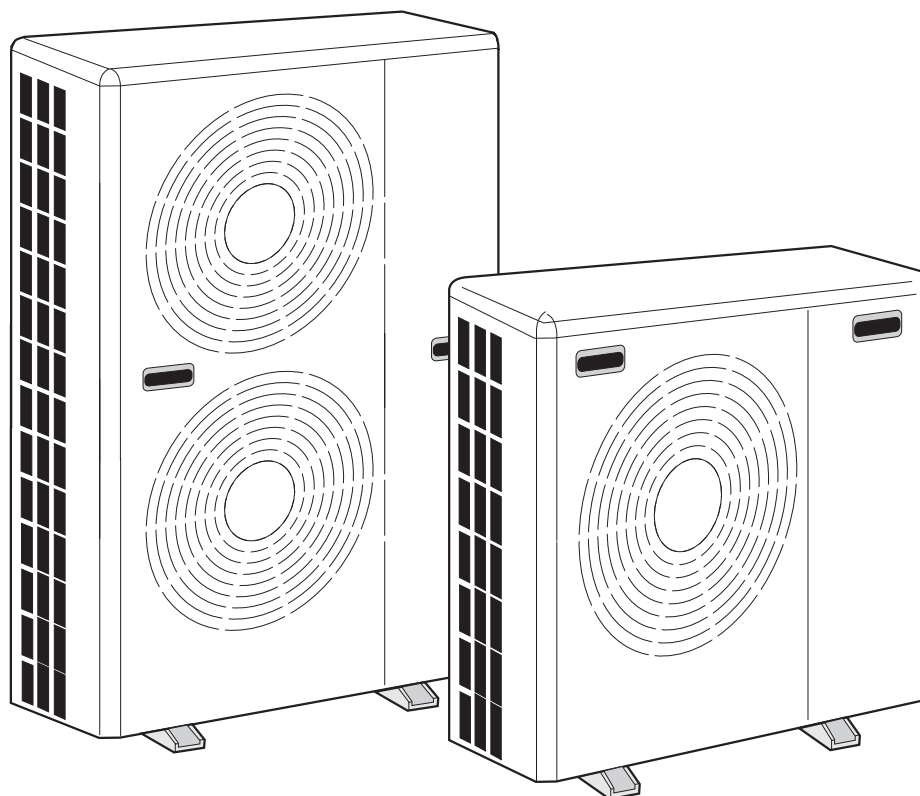# PALM AH, GH SERIES
AIR TO WATER HEAT PUMP

Parameter and Error code Manual

Error Meaning, Reason and Solution

* Error codes won't display directly. We need to press once "enter" ⏎ button to see the error code.

* Continue to press "Enter" key to see more error code if exist.

The The following error code is for Triaqua split heat pump and may be different from other series heat pumps. But the reason and solution is similar.

