



**AIR TO WATER
ALL IN ONE HEAT PUMP
Installation & Instruction Manual**

ALL IN ONE HEAT PUMP

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ALL IN ONE HEAT PUMP

Introduction

HILUX all in one heat pump has a series of products with different volumes to meet demands by ordinary households, factories, schools, hotels, restaurants, hospitals, beauty salons, laundries and so on

A heat pump is a machine that pumps heat from a low temperature source to a high temperature reservoir. It has a cold side to absorb heat at low temperature and a hot side to deliver heat at high temperatures.

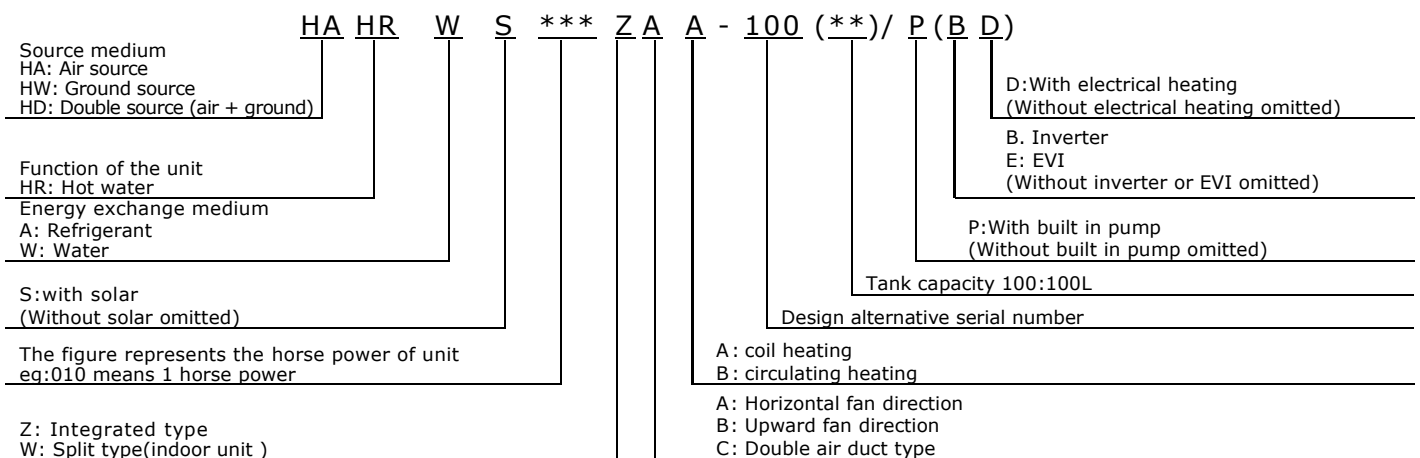
The all in one heat pump is a compact model (heat pump and water storage tank) with a technology known as dynamic cycle flow heating that uses just 1kW of electrical energy to provide 3.6kW of heat energy into the water at 20 deg C.

The system can save up to 75% of conventional hot water energy utilization.

Features

- Streamline appearance with matt white shell design.
- Uses highly efficient compressor (Panasonic/Mitsubishi/Sanyo) and direct coil heat exchanger.
- It also uses an AC single inlet type centrifugal blower instead of normal fan blade, which improves the air heat exchange to give a COP of more than 3.6.
- The system uses energy efficient compressors that are economic and practical thus providing lower operating costs.
- Power consumption is 65% of a solar energy water heater, 25% of electric water heaters.
- The system uses environmentally friendly refrigerants for domestic water heating; no pollution, no emissions of exhaust residue.
- The heat pump can be installed with an electric auxiliary heater or solar system (optional) to assist the heating, thus providing further energy savings.
- Intelligent design, large-screen LCD display, easy operation, 30 deg C to 60 deg C free setting, cycle timing can be set on/off, with power failure memory function, automatic high-temperature sterilization (optional).
- Simple installation and easy to use. Installation requires just two pipes, one at the inlet and one at the outlet and some necessary accessories. Electrical connection must be carried out by a qualified electrician.
- It will work in temperatures from as low as -10 deg C to +43 deg C during day and night very efficiently.

Model Nomenclature



ALL IN ONE HEAT PUMP

Specification and Dimensions

Model	HAHRW (S)	010ZCA-150	010ZCA-200	010ZCA-250	010ZCA-300
Application Number		2-4	2-6	2-7	2-8
Water Volume	L	150	200	250	300
Rated Output Water	L/h	75	75	75	75
Solar Specification ①		Φ58 x 1800 x 15	Φ58 x 1800 x 20	Φ58 x 1800 x 25	Φ58 x 1800 x 30
The Specification Of Solar Coil ①	m	Φ 22 x 15	Φ 22 x 20	Φ 22 x 20	Φ 22 x 20
Rated Heating Capacity	kW	3.5	3.5	3.5	3.5
	BTU/h	11900	11900	11900	11900
Rated Input Power	kW	0.95	0.95	0.95	0.95
Hated Input Current	A	4.3	4.3	4.3	4.3
Auxiliary Electric Heater	kW	1.5	1.5	1.5	1.5
Rated Temp.& Water Output	°C	55	55	55	55
Max.Temp.Of Water Output	°C	60	60	60	60
Power Supply	V/PH/Hz	220/1/50	220/1/50	220/1/50	220/1/50
Compressor		Rotary	Rotary	Rotary	Rotary
Compressor Qty		1	1	1	1
Fan Qty		1	1	1	1
Noise	dB(A)	48	48	48	48
PTR valve	inch	1/2"	1/2"	112'	1/2"
Hot Water Outlet	inch	3/4"	3/4"	3/4"	3/4"
Water Inlet	inch	3/4"	3/4"	3/4"	314"
Working Temp. Range	°C	-15 ~ 43	-15 ~ 43	-15 ~ 43	-15 ~ 43
Fan Direction		vertical	vertical	vertical	vertical
Refrigerant Type		R134a/R410a			
Max. Working Pressure Tank	MPa	0.7	0.7	0.7	0.7
Unit Net Dimensions(+ x H)	mm	Φ 560 x 1475	Φ 560 x 1725	Φ 560 x 1975	Φ 640 x 1820
Unit Shipping Dimensions (LJANI-1)	mm	650 x 650 x 1625	650 x 650 x 1875	650 x 650 x 2125	730 x 730 x 1970
Net Weight	kg	55	65	80	95
Shipping Weight	kg	65	75	90	105
Model	HAHRW (S)	015ZCA-150	015ZCA-200	015ZCA-250	015ZCA-300
Application Number		2-4	2-6	2-7	2-8
Water Volume	L	150	200	250	300
Rated Output Water	L/h	100	100	100	100
Solar Specification ①		Φ 58 x 1800 x 20	Φ 58 x 1800 x 20	Φ 58 x 1800 x 25	Φ 58 x 1800 x 30
The Specification Of Solar Coil ①	m	Φ 22 x 20	Φ 22 x 20	Φ 22 x 20	Φ 22 x 20
Rated Heating Capacity	kW	4.5	4.5	4.5	4.5
	BTU/h	15400	15400	15400	15400
Rated Input Power	kW	1.25	1.25	1.25	1.25
Rated Input Current	A	5.7	5.7	5.7	5.7
Auxiliary Electric Heater	kW	1.5	1.5	1.5	1.5
Rated Temp.Ot Water Output	°C	55	55	55	55
Max.Temp.Of Water Output	°C	60	60	60	60
Power Supply	V/PH/Hz	220/1/50	220/1/50	220/1/50	220/1/50
Compressor		Rotary	Rotary	Rotary	Rotary
Compressor Qty		1	1	1	1
Fan Qty		1	1	1	1
Noise	dB(A)	50	50	50	50
PTR valve	inch	1/2"	1/2"	1/2"	1/2"
Hot Water Outlet	inch	3/4"	3/4"	3/4"	3/4"
Water Inlet	inch	3/4"	3/4"	3/4"	3/4"
Working Temp. Range	°C	-15 ~ 43	-15 ~ 43	-15 ~ 43	-15 ~ 43
Fan Direction		vertical	vertical	vertical	vertical
Refrigerant Type		R134a/R410a			
Max. Working Pressure Tank	MPa	0.7	0.7	0.7	0.7
Unit Net Dimensions(4x H)	mm	Φ 560 x 1475	Φ 560 x 1725	Φ 560 x 1975	Φ 640 x 1820
Unit Shipping Dimensions (LJM/H)	mm	650 x 650 x 1625	650 x 650 x 1875	650 x 650 x 2125	730 x 730 x 1970
Net Weight	kg	55	65	80	95
Shipping Weight	kg	65	75	90	105

Note:

- (1) The manual is a technical parameters measured in the following conditions: outdoor dry bulb temperature is 20°C and wet bulb temperature is 15°C, the temperature of water inlet is 15°C and of water outlet is 55°C
- (2) Using in ambient temperature:-15°C~43°C
- ① (3) apply to the auxiliary solar heater.

