

HEATLOGIC

R290 HEAT PUMPS

& Hydraulic Modules



Certified, conforming to

EN 14825-2022
EN 12102-1-2022
EN14511-4:2022 Clause 4
EN 14511-3:2022

LVD

EN 60335-1:2012+A15:2021
EN 60335-2-21:2021+A1:2021
EN 60335-2-40 2003+A1:2-021
EN 62233:2008

EMC

EN IEC 55014-1:2021
EN IEC 55014-2:2021
EN IEC 61000-3-2019+A1:2021
EN61000-3-3:2013+A2:2002

Manager:

DCH006-Q DCH006-D

Hydraulic Station:

DSK03-QPVTSG

Hydraulic Tower:

DSK03-QPVTSL200

Heat Pumps

*HS06V-QPNNW (HS06V-QNANW)
*HS08V-QPNNW (HS08V-QNANW)
HS10V-QPNNW (HS10V-QNANW)
HS12V-QPNNW (HS12V-QNANW)
HS15V-QPNNW (HS15V-QNANW)
HS22V-DPNNW (HS22V-DNANW)

*Special order in NZ



Federal Office
for Economic Affairs
and Export Control

BAFA listed



Installers and service contractors:

Read this manual before installing this appliance, pay particular attention to the safety sections and specific installation requirements.

Before operating the system, please read the operating instructions.

Leave this manual with the end user at the installed location

Installation-Service & User Manual

This manual provides some basic generic
system schematics for your guidance.

for more options and greater detail relating to mechanical and
electrical configuration of a range of system options.

Please request a copy of our...
Products & systems installation manual

"Thank you" for choosing



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Generic diagrams included in this document may not show all safety devices required for a specific installation.
Install all necessary safety devices for your installation and observe all applicable NZ Code and standards.

This Appliance must be installed in accordance with NZ Standards by a suitably qualified Contractor,
 Electrical connections must be completed by a licensed electrical contractor

Mechanical and Electrical Installing contractors must read and observe all the requirements and actions set out in the Safety-First section of this manual

Specifications are subject to development. We are constantly improving and updating our products & though correct at the time of publication some minor specifications in the manual may vary from those of the actual product.

Icons used within this manual

ICON	Refers....
	This Icon highlights the need for Caution and safe practice regarding flammable substances associated with refrigerant R290.
	This Icon indicates instructions that must be read carefully by the relevant operative, before commencing installation or service work process on this appliance.
	This Icon indicates that information on the page refers to Installation Only qualified contractors should carry out the described actions.
	This Icon indicates that information on the page refers to Service & maintenance Only Qualified personnel should carry out the described actions.
	This Icon indicates that further specific installation or use information may be available to download or from the distributor. www.Heatlogic.co.nz
	This Icon indicates the section contains information of interest & relevant to the user , and actions permitted to be carried out by the user .

Appliance Type, Application & Use



Description

Monobloc R290 air to water heat pump for domestic space heating and domestic hot water, this appliance must be paired with a Manager, Station or Tower

Application

Installed externally, using outdoor ambient air as a heat source this appliance is intended exclusively the provision of hydronic heating and or domestic hot water generation in domestic applications.

The outdoor Heat Pump unit is a, pre charged air to water heat pump of monoblock design.

To avoid risk of damage or serious injury to people this product must be installed as prescribed & used as intended.

Intended use includes the following:

Observance of the operating instructions provided, and any other instructions with the hydraulic accessory and components associated to it.

Compliance with all installation and maintenance requirements prescribed in the instructions.

Any other use, not specified in these instructions Including commercial or industrial application is deemed improper use.

Bulk, pre-Installation Storage:

Store in a well-ventilated building free of ignition sources (Eg: open flames, an operating gas appliance or an operating electric heater). Maximum number of appliances stored together must be in line with relevant NZ regulations. If required maintain an explosion prevention plan.

- Temperature range for storage: -25 °C to 70 °C
- Only store the outdoor units in the ex-factory protective packaging.

The outdoor Heat pump contains easily flammable refrigerant in safety group A3 according to ISO 817 and ANSI/ASHRAE Standard 34. In the event of a leak, escaping refrigerant may form a flammable or potentially explosive atmosphere. A safety zone is a requirement for the immediate vicinity of the outdoor unit, in which special rules apply when working on the appliance.



Safety instructions



Follow these instructions closely to prevent personal injury and or material loss.

- Do not attempt to move the appliance once installed;
- Ensure the area around the appliance is clean, well-ventilated and kept free of all obstructions
- Persons with Physical or sensory disabilities are advised to engage assistance when interacting with this appliance. Do not allow children to directly interact with or play around this appliance.
- Do not insert fingers or any other items into the air inlet or fan outlet grille.
- We recommend the electrical supply is isolated during a heightened risk of lightning strikes.
- Always use the Isolation switches provided. Do not operate isolators with wet hands.
- Isolate the electrical supply to the appliance if an odor presents, or scorching is detected.
- Do not stand on or keep items on top of the appliance or use it to support other appliances.
- During cleaning, isolate the electrical supply to the appliance. Do not pressure wash the unit or clean with alcohol, benzene, thinners, glass cleaner, or scouring powders.
- Periodically check the condition of any support for deterioration
- Servicing should be performed only as recommended by the manufacturer/distributor.
- Any working procedure that affects safety may only be carried out by competent persons.
- Be aware: Refrigerants may not contain detectable odor.
- Air discharge from the HP must discharge freely, and must not be used for any other purpose.

Installation & service of the heat pump must be carried out by suitably qualified competent contractors.

Users: Do not attempt to install modify, repair or service the appliance yourself.

Under some conditions, the HP will defrost. Ice on the evaporator will melt & a short cloud of condensation will come from the HP. The surface below the HP may become wet due to this action.

- Do not use any external means to accelerate the defrosting process

Safety measures



Caution: Take the following measures in the safety zone to prevent fire and explosion:

■ **Keep ignition sources away**, e.g. naked flames, hot surfaces, electrical devices not free of ignition sources, mobile devices with integrated batteries (e.g. mobile phones, fitness watches, etc.).

Permissible tools:

■ Tools used for working in the safety zone must be designed and explosion protected in accordance with the applicable standards and regulations for refrigerant in safety groups A2L and A3, e.g. brushless machines (cordless screwdrivers), extraction equipment, disposal containers, installation aids, vacuum pumps, conductive hoses, mechanical tools of non-sparking material, etc.

■ **Note:** tools must also be in good condition and suitable for the pressure ranges in use.

■ Electrical equipment must meet the requirements for areas at risk of explosion, zone 2.

■ Do not use flammable materials, e.g. sprays or other flammable gases.

■ **Discharge static:** Before beginning work, touch earthed objects, such as heating or water pipes.

■ Do not remove, block or bridge safety equipment.

■ Do not make any changes to safety devices:

■ **During tests:** NEVER pressurize the product with a pressure higher than the maximum allowable pressure (as indicated on the data plate of each appliance).

■ Strict compliance of NZ regulations must be observed when disposing of this appliance.

Working on the refrigerant circuit



R290 refrigerant (Propane) is an air displacing, colorless, flammable, odorless gas which forms explosive mixtures with air. Drained refrigerant must be properly disposed of by a qualified contractor. Work on the refrigerant circuit with refrigerants in safety group A3 may only be carried out by Qualified AC contractors in accordance with EN 378 Part 4 or IEC 60335-2-40, Section HH & or NZ equivalent.

Before Commencing work on the refrigerant circuit:

- Inspect the area immediately around the HP: Remove all flammable material & ignition sources.
- Ensure good ventilation, especially in the floor area and sustain this for the duration of the work.
- Secure the area surrounding the work area.
- Inform other maintenance personnel and any other persons in the vicinity of the system.
- Check the refrigerant circuit for leaks.
- during & after the work, check for escaping refrigerant using an explosion-proof refrigerant detector suitable for R290. This refrigerant detector must not generate any sparks and must be suitably sealed.
- Display “No Smoking” signs.

When working on the refrigerant circuit.

A CO2 or powder extinguisher must be accessible when:

- Refrigerant is being drained.
 - Refrigerant is being topped up.
 - Soldering or welding work is being carried out.
-
- Use tools exclusively for the refrigerant type R290, to ensure pressure resistance and prevent foreign materials from entering the system.
 - Do NOT touch the air inlet or aluminum fins of the unit
 - Do NOT place any objects or equipment on top of the unit.
 - Do NOT sit, climb or stand on the unit.
 - Should recharge be required, refer to the data plate of the unit for the refrigerant Type and quantity.

Escaping refrigerant can lead to fire and explosions that may result in serious injury or death.

- Do not drill or apply any form of heat to a circuit filled with refrigerant.
- Do not operate Schrader valves unless a fill valve or extraction equipment is attached.
- Take measures to prevent electrostatic charge.
- Prevent naked flames and sparks. Never switch lights or electrical appliances on or off.
- Components that contain or contained refrigerant should be labelled, stored and transported in well ventilated areas in accordance with the applicable regulations and standards.

Avoid risks!

- Use a separate recovery system so that the unit's compressor does NOT have to operate.
- To avoid compressor breakdown, do NOT charge more than the specified amount of refrigerant.
- If the refrigerant system is to be opened, refrigerant MUST be handled according to NZ legislation.
- Make sure there is no oxygen in the system. Refrigerant may only be charged after performing the leak test and the vacuum drying.

Emergency Action



What to do if refrigerant escapes

Escaping refrigerant can lead to fire and explosions that result in very serious injuries or death. There is a risk of asphyxiation if it is breathed in. Direct contact with liquid and gaseous refrigerant can cause serious frostbite and/or burns.

- Ensure good ventilation, especially in the floor area around the HP.
- Prevent direct contact with liquid and gaseous refrigerant. Never breathe in refrigerant vapor.
- Prevent naked flames & sparks. Never switch lights or electrical appliances on or off. Do not Smoke.
- From a safe location, Evacuate people in the vicinity to a safe distance away from the danger zone.
- Switch off the electricity supply for all system components.
- Remove any potential ignition sources from the danger zone.
- Advise the user, no ignition source may be brought into the danger zone until the leak is made safe.
- Seek the assistance of a refrigeration engineer to rectify the leak.
- Recommission the system only after repairs are fully complete.

Contact with Refrigerant

Avoid spilling liquid refrigerant onto skin or splashing it into the eyes. Use safety goggles. Wash any spills from the skin with soap and water. If liquid refrigerant enters the eyes, immediately and abundantly flush the eyes with water and seek medical advice.

Qualified and Competent.

The following operations may only be carried out by competent contractors who are sufficiently qualified:

- Set-up
- Mechanical and Electrical Installation
- Commissioning start-up test
- Inspection, maintenance & Repairs
- Dismantling
- Decommissioning

End of Life Recycling and disposal



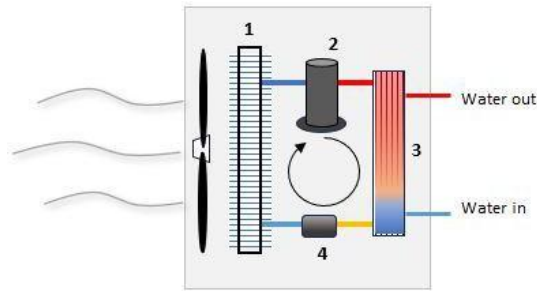
The product is filled with R290 (Propane) refrigerant.

- Do not dispose of this appliance with household waste.
- Dispose of this appliance only at a specialist recycling center or via an AC contractor
- Refrigerant must only be recovered and disposed of by an authorized AC contractor.

Heat Pump Specifications



Operating principle



1. low pressure, low temperature liquid refrigerant coming out of expansion valve extracts heat energy from the air through finned coil heat exchanger ① and evaporates into gas state.
2. This gas state refrigerant is sucked into compressor ② and compressed to high pressure and high temperature gas.
3. The high pressure and high temperature gas discharged by compressor releases its heat energy to water in a plate exchanger ③ and is condensed back to a liquid state.
4. The liquid state refrigerant is expanded in thermostatic expansion valve ④ and becomes low pressure and low temperature liquid refrigerant.
5. The cycle repeats.

Integral HP Safety features

Freezing protection function

The HP has freezing protection function, with the power supply ON. If the system control fails, the appliance provides limited freezing protection.

Be aware: In negative outdoor temperatures, there is increased risk of the unit freezing if a heat pump fault occurs, e.g. due to a power cut or a defective compressor.

Insufficient water flow protection

This function continuously monitors the flow of system water. It will stop the compressor and backup heater if it detects insufficient flow rate, it will automatically revert back to operation if the flow rate returns to normal.

Pump Anti Seize protection

This function prevents the circulating pumps for system water from sticking. The pumps, if out of operation for 24 hours, are switched on for a short time, one after the other.

Safety cut-out in the backup heater

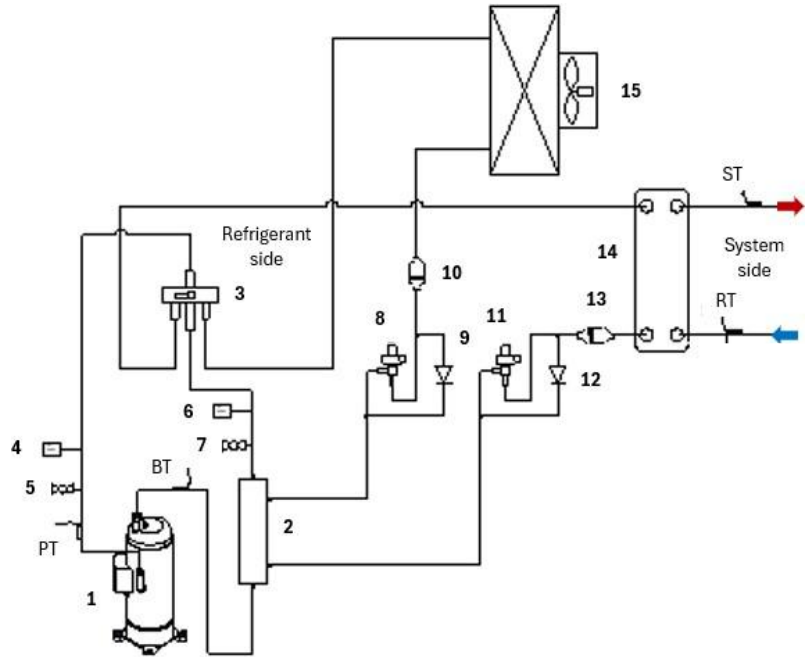
If the temperature in the internal electric back-up heater exceeds the maximum temperature, the safety cut out shuts down the electric back-up heater as a safety measure.

Refrigerant circuit diagram / Primary Components



Refrigerant side

1. Compressor
 2. Heat exchanger
 3. 4 way valve
 4. High pressure transducer
 5. HP Ref, service connection
 6. Low pressure transducer
 7. LP Ref, service connection
 8. EEV 2
 9. Non return Ref, valve
 10. Filter
 11. EEV 1
 12. Non return Ref, valve
 13. Filter
 14. Plate heat exchanger
 15. Evaporator coil heat exchanger
- System side – (detail not shown)**



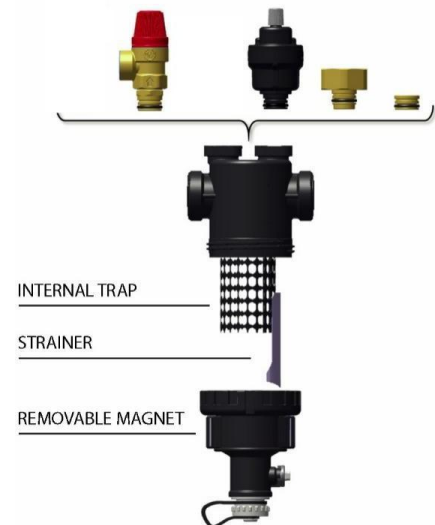
Safety relief assembly & Magnetic dirt separator.

in the event of refrigerant entering the system side, this integral component acts as a collector and gas discharge point reducing the risk of refrigerant gas entering the properties internal heating circuit

Installed on the Flow after the plate heat exchanger.

It also allows impurities to slow down and fall by gravity on the decantation chamber and any Magnetic particles to be captured by the removable magnet.

The internal strainer captures all particles bigger than 0,8 mm. The automatic air vent eliminates air during a filling operation and safety valve provides over pressure system relief at 3 Bar

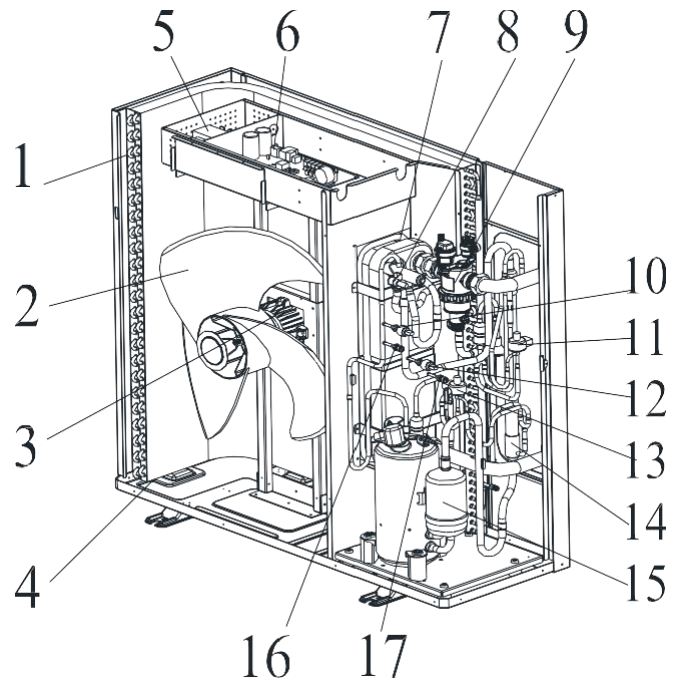


A second magnetic filter must be installed when

Where Steel or cast-Iron Radiators, or Towel rails are within the system a second magnetic filter must be installed on the return line before the HP and or Hydraulic Station or Tower

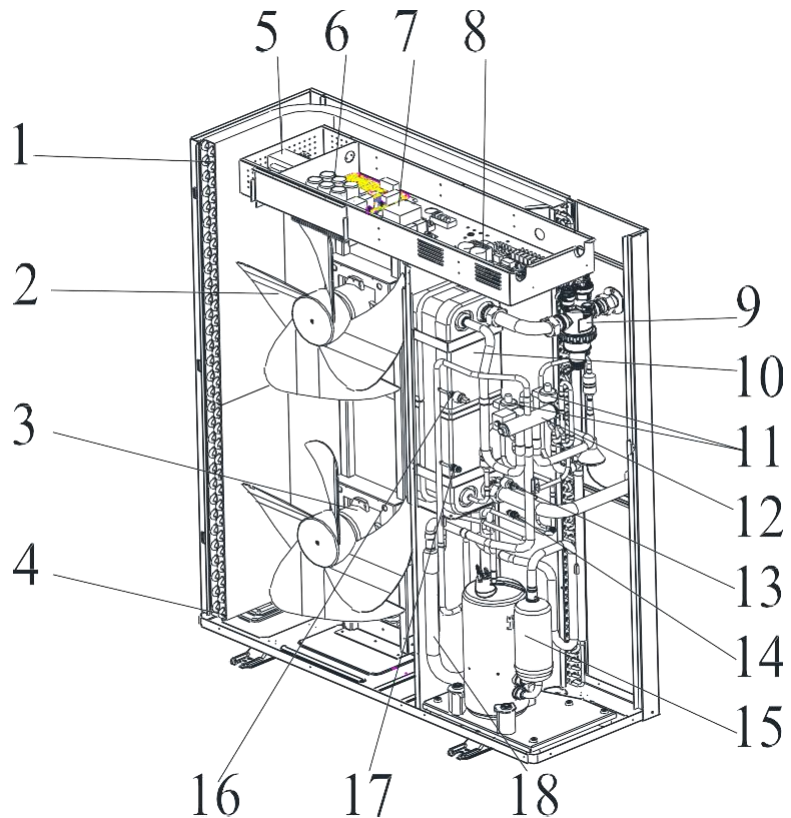
HS06V-QPNNW / HS08V-QPNNW / HS10V-QPNNW / HS12V-QPNNW

1. Finned coil heat exchanger
2. Fan blade
3. EC Fan motor
4. De-icing heater
5. Reactor
6. Inverter / control board
7. Plate heat exchanger
8. 4 way valve
9. Magnetic air and dirty separator
10. HP transducer
11. EEV2
12. LP transducer
13. EEV1
14. heat exchanger
15. Compressor
16. HP service connection
17. LP service connection

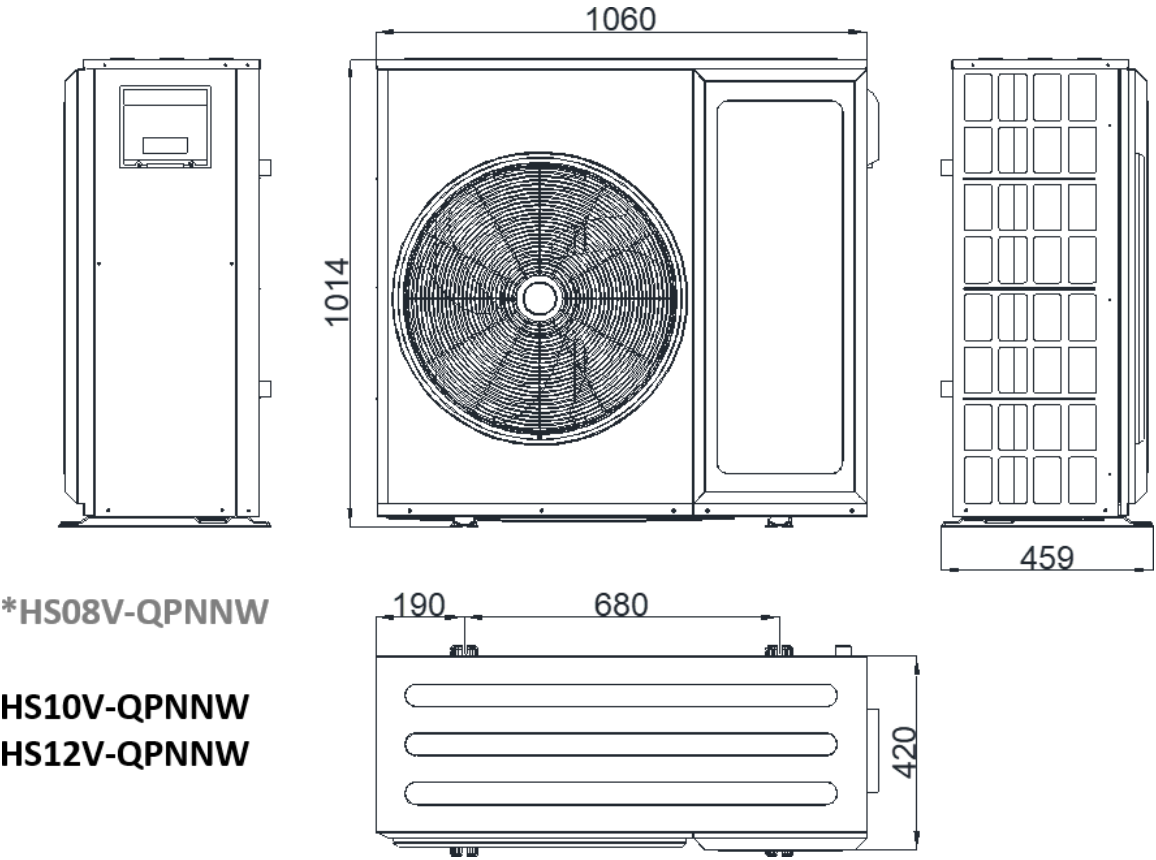
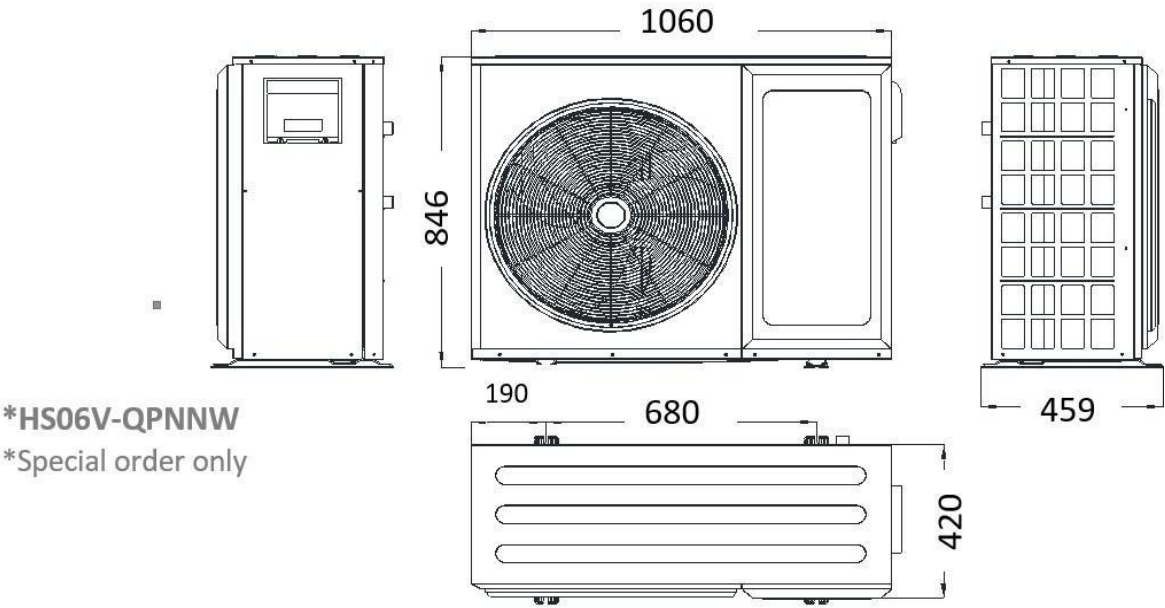


