

SEILAR THERMO AUSTRALIA P/L

PRODUCT MANUAL

MANUFACTURER'S GUIDE FOR
PROFESSIONAL INSTALLATION
M.E.P


IMPORTANT SAFETY PRECAUTIONS

Important Notice:

This guide provides installation and operation instructions for the Commercial Air Source Heat Pump. Consult the seller with any questions regarding this equipment.

Attention Installer: This guide contains important information about the installation, operation and safe use of this product. This information should be given to the owner and/or operator of this equipment after installation or left on or near the heat pump.

Attention User: This manual contains important information that will help you in operating and maintaining this heat pump. Please retain it for future reference.

 **WARNING** - Before installing this product, read and follow all warning notices and instructions which are included. Failure to follow safety warnings and instructions can result in severe injury, death, or property damage.


Codes and Standards

The Commercial Air Source Heat Pump must be installed in accordance with the local building and installation codes as per the utility or authority having jurisdiction. All local codes take precedence over national codes. In the absence of local codes, refer to the latest edition of the National Electric Code (NEC) in the local government Electric Code (CEC) for installation.


DANGER — Risk of electrical shock or electrocution.



The electrical supply to this product must be installed by a licensed or certified electrician in accordance with the National Electrical Code and all applicable local codes and ordinances. Improper installation will create an electrical hazard which could result in death or serious injury to pool or spa users, installers, or others due to electrical shock, and may also cause damage to property. Read and follow the specific instructions inside this guide.

 **WARNING** - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

Consumer Information and Safety

The Commercial Air Source Heat Pumps are designed and manufactured to provide years of safe and reliable service when installed, operated and maintained according to the information in this manual and the installation codes referred to in later sections. Throughout the manual, safety warnings and cautions are identified by the “” symbol. Be sure to read and comply with all of the warnings and cautions.

Heat Pump Energy Saving Tips

If you do not plan to use hot water for a prolonged period, then you might choose to turn the heat pump off or decrease the temperature setting of the control several degrees to minimize energy consumption.

We offer the following recommendations to help conserve energy and minimize the cost of operating your heat pump without sacrificing comfort.

1. A maximum water temperature of 60° C is recommended.
2. It is recommended to turn off the heat pump when ambient air temperature is less than -10° C or if on vacation for longer than a week.
3. To save energy, it is recommended that the heat pump is operated during daytime when the ambient temperature is higher.
4. Try to install the heat pump at the ventilated places indoor. If it must be installed outdoor, Where possible, shelter the heat pump from prevailing winds, rain and snow. Always use a shelter when practical, which will reduce the possibility of frosting and icing.

General Installation Information

1. Installation and service must be performed by a qualified installer or service agent, and must conform to all national, state, and local codes and/or safety regulations.
2. This Commercial Air Source Heat Pump is specifically designed for hot water supply & heating at any domestic and commercial places where need medium-temperature hot water, such as factory, textile printing factory, tobacco dry, paper dry, wooden dry, feature factory, heating supply, slaughterhouse, food factory sterilization and so on. Do not use it for any other applications.

Section 1 Introduction

Product Overview

Commercial Air Source heat pumps transfer heat from the ambient air to water, providing high-temperature hot water up to 60°C. The unique high-temperature heat pump is widely used for house warming. With innovative & advanced technology, the direct-heating heat pump can operate very well at -10°C ambient temperature with high output temperatures up to 60°C, which ensures the compatibility with normal sized radiator based systems without supplementation. Compared with traditional oil/LPG boilers, high-temperature heat pump produces up to 50% less CO₂ whilst saves 80% running cost.

Our heat pumps are not only highly efficient, but also easy and safe to operate.

General Features

1. Low running costs and high efficiency
 - A high coefficient of performance (COP) of up to 5 results in lower running costs compared with traditional ASHP technology.
 - No immersion heater supplement is required.

2. Reduced Capital Costs
 - Simple installation
 - Compatible with traditional radiator systems, eliminating the expense of installing under floor heating or changing to oversized radiators.
3. High Comfort Levels
 - High storage temperature results in increased hot water availability.
4. No potential danger of any inflammable, gas poisoning, explosion, fire, electrical shock which are associated with other heating systems.
5. A digital controller is incorporated to maintain the desired water temperature.
6. Long-life and corrosion resistant composite cabinet stands up to severe climates.
7. Japan Panasonic compressor Japan Panasonic compressor ensures outstanding performance, ultra energy efficiency, durability and quiet operation.
8. Self-diagnostic control panel monitors and troubleshoots heat pump operations to ensure safe and reliable operation.
9. Intelligent digital controller with friendly user interface and blue LED back light.
10. Separate isolated electrical compartment prevents internal corrosion and extends heat pump life.
11. The heat pump can operate down to ambient air temperature of -10°C .

Section 2

Installation

The following general information describes how to install the Commercial air source heat pump.

Note: Before installing this product, read and follow all warning notices and instructions. Only a qualified service person should install the heat pump.

Materials needed for Installation

The following items are needed and are to be supplied by the installer for **all** heat pump installations:

1. Plumbing fittings.
2. Level surface for proper drainage.
3. Ensure that a suitable electrical supply line is provided. See the rating plate on the heat pump for electrical specifications. Please take a note of the specified current rating. No junction box is needed at the heat pump; Connections are made inside of the heat pump electrical compartment. Conduit may be attached directly to the heat pump jacket.
4. It is advised to use PVC conduit for the electrical supply line.
5. Use a booster pump for pumping water in case of low water pressure.
6. A filter on the water inlet is needed.
7. The plumbing should be insulated to reduce its heat loss.

Note: We recommend installing shut-off valves on the inlet and outlet water connections for ease of serviceability.

Note:

The above design and specifications are subject to change without prior notice for product improvement. Detailed specifications of the units please refer to name plate on the units,

Correct installation is required to ensure safe operation. The requirements for heat pumps include the following:

1. Dimensions for critical connections.
2. Field assembly (if required).
3. Appropriate site location and clearances.
4. Proper electrical wiring.
5. Adequate water flow.

This manual provides the information needed to meet these requirements. Review all application and installation procedures completely before continuing the installation.

Installation Location

1. DO NOT install the heat pump near to hazardous materials and places
2. DO NOT install the heat pump under deep sloping roofs without gutters which will allow rain water, mixed with debris, to be forced through the unit.
3. Place the heat pump on a flat slightly pitched surface, such as concrete or fabricated slab. This will allow proper drainage of condensation and rain water from the base of the unit. If possible, the slab should be placed at the same level or slightly higher than the filter system/equipment.

Installation details

All criteria given in the following sections reflect minimum clearances. However, each installation must also be evaluated, taking into account the prevailing local conditions such as proximity and height of walls, and proximity to public access areas. The heat pump must be placed to provide clearances on all sides for maintenance and inspection.

1. The installation area must have good ventilation and the air inlet/outlet must not be hindered.

2. The installation area must have good drainage and be built on a solid foundation.
3. Do not install the unit in areas accumulated with pollutions like aggressive gas (chlorine or acidic), dust, sand and leaves etc.
4. For easier and better maintenance and troubleshooting, no obstacles around the unit should be closer than 500mm. And no obstructions within 2m, vertically, from the unit for air ventilation. (See Figure 1)

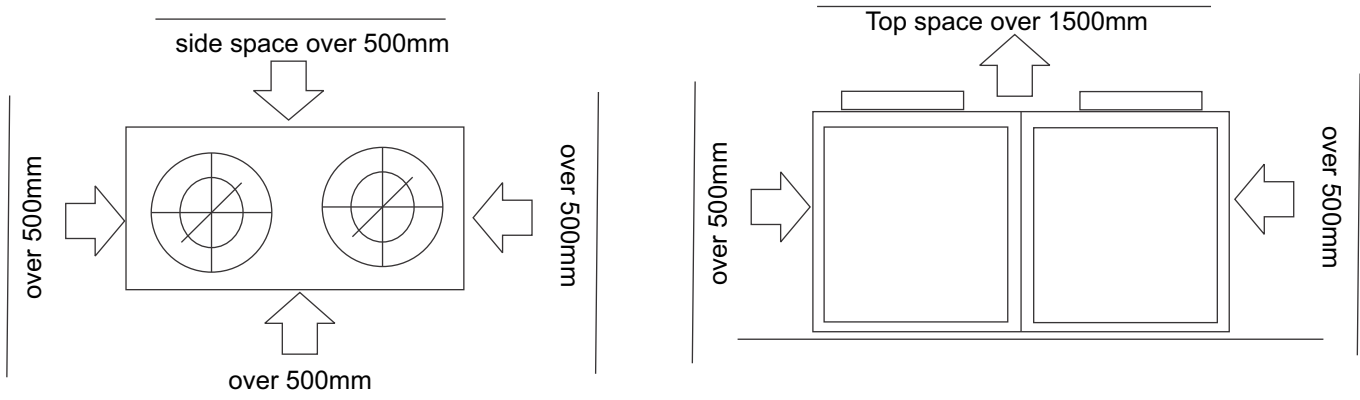


Figure 1

5. The heat pump must be installed with shockproof bushes to prevent vibration and/or imbalance.
6. Even though the controller is waterproof, care should be taken to avoid direct sunlight and high temperature. In addition, the heat pump should be placed to ensure quality viewing of the controller.
7. The plumbing pipes must be installed with proper support to prevent possible damage due to vibration. Running water pressure should be kept over 196kpa. Otherwise, booster pump should be installed.
8. The acceptable operating voltage range should be within $\pm 10\%$ of the rated voltage. When heat pump units are installed in parallel, ensure that the voltage differences, between these units, are within $\pm 2\%$.
 - The heat pump unit must be grounded /earthed for safety purposes.

