Hi Heat Pump - Front Discharge

Installation & User Manual

HI HEAT PUMP FRONT DISCHARGE

A COMPLETE GUIDE TO YOUR HEAT PUMP



Models: Hi 35 | Hi 55 | Hi 72 | Hi 85 | Hi 96 | Hi 120

IMPORTANT - R32 REFRIGERANT

This heat pump contains R32 refrigerant. Installation, electrical work and refrigerant service must be carried out by appropriately qualified persons in accordance with applicable Australian requirements and the safety instructions in this manual.

Quick Reference

Record these details at installation. They will make future technical support, service and warranty enquiries faster and easier.

Model	
Serial number	
Purchase / installation date	
Installer / company	
Pool / spa volume	

Before you start

- Check the unit and packaging for transit damage before installation.
- Confirm the model is suitable for the site, electrical supply and required water flow.
- Install outdoors in a well-ventilated position with the minimum airflow and service clearances shown in this manual.
- Provide safe service access in addition to normal operating clearances.
- Connect and route the condensate drain to a suitable discharge point.
- Install chemical dosing equipment and chlorinator cells downstream of the heat pump on the pool return line.
- For Wi-Fi operation, confirm a reliable 2.4 GHz Wi-Fi signal is available at the heat pump location.
- Keep the purchase invoice and record the serial number for warranty and service.

Support

For technical assistance, contact Insnrg on (03) 8578 5633 or visit www.insnrg.com. Have the model, serial number, installation details and a description of the issue available.

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PART 1

Installation

Safety, product specifications, site requirements, plumbing, electrical connection and commissioning.

1. Introduction

Thank you for choosing an Insnrg Hi inverter heat pump. This manual provides information for safe installation, commissioning, operation, troubleshooting and routine maintenance. Read the relevant sections before installation and keep this manual with the equipment for future reference.

Important
The heat pump must be installed safely, securely and in accordance with applicable laws, regulations and standards. Electrical work must be performed by a licensed electrician. Refrigerant circuit service must only be carried out by appropriately qualified refrigeration personnel.

1.1 Service access

Operating clearances are not a substitute for safe service access. The installation must provide sufficient access for future inspection, maintenance and repair without requiring unsafe climbing, reaching or manoeuvring.

1.2 What the manual covers

- Safety and R32 refrigerant precautions
- Product overview, specifications and dimensions
- Site selection, airflow and clearances
- Hydraulic and electrical installation
- Commissioning and controller operation
- Wi-Fi connection and operation
- Fault diagnosis and maintenance
- Warranty and after-sales support

2. Safety

WARNING - FLAMMABLE REFRIGERANT
R32 is a flammable refrigerant. Do not pierce or burn refrigerant-containing components. Keep ignition sources away from the equipment. Refrigerant may not have an odour.

2.1 General safety

- Do not operate or service the heat pump with wet hands.
- Do not pour water directly onto electrical components.

- Do not insert fingers or objects into the fan or heat exchanger.
- Do not install the unit where flammable gas may accumulate.
- Isolate electrical power before cleaning, inspection, installation or service work.
- If a fault occurs, stop operation and isolate power before further inspection.
- The unit must be securely installed on a stable, level base capable of supporting its weight.
- Children and persons requiring assistance must be appropriately supervised around the equipment.

2.2 R32 service precautions

For service technicians

Only trained and appropriately qualified personnel are to perform refrigerant service work.

WARNING

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater). Do not pierce or burn. Be aware that refrigerants may not contain an odor.

Initial safety checks shall include

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

Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be completed prior to conducting work on the system.

Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.

General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

Checking for presence of refrigerant

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

Presence of fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No ignition sources

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 that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the

surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt consult the manufacturer’s technical department for assistance. The following checks shall be applied to installations using flammable refrigerants:

- The charge size is in accordance with the room size within which the refrigerant containing parts are installed;
- The ventilation machinery and outlets are operating adequately and are not obstructed;
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
- Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Repairs to sealed components

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, 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 the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer’s specifications.

Repair to intrinsically safe components

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. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

NOTE The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment.

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

Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Leak detection methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.

Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed 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 the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

Removal and evacuation

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

Flushing shall be achieved by breaking the vacuum in the system with OFN and 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 is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipework are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed:

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them. Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.

- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system. Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

1. Become familiar with the equipment and its operation.
2. Isolate system electrically.
3. Before attempting the procedure ensure that:
    - Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
    - All personal protective equipment is available and being used correctly;
    - The recovery process is supervised at all times by a competent person;
    - Recovery equipment and cylinders conform to the appropriate standards.
4. Pump down refrigerant system, if possible.
5. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
6. Make sure that cylinder is situated on the scales before recovery takes place.
7. Start the recovery machine and operate in accordance with manufacturer's instructions.
8. Do not overfill cylinders. (No more than 80 % volume liquid charge).
9. Do not exceed the maximum working pressure of the cylinder, even temporarily.
10. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
11. Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Labeling

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants.

In addition, a set of calibrated weighing scales shall be available and in good working order.

Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

3. Product Overview

The Hi Front Discharge range uses inverter technology and a titanium water heat exchanger. Models covered by this manual are Hi 35, Hi 55, Hi 72, Hi 85, Hi 96 and Hi 120.

3.1 Accessories Supplied With the Unit

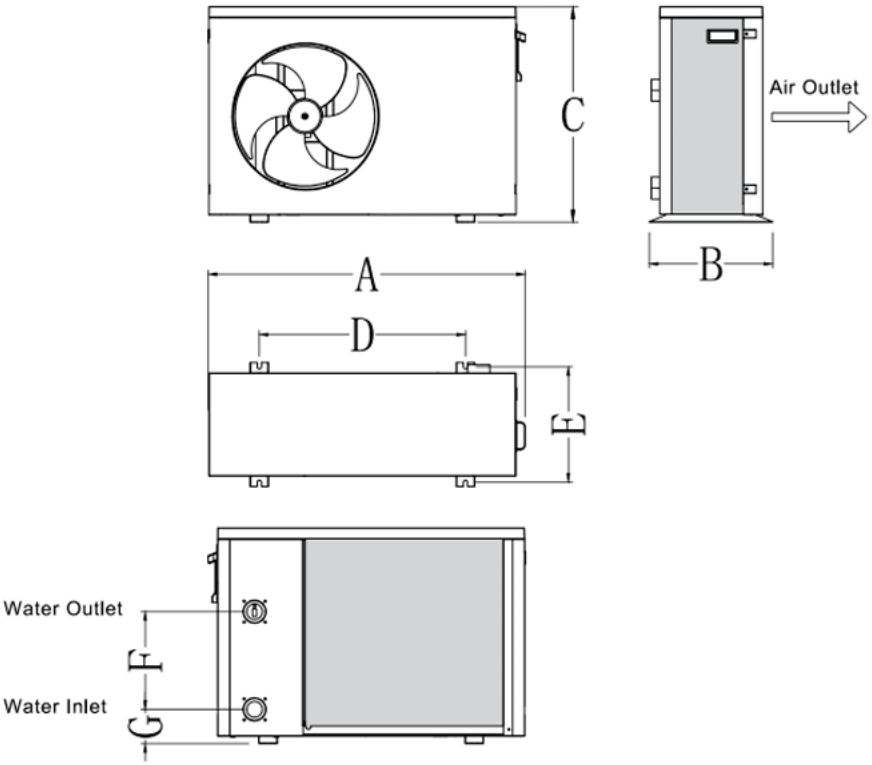
After unpacking, check that the heat pump and all supplied accessories are present and undamaged.



No.	Component	Quantity
1	User Manual	1
2	Rubber Blanket	4
3	Drain Connector	1
4	Drain Pipe	1
5	Water Pipe Joint	2

3.2 Dimensions of the Unit

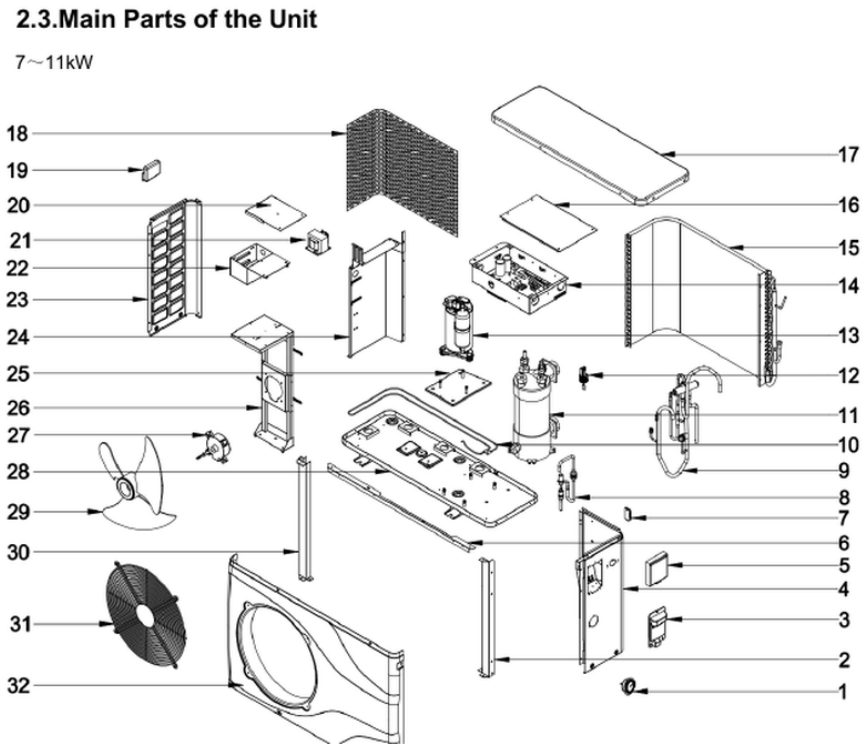
Dimensions are in millimetres. Refer to the diagram for dimension references A to G.