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Heat Recovery Time

		Tank			
Model	HAHRW(S)010ZC	150	200	250	300
Initial water temperature	°C	20	20	20	20
Target water temperature	°C	55	55	55	55
Temp difference $\Delta T = T_2 - T_1$		35	35	35	35
Unit output heating capacity	KW/h	3.5	3.5	3.5	3.5
Auxiliary electric heater output heating capacity	KW/h	1.5	1.5	1.5	1.5
Working hours (unit compressor only)	h	1.7	2.3	2.9	3.5
Working hours (compressor and Auxiliary electric heater)	h	1.3	1.6	2.0	2.5

Note:

- The working hours above are based in the following conditions: Inlet dry bulb Temp of 7°C and Inlet wet bulb Temp of 6°C.
- The heating capacity of model HAHRW010ZCA is 3.5kw.

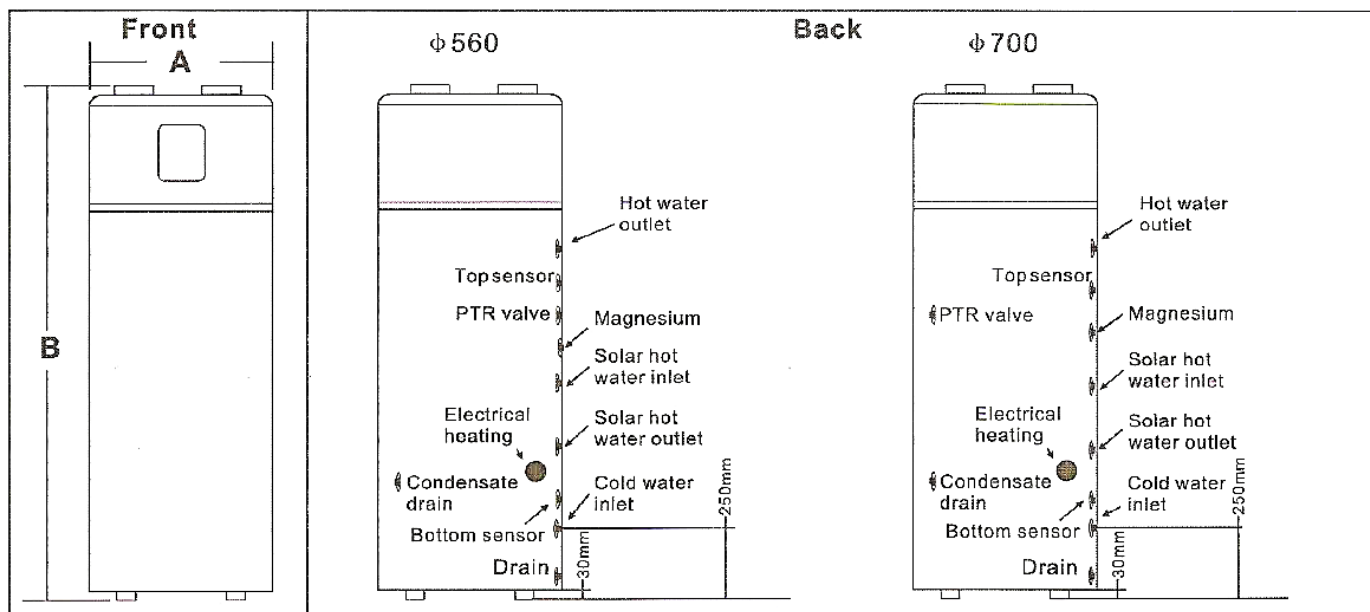
		Tank			
Model	HAHRW(S)015ZC	150	200	250	300
Initial water temperature	°C	20	20	20	20
Target water temperature	°C	55	55	55	55
Temp difference $\Delta T = T_2 - T_1$		35	35	35	35
Unit output heating capacity	KW/h	4.5	4.5	4.5	4.5
Auxiliary electric heater output heating capacity	KW/h	1.5	1.5	1.5	1.5
Working hours (unit compressor only)	h	1.4	1.8	2.3	2.7
Working hours (compressor and Auxiliary electric heater)	h	1.0	1.35	1.7	2.0

Note:

- The working hours above are based in the following conditions: Inlet dry bulb Temp of 7°C and Inlet wet bulb Temp of 6°C.
- The heating capacity of model HAHRW015ZCA is 4.5kw.

ALL IN ONE HEAT PUMP

Unit appearance and mounting dimensions



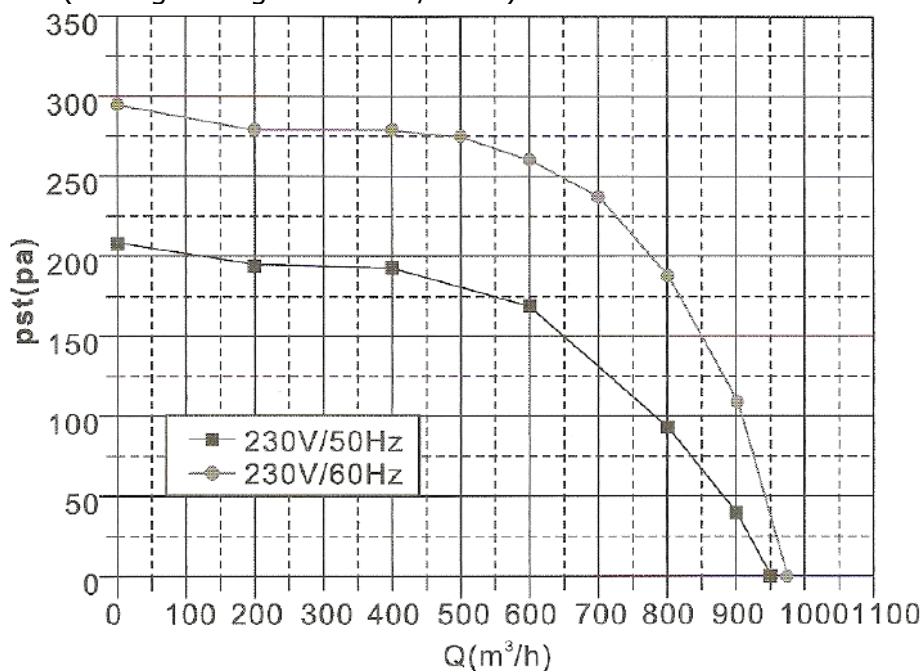
Model Side	150L	200L	250L	300L
A	$\phi 560$	$\phi 560$	$\phi 560$	$\phi 640$
B	1475	1725	1975	1820

Note: The solar hot water inlet and outlet port, the electrical heating port effective for the unit with the solar and electrical heating function.

Air Flow Rates Rating data

Voltage [V]	Frequency [Hz]	Capacitor $\pm 5\% [\mu]$	Current draw	Power input	Speed $\pm 10\% [\text{r/min}]$	Airflow $\pm 10\% [\text{m}^3/\text{h}]$	Noise level [dB(A)]
230	50/60	420/450	0.91/1.15	194/225	1300/1350	950/970	≤ 72

Performance curve (Rating voltage 230V 50/60Hz)



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Methods of Operation

Waste heat recovery and domestic hot water

The system can be used to recover high waste heat in areas such as a kitchen, utility room and so on, even under low temperature conditions such as in winter.