Drainage and Condensation

Condensation will occur from the evaporator when the unit is running and drain at a steady rate, depending upon ambient air temperature and humidity. The more humid the ambient conditions, the more condensation will occur. The bottom of the unit acts as a tray to catch rainwater and condensation. Keep the drain holes, located on the bottom pan of the unit base, clear from debris at all times.

Commercial air source heat pump Installation Diagram (See Figure 2)

Cycle heating heatpump Installation Diagram

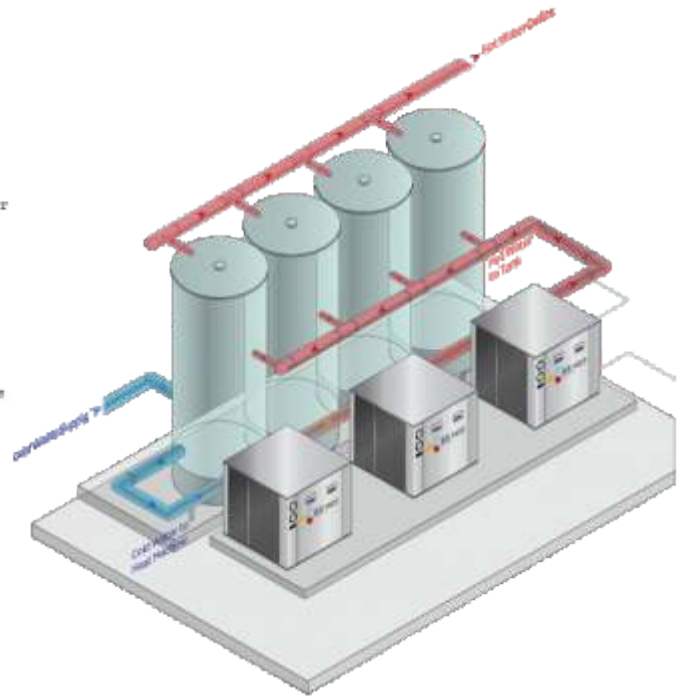
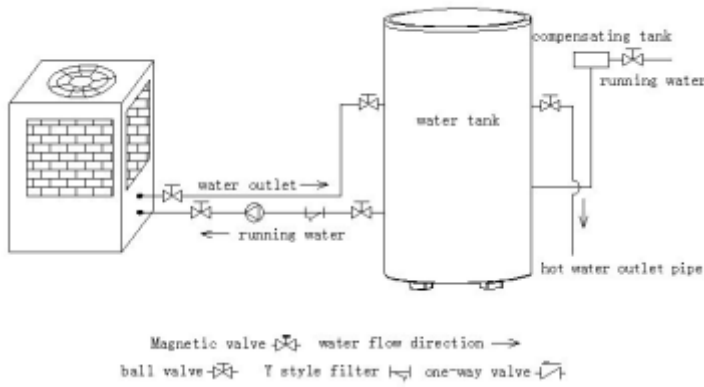


Figure 2

Water Connections

Water Connections at the Heat Pump

Quick Connect fittings are recommended to be installed on the water inlet and outlet connections. (See Figure 3)

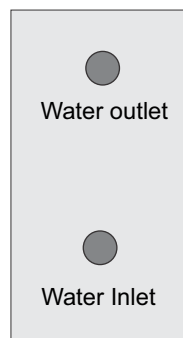


Figure 3

Tap water is plumbed to the inlet, located on the right side of the heat pump unit. Heated water flows through the outlet, located on the left side of the heat pump to the water tank.

It is recommended to use stainless steel and PVC/PPR pipes for the heat pump plumbing. The water inlet and outlet connection to the heat pump (40mm or threaded entry female) accepts stainless steel or PVC/PPR pipe fittings.

⚠ CAUTION — Make sure that flow requirements and tap water turnover rates can be maintained with the installation of additional heat pumps and plumbing restrictions.

Plumbing installation requirements

1. When water pressure exceeds 490Kpa, please use reducing valve to reduce the water pressure below

294Kpa.

2. Each part connected to unit needs to be connected with method of loose joint and installed with intermediate valve.
3. Ensure that all plumbing has been properly completed and then proceed to do a water leakage and pressure test.
4. All the pipelines and pipe fittings must be insulated to prevent heat loss.
5. Install a drain valve at the lowest point of the system to enable the system to be drained during freezing conditions (winterizing).
6. Install a check valve on the water outlet connection in order to prevent back siphoning when water pump stops.
7. In order to reduce the back pressure, the pipes should be installed horizontally
8. And minimize the elbows (90 degrees connections). If a higher flow rate is required, install a bypass valve

Electrical Connections



WARNING —Risk of electrical shock or electrocution.



Ensure that all high voltage circuits are disconnected before commencing heat pump installation. Contact with these circuits could result in death or serious injury to users, installers or others, due to electrical shock and may also cause damage to property.



CAUTION — Label all wires prior to disconnection when servicing the heat pump. Wiring errors can cause improper and dangerous operation. Check and ensure proper operation after servicing.

General Information

Wiring connections must be done according to the wiring diagram found on the inside of the heat pump access panel or see addendum A for reference.

The heat pump must be grounded / earthed. A ground lug is provided on the inside of the heat pump electrical compartment.

Power supply

1. If the supply voltage is too low or too high, it can cause damage and/or result in unstable operation of the heat pump unit, due to high inrush currents on start up.
2. The minimum starting voltage should be above 90% of rated voltage. The acceptable operating voltage range should be within $\pm 10\%$ of the rated voltage. When heat pump units are installed in parallel, ensure that the voltage difference, between these units, is within $\pm 2\%$ of each other. The voltage difference between phases of a three phase power supply should be within $\pm 2\%$.
3. Ensure the cable specifications meet the correct requirements for the specific installation. The distance between the installation site and mains power supply will affect the cable thickness. Follow the local electrical standards to select the cables, circuit breakers and isolator breakers.

Grounding and Over Current Protection

In order to prevent electrical shock in case of leakage from unit, install the heat pump according to local electrical standard.

1. Do not interrupt the voltage supply to the heat pump frequently as this may result a shorter life expectance of the heat pump.
2. When installing over current protection, ensure that the correct current rating is met for this specific installation.
3. The Compressor, fan coil unit and heat pump water pump all have AC-contactor and thermo relay protection. Therefore, in the process of installation and debugging, firstly measure each of the aforementioned components' current, and then adjust the current protection range of the thermo relays.

Controller PC board Settings

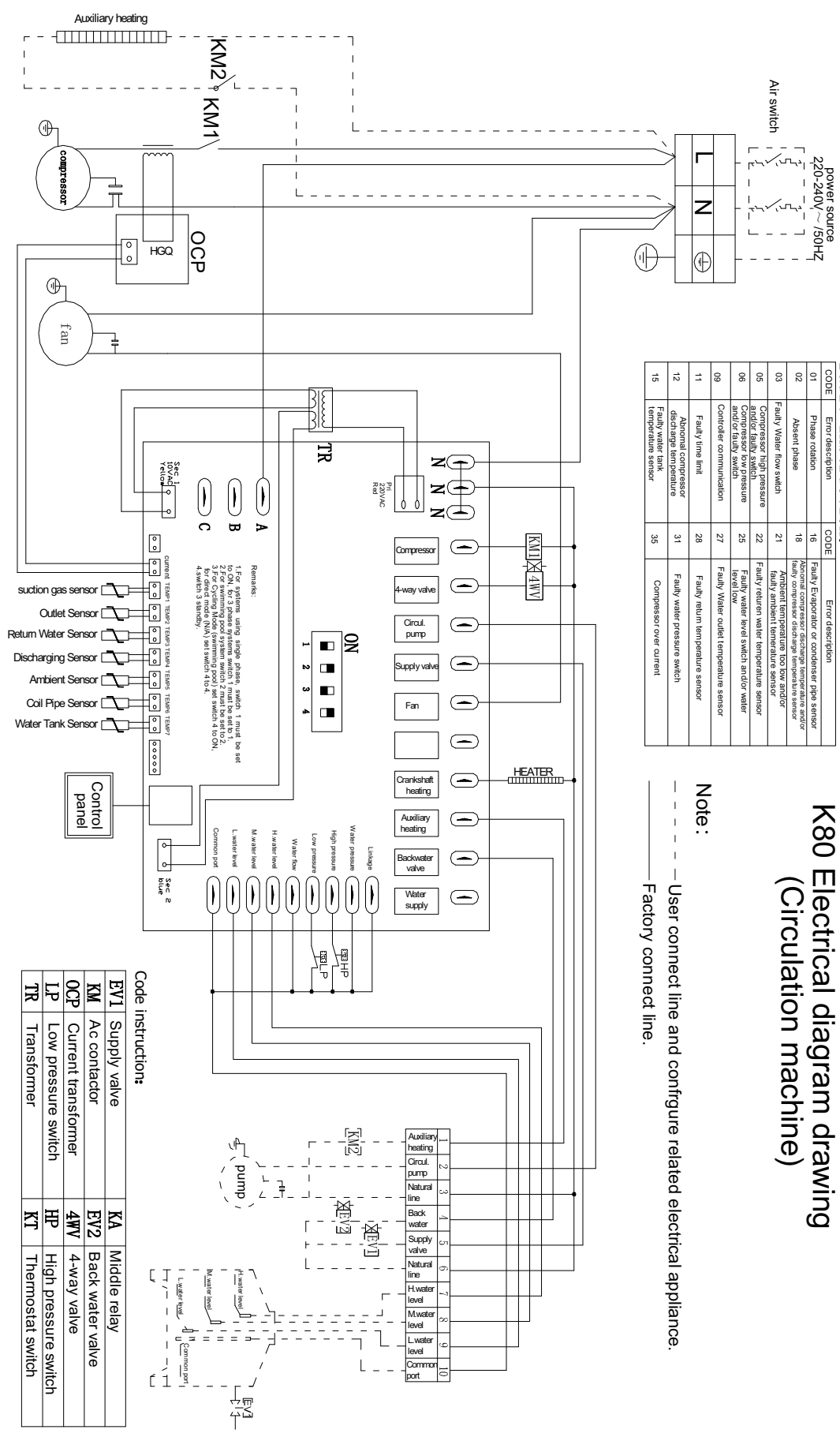
The Controller PCB has a pin selectable toggle switch which must be set according to the specific installation requirement.

