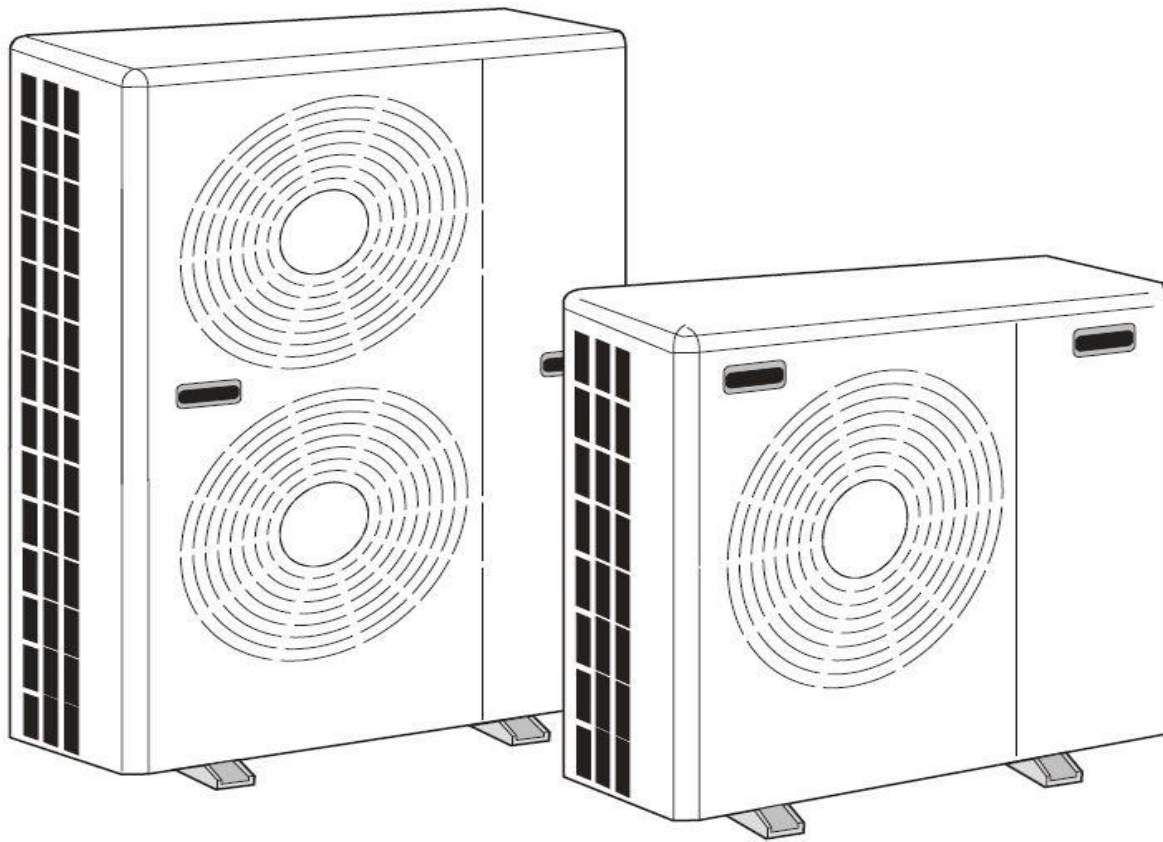




DC INVERTER AIR TO WATER HEAT PUMP

Installation and Operation Manual CX34

Options for Heating, Cooling and Domestic Hot Water



Version 1.5

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Safety Precautions

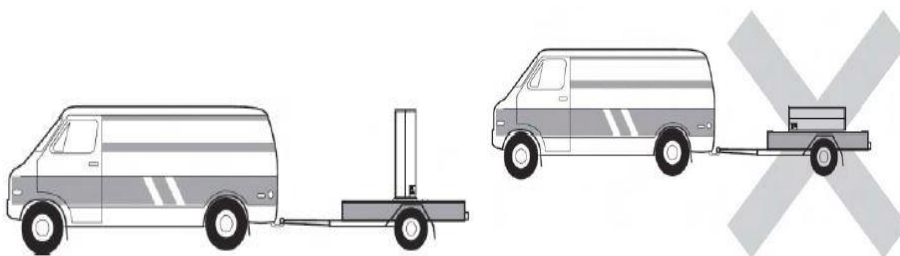
NOTE: It is required to read the Safety precautions in detail before operation. The precautions listed below are very important for safety, please follow all safety precautions.

General

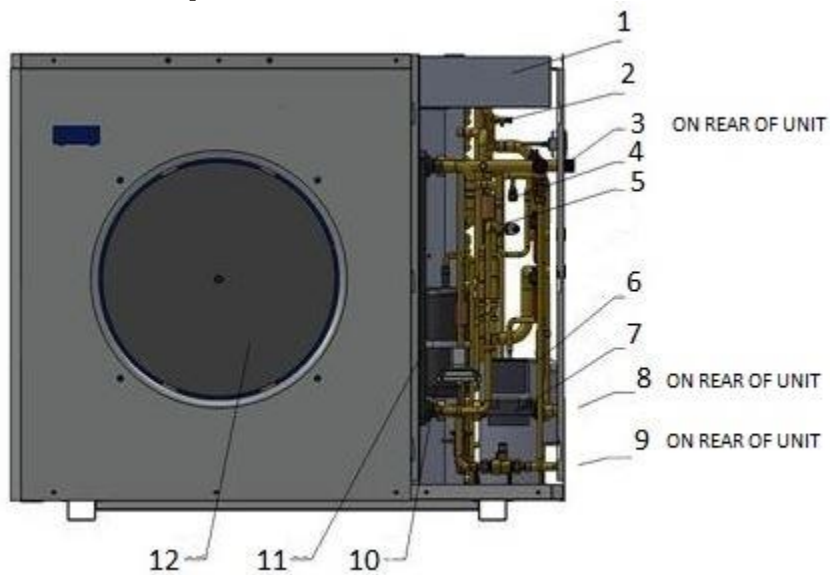
- Make sure that the ground wire in the building is securely connected to earth. Wiring tasks should be carried out by qualified electricians only, in addition, they should check the safety conditions of power utilization, for example, verify that the line capacity is adequate, and the power cable isn't damaged.
- Users must not install, repair or relocate the unit. Improper procedures might lead to accidents e.g. personal injury caused by fire, electrical shock or unit's falling off its base, and water leaking into the machine. Please contact a professional service department if problems arise.
- The unit shall not be installed at a spot with the potential hazard of leaking flammable gas. If gas is leaking near the machine, there might be the risk of explosion.
- Make sure that the foundation of the unit is stable. If the foundation is unstable, the outdoor unit may come loose from its base and cause injury.
- Make sure that the GFCI installed at the service panel is working properly to avoid shock or fires.
- If any abnormality occurs in the unit (such as a burning smell is noticed inside the unit), cut off the power supply immediately, and contact a professional service department.
- Please observe the follow items when cleaning the unit. Before cleaning, shut off the electric supply of the unit first to avoid injuries caused by the fan operation.
- Do not rinse the unit with water because the rinsed unit may cause electric shock.
- Make sure to shut off the electric supply before maintaining the unit.
- Please do not insert fingers or sticks into air outlet or air inlet.

Transporting and storage

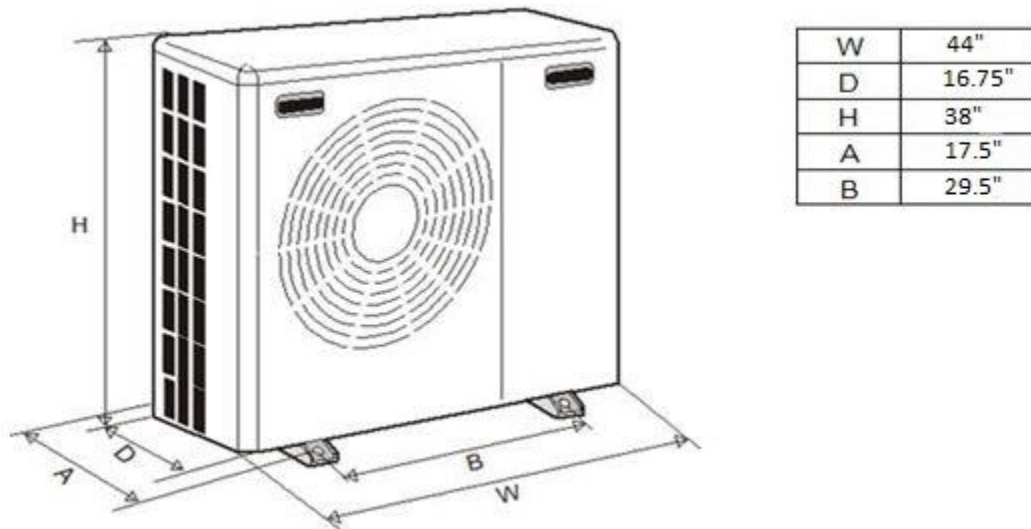
- The machine must be transported and stored vertically.



CX34 Components



Position	Component	Position	Component
1	Electronics Box	7	Water Pump
2	Air Discharge Valve	8	Heat Pump Inlet
3	Heat Pump Outlet	9	Plate H.E. Drain
4	Needle Valve	10	Accumulator
5	4 Way Valve	11	Plate Heat exchanger
6	Compressor	12	Fan

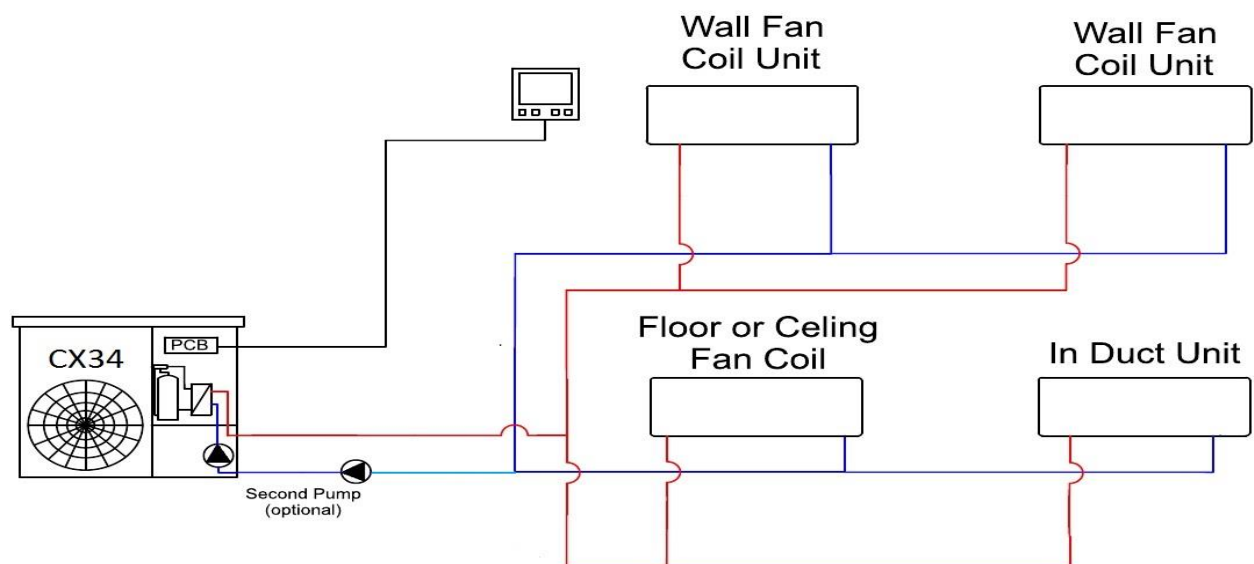


Hydronic Piping and Design Guide

Installation Methods Heating and Cooling (Heating Shown)

Note: Primary Secondary Piping is NOT supported on this chiller.

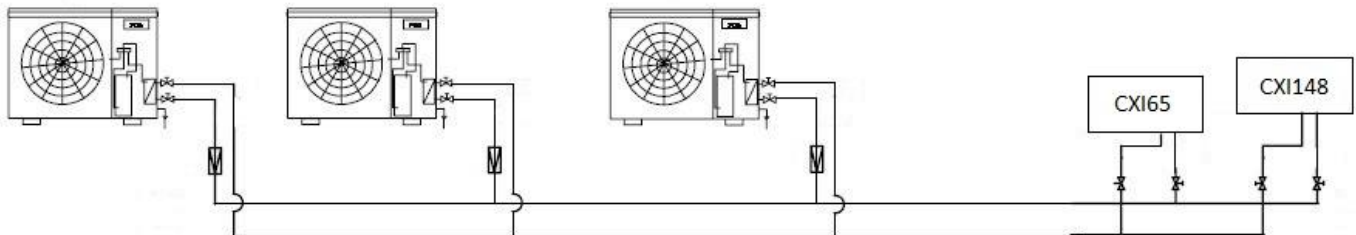
A buffer tank must be used for floor heating.

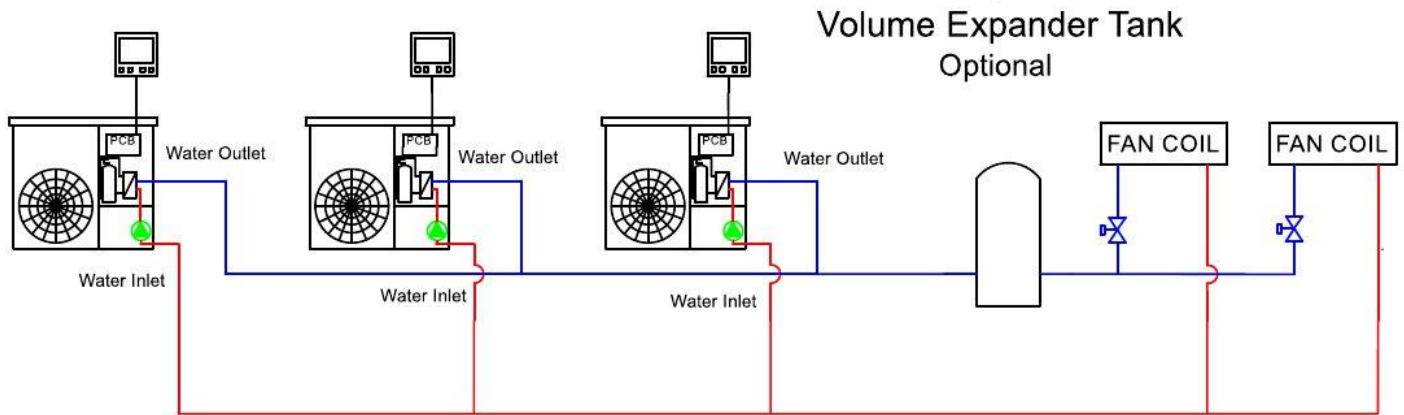


1. Minimum pipe size should be no less than 1", CPVC or Oxygen Barrier PEX, reverse return piping is preferable to eliminate balancing valves or pressure regulators. The installer should calculate the pipe and fitting resistance to determine the head pressure. See the examples on the following pages, maximum water flow for the CX34 is 6 gpm, design flow is 4.8 gpm. If necessary, a second PWM pump may be added to the loop and controlled by the CX34. The second water pump connections can be found in the wiring diagram starting on page 19.
2. The loop example above is designed with wild coils. Water flows through the coil at all times, if there is a call for heating or cooling the FCU controls will turn the fan on. Optionally, a 2 way valve may be installed at the input tee to prevent any flow through the coil and the FCU will control it.
3. An air discharge valve should be installed at the top of the circulation system if possible for easy air discharge. As an alternative an automatic/manual air vent can be used inline before the pumps.
4. Flow meters with restrictor valves, Watts Flow Guard for example, may be used when reverse return piping is not an option.
5. Always install a water filter or wye strainer on the supply pipe to the chiller to prevent blockage of the heat exchanger.

Piping Examples: Stacked Chillers

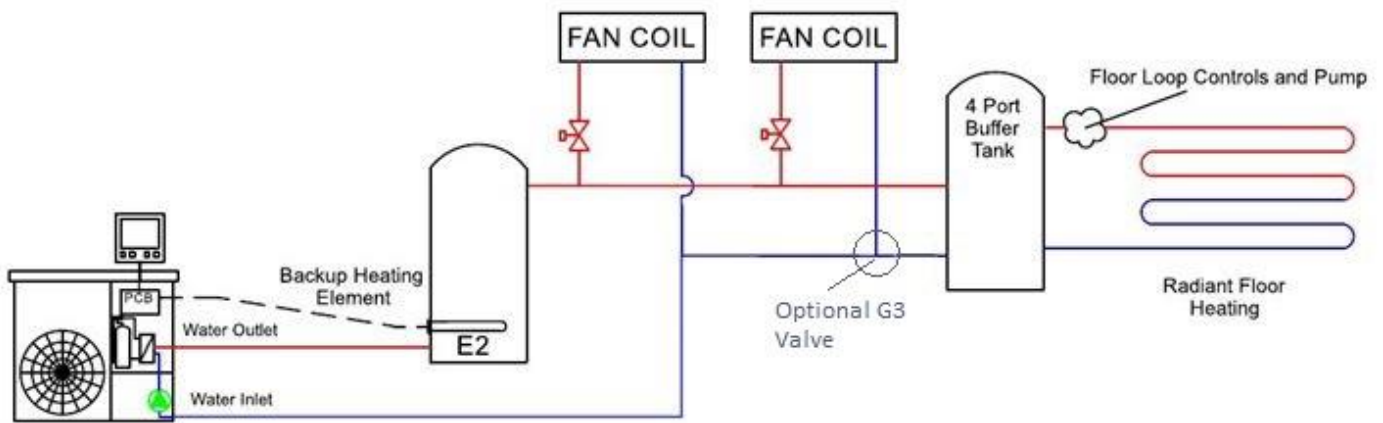
Without Buffer Tank





A volume expander tank should be used when the loop volume is less than 5 gallons to keep the compressor from cycling.

