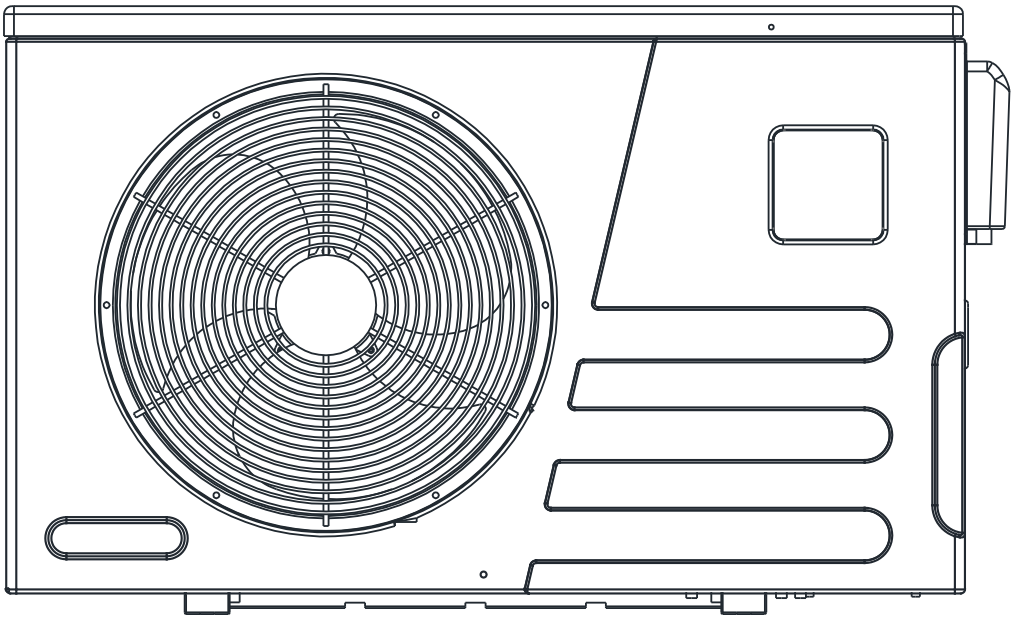
OWNER'S MANUAL

PENTAIR



ecoselect™

For the Installation, Operation and Service of the

ULTRATEMP™ HXi

INVERTER HEAT PUMP

Should the installer or owner be unfamiliar with the correct installation or operation of this type of equipment, you should contact the distributor/manufacturer for the correct advice before proceeding with the installation or operation of this product.
The equipment operator or owner must be provided with this owner's manual.

CUSTOMER SERVICE / TECHNICAL SUPPORT

If you have questions about ordering Pentair replacement parts, and pool products, please use the following contact information:

Customer Service
Australia Wide (8:30 A.M. to 5:00 P.M. AEST & AWST)
Phone: 1300-137-344
e-mail: au.sales@pentair.com
Web site: visit www.pentairpool.com.au to find information about Pentair products.

Technical Support
Melbourne, Victoria (8:30 A.M. to 5:00 P.M. AEST)
Phone: 1300-137-344
e-mail: au.service@pentair.com

Eco Select®

The Eco Select® brand identifies our most eco-friendly products
As the global leader in pool and spa equipment, we've made a strong commitment to develop and offer the most environmentally responsible products available.

When you see the Eco Select® brand on one of our products, you'll know it is our "greenest" and most efficient product in that equipment category.

These products do the best job of saving energy, conserving water, reducing noise, or otherwise contributing to a more environmentally responsible equipment system. In every case, a product that earns the Eco Select brand is clearly our "greenest" and most efficient choice.

Pentair is a member of the product stewardship program Refrigerant Reclaim Australia
This pool water heat pump contains the synthetic greenhouse gas refrigerant R32. By law, the refrigerant must be recovered prior to dismantling and scrapping.

Most local government waste facilities, metal merchants and recyclers provide recovery services. Please ensure the refrigerant will be recovered when disposing of this unit.

For more information please visit www.refrigerantreclaim.com.au

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Notices and Warnings

Important Notice

This manual provides installation and operation instructions for the product. Consult Pentair with any questions regarding this product.

Attention Installer:

This manual contains important information about the installation, operation and safe use of this product. Leave this manual with the owner and/or operator of this product after installation.

Attention User:

This manual contains important information that will help you in operating and maintaining this product. Please retain it for future reference.



WARNING

Before installing this product, read and follow all safety warning notices and instructions which are included. Failure to follow safety warnings and instructions can result in severe injury, death, or property damage. Call 1300-137-344 for additional free copies of these instructions.

Read and Follow all Safety Instructions

This product is designed and manufactured for safe and reliable service when installed, operated and maintained according to the information and installation codes referred to in this manual.

This is a safety alert symbol. When you see this symbol in this manual or on the product, look for one of the following signal words; DANGER, WARNING, CAUTION and NOTICE and comply with the information. Be alert to the potential hazard. Ensure to read and comply with all of the warnings and cautions in this manual.



DANGER

Risk of Electrical Shock or Electrocution!
This product must be installed by a licensed electrician. Installations must comply with:
- The Wiring Rules AS/NZS 3000.
- All applicable local codes and ordinances.
- Always disconnect power at the circuit breaker before servicing the product. Failure to do so could result in death or serious injury to installer, service person, pool users, or others due to electrical shock.
- Improper installation can create an electrical shock hazard that can result in death or serious injury.



WARNING

Water temperature in excess of 38 degrees Celsius may be hazardous to your health. Prolonged immersion in hot water may induce hyperthermia. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above normal body temperature of 37°C. The symptoms of hyperthermia include drowsiness, lethargy, dizziness, fainting, and an increase in the internal temperature of the body.

The effects of hyperthermia include: 1) Unawareness of impending danger. 2) Failure to perceive heat. 3) Failure to recognize the need to leave the spa. 4) Physical inability to exit the spa. 5) Foetal damage in pregnant women. 6) Unconsciousness resulting in danger of drowning.



WARNING

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



WARNING

The use of alcohol, drugs, or medication can greatly increase the risk of fatal hyperthermia in hot tubs and spas.

Notices and Warnings (Continued)

WARNING	The unit should be located on a solid, level, horizontal surface and securely fixed. Ensure free air-flow to all sides of the unit.
WARNING	Never use an extension cable to connect the unit to the electric power supply If there is no suitable earthed supply available, have one installed by a qualified electrician.
WARNING	Do not move/repair the unit yourself - Before carrying out any maintenance, service or repair work, the product must be isolated from the mains electrical supply. To prevent possible injury, only qualified engineers should carry out these works.
WARNING	This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety. Please ensure that young children are supervised to ensure that they do not play with the appliance.
WARNING	Do not install the unit in a place where there is a chance of flammable gas leaks. If there is a gas leak and gas accumulates in the area surrounding the unit, it could cause an explosion.
WARNING	Water Connections - All plumbing connections should be carried out as per the instructions in this manual. Failure to do so could result in water damage to property.
WARNING	Cleaning the Unit - To prevent injury always shut the power 'OFF' when cleaning or servicing the unit. Avoid contact with the fan when running as this will cause serious injury.
WARNING	Error Codes - If an error code occurs or you can smell burning, isolate the unit immediately and call your local installer.

General Installation Information

1. All wiring work must be performed by a licensed electrician, and must conform to all national, state, and local codes.
2. Installer to provide drainage of compartment for electrical components.
3. Power to all circuits must be supplied via a suitably sized Residual Current Device (RCD) in the fixed wiring.
4. An Earth terminal is located inside the supply terminal box. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment and as per the wiring rules.
5. The electrical supply for this product must include a suitably rated switch or circuit breaker to open all ungrounded supply conductors to comply with the Wiring Rules. The disconnecting means must be readily accessible to the occupant.
6. Supply conductor must be sized to support all loads.

UltraTemp Contents and Overview

UltraTemp® HXi Package Contents

- Heat Pump Unit.
- Wi-fi connection module.
- Owners Manual.
- Barrel unions x2
- Drain Hose x2.
- Elbows (for drain hose connection) x2.
- Anti-vibration pads x4.

UltraTemp® HXi Overview

The swimming pool heat pump is one of the most economical ways of heating your swimming pool efficiently. Using the free renewable energy from the air,it is up to 14 times more efficient than traditional heating. The swimming pool heat pump extends your swimming season and gives you comfort at high level. You could enjoy swimming not only in summer,but also in spring,autumn and even winter time.

ECO Friendly
The Heat Pump uses R32 Refrigerant which is ozone friendly and dramatically reducing carbon emissions with a low GWP (Global Warming Potential).

Titanium heat exchanger
The advanced titanium heat exchanger guarantees a longer life span, free of corrosion. It can be used with all types of water treatment including chlorine, iodine, bromine and salt water.

Multiple functions
- Cooling and heating functions available
- Auto operation, Auto-restart, Auto defrost
- Auto timer on/off: no human attendance is required
- Wide ambient working range: -7°C to 43°C

Reliable operation
The Heat Pump has several built in safety features, which include insufficient water flow protection, high/low pressure protection, overload protection, compressor protection.

Self-diagnosis
When there is malfunction,the swimming pool heat pump will make self-diagnosis by displaying error code on the control panel. To identify the problem,please refer to ERROR CODES pages in this manual.

Dimensions

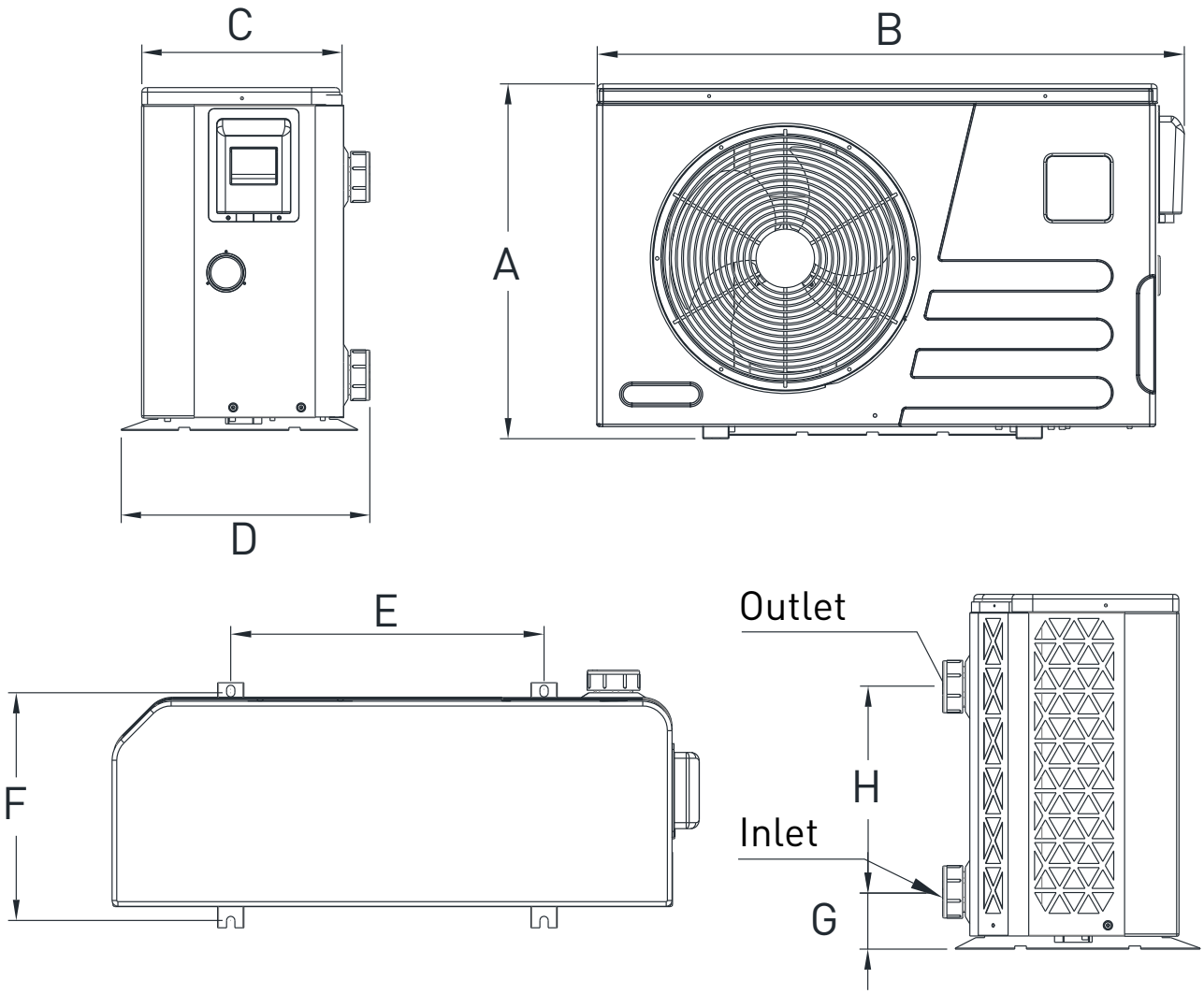


Figure 1: Dimensions

Key	Dimensions			
	UTHP-9-HXi, UTHP-12-HXi	UTHP-16-HXi	UTHP-20-HXi	UTHP-24-HXi, UTHP-28-HXi UTHP-35-HXi
A	605mm	768mm	862mm	855mm
B	999mm	1044mm	1158mm	1159mm
C	350mm	385mm	428mm	435mm
D	439mm	483mm	514mm	490mm
E	535mm	615mm	758mm	738mm
F	395mm	428mm	467mm	467mm
G	98mm	101mm	96mm	97mm
H	350mm	350mm	466mm	465mm

The ingress protection rating is IPX4

Specifications

Description		UltraTemp 9kW Inverter	UltraTemp 12kW Inverter	UltraTemp 16kW Inverter
Part No.		**UTHP-9-HXi**	**UTHP-12-HXi**	**UTHP-16-HXi**
Ambient 27^{0}C Water 26^{0}C in 28^{0}C out 80% Humidity	Capacity (kW)	2.3~ 9.0	2.5~12.0	3.1~16.0
	Power (kW)	0.16~1.41	0.18~1.90	0.22~2.54
	COP	14.2~6.4	14.1~6.3	13.9~6.3
Ambient 15^{0}C Water 26^{0}C in 28^{0}C out 70% Humidity	Capacity (kW)	1.7~7.0	2.1~9.0	2.4~12.6
	Power (kW)	0.24~1.46	0.29~1.91	0.34~2.73
	COP	7.2~4.8	7.1~4.7	7.0~4.6
Ambient 35^{0}C Water 29^{0}C in 27^{0}C out	Capacity (kW)	3.15	3.75	5.61
	Power (kW)	1.4	1.58	2.2
	EER	2.25	2.37	2.55
SCOP (EN 17645)		7.38	7.36	7.44
Energy Efficiency Grade (EN 17645)		A	A	A
Power Supply		230-240VAC 50Hz	230-240VAC 50Hz	230-240VAC 50Hz
Max Current (A)		9.0	10.9	16.6
Max Power (kW)		2.10	2.49	3.80
Compressor Type		Rotary Inverter	Rotary Inverter	Rotary Inverter
Water Flow (LPM)		53	66	86
Sound Pressure (1m dBa)		39-50	41-52	42-53
Refrigerant		R32 430g	R32 480g	R32 600g

Description		UltraTemp 20kW Inverter	UltraTemp 24kW Inverter	UltraTemp 28kW Inverter	UltraTemp 35kW Inverter
Part No.		**UTHP-20-HXi**	**UTHP-24-HXi**	**UTHP-28-HXi**	**UTHP-35-HXi**
Ambient 27^{0}C Water 26^{0}C in 28^{0}C out 80% Humidity	Capacity (kW)	3.70~20.0	6.5~24.3	7.1~28.2	8.15~35.1
	Power (kW)	0.27~3.08	0.45~3.74	0.49~4.41	0.57~5.18
	COP	13.8~6.2	14.5~6.5	14.3~6.4	14.3~6.8
Ambient 15^{0}C Water 26^{0}C in 28^{0}C out 70% Humidity	Capacity (kW)	2.6~14.5	4.5~19.0	5.1~21.0	7.8~24.4
	Power (kW)	0.38~3.15	0.62~3.88	0.71~4.38	1.07~5.55
	COP	6.9~4.6	7.3~4.9	7.2~4.8	7.3~4.4
Ambient 35^{0}C Water 30^{0}C in 28^{0}C out 41% Humidity	Capacity (kW)	7.85	8.93	11.78	14.63
	Power (kW)	3.18	3.43	4.44	5.41
	EER	2.47	2.61	2.65	2.7
SCOP (EN 17645)		7.42	7.59	7.48	6.68
Energy Efficiency Grade (EN 17645)		A	A	A	B
Power Supply		230-240VAC 50Hz		400-415V 3~ 50Hz	
Max Current (A)		17.5	22.7	10.8	11.7
Max Power (kW)		3.80	4.96	6.30	7.23
Compressor Type		Rotary Inverter			
Water Flow (LPM)		100	141	158	230
Sound Pressure (1m dBa)		43-54	44~55	45~56	47~57
Refrigerant		R32 670g	R32 1150g	R32 1350g	R32 1350g

Installation

Only a qualified service person should install the UltraTemp™ Heat Pump. Before installing this product, refer to the Important Warning and Safety Instructions on page 4.