NOTE:

Before any changes are made to the pin settings, ensure that the mains supply power is OFF at the circuit breaker or physically disconnected from the mains supply.

Electrical Wiring Diagram

Single system Single Phase



fault instruction:

CODE	Error description	CODE	Error description
01	Phase rotation	16	Faulty evaporator or condense pipe sensor
02	Absent phase	18	Faulty compressor discharge temperature sensor
03	Faulty Water flow switch	21	Ambient temperature too low and/or faulty ambient temperature sensor
05	Compressor high pressure	22	Faulty return water temperature sensor
06	Compressor low pressure and/or faulty switch	25	Faulty water level switch and/or water level low
09	Controller communication	27	Faulty Water outlet temperature sensor
11	Faulty time limit	28	Faulty return temperature sensor
12	Abnormal compressor discharge temperature	31	Faulty water pressure switch
15	Faulty water tank temperature sensor	35	Compressor over current

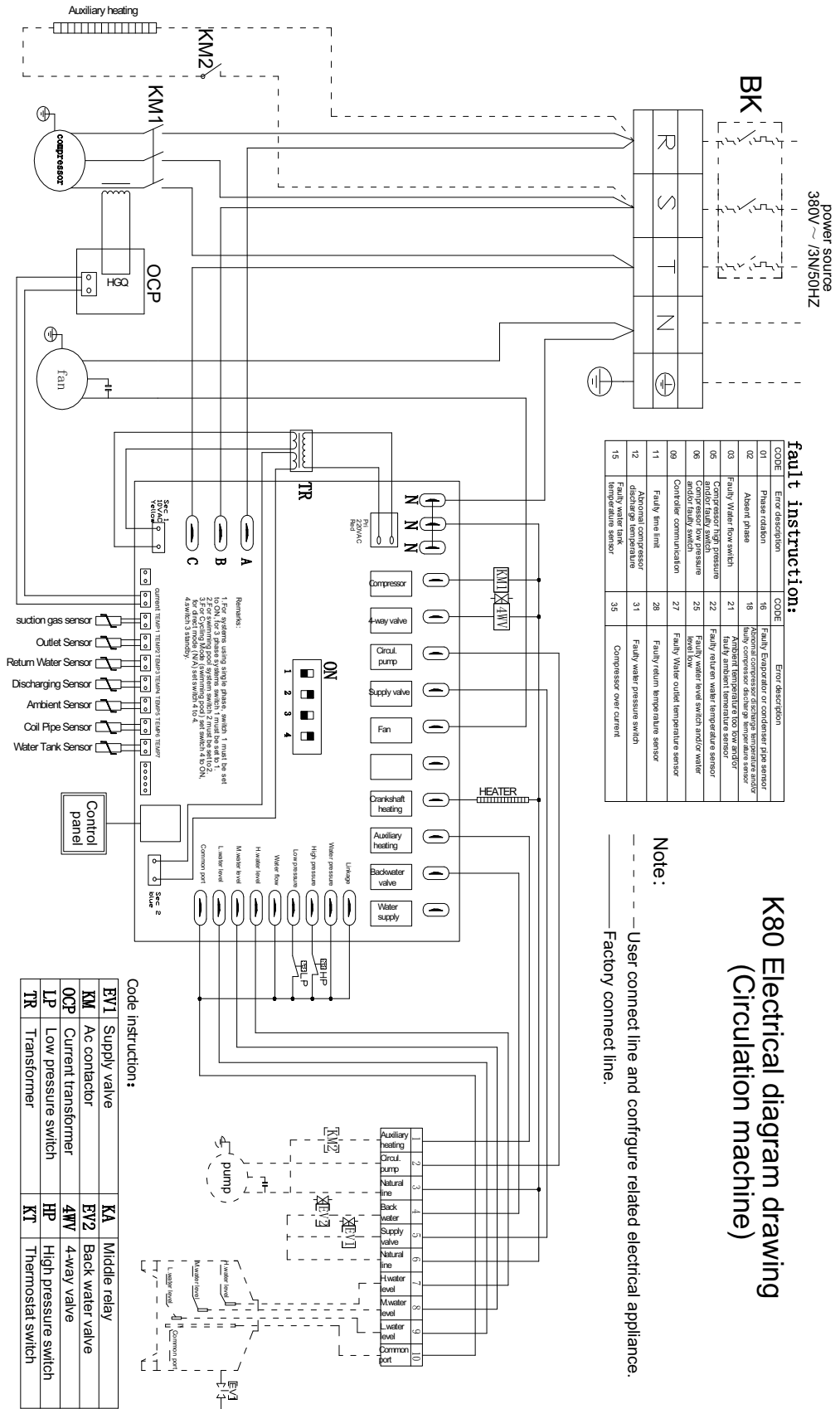
K80 Electrical diagram drawing (Circulation machine)

Note:
 --- User connect line and configure related electrical appliance.
 _____ Factory connect line.

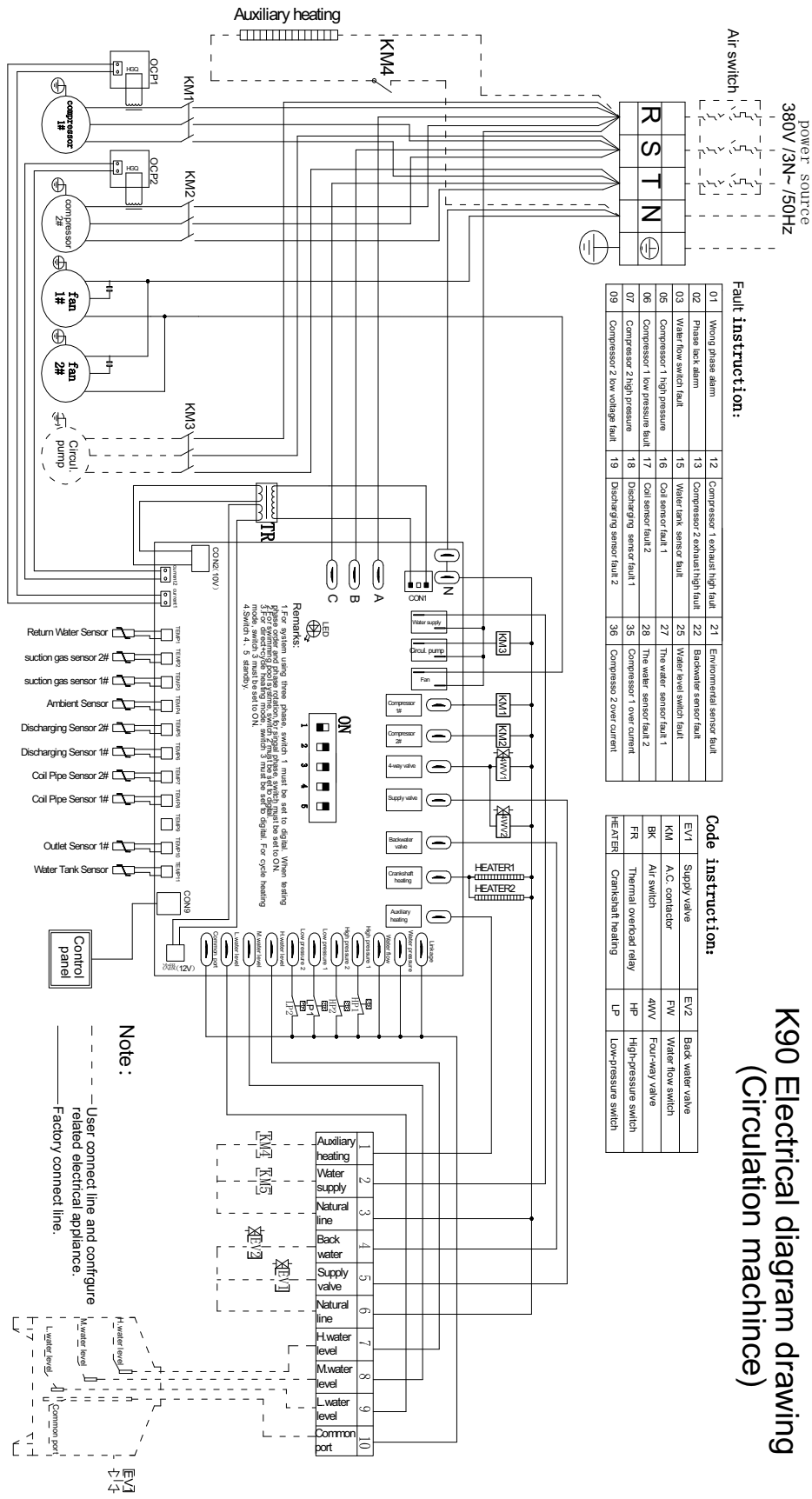
Code instructions:

EY1	Supply valve	KA	Middle relay
KM	Ac contactor	EY2	Back water valve
OCP	Current transformer	4WV	4-way valve
LP	Low pressure switch	HP	High pressure switch
TR	Transformer	KT	Thermostat switch

Single system Three Phase



Dual System Three Phase

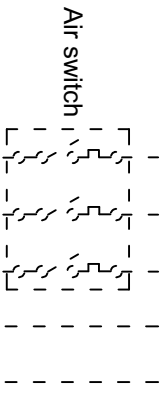


K90 Electrical diagram drawing
(Circulation machine)

Attention Installer: Just connect “High, Middle, Low” water level with “COM” together when it is connected with pressurized water tank without water level detector.