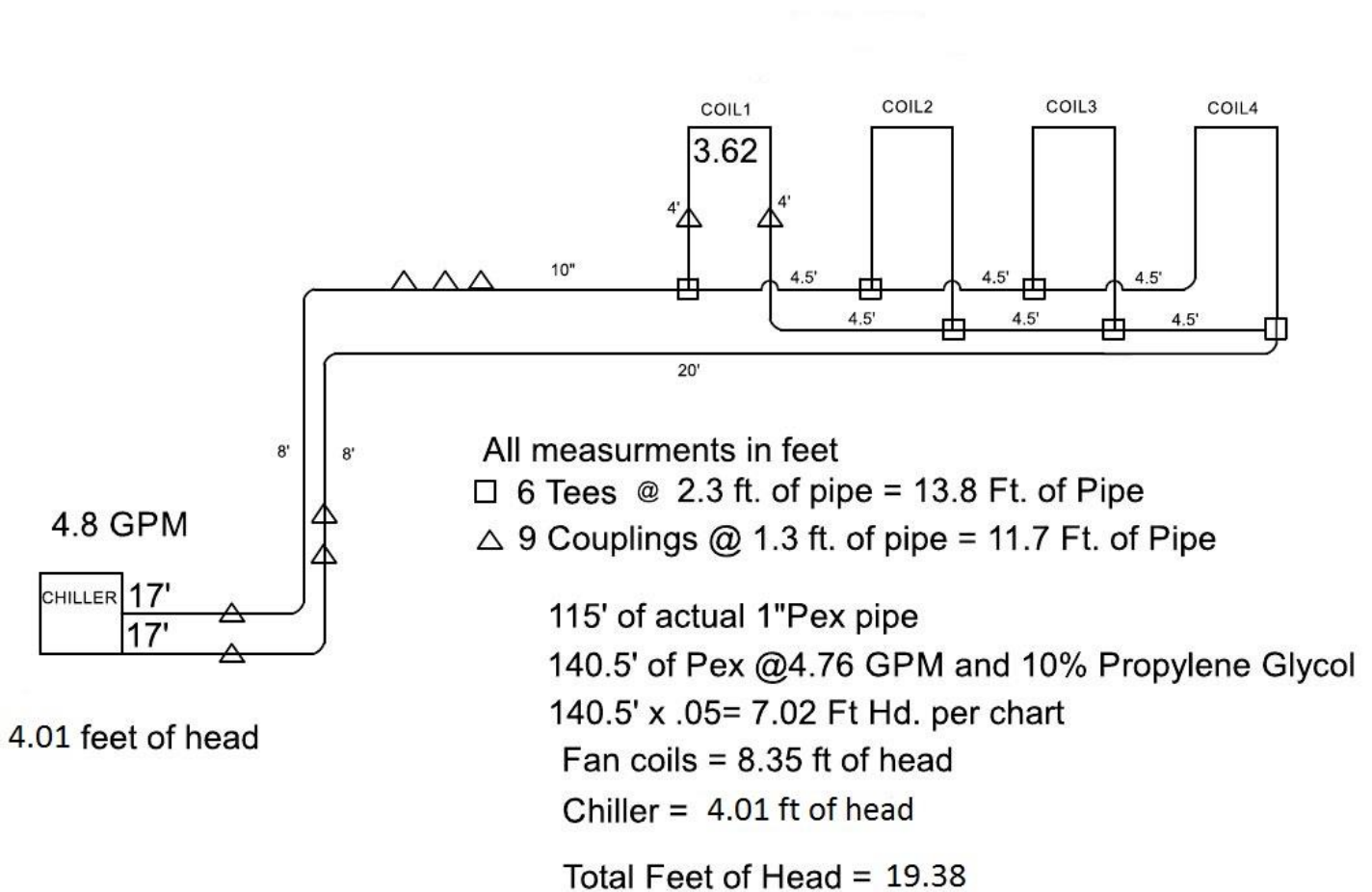
Using a Buffer Tank



Primary / secondary piping is not supported, when connecting to a floor heating loop always use a buffer tank. Buffer tanks are generally used only with floor heating.

The pump in the buffer tank drawing is controlled by the customer's floor loop controls. A 20-50 gallon buffer tank is used generally for best performance. A G3 seasonal valve may be used to isolate the tank in cooling mode.

Head Calculation Example:



To calculate the head pressure for the correct water flow, the pipe length must be measured and all fittings counted. It is advisable to use flexible red oxygen barrier PEX piping to avoid as many elbows as possible. All fittings have an equivalent length of pipe already calculated, available on the next page under PEX Fittings Pressure Drops. Add up the equivalent length of pipe for the fittings, $13.8' + 11.7' = 25.5'$. Then, add this to the actual pipe, $25.5' + 115' = 140.5'$ of 1" pipe. Once you know the total length of pipe, use a (1" PEX 10% Glycol, feet of head per 100 feet of tubing chart), to get the head for 1' of pipe, at 40°F and 4.76 GPM. This comes to (.0500) feet of head per foot. $140.5 \times .0500 = 7.02$ ft. of head. Add up all head calculations, $7.02 + 8.35 + 4.01 = 19.38$ ft. of head. Next we will look at the Wilo Pump curve on page 13. Maximum head at 4.76 GPM is 23.67 ft.

If using the CX30SE (Free Cooling option) the CX30SE's pressure drop is 4.5 PSI when active.

Notes:

The example loop above has a volume of 4.5 gallons. The internal thermal expansion tank is 2 liters or .52 Gallons. The volume of the CX34 is 4.5 liters. An additional thermal expansion tank may be required for larger loops. There are many thermal expansion calculators on the internet, the following is an example.

<http://westank.com/calculator/>

Minimum loop pressure is 14.5 psi, maximum pressure is 43.5 psi, and ideal pressure is 29 psi. The Lowest temperature is 44°F, the highest temperature is 131°F, the Initial pressure is 14.5 psi, and the final pressure is 29 psi.

A microbubble air separator should be installed in the loop preferably in the higher part of the loop to remove any air in the circulation loop.

Always install a water filter or wye strainer on the supply pipe to the chiller to prevent blockage of the heat exchanger.

Nominal size	OD	Wall thickness	ID	Volume gal/100'
3/8"	0.500	0.070	0.350	0.50
1/2"	0.625	0.070	0.475	0.92
5/8"	0.750	0.083	0.574	1.34
3/4"	0.875	0.097	0.677	1.83
1"	1.125	0.125	0.863	3.03



WYE STRAINER

PEX PIPE VOLUME

Watts AS-MB
Microbubble Air Separator

PEX Fittings Pressure Drops

<u>PEX Brass Crimp Fittings</u>				
Friction Loss - Equivalent Feet of PEX Tubing				
Size	Coupling	Elbow	Tee Run	Tee Branch
3/8"	2.9	9.2	2.9	9.4
1/2"	2.0	9.4	2.2	10.4
3/4"	0.6	9.4	1.9	8.9
1"	1.3	10.0	2.3	11.0

Freeze protection

Vol%	Wt%	Freezing Point		Burst Point	
Propylene Glycol	Propylene Glycol	°F	°C	°F	°C
0	0	32	0.0	32	0.0
5	5.2	29	-1.7	27	-2.7
10	10.5	26	-3.3	22	-5.6
15	15.6	23	-5.0	18	-7.5
20	20.8	19	-7.2	11	-11.8
21	21.8	17	-8.3	9	-12.9
22	22.9	17	-8.3	7	-14.2
23	23.9	16	-8.9	4	-15.5
24	24.9	15	-9.4	2	-16.9
25	25.9	14	-10.1	-1	-18.4
26	27.0	13	-10.6	-4	-20.1
27	28.0	12	-11.1	-7	-21.8
28	29.0	10	-12.2	-10	-23.6
29	30.1	9	-12.8	-14	-25.5
30	31.1	8	-13.3	-18	-27.5
31	32.1	7	-13.9	-21	-29.6
32	33.1	5	-15.0	-24	-31.1
33	34.1	4	-15.6	-30	-34.4
34	35.1	2	-16.7	-38	-38.9
35	36.1	1	-17.2	-46	-43.3
36	37.2	-1	-18.3	-53	-47.2
37	38.2	-3	-19.4	-60	-51.1
38	39.2	-4	-20.0	-60	-51.1
39	40.2	-6	-21.1	-60	-51.1
40	41.2	-8	-22.2	-60	-51.1
41	42.2	-10	-23.3	-60	-51.1

Vol%	Wt%	Freezing Point		Burst Point	
Propylene Glycol	Propylene Glycol	°F	°C	°F	°C
42	43.2	-12	-24.4	-60	-51.1
43	44.2	-14	-25.5	-60	-51.1
44	45.2	-16	-26.7	-60	-51.1
45	46.2	-18	-27.8	-60	-51.1
46	47.2	-21	-29.4	-60	-51.1
47	48.2	-23	-30.6	-60	-51.1
48	49.2	-26	-32.2	-60	-51.1
49	50.2	-28	-33.3	-60	-51.1
50	51.2	-31	-35.0	-60	-51.1

NOTE:

When using **CPVC piping** it is highly recommended that you do not exceed a 25% glycol to water ratio. Environmental Stress Cracking, also referred to as ESC, may occur.

Required flow per ton for various glycol % changes with the glycol %.

Cooling is generally OK as you will see but pay attention to heating. Note the “500” formula is adjusted as follows:

Cooling is generally OK as you will see but pay attention to heating. Note using the “500” formula $500 \times \text{GPM} \times \Delta T = \text{BTU}$, is adjusted as follows:

COOLING		HEATING	
0% glycol use 500×1.0	(500) $24,000/500/10=4.8$		
10% glycol use $500 \times .98$	(490) $24,000/490/10=4.89$ GPM		$33,000/500/10=6.6$ GPM
20% glycol use $500 \times .96$	(480) $24,000/480/10=5.00$ GPM		$33,000/490/10=6.73$ GPM
30% glycol use $500 \times .935$	(467) $24,000/467/10=5.13$ GPM		$33,000/480/10=6.87$ GPM
40% glycol use $500 \times .895$	(447) $24,000/447/10=5.36$ GPM		$33,000/467/10=7.06$ GPM
50% glycol use $500 \times .85$	(425) $24,000/425/10=5.64$ GPM		$33,000/447/10=7.38$ GPM
			$33,000/425/10=7.76$ GPM

Example:

Flow needed per ton cooling:

2 tons: 0% glycol 2.4 GPM/ton (4.8 GPM total)

2 tons: 30% glycol 2.57 GPM/ton (5.14 GPM total)

Flow needed per ton heating:

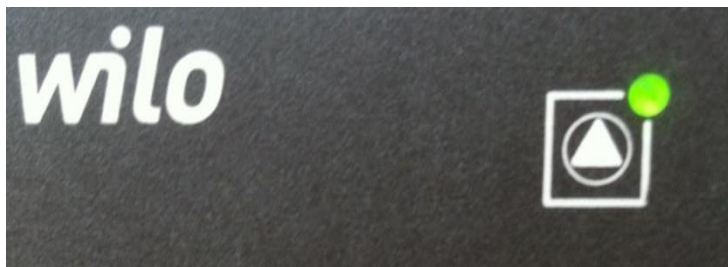
2.75 tons: pure water 2.4 GPM/ton (6.6 GPM total)

2.75 tons: 30% glycol 2.57 GPM/ton (7.06 GPM)

In the above example (and using Wilo head curve) you can see that head can be max 22 ft. for CX34 to deliver full heating capacity with 30% glycol.

Internal CX34 WILO Pump

LED	Meaning	Diagnostic	Cause	Remedy
On-Green	Pump in Operation	Pump is Running	Normal Operation	
Green Flashing	PWM Model	Pump in Standby	Normal Operation	
Blinks Red/Green	Pump is Functional but has stopped	Pump will restart after fault is cleared	Under Voltage < 160 <u>vac</u> Pump Over heating	Check Power supply 195 <u>vac</u> – 253 <u>vac</u>
Blinks Red	Pump is not Functional	Pump Stopped	Pump will not start due to a permanent failure	Replace Pump
LED Off	No Power	No Voltage to Electronics	Pump Has no Power	Check Cable Connections
			Led is Damaged	Check if the Pump is Running
			Electronics are damaged	Replace Pump



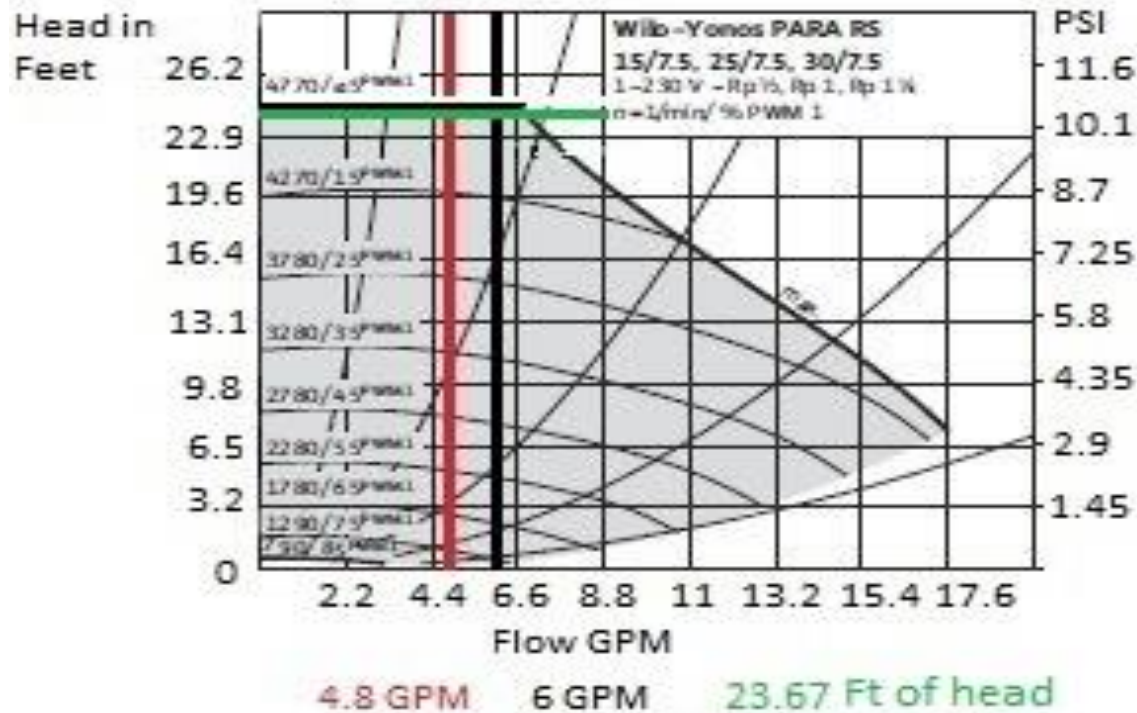
Minimum pump speed can be set at P53, minimum speed should not be lower than 40%.

Pump speed can be monitored at C48.

Actual water flow can be monitored at C13, liters per minute.

Wilo-Yonos PARA RS 15/7.5, 25/7.5, 30/7.5

External control via PWM 1



Pump Specifications

Voltage AC 1-230, 50-60 Hz

Power consumption 4-75 Watts

Speed 800-4770 RPM

Max Head 25 ft

Max Flow 15 GPM

Pipe Insulation

All loop piping must be insulated per local and national mechanical codes.

For design tips and a thickness calculator please visit <http://www.armacell.us/knowledge-center/>

NOTE: The CX34 is shipped with the pump strapped to the fan stand. Please follow the directions below to install the “C4” internal pump.

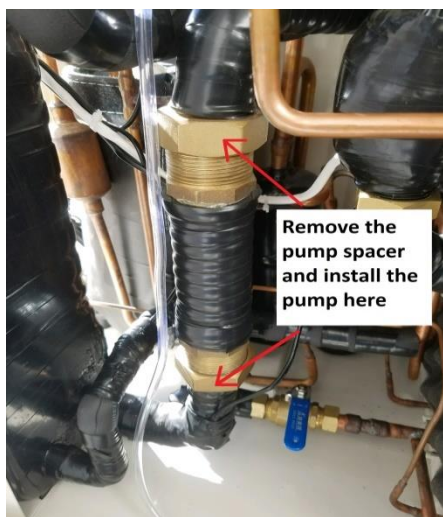
Heat Pump Installation

Installation position

Note: *Installation must be carried out by professional personnel.*

1. The recommended mounting pad should be 1" to 1 ½" above ground level.
2. Proper drainage is required at each outdoor unit to avoid flooding the outdoor unit.
3. To install the unit on a balcony or on top of a building, the installation site must meet the allowable bearing capacity of the building structure without affecting the structural safety.
4. Ensure the unit is well ventilated; the direction of air exhaust should be kept away from the windows of neighboring buildings. Adequate service clearance should be kept around the unit.
5. The unit should not be installed in places accompanied with oil, inflammable gases; corrosive components e.g. sulfur compound, or high-frequency equipment.
6. The unit must be installed upon a reliable machine base or framework. Weight capacity of framework should be 2 times of the outdoor unit's body weight. The unit must have extra precautions taken when it is installed at sites with hurricane/ earthquake hazards.
7. Midair or suspended installation should be avoided as much as possible, falling machines may result in personal injury and property damage.

Internal pump installation (Remove Top, Front, and Right Side Covers)



Removing the shipping spacer

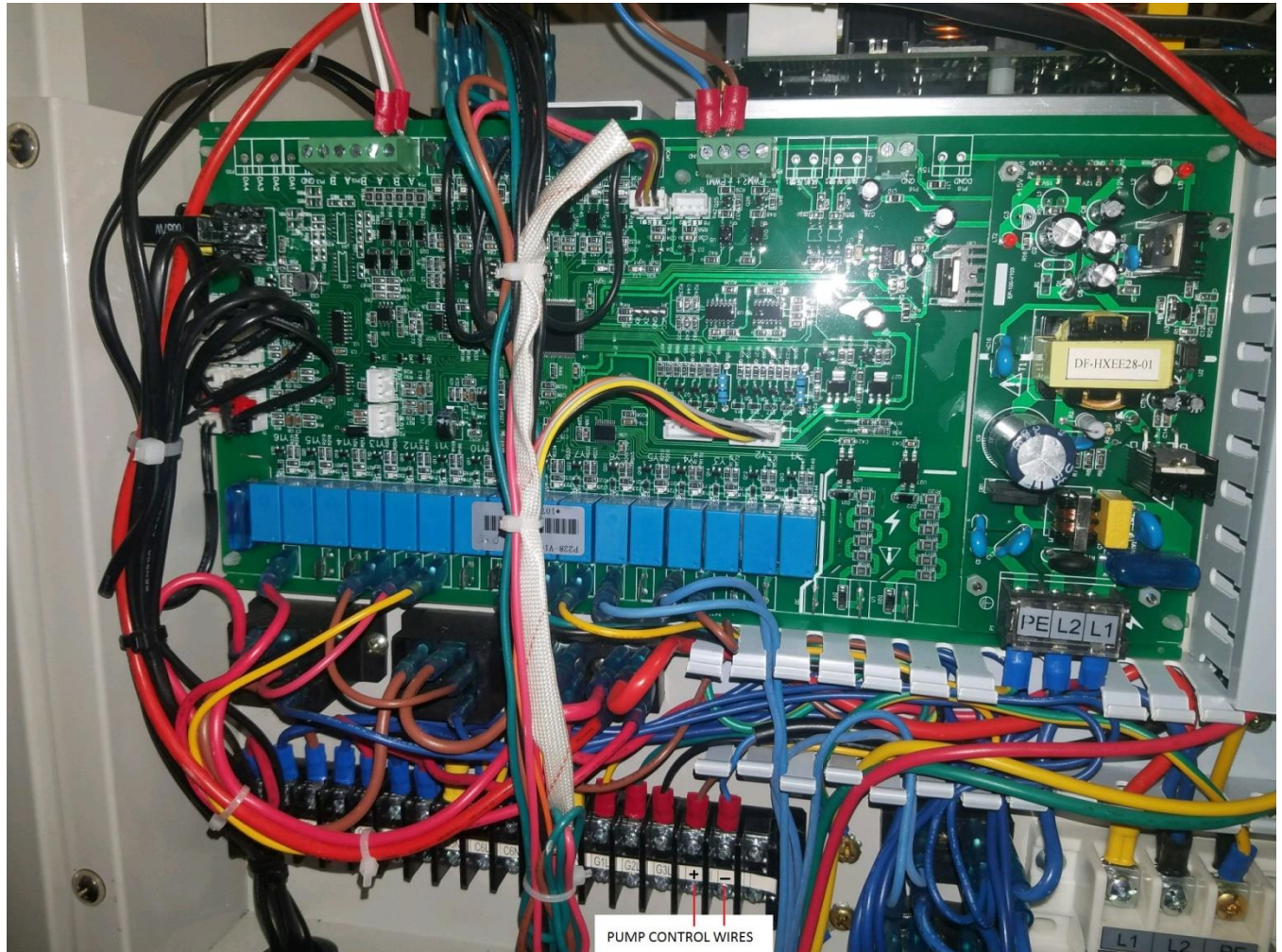


Verify flow direction (UP)



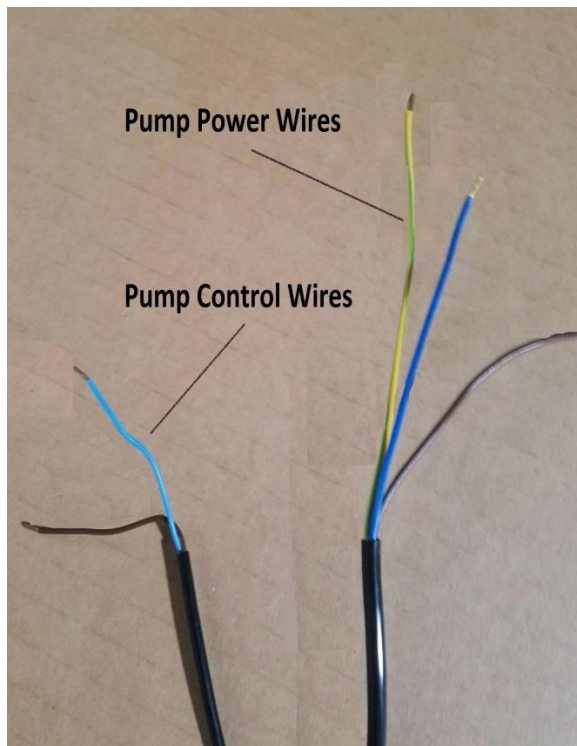
Installed properly

Internal Pump Wiring



Electronics cabinet

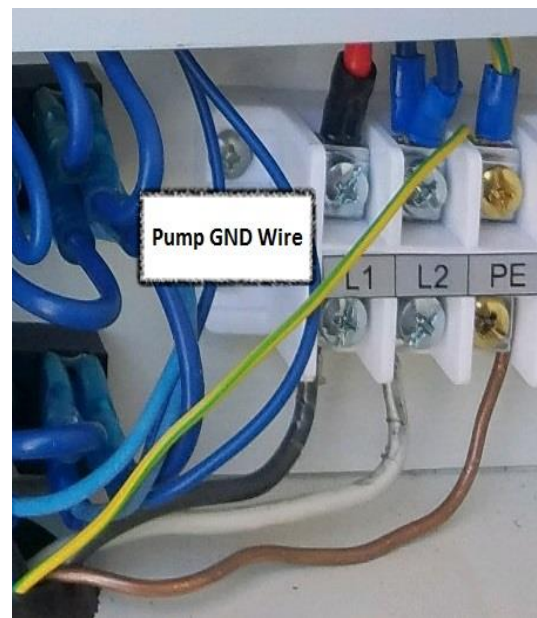
Connect the C4 internal pump control wires to the terminal strip labeled (+ and -).