Materials Needed for Installation
The following items are needed and are to be supplied by the installer for all heat pump installations:
1. Plumbing connections (50mm).
2. Level surface for proper drainage.
3. Suitable electrical supply line. See rating plate on unit for electrical specifications. A junction box is not 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. Electric isolation switch that will interrupt all power to the unit. This switch must be within line of sight of the heat pump. Check local codes and wiring rules AS/NZS 3000 for requirements.
5. Watertight conduit to run the electrical supply line.

Equipment Pad
For proper drainage of condensation and rain water, place the heat pump on a flat slightly pitched surface, such as a concrete or fabricated slab (pad). If possible, place the pad at the same level or slightly higher than the filter system equipment pad.
Note: Be sure that the pad is pitched not more than 20mm per metre in any direction as needed for runoff.

Drainage and Condensation
Condensation occurs from the evaporator coil while the unit is running, and drains at a steady rate (up to 20L per hour), depending upon ambient air temperature and humidity. The more humid the ambient conditions, the more condensation will be produced. 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 base of the unit, clear of debris.

Roof Run-off
Make sure the heat pump is not located where large amounts of water may run-off from a roof into the unit. Sharp sloping roofs without gutters will allow massive amounts of rain water, mixed with debris from the roof to be forced through the unit. A gutter or down spout may be needed to protect the heat pump.

Lawn Sprinklers
Avoid placing lawn sprinkler near the heater - they can spray water into the heater and void the warranty. Be sure to direct any spraying water away from the heater. Note the wind direction to be sure water from sprinklers is not blown toward the heater. Sprinkler heads can produce high water pressure and spray at an angle, different from typical rain and humid weather. Also, sprinklers connected to a well water system can cause mineral build up on the evaporator coils and electronics.

Coastal Environments
Salt spray from coastal environments can cause corrosion of certain heat pump components, which is not covered by warranty. Care and attention should be taken to locate the heat pump to avoid salt spray from the surrounding environment.

Location and Clearances

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 UltraTemp® Heat Pump must be placed to provide clearances on all sides for maintenance and inspection.
DESIGNED FOR OUTDOOR INSTALLATION ONLY - contact Pentair for alternative installations.

1. At least 1.5m clearance must be available in the front (2.5m ideal) and 300 mm on all the other sides of the heat pump for service and proper air flow. (Manufacturer's recommendation).
2. If the heat pump is to be installed under a cover or under a vertical overhang, the unit must have a minimum of 500mm clearance from the top of the heat pump. (Manufacturer's recommendation).
3. Install a minimum of 3.5m from the inside wall of the pool or spa unless the heat pump is separated from the pool or spa by a 1.8m high solid fence or other permanent barrier.
4. Install heat pump a minimum of 300mm from the wall of the house.
5. Allow 500mm clearance above the heat pump for service access.
6. Base must be level. It is important that condensate and rain water will drain away from the drip tray. Any unevenness in the base will cause water to pool in the drip tray and corrosion may occur.

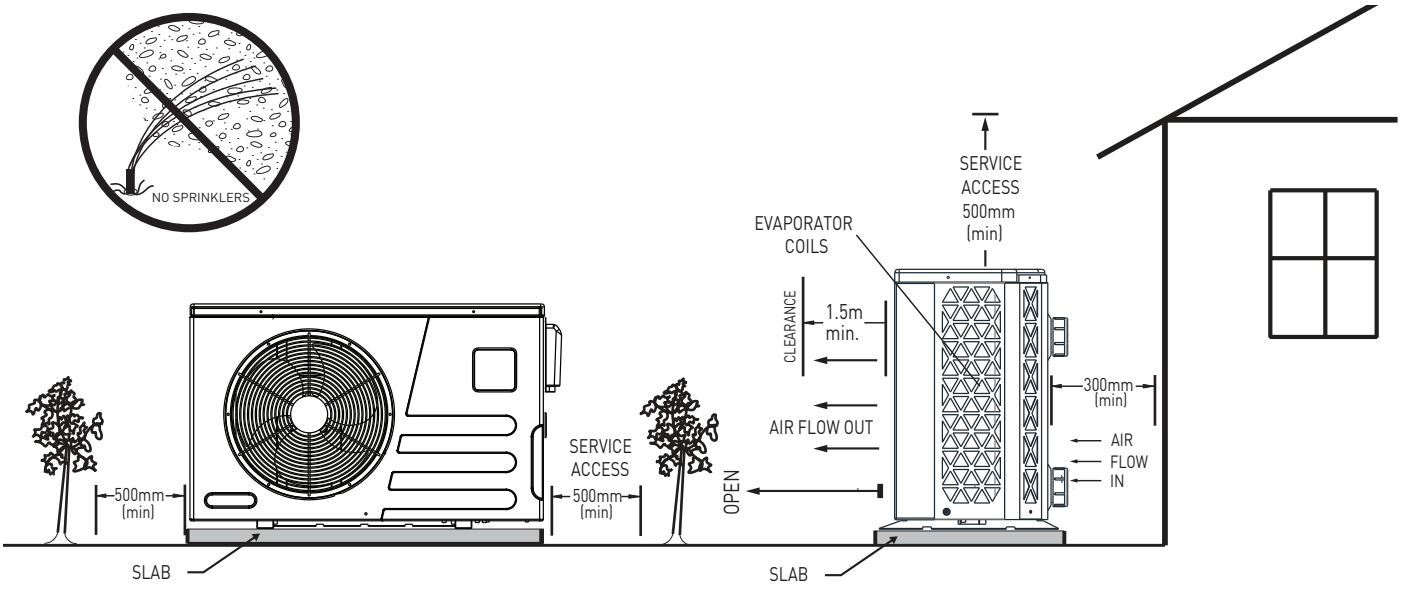


Figure 2: Location and Clearances

Anchor Bolt Installation

Installation of anchor bolts is recommended. Anchor bolts hold the heat pump to the equipment pad in order to withstand high winds, accidental movement and excessive vibration.
To install anchor bolts:
1. Be sure the heat pump is in its permanent location on the equipment pad.
2. Locate the mounting brackets at the base of the heat pump in the four (4) locations, shown in the image to the left.
Note: Bolts and bolt anchors are not included with the heat pump. The installer must provide 1/4" x 1-3/8" stainless steel anchor bolts and the appropriate size concrete anchor to mount the clamp to the equipment pad. Be sure to check local codes.
3. Fit rubber anti-vibration pads under each heat pump bracket.
4. Mark the position of the hole in each bracket on the equipment pad.
5. Use a masonry drill bit and drill a hole in the cement with a diameter as determined by the concrete anchor, at each of the marks on the equipment pad. The hole should be approximately 40mm deep.
6. Insert a bolt anchor into each of the holes. Be sure the anchors are set completely into the holes.

Anchor Bolt Installation (Continued)

7. Position the mounting brackets so that the holes in the brackets are over the bolt anchors. Be sure that the clamp hooks are over the lip of the heat pump base.
8. Insert an anchor bolt through each clamp into the anchor and tighten to secure the clamp and heat pump to the equipment pad.

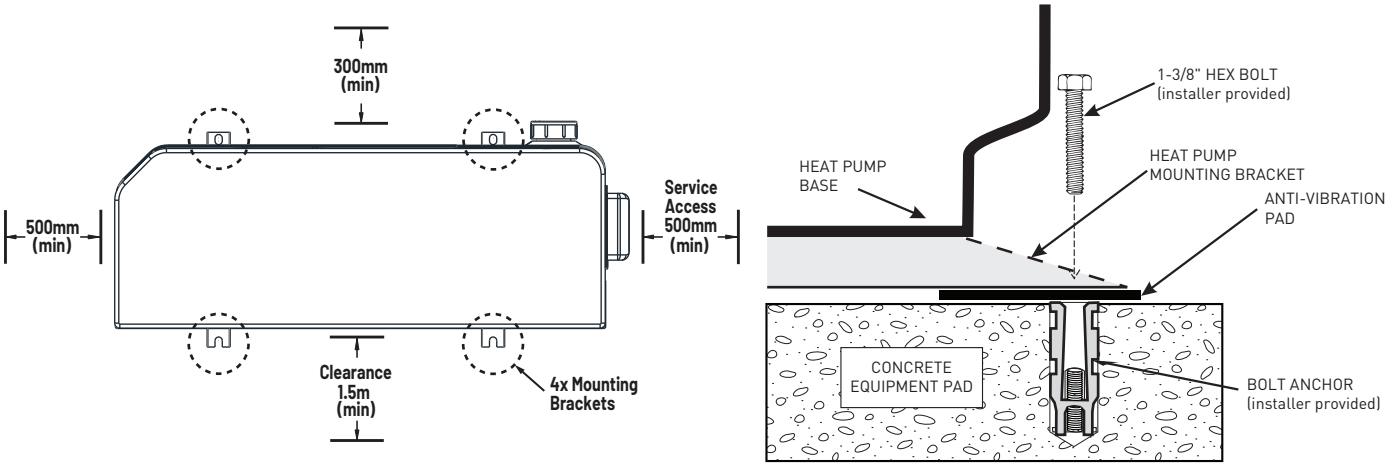


Figure 3: Anchor Clamp Installation

Rubber Mount Installation

Installation of the anchor clamps is recommended in all installations. Anchor clamps hold the heat pump to the equipment pad in order to withstand high winds, accidental movement and excessive vibration.
To install the anchor clamps:
1. Be sure the heat pump is in its permanent location on the equipment pad.
2. Locate the mounting brackets at the base of the heat pump in the four (4) locations, shown in the image to the left.
3. Fit the anti-vibration pad (included) under each mounting bracket. Passing the bolt thread throught ht mounting hole.
4. Fit the washer and nut to the bolt thread and fasten securely. Repeat with all 4 mounts.

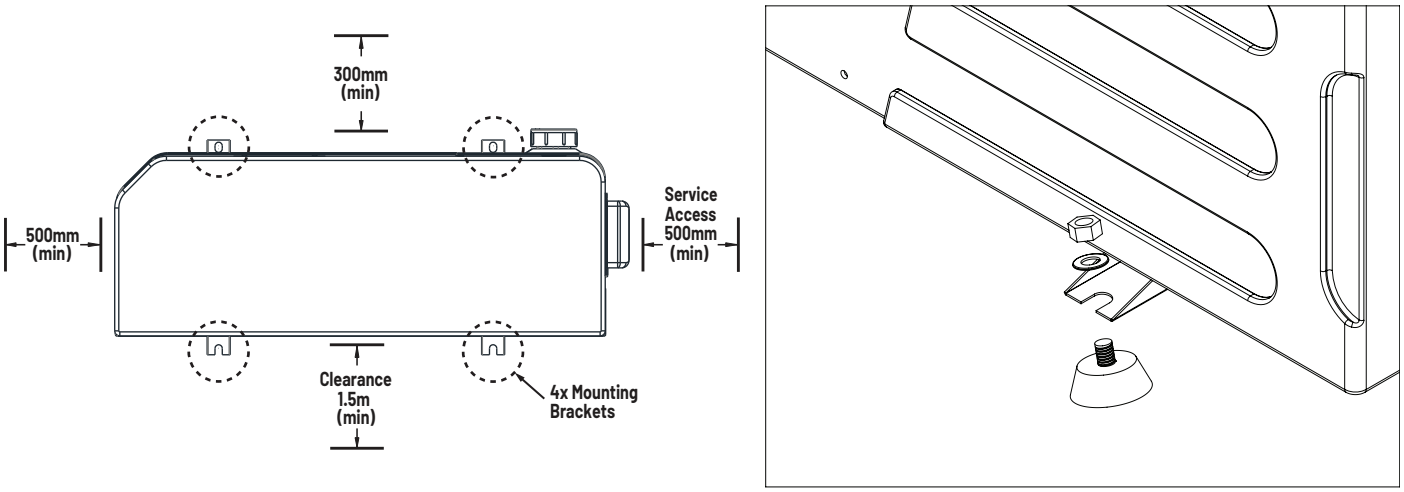


Figure 4: Anchor Clamp Installation

Water Connections to the Heat Pump

2" / 50mm quick connect union fittings have been supplied for the water inlet and outlet connections. Filtered cool water is plumbed to the inlet, as labelled. Heated water flows through the outlet, as labelled. PVC piping (AS/NZS 1477) should be connected to the heat pump. The unions, provided with the unit, accept 50mm PVC pipe.

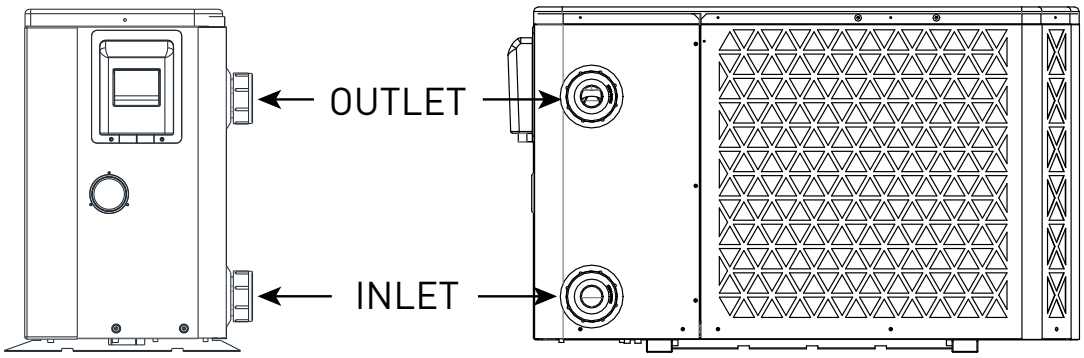


Figure 5: Water Connections to the Heat Pump

Condensate Drainage

The HXi heat pump will produce an amount of condensate during normal operation. The condensate is pure water and is fine to discharge into stormwater or onto the garden.

In the package there are 2 condensate hoses, 2 connecting elbows and 2 plugs. There are 4 holes in the drip tray.

1. On the front right hand side of the unit, there is a drain hole. One elbow and drain hose must be connected here. This is the only drain hole on this side so it cannot be plugged.
2. There are another three drain holes which drain from the main compartment of the drip tray. Choose one of these to connect the second drain hose and plug the other two holes with the plugs supplied.

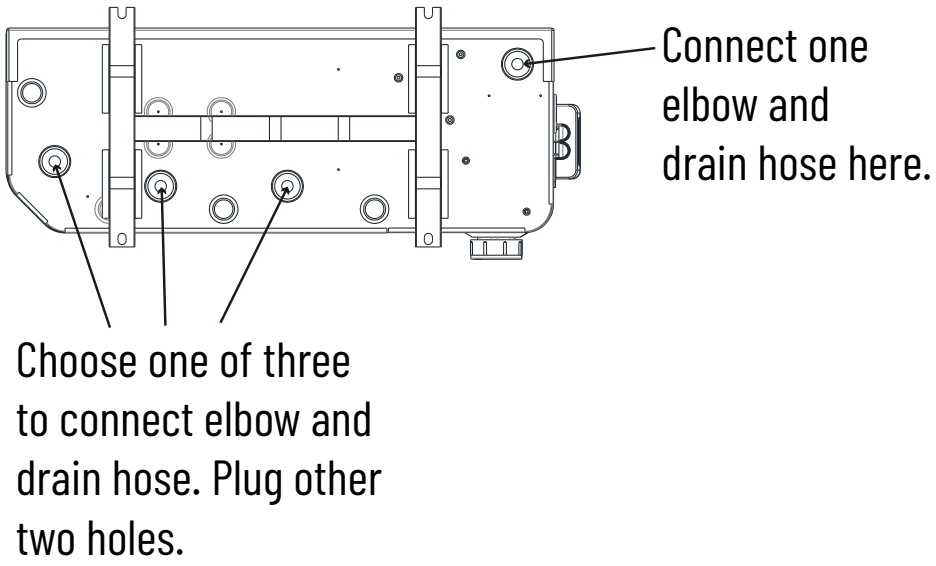


Figure 6: Underside view - Condensate drain connections.

Plumbing Connections - Standard

The image below shows the standard plumbing layout with a single UltraTemp™ Heat Pump unit. Arrangement of pool system components (other than the standard plumbing image below), can affect the operation of the heat pump.

Note: Be advised that when pool equipment is located below the pool surface a leak can result in large-scale water loss or flooding. Pentair is not responsible for such water loss or flooding or damage.

The heat pump should be connected to a filtration circuit through a by-pass which consists of 3 valves. It is imperative that the by-pass is placed after the pump and the filter. These valves allow to regulate the water flow which passes through the heat pump and to isolate the heat pump completely for any maintenance work, without cutting the filtration flow.

If your installation is equipped with water treatment devices (chlorine, bromine feeder, salt water chlorine generator, others) the by-pass must be installed before the water treatment devices, with a non-return check valve between the by-pass and water treatment devices.

Water inlet and outlet are designed to be connected to rigid pressure PVC tube (for swimming pool) 50mm, directly glued to the union connectors provided.

Water pipes must be fixed on the floor or the walls, so the heat pump will not support the weight of the water inside the plumbing.