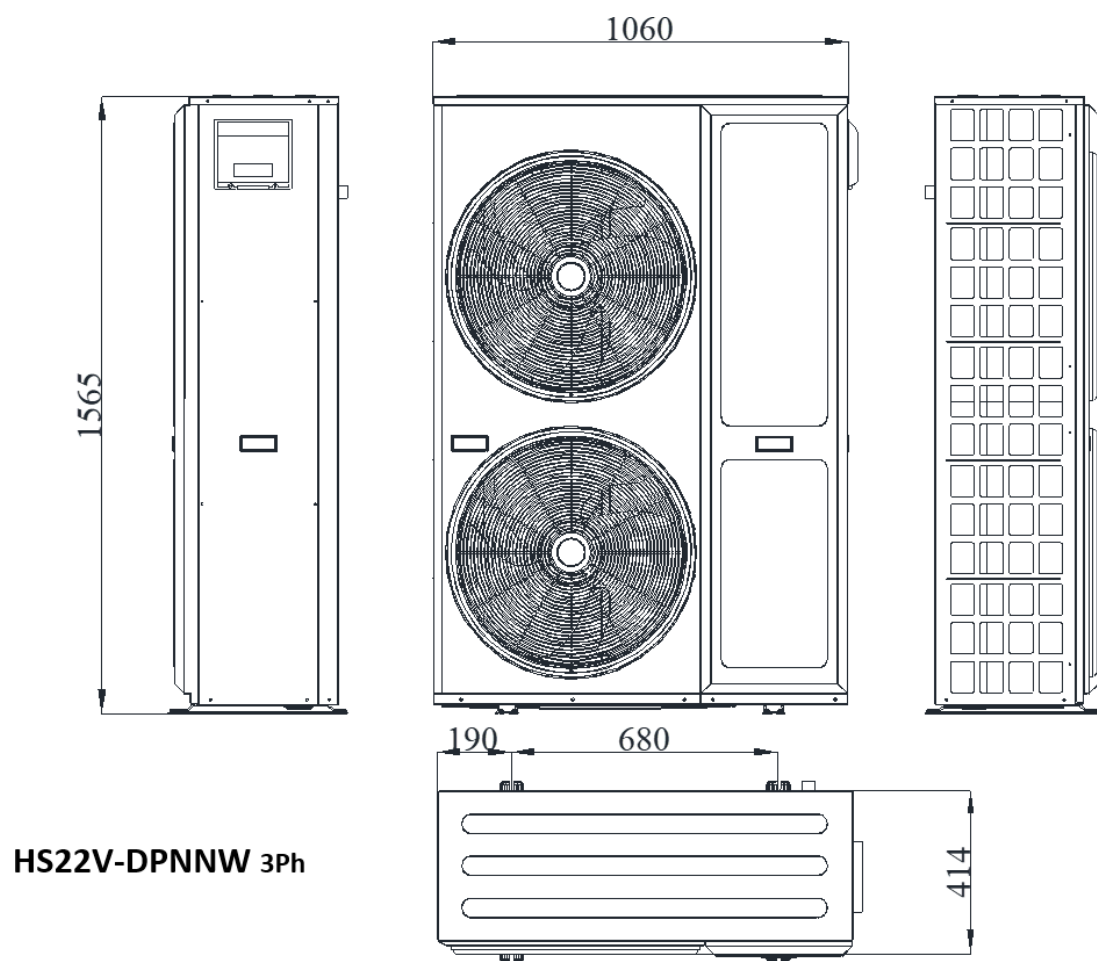
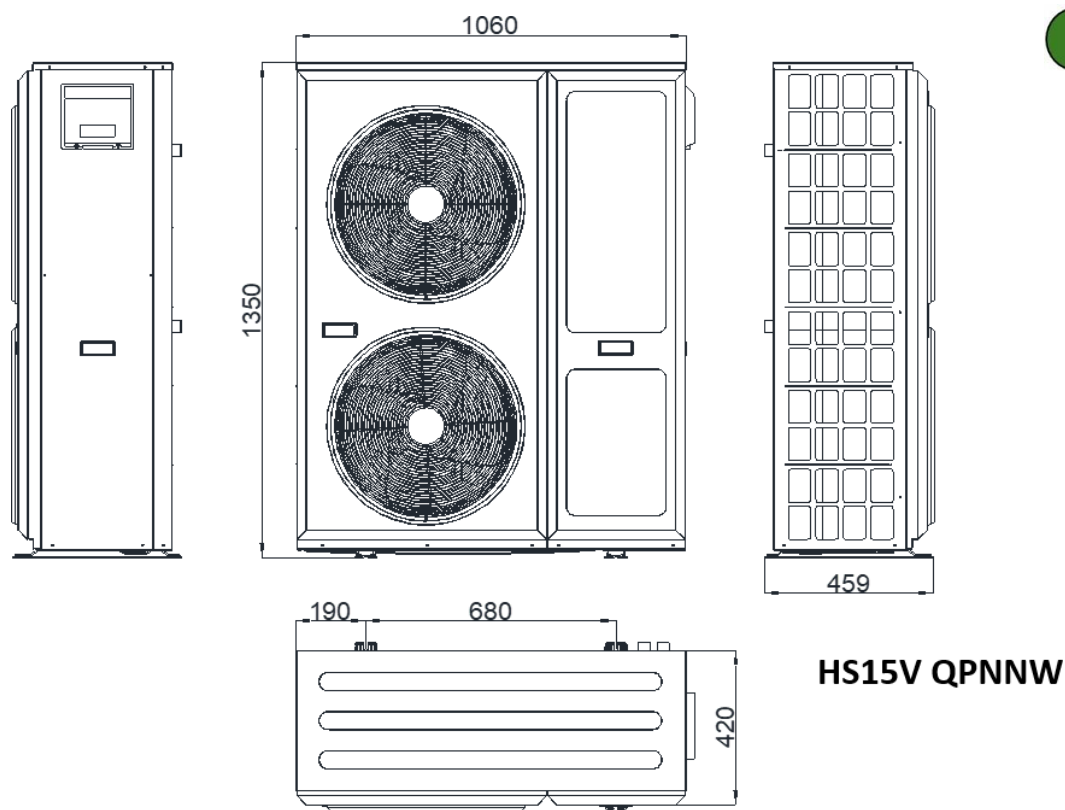
HS15V-QPNNW / HS22V-DPNNW

1. Finned coil heat exchanger
2. Fan blade
3. EC Fan motor
4. De-icing heater
5. Reactor
6. Inverter board
7. EMC filter
8. Controller
9. Magnetic air and dirt separator
10. Plate heat exchanger
11. EEV1 & EEV2
12. 4-way valve
13. LP transducer
14. LP service connection
15. Compressor
16. HP transducer
17. HP service connection
18. Heat exchanger



2.3 HP Dimensions

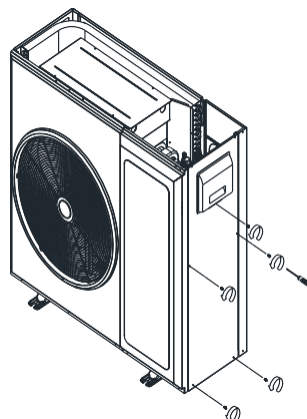
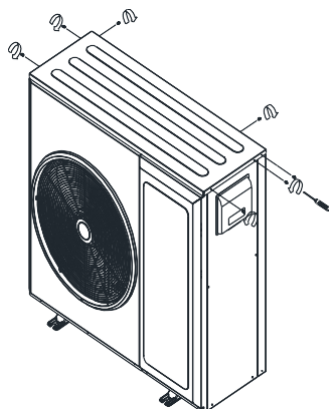




Removal of cabinet panels

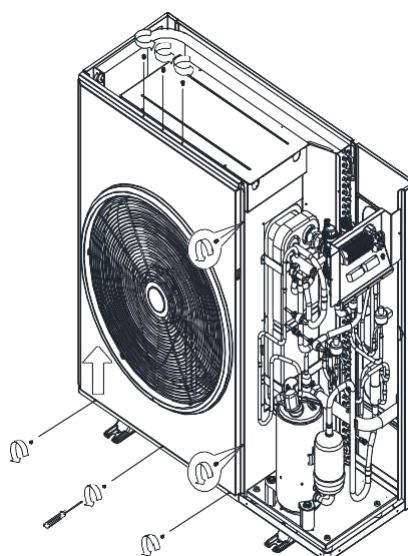
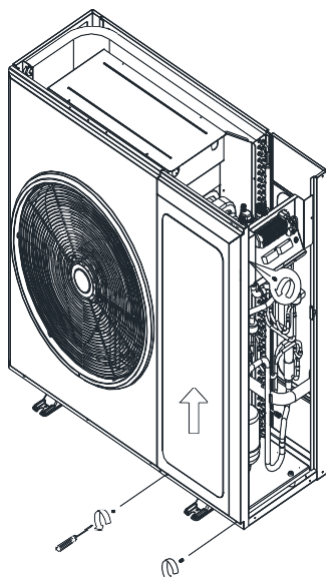
The HP casing can be removed in order, as follows

1. Remove the screws as shown, top panel can be removed. The inner cover below encloses the control PCB etc



2. Remove plastic cover first then remove the screws as shown, the right panel can be removed.

3. Remove the screws as shown. The front panel can be removed by pushing the panel upward.



4. Remove the screws as shown. The fan panel can now be removed by pushing it upward.

heat pump specifications by model

Model Number		HS06V-Q	HS08V-Q	HS10V-Q	HS12V-Q	HS15V-Q
Heat output (Kw) range A7°/W35°C		2.3 ~ 6.46	2.90 ~ 8.2	2.90 – 9.50	4.4 – 12.2	4.95 – 15.2
output, at A7/W35°C	kW			9.5	12.20	15.2
Power consumption A7/W35°C	kW			2.06	2.67	3.53
COP at A7/W35°C				4.51	4.35	4.47
Heat output (Kw) range A2°/W35°C			2.9 – 8.	2.89 – 8.26	3.89 - 10.5	5.19 - 14.01
Output, at A2/W35°C	kW			8.26	10.5	14.01
Power consumption A2/W35°C	kW			2.1	2.73	3.59
COP at A2/W35°C				3.94	3.85	3.91
Heat output (Kw) range A-7°/W35°C				3.77 – 6.46	5.06 – 8.20	7.04 – 11.40
output, at A-7/W35°C	kW			6.46	8.20	11.40
Power consumption A-7/W35°C	kW			1.9	2.48	3.34
COP at A-7/W35°C				3.4	3.30	3.41
Heat output (Kw) range A7°/W55°C		1.82 ~ 5.8	2.47 ~ 6.6	2.66 - 7.6	4.08 - 11.0	5.5 ~ 14.84
output, at A7/W55°C	kW			7.60	11.0	14.30
Power consumption A7/W55°C	kW			2.67	3.57	5.08
COP at A7/W55°C				2.85	3.08	2.92
Heat output (Kw) range A2°/W55°C				2.4 – 7.0	3.71 – 10.2	4.73 – 13.0
output, at A-2/W55°C	kW			7.0	10.2	13.00
Power consumption A-2/W55°C	kW			2.69	3.78	4.84
COP at A-2/W55°C				2.60	2.70	2.69
Cooling output range (Kw) A35°/W7°C		1.50 ~ 4.32	1.90 ~ 5.35	1.9 ~ 5.9	2.7 ~ 7.8	3.65 ~ 12.2
output, at A35/W7°C	kW			6.00	7.80	10.30
Power consumption A35/W7°C	kW			2.30	2.80	4.50
EER at A35/W7°C				2.60	2.79	2.29
Cooling output range (Kw) A35°/18°C		1.8 ~ 5.2	2.22 ~ 6.2	2.29 ~ 7.1	3.87 ~ 10.6	5.45 ~ 14.7
output, at A35/W18°C	kW			7.10	10.60	14.70
Power consumption at A35/W18°C	kW			2.40	3.30	4.30
EER at A35/W18°C				2.96	3.21	3.42
Power supply / Compressor / Condenser		! PH 220-250V/50Hz / TWIN ROTARY / PLATE HX				
Starting current	A	<15	<15	<15	<15	<15
Rated operating current	A	9.40	12.50	14.00	18.00	32.00
Rated power consumption	KW	2.16	2.86	3.22	4.15	7.10
Heating medium flow range	m3/h	0.60~1.15	0.55~1.6	0.6~1.8	0.9~2.12	1.25~2.62
Internal pressure drop at nominal flow	kPa	16	21	23	25	25

Min. flow (defrosting)	m3/h	1.0	1.4	1.4	1.7	2.5
Nominal air flow	m³/h	2700	2900	3000	3350	5500
Nominal fan output	W	70	70	75	80	150
Max outlet heating medium temperature	°C	70				
Refrigerant R290 filling weight	kg	0.55	0.72	0.72	0.80	1.10
CO2 equivalent		0.0017	0.0022	0.0022	0.0024	0.0033
Anti electric shock grade		I	I	I	I	I
Water proof grade		IP X 4	IP X 4	IP X 4	IP X 4	IP X 4
Max. operating pressure of low side	Mpa	3.0	3.0	3.0	3.0	3.0
Max. operating pressure of high side	Mpa	3.0	3.0	3.0	3.0	3.0
Max allowable pressure	Mpa	3.3	3.3	3.3	3.3	3.3
Dimensions (W x D x H)	mm	1060×420×846	1060×420×1015			1060×420×1350
Pipe connector		G1"				
Net Weight	kg	88	106	106	108	132
ErP Level (35°C)		A+++	A+++	A+++	A+++	A+++
ErP Level (55°C)		A++	A++	A++	A++	A++
Energy efficiency ns (35°C)		181%	186%	186%	184%	186%
Rated heat output Prated (35°C)		5	6	7	8	12
Energy efficiency ns (55°C)		137%	144%	138%	144%	143%
Rated heat output Prated (55°C)		5	6	6	9	12
Operating ambient temp. range	°C	Heating: -25~46				
		DHW: -25~46				
		Cooling:10~45				
Sound power level L _{WA} (ErP)	dB(A)	59	56	58	60	64
Sound power level L _{WA} (night mode)	dB(A)	53	54	55	59	62

The above data is tested by EN14511. A7/W35°C means air temp. 7°C, outlet water temp. 35°C Max COP given at optimum efficiency at A=, W= Variation of system Load, + A and W will effect COP The Sound power level is tested by EN12102

Environmentally friendly R290 GWP rating (Global warming potential) =3

Compressor oil filling volume:

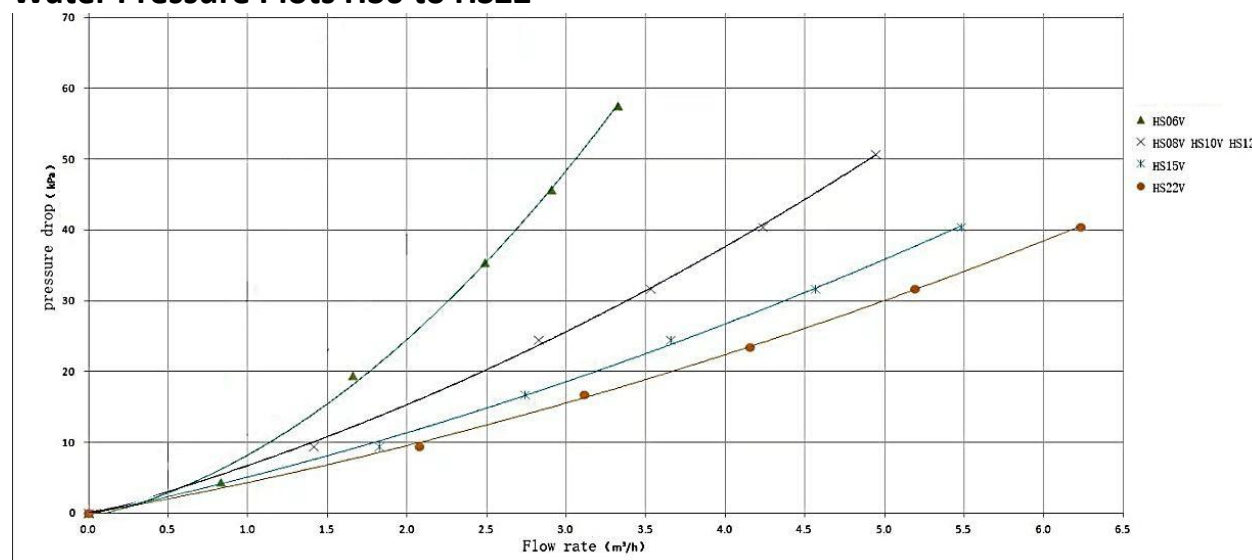
HS06V	HAF68 - 630ml
HS08V HS10V HS12V-Q HS12V-D	HAF68- 840ml
HS15V	HAF68 - 1150ml
HS22V	HAF68 - 2000ml

Model Number 3-Phase appliance				HS22V-D
Heat output range A7°/35°C				6.85 – 22.10
Output, at A7/W35°C	kW			22.10
Power consumption A7/W35°C	kW			5.13
COP at A7/W35°C				4.30
Heat output (Kw) range A2°/W35°C				7.36 – 19.86
Output, at A2/W35°C	kW			19.86
Power consumption A2/W35°C	kW			5.23
COP at A2/W35°C				3.80
Heat output (Kw) range A-7°/W35°C				9.81 – 15.89
Output, at A-7/W35°C	kW			15.89
Power consumption A-7/W35°C	kW			5.10
COP at A-7/W35°C				3.12
Heat output range A7°/W55°C				7.07 - 19.09
Output, at A7/W55°C	kW			19.10
Power consumption A7/W55°C	kW			6.82
COP at A7/W55°C				2.80
Heat output (Kw) range A2°/W55°C				6.35 - 17.47
Output, at A-7/W55°C	kW			17.47
Power consumption A-7/W55°C	kW			6.78
COP at A-7/W55°C				2.58
Cooling output range A35°/W7°C				5.75~16.30
Cooling output at A35/W7°C	kW			16.3
Power consumption A35/W7°C	kW			5.8
EER at A35/W7°C				2.81
Cooling output range A35°/18°C				8.70~19.33
Cooling output at A35/W18°C	kW			19.33
Power consumption at A35/W18°C	kW			6.19
EER at A35/W18°C				3.12
Power Supply / Compressor / Condenser		3 PH 380-415V/3N~/50Hz / TWIN ROTARY / PLATE HX		
Starting current	A			<15
Rated operating current	A			16
Rated power consumption	KW			9
Heating medium flow range	m3/h			1.45~3.80
Internal pressure drop at nominal flow	kPa			35
Min. flow (defrosting)	m3/h			3.2

Nominal air flow	m ³ /h			8000
Nominal fan output	W			220
Max outlet heating medium temperature	°C			
Refrigerant R290 filling weight	kg			1.38
CO2 equivalent				0.0041
Anti electric shock grade				I
Waterproof grade				IP X 4
Max. operating pressure of low side	Mpa			3.0
Max. operating pressure of high side	Mpa			3.0
Max allowable pressure	Mpa			3.3
165 Kgs - Dimensions (W x D x H)	mm			1060×420×1565
Pipe connector		G1"		
ErP Level (35°C)				A+++
ErP Level (55°C)				A++
Energy efficiency ns (35°C)				185%
Rated heat output Prated (35°C)				15
Energy efficiency ns (55°C)				142%
Rated heat output Prated (55°C)				17
Operating ambient temp. range	°C	DHW & Heating: -25~46		
		Cooling:10~45		
Sound power level L _{WA} (ErP) (Night mode)	dB(A)			64 (62)

The above data is tested by EN14511. A7/W35°C means air temp. 7°C, outlet water temp. 35°C
Variation of system Load, A and W will effect COP Sound power level is tested to EN12102

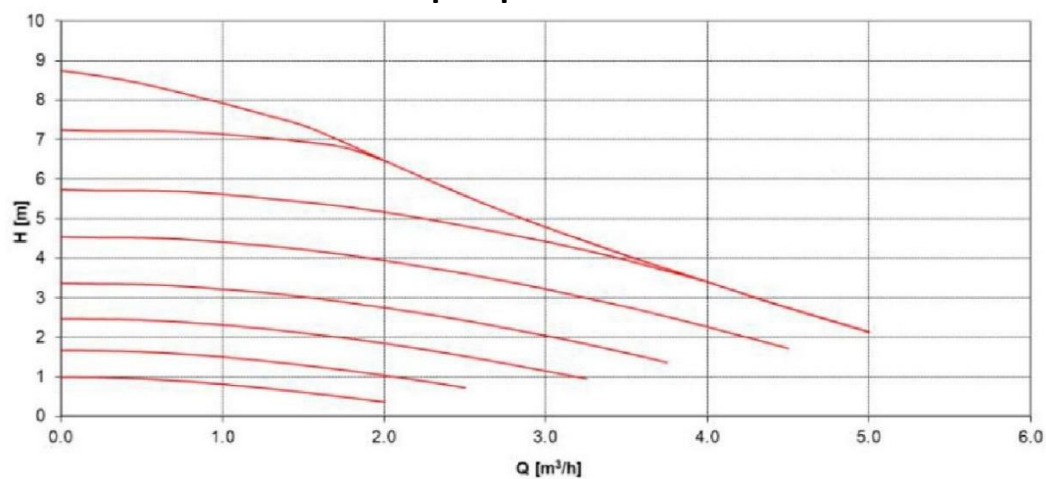
Water Pressure Plots HS6 to HS22



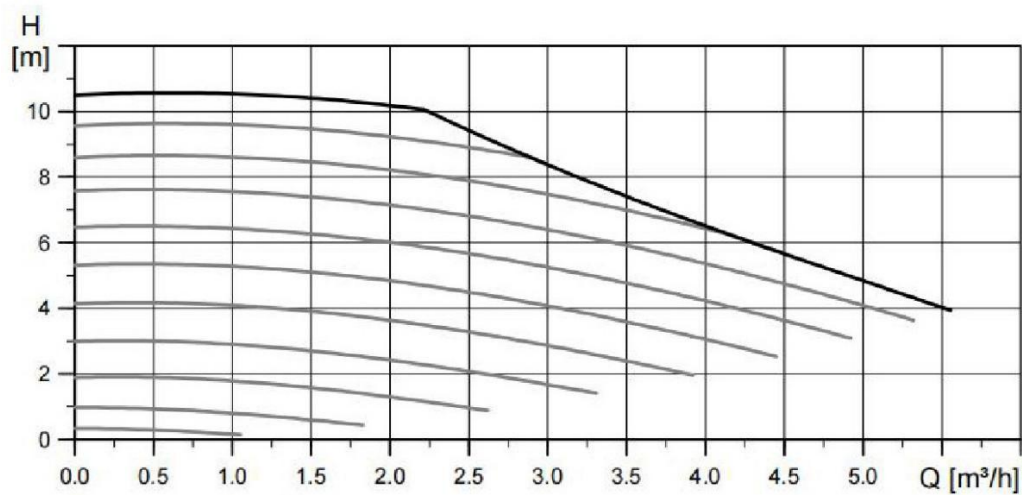
Pump Curve charts



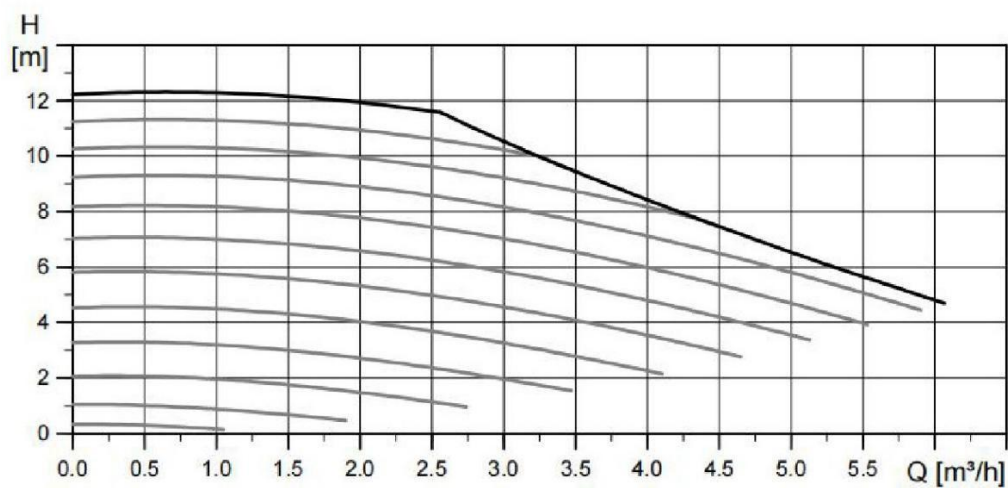
HS06V to HS12V circulation pump



HS15V circulation pump



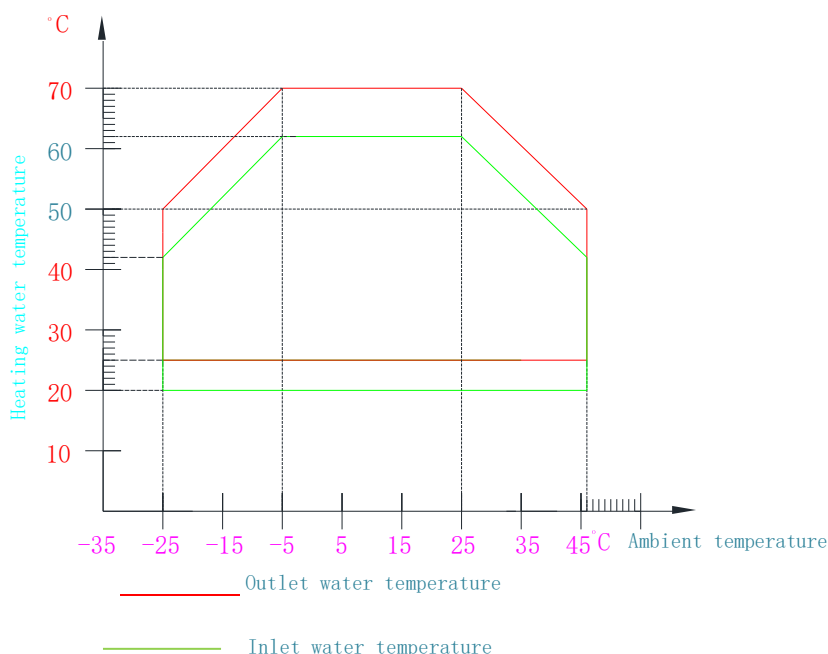
HS22V circulation pump



Operating range

The appliance operates between a minimum and maximum outdoor temperature. These outdoor temperatures define the application limits for the heating and cooling modes. Operation outside of the application limits leads to the compressor locking out.

