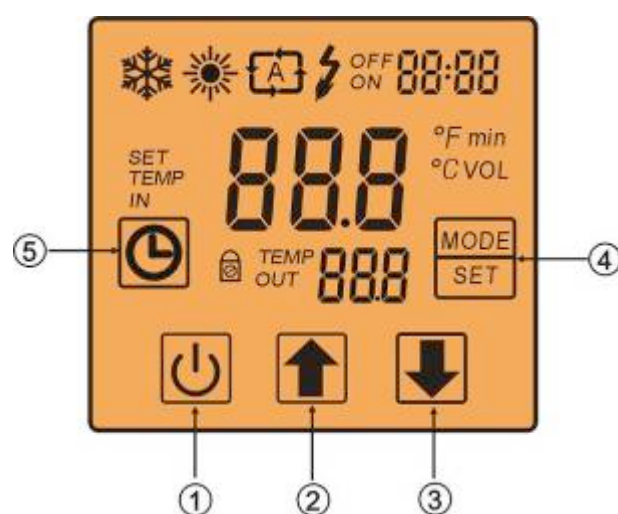


Section 4 PC4001 Controller

1. Controller Operation

◆ Control panel explanation



① **On/Off key**

Press this key to switch on or off; (hold on 0.5 s)

② **Up key**

- a) Select higher item inside programming environment;
- b) Increase parameter value

③ **Down key**

- a) Select lower item inside programming environment;
- b) Decrease parameter value;

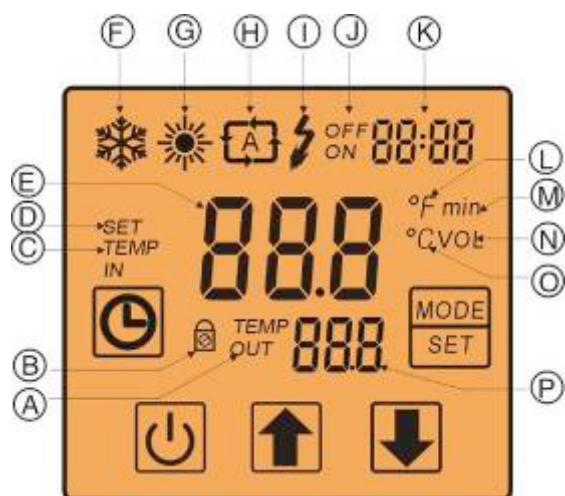
④ **Mode key**

- a) Select mode and set parameter.
- b) Release more factory parameters; (press for 10 s)

⑤ **Clock key**

Set date and timer

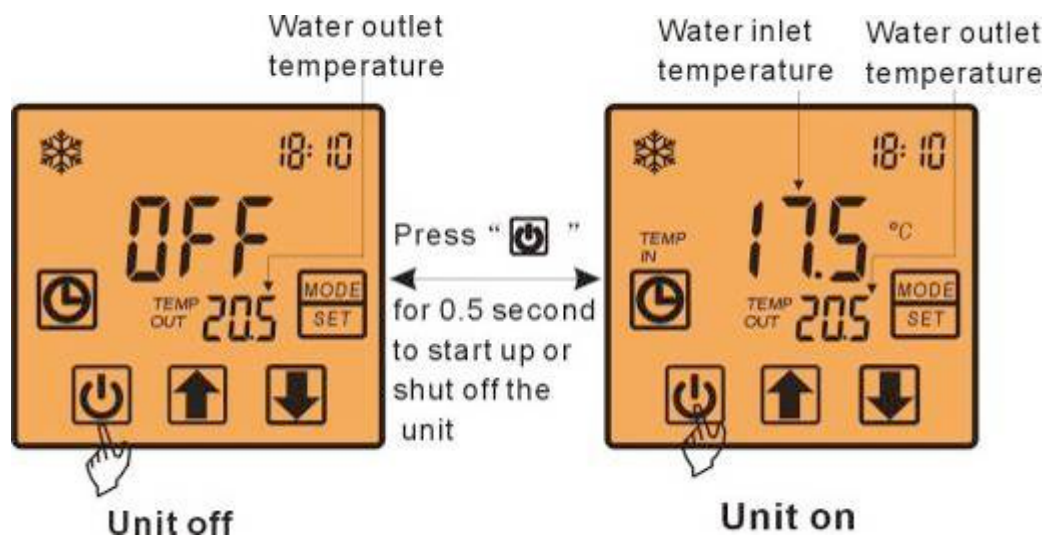
◆ Display Explanation



Symbol	Explanation	Symbol	Explanation
A	Water outlet	I	Electrical heater(reserved)
B	Lock	J	Timer on/ off
C	Water inlet	K	Clock
D	Temperature setting	L	Fahrenheit
E	Water inlet temperature	M	Minute
F	Cooling	N	Flow
G	Heating	O	Centigrade
H	Automatic	P	Outlet water temperature