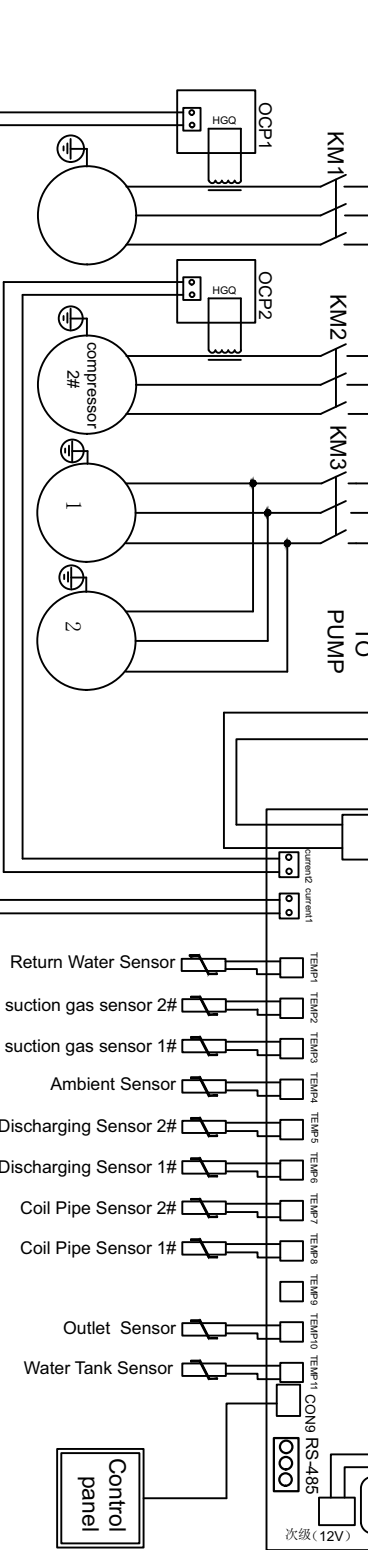
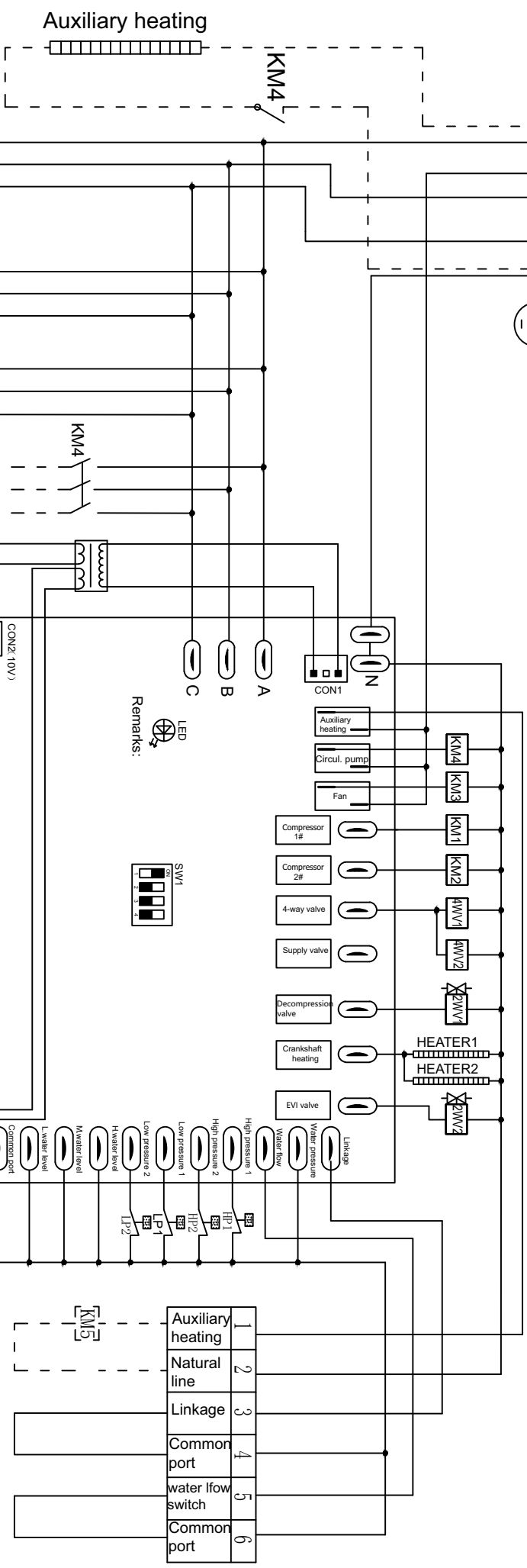
RS 485 Electrical diagram drawing

Power Source
380V /3N~/50Hz



Fault	:
01	Wrong phase alarm
02	Phase lack alarm
03	Water flow switch fault
05	Compressor 1 high pressure
06	Compressor 1 low pressure fault
07	Compressor 2 high pressure
09	Compressor 2 low voltage fault
12	Compressor 1 exhaust high fault
13	Compressor 2 exhaust high fault
15	Water tank sensor fault
16	Coil sensor fault 1
17	Coil sensor fault 2
18	Discharging sensor fault 1
19	Discharging sensor fault 2
21	Environmental sensor fault
22	Backwater sensor fault
25	Water level switch fault
27	The water sensor fault 1
28	The water sensor fault 2
35	Compressor 1 over current
36	Compressor 2 over current

2MV/1	Decompression valve	2MV/1	EVI valve
KM	A.C. contactor	FW	Water flow switch
4WV/1	Four-way valve 1	4WV	Four-way valve 2
BK	Air switch	HP	High-pressure switch
HEATER	Crankshaft heating	LP	Low-pressure switch



Note:
 - - - - - User connect line.
 _____ Factory connect line.