Domestic hot water and dehumidifier

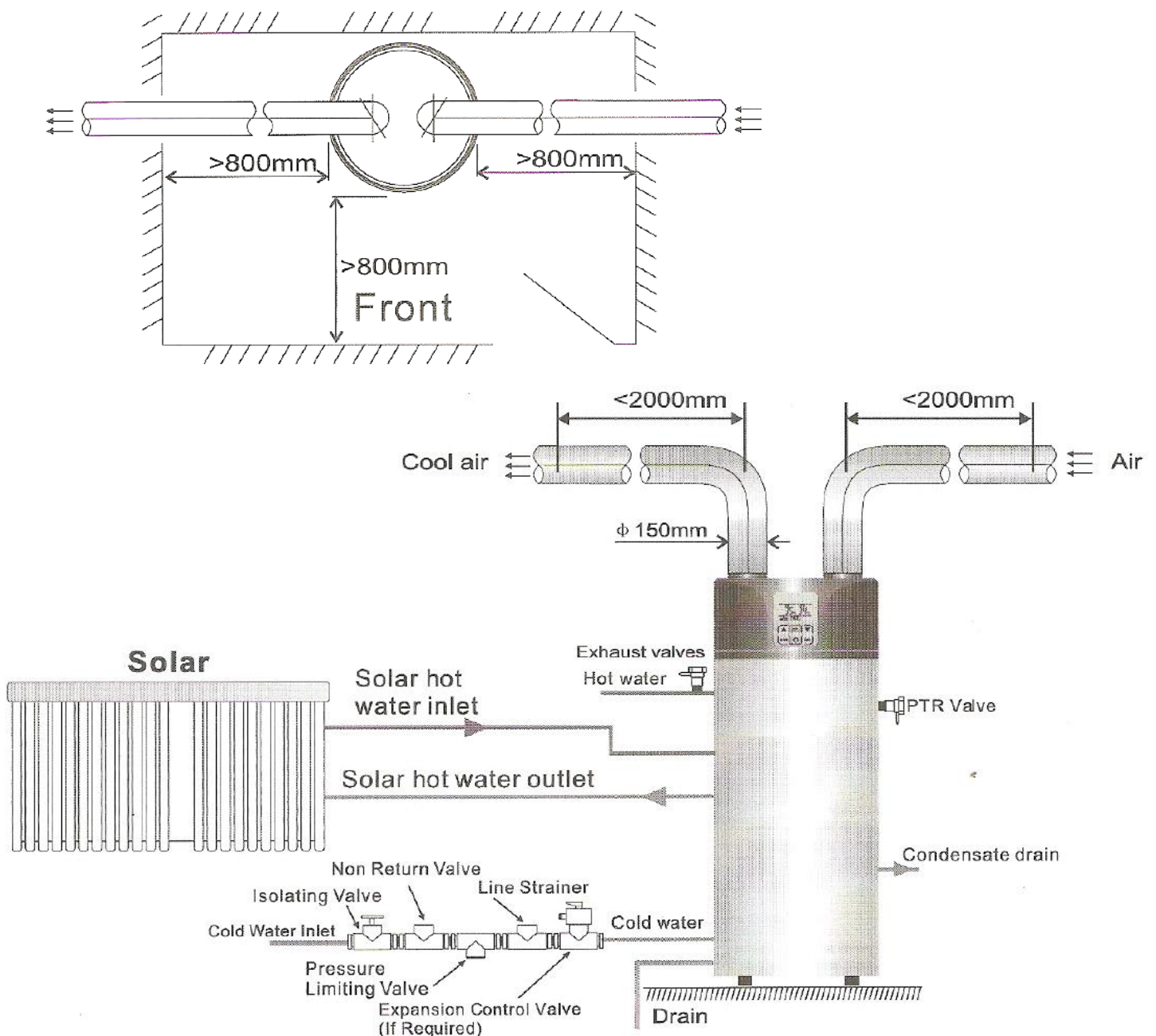
The system can be used to reduce the temperature and humidity in a bathroom or washing room.

Domestic hot water & reducing the temp. of a storage room

The system can be set up to reduce the room temperature of a beverage & wine/food/fruit store by providing fresh cold air when you use your hot water.

Domestic hot water and ventilation

The system can be set up to provide additional ventilation and reduce the temperature of a garage/ basement or fitness room.



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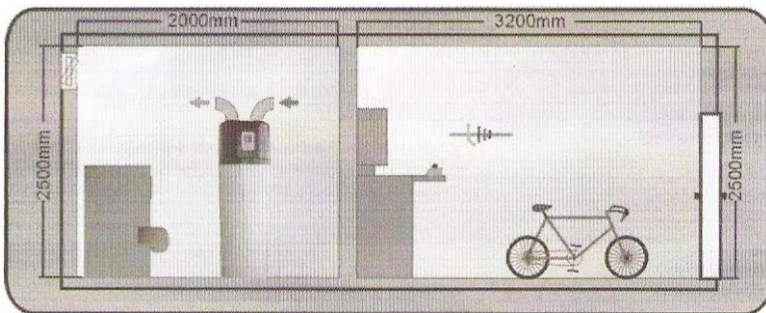
Installation Instructions

Note: This water heater is not suitable for pool heating or building heating.

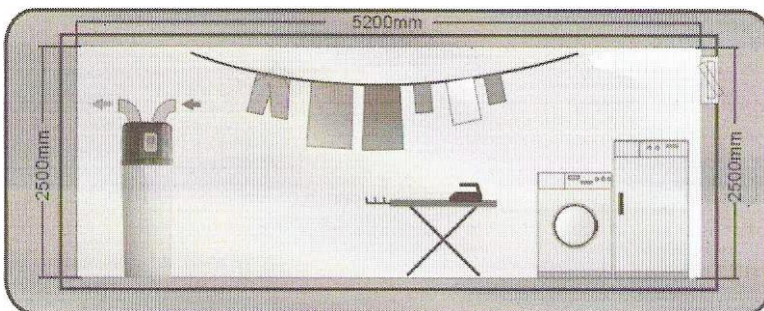
The fitting and shell surface in contact with the water are to be galvanically compatible. Sealants and/or Teflon plumbing tape should be used on potentially galvanically incompatible fittings. This is to protect against possible electrolytic corrosion between the metals (where moisture penetration could occur due to incorrectly or poorly sealed fitting(s)).

The heat pump extracts the required heat from the air being drawn through the fin coil evaporator. This produces cold exhaust as a by-product. In order for the heaters to operate efficiently, good ventilation of the heat pump separate evaporator is required.

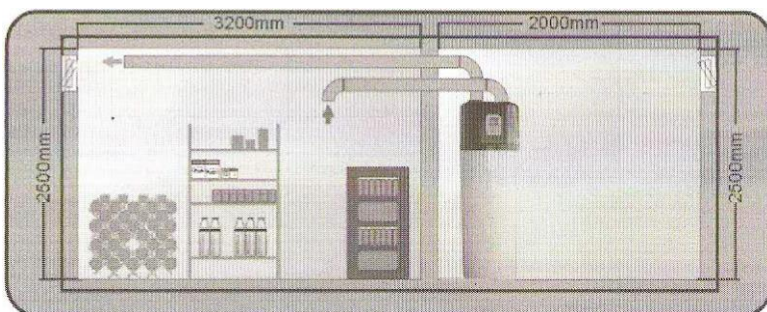
Warm air is required as a heat source and it is also necessary to remove the cold air being produced. The heat pump is therefore best located with the air intake coming from an area with excess heat e.g. a bathroom(s) or a server room (minimum of 120 cubic meters) and the exhaust air extracted to a roof void or cold room or external to the building.



