TRIANCO

BRINGING HEAT TO LIFE

High Temperature Indoor
Air Source Heat Pump
Installation Operation and Service Manual

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING AND OPERATING THIS APPLIANCE

TO BE RETAINED BY HOUSEHOLDER

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INTRODUCTION

This manual includes the necessary information about the unit. Please read this manual carefully before you install, operate, and maintain the unit. This manual is intended for professional installers.

By Fitting this Activair High Temperature Air Source Heat Pump, you agree:

- **The unit has been received in good condition.**
- **You have carried out a heat loss calculation, consulted the heat pumps data and are sure that this heat pump is suitable.**
- **You have carried out a load and voltage test to determine the correct size of breaker to be used.**
- **You meet the requirements of the appropriate Building Regulations.**

HEALTH AND SAFETY

INFORMATION FOR THE USER, INSTALLER AND SERVICE ENGINEER

Under the Consumer Protection Act 1987 and the Health and Safety at Work Act 1974, it is a requirement to provide information on substances hazardous to health (COSHH Regulations 1998).
TR Engineering takes every reasonable care to ensure that its products are designed and constructed to meet these safety requirements when the products are professionally installed and used. To fulfil the requirements, products are comprehensively tested and examined before despatch.
When working on the appliance, it is the responsibility of the user or engineer to ensure that personal protective clothing or equipment appropriate to parts that could be considered hazardous or harmful is worn.

This appliance may contain some of the items below:

Glass rope, mineral wool, insulation pads, ceramic fibre, and glass insulation.
When handling, avoid inhalation and contact with eyes. These may be harmful and cause irritation to the skin, eyes, nose, or throat. Use disposable gloves, face masks and eye protection.
After handling, wash hands and other exposed areas. When disposing of materials, limit dust and the risk of inhalation by using water spray. Ensure materials are securely wrapped.
Seek urgent medical attention if inhaled or ingested. Exposure to eyes and skin should be followed by immediate cleansing of the affected areas and medical attention if necessary.

Glues, Sealants and Paints
The glues, sealants and paints used present no known hazards when the appliance is used in the manner for which it is intended.

This Activair High Temperature Heat Pump uses R290 refrigerant.
Precautions should be taken when installing and working on appliances that contain R290 refrigerant.

SAFETY PRECAUTIONS

To Prevent Injury to the user, other people, or property damage the following instructions must be followed.

Incorrect operation due to ignoring of instructions may cause harm or damage.

Install the unit only when it complies with local regulations, by-laws, and standards. Check the mains voltage and frequency. This unit is only suitable for earthed supplies.

The following safety precautions should always be considered:
- Be sure to read the following WARNING before installing the unit.
- Be sure to observe the cautions specified here as they include important items related to safety.
- After reading these instructions, be sure to keep it together with the manual in a handy place for future reference.

⚠ WARNING

Only to be installed by a professional person.
Incorrect installation could cause injury due to fire, electric shock, the unit falling or leakage of water. Consult the dealer from whom you purchased the unit or a specialized installer.

Install the unit securely in place.
When insufficiently installed, the unit could fall causing injury.

Use the specified electrical wires and attach the wires firmly to the terminal board (connection in such a way that the stress of the wires is not applied to the terminals).
Incorrect connection and fixing could cause a fire.

Be sure to use the provided or specified parts for the installation work.
The use of defective parts could cause an injury due to fire, electric shocks, the unit falling etc.

Perform the installation securely and please refer to the installation instructions.
Incorrect installation could cause an injury due to fire, electric shocks, the unit falling, leakage of water etc.

Perform electrical work according to the installation manual.
If the capacity of the power circuit is insufficient or there is an incomplete electrical circuit, it could result in a fire or an electric shock.

The unit must always have an earthed connection.
If the power supply is not earthed, you may not connect the unit.

Never use an extension cable to connect the unit to the electric power supply.
If there is no suitable, earthed supply available, have one installed by a qualified electrician.

Do not move/repair the unit yourself.
Improper movement or repair on the unit could lead to water leakage, electrical shock, injury, or fire. Have any repairs and/or maintenance only carried out by a recognized service engineer.

Do not plug or unplug the power supply during operation.
Risk of fire or an electric shock.

Do not touch/operate the unit with wet hands.
Risk of fire or an electric shock.

Do not place a heater or other appliances near the power cable.
Risk of fire or an electric shock.

Be cautious that water could not be poured into the product directly, do not allow water to run into electric parts.
Risk of fire or an electric shock.

If the supply cable is damaged, it must be replaced by qualified person to avoid a hazard.

This appliance has not been designed for use by persons (including children) with reduced physical, sensorial, or mental faculties or by persons without any experience or knowledge of heating systems, unless they act under the safety and supervision of a responsible person or have received prior training concerning the use of the appliance.

Children should be supervised to ensure that they do not play with the appliance.

IF THE PRODUCT IS NOT TO BE USED FOR AN EXTENDED PERIOD OF TIME, WE STRONGLY RECOMMEND NOT TO SWITCH 'OFF' THE POWER SUPPLY OF THE UNIT.

IF THE POWER IS NOT SUPPLIED, THE ANTI-FREEZE FUNCTION WILL NOT BE PERFORMED.

CAUTION

Do not install the unit in a place where there is a chance of flammable gas leaks.
If there is a gas leak and gas accumulates in the area surrounding the unit, it could cause an explosion.

Perform the drainage/piping work according to the installation instruction.

Do not clean the unit when the power is 'on.'
Always shut 'off' the power when cleaning or servicing the unit. If not, it could cause electrical shock.

Do not continue to run the unit when there is a suspected fault.
The power supply needs to be shut 'off' to stop the unit; otherwise, this may cause an electrical shock or fire.

Be cautious when unpacking and installing the product.
Sharp edges could cause injury. Especially watch the edges and the fins on the heat exchanger of the product.

Always check for gas (refrigerant) leakage after installation or repair of product.
Low refrigerant levels may cause failure of the product.

Keep level even when installing the product.

Do not place hands or fingers into the fan, or evaporator.
The ventilator runs at high speed; this could cause significant injury.

Keep the unit upright, even when transporting and installing the product.

TR ENGINEERING LTD CUSTOMER AFTER SALES SERVICE INFORMATION

The Heat Pump comes with a 5 Year warranty, providing the Heat Pump is registered within 30 days from the date of installation. 3 Years Parts and Labour, Years 4 and 5, Parts only. Register online at:
www.trianco.co.uk/product-registration
Terms and Conditions apply, please see Trianco web site for details.
The Heat Pump must be serviced annually by a suitably qualified MCS registered Heat Pump Engineer to qualify for warranty after the first year.

Please note you will require the full Heat Pump serial number to be able to register the unit. The serial number is located on the right-hand side of the Heat Pump and can also be found on the box the Heat Pump came in.

A step-by-step guide to reporting a fault with your appliance.

A qualified field SERVICE ENGINEER is available to attend a breakdown or manufacturing fault occurring whilst the appliance is under warranty.
The appliance must be made available for service during normal working hours, Monday to Friday (no weekend work or bank holidays accepted).

A charge will be made where:

- Our Field Service Engineer finds no fault with the appliance.
- The cause of a breakdown is due to other parts of the plumbing/heating system or with equipment not supplied by TR Engineering Ltd.
- Where the appliance falls outside the warranty period.
- The appliance has not been correctly installed, as recommended (see installation, operating and servicing instructions.)

NOTE: Over 50% of all service calls made are found to have no appliance fault.

What to do in the event of an appliance fault or breakdown:

Step 1: Always contact your installer in the first instance, who must thoroughly check all their work PRIOR to requesting a service visit from TR Engineering LTD.

Step 2: If your appliance has developed an in-warranty fault your installer should contact TR Engineering LTD for assistance from site. Please quote the serial number at the beginning of the call.

What happens if my Installer/engineer is unavailable?

Step 3: Contact TR Engineering LTD. We will provide you with the name and telephone number of our Service Agent. However, a charge may apply if the fault is not covered by the appliance warranty (payment will be requested on site by our independent Service Agent).

PLEASE NOTE: UNAUTHORISED INVOICES FOR ATTENDANCE AND REPAIR WORK CARRIED OUT ON THIS APPLIANCE BY ANY THIRD PARTY WILL NOT BE ACCEPTED BY TR ENGINEERING LTD

SERVICE CENTRE AND TECHNICAL SUPPORT
Tel: 0114 257 2300 Fax: 0114 257 1419
Hours of Business
Monday to Friday 8.30am - 5pm

Choosing the correct size unit.

Sizing the heat pump is extremely important.

Match the correct heat pump for the heat requirement.
Pay attention to the heat pump output at lower ambient temperatures.
Pay attention to the heat pump output at Higher flow temperature settings.

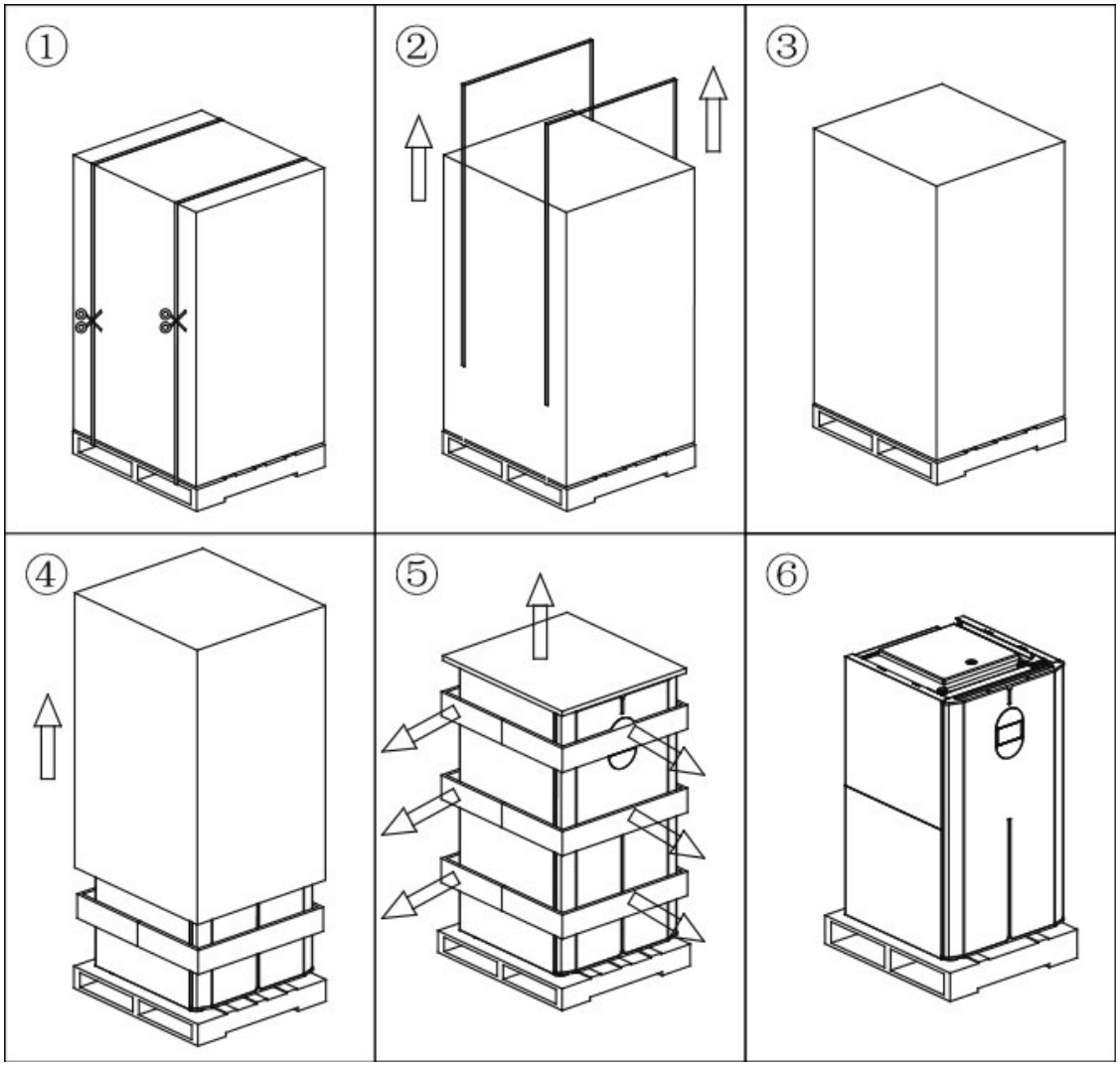
Max. Heating Capacity (kW)									
Water outlet(℃)	-15	-10	-7	-5	2	7	10	15	20
35	4.11	4.59	4.80	4.80	4.80	4.80	4.80	4.80	4.80
45	3.93	4.42	4.80	4.80	4.80	4.80	4.80	4.80	4.80
50	3.75	4.13	4.63	4.80	4.80	4.80	4.80	4.80	4.80
55		3.76	4.44	4.53	4.80	4.80	4.80	4.80	4.80
60					4.53	4.80	4.80	4.80	4.80
Power Input (kW)									
Water outlet(℃)	-15	-10	-7	-5	2	7	10	15	20
35	1.97	2.08	1.85	1.70	1.22	1.10	1.03	0.91	0.80
45	2.15	2.20	2.15	1.95	1.47	1.30	1.21	1.09	0.93
50	2.29	2.19	2.30	2.04	1.70	1.47	1.39	1.25	1.05
55		2.24	2.27	2.17	1.96	1.68	1.52	1.37	1.19
60					2.19	1.98	1.78	1.52	1.40
COP(kW/kW)									
Water outlet(℃)	-15	-10	-7	-5	2	7	10	15	20
35	2.09	2.21	2.59	2.82	3.92	4.36	4.67	5.27	6.02
45	1.83	2.01	2.23	2.46	3.27	3.68	3.97	4.42	5.17
50	1.64	1.89	2.01	2.35	2.83	3.26	3.45	3.85	4.55
55		1.68	1.96	2.09	2.45	2.85	3.15	3.51	4.02
60					2.07	2.42	2.69	3.15	3.44

Unpacking

1. Cut the straps around the outer packaging and carton.
2. Remove the outer packaging straps.

3-4 Slide the carton upwards.

