



Operating & Maintenance Manual

Domestic Units

3.8 HPD

5.6 HPD

7.8 HPD

9.5 HPD

13.5 HPC



17 Dana Street, Brackenfell
Cape Town

Tel : 021 981 3589/Fax : 021 981 6063

Email : info@sunworx.co.za

www.sunworx.co.za

Contents	Page
1. General Information	3
2. Safety Information	3
3. Important Information	3
4. Usage and Features	4
5. Product Functions	4
6. Installation Instructions	5
6.1 Heat Pump & Brackets	5
6.2. Pipe work & Plumbing connections	5
6.3. Electrical connection	6
6.4. Commissioning	6
7. Directions for use – Controller	7
7.1. Power On, Stand By & Start Up	7
7.2. Mode	7
7.3. How to set the Operation Parameter	8
7.4. Clock setting	8
7.5. Timer on/off setting	9
8. Parameter List	10
9. Failure Codes	11
10. Manual Defrost Cycle	11
11. Wire Circuit Diagram	12
12. Installation Diagram	13
13. Warranties	14

1. General Information



Thank you for purchasing a Sunworx Air Source Heat Pump Water Heater. Please read the instructions carefully before installing or using the Heat Pump and keep this Manual for future reference. This Heat Pump Water Heater is a highly efficient electrical appliance. However, if used or installed incorrectly, it will affect the COP and reduce both the performance and lifespan of the unit. The Heat Pump should be installed and serviced by Sunworx qualified technicians or Sunworx- approved agents.

2. Safety Information



Electrical operating voltage is 230 V 50HZ.

Make sure that the power supply is securely fixed and correctly earthed.

To avoid fire or explosions do not install the Heat Pump in places where flammable, explosive, chemical solvents, perishable gas or liquids are used or stored.

The outdoor unit should be installed on a wall or floor with adequate ventilation.

3. Important Information



The outdoor unit should be carried with the right side facing up. Please try to avoid inclined carrying as this will disturb oil within the compressor. The Intelligent Controller has been set to factory default settings. If you want to change the factory setting please refer to the operating instructions for the Intelligent Controller.

Do not set water temperature at random. Water temperature set between 45 °C and 52 °C is the most energy efficient. Remember, the higher the water temperature, the lower the operating efficiency.

If there is no water supply please turn off the unit to avoid damage due to lack of water in the water tank.

The operating ambient temperature of this machine is -5°C – 40 °C.

Out of this temperature range, the machine cannot operate normally.

4. Usage & Features



A heat pump is a machine that moves heat from a low temperature source to a higher temperature location

by means of mechanical work in the form of a compressor.

Heat pumps work by exploiting the physical properties of an evaporating and condensing fluid known as a refrigerant and refers to a vapour-compression refrigeration device that includes a reversing valve and optimized heat exchangers so that the direction of heat flow may be reversed. Most commonly, heat pumps draw heat from the air.

The heat delivered by a heat pump is theoretically the sum of the heat extracted from the heat source being outside air and the energy needed to drive the cycle.

The steady-state performance of an electric compression heat pump at a given set of temperature conditions is referred to as the coefficient of performance (COP). It is defined as the ratio of heat delivered by the heat pump and the electricity supplied to the compressor.

5. Product Functions



This heat pump has a liquid crystal display controller for water temperature, automatic defrosting, automatic delay-start, fault code display and self-checking functions. The controller has a On / Off Timer function - power failure memory and 2 separate time zone settings. The machine operates automatically according to the factory setting when you do not preset the on/off timer.

The heat pump has an earth leakage protector, high temperature, high voltage, high hydraulic pressure and anti-freezing protection function.

Display Lock - The controller has a key board and coded lock function to avoid altering with parameter settings.

6. Installation Instructions



The Heat Pump must be installed by a qualified PIRB registered plumber and or a Sunworx approved technician. Take note that installation of our Heat Pumps must comply with SANS 10254, SANS 10252 & SANS 1352.

6.1 Heat Pump & Brackets

- The unit should be installed outdoors in a well-ventilated position not directly in the wind.
- Install the mounting brackets supplied with the Heat Pump.
- Fix into brickwork with suitable rawbolts or coach screws
- Install the rubber vibration pads supplied with the Heat Pump under the feet to reduce vibration and the transmission of sound.
- Connect a suitable SABS approved UV rated drainage pipe to the condensate hole at the bottom of the Heat Pump.
- The controller can be installed internally by disconnecting it at the Heat Pump and making use of the controller extension cord and mounting kit. Controllers are installed on the outside of the Heat Pump as shown in the installation drawing.
- The controller should be installed on a wall on which there is no vibration, humidity or high temperature.
- The temperature probe can also be extended with the correct and approved extension cable.