APPLICATION A
Waste heat Recovery
and domestic hot water

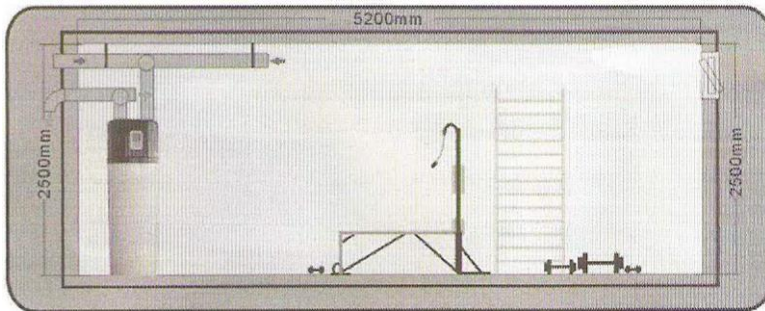


APPLICATION B
Domestic hot water
&
Dehumidifier

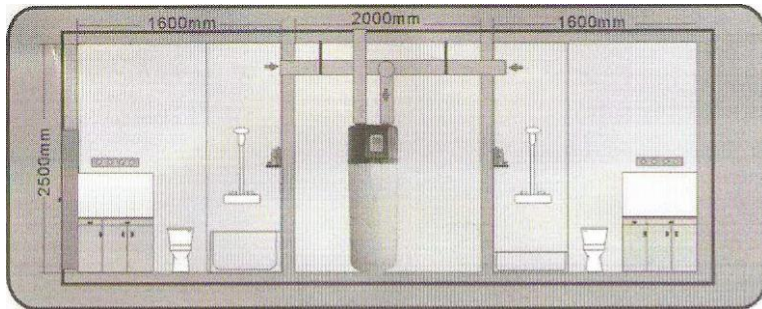


APPLICATION C
Domestic hot water
&
Reducing the temperature
of storage room

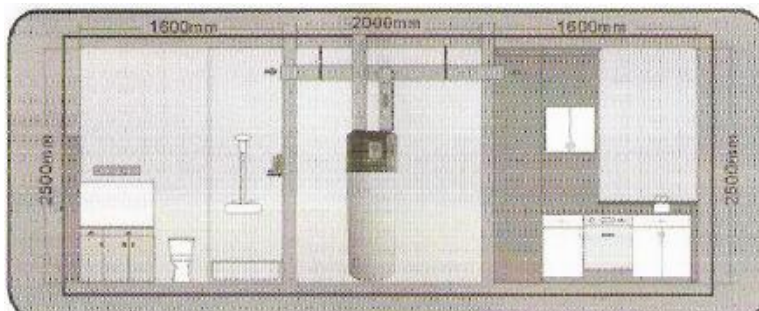
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APPLICATION D
Domestic hot water
&
Ventilate



APPLICATION E
Domestic hot water
&
Waste heat Recovery from
bathrooms



APPLICATION F
Domestic hot water
&
Waste heat recovery from
Bathroom and kitchen

During operation considerable amounts of condensate water will flow from the evaporator drain. If allowed to simply flow out of the outlet, this water may pool below the unit and cause problems to both the water heater and the area around it. The evaporator drain should be drained to a suitable location. This can be accomplished with a length of hose or pipe but must not be connected directly to the PTR valve or expansion valve drain.

Where an expansion control valve is fitted to the cold water supply, the ECV should be rated at 150kPa lower than the Pressure & Temperature Relief valve (PTR). An ECV has to be fitted on the cold water supply line between the non return valve and the water heater.

An approved isolating valve, an approved non-return valve, line strainer (optional but recommended), and union must be fitted between the supply main and the G3/4" /25mm socket in the water heater.

See diagram below.

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General Information

The water heater is designed for direct connection to a maximum water supply pressure of 600kpa. Where the mains water pressure can exceed or fluctuate beyond this pressure, a pressure limiting device (complying to AS1357) must be fitted in the cold water supply line.

This device must be installed after the isolating valve and set at or below 500kpa (or 350kpa if a 600kpa expansion control valve is fitted).

An ECV should be fitted if the water supply has a tendency to form scale.

The R407c refrigerant used has a boiling point of -43.8 deg C so there is no risk of damage of the heat pump from frost. Performance may be reduced in very low temperatures but the system will not be damaged in these conditions.

Consideration should be given to the possible necessity of draining the tank at some point. Draining of the tank can be accomplished by the connection of a hose to the cold water inlet and running to a suitable drain. It will be necessary to disconnect the hot water outlet or PTR valve to relieve any partial vacuum created as the water flows out.

The hot water pipe should be connected to the G3/4" / 25mm socket as shown in the installation diagram. NOTE: Plugs are supplied with the water heater to plug out the inlet & outlet entries that are not required. Please ensure that adequate sealing tape is applied to the plugs for a tight, leak, proof seal.

Where a tempering valve is fitted on the hot water outlet of a Heat Pump (to reduce water temperature to 50 deg C) as per the plumbing code), only high performance valves suitable for "Solar" type water heaters are recommended to be used. Standard tempering valves may not function correctly.

Electrical Requirements

The water heaters are designed for single-phase 220/240V AC supply only. A certified electrician must carry out all electrical work according to the local supply authority regulations.

A 15 amp circuit breaker must be installed at the power supply for the hot water unit. A separate circuit breaker is recommended for each unit in the case of multiple installations. The power connection rating is 220 240V AC 50Hz 15A.

The connection will require an approved, standard 240V 15A On/Off switch or junction box in close proximity to the heater. The fitted power cord is not to be removed; this cord should be connected directly to the junction box adjacent to the heater. Faulty wiring may void the warranty.

It is recommended that a dual tariff meter is installed by your electricity supplier.

Technical Notes:

1. The technical parameters in this manual are measured under the following conditions: outdoor dry bulb temperature 20 deg C, wet-bulb temperature 15 deg C, water inlet temperature 20 deg C, and water temperature 55 deg C.
2. The application temperature range for this product is above -15 deg C, and when the temp. is between -10 deg C and 0 deg C, additional booster heating is required to be provided to ensure the the water yield of the unit.
3. Our company reserves the right to modify the design in order to improve product performance without further notice.
4. Where the performance parameters of the unit purchased are in discrepancy with this table, the nameplate on the unit purchased should be regarded authoritative.
5. *Auxiliary electric heating optional range 1.5kW-3.0kW

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Safety Information

Safety Devices

WARNING: This water heater is fitted with the following safety devices: -

1. Digital Controller.
2. A thermostat (connected to the digital controller) to manage water temperature.
3. A thermostat (connected to the digital controller) to manage compressor temperature.
4. A non self-setting thermal cut out (incorporated into the digital controller).
5. Combination pressure and temperature relief valve.

These devices must not be tampered with or removed.

The water heater **must not** be operated unless each of these devices is fitted and in working order.

This appliance is not intended for use by young children and should be supervised to ensure that they do not play with the appliance.

Pressure and Temperature Relief Valve

The Pressure and Temperature relief valve should be checked for adequate performance and replaced at intervals not exceeding 5 years, or less in areas where there is a high incidence of water deposits.

Providing there is some discharge from the relief valve during each heating cycle, there is no requirement to manually activate the release mechanism on the relief valve.

There is a possibility that the manual opening of the relief valve may allow contamination/grit etc. To settle in the valve seat causing continuous leakage, If the relief valve is operated manually it should be done with care.

The pressure and temperature relief valve and the drain outlet pipe must not be sealed or blocked. It is normal for small amounts of water to leak from the valve during each heating cycle.

DO NOT TURN ON THE POWER UNLESS THE TANK IS FULL OF WATER

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Water heater left operating but unused

If the heater is left in an operating condition but unused for two weeks or more, a quantity of hydrogen gas (which is highly flammable) may accumulate in the top of the water cylinder.

To dissipate this gas safely, it is recommended that a hot tap be turned on for several minutes at a sink, basin or bath, but not a dishwasher, clothes washer or other appliance.

During this procedure there must be no smoking, open flame or any other electrical appliance operating nearby. If hydrogen gas is discharged through the tap it will make an unusual sound similar to air escaping.

Note 1:

This water heater is fitted with a thermostat and over-temperature energy cut-out (both incorporated into the digital controller). Under not circumstances should the water heater be operated without both of these devices being in the circuit. A qualified electrician or the manufacturer should carry out replacement.

Note 2:

If the supply cord is damaged, the local service agent or other similarly qualified person must replace it in order to avoid hazard.

Caution: The water heater must be filled with water before turning on the electricity.

Caution: Regarding drilling metal jacket

Do not drill any holes in the outer metal jacket, it may cause damage to water lines within the tank.