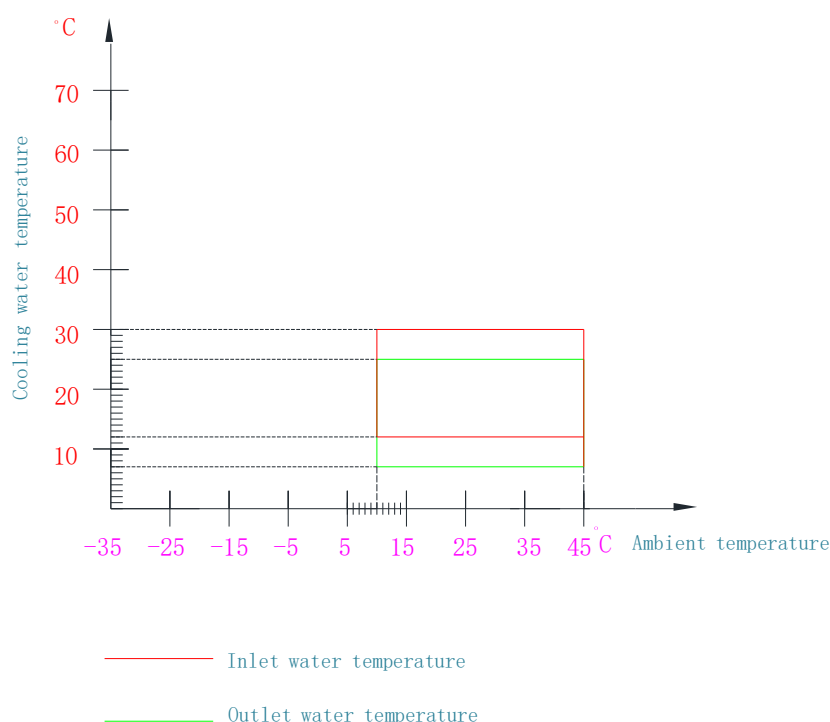
Heating mode



The maximum outlet water temperature made by the compressor is subject to the ambient temperature as per this running envelope. The unit will follow this envelope to automatically adjust the maximum outlet water temperature.

If the user sets a heating setpoint higher than the operating limit temperature, the unit may not meet the setpoint and will go to standby after meeting the operation envelope value.

Cooling mode

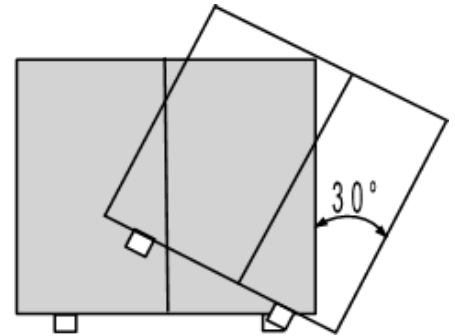


Movement and Storage



Caution: This Heat Pump is charged with refrigerant R290 (propane): Mechanical loading can lead to leaks in the refrigerant circuit. If leaks of refrigerant occur, there is risk of explosion or asphyxiation.

- Shock, pressure and tensile loads can damage this equipment. Equipment damaged in transit Must not be used. Prevent excess vibration during transport.
- This appliance must not be transported, moved or stored at greater than a 30° angle from the upright position. In order to avoid damage to the air outlet grill, always truck to the rear side of the outdoor unit. Take care not to damage the evaporator when doing so. Scratches on the surface coating will lead to corrosion.

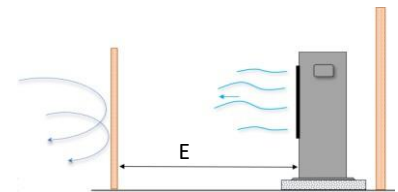
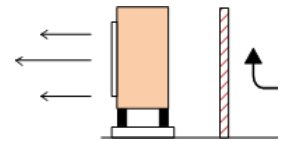
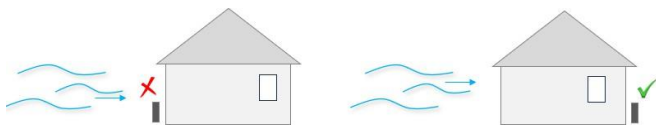


- When moving, protect the evaporator on the rear side of the outdoor unit against mechanical loading, e.g. with cardboard packaging
- Position the outdoor unit carefully after transport Storing in a dry area until required.
- Only remove the packaging from the outdoor unit after transporting & protect the outdoor unit on site prior to commissioning using cardboard or bubble wrap.
- Dispose of all packaging in a safe and environmentally friendly manner
- When installing, wear suitable personal protective equipment (protective gloves, safety glasses etc)

Reminder Mechanical and Electrical Installing contractors must read and observe all the requirements and actions set out in the Safety-First section of this manual

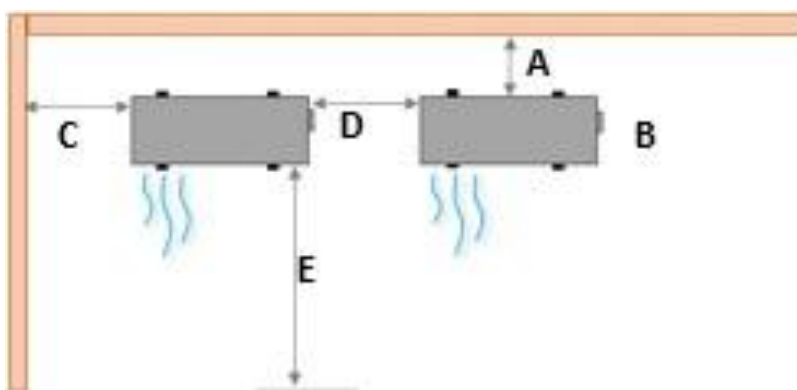
■ HP Installation Location requirements

- **In accordance with EN 378-3:2016, the HP must be installed in open air.** The refrigerant circuit in the HP contains easily flammable refrigerant in safety group A3 according to ANSI/ASHRAE Standard34. Observe the requirements for a safety zone as defined [See "Safety Zone Requirements"](#).
- Install on a concrete pad foundation at lease 50mm bigger than the HP footprint (separate from the house slab) use anti-vibration type mounting feet. If temp, will be consistently below 0°C or heavy snow is likely the unit must be raised by 300mm to avoid ice build-up on the unit's chassis.
- Install to avoid facing prevailing southerly winds Ideally away from bedrooms or noise sensitive areas including neighbor's section boundaries. (The unit may produce low level noise above 45 decibels). baffles at least 1600mm may be necessary in front to deflect strong winds and snow blowing directly into the face of the HP.
- Install level on both planes (max 2mm tolerance) and observe the minimum clearances required
- Install using the base drain attachments supplied, and in any case ensure there is good drainage around installation area to ensure water cannot run out onto paths as it may freeze or cause undesirable slime build up (The HP can produce large volumes of condensation water when running in high humidity conditions. and run off when the unit melts ice during a defrost cycle).
- Avoid locations exposed to machine oil vapor, salty air, thermal Sulphur gases or other harsh substances which will have an adverse effect on this appliance.
- If not adjacent to a structure, protect the intake side with a wall or similar to prevent strong winds from blowing directly on the rear intake of the HP.



Minimum Clearances:

Refer also to "Safety Zone Requirements"



A = 250 mm – 300mm for HS22 model
 B = 600 mm
 C = 600 mm
 D = 500 mm
 E = 1550mm

Obligatory Safety zone



The HP unit contains easily flammable refrigerant in safety group A3 according to ISO 817 & ANSI/ASHRAE Standard 34. Note: R290 refrigerant has a higher density than air. In the event of a leak, escaping refrigerant may collect near ground level.

- Refrigerant must not be allowed to collect in any way that may lead to a dangerous, explosive, suffocating or toxic atmosphere. Avoid situations where refrigerant may collect in indentations.
- Refrigerant must not be allowed to enter the building via building openings.

A safety zone is required, in which specific requirements apply.

The following must not be present or permitted within the safety zone:

- Building openings, e.g. windows, doors, light wells, skylights, etc.
- Outdoor air and exhaust air apertures from ventilation boilers and air conditioning systems
- Property boundaries,
- Gullies or inlets to wastewater systems,
- Other, troughs, depressions, shafts or potential discharge points to sub floor voids
- Electrical house supply connections Distribution boards, sockets, lamps, light switches
- Naked flames such as burner gauze assemblies, Barbeque Grills or cooking devices
- Tools that have potential to generate sparks
- Electrical devices not free of ignition sources, mobile devices with integrated batteries (e.g. mobile phones, fitness watches, etc.)
- Objects with temperatures above 360 °C

SAFETY ZONE REQUIREMENTS.

Safety zones are shown for floor standing installation. These also apply to other types of installation. E.g, In the case of wall installation, the requirements listed also apply to the area below the outdoor unit, down to the ground.

Extent of Safety Zone

A Must be equal to the required clearance from the HP to a wall - or when installed in an open space, 1m from the rear of the appliance.

B 1 meter from the lower left or right edge of the heat pump (or the minimum clearance distance to a wall)

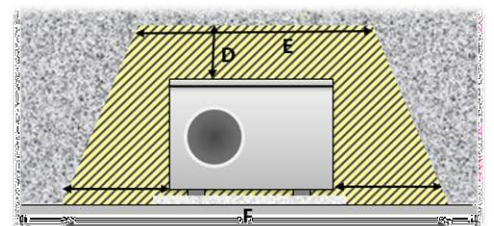
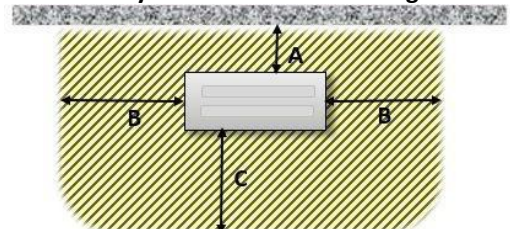
C 1 meter in front of the appliance must be applied. (*Do not confuse with the 1.55m required for air discharge*)

D 0.5 Meters over the top of the HP

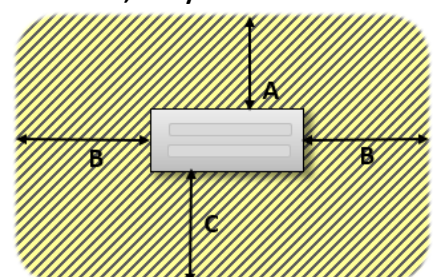
E 0.5 m wider than the HP at the Height of dimension (D)

F HP + 1m per side or minimum 600 to an internal construction corner (Corner permissible on one side only)

Located by External wall of building



located, away from a structure



HP: Mechanical connections.



This appliance must be installed in observance of NZ regulations

- ▶ Install F/R connection pipework such that it is free from mechanical stress.
- ▶ If you are using metallic pipes to connect to the outdoor unit, earth the pipes.
- ▶ Thoroughly flush the heating installation before allowing water through the Heat Pump

Installation requirements

1. Hydronic installation must adhere to NZ Building Code, standards and any local council requirements.
2. The water supplied to the system must be clean and not contain heavy metals that could cause harm to the unit. Upon commissioning The water must be treated with an approved inhibitor and tested annually to prevent corrosion, fouling and deterioration of the Heat pump and system.
3. Use a multilayer pipe system for your Flow and Return pipe work (Not Copper) Use the least number of elbows and joiners as they restrict flow. **Note:** Minimum pipe size is a requirement of warranty

25mm Flow and return for HS6V HS8V HS10V (For HS10V Max 15M 32mm thereafter)

32mm Flow and return for HS12V HS15V and HS22V (max 30m)

4. Service valves must be installed on the flow and return to facilitate future HP service requirements. Use Union type isolation valves with a rubber seal connection to reduce vibration
5. A **Y type** strainer (must for warranty) be installed before the HP service valve on the system return with an additional service valve downstream to allow easy cleaning of the strainer.
6. Install a drain valve at the lowest point to allow the HP and system to be drained if required.
7. Install A pressure limiting filling valve with a detachable flexible hose between it & a fixed cold-water supply adjacent to the appliance installed so the user can simply connect & use as required.
8. The HP has an integral 3 Bar relief & Automatic Air Vent you do not need to install others externally. **Note:** In the unlikely event that R290 refrigerant leaks into the water circuit, there is a risk flammable refrigerant may escape indoors. Do not install AAVs on indoor system (Use manual vents).
9. Insulate pipe work & exposed valving to protect against thermal heat loss, condensation and frost.
10. **If your system contains more than 160L** a supplementary expansion vessel will be required in addition to the one in the tower or station.

Condensate run out drains x 2

Two adapters are supplied inside the heat pump. these plug it into the holes provided in the unit base. connect a 16mm drain hose(not provided) to the adapter
Run the drain pipe with a fall to an appropriate drain point (e.g. a small, covered soak away) the shortest possible run is recommended.

Note: Gully traps within 1m are prohibited under the Safety zone requirements

Ensure condensate does not discharge directly onto a foot path.

System Operational Parameters

- Min. heating circuit operating pressure: ≥ 0.70 bar)
- Max. heating circuit (relief) pressure: < 3 bar)
- Max. DHW tank in the hydraulic tower pressure: < 7 bar)
- Max. DHW tank temperature: 70°C



The Generic details on Pages 28-29 Set out the basis of your system side installation.

Refer also to the systems installation manual available online from Heat Logic

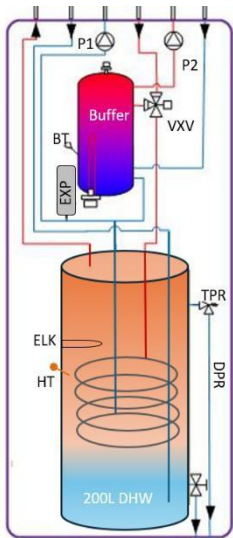
Hydraulic Module: Options

Every installation requires use of either a Manager, Station or Tower

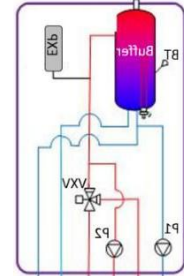
Manager Used for systems using individual system components.

Station A system hub with integral components and an optional to add a DHW cylinder

Tower Provides a truly fully integral hub including 200L of DHW storage



Tower Module



Station Module



Manager Module

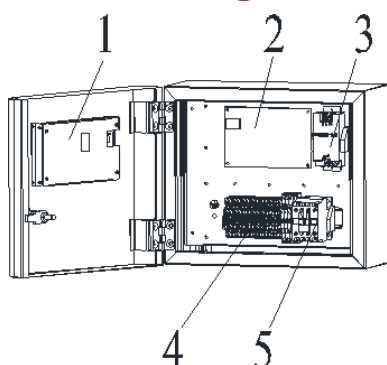
Manager: Includes. wiring control interface for external components with touch screen.

When installing a manager, the specific Heat Logic accessory **"PWM primary pump"** must be used for the HP-Buffer Circuit.

Station: Includes. Wiring interface, Touch screen control plus buffer tank and expansion vessel, with pre plumbed & wired integral primary and secondary circuit pumps plus prewired and plumbed three-way valve for optional cylinder control through dedicated connections.

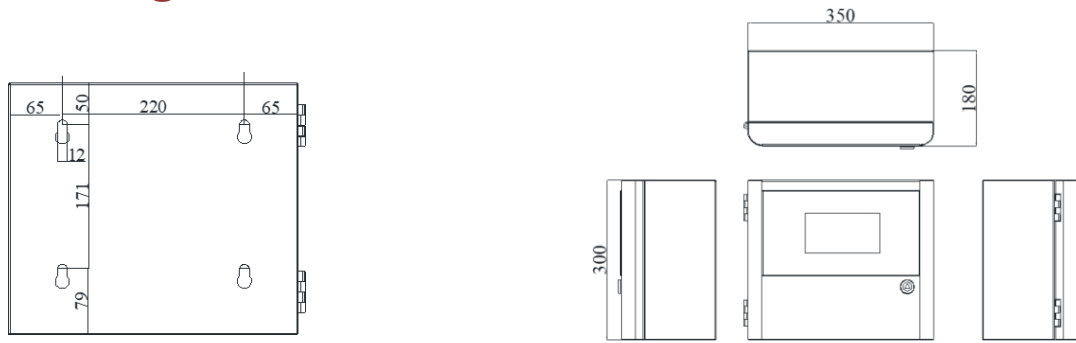
Tower: Includes. Wiring interface, Touch screen control plus buffer tank and expansion vessel, with pre plumbed & wired integral primary and secondary circuit pumps plus prewired and plumbed three-way valve controlling output to the integral 200L duplex SS DHW Cylinder.

Hydraulic Manager : Description



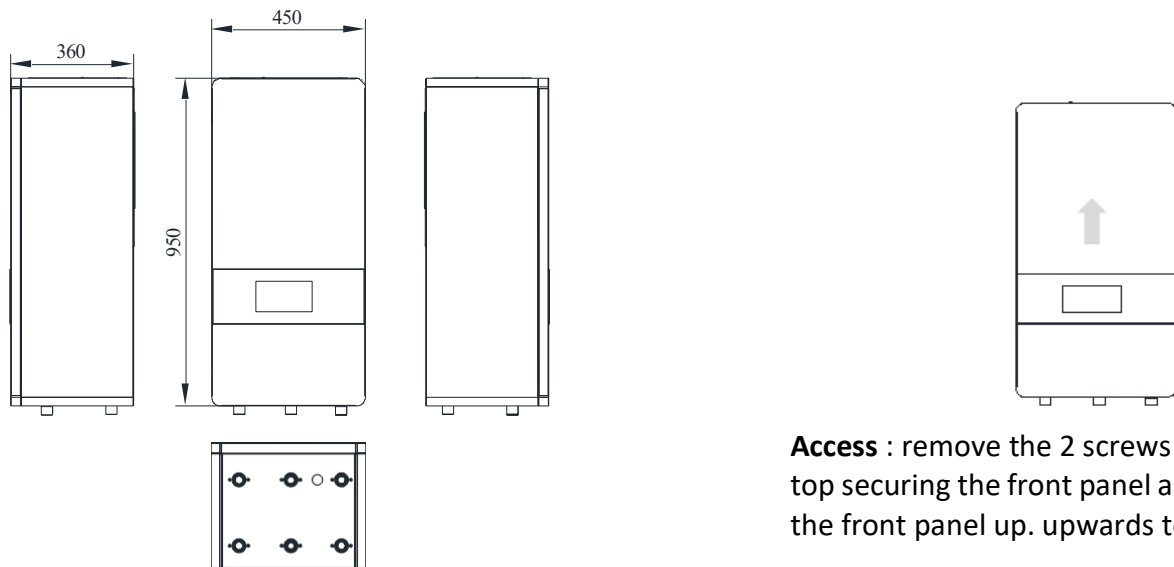
1. Touch screen
2. I/O board
3. Switching power supply
4. Terminal block

Hydraulic Manager : Dimensions & Location



Locate indoors, potentially in the plant room or suitably close to the wired components and buffer.
 Attach to wall with 4 X Ø10 mm bolts (not provided) via the holes on the mounting plate
 (Do not install in a wet area)

Hydraulic station: Dimensions & Location

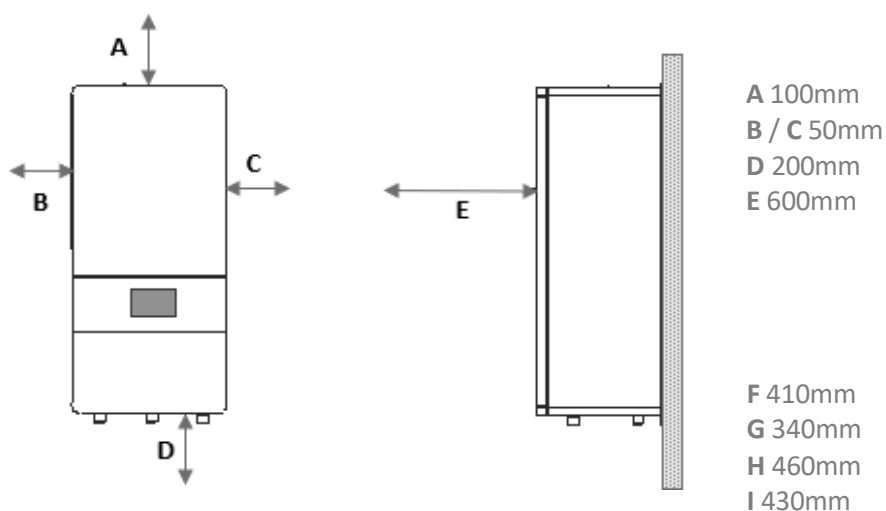


Access : remove the 2 screws on the top securing the front panel and push the front panel up. upwards to open

Selecting the Station location.

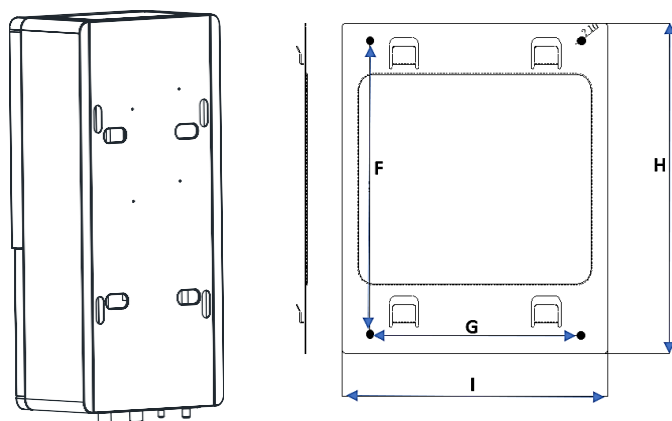
- Install indoors or in a garage area that is protected from frost with an environmental temperature between 7° & 35° and relative air humidity of 40 to 75 %. Avoid areas with high condensation, dust or corrosive atmospheres. Never install it in a bathroom!
- Take into consideration low level noise and possible oscillation transfer into the wall on which it hangs. **We recommend walls behind the unit include sound deadening bats.**
- Check that a WIFI signal is present in the installation location. (Required for remote access and software updates)
- Ensure the mounting wall is flat and offers sufficient loadbearing capacity. Use appropriate fixings for the load. Ensure the required minimum clearance requirements are maintained.
- Do not install above another appliance that may damage it (e.g. above an oven or heater)
- The height difference between the Hydraulic station & HP must not be greater than 10 m.
- When including other accessories, observe the minimum clearances/ installation clearances.
- Highly flammable items must not come in contact with this appliance.

Station: Pipe connections & installation clearances



wall bracket dimension hydraulic

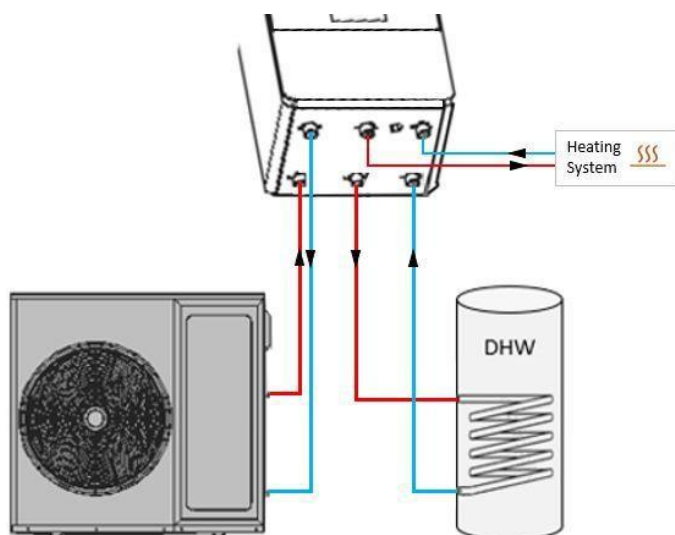
station holes on the back side



Fix the wall bracket to the wall with Tech screws (*not supplied*)

To attach lift up the hydraulic station & attach it to the wall bracket. Locating the bracket hooks into the corresponding holes in the rear face of the station.

Connect pipework as per the below diagram: (Required service Valving not shown)



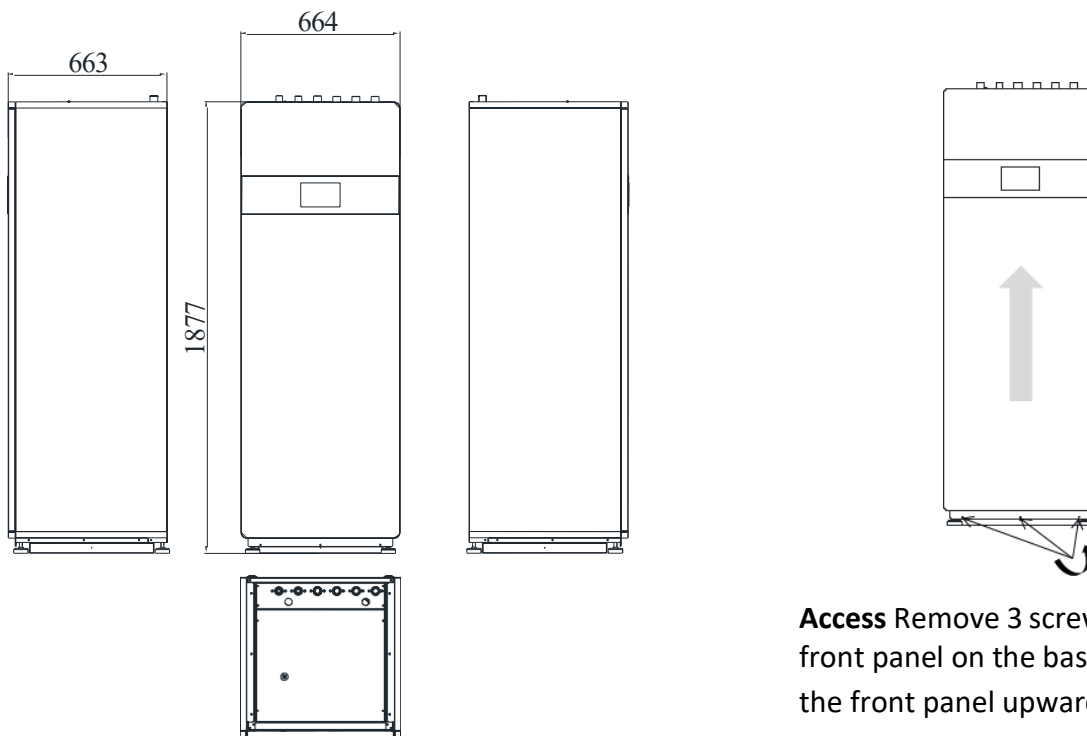
For installations with UFH actuator valves or thermostatically controlled valves, install a differential bypass valve between flow and return in order to guarantee a volume flow of at least 40%.

Important: Hydraulic station & Hydraulic Tower modules contain a 3Kw electric back up element within the buffer tank, not typically required

- If it is not required, or the power supply does not support it. Then It must be programmed out in the Service access settings and the power supply to it physically disconnected.

To program out the back up heater set engineer setting ST07 to -20

Hydraulic Tower : Dimensions & Location



Access Remove 3 screws fixing the front panel on the base and push the front panel upward to open.