The blue and brown pump control wires are connected to the (+ & -) on the terminal strip.



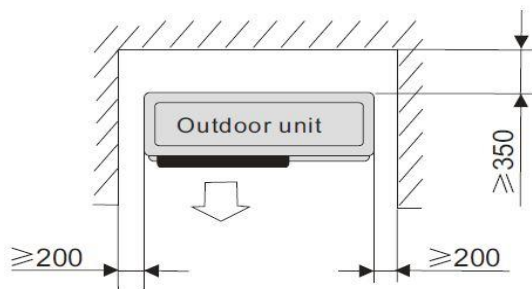
Pump power wires.



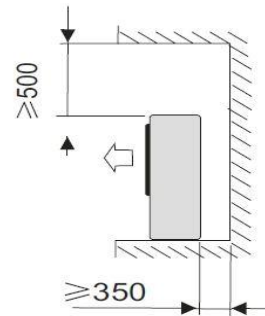
Pump ground wire.

Clearances (unit: mm) 200mm = 8" , 350mm =14 " , 400=16", 500=20",1000=40"

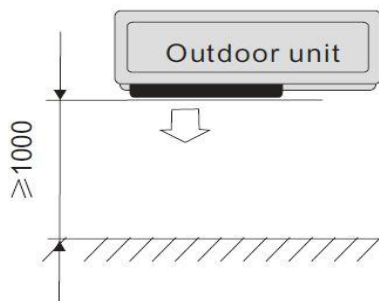
No obstacle in front of the unit



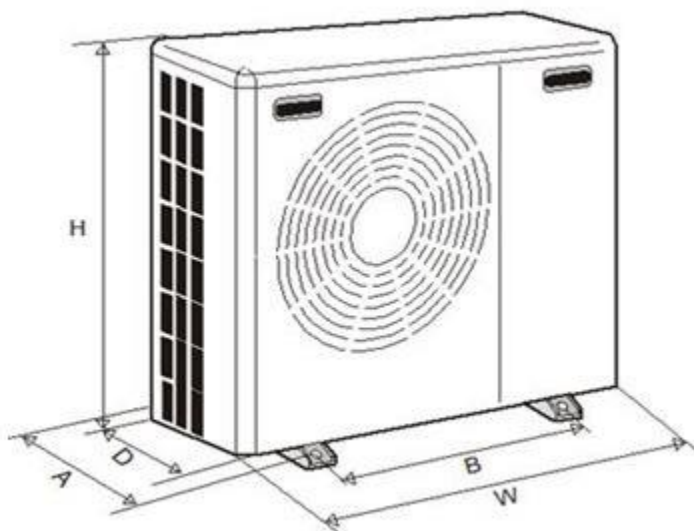
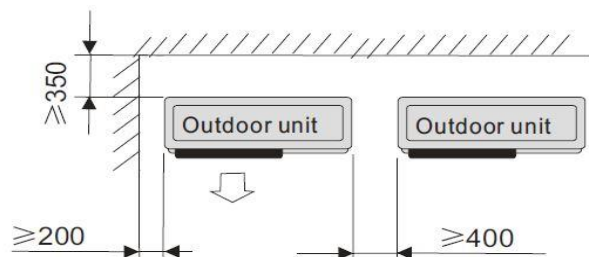
Obstacle above the unit



Obstacle in front of the unit



Several units in a row



W	44"
D	16.75"
H	38"
A	17.5"
B	29.5"

Electric connection

General

Note!

Electrical installation and service must be carried out under the supervision of a qualified electrician. Electrical installation and wiring must be carried out in accordance with the NEC.

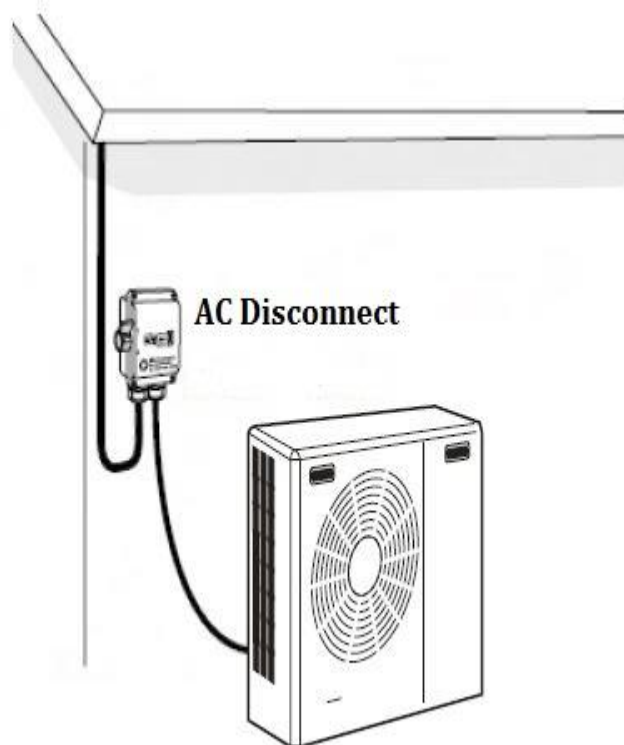
The heat pump must not be connected without the permission of the electricity supplier and must be connected under the supervision of a qualified electrician. Wires, spare parts and materials etc. must satisfy the relevant standards issued by the host country or region.

The heat pump does not include an AC disconnect or switch on the incoming electrical supply. The power supply cable must be connected to a circuit-breaker with at least a 3 mm breaking gap.

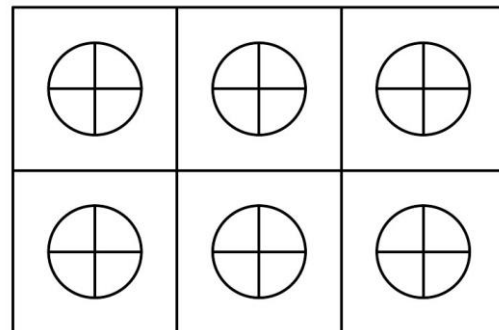
Incoming supply must comply with the technical requirements, with a frame ground wire (neutral is not used), via a distribution box with breakers.

Voltage range is 208-240vac

Maximum current draw is 13 amps, minimum wire size is 12 AWG, minimum breaker size is 20 AMP.

