ESP CLASSIC II

13KW, 15KW, 17KW& 25KW

AIR SOURCE HEAT PUMP INSTALLATION & OPERATION MANUAL

WARNING !

READ THIS BEFORE INSTALLING THE UNIT.

The installation of all un-vented water heating systems above 15 litres (this includes ESP ASHPs) MUST comply with local area Building Regulations. It is a legal requirement that the local Building Control Officer be notified of any proposed installation.

UK regulations require an appropriately sized expansion vessel (internal or external) to be incorporated, safety devices to prevent the stored water exceeding 100°C, and pipe work to convey discharged hot water safely away from the safety devices.

Furthermore, the installation must be carried out by an enginner who has Successfully completed a recognised course in the installation of un-vented heating systems such as CITB. Failure to fit the unit correctly and in accorance with regulations may affect its safety, efficiency and WILL invalidate any guarantee.

THE UNIT MUST BE INSTALLED, COMMISSIONED AND MAINTAINED BY A COMPETENT INSTALLER IN ACCORDANCE WITH BUILDING REGULATION G3 (ENGLAND AND WALES), TECHNICAL STANDARD P3 (SCOTLAND) OR BUILDING REGULATION P5 (NORTHERN IRELAND) AND THE WATER FITTING REGULATIONS (ENGLAND AND WALES) OR WATER BYELAWS (SCOTLAND). FOLLOWING INSTALLATION AND COMMISSIONING, THE OPERATION OF THE UNIT SHOULD BE EXPLAINED TO THE USER AND THESE INSTRUCTIONS LEFT WITH THEM FOR FUTURE REFERENCE.

Content List

1.0 General Notes

1.1 INFORMATION FOR INSTALLATION AND MAINTENANCE ENGINEERS

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).

ESP takes all reasonable steps to ensure that its heat pumps are designed and constructed to meet these general safety requirements, provided they are properly installed by qualified engineers and used in accordance with these instructions.

ESP heat pumps are comprehensively tested and examined before despatch to ensure compliance with regulations current at the date of sale.

When working on the appliance, it is the responsibility of the user/engineer to ensure that personal protective clothing and equipment is worn or used appropriate to the work being undertaken.

This heat pump may contain some of the items below:

Refrigerants

The heat pump contains R410A refrigerant. Whilst the constituents of R410A have low toxicity levels, it is important that any necessary work upon any part of the unit that contains or may cause the escape of any refrigerant must be carried out by suitably qualified engineers. Site engineers must have a certificate of competence confirming that they are qualified to work with and/or around refrigerants and must understand the properties of refrigerants in the heat pump and hazards

that such refrigerants present before handling liquid refrigerants.

When handling refrigerant, avoid inhalation and contact with the skin and eyes. Suitable personal protective equipment must be worn (gloves, overalls, eye protection) and a comprehensive first-aid kit (containing eye wash) should be immediately accessible.

When the appliance has come to the end of its life-span, the equipment and refrigerant must be disposed of in accordance with EU law and by an approved engineer.

Seek urgent medical attention if any refrigerant is inhaled or ingested. Exposure to eyes and skin should be followed by immediate cleansing of the affected areas and professional medical attention.

Glues, Sealants and Paints

Glues, sealants and paints are used in the heat pump and present no known hazards when used in the manner for which they are intended.

1.2 IMPORTANT SAFETY INFORMATION FOR THE END USER

Installation of the heat pump must only be carried out by experienced persons with recognised and appropriate qualifications.

Do not attempt to modify, repair or service the heat pump yourself, unless you have been appropriately trained and are suitably qualified.

Do not insert body parts or any other items into the air inlet or air outlet – the fans are provided with a guard for good reason!

The unit must be put into standby mode before turning off the rotary isolation switch.

Ensure that the heat pump is protected from prolonged exposure to large quantities of water (e.g. leaking gutters). Failure to do so may damage the unit and will invalidate the warranty.

Do not operate the unit or the programmer with wet hands/fingers.

Upon replacement of any fuse in any part of the power feed to the unit, ensure a correct replacement is used. Do not, under any circumstances, use a fuse that is too large or bridge the fuse with silver paper, nails, wire, or anything similar.

Keep the programmer for the unit out of reach of children.

The electrical supply must be isolated during a heightened risk of lightning strikes.

Do not attempt to move the appliance once installed; this must be carried out by a qualified engineer

Isolate the electrical supply to the appliance if you detect an odour from the unit, or scorching is detected anywhere in or on the unit.

Only use the unit for the purpose intended and in accordance with this manual.

Ensure the area around the unit is clean, well-ventilated and kept free of all obstructions.

Do not keep items on top of the unit or use it to support other appliances.

Do not under any circumstances stand on the unit – it is dangerous for you and will damage the unit.

Isolate the electrical supply to the unit if it is to be switched off for a period of more than a week.

Drain the water from the water circuit if power to the unit is to be switched off during very cold weather.

Periodically check the condition of any supports or wall brackets for deterioration – have these replaced immediately if any deterioration is evident.

Do not wash the unit with water, alcohol, benzene, thinners, glass cleaner, polish or powders.

Before cleaning, isolate the electrical supply to the unit. If cleaning of any internal part of the unit is required, this should only be done by an appropriately qualified engineer.

If you have any questions about the operation and maintenance of the unit that are not addressed in this manual or if you feel that something in the manual is unclear, please call the seller, distributor or ESP.

All ESP ASHPs are covered by the warranty contained in the ESP *Terms and conditions of Business* a copy of which will have been provided to you prior to your purchase

1.3 OPERATING INSTRUCTIONS

The ESP Classic II range of air source heat pumps (ASHP) provide hot water or low-temperature space heating by extracting the ambient heat energy from the surrounding air.

Please note, all ESP Classic II ASHPs are provided with an ESP Log Book that must be filled in, signed and dated by the installation engineer upon completion of the installation. Please ensure that this is done on the day of installation.

The ESP Classic II range of ASHPs is designed and built to give years of trouble-free service and these instructions are provided to assist you in obtaining the best performance from your heat pump and achieving the lowest possible running costs.

If you are seeking any Government support for the cost of purchase, installation and/or operating the ASHP, please ensure that you understand fully what is required to enable you to access that support. ESP accepts no responsibility or liability for any failure to obtain the support that you may be seeking; complying with any rules or requirements to obtain any such support is solely your responsibility.

1.4 TIPS FOR LOWERING ENERGY USAGE

The correct and timely maintenance of the heat pump has a dramatic impact upon system performance and service life. It is important, therefore that regular inspections are carried out over the lifetime of the appliance. ESP offers a pre-planned maintenance service, so please ask us about this, if required.

Dirty evaporators and fans reduce airflow through the system which can decrease performance. Regular checks must be carried out to ensure the cleanliness of these components.

All pipework to and from the heat pump must be well insulated and waterproofed to avoid unnecessary heat loss from the system.

Do not power wash the evaporator!

Set the room stat temperatures as low as is comfortable. This may need experimentation with the householder.

Do not over fill the unit with glycol. (See required water/glycol mix on the label on the unit). Using too much glycol alters the thermal properties of the system water.

Ensure that the unit is properly installed! Poor quality, or inappropriate, installation of the unit can dramatically reduce the performance efficiency of the unit and may invalidate the warranty.

For new builds, the requirements of Part L of The Building Regulations (or better) for insulation will help ensure that the heat load of the dwelling is kept to a minimum. For existing buildings, insulation should be improved as much as possible to minimise the heat load.

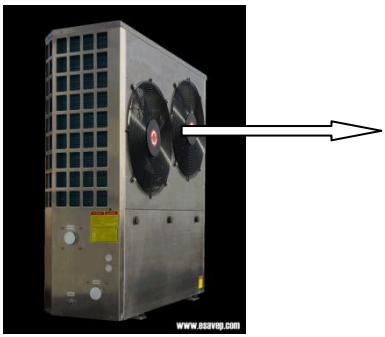
1.5 SITING CONSIDERATIONS

Air Source Heat Pumps operate by extracting heat from the ambient air. Because of this, they must be installed out-doors in an area with sufficient clearance to provide free air circulation through the evaporator. Any free air circulation restrictions can decrease the heating capacity, increase the power input (and, therefore operating costs) and, in certain cases, prevent the heat pump from operating by creating conditions in which the unit will over-pressure.