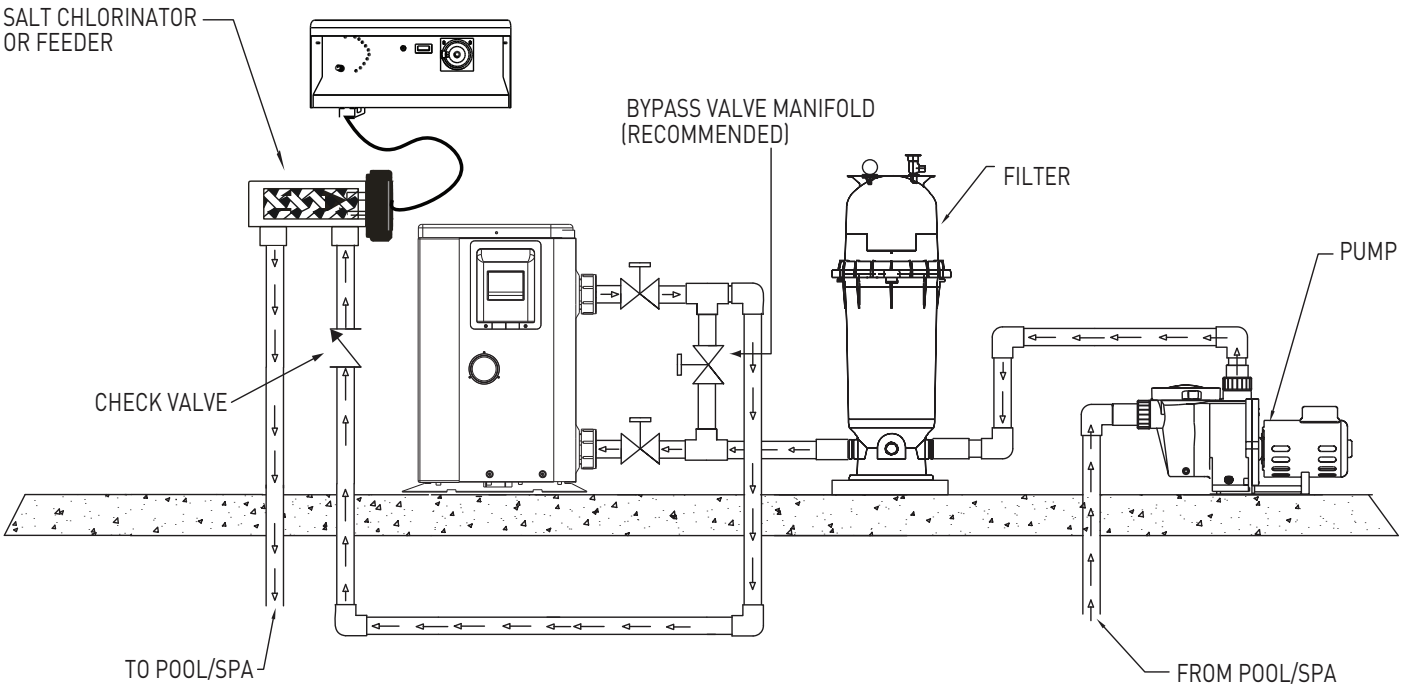


Figure 7: Plumbing Connections - Standard Circulation System

Plumbing Connections - Separate Circulation System

The UltraTemp heat pump can also be connected on plumbing separate to the main filtration system. In this configuration the pump will take water from separate pool outlets and flow directly into the heat pump. A filter is not essential in this configuration, however it may be required in circumstances where there is large debris in the water, or poor water quality, which could cause blockages in the heat pump.

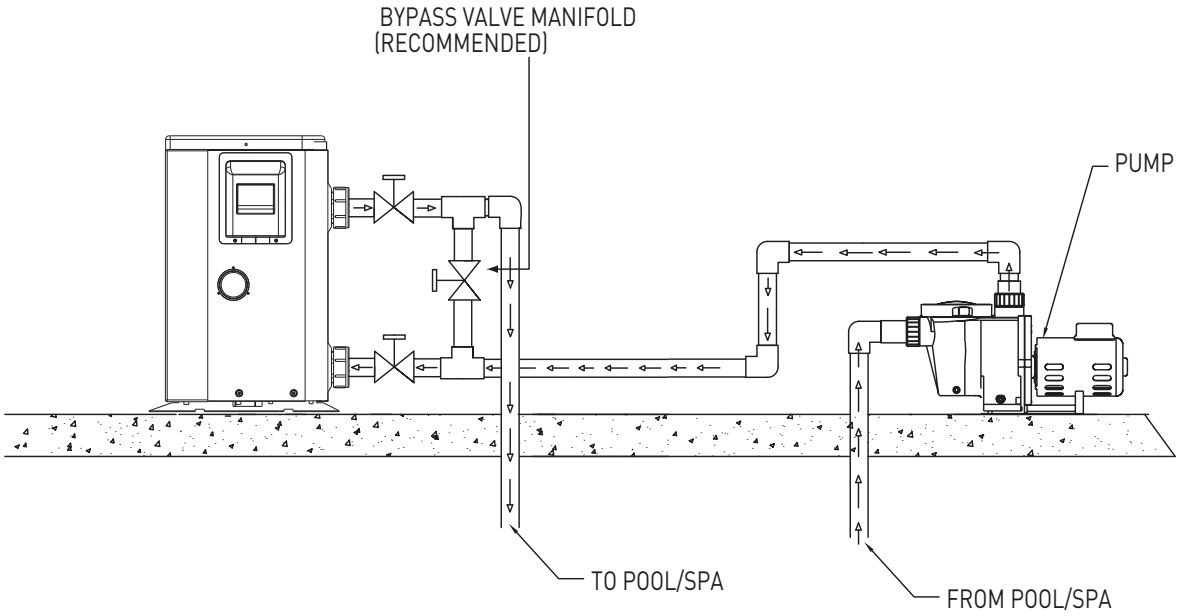


Figure 8: Plumbing Connections - Separate Circulation System

The heat pump should be connected through a by-pass which consists of 3 valves. These valves allow to regulate the water flow which passes through the heat pump to optimise performance and also to isolate the heat pump for service. The valve network is not required when using a variable speed pump, in this configuration, as the pump can be adjusted to optimise the flow through the heat pump.

When installing the pool plumbing for this configuration, at least two pool outlets shall be used with minimum separation as per AS1926.3. Ensure that the plumbing configuration of the pool outlets and the pool outlet covers are compliant to AS1926.3.

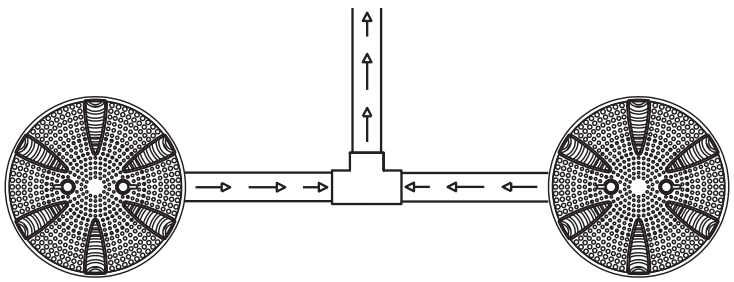


Figure 9: Twin Safety Suctions

In this configuration, the circulation pump can be powered by the heat pump. Refer to the electrical wiring diagram for connection details and ensure this work is undertaken by a qualified electrician in accordance with the wiring rules.

Multiple Heater Type Installation

The Pentair UltraTemp heat pump may be used in conjunction with a gas or electric heater or any combination of heat sources including solar. When using multiple heater types, all heat sources should be plumbed in series to work correctly and efficiently. A recommended plumbing layout for a heat pump / heater / solar combination heating system for a pool / spa combination is shown below. Your system may not contain all of these components, but the basic plumbing will apply by eliminating the component in the illustration that is not a part of your system. Each heater should be activated electronically and not operated simultaneously.

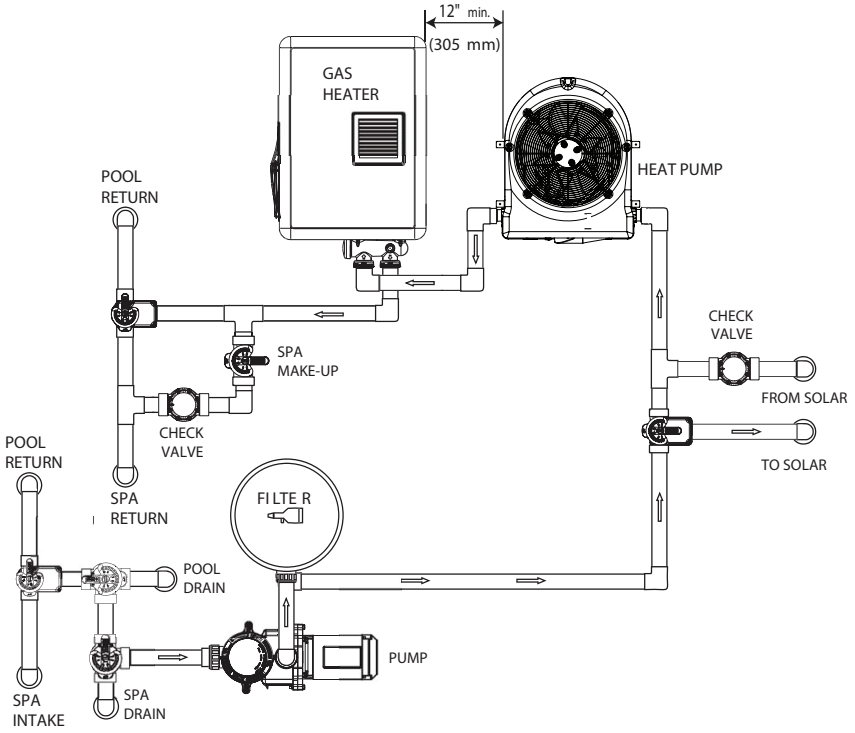


Figure 10: Multiple Heat Source Configuration

Multiple Heat Pump Installation

When installing multiple heat pumps, they shall be plumbed in parallel in accordance with the below figure.

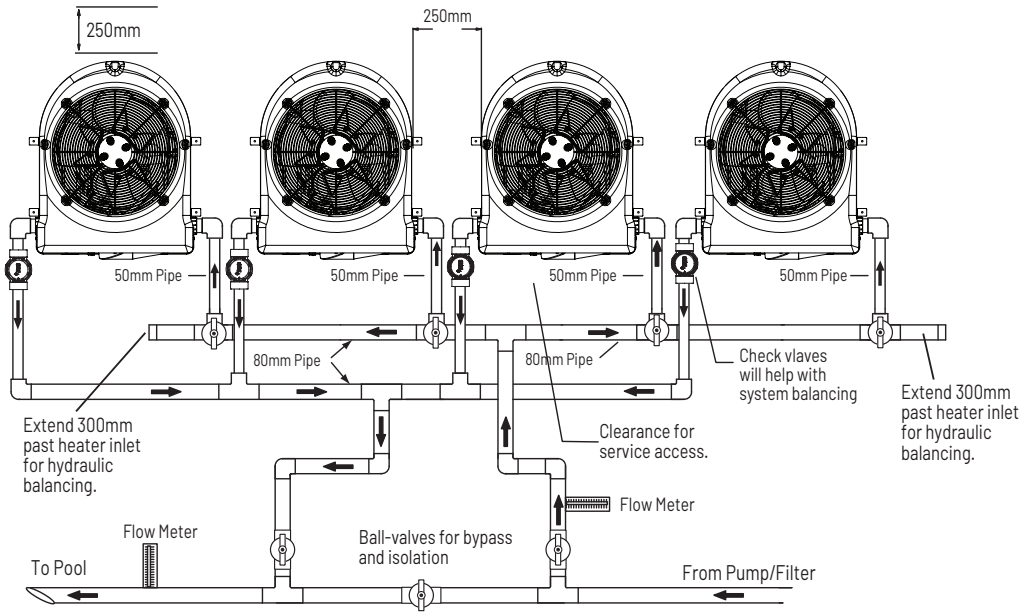


Figure 11: Multiple Heat Pumps Configuration

Electrical Connections

General Information

Wiring connections must be made exactly as shown in the wiring diagram found on the inside of the heat pump access panel; see the wiring diagrams on page 35.
The UltraTemp™ Heat Pump must include a definite means of grounding and bonding. There is a ground lug inside the heat pump electrical compartment.

Equipotential Bonding

The Wiring Rules (AS/NZS 3000) and most other codes require in many circumstances that metallic components of a pool structure, including reinforcing steel, metal fittings, and above ground equipment be bonded together with a solid copper conductor. The heat pump contains a metal (titanium) heat exchanger which is in contact with the pool water, which may need to be connected to this bonding grid. A bonding lug is provided to ensure this requirement can be met. Please refer to the Wiring Rules (AS/NZS 3000) and any local codes for details on whether equipotential bonding is required.

Mains Power

Electrical wiring to the heat pump must be in accordance with the latest edition of the Wiring Rules (AS/NZS 3000). All wiring must be done by a certified or qualified electrician.

Power to the heat pump must be protected by an RCD or RCBO. The heat pump should be the only device connected to the protected circuit. For high power model heat pumps (16kW-24kW) it may be necessary to use a D-Curve type RCD/RCBO to avoid nuisance tripping with compressor starts.

The following is the procedure to wire the heat pump to the electrical source:
Be sure the power to the circuit for the heat pump is turned off.
1. Remove the service panel to the heat pump electrical compartment.
2. Electrical supply lines must be run through watertight conduit on the front panel. Run the wires and conduit from the power source and connect them to the conduit connection. Use suitable gauge connection wire as per below table.
3. Connect the power leads to the terminals in the electrical compartment as shown in the wiring diagram.
4. Verify that all other wires are secure, they may have loosened during shipment.
5. Connect the ground wire to the ground lug provided.
6. Replace the service panel and reinstall screws to hold it in place.

Heat Pump	Cable Size	Circuit Breaker*
9kW	10A Plug and Cable Provided	10A**
12kW	15A Plug and Cable Provided	16A* *
16kW	3 x 4mm^2(L, N, E)	20A
20kW	3 x 6mm^2(L, N, E)	25A
24kW	3 x 6mm^2(L, N, E)	32A
28kW & 35kW	5 x 2.5mm^2(L1, L2, L3, N, E)	20A

* If there is any discrepency between this and Australian Standard, please follow the standard.
** Should be determined by requirement of GPO to which heat pump is connected to.

Electrical Connections (Continued)



Figure 12: Location of Electrical Panel

Power Connections

L = Live/Active 230V power supply input.
N = Neutral 230V power supply input.
E = Earth 230V power supply input & Earth for pump output.
1 = Live/Avtive 230V pump output.
2 = Neutral 230V pump output.

Signal Connections

3&4 - Dry contact output to junction box or controller.
5&6 - Control dry contact input. Remove loop before connectin to controller.

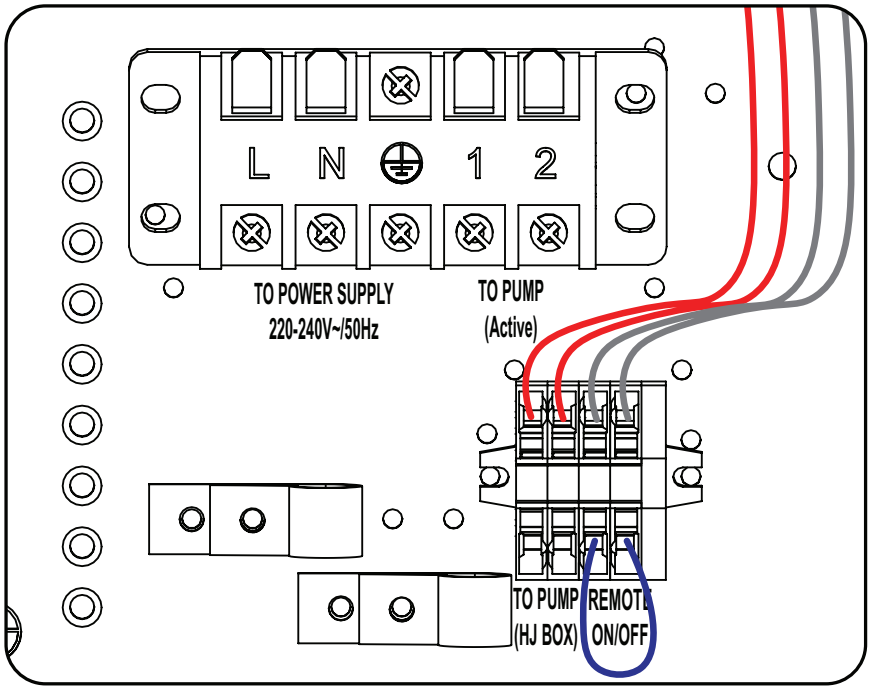


Figure 13: Electrical Connections for Single Phase Units

Electrical Connections (Continued)

Power Connections
R = Phase 1 Live/Active 415V Input.
S = Phase 2 Live/Active 415V Input.
T = Phase 3 Live/Active 415V Input.
N = Neutral power supply input.*
E = Earth power supply input.

*N Terminal is Always Neutral. Please check neutral in supply wiring. Failure to connect neutral wire to the correct terminal can result in damage to the unit not covered by warranty. Building wiring may be as per old or current wiring standard.

Old wiring standard (pre 2018):
Red = Phase 1
White = Phase 2
Blue = Phase 3
Black = Neutral
Green/Yellow = Earth

Current wiring standard (post 2018):
Brown = Phase 1
Black = Phase 2
Grey = Phase 3
Blue = Neutral
Green/Yellow = Earth

Circulation Pump Connections:
L = Live/Avtive 230V pump output.
N = Neutral 230V pump output.
Earth = Pump earth.

Signal Connections
Control dry contact input. Remove loop before connectin to controller.