6.2. Pipe work & Plumbing connections

- **NOTE – Refer to Sunworx Installation diagram (see page 14)**
- The maximum allowable head is 6 mm & maximum distance of the total length of pipe work between the circulation loop flow and return is 5 m.
- Be sure to install ball valves and a strainer as per the installation diagram
- Fix the temperature sensor directly to the pipe work by means of insulated foam tape in the position shown in the installation diagram.
- All pipe work must be of copper or material similarly approved by PIRB.
- All internal and external pipe work must be lagged with 25mm thick approved lagging with a minimum r value of 1.

6.3. Electrical connection (see page 12)

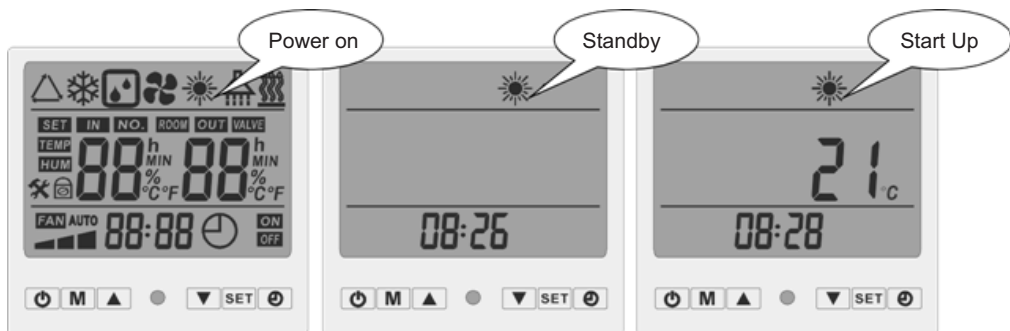
- This appliance must be installed in accordance with SABS wiring regulations and Electrical Code of Practice and by a qualified Electrician.
- The electrical supply isolator should be sufficiently rated and must be correctly earthed.
- External isolating switches must be of the correct IP rating.
- The Heat Pump is supplied with a 1 m cabtyre connection that is pre-connected internally.
- Connect the cabtyre directly to the isolator. Wires are clearly marked.
- If the 1 m cabtyre is too short, do not join but rewire from the Heat Pump to your external isolator

6.4. Commissioning

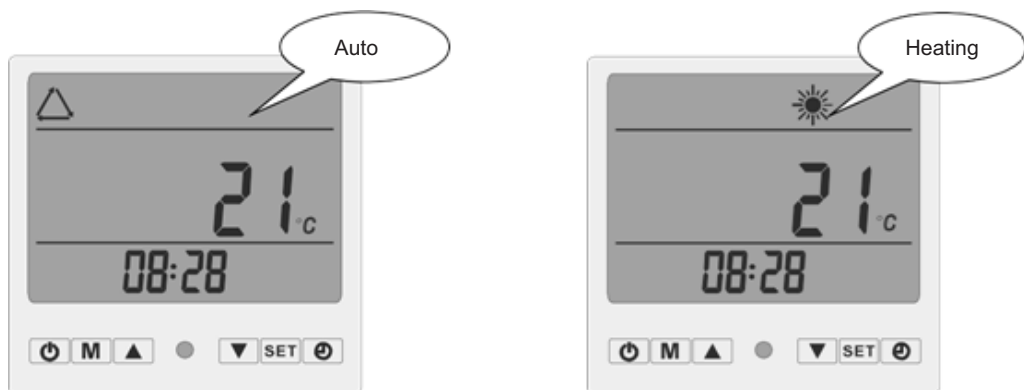
- Open ball valves and slowly and fill the pipe work. Check for any leaking pipe joints.
- Remove front cover from heat pump and release any trapped air from the circulation pump air release screw.
- Once all the air has been expelled replace front cover.
- Turn on the power supply.
- The heat pump should now be in standby mode.
- Press the ON button to start the initial trial operation.
- Let the Heat Pump run until all air has been removed.
- Continue to purge at the pump air release screw.