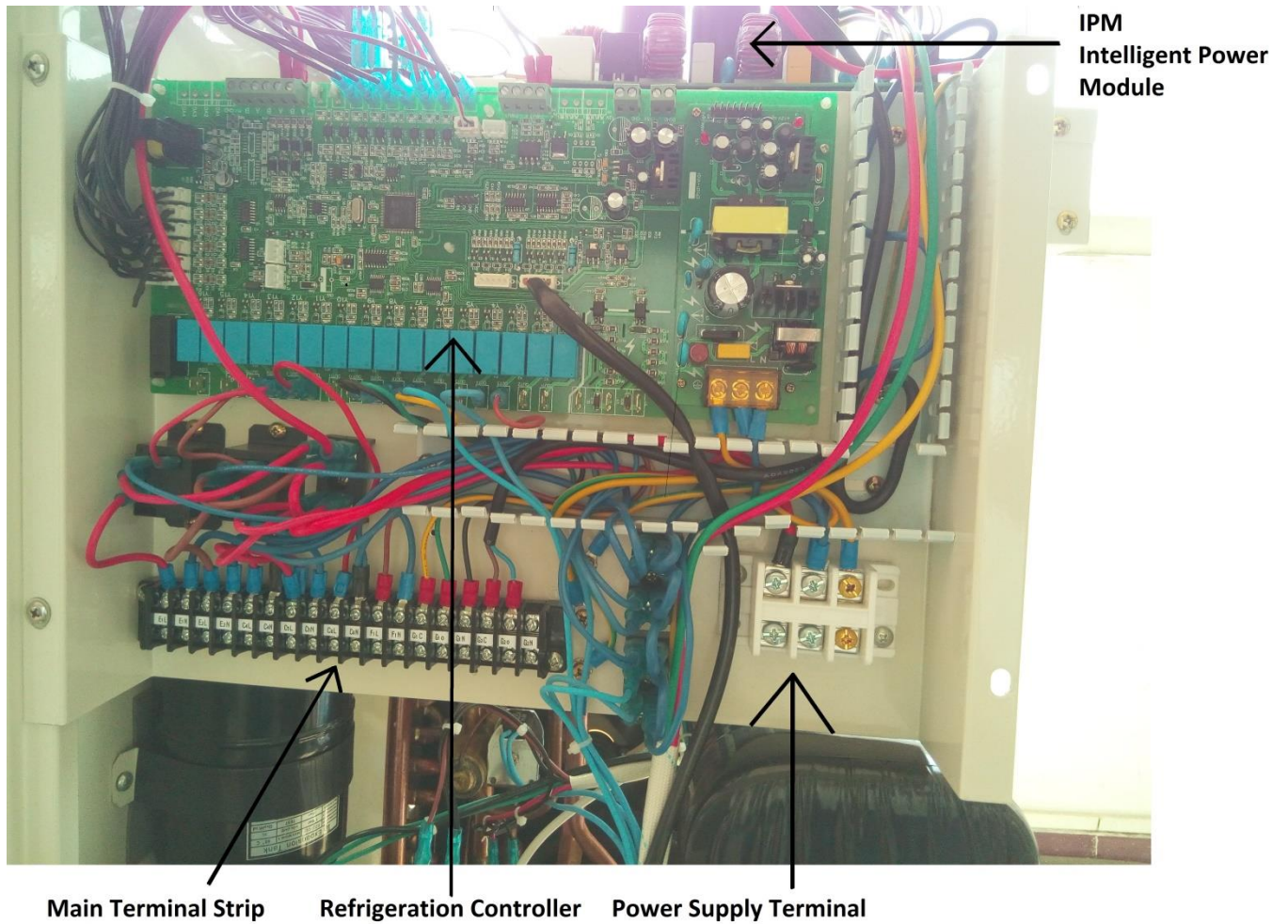


L1 L2 GND

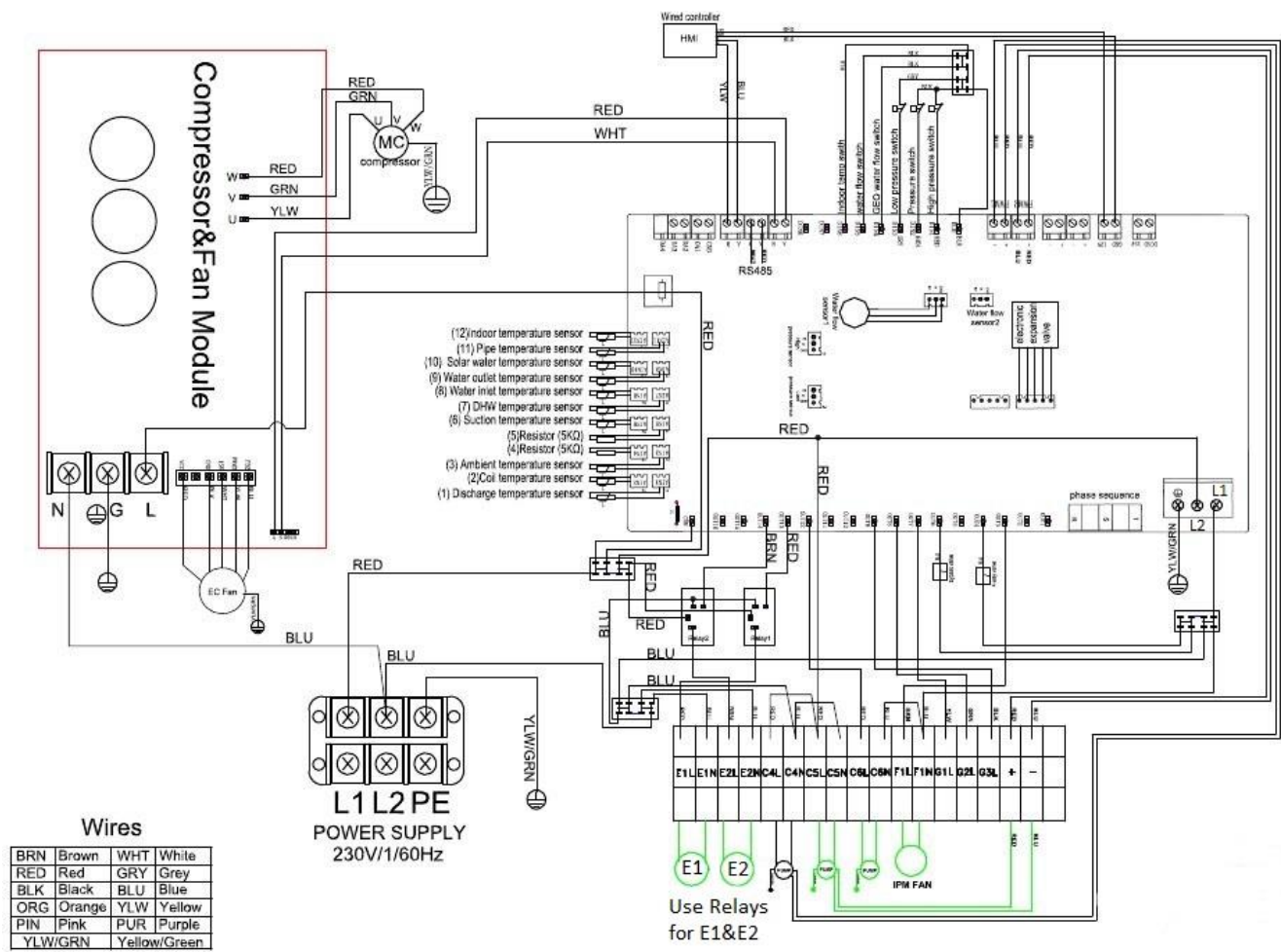


Main terminal block inside electronics box

Electric Connections and Component Locator

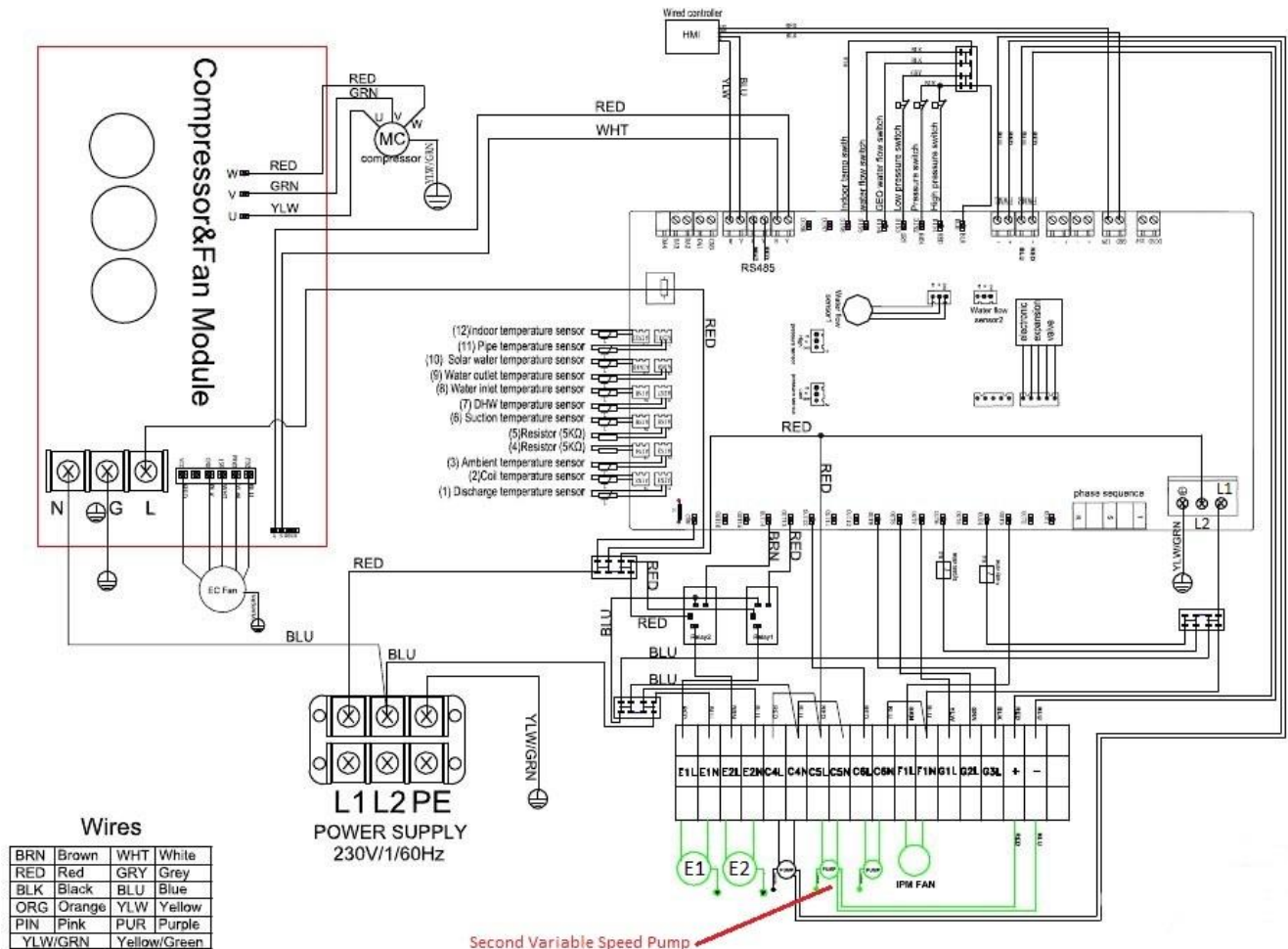


Using Internal PWM Pump



System Layout with internal flow switch and MODBUS

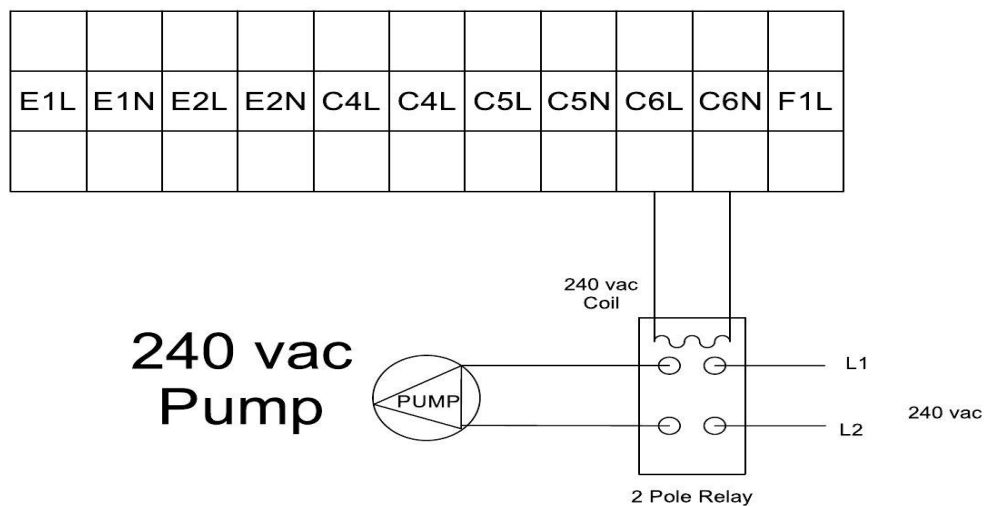
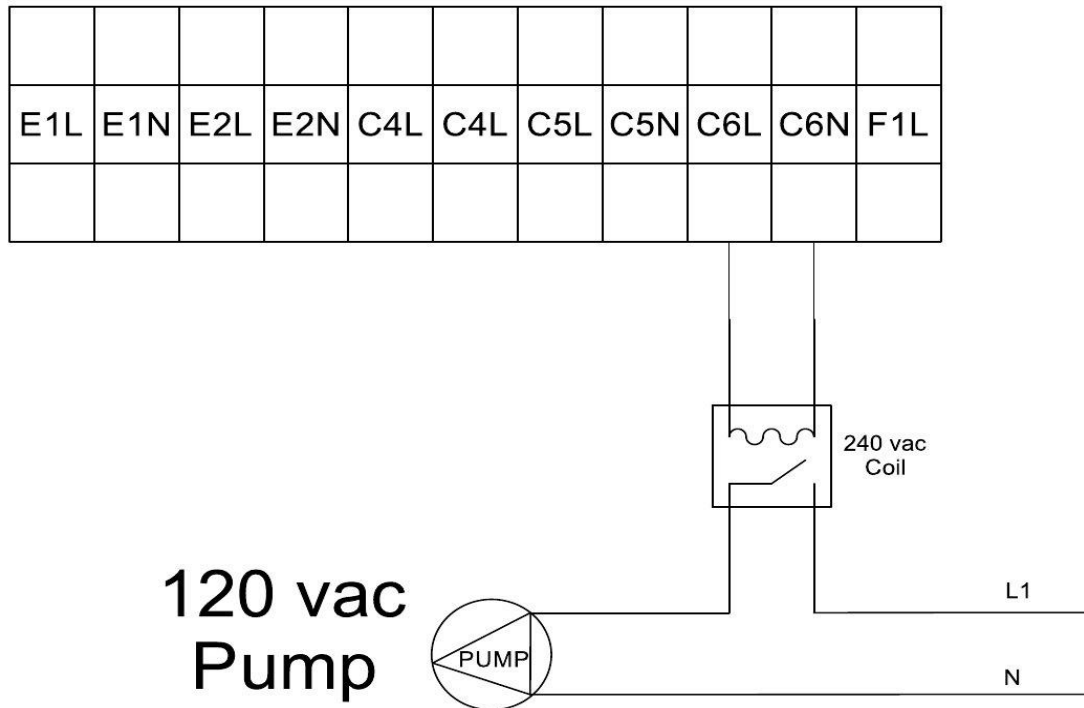
Second PWM Pump Wiring



If the Wilo RS 25/7.5 PWM pump does not have the required pressure at the targeted flow rate, a second Wilo RS 25/7.5 may be added to increase the total pump pressure. This will double the head pressure at the targeted flow rate. Connect to C5L and C5N for 240 vac, + and – for controls.

Contact us for more information on booster pumps.

When using a second NON-PWM water pump



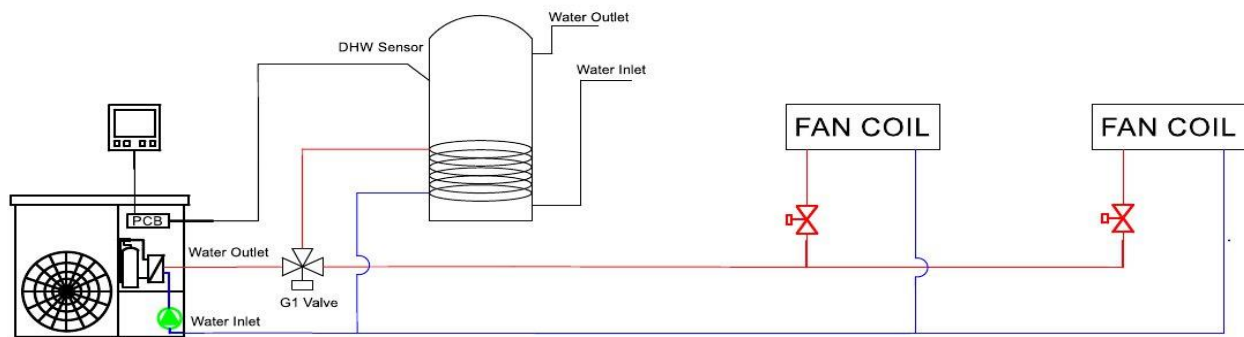
When using a second NON-PWM water pump, use terminals C6L and C6N for relay coil power only. Do not connect a pump directly to C6L and C6N, always use a relay with a 240 vac coil. This pump will only run when the PWM pump is running.

G1 Valve

DHW and AC / Heating

G1: DHW/AC / Heating Valve

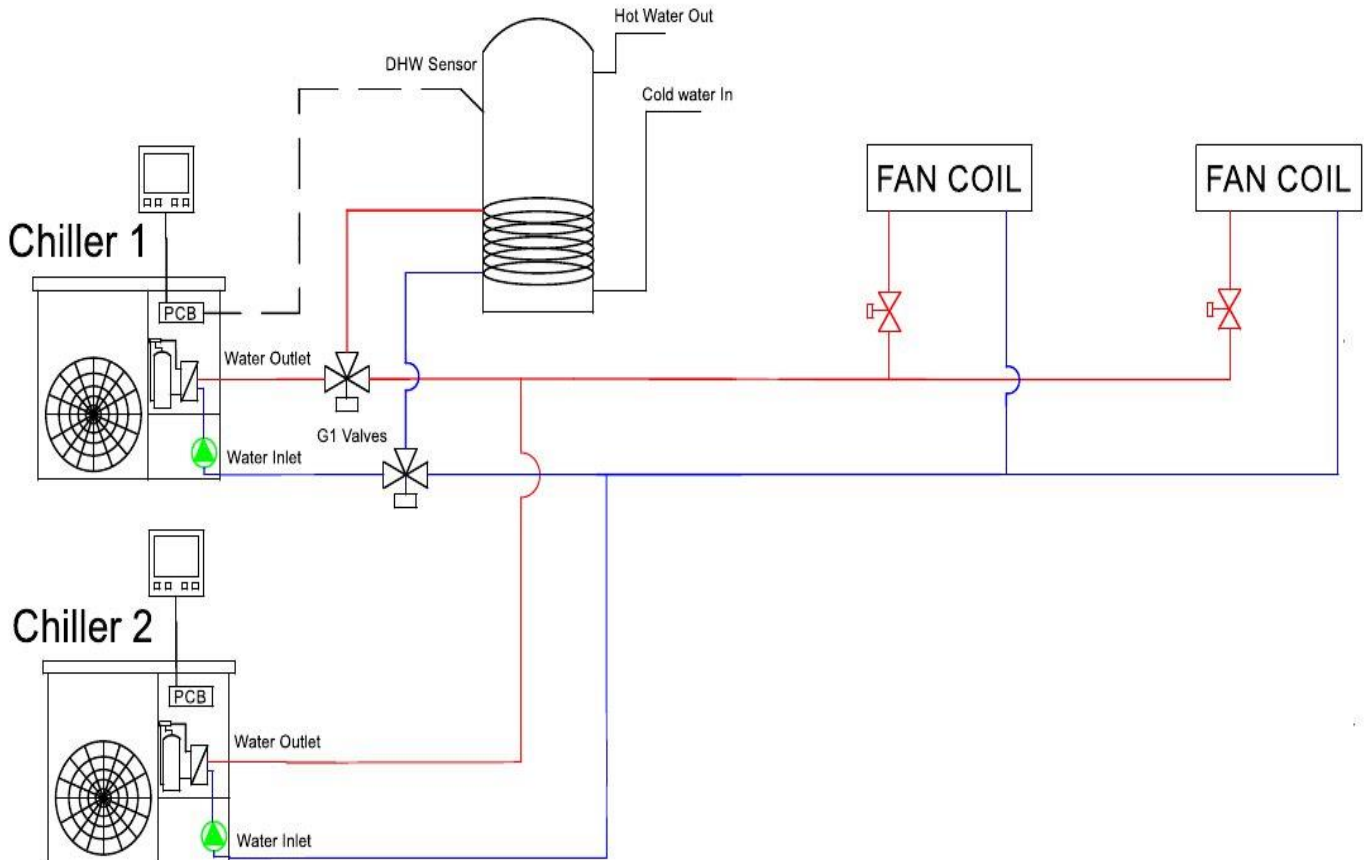
In DHW mode, the G1 valve is powered off. In AC mode, G1 is powered on.
Parameter P08 must be "0" to enable DHW, C19 will show the switch status.



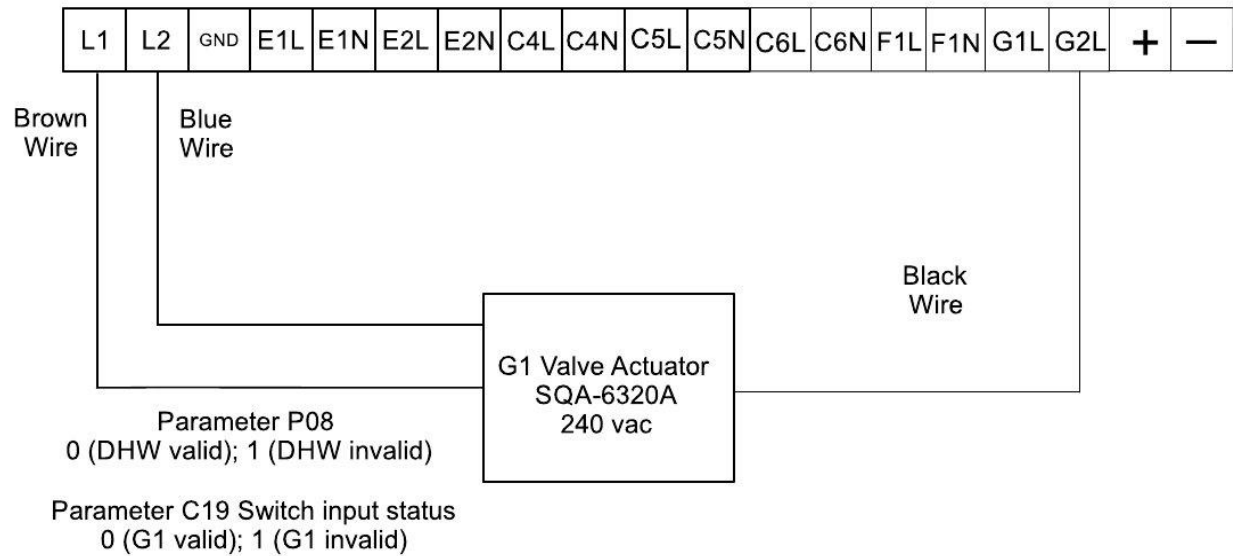
DHW target setting temperature is the tank water temperature measured with the DHW sensor, not the inlet water temperature. If the target temperature is 122°F, (refer to page 43 to set the DHW temp), and the differential is 2°C, it means, when the DHW tank reaches 122°F, the compressor will stop. When the DHW tank temperature is lower than 119°F, the compressor will start.

G1 Valve

DHW and AC / Heating with two chillers in Parallel



G1 Valve Wiring and Parameters



G1 Valve (240vac) DHW & AC/Heating

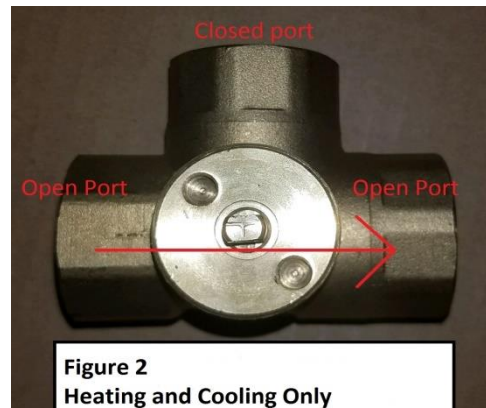
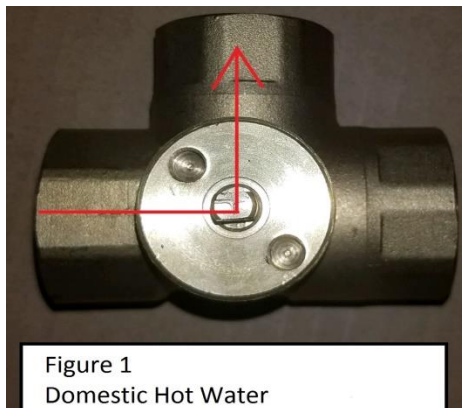
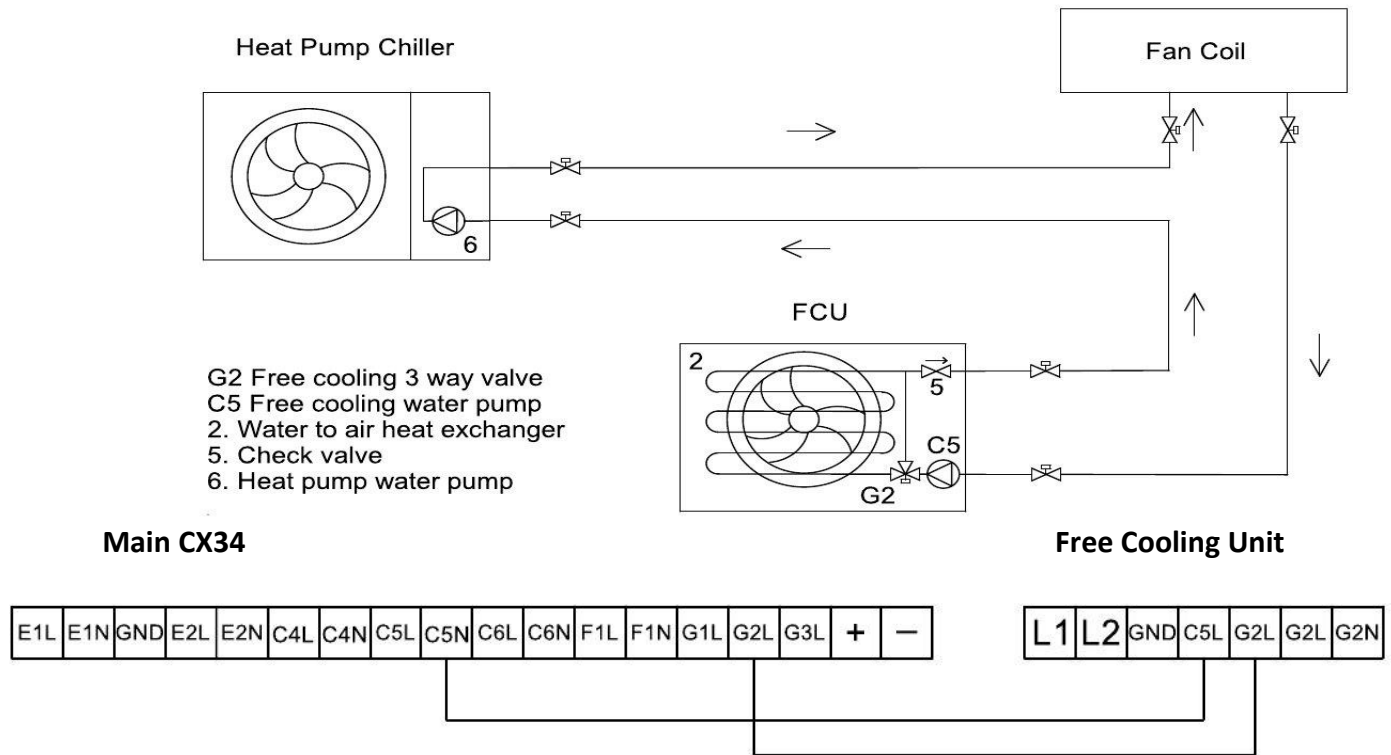


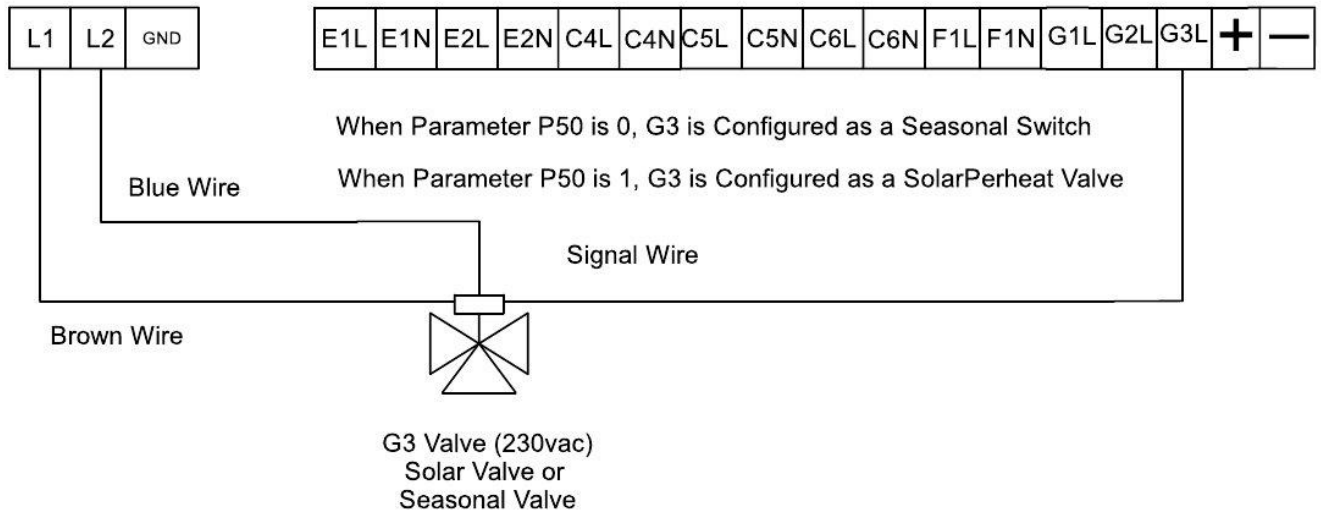
Figure 1, this is the valve position when it is activated for DHW. Figure 2, this is the valve position when it is activated for Heating or Cooling. When the brown wire is connected to L1, the blue wire is connected to L2, and the black control wire is connected to G2L the valve is controlled by voltage at G2L. Voltage at G2L activates the valve for heating/cooling. No voltage at G2L activates the valve for DHW. See wiring diagram above.