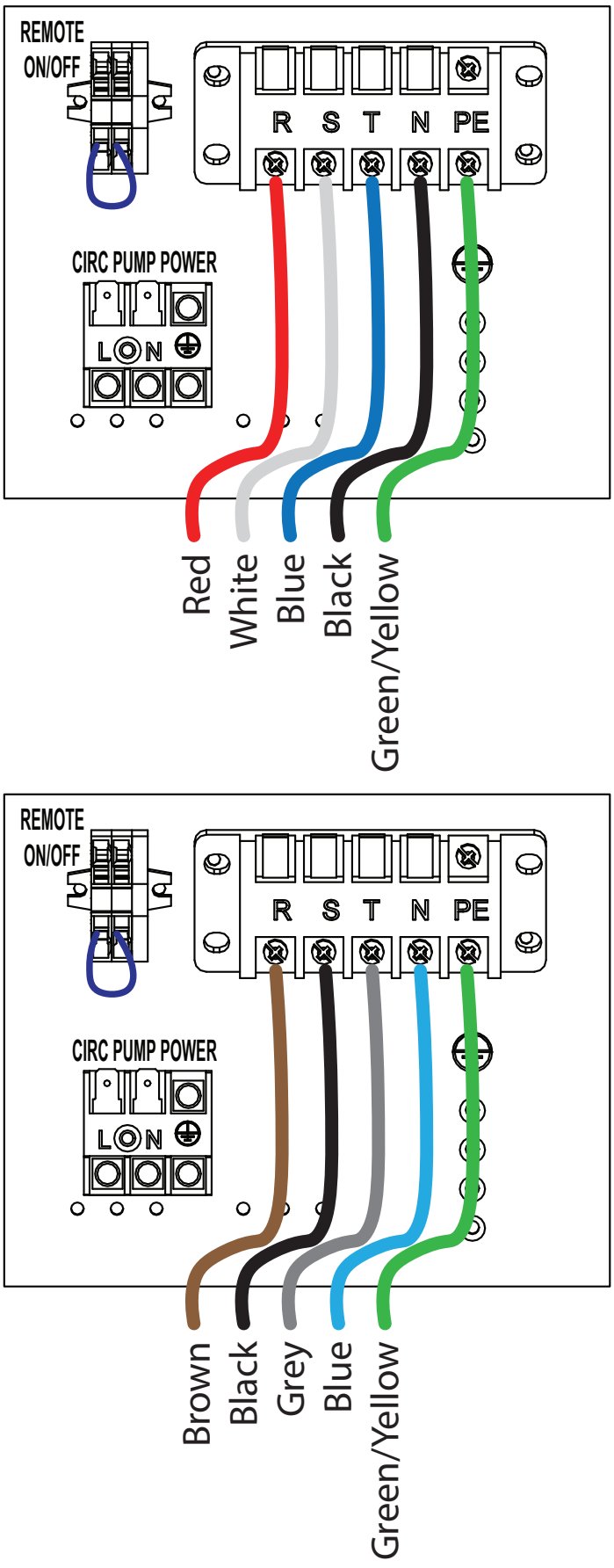


Figure 14: Electrical Connections for Three Phase Units

Configuration

Control Panel

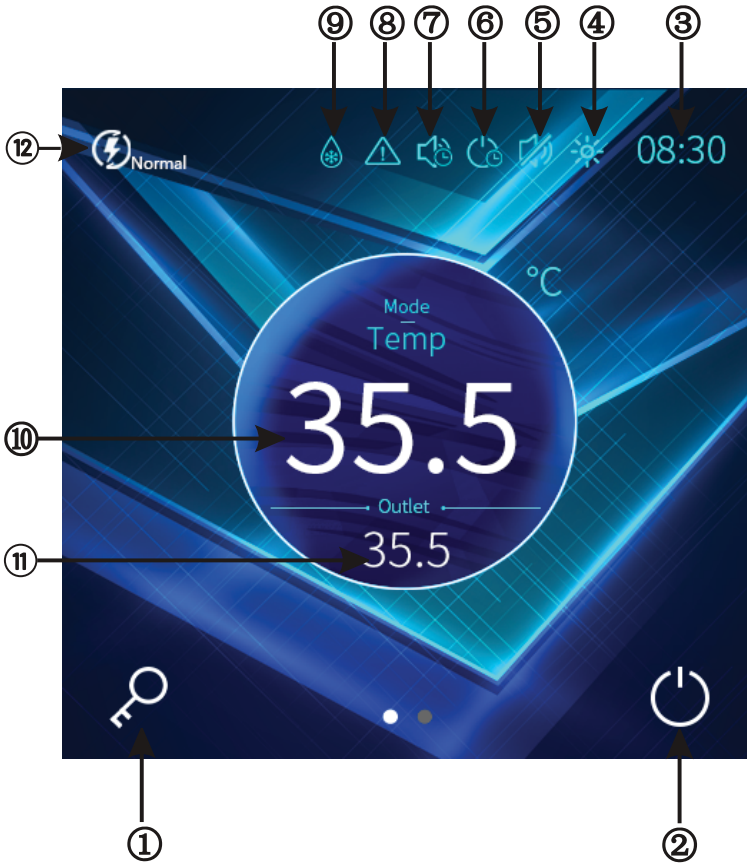


Figure 15: Control Panel

Ref	Icon	Function
1	Key / Lock	Tap the key to lock the screen. Hold the padlock for 3 seconds to unlock the screen.
2	On/Off	Tap to turn the heat pump on or off.
3	Time	This shows the current time.
4	Mode Icon	Shows whether Heating, Cooling or Smart mode is active.
5	Mute	This icon will show if the control pad is muted.
6	Timer Mode	This icon will show if the on/off timer is enabled.
7	Timed Mute Mode	This icon will show if the mute timer is enabled.
8	Fault Icon	This icon will show if there is a fault detected with the heat pump.
9	Defrost Icon	This icon will show if the heat pump is in defrost mode.
10	Water Inlet Temperature	The current water inlet temperature (the water from the pool).
11	Water Outlet Temperature	The current water outlet temperature from the heat pump. This should be 1-2 degrees higher than the inlet temperature.
12	PV Mode Icon	Displays the current Solar PV mode.

Control Panel (Continued)

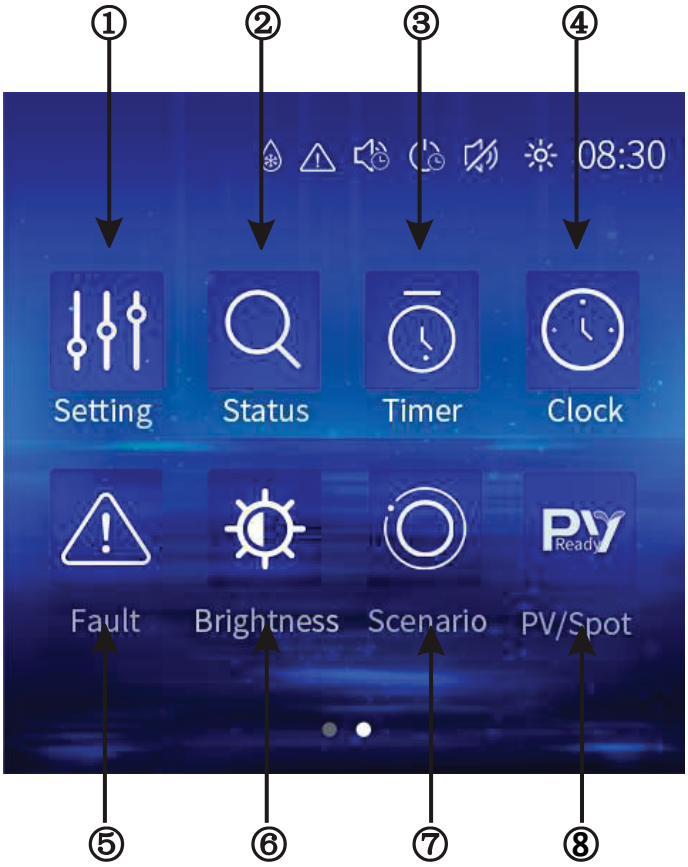
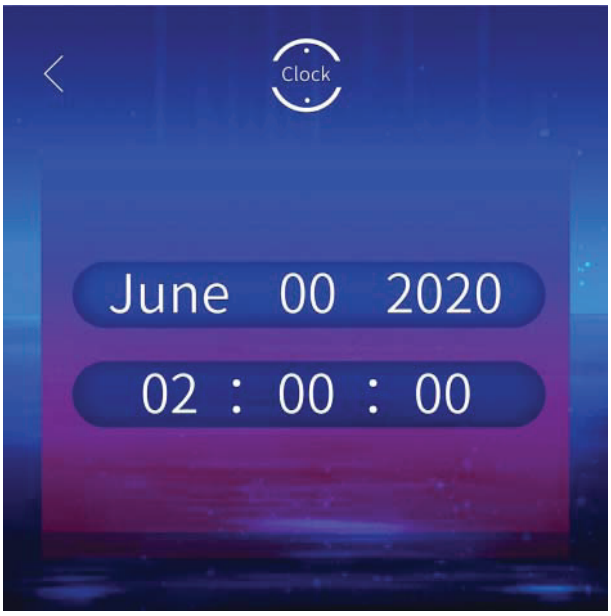


Figure 16: Control Panel Menu Screen

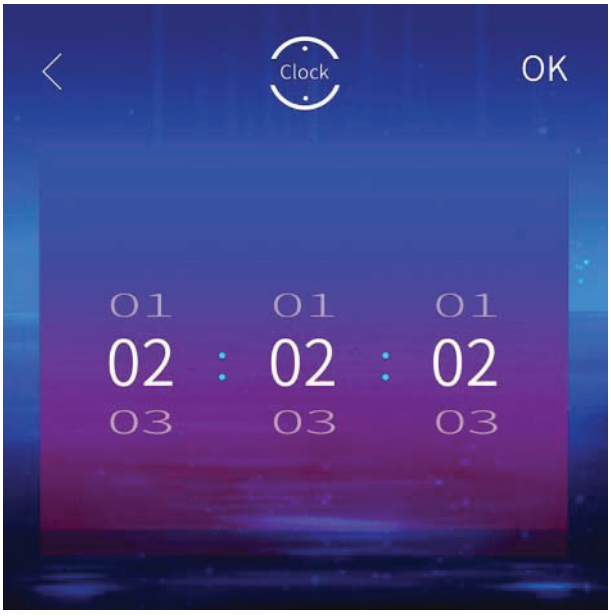
Ref	Icon	Function
1	Settings	Tap this to enter the settings menu.
2	Status	Tap to enter the status menu.
3	Timer	Tap to enter the timer menu. For setting the on/off timer.
4	Clock	Tap to enter the clock menu for setting the system time.
5	Fault	Tap to view the fault history.
6	Brightness	Tap to select the screen brightness.
7	Scenario	Tap to enter the heat pump operation scenario menu.
8	PV/Spot	Tap to enter the Solar PV / Spot menu.

Setting the Clock

1. On the main interface screen, swipe left and tap  to enter into clock setting interface.
2. Tap the date. This will this take you to the date setting interface. Swipe up and down on the Month, Day and Year to select the correct date. Tap OK to save the date, tap < to go back without saving.
3. Tap the time. This will take you to the time setting interface. Swipe up and down on the Hours, Minutes and Seconds to select the correct time. Tap OK to save the time, tap < to go back without







Turning Heat Pump On and Off

When the heat pump is off, the main screen will have a black background and display "OFF" in the centre.

To turn the heat pump on, tap the power button . The background will change to blue and the current temperature will be displayed on the screen, indicating the heat pump is on. If you do not set a timer, the heat pump will stay on indefinitely as long as there is water flow. To manually turn the heat pump off, tap the power button . The main display will change to a black background and display "OFF" again, indicating the heat pump is off.



Setting the Temperature and Mode

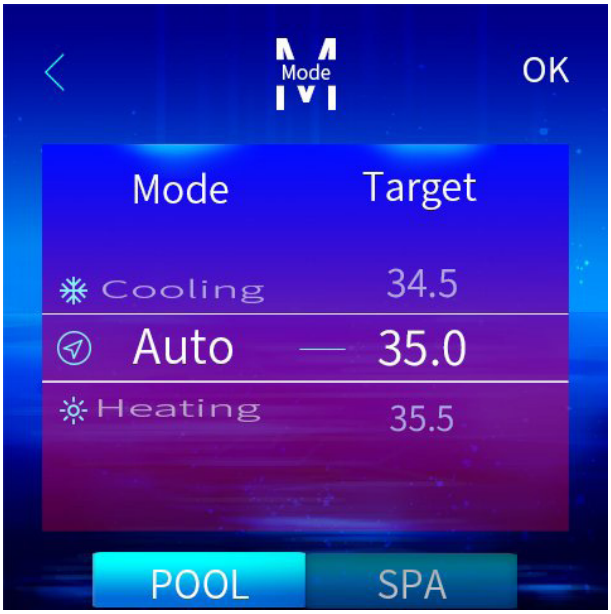
The UltraTemp HXi heat pump can work in heat/cool or auto mode. To set the temperature and mode:

1. On the main interface screen, tap the centre of the screen where the temperature is displayed. This will display the 'Mode' screen.
2. On the left hand side of the screen the mode will be displayed. Swipe up and down over the mode to choose between Heating, Cooling or Auto. Except in really warm climates, Heating mode is the normal mode to choose for heating your pool.
3. On the right hand side of the screen, the target temperature will be displayed. Swipe up and down on the temperature to set the desired water temperature.
4. Tap OK to save the mode setting. Tap < to go back without saving.



Spa Heating Mode

Pool heating mode is the default heating mode. If you are predominently heating a spa, then you can choose spa mode. Spa mode allows the maximum temperature setting to reach 40⁰ C and optimises other parameters to enhance your spa comfort.

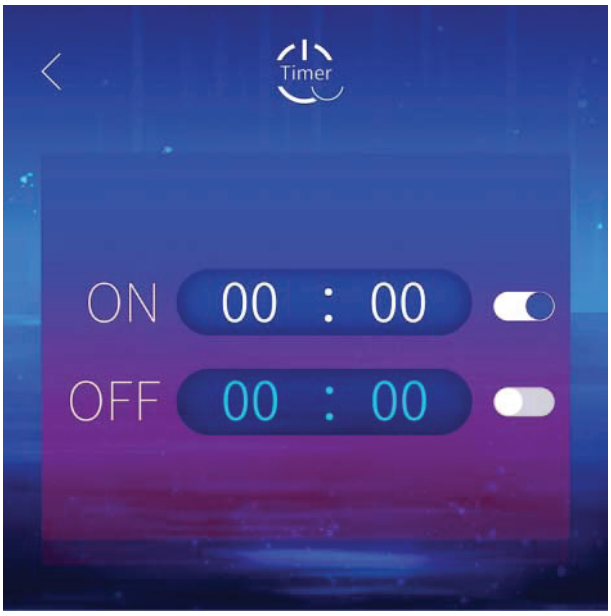


Setting the On/Off Timer

The timer option will start and stop the heat pump at the specified times. The heat pump still requires water flow to operate. If there is a water circulation pump connected to the heat pump, the timer will also start the water circulation pump.



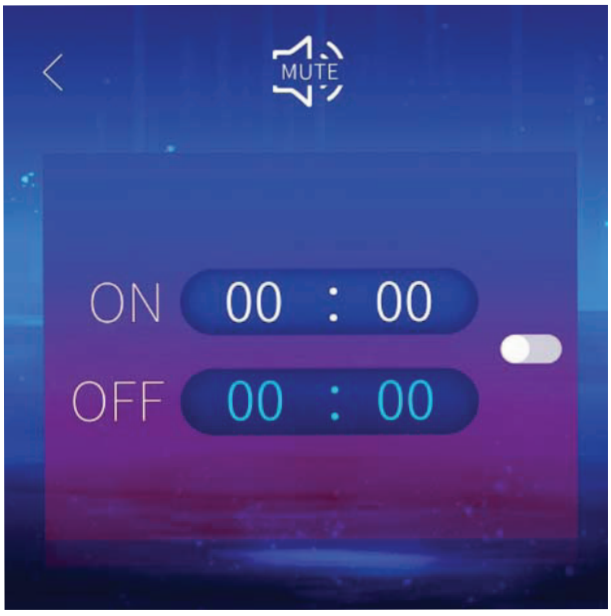
1. On the main interface screen, swipe left and tap  to enter into Timer setting interface.
2. Tap the timer button  to enter the timer interface.
3. Swipe up and down to change the start time hours and minutes.
4. Swipe up and down to change the stop time hours and minutes.
5. Tap the switch next to the start and stop times to activate the timers.
6. Tap OK to save the timer setting. Tap < to go back without saving.
7. To deactivate the timer simply tap the switches next to the start and stop times, to turn the timer off.



Setting the Mute Timer

The mute timer will run the heat pump in silent mode during the selected times. This time must overlap the on/off timer. For example; if you set Timer 6:00-23:00 and Mute 20:00-23:00, the unit will turn on at 6:00, work in silent mode after 20:00, and turn off at 23:00.