7. Directions for use - Controller




7.1. Power On, Stand By & Start Up



- When the unit is connected to the electrical supply and power is on, the controller will present a full screen display.
- When in STAND-BY mode, the controller will display the time and heating mode.
- When in START-UP mode, the controller will display the time, heating mode and the temperature of the tank and the running mode

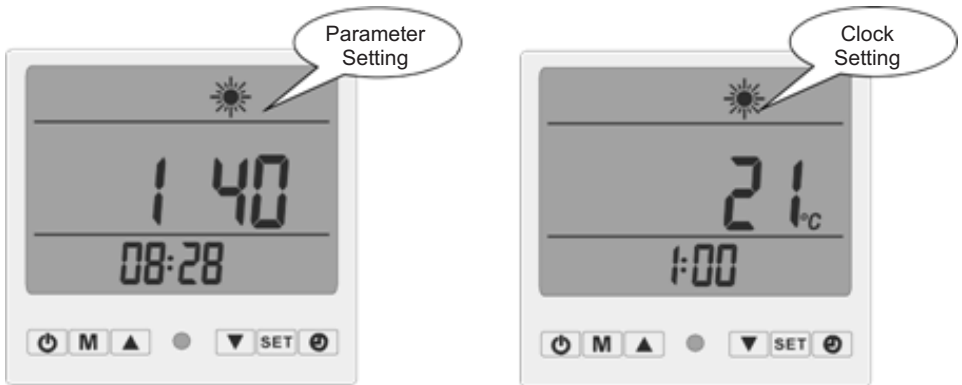


7.2. Mode

- Press the **M** button to choose the Auto or Heating mode.
- Press the  button to turn on and turn off the heat pump.
- Press the  or  button to enter Operation Parameter setting interface.

7.3. How to set the Operation Parameter

- When in the START-UP or STAND-BY state, press the UP or DOWN arrow on the controller to check parameter settings as well as temperature setting.
- Once a parameter setting has been selected the controller will, after 8 seconds, return to default mode.
- To change the desired water tank temperature, select the temperature parameter by means of the up or down arrows and select SET.
- Change the desired temperature and select SET again.
- Wait for 8 seconds for the controller to return to the default screen.

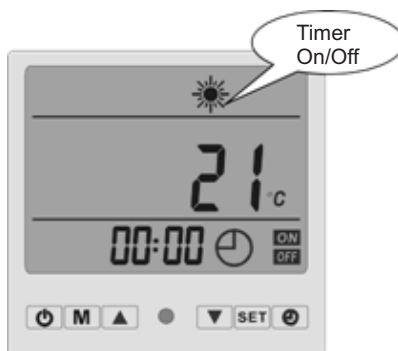


7.4. Clock setting

- In STAND-BY /START-UP mode, press the set button, when the hour is flashing, press the or to adjust the hour and minute value, press the set button again to confirm the time setting.

7.5. Timer on/off setting

- In the STAND-BY/START-UP mode, press button to show hour data and "ON" "1" flashed, press or to adjust the hour - press button again, shows minute data and "ON" "1" flashed, press or to adjust the minute; press button again shows hour data and "OFF" "1" flashed, press " or or to adjust the hour; press button again shows minute data and "OFF" "1"
- flashed, press or to adjust the minute; Press button again, then the timer on and off time setting is finished. If you want to cancel this setting, press "SET" then it will be cancelled.
- At the stand by/start-up state, long press button 3 seconds
- Shows hour data and "ON" "2" flashed, press or
- To adjust the hour; press button again, shows minute data and "ON" "2" flashed, press or to adjust the minute; press button again shows hour data and "OFF" "2" flashed, press or to adjust the hour;
- Press button again shows minute data and "OFF" "2" flashed, press or to adjust the minute; press button again, then time on and time off time setting is finished. If you want to cancel this setting, press "SET" then it will be cancelled.
- **Important Note:** During your setting of 2 timers (at one time), all timer on/off setting time (00:00) shall NOT be same.