Model	A	B	C	D	E	F	G
Hi 35	907	353	616	525	330	280	95
Hi 55	907	353	616	525	330	280	95
Hi 72	907	353	616	525	330	280	95
Hi 85	1000	399	658	593	375	390	98
Hi 96	1000	399	658	593	375	390	98
Hi 120	1115	455	765	592	440	470	109

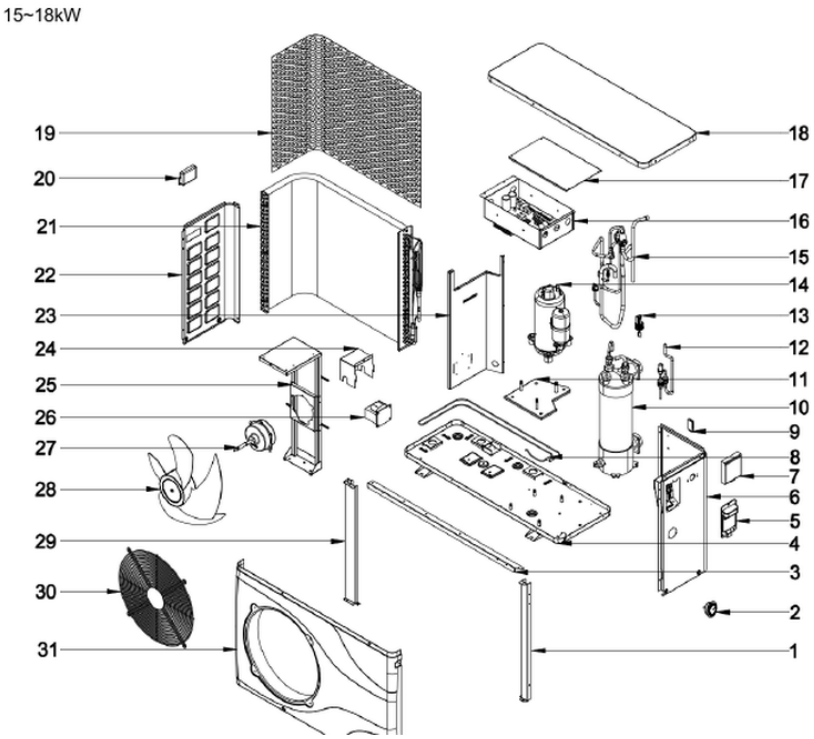
3.3 Main Parts of the Unit

7-11 kW models



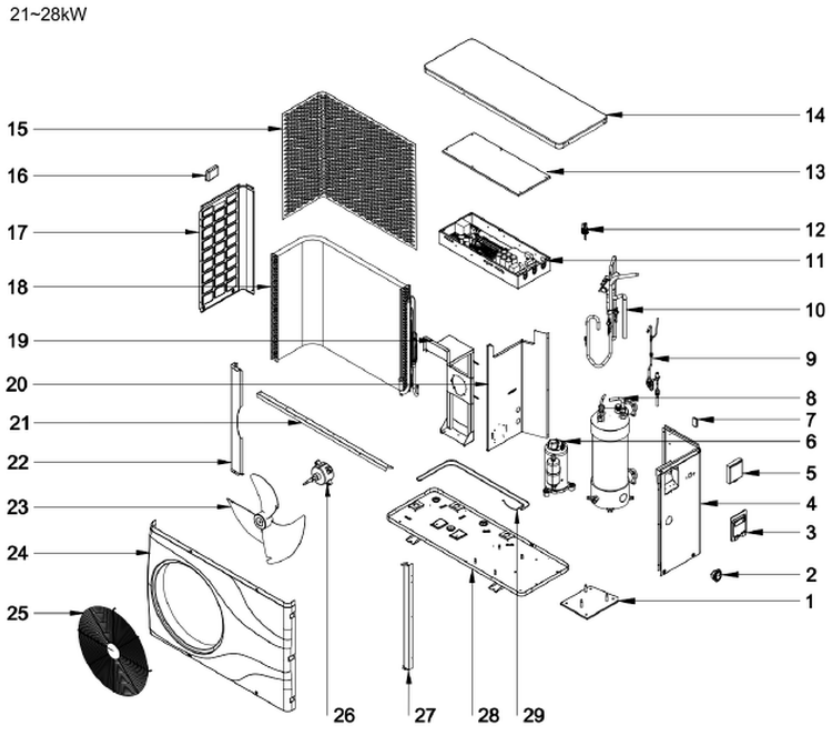
No.	Component	No.	Component	No.	Component
1	High Pressure Gauge	12	Water Flow Switch	23	Left Plate
2	Right Column	13	Compressor	24	Middle Partition
3	Right Handle	14	Electrical Box	25	Compressor Tray
4	Right Plate	15	Finned Heat Exchanger	26	Motor Support
5	Wire Controller	16	Electrical Box Cover	27	Fan Motor
6	Crossbeam	17	Top Cover	28	Chassis
7	Ambient Temp. Sensor	18	Back Net	29	Fan Blade
8	Throttle Device Assembly	19	Left Handle	30	Left Column
9	Four-way Valve Assembly	20	Reactance Cover	31	Grille Cover
10	Chassis Heating Belt	21	Reactance	32	Front Plate
11	Titanium Tube Heat Exchanger	22	Reactance Fixing Plate		

15-18 kW models



No.	Component	No.	Component	No.	Component
1	Right Column	12	Throttle Device Assembly	23	Middle Partition
2	High Pressure Gauge	13	Water Flow Switch	24	Reactance Cover
3	Crossbeam	14	Compressor	25	Motor Support
4	Chassis	15	Four-Way Valve Assembly	26	Reactance
5	Right Handle	16	Electrical Box	27	Fan Motor
6	Right Plate	17	Electrical Box Cover	28	Fan Blade
7	Wire Controller	18	Top Cover	29	Left Column
8	Chassis Heating Belt	19	Back Net	30	Grille Cover
9	Ambient Temp. Sensor	20	Left Handle	31	Front Plate
10	Titanium Tube Heat Exchanger	21	Finned Heat Exchanger		
11	Compressor Fixing Plate	22	Left Plate		

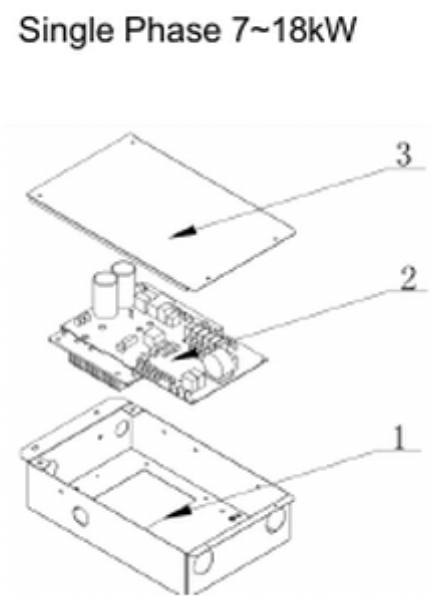
21-28 kW models



No.	Component	No.	Component	No.	Component
1	Compressor Fixing Plate	11	Electrical Box	21	Crossbeam
2	High Pressure Gauge	12	Water Flow Switch	22	Left Column
3	Right Handle	13	Electrical Box Cover	23	Fan Blade
4	Right Plate	14	Top Cover	24	Front Plate
5	Wire Controller	15	Back Net	25	Grille Cover
6	Compressor	16	Left Handle	26	Fan Motor
7	Ambient Temp. Sensor	17	Left Plate	27	Right Column
8	Titanium Tube Heat Exchanger	18	Finned Heat Exchanger	28	Chassis
9	Throttle Device Assembly	19	Motor Support	29	Chassis Heating Belt
10	Four-Way Valve Assembly	20	Middle Partition		

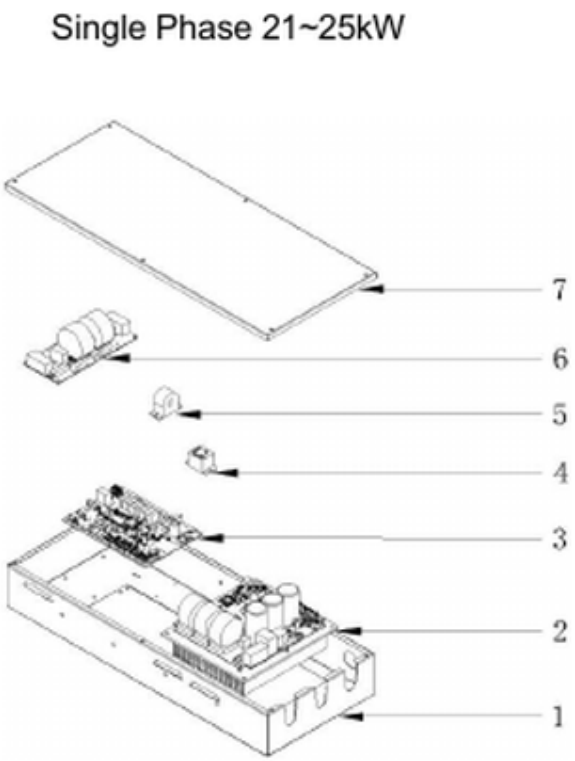
3.4 Electrical Box Components

Single Phase 7-18 kW



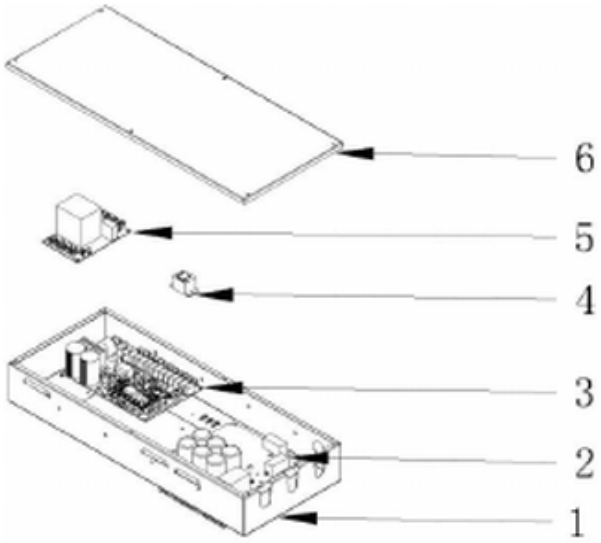
No.	Component
1	Electrical box
2	Main board
3	Electrical box cover

Single Phase 21-25 kW



No.	Component
1	Electrical box
2	Drive module
3	Main board
4	Relay
5	Current transformer
6	Filter board
7	Electrical box cover

Three Phase 21-28 kW



No.	Component
1	Electrical box
2	Drive module
3	Main board
4	Relay
5	Filter board
6	Electrical box cover

3.5 Performance and Technical Specifications

Performance is dependent on ambient temperature, humidity, water temperature, water flow and operating mode. Values below reproduce the technical data from the current Front Discharge manual.