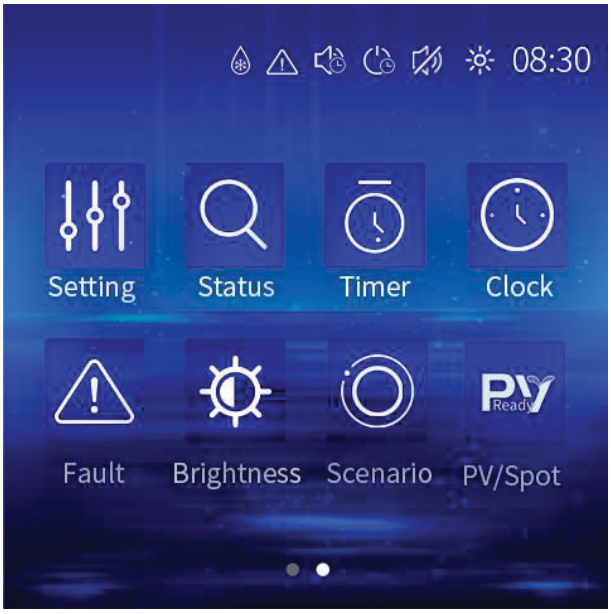
1. On the main interface screen, swipe left and tap  to enter into Timer setting interface.
2. Tap the timed mute button  to enter the timer interface.
3. Swipe up and down to change the start time hours and minutes.
4. Swipe up and down to change the stop time hours and minutes.
5. Tap the switch next to the start and stop times to activate the mute timer.
6. Tap OK to save the timer setting. Tap < to go back without saving.
7. To deactivate the mute timer simply tap the switches next to the start and stop times, to turn the timer off.



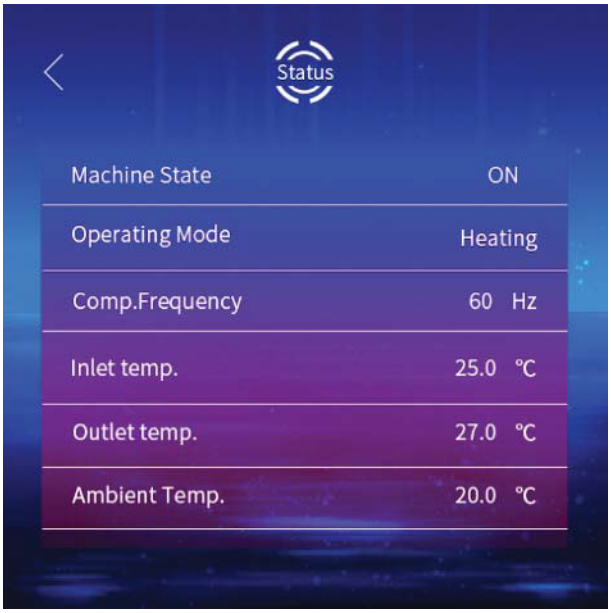
Status Query

Important parameters of the heat pump's current status can be viewed on the status screen.

1. On the main interface screen, swipe left and tap  to enter into the status menu.
2. Tap the status button  to enter the status display.





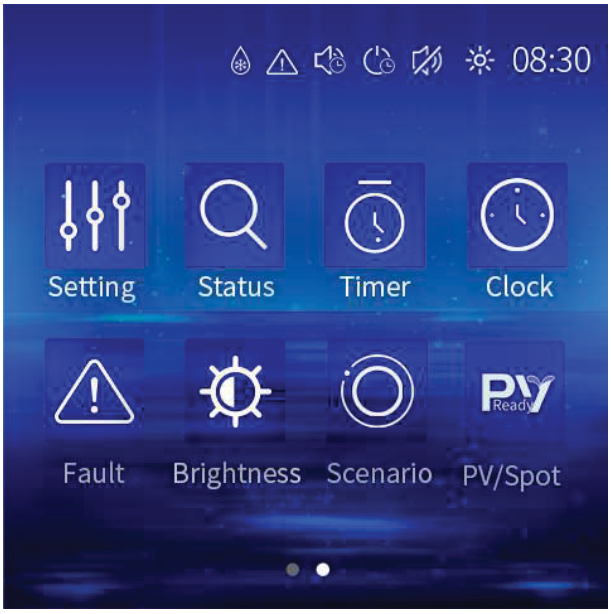


Machine Status: (ON/OFF) - Displays whether the heat pump is currently on or off.
Operating Mode: (Heating / Cooling / Auto) - Displays whether the heat pump is currently in heating, cooling or auto mode.
Comp. Frequency: (30-95Hz) - Displays the supply frequency of the inverter compressor.
Inlet Temp: (5-40^{0}C) - Displays the water temperature at the inlet of the heat pump. This is the water temperature of the pool.
Outlet Temp: (5-40^{0}C) - Displays the water temperature at the outlet of the heat pump. This should be 1-2^{0}C warmer than the inlet temp while in heating mode or 1-2^{0}C cooler than the inlet temp while in cooling mode. If the temperature difference is higher than 2^{0}C, adjust the water flow so there is more water flowing through the heat pump.
Ambient Temp: Displays the current ambient temperature of the air around the heat pump. If the temperature differs greatly from the actual temperature of the day, it could be that the heat pump does not have adequate clearance to properly circulate it's exhaust air.

Scenario (Operating Mode)

The UltraTemp HXi has multiple operating modes to optimise the performance and efficiency:

1. On the main interface screen, swipe left and tap  to enter into Scenario setting interface.
2. Tap the desired scenario mode.
3. Tap OK to save the timer setting. Tap < to go back without saving.





Scenario Mode:	Boost
Comp. Speed:	High
Application:	When the pool is heated for the first time or after a long shut-down.
Description:	The pool is heated at the full power and when the set temperature is reached, changes to Smart mode.

Scenario Mode:	Silent
Comp. Speed:	Medium
Application:	When the pool has reached the target temperature and is in use.
Description:	Maintains the temperature of the pool whilst optimising compressor running speed and fan speed to reduce noise.

Scenario Mode:	Eco
Comp. Speed:	Low
Application:	When the pool has reached the target temperature and is not in use.
Description:	Heat loss is reduced when the pool is not in use. Low-speed compressor maximises energy efficiency and reduces heat loss to the pool.

Scenario Mode:	Smart (recommended)
Comp. Speed:	Changes automatically
Application:	All of the above
Description:	Users can select the SMART mode in any application, as the temperature rises and falls, the operation will automatically change.

Connecting the Heat Pump to Automation

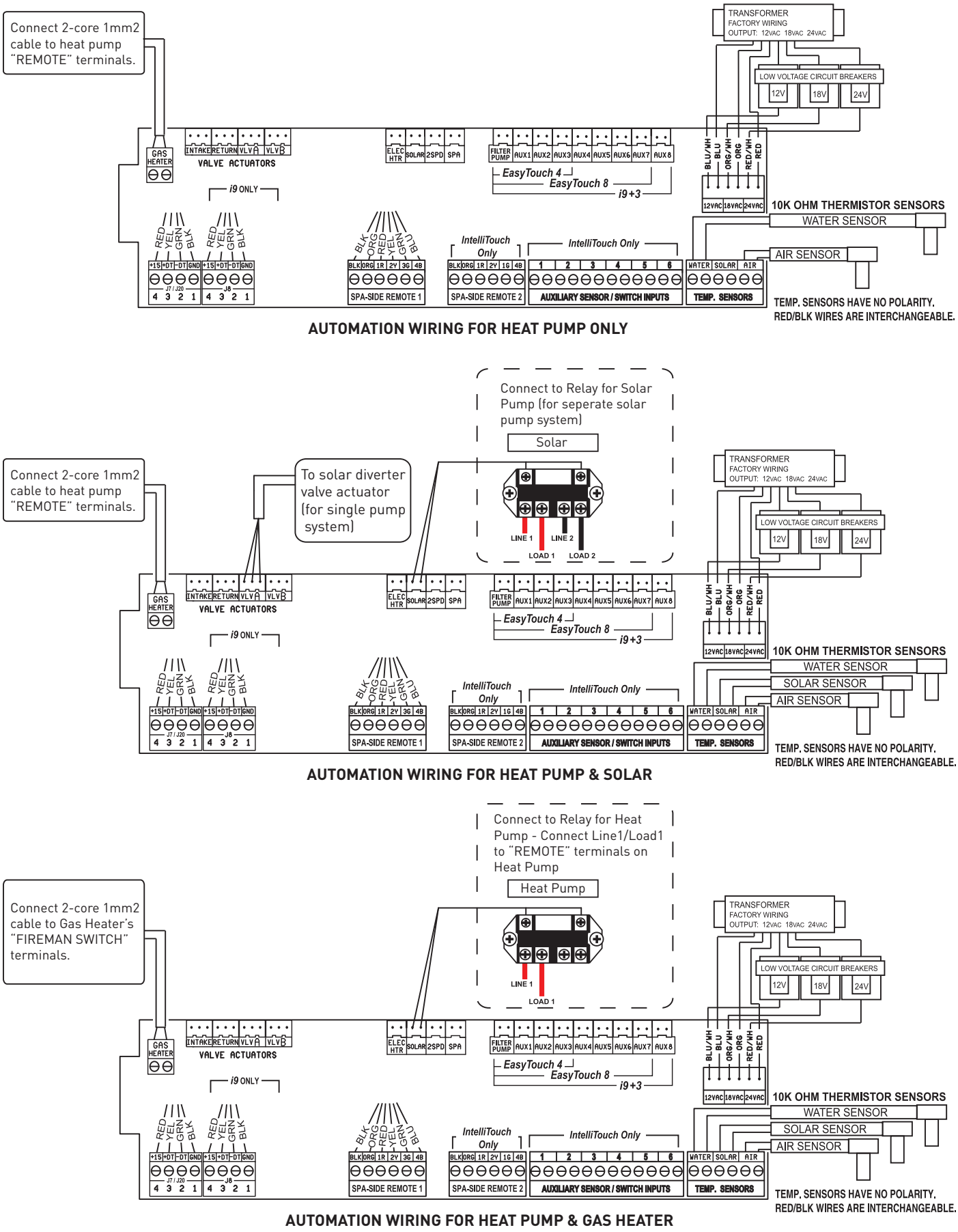
To connect the external control cable plug to the motherboard:

1. Run a two-conductor cable from the heat pump external control to the low voltage raceway to the motherboard in the Pentair Automation control centre.
2. Strip the conductors 7mm. Insert the wires into the GAS HEATER two-screw terminals (J19) on the motherboard.
3. At the heat pump, connect the wires to "remote on/off" on the terminal block.
4. Do NOT disconnect or wire around the thermostat, pressure switch, high limit switch, or other safety devices.
5. Turn the thermostat for the selected setting to maximum.

Pool/Spa Heating Combinations (Recommended Configurations)

Heat Sources	Connections	EasyTouch Configuration
Heat Pump Only	Connect heat pump to 2-wire terminal marked "Gas Heater" (J19).	Menu>Heat Menu>Pool Temp/ SRC>Heater Menu>Heat Menu>Spa Temp/ SRC>Heater
Heat Pump + Gas Heater	Connect gas heater to 2-wire terminal marked "Gas Heater" (J19). Connect heat pump to relay connected to "Solar" terminal.	Menu>Settings>Solar>Enable = Yes Menu>Settings>Solar>Solar is Heat Pump = Yes Menu>Heat Menu>Pool Temp/ SRC>Heat Pump Menu>Heat Menu>Spa Temp/ SRC>Heater
Heat Pump + Solar	Connect heat pump to 2-wire terminal marked "Gas Heater" (J19). Connect solar valve actuator to VLVA (single pump system) or connect solar booster pump electrical outlet relay to "Solar" terminal (separate solar pump system).	Menu>Settings>Solar>Enable = Yes Menu>Heat Menu>Pool Temp/ SRC>Solar (or solar preferred). Menu>Heat Menu>Spa Temp/ SRC>Heater Menu>Settings>Solar>Solar is Heat Pump = NO

Connecting the Heat Pump to Automation (Continued)



AUTOMATION WIRING FOR HEAT PUMP ONLY

AUTOMATION WIRING FOR HEAT PUMP & SOLAR

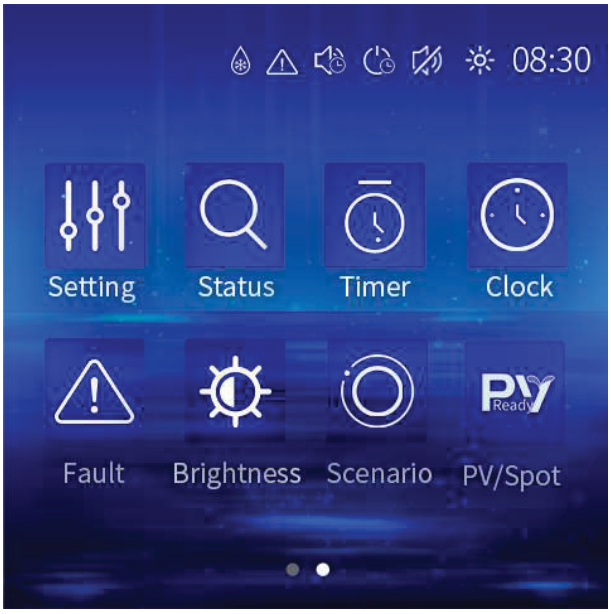
AUTOMATION WIRING FOR HEAT PUMP & GAS HEATER

Figure 17: Automation Connections

Solar PV / Spot Settings

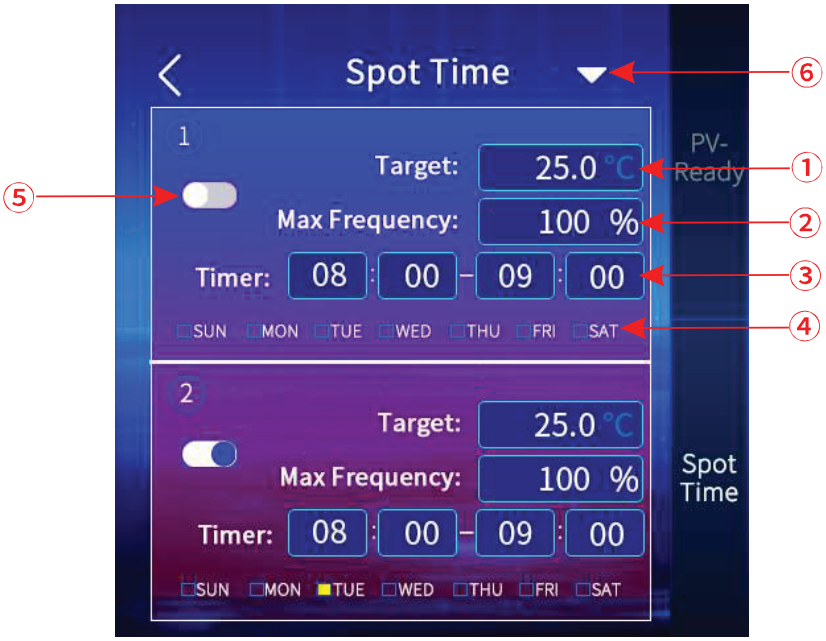
Your UltraTemp heat pump comes Solar PV ready. This allows for the heat pump operation to be changed based on a signal from your solar PV inverter. To access the PV/Spot menu:

1. On the main interface screen, swipe left and tap PV Ready to enter into the PV/Spot menu.



Spot Time

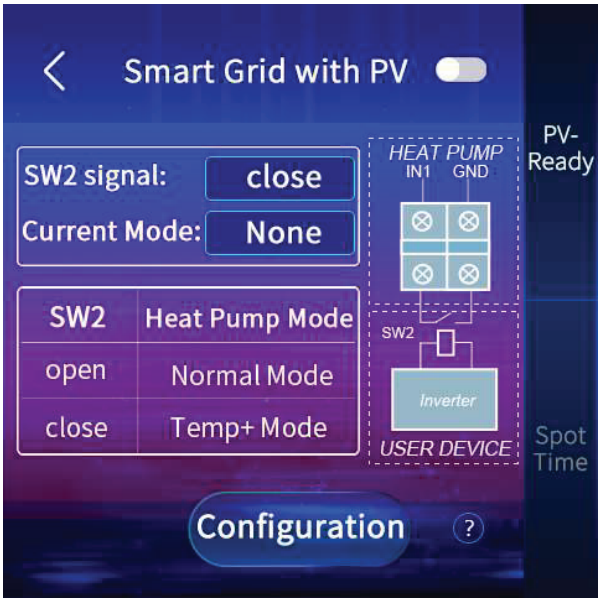
Spot time allows for over-riding the main schedule to take advantage of off-peak electricity pricing, prevent high consumption during peak pricing periods or to optimise power usage during peak solar times. Spot time does not require any electrical input from the solar inverter.



Item	Name	Description
1	Target Temperature	Set the time-sharing temperature control target temperature for the associated schedule.
2	Maximum Frequency	Set the maximum operating compresser speed for this associated schedule. The lower the speed, the higher the efficiency and lower power consumption but also lower heat output.
3	Time Setting	Set the start and stop time for this time-sharing schedule.
4	Day Setting	Set the applicable days of the week for this time-sharing schedule.
5	Enable Key	Enable or disable the spot time schedule.
6	Next Page	Press this for additional schedule slots.

When running time-sharing temperature control, the main interface will display the corresponding icon 

. The number in the icon corresponds to which time-sharing temperature control is running. The display position of the time-sharing temperature control icon is the same as that of the PV mode icon, but they will not be displayed at the same time. The spot time will take priority if there is a conflict.