8. Parameter List



No	Definition	Range	Default	Remark
0	Inlet water temperature setting to start auxiliary heating element	0 - 30 °C	15 °C	N/A
1	Hot water cylinder temperature setting	10 - 60 °C	55 °C	Adjustable
2	Return water temperature difference	1 - 10 °C	5 °C	Adjustable
3	Defrost Cycle	30 - 90 Min	40Min	Adjustable
4	Temperature to enter to defrosting in heating mode	0 - 30 °C	-7 °C	Adjustable
5	Temperature to exit defrosting under heating mode	2 - 30 °C	13 °C	Adjustable
6	Defrosting time	1 - 12 Min	8Min	Adjustable
7	Defrosting time		1	Adjustable
8	Power failure protection(yes/no)	0-1	Yes	Adjustable
9	Manually or automatically control on Electronic expansion valve	0-1	1 (Auto)	N/A
A	Pressure water pump	0-1	1- Engaged	N/A
B	Anti-freezing protection	0-1	1 - Engaged	N/A
C	Temperature difference between gas suction and evaporator tube	-F-F	0	Adjustable
D	Manually control steps for electronic expansion valve	0-5 °C	35	Adjustable
E	Inlet water temperature	- 9 ~ 9 9 °C		Tested Data
F	Outlet water temperature	- 9 ~ 9 9 °C		Tested Data
10	Evaporator tube temperature	- 9 ~ 9 9 °C		Tested Data
11	Gas compressing side temperature	0 ~ 1 2 7 °C		Tested Data
12	Ambient temperature	- 9 ~ 9 9 °C		Tested Data
13	Water tank temperature	- 9 ~ 9 9 °C		Tested Data
14	Gas suction side temperature	- 9 ~ 9 9 °C		Tested Data
15	Actual steps for electronic expansion	0-5 °C		Tested Data

9. Failure code and parameter tables



Description	Error Code
Heat Pump in Stand-By mode Normal running	
Inlet water temperature sensor failure	PP1
Outlet water temperature sensor failure	PP2
Evaporator defrosting temperature sensor failure	PP3
Gas compressing side temperature sensor failure	PP4
Ambient temperature sensor failure	PP5
Tank water temperature sensor failure	PP6
Winter anti-freezing protection	PP7
Gas compressing side high temperature sensor failure	PP8
Gas suction side temperature sensor failure	PP9
System high press protection	EE1
System low press protection	EE2
Water flow switch failure	EE3
Power source wrong/open phase	EE4
Water pressure failure	EE5
Wire controller communication failure	EE8
Defrosting	Defrost

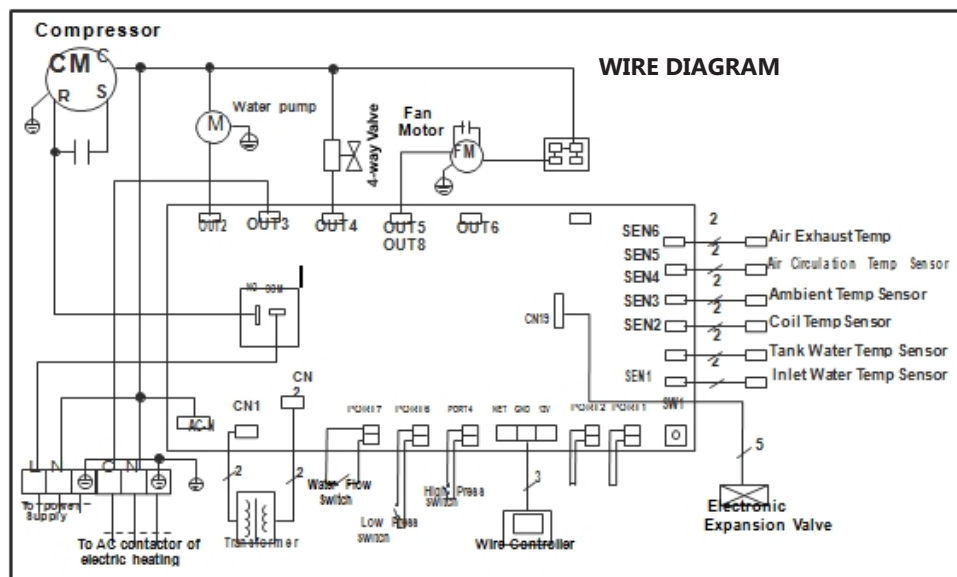
10. Manual defrost cycle.