5. Remove the honeycomb cardboard packing.

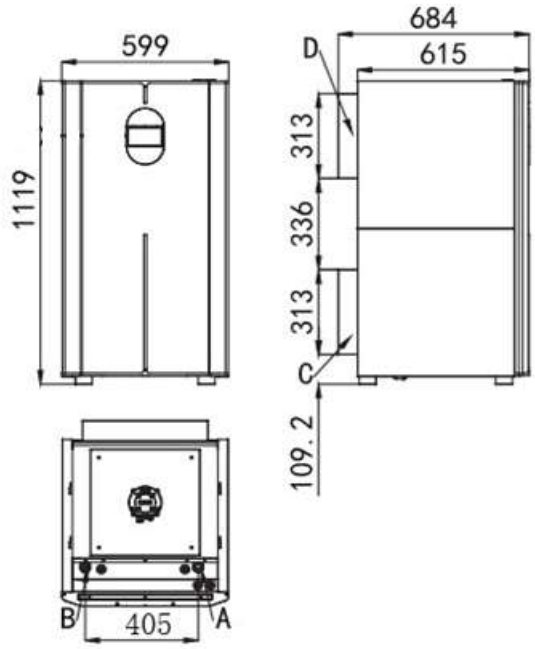


Inspect the unit for damage. Any damage or missing parts must be reported immediately.

Supplied Components

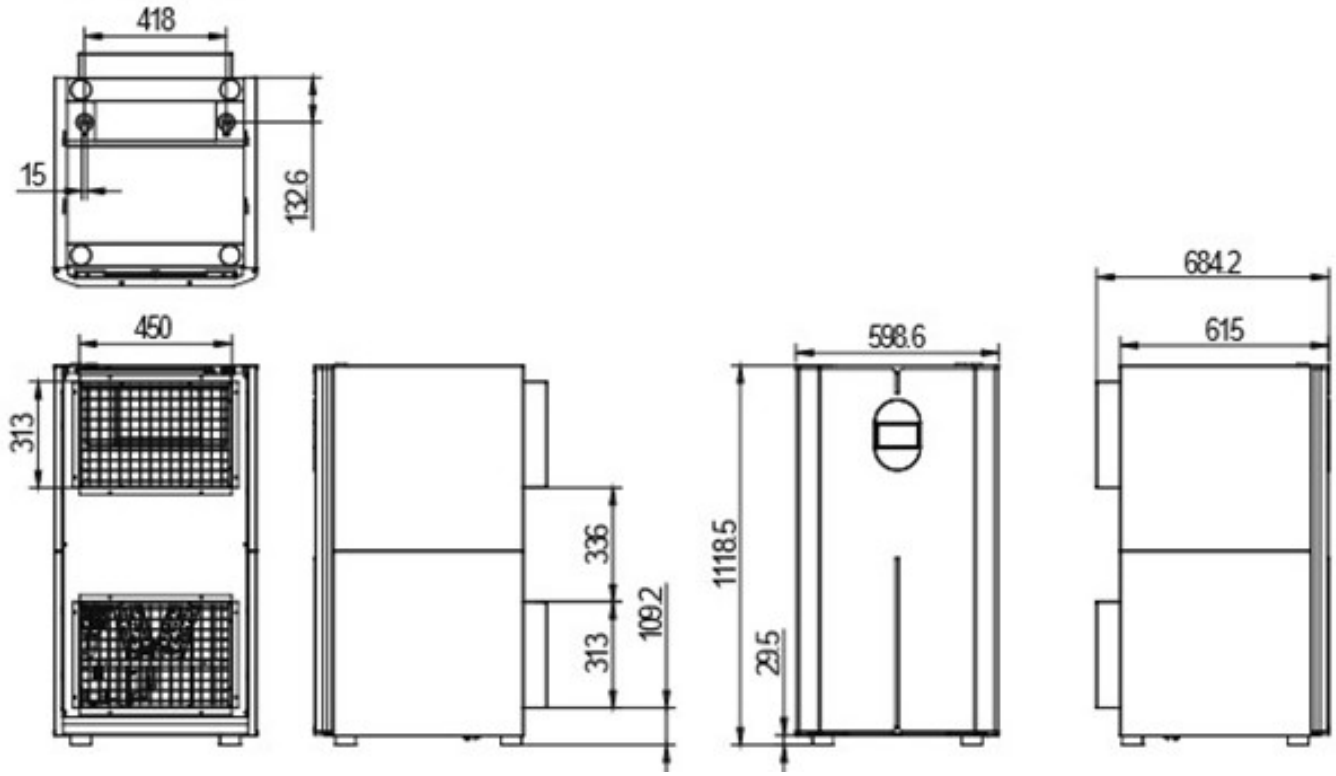
1 x User Manual
2 x Drain connector
2 x Drainage pipe
2 x Temperature Sensor
1 x WiFi Module

Unit Dimensions

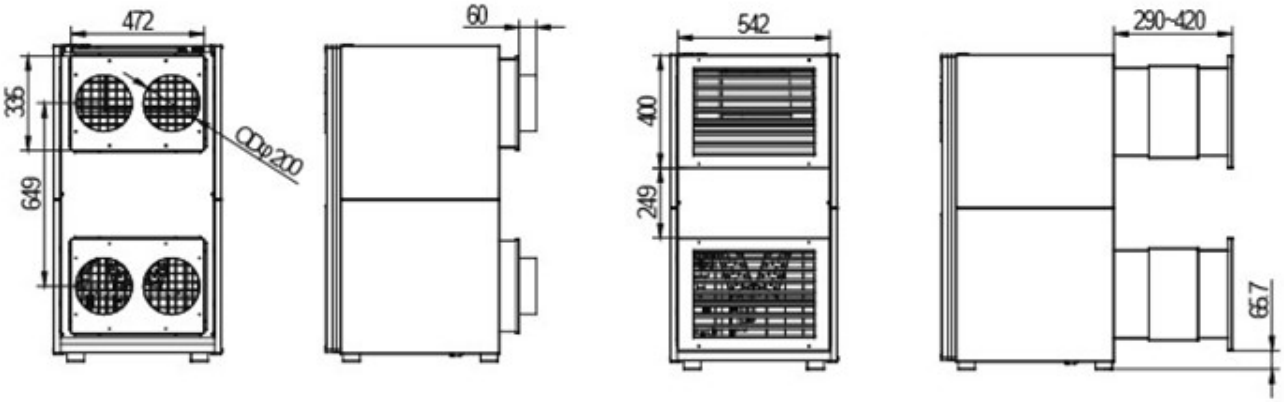


A Water Inlet
B Water Outlet
C Air Inlet
D Air Outlet

Without Ducting

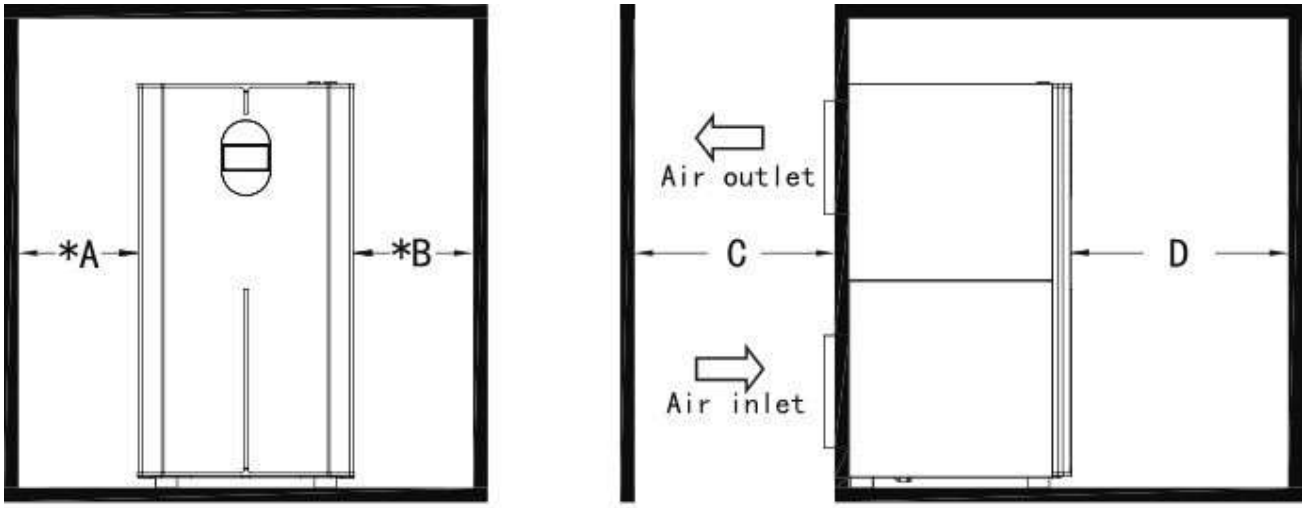


Circular Duct **Square Duct**



Installation Space and Clearances

The unit can only be installed indoors.
The location must have good ventilation.
The area should be free from heat radiation and open flames.
The location should be away from gas appliances, electric heaters and any other potential source of ignition.



A = 200mm
B = 200mm
C = 1500mm
D = 500mm
*****Side clearances are for extraordinary maintenance and can be reduced to **50mm**.
The reduced clearance will not affect servicing and general maintenance.
Please maintain adequate clearance from surrounding objects to avoid condensation resulting from the unit's low surface temperature.

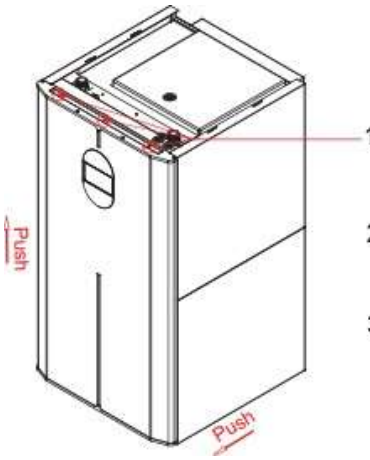
The equipment should be installed, operated and stored in a room with an area no less than 4.5 cubic meters.

As standard the units are configured with square air duct.
If you need to convert it to a circular air duct, the following points must be guaranteed.

1. Use round air ducts with an inner diameter of 200mm.
2. The length of the round air duct is less than 5 meters.
3. No elbows are allowed when installing air ducts.

Front Panel Removal

Pull the lid forwards and lift upwards



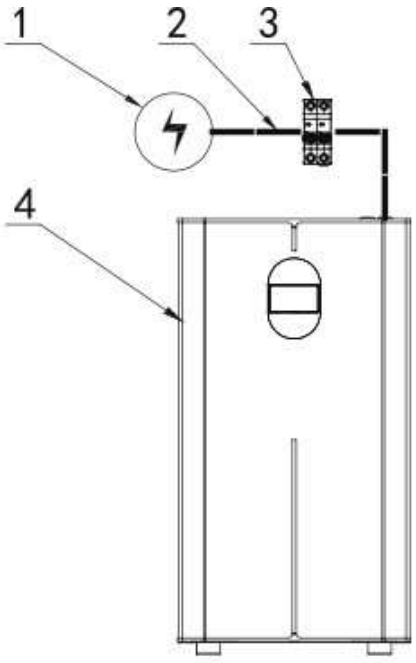
1. Remove 3*screws from the top of the unit.