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Maintenance and Service Information

The HILUX water heater is a completely sealed refrigeration system, similar to a household refrigerator. The maintenance program to be employed is not much different to that required for the maintenance of a standard electric water heater. However, the warranty may be void if any of the following conditions are not met or if the refrigeration lines or components are damaged or altered in any unauthorised way.

The water tank must not be drilled or punctured. Drilled holes or punctures, may damage the water pipes located in the water tank.

The water heater uses evaporator coils to extract heat from the air. The coil is extremely efficient in warm humid weather; however, as temperatures drop to 10 deg C or less the coil will begin to collect ice. The coil has been designed to auto-defrost the coil under such conditions.

The defrost is automatic and is managed by the digital controller. It is important that the air inlet vents are kept clean. Restriction of air-inlet or air outlet vents may void warranty if the system has been damaged because of insufficient airflow.

A sacrificial anode is fitted inside the vitreous enamel lined cylinder. Its purpose is to help protect the cylinder from the corrosive effects of water. Normally, the sacrificial anode should be inspected every fifth year and replaced if necessary.

In areas where "hard water" or poor quality water conditions exist, the sacrificial anode must be inspected every second year. Replacement anodes must meet HILUX quality specifications and must be appropriate for local water conditions. The anode socket in the flank of the tank is a G1/2" /20mm thread, and a socket wrench is required to unscrew it.

Before any electrical components are inspected the system MUST be turned off at the power switch/hot water circuit breaker. Do not touch wiring or any electrical components without supervision or training to Irish or international standards.

Routine Service

Access and removal of Sacrificial Anode

The anode can be accessed via the heatpump section for removal: -

1. Turn off power to the unit, cut into water valve, open PTR valve to release pressure on the system.
2. The anode head is now accessible and can be unscrewed with a suitable socket wrench.
3. Once unscrewed the anode can be drawn out through the flank of the tank/heat pump section.
4. The new anode can then be fitted and the heater reassembled.

Flushing of Water Tank

As with other hot water heater tanks, dissolved solids in the water or scale may accumulate in the bottom of the water tank forming sludge. This is generally less a problem with HILUX units as no internal elements or burners are used.

If such sludge buildup does occur, the following procedure can be followed to clean out the tank.

1. Turn off power to the unit.
2. Turn off water supply to the unit.
3. Remove the blanking plug (brassfitting) from the unused inlet (normally on the right hand side for left hand connected tanks). The inlets are at the bottom of the tank about 300mm up from the base.
4. Remove the blanking plug from the unused hot water outlet (normally on the right hand side for left hand connected tanks). The outlets are at the top of the tank.
5. Allow the water to drain from the tank. While the water is draining a non-metalic rod may be inserted through the open cold water inlet and used to break up any sludge and assist in its removal.
6. Care should be exercised during this procedure so as not to damage the glass lining of the tank. The use of metal rods should be avoided and plastic or wooden rods used instead.
7. Turning the cold water supply back on while the tank is emptying or after the tank has drained and continuing with the mechanical agitation will further assist with the removal of the sludge.

Thermal Overload (Incorporated in Digital Controller)

All models are fitted with a digital controller for heat pump management. One function of the digital controller is to initiate a shut down and lockout if the compressor reaches a temperature of 105 deg C. The system will not automatically restart from this.

Turning the power off then back on will also perform a reset.

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Filling the Water Heater and expelling air from the water pump

1. Before filling the water heater open all hot water taps. Open the isolating valve at the cold-water inlet and allow the water heater to fill until the water flows through the system.
2. Close each hot water tap after the air has been expelled from its line.
3. When the system is full of water, keep all the hot water taps and the isolating valve at the cold water inlet open and let the water flow out for a minute or two.
4. Power up the unit (use the digital controller by pushing the "ON/OFF" button). If the unit does not stop after 5 minutes, the unit is operating normally. Close all the hot water taps to let the heat pump work normally.
5. If the unit stops within the first 5 minutes, turn the power off to the unit (use the digital controller by pushing the "ON/OFF" button). Open the hot and cold water taps. Let the cold water fill the tank. When the tank is full of water, the water will flow out of the tank from the hot water outlet. Power the unit up again. Repeat steps 4 and 5 until all the air is expelled from the water pump.

Your HILUX water heater has been manufactured to suit the water conditions of most Irish metropolitan supplies. Please note that harsh water supplies can have a detrimental effect on the water heater and its life expectancy. If you are unsure about your water quality you can obtain information from your local water supply authority.

By using the correct anode this water heater can be used in areas where the Total Dissolved Solids (TDS) content of the water supply is up to 2500 mg/L. In areas where the TDS exceeds 750mg/L it is possible that the magnesium alloy anode (supplied in the heater) may become over reactive. To alleviate this, the magnesium alloy anode should be replaced with an aluminium alloy anode (Note: Producer does not supply this).

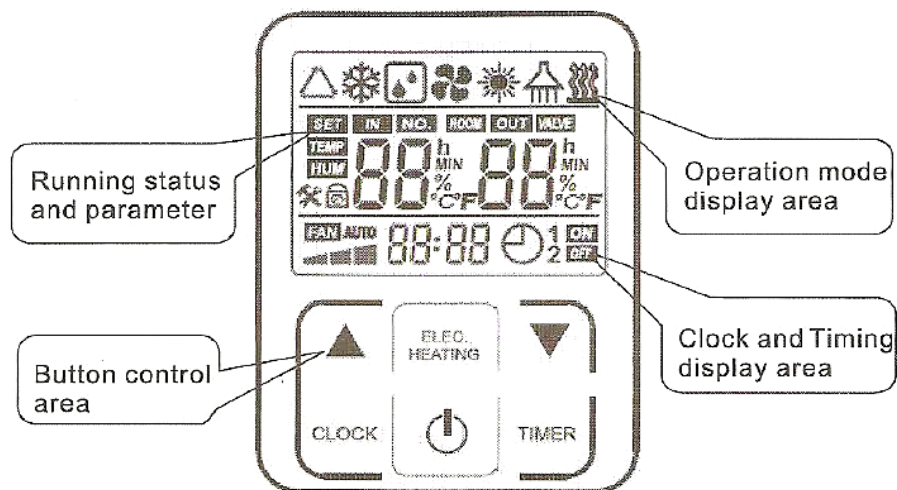
Operation of the Digital Controller

Caution:

Modification of the digital controller programming and setting without authorisation from HILUX will void your warranty. This section is provided **only** for qualified refrigeration technicians to assist in servicing, repairs or troubleshooting.

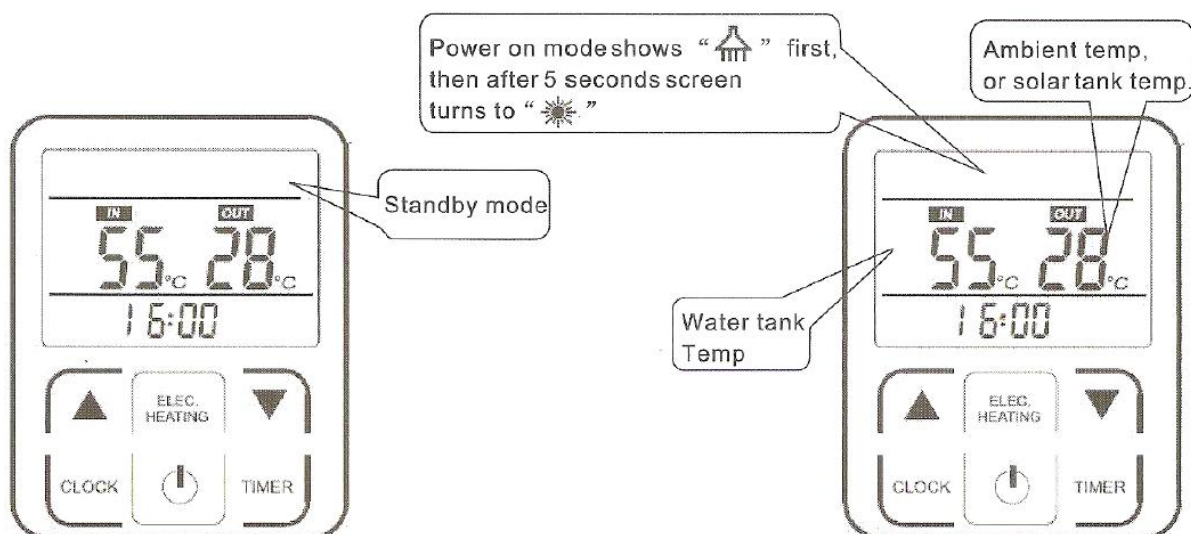
Using the digital controller

The digital controller is mounted on the side of the unit. The diagram below shows the control buttons and the area on the display associated with the clock/timing, operating mode and running status and parameter setting.