G2 Valve Wiring “Free Cooling “ CX30SE Model



G2 Valve and C5 cooling water pump are preinstalled in the CX30SE. To enable the free cooling function P06 must be set to “0”, C17 will show the status. The main CX34 C5N port is connected to the Free Cooling Units C5N port, the CX34 G2L is connected to the FCU 3-way valve G2L port. With parameter P06 a “0”, the unit will operate as follows: When outdoor temperatures drop below 38F, the CX30SE glycol-water loop is automatically extended through the water-to-air heat exchanger to harvest outdoor cold ambient conditions to pre-cool the glycol-water loop so that the CX34 variable speed compressor can drop to a very slow speed and consume less power. At and below 28F, the CX30SE server room chiller will turn off the CX34 compressor entirely and still be able to maintain its rated cooling capacity using only the variable speed pump and fan motors.

G3 Valve: Seasonal Switch Valve or Solar Preheat Valve

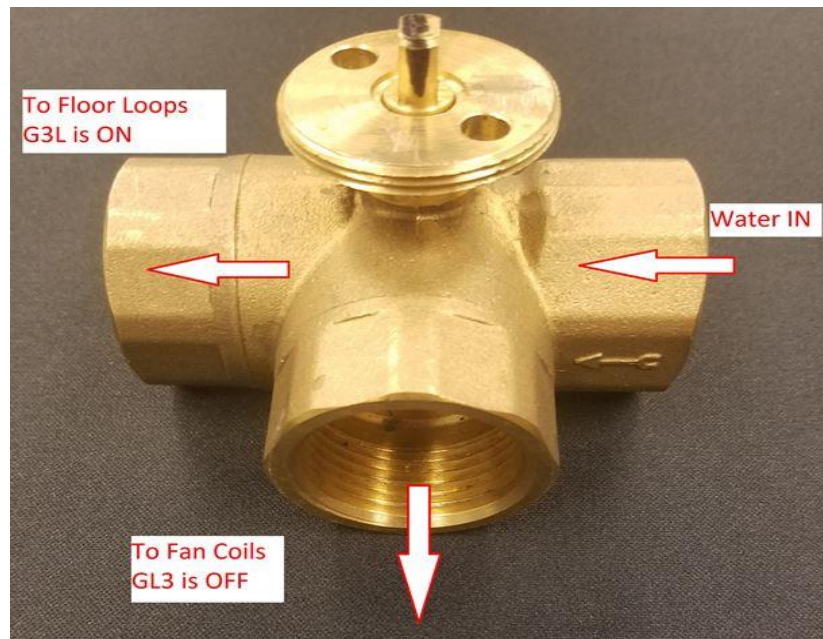
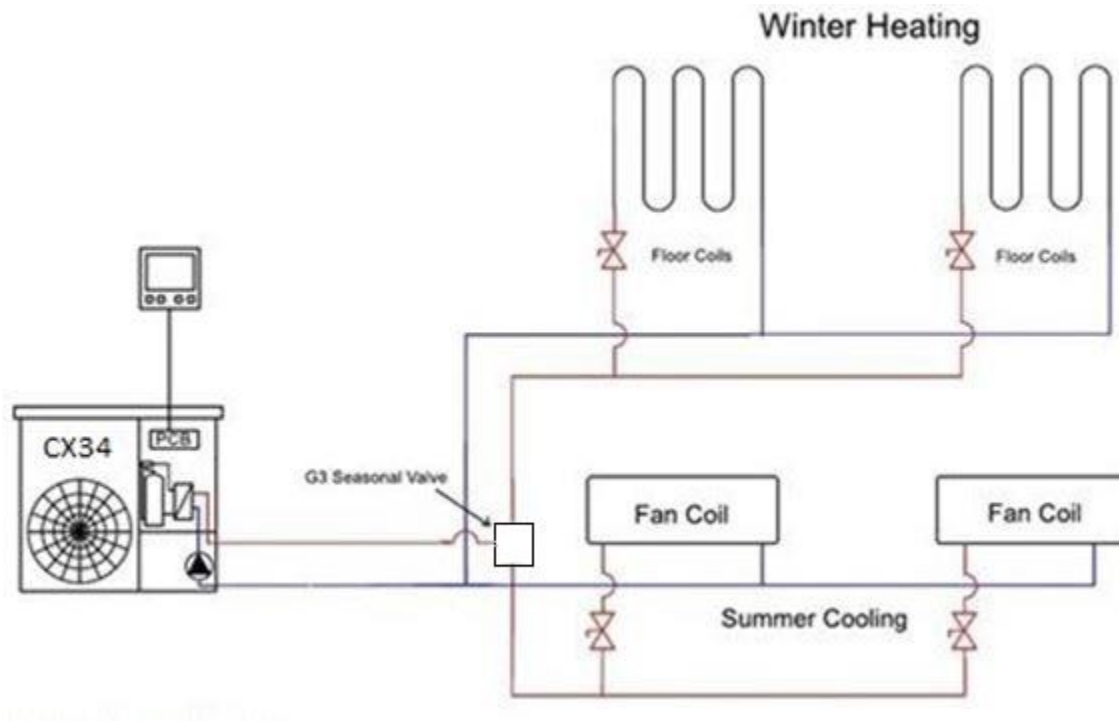


The G3 port can be used to control a seasonal switch valve. The seasonal switch valve is used to isolate the floor coils from the fan coils when switching over from heating to cooling. The seasonal switch valve is controlled by parameter P50. When parameter P50 is 0, the valve is configured as a seasonal Switch.

When parameter P50 is 1, the valve is configured as a solar pre-heat valve. The CX34 compares the solar tank temp and AC returned temp. When the solar tank temp – AC returned temp is $\geq 5^{\circ}\text{C}$, the 3-way valve G3 will be on; when solar water tank temperature minus the air conditioning returned temperature is less than 2°C , G3 will be off.

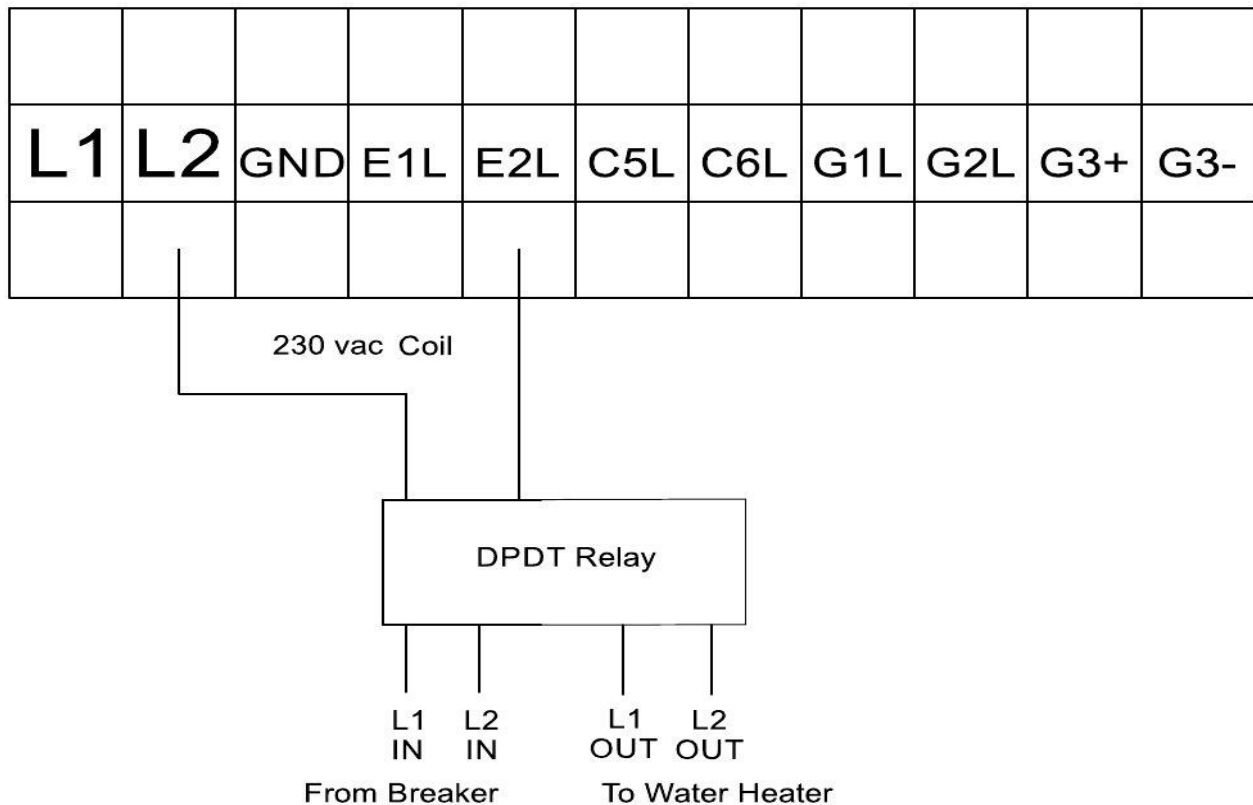
G3 VALVE

Seasonal Switch Valve



G3 Ports

Assistant Electric Heater



Parameters 56, 57

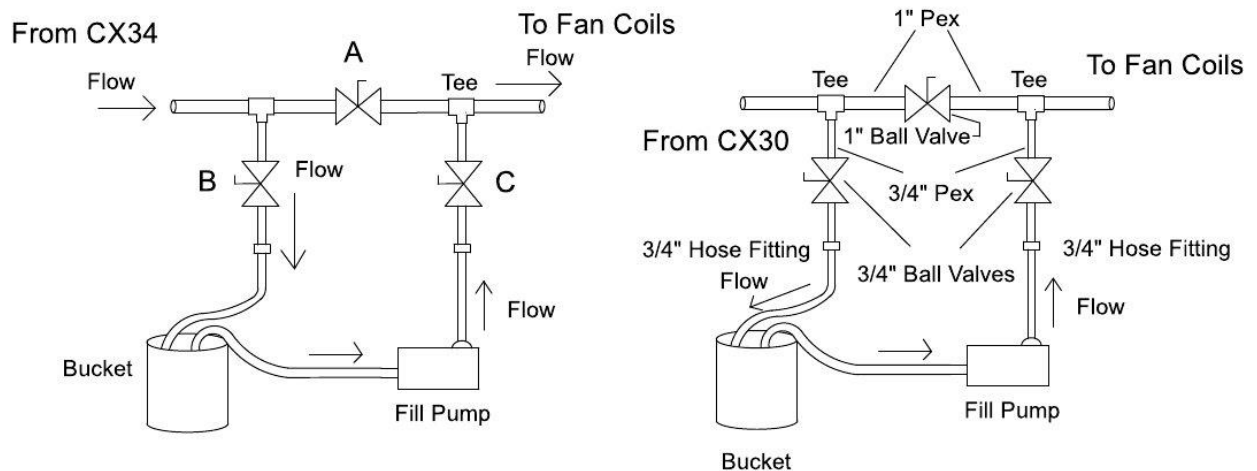
If you set parameter P56 to "0", E2 is the assistant electric heater control port, if you set parameter P56 to 1, E2 will be 2nd heat source control port. If the E2 port is the assistant electric heater control port, it is controlled by parameter P57. If air temp < Parameter P57, E2 will be active, but it will not start at once, if the compressor cannot reach target temp within 15 minutes, it will energize the relay coil at L2 & E2. The compressor will work together with E2.

System filling with Propylene Glycol and water

At or near the chiller a flush/fill valve assembly must be installed. This can be made with three ball valves and a couple hose fittings. See example below.

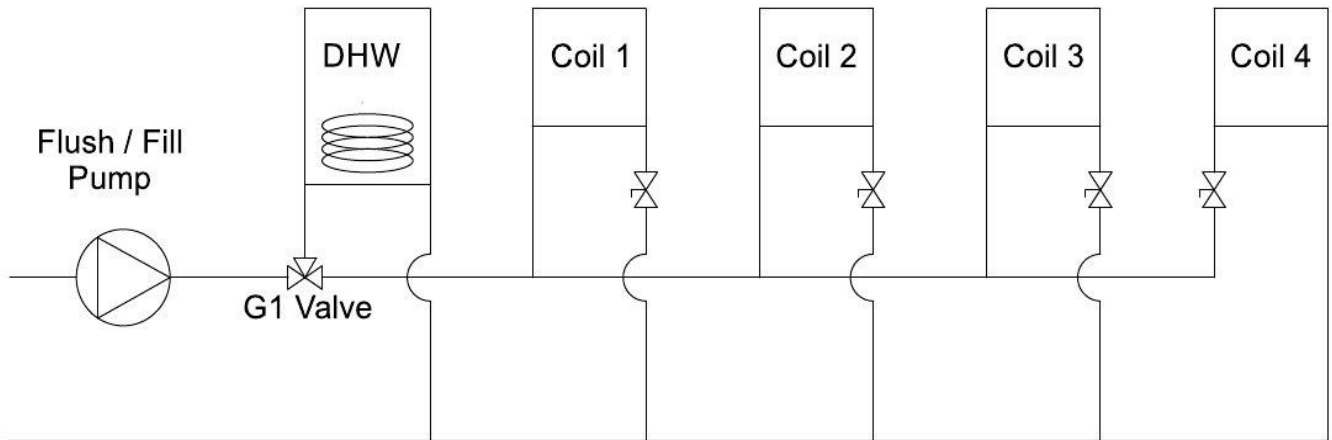
Bill Of Materials

2 ea. 1" x 3/4" tee
 1 ea. 1" Ball Valve
 2 ea. 3/4" Ball Valve
 2 ea. 3/4" Hose Fittings
 10' of Garden Hose
 5 Gallon Bucket
 High Head Fill Pump



Pre-mix the propylene glycol in a container large enough to hold the loop volume plus a few gallons. Using a filling pump and 3 hoses, place one hose in the glycol container and connect it to the suction side of the pump. Connect the second hose to the pump discharge and the other end to valve "C" that is closest to the fan coils. Using a third hose, connect it to valve "B", closest to the chiller and leave the open end in the glycol bucket. Close the middle ball valve "A". The pump should be pumping away from the CX34 chiller. Run the pump until there are no more air bubbles coming out of the loop. After all air is expelled from the loop, close valve "B" and then open valve "A" with the pump running. When the pressure gage on the CX34 shows at least 30 psi close valve "C" and turn off the pump. Minimum loop pressure is 14.5 psi, maximum pressure is 43.5 psi, and ideal pressure is 30 psi.

Purging Air from the Fan Coils



If a DHW tank is installed, it should be the first device on the loop as shown. To purge the air from its coil, remove the actuator from the valve body and rotate the valve stub 90° clockwise to force the water through the coil. Return the valve stub back to its original position when all of the air is purged. Close the input valve to each fan coil except the first coil (1). Turn the pump on and run it, when the bubbles stop coming out of the discharge hose turn on the ball valve on coil (2), wait for the bubbles to stop, then do the same for coil number (3), then (4). All CX Chillers have a flow switch installed in the loop. Air in the system may cause a flow switch alarm; the controller will display a P5 or P6 error code.

All CXI fan coils have an air purge screw near the water inlet port, always purge the fan coils before starting the chiller.

The CX34 chiller also has a bleeder valve with a ¼" clear tube attached to it located near the brazed plate heat exchanger.

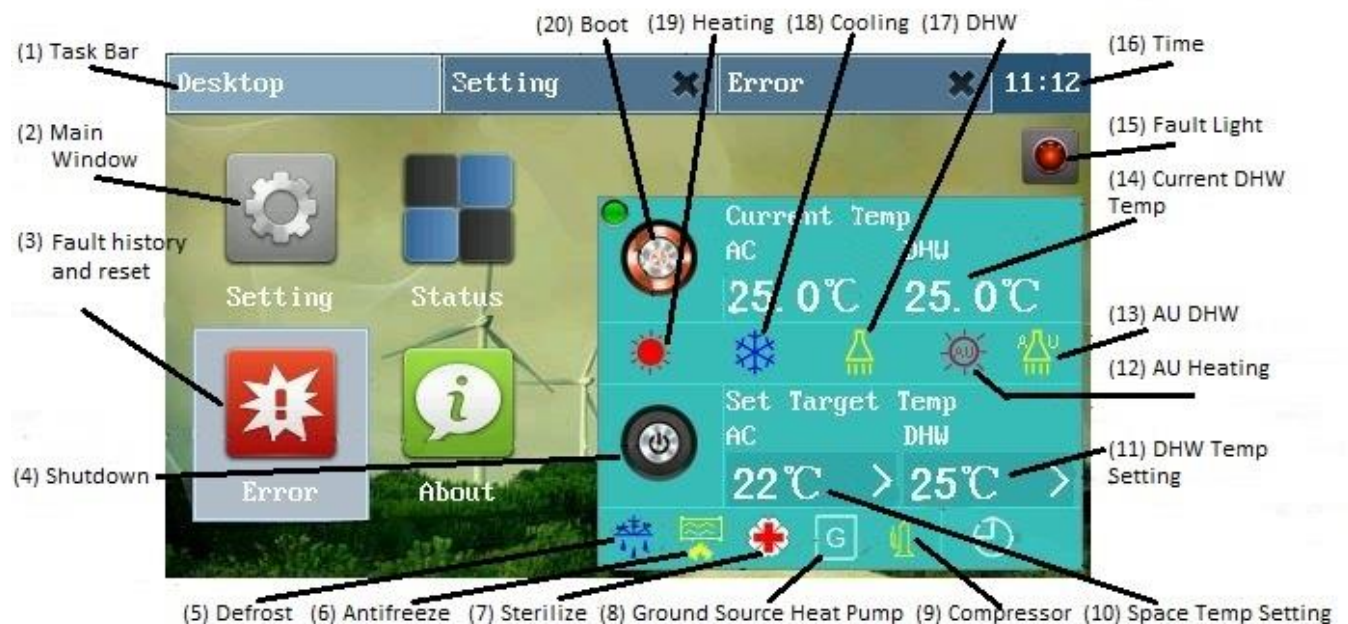
Proper and even flow through each fan coil is critical for both heating and cooling. This can be done with balance valves or ball valves installed at each fan coil supply or return pipe. Set each fan coil to the same temperature and fan speed. Using an accurate digital thermometer adjust each ball valve until the coil return temperatures are even. This must be done in heating mode so proper flow can be verified to protect the heat exchanger from freezing up in cooling mode. If a fan coil is powered on but the fan isn't running, there is a good possibility that there is air trapped in that particular part of the loop.