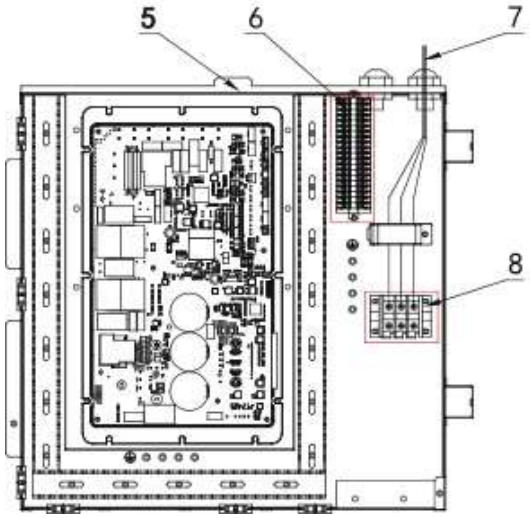
2. Push the front panel from bottom to top.

3. Remove the front panel.

Power Supply Connection

1. Power supply 220-240V~/50Hz
2. Power cable
3. Protection switch(by installer)
4. Heat pump unit

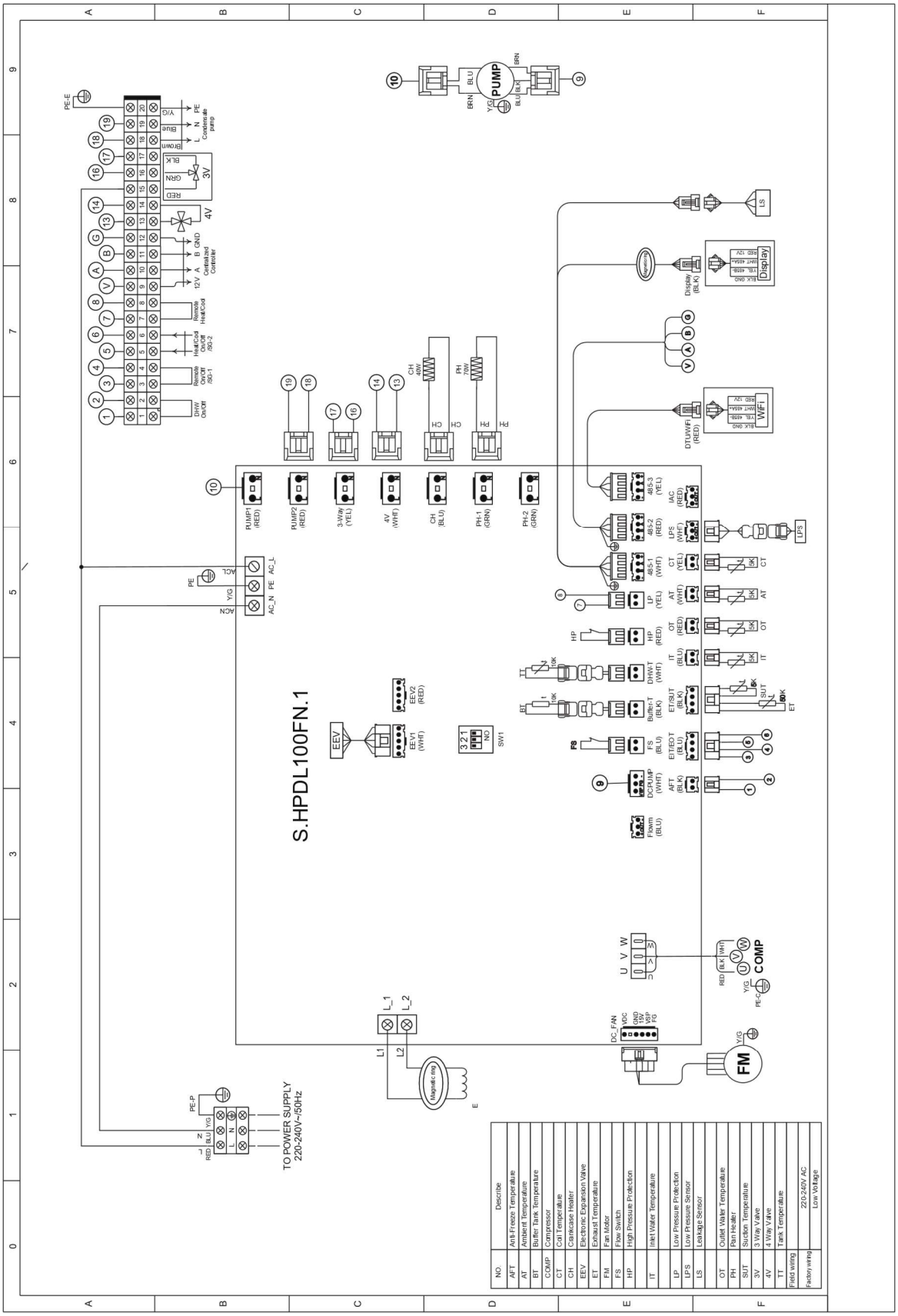




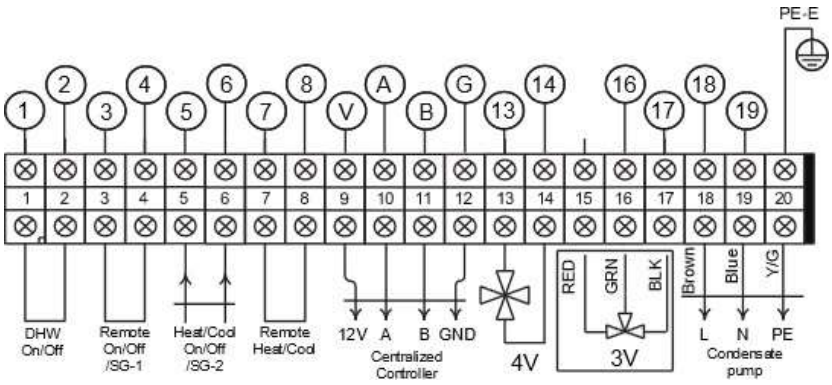
5. Electrical box assembly
6. External load connection terminal
7. Power cable
8. Power connection terminal block

The power cable type should be H05RN-F or above.
A Type B RCD or RCBO must be used.
A suitable double pole isolator should be located in close proximity above the unit.

Electrical Wiring Diagram



Electrical connections



Terminals 1 to 8 are **VOLT FREE.**

Terminals 1 & 2 should be connected to a volt free timer for domestic hot water control.

Terminals 3 & 4 should be linked.

Terminals 5 & 6 should be connected to volt free heating controls.

Terminals 7 & 8 should be linked if external controls are being used.

3 Port Diverter valve.

Terminal 15 – Permanent Live
Terminal 16 – Switched Live
Terminal 17 – Neutral

Condensate Pump. (If required)

Terminals, 18, 19 and 20 -
If a permanent live is required for the condensate pump, Terminal 15 can be used. 500w Max

Temperature Sensors

The unit comes supplied with two NTC type temperature sensors for Heating labelled BT and Hot water labelled TT which are located at the top of the unit. Sensor cables can be extended up to a maximum of 50m.

The Domestic hot water sensor (TT) should be routed to the cylinder and located inside a dry pocket.
Heat transfer paste must be used to ensure the sensor has optimal contact with the wall of the dry pocket. Failure to use heat transfer paste can lead to incorrect domestic hot water temperature readings.

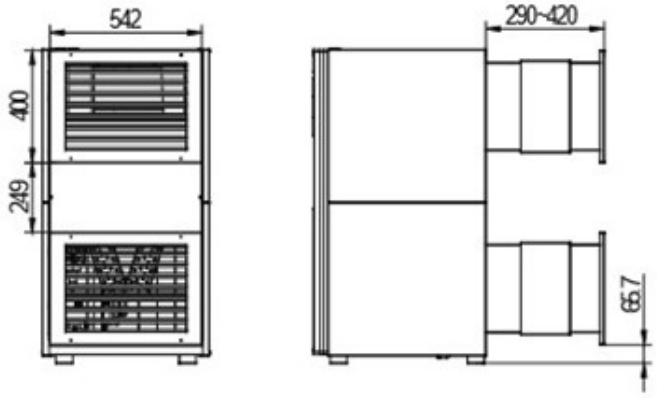
BT = Buffer Tank/Room Temperature
TT = DHW Cylinder

The heating sensor (BT) can be used if the system incorporates a buffer tank. The sensor should be routed to the buffer and located inside a dry pocket. Heat transfer paste must be used.
When not using a buffer, the sensor should be left connected and stored at the top of the unit. On commissioning, operating parameters can be changed to allow the unit to sense return water temperature.

Ducting

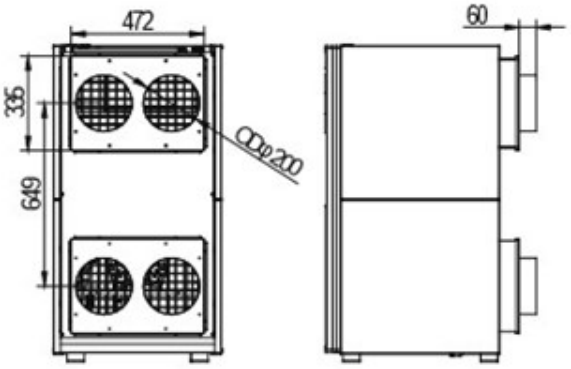
Inlet and outlet spigots are located at the rear of the unit.
Outlet Air– Top.
Inlet Air – Bottom.

Square Duct



Square duct cannot be extended beyond its maximum extension length.

Round Duct



Use circular duct with an inner diameter of 200mm.
Circular duct length should be no more than 5m to avoid reducing the units heating capacity.
No elbows are allowed on circular ducting.
We would recommend insulating both outlet and inlet ducting.

Minimum Air flow - 380 m^3/h

System Requirements

All systems should have the relevant system components, e.g., Isolation valves, system filter, strainer, drain cock, expansion vessel, air vents and comply with the following British Standards.

It is the installers responsibility to ensure the installation complies with the relevant standards.

BS EN 12828 – Heating systems in buildings: Design for water-based heating systems.
BS EN 12831 – Heating systems in buildings: Method for calculation of the design heat load.
BS EN 14336 – Heating systems in buildings: Installation and commissioning of water-based heating systems.
BS7671 – Requirements for electrical installations. IEE wiring Regulations. Seventeenth Edition.
BS EN 7593 – Code of practice for treatment of water in heating systems.

The Building Regulations: Part 'L' (Northern Ireland)
Current I.E.E. Regulations
Local water undertaking By-laws.

System

Relevant Heating and Hot water controls will be required to complete the system dependant on system type.
All Pipe work should be flushed before connecting the heat pump.
All air should be removed from the system. Air vents should be installed at all high points in the system.
All pipework must be insulated to MCS standards.
The system should be treated with a suitable inhibitor.

Isolation Valves

Full bore Isolation valves must be fitted on both the flow and return pipe work.
Warranty work will not be undertaken if not fitted.

Pressure Gauge

A pressure gauge must be permanently fitted in the system covering a range from 0 to 4 bar. Position where it can be seen when filling the system.

System Makeup

Provision can be made by pre-pressurisation of the system via a temporary hose connection and through a double check valve (non-return) and stop valve.
There must be no permanent connection to the mains water valve supply even through a non-return valve.

Drain Tapping

A drain tapping must be provided at the lowest point of the system, which will allow the entire system to be drained.

In-Line Filter/Strainer

An in-line strainer and Magnetic type system filter must be fitted on the return pipework close to the heat pump.

Condensate

The condensate can be routed to a sewer, soakaway, or condensate pump.
Any discharge should not be allowed to freeze.
Care should be taken when utilising a soakaway, condensate should discharge onto a gravel bed at least 900mm below the ground level to avoid freezing.
Any condensate pipework that runs either vertically or horizontally should be protected from freezing. This might include the use of electrical trace heating.

Expansions Vessel Capacity

The expansion vessel should be a diaphragm type expansion vessel, conforming to the current issue of BS 4814.
The expansion vessel must be connected to the system at a point close to the inlet side of the circulating pump. The expansion vessel volume depends on the total water system volume and the initial system design pressure. For any system an accurate calculation of vessel size is given in the current issue of BS 5449 and BS 7074 Part 1.
Note: A higher initial design pressure requires a larger Volume expansion vessel.

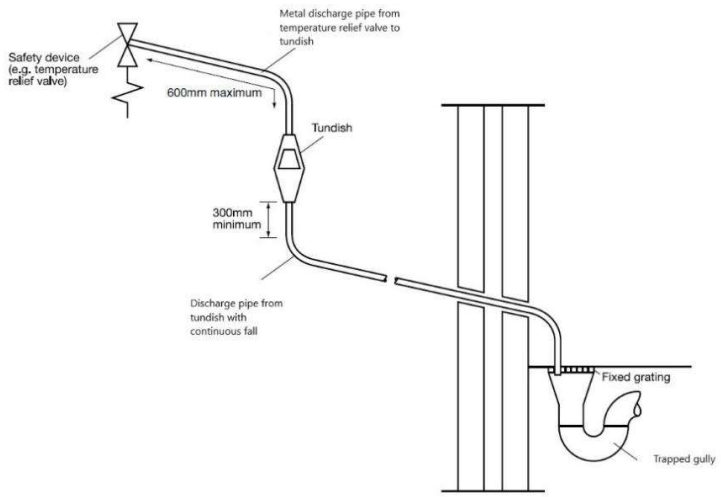
The charge pressure must not be less than the static head of the system that is the highest point of the system above the expansion vessel.
The maximum running temperature of the system is 70°C. It is recommended that this figure be used in the calculations of vessel size.