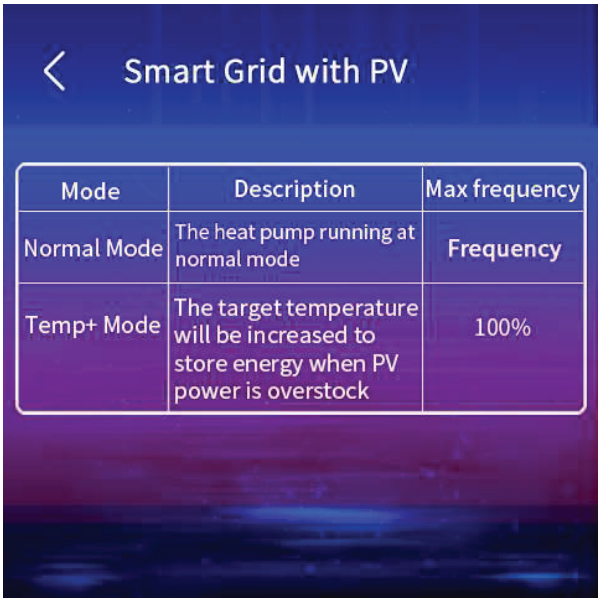


PV Control

To enable PV control, you must change the EM02 parameter in settings.

Navigate to the Settings menu and enter the password 25. Change the EM02 parameter as follows:

EM02	Description
0	No PV function, spot time only.
1	Single contact PV control
2	Dual contact PV control
3	Smart Meter control



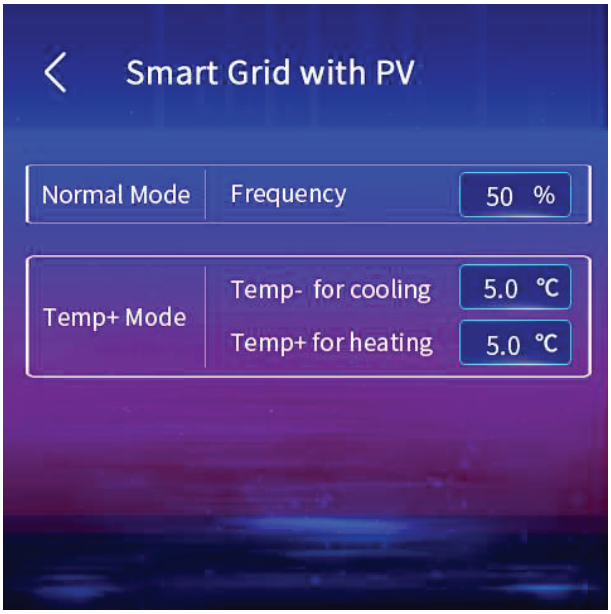
Single Contact PV Control (EM02 = 1)

The first screen allows set-up for the most basic single contact PV control. With a dry contact connection from the solar inverter to input SW2.

Tap on "SW2 signal" to select between open (active on open circuit) or close (active on closed circuit).
Tap on "Current Mode" to select the mode option that will be triggered by the solar PV system.

Tap "?" for on-screen information about the operating modes.

Tap "Configuration" to set the operating parameters for open or closed input signals.



Normal mode: Set the maximum frequency when the heat pump is operating with no signal from the solar PV inverter.

Temp+ mode: Set the temperate boost option to increase the temperature when ther is a signal from the solar PV inverter.

Dual Contact PV Control (EM02=2)

The second level of PV control allows set-up for the more advanced dual contact PV control. With two dry contact connections from the solar inverter to input SW1 and SW2.

Tap on "SW2 signal" to select between open (active on open circuit) or close (active on closed circuit).
Tap on "Current Mode" to select the mode option that will be triggered by the solar PV system.

Tap "?" for on-screen information about the operating modes.

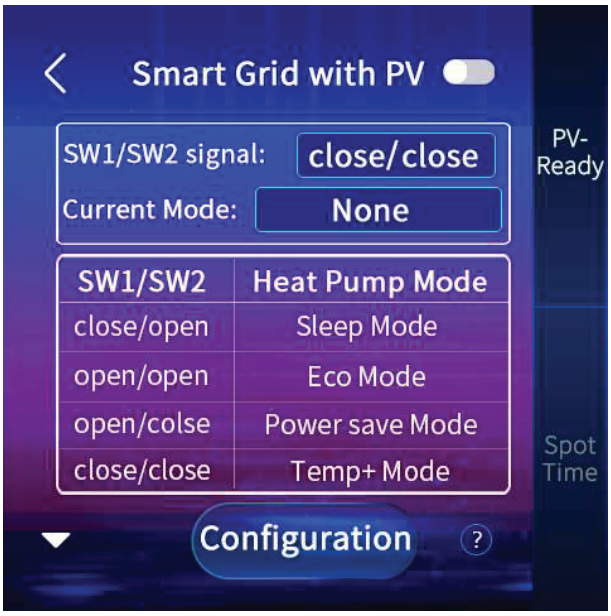
Tap "Configuration" to set the operating parameters for open or closed input signals.

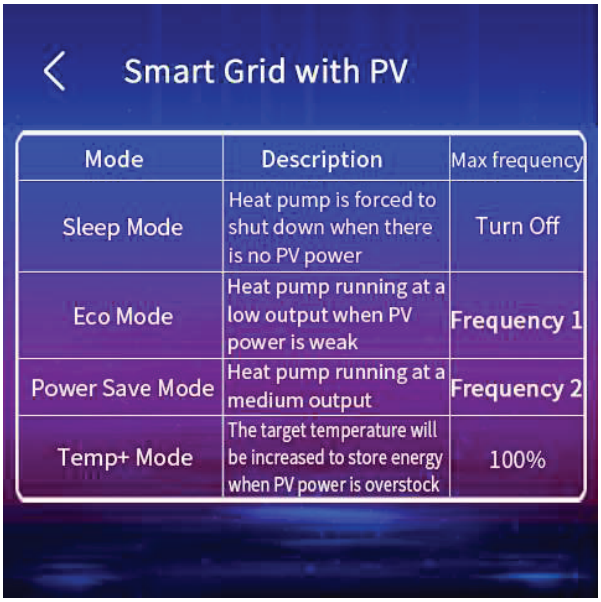
Sleep Mode: The Heat pump is forced to shut down when there is no PV power.

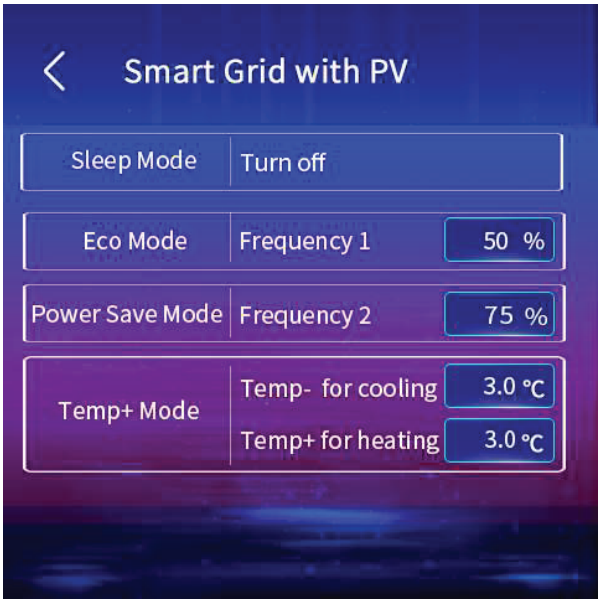
Eco Mode: The heat pump will run at a high-efficiency lower output mode. You can choose the maximum frequency of the inverter. The lower the frequency, the more efficient and the lower the output.

Power Save Mode: The heat pump can run at a medium output level. You can choose the maximum frequency of the inverter. The lower the frequency, the more efficient and the lower the output.

Temp+ mode: Set the temperate boost option to increase the temperature when ther is a signal from the solar PV inverter.







Smart Meter Control (EM02=3)

This mode is intended for allowing heat pump control via a smart meter. It is for future use, and may allow connection to a Demand Response Enabling Device (DRED). Please contact Pentair for futher details.

Maintenance & Troubleshooting

Water Chemistry

Proper chemical balances are necessary for sanitary bathing conditions as well as ensuring your heat pump's long life. Be sure to keep your chemical and mineral concentration levels within the values indicated in the table below. Failure to maintain proper water chemistry may cause damage to the UltraTemp® Heat Pump and may void the warranty.

Test	Recommended Level
Free Chlorine	1.0 to 3.0 ppm (3.0 to 5.0 spa)
Bromine	2.0 to 4.0 ppm (3.0 to 5.0 spa)
pH	7.4 to 7.6
Total Alkalinity (TA) *With Calcium, Lithium, and Sodium Hydrochlorite*	80 to 100 ppm
Total Alkalinity (TA) *with Sodium Dichlor, Trichlor, Chlorine Gas, and Bromine Compounds*	100-120 ppm
Calcium Hardness (CH)	200 to 400 ppm
Cyanuric Acid (Stabiliser)	30 to 50 ppm *(less than 30ppm with ORP controllers)*
Total Dissolved Solids (TDS)	Less than 2000 ppm
Copper	0 ppm

* Concentration levels taken from "Basic Pool and Spa Technology" published by NSPI (National Spa and Pool Institute).

Inspection and Service

Pentair Heat Pumps are designed and constructed to provide long performance life when installed and operated properly under normal conditions. Periodic inspections are important to keep your heat pump running safely and efficiently through the years. Failure to properly maintain your unit can void the warranty.

Owner Inspection

Pentair recommends that you inspect your heat pump on a continual basis and 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.
4. Keep lawn sprinkler heads from spraying on the heat pump to prevent corrosion and damage.
5. If the unit is installed under a roof edge, install a gutter or diverter to prevent excessive water and debris from pouring down into the unit.
6. Do not use this heat pump if any part has been under water. Immediately call a qualified professional technician to inspect the heat pump and replace any part of the control system which has been submerged.

Maintenance & Troubleshooting Continued

The UltraTemp® Heat Pump will produce condensation (water) while in operation. The heat pump base is designed to allow the condensation to exit through the bottom drain port when the unit is running. The condensation will increase as the outdoor air humidity level increases. Check the following at regular intervals to ensure proper condensate drainage:

1. Visually inspect and clear the bottom drain ports of any debris that could clog the ports.
2. Keep the top air flow discharge and air flow intake area clear of debris so the air flow though the heat pump is not restricted. The cooler discharge air from the top should not accumulate and be drawn into the side air intake coils.
3. Be sure the condensate run-off is properly directed away from the equipment pad to keep it from undermining the pad.
4. Be sure the condensate water does not puddle inside the heat pump. To be sure it is condensate water, check for the absence of chlorine.

During normal operation, the heat pump produces three to five gallons of condensate per hour. If condensate drainage is above this range during operation or if water continues to drain from the base when the heat pump is not in operation for more than an hour, a leak in the internal plumbing may have occurred. Call a qualified heat pump technician to investigate the problem.

Professional Maintenance and Service

The maximum heat output and efficiency of a heat pump is dependent upon the quality and performance of the major components used. Equally important are the environmental conditions (for example, air temperature, humidity, water temperature, and wind).

To maintain maximum performance and efficiency, keep the air coil clean from dirt and debris. It is recommended to clean your air coil once a year by flushing the coil with compressed air or hosing off the coil with a garden hose.

Care should be taken to not bend the coil fins as this will restrict the airflow and lower your heat pump performance. Compressed air can also damage the heat pump coil.

DO NOT USE A PRESSURE CLEANER ON THE UNIT.

The heat pump should be maintained at least once a year by qualified personnel to maintain maximum performance and efficiency. The unit should be powered off during maintenance.

Winterising

In areas where freezing temperatures occur, you should protect your pump, filter, and heat pump from the elements. Perform the following steps to completely drain the heat pump.

1. Turn off the electrical power to the heat pump at the main breaker panel.
2. Shut off the water supply to the heat pump.
3. Disconnect the water inlet and outlet unions located on the lower front panel of the heat pump.
4. Blow out the water lines.
5. Cover only the top of the heat pump to prevent debris from falling into the unit. Do not wrap the sides of the heat pump with any plastic or other material that will retain heat or moisture inside the unit.

Maintenance & Troubleshooting Continued

Spring Start Up
If your heat pump has been winterised, perform the following steps when starting the system in the Spring:
1. Uncover the heat pump and inspect the top and sides for any debris or structural problems.
2. Connect the water inlet and outlet unions on the sides of the heat pump.
3. Turn on the filter pump to supply water to the heat pump. Open the filter air bleeder and circulate water through the system long enough to bleed all the air out of the pool system. Check for leaks in and around the heat pump.
4. Turn on the electrical power to the heat pump at the main breaker panel.

To protect the paintwork, avoid leaning or putting objects on the shell. External Heat Pump parts can be wiped with a damp cloth and domestic cleaner. (Warning: Never use cleaning agents containing sand, soda, acid or chloride as these can damage the surfaces.)

To prevent blockages in the titanium heat exchanger, ensure that the system incorporates a water and filter treatment facility. In the event of a problem occurring due to contamination, the system should be cleaned as described below. (Warning: the fins on the finned tube heat exchanger are sharp!).

Cleaning the Heat Exchanger and Pipework
Contamination in the pipes and heat exchanger can reduce the performance of the heat pumps' titanium heat exchanger. If this is the case, the pipe system and heat exchanger must be cleaned by a technician.
Use only pressurized drinking water for cleaning.

Cleaning the air system
The finned heat exchanger, fan and condensate outflow should be clear of all obstructions (leaves, twigs, etc.) before each new heating season. These can be manually removed using compressed air or by flushing with clean water.
It may be necessary to remove the unit cover and air inlet grid first.

Attention: Before opening the unit, ensure that all electrical supplies are isolated.

To prevent the evaporator and the condensate tray from being damaged, do not use hard or sharp objects for cleaning.
Under extreme weather conditions (e.g. snow drifts), ice may form on the air intake and exhaust air outlet grids. If this happens, the ice must be removed in the vicinity of the air intake and exhaust air outlet grids to ensure that the minimum air flow rate is maintained.

Winter Shutdown
To prevent frost damage to the unit when not in use the Heat Pump should be drained of all water. Failing this another form of frost protection should be considered and actioned.

Attention: The warranty does not cover damage caused by inadequate frost protection measures during the winter.

Troubleshooting

This section provides useful information for diagnosing and correcting certain problems which may occur. Before starting the troubleshooting procedure, carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.
Before contacting your local dealer, read this chapter carefully. It could save you time and money.



WARNING

Do not move/repair the unit yourself - Before carrying out any maintenance, service or repair work, the product must be isolated from the mains electrical supply. To prevent possible injury, only qualified engineers should carry out these works.

The hints below are for guidance only. If you cannot solve the problem, consult your installer/local dealer.

The Heat pump will not run.
Please check:
- There is a supply voltage (tripped fuse, power failure).
- The switch on the wired controller is switched on, and whether the correct set point temperature has been set.

The set temperature level cannot be reached.
Please check whether:
- The permissible operating conditions for the heat pump have been adhered to (air temperatures too high or too low).
- The air inlet or outlet area is blocked, restricted or very dirty.
- There are closed valves or stop-cocks in the water pipes.

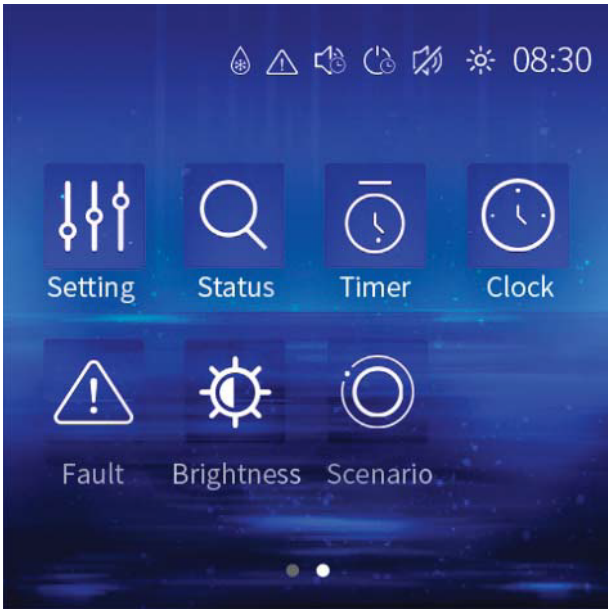
The timer works but the programmed actions are executed at the wrong time (e.g. 1 hour too late or too early).
Please check whether:
- The clock and the day of the week are set correctly, adjust if necessary.

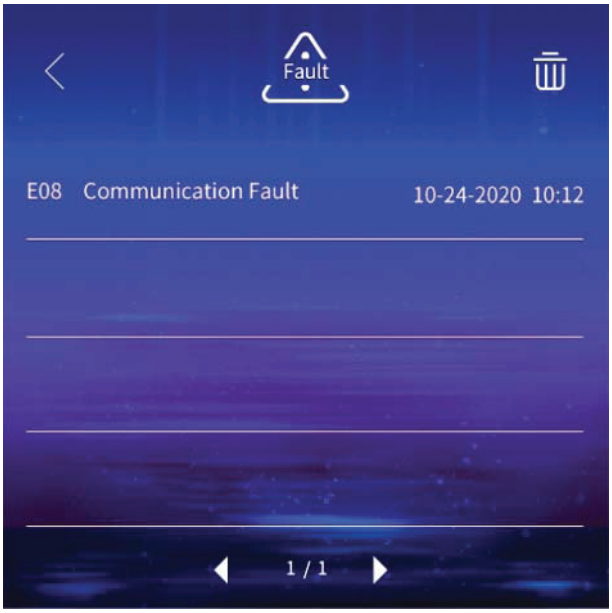
The fan is starting occasionally, while the filter pump is not running.
Please check whether:
- The timer has been set on the heat pump, with the same hours for when the filtration pump is running. This will avoid the heat pump checking for flow during off times.
- If the filtration pump driving the heat pump is operating at different times and thus the heat pump timer cannot be set, swap L5 and L7 on the motherboard. This will connect the flow switch to the automation input.