| Error code	Error code meaning	Error display	Error Reason	Error Solution
E9	Temp sensor of the of D.H.W water error	The compressor does not work in D.H.W. The heat pump will continue to produce D.H.W. with the heater element. Contact your support service	Sensor is broken or the connection is loose	Change or reconnect the sensor
E1	Sensor of water outlet from the heat exchanger of the air conditioning circuit error	The unit will continue to operate. The system uses sensor d5 instead of d3.Contact your support service about the problem.	Sensor is broken or the connection is loose.	Change or reconnect the sensor
P3	Sensor of water entering the heat exchanger of the air conditioning circuit error	The unit will continue to operate. The system uses sensor d3 instead of d5. Contact your support service	Sensor is broken or the connection is loose.	Change or reconnect the sensor
P1	Outdoor unit coil temperature sensor error	The compressor does not work in D.H.W. The unit will continue to produce D.H.W. with the electric heater. Contact your support service	Sensor is broken or the connection is loose.	Change or reconnect the sensor
P7	Outdoor air temperature sensor error	The compressor will stop for 20 minutes. It will then continue operating and will replace, sensor A4 by sensor A3. Contact your support, service about the problem.	Sensor is broken or the connection is loose.	Change or reconnect the sensor
PD	Not enough water flow, volume in the air conditioning circuit.	The unit will stop air conditioning mode if this anomaly occurs 3 successive times. When the water flow is resumed, the error should be cleared. If this does not occur, contact your support service.	Water flow switch connection loose or air conditioning water flow volume is too small. Or water filter is blocked by dirt -need to clean the filter as per page 18, figure 7.	1. If with water flow switch on the unit, please check if the connection is loose or the water flow switch is broken or the water pump is too small. 2. If without water flow switch on the unit, please check if the short connection wire is loose.
EN	Communication error between the indoor LCD control panel and the control board	The unit will stop operating. Contact your support service about the problem.	Communication wire is loose or control board is error.	Check the communication wires and control board. Reconnect the wires or change wires and control board
PA	Outdoor Electric connection missing phase protection	The unit will stop operating. Contact your support service	Power cable connection not Correct	Check the electric connection and reconnection the power cable.
PA	Outdoor Electric connection wrong phase.	The unit will stop operating. Contact your support service about the problem.	Power cable connection not correct	Check the electric connection and reconnection the power cable
E4 E7	Pressure switch jump in high Pressure	The compressor will stop. The unit will operate again when normal conditions are re-established. If this does not start, contact your support service	1. Vacuum is not good enough for refrigerant circuit. 2. There is air get inside of air conditioning water circuit. 3. There is dirt in the AC water circuit. 4. Water flow volume is too small, water pump is too small. 5. High pressure switch is loose or broken 6. Expansion valve need adjustment	1. Check the refrigerant pressure. 2. Clean and purge the air from the water circuit. 3. Clean the air conditioning Water inlet filter and other filter in the water circuit. 4. Change a bigger water pump 5. Reconnect high pressure switch or change the switch. 6. Open the expansion valve 3 rounds Contact Palm for the method
E7	water source side water flow volume too small		1. There is air in the water source loop 2. Water flow volume too small	1.Vaccum the water source loop 2. Change a bigger water pump
E5	Communication error between the indoor and outdoor control board	The unit will continue to produce D.H.W. with the heater element and the water pump. Contact your support service.	Communication wire is loose or Control board is error.	Check the communication wires and control board. Reconnect the wires or change wires and control board
P9	Pressure switch jump in low pressure	The compressor will stop. The unit will operate again when normal conditions are re-established. If this does not start, contact your support service	1.Heat expansion valve need to be preheated 2.Low pressure switch is loose or broken 3.Refrigerant leak	1.Power off for minutes and power on again then turn on the unit. May repeat this 2 or 3 times to preheat the expansion valve. 2.Reconnect the low pressure switch or change it 3.Check the whole system to see if the refrigerant is leaked.

PB	Solar thermal sensor error	Valve control for solar system will stop	Sensor is broken or the connection is loose	Change or reconnect the sensor
	Antifreeze protection(d3 or d4 ≤1 C)	Compressor stop	4 way valve or compressor contactor or compressor error	Check the 4 way valve, compressor contactor or compressor.
E5	Error in the EEPROM memory of inner control board	Unit continue working but without historical record	EEPROM chip loose or error	Check EEPROM on the indoor control board
P2	Discharge air temperature sensor error	Unit stop	Sensor is broken or the connection is loose	Change or reconnect the sensor
E3	Compressor High temperature Protection (115 C air discharge)	Compressor stop to protect the unit, when the temp is lower, the unit will start again. If this error occur twice in 30 minutes, the unit will be locked	1. Refrigerant volume is low 2. Thermal expansion valve error 3. Water flow volume is too low	1. Check the refrigerant pressure and check if there is leakage. 2. Check the thermal expansion valve 3. Check the water flow volume and check if the water pump is small or has dust or other problem.
E2	It is not error, Just show 2nd switch LD92 disconnect		PF: it is not error, just show 2nd switch Ld93 Disconnected	

Parameter setting and DIP switch setting

1. Parameter checking

Press 』 for 6 seconds, then enter the parameter checking and setting page.
Then, press 』 to check the next parameter, press on/off key to check the 10th parameters after current parameter.
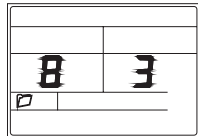
The "8" is a parameter code, "3" indicates the parameter values.
Following table is the parameter list which is only for checking and cannot be modified.