Power Source
380V /3N~/50Hz

Air switch

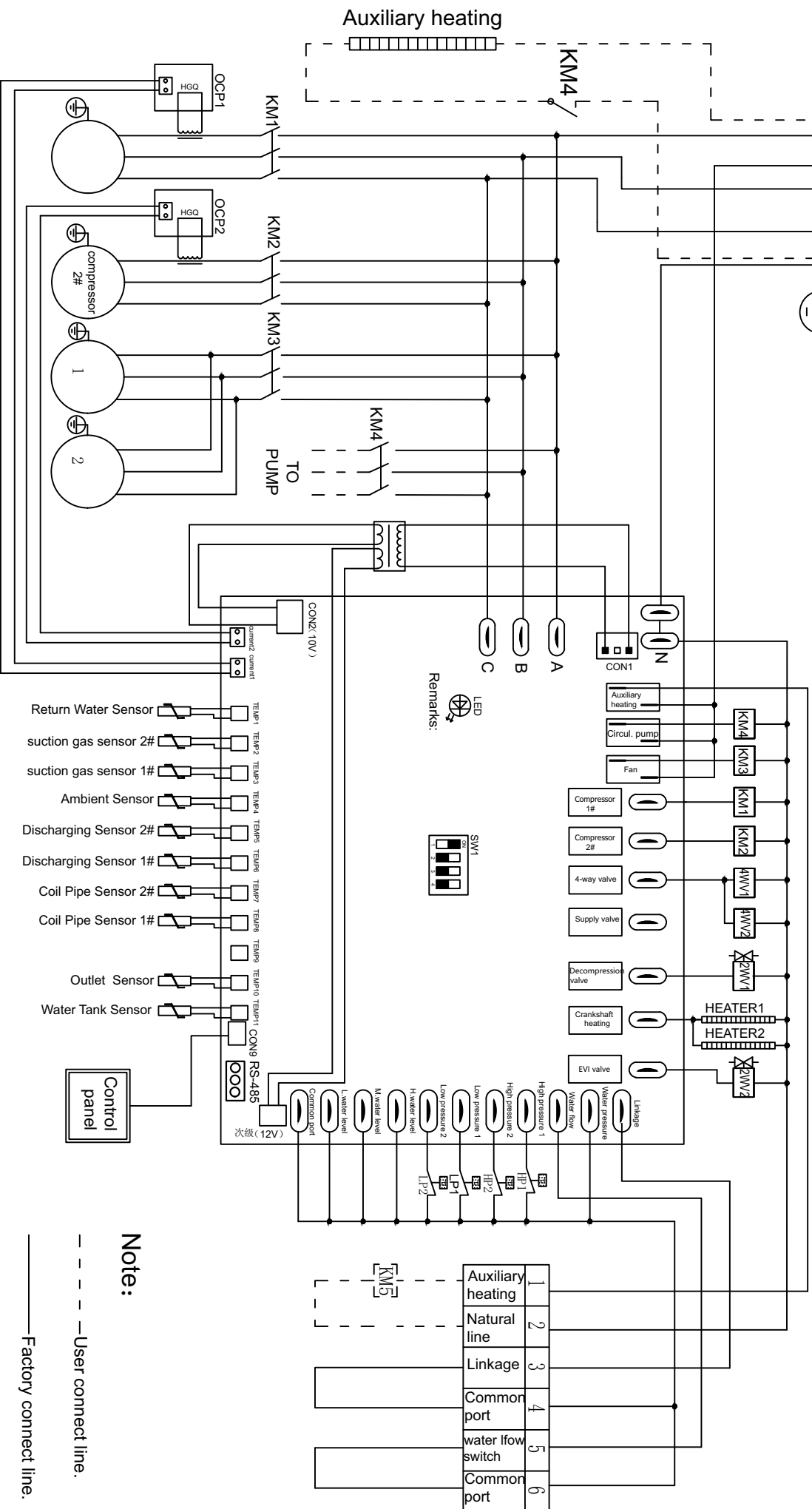


Fault

01	Wrong phase alarm	12	Compressor 1 exhaust high fault	21	Environmental sensor fault
02	Phase lack alarm	13	Compressor 2 exhaust high fault	22	Backwater sensor fault
03	Water flow switch fault	15	Water tank sensor fault	25	Water level switch fault
05	Compressor 1 low pressure	16	Coil sensor fault 1	27	The water sensor fault 1
06	Compressor 1 high pressure	17	Coil sensor fault 2	28	The water sensor fault 2
07	Compressor 2 high pressure	18	Discharging sensor fault 1	35	Compressor 1 over current
09	Compressor 2 low voltage fault	19	Discharging sensor fault 2	36	Compresso 2 over current

RS 485 Electrical diagram drawing

2MV/1	Decompression valve	2MV/1	EVI valve
KM	A.C. contactor	FW	Water flow switch
4WV/1	Four-way valve 1	4WV	Four-way valve 2
BK	Air switch	HP	High-pressure switch
HEATER	Crankshaft heating	LP	Low-pressure switch



Note:

--- User connect line.

_____ Factory connect line.

Section 3

Operating Heat Pump

LCD User-Friendly Interface Controller

General instruction

The control panel applies to a single system heat pump.

The operation panel features:

1. Capacitive touching keys for higher operating sensitivity and unlimited key operations.
2. Minimal electromagnetic susceptibility and interference.
3. Stylish appearance for easy viewing purposes.
4. Dust and Water Proof.
5. Installed on wall indoor for convenient operation.
6. Automatic Key Lock function (AKL).

Controller panel

Operating Controller



Operation guide

When the power supply to the heat pump is switched on for the first time, an audible tone is heard from the controller. The LCD will be displayed in a dimming mode (no back light). At this time the touch keys are locked (see “lock key display” symbol).

Keys explanation:

Unlocking Keys: Press the “power” key for 3 seconds until you hear an audible tone, then release the key. The back light of the LCD display will turn on and the key pad is unlocked with no “lock key display” symbol. The keypad will automatically lock after 60 seconds, displaying the “lock key display” symbol.

“power” key: By pressing the “power” key, the unit can be switched ON or OFF.

“▲” and “▼” keys: Press to Increase and Decrease values.

“setting” key: Press for Inquiry, Parameter and Password setting

“timer” key: Press for timer setting, timer eliminate and clock setting.

Controller Set-Up

1. Temperature setting:

Make sure key-pad is unlocked. Press the “▲” key, “temperature setting” symbol is flashing and the set temperature is displayed. Press the “▲”key again, the displayed temperature will increase. Press the “▼”key, “temperature setting” symbol is flashing and the set temperature is displayed. Press the “▼”key again, the displayed temperature will decrease. The range of water temperature can be set from 20°C (68°F) to 60°C (140°F) (default = 60°C (140°F)).



NOTE:

- It is recommended that the maximum setting temperature be 60°C.

2. System status display values:

Make sure key-pad is unlocked. Press the “setting” key and enter into inquiry panel with “inquire” symbol on display.



On the state of power on, press the “setting” key for more than 3 seconds, until an audible tone is heard and enter into the setting panel with “setting” symbol on display. After parameter set, press the “setting” key again for next parameter setting, after all parameters set, exit the setting panel. Details are shown as follows:

Code	Name	Range	Default
	Water tank temperature setting	30°C–99°C	55°C
L1	Temperature difference between hot water and indication	0°C–15°C	2°C
L2	Compressor restart & set temperature	3--18	4
L4	Maximal water tank temperature	30--99	60
L5	Electric heating start temperature	0°C–35°C	7 (No electric heating)
L9	NO	NO	NO
h1	Defrosting period	20–99minutes	45 minutes
h2	Defrosting start temperature	-15°C–1°C	-1°C
h3	Defrosting time	5-20minutes	8minutes
h4	Defrosting quit temperature	1°C–40°C	15°C
P1	NO	NO	NO
P2	NO	NO	NO
P3	NO	NO	NO
P4	NO	NO	NO
P5	NO	NO	NO
P6	NO	NO	NO

Note:

● If electric expansion valve is not controlled by controller (dip 3 in the number side), no indication of P1-P6 while parameter setting. (Electric expansion valve used in domestic heat pump is not controlled by controller).

For a single heat pump system (SHPS), the inquiry codes are from A1 to A9. By pressing the “setting” key sequentially, the desired inquiry code will be selected and value displayed. To exit the inquiry panel, press the “setting” key once after the last inquiry code (Er) is reached. Details are shown as follows:

Single system heat pump	Dual system heat pump	
	System A	System B
A1—coil pipe temp.	A1—coil pipe temp.1	b1—coil pipe temp.2
A2— compressor suction temp.	A2—compressor suction temp. 1	b2—compressor suction temp. 2
A3—compressor discharging temp.	A3—compressor discharging temp. 1	b3—compressor discharging temp. 2
A4—ambient temp.	A4—ambient temp.	b4—ambient temp.
A5—water outlet temp.	A5—water outlet temp. 1	b5—water outlet temp.2
A6—Return water temp.	A6—water tank water temp.	b6—water tank water temp.
A7—00	A7—00	b7—00
A8— compressor current	A8—compressor current 1	b8—compressor current 2
A9—N/A	A9— N/A	b9— N/A
Er—error code	Er—error code	

3. Parameter setting:

NOTE: THESE SETTINGS ARE PRE-SET ACCORDING TO THE MANUFACTURER’S SPECIFICATION FOR SAFE HEAT PUMP OPERATIONS. DO NOT CHANGE THESE SETTINGS AS IT WILL INFLUENCE THE SAFE OPERATION OF THE HEAT PUMP.

Press the “setting” key for more than 3 seconds, until an audible tone is heard and enter into the setting panel with “setting” symbol on display.



By pressing the “setting” key sequentially, the desired setting code will be selected. The value of each setting can be adjusted by pressing “▲” and “▼” keys (Setting values see below). To exit the setting panel, press the “setting” key once after the last setting code (P6) is reached.

Details are shown as follows:

L1- Setting is used to compensate/calibrate for the difference between displayed water temperature (A6) and the actual measured water tank water temperature (use a good quality thermometer). (0~15°C (32°F~59°F), default: 2°C).

L2- Minimum outlet water temperature deviation. This value setting is set to indicate to the compressor when to re-start until desired temperature is reached. (3~18°C (37.4~64.4°F) default: 4°C. For example, set water tank water temp. = 25°C (77°F), L2 = 5°C (41°F), the compressor will stop at 25°C (77°F) and

re-start at 20°C (68°F)

L4- Desired water tank water temperature limit (30~99°C (86~210.2°F) default: 60°C.

L5- allowed electric heating ambient temperature (0~35°C (32~95°F), default: 7°C (44.6°F), where 0°C (32°F) means no electric heating).

L9-NO

H1-defrosting period (20~99 minutes default: 45minutes)

H2- defrosting start temperature (0~-15°C (32~59°F) default: -1°C (30.2°F))

H3-defrosting time (5~20minutes default: 8 minutes)

H4-defrosting exiting temperature (1~40°C (33.8~104°F), default: 15°C

P1-NO

P2- NO

P3- NO

P4- NO

P5-NO

P6-NO

4. Clock setting

Press the “timer” key for more than 8 seconds until an audible tone is heard and the “timer” symbol disappears. The hour value is flashing and can be adjusted by pressing “▲” and “▼” keys. Press the “timer” key for minute adjustment and repeat as previous. Press the “timer” key to exit. (please kindly note that the clock setting can be used only when timer setting function is closed)



5. Timer setting:

The heat pump consists of two separate timing functions. Timer 01 and 02 are used to set the ON/OFF times of the heat pump within 24 hour period. Timer 03 and 04 are used to set the ON/OFF times of an external water pump within 24 hour period.