Wired Controller

1. Functions and features

Cooling, Heating, DHW, cooling + DHW, heating + DHW mode of operation options, automatic fault detection, alarm processing, and energy control.

1. The 4 wire control cable can be extended up to 300 feet of 20 AWG or larger.
2. The controller handles all input and output signals, and system status to ensure that the unit is stable and reliable.
3. Full-touch color LCD display.
4. Modes and other factory parameter settings are entered directly on the LCD screen.
5. 100 fault records can be stored and retrieved to show the details of each fault that may occur.
6. All of the switch input / outputs can be directly observed on the LCD control panel making commissioning convenient.
7. The LCD display is wall-mountable.



- (1) **Taskbar:** shows the current running applications, and the time. Clicking on the different application boxes will switch to different applications.
- (2) **Main window:** Displays the main window of the application that is currently running.
- (3) **Application icon:** A desktop application that first highlights the icon when it is first clicked, and then clicked again to launch the application.

- (4) **Shutdown button:** Used to execute the **shutdown command**, when clicked it will pop up a confirmation window, click "OK" to execute the boot command, or click "Cancel" for no action. The shutdown command is used to take the chiller out of heating or cooling mode.
- (5) **Defrost:** Is illuminated when system is in the Defrost State.
- (6) **Antifreeze:** Is illuminated when system is in the antifreeze mode.
- (7) **Sterilization:** Is illuminated when system is in the sterilization mode.
- (8) **Ground source heat pump:** N/A
- (9) **Compressor:** Illuminated when the compressor is on.



Figure 1-2

- (10) **AC temp setting:** Temperature setting in the air conditioning mode (cooling or heating), touch the "SET TARGET TEMP" icon and the keyboard window will pop up, as shown in Figure 1-2, then, enter the required temperature. Use the ENT" key will confirm the input. Use the "DEL" key to delete the input, and the "ESC" to cancel the input and exit.
- (11) **DHW temperature setting:** Sets the temperature in the (DHW) mode.
- (12) **AU heat:** Not used, please disable.
- (13) **AU DHW:** Not used, please disable.
- (14) **Current DHW temperature:** This is used to check the current DHW mode temperature.
- (15) **Fault light:** Illuminated if there is a fault.

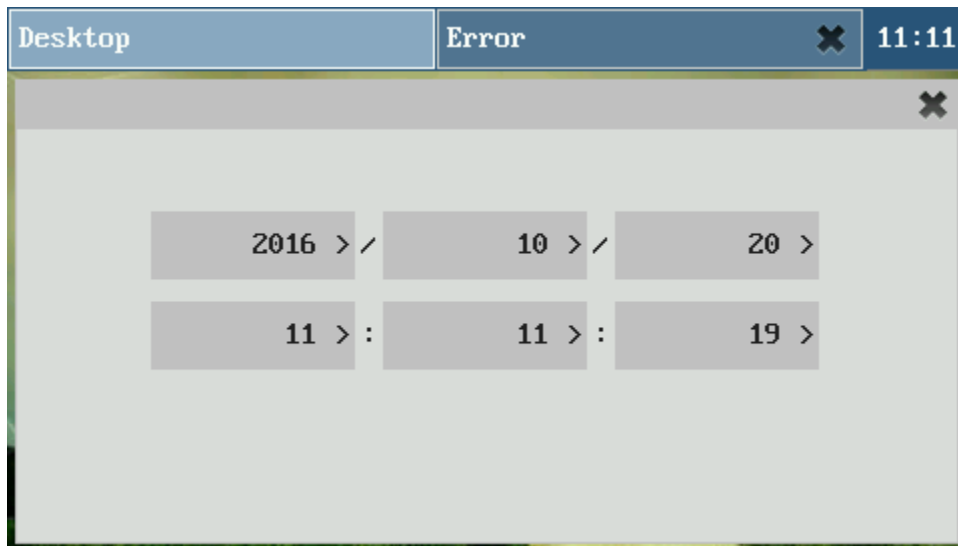


Figure 1-3

- (16) **Time:** Used to display and set the current time. When clicked, a pop-up showing the date and time is displayed, Figure 1-3. From left to right, and from top to bottom is the year, month, day, hour, minute, and second. Clicking on each box will allow you to set its value.
- (17) **DHW:** If the hot water mode is enabled, this icon will be lit.
- (18) **Cooling:** If the cooling mode is on in the user setting, this icon will be lit.
- (19) **Heating:** If the heating model is on in the user setting, this icon will be lit.

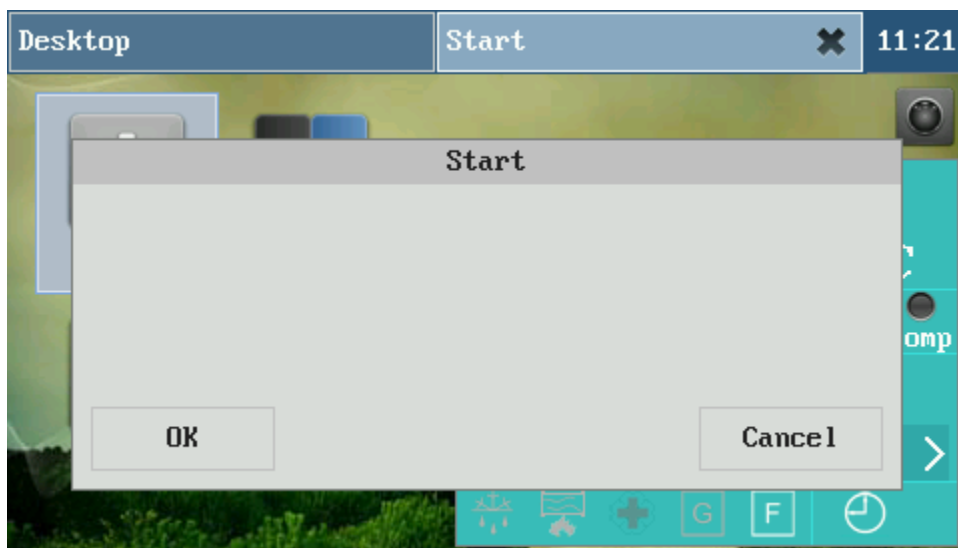


Figure 1-4

- (20) **Boot button:** Used to execute the boot command operating mode.

1.1 SETTING PASSWORDS

The application is used to set the user parameters, and set a password, as shown in Figure 1-5, minimum of 6 characters, maximum of 127.

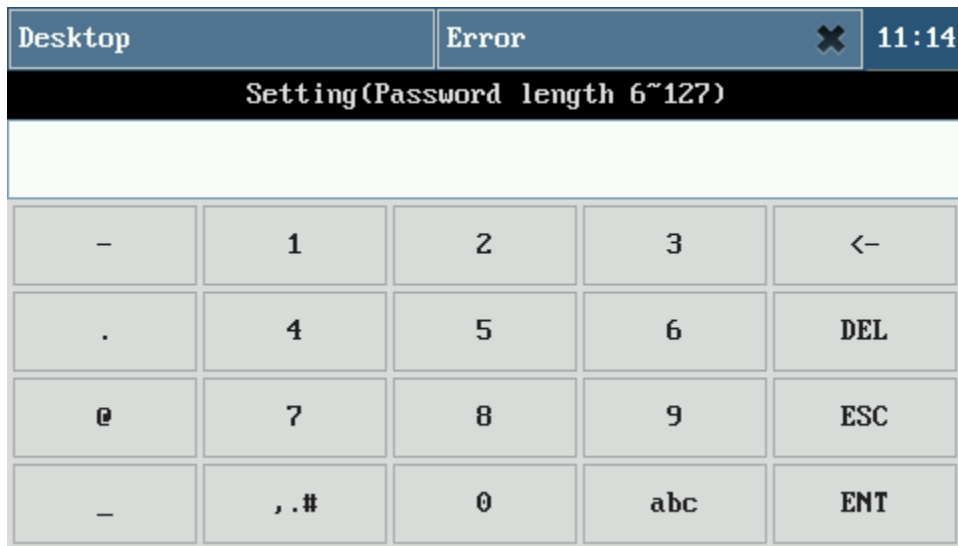


Figure 1-5

Description of the keypad function keys:

- “<-”: Backspace key, used to delete a character.
- “DEL”: Delete key, used to delete all characters.
- “ESC”: Exit key, used to exit the input state.
- “ENT”: ENTER key to confirm an input.
- “abc”: Toggles key for switching to lowercase alphabetic keyboards.
- “ABC”: Toggle key for switching to uppercase alphabetic keyboards.
- “123”: Numeric keypad toggle key for switching to the numeric keyboard.
- “,.#”: Symbol Keyboard toggle key for switching to the symbol keyboard.

Note: The password can be composed of numbers, letters, symbols, etc., the factory default password is empty, and any 6 characters can be used.

Write the password on the back of the controller.

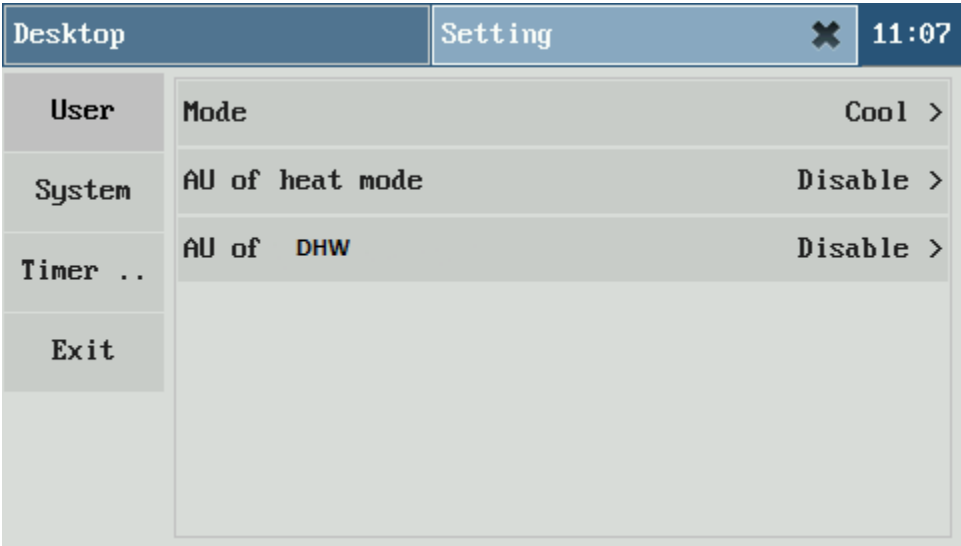


Figure 1-6

After the password is entered correctly, as shown in Figure 1-6, click "Exit" in the main menu or "X" in the task bar to exit the application.



Figure 1-7

1.2 USER PARAMETERS (Figure 1-7)

- Operation mode: Set the units' operation mode.
- Five optional modes: cooling、heating、DHW、cooling + DHW、heating + DHW

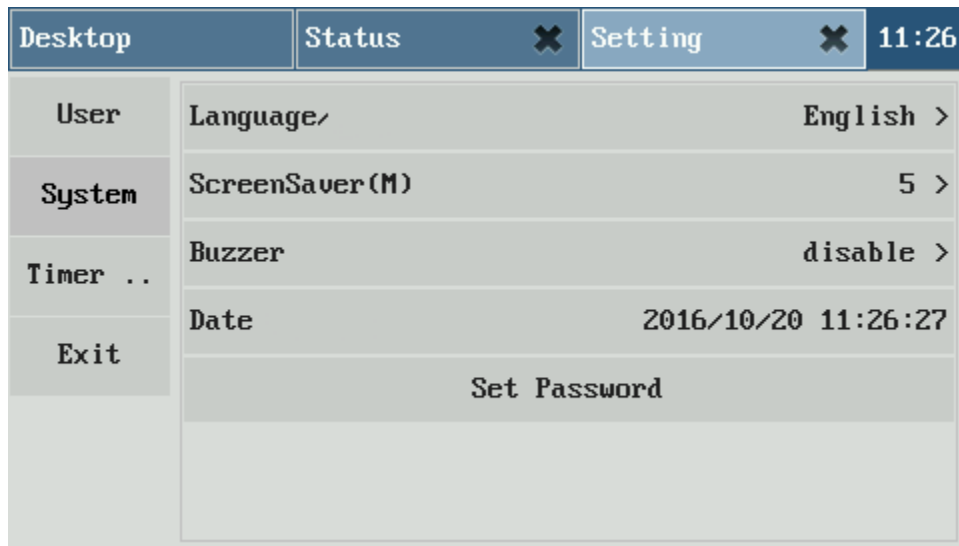


Figure 1-8

1.3 SYSTEM

- Language: Default is English.
- Screensaver: Sets the screen saver pop-up time.
- Buzzer: Disables or uses the buzzer sound when the unit has an alarm.
- Date & Time: you can set the machine date and time.
- Password setting: Set the password to enter this application

1.4 Machine Timing Switch

- Boot Timing (1 ~ 3): 3 segment Boot timing setting.
- Timing shutdown (1~3) : 3 segment "Off" timing setting.

Figure 1-8 shows the setting window of each machine timer switch. After setting the time to turn the machine on and off, click the small circle at the bottom to select the time to execute the switch during the week. Use small circles of blue to select the day, gray means disabled. See next page, Figure 1-9.

Desktop	Statu: ✕	Settin ✕	Manufi ✕	Error ✕	17:54
User	Timer 1 On				00:00:00
System	Timer 1 Off				00:00:00
Timer On/Off	Timer 2 On				00:00:00
	Timer 2 Off				00:00:00
Exit	Timer 3 On				00:00:00
					▼

Figure 1-9

Desktop

Setting ✕

08:46

Timer 1 On ✕

09 > :

00 > :

00 >

SU

MO

TU

WE

TH

FR

SA

Weekly Setting

2 STATUS

The status application is used to check the detailed status of the unit operation, such as compressor speed, fan speed, G1, G2, G3, G4 valves and so on.

2.1 State preview display interface

- a) **Compressor:** Displays the current working status of the compressor.
- b) **Compressor Heating:** Displays compressor heating status.
- c) **Outdoor fan:** show the working status of the outdoor fan.
- d) Reversing valve, electronic expansion valve, electrical heating, G1 valve and other work status, query can be directly observed through this interface.

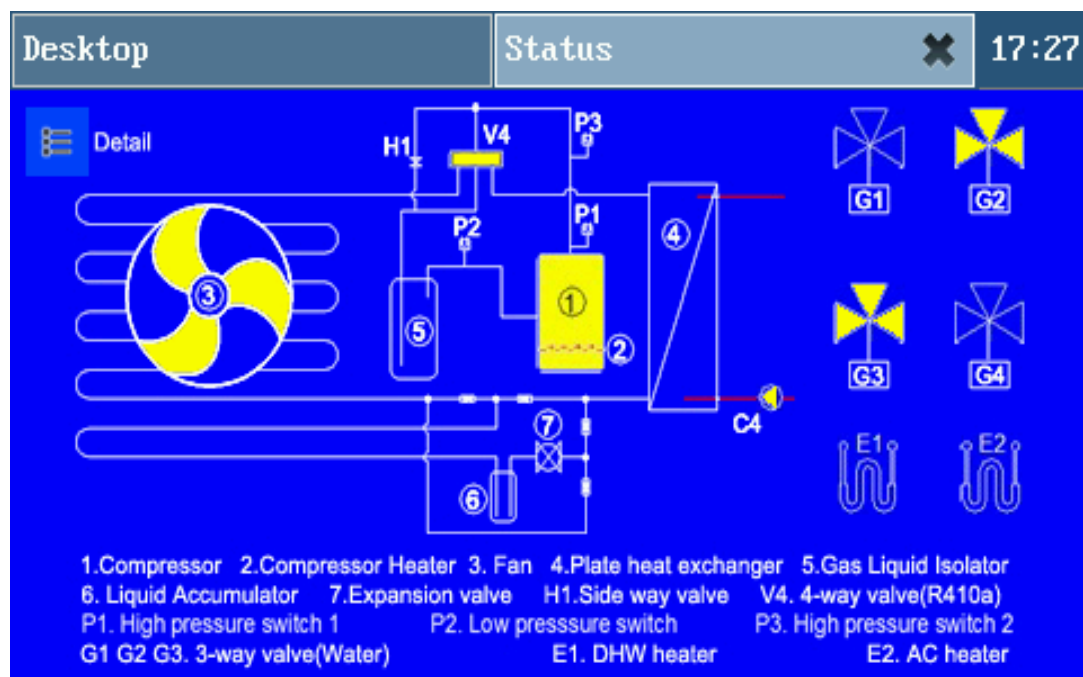


Figure 2-1

2.2 Detailed Status Interface “C Parameters”

Click "detail" in the status query interface to enter the detailed status interface of the machine, as shown in Figure 2-1. Click the arrow “->” button to return to the previous state interface. Specific C parameters can be found in Figure 2-2 below. The complete list of “C” parameters begins on page 50.

Desktop	Status	✕	11:30
item	value		
C08 Water source outlet water temp	25.0℃		
C09 Compressor current value	0.0A		
C10 High pressure value	0.0MPa		
C11 Low pressure value	0.0MPa		
C12 Water Source side water flow volume	0.0L/m		
C13 Usage side water flow volume	0.0L/m		
C14 Functional parameter(P03)	1:Air source Source		
C15 Functional para..	0:AC heating temp control method 1		
<		2/8	>

Figure 2-2

2.3 Manufacturing Setting (Parameter Checking and Setting) "P Parameters"

Press and hold the lower left side of the main window for more than 3 seconds to enter the factory setting confirmation window as shown in Figure 2-3, press "Confirm" Factory setting, or press "Cancel" to exit.



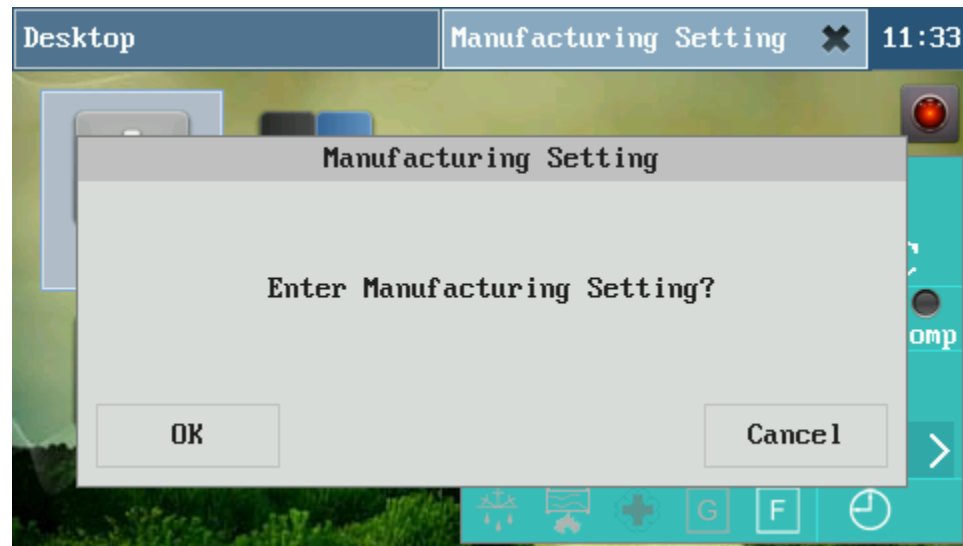


Figure 2-3

Enter the factory settings menus as shown in figure 2-4, the left is the "main menu", on the right are the "settings". Complete list of P parameters starts on page 46. For Multi-pages, click on the "main menu" arrow to display the next page.