Selecting the Tower location

- Install indoors or in a garage area that is protected from frost with an environmental temperature of between 7° & 35° with relative air humidity of 40 to 75 %. Avoid areas with high condensation, dust or corrosive atmospheres. Do not install in a bathroom!
- location must allow access to the pipe connections and top side inspection cover
Allow for installation of a drain tray and space to facilitate the cylinder TPR relief drain.
Allow for provision of seismic restraint.
- Take into consideration there will be low level noise and possible oscillation transfer to the floor and adjacent structure. **We recommend sound proofing bats be applied to adjacent walls**
- Check that a WIFI signal is present in the proposed installation location. (required for the inbuilt control panels WIFI module if used)
- Ensure the floor is flat and offers sufficient load bearing capacity for the unit and water volume. Ensure the required minimum clearance requirements are maintained.
- Seismic restraints and a drain tray are required by NZ regulation (G12)
- The height difference between the Hydraulic Tower & HP must not be greater than 10 m.
- When including other accessories, observe the minimum clearances/ installation clearances.
- Flammable items must not come into contact with this appliance.

Important: Hydraulic station & Hydraulic Tower modules contain a 3Kw electric back up element within the buffer tank, not typically required

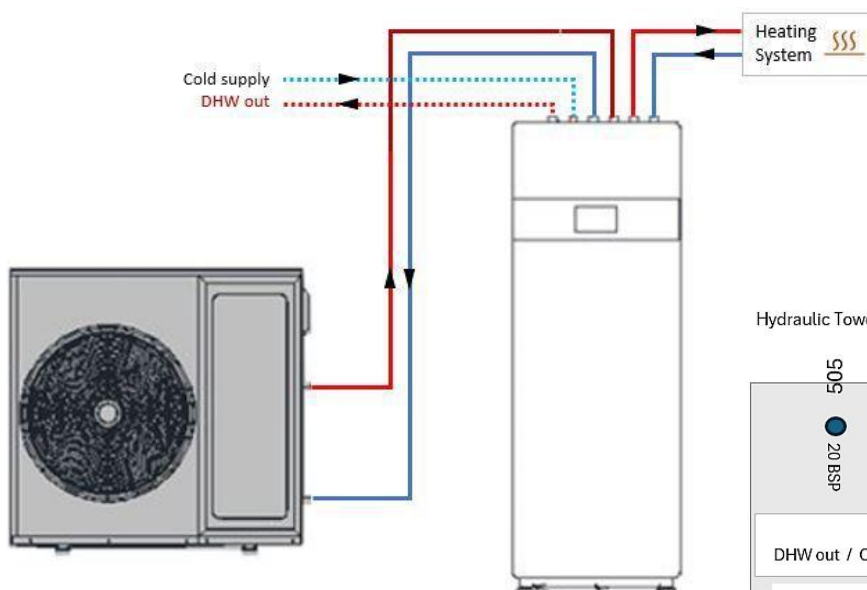
- If it is not required, or the power supply does not support it. Then It must be programmed out in the Service access settings and the power supply to it physically disconnected.

To program out the back up heater set engineer setting ST07 to -20

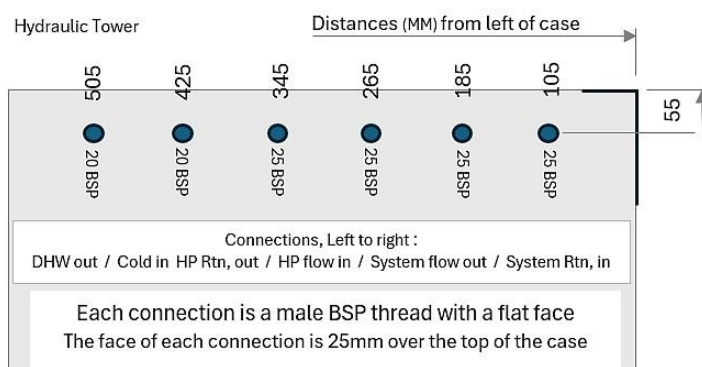


Tower: Pipe connections and clearances.

Connect pipework as below: (service Valving not shown)

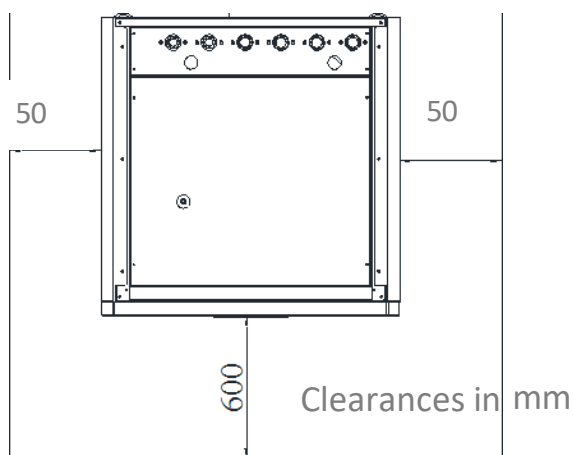


For installations with UFH actuator valves or thermostatically controlled valves, install a differential bypass valve in order to guarantee a volume flow of at least 40%.



A TPR valve is included on the tower cylinder. For New Zealand compliance this must be piped to a compliant drain point using copper pipe and incorporate a Tundish

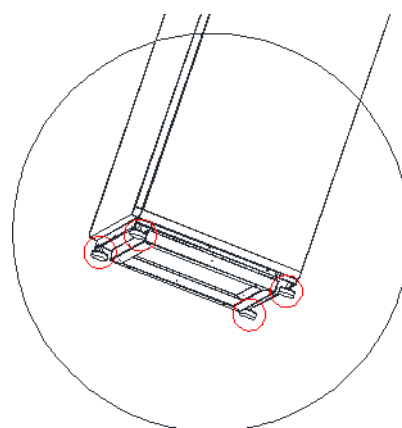
A 20mm gap is recommended behind the Tower. If the Tower is pushed tight to a wall introduce 10mm foam packing to the rear to minimize oscillation/noise



Side clearances of 250mm are advisable but not essential however the installer should note that without side clearances Especially to the Left, some future component replacement actions may require the Tower to be removed.

NZ Installers are reminded of the requirement to provide a tray, run a relief drain and attach seismic restraints

Use the adjustable feet to ensure the tower installation is level on both planes.



Three x captive M10 female threads are provided on each side of tower to allow the attachment of seismic restraint brackets. (not provided)

Hydraulic Station & Tower specifications

Model	Station DSK03-QPVTSG	Tower DSK03-QPVTSL200
DHW Cylinder	N/A	200L Duplex (6.5 Bar max rated)
Coil	N/A	1.25m ²
buffer tank volume	18L	26L
expansion tank volume	8L	8L
expansion tank pre-charged pressure	1.0bar	1.0bar
Minimum operating pressure heating circuit	0.5bar	0.5 bar
Maximum operating pressure heating circuit	3bar	3bar
Primary pump	Shimge APF25-8-130E FPWM1	Shimge APF25-8-130E FPWM1
Primary pump with 22KW HP		Requires available upgrade with 22KW HP
secondary pump	Shimge APF25-8-130A	Shimge APF25-8-130A
3-way valve	included	included
Power supply	220-240V /50Hz	220-240V /50Hz
Aux. element heater for heating buffer	3.1kw	3.1kW
Cylinder element	N/A	3.1kw
WI-FI App. + web platform	integral	Integral
user interface	6" touch screen	6" touch screen
heating water connection	G1"	G1"
DHW connection	G1" F/R	DHW out G3/4"
Anti electric shock grade	I	I
Waterproof grade	IPX4	IPX4
Nominal weight	43kgs	153kgs
dimension WXD _X H	450×360×900	665×665×1880mm

Power supply Requirements Tower & Station	Hydraulic Station DSK-QPVTSG	Hydraulic Tower DSK-QPVTSG200
Rated Voltage	220-240V/50Hz Single Phase	220-240V/50Hz Single Phase
Rated Power Max	3.4Kw	3.4Kw
Rated Current Max	14.8A	14.8A
Breaker rating	16A Type B	16A Type B
Supply cable (90° resistance)	2.5mm L/N/E	** 2.5mm L/N/E **
Max cable length	30m	30m
Connections 1-2, 3-4, 4-5, 6-7	2 cores 1mm	2 cores 1mm
Connections D1 – M, D2 – M, D3 –M, D4-M	2 cores 0.5mm	2 cores 0.5mm

****** This accommodates the Towers components and screen along with the DHW Cylinder element.

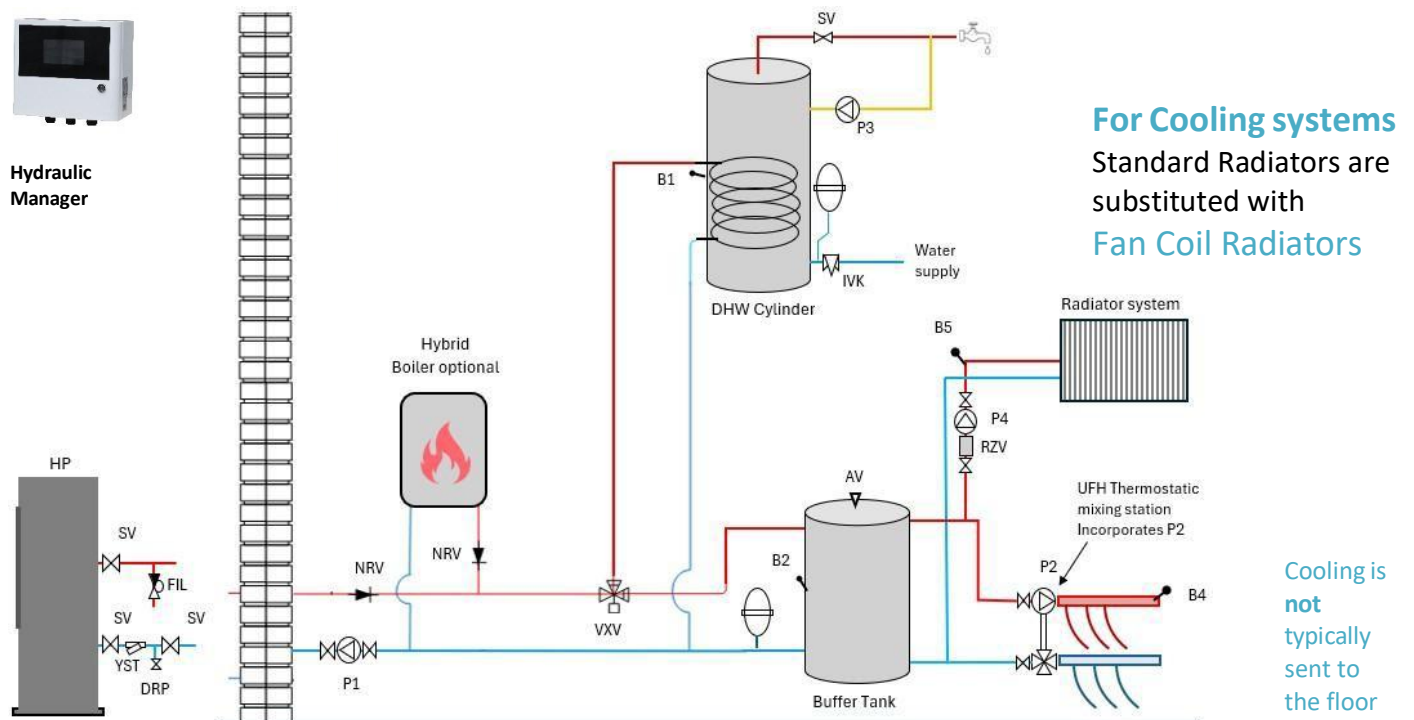
If the heating side buffer element is adopted, the cable size must be increased to either 4.0mm or 6.0 mm depending on its length, and a 32A breaker adopted.

installed as standard- the buffer element can be optioned Permanently off by the installer by setting ST07 to -20. If doing so, We recommend also disconnecting the feed to it

HYDRAULIC MANAGER SYSTEMS: Generic Detail

High & Low temperature heating zones + DHW Production

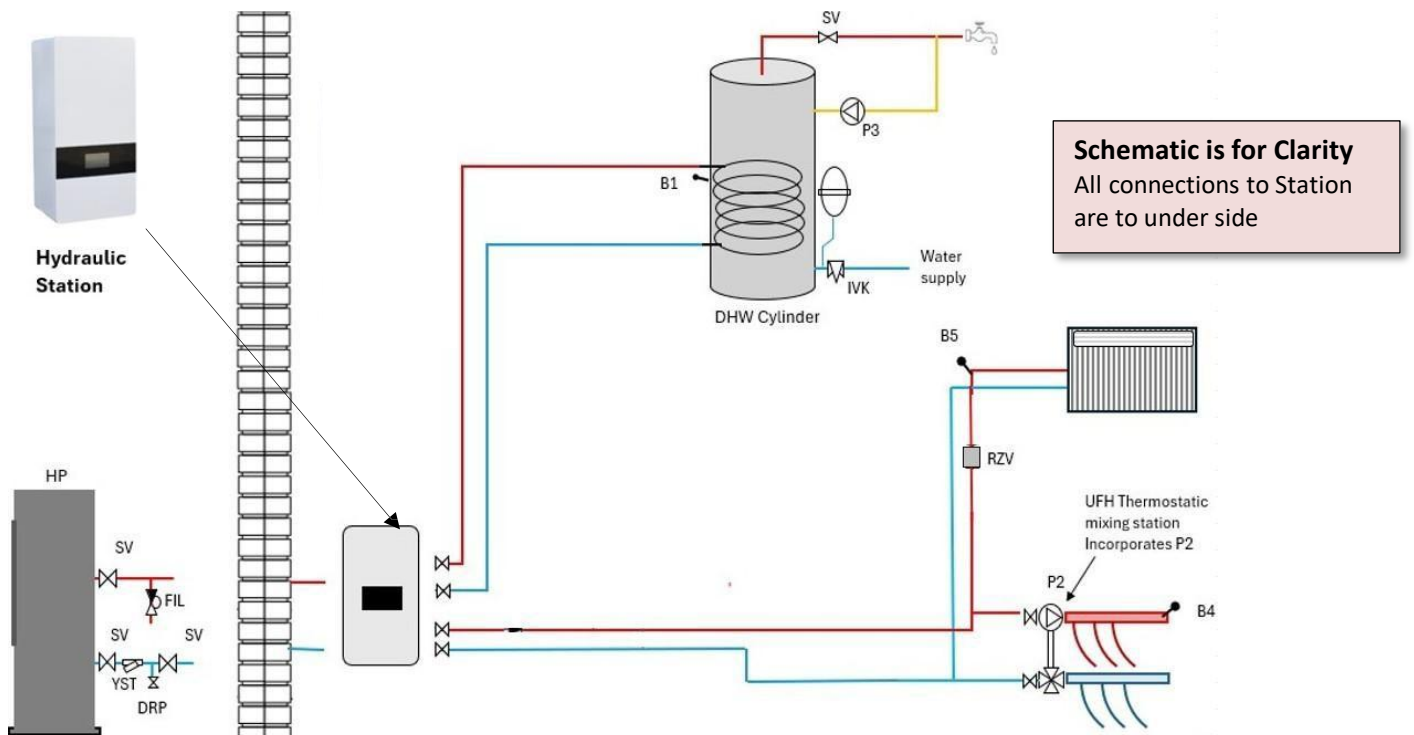
OPTIONAL Hybrid controlled boiler and reticulated DHW are also shown



HYDRAULIC STATION SYSTEMS: Generic detail

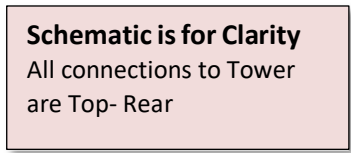
High & low temperature heating zones + DHW Production

OPTIONAL Hybrid controlled boiler and reticulated DHW are also shown



Hydraulic Station includes an integral Pressure vessel and Buffer tank plus prewired Heating /DHW diverter valve and the Primary side and system side pumps. (Buffer includes a backup element)

High & low temperature heating zones + DHW Production via integral 200L cylinder
OPTIONAL Hybrid controlled boiler shown



Hydraulic Tower includes an integral Pressure vessel and Buffer tank plus prewired Heating /DHW diverter valve and the Primary side and system side pumps along with a duplex 200L DHW cylinder (Buffer and Cylinder include backup elements)

Legend of items indicated (all schematics)

Name	Description	Name	Description
P1	Primary Circulation pump	RT	<i>Water Return sensor in HP</i>
P2	UFH LT zone pump station	ST	<i>Water Flow sensor in HP</i>
P3	DHW reticulation pump	OT	<i>Outdoor temp sensor in HP</i>
P4	HT zone pump	ET	<i>Evaporator sensor in HP</i>
VXV	3-way HW/Heating valve	PT	<i>Discharge gas sensor In HP</i>
SV	Service valves	B1	Domestic hot water cylinder sensor
EXP	Diaphragm expansion vessel	B2	Buffer tank sensor
YST	Y type Strainer	HP	<i>High pressure transducer In HP</i>
AV	Air vent valve	LP	<i>Low pressure transducer In HP</i>
FIL	Auto fill valve + Pressure gauge	IVK	Cylinder inlet valve kit
DRP	drain valve	B4	Low Temperature zone sensor
NRV	non-return valve	B3	High temperature Zone sensor
		B5	HT zone temp. sensor

ITEMS Bold are supplied integrally with Station and Tower they are required accessories with Manager

Italics are within the HP all Other items are to be provided by the installer

HP : Electrical Installation.

This appliance must be installed in accordance with NZ regulations

Before commencing, confirm the unit suits the power supply available.

For safety: first make water connections, then electrical connections. If the unit is to be removed first disconnect electrical connections, then water connections.

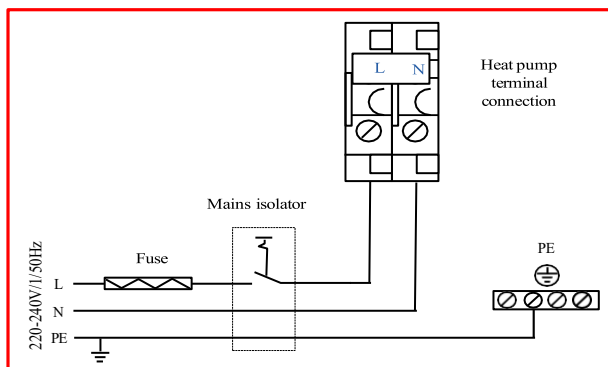
- These appliances include an inverter for the variable speed compressor. In case of a fault, inverters can cause DC residual currents. RCDs have to be type B AC/DC-sensitive. A DC residual current can block type A RCDs.
- A local isolation switch with a 3mm break on all poles is required at the appliance
- Breaker protection must be installed according to the max value stated in the nameplate attached to the unit inside of the front panel. This HP should have its own dedicated RDC
- Earthing, Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- The power supply must conform to the specification on the unit's nameplate. Supply voltage must be within the range specified in the electrical data table. For wiring connections, refer also to the electric wiring diagram on the inside panel of the unit
- When installing an earth leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.

Recommended power cables and RCD rating

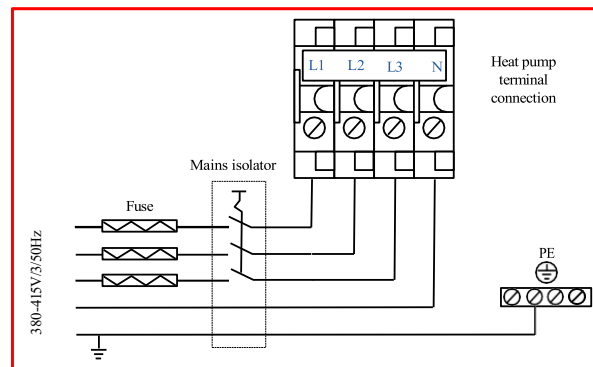
Heat Pumps		HS10V	HS 12V	HS15V	HS22V-D
Rated voltage	V	220 – 240V/50Hz Single Phase			380-415V/50Hz
Rated Power Max		3.22	4.15	7.1	9.0
Rated Current Max	A	14	18	32	16
RCD Trip Rating	A	16A	20A	32A	16A
Power supply cable (90 degrees resistance)	mm2	4mm L/N/E		6mm L/N/E	5 cores @ 6mm
Indoor to outdoor connection	A/B	2 core 0.5mm Shielded			
Indoor to outdoor connection	10/11	2 core 0.5mm Shielded			
NZ Stock models shown;		Special order HS6V and HS8V not shown			

For Tower and Station wiring requirements see P27

Single Phase



Three Phase



Wiring: Hydraulic Manager



Manager- Power supply

L-N supplies the screen, IO board power, terminals 1-2, & Buffer element.

L1-N1 supplies terminals 3-4 for DHW cylinder element (Relay) control, loop L-N to L1-N1 if required.

If a Buffer or DHW cylinder element are connected to a “Manager”,

The Manager must be on it's own power supply (2.5mm L/N/E with a 16A breaker), rather than fed from the HP supply.

Terminals 3-4 are a 230V switching output these should control a separately supplied DHW element via a relay. Use a relay with an override switch to allow manual control of the element should be used.

Temperature sensors for Buffer and DHW Cylinder – (prewired into Manager).

The buffer tank & domestic hot water sensors in the Manager should be put into their respective cylinder / buffer probe inlet pockets. If the temperature sensor cable runs close to power cables, shielded cable should be used. If a conduit is used, it should be sealed to avoid condensation forming in the sensor probe.

I/O board terminal definition

The primary pump power supply, PWM in and out signal, Secondary circulation pump, 3-way valve, hot water circulation pump, boiler on/off signal, etc. connect to the I/O board connectors as below table:

I/O board: wiring interface connections & definition					
AC 230V output		Function		Analog Input	Function
1 -2	(Max 20A)	Buffer Element		B1	DHW sensor
3 -4	(Max 5A)	DHW Cyl, element		B2	Buffer sensor
NO1	(Max 5A)	Primary pump		<i>B3</i>	<i>Solar sensor</i>
NO2	(Max 5A)	System pump		B4	LT Zone sensor
<i>NO3</i>	<i>(Max 5A)</i>	<i>Zone Pump</i>		B5	HT Zone sensor
NO4	(Max 5A)	HW reticulation Pump		B6	Primary pump PWM
NO5	(Max 5A)	C/H control output		B7	Reserve
NO6 NC6 (5A)		HW 3-way Valve		Communication	Function
Passive Output		Function		Pair A / B	HP interconnection
NO7		Boiler		Pair 10 / 11	HP interconnection
COM				Analogue Output	
<i>Items in light Italics are not applicable for New Zealand system configuration</i>				Y1	Primary pump PWM input
				<i>Y2</i>	<i>Zone Proportional valve</i>

Important:

Temperature sensors must be run 200mm from high voltage power cables to avoid interference which may cause measured temperature fluctuation and the heat pump to operate incorrectly.

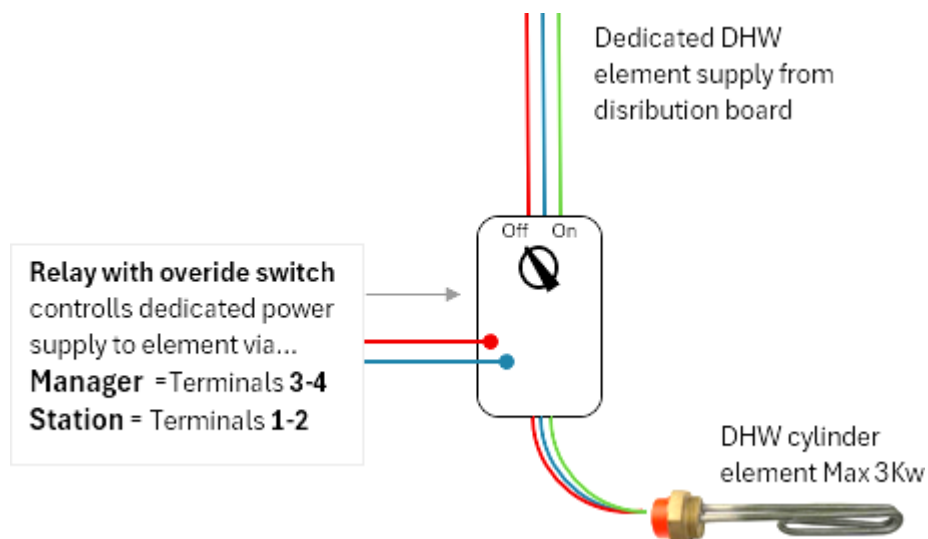
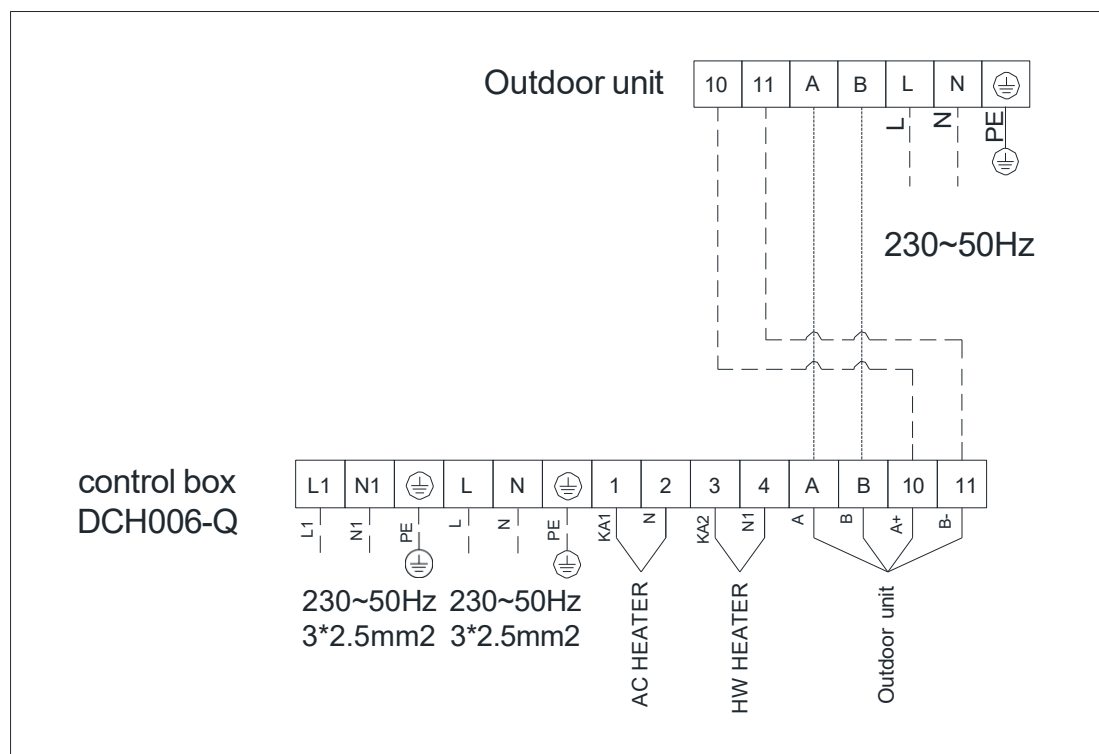
IO board description

- A:** Switch signal output point;
- B:** N/M;
- C:** Analog signal input point;
- D:** Analog signal output point;
- E:** Switch signal input point;
- F:** power supply input point;