Code	Name	Range / meaning	Default	State
8	Outdoor copper tube temp	-9~79ºC	no	only check
9	Compressor air discharge temp	6~129ºC	no	only check
10	Ambient air temperature	-9~79ºC	no	only check
12	Function parameters	Total days since last virus killing(HEX)	no	only check
13	Compressor stop point code		no	only check
29	Compressor air suction temp	-9~79ºC	no	only check
30	Air Conditioning outlet water temp	-9~79ºC	no	only check
31	Solar water temperature	-9~79ºC	no	only check
32	Target temp of domestic hot water		no	only check
33	Target temp of air conditioning		no	only check
35	Compressor electricity current value		no	only check
36	Outdoor fan output	82 ~ FF (the larger number , the outdoor fan to run faster)	no	only check
37	Water source water inlet temp	-9~79º C	no	only check
54	Water source water outlet temp	-9~79º C	no	only check
49	DHW water temp	-9~79ºC	no	only check
50	Air conditioning returned water temp	-9~79ºC	no	only check

Parameter setting and DIP switch setting

2. Parameter setting

Parameter setting method

Press ⏎ for 6 seconds, enter the parameters check and settings, press ⏎ key to find the items you want to set the parameters, press M key to enter the setting mode (parameter values flashing),

press ▲ or ▼ key to adjust parameter values, press ⏎ key to confirm.

After confirm the parameter change, please shut off the electricity connection for 30 seconds and reconnect the electricity connection again to enable the new parameter working.

Code	Name	Range / meaning	Default
0	Power-off auto recovery function	0: not recovery; 1: recovery	1
2	Domestic Hot water outlet temp differential	2 ~ 15 ºC, negative differential	2ºC
3	Air conditioning return water temp differential	2 ~ 15 ºC, negative differential	2ºC
5	Defrost entering temp (of copper tube)	-20~5ºC	0ºC
5	Outside Antifreeze entering temp	-20~5ºC (Only for water source type)	2ºC
99	AC side Antifreeze entering temp	-20~5ºC (Only for R2 Heat Recovery type)	2ºC
6	Defrost stop temp (of copper tube)	10~35ºC	30ºC
7	Compressor air discharge protection temp	100~129ºC	115
24	DHW electric heater validation	0: invalid 1:valid	1
40	Forcing bacteria killing function validation	0: invalid 1:valid	0
97	DHW backup electric heater start air temp	-20~20ºC	0 ºC
53	Reset system parameters	0: indicated do not restore the factory setting; 1: indicated to restore factory setting	0
92	Hot water automatic temp curve control validation	0: is invalid; 1; is valid	0
93	Heating automatic temp curve control validation	0: is invalid; 1; is valid	0
4	Defrost Interval time	15~99 minutes	35
85	E4 working as air conditioning electric heater control port or other heating source switching port selection parameter	0: E4 is electric heater port 1: E4 is other heating sources switching port	0
43	Other Heating sources switching air temp when E4 working is heating sources switching control port	-30~ 15 ºC	-5 ºC
39	Electric heater active air temp when E4 is electric heater port	-30~ 15 ºC	0 ºC

The above codes 85, 43, 39 utilize E4 port of our indoor control board as two usage.

When code 85 is set to 0, E4 will work as electric heater auto starting port；

It is to control the indoor air conditioning electric heaters, the working theory is as following,

When the ambient temp is higher than set temp in parameter 39. The electric heater is deactivated and won't start.

When the ambient temp is lower than set temp in parameter 39, the assistant heater will be active for assistant heating if compressor heating is not sufficient enough.

When code 85 is set to 1, E4 will work as second heating sources switching port.