Main menu includes:

- (1) Basic settings
- (2) Communication settings
- (3) Special functions

2.4 Basic Settings

Desktop	Status	✕	Setting	✕	Manufact	✕	17:31
Basic Set	P00	Power-down recovery function	1: On	>			
Commun..	P01	Single/Thr..	0: Single-phase power supply	>			
Others	P02	Power frequency	0: 50HZ	>			
Exit	P03	Heat source selection	1: Air source	>			
	P04	Heating temperature control..	0: Method 1	>			

Figure 2-4

2.5 Communication Setting

Communication settings include settings for the protocol and baud rate. The interface is shown in Figure 2-5.

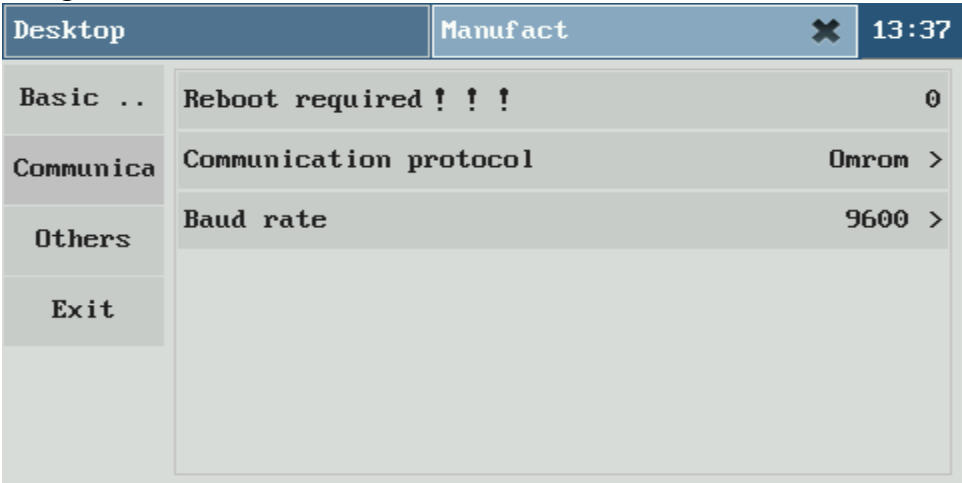


Figure 2-5

2.6 SPECIAL FUNCTIONS

- (1) **Initialize the control panel:** The initialization of the control panel function is used to initialize all parameters in the control panel.
- (2) **Delete the fault history:** Deletes all historical faults.
- (3) **Password setting:** To set the password to enter settings.

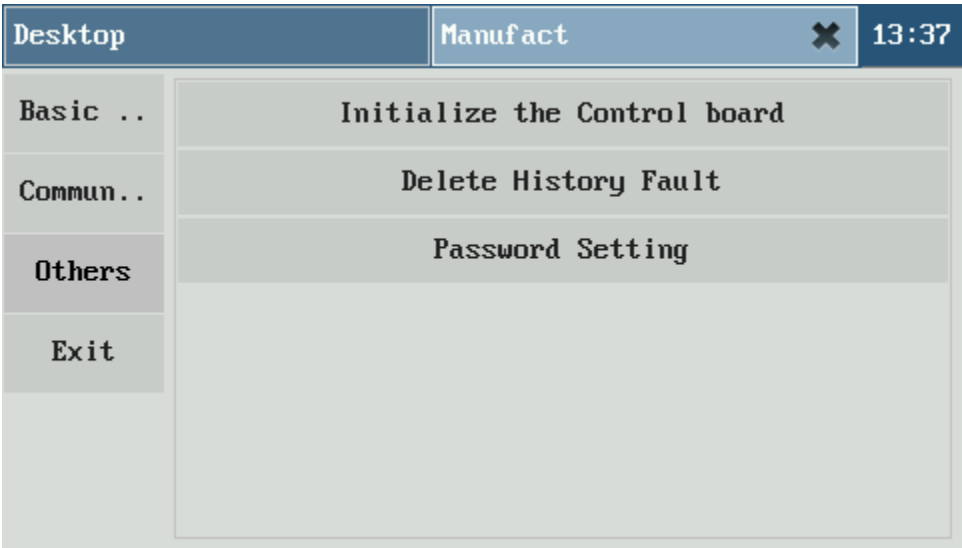
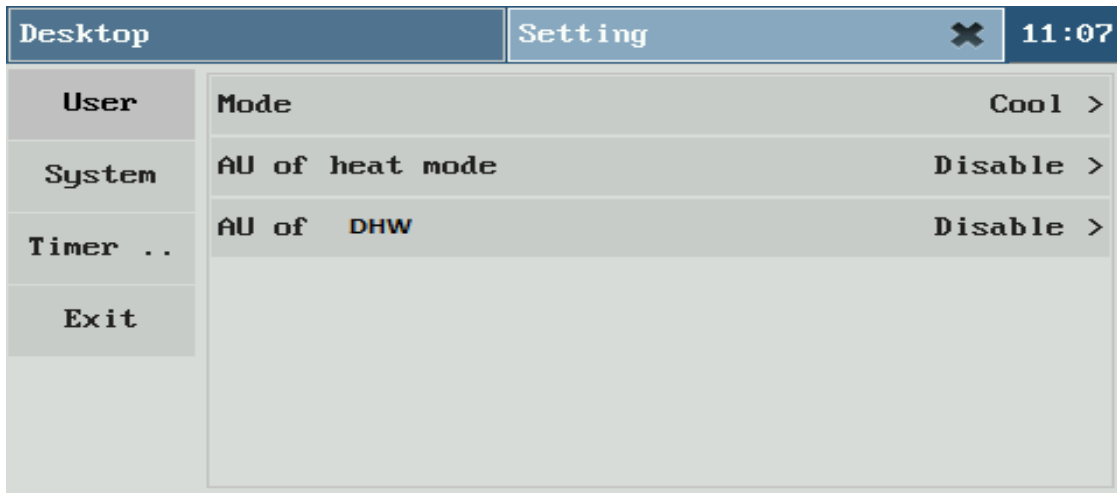


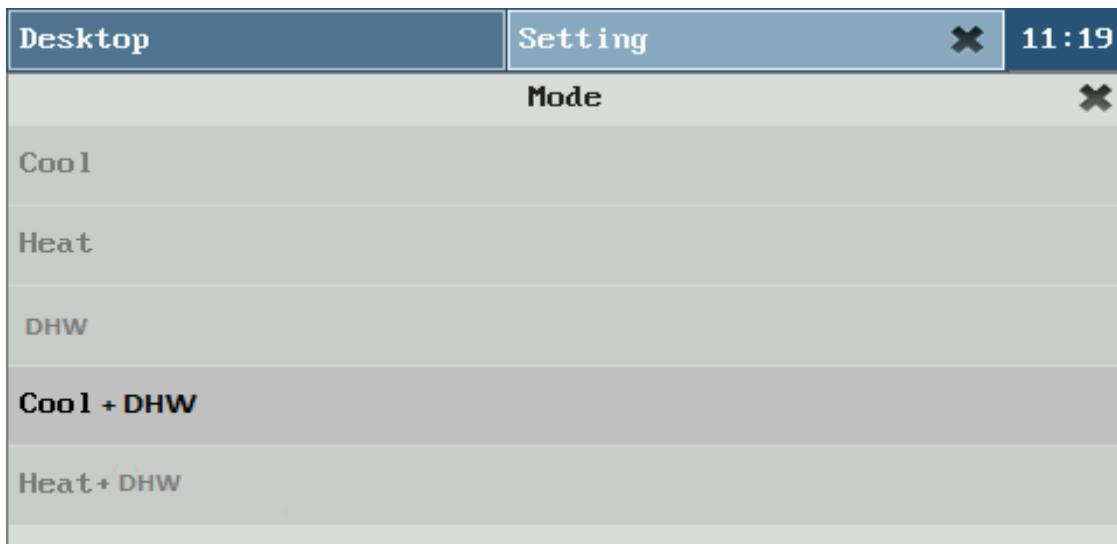
Figure 2-6

Operating the CX34

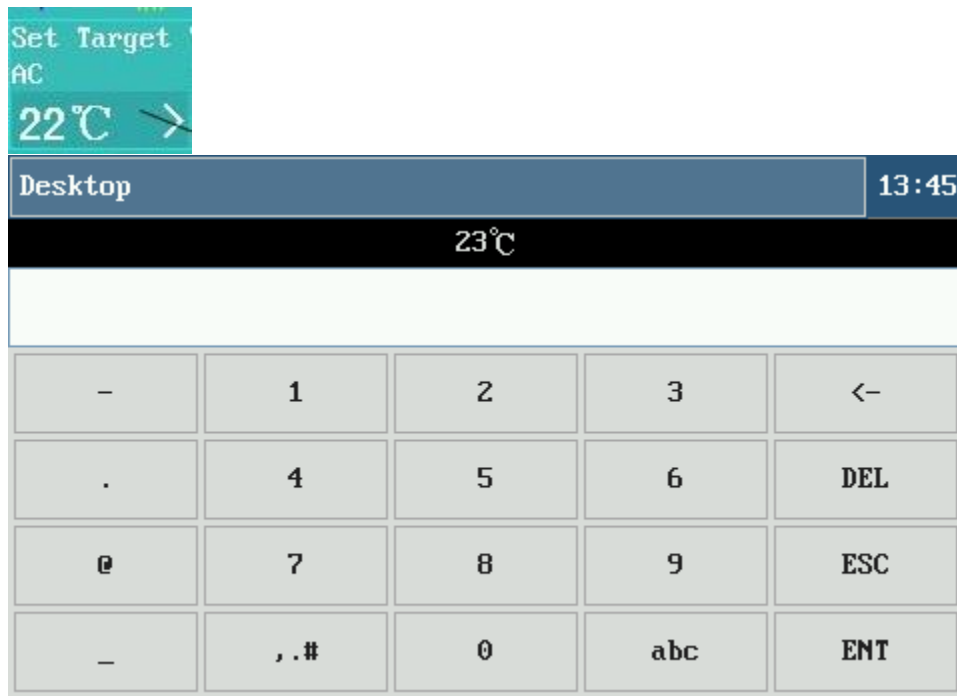
To select a mode to operate in, from the desktop, touch “settings”. The screen below will appear.



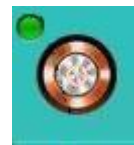
Touch the mode bar and the screen below will appear. Select the mode you want by touching the bar associated with the mode. AU Heat Mode and AU DHW Modes are not used on the CX34.



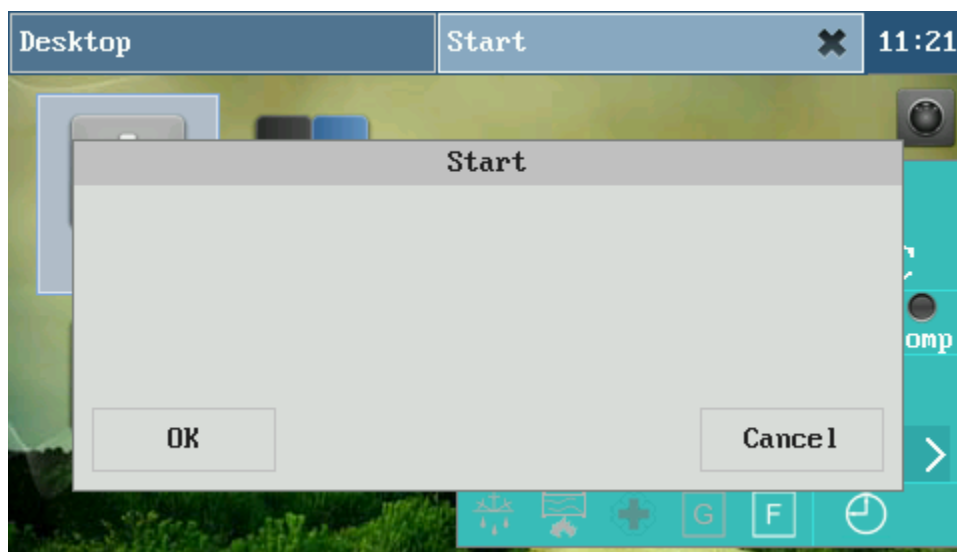
Next, to set the temperature go back to the desktop and touch the “set target AC” icon.



Using the keypad select the desired temperature and touch the “ENT” icon.



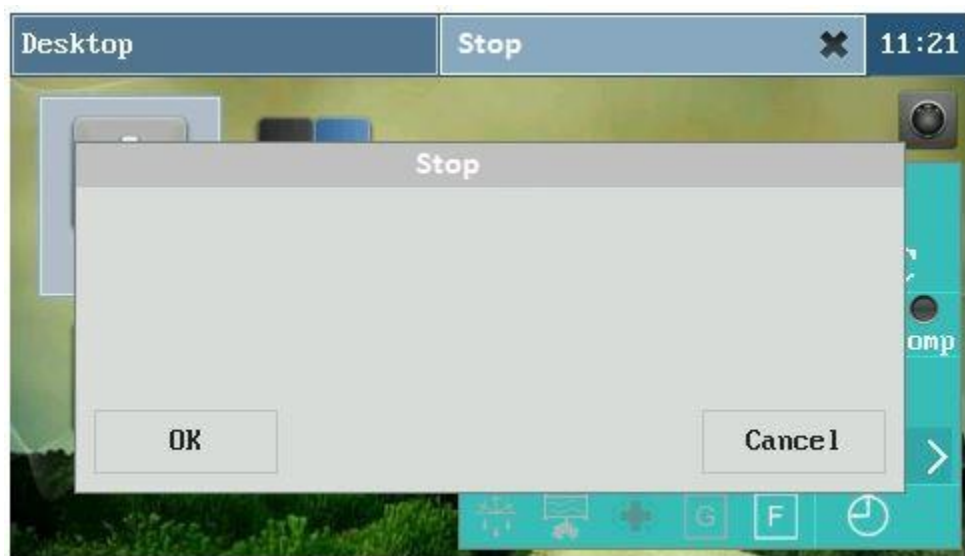
To launch the selected mode hit the Start button then “OK”



Use this same sequence for all of the modes.



To stop a mode touch the “shutdown” icon. Then touch “OK”.



3. Parameter Checking and Setting

The detailed parameters of the manufacturer settings are described in the table below.

NO	Name	scope/means	Range, Meaning	Default
P00	Power-down recovery function	0 : off ; 1 : on	0 : off ; 1 : on	1
P01	Input Power: Single / three phase selection	0 : Single-phase 1 : Three-phase	0 : Single-phase power Three-phase power	0
P02	Power frequency	0 : 50HZ ; 1 : 60HZ	5 : 50HZ ; 1 : 60HZ	1
P03	Heat source selection	0 : ground source ; 1 : air source	0 : ground source 1 : Air source	1
P04	Heating temperature control method	0 : Method 1 ; 1 : Method 2	0 : Method 1 : 1 : Method 2	0
P05	Defrost method selection	0 : Method 1 ; 1 : Method 2	0 : Method 1 : 1 : Method 2	0
P06	FREECOOLING validation	0 : valid ; 1 : invalid	0 : valid ; 1 : invalid	1
P07	Frequency control method	0 : Method 1 ; 1 : Method 2	0 : Method 1 ; 1 : Method 2	0
P08	DHW validation G1	0 : valid ; 1 : invalid	0 : valid ; 1 : invalid	1
P09	Air conditioning and heating validation	0 : valid ; 1 : invalid	0 : valid ; 1 : invalid	0
P10	Air conditioning and Cooling validation	0 : valid ; 1 : invalid	0 : valid ; 1 : invalid	0
P11	DHW hot water temp hysteresis	2~15°C, minus hysteresis	2~15°C, minus hysteresis	2°C
P12	AC temp hysteresis	2~15°C, minus hysteresis	2~15°C, minus hysteresis	2°C
P13	Ambient temp to start heating of Heating temp control Method 2	-10~15°C (Higher than the set ambient temperature before starting)	-10~15°C (When ambient temp is higher than this temp it can start)	7°C
P14	Indoor target temperature	10~28°C	10~28°C	21°C
P15	buffer tank highest temp	35~55°C	35~55°C	45°C
P16	buffer tank lowest temp	15~30°C	15~30°C	25°C
P17	Water temperature adjustment scope	1~5°C	1~5°C	2°C
P18	water temp adjust interval time	2~300min	2~300min	120min
P19	longest counting period time	6~48H	6~48H	24H
P20	target water temp corrected Value	-2~5°C	-2~5°C	0°C
P21	ambient temp correction factor	0.1~2.0	0.1~2.0	.75
P22	Counting starting ambient temp	-7~15°C	-7~15°C	7°C
P23	Frequency control method	0 : Method 1 ; 1 : Method 2	0 : Method 1 ; 1 : Method 2	0

P24	Low-frequency ambient temperature	30~10°C (A)	30~10°C (A)	15°C
P25	High-frequency ambient temperature	-20~8°C (B)	-20~8°C (B)	0°C
P26	The lowest operating frequency	10~50% (C)	10~50% (C)	30%
P27	The maximum operating frequency	55~100% (D)	55~100% (D)	100%
P28	Frequency limit pressure	2.00-4.50MPa	2.0-4.5MPa	3.70MPa(37)
P29	Cancel limit frequency pressure	2.00-4.50MPa	2.0-4.5MPa	3.40MPa (34)
P30	fan motor Category	0=AC fan, 1=EC fan1, 2=EC fan 2	0=AC Fan, 1=EC Fan1, 2= EC Fan2	1
P31	Maximum speed of the fan	10-100 (100 show 100%)	1-10 (10=100%)	100
P32	Heating fan speed control temperature difference	2~15°C	2~15°C	1°C
P33	Cooling Fan speed control Temperature difference	5~18°C	5~18°C	12°C
P34	Defrost method	0 : Method 1 ; 1 : Method 2	0 : Method 1 ; 1 : Method 2	0
P35	defrost starting temp	-5~5°C	-5~5°C	-1°C
P36	defrost interval time multiple rate	0 : Not defrost ; 1 ; 2 ; 3 ; 4 : (interval X 4)	0 : Not defrost ; 1 ; 2 ; 3 ; 4 : (interval X 4)	1
P37	The first defrost interval	15~99minu (1st interval after repower on)	15~99minute (1st interval after repower on)	35
P38	defrost exist temp	10~35°C	10~35°C	30°C
P39	Set value of Δ	3~8 (B)	3~8 (B)	5
P40	Ambient temp correction value of Δ	(5~50) /100 (C)	(5~50) /100 (C)	10/100
P41	ambient temp correction multiple rate	1~5 (D)	1~5 (D)	1
P42	water temp correction value of Δ	(5~50) /100 (E)	(5~50) /100 (E)	10/100
P43	water temp correction multiple rate	1~5 (F)	1~5 (F)	1
P44	Minimum allowed Δ	(1~100) /100 (G)	(1~100) /100 (G)	30
P45	Allowed defrost coil temperature	-20~0°C (H)	-20~0°C (H)	-6°C
P46	Allowed the defrost time	1~10min (I)	1~10min (I)	3min
P47	hot water frequency limitation	2~10, max frequency 20~100%	2~10= max frequency 20~100%	100
P48	AC heating AU mode highest temp	30~50°C	30~50°C	45°C
P49	AC Heating AU mode offset temperature	-10~10°C	-10~10°C	0°C
P50	solenoid valve function parameters	0=G3 seasonal valve,	0= G3 is seasonal valve,	0