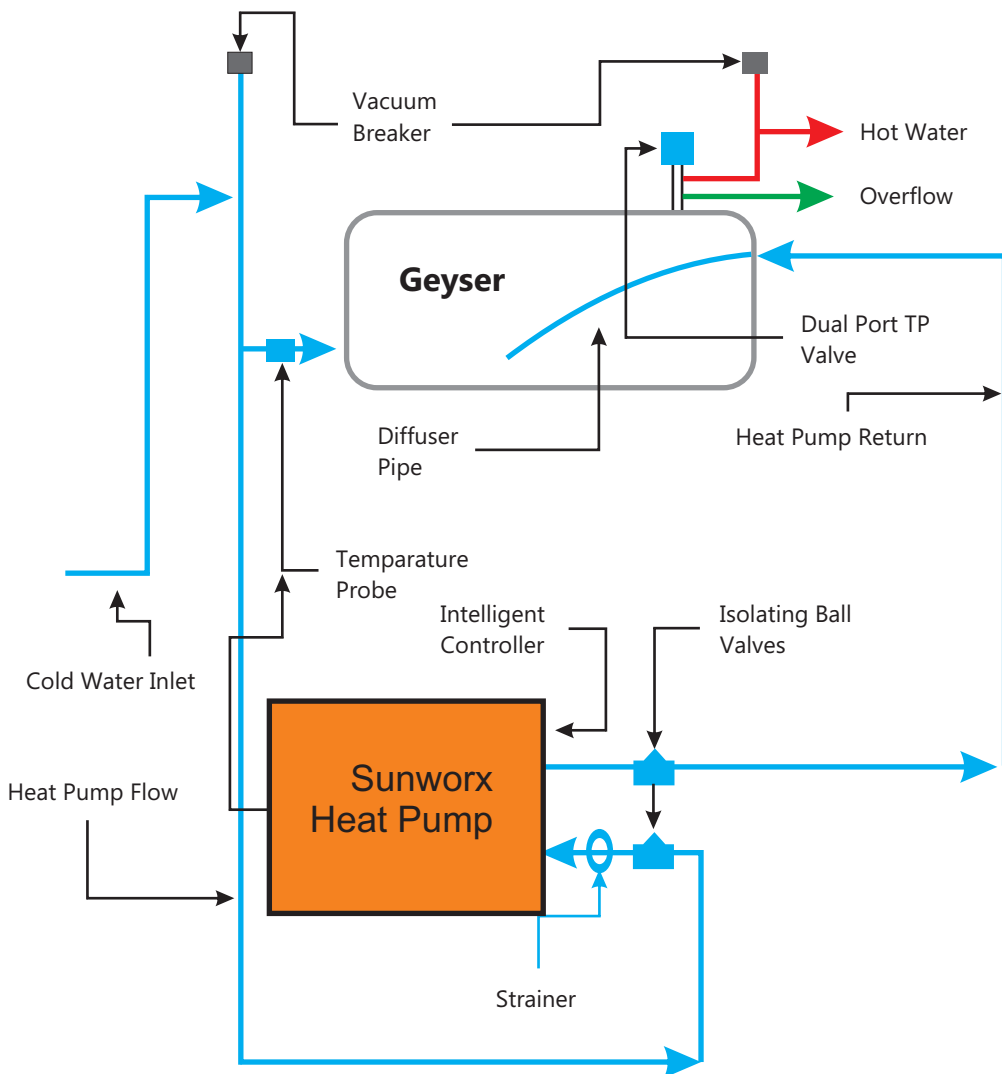
- In STAND-BY mode, press  and  for 5 seconds to enter forced defrost cycle.

11. Wire Circuit Diagram

Applicable model: SWBC-3.8H-B/P SWBC-5.6H-B/P SWBC-7.8H-B/P SWBC-9.5H-B/P



13. Installation Diagram of Heat Pump Pipe Work



12. Warranties

Heat Pump Compressor, circulation pumps – 2 years
Heat Pump casing, Heat exchanger and Controller – 1 year

All warranty claims must be submitted in writing to :
SUNWORX RENEWABLE ENERGY SOLUTIONS
17 Dana Street
Brackenfell
7500
Cape Town

By post or via email : info@sunworx.co.za

Original Invoice must accompany claim.

Warranty is only valid for goods supplied by Sunworx.
Installation claims should be registered with your Installer.

Sunworx does not accept liability or responsibility for the water for consumption from this system.
This system is water heating system and no purification of water is delivered from this system.
The output of quality is dependant upon the quality of the input water supplied to this system.