1.When the outdoor ambient temp is lower than set temp in parameter 43. The heat pump automatically go into standby mode. The E4 will start 230V electricity supply. When the ambient temp- set temp in parameter 43 ≥5℃, E4 will stop electricity supply. The heat pump will switch on.

The connect method is according to the wiring diagram

3. DIP switch setting meaning

The DIP switch can only be set at factory or by authorized engineer. Any improper setting may cause unrecoverable damage or misfunction.
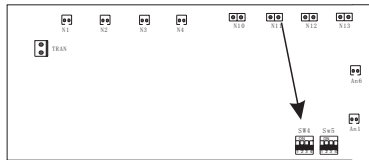
AH series

SW4-1: OFF: Single phase, ON: Three phase.
SW4-2: OFF: air source heat pump, On: Water source heat pump
SW4-3/SW4-4   OFF/OFF: Only DHW(domestic hot water) function;   ON/OFF: Room heating and cooling function;
OFF/ON: Multifunctional function(Heating,Cooling & DHW) HC series

If SW5-2 is set to ON, it will disable cooling mode

Illustrated as following,

Sw4

Single phase air source DHW only heat pump

Three phase air source DHW only heat pump

Single phase air source Heating & Cooling heat pump

Three phase air source Heating & Cooling heat pump

Single phase air source Multifunction Heating & Cooling+DHW heat pump HC series

Three phase air source Multifunction Heating & Cooling+DHW heat pump HC series

AH- R series(air source heat recovery heat pump) can only select single phase or Three phase at Sw4. Other switch of Sw4 is not settable.

GH series

SW4-1: OFF: Single phase, ON: Three phase.
SW4-2: OFF: air source heat pump, On: Water source heat pump
SW4-3/SW4-4 ON/OFF: Room heating and cooling function;   OFF/ON: Multifunctional function(Heating,Cooling & DHW) HC series

If SW5-2 is set to ON, it will disable cooling mode

Illustrated as following,

Sw4

Single phase water source Heating & Cooling heat pump

Three phase water source Heating & Cooling heat pump

Single phase water source Multifunction Heating & Cooling+DHW heat pump HC series

Three phase water source Multifunction Heating & Cooling+DHW heat pump HC series

Single phase water source Heat recovery heat pump

Three phase water source Heat recovery heat pump

Sw5 is Applicable for AH and GH series

SW5-1: Selection between 2 valve control modes（G2 terminal port works for seasonal valve or solar fuzzy logic valve）
off: Seasonal switch solenoid valve On: Solar fuzzy logic auto switch solenoid valve   (NOT applicable for AH-R series)

SW5-2: Selection between air conditioning heating mode and air conditioning cooling mode
off: air conditioning heating and cooling mode   on: air conditioning heating only mode   (NOT applicable for AH-R series)