Where design information is not complete the following chart can be used for selecting the size of the vessel.

Safety valve setting (bar gauge)	3 bar		
Vessel charge and initial system pressure (bar gauge)	0.5	1.0	1.5
Total water content of system	Vessel volume		
Litre	Litre	Litre	Litre
25	2.3	3.3	5.9
50	4.4	6.7	11.8
75	7.0	10.0	17.7
100	9.4	13.4	23.7
125	11.7	16.7	29.6
150	14.1	20.1	35.5
175	16.4	23.4	41.4
200	18.8	26.8	47.4

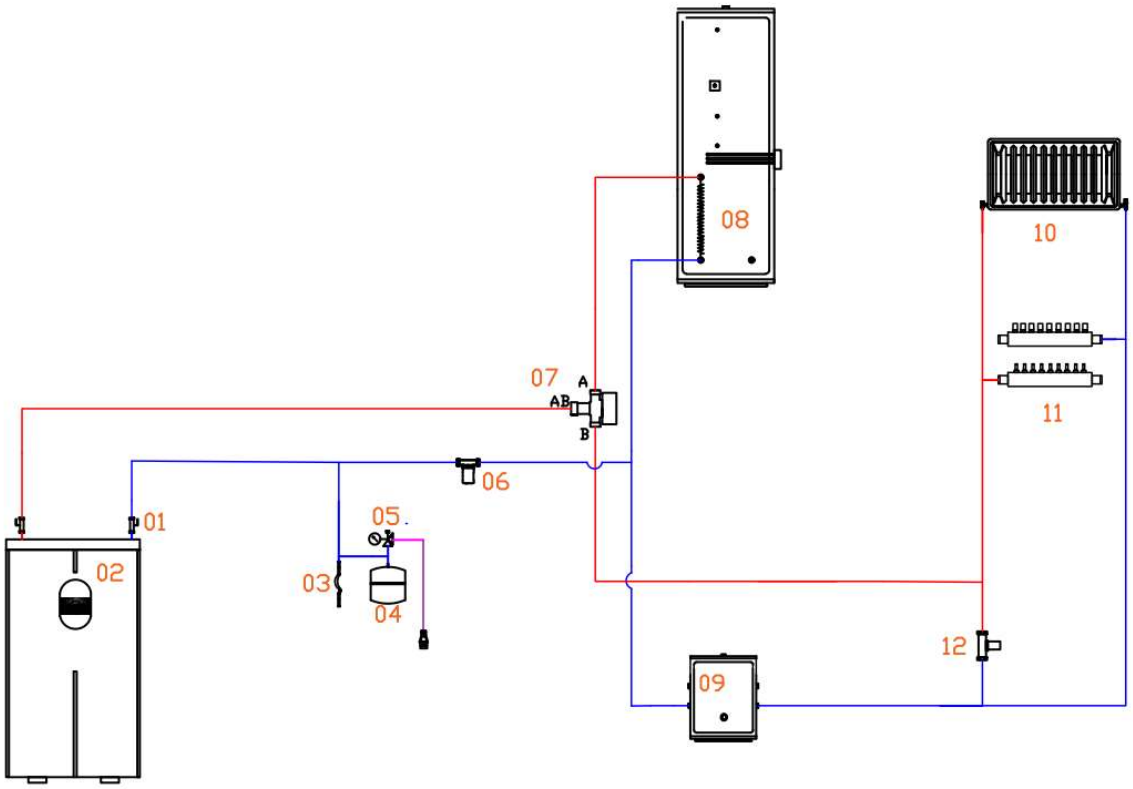
Safety Valve

A safety valve set at 3 bar should be fitted with the drain routed to the outside of the building. The drain must not discharge above an entrance or a window or any public access area, be clear of any electrical fittings and positioned so that any discharge can be seen.



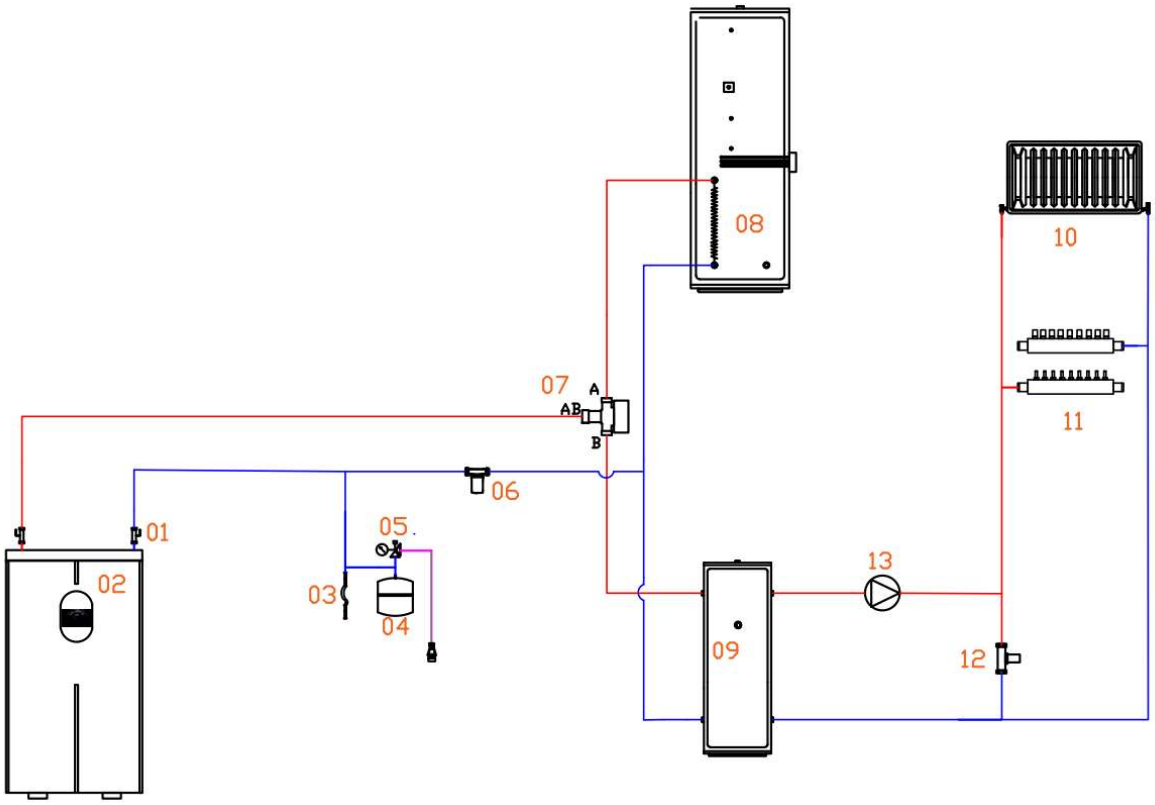
System Schematics

Volumiser and Hot Water Cylinder



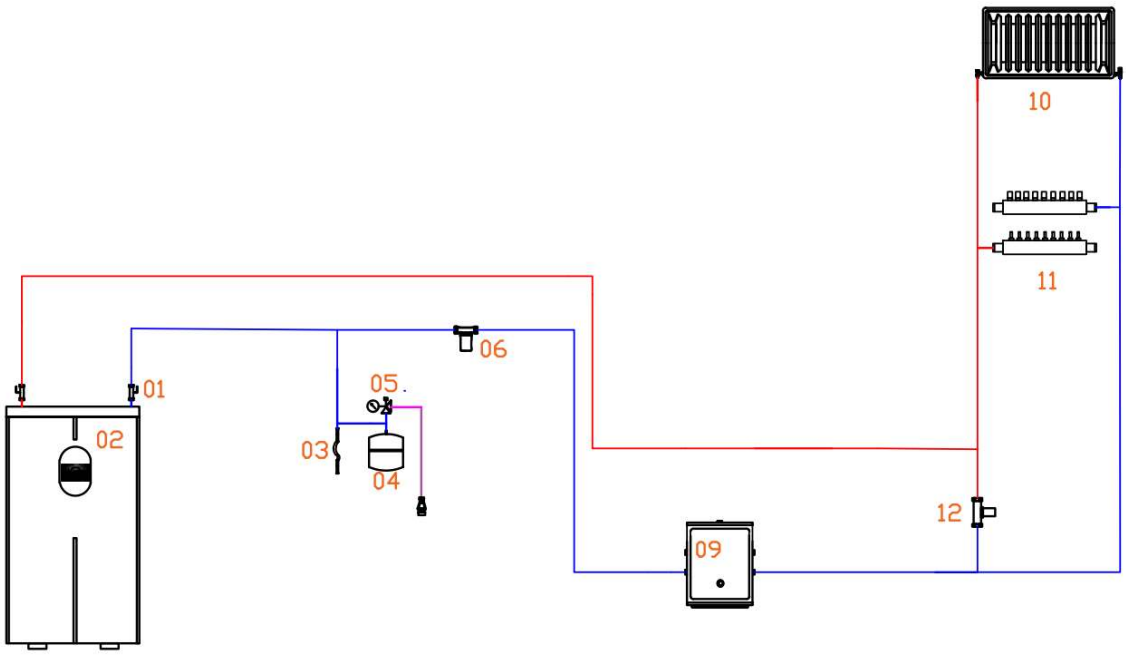
01 – Isolation Valves
02 – Heat Pump
03 – Filling Loop
04 – Expansion Vessel
05 – Pressure Gauge
06 – Magnetic Filter
07 – Diverter Valve
08 – DHW Cylinder
09 – Volumiser
10 – Zone 1
11 – Zone 2
12 – Auto Bypass Valve

Buffer and Hot Water Cylinder



01 – Isolation Valves
02 – Heat Pump
03 – Filling Loop
04 – Expansion Vessel
05 – Pressure Gauge
06 – Magnetic Filter
07 – Diverter Valve
08 – DHW Cylinder
09 – Buffer Tank
10 – Zone 1
11 – Zone 2
12 – Auto Bypass Valve
13 – External Pump

Volumiser Heat Only



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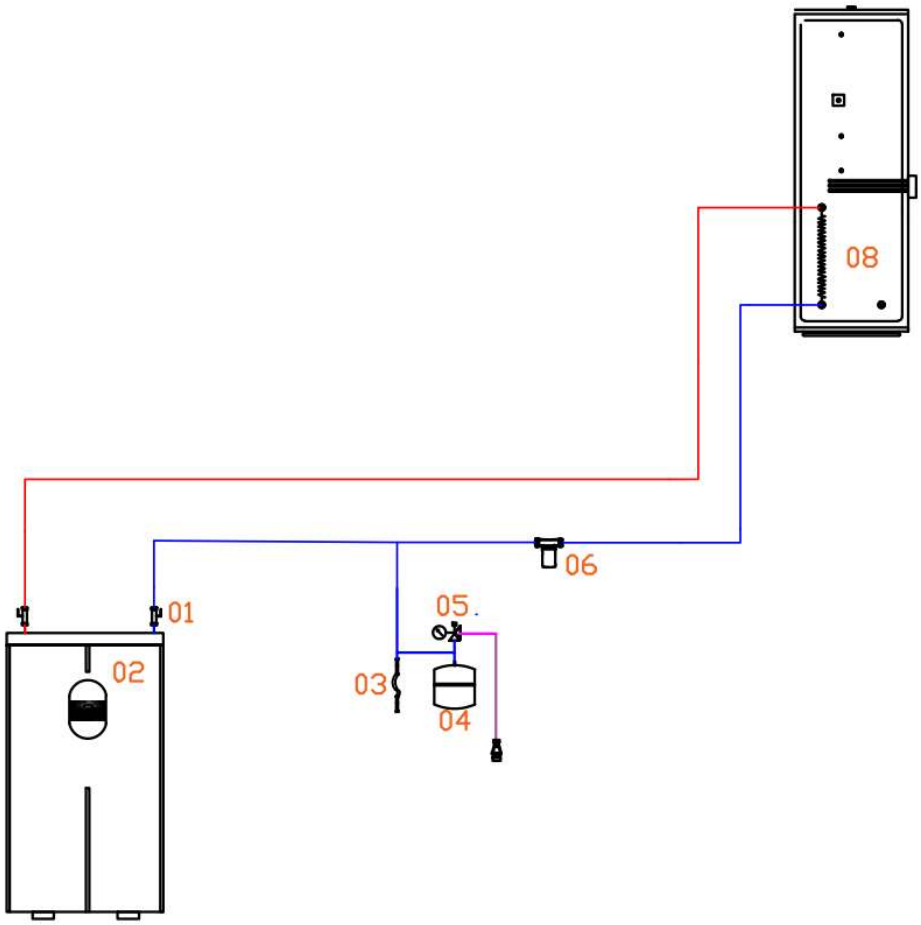
Hot Water Only



01 – Isolation Valves	02 – Heat Pump	03 – Filling Loop
04 – Expansion Vessel	05 – Pressure Gauge	06 – Magnetic Filter
07	08 – Hot Water Cylinder	

All schematics are supplied for information only and general guidance. No responsibility is accepted for any errors or omissions contained within or for any cost incurred in rectifying any work relating to it. Drain off points and AAV's to be fitted where appropriate, all applicable laws and regulations must be followed.