Heat pump ON/OFF timers:

01—ON/OFF timing

02-- ON/OFF timing

External water pump ON/OFF timers:

03—ON/OFF timing

04—ON/OFF timing

Press the “timer” key and enter timer 01 ON time. Set the ON time as in **Clock Setting** section. Press “timer” key again to set timer 01 OFF time. Set the OFF time as in **Clock Setting** section. Repeat sequence until all timer settings are completed.

If, however, a timer is not used, set ON and OFF times to 00:00. Timer setting can be randomly selected. For example, Timer 01 ON, Timer 02 OFF, Timer 03 OFF and Timer 04 OFF.



After completing all timer settings, the controller will display the following:



To cancel the timer feature, press the “timer” key for more than 3 seconds until an audible tone is heard, then release key, timer is now cancelled.

6. Installer Password Control:

This feature enables the installer/agent to have control and use of the normal operation of the heat pump on a monthly basis by monthly password control. For example: If there is an agreement which involves monthly installment, the installer/agent can utilize this feature by applying password control.

Press the “setting” key for more than 3 seconds until an audible tone is heard and release key, enter into setting panel with “setting” symbol and “L settings on display. Press the “setting” key for more than 8 seconds until an audible tone is heard and release key, enter into Password Control with “C on display.

Set-up installer/agent Password

The installer/agent Password consists of 4 groups of double digit numbers (C1 to C4 with range from 00 to 99). Choose your Password carefully to avoid any unauthorized access. For example: C1 = 79, C2 = 04, C3 = 33 and C4 = 07. The Password is 79043307.


Now enter C5. C5 (range from 01 to 09, 00 disables installer/agent Password) indicates the period in number of month(s), 30 days/month. For example: C5 = 08, the unit will be disabled after 8 months (240 days). To enable the unit, Password is needed.

How to enable the unit

Press the “setting” key for more than 3 seconds until an audible tone is heard and release key, enter into setting panel with “setting” symbol and “L settings on display. Then press the “setting” key for more than 8 seconds until an audible tone is heard and release key, enter into Password Control with “C on display. Input Password to enable the heat pump and reset C5 (range from “01” to “15”, “00” disables installer/agent Password) to desired period. If an incorrect password is provided the heat pump the Error Code 11E will be displayed.

Forgotten/Reset Password

This function enables the installer/agent to enable the heat pump unit in the event of a forgotten password. All preset settings will be reverted back to the original factory default settings once the heat pump is enabled.

Make sure that the lock symbol “” is on display, press the “setting” key until an audible tone is heard and the display back light is lit, release key. The clock will now display, “00:” and the heat pump unit is enabled.


REMEMBER: All preset settings is reverted back to the original factory default settings. The password function will be disabled (C1=01, C2=01, C3=01, C4=01, C5=00). Please ensure that the heat pump unit is set up correctly. (Refer to controller set-up)

7. Manual/Forced Defrosting:

Although this heat pump features an automatic defrosting function, a manual defrosting function enables the user to manually defrost the heat pump when unusual frosting appears.


Make sure key-pad is unlocked. Ensure that heat pump unit is in running mode, displaying the heat symbol.






Press the “▼”key for more than 8 seconds until an audible tone is heard, and release key. The heat pump will be in defrosting mode and the “defrost” symbol will be on display--  .

8. Heating mode:

This function will alternate the heat pump from “Heating” mode to “Chilling” mode (**Not Applicable**).

Heating mode--:  In heating mode, the heat pump will function as a water heater, ensuring that the water in tank is kept to a set water temperature.

Chilling mode--:  In chilling mode, the heat pump will function as a water chiller, ensuring that the water in tank is kept to a set water temperature. In chilling mode, the temperature can be adjusted from 7 to 30°C (44.6°F to 86°F). Make sure key-pad is unlocked. The heat pump unit must display either the Heating. –**Not Applicable**.


symbol  or **Chilling symbol**  now press the “▲” key, until an audible tone is heard, and release key. The heat pump will be in either heating mode or chilling mode, and the corresponding symbol will be on display. – **Not Applicable**.


General Operating Guide

Initial Start-up Precautions

First boot-strap and Running state checks

1. To ensure the power same as the product nameplate required power
2. Unit electrical connections: Check if power supply wire track and connection is ok; if ground wire is properly connected; Check if water pump and other chain device is properly connected
3. Water pipe and pipe: water pipe and pipe must be washed two and three times, ensure clean and no any pollution.
4. Check water system: If the water is enough and no any air, ensure no leakage
5. First boot-strap or starting up again after long time stop, ensure power on ahead and heating at least 12 hours for crankcase(local loop temperature is zero). Water pump start up first, last a while, fan start up, compressor start up, unit regular work.
6. Running checks (according to the following data to check if the unit running is normal)
After unit normal running, check the following item:
 - a. Input and output water temperature
 - b. cycle water flow of the side
 - c. running electric current of compressor and fan
 - d. High and low pressure value when heating running.

 **CAUTION** — Refrain from using this heat pump if any electrical components have been in contact with water. Immediately call a qualified service technician to inspect the heat pump.

 **CAUTION** — Keep all objects clear above the heat pump. Blocking air flow could damage the unit and may void the warranty.

Users' Guide

1. Rights and Responsibility

1.1 To ensure you have the service in guarantee period, only professional server and technology staff can install and repair the unit. If you infract this request and cause any loss and damage, our company will not be claimed any responsibility.

1.2 After receiving the unit, check if have damage on shipment and all parts are complete; any damage and lack of parts please notice the dealer in written.

2. User Guide

2.1 All safety protection device are set in unit before leaving factory, don't adjust by yourself.

2.2 Unit have enough refrigerant and lubricating oil, don't fill or replace them; if need fill owing to leak, please refer to the quantity on nameplate (if refill refrigerant, need re-vacuum).

- 2.3 External water pump must connect with the message of unit, or else easy show various water lack alarm.
- 2.4 Regular clean water system according to maintenance request.
- 2.5 Pay attention to antifreeze when the environment temperature is less than zero in winter.
- 2.6 Safety Precautions
 - a User can't self-install the unit, ensure agent or specialized install company to do, or else maybe cause safety accident and affect the use effect.
 - b When install or use the unit, please check if the power is corresponding with unit power.
 - c The main power switch of unit should install leakage protector; the power cord must meet unit power request and national standard and local Fire & Safety Regulations.
 - d Unit must have ground wire; don't use the unit if no ground wire; forbid connect the ground wire to null line or water pump.
 - e The main power switch of unit should set more higher 1.4 meter (child don't touch it), to prevent child play it and cause danger.
 - f More than 52°C hot water can cause damage, hot and cold water must be mixed then use it.
 - g when unit is soaking, please contact the factory or maintain department, you can use it again after maintain.
 - h Forbid insert any tools into fan fence of unit, fan is dangerous. (child special care)
 - i Don't use the unit if turn off the fan fence.
 - j To avoid electric shock or cause fire, don't store and use fixture, oil paint and petrol etc. combustible gas or liquid around the unit; don't throw the water or other liquid on the unit and don't touch the unit by wet hand.
 - k Don't adjust the switch, valve, controller and internal data except company server or authorized staff.
 - L If safety protection device often start up, please contact factory or local dealer

Product Protection

1. **Compressor Time Delay Protection:** To ensure the compressor is protected, a time delay of 3 minutes is needed to restart the compressor.
2. **Water Flow Switch Protection (error code: 03):** To ensure that the heat pump will not operate during no water flow conditions and the error code will be displayed. For example, the water pump is not running or burst water pipes.
3. **Compressor High Discharge Temperature Protection (error code :12):** If a high compressor discharge temperature ($\geq 115^{\circ}\text{C}$ (239°F)) is detected for 30 seconds, the heating function will be disabled and the error code will be displayed. The heat pump will resume operating automatically after 3 minutes.
4. **Compressor High Pressure Protection (error code: 05/07):** If a high pressure is detected on the compressor, the heating function will be suspended, the error code will be displayed and the alarm will sound. The heat pump unit will resume operation 3 minutes after the high pressure switch was reset. If the same error code appears for 3 consecutive times within an hour, the heating function will be permanently disabled, the error code will be displayed and the alarm will sound. Please consult an authorized service technician.
5. **Compressor Low Pressure Protection (error code: 06/08):** If a low pressure is detected on the compressor, the heating function will be suspended, the error code will be displayed and the alarm will sound. The heat pump unit will resume operation 3 minutes after the low pressure switch was reset. If the same error code appears for 3 consecutive times within an hour, the heating function will be permanently disabled, the error code will be displayed and the alarm will sound. Please consult an authorized service technician.

NOTE: Low pressure will not be detected under 2 circumstances, during the defrosting period and/or during the first 5 minutes after the compressor has started.

6. **Sensor (Any) Faults (error codes: 15, 16, 17, 18, 19, 21, 22, 27, 28, 29, 30):** When any sensor

appears to be faulty, the heating function will be suspended and the corresponding error code will be displayed. The heat pump will resume operation when the fault has been corrected.