Hi 35

Parameter	Hi 35
Heating capacity @ 27/24.3°C air, 26/28°C water (kW)	2.35-9.30
Power input (kW)	0.13-1.35
COP	18.12-6.88
Boost heating capacity / COP	9.30 / 6.88
Smart heating capacity / COP	6.00~9.3
Silent heating capacity / COP	6.00
Heating capacity @ 15/12°C air, 26°C inlet (kW)	1.43-6.60
Power input (kW)	0.17-1.43
COP	8.25-4.61
Boost / Smart / Silent capacity (kW)	6.60 / 5.28 / 3.17
Power supply	220-240V~/50Hz
Max power input / current	1.6 kW / 9.1 A
Temperature ranges	Heat 15-40°C; Cool 8-28°C; Ambient -15-43°C
Advised pool size	20-40 m^3
Water flow / pressure drop	4 m^3/h / 16 kPa
Dimensions / net weight	907x353x616 mm / 46 kg
Noise level	32-46 dB(A)
Refrigerant / IP	R32 / IPX4

Hi 55 and Hi 72

Parameter	Hi 55	Hi 72
Heating capacity @ 27/24.3°C air, 26/28°C water (kW)	3.09-15.26	4.51-18.04
Power input (kW)	0.17-2.35	0.25-2.97
COP	18.19-6.49	18.03-6.06
Boost heating capacity / COP	15.26 / 6.49	18.04 / 6.06
Smart heating capacity / COP	9.92~15.26	11.73~18.04
Silent heating capacity / COP	9.92	11.73
Heating capacity @ 15/12°C air, 26°C inlet (kW)	2.05-10.54	2.66-14.37
Power input (kW)	0.28-2.18	0.43-2.77

Parameter	Hi 55	Hi 72
COP	7.32~4.83	6.06-5.18
Power supply	220-240V~/50Hz	220-240V~/50Hz
Max power input / current	3.1 kW / 14.1 A	4.0 kW / 18.2 A
Advised pool size	30-60 m^3	35-70 m^3
Water flow / pressure drop	6.6 m^3/h / 15 kPa	7.7 m^3/h / 23 kPa
Dimensions / net weight	1000x399x658 mm / 53 kg	1000x399x658 mm / 62 kg
Noise level	33-47 dB(A)	33-47 dB(A)

Hi 85 and Hi 96

Parameter	Hi 85	Hi 96
Heating capacity @ 27/24.3°C air, 26/28°C water (kW)	5.43~20.52	5.10~24.68
Power input (kW)	0.30~3.09	5.17
COP	18.10~6.64	18.89~6.38
Boost heating capacity / COP	6.64/20.52	6.38/24.68
Smart heating capacity / COP	13.06~20.52	19.00 / 8.73
Silent heating capacity / COP	13.06	15.73
Heating capacity @ 15/12°C air, 26°C inlet (kW)	2.79~14.7	8.23 – 19.5
Power input (kW)	0.41~3.02	5.17
COP	6.80~4.87	8.34-4.94
Power supply	220-240V~/50Hz	220-240V~/50Hz
Max power input / current	4.1 kW / 18.8 A	4.9 kW / 22.3 A
Advised pool size	45-80 m^3	55-90 m^3
Water flow / pressure drop	9.1 m^3/h / 41 kPa	10.8 m^3/h / 59 kPa
Dimensions / net weight	1115x455x765 mm / 75 kg	1115x455x765 mm / 80 kg
Noise level	34-49 dB(A)	34-51 dB(A)

Hi 120

Parameter	Hi 120
Heating capacity @ 27/24.3°C air, 26/28°C water (kW)	5.77-27.57
Power input (kW)	5
COP	18.61~6.15
Boost heating capacity / COP	27.57/5.77
Smart heating capacity / COP	21.36 / 8.52

Parameter	Hi 120
Silent heating capacity / COP	12.82 / 11.96
Heating capacity @ 15/12°C air, 26°C inlet (kW)	8.23-20.24
Power input (kW)	1.06-3.75
COP	7.74-5.39
Power supply	380-415V/3N/50Hz
Max power input / current	5.0 kW / 13.2 A
Advised pool size	65-100 m^3
Water flow / pressure drop	12 m^3/h / 59 kPa
Dimensions / net weight	1115x455x765 mm / 82 kg
Noise level	35-51 dB(A)
Refrigerant / IP	R32 / IPX4

Common heat exchanger and temperature data
All models: Mitsubishi Electric DC inverter compressor; hydrophilic fin air-side heat exchanger; titanium tube water-side heat exchanger; 40 mm high-pressure PVC water connections; heating range 15-40°C; cooling range 8-28°C; operating ambient range -15-43°C.

4. Installation

Installation responsibility

The heat pump must be installed by competent tradespeople. Electrical connection must be completed by a licensed electrician. The installer must confirm that the site, airflow, plumbing, water flow and electrical supply suit the selected model.

4.1 Transport and handling

- Keep the unit upright during transport and handling.
- Do not lift or move the unit by the water unions. This can damage the titanium heat exchanger.
- Inspect the unit for damage before installation.

4.2 Pre-installation requirements

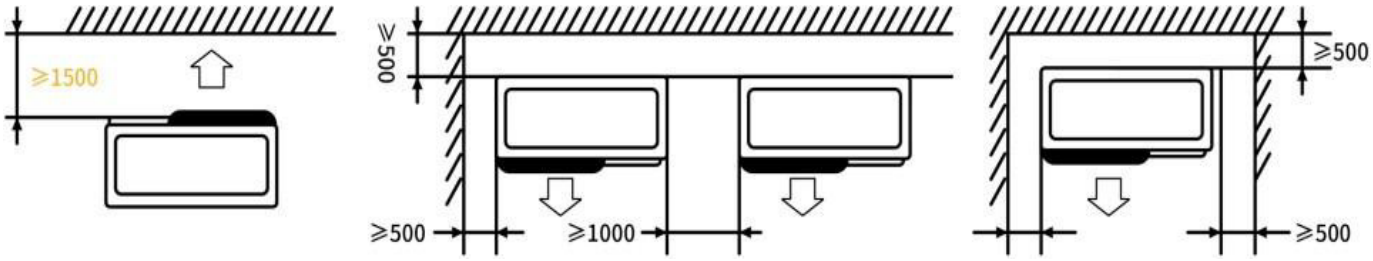
- Suitable power supply cable and circuit protection for the selected model.
- PVC pressure pipe and fittings suitable for the installation, including an adjustable bypass arrangement.
- A stable, level mounting base and suitable corrosion-resistant fixings.
- A condensate drain connection routed to an appropriate waste point.
- A filtration pump capable of delivering the required water flow through the heat pump.

4.3 Location, airflow and service clearances

Select an outdoor, well-ventilated location. The air inlet and discharge must remain unobstructed and discharged air must not recirculate through the evaporator. Consider neighbouring windows and noise-sensitive areas when orienting the unit.

- Install on a stable, level surface with provision for condensate drainage.
- Do not install near oil, flammable gas, corrosive products, sulphur compounds or high-frequency equipment.
- Keep the unit away from locations where mud, debris or roof runoff can enter the heat exchanger.
- Provide clear access for future service in addition to the stated airflow clearances.

For the front-discharge models, do not place an obstruction within 1 metre of the front discharge. Leave at least 500 mm clear at the sides and rear, with unrestricted ventilation above, unless a site-specific installation arrangement approved by Insnrg provides equivalent airflow.



Front-discharge airflow clearance principles

Do not install the unit where it may be exposed to oil, flammable gases, corrosive products, sulphur compounds or high-frequency equipment. Avoid positions where mud or road splash can enter the unit, and locate the heat pump to minimise nuisance to neighbours.

4.4 Air Scoop / Air Deflector

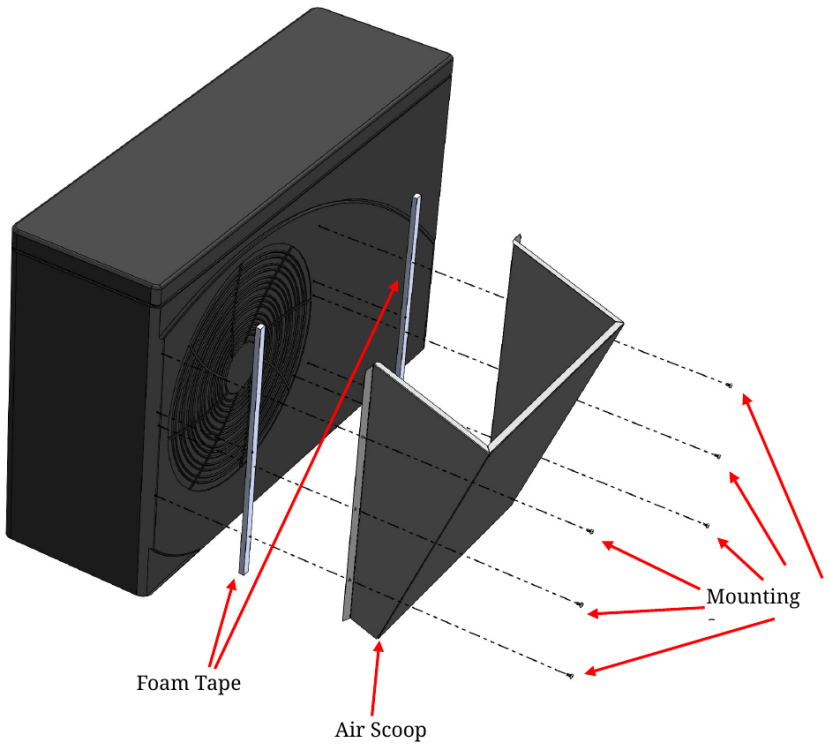
Where the front discharge faces a nearby wall, fence or other obstruction, an Insnrg air scoop may be fitted to redirect the cold discharge air and reduce the risk of recirculation back through the heat pump. The scoop may also assist where discharge air would otherwise create an unwanted draught.