If you cannot correct the fault yourself, please contact Pentair for after-sales service.

System Protections / Error Codes

When a fault occurs, the fault icon in the main interface will flash. When an error occurs or the protection mode is set automatically, the wired controller will display an error code as below. To view fault codes, swipe left and tap . The fault log will be displayed. You can clear fault codes, after troubleshooting by tapping the trash can.





Code	Fault Message	Possible reasons	Remedy
P01	Inlet Temp. Sensor Fault	The inlet temperature sensor is broken or short circuited.	Check or change the temperature sensor.
P02	Outlet Temp. Sensor Fault	The outlet temperature sensor is broken or short circuited.	Check or change the temperature sensor.
P04	Ambient Temp. Sensor Fault	The ambient temperature sensor is broken or short circuited.	Check or change the temperature sensor.
P05	Coil 1 Temp. Sensor Fault	The coil temperature sensor is broken or short circuited.	Check or change the temperature sensor.
P15	Coil 2 Temp. Sensor Fault	The coil temperature sensor is broken or short circuited.	Check or change the temperature sensor.
P07	Suction Temp. Sensor Fault	The compressor suction temperature sensor is broken or short circuited.	Check or change the temperature sensor.
P081	Discharge Temp. Sensor Fault	The compressor discharge temperature sensor is broken or short circuited.	Check or change the temperature sensor.
P082	Exhaust Air over Temp Prot.	The compressor is overloaded. Exhaust temperature is high.	Check whether the system of the compressor is running normally.

System Protections / Error Codes (Continued)

Code	Fault Message	Possible reasons	Remedy
P09	Antifreeze Temp. Sensor Fault	Antifreeze temp sensor is broken or short circuited.	Check or change the temperature sensor.
PP	Pressure Sensor Fault	The pressure sensor is broken.	Check or change the pressure sensor.
E01	High Pressure Prot.	The high-pressure switch is open circuit.	Check the pressure switch and cold circuit
E02	Low Pressure Prot.	Low pressure protection	Check the pressure switch and cold circuit
E03	Flow Switch Prot.	No water or low water flow in the system.	Check the pipe water flow and water pump is on and primed.
E05	Waterway Anti-freezing Prot.	Water temperature or ambient temperature is too low	
E06	Inlet and outlet temp. too big	Water flow is not enough and low differential pressure	Check the pipe water flow and whether water system is jammed or not.
E07	Anti-freezing Prot.	Water flow is not enough	Check the pipe water flow and whether water system is jammed or not
E19	Primary Anti-freezing Prot.	The ambient temperature is low	
E29	Secondary Anti-freezing P rot.	The ambient temperature is low	
E051	Comp. Overcurrent Prot.	The compressor is overloaded.	Check whether the system of the compressor running normally
E08	Communication Fault	Communication failure between display and mainboard.	Check the wire connection between remote display and main board.
E081	Communication Fault (speed control module)	Speed control module and main board communication fail	Check the communication connection
TP	Low AT Protection	Ambient temp. is too low	
F051	EC fan feedback Fault	There is something wrong with fan motor and fan motor stops running.	Check whether fan motor is broken or locked rotor.
F031	Fan Motor1 Fault	1. Motor is in locked-rotor state. 2.The wire connection between fan controller and fan motor is in poor contact.	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact

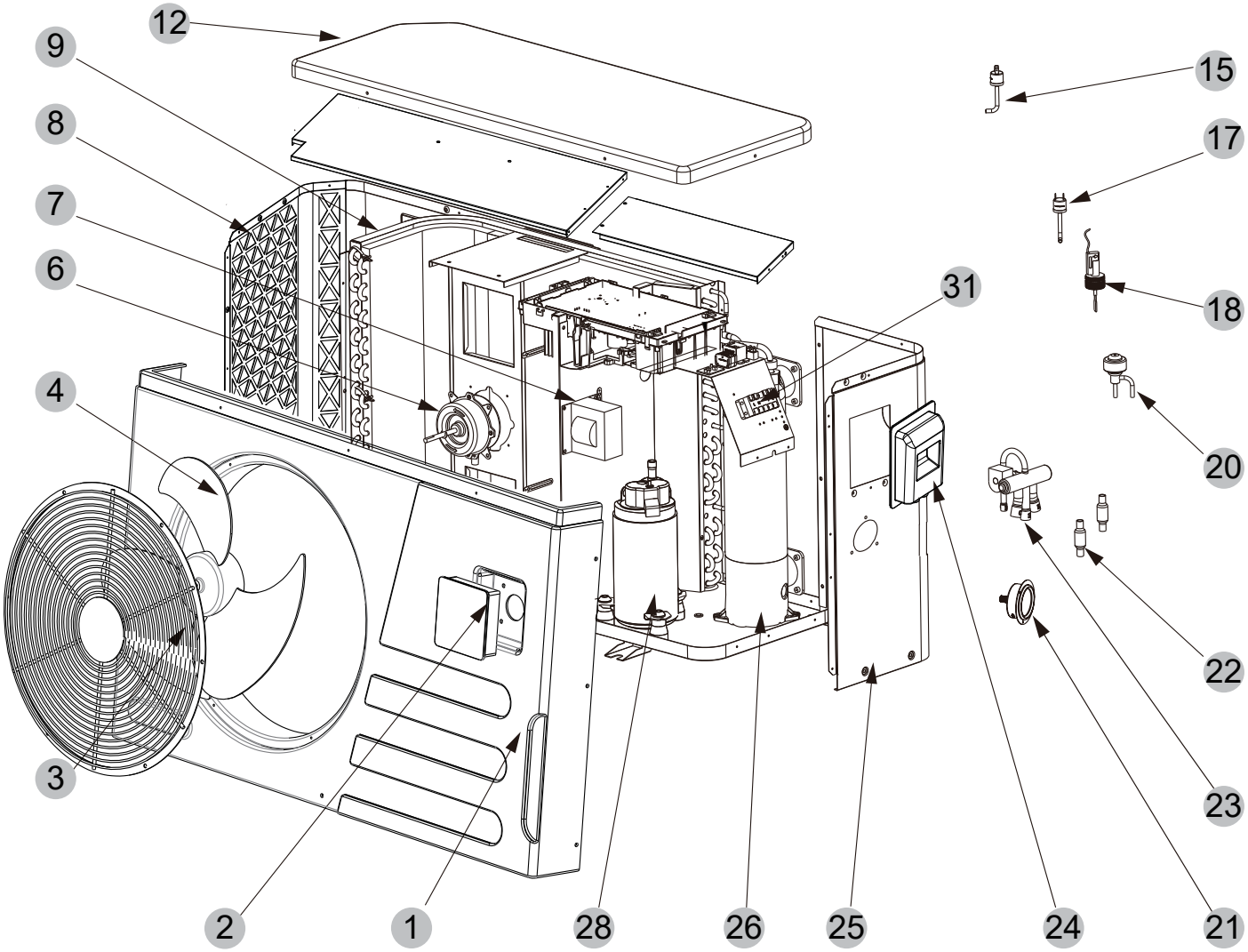
System Protections / Error Codes (Continued)

Code	Fault Message	Possible reasons	Remedy
F032	Fan Motor2 Fault	1. Motor is in locked-rotor state. 2.The wire connection between fan controller and fan motor is in poor contact.	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact.
F01	Drv1 MOP alarm	MOP drive alarm	Recovery after the 150s
F02	Inverter offline	Frequency conversion board and main board communication failure.	Check the communication connection.
F03	IPM protection	IPM modular protection	Recovery after the 150s
F04	Comp. Driver Failure	Lack of phase, step or drive hardware damage.	Check the measuring voltage and frequency conversion board hardware.
F05	DC Fan Fault	Motor current feedback open circuit or short circuit.	Check whether current return wires connected motor.
F06	IPM Overcurrent	IPM Input current is large.	Check and adjust the current measurement.
F07	Inv. DC Overvoltage	DC bus voltage>Dc bus over-voltage protection value.	Check the input voltage measurement.
F08	Inv. DC Lessvoltage	DC bus voltage<Dc bus over-voltage protection value.	Check the input voltage measurement.
F09	Inv. Input Lessvolt.	The input voltage is low, causing the input current is high.	Check the input voltage measurement.
F10	Inv. Input Overvolt.	The input voltage is too high, more than outage protection current RMS.	Check the input voltage measurement.
F11	Inv. Sampling Volt.	The input voltage sampling fault.	Check and adjust the current measurement
F12	Comm. Err DSP-PFC	DSP and PFC connect fault.	Check the communication connection.
F26	Input Over Cur.	The equipment load is too large.	
F27	PFC fault	The PFC circuit protection.	Check the PFC switch tube short circuit or not.
F15	IPM Overheating	The IPM module is overheat	Check and adjust the current measurement.
F16	Weak Magnetic Warn	Compressor magnetic force is not enough.	

System Protections / Error Codes (Continued)

Code	Fault Message	Possible reasons	Remedy
F17	Inv. Input Out Phase	The input voltage lost phase	Check and measure the voltage adjustment.
F18	IPM Sampling Cur.	IPM sampling electricity is fault.	Check and adjust the current measurement
F19	Inv. Temp. Probe Fail	Sensor is short circuit or open circuit.	Inspect and replace the sensor.
F20	Inverter Overheating	The transducer is overheat.	Check and adjust the current measurement.
F22	Inv. Overheating Warn	Transducer temperature is too high.	Check and adjust the current measurement.
F23	Comp. Over Cur. Warn	Compressor electricity is large.	The compressor over current protection.
F24	Input Over Cur. Warn	Input current is too large.	Check and adjust the current measurement.
F25	EEPROM Error Warn	MCU error	Check whether the circuit board is damaged. Replace the circuit board.
F28	V15V overload/under voltage fault	The V15V is overload or under voltage.	Check the V15V input voltage in range 13.5v~16.5v or not.

Replacement Parts



Item	Part No.	Description
		ULTRATEMP HXi REPLACEMENT PARTS
1	803195	Panel Front UTHP HXi 7.5-12kW
1	803196	Panel Front UTHP HXi 16kW
1	803197	Panel Front UTHP HXi 20kW
1	803255	Panel Front UTHP HXi 24-35kW
2	803198	LCD UTHP HXi
3	803199	Grill UTHP HXi 7.5-12kW
3	803200	Grill UTHP HXi 16-20kW
3	803256	Grill UTHP HXi 24-35kW
4	803201	Fan UTHP HXi 7.5-12kW
4	803202	Fan UTHP HXi 16-20kW
4	803257	Fan UTHP HXi 24-35kW
6	803203	Motor Fan UTHP HXi 7.5-12kW
6	803204	Motor Fan UTHP HXi 16-20kW
6	803258	Motor Fan UTHP HXi 24-35kW
7	803205	Inductive Filter UTHP HXi 7.5-12kW
7	803206	Inductive Filter UTHP HXi 16-35kW
8	803207	Panel Rear UTHP HXi 7.5-12kW
8	803208	Panel Rear UTHP HXi 16kW
8	803209	Panel Rear UTHP HXi 20kW
8	803259	Panel Rear UTHP HXi 24-35kW

Item	Part No.	Description
9	Call	Condenser
12	803213	Panel Top UTHP HXi 7.5-12kW
12	803214	Panel Top UTHP HXi 16kW
12	803215	Panel Top UTHP HXi 20kW
12	803260	Panel Top UTHP HXi 24-35kW
15	803218	Low Pressure Switch UTHP HXi
17	803220	High Pressure Switch UTHP HXi
18	803221	Flow Switch UTHP HXi 9-20kW
19	803254	Flow Switch UTHP HXi 24-35kW
20	803223	EEV UTHP HXi 7.5-12kW
20	803224	EEV UTHP HXi 16-20kW
20	803261	EEV UTHP HXi 24-35kW
21	Call	Pressure Gauge UTHP HXi
22	Call	Filter
23	Call	Four-way valve
24	803228	Junction Box UTHP HXi
25	803230	Panel Right UTHP HXi 7.5-12kW
25	803231	Panel Right UTHP HXi 16kW
25	803232	Panel Right UTHP HXi 20kW
25	803262	Panel Right UTHP HXi 24-35kW
26	Call	Titanium tube heat exchanger

Replacement Parts

Item	Part No.	Description
28	Call	Compressor
29	803276	Inverter Drive UTHP HXi 9kW
29	803236	Inverter Drive UTHP HXi 12kW
30	803237	Inverter Drive UTHP HXi 16kW
30	803281	Inverter Drive UTHP HXi 20kW
30	803238	Relay UTHP HXi
31	803239	Terminal Block UTHP HXi 7.5-24kW
31	803265	Terminal Block UTHP HXi 28-35kW
32	803263	Inverter Drive UTHP HXi 24kW
33	803270	Control Board PC1004-G 24kW
34	803266	EMC Filter UTHP HXi 24kW
35	803271	Control Board PC1004 28kW
35	803370	Control Board PC1004 35kW
36	803264	Inverter Drive UTHP HXi 28kW
36	803369	Inverter Drive UTHP HXi 35kW
37	803267	EMC Filter UTHP HXi 28-35kW
38	803272	Fan speed regulating module 28-35kW
39	803273	Capacitance board
		Not Shown
	803240	EMC Filter UTHP HXi 16-20kW
	803241	Temp Sensor Exhaust Gas UTHP HXi9-20kW
	803268	Temp Sensor Exhaust Gas UTHP HXi 24-35kW
	803242	Temp Sensor Suction/Coil/Ambient/water 9-20kW (not 16kW coil, see 35)
	803269	Temp Sensor Suction/Coil/Ambient/Water 24-35kW
	803243	Temp Sensor Coil UTHP 16HXi
	803248	Display Protection Box UTHP HXi
	803274	Accessory Kit UTHP 9-20 Hxi
	803275	Accessory Kit UTHP 24-35 Hxi
	803364	Barrel Unions
	803368	O-Ring Barrel Union
	803367	Wifi Module

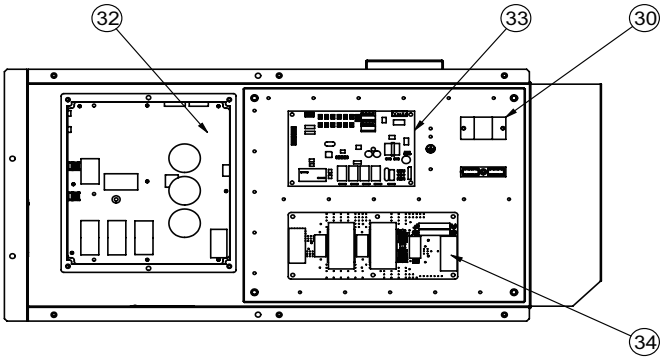


Figure 18: Electrical box spares UTHP 24kW

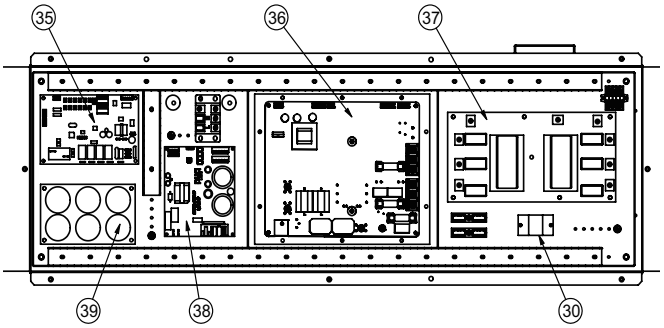
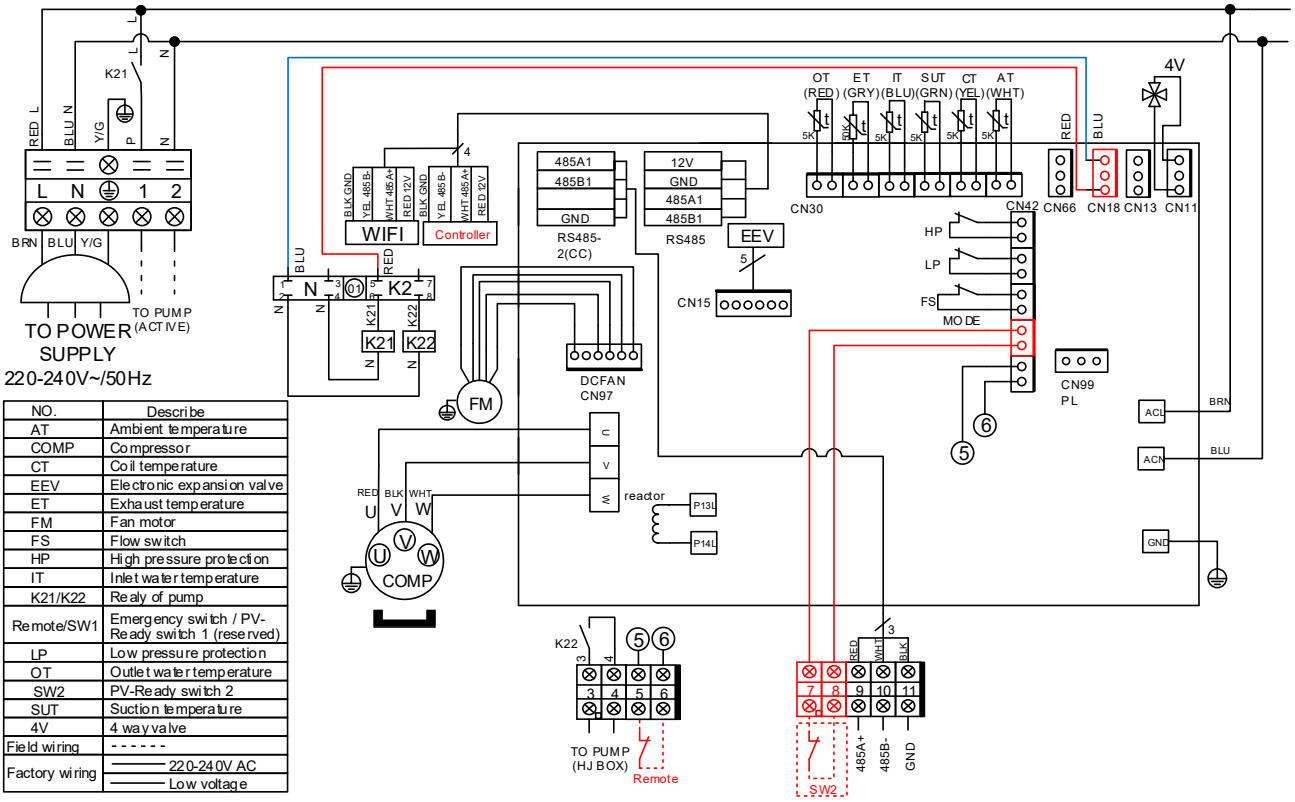