Existing heating distribution pipework and emitters must be power flushed before the heat pump and ancillaries are connected to the system.

Inspection Before Operation

Check all pipework and Electrical connections are correct.
Make sure the system is full of water, all relevant valves are open, and the system shows no signs of leaks.
Ensure all air has been vented from the system and the system pressure is correct.
Check the supply voltage is correct and the unit is earthed.
Review the control interface and see if there are any fault codes indicated. Reference the Fault Code list for information regarding any code shown on the display.
Make sure the sensor(s) are located in the Buffer Tank and Hot Water Cylinder depending on system configuration.

Commissioning the Heat Pump

Please complete the Commissioning form on pages 38 & 39 of this manual.

The control interface should now be set up, set the time, date, and any timer requirements.
Follow the User Interface guide on page 22

Parameters should be set for different types of installs via the user interface using passcode 22.
Alternatively contact Trianco Technical support for assistance. 01142572300 Please quote the heat pump serial number.

Typical Parameters

System Settings

H07	Control Mode
0	User Interface
1	3rd Party Controls

H25	Temperature Control Selection
0	Outlet water Temperature
1	Room Temperature
2	Buffer Tank Temperature
3	Inlet Water Temperature

H40	External Pump Selection
0	Hot water
1	Warm Water Circulation
2	Off When Defrosting
3	Heating

Hot Water Disinfection Settings

Parameter Name	Parameter Code	Parameter Value to be set
Disinfection Water Temperature	G01	60 - 70 °C
Time Duration of Disinfection	G02	60 minutes
Disinfection Start Time	G03	0 – 23h
Interval Period of Disinfection	G04	7 Days
Enable Disinfection	G05	0=N0, 1=Yes

Select the operation mode by pressing the Mode key on the control interface.

Heating – Select for controlling the temperature of the heating.

Hot Water + Heating – Select this mode only if the system is installed to allow the heat pump to control the DHW and 3 port diverter valve.

Set the target temperature.
Depending on the system configuration, you can select separate target temperatures for the Hot Water and Heating.

Start the heat pump by pressing the power symbol on the Control interface.
The internal water pump will run for approximately 1 minute followed by the fan; the compressor will then start.
Observe the unit running, check the outlet pipework for temperature increase.
Allow the heat pump to fully heat the buffer tank or system to the set temperature.

If third party controls are connected to the heat pump insure there is a demand.

Important

While the heat pump is working make sure the flow rate is correct.
The flow rate should be 0.86m3/h.

Swipe from left to right to show the status screen which will indicate actual flow rate
Insufficient flow rate will cause system issues, poor performance and poor efficiency.
Minimum stated flow rates must be observed.

App Control

The unit is supplied with a pre-installed Data Transfer Unit (DTU) to allow control of the High Temperature Heat pump via the Warm Link App.
Scan the QR code to download the app.

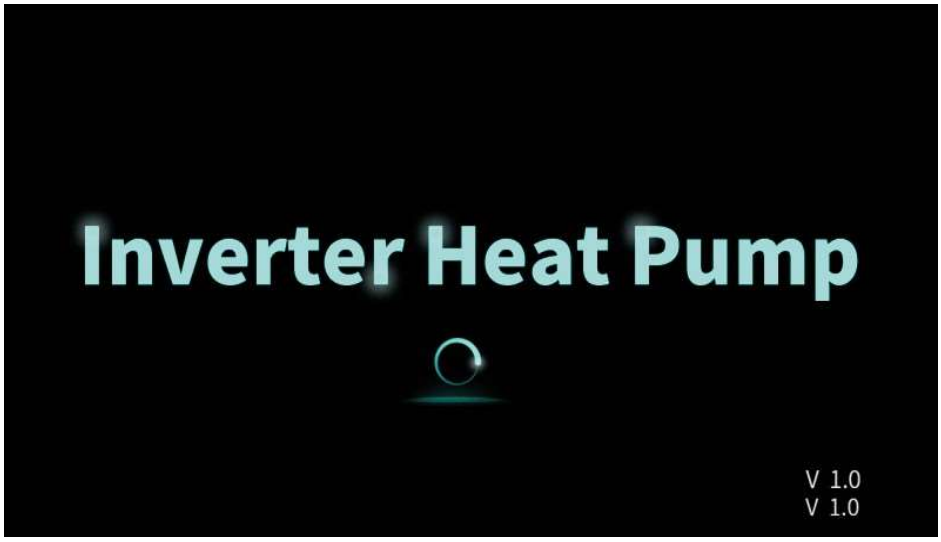
Download from the Google Play store for Android devices or Apple App Store for iOS devices.
Please see the separate User Instructions for guidance on Downloading the App, set up and operation.

Note: Data connection and DTU set up may take up to 15 minutes.
Once connection has been made, Trianco will be able to see the unit on-line via the iOT platform.
Trianco will be able to monitor and adjust settings if requested. This may become useful at the commissioning stage of the install.

User Interface Operation Guide

Main Interface Display and Function

Power on Interface.



Starting Up Interface

Main Key Functions

1. Lock Screen — Click this to lock the screen.
4. On/Off — Click this key to switch ON or OFF.
5. Temperature — Use this key to set the Target Temperature.
15. Mode Key — Used to select the operation modes. Heating. Heating + Hot Water

Other Key Functions

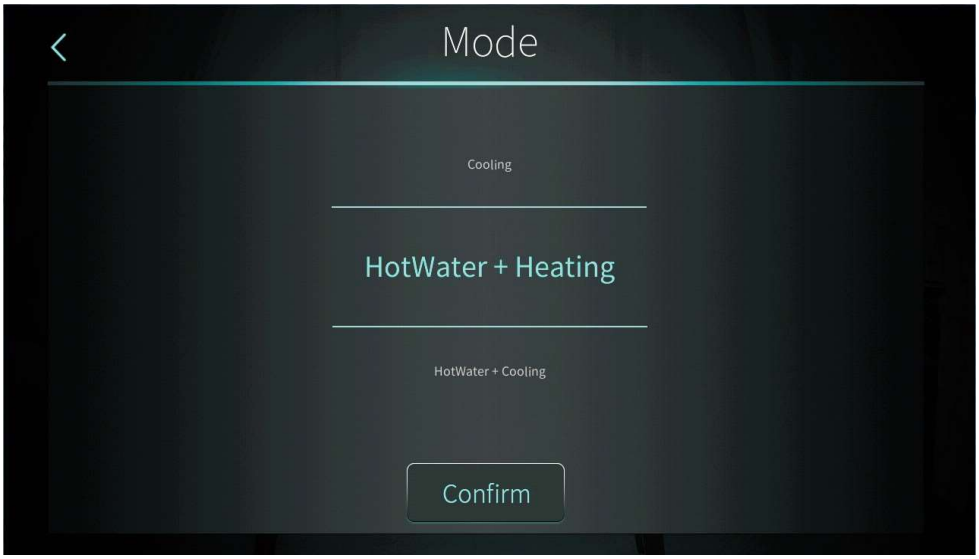
2. Home Icon — Slide left or right for other options.
3. DHW Tank Temperature — Only shown when in Hot Water Mode
6. Outlet water temperature or room temperature depending on system configuration.
7. Target Temperature
8. Fault Icon — Flashes when an error has occurred.
9. Defrost — Only visible when the unit is in defrost mode.
10. Disable Timing
11. Timer activated
12. Ambient Air Temperature
13. Time and Date
14. Current Mode

ON/OFF

Pressing the power symbol will turn the unit On or OFF

Mode

Five modes can be selected. Please consult your installer before changing the Mode.



The mode will be set depending on the system configuration.

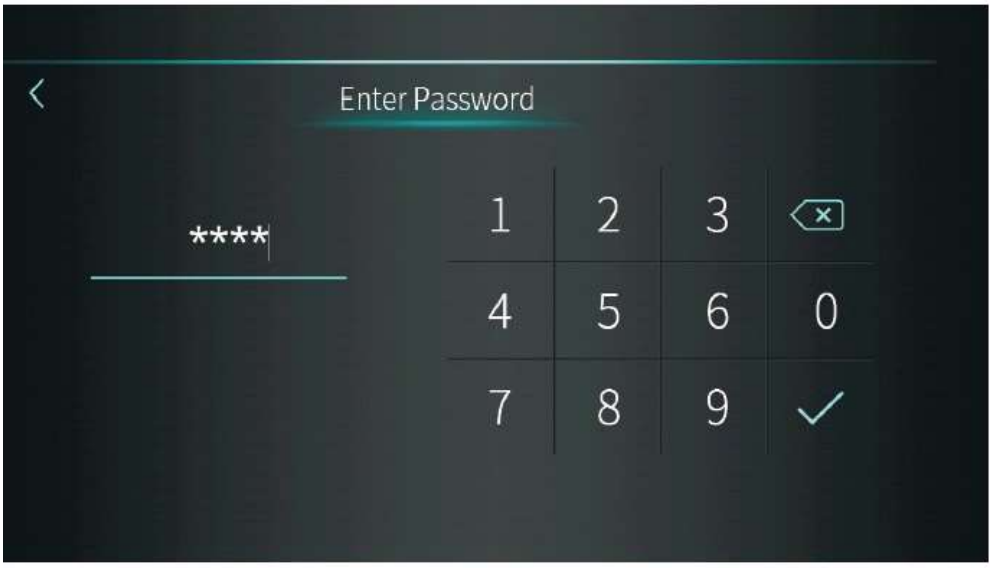
Setting Target Temperature

1 Returns the display to the Home Screen
2 Temperature can be adjusted in a clockwise or counter clockwise direction.
3 Pressing Confirm will save the set temperature.

Engineer System Settings

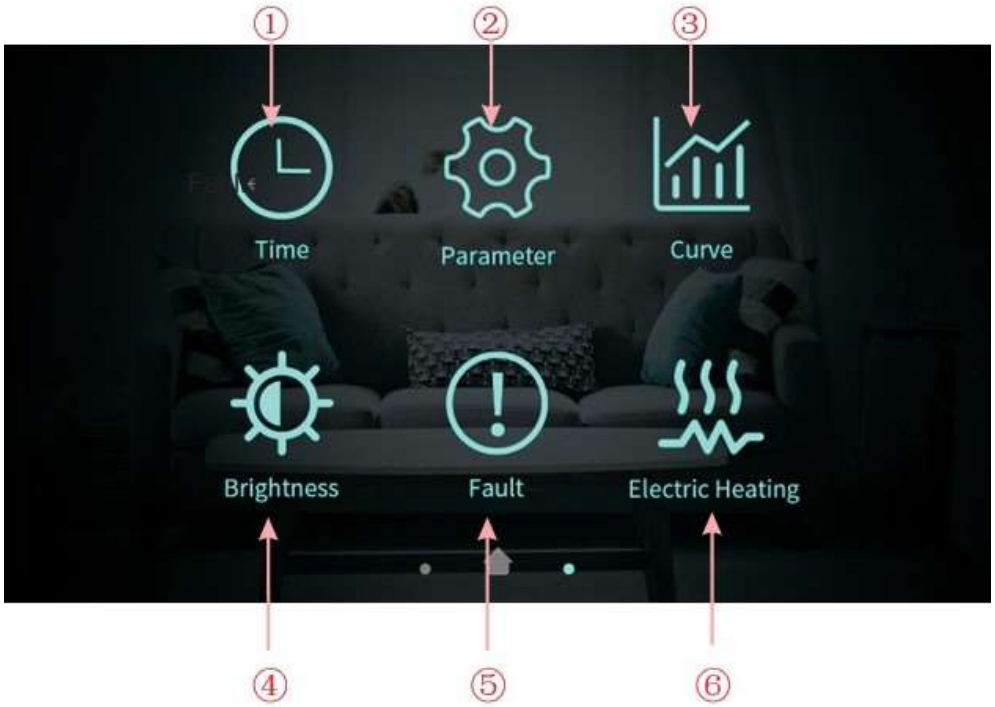
Unlocking the System Settings Menu

Press the locked padlock symbol and input the Password 022. Press the tick to unlock the Menu.
Only to be accessed by a qualified engineer in conjunction with the engineer's guide.



Changing settings within this menu can adversely affect the operation of the heat pump.