Airflow rule

The air scoop does not eliminate the need for adequate fresh-air intake and service access. Do not install the unit in an enclosed space simply because an air scoop is fitted.

1. Position the air scoop on the face of the heat pump and confirm the required discharge direction.
2. Mark the mounting positions and drill 3.5 mm holes in the heat pump face. Take care not to damage internal components.
3. Apply the supplied foam tape to the edge of the air scoop to seal the contact surface and reduce vibration.
4. Secure the air scoop using the supplied screws. Do not overtighten.
5. Confirm that the scoop is secure and that the redirected air path is unobstructed.

HEAT PUMP AIR SCOOP INSTALLATION



1. Locate the air scoop mounting position and drill 3.5mm holes on the face of the heat pump.
2. Apply foam tape to the edge of the air scoop
3. Secure the air scoop using the provided screws.

Insnrg Heat Pump Air Scoop - installation arrangement

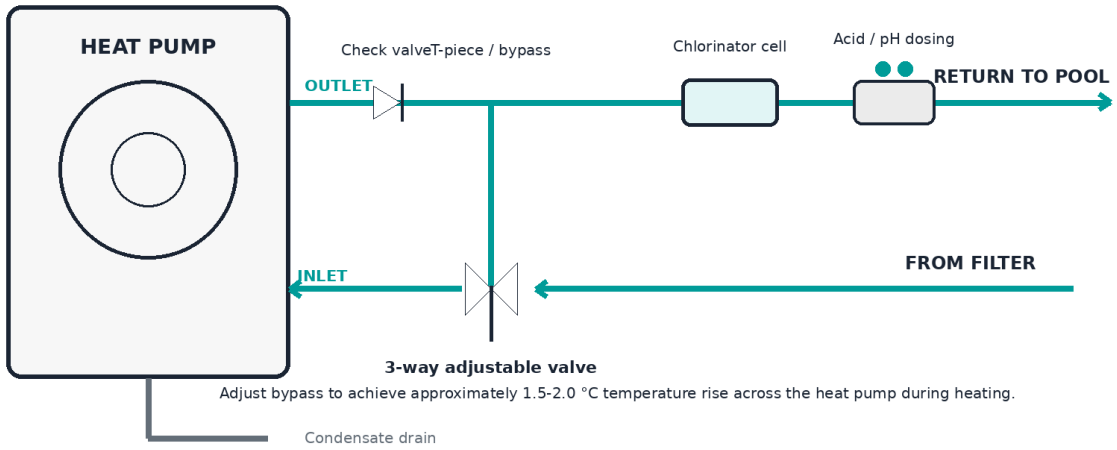
4.5 Plumbing and bypass

Connect the heat pump into the filtered pool return line. The water connections must be supported by rigid pipework so the heat pump unions do not carry pipe weight or side load. Keep the pipe run between the pool and heat pump as short as practical; the current Insnrg instructions specify 10 m or less where possible.

- Install an adjustable three-way valve / bypass arrangement so water flow through the heat pump can be set correctly.
- Set the bypass to achieve approximately 1.5 to 2.0 C temperature rise between the heat-pump inlet and outlet during heating operation.
- Install chlorinator cells, acid dosing and other chemical dosing downstream of the heat pump on the return line to the pool.
- Keep the filter clean so the required water flow is maintained.
- Provide a low-point drain where required for winterisation and service.

Keep the filter clean so adequate water flow is maintained. Where freezing conditions or an extended winter shutdown are expected, isolate power and drain water from the heat pump and low points in the plumbing. If the heat pump is operating in sub-zero ambient conditions, maintain the required water circulation.

Typical plumbing and bypass arrangement



Typical heat pump plumbing and bypass arrangement

4.6 Electrical installation

- Protect the supply with a 30 mA RCD and correctly rated circuit protection.
- Use outdoor-rated cable sized for the model, load and installation length.
- Three-phase models must have correct phase sequence.
- Provide an accessible local isolating means in accordance with applicable requirements.
- In public installations, provide emergency isolation where required.

4.6.1 Electrical Connection

Disconnect the heat pump power supply before installation or service. Remove the electrical side panel to access the terminal block, route the supply cable through the approved cable entry, and connect the conductors to the terminal block in accordance with the applicable diagram.

Model	Electricity Supply	Supply Cable	Specification
Hi 35	220-240V~/50Hz	3G 2.5 mm^2	AWG14
Hi 55	220-240V~/50Hz	3G 4.0 mm^2	AWG12
Hi 72	220-240V~/50Hz	3G 4.0 mm^2	AWG12
Hi 85	220-240V~/50Hz	3G 4.0 mm^2	AWG10
Hi 96	220-240V~/50Hz	3G 4.0 mm^2	AWG10
Hi 120	380-415V/3N/50Hz	5G 4.0 mm^2	AWG12

WARNING - ELECTRICAL ISOLATION

Power supply to the heat pump must be isolated before installation, wiring inspection or service. Electrical work must be completed by a suitably licensed electrician in accordance with applicable Australian requirements.

4.6.2 Wiring Diagrams

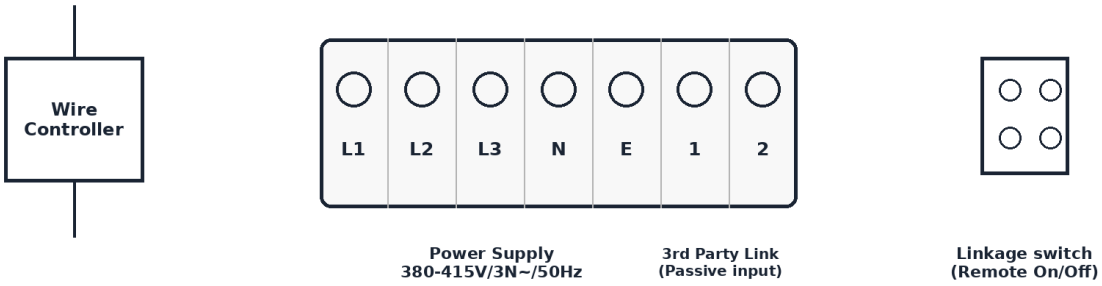
Single Phase 7-18 kW



Single Phase 21-25 kW



Three Phase 21-28 kW



5. Commissioning and Installation Quick Start

A clear commissioning sequence is important for reliable operation and provides a useful installation record. Complete the following checks before energising the heat pump.

[ ]	Unit installed securely and level
[ ]	Supply voltage matches the unit rating
[ ]	Plumbing and wiring completed correctly
[ ]	Air inlet and discharge unobstructed
[ ]	Condensate drainage clear and leak-free
[ ]	RCD / circuit protection installed and functional
[ ]	Water is circulating through the heat pump
[ ]	Protective earth connection confirmed

5.1 Initial start-up

1. Start the filtration pump and confirm water flow through the heat pump. Check all plumbing connections for leaks.
2. Switch on electrical power to the heat pump.
3. Use the controller ON/OFF function to start the unit and select the required operating mode and target water temperature.
4. Adjust the bypass so the water flow is within the model requirement and the heating temperature rise across the unit is approximately 1.5 to 2.0 C.
5. Confirm the condensate drain is flowing freely and inspect for abnormal noise or vibration.
6. Switch the filtration pump off briefly and confirm the heat pump stops in response to loss of water flow. Restore normal circulation.
7. Record the model and serial number on the Quick Reference page.

Initial heat-up

Initial pool heat-up time depends on pool volume, ambient conditions, heat loss and installed heating capacity. For the fastest initial warm-up, operate the heat pump and filtration system continuously until the target temperature is reached, then allow normal automatic control to maintain temperature.

PART 2

User Operation

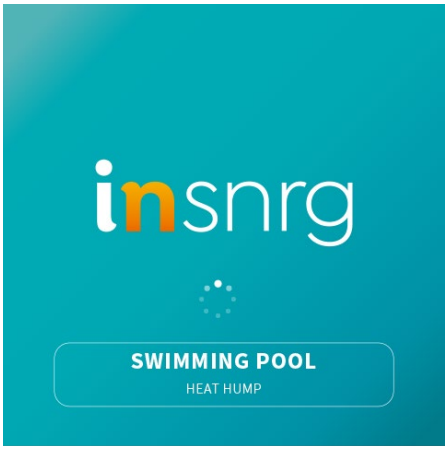
Everyday touchscreen operation, operating modes, settings, fault information and routine care.

6. User Operation

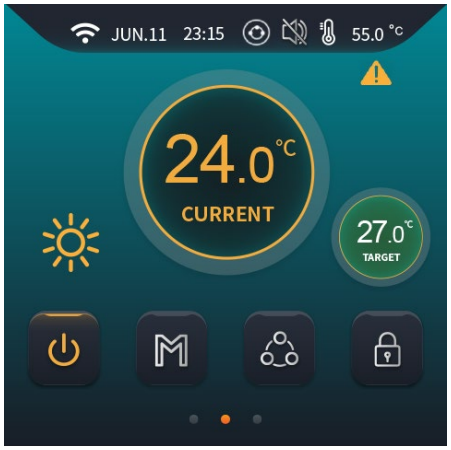
The Hi heat pump touchscreen provides direct control of operating mode, target temperature, power mode, screen lock, fault information, status monitoring, display settings, timers and operating statistics. The following screens and operating sequence correspond to the controller supplied with this range.