7. **Three Phase Protection (error code: 01, 02), (Only applies to 3 phase voltage heat pumps):**
For this function to operate, ensure that the pin selectable toggle switches are set to the correct positions (refer to **Controller PC Board Settings in Section 2**). When the heat pump unit is connected with power supply, this protection will function. In the event of phase rotation fault or missing phase, the heating function will be suspended and the error code will be displayed. The heat pump will resume operation when the fault has been corrected.
8. **Frost (Winterizing) Protection:**
 - (1) In standby mode, when the ambient temperature $\leq 5\text{ }^{\circ}\text{C}$, if the compressor stops more than 10 minutes, the circulating pump starts to run 30 seconds. (Circulating pump runs 30 seconds every 10 minutes);
 - (2) In off mode, when the ambient temperature $\leq 5\text{ }^{\circ}\text{C}$, the water temperature $> 2\text{ }^{\circ}\text{C}$, the circulating pump runs 30 seconds every 10 minutes, when the water temperature $\leq 2\text{ }^{\circ}\text{C}$, the starting system, until the water temperature $\geq 12\text{ }^{\circ}\text{C}$ system stops.
9. **Water Pressure Switch Protection (error code: 31):** When the chilled water feeding magnetic valve is open and the controller detects that the water switch is in the off position for a period of six seconds, the heating functions will be suspended and the error code will be displayed. The heat pump will automatically resume operation with 3 minutes delay time, after the water pressure switch was reset.
10. **Compressor Over Current Protection (35/36):** This function will only activate 6 seconds after the compressor has started. When the current is equal to or higher than the set current, L8 (refer to **Parameter Setting in Section 3**) for a consecutive period of 6 seconds, the heating function will be suspended and the error code (35) will be displayed. The heat pump will resume operation when the fault has been corrected.
11. **Controller communication Faults (09):** There is some problem between control panel and main PCB connection or control panel and PCB problem.
12. **Outlet water too cold Faults (32):** when the outlet water temp $\leq 4\text{ }^{\circ}\text{C}$, the controller display shows 32 error code and the machine will stop. when the outlet water temp $> 4\text{ }^{\circ}\text{C}$, it recovers automatically.

Section 4

General maintenance

Controller Error Codes

The following Common Error Codes for the heat pump units (single and dual systems) will be displayed on the controller panel:

Common Error Code

Single system heat pump

CODE	NAME	CODE	NAME
01	Phase Failure	11	password protection
02	Phase stagger	12	Compressor high discharge temperature
03	Water flow switch	15	Faulty inlet water tank water temperature sensor
05	Compressor high pressure and/or faulty switch	16	Faulty Evaporator sensor
06	Compressor low pressure and/or faulty switch	18	Abnormal compressor discharge temperature and/or Faulty compressor discharge temperature sensor

09	Controller communication	21	Ambient temperature too low and/or Faulty ambient temperature sensor
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Dual system heat pump

CODE	NAME	CODE	NAME
01	Phase Failure	18	Abnormal compressor discharge temperature and/or Faulty compressor discharge temperature sensor 1
02	Phase Stagger	19	Abnormal compressor discharge temperature and/or Faulty compressor discharge temperature sensor 2
03	Water flow switch	21	Ambient temperature too low and/or Faulty ambient temperature sensor
05	Compressor high pressure and/or faulty switch 1	22	Faulty return water temperature sensor
06	Compressor low pressure and/or faulty switch 1	25	Faulty water level switch and/or water level low
07	Compressor high pressure and/or switch 2	27	Faulty water outlet temperature sensor 1
08	Compressor low pressure and/or faulty switch 2	28	Faulty water outlet temperature sensor 2
09	Controller communication	29	Faulty compressor suction temperature sensor 1
11	Installer password control	30	Faulty compressor suction temperature sensor 2
12	Compressor high discharge temperature 1	31	Faulty water pressure switch
13	Compressor high discharge temperature 2	32	Outlet water too cold
15	Faulty inlet water tank water temperature sensor	35	Compressor 1 over current
16	Faulty Evaporator sensor 1	36	Compressor 2 over current
17	Faulty Evaporator sensor 2		

Note:

If a fault occurs during normal heat pump operation, a common error code will be displayed on the controller display panel. Follow the instructions in Section 3, Controller Set-Up, “System status display values (2)” to “inquire” (check) the specific error codes for the corresponding heat pump systems.

Inspection and Service

Our Commercial air source heat pumps are designed and built to provide long life performance, when installed and operated properly under normal conditions. Periodic inspections are important to keep your heat pump running safely and efficiently.

Owner Inspection

We recommend that inspections on heat pumps are done frequently, especially after abnormal weather conditions. The following basic guidelines are suggested for your inspection:

1. Make sure the front of the unit is accessible for future service.
2. Keep the top and surrounding areas of the heat pump clear of all debris.

3. Keep all plants and shrubs trimmed and away from the heat pump especially the area above fan.
4. Keep lawn sprinklers from spraying on the heat pump to prevent corrosion and damage.
5. Ensure that the ground wire is always properly connected.
6. The filter must be maintained on a regular basis in order to ensure clean and healthy water protect the heat pump from damaging.
7. Keep inspecting power and electrical components' wiring to make sure their normal operation.
8. All the safety protection devices have been set up; please refrain from changing these settings. any changes are needed, please contact the authorized installer/agent.
9. If the heat pump is installed under roof without a gutter, ensure that all measures are taken prevent excessive water from flooding the unit.
10. Do not use this heat pump if any electrical part has been in contact with water. Contact authorized installer/agent.
11. If the increase of power consumption is not due to colder weather, please consult with the authorized installer/agent.
12. Please turn off the heat pump and disconnect it from the mains power supply, when not in use a prolonged period of time.

Troubleshooting

Use the following troubleshooting information to resolve issues/problems with your heat pump.

WARNING — RISK OF ELECTRICAL SHOCK OR ELECTROCUTION.



Ensure that all high voltage circuits are disconnected before commencing heat pump. Contact with these circuits could result in death or serious injury to users, installers or others, to electrical shock and may also cause damage to property.

DO NOT opens any part of the heat pump as this may result to electrocution.

1. Keep your hands and hair clear of the fan blades to avoid injury.
2. If you are not familiar with your heater:
 - a) **DO NOT** attempt to adjust or service the unit without consulting your authorized installer/agent.
 - b) **PLEASE** read the complete Installation and/or User's Guide before attempting to operate service or the heater.

IMPORTANT: Turn off the mains power supply to the high-temp heat pump prior to attempting service or

Problems and Corrective Action

NO.	Problem Description	Possible Cause	Corrective Action
1	Error code 01 or 02	1. Absent phase or phase rotation or voltage imbalance among the 3 phases occurred to the mains power supply	1. Ensure that incoming phase rotation is correct. If faulty, use a phase rotation meter or check incoming phase coding to assist. 2. Test to check for absent phase, make sure that the circuit breakers are switched ON or check cable

			connection.	
			3. Test for Voltage imbalance, if not balanced, check cabling and connections.	
		2. Controller or PC Board Faulty (Phase rotation Protection damaged)	Replace the PC Board and/or Controller	
2	Error code 03	1. Water Flow Switch Faulty	Replace Water Flow Switch	
		2. Connection cable damaged or disconnected.	Replace the connection cable or reconnect the cable.	
		3. Controller or PC Board Faulty	Replace the PC Board and/or the Controller.	
3	Error code 05/07	1. Measured water tank water Temp < Actual water tank water Temp	a) The water tank water temperature sensor and PC Board are not compatible.	Use the correct sensor.
			b) The water tank temperature sensor is not in the correct position.	Position the sensor correctly.
		2. The Y shaped filter is blocked or jammed resulting into lower water flow.	Clean the filter.	
		3. No water in water tank or is lower than the water inlet (Weir).	Fill the water tank with water.	
		4. The plumbing is blocked or the valves are damaged or closed.	Repair or replace the plumbing and/or valves.	
		5. Too much air in the plumbing result in reduction in flow rate.	1. Remove air lock from the system. 2. Make sure that the circulation pump is working correctly.	
		6. Circulation pump faulty.	a) Circulation pump damaged.	Repair or replace circulation pump.
			b) Circulation pump is too small or the distance from the heat pump is too far.	Install correct circulation pump for specific application or shorten the distance between circulation pump and/or the heat pump and/or other equipment.
		7. Excessive refrigerant charge volume.	Charge the correct volume of refrigerant specified on the label.	
		8. Control cable of the high pressure switch damaged or disconnected.	Replace the damaged cable or reconnect.	
		9. High pressure switch can not be reset.	Replace high pressure switch.	
10. Input of the high pressure sensor is shorted with common, error code 05E is still displaying.	Replace the PC Board.			
11. The refrigeration system is blocked (by ice or dirt).	Find the cause of blockage and replace the filter and/or re-vacuum the system.			
4	Error code 06/08	1. Refrigerant leakage.	Detect leakage and repair. Vacuum, charge refrigerant and start heat pump.	
		2. Control cable of the high pressure switch damaged or disconnected.	Replace the damaged cable or reconnect.	
		3. Low pressure switch cannot be reset.	Replace low pressure switch.	
		4. Input of the high pressure sensor is shorted with common, error code 05E is still displaying.	Replace the PC Board.	
		5. The refrigeration system is blocked (by ice or dirt).	Find the cause of blockage and replace the filter and/or re-vacuum the system.	