Manager Wiring Detail

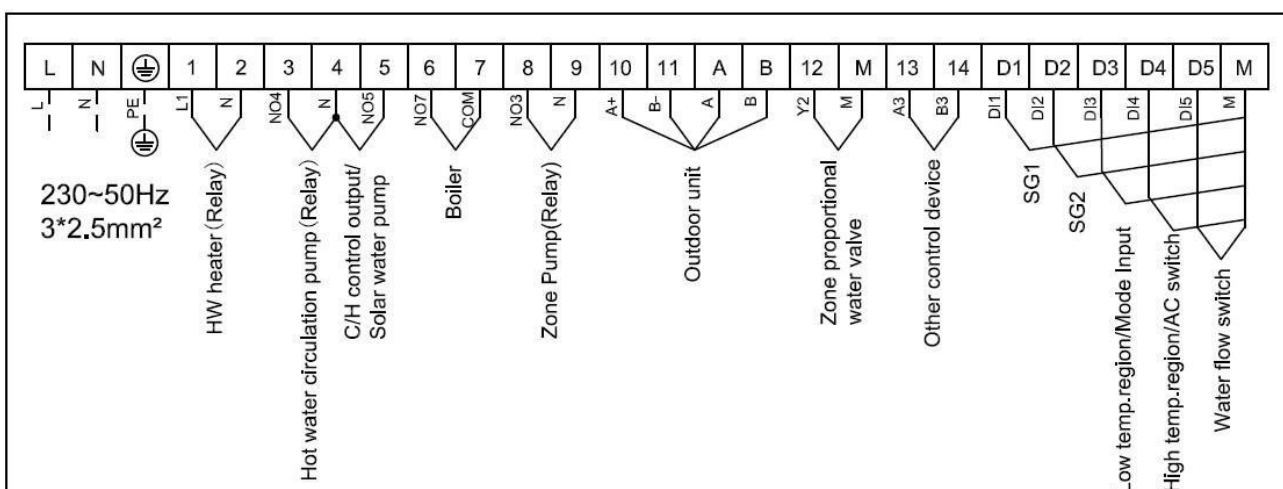
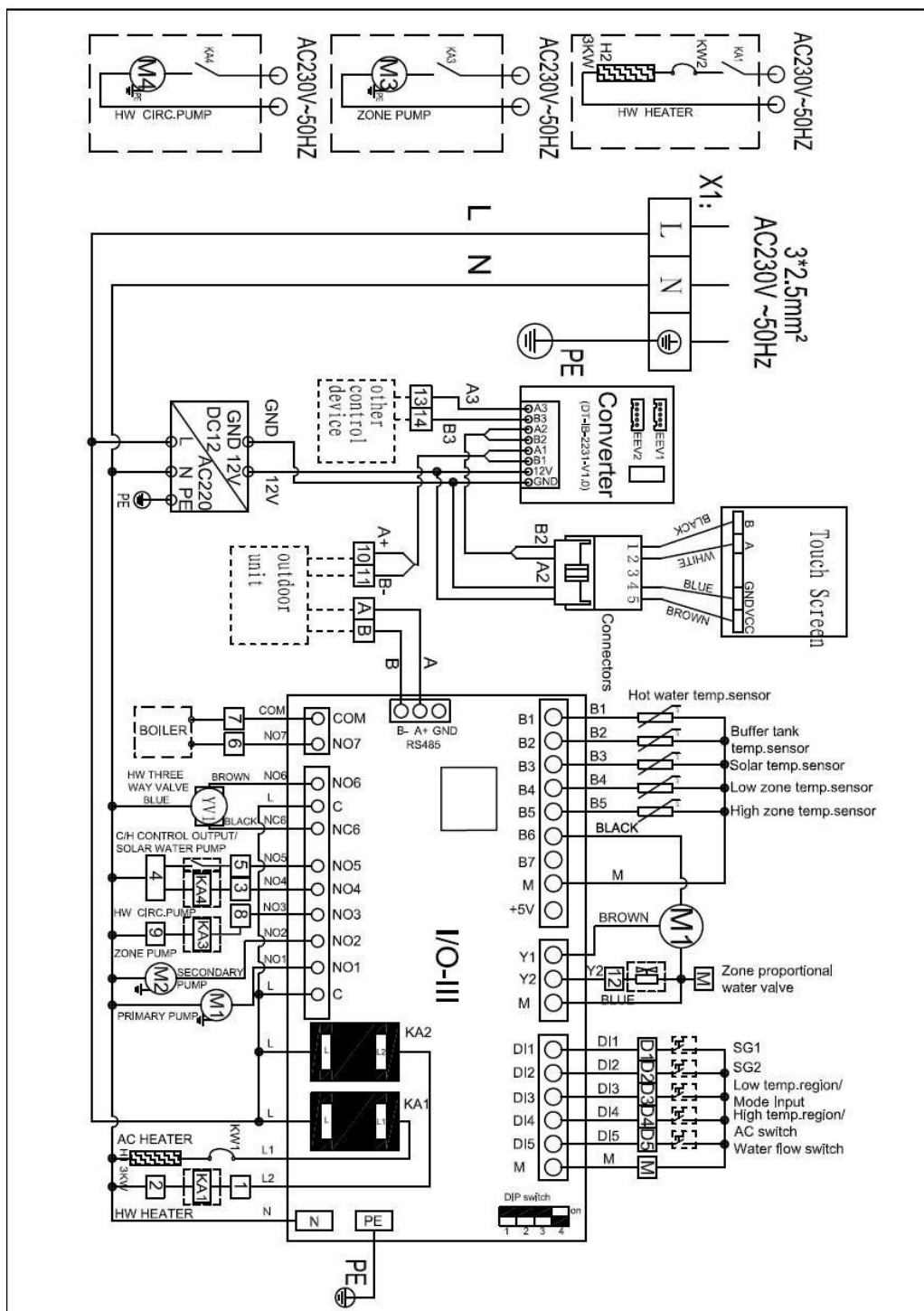


For wiring of component devices to the Manager see following pages

Tower & Station Wiring Detail

See also, chart on Page 27

Details are the same
Except, for "Station"
the DHW cylinder
element is not in
place



Wiring: Components & accessories

Heat pump Modbus communication connection (10-11) potential free

The Heat pump 10-11 potential free contact on the terminal block and at the control box (Manager) must be interconnected.

Indoor and outdoor unit communication connection (A B)

The A-B potential free contact on the HP terminal block and at the control box must be interconnected.

Primary F/R pump -Integral for Station and Tower

The primary pump (a separate accessory required with the Manager) is for the HP to buffer circuit. Its power supply cable should be connected to control box board terminal **NO1-N-PE** and its PWM and flow feedback cables should be connected to IO board terminal **Y1-B6-M**.

The Manager gets the flow rate from the PWM feedback signal from the primary circulation pump PWM flow feedback function. Only the primary circulation pump supplied or recommended by the manufacturer can provide the correct flow feedback.

SF10 pump installation method should be set to “external”

The Circulation pump model must be correctly selected on the manufacturer parameter SF35 as per the actual installed pump type.

Pumps without flow feedback function or not recommended by the manufacturer could be installed. with SF35 set to “others” and the inclusion of a potential free water flow switch connected to control box (Manager) board terminal DI5-M. Not recommended

Secondary (system) pump – Integral for Station and Tower

If required A circulation pump for system circulation is connected to terminal (NO2) .

Three-way valve – Integral for Station and Tower

A power to open/power to close type 3-way valve uses terminals (NO6-NC6-N) for hydraulic switching between flow to the heating buffer and flow to the DHW cylinder coil

Buffer and DHW back up elements Integral for Station and Tower

Heating & DHW elements are prewired components in the Tower. DHW element is not included with a Station & neither are a supplied with a Manager, **for control refer to “System overview” section.**

230VAC Connections **(1-2)** in the Manager can be connected to a heating side electric element (installed in Buffer) and **(3-4) to a relay** controlling a DHW electric element (installed DHW cylinder).

A Station has a prewired buffer element if a DHW element is to be installed use terminals 1-2 to a relay

Connector 3-4 is a multifunctional port, It can be configured as either a **DHW electric element output** or a **unit ON/OFF signal output**, depending on the **SF38 parameter setting** in the service menu.

Configuration Options Based on SF38:

1. **SF38 = DHWEH (Domestic Hot Water Electric element)**
 - Connector 3-4 serves as the **control output for the DHW element**, following the system’s hot water electric heating logic.
2. **SF38 = Unit ON/OFF**
 - Connector 3-4 functions as a **power status signal output**.

The output is **ON** when the unit is powered on, and **OFF** when the unit is powered off

Wiring: Components & accessories



External System control (e.g.; System thermostat or wiring center)

By default, the HPs output is regulated by its buffer water temperature setting.

For efficient operation installers should regulate the system temperature via a room thermostat. Or UFH wiring center with Zone control

Connect the thermostat or wiring centers potential free on/off switch signal to either (**DI4-M** terminal block in Manager) (**D4-M** terminal block in Station or Tower) and change service parameter **SF14** in service menu to **remote**.

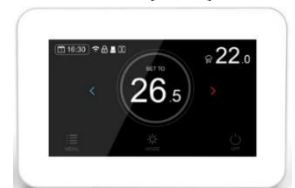
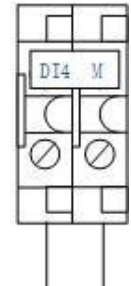
If **SF14** set = “**DI switch**”. on/off control is taken over by the thermostat, the touch screen cannot turn On or Off the heating & there is no heating schedule function.

When the connection is bridged by the room thermostat, the unit is switched on & will go into standby after the buffer water temperature reaches the set point.

When the connection is broken by the thermostat, the unit is switched off.

It is important to have a good thermostat hysteresis

The HP needs to run continually for at least 20 minutes to permit a defrosting cycle. If the HP run cycles are always shorter than 20 minutes, defrost cannot be activated - this will cause a heavily frosted evaporator.



DI4/M AKA D4/M is a multifunction port. If two zone (High temp / Low temp) function control is applied, it is the high temperature zone on/off signal input. If two zone function control is not optioned, it is the external control room thermostat on off signal input. **Note: connection is potential free (no volts) input contact only**

Heating/Cooling: Mode input

Cooling or heating mode can be changed via a potential free signal from a thermostat, etc. To do so you will need to set **SF113** “enable mode change input” to **ON**.

Connect the mode signal from thermostat to the mode input switch in the control box (Manager) terminals **DI3-M**. (D3-M in station or tower) When the mode input switch is bridged, it is cooling mode, when the switch is disconnected, it is heating mode. **The mode input signal must be potential free.**

DI3/M AKA D3/M is multifunction port. If two zone function control is activated, it is the low temperature zone on/off signal input.

If two zone function control is not activated, it is able to be used as mode input. The Mode input signal to it must be potential free

Cooling & heating mode switching output (NO5) 230VAC

The **NO5** contact on the Manager can be connected to a thermostat with mode change function so the thermostat could change its running mode as per heat pump setting.

NO5 contact output is 230V in cooling mode and 0V in heating mode.

If the thermostat used has mode input that requires a potential free signal, a relay should be applied.

The NO5 terminal signal also could be connected to a 2-way valve to close floor heating circuit when in cooling mode if fan coil units are adopted for cooling.

NO5 is a multifunction port, configured via parameter SF39 in the service menu.

SF39 = Operating Mode, NO5 functions as per the HPs operation mode. The output is **ON** when the unit is running in **cooling mode**, and **OFF** when running in **heating mode**.

(Control parameter SF39 indicates an option solar pump output - this feature does not apply for NZ)

Wiring: Components & accessories

Managed DHW cylinder electric element Integral in Tower

The HP manages the DHW element utilizing it if required for legionella protection and as a backup heat source in the event of a system issue. Manager Terminals 3-4 (*Station terminals 1-2*) are a 230V switching output these should control a separately supplied DHW element **via a relay**.

Do not feed Manager terminals 3-4 or station Terminals 1-2 to the element directly.

Use a relay with an override switch to allow manual control of the element.

(Note; the DHW element's capacity must not be over 3KW)

Optional DHW reticulation

Reticulation is not an option on the Tower module; it is only applicable for systems with an independent cylinder with a reticulation port using a Manager or Station.

Pump Connection – Via NO4,

By reticulation, DHW can be supplied with minimal point of use run out time. A suitable DHW reticulation pump is available as a Heat-Logic accessory. The DHW circulation pump power supply should be connected to **NO4** at the 230VAC Manager terminal block and SF 37 set accordingly

NO4 is a multifunctional port. It can be configured for different functions based on the **SF37 parameter setting** in the service menu. The available configurations include:

1. **SF37 = DHW Circulation Pump**
 - NO4 functions as the control output for a **domestic hot water (DHW) reticulation pump**.
 - It follows the logic of the DHW circulation control system.
2. **SF37 = Fault Signal Output**
 - NO4 outputs a **unit fault signal**. to a light or audible alarm, (not supplied)
 - When the unit experiences a fault causing it to shut down, this output is **ON**.
 - When the unit is operating normally, it remains **OFF**.
3. **SF37 = Operating Mode Output**
 - NO4 indicates the unit's **current operating mode**. (Via a light not supplied)
 - It is **ON** when the unit is running in **cooling mode**, and **OFF** when running in **heating mode**.

Optional Boiler: For hybrid systems

Connector (NO7-COM) potential free contact can be used to activate and de-activate an installer supplied backup heating device like a boiler.

(Note: this is potential free contact. do not apply any voltage source to it)

For Backup boiler control logic refer to the "System overview" section.

Operating principles.



Heating Mode Working Principle:

In heating mode, 3-way valve (VXV) turns to heating circuit. Mode switch valve MXV will switch to floor heating side.

Unit is On: when buffer tank water temp. (Via inserted sensor) $Is < T(\text{heating}) - ST04$ (temp. diff. heating).

($T(\text{heating})$ is the user set control water temperature on heating mode)

Unit is Off: when the buffer tank water temp. $> T(\text{heating}) + 2^{\circ}\text{C}$.

T (heating) calculation:

- 1.) When temp. compensation = OFF. $T(\text{heating}) = \text{user set heating water temperature}$.
- 2.) When temp. compensation = ON, the heating curve is activated, and $T(\text{heating}) = \text{calculated control of water temperature as per the user menu weather compensation calculation result}$.

The max. outlet water temperature TL is subject to the units heating operating range envelope.

Heating: Buffer tank back-up element control

The Heating backup heater is only switched on when all of conditions below are met.

- 1.) Heating mode running and compressor has been running on the maximum workable frequency.;
- 2.) Compressor has run max for over 300s
- 3.) $OT(\text{Ambient temp.}) \leq ST07$ (Via the HP integral OT sensor.);
- 4.) Buffer tank water temp. $\leq T(\text{heating}) - ST04$ (temp. diff. heating) $- 2^{\circ}$;
- 5.) The Compressor has run over 5 minutes.

The heater is switched off again when any of conditions below are met.

- 1.) A/C flow alarm.
- 2.) Buffer tank water temp. $\geq T(\text{heating}) - 2^{\circ}$;

Optional Boiler control (Managed Hybrid option)

If a boiler is optioned, parameter SF224 boiler function enable should be set to ON. With SF224 enabled, boiler works in hybrid mode & takeover mode as per the ambient temp. & parameter setting:

A. Hybrid mode

Boiler can only be switched on when all of conditions below are met.

- 1.) Heating mode running & compressor has been running on the maximum workable frequency.
- 2.) The Compressor has run max for over 300s.
- 3.) $OT \leq ST200$ (setup, default 0°).
- 4.) Buffer tank water temp. $\leq T(\text{heating}) - ST04$ (temp. diff. heating) $- 2^{\circ}$.

Boiler is switched off when any of conditions below is met.

- 1.) $OT \geq ST200 + 2^{\circ}$
- 2.) buffer tank water temp. $\geq T(\text{heating}) - ST04$;

B. Takeover mode

Boiler takes over heating & compressor is switched off when all of conditions below are met.

- 1.) $OT \leq ST201$ (Boiler takeover external setpoint, default -10°) ;
- 2.) Compressor is running in heating mode.

Boiler reverts from takeover to hybrid mode when $OT \geq ST201 + 2^{\circ}$

Cooling Mode Working Principle:

In cooling mode, the 3-way valve (VXV) will open AB-A. Mode switching valve MXV to the fan coil circuit.

Unit On: Buffer tank water temp. $>T(\text{cooling}) + ST03$ (temp. diff. cooling)

($T(\text{cooling})$ is the user set control water temperature on cooling mode)

Unit Off: Buffer tank water temp. $<T(\text{cooling}) - 1.5^\circ$.

T (cooling) calculation:

1.) When temp. compensation = OFF. $T(\text{cooling})$ = user set cooling water temperature.

2.) When temp. compensation = ON, cooling curve is activated,

$T(\text{cooling})$ = calculated control water temperature as per the user menu weather compensation calculation result.

Domestic Hot water production working principle:

In hot water mode, the 3-way valve (VXV) will open AB-B.

TL - the max. operating outlet water temperature as per compressor heating operating range envelope.

In DHW mode, the compressor runs with $ST = ST09 + 5^\circ$ as outlet water temperature target PID compressor speed control. If $ST09 + 5^\circ > TL$, then TL is the target PID control outlet water temp.

1.) Compressor On: $HT \leq ST09$ (DHW set point) - $ST10$

Compressor is Off when one of the below conditions are met:

A.) $HT > ST09$

B.) $HT < ST09$ but outlet water $ST \geq TL + 2^\circ$. It records HT1 – the instant HT when the compressor off and will restart to heat DHW when $HT1 < HT1 - ST10$. If DHW heater is installed, it is switched on to heat DHW up to $ST09$ when compressor stops.

DHW reticulation pump control:

1) When DHW mode is active, the DHW circulation pump will be switched on and run for the given DHW circulation pump on time - in every DHW circulation pump off time interval setting.

2.) when DHW mode is turned off, the DHW circulation pump is switched off after 3 minutes delay

Solar integration, advice

Within the touch screen you may see reference to Solar water heater control, This, overseas functionality for water based solar is not applicable to New Zealand solar system installations.

A Wet solar system integration will require independent solar control

Our advice would be to consider solar PV and inputting via elements in the buffer or DHW cylinder rather than a wet system, Heat Logic can help with advice

High and Low Temperature: Dual zone control

1.) System Concept and Operating Principle

Two-Zone Control allows the HP to supply two heating zones with different temperature requirements.

- Low-temperature zone (LT): e.g. underfloor heating
- High-temperature zone (HT): e.g. radiators or fan coil convectors

Note:

The HP can generate only one primary supply temperature at any given time. If there is demand from the HT zone The LT zone temperature is achieved by hydraulic control on the secondary side, not by generating two independent primary temperatures. If there is no demand from the HT zone control logic will reduce the buffer control temperature to the LT set point. Thus, Increasing efficiency.

The heat pumps operational control is always based on the buffer tank temperature.

2). Hydraulic Requirements

To enable Two-Zone Control, the following components must be installed according to the hydraulic scheme. [see system schematics](#).

- B4 – LT zone water temperature sensor supplied inside control box is placed in a pocket within in the UFH manifold flow rail
- B5 – HT zone water temperature sensor supplied inside control box is positioned in a pocket within the radiator zone flow
- The Buffer tank temperature sensor supplied inside the Manager is placed centrally in the buffer (*It is pre installed in Tower and Station modules*)
- An UFH manifold blending station assembly with pump and thermostatic blending valve is required at the manifold
- For “Manager” installation, a two port motorized valve with end switch and circulation pump is required for the HT radiator zone . For “Station” and “Tower” installation only the motorized valve is required, the HT zone pump is not required [See System schematics](#).
- A wiring center for the UFH system with an optional dedicated radiator Zone output such as.. www.chcdirect.co.nz model ref 101Z ..is required.
- A Room thermostat for the HT zone Along with zone control thermostats and manifold actuators will be also required as per the UFH system requirement. (All UFH Manifold loops must be actuator controlled)

3). Control Logic Overview

In Two-Zone Control Configuration, the heat pump uses the buffer tank water temperature as the sole reference for heating and cooling control. Zone temperature sensors (B4, B5) are used for monitoring and protection only, they do not directly control the heat pumps outlet temperature.

Dual Temperature Heating Zone control signal

Each heating zone is enabled or disabled by an external control potential-free ON/OFF signal. For the LT Zone this is via the wiring centers potential free (Volt free) output. For the HT zone this is via the potential free end switch of the motorized zone valve.

These Connections are made as follows

LT zone heating demand from wiring center connects to **DI3** at the hydraulic unit

HT zone heating demand from motorized valve connects to **DI4** at the Hydraulic unit

When Two-Zone Control is enabled:

- ON/OFF operation via the screen button is disabled
- The screen Timer mode is disabled
- The appliance is controlled exclusively by DI3 and DI4

Operating Logic by Zone Status

LT (DI3)	HT (DI4)	Buffer Tank Target	LT Zone Supply	HT Zone Supply
OFF	OFF	No heating	Off	Off
ON	OFF	LT setpoint	Delivered at LT temp	Off
OFF	ON	HT setpoint	Off	Delivered at HT temp
ON	ON	HT setpoint	Mixed to LT setpoint	Delivered at HT temp

When both zones are active, the buffer tank temperature is controlled to the HT zone setpoint. The LT zone temperature is reduced to its required level by the manifold blending valve.

When only the LT zone is active the buffer tank temperature is controlled to the lower LT setpoint significantly raising the COP performance of the appliance

Circulation Pump Control Via Manager systems

- The LT zone circulation pump is controlled by the UFH wiring station. The pump is activated when there is a call for heat from one of the UFH zones off the manifold
 - o LT zone heating demand via (DI3) is also activated

The HT Zone Pump and motorized Zone valve is controlled by the dedicated radiator zone output of the UFH wiring center “ *this dedicated output will not activate the UFH pump or the LT call for heat*”

- o HT zone heating demand via DI4 is also activated. (*Via motorized valve end switch*)

For Station and tower systems

An integral system pump is included in the unit. Thus the HT (radiator system) pump is no longer an additional pump required install only the motorized valve and with end switch for DI4 connection.

The integral system pump is also active in the LT system but UFH blending station pump is still included. A differential pressure bypass should be added to the UFH Flow and return before the blending station.

[See system schematics](#)

6 System operational logic

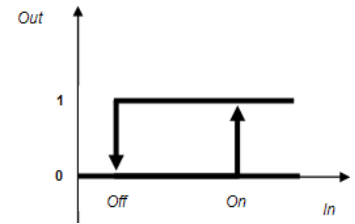


Cooling demand

Buffer tank water temperature

On: Buffer tank water temp. $>ST01$ (cooling setpoint) $+ST03$ (cooling differential.)

Off: Buffer tank water temp. $<ST01 - 1.5^{\circ}$

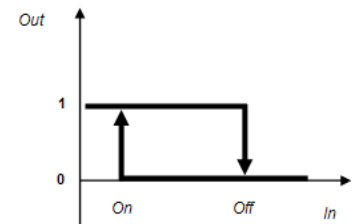


Heating demand

Buffer tank water temp.

On: Buffer tank water temp. $<T$ (heating) $-ST04$ (T (heating) is the control water temperature in heating mode)

Off: Buffer tank water temp. $>T$ (heating) $+ 2^{\circ}$



T (heating) calculation:

1.) When "temp compensation" =OFF. T (heating) = "target temp" menu set value.

2.) When "temp compensation" =ON, heating curve is activated,

T (heating) = "Actual control temp". This control temp. is as the heating curve set by user in the "heating circuit 1" menu.

The max. outlet water temperature TL is subject to the unit heating operating range envelope.

Domestic hot water demand

HT – Hot water temp.

TL - the max. operating outlet water temperature as per compressor heating operating range envelope.

In DHW mode, compressor runs with $ST=ST09 + 5^{\circ}$ as outlet water temperature target PID compressor speed control.

If $ST09 + 5^{\circ} > TL$, then TL is the target PID control outlet water temp.

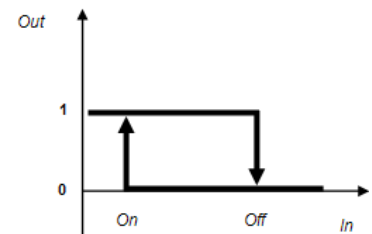
Compressor On: $HT \leq ST09$ (DHW set point) $-ST10$

Compressor Off:

A.) $HT > ST09$

B.) $HT < ST09$ but outlet water $ST \geq TL + 2^{\circ}$. It records HT1 – the instant HT when the compressor off and will restart to heat DHW when $HT1 < HT1 - ST10$.

If DHW element is installed, it is switched on to heat DHW up to $ST09$ when the compressor stops.



Control processes



Turn on process in heating mode

- 1.) Starts water pump, checks water flow
- 2.) if water flow meets requirement and there is heating demand, starts fan and compressor

Turn off process in heating mode

- 1.) Switches off compressor
- 2.) After 5 second's delay, switches off fan motor
- 3.) After 30 seconds' delay, switches off water pump.

Turn on process in cooling mode

- 1.) Starts water pump and 4-way valve, checks water flow
- 2.) if water flow meets requirement and there is cooling demand, starts fan and compressor

Turn off process in cooling mode

- 1.) Switches off compressor
- 2.) After 5 seconds' delay, switches off fan motor
- 3.) After 30 seconds' delay, switches off water pump.
- 4.) After 120 seconds' delay, switches off 4-way valve.

Turn on process in hot water mode

- 1.) Starts 3-way valve and water pump, checks water flow.
- 2.) if water flow meets requirement, starts fan and compressor

Turn off process in hot water mode

- 4.) compressor Switches off
- 5.) After 5 seconds' delay, switches off fan motor
- 6.) After 30 seconds' delay, switches off water pump and 3-way valve.

Hot water priority:

- When unit is heating, if there is a call for hot water, the 3-way valve moves to hot water mode. Reverting to heating mode when the hot water reaches the set temperature.
- if there is a call for hot water When HP is cooling, compressor stops & then starts in hot water mode with 3-way valve open, stopping again reverting to cooling mode. when hot water reaches set temp.

Primary circulating pump control

- The Primary Circulation pump is on continuously when cooling, heating or DHW mode is turned on.
- When the compressor is first turned ON in heating or cooling mode, the circulation pump PWM signal output is 100% for the first 3 minutes, and then runs with PID control
- During defrost & 3 minutes after a defrost ends, the circulation pump PWM signal output is 100%.

To prevent the pump from seizing. If the circulation pump is dormant for 24 hours, it is switched on and runs for 3 minutes. with PWM signal output at 60%.