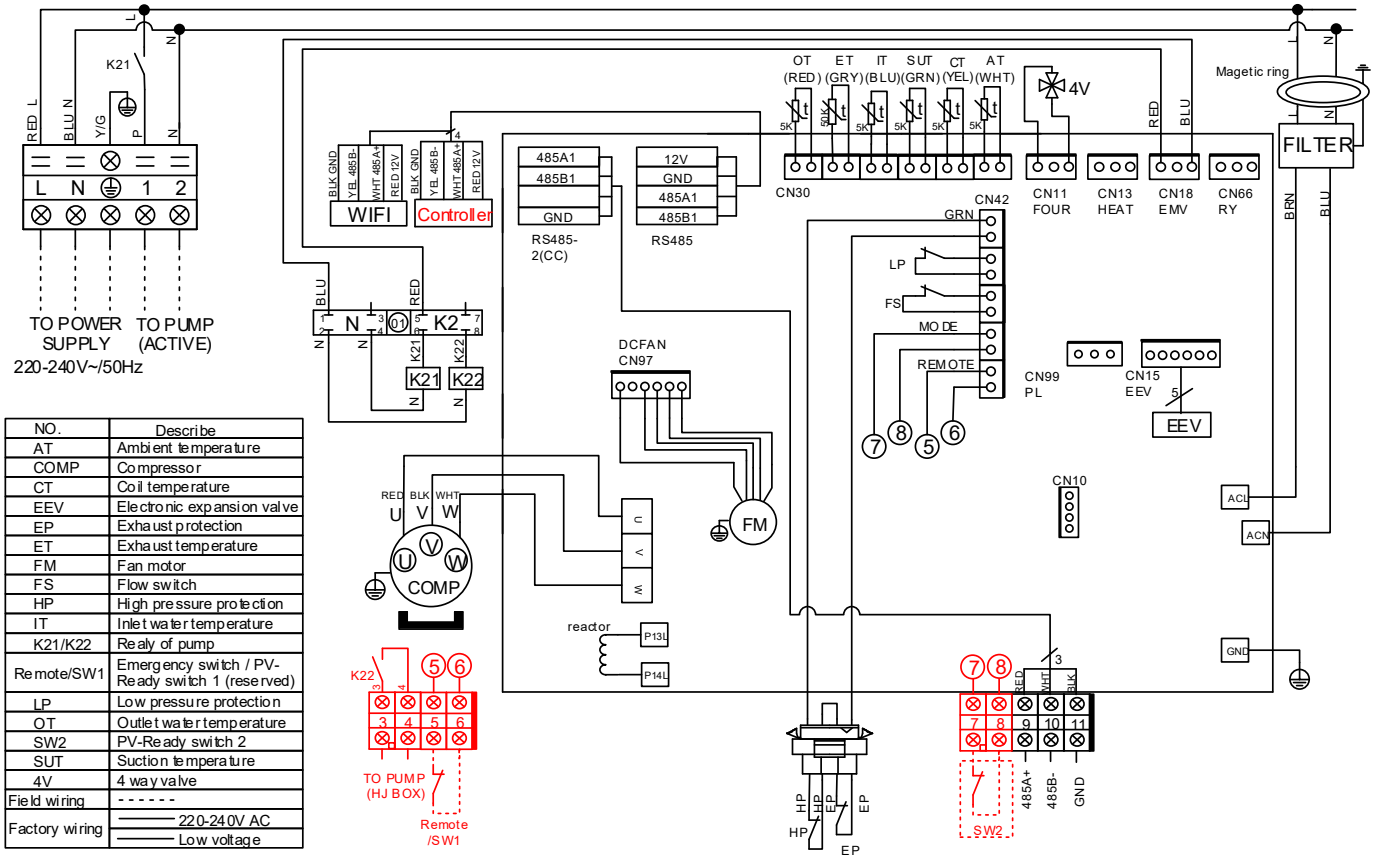
Figure 19: Electrical box spares UTHP 28kW & 35kW

Wiring Diagrams



NO.	Describe
AT	Ambient temperature
COMP	Compressor
CT	Coil temperature
EEV	Electronic expansion valve
ET	Exhaust temperature
FM	Fan motor
FS	Flow switch
HP	High pressure protection
IT	Inlet water temperature
K21/K22	Realy of pump
Remote/SW1	Emergency switch / PV-Ready switch 1 (reserved)
LP	Low pressure protection
OT	Outlet water temperature
SW2	PV-Ready switch 2
SUT	Suction temperature
4V	4 way valve
Field wiring	- - - - - -
Factory wiring	——— 220-240V AC ——— Low voltage

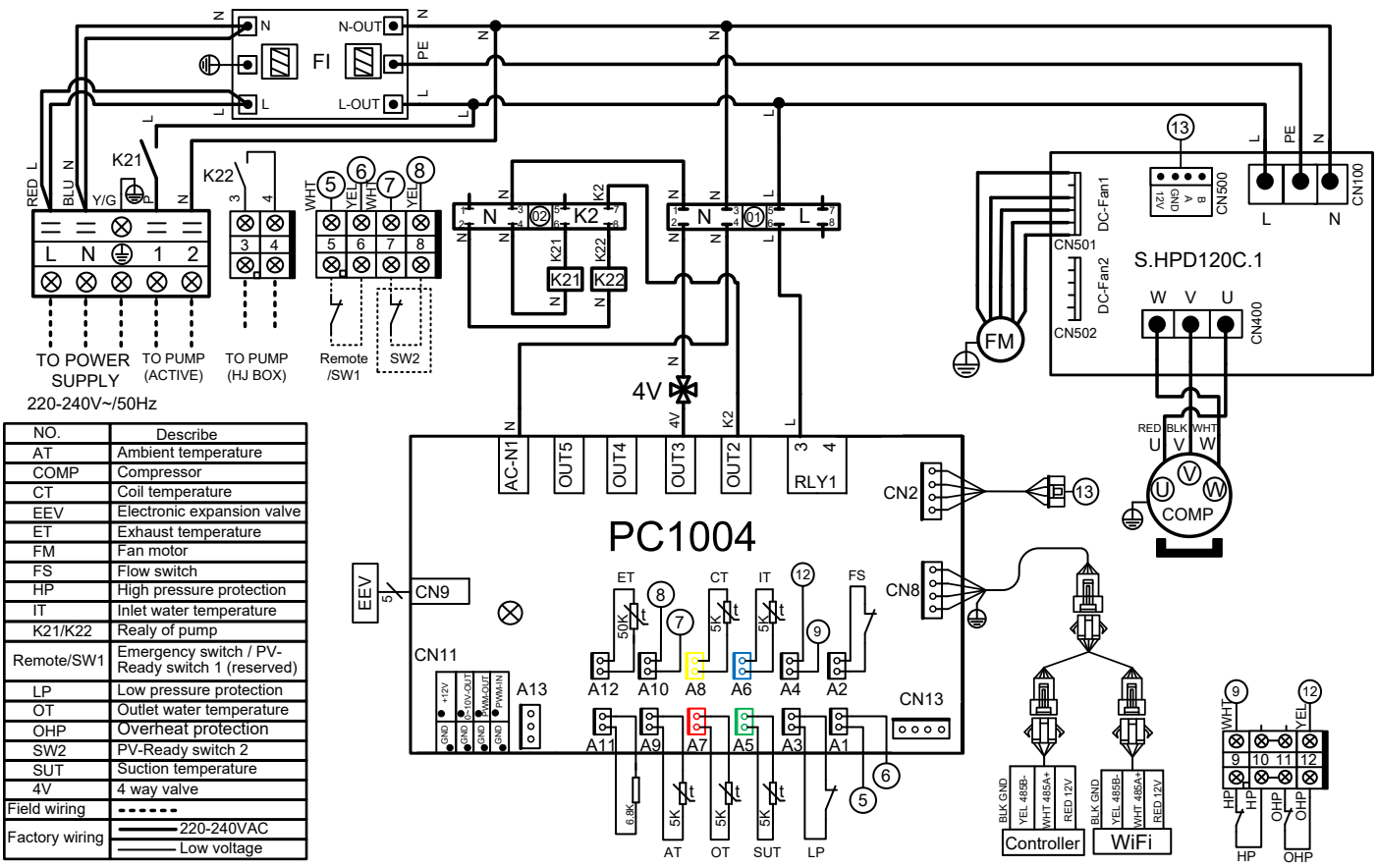
Figure 20: Wiring Diagram - UltraTemp 9kW & 12kW HXi models



NO.	Describe
AT	Ambient temperature
COMP	Compressor
CT	Coil temperature
EEV	Electronic expansion valve
EP	Exhaust protection
ET	Exhaust temperature
FM	Fan motor
FS	Flow switch
HP	High pressure protection
IT	Inlet water temperature
K21/K22	Realy of pump
Remote/SW1	Emergency switch / PV-Ready switch 1 (reserved)
LP	Low pressure protection
OT	Outlet water temperature
SW2	PV-Ready switch 2
SUT	Suction temperature
4V	4 way valve
Field wiring	- - - - - -
Factory wiring	——— 220-240V AC ——— Low voltage

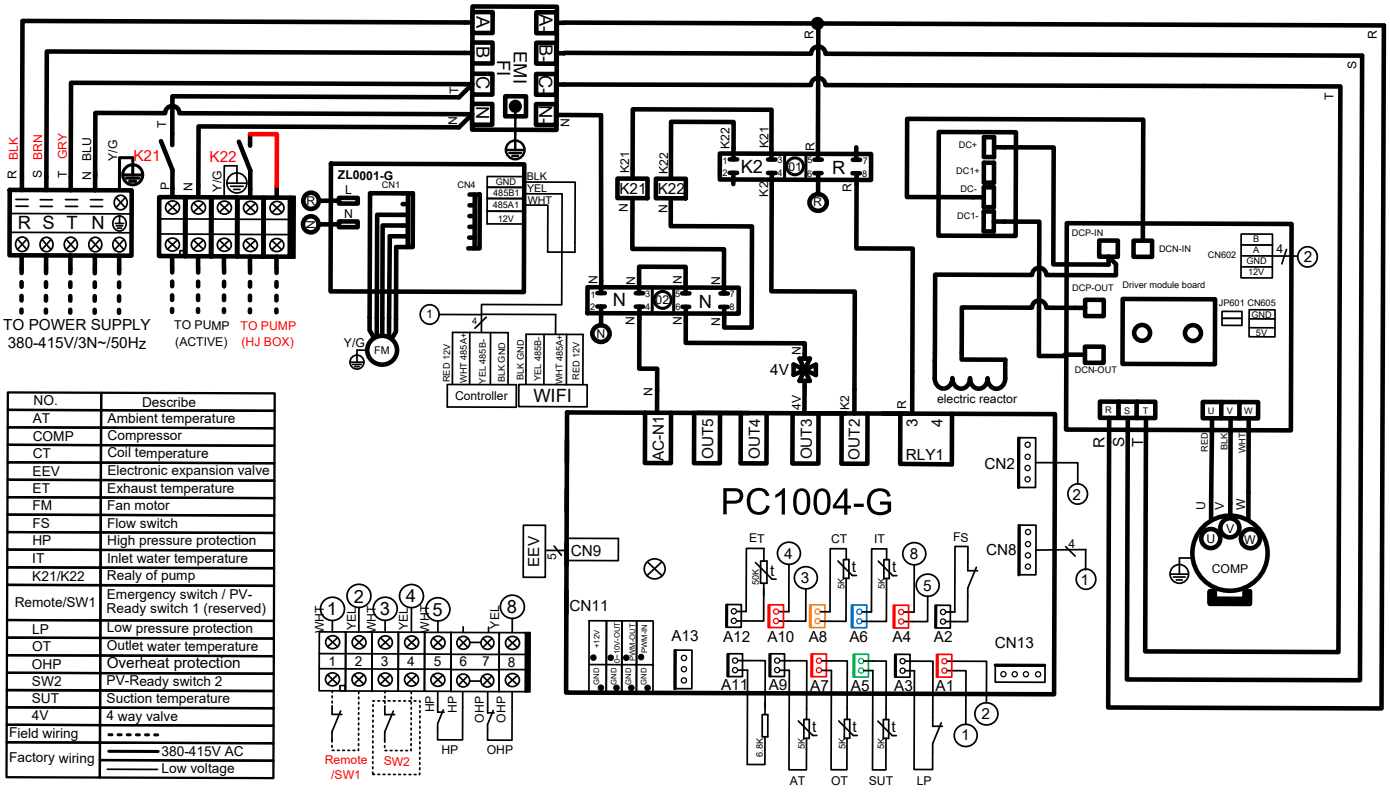
Figure 21: Wiring Diagram - UltraTemp 16kW & 20kW models

Wiring Diagrams Continued



NO.	Describe
AT	Ambient temperature
COMP	Compressor
CT	Coil temperature
EEV	Electronic expansion valve
ET	Exhaust temperature
FM	Fan motor
FS	Flow switch
HP	High pressure protection
IT	Inlet water temperature
K21/K22	Realy of pump
Remote/SW1	Emergency switch / PV-Ready switch 1 (reserved)
LP	Low pressure protection
OT	Outlet water temperature
OHP	Overheat protection
SW2	PV-Ready switch 2
SUT	Suction temperature
4V	4 way valve
Field wiring	------
Factory wiring	——— 220-240VAC ——— Low voltage

Figure 22: Wiring Diagram - UltraTemp 24kW HXi models



NO.	Describe
AT	Ambient temperature
COMP	Compressor
CT	Coil temperature
EEV	Electronic expansion valve
ET	Exhaust temperature
FM	Fan motor
FS	Flow switch
HP	High pressure protection
IT	Inlet water temperature
K21/K22	Realy of pump
Remote/SW1	Emergency switch / PV-Ready switch 1 (reserved)
LP	Low pressure protection
OT	Outlet water temperature
OHP	Overheat protection
SW2	PV-Ready switch 2
SUT	Suction temperature
4V	4 way valve
Field wiring	------
Factory wiring	——— 380-415V AC ——— Low voltage

Figure 23: Wiring Diagram - UltraTemp 28kW & 35kW models

Environmental Information

This equipment contains fluorinated greenhouse gases covered by the Kyoto Protocol. It should only be serviced or dismantled by professional trained engineers.

This equipment contains R32 refrigerant in the amount as stated in the specification. Do not vent R32 into the atmosphere: R32, is a fluorinated greenhouse gas with a Global Warming Potential (GWP) = 677.

Disposal Requirements

Dismantling of the unit, treatment of the refrigerant, of oil and of other parts must be carried out in accordance with relevant local and national legislation.

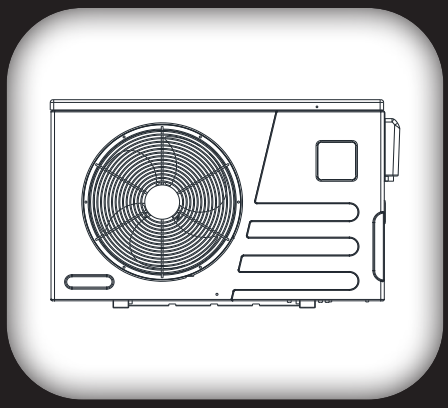
Do not try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and other parts must be done by a qualified installer in accordance with relevant local and national legislation.

Units must be treated at a specialized treatment facility for re-use, recycling and recovery. By ensuring that this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. **Please contact the your local council for more information on correct disposal of Pre-charged HCFC equipment.**

This product should not be mixed with unsorted household waste.

ULTRATEMP® HXi

Inverter Heat Pump



IMPORTANT
Please attach your sales invoice/docket here as proof of purchase should warranty service be required.

Purchased from:.....

Purchase date: ..... Serial No.: ..... Model No.: .....

Head Office
Pentair AU/NZ: 1-21 Monash Drive
Dandenong South,
VIC 3175

Australia

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