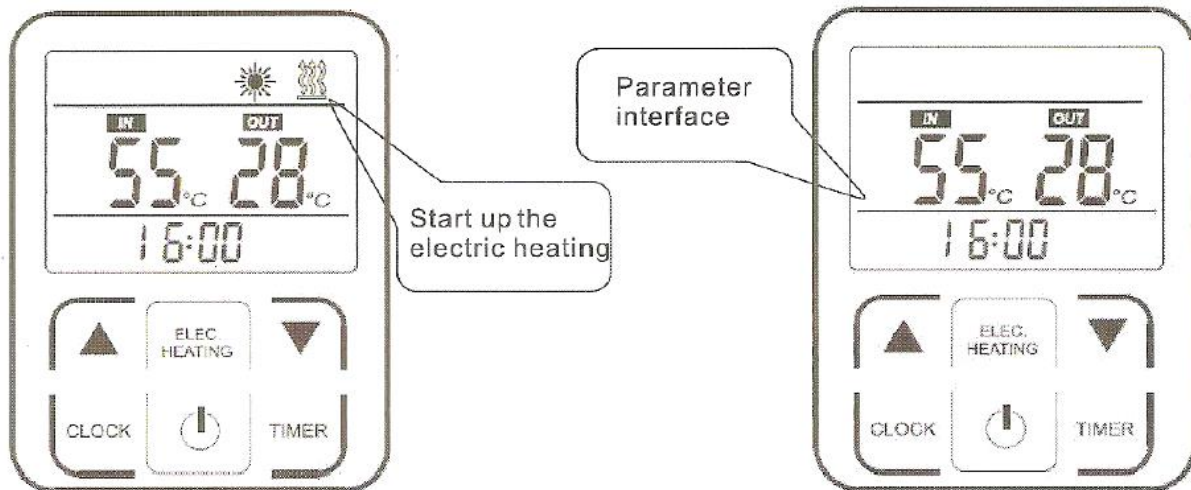
ON/OFF control

If the operating mode display area is clear this means that the controller is in standby mode. The ON/OFF button is located in the bottom centre of the button control area. Press this button to power the unit on and off. When the unit is turned on a "🏠" symbol is shown for 5 seconds after which, it turns to "☀️". The unit will then heat the water during the programmed time period (see below for instructions on adjustment and factory settings).



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If a boost to the water heating is required press the "ELEC. HEATING" button. The electric heater symbol appears in the operation mode display area. Press this button again to turn off the boost. If the boost is not turned off manually it will be turned off automatically at the end of the next programmed time period.



Air supply mode

In the shutdown state, press button "ELEC. HEATING" for 5 seconds, you will see the icon "🌀" display on the wire controller. This moment the units are running air supply mode, the fan operation.

Press button "ELEC. HEATING" for 5 seconds, can close the air distribution mode

Clock Setting

1. To change the time, press the "CLOCK" button . The hour flashes. Use the up "▲" and down "▼" buttons to change the hours as required.
2. Press "CLOCK" again, the minutes flash. Use the up "▲" and down "▼" buttons to change the minutes. Press "CLOCK" again to get back to the standard display.

Timed Setting

Timed ON setting: Press "TIMER" button, and the place of "hour" and "1" "ON" will keep flicking. Press "▲▼" button to adjust the setting of the hour. Press "TIMER" button again, and the bit minute flicks. Press "▲▼" buttons to adjust the setting of minute;

Timed OFF setting: Press "TIMER" button again and the place of "hour" and "OFF" flicks. Press "▲▼" to adjust the setting of hour. Press "TIMER" button again, and the bit minute flickers. Press "▲▼" buttons to adjust the setting of minute. press "TIMER" button again to end the first timing setting.

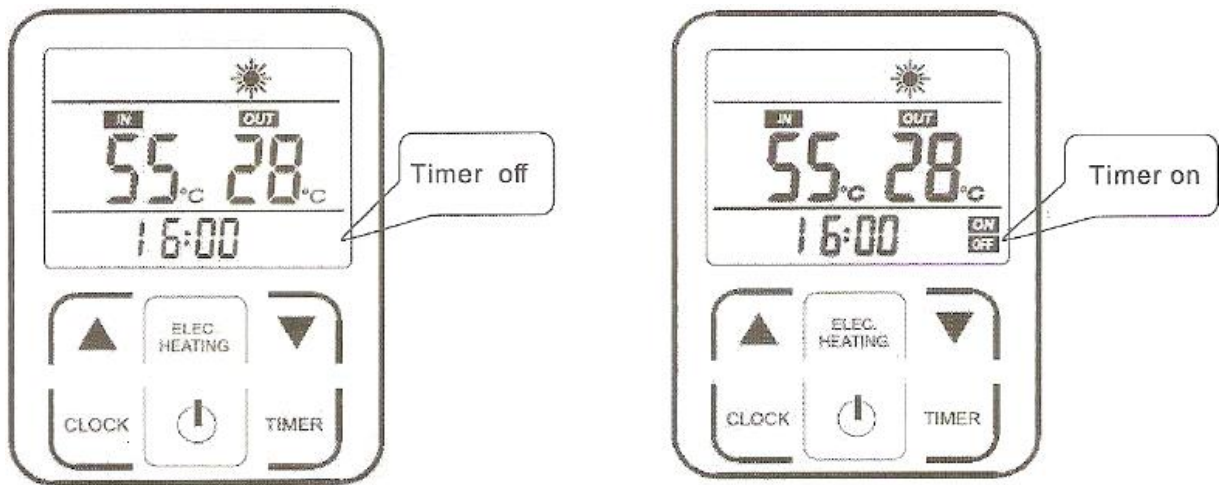
Press "TIMER " button s for 3 seconds to enter the second timing setting; and the place of "hour" and "2" and "ON " will keep flicking. Press "▲▼" buttons to adjust the setting of the hour. Press "TIMER" button again, and the bit minute flicks. Press "▲▼" buttons to adjust the setting of minute; Press "TIMER" button again and the place of "hour" and "OFF" flicks. Press "▲▼" to adjust the setting of hour. Press "TIMER" button again, and the bit minute flickers. Press "▲▼" buttons to adjust the setting of minute. Press "TIMER " button again to complete and exit the timed ON/OFF setting mode.

Cancellation of timing setting operation

Press "TIMER" button and press "CLOCK " button to cancel the timing 1.

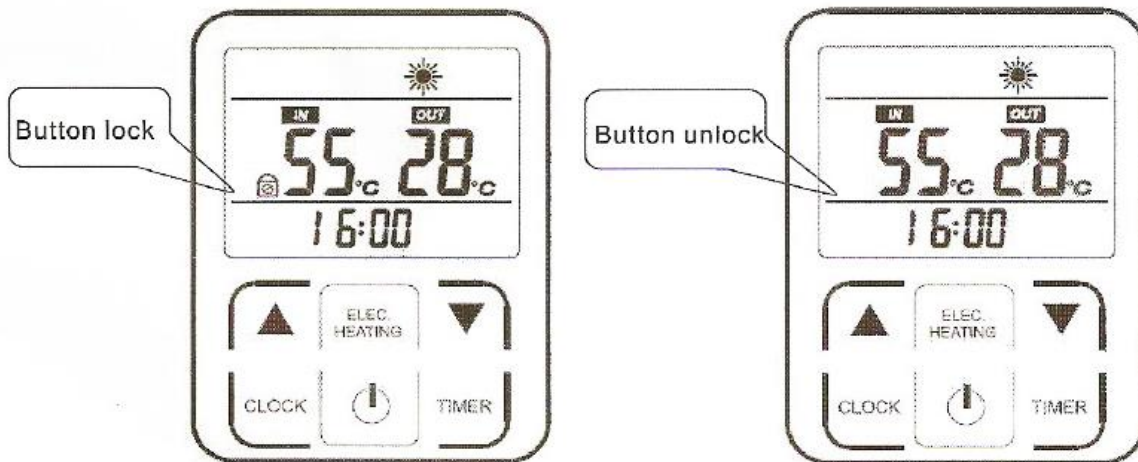
Press "TIMER" button for 3 seconds to enter the second timing setting; and the place of "hour" and "2" and "ON " will keep flicking, and press "CLOCK" button to cancel the timing 2.