Compressor running control

- 1.) In cooling mode, when Buffer tank temp. $\leq T(\text{cooling}) - 0.5^\circ$ compressor runs at minimum frequency. When Buffer tank water temp. $\leq T(\text{cooling}) - 1.5^\circ$ for 10 seconds at minimum frequency, compressor is switched off.

when $ST \leq 7^\circ\text{C}$, compressor runs at minimum frequency.

when $ST \geq 8^\circ\text{C}$, compressor runs with normal PID control.

- 2.) In heating mode, when Buffer tank temp. $\geq T(\text{heating}) + 0.5^\circ$, compressor runs at minimum frequency. When the Buffer tank water temp. $\geq T(\text{heating}) + 2^\circ$ after running for 10 seconds with minimum frequency, compressor is switched off.

4-way valve control

4-way valve is OFF under any of the below conditions. It is ON under any other conditions.

- 1.) Heating mode, hot water mode, or heating + hot water mode
- 2.) Producing hot water on cooling + hot water mode.

Auxiliary Electric backup element control

The Auxiliary backup element or boiler can only be switched on when all of conditions below are met.

- 1.) Heating mode is running and compressor has been running with the maximum workable frequency.;
- 2.) Compressor has run over 300s
- 3.) $OT \leq ST07$;
- 4.) Buffer tank water temp. $\leq T(\text{heating}) - ST04 - 2^\circ$;

The Auxiliary element or boiler is switched off when any of conditions below is met.

- 1.) A/C flow alarm. **Or** 2.) Buffer tank water temp. $\geq T(\text{heating}) - 2^\circ$; **Or** 3.) Unit is switched off

Crankcase heater running control

When all conditions below are met, the compressor crankcase heater is switched on

- 1.) Compressor is OFF; **and** 2.) $OT \leq 10^\circ$

When any of conditions below are met, the compressor crankcase heater is switched off

- 1.) Compressor is ON; **and** 2.) $OT \geq 11^\circ$

3-way valve control

The 3-way valve is ON when there is DHW demand. Otherwise, it is OFF.

DHW circulation pump control

- 1.) When DHW mode is switched on, the DHW circulation pump will be switched on and run ST34 in every ST33 interval.
- 2.) when DHW mode is switched off, the DHW circulation pump is switched off after 3 minutes' delay.

DHW electric heater control

- 1.) When $HT < ST09$, the compressor stops heating DHW due to $ST > TL + 2^\circ$, DHW electric heater is switched on until $HT \geq ST09$.
- 2.) If the unit is with fault and there is DHW demand, DHW heater is switched on until $HT \geq ST09$
- 3.) **The DHW heater is set to kill bacteria** (Legionella) until $HT \geq ST27$ after compressor is switched off when $ST > TL + 2^\circ$ and HT is not over $ST27$ in the $ST26$ time interval.

If $ST26 = 0$, Legionella function is not active. by default, $ST26 = 360$ hours. The Legionella function is only valid when DHW switch is turned on.

De-icing heater running control

When all of conditions below are met, de-icing heater is switched on

- 1.) Compressor is ON; **and** 2.) Heating or DHW mode running **and** 3.) Ambient temperature $OT \leq DF15$

When any of conditions below are met, the de-icing heater is switched off

- 1.) Compressor is OFF; **or** 2.) Ambient temperature $OT > DF15 + 2^\circ$;

Defrosting control

The HP is equipped with hot gas defrosting. When the conditions of defrosting are met,

- 1.) compressor speed begins to go down.
- 2.) When the compressor speed reduces to 30Hz & lasts 60 seconds, the 4-way valve is turned on, fan motor is switched off & it begins to count defrost time. Hot gas flows out to the coil heat exchanger.
- 3.) 10 seconds after the 4-way valve is switched on, compressor speed increases to rated cooling speed.
- 4.) When $HPS \geq DF13$, the fan motor is switched on and runs in CN02 speed for 10 seconds to blow down the condensed water.

Continues next page...

Continued...

- 5.) After the conditions of ending defrosting are met, the compressor speed reduces and it stops counting defrost time.
- 6.) After the compressor reduces to 30Hz and lasts 10 seconds, the 4 way valve is switched off and fan motor is switched on. The hot gas flows into the brazed plate heat exchanger and the unit returns to heating mode operation.
- 7.) 60 seconds after the 4-way valve is switched off, the compressor runs with its speed as PID control.

Defrosting mode activation conditions one (all must be met)

- a.) The unit running time after previous defrosting is $\geq DF06$
- b.) The temperature differential OT minus LPS $\geq \Delta T$ and lasts DF05 time .
 $\Delta T = DF04 - 4^\circ (CM15 - CMF) / (CM15 - CM16)$, CMF is current compressor running frequency
- c.) LPS $\leq DF02$ and lasts for DF11 time.
- d.) The Compressor has run for more than 5 minutes.
- e.) Ambient temperature is OT $< DF03$

Defrosting mode activation conditions two (all must be met)

- f.) The accumulated compressor running time is over DF16 after LPS $\leq DF02$ and the compressor has run for more than 5 minutes.

When conditions one or two are met, the unit will start to defrost.

Defrosting ends (when any of the following conditions are met)

- A.) High pressure HPS $\geq AR33$ and lasts 5 seconds.
- B.) HPS $\geq DF09$ and last 10 seconds
- C.) AL17 Flow alarm presents
- D.) ST $\leq 7^\circ C$ and last 5 seconds.
- E.) Defrost time $\geq DF10$

Automatic optimizing of defrost

Optimization solution one (if the last defrost is activated by condition one as above)

- 1.) If previous defrosting time is less than 3 minutes and defrosting is terminated by above condition A or B. It means that there was little frost on the evaporator when unit started defrosting. so, on the next defrost, DF04 will add $1^\circ C$. After this optimization, and defrosting will be activated a little later.
- 2.) If previous defrosting time is between 3 to 5 minutes, the next defrost, DF04 does not change.
- 3.) If the previous defrosting time is over 5 minutes and defrosting is terminated by above condition A or B. or If on previous defrosting activation, DF06 is the last condition to be met, then DF04 does not change the next defrost. Otherwise, DF04 value will reduce $1^\circ C$ in next defrost.
- 4.) The DF04 optimized value is limited by its max setting and min setting values.

Optimization solution two (if the last defrost is activated by condition two mentioned above)

- 1.) if previous defrost time is less than 3 minutes and defrosting is terminated by above conditions A or B. It means that there is little frost on the evaporator when the unit starts defrosting. so on the next time defrost, DF16 will add 10 minutes. After this optimization, the next time defrosting will be activated a little later.
- 2.) If previous defrost time is between 3 to 5 minutes, then next time defrosting, DF16 does not change.
- 3.) if the previous defrost time is over 5 minutes and defrosting is terminated by above condition A or B. it indicates there is too much frost on the evaporator when the previous defrost was activated. So, the DF16 value will be reduced by 10 minutes in next defrost, after this optimization, next time defrosting will be activated a little earlier.
- 4) DF16 optimized value is limited by its max setting and min setting values.

Commissioning Form - Complete in full – Required for warranty			HEATLOGIC	
Installation address:		Town/city		
Installed by : Company name		Commissioned by Signature		
Heat pump Model:		Heat pump serial number:		
Commissioning date:				
Hp installed with a - Manager () Station () Tower () Serial no				
The heating system has been filled and pressure tested			YES ()	
Expansion vessel for heating is sized, fitted & charged in accordance with manufacturer's instructions			YES ()	
The heat pump is fitted on a concrete base capable of taking its weight			YES ()	
The system has been flushed and cleaned in accordance with BS7593 and heat pump manufacturer's instructions			YES ()	
What system cleaner was used?				
What brand of inhibitor was used?			Qty:() liters	
Is all exposed external pipework the correct size and insulated?			YES ()	
Central heating mode (10 minutes after the compressor starts to run)				
Is a buffer tank installed			Capacity:() l	
Inlet	()°C	discharge	()°C	
outlet	()°C	suction	()°C	
ambient	()°C	HP	()bar	
Power voltage	()V	Current	()A	
LP	()bar	Power voltage	()V	
Domestic hot water mode (10 minutes after the compressor starts to run)				
Is a hot water cylinder installed	Capacity:() liters Heating coil diameter ()mm, length ()m			
Inlet	()°C	discharge	()°C	
outlet	()°C	suction	()°C	
ambient	()°C	HP	()bar	
hot water	()°C	Current	()A	
LP	()bar	Power voltage	()V	
Additional heat sources connected: Gas Boiler () Oil Boiler () Buffer element () Solar Thermal ()			YES ()	
The heating, hot water and ventilation system complies with the appropriate NZ Regulations / code			YES ()	
All electrical work complies with the appropriate NZ Regulations			YES ()	
The heat pump and associated products have been installed and commissioned as the manufacturer's instructions			YES ()	
Operation of the heat pump and system controls have been demonstrated to the customer			YES ()	
The operation, installation and maintenance manual has been explained and left with the customer			YES ()	
Notes				
Customer End user name and Signature (To confirm demonstration of equipment and receipt of appliance instructions)				

If this form has not been completed and submitted warranty is limited to 12 months

Commissioning and adjustment

Important:

The HP must be, Powered ON in a standby state for a minimum period before the compressor is run for the first time, **1Hr** at 10°+ ambient. **2Hrs** at 2-10° Ambient. **4 Hrs** at +2 to -3 ambient. & **7 hrs** below -3° ambient.

To allow the crankcase heater to heat the compressor oil to the correct temperature before the compressor is run for the first time

First Steps

1. Before commissioning, **ensure the entire system has been thoroughly flushed** and the heating system is filled with clean water dosed with inhibitor. The required pressure of between **1.2 - 1.5Bar** is set.
2. Check to ensure all electrical connections are correct then, Switch ON the power supply to both the heat pump and indoor unit, observing the highlighted note above.
3. Open the Tower/Station manual air vent valve to purge air (**Take care**, water may also come out).
4. One at a time open system vent plugs on manifolds, radiators, fan coil convectors, etc., and remove air accumulated in the system. While constantly checking pipework in case of any leaks.
5. **If you have a system with DHW** with a cylinder attached or are using the Hydraulic Tower, *Turn on the cold-water supply and set all the DHW systems hot taps and Showers "OPEN". After some time, the cylinder will fill. Water should flow out of Taps / Shower. Shut the taps.
6. Once the heating system (and DHW system if applicable) are filled...Activate a **Purge cycle** Go to service menu & set **SF223 Air purge** to **ON** this brings on the circulation pump to purge residual air with the flow switch deactivated. "Remember to return SF223 setting to **OFF** after purging."

Air in the System after Start-up

- Air will be released from the water as it is heated. If bubbling is heard from the heat pump, the circulation pump, under-floor and/or radiators then the system may require further venting.
- Once the system is stable (at the correct pressure and all air eliminated) and the standby time above observed the heating control system thermostats and programmers can be set as required.

With DHW mode off - Start the HP by turning on the heating system controls to call for heat. When you are happy that heating is operating as it should. If DHW is included, turn on DHW. *(DHW has priority so the heat should now be directed to the cylinder)*

Referring to "operating principals" section, and service parameters list, set the pump type and other system relevant parameters to suit the installed system configuration

Note: Turn off DHW and/or Cooling if not required so they are not present on the user screen.

Run through the service parameter list to ensure all settings other than those adjusted to suit the system are correct as per the defaults

After an initial test run period, please clean the Magnetic air & dirt separator device within the appliance, System Y strainer at the appliance inlet and the secondary Magnetic filter if applicable.

FOR WARRANTY

Complete the warranty/commissioning form and submit a photo of the completed form to sales@heatlogic.co.nz or by txt message to 0274616880

Warranty is given for 12 months - renewed at annual service up to 5 Years

Warranty beyond 12 months requires the submission of the commissioning form and does not cover incorrect installation, configuration or use





Energy saving EU Smart Grid (SG READY)

New Zealand does not support the Smart Grid System



This HP includes SG - Smart grid label certification from German heat pump association.

If there is SG signal or PV system signal, it could be connected to the unit.

This function can only be used in mains networks that support the "SG Ready" standard.

"SG Ready" requires two AUX inputs.

In cases where this function is required, it must be connected to terminal block DI1-M and DI2-M.

"SG Ready" is a smart form of tariff control, through which your electricity supplier can affect the heating, cooling & hot water temperatures (if applicable) or simply block the HP at certain times of day.

1.) Connector DI1-M is connected to SG1 and DI2-M is connected to SG2 of the electric meter SG signal.

2.) SF217 parameter in Service menu is used to turn on / off unit SG function.

When SG function is set OFF, SG function is invalid.

When SG function is set ON, SG function is valid. "SG mode" is displayed on touch screen. SG1 SG2 signal status displays on I/O menu.

1.) SG1=closed, SG2=open:SG1 symbol displays on the screen, switch off command

Unit has to stop. but anti-freezing function is still valid so water pump could be switched on if anti-freezing circulation is needed.

2.) SG1=open, SG2=open: SG symbol displays on the screen, normal operation.

unit runs in normal program regulation.

3.) SG1=open, SG2=closed:SG2 symbol displays on the screen, switch-on recommendation: cheap electricity mode;

A) In heating mode, heating control water temperature automatically increases ST17 (SG cool/heat diff. default 2) to store heating energy. but the maximum heating control water temp. is limited by ST14 (max. heating setpoint, default 60).

B.) In DHW mode, DHW control temperature automatically increases ST18 (SG DHW diff. default 5) to store DHW energy. but the maximum DHW control temperature is limited to 65.

C) In cooling mode, cooling control water temperature automatically decrease ST17 to store cooling energy. but the minimum cooling control water temp. is limited by ST11 (min. cooling setpoint, default 12).

4.) SG1=closed, SG2=closed:SG3 symbol display on the screen, switch-on command; very cheap electricity mode

A) In heating mode, heating control water temperature automatically increase ST17+2 to store more heating energy. but the maximum heating control water temp. is limited by ST14.

B.) In DHW mode, DHW control temperature automatically increases to 65 to store maximum DHW energy. DHW electric heater (installed in the water tank) is switched on after compressor stops when ST> TL+2 until DHW temperature reaches 65.

C) In cooling mode, cooling control water temperature automatically decreases ST17-2 to store more cooling energy. but the minimum cooling control water temp. is limited by ST11.

Home screen, Unit on/off and Temp. setting

Heating / Cooling setting screen (With one heating zone control):



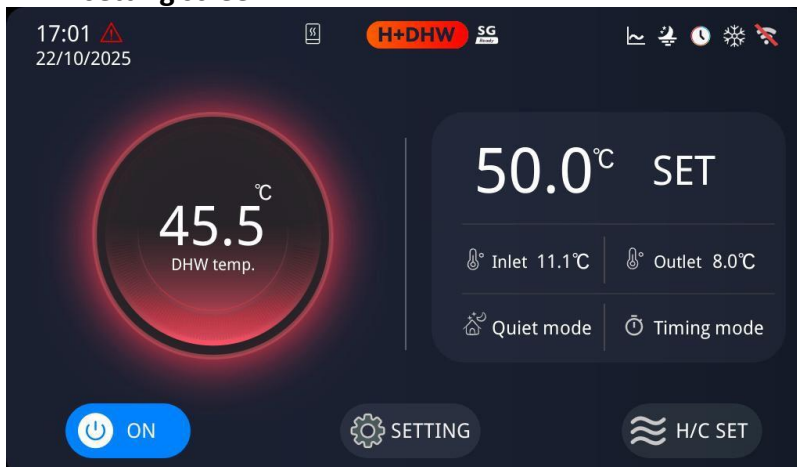
The icons at the top indicate the activation status of related components, functions, and system operation status. The Time & Date, Alarm, Quiet Mode, Timer Mode, Running Status, and Weather Compensation icons can be tapped to enter their respective setting screens.

8.0 °C SET Tap to change the heating or cooling set point. If weather compensation is enabled, it will enter the weather compensation setting screen.

ON Tap to switch on/off the heating/cooling function. If the unit is set to switched on/off by a system control (e.g. thermostat or wiring center) this button becomes inactive.

DHW SET Tap to go to the DHW setting screen to switch on/off DHW function and to set the DHW setpoint.

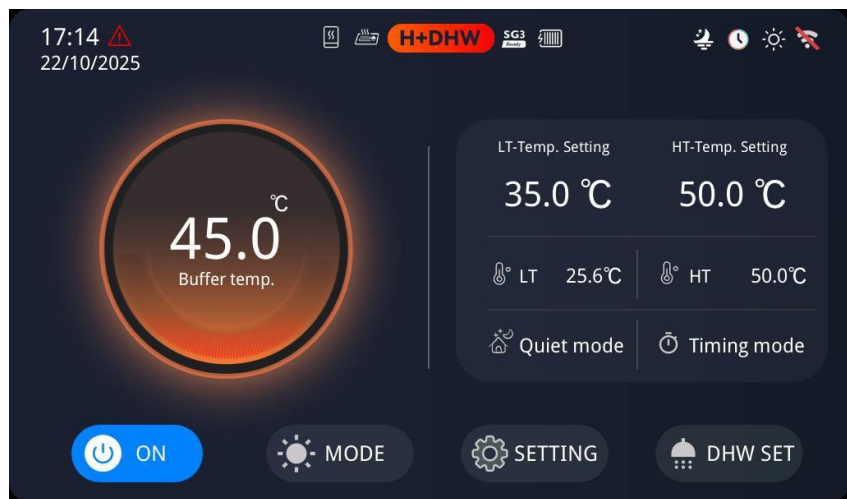
DHW setting screen:



ON Tap to switch on/off DHW function.

50.0 °C Tap to change DHW set point.
Quiet mode and Timer mode can be tapped to set accordingly.

Heating / Cooling setting screen (with two heating zones control):



In two zone control, the heating/cooling function can only be switched on/off by the LT (low temp) and HT (High temp) external system controls (e.g. system Thermostats /wiring center etc)

Tap **35.0 °C** or **50.0 °C** to change the LT zone or HT zone heating or cooling set point. If weather compensation is enabled, it will enter the weather compensation setting screen.

If DHW is not optioned in the system by the installer then **DHW SET** will not be displayed as shown here.



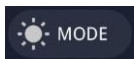
Button Functions Overview

Icon	Function
	Mode switch
	Power On/Off
	System setting
	DHW setting
	Heat/cool setting
	Quiet mode
	Timer mode

Overview of Unit Status and Function Icons

Icon	Description	Icon	Description	Icon	Description
	Unit off		Wi-Fi connection		boiler
	starting		timer mode		DHW heater
	Standby		temp. compensation		heating electric heater
	Anti-freeze		quiet mode		cooling + DHW
	defrost		SG1:SG2=0:0		heating
	Heating		SG1:SG2=1:0		cooling
	Cooling		SG1:SG2=0:1		heating + DHW
	Mode DI controlled		SG1:SG2=1:1		DI switch on/off
	DHW		alarms		initializing

Mode Switch



Tap to switch between "Heating Mode" and "Cooling Mode"

Note if the unit is configured to operate from external control devices, this button will be disabled.

Timer Mode



***Note:** if the unit is configured to operate from external control devices, this function will be disabled.



Timer Activation (Switch)

Timer mode includes three screens - Cooling Timer, Heating Timer, DHW Timer. Each has a dedicated interface accessible via left/right toggle. Timer mode, time settings, and mode switching have independent toggle switches. (**Only enabled timers will operate based on a set schedule*).

Note: The set ON and OFF times are used to activate the function. If the preset ON time is later than the current time, the unit will not be activated today — it will take effect the next day when the preset time is reached.

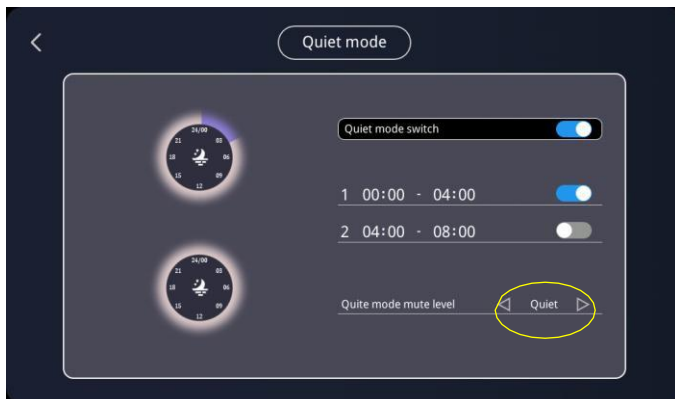
Timer Configuration

You can configure up to four time intervals. **Tap** the time fields to access the configuration interface.



Quiet Mode

Quiet mode includes two levels of noise reduction: Quiet and Ultra Quiet. The compressor frequency and fan speed reduction values for each level can be set in the user menu. Tap “QUIET MODE” to enter the quiet mode setting screen, where either Quiet or Ultra Quiet mode can be selected as required.



Quiet Mode Activation (Switch)

Quiet mode must be enabled for the system to transition into Quiet mode at the configured time.

Quiet Mode Time Configuration

You can set two-time intervals for Quiet mode. Tap the time fields to access the configuration interface. The left field indicates the start time, and the right field indicates the end time.

Quiet Mode / Ultra-quiet mode Compressor Maximum frequency Reduction

Configures the maximum compressor frequency reduction during Quiet mode.

Quiet mode adjustable range reduces compressor output by between 0Hz & 10Hz.

Ultra-Quiet mode adjustable range reduces compressor output buy between 10Hz & 20Hz.

Quiet Mode / Ultra-quiet mode Fan Maximum Speed Reduction

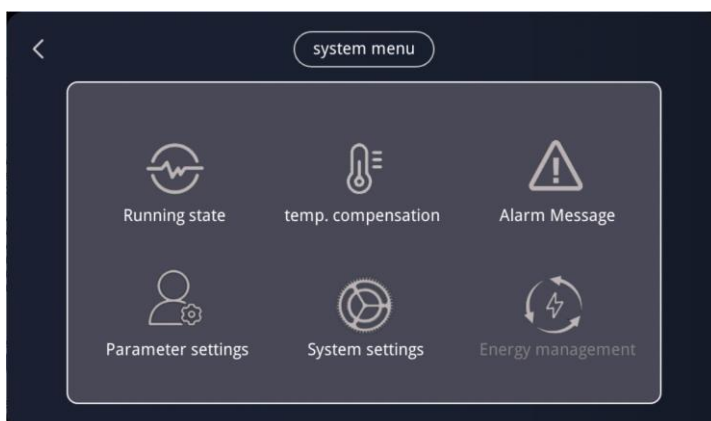
Configures the maximum fan speed during Quiet mode.

Quiet mode adjustable range reduces fan speed by 0-70rpm.

Ultra-Quiet mode adjustable range reduces fan speed by 70-150rpm.



System Menu



This screen provides access to six menus: Running status, Temperature compensation, Alarm faults, Parameter settings, System settings, and Energy management.

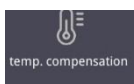


Running Status

The running state interface consists of 2 screens. Navigate between screens by swiping the screen.

Running state			
Inlet water temp.	11.1 °C	EEV1 steps	365
Outlet water temp.	50.2 °C	EEV2 steps	356
Ambient temp.	32.4 °C	Superheat	43.7 K
Suction gas temp.	2.0 °C	Pump PWM output	33 %
Discharge gas temp.	70.0 °C	Comp. Frequency	45 Hz
Evaporation pressure	3.0 bar	Comp. Freq. Command	45 Hz
Condensation pressure	1.7 bar	Compressor power	2530 W
Water flow	3.2 m³/h	Compressor current	12.3 A
Evaporation temp.	-5.2 °C	Buffer tank temp.	45.0 °C
condensation temp.	52.3 °C	LT zone temp.	-- °C
Fan1 speed	256 r/min	HT zone temp.	-- °C
Fan2 speed	258 r/min	Mixing valve opening	-- %

Running state			
Solar Temp.	55.0 °C	Water flow switch	ON
Inverter Board IPM Temp.	-31.4 °C	4-way valve	ON
Actual target temp.	29.7 °C	DHW 3-way valve	ON
Primary pump	ON	Mixing pump	ON
H/C switch	ON	Operating Mode	ON
DHW switch	ON	Boiler Status	ON
Drain pan heater	ON	SG1	ON
Heating electric heater	ON	SG2	ON
DHW electric heater	ON	Work status	Cooling
DHW circulation pump	ON	DI Mode Input Status	Cooling
LT zone control signal	ON		
HT zone control signal	ON		



Temperature compensation

One zone controls temp. compensation setting: Heating & One Zone control temp. compensation: cooling

Heating circuit		
reference		
Temp.compensation	☒	
Current Ambient T.	-5 °C	
Actual target temp.	56 °C	
ST02 temp.	< 32.5 °C >	
ST06 coefficient	< 0.8 >	
Ambient temp.	15.0 °C	Actual target temp.
	10.0 °C	40.5 °C
	5.0 °C	44.5 °C
	0.0 °C	48.5 °C
	-5.0 °C	52.5 °C
	-10.0 °C	56.5 °C
	-15.0 °C	55.0 °C

Cooling circuit		
reference		
Temp.compensation	☒	
Current Ambient T.	32.4 °C	
Actual target temp.	12.5 °C	
ST01 temp.	< 14.5 °C >	
ST08 coefficient	< 0.6 >	
Ambient temp.	45.0 °C	Actual target temp.
	40.0 °C	11.5 °C
	35.0 °C	14.5 °C
	30.0 °C	17.5 °C
	25.0 °C	20.5 °C

Note If two zone control is enabled, both zones temperature compensation can be set as required.

Temperature compensation continued

When temperature compensation is enabled, the system calculates the actual target temperature and displays it as “Actual Target Temp.”

Note: if SG Ready is enabled, the Actual Target Temp. already includes any offset caused by the SG signal. (SG is not available in New Zealand)

Current Ambient T.

Displays the current ambient temperature.

Adjusting heating / temperature. compensation

ST02 temp. and ST06 coefficient are used to adjust the temp. compensation in heating mode.

ST01 temp. and ST08 coefficient are used to adjust the temp. compensation in cooling mode.

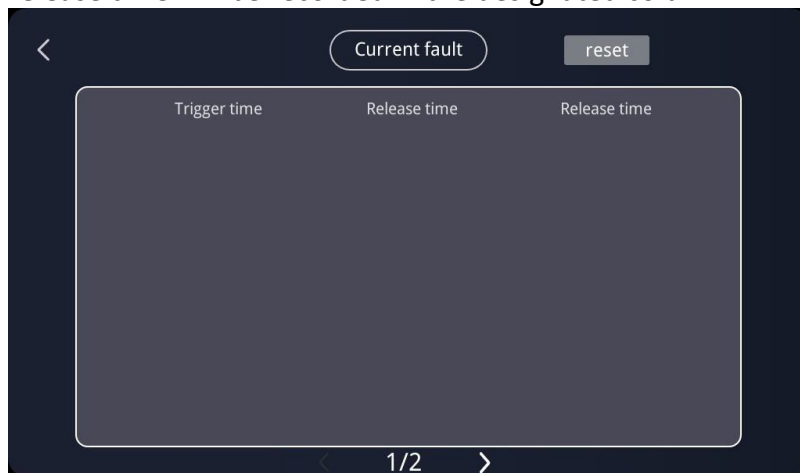
After completing the adjustments, the Reference display shows the calculated target temperatures under different ambient conditions.