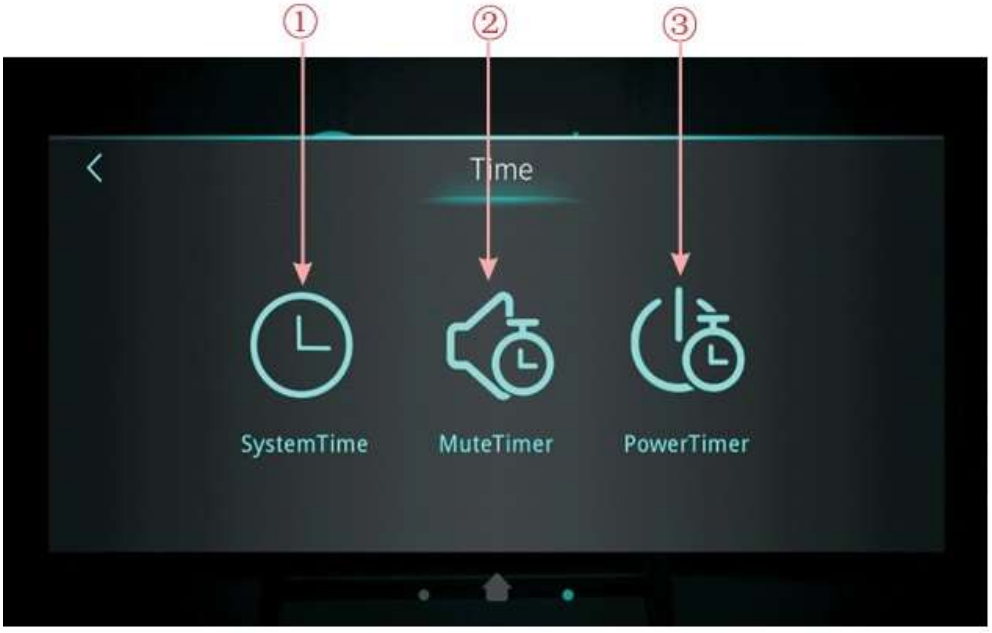
System Settings Menu



1 Time Setting
2 Factory Parameters
3 Temperature Graph
4 Screen Brightness
5 Fault History
6 One touch Electric Heating activation. (If available)

Setting the Time

Press the Time Button to enter the time setting interface. Adjust the various options by sliding up and down. Press confirm to store.



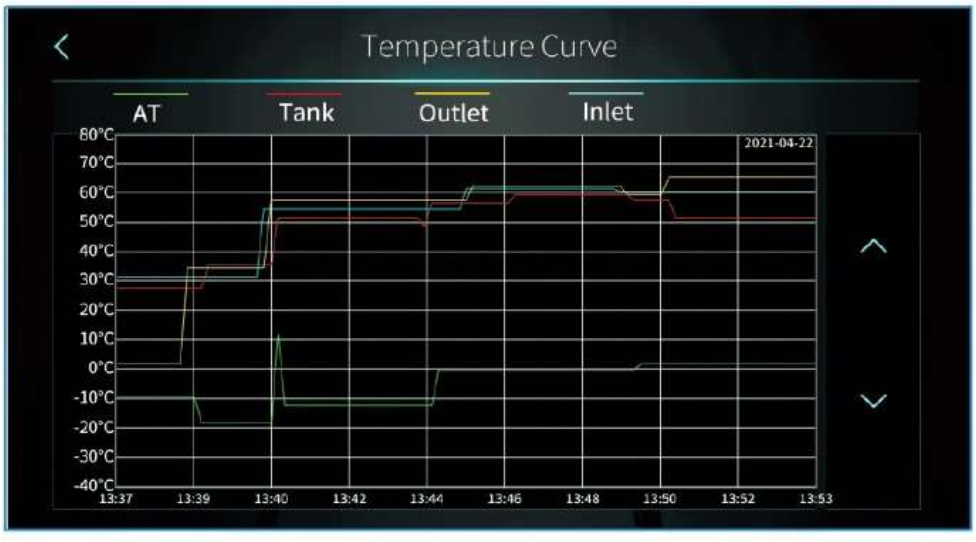
Setting the Timer

Press the Power Timer button to enter the Timer Interface.

Turn the Timer on by sliding the toggle (1)
Select the days of the week you wish this timer to work on (2)
Set the On/Off time (3)
Move to the next Timer (4)
A total of 6 time periods can be set.

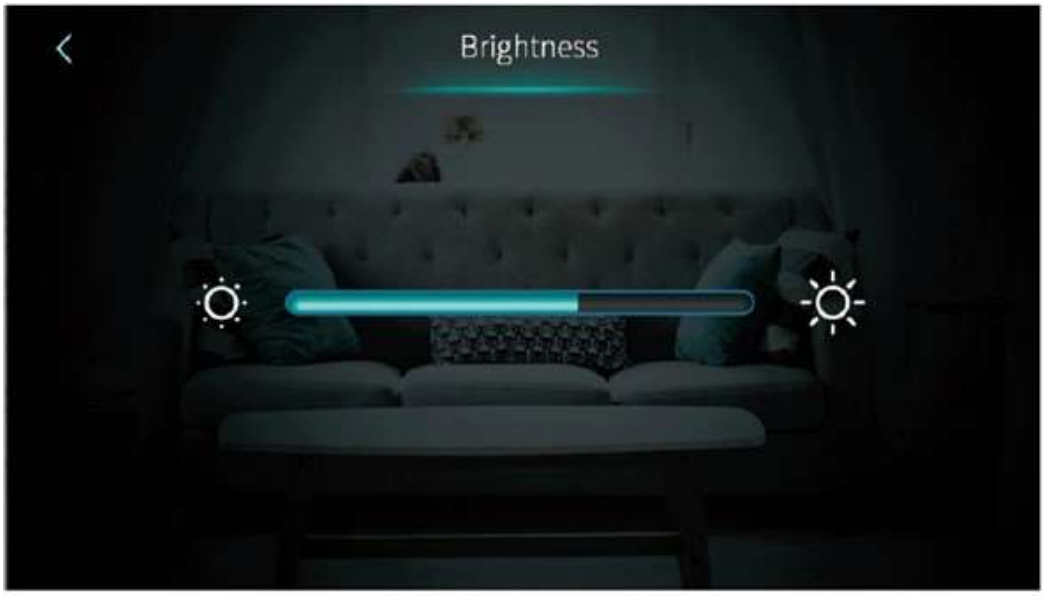
Temperature Graph

In the system Setting Menu pressing the Curve button (3) will display the Water inlet temperature, Water outlet temperature, Buffer tank temperature and Ambient temperature.
Data is collected in 5-minute intervals. Only Power on Status data is collected. If the power supply is disrupted between the 5-minute interval the data will not be saved.



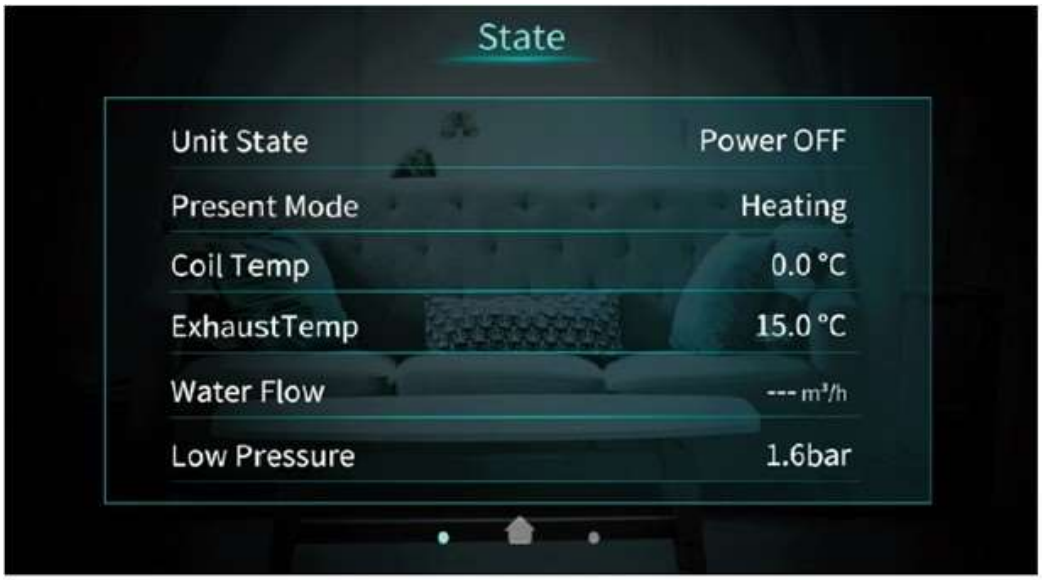
Screen Brightness

Press the Brightness button (4) in the System settings Menu.
Use the slide bar to adjust the screen brightness.
Press the back key to return to the System setting Menu.



Unit Status

From the main screen swipe from left to right to enter the status screen. Swipe from right to left to return to the main screen.

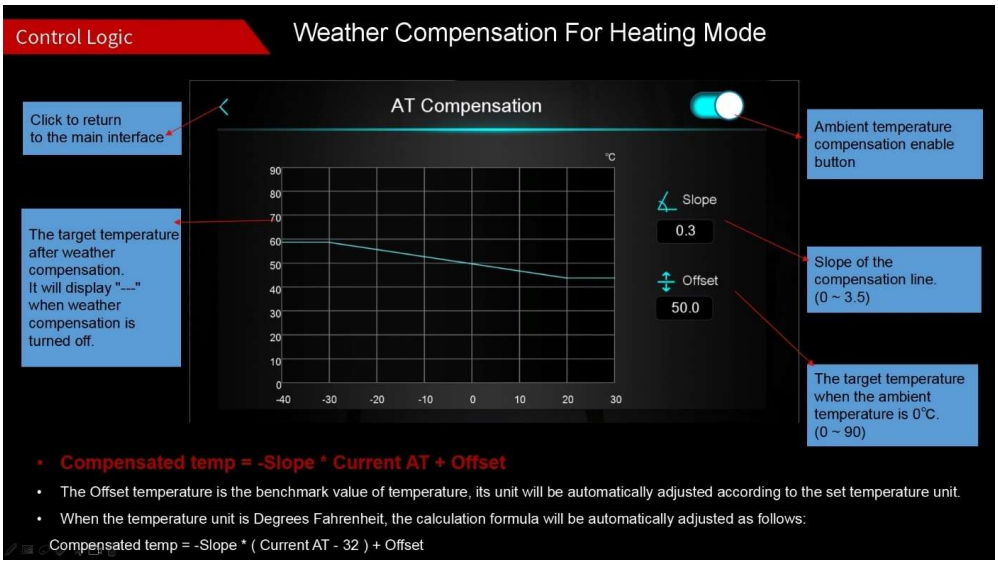


Fault Record

Press the Fault Button in the System settings Menu.
1 – Indicates the Fault Code
2 – Fault Description
3 – Fault Code Deletion

Weather Compensation

From the Home screen swipe Left to the Settings Screen.
Press the Parameter Icon.
Input the engineer Password 022 and press the tick Icon.
Press AT Compensation Icon.
Use the Toggle button to turn On/OFF weather compensation.
Adjust the Offset and Slope to your desired parameters.
To Return to the Home screen press the back button twice and then swipe Right.



Maintenance

Before starting the unit for the first time or after long periods of being shut down please ensure.

1. The unit is inspected and cleaned.
2. The system is at the correct water pressure.
3. No air is present in the system.
4. The fins on the heat exchanger are in good condition and are clean with no blockages.

Cleaning

Make sure the unit has been powered OFF before any maintenance or cleaning is carried out.

1. Clean using a sponge and hot water with a mild detergent.
2. Do not use abrasive cleaners. Do Not use solvents. Do not use any cleaning agents that contain chlorine or ammonia.
3. Clean the fins using a soft brush, avoid bending the fins.
4. Check that condensate can drain freely from the base tray.

Periodic Maintenance

It is a requirement that the heat pump be serviced to the manufacturer's instructions. The system shall be serviced in line with the manufacturer's instructions annually and must be carried out by a competent MCS registered person.

Activair R290 Heat pump Annual Service Check list.

Heat pump Unit

1. Carry out electrical testing and safe isolation
2. Check all electrical supply connections for tightness.
3. Check visual condition of heat pump, confirm no damage and check panels for vibration.
4. Visual internal inspection for refrigerant and/or oil leaks.
5. Carry out sniffer test on internal pipework and components for leakage.
6. Visual inspection on circuit boards and electrical cabling for signs of damage.
7. Check and remove any obstruction to airflow on evaporator coil.
8. Inspect the coil and clean if required.
9. Comb fins straight if required.
10. Check condensate drain holes and pipes are clear.
11. Check fan condition.
12. Check if fan moves freely.