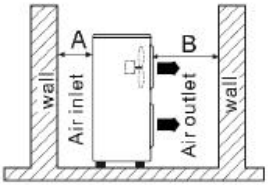
If possible, site the unit on a south facing wall to increase solar gain; every extra degree of heat in the air entering the unit will increase the performance of the pump.

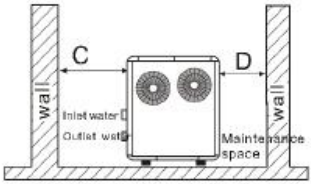
You should not connect the fans to duct networks because of the pressure drops created by such networks.

In the event that the unit is located in an area exposed to high wind, avoid the wind striking the fan surfaces directly. The arrows show the direction of air circulation through the unit.



When siting the unit, take care to leave sufficient free space all around it for carrying out inspections/ maintenance work. Please see the following diagram for minimum clear distances around the unit recommended to allow free access and to ensure free air flow to and from the unit.





2.0 INSTALLATION

2.1 MOUNTING THE UNIT

The unit **must** be positioned on a flat, level, solid concrete base at least 20cm higher than ground level to protect against flooding or snow and ice build up in severe conditions. In areas of known regular flooding the unit must be positioned at a height to avoid ingress of flooding.
The units are supplied with rubber mounting feet and they must be used to prevent excessive vibration. The unit should secured through these rubber feet/mounting brackets. If the rubber mounting feet are omitted, the system will not meet certification requirements.

The unit must not be stood upon or heavy objects placed/stored upon it.

The fan(s) must be kept clear at all times
The unit must be connected to the plumbing network using flexible pipe that can be bought in a fitting kit for the unit. Please ask your supplier/ESP about the fitting kit available.

2.2 ACCESS TO THE UNIT

After installation, all sides of the unit must be accessible for maintenance operations – e.g. Clearing of leaves or other debris from around the unit or that become stuck in the evaporator. Check the unit for debris once a month and remove any build up.

Removal of Panel 1 provides access to the electric junction box, the compressor and the cooling circuit.

25 Kw Unit Shown

3.0 HYDRAULIC CONNECTION

3.1 IMPORTANT NOTE

All plumbing, electrical and safety regulations must be observed when fitting the unit. All hydraulic and electrical connections to the pump must be carried out by suitably qualified engineers. Failure to meet these requirements may affect the warranty.

3.2 RECOMMENDATIONS

Because water composition can vary greatly, **it is not ESP's policy to issue recommendations relating to water treatment**. The user or the owner is responsible for contacting a specialised water treatment company to obtain water treatment advice appropriate to your location. Appropriate water treatment processes/devices must be fitted to ensure the longevity of the unit and its proper operation.

The pipe circuits must be designed with a minimum of bends and joints. The pipe work should be at least the same internal diameter or greater than the flow and return connections on the unit (this is critical) and should not be reduced down. Please ensure that, when installing the unit with under floor heating, the manifolds must be suitable for use with heat pumps and the size

of the manifold connections must not restrict water flow. The pipe network must include:

Flexible hoses must be used to connect the heating network to the heat pump. Important note: When tightening joints between the unit and pipework take care not to over-tighten them. You must also use a second wrench to counter the torque in fittings when tightening them.

3.3 FULL FLOW LEVER VALVE

A full flow lever valve must be installed on the flow and return pipes after the flexible hose connection, to allow the water flow away from the unit to be shut off for the purpose servicing. Under no circumstances should gate valves be installed on any part of a pressurized system.

3.4 IN-LINE FILTERS

An in-line filter/strainer must be installed into the return pipe work to the unit. There must also be a full flow lever valve each side of the filter/strainer to allow a minimum loss of water from the system during maintenance (See Below). The inline filter/strainer is to prevent any ingress of debris to the heat exchanger inside the unit. Please ensure that the inline filter/strainer has a suitably sized mesh in it such that water flow through it is not restricted. Failure to fit a suitable inline filter/strainer will invalidate the warranty on the unit and may cause serious damage to the unit. Due to the mix of metals on many systems it is advisable and preferable to install a Spirotrap ® (See below) rather than minimum standard Y strainer.

Spirotrap fitted with a single full-flow lever valve (25 Kw Unit).

Spirotrap for smaller Units

3.5 DRAIN COCK

A transportation plug is installed below the water connections to all of our heat pumps. Please remove this plug and replace with an appropriate drain off cock (DOC).

3.6 AIR VENTS

Manual air vents must be installed at the highest points of the external water circuits. Anywhere that the internal pipe work is configured such that air locks can occur then automatic air vents should be used. The unit is equipped with a flow sensor that will stop the unit running (and display "Flow Error" on the controller) should air be detected in the pipe work.

3.7 FILLING LOOP & SAFETY VALVE

A "part L compliant" filling valve/loop must be installed on to the system within the property to allow you to maintain the required water pressure in the system. A 3.0 bar safety valve and gauge *mus*t be installed in accordance with good plumbing practice.

3.8 EXPANSION VESSEL

It is the responsibility of the installer to ensure that an expansion vessel is fitted that is appropriate to the volume of water in the system.

3.9 INSULATION

It is imperative that a high quality external grade waterproof 30mm wall or equivalent insulation is installed on all external pipework. Where pipes pass through any external walls, the holes must be sleeved and the insulation must be continuous through the wall. *"Good practice – High quality insulation is recommended throughout the entire installation"*

3.11 EMITTER SYSTEMS

When choosing an emitter system, it is important to comply with the guidance given in the MCS Emitter guide available at www.microgenerationcertification.org/admin/documents/MIS%203005%20Supplementary%20Information%202%20-%20Heat%20Emitter%20Guide%20v2.0.pdf where guidance on UFH pipe spacing and sizing of fan coil units such as the ESP Thermovec units and wet radiators can be found. Where standard wet radiators are to be fitted, careful consideration should be given before fitting Thermostatic Radiator Valves (TRVs) because they are not designed for low temperature systems. Do not fit a TRV in the same room as a room thermostat.

4.0 ELECTRICAL CONNECTION

4.1 IEE WIRING REGULATIONS

The IEE Wiring Regulations BS 7671 are the UK standard to which all industrial and domestic wiring must conform. The 17th edition IEE Wiring Regulations has many changes in order to comply with European guidance.

The IEE Wiring Regulations are produced by the Institution of Engineering and Technology (IET).

The 17th Edition IEE Wiring Regulations (BS7671) became effective on 1st July 2008. Since then all commercial, domestic and industrial wiring installations must be designed to the specification laid out in BS7671: 2008 this Edition takes over from the 16th Edition which came into force in 1991. All designs after July 1st 2008 have to comply with the new standard and must be installed and certified to the 17th edition of the IEE Wiring Regulations. Anyone involved in the design and installation of electrical installations or inspection and testing of electrical installations must have a sound working knowledge of the 17th edition wiring regulations.

For more info visit www.iee-wiring-regulations.co.uk

4.2 POWER SUPPLY

Before starting to wire in the power supply to the unit, please check that the power supply is suitable for the unit (e.g. single or three phase) and that the correct size cable, MCB etc. are available. The unit must be installed with a dedicated power supply from the consumer unit using a type C MCB

Unit	Output (kW)	Phase	Circuit Breakers (A)	Start-Up Load Current (A)
ESP 13Kw	12	Single	32	18
ESP 15kW	14	Single	32	20
ESP 17kW	16	Single	32	22
ESP 25kW	24	Single or 3-phase	40	22

4.3 ISOLATION SWITCH

The heat pump MUST be installed with a suitably sized, external duty rotary isolation switch adjacent to the unit and suitably positioned for general and emergency use. The switch must not be screwed to the unit cabinet as it is extremely dangerous to do so and will invalidate the warranty. The isolation switch must be suitable for the unit electrical duty and meet applicable Regulations (see below).

Typical Isolator Switch

4.4 CONTROL WIRE

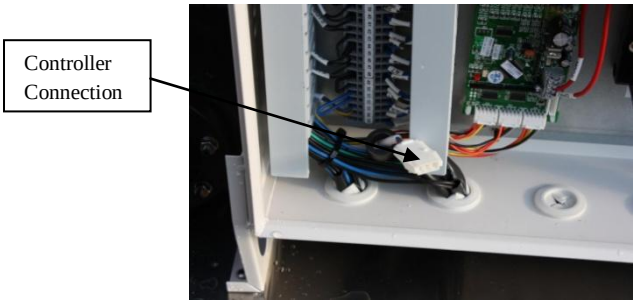
The Heat Pump Control Wire supplied with the heat pump is a 10m cable with connection each end for use with the heat pump controller (see picture below of 25Kw unit). The heat pump controller must be installed inside the building.