6.1 Control Panel Diagram

At start-up the controller displays the Insnrg logo and automatically enters the main interface after approximately five seconds.



Boot screen



Main operating screen

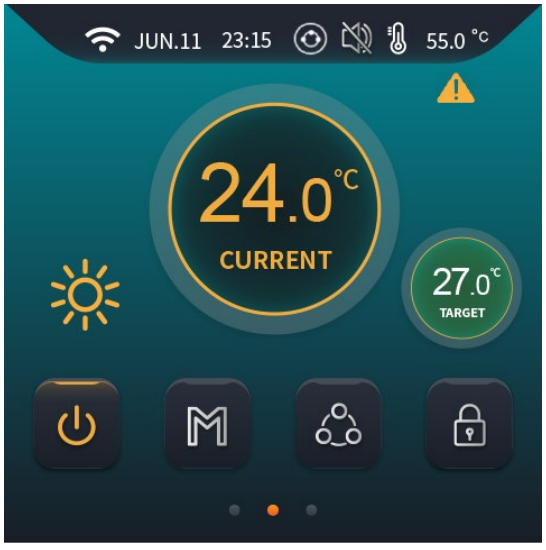
Area / Icon	Function	Area / Icon	Function
Wi-Fi status	Displays wireless connection status	System time	Current controller time
Linkage switch	External linkage / control status	Power mode	Shows current power mode
Outdoor temperature	Displays measured outdoor temperature	Current faults	Fault icon flashes when a fault is active
Inlet water temperature	Current inlet water temperature	Target temperature	Tap to change target temperature
ON/OFF	Starts or stops the unit	Mode	Select Heating, Automatic or Cooling
Power	Select Boost, Silent or Smart power mode	Lock / Unlock	Locks or unlocks the touchscreen
Operating mode	Shows the active operating mode		

6.2 Icon Guide and Key Operating Instructions

Icon	Meaning	Remark	Icon	Meaning	Remark
	Internet Status	Display according to signal strength		Fault Icon	Blinks when a fault is active
	Heating Mode	Dynamic while unit is operating		Silent Mode	Static
	Automatic Mode	Dynamic while unit is operating		Powerful Mode	Static
	Cooling Mode	Dynamic while unit is operating		Smart Mode	Static
	Defrosting Mode	Static		Linkage Icons	Blinks when active

6.2.1 Target Temperature Setting

Tap the target-temperature setting on the main screen, enter the required value, then select OK to save the set point.



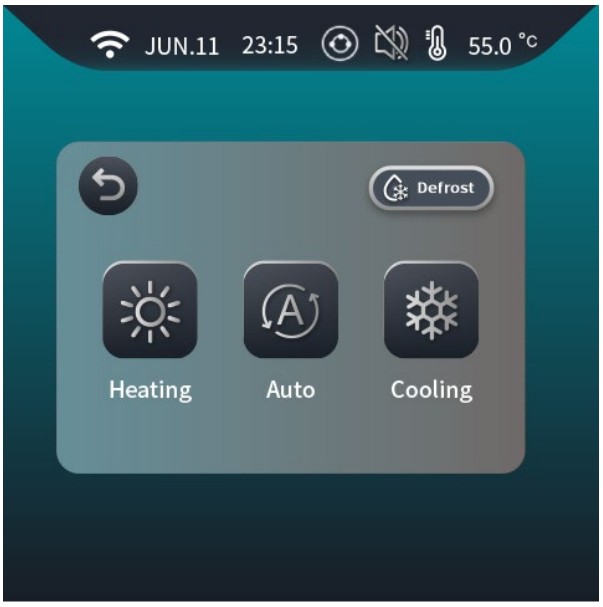
Target-temperature setting is accessed from the main screen

6.2.2 ON/OFF Function

At the main interface, tap the ON/OFF button to turn the heat pump ON or OFF.

6.2.3 Mode Selection

Tap Mode to open the operating-mode screen, then select Heating, Automatic or Cooling.

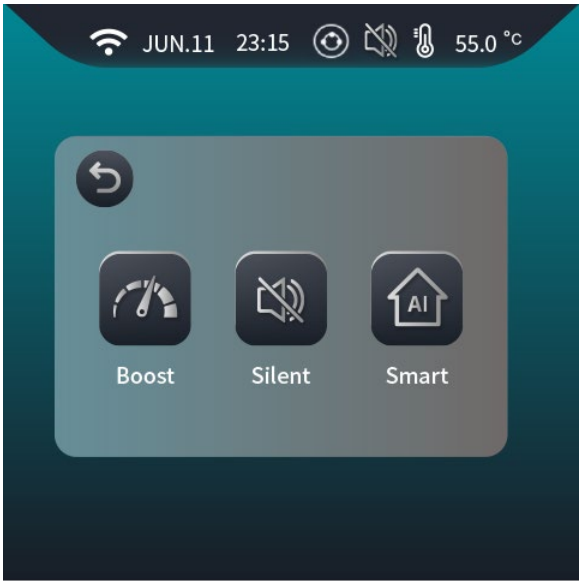


Operating-mode selection

Forced defrost can be selected from this screen when available. The forced-defrost indicator remains active until the unit completes the defrost cycle. Forced defrost is not available in Cooling mode.

6.2.4 Power Mode

Tap the Power Mode button to open the power-mode screen. Three selections are available: Boost, Silent and Smart.



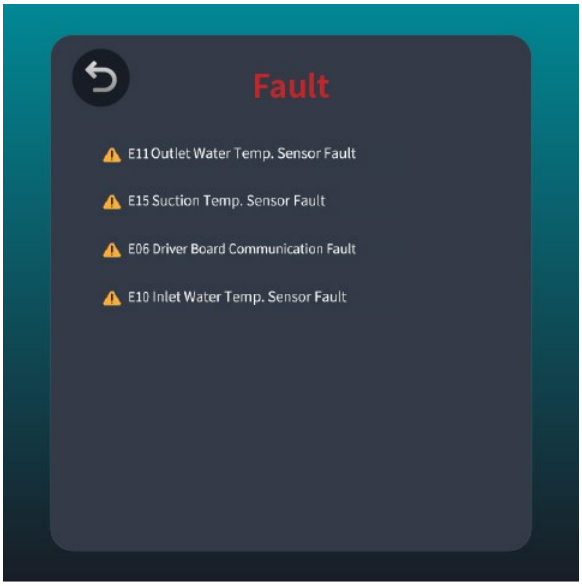
Boost, Silent and Smart power modes

6.2.5 Lock Screen

At the main interface, tap the lock icon to lock or unlock the touchscreen.

6.2.6 Current Faults

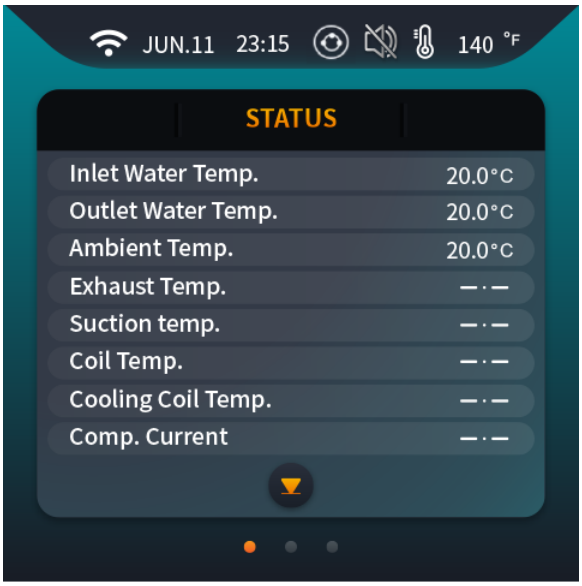
When the unit detects a fault, the fault icon on the main interface flashes. Tap the fault icon to open the fault inquiry screen. The controller can display multiple pages when more than one fault is active, with each entry showing the fault code and fault name.



Current fault inquiry screen

6.2.7 Status Inquiry

From the main interface, swipe from right to left to view current operating status and live temperatures.



Operating-status screen

6.2.8 Settings Interface

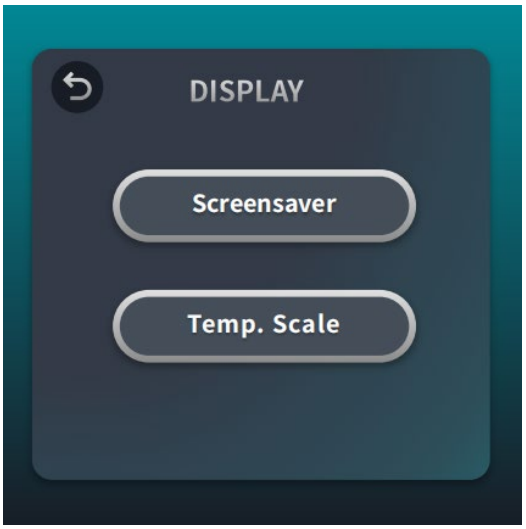
Swipe to the right on the main interface to open Settings. The Settings screen provides access to Display, Clock, System, Temperature Curve, Power Statistics and About information.



Settings interface

6.2.9 Display Interface

From Settings, select Display to open the display settings.



Display settings

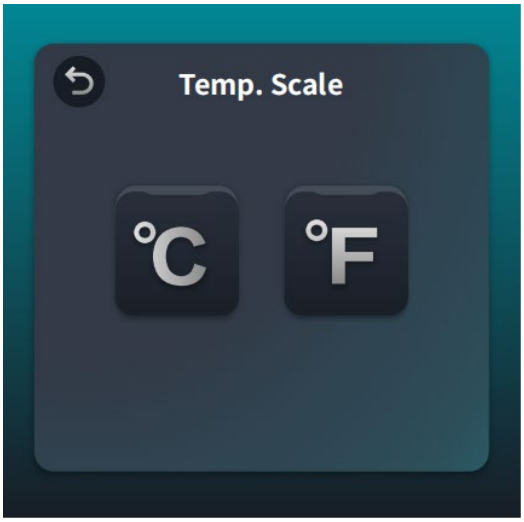
Screen protection: when enabled, the controller changes to the screen-protection display after five minutes without operation and then turns the display off after a further two minutes. When screen protection is disabled, the display turns off after five minutes without operation.