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Display locking/unlocking

1. While in any mode (but not while changing parameters), it is possible and recommended to lock the display.
2. Press and hold both the up "▲" and down "▼" buttons for 10 seconds to lock the display.
3. To unlock, simply press and hold the up "▲" and down "▼" buttons again, for 10 seconds.



8.3f Parameter setting

In the standby mode, press key "▲" or key "▼" to enter the browsing interface and can see the parameters of 0-14/A/b/c/d/E/F, then choose the parameters you want to modify, and press the key "⌚" and key "ELEC. HEATING" at the same time to enter the interface of parameters modifying, then press the key "▲" or key "▼" to modify the corresponding parameter value, then press the

key "⌚" and key "ELEC. HEATING" at the same time for confirm the modification.

In the boot - up state. Press key "▲" or key "▼" to enter the browsing interface and can see the parameters of 0-14/A/b/c/d/E/F. (but can't modify the parameters)

Note: 1. All the parameters could not be modified under boot-up state and just can be modified under standby mode.

2. Adjustment of controllers in settings may adversely affect heat pump

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Digital Controller Parameter Settings

Parameter	Content description	range	default	Adjust
0	Domestic hot water tank temperature setting	10 ~ 60°C	55°C	Adjustable
1	Tank temperature difference value for the compressor restart setting	2 ~ 15°C	5°C	Adjusted by technicians
2 ①	Start temp. of heating Aux. setting	10 ~ 90°C	55°C	Adjusted by technicians
3 ①	Electric heating start time delay	0 ~ 90	6(N*5)	Adjusted by technicians
4 ①	The temp. of start high-temperature disinfection per week setting	60 ~ 90°C	70°C	Adjusted by technicians
5	High-temperature disinfection maintain time	0 ~ 90 min	30 min	Adjusted by technicians
6	Defrost cycle setting	30 ~ 90 min	45 min	Adjusted by technicians
7	Enter defrost temperature setting	-30 ~ 0°C	-7°C	Adjusted by technicians
8	Exit defrost temperature setting	2 ~ 30°C	13°C	Adjusted by technicians
9	Exit defrost max. time cycle setting	1 ~ 12 min	8 min	Adjusted by technicians
10 ②	Difference temp. Value between solar and tank for Solar pump start setting	1 ~ 20°C	6	Adjusted by technicians
11	Discharge temperature setting of compressor to open the solenoid valve	70 ~ 120°C	95°C	Adjusted by technicians
12	Discharge temperature setting of compressor to close the solenoid valve	60 ~ 80°C	70°C	Adjusted by technicians
13	Discharge temperature setting of compressor	90 ~ 127°C	105°C	Adjusted by technicians
14	Exiting discharge temperature setting of compressor	60 ~ 80°C	70°C	Adjusted by technicians
A	Tank bottom temperature	-9 ~ 99°C		Actual testing value
B	Tank top temperature	-9 ~ 99°C		Actual testing value
C	Coil temperature	-9 ~ 99°C		Actual testing value
D	Discharge temperature	0 ~ 127°C		Actual testing value
E ②	Solar collector temperature	-9 ~ 99°C		Actual testing value
F	Ambient temperature	-9 ~ 99°C		Actual testing value

Note:

- ① Apply to the heat pump with Aux. electric heater.
- ② Apply to the heat pump with Solar collector.

Parameter 3 every unit means 5 minutes ,for example, if you set the parameter is '1' ,that's mean 5 minute, set it to be '2' ,it's 10 minute, and so on.

In the operation, if you stop operating for 10 seconds, it will log out automatically.

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System Malfunction Schedule

Fault code	Motherboard travel light	Malfunction and Protection Name	Solution
	Off	Standby	
	On	Normal start	
PP1	1 flash 1 off	bottom of water tank temperature Sensor failure	1. Check whether the temperature thermistor of the bottom of the water tank is connected loose or not . 2. Connect temperature thermistor of the bottom of the water tank tight or change the temperature thermistor.
PP2	2 flash 1 off	Top of water tank temperature Sensor failure	1. Check whether the temperature thermistor of the upper part of the water tank is connected loose or not . 2. Connect temperature thermistor of the upper part of the water tank tight or change the temperature thermistor.
PP3	3 flash 1 off	System coil temp Sensor failure	1. Check whether the temperature thermistor of the coil is connected loose or not . 2. Connect temperature thermistor of coil tight or change the temperature thermistor.
PP4	4 flash 1 off	Compressor discharge temp Sensor failure	1. Check whether the exhaust temperature thermistor is connected loose or not . 2. Connect exhaust temperature thermistor tight or change the exhaust temperature thermistor.
PP5	5 flash 1 off	Solar energy collector temp Sensor failure	1. Check whether the temperature thermistor of the solar collector is connected loose or not . 2. Connect temperature thermistor of the solar collector tight or change the temperature thermistor.
PP6	10 flash 1 off	Ambient temp sensor failure	1. Check whether the ambient temperature thermistor is connected loose or not . 2. Connect ambient temperature thermistor tight or change the ambient temperature thermistor
EE1	6 flash 1 off	System high pressure protection	Check whether lack of water in the system, or cycle heating system pipe exist air and need discharge the air, or the water temperature is too high or the refrigerant is too much or high pressure switch has been damaged
EE2	7 flash 1 off	System low pressure protection	The system lack of refrigerant or the low pressure switch has been damaged
EE3	8 flash 1 off	aux. electric heater overheat protection	The aux. electric heater is broken ,so the unit make overheat protection. (only effective to the unit with auxiliary electrical heater) (lack of water protection)
EE4	9 flash 1 off	Compressor discharge temp High	Check whether lack of water in the system, or cycle heating system pipe exist air and need discharge the air, or leakage of Freon in the system, or the water temperature is too high
Defrosting indication	Keep flashing		system is running defrost program
EE8	No flashing	Communication failure	Communication wires disconnect or Connection Error