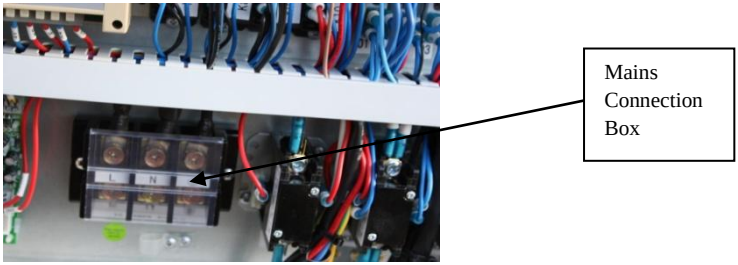
4.5 THERMOSTAT & PROGRAMMER

Part L2 of The Building Regulations requires that the heating system be fitted with a a 7 day programmer. However, the most efficient way of running an ASHP heating system is to set the programmer to ALWAYS ON. An L2 compliant programmer may be used but it is *very* **IMPORTANT** that any signal going back to the heat pump from the heating system thermostat/programmer must be **VOLT FREE !** The heating system thermostat/ programmer controller is wired to terminals stipulated in section 10 on the terminal connector block (see below) inside the heat pump which is located behind panel 1 of the heat pump (these connections are not polarized). If you do not use a *volt free* programmer you WILL damage the ASHP unit.

Terminals 53&54
(25kW unit shown)

NB. For 13,15 and 17kW units, connect to terminals 37&39 SEE SECTION 10





4.6 IMPORTANT NOTICE

The connection to the electrical consumer unit in the property must comply with current electrical standards and Regulations and be done via a fused supply/breaker that corresponds to the unit electrical capacity as mentioned above. Failure to do this correctly can result in fire and/or permanent damage to the unit. If the unit is not appropriately wired in to a suitable supply the warranty on the unit will be voided.

IMPORTANT! We know that suitably qualified electricians charge professional level fees for work that they carry out, but it is better to pay a professional/fully qualified electrician to connect your unit in to an appropriate power supply in the correct way, than for you to die trying or as

a result of a fire in your property caused by inappropriate or incorrect electrical works. Also, it is a legal requirement that only qualified electricians should install, repair or maintain electrical connections and, if you do not kill yourself installing the unit, you run the risk of prosecution if you do not comply with the law. It is not an exaggeration to say that, if you install/connect your unit to a power supply and that installation/connection causes injury to, or death of someone (even years after installation), you can be prosecuted under criminal law for murder, manslaughter or bodily harm and spend many years in prison as a result. IT IS NOT WORTHWHILE RUNNING THIS RISK.

SO, GET YOUR UNIT WIRED IN BY A PROFESSIONALLY QUALIFIED ELECTRICIAN – IF YOU DO NOT KNOW SOMEBODY THAT IS QUALIFIED TO DO THE WORK, FIND SOMEONE AND DO NOT BREAK THE LAW BY DOING IT YOUR- SELF (UNLESS YOU ARE FULLY QUALIFIED TO CARRY OUT THE WORK!).

Your electrician will find wiring diagrams in section 10.

The power supply cable must be threaded through the cable guide/fitting provided on the unit.

5.0 STARTING THE UNIT

5.1 PRE-START UP

Before starting up the unit, a certain number of checks must be performed to ensure that the unit and associated system will operate within appropriate conditions. The check list below is not exhaustive and should only be used as a minimum reference-basis. All suitably qualified and experienced engineers will also rely upon “best practice” although a more complete check-list is included at the back of this manual:

1. Make certain the fans rotate freely.

2. Inspect all pipework and fittings for flow direction and make sure that it is all designed and installed to flow in the correct direction.

3. Verify all pipework is of the correct diameter as per installation requirements and best practice.

4. Check that the voltage and power rating of the electrical are within specifications, taking into account other power requirements on site.

5. Make sure that the unit is properly earthed.

6. Ensure that all electric connections are secure.

7. Check all pipework for leaks and vent the air from the whole system before starting up the compressor.

8. Make sure that the water/glycol ratio is correct.

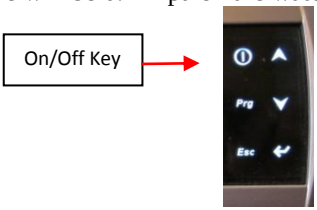
9. Make sure that all pipework and fittings are properly insulated.

The system should have “auto vents” on all high points and pipe runs that present air lock potential. Please note that the unit has an integrated “flow switch” that detects when water is flowing through
the system. If there is any air in the system, the flow switch will sense this and the heat pump operation will be suspended. Should
this happen, an error message of “Flow Error” will appear on the unit controller. To avoid this, all of the air must be purged from the the system although this can take time depending upon the size and complexity of the system. We advise making sure that you have adequate auto vents in the system to allow all air to escape quickly.

5.2 POWERING-UP

Once you have ensured that the heat pump and distribution system has been installed correctly, proceed with the start-up as follows:

- Turn the external isolator switch to the ‘on’ position.
- With power to the unit, the controller will display “stand by”.
- Start the heat pump by pressing the on/off key on the right hand side of the remote controller. If heat is being called for remotely, or the pre-installed red wiring loop (in terminals 37-39 for the 13,15 and 17 Kw units, terminals 51 ad 52 for the 25 Kw unit) of the chiller 300, the unit will start. Check whether or not the water pump is running – if it runs normally there will be 0.2 Mpa on the water pressure meter.



• When the water pump has been running for 1 minute, the compressor will start. Listen to make sure that on start-up the compressors do not make any unusual sounds. If you hear anything abnormal please stop the unit and check the compressor for any obvious problems. If the compressor runs well check the pressure meter of the refrigerant.

• Then check whether or not the power input and running current is in line with this manual. If not please stop and check over the installation work again.
• Ensure that all full-flow valves are fully open.

• Check that the outlet water temperature is stable.

Please note that running parameters are factory set and may not be altered by the end user

To turn the unit off:

Press the (on-off) key (on the controller). The unit will close down as follows:

The fan and compressor will switch off.
After 60 seconds, the water pump will switch OFF.

5.3 FROST PROTECTION

Because the heat pump will be exposed to the elements, the water in the system may be in danger of freezing in *very* cold weather. The unit must have glycol mixed with the system water to prevent freezing and the required mix of glycol/ water is stated on the label on the unit containing the unit specifications and listed in the following table:

% Glycol	10	20	30	40	50
Ambient Temp	-3	-8	-14	-22	-33
Heating Capacity Fluctuation	.991	.982	.972	.961	.946
Power Input Fluctuation	.996	.992	.986	.976	.966
Water Flow Fluctuation	1.013	1.040	1.074	1.121	1.178
Water Drop Fluctuation	1.070	1.129	1.181	1.263	1.308

5.4 DEFROST MODE

If the temperature is cold enough for ice to develop on the evaporator at the rear of the unit and the unit has failed to reach the target system temperature within the pre-set period of time, the unit will automatically enter defrost mode. This will divert heat from the heating circuit back to the evaporator until the ice has melted. The DEFROST symbol will appear above the temperature display and will flash during the defrost operation and quantities of steam may be seen emanating from the unit. This is normal.

5.5 SERVICING

Annual inspections are advisable. Remove leaves, debris, moss, etc. from the evaporator. Also, certain Government grant/support Schemes require that the unit be inspected and that each inspection is recorded in the unit Log book for grant/support funding to be payable. It is YOUR responsibility to comply with the rules of any such Scheme. ESP offers a pre-planned inspection and maintenance service. Should you wish to avail of this facility, please call us.

5.6 COIL TEMPERATURE CUT-OUT

Should the coil reach a pre-defined temperature, the unit will automatically switch off until the temperature has reduced sufficiently. Please note that the unit may take several minutes to restart.

5.7 COMPRESSOR OUTLET TEMPERATURE CUT-OUT

Should the compressor outlet reach a pre-defined limit, the unit will automatically switch off until the temperature has reduced. Please note that the unit may take several minutes to restart.