Screen-protection display

When the display is off, touch the screen to wake it. If screen protection is enabled, the first touch displays the screen-protection interface; touch the screen again to return to the main interface.

Temperature unit setting: select °C or °F to change the displayed temperature unit.



Temperature scale selection

6.2.10 System Parameters

From the Settings interface, select System to open the password screen.

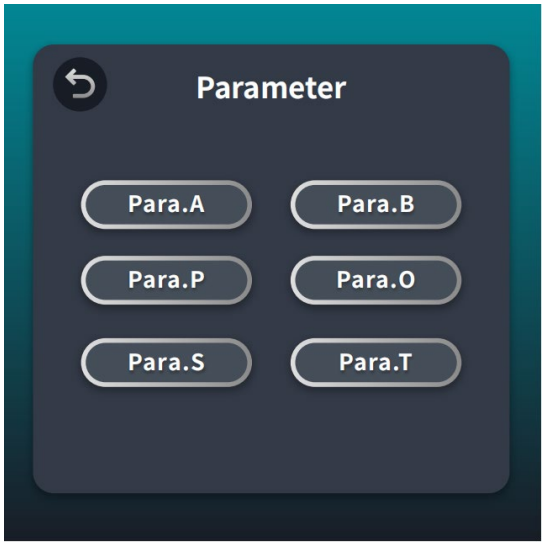


System settings



Password entry

- Restore factory settings: enter 400866. The controller will display a confirmation prompt before restoring factory settings.
- History faults: enter 589 to view stored fault history. Up to 48 fault records can be stored. Each record shows the fault name and the time the fault occurred. Stored history is retained through power loss unless cleared manually.
- User parameter setting: enter 168 to open the user-parameter menus.



User parameter menu

6.2.11 General Parameters

- Version information includes the display hardware version, display software version and motherboard checksum.
- Wi-Fi information includes connection details and a QR code for Wi-Fi connection.



About / version menu



Wi-Fi information

6.2.12 Time Settings

Select Clock to set the controller date and time. Date/time format is Day-Month-Year-Hour:Minute.

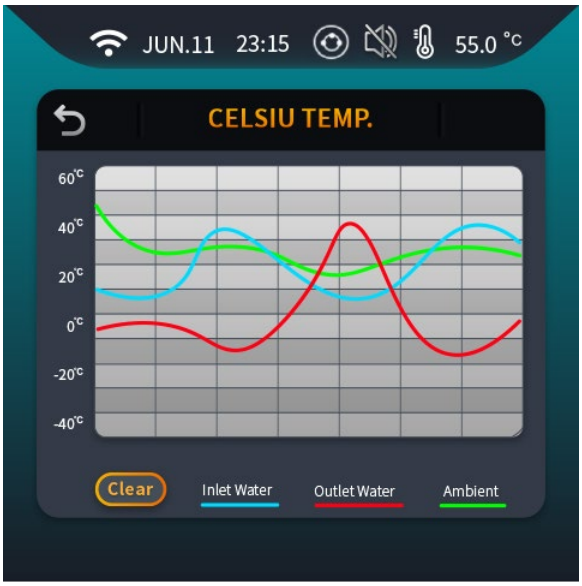
Select Timer to configure timed ON/OFF operation. Up to eight timed periods per day are supported. A timer is not active if the ON and OFF times are identical or if the timer switch is disabled.



Clock and timer menu

6.2.13 Temperature Curve

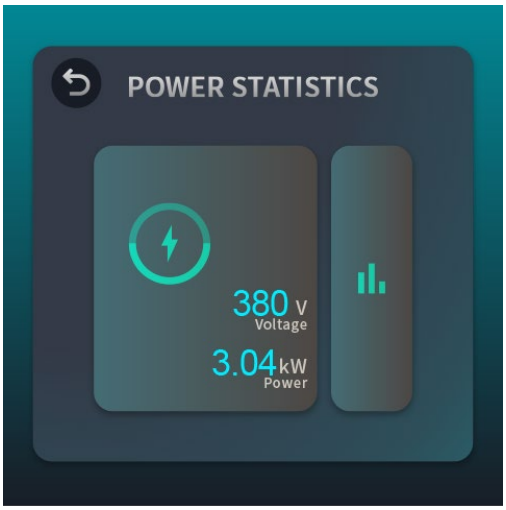
Swipe to the curve interface to view temperature trends. The curve updates hourly and displays up to seven days of data. The newest data is shown at the far right. If power is lost for more than seven days, the stored curve is cleared; for shorter outages the missing period is displayed as zero.



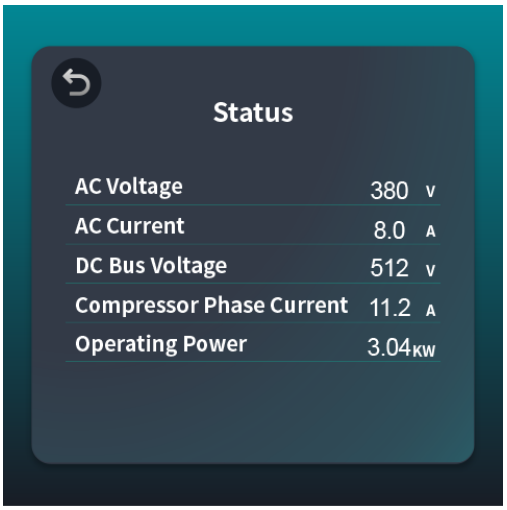
Temperature curve

6.2.14 Power Consumption Query

Select Power Statistics to view current electrical values including voltage, current and power, or to view historical power-consumption statistics. Historical information can be displayed by day, month or year.



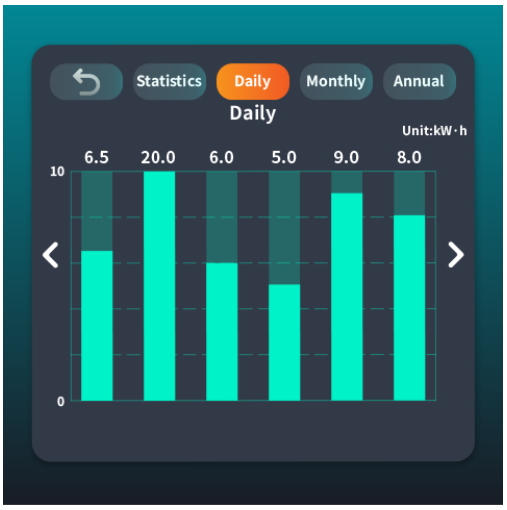
Power statistics



Live electrical status



Consumption summary



Daily / monthly / annual history

6.3 User Parameters

The following parameter screens are available through the password-protected user-parameter menu. Change parameters only when required for the installation and record any changes made.

Para. A - Setting Temperature

Code	Meaning	Unit	Range
A01	Heating target	℃	20~40
A02	Cooling target	℃	8~30
A03	Automatic target	℃	8~40
A10	Temperature compensation	℃	-10~10℃

Para. B - System Parameters

Code	Meaning	Unit	Range
B02	Remote monitoring address	/	0~255
B11	LED Light	/	0～1

Para. P - Water Pump Parameters

Code	Meaning	Unit	Range
P01	Water Pump mode	/	0~5 Keep running at constant Temp. 1. Keep running at constant Temp. for 2 Min. and then off. 2. Run water pump at intervals at constant Temp. 3. Shared unit water pump, keep running at constant Temp. 4. Shared unit water pump, keep running at constant Temp. for 2 Min. and then off. 5. Shared unit pump, run water pump at intervals at constant Temp.)
P02	pump interval time	/	0~120min

Para. O - Status Parameters

Code	Meaning	Unit	Range
O01	Water Pump	/	/
O02	Compressor	/	/
O03	Fan High Speed	/	/
O04	4-Way Valve	/	/
O05	Fan Medium Speed	/	/
O06	Fan Low Speed	/	/
O07	DHW Tank Electric Heater	/	/
O08	Crankshaft Electric Heater	/	/
O09	Chassis Heater	/	/
O10	EVI Valve	/	/
O11	Water Supply Valve	/	/
O12	Water Return Valve	/	/

Para. S - Status Parameters

Code	Meaning	Unit	Range
S01	Linkage switch	/	/
S02	Water Flow Switch	/	/
S03	Low Pressure Switch 1	/	/
S04	High Pressure Switch 1	/	/
S05	Low Water Lever Switch	/	/
S06	High Water Lever Switch	/	/
S07	Low Pressure Switch 2	/	/

Code	Meaning	Unit	Range
S08	High Pressure Switch 2	/	/
S09	Code Switch S1	/	/
S10	Code Switch S2	/	/
S11	Code Switch S3	/	/
S12	Code Switch S4	/	/
S13	Code Switch S5	/	/
S14	Code Switch S6	/	/
S15	Code Switch S7	/	/
S16	Single&Double System	/	/

Para. T - Temperature / Operating Status Parameters

Code	Meaning	Unit	Range
T01	Compressor Frequency	Hz	/
T02	Inlet Water Temp.	℃	/
T03	Coil Temp.	℃	/
T04	Exhaust Temp.	℃	/
T05	Suction temp.	℃	/
T06	Cooling Coil Temp.	℃	/
T07	Ambient Temp.	℃	/
T08	Outlet Water Temp.	℃	/
T09	Main EEV 1 Steps	P	/
T10	AC Voltage	V	/
T11	AC Current	A	/
T12	DC Bus Voltage	V	/
T13	Compressor (Comp.) Current	A	/
T14	IPM Temp.	℃	/
T15	DC Fan 1 Speed	/	/
T16	DC Fan 2 Speed	/	/
T17	DHW Tank Temp.	℃	/
T18	Return Water Temp.	℃	/
T19	Auxiliary EEV 1 Steps	P	/
T20	Main EEV 2 Steps	P	/
T21	Auxiliary EEV 2 Steps	P	/
T22	High Pressure Value	/	/
T23	Low Pressure Value	/	/

Code	Meaning	Unit	Range
T24	High Pressure Saturation Temp.	℃	/
T25	Power consumption within 10 minutes	/	/

6.4 Fault and Protection

When a fault with an alarm output is active, the fault icon flashes. Tap the fault icon to view the current fault. Some faults do not generate an alarm indication. A temperature sensor fault may be displayed as -.- in the relevant temperature field.