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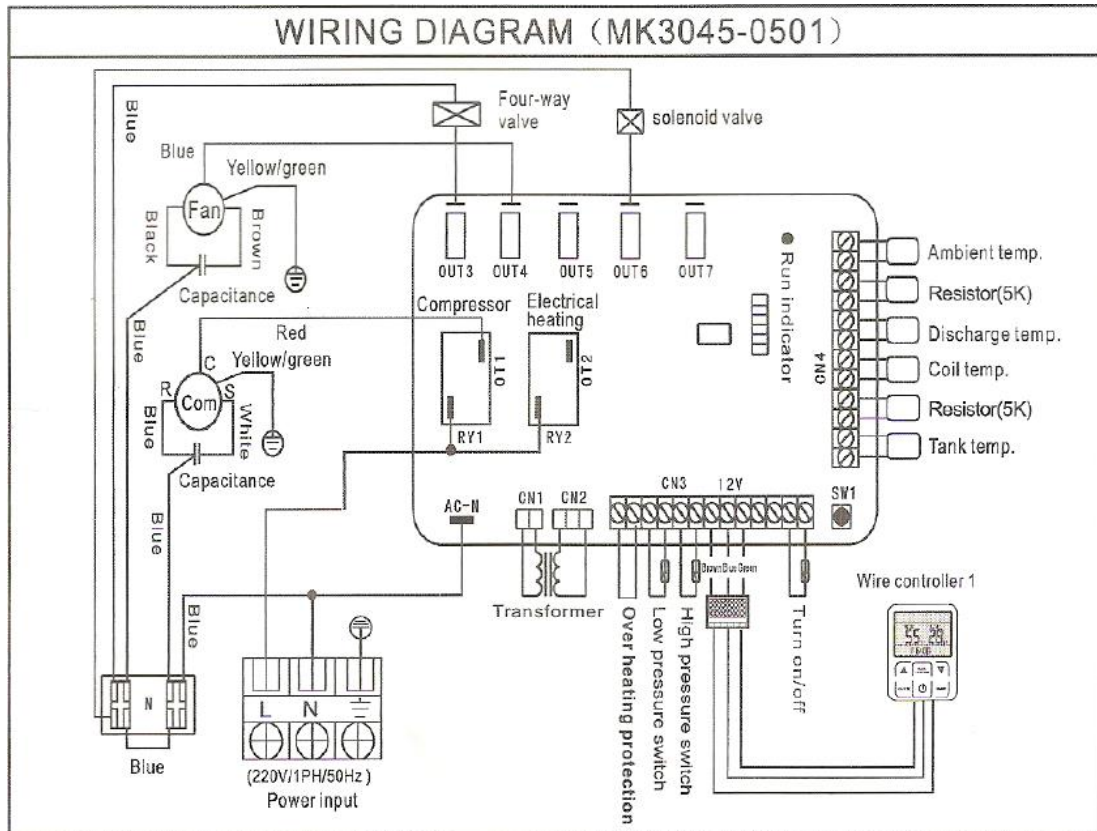
Troubleshooting

Malfunction	Reason	Solution
Unit does not work	<ol style="list-style-type: none"> 1. Power failure 2. Loose power wire connection 3. Fuse of controller burn-out 	<ol style="list-style-type: none"> 1. Turn off power and inspect power supply 2. Identify the cause and rectify 3. Identify the cause and replace with
The pump is operating, but water isn't circulatory or the noise of pump is too loud	<ol style="list-style-type: none"> 1. Shortage of the water or exist air in the water system. 2. Water pump damage 3. Valve of water system is not all opened 4. Water filter is blocked 	<ol style="list-style-type: none"> 1. Check water supply equipment and replenish water remove the air of the water system 2. Change another pump. 3. Open the valve of the water system 4. Clean the water filter and the pump
Unit heating capacity is low or compressor long term working	<ol style="list-style-type: none"> 1. Shortage of refrigerant or leakage 2. Poor thermal insulation of water system 3. Poor heat dissipation of the air heat exchanger 4. Shortage of water flow 	<ol style="list-style-type: none"> 1. Check the system for leakage and fill refrigerant 2. Strengthen thermal insulation of the system pipeline 3. Clean the air heat exchanger and improve the condensation condition 4. Clean the filter
Compressor discharge pressure too high	<ol style="list-style-type: none"> 1. Excessive refrigerant 2. Poor cooling capacity of air heat exchanger 	<ol style="list-style-type: none"> 1. Release the excess refrigerant 2. Clean the air heat exchanger and improve condensation conditions
Compressor suction pressure too low	<ol style="list-style-type: none"> 1. Shortage of refrigerant or leakage 2. Filter or capillary blocked 3. Poor condenser heat dissipation 	<ol style="list-style-type: none"> 1. Check the system for leakage and fill refrigerant 2. Replace capillary tube or filter 3. Clean the heat exchanger.
Compressor is out of operation	<ol style="list-style-type: none"> 1. Power failure 2. Compressor contactor breaks down 3. Loose connection 4. Overload protection of compressor 5. Incorrect setting of the return water temperature in the water tank 6. Compressor capacitance break down 	<ol style="list-style-type: none"> 1. Check the power supply and debug 2. Replace the contactor 3. Check the loose place and maintenance it. 4. Overload protection of the compressor. 5. Reset the return temp. 6. Replace the capacitance.
Loud compressor noise	<ol style="list-style-type: none"> 1. Liquid refrigerant enters the compressor 2. Compressor breaks down 	<ol style="list-style-type: none"> 1. Check the cause for liquid impact and solve the problem 2. Replace the compressor
Fan is out of operation	<ol style="list-style-type: none"> 1. The relay or capacitance of the fan breaks down 2. Burnt the fan motor 	<ol style="list-style-type: none"> 1. Replace the fan relay or capacitance 2. Replace the fan motor
The compressor is in operation, but the unit doesn't heating	<ol style="list-style-type: none"> 1. All the refrigerants leak out 2. Compressor breaks down 	<ol style="list-style-type: none"> 1. Check the system for leakage and fill refrigerant 2. Check the reason and replace the compressor

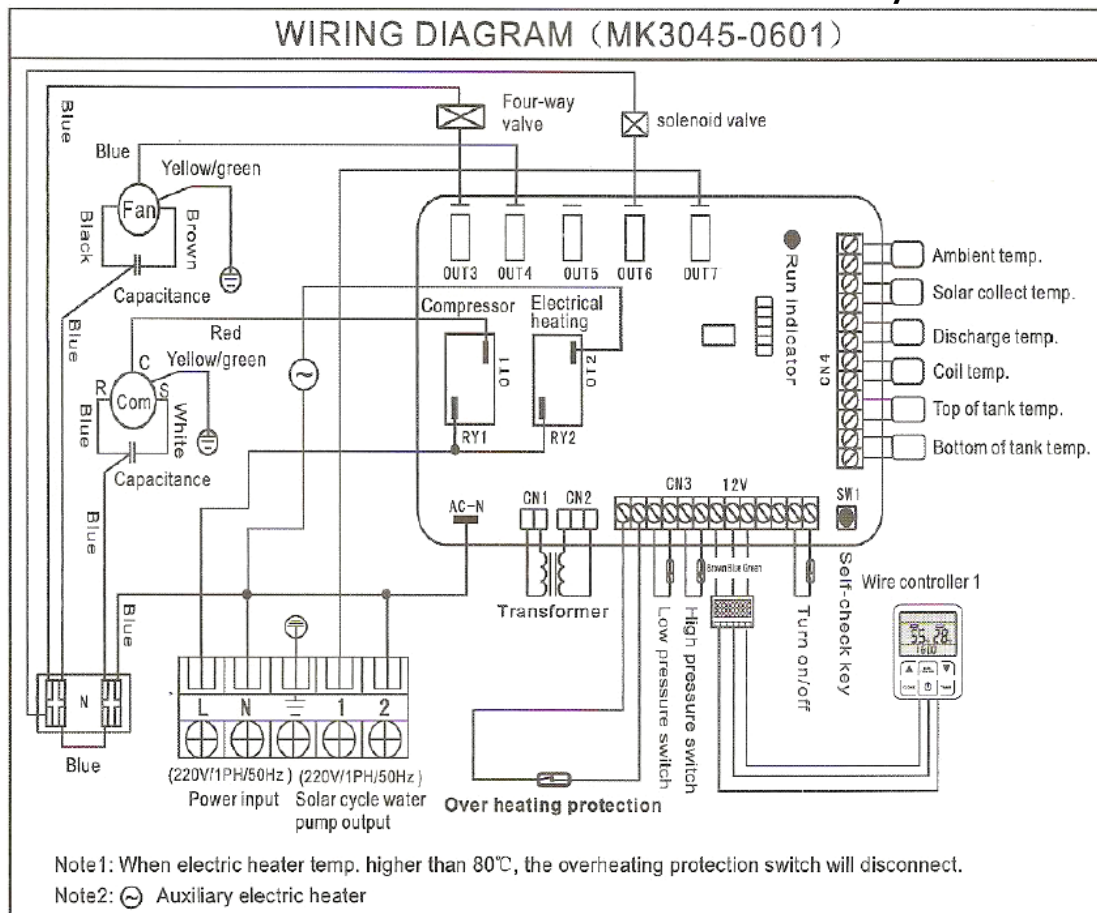
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Wiring Diagram

1:MK3045-0501 effective for the mode without solar controller and auxiliary electric heater controller



2:MK3045-0601 effective for the mode with solar controller and auxiliary electric



AIR TO WATER ALL IN ONE HEAT PUMP