SW5-3: Selection for air conditioning water pump mode
off: water pump is always running never stop
on: water pump will stop one minute after compressor stop.（This need a air conditioning water tank and put the returning water temp sensor in the water tank, heat pump only recycle with the water tank）as illustrated at following scheme
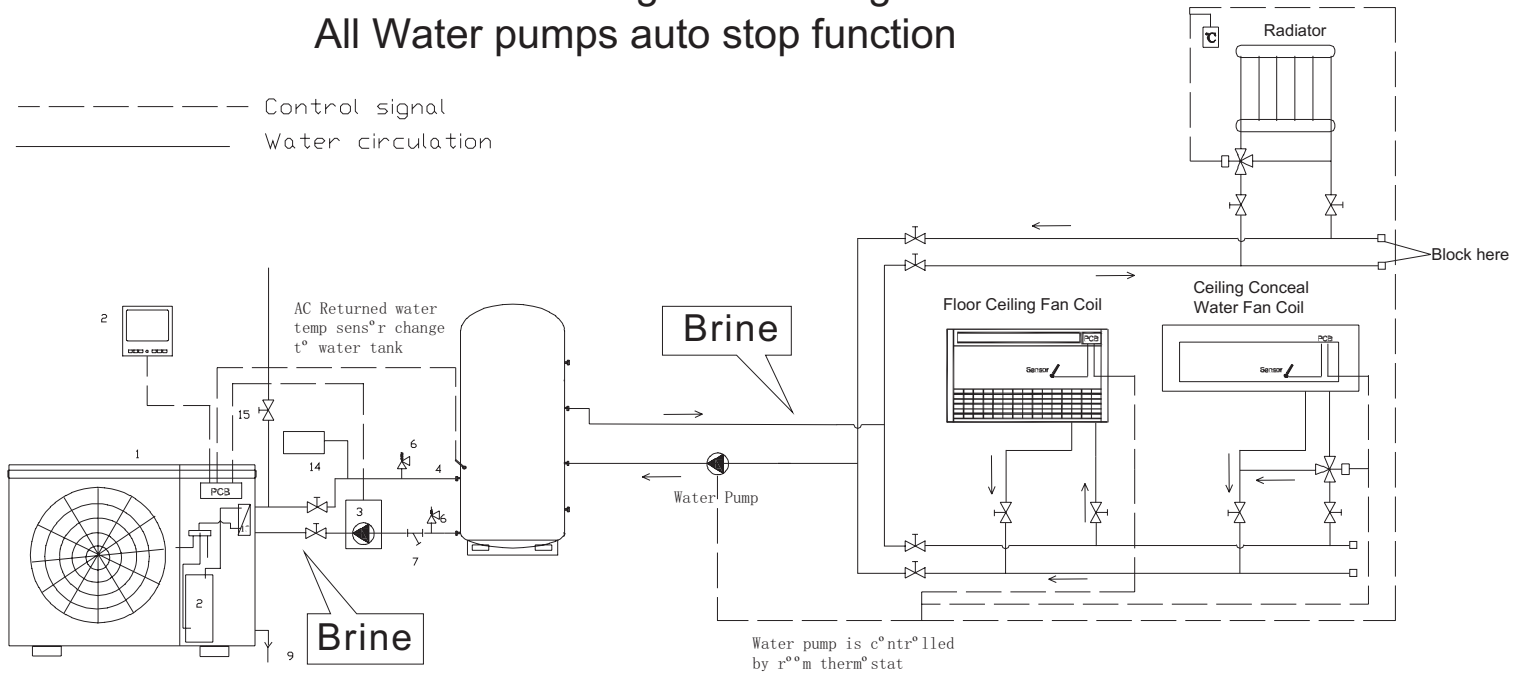SW5-4: Shrink time counter,every action interval will be shorten to 10% of original time.

Connection method for lowest water pump consumption）
Need to set DIP switch Sw5-3 to ON

Note!

If the air temp will be lower than 0 $^\circ$ C in winter, **Must use brine（mixed 20% to 50% glycol） to replace pure water to avoid plate heat exchanger frozen to leak**.

## ROOM Heating and Cooling
All Water pumps auto stop function

Control signal

Water circulation

Radiator

Block here

AC Returned water temp sens°r change t° water tank

Brine

Floor Ceiling Fan Coil

Ceiling Conceal Water Fan Coil

PCB

Sensor

Sensor

PCB

PCB

15

1

14

2

6

4

3

16

7

9

Brine

Water Pump

Water pump is c°ntr°lled by r°°m therm°stat

Better connection for HC series Multifunctional heat pump application with solar assist for room heating and DHW