5	Error Code 09	1. The controller cable damaged or disconnected.	Replace damaged controller cable or reconnect.
6	Error Code 11	1. Incorrect installer/agent control password.	Input the correct control password.
7	Error Code 12/13	1. Insufficient refrigerant charge volume.	Charge the correct volume of refrigerant specified on the label.
		2. Compressor discharge temperature sensor faulty or damaged.	Replace the compressor discharge temperature sensor.
		3. PC Board damaged.	Replace the PC Board.
8	Error Code 15	1. water tank water temperature sensor damaged.	Replace water tank water temperature sensor.
		2. Water tank water temperature sensor connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean water tank water temperature sensor and wrap it with insulation tape.
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.
9	Error Code 16/17	1. Defrost temperature sensor faulty or damaged.	Replace the defrost temperature sensor.
		2. Defrost temperature sensor connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean defrost temperature sensor and wrap it with insulation tape.
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.
10	Error code 18/19	1. Compressor discharge temperature sensor faulty or damaged.	Replace the compressor discharge temperature sensor.
		2. Compressor discharge temperature sensor connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean compressor discharge temperature sensor and wrap it with insulation tape.
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.
11	Error code 21	1. Ambient temperature sensor faulty or damaged.	Replace the Ambient temperature sensor.
		2. Ambient temperature sensor connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean Ambient temperature sensor and wrap it with insulation tape.
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.
12	Error code 22	1. Return water temperature sensor faulty or damaged.	Replace the Return water temperature sensor.
		2. Return water temperature sensor connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean Return water temperature sensor and wrap it with insulation tape.
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.
13	Error code 25	1. Water Level switch connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean water level cable connection to PC Board.
		2. Water level switch Cable Damaged.	Replace the cable
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.
14	Error code 27/28	1. Outlet water temperature sensor faulty or damaged.	Replace the Outlet water temperature sensor.
		2. Outlet water temperature sensor connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean Outlet water temperature sensor and wrap it with insulation tape.
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.
15	Error code 29/30	1. Compressor suction temperature sensor faulty or damaged.	Replace the Compressor suction temperature

		2. Compressor suction temperature sensor connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean Compressor suction temperature sensor and wrap it with insulation tape.	
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.	
16	Error code 31	1. Water pressure switch connector (plug) disconnected and/or oxidized due to damp or water.	Reconnect or clean water pressure cable connection to PC Board.	
		2. Water pressure switch Cable Damaged.	Replace the cable	
		3. The controller and/or PC Board faulty or damaged.	Replace the controller or PC Board.	
17	Error code 32	1. Outlet water temp sensor takes off from the fixed position.	Check and install it to the fixed position.	
		2. Outlet water temp is too cold and less than 4°C.	Ambient temp and water temp is too low for operation.	
		3. Outlet water temp sensor faulty.	Replace outlet water temp sensor.	
18	Error code 35/36	1. Compressor over current	1. Check if the incoming voltage supply is too low, if so, repair.	
			2. Check if the compressor is overloaded and repair.	
			3. Check whether the thermal relay is damaged, if so, replace.	
19	The heat pump is not heating	1. User's incorrect operation and/or parameter settings.	a) The water tank water temperature setting is set too low and the desired temperature cannot be reached.	Re-set the water tank water temperature to the correct range.
			b) The difference between the required water tank water temperature and the heat pump restart temperature (L2) is too big.	Re-set by reducing the value of L2.
			c) Timer function has been set to a specific ON and OFF time, which does not allow sufficient time for the heat pump to operate.	Re-set the timer.
			d) No electrical power supply to the heat pump (no display on the controller).	1. Check and ensure that circuit breakers are ON. 2. Test voltage on the PC Board L/N/G Connectors. 3. If power is not restored, replace cable.
		2. Problem with controller or PC Board.	a) The temperature displayed is more than 45°C .	Check the water tank water temperature sensor, replace if faulty.
			b) PC Board is damaged due to burnt relays.	Check and find out the cause, find faulty relay(s) and replace.

			c) PC Board microcontroller chip faulty.	Replace the PC Board.
20	Slow increase of water tank water temperature	1. Insufficient refrigerant.	1. Check for leakages, if found, repair and re-charge refrigerant as per volume specification on label. 2. If no leakage was found, re-charge refrigerant as per volume specification on label.	
		2. The heating capacity of the heat pump is insufficient.	Increase the size or number of heat pump units.	
		3. Serious residues/dirt occurred on the heat exchanger.	Clean the heat exchangers.	
		4. The evaporator coil is dirty or jammed and this will affect the heat exchange efficiency.	Clean the evaporator coil.	
		5. Poor design of insulation.	It is recommended to use an insulation cover.	
		6. The length of the pipes is too long and/or improperly insulated.	1. If the length of the pipes cannot be done, ensure well insulated piping.	
			2. Increase the size and number of heat pump units.	
21	The controller displays "00"	1. The controller cable damaged or disconnected.	Reconnect or replace controller cable and wrap it with insulation tape.	
		2. PC board damaged.	Replace PC Board.	
		3. Pool temperature sensor and/or cable disconnected or damaged.	Reconnect or replace pool temperature sensor and wrap it with insulation tape.	
22	No display on the controller	1. Mains power supply is abnormal.	a) The main power supply cables is disconnected or damaged.	Reconnect or replace the mains power supply cable.
			b) The main power supply voltage is lower than 175V.	Check and ensure that the mains power supply cable', length and thickness, is within the specifications, if not replace with thicker cable to ensure less voltage drop.
		2. PC board power cable is disconnected or the fuse is burnt.	Reconnect PC Board cable or replace the fuse.	
		3. PC Board transformer is damaged.	Replace the PC Board transformer.	
		4. The controller cable damaged or disconnected.	Reconnect or replace controller cable and wrap it with insulation tape.	
		5. PC Board damaged.	Replace the PC board.	
23	The fan does not operate	1. Fan motor capacitor damaged (under this circumstance the fan motor will overheat).	Replace fan motor capacitor.	
		2. The motor windings has been burnt.	Repair or replace the fan motor.	
		3. The display is ON but heat pump unit is not in running mode/ON.	Press the power button and turn On the heat pump unit.	
		4. Fan motor relay damaged.	Check and replace if damaged.	
		5. No fan motor output from PC Board.	Replace PC board.	
		6. Fan motor cable disconnected or damaged.	Reconnect or replace fan motor cable.	
24	The compressor does not	1. Compressor damaged (under this circumstance the compressor motor will overheat).	Replace compressor capacitor.	

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document is subject to change without prior notice.

	operate while the fan is working	2. Compressor connecting cable is burnt.	Replace compressor connecting cable.		
		3. The compressor windings have been burnt.	Repair or replace the compressor.		
		4. The compressor is jammed or blocked.	Repair or replace the compressor.		
		5. AC contactor does not work.	a) The AC contactor winding is damaged or the contactor is jammed and cannot close.	Replace the AC contactor.	
			b) The main power supply voltage is lower than 175V.	Check and ensure that the mains power supply cable', length and thickness, is within the specifications, if not replace with thicker cable to ensure less voltage drop.	
			c) No compressor relay output from the PC Board.	Check and/or replace compressor relay or PC Board.	
		6. Thermal relay damaged.	Replace the thermal relay.		
25	Frost or ice	1. Fan is not working.	Refer to " problem description #22 ".		
		2. Insufficient refrigerant or the refrigeration system is blocked.	1. Find the cause of blockage and replace the filter and/or re-vacuum the system.		
			2. Check for leakages, if found, repair and re-charge refrigerant as per volume specification on label.		
			3. If no leakage was found, re-charge refrigerant as per volume specification on label.		
		3. The defrost parameter is not set correctly.	Re-set the defrost parameter to the correct value.		
		4. The defrost sensor is not placed correctly.	Replace the defrost sensor to the correct position.		
		5. The 4-way valve cannot be reversed (The winding is damaged or the valve cannot be correctly reversed).	Check the 4-way valve to find the cause replace the winding or the 4-way valve.		
		6. Controller is damaged.	Replace the controller.		
7. The refrigeration system has a problem.	Check and repair refrigeration system.				

LIMITED WARRANTY STATEMENT

LIMITATIONS OF WARRANTIES: ALL IMPLIED WARRANTIES AND/OR CONDITIONS (INCLUDING IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE OR PURPOSE) ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY OR CONDITION LASTS, SO THE ABOVE MAY NOT APPLY TO YOU. THE EXPRESS WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON,

THIS WARRANTY DOES NOT COVER:

1. Labor or other costs incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts, or replacement parts, or new units.
2. Product cleaning required prior to warranty service and repair.
3. Normal maintenance as outlined in the installation and servicing instructions or Owner's Manual, including filter cleaning and/or replacement and lubrication.
4. Failure due to faulty installation or repairs, damage, misapplication, abuse, improper servicing, lack of or in-sufficient maintenance, unauthorized alteration or improper operation.
5. Failure to start due to voltage conditions, blown fuses, open circuit breakers, or damages due to the inadequacy or interruption of electrical service.
6. Failure or damage due to floods, winds, fires, lightning, accidents, corrosive environments (rust or residue etc.) or other conditions beyond the control of the Company.
7. Failure or damage of coils, piping or other parts due to corrosion, when installed within one (1) mile of sea coast or corrosive body.
8. Parts not supplied or designated by Company, or damages resulting from their use.
9. Products installed outside Australia and New Zealand without delegated from STA P/L
10. Electricity or fuel costs, or increases in electricity or fuel costs from any reason whatsoever, including additional or use of supplemental electric heat.
11. Any cost to replace, refill or dispose of refrigerant, including the cost of refrigerant.
12. Shipping damage or damage as a result of transporting the unit.
13. Accessories such as condensate pumps, line sets and so forth are not covered.
14. Any special, indirect or consequential property or commercial damage of any nature whatsoever. Some states do not allow the exclusion of incidental or consequential damages, so the above limitation may not apply to you.
15. Consumable components, such as air filters, are not covered under parts warranty.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.