		1=G3 solar valve	1=G3 is solar valve	
P51	C4 Water pump type selection	0=AC Water pump, 1=EC Water pump	0=AC Water pump, 1=EC Water pump	1
P52	water pump working mode	0=Not stop, 1=stop after reaching target temp) 2=start 1 minute after each stopping of 15 minutes)	0=Not stop, 1=stop after reaching target temp, 2=start 1 minute after each stopping of 15 minutes)	0
P53	EC Water pump C4 Minimum speed	40-80%	40-80% 40, "80" during startup	80
P54	C5 Water pump type selection	0=AC Water pump, 1=EC Water pump	0=AC Water pump, 1=EC Water pump	0
P55	DHW e-heater activated ambient temp	-20~20°C	-20~20°C	0°C
P56	Electric heating function	0=electric heating, 1=the second heat source	0=electric heating, 1=the second heat source	0
P57	AC e-heater activated ambient temp	-20~20°C	-20~20°C	0°C
P58	2nd heat source starting air temp	-30~15°C	-30~15°C	-15°C
P59	AC anti-freezing temperature	-15~5°C	-15~5°C	3°C
P60	Virus killing interval days	7~99day	7~99 day	99
P61	Start virus killing time	1~24hour	1~24 hour	1
P62	Virus killing holding time	5~99minu	5~99 Min	5
P63	Target temperature of virus killing	55~80°C	55~80°C	55°C
P64	AC water flow switch type selection	0=Water flow switch 1=flow meter	0=Normal Water flow switch 1=Water flow meter switch	1
P65	AC minimum water flow (Sets P5)	9-80L/m	9-80L/m	8
P66	Water source Water flow switch type selection	0=Water flow switch 1=flow meter	0=Normal Water flow switch 1=Water flow meter switch	0
P67	The lowest water flow of water source	9-80L/m	9-80L/m	9
P68	air source heat pump FREECOOLING function start ambient temp	-16~20°C	-16~20°C	5°C
P69	FREECOOLING function additional Temperature difference to start full free cooling. (compressor stops)	3~15°C	3~15°C	5°C
P70	water source side anti- freeze temp	-20~5°C	-20~5°C	2°C
P71	Cooling Maximum set temperature	15~35°C	15~35°C	25°C
P72	Heating maximum set temperature	25~55°C	25~55°C	55°C
P73	DHW The highest set temperature	25~60°C	25~60°C	60°C

P74	Debugging fixed operating frequency	10~100 HZ	10~100 HZ	50HZ
P75	run setting frequency	0= Manual frequency, 1= Auto frequency	00= Manual frequency, 1= Auto frequency	1
P76	EEV manually open degree (heating)	70~480	70~480	200
P77	EEV manually open degree (cooling)	70~480	70~480	250
P78	EEV control mode	0=No,1=table list,2=manually, 3=automatically	0=No,1=table list,2=manually, 3=automatically	3
P79	target overheat degree (heating)	-5~10°C	-5~10°C	-1°C
P80	target overheat degree (cooling)	-5~10°C	-5~10°C	2°C
P81	night mode validation	0= no start, 1= start	0= no start, 1= start	0
P82	night mode starting point	0-23 (for relative time)	0-23 (for relative time)	22
P83	night mode ending point	0-23 (for relative time)	0-23 (for relative time)	6
P84	High-pressure protection settings	2.50~5.00MPa	2.5~5.0MPa	4.5
P85	Low-pressure protection settings	0.01~1.00MPa	0.01~1.0MPa	.2
P86	High-pressure protection stop hysteresis	0.20~1.50MPa	0.20~1.50MPa	.5
P87	Low-pressure protection stop hysteresis	0.01~1.00MPa	0.01~1.00MPa	.2
P88	Model selection	0~255	0~255	4
P89	Electronic expansion valve manual opening	70~480	70~480	200
P90	Electronic expansion valve control mode	0=No, 1=table list, 2=manually 3=automatically	0=No, 1=table list, 2=manually 3=automatically	0
P91	Condensation temperature correction value	-5~10°C	-5~10°C	5°C
P92	Whether to use high and low pressure transmitter	-5~10°C	-5~10°C	5°C
P93	Target air temperature coefficient	0.75~1.15	0.75~1.15	0.95
P94	Whether to use high and low pressure transmitter	0=Disabled 1= Enable	0= N/A 1= Enable	0
P95	C4 Control the temperature difference (°C)	2~8	2~8	5
P96	Compressor Manufacturer		Mitsubishi	
P97	Manual Virus Killing		NO	0
P98	Reset Factory parameter		NO	0

4. Parameter Checking Only

No	Name	Scope/means	Range, Meaning
C00	out pipe temp	-30~97°C	-30~97°C
C01	compressor discharge temp	-30~128°C	-30~128°C
C02	ambient temp	-30~97°C	-30~97°C
C03	Suction temperature	-30~97°C	-30~97°C
C04	Plate heat exchanger temp	-30~97°C	-30~97°C
C05	AC outlet water temp	-30~97°C	-30~97°C
C06	Solar temperature	-30~97°C	-30~97°C
C07	water source inlet water temp	-30~97°C	-30~97°C
C08	Water source outlet water temp	-30~97°C	-30~97°C
C09	Compressor current value	0.0~30.0A	0.00~30.00A
C10	High pressure value	0.00~5.50MPa	0.00~5.50MPa
C11	Low pressure value	0.00~5.50MPa	0.00~5.50MPa
C12	Water Source side water flow volume	0~100L/m	0~100L/m
C13	Usage side water flow volume	0~100L/m Actual Flow	0~100L/m
C14	P03 Status	0=Air source, 1= Ground source	0=Air source, 1=Ground source
C15	P04 Status	0=Heating temperature control mode one, 1= Heating temperature control mode two	AC heating temp control method
C16	P05 Status	0=Defrost mode one, 1= Defrost mode two	Defrost method
C17	P06 Status	0= Free cooling valid, 1= Free cooling invalid	Free cooling=0 valid, 1=invalid
C18	P07 Status	0=Frequency mode one, 1= Frequency mode two	Frequency method
C19	P08 Status	0= DHW valid, 1= DHW invalid	0=DHW valid, 1= DHW invalid
C20	P09 Status	0=Heating valid,	AC heating valid= 0 valid

		1= Heating invalid	1= invalid
C21	P10 Status	0=cooling valid, 1=cooling invalid	0=cooling valid, 1=cooling invalid
C22	high pressure switch status	1= on, 0= off	1= on, 0= off
C23	low pressure switch status	1=on, 0= off	1=on, 0= off
C24	second high pressure switch status	1=on, 0= off	1=on, 0= off
C25	inner water flow switch	1=on, 0= off	1=on, 0= off
C26	external water flow switch	1=on, 0= off	1=on, 0= off
C27	Compressor Frequency	Displays the actual operating frequency	Show actual frequency
C28	Thermal switch status	1=on, 0= off	1=on, 0= off
C29	outdoor fan motor	1= run, 0= stop	1=on, 0= off
C30	electrical valve 1	1= run, 0= stop	1= run, 0= stop
C31	electrical valve 2	1= run, 0= stop	1= run, 0= stop
C32	electrical valve 3	1= run, 0= stop	1= run, 0= stop
C33	electrical valve 4	1= run, 0= stop	1= run, 0= stop
C34	C4water pump	1= run, 0= stop	1= run, 0= stop
C35	C5water pump	1= run, 0= stop	1= run, 0= stop
C36	C6water pump	1= run, 0= stop	1= run, 0= stop
C37	The accumulative days after last virus killing	0-99 (From the last complete sterilization to the present, cumulative number of days)	0-99 (from the last complete sterilization to the present, cumulative number of days)
C38	outdoor modular temp	-30~97°C	-30~97°C
C39	Expansion valve 1 opening degree	0~500	0~500
C40	Expansion valve 2 opening degree	0~500	0~500
C41	inner pipe temp display	-30~97°C	-30~97°C
C42	Heating Method 2 target temperature	-30~97°C	-30~97°C
C43	Indoor temperature control switch	1=on, 0= off	1=on, 0= off
C44	fan type	0= AC fan, 1= EC fan 1, 2= EC fan 2	0= AC fan, 1= EC fan 1, 2= EC fan 2
C45	EC fan motor 1 speed	0~3000	0~3000
C46	EC fan motor 2 speed	0~3000	0~3000

C47	water pump types	0= AC Water pump 1= EC Water pump	0= AC Water pump 1= EC Water pump
C48	water pump1 speed (C4)	1~10 (10 Show 100%)	1~10 (10 means 100%)
C49	water pump2 speed	1~10 (10 Show 100%)	1~10 (10 means 100%)
C50	Inductor AC Current value	0~50A	0~50A
C51	Driver working status value	Hexadecimal value	Hexadecimal values
C52	Compressor shut down Code	Hexadecimal value	Hexadecimal values
C53	Driver allowed highest frequency	30-120Hz	30-120Hz
C54	Reduce frequency temperature setting	55~200°C	55~200°C
C55	input AC Voltage value	0~550V	0~550V
C56	input AC current value	0~50A (IPM test)	0~50A (IPM Check)
C57	Compressor phase current value	0~50A (IPM test)	0~50A (IPM Check)
C58	Bus line voltage	0~750V	0~750V
C59	Fan shutdown Code	Hexadecimal value	Hexadecimal values
C60	IPM temp	55~200°C	55~200°C
C61	Compressor total running time	0~65000	0~65000 hour

5 INITIAL TEMPERATURE SETTINGS

***Note – Cooling set points refer to the CX34 outlet temperature, however, the system is managed by a ΔT controller. Default setting for cooling should be 7°C, therefore the controller returned temp would be set to 12°C. This will create a 44°F leaving water temperature which is the correct setting. The same logic applies to the heating setting. The default setting for heating should be 35°C, therefore the returned temp would be set to 30°C, this will create a 95°F leaving water temperature which is the correct setting for floor heating and when using floor heat and CCUs together. For FCU-only operation increase the temperature 2-3C as desired.**

Detailed settings as follows:

NO.	Meaning	Selected temperature range	Recommended controller temperature initial setting
1	Cooling returned water temp	10°C ~ 25°C	17°C
2	Heating returned water temp	10°C ~ 55°C	35°C Fan coils 30°C for radiant
3	DHW temp	10°C ~ 50°C	50°C

7 FAULTS

Fault application is used to query the current or historical fault, after entering the fault application, click on the main window of the "current fault" or "historical failure" can be switched to the corresponding interface.

7.1 CURRENT FAULT

To enter the current fault display as shown in Figure 7-1, the left side shows the fault item, the format is "fault number". On the right side of the three buttons are "on a page", "next" page, "reset", click the reset button to reset the current fault.

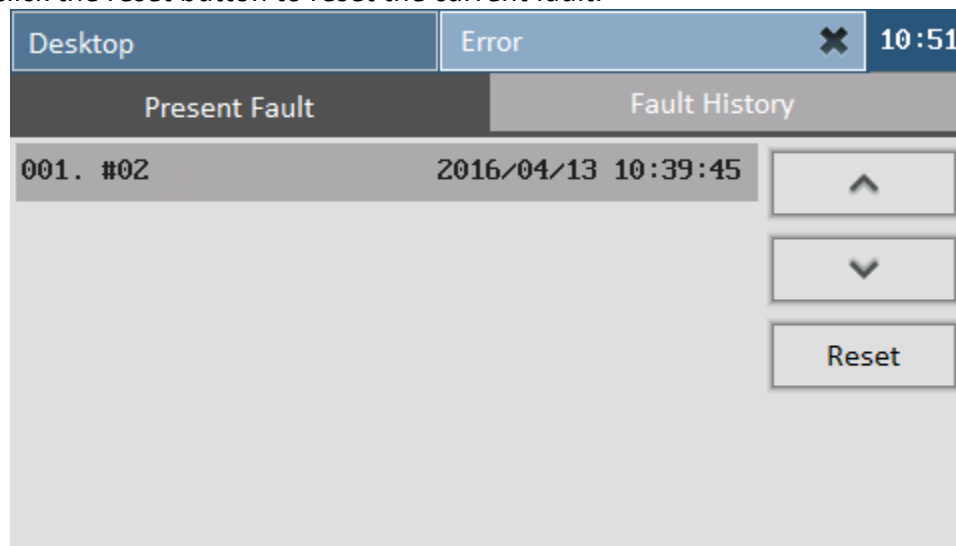


Figure 7-2

7.3 FAULT HISTORY

Enter the history fault display as shown in Figure 7-3, the left side is the fault item, the right side is the previous page, the next page and the query time of the history fault, the query time can be set by clicking the year / month / day.

Desktop	Status	Settings	Manufacturer	Error	17:52
Present Fault			History Fault		
P9 Communication error			2016/10/18 17:11:19		▲
P9 Communication error			2016/10/18 16:52:01		▼
P9 Communication error			2016/10/18 16:15:34		
P9 Communication error			2016/10/18 16:08:37		Year 2016 >
P9 Communication error			2016/10/18 16:07:48		Month 10 >
					Day 18 >
1/1					

Figure 7-3

7.4 ABOUT

The interface displays the touch screen and PLC version information, as shown in Figure 7-4.

Desktop	About ✕	11:17
Main FW vrsion: H8200-U107-10-LIB106		
Configure version: S10-U0.016		
PLC version: P228		

Figure 7-4

8. CX34 Error Codes, Error Meaning, and Reason

Error code	Error Meaning	Reason
E1	Compressor discharge high temp protection	Poor refrigerant or throttle is not normal (stop compressor)
E2	Outdoor air temp sensor error	Outdoor air temp sensor open or short circuit (stop compressor)
E3	Outer coil pipe temp sensor error	Outdoor coil pipe temp sensor open or short circuit (stop compressor)
E4	Pipe returned gas sensor error	Outdoor coil pipe temp sensor open or short circuit (stop compressor)
E5	indoor refrigerant pipe temp sensor error	Indoor pipe temp sensor open or short circuit (stop compressor)
E6	Coil high temp protection	Outdoor coil pipe temp over 60°C (stop compressor)
E7	solar water temp sensor error	solar temp sensor open or short circuit (stop compressor)
E8	AC inlet water temp sensor error	AC return water temp sensor open or short circuit (stop compressor)
E9	AC outlet water temp sensor error	AC outlet water temp sensor open or short circuit (stop compressor)
E10	DHW temp sensor error	DHW temp sensor open or short circuit (stop compressor)
E11	Indoor ambient sensor error	Indoor ambient sensor open or short circuit (stop compressor)
E12	water source inlet water temp sensor error	water source inlet temp sensor open or short circuit
E13	water source outlet temp sensor	water source outlet temp sensor open or short circuit
E14	system anti-freeze twice	(stop compressor)
E15	DHW anti-freeze twice	(stop compressor)

E16	discharge Probe error	Poor outdoor unit heat transfer
E17	System 2 antifreeze twice	(stop compressor)
P1	high pressure protection	(1) too much refrigerant; (2) throttle mechanism failure; (3) high voltage switch failure
P2	low pressure protection	(1) less refrigerant; (2) throttle failure; (3) low-voltage switch failure
P3	compressor overheat protection	(1) less refrigerant; (2) throttle mechanism failure
P4	over current protection Verify that P88 = 4	(1) too much refrigerant; (2) throttle mechanism failure; (3) current sensor failure
P5	indoor unit water flow error	(1) water flow is too small; (2) water switch failure
P6	outdoor water flow error	(1) water flow side is too small; (2) water source side of the water flow switch failure
P7	miss phase	Power failure
P8	wrong phase	Power failure
P9	communication error	The communication line is broken or the control board is damaged
P10	water source anti-freeze	(1) the water source side of the heat transfer or water temperature is too low; (2) water side of the water flow is insufficient
P11	water source water flow not enough	(1) water side of the water flow is low
P12	EPPRON initializes the fault	
P13	Control board and inverter communication fault	(1) The inverter and the circuit board communication line is loose (2) inverter fault
P14	The temperature difference between inlet and outlet is too large	(1) water flow is too small; (2) water switch failure
P15	Current limit frequency fault	Caused by current limitation at lubricant oil return operation.

F1	voltage protection	Power voltage is too high or too low, the voltage is normal after the machine to resume operation (motherboard detection)
F2	IPM Fault	IPM module is damaged
F3	Compressor Drive Fault	The compressor cannot start normally
F4	Compressor over current protection 1	IPM detects that the compressor current is excessive (IPM or compressor or wiring is faulty)
F5	Compressor over current protection 2	The motherboard detects that the compressor current is excessive
F6	IPM Overheat	IPM temperature exceeds the set value
F7	PFC Fault	PFC damage
F8	DC bus over voltage	DC voltage exceeds 410V
F9	DC bus under voltage	DC voltage less than 200V
F10	AC input over or under voltage	Power voltage is too high or too low, the voltage is normal after the machine to resume operation (IPM detection) (175V ~ 255V)
F11	AC input overcurrent	IPM detected AC current exceeded
F12	Temperature sensor Fault	temp sensor is open or shorted
F13	DSP and motherboard communication Fault	Communication break or control board failure
F14	EC fan failure 1	EC fan 1 not connected or fan failure
F15	EC fan failure 2	EC fan 2 not connected or fan failure

9 Commissioning “In Heating Mode Only”

Preparation

After finishing the installation tasks, please check the items below:

1. Check the Wired Controller settings for the standard features.
2. Check that the power cable is securely connected and the screws are tight.
3. Is the display lit on the wired controller after the power is applied?
4. Verify that all the shut off valves and manual valves are open. Insulate all water supply and return pipes. Test only in **heating mode** to verify proper water flow.

Water or Glycol Filling (See page 28) A 10% minimum glycol mixture is required to protect the unit from freezing. Refer to the chart on page 10.

1. With a hose and filling pump connected to the CX34 water system, and all air exhaust valves open in the water system, fill the water loop with water and glycol mixture. Keep the air exhaust valves open until there is a continuous flow of water and glycol mixture coming out of the air exhaust valve. Then close the air exhaust valves. See page 30 and 31 for more details.
2. Discharge the air from both domestic hot water system and air conditioning water system. CXI fan coils have a bleeder valve located near the inlet and outlet ports. The CX34 has a bleeder tube attached to the Brazed plate heat exchanger.

To avoid freezing the heat pump when the air temperature drops below 32F in winter, you must use an appropriate glycol and water mixture just in case the electricity is cut off. We recommend biodegradable non-toxic SPP Corn Glycol, any Propylene Glycol (PG) can be used.

Running a Test- Call tech support if this is your first time commissioning a CX34.

Apply power to the CX34 and select **heating mode** using the wired controller. Return and leaving water temperature should be within 6-7 degrees. If more than 6-7 degrees, there is not enough flow in the system or air in the lines and you will get P5 and P1 errors. Call tech support if any error codes are displayed on the wired controller. Chilrix

Chiltrix Tech Support hours of operation, M-F, 9 am-6 pm EST, 757-410-8640 x119

MOST IMPORTANT!

1. Always maintain an electrical connection with heat pump to enable the antifreeze function.
2. Initial test should be done in **heating mode**. Make sure it is not in cooling mode during first operation or running a test until you make sure the air conditioning circulation pump is working properly and water is flowing smoothly.