## Seperate Room Cooling Circulation

1. Safety valve ;   2. Water filter
G1 ,G5,G6 are Electric 3 way valve.   G5,G6 are controlled by room thermostat
C4 Main water pump ;   C5 Room heating water pump;   C6 AC cooling water pump;
C4,C5,C6 are controlled by heat pump PCB
C7 DHW water pump is controlled by DHW tank thermostat
C8 is controlled by solar thermostat
C9 water pump is controlled by fan coil thermostat
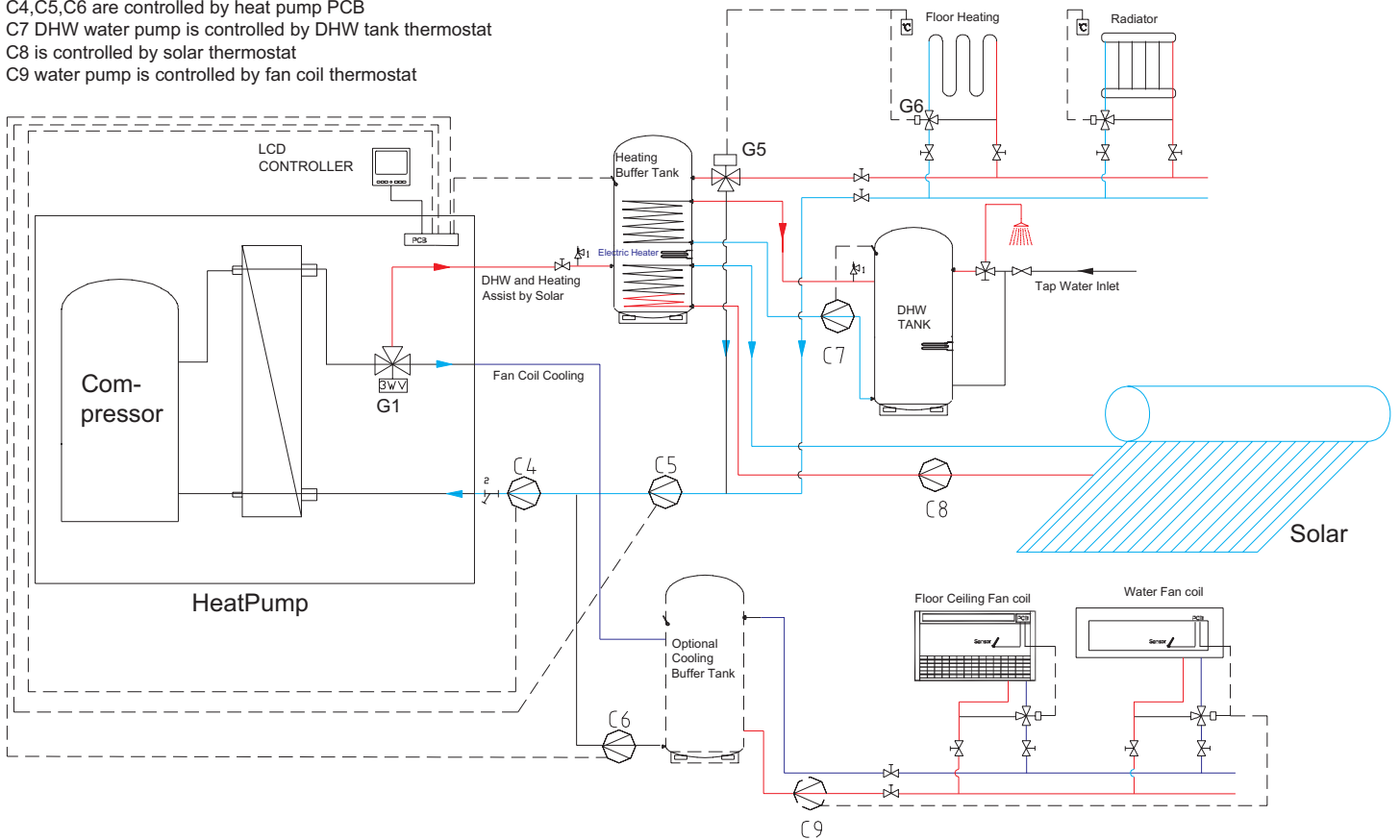
Recommanded connection with second heat source such as gas boiler and oil kettle.