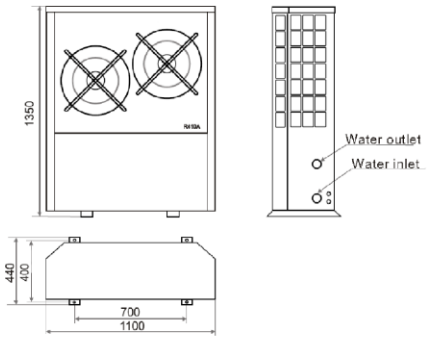
5.8 SHUTTING DOWN FOR LONG PERIODS

If power to the heat pump is to be shut down for a long period during very cold weather (and when the required glycol/water ratio in the system water will not offer adequate protection), it is advisable to drain the system completely. However, frequent draining of the system should be avoided, especially in hard water areas, as this can lead to the build-up of scale in the heating circuit.

6.0 TECHNICAL SPECIFICATIONS

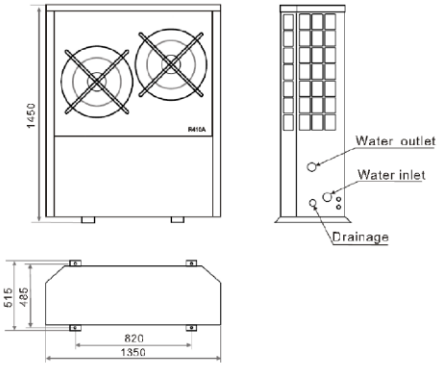
6.1 UNIT DIMENSIONS

13,15 and 17Kw units



25Kw Unit

:W



PASRW-040B-KA
PASRW-050B-KA
PASRW-060B-KA
PASRW-080B-KA
PASRW-080SB-KA

6.2 TECHNICAL DATA

Model	Unit	13kW	15kW	17kW	25 kW	25kWS
Heating Capacity[1]	Kw	13.5	14.0	16.0	24.0	22.0
	BTU/hr	46000	47770	54594	81891	74999
Heating power input	Kw	4.3	4.2	4.9	6.9	7.4
Running Current Cooling/Heating	A	15.2/ 13.5	17.8/ 15.6	20.4/ 17.8	30.4/ 26.1	12.1/ 10.3
Power Supply	V/Ph/Hz	230/1/ 50	230/1/ 50	230/1/ 50	230/1/ 50	380/3/ 50
Number of fans		2	2	2	2	2
Compressor type		2 X Rotary	2 X Rotary	2 X Rotary	3 X Rotary	3 X Rotary
Fan power input	W	2 X 120	2 X 120	2 X 120	2 X 150	2 X 150
Fan Speed	RPM	850	850	850	800	800
Noise	dB(A)	59	56	56	59	59
Water pump input	Kw	.02	0.2	0.2	0.75	0.96
Water head	M	10	10	10	24	24
Water connection	Inch	1	1	1	1.5	1.5
Water flow	m^2/hr	2.3	2.3	2.8	3.8	3.8
Shipping Dimensions	See Package Label					
Shipping weight	See Package Label					
Net Weight	See Information Plate					

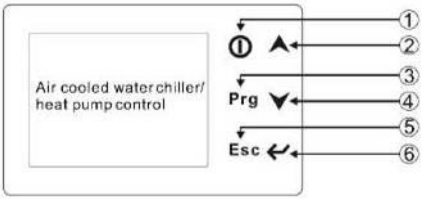
Notes:

1. Ambient Temperature: 7°C/6°C, Inlet/outlet water temperature: 40°C/45°C
(Tested under EN14511 test conditions the units heating out-put is 15kW, 17kW and 25kW respectively with correspondingly higher COPs.)

7.0 OPERATIONS

7.1 USING THE CONTROLLER

Wired Controller showing screen in heating mode

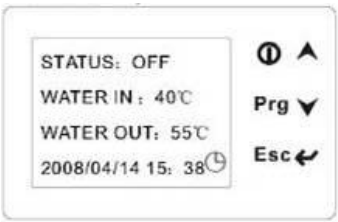


Buttons:

1. Key Button
2&4. Menu selection Buttons
3. Menu Button.
5. Exit Button.
6. Enter Button.

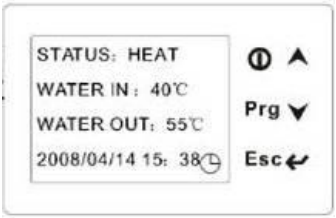
Button 1 is used to activate the screen and to change the display. Button 3 is used to access the menu, buttons 2&4 are used to navigate through the menu. Button 6 is used to access a parameter then it is changed by using buttons 2&4. Once the required setting has been changed, button 6 is used to set (or confirm) that parameter. Pressing button 5 will exit a

parameter then pressing again will return to the top menu.



Wired Controller showing screen 10 seconds after on power-on

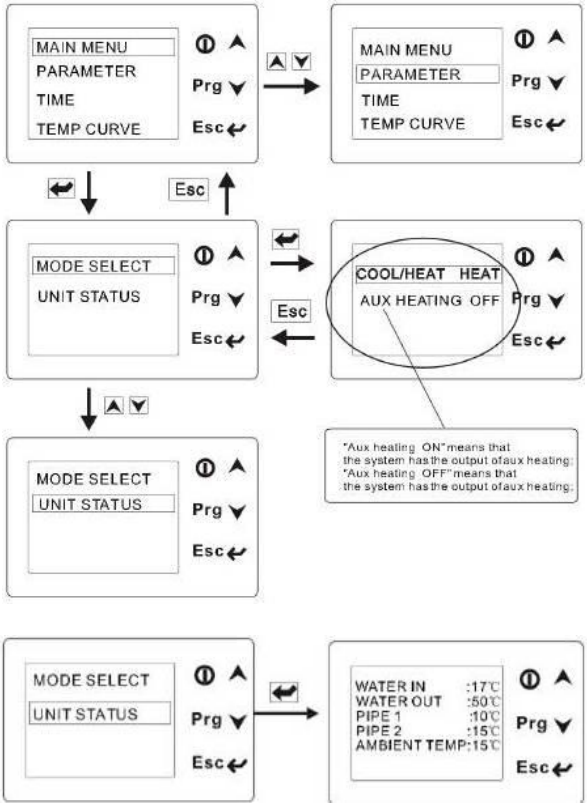
The above screen shows the status of the heat pump; in this case the heat pump is off. The next line shows the temperature of the water/glycol mix at the 'return' port of the pump (40°C), the third line shows the temperature of the water/glycol at the 'flow' port of the pump (55°C), and the bottom line shows the date and time.
Pressing Button 1 again will make the heat pump run and the display will change to:



Note that the top line of the menu shows 'HEAT'

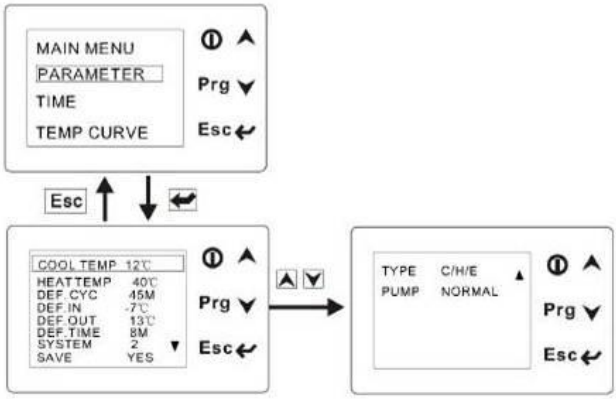
7.2 USING THE MENUS

Pressing the Key Button (1) will display the top-level menu. From here the "up" and "down" buttons (2&4) are used to enter the "Parameter", "time" or "temperature curve" sub-menus:



7.3 Setting Parameters

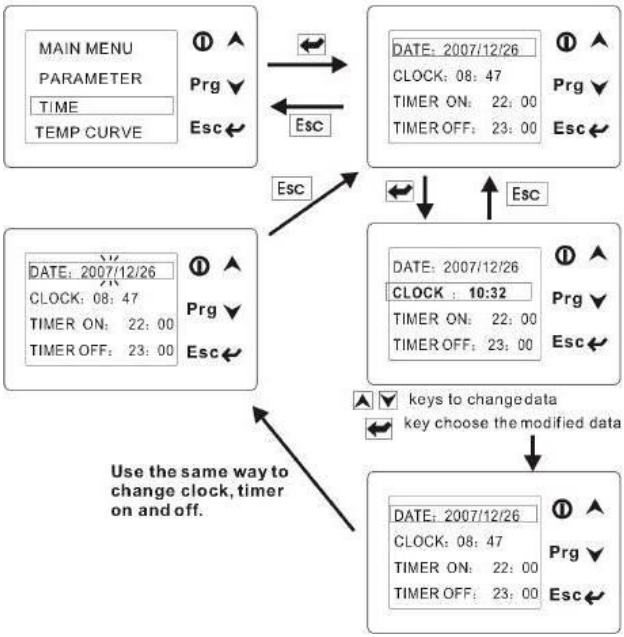
To set an individual parameter, such as the flow temperature or “heat temp”, select “Parameter” from the top-level menu and then the parameter to be changed:



Please note that, apart from changing the time (see below), there will be few situations where another parameter needs to be changed. It would be advisable to discuss any proposed changes with your installer or the ESP technical team.