Note: the final values are limited by the maximum and minimum heating or cooling setpoints.



Alarm Fault Enquiry

When a fault occurs in the system, the event log records the trigger time based on the system's internal clock and displays the fault code as a warning message. Once the fault is resolved, the release time will be recorded in the designated column.



Swipe to see the next page, to display the alarm log history

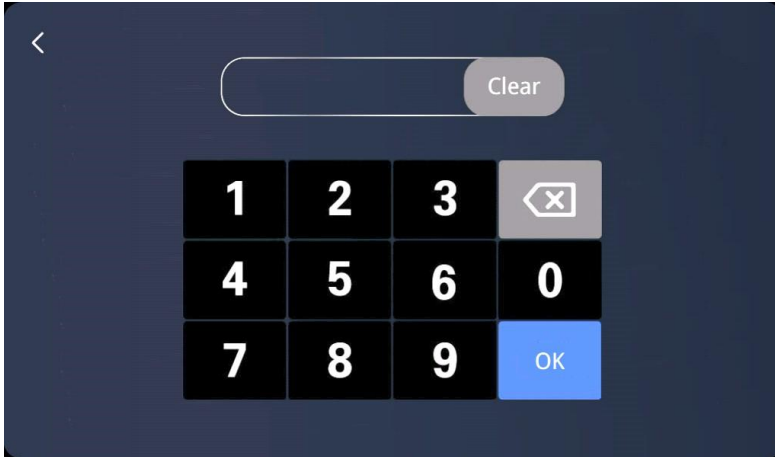




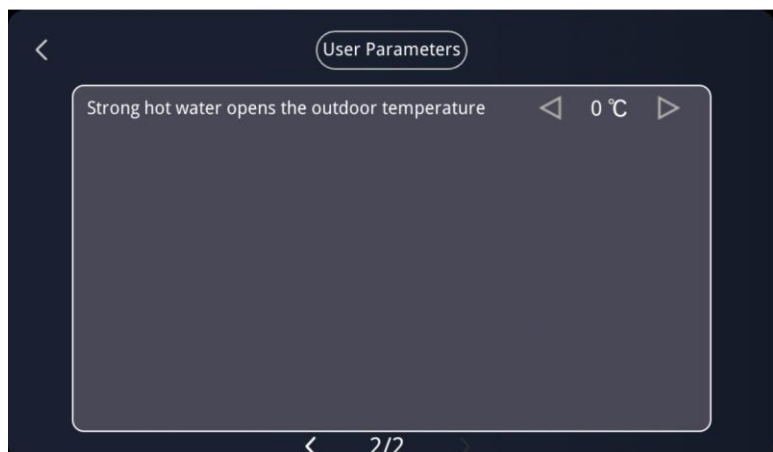
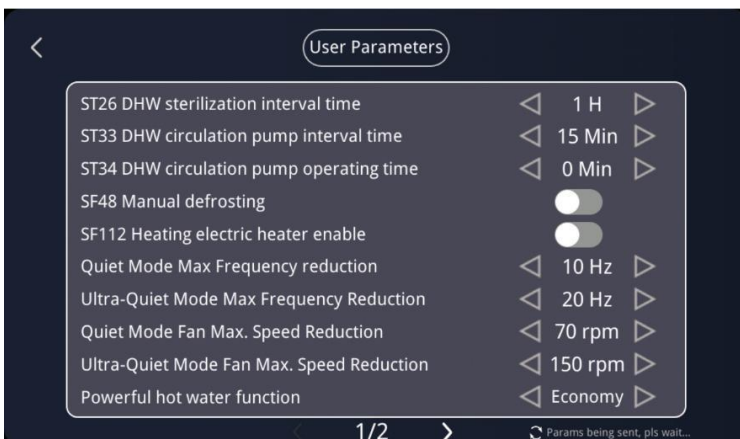
Parameter settings

Users can enter 0000 in the password input interface to enter the user parameter settings interface. For safety reasons, accessing the service and factory level parameter settings requires a password.

Passwords are available to contractors via NZ distributor Heat-Logic. (sales@heatlogic.co.nz)



input 0000 to enter user menu:



When a DHW electric element is installed in the DHW cylinder and controlled by the heat pump, parameter ST26 (DHW sterilization interval time) can be set to activate the DHW electric heater for sterilization.

If a DHW circulation pump is installed, parameters ST33 and ST34 can be set as required to define the on/off time intervals for the circulation pump. The DHW circulation pump will only operate when the DHW function is enabled.

The unit features smart defrost control, but defrosting issues may still occur under extremely humid conditions. In such cases, users can tap the SF48 Manual Defrost function to force the unit into defrost mode. The top icon on the home screen and the unit's status will change to "Defrost." The unit will automatically exit defrost mode once the process is complete. (It is normal for the switch to automatically turn off about 10 seconds after being turned on.)

SF112 is used to turn off the heating buffer tank electric element heater if that is not required to run. Note: Generally, this option is not required

Powerful DHW Function

The, Domestic Hot Water (DHW) function provides two operating modes: Powerful and Economy.

Powerful mode:

The electric backup heater is activated simultaneously when DHW mode is enabled, provided that the ambient temperature is lower than the setpoint defined by the parameter "Strong Hot Water Outdoor Temperature". This ensures rapid achievement of the DHW setpoint temperature.

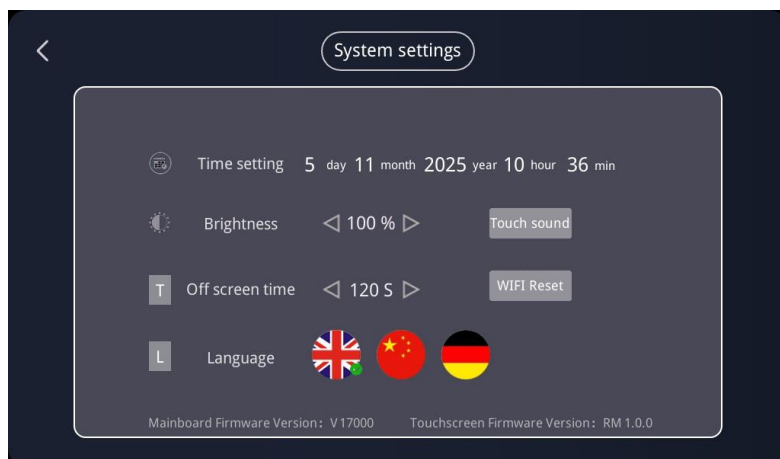
Economy mode:

The electric backup heater is activated only if the compressor is unable to reach the DHW setpoint or in the event of a unit fault.

The DHW electric backup heater function can be disabled by a qualified service technician via the service menu.



System settings



Time Setting

Configure the RTC (Real-Time Clock) to ensure accurate timing. RTC time settings are critical for features like hot water scheduling, vacation mode, and night mode timing.

Off Screen Setting To extend the screen's lifespan and minimize unnecessary display activity, an off screen (not visible) timer can be configured.

Users can define the screen active duration within a range of 0–180 seconds.

Brightness Setting

Adjust the screen's backlight brightness to match user preferences. The brightness adjustment range: is 10%–100%. The factory Default setting is: 90%.

Language Settings

The system supports three language options: English, German, and Chinese

Touch sound

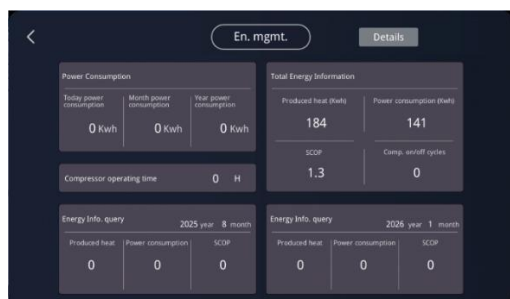
Touch sound can be enabled to audially confirm user taps on the screen.

WI-FI reset

WI-FI reset clears the current paired WI-FI data to allow a new pairing.



Energy Management



This feature is currently only configured for EU customers in conjunction with the Smart Grid system the control Logic is not correct for New Zealand and therefore data displayed would be incorrect. We strongly recommend this function not activated

WI-FI connection



Your installer should first connect your HP to the installed heat pump database. By doing so Heat Logic will then be able to facilitate necessary remote software updates and potentially diagnose in the case of an issue.

Once they have done so they can Pass control on to you via the Smart Life app on your android or apple smartphone make sure to ask them to do so if the haven't.

Please Note; Where a link is not established, charges will apply for on-site software updates

Please reach out to your installer or to Heat Logic if you have any problems with the touch screen control

HEATLOGIC
sales@heatlogic.co.nz



Warranty is given for 12 months - renewed at annual service up to 5 Years

Warranty beyond 12 months requires the submission of the commissioning form and does not cover incorrect installation, configuration or use

User: Basic care and maintenance



Keep the HP unit clean and clear of debris

Before commencing cleaning of the the HP:

Disconnect the product from the power supply by switching off the local isolator & wait for at least 3 minutes until the capacitors have discharged.

- Regularly remove leaves & debris that have gathered around the rear intake and underside and rear of the HP. Remove any snow that builds up around the air inlet grille & from the air outlet grille.
- Clean the casing with a damp cloth and a little solvent free soap. Occasionally use a little furniture or car polish.
- Do not use sprays, scouring agents, detergents, solvents or cleaning agents that contain chlorine.

► Users must not attempt to carry out maintenance work or repairs on this appliance.

We recommend users establish a maintenance contract with their installer, or suitable provider.

Risk of injury and or material damage to this appliance can increase due to inadequate maintenance

Vapor Discharge

► You will sometimes observe a cloud of vapor on and around the heat pump , you do not have to do anything. This is to be expected during the unit's periodic defrosting process.

HP not running. (User Reboot)

► If the unit will no longer start up, an isolator may have tripped, check first that the power supply is on
If power is on to both the indoor unit and outdoor appliance but the system does not come on when the system is calling. Then before you call in a service contractor You can try a Re-boot

Turn the power OFF to both the indoor unit and outdoor HP let them stand off for at least 5 minutes before powering them both back ON

► Contact your installer or service provider if reboot is unsuccessful.

Alarm Codes: Description

AL01	Low voltage protection alarm
AL02	High voltage protection alarm
AL03	Indoor low water outlet protection
AL04	Outdoor low outlet water temperature protection
AL05	Indoor high water outlet protection
AL17	Indoor water flow protection alarm
AL18	24-hour low voltage protection alarm exceeding the specified number of times
AL19	24-hour high voltage protection alarm exceeding the specified number of times
AL20	Low evaporation temperature protection alarm
AL21	Exhaust temperature protection alarm
AL31	24-hour low evaporation temperature protection alarm for exceeding the specified number of times
AL30	Communication failure between the main control board and IO board 3.0
AL37	Low pressure sensor malfunction alarm
AL38	High pressure sensor malfunction alarm
AL71	B1 Inlet water temperature sensor fault alarm
AL72	B2 outlet temperature sensor fault alarm
AL73	B3 environmental temperature sensor fault alarm
AL74	B4 hot water temperature sensor malfunction alarm
AL75	B5 exhaust temperature sensor fault alarm
AL76	B8 return air temperature sensor fault alarm
AL79	Abnormal duty cycle of water pump
AL98	Compressor variable frequency drive board fault alarm
AL57	Communication failure between the main control board and the driver board
WN01	Indoor pipeline antifreeze protection alarm
ALEP	Main control board memory EPROM fault
AL100	IPM overcurrent
AL101	Compressor drive failure
AL102	Compressor overcurrent
AL103	Input voltage phase loss
AL104	IPM current sampling fault
AL105	Overheating and shutdown of radiator
AL106	Pre charging failed
AL107	DC bus overvoltage
AL108	DC bus undervoltage
AL109	Communication input undervoltage
AL110	Communication input overcurrent
AL111	Input voltage sampling fault
AL112	DC fan 1 malfunction
AL113	Temperature Sensor Failure
AL114	DC fan 2 fault
AL115	Abnormal communication with the main control board
AL00	Communication failure between the main control board and the screen
AL202	IO board: solar temperature sensor malfunction
AL203	IO board: Low temperature zone B4 temperature sensor fault
AL204	IO board: High temperature zone B5 temperature sensor fault
AL133	IPM module overheating shutdown
AL134	Compressor model malfunction

Service parameter list Password Required .



A Service Password is available to contractors via NZ distributor Heat-Logic.

(sales@heatlogic.co.nz) End users should not alter service level parameters

Manufacturer level settings are withheld by the distributor (Heat-Logic LTD NZ)

Para.	Descriptions	De- fault	Min.	Max.	Unit	Res
ST03	Cooling hysteresis	2.0	1.0	10.0	°C	0.1
ST04	Heating hysteresis	2.0	1.0	10.0	°C	0.1
ST07	Outdoor temp. for starting buffer support element	0.0	-10.0	20.0	°C	0.1
ST10	DHW hysteresis	5.0	1.0	10.0	°C	0.1
ST11	Minimum cooling setpoint	12	0	ST12	°C	0.1
ST12	Maximum cooling setpoint	40	ST11	60	°C	0.1
ST13	Minimum heating setpoint	20	0	ST14	°C	0.1
ST14	Maximum heating setpoint	50	ST13	80	°C	0.1
ST17	SG Ready Heating/Cooling setpoint offset	2.0	1.0	10.0	°C	0.5
ST18	SG Ready DHW setpoint offset	5.0	1.0	10.0	°C	0.5
ST27	DHW sterilization temp.	65.0	55.0	70.0	°C	0.5
ST70	Solar pump, start up setpoint	20.0	10.0	40.0	°C	0.1
ST71	Solar pump off setpoint	5.0	0.0	10.0	°C	0.1
ST72	Solar heating Max temp.	70.0	40.0	90.0	°C	0.1
ST73	Outdoor temp. for activating solar anti-freeze	2.0	-20.0	10.0	°C	0.1
ST118	DHW temp. sensor offset	0.0	-10.0	10.0	°C	0.1
ST200	Boiler starts, outdoor temp	0	-25.0	20.0	°C	0.1
ST201	Boiler to replace compressor outdoor temp.	-10	-30.0	20.0	°C	0.1
DF04	Defrost temp. differential	8(HS08V HS10V); 10(others)	8.0	20.0	°C	0.5
DF06	Min. defrost interval	30	15	90	Min.	1
DF16	Forced defrost interval	180	120	180	Min.	1
EV01	Primary pump operation mode Sustain – primary pump will run when heating/cooling switch is turned on. auto - primary pump ON when compressor ON, OFF when compressor OFF	sustain	sustain or auto			
EV03	Cooling ΔT control	5.0	1.0	10.0	°C	0.5
EV04	Heating ΔT control	5.0	1.0	10.0	°C	0.5
SF05	DHW function	ON	ON or OFF			
SF10	Primary pump configuration Built-in: Wires connected to heat pump board. External: Wires connected to IO board	As per Order	Built in or external			

Routine (annual) Maintenance



Maintenance is a requirement for warranty. To ensure the optimal performance of this appliance regular maintenance is essential. Failure to undertake regular maintenance may reduce performance of the Appliance and attached system and can shorten the life of the appliance.

General Annual Service

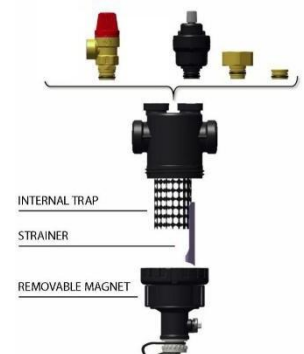
1. Confirm the safety zone requirements are observed.
2. Clean within the fan chamber and clear the base drain connections
3. Inspected for loose, damaged or broken components. If such faults are not rectified, the appliance may present danger to people and property.
4. Carry out system water leak checks. Repair any leak found immediately. If there is a leak in the plate heat exchanger, shut down the appliance & have a refrigeration engineer replace it
5. To ensure performance is maintained. Clean the air intake path annually, more often if the equipment environment is especially demanding,
6. Visually check the integrity of all wiring connections.
7. Check the compressor shock absorbers replace if worn
8. Alarms When the HP is in the standby mode, check the alarm Log to see if any alarms or warnings have occurred, especially if there are repeat instances that may require investigation.

System Circuit Checks

1. Clean the HPs Y Strainer filter and *internal magnetic filter.
2. Test the level and adjust the systems inhibitor dosage as required
3. Purge the system to remove any air and re set system pressure.
4. Check the thermal status of external and any internal pipe insulation.
5. Check the water flow by checking the water inlet and outlet temperature difference.
6. If applicable, Check the concentration of the systems anti-freeze protection solution
7. Check the status of the water quality and check the Inhibitor protection level.
8. Check the expansion vessel for excessive corrosion or pressure loss, replace if necessary.
9. Check the water pressure safety valve is not leaking. (inside HP) Operate the valve by turning the knob counterclockwise to allow water flow through discharge pipe to remove any lime deposits & ensure it is not blocked.
10. Check that the integral automatic air vent valve is not leaking system water (inside HP) Manually vent the system withing the property. **Note:** ensure there are no active AAVs within the dwelling.
11. Check the control operation of the attached system & rectify any issues

*Magnetic air / dirt separator (within the HP) maintenance procedure:

- . Turn OFF power supply.
- . Remove the "Removable magnet" as detail right
- . open the Service Valve to release the dirty water, close the service valve after the dirt is removed.
- . Reinstall the Cap of Discharge Port and the removal Magnet.
- . Re-charge the system water as necessary
- . Turn ON power supply.





Refrigerant side checks

9. Check the operation of the high & low, pressure transducers. Replace them if there is a fault.
10. Check for fouling of the filter (by checking the temperature difference in the copper piping). Replace it if necessary.

Full-load operating tests to verify the following values:

- A. Compressor high-pressure side discharge pressure
- B. Compressor low-pressure side suction pressure
- C. Verify the charge status by checking the super heat and sub-cooling.
- D. Check temperature difference between the heat exchanger water inlet & outlet temperatures
- E. Actual liquid sub-cooling, overheating at the expansion device, verify correct defrost of the air heat exchanger

If there is not enough refrigerant in the system, the HP will have poor performance. If a low refrigerant charge is significant, the suction pressure drops, and compressor suction superheat will also be high.

Find the leak and carry out repairs working in accordance with the defined processes and safety information in this manual.

Note:

After the leak has been repaired, the circuit must be tested, without exceeding the maximum low-side operating pressure shown on the HPs Data plate.

The refrigerant must always be recharged in the liquid state into the liquid line.

The refrigerant cylinder must always contain at least 10% of its initial charge.

For the refrigerant quantity per unit, refer to the data on the HPs Data plate.

Electrical checks

1. Check termination tension of the electrical connections, contactors, isolation switch and transformer.
2. Check the condition of contactors, fuses/trip devices and capacitors,
3. Check the condition of electrical cables and their insulation.
4. Carry out operating tests of the tray de-icing heater, compressor oil heater, refrigerant valve and expansion device.
5. Check the phase/earth insulation of the compressors, fans and pumps.
6. Check the compressor, fan and pump winding status.
7. Check the tension of the fan motor, fan wheel, compressor and control box fixing bolts and shock absorbers.
8. Check that water has not penetrated the control box.

Evaporator Coil

It is recommended that the finned evaporator coil is inspected regularly to check the degree of fouling. This also depends on the environment where the unit is installed. Sea air can cause increased corrosion therefor an approved sprayed film coating is highly recommended.

Remove fiber and dust collected on the evaporator face with a soft brush compressed air (or vacuum cleaner). Clean the coil with appropriate cleaning agents

NOTE: Corrosion due to salty or sulfurous environments is not covered by warranty

Refrigerant side, Maintenance operations



Preliminary checks and safety considerations

Prior to working on systems containing flammable R290, safety checks are necessary to ensure the risk of ignition is minimized. Precautions must be taken prior to conducting any work on the system.

Procedures

All work must be carried out in a controlled manner to minimize the risk of flammable gas or vapor being present while the operation is being performed.

Work area

Those working or present in the surrounding area should be instructed on the nature of work being carried out. The area around the workspace should be sectioned off & no flammable material present.

Check for presence of refrigerant

The area must be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure the leak detection equipment used is suitable for use with flammable R290, i.e. non-sparking, adequately sealed or intrinsically safe.

Fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, a dry powder or CO2 fire extinguisher must be to hand, within the work area.

No ignition sources ("No Smoking" signage should be displayed)

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner it may lead to the risk of fire or explosion. possible ignition sources must be kept away from the site of installation, repair, removal or disposal, in which flammable refrigerant may possibly be released.

Ventilated area

Ensure that the work area is adequately ventilated before breaking into the system or conducting any hot work. Ventilation must be maintained during the period that the work is carried out. Ventilation should ensure any released refrigerant into the atmosphere.

Checks of the refrigeration equipment

Where electrical components are being replaced, they must be fit for purpose and to the correct specification. At all times the maintenance and service guidelines in this manual should be followed.

If in doubt, consult NZ distributor Heat Logic LTD for technical assistance.

- Marking on the appliance continues to be visible and clear. Replace Data labels that are illegible
- Refrigeration components are unlikely to be exposed to any substance which may corrode them unless the components are constructed of materials which are inherently resistant to corrosion or are suitably protected against being corroded.

Checks of electrical devices

Repair & maintenance of electrical components shall include initial safety checks & component inspection procedures. If a fault exists that could compromise safety, then the electrical supply shall be isolated until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to retain operation, a safe temporary solution can be used. This shall be reported to the owner/user, so all parties are advised. **Initial safety checks must include:**

- Capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- No live electrical components or wiring are exposed while charging, recovering or purging the system;
- Confirm there is continuity of earth bonding.



Repairs to sealed components

1) During internal component repairs, the electrical supply should be disconnected prior to removal of sealed covers, etc. If it is necessary to have an electrical supply to equipment during service, then a permanently operating form of refrigerant leak detection must be located at the most critical point to warn of a potentially hazardous situation.

Particular attention must be paid to the following

When working on electrical components ensure, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that apparatus is mounted securely and that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts used must be in accordance with the manufacturer's specifications.

NOTE: Use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment.

Repairs to intrinsically safe components

Intrinsically safe components do not have to be isolated prior to working on them.

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.

Any test apparatus shall be at the correct rating. Only replace components with parts specified by the manufacturer. The use of Incorrect components may represent a risk to safety.

Refrigerant Leak detection

Under no circumstances should potential sources of ignition be used to detect refrigerant leaks.

The following leak detection methods are acceptable for systems containing flammable R290 refrigerant
Calibrated Electronic leak detectors must be used to detect, ensure the detector is not a potential source of ignition & suitable for the refrigerant R290 (Propane).

Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and calibrated to the refrigerant and the appropriate percentage of gas (25 % maximum) is confirmed.

Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as chlorine may react with the refrigerant & corrode the copper pipework.

If a leak is suspected, all naked flames shall be removed/ extinguished. If leakage of refrigerant is found which requires brazing, the refrigerant must first be recovered from the system. Oxygen free nitrogen (OFN) shall then be purged through the system, before & during brazing process.

Evacuation and Recovery of Refrigerant

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

- **Remove refrigerant;**
- **Purge the circuit with inert gas;**
- **Evacuate;**
- **Purge again with inert gas;**
- **Open the circuit by cutting or brazing.**

The Refrigerant charge shall be recovered using the correct recovery cylinders & The system “flushed” with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen must not be used for this task.

Continued...

Flushing shall be achieved by breaking the vacuum in the system with OFN & continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.



This process shall be repeated until no refrigerant remains within the system. When the final OFN charge is used, the system is to be vented down to atmospheric pressure to enable work to take place. Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available. **This operation is vital if pipe brazing operations are to take place.**

Refrigerant charging procedures

Prior to recharging the system pressure test with OFN.

The system must be leak tested on completion of charging but prior to commissioning. A follow up leak test must be carried out prior to leaving the site.

In addition to conventional charging procedures, the following requirements must be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses are as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders must be kept upright.
- Ensure the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already clearly marked).
- Extreme care must be taken not to overfill the refrigeration system.

Decommissioning

It is good practice to recover refrigerant safely Before decommissioning, it is essential to ensure the technician is completely familiar with the equipment and its operation.

It is recommended that an oil and refrigerant sample should be taken before commencing in case analysis is required prior to re-use of the reclaimed refrigerant.

Before you commence, ensure power is available to you. Familiarize yourself with the equipment and its operation Then Isolate Appliance electrically.

- Have Mechanical handling equipment available, if required, for handling refrigerant cylinders;
 - Have personal protective equipment available and is used it as required;
 - The procedure must be overseen by a competent person;
 - Recovery equipment and cylinders should conform to the appropriate NZ standards.
- c) Pump down refrigerant system, if possible.
- d) If a vacuum is not possible, make a manifold & removed from various parts of the system.
- e) Make sure the recovery cylinder is situated on the scales before recovery takes place.
- f) Start the recovery machine and operate in accordance with manufacturer's instructions.
- g) Do not overfill cylinders. (No more than 80 % volume liquid charge). Do not exceed the maximum working pressure of the cylinder, even temporarily.
- h) When the cylinder has been filled correctly and the process completed, make sure the cylinder and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- i) Recovered refrigerant must not be put into another refrigeration system unless cleaned & checked.
- The HP shall be labelled stating that it has been de-commissioned & emptied of refrigerant. The label must be dated and signed. Ensure the label states the HP may contain residual flammable refrigerant.**

Recovery of Refrigerant

for servicing or decommissioning It is good practice to safely remove refrigerant. When transferring refrigerant into cylinders, ensure that only appropriate recovery cylinders designated for the recovered recovery of refrigerant R290 are used. Cylinders must be complete with pressure relief valve, associated shut-off valves & in good working order. Empty recovery cylinders must be evacuated &, if possible, cooled before use. If compressors or compressor oils are to be removed, ensure they have been evacuated to a point where you are certain flammable refrigerant does not remain within the lubricant.