Heating Circuit

1. Check pipe insulation is in good condition.
2. If present, check flexible pipes are in good condition.
3. Check air bleed valves are operating correctly.
4. Check and clean strainer/magnetic filter.
5. Visually check PRV and termination of discharge correct.
6. Confirm primary system flow rate and delta T meets minimum requirements.
7. Note flow rate on service sheet.
8. Check/charge expansion vessel.

Domestic Hot Water Cylinder (If fitted)

1. Check the cylinder for any obvious defects.
2. Check pipe work insulation.
3. Check for signs of water leakage
4. Check system water pressure is within limits.
5. Check the hot water outlet temperature closest to the cylinder to determine 10k NTC sensor accuracy.
6. Check sensors are inserted into sensor pocket correctly and have heat transfer paste applied.
7. Check any electrical wiring associated with the cylinder.
8. Check high limit cut out on immersion heater.
9. Check operation of immersion heater.
10. Check operation of diverter valves.
11. Clean line strainer of inlet group.
12. Check T&P and expansion valves are operating correctly.
13. Check/charge expansion vessel.
14. Check tundish drains and discharges correctly.

Interface Information

1. Check if parameters have been set up correctly and inline with system design. Consult the commissioning sheet.
2. Check if AT compensation has been enabled and set correctly in line with system design.
3. Record any fault codes on the service sheet.
4. Check time and date is set correctly.

Sign and date the service sheet and leave one copy with the heat pump.

Danger!
Risk of death caused by fire or explosion if there is a refrigerant leakage!

Only carry out the work if you are competent and have knowledge about the special features and risks of R290 refrigerant.

The product contains combustible refrigerant R290. In the event of a leak, escaping refrigerant may mix with air to form a flammable atmosphere.
In the event of a refrigerant leak the unit will operate the internal fan to disperse the refrigerant to outside.
The unit is equipped with a leak detection system for safety.
For leak detection to be effective the unit must be electrically powered at all times after installation, other than servicing.
Ensure that space is sufficiently aerated around the product.

Refrigerant Charge

All Trianco Heat pumps are supplied pre charged with refrigerant.

If the machine is not equipped with refrigerant and is charged with nitrogen, then therecharging of the refrigerant needs to be carried out according to the instructions onpage.

3.1 Preparations

3.1.1 Please ensure a well-ventilated environment while charging the refrigerant.

3.1.2 Avoid open flames or potential sources of fire.

3.1.3 Disconnect the power supply to the heat pump.

3.1.4 Carefully check the heat pump's nameplate and charge according to the specified amount labeled.

3.2 Nitrogen Gas Pressure Check

Check the pressure of the nitrogen gas inside the system. The heat pump is pre-charged with about 30 Bar of nitrogen gas. Before charging the refrigerant, ensure there is still high-pressure nitrogen present; otherwise, identify and check for leakage points. (Use a spanner to remove seal nut(1) , press the valve core(2) with the seal nut(1). If high-pressure gas is expelled, the heatpump is not leaking.)

3.3 Nitrogen Gas Release

Press the valve core (2)with the seal nut(1) for a period of time, until no nitrogen gas is discharged.

3.4 Vacuuming the System

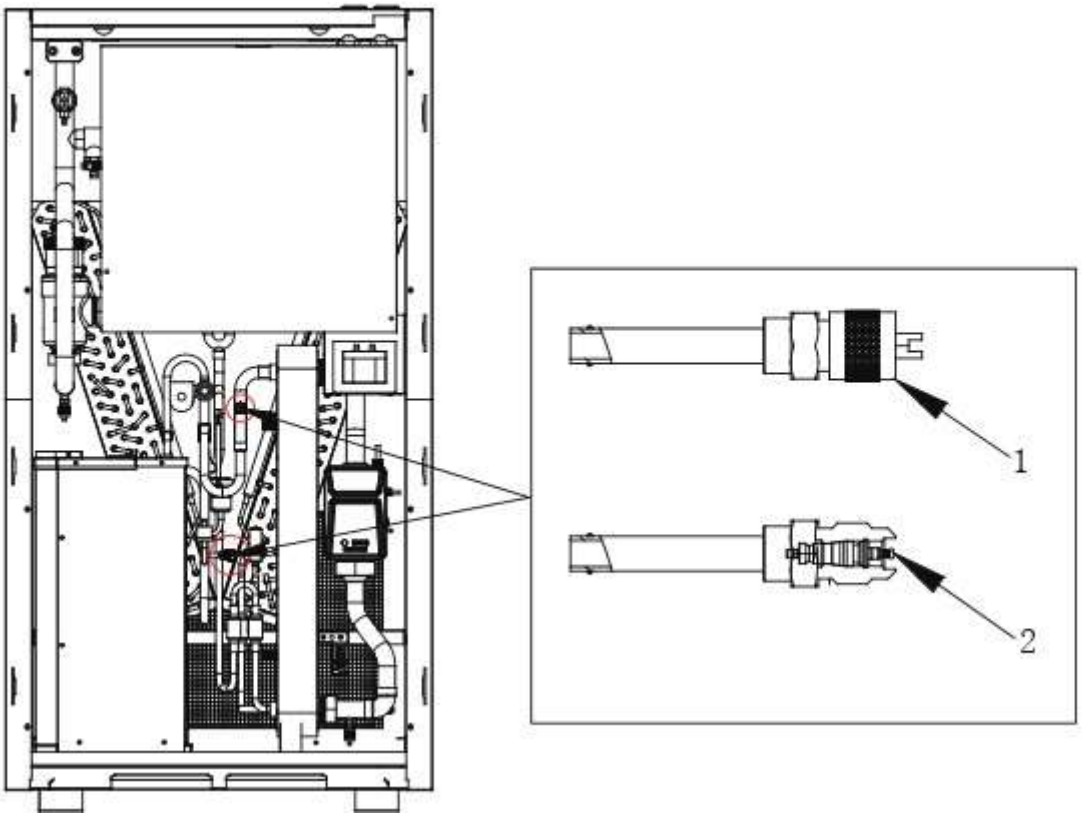
Connect a vacuum pump to valve and run it until the absolute pressure falls below 30Pa or it has been operating for more than one hour.

3.5 Refrigerant Charging

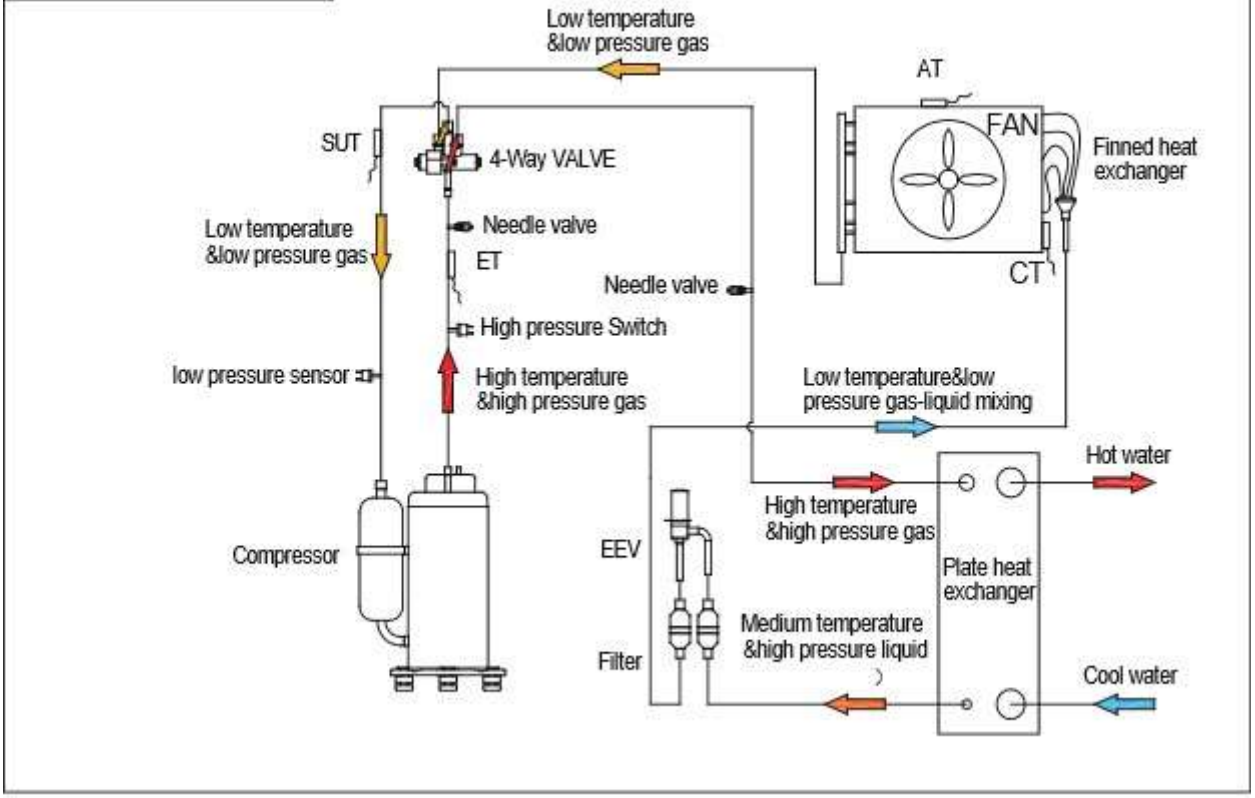
Ensure the refrigerant is in a liquid state when charging and adhere strictly to the labeled amount.

3.6 Sealing the System

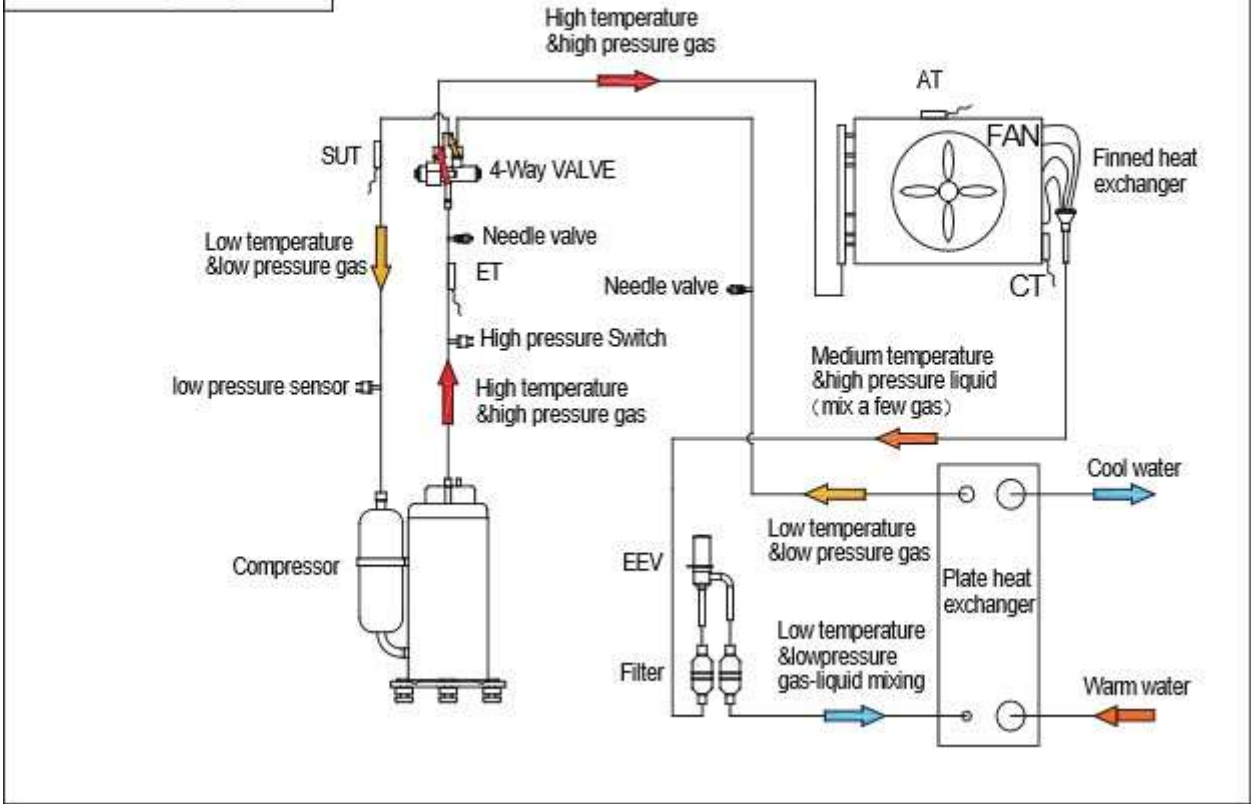
After charging is completed, tighten the seal nut(1).