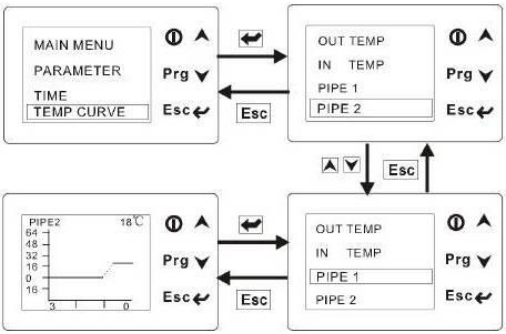
7.4 SETTING THE TIME

The time is set just like any other parameter. Enter the main menu then use the "down" button to select "time". Use the Enter button (6) to move to the time menu. By using the "up" and "Down" buttons, select the parameter to be changed, press the enter button and use the "up" and "Down" buttons to change the value (Hour, Minute, Date etc.). Use the "Enter" (6) to confirm the change. Repeatedly pressing the "Esc" button (5) will return the display to the top-level menu:


MAIN MENU
PARAMETER
TIME
TEMP CURVE
Prg
Esc
Esc
DATE: 2007/12/26
CLOCK: 08: 47
TIMER ON: 22: 00
TIMER OFF: 23: 00
Esc
Esc
DATE: 2007/12/26
CLOCK: 08: 47
TIMER ON: 22: 00
TIMER OFF: 23: 00
DATE: 2007/12/26
CLOCK : 10:32
TIMER ON: 22: 00
TIMER OFF: 23: 00
keys to change data
key choose the modified data
Use the same way to change clock, timer on and off.
DATE: 2007/12/26
CLOCK: 08: 47
TIMER ON: 22: 00
TIMER OFF: 23: 00

7.5 DISPLAYING THE TEMPERATURE CURVES

The last item on the main menu is used to display temperature curves for information only:



7.6 PARAMETER SETTING SUMMARY

Number	Meaning	Range	Default Setting	Adjustable?
00	Cooling Temperature	8-18°C	12°C	N/A
01	Heating Temperature	15-60°C	40°C	Yes
02	Defrost Cycle	1-45mins	40Mins	No
03	Defrost temp (in)	-30°C – 0°C	-7°C	No
04	Defrost temp (out)	2-30°C	13°C	No
05	Defrost Time	1-12 mins	8mins	No
06	System	1-2	1	Yes
07	Save	1-2	1(Recording)	Yes
08	Type	C/CH/CHE/HE	CH	Yes
09	Pump	0-1	0	Yes

Parameter Sub-Settings:

Parameter 06 sub-settings: (DO NOT CHANGE THIS)
1: the unit has 1 compressor.
2: the unit has 2 compressors.

Parameter 07 sub-settings:
0: the unit will restart automatically; (after power cut)
1: the unit will not restart automatically.

Parameter 08 sub-settings:
0: Cooling mode only.
1: Heat pump mode (heating and cooling, as required).
2: Electrical auxiliary heating activated.
3: Heating mode only.

Parameter 09 sub-settings: (DO NOT CHANGE)
For the ESP Classic range, the parameter should be set as follows:
1: 60 second delay before compressors start.
2: 30 second delay after compressors stop.

PLEASE NOTE: The controller will be supplied with factory settings and it will be rare that the operating parameters will need alteration. It would be advisable to consult the ESP technical team or your service engineer before altering factory set parameters.

8.0 FURTHER SAFETY WARNINGS

Before doing any work on the heat pump you MUST switch off power to the unit at the external isolator switch that should be installed next to the unit.

Servicing and maintenance of the unit must only be carried out by qualified technicians.

Repeated triggering of safety and control devices must be thoroughly investigated and any fault causing the triggering corrected before further use of the unit. Please call your service

engineer/installer should safety or control devices be triggered.

You should carry out some basic checks on your unit regularly to maintain it in optimum working order – these consist of standard checks (look at the operating temperature settings, checking water flow and temperatures, see if there is scorching visible on the unit, make sure that the unit surroundings are free from debris and growth of foliage from plants etc.) and should be carried out every 3 months and after the unit has been out of service for any prolonged periods.

The inline filter/strainer should be cleaned regularly for the first six months and once a year thereafter.

The grills on the unit are intended to protect installation engineers from injury from the evaporator during handling and installation work.

However, the grills located over the evaporator can create a risk of clogging with a frost or ice during very cold weather. You may remove the grills over the evaporator during periods of very cold weather but, if you do this, you must make sure that the evaporator is not damaged while the grills are removed and it is, therefore, advisable to keep people and pets away from the unit. Please also note that the metal "fins" on the evaporator are sharp and you should not touch them nor allow others to do so as they are sharp enough to cause cuts. The fins are also fragile and you should avoid bending them.

If in any doubt about what to do, please call your installation engineer or ESP.

WARNING!

Because water composition can vary greatly, it is not the manufacturer's policy to issue recommendations relating to water treatment. The user or the owner is responsible for contacting a specialised water treatment company to obtain water treatment advice appropriate to your location. Appropriate water treatment processes/devices must be fitted to ensure the longevity of the unit and its proper operation.

The unit system must have a water glycol mix in it as stated on the label on the side of the unit. Units in certain colder locations may need more glycol in the mix and you should consult your installation engineer or ESP to ensure that you use an appropriate mix.

PLEASE NOTE – GLYCOL CAN BE POISONOUS UNLESS YOU USE A SPECIFICALLY NON-TOXIC BRAND. PLEASE BE SURE TO USE A NON-TOXIC BRAND AS VERY LITTLE GLYCOL NEEDS TO BE INGESTED TO BE FATAL. ESP OR YOUR INSTALLATION ENGINEER CAN SUPPLY NON-TOXIC GLYCOL ON REQUEST.

9.0 TROUBLESHOOTING

Should the unit fail to start for no apparent reason, carry out the following simple checks before investigating the operating parameters and fault-finding guide or calling your service engineer.

The unit may be running through a process to clear an operating parameter condition. In most cases, this will be

cleared automatically. If it persists, check the programmer display for an operating parameter number. The guide starting on page 28 gives some descriptions and remedies.

Ensure there is a current ‘heat demand’ from the programmer. Ensure the programmer clock and timer controls (and any auxiliary room stat controller/programmer fitted) have been set in accordance with the instructions or that they are switched on (if in non-timed mode).

Check for failure in the electrical supply.

Check for a blown fuse. If the fuse has blown and the replacement also fails, switch off the main electrical supply to the unit and contact your service engineer.

Check the circuit breaker. If this has tripped, reset and restart the unit. If the circuit breaker trips for a second time soon after, switch off the main electrical supply to the unit and contact your service engineer.

Note: If the unit has been shut down due to a failure of the power supply, the programmer contains a battery backup which will preserve all settings. Make sure that you do not leave the system water to freeze while the unit is switched off (you must have glycol in the system to protect the unit from frost at all times).