Code	Meaning	Code	Meaning
E01	Wire Controller communication protection	E35	Phase B wrong phase fault
E02	Flow switch fault	E36	Phase C wrong phase fault
E03	High pressure protection	E37	AC current protection
E04	Low pressure protection	E38	AC voltage protection
E06	Driver board communication protection	E39	DC voltage protection
E07	Abnormal Communication between driver and main board	E40	Phase current protection
E10	Inlet water temp. sensor fault	E41	DC current protection
E11	Outlet temp. sensor fault	E42	High pressure sensor fault
E13	Ambient temp. sensor fault	E43	Low pressure sensor fault
E15	Suction temp. sensor fault	F01	AC input current over-current shutdown
E16	Exhaust temp. sensor fault	F02	AC input voltage under-voltage
E17	Outer coil temp. sensor fault(Heating)	F03	Transformer output 15V under-voltage protection
E18	Inner coil temp. sensor fault(Cooling)	F13	IPM temp.overheat protection
E22	High coil temp.protection(Cooling)	F15	Compressor over-current
E23	Low inner coil temp. protection (Cooling)	F20	PFC fault
E24	High outlet water temp.protection (Heating)	F21	IPM fault
E25	Low outlet water temp. Protection (Cooling)	F25	DC bus over-voltage protection
E26	Inlet and outlet water temp. difference protection	F26	DC bus under-voltage protection
E27	High exhaust temp. protection	F38	DC fan 1 fault
E30	Low ambient temp.protection (Heating)	F43	DC fan fault
E30	Low ambient temp.protection (Cooling)	F44	Driver compressor Driver fault
E31	High pressure switch fault	F45	IPM protection (permanent)
E32	Low pressure switch fault	F46	Driver protection(permanent)
E33	Out of phase fault	F47	IPM temp.protection
E34	Phase A wrong phase fault	F48	IPM overheat protection
E49	High Pressure Fault 3 Times Lock	F74	Driver Fault 3 Times Lock

6.5 Maintenance and Winterising

6.5.1 Routine Maintenance

- Isolate electrical power before maintenance.
- Keep the air inlet, outlet and fin heat exchanger clear of leaves, dust and debris.
- Keep the pool filter clean and maintain correct water flow.
- Inspect the condensate drain for blockage and ensure water drains freely.
- Check the water unions and surrounding plumbing for leaks or pipe strain.
- Periodically inspect electrical enclosures, cables and visible fasteners for damage or corrosion.
- Arrange professional service if fault codes recur or performance changes significantly.

6.5.2 Winterising / Extended Shutdown

Where freezing conditions or extended shutdown are expected, isolate electrical power and drain water from the heat pump and associated low points as required by the installation. If the unit is required to operate in sub-zero ambient conditions, maintain the water circulation required by the system and ensure freeze-protection functions are not defeated.

6.5.3 Outdoor Panel Removal

Outdoor panel removal must only be carried out by qualified service personnel. Panel removal is not a routine owner maintenance task. Isolate electrical power before removing any panel.

PART 3

Wi-Fi and App

Connect the heat pump using Eco-Home, add and share devices, use timers, change operating modes and review supported settings from the mobile app.

7. Eco-Home Wi-Fi and App

7.1 Software Installation

Download Eco-Home from Google Play or the Apple App Store. You can also scan the QR code below.

Eco-Home download QR code

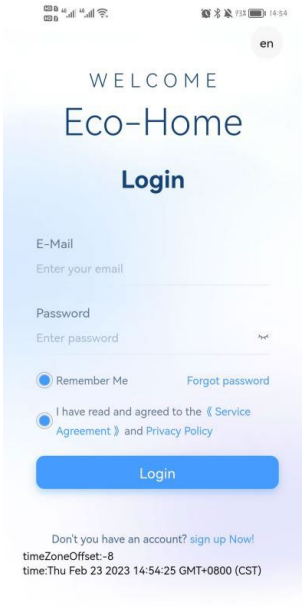
7.2 Login / Registration

1. Existing accounts can log in directly using the registered account details.

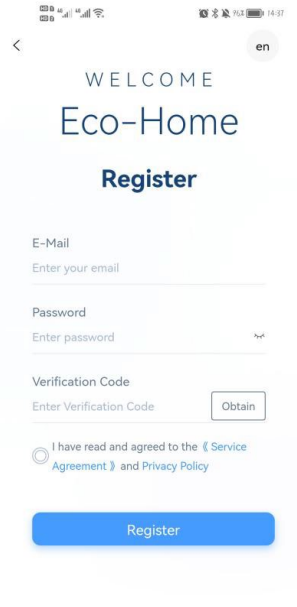
2. If you forget your password, choose the verification-code login option or select “Forget Password”, enter your phone number and obtain the verification code.

3. If you do not have an account, select “Sign Up Now!” to create one.

4. Set your password, enter your email address and obtain the verification code to complete registration.



Eco-Home login



Eco-Home registration

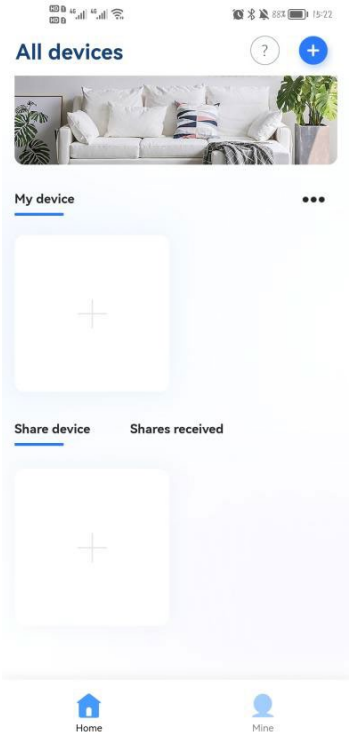
7.3 Wi-Fi Settings

On the main interface of the heat pump wire controller, press and hold the ON/OFF button together with the + button, or the ON/OFF button together with the – button, for 3 seconds to enter Wi-Fi setup mode.

- The Wi-Fi icon will flash while the unit is in Wi-Fi setup mode.
- When Wi-Fi connects successfully, the Wi-Fi icon is displayed continuously on the controller screen.
- If the unit is not connected within 4 minutes, Wi-Fi setup mode exits automatically.

7.4 Add Device

Step 1: Turn on Bluetooth and Wi-Fi on the phone, then connect the phone to a Wi-Fi network that has a normal Internet connection.



Eco-Home device screen



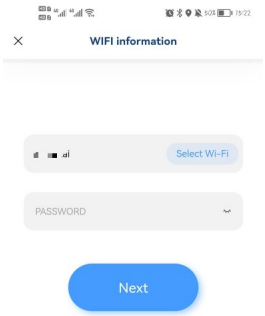
Network preparation

7.4 Add Device - continued

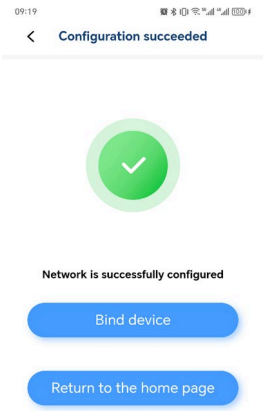
Step 2: Start network provisioning, choose the Wi-Fi network and enter the Wi-Fi password.



Start network provisioning



Enter Wi-Fi details



Network configured

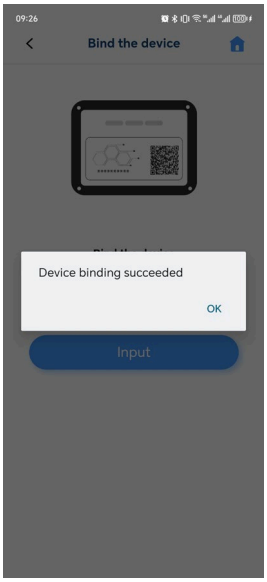
Step 3: After the network connection succeeds, choose Input and enter the IoT code to bind the heat pump. When binding succeeds, return to the main page.



Choose Input



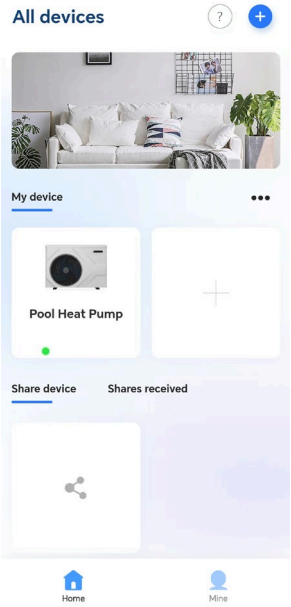
Enter the device code



Binding successful

7.5 Device Sharing

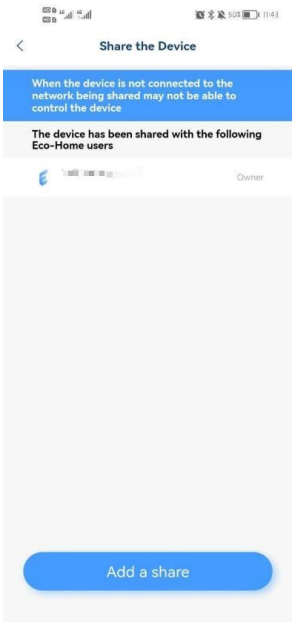
Select “Share device”, choose the heat pump you want to share, select “Add a share”, enter the Eco-Home account to be shared with, and confirm the share.