Heating Cycle



Cooling Cycle



TEST SPECIFICATION

EN14511
EN14825

Fault Diagnosis

Issue	Possible Cause	Related Components	Solution
Unit trips MCB when powered on	Short circuit	Terminals Relays Contactors cables	Check all the component connections. Check relays and contactors. Disconnect the electronic components one by one and power on to find the problem
No Power to Display	Cables have disconnected. The power input cable is Damaged	Display cable Power input cable	Check the display Cable. Check The Power Cable.
Unit will Not start	Errors on display Disconnected Cables	Display Cables	Check the display for error codes. Check the cables.
Display will Not Work	The Display has been locked. The Display is damaged	Display	Unlock the Display Check Display cable.
Poor Heat	Compressor Issue Fan not running or speed is too low. Refrigerant leak	Compressor Fan Refrigerant System	Check correct operation of Compressor. Check fan speed. Check exhaust temperature and refrigerant pressure.
Unit shuts off before reaching Temperature	Weather Compensation	Control Logic	Check Parameters
Excessive Frost	Fan Blade or motor issue. EEV step is not suitable. Refrigerant amount incorrect Parameter Issue	Fan EEV Refrigerant System Parameters	Check fan speed. Check defrosting parameters. Check the compressor frequency. Check exhaust temperature and refrigerant pressure.
Abnormal Noise	Loose screws Fan blade or motor issue Compressor Issue Touching components	Screw Fan Compressor Other components	Check all screws are tight. Check fan blade and motor. Check compressor. Check other components.

Information Codes

Protect/fault	Fault display	Reason	Elimination methods
Inlet Water Temp. Sensor Fault	P01	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Outlet Water Temp. Sensor Fault	P02	The temp. sensor is broken or short circuit	Check or change the temp. sensor
DHW Tank Sensor Fault	P03	The temp. sensor is broken or short circuit	Check or change the temp. sensor
AT Sensor Fault	P04	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Suction Temp. Sensor Fault	P17	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Heating Returning Water Temp. Sensor Fault	P013	The temp. sensor is broken or short circuit	Check or change the temp. sensor
DHW Returning Water Temp. Sensor Fault	P018	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Heating Leaving Water Temp. Sensor Fault	P023	The temp. sensor is broken or short circuit	Check or change the temp. sensor
DHW Leaving Water Temp. Sensor Fault	P028	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Room Temp. Sensor Fault	P42	The temp. sensor is broken or short circuit	Check or change the temp. sensor
EVI Inlet Sensor Fault	P101	The temp. sensor is broken or short circuit	Check or change the temp. sensor
EVI Outlet Sensor Fault	P102	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Distributor Tube Temp. Sensor Fault	P152	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Coil Temp. Sensor Fault	P153	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Exhaust Temp. Sensor Fault	P181	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Overhigh Exhaust Temp.	P182	The compressor is overload	Check whether the system of the compressor running normally
Anti-freezing Temp. Sensor Fault	P191	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Mix Tube Outlet Water Temp. Sensor Fault	P02a	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Buffer Tank Temp. Sensor Fault	P03a	The sensor is broken or short circuit	Check or change the temp. sensor
Pressure Sensor Fault	PP11	The pressure sensor is broken or short circuit	Check or change the pressure sensor or pressure
High Pressure Sensor Fault	PP12	The pressure sensor is broken or short circuit	Check or change the pressure sensor or pressure
Low AT Protection	TP	The ambient temp. is low	Check the ambient temp value
No Cooling at Low AT Protection	TC	The temp. sensor is incorrectly--detected or the temp.sensor is lower--than the set value A30	Check or change the temp. sensor
Electric Heater Overheat Fault	E04	The electric-heater protection switch is broken	Check whether the electric heater runs at the temperature above 150℃ for a long time
Excess Temp. Diff. Between Inlet & outlet	E06	Water flow is not enough and low differential pressure	Check the pipe water flow and whether water system is jammed or not
Communication Fault	E08	Communication failure between wire controller and mainboard	Check the wire connection between remote wire controller and main board

Protect/fault	Fault display	Reason	Elimination methods
Primary Anti-freezing Fault	E19	The ambient temp. is low	Check the ambient temp value
Secondary Anti-freezing Fault	E29	The ambient temp. is low	Check the ambient temp value
Insufficient Defrosting Water Flow Alarm	E030	The unit flow rate is less than the minimum flow value of the unit.	Check or change waterway systems to provide unit flow
Flow Switch Fault	E032	No water/little water in water system	Check the pipe water flow and water pump
Overhigh Outlet Water Temp.	E065	No water/little water in water system	Check the pipe water flow and water pump
Low Outlet Water Temp. Temp. Fault	E071	No water/little water in water system	Check the pipe water flow and water pump
Fan Motor 1 and PCB Communication Fault	E081	Speed control module and main board communication fail	Check the communication connection
Fan Motor 2 and PCB Communication Fault	E082	Speed control module and main board communication fail	Check the communication connection
Display and PCB Communication Fault	E084	The wire controller software is not match the mainboard software	Check the wire control software number and the mainboard software number
Communication Fault with Hydraulic Module	E08c	Hydraulic Module and mainboard communication fail	Check the communication connection
HP Fault	E11	The high-pressure switch is broken	Check the pressure switch and cold circuit
LP Fault	E12	The low-pressure switch is broken	Check the pressure switch and cold circuit
Anti-freezing Fault	E171	Use side water system temp. is low	1.Check the water temp. or change the temp. sensor 2.Check the pipe water flow and whether water system is jammed or not
Fan Motor1 Fault	F031	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact
Fan Motor2 Fault	F032	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact
Zone 1 Room Temp. Sensor Fault	P105	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Zone 2 Room Temp. Sensor Fault	P106	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Zone 2 Mixing Temp. Sensor Fault	P107	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Abnormal Adjustment of Mixing Valve	E122	1. Mixing Valve is incorrectly connected; 2. Mixing Valve is damaged;	1. Plug and unplug terminals; 1. Replace the Mixing Valve;
Zone 1 Thermostat Communication Fault	E08g	1. Thermostat not connected 2. Thermostat failure 3.Wrong parameter setting	1. Check the wiring connection between the thermostat and the unit 2. Replace the thermostat 3.Check the parameters
Zone 2 Thermostat Communication Fault	E08h	1. Thermostat not connected 2. Thermostat failure 3.Wrong parameter setting	1. Check the wiring connection between the thermostat and the unit 2. Replace the thermostat 3.Check the parameters
Low Water Flow Protection	E035	Water flow is too low	Increased water flow
System 1 Refrigerant Leak Anomaly	E131	Refrigerant Leak	Check for any refrigerant leakage

Protect/fault	Fault display	Reason	Elimination methods
IPM Overcurrent Fault	F00	IPM Input current is large	Check and adjust the current measurement
Comp. Driver Fault	F01	Lack of phase, step or drive hardware damage	Check the measuring voltage check frequency conversion board hardware
Pre-Charge Failure	F03	The PFC circuit protection	Check the PFC switch tube short circuit or not
DC Power Bus Overvoltage Fault	F05	DC bus voltage>Dc bus Overload-voltage protection value	Check the input voltage measurement
DC Power Bus Undervoltage	F06	DC bus voltage<Dc bus Underload-voltage protection value	Check the input voltage measurement
AC Power Undervoltage Fault	F07	The input voltage is low, causing the input current is low	Check the input voltage measurement
AC Power Overcurrent Fault	F08	The input voltage is too high, more than outage protection current RMS	Check the input voltage measurement
Input Power Voltage Sampling Fault	F09	The input voltage sampling fault	Check and adjust the current measurement
DSP and PFC Communication Fault	F12	DSP and PFC connect fault	Check the communication connection
DSP and Comp. Driver Communication Fault	F11	DSP and Inverter board communication failure	Check the communication connection
Comp. Driver and PCB Communication Fault	F151	DSP and Mainboard communication failure	Check the communication connection
IPM Overheat Fault	F13	The IPM module is overheat	Check and adjust the current measurement
Comp. Overcurrent Fault	E051	The compressor is overload	Check whether the system of the compressor running normally
Input Power Lacking Phase Fault	F15	The input voltage lost phase	Check and measure the voltage adjustment
IPM Current Sampling Fault	F18	IPM sampling electricity is fault	Check and adjust the current measurement
Comp. Driver Temp. Sensor Fault	F17	The transducer is overheat	Check and adjust the current measurement
IGBT Power Device Overheat Alarm	F20	The IGBT is overheat	Check and adjust the current measurement
Comp. Weak Magnetic Alarm	F16	Compressor magnetic force is not enough	Check and adjust the current measurement
AC Input Current Frequency Decrease Alarm	F22	Input current is too large	Check and adjust the current measurement
EEPROM Alarm	F23	MCU error	Check whether the chip is damaged Replace the chip
Destroyed EEPROM & No Activated Fault	F24	MCU error	Check whether the chip is damaged Replace the chip
Input Power Current Sampling Fault	F25	The V15V is overload or undervoltage	Check the V15V input voltage in range 13.5V~16.5V or not
IGBT Overheat Fault	F26	The IGBT is overheat	Check and adjust the current measurement
Comp. Current Frequency Decrease Alarm	F33	The compressor current frequency reduction	Check and adjust the current measurement
AC Power Overvoltage Fault	F10	Input voltage>Input Overload--voltage protection value	Check whether the input voltage is higher than 265V
Compressor Lacking Phase Fault	F14	The compressor lost phase	Check whether compressor cables are connected properly and reliably
EEPROM Fault	F29	Failed to read the memory chip	Check the frequency conversion board
Overspeed Fault	F21	The compressor is running abnormally	Check whether the compressor cable is nor--mal and whether the compressor is blocked

Protect/fault	Fault display	Reason	Elimination methods
Driver (Fan)Temp.Sensor Fault	F120	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Driver (Fan)IPM Overheat Fault	F106	The fan IPM drive plate has poor heat dissipation	Check heat dissipation conditions
Driver (Fan) External Overcurrent Fault	F105	The fan IPM hardware running current is too large	Check whether the fan is blocked
Driver (Fan) Power Lacking Phase Fault	F101	The fan lost phase	Check whether fan cables are connected properly and reliably
Driver (Fan) Current Sampling Fault	F112	Fan sampling electricity is fault	Check whether the fan drive plate is abnormal
Driver (Fan) Start Fault	F102	The fan fails to start	Check whether the fan is blocked
Driver (Fan) Internal Overcurrent Fault	F113	The fan software running current is too large	Check whether the fan is blocked
Driver (Fan) overspeed Fault	F109	The fan speed is too high	Check whether the fan drive board is abnormal

Technical Details

Voltage	220-140V / 50Hz
Heating Capacity (A)	4800W
Heating Power Input (A)	1148W
Cooling Capacity (B)	3420W
Cooling Power Input (B)	1315W
Rated Power Input *	3.1kW
Rated Current Input *	13.5A
Water Flow	0.86m3/h
Flow/Return Connections	G1”
Refrigerant Charge	R290 / 0.49kg
GWP	3
CO2 Equivalent	0.00147T
Noise Level (Sound Pressure @ 1m)	47dB (A)
Net Weight	124kg
Operation Pressure (Low Side)	0.8 MPa
Operation Pressure (High Side)	3.0 MPa
Maximum Allowable Pressure	3.0 MPa
Operating Ambient Temperature	-15 ~ 43°C
Operating water Temperature	4 ~ 65°C
Maximum Water Pressure	0.3MPa
Minimum System Water	40l

A: Ambient Temp. (DB/WB : 7°C/6°C, Water Temp. (In/Out) : 30°C/35°C

B: Ambient Temp. (DB/WB : 35°C/24°C, Water Temp. (In/Out) :12°C/7°C

*According to IEC/EN 60335-1

Activair R290 Heat Pump Commissioning Check List

It is a requirement that the heat pump be installed and commissioned to the manufacturer's instructions. The warranty must be registered with the manufacturer and in accordance with the terms and conditions.
The Commissioning Check list is to be completed in full by the competent person who commissioned the system as a means of demonstrating compliance with the appropriate Building Regulations.

Company Name	
Company Address	
Service Engineer	
Contact Number	
Install Address	
Model & Serial Number	
Commissioning Date	

Installation

DNO Notified	YES	NO
Installation Compliant with Build Regulations	YES	NO
Time & Temperature control provided for all circuits	YES	NO
Interlock Provided	YES	NO
Water Quality Check Completed	YES	NO

System property Heat loss (kW) @ outdoor design temperature	
Please Provide a brief description to how the system is installed.	

User Interface Parameters.

(Add values set)

Flow Temperature Slope	
Flow Temperature Offset	
H07	
H20	
H25	
H37	
P01	
P02	
P03	
P10	
P11	
G01	
G02	
G03	
G04	
G05	

AT Compensation Enabled	YES	NO

Heating System Information

System Balanced	YES	NO
Auto Bypass fitted and set	YES	NO
Heating Expansion vessel Fitted and set correctly	YES	NO
System Flushed and Cleansed	YES	NO
Heating System Frost Protection	YES	NO
Primary System flow rate		M3/H

Declaration

Installer signature: *I can confirm the installation has been installed and commissioned in accordance with the above checklist*	
Print Name:	

Notes

TRIANCO

BRINGING HEAT TO LIFE

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