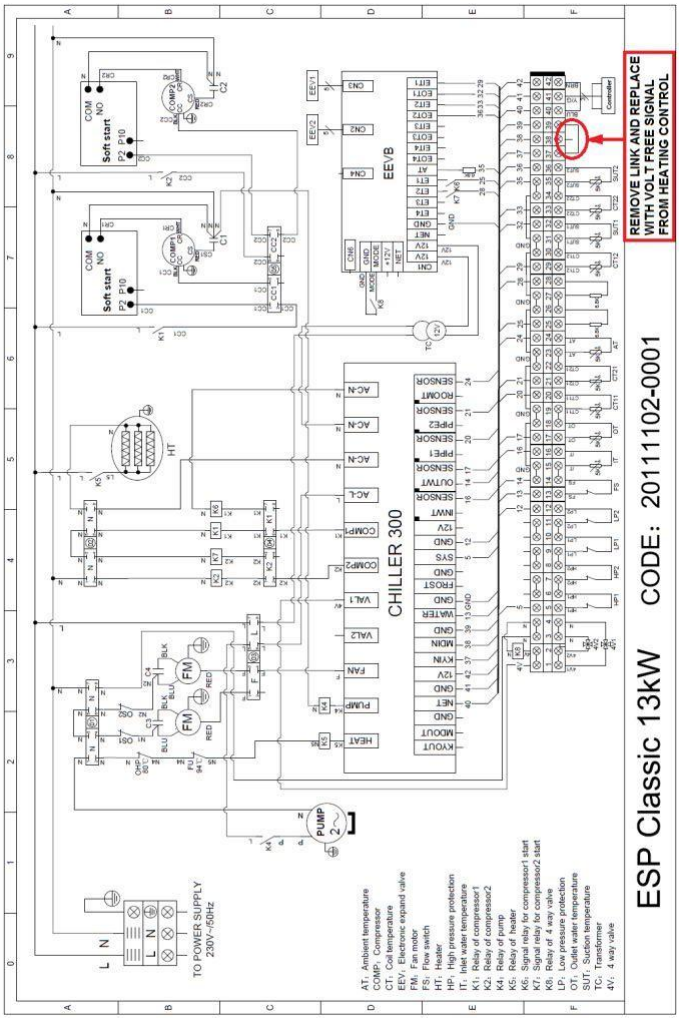
Single Phase Units

Display	Name	Reason	Action	Recover	Resolution
1	Cooling water freezing	Cooling water temp. too low	Unit stops and alarm	Yes	Check water flow volume and temp
2	Cooling water anti freezing	Cooling water temp. after tube inlet too low	Unit stops and alarm	Yes	Check the water system
3	Low pressure	Low pressure switch action	Unit stops and alarm	Yes	Check through the pressure switch and system
4	Compressor exhaust temp toohigh	Compressor exhaust temp too high	Unit stops and alarm	Yes	Check through the refrigerant system for faults and overloading
5	Over-current on compressor	Current through compres-sor too high	Unit stops and alarm	Yes	Check through the power supply to compressor or for short circuit
6	High pressure	High pressure switch action	Unit stops and alarm	Yes	Check through the pressure switch and system
7	Temp. sensor before tube failure	Temp. disengaged sensor or short circuit	Unit stops and alarm	Yes	Check and renew the sensor
8	Tube outlet temp. sensor failure	Temp. disengaged sensor or short circuit	Unit stops and alarm	Yes	Check and renew the sensor
9	Exhaust temp. sensor failure	Temp. disengaged sensor or short circuit	Unit stops and alarm	Yes	Check and renew the sensor
E	Power supply wrong connection	Wrong connection or lack of connection	Unit stops and alarm	Yes	Check the connections and power supply being used (i.e. single or 3 phase)

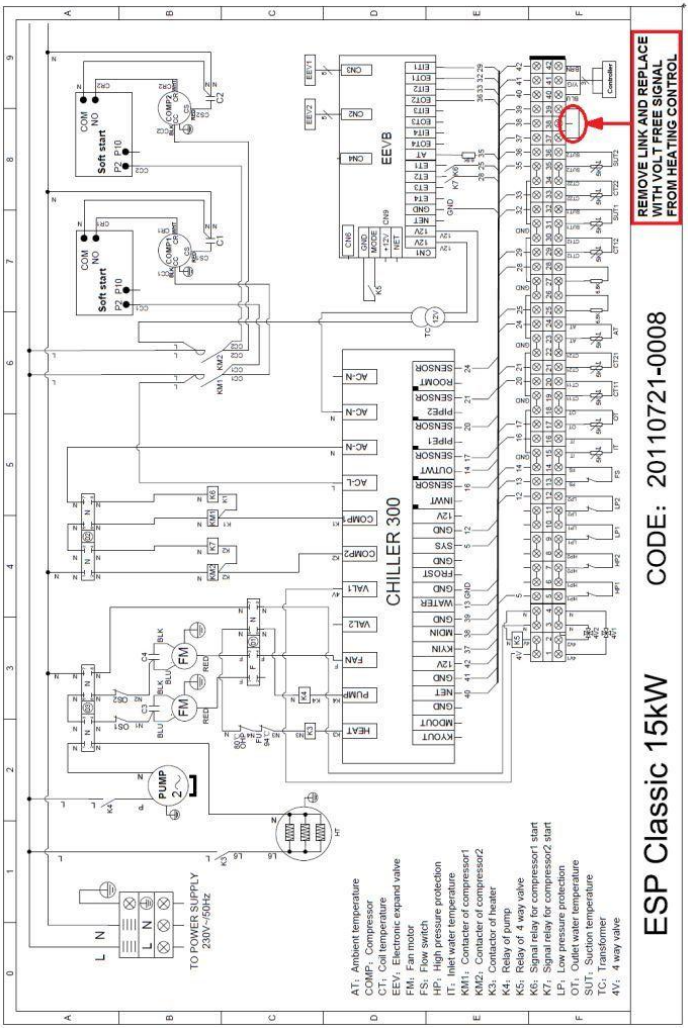
3-Phase Units

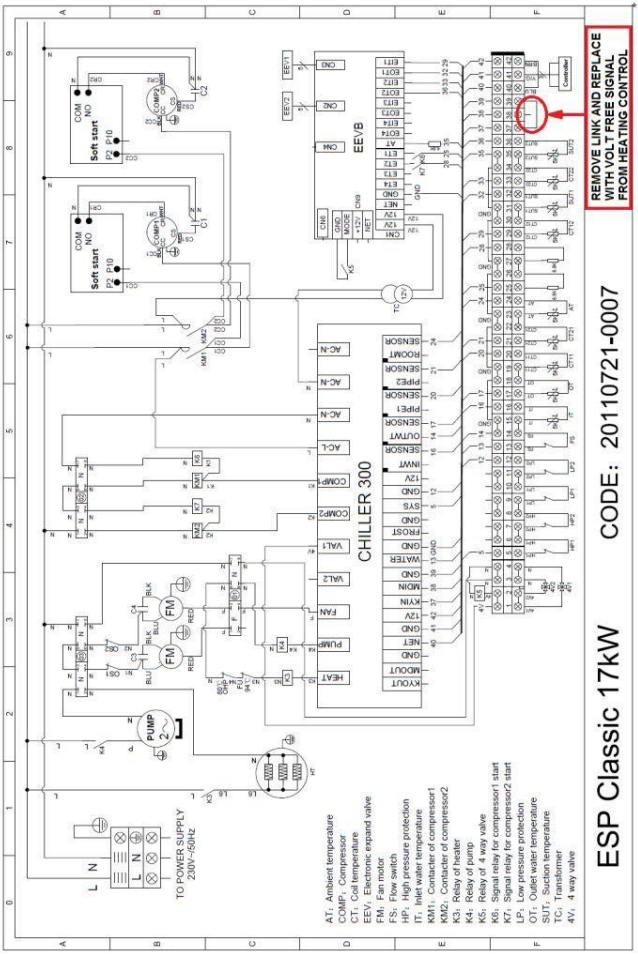
Display	Name	Reason	Action	Recover (yes or no)	Resolution
1	Cooling water freezing	Cooling water temp. too low	Unit stops and alarm	Yes	Check water flow volume and temp
2	Cooling water anti freezing failure	Cooling water temp. after tube inlet too low	Unit stops and alarm	Yes	Check the water system
3	Low pressure	Low pressure switch action	Unit stops and alarm	Yes	Check through the pressure switch and system
4	Compressor exhaust temp Too high	Compressor exhaust temp too high	Unit stops and alarm	Yes	Check through the refrigerant system for faults and overloading
5	Over-current on compressor	Current through compres-sor too high	Unit stops and alarm	Yes	Check through the power supply to compressor or for short circuit
6	High pressure	High pressure switch action	Unit stops and alarm	Yes	Check through the pressure switch and system
7	Temp. sensor before tube failure	Temp. disengaged sensor or short circuit	Unit stops and alarm	Yes	Check and renew the sensor
8	Tube outlet temp. sensor failure	Temp. disengaged sensor or short circuit	Unit stops and alarm	Yes	Check and renew the sensor
9	Exhaust temp. sensor failure	Temp. disengaged sensor or short circuit	Unit stops and alarm	Yes	Check and renew the sensor
E	Power supply wrong connection	Wrong connection or lack of connection	Unit stops and alarm	Yes	Check the connections and power supply being used (i.e. single or 3 phase)

