilities.

Warranty Registration

EvoHeat highly recommend customers to complete their warranty details online to ensure efficient warranty claim processing.

To register your warranty, scan our QR Code or head to our website and fill in the Warranty Registration Form: <https://evoheat.com.au/warranty-registration/>