Connect E4 signal to start boiler, 3 way valve and circulation pump in the same time.
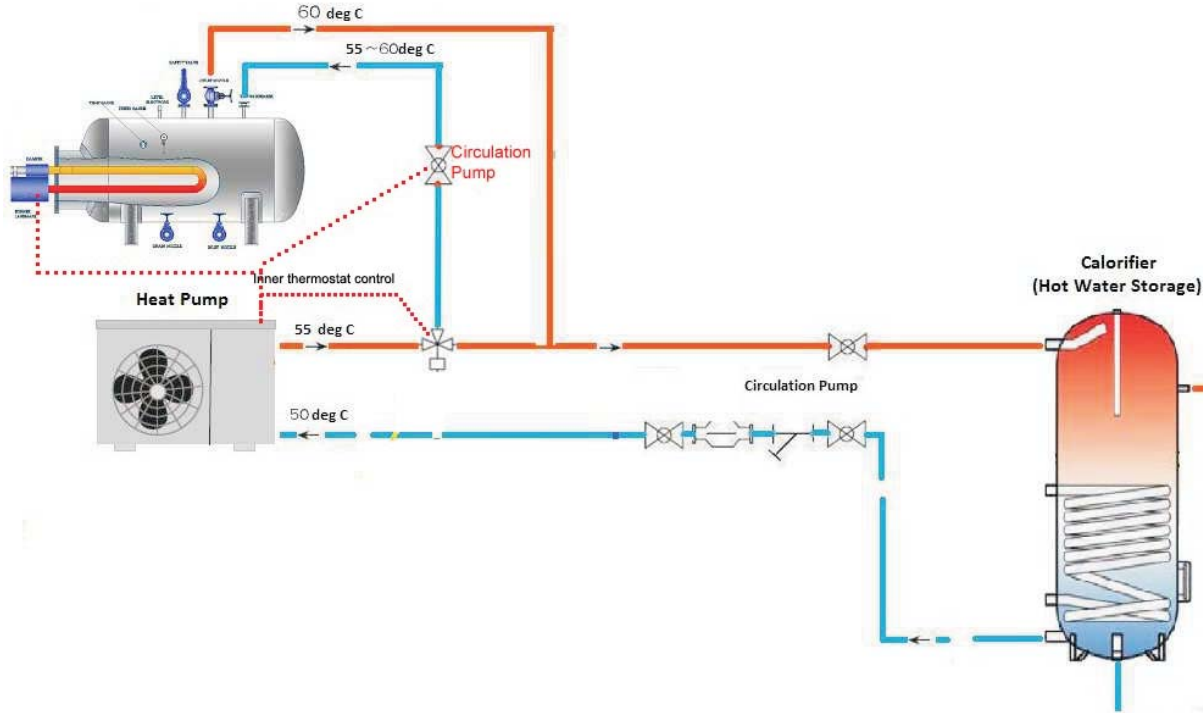
Enable AC auto temp curve working. Please do following procedure.

1.Set parameter 93 to value 1 to active AC auto temp function .
2.Set parameter 25 according to following to set the offset value.
3.Choose "AU" target temp in Room heating mode.

In some areas, air conditioning built-in automatic temperature curve may be not ideal for local users, installed by professional installers of automatic parameter adjustment curve,Adjust the range of -5ºC~+5ºC as the table below:
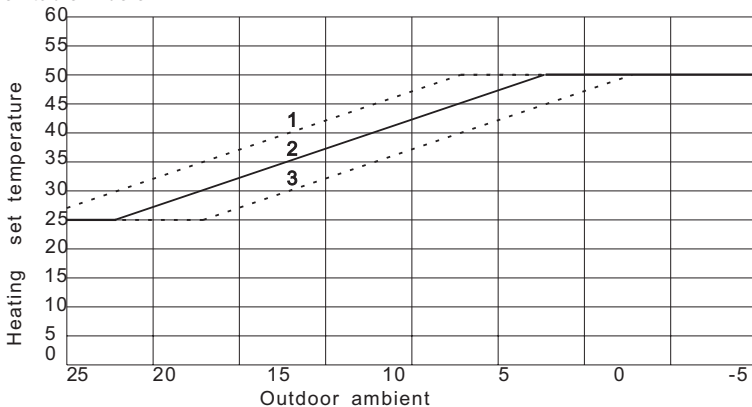
Automatic temperature curve factory setting is curve 2,user can offset automatic temperature curve by setting Parameter "25"

Curve1:parameters "25" =10

Curve2:parameters "25" = 5

Curve3:parameters "25" = 0