10.0 WIRING DIAGRAMS



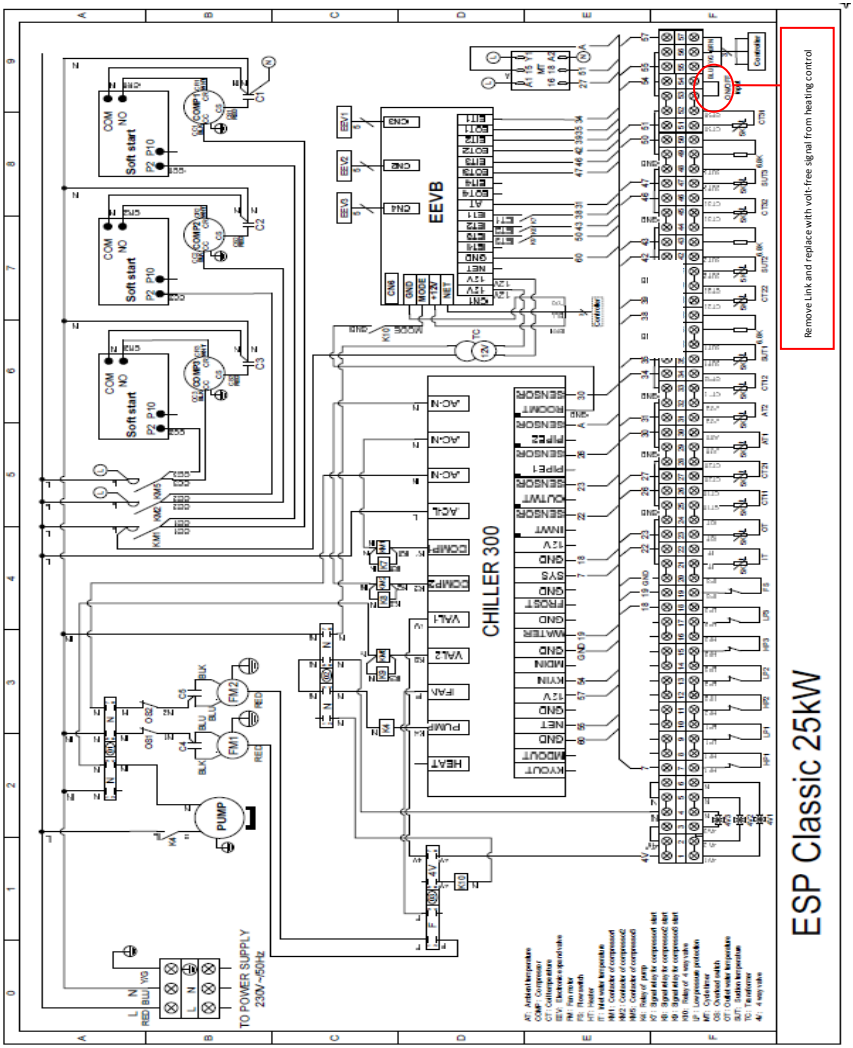
PASRW-040B-KA
PASRW-050B-KA
PASRW-060B-KA
PASRW-080B-KA
PASRW-080SB-KA





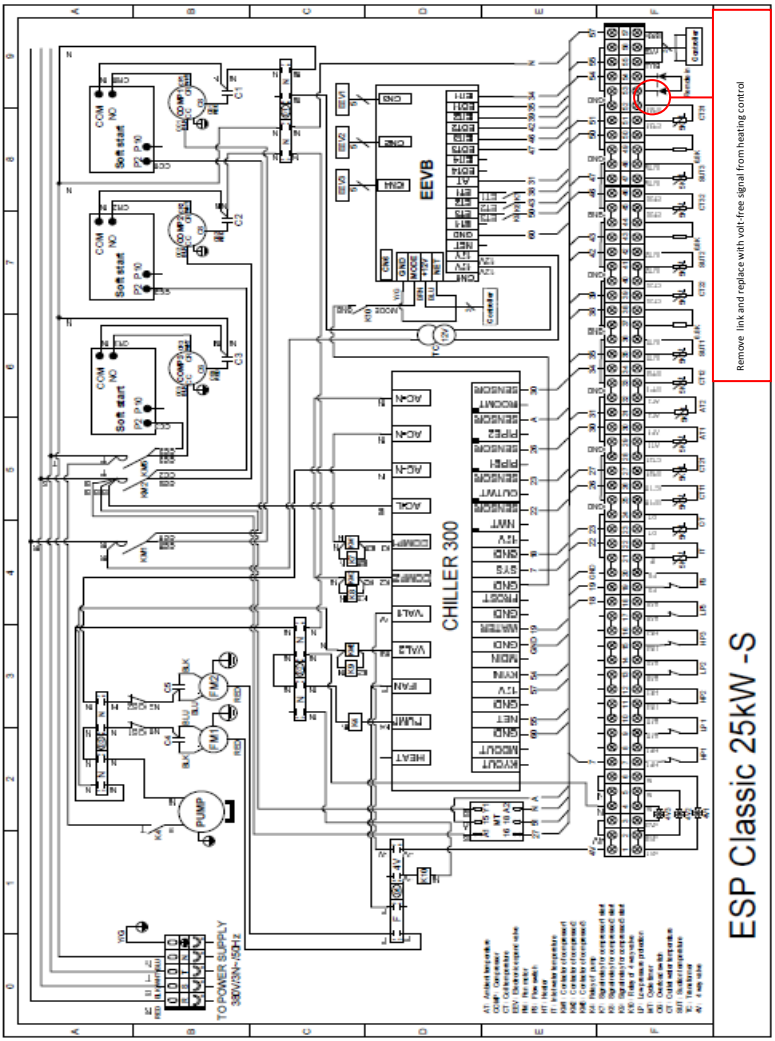
PASRW-040B-KA
PASRW-050B-KA
PASRW-060B-KA
PASRW-080B-KA
PASRW-080SB-KA

25 Kw (Single Phase) Units



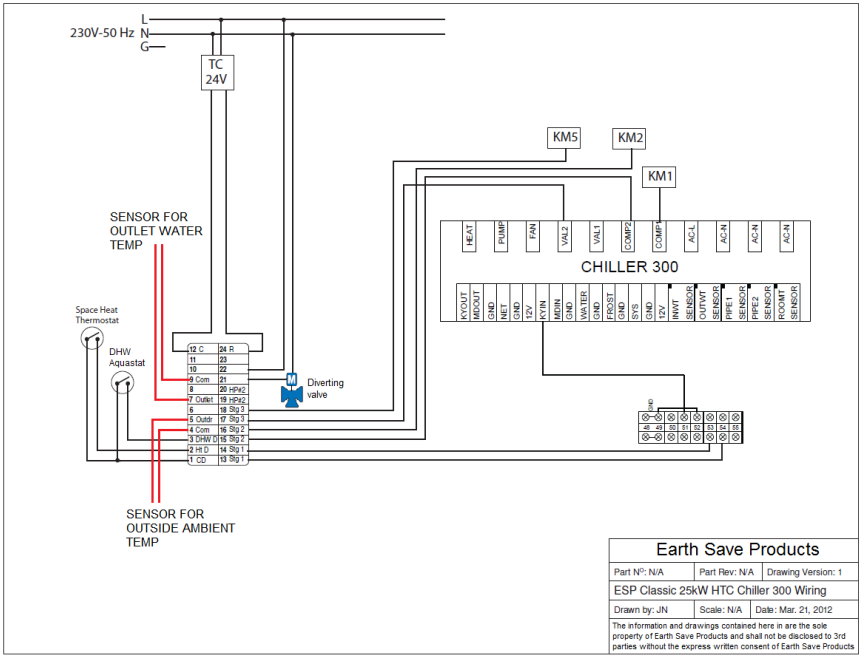
PASRW-040B-KA
PASRW-050B-KA
PASRW-060B-KA
PASRW-080B-KA
PASRW-080SB-KA

25Kw (3-Phase) Unit



PASRW-040B-KA
PASRW-050B-KA
PASRW-060B-KA
PASRW-080B-KA
PASRW-080SB-KA

ESP HPTC Control Wiring



Please note that this is an additional item and detailed wiring instructions are included with the product.