Select Share device



Choose the heat pump



Add a share

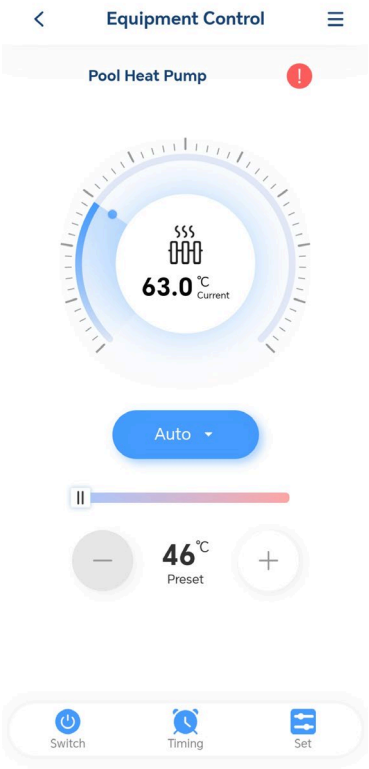


Enter the Eco-Home account

7.6 Software Function Operation

- After the device has been bound successfully, open Eco-Home and enter the heat pump operation interface. The device name can be modified.
- From the Eco-Home main interface, tap the heat pump to open the operating screen.

Heating & Cooling

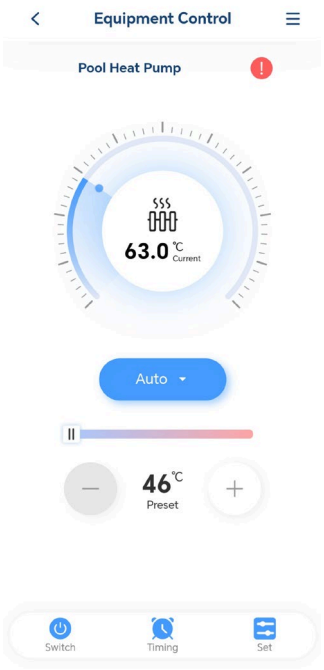


Eco-Home heat pump operating screen

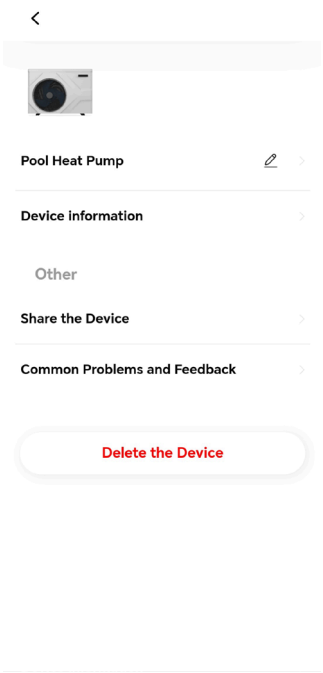
1. Current temperature
2. Mode settings
3. Target temperature setting
4. Total ON/OFF
5. Timer ON/OFF
6. Set
7. Fault information
8. More settings

7.7 Modify Device Name / Delete Device

Open the device details from the heat pump operating screen. Select “Device Name” to rename the heat pump. Select “Delete the Device” to remove it from the Eco-Home account.



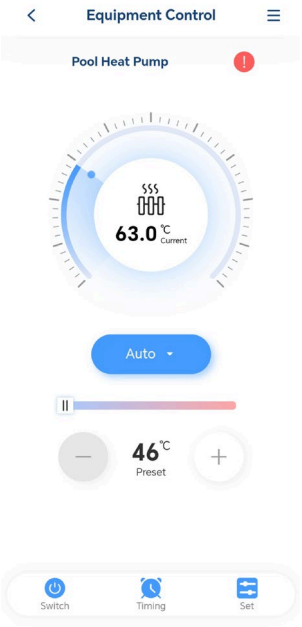
Heat pump operating screen



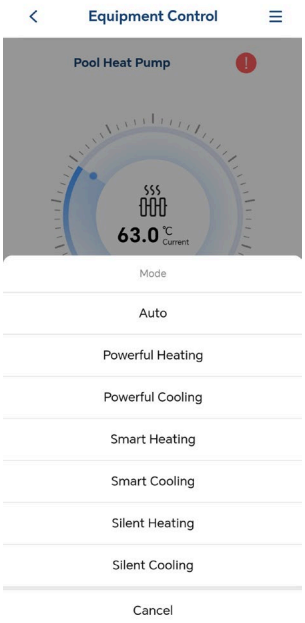
Device details

7.8 Mode Settings

Select the operating-mode control, then choose the required heat pump mode from the list.



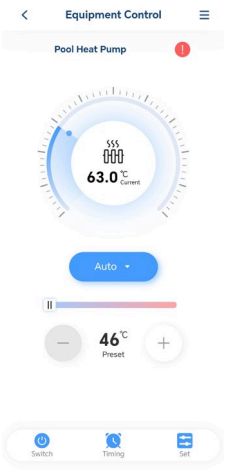
Open Mode settings



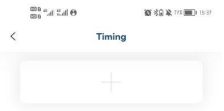
Select the required mode

7.9 Timing

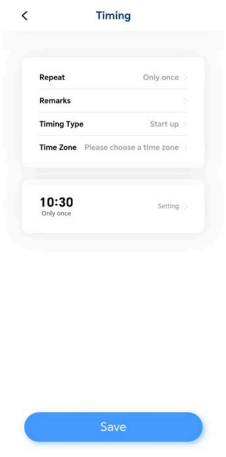
Select “Timing”, choose “+”, set the required timer details and then save the timer.



Open Timing



Add a timer

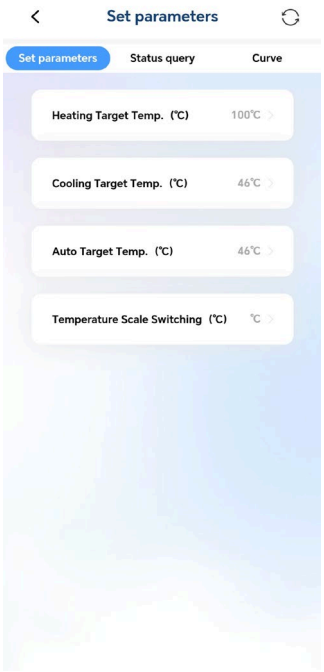


Set and save the timer

7.10 Set Parameters

Set Target Temp.

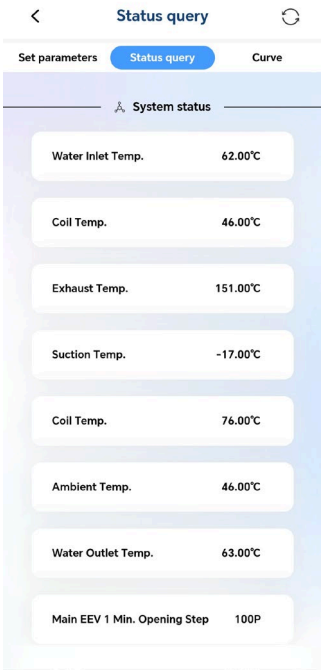
Eco-Home supports adjustment of the Cooling target temperature, Heating target temperature, Auto target temperature and temperature units. When the temperature unit is changed, the controller re-reads the main board and uploads the values to the app.



Set target temperatures and temperature units

Status Query

Use Status Query to view system status and module status.



System status query

Temperature Curve

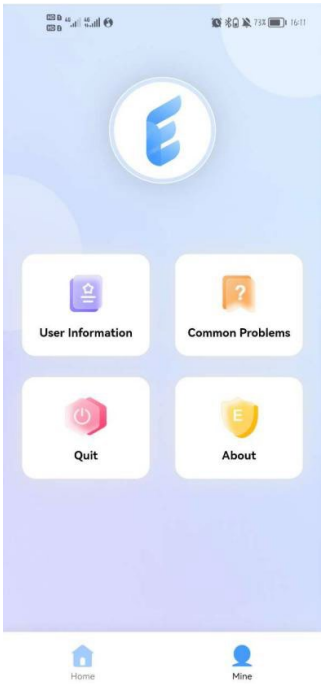
The temperature curve displays Water Outlet Temperature, Inlet Temperature and Ambient Temperature. The curve updates in real time.



Temperature curve

7.11 Mine

Select “Mine” to access user information, common problems, About information and logout.



Eco-Home Mine screen

PART 4

Warranty

Warranty periods, Australian Consumer Law, conditions and after-sales support.

8. Warranty

Insnrg products are designed and manufactured to high standards of performance.

Australian Consumer Law

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Warranty period and conditions

Insnrg Techne Pty Ltd (the Company) warrants to the original retail purchaser that this product shall be free of manufacturing defects from the original invoice date, subject to the conditions below, for the following periods:

Component	Warranty period
Titanium Heat Exchanger Coil	25 years
Compressor	10 years
Fan, fan motor, circuit boards and parts	2 years
Labour	2 years

1. The product is purchased new from an authorised Insnrg dealership in Australia.
2. The product is installed by a qualified person and in accordance with these instructions.
3. This warranty is not assignable and applies to the original retail purchaser only. The original receipt, invoice or other proof of purchase must be retained and produced if required by the Company.
4. Nothing in this warranty applies to defects caused by misuse or abuse, neglect, accident, extremes of climate, dampness, humidity, reasonable fair wear and tear and/or causes other than defects in manufacturing and materials. Proper care and maintenance requirements in this manual must be followed.
5. Where a defect is physically visible or otherwise affects the exterior surfaces of the product, you must notify the Company of such defect within fourteen (14) days from the date of purchase.
6. If the product is bought as a demonstration, refurbished, ex-rental, discontinued or otherwise previously unboxed unit, the warranty applicable shall be limited to 6 months.

After-sales support

Insnrg provides local technical and field service support. When requesting service, have the model, serial number, installation date, installer details and any displayed fault code available.

Thanks again for purchasing some of our unique Australian Designed and Manufactured Pool and Spa Equipment

We know that you will get many years of enjoyment from this product.

Insnrg loves to design and manufacture unique, energy-efficient appliances for filtration, treatment and making the swimming and bathing experience a joy. Our hard working pool and spa appliances do require service and maintenance from time to time so please contact us to schedule a service. If you have ideas of how you would like to see your pool or spa operate, please feel free to contact us.

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