Temperature sensors: resistance tables



(Sensors are NTC10K.) - Except the B5 PT sensor,

R25 : 10.0 kΩ±1% B25/50: 3470K±1%

T (°C)	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]
-29	117.0	121.1	125.3
-28	110.8	114.6	118.6
-27	105.0	108.6	112.2
-26	99.48	102.8	106.3
-25	94.33	97.47	100.7
-24	89.49	92.42	95.44
-23	84.92	87.66	90.47
-22	80.62	83.17	85.80
-21	76.56	78.95	81.39
-20	72.74	74.96	77.25
-19	69.12	71.20	73.33
-18	65.71	67.66	69.65
-17	62.50	64.31	66.17
-16	59.54	61.15	62.88
-15	56.58	58.16	59.78
-14	53.86	55.34	56.85
-13	51.29	52.67	54.09
-12	48.86	50.15	51.47
-11	46.56	47.77	49.00
-10	44.38	45.51	46.66
-9	42.32	43.37	44.45
-8	40.36	41.35	42.36
-7	38.51	39.43	40.37
-6	36.75	37.62	38.49
-5	35.09	35.89	36.72
-4	33.51	34.26	35.03
-3	32.01	32.71	33.43
-2	30.59	31.24	31.91
-1	29.23	29.85	30.48
0	27.95	28.53	29.11
1	26.73	27.27	27.81
2	25.57	26.07	26.58
3	24.47	24.94	25.41
4	23.42	23.86	24.30
5	22.42	22.83	23.25
6	21.47	21.86	22.24
7	20.57	20.93	21.29
8	19.71	20.04	20.38
9	18.89	19.20	19.52
10	18.11	18.40	18.69
11	17.37	17.64	17.91
12	16.66	16.91	17.16
13	15.98	16.22	16.45
14	15.34	15.56	15.78
15	14.72	14.93	15.13
16	14.13	14.32	14.51

17	13.57	13.75	13.93
18	13.04	13.20	13.37
19	12.53	12.68	12.83
20	12.04	12.18	12.32
21	11.57	11.70	11.84
22	11.13	11.25	11.37
23	10.70	10.81	10.93
24	10.29	10.40	10.50
25	9.900	10.00	10.10
26	9.522	9.621	9.721
27	9.160	9.259	9.359
28	8.814	8.931	9.012
29	8.483	8.581	8.680
30	8.166	8.264	8.362
31	7.863	7.960	8.058
32	7.573	7.669	7.766
33	7.295	7.391	7.487
34	7.029	7.123	7.219
35	6.774	6.868	6.962
36	6.529	6.622	6.716
37	6.295	6.387	6.479
38	6.071	6.161	6.253
39	5.855	5.945	6.035
40	5.649	5.737	5.826
41	5.451	5.538	5.626
42	5.260	5.347	5.433
43	5.078	5.163	5.249
44	4.903	4.987	5.071
45	4.735	4.817	4.900
46	4.573	4.654	4.736
47	4.418	4.498	4.579
48	4.269	4.348	4.427
49	4.126	4.203	4.282
50	3.988	4.064	4.141
51	3.855	3.930	4.007
52	3.728	3.802	3.877
53	3.606	3.678	3.752
54	3.488	3.559	3.632
55	3.374	3.445	3.516
56	3.265	3.334	3.404
57	3.160	3.228	3.297
58	3.059	3.126	3.194
59	2.962	3.027	3.094
60	2.868	2.933	2.998
61	2.778	2.841	2.905
62	2.691	2.753	2.816
63	2.607	2.668	2.730
64	2.526	2.586	2.647
65	2.448	2.507	2.567
66	2.373	2.431	2.490
67	2.301	2.357	2.415
68	2.231	2.287	2.343

69	2.164	2.218	2.274
70	2.098	2.152	2.207
71	2.036	2.088	2.142
72	1.975	2.027	2.080
73	1.917	1.976	2.019
74	1.860	1.910	1.961
75	1.806	1.855	1.904
76	1.753	1.801	1.851
77	1.702	1.749	1.797
78	1.653	1.699	1.746
79	1.606	1.651	1.697
80	1.560	1.604	1.650
81	1.515	1.599	1.603
82	1.472	1.515	1.559
83	1.431	1.473	1.516
84	1.391	1.432	1.474
85	1.352	1.392	1.434
86	1.315	1.354	1.395
87	1.278	1.317	1.357
88	1.243	1.282	1.321
89	1.209	1.247	1.285
90	1.177	1.213	1.251
91	1.145	1.181	1.218
92	1.114	1.150	1.186
93	1.084	1.119	1.155
94	1.055	1.089	1.125
95	1.027	1.061	1.095
96	1.000	1.033	1.067
97	0.974	1.006	1.039
98	0.948	0.9801	1.013
99	0.9234	0.9548	0.9873
100	0.8994	0.9303	0.9621
101	0.8762	0.9065	0.9378
102	0.8537	0.8834	0.9141
103	0.8318	0.8611	0.8912
104	0.8106	0.8393	0.8689
105	0.7901	0.8182	0.8473
106	0.7270	0.7806	0.8378
107	0.7085	0.7611	0.8173
108	0.6906	0.7422	0.7974
109	0.6732	0.7239	0.7781
110	0.6563	0.7061	0.7594
111	0.6399	0.6888	0.7411
112	0.6240	0.6720	0.7235
113	0.6086	0.6557	0.7063
114	0.5936	0.6399	0.6896
115	0.5791	0.6246	0.6733
116	0.5650	0.6096	0.6576
117	0.5513	0.5951	0.6422
118	0.5380	0.5810	0.6273
119	0.5250	0.5674	0.6128
120	0.5125	0.5541	0.5988

$R_{25}=50K\Omega\pm2\%$ $B_{25}/50=3950K\pm2\%$

T (°C)	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]
-20	441.8	471.5	503.0
-19	417.9	445.5	474.7
-18	395.5	421.1	448.2
-17	374.4	398.2	423.4
-16	354.5	376.7	400.0
-15	335.8	356.4	378.1
-14	318.2	337.4	357.5
-13	301.6	319.4	338.1
-12	286.0	302.6	319.9
-11	271.3	286.7	302.8
-10	257.4	271.7	286.7
-9	244.3	257.6	271.5
-8	232.0	244.3	257.3
-7	220.3	231.8	243.8
-6	209.3	220.0	231.1
-5	198.9	208.8	219.2
-4	189.1	198.3	207.9
-3	179.8	188.4	197.3
-2	171.0	179.0	187.3
-1	162.7	170.1	177.8
0	154.8	161.7	168.9
1	147.4	153.8	160.5
2	140.4	146.3	152.5
3	133.7	139.2	145.0
4	127.4	132.5	137.8
5	121.4	126.2	131.1
6	115.7	120.2	124.8
7	110.4	114.5	118.7
8	105.3	109.1	113.0
9	100.4	104.0	107.6
10	95.84	99.14	102.5
11	91.49	94.55	97.68
12	87.35	90.20	93.09
13	83.43	86.06	88.74
14	79.70	82.14	84.62
15	76.16	78.42	80.71
16	72.80	74.88	77.00
17	69.60	71.53	73.48
18	66.55	68.34	70.14
19	63.66	65.31	66.97
20	60.91	62.42	63.96
21	58.28	59.69	61.09
22	55.79	57.08	58.38
23	53.42	54.60	55.79
24	51.15	52.24	53.34

T (°C)	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]
25	49.00	50.00	51.00
26	46.87	47.86	48.86
27	44.83	45.83	46.83
28	42.90	43.89	44.89
29	41.06	42.05	43.04
30	39.31	40.29	41.27
31	37.64	38.61	39.59
32	36.05	37.01	37.98
33	34.54	35.49	36.45
34	33.10	34.03	34.98
35	31.72	32.65	33.58
36	30.41	31.32	32.25
37	29.16	30.06	30.97
38	27.97	28.85	29.75
39	26.83	27.70	28.59
40	25.74	26.60	27.48
41	24.70	25.55	26.41
42	23.71	24.54	25.39
43	22.77	23.58	24.42
44	21.86	22.67	23.49
45	21.00	21.79	22.60
46	20.18	20.95	21.74
47	19.39	20.15	20.93
48	18.64	19.38	20.15
49	17.91	18.64	19.40
50	17.23	17.94	18.68
51	16.57	17.27	17.99
52	15.94	16.62	17.33
53	15.33	16.00	16.70
54	14.75	15.41	16.10
55	14.20	14.85	15.51
56	13.67	14.30	14.96
57	13.16	13.78	14.42
58	12.68	13.28	13.91
59	12.21	12.80	13.42
60	11.76	12.34	12.95
61	11.34	11.90	12.49
62	10.92	11.48	12.06
63	10.53	11.07	11.64
64	10.15	10.69	11.24
65	9.791	10.31	10.86
66	9.444	9.953	10.48
67	9.110	9.608	10.13
68	8.790	9.277	9.786
69	8.483	8.959	9.457
70	8.187	8.653	9.141
71	7.904	8.359	8.837
72	7.632	8.077	8.544
73	7.370	7.805	8.262

T (°C)	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]
74	7.119	7.544	7.991
75	6.877	7.293	7.731
76	6.645	7.051	7.480
77	6.421	6.819	7.238
78	6.207	6.595	7.005
79	6.000	6.380	6.781
80	5.801	6.173	6.565
81	5.610	5.973	6.357
82	5.426	5.781	6.157
83	5.249	5.596	5.963
84	5.078	5.418	5.777
85	4.914	5.246	5.598
86	4.756	5.080	5.424
87	4.604	4.921	5.258
88	4.457	4.767	5.096
89	4.316	4.619	4.941
90	4.180	4.476	4.791
91	4.048	4.338	4.647
92	3.922	4.205	4.507
93	3.800	4.077	4.372
94	3.682	3.953	4.242
95	3.569	3.833	4.116
96	3.459	3.718	3.995
97	3.354	3.607	3.877
98	3.252	3.499	3.764
99	3.153	3.395	3.655
100	3.058	3.295	3.549
101	2.967	3.198	3.447
102	2.878	3.105	3.348
103	2.792	3.014	3.252
104	2.710	2.927	3.160
105	2.630	2.842	3.070
106	2.553	2.760	2.984
107	2.478	2.681	2.900
108	2.406	2.605	2.819
109	2.337	2.531	2.740
110	2.269	2.460	2.665
111	2.204	2.390	2.591
112	2.141	2.323	2.520
113	2.080	2.259	2.451
114	2.022	2.196	2.384
115	1.964	2.135	2.320
116	1.909	2.076	2.257
117	1.856	2.019	2.196
118	1.804	1.964	2.137
119	1.754	1.911	2.080
120	1.705	1.859	2.025

HP Data Plate information

Inverter Air Source Heat Pump	
Model:	HS22V-DPNNW
Cooling capacity (A35/W7°C):	5.75-16.3 kW
Heating capacity (A7/W35°C):	5.28-22.1 kW
Max EER Cooling (A35/W7°C):	2.99W/W
Max COP Heating (A7/W35°C):	4.52W/W
Power supply:	380-415V/3N~50Hz
Input Power-Cooling:	2.56-7.05 kW
Input Power-Heating:	1.88-5.25 kW
Rated power input:	9.0 kW
Rated current:	16.0 A
Refrigerant / Filling weight:	R290/1.38kg
R290 GWP:	3
CO2 equivalent:	0.0041 T
Pipe connector:	G1"
Anti electric shock grade:	I
Water proof grade:	IPX4
Nominal flow heating medium:	1.6-3.8 m³/h
Max outlet heating medium temperature:	70°C
Max.Operation pressure of low side:	3.0MPa
Max.Operation pressure of high side:	3.0MPa
Max allowable pressure:	3.3MPa
Internal pressure drop at nominal flow:	35kPa
N.W:	162kg
Series No.:	
Manufacture date:	
 	

Inverter Air Source Heat Pump	
Model:	HS15V-QPNNW
Cooling capacity (A35/W7°C):	3.65-12.2 kW
Heating capacity (A7/W35°C):	4.95-15.2 kW
Max EER Cooling (A35/W7°C):	2.99W/W
Max COP Heating (A7/W35°C):	4.70W/W
Power supply:	220-240V~ 50Hz
Input Power-Cooling:	1.15-4.50 kW
Input Power-Heating:	1.08-3.35 kW
Rated power input:	7.1 kW
Rated current:	32.0 A
Refrigerant / Filling weight:	R290 / 1.1kg
R290 GWP:	3
CO2 equivalent:	0.0033 T
Pipe connector:	G1"
Anti electric shock grade:	I
Water proof grade:	IPX4
Nominal flow heating medium:	1.25-2.62 m³/h
Max outlet heating medium temperature:	70°C
Max.Operation pressure of low side:	3.0MPa
Max.Operation pressure of high side:	3.0MPa
Max allowable pressure:	3.3MPa
Internal pressure drop at nominal flow:	25kPa
N.W:	132kg
Series No.:	
Manufacture date:	
 	

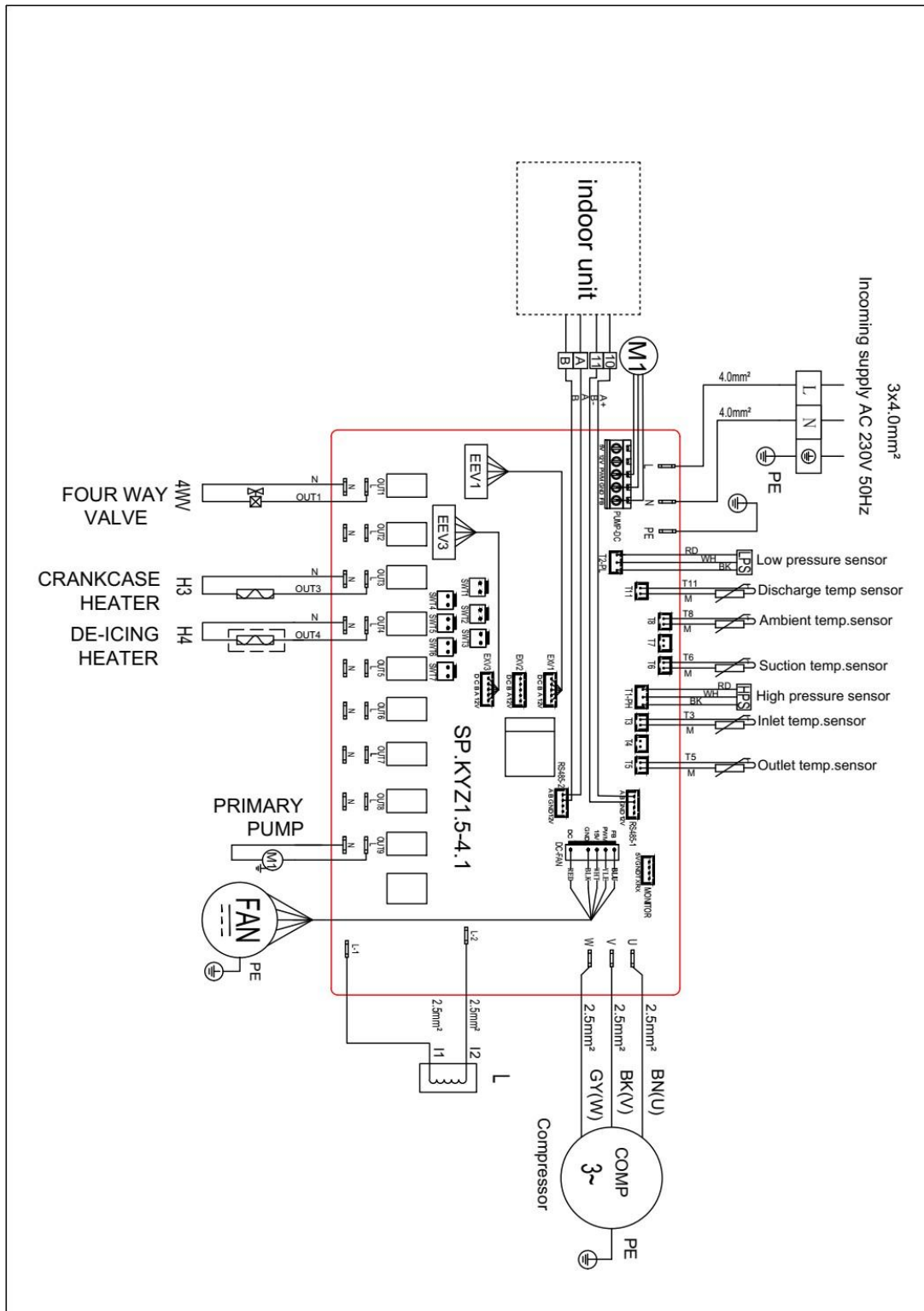
Inverter Air Source Heat Pump	
Model:	HS10V-QPNNW
Cooling capacity (A35/W7°C):	1.9-5.9 kW
Heating capacity (A7/W35°C):	2.9-9.5 kW
Max EER Cooling (A35/W7°C):	2.74W/W
Max COP Heating (A7/W35°C):	4.78W/W
Power supply:	220-240V~ 50Hz
Input Power-Cooling:	0.68-2.26 kW
Input Power-Heating:	0.67-2.13 kW
Rated power input:	3.22 kW
Rated current:	14.0 A
Refrigerant / Filling weight:	R290/0.72kg
R290 GWP:	3
CO2 equivalent:	0.0022 T
Pipe connector:	G1"
Anti electric shock grade:	I
Water proof grade:	IPX4
Nominal flow heating medium:	0.6-1.8 m³/h
Max outlet heating medium temperature:	70°C
Max.Operation pressure of low side:	3.0MPa
Max.Operation pressure of high side:	3.0MPa
Max allowable pressure:	3.3MPa
Internal pressure drop at nominal flow:	23kPa
N.W:	106kg
Series No.:	
Manufacture date:	
 	

Inverter Air Source Heat Pump	
Model:	HS12V-QPNNW
Cooling capacity (A35/W7°C):	2.7-7.8 kW
Heating capacity (A7/W35°C):	3.8-12.2 kW
Max EER Cooling (A35/W7°C):	2.8W/W
Max COP Heating (A7/W35°C):	4.75W/W
Power supply:	220-240V~ 50Hz
Input Power-Cooling:	1.60-2.86 kW
Input Power-Heating:	0.87-2.76 kW
Rated power input:	4.15 kW
Rated current:	18.0 A
Refrigerant / Filling weight:	R290 / 0.8kg
R290 GWP:	3
CO2 equivalent:	0.0024 T
Pipe connector:	G1"
Anti electric shock grade:	I
Water proof grade:	IPX4
Nominal flow heating medium:	0.9-2.12 m³/h
Max outlet heating medium temperature:	70°C
Max.Operation pressure of low side:	3.0MPa
Max.Operation pressure of high side:	3.0MPa
Max allowable pressure:	3.3MPa
Internal pressure drop at nominal flow:	25kPa
N.W:	108kg
Series No.:	
Manufacture date:	
 	

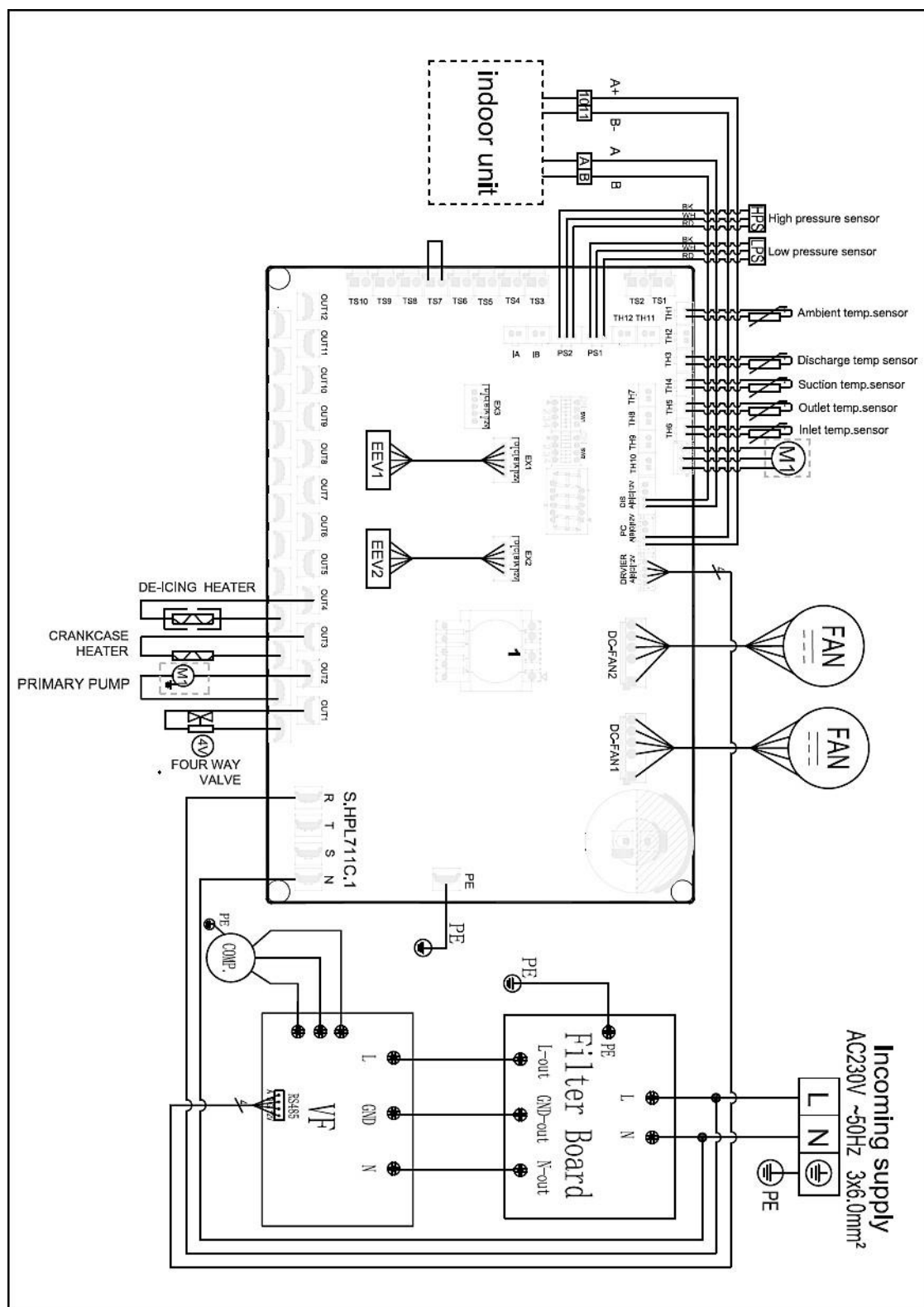
HP Bord - Electrical schematic diagrams

Note 6 & 8Kw models: These are special order in NZ Wiring details are available separately, not shown

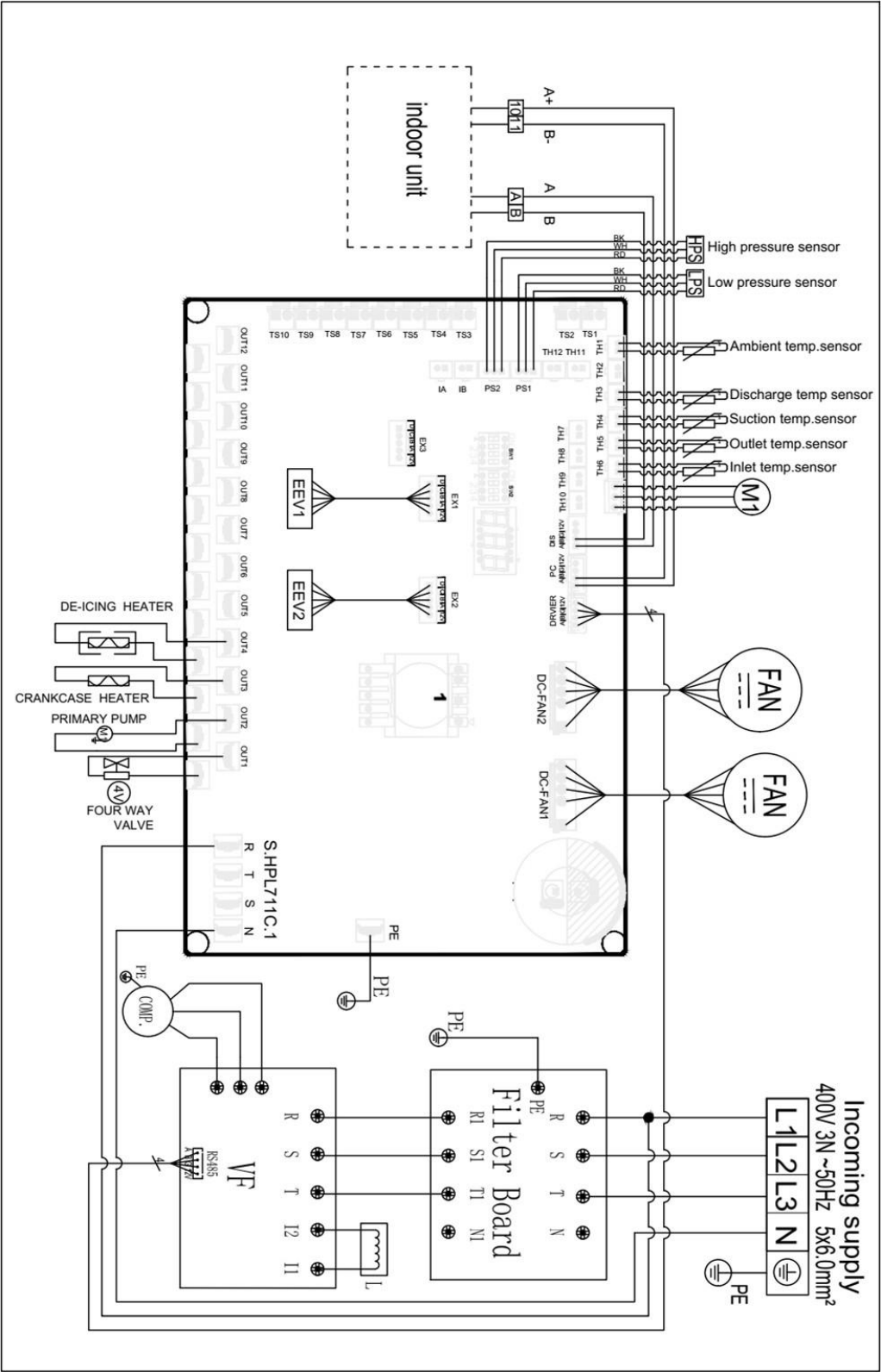
HS10V & 12V-QPNNW



HS15V- QPNNW



HS22V-DPNNW (3 Phase model)



Service records

“Make it easier for the next guy”

Date:

Please let future service providers know what you have done

[illegible]

Service is a requirement of warranty.



WI-FI connection

Your installer should first connect your HP to the installed heat pump database. By doing so Heat-Logic will be able to facilitate necessary remote software updates and potentially provide remote diagnosis in case of an issue.

Once they have done so they can Pass control on to you via the Smart Life app on your android or apple smartphone. **Be sure to ask them to do so if they haven't.**

Please Note; Where a link is not established, charges will apply for on-site software updates



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Specifications are subject to development. We are constantly improving and updating our products & though correct at the time of publication some minor specifications in the manual may vary from those of the actual product.