11.0 Installation and Commissioning Certificate Template

This MUST be completed in full and left with the customer.

Customer Details	
Name:	
Correspondence Address:	
Installation Postcode:	

Installer Details	
Installer Company Name:	
Accreditation no. (MCS)	
Address:	
Postcode:	
Telephone:	
Emergency Telephone (if different):	
Email Address:	
Website:	
Installation carried out by: (if different from above)	

System Details		
Heat Pump Manufacturer:	Earth Save Products Ltd.	
Unit size:		
Heat Pump Model and Serial no:		

We have inspected the installation of the heat pump and can advise that the unit has been correctly installed. ☐

We have not inspected the system or reviewed its design. ☐

I confirm that we are responsible for the installation, commissioning and handover of the above Air Source Heat Pump and the same has been carried out (so far as we are aware) in accordance with the manufacturer's documentation and MCS guidelines.

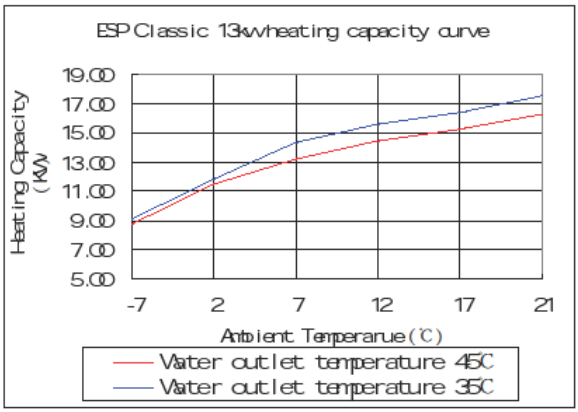
Signed: _____

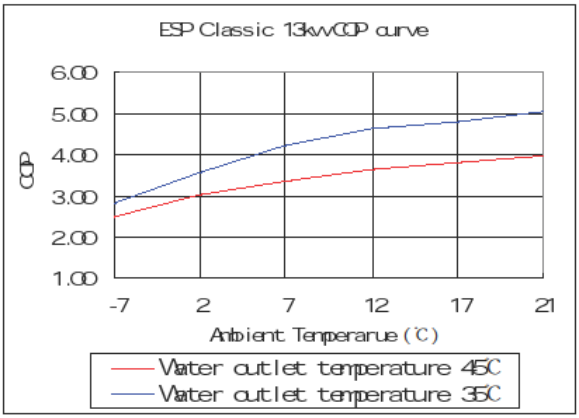
Print Name: _____

Date (of commissioning): _____

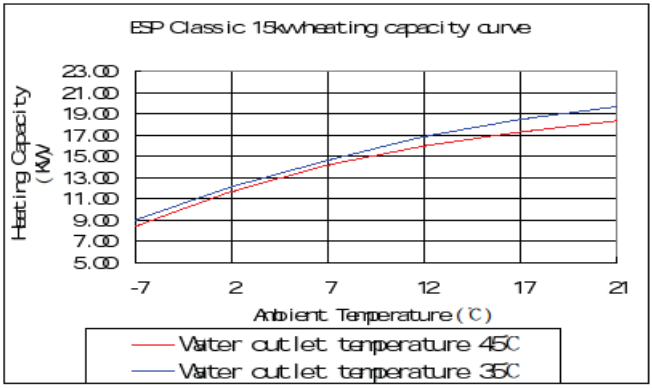
12.0 Performance Graphs

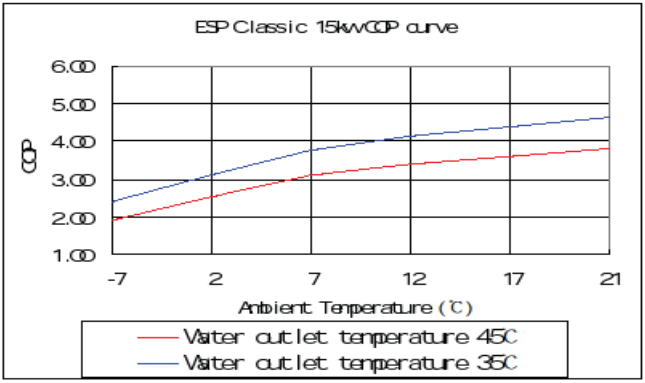
ESP Classic 13Kw



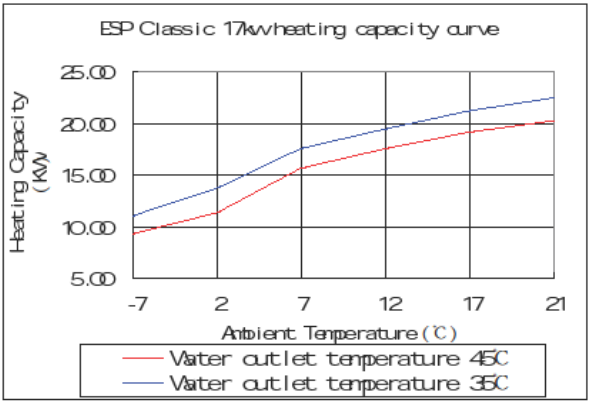


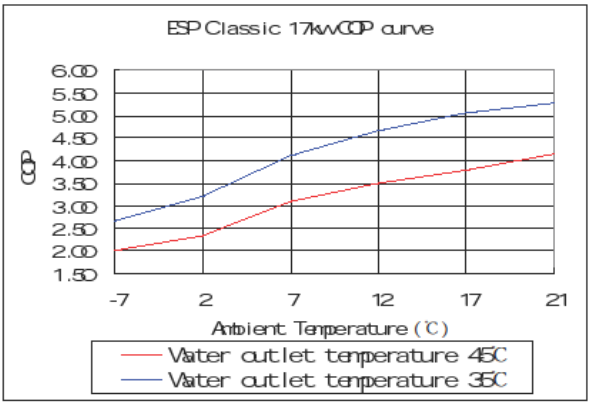
ESP Classic 15Kw



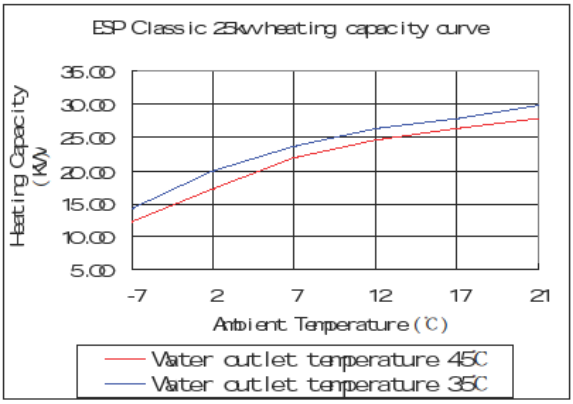


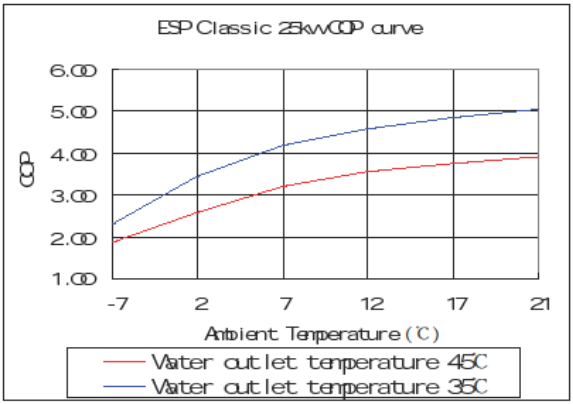
ESP Classic 17Kw





ESP Classic 25Kw





ESP Classic 25Kw-S