◆ Operation Instruction

a) On-off operation



When the unit is on, press "on/off" key for 0.5 seconds to start it up;

When the unit is off, press "on/off" key for 0.5 seconds to shut it down.

b) Mode selection

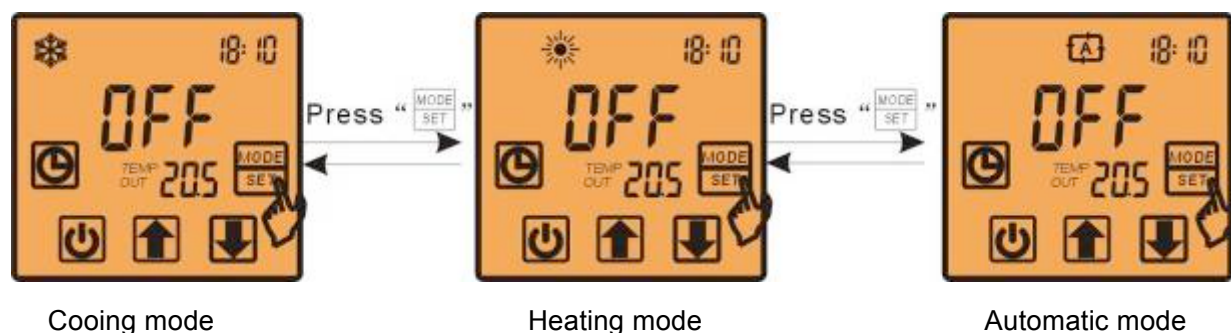
The unit has three operation modes:

Cooling mode, Heating mode, Auto heat pump mode.

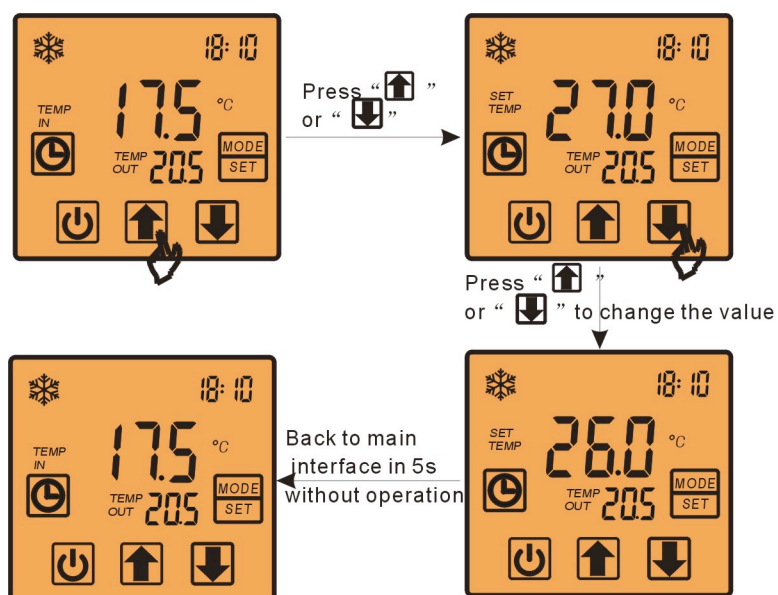
When parameter "H01=0", "cooling mode" only.

When parameter "H01=1", Press "mode" to select modes of heating, cooling, automatic;

When parameter "H01=2", "heating mode" only.



c) Target temperature Setting



Attention: 1) If there is no operation for 5 seconds, the system will remember parameters setting and return to the normal display screen.

d) Parameter Setting

The parameters are divided into 2 different types, according to their level of access by the user (password) and their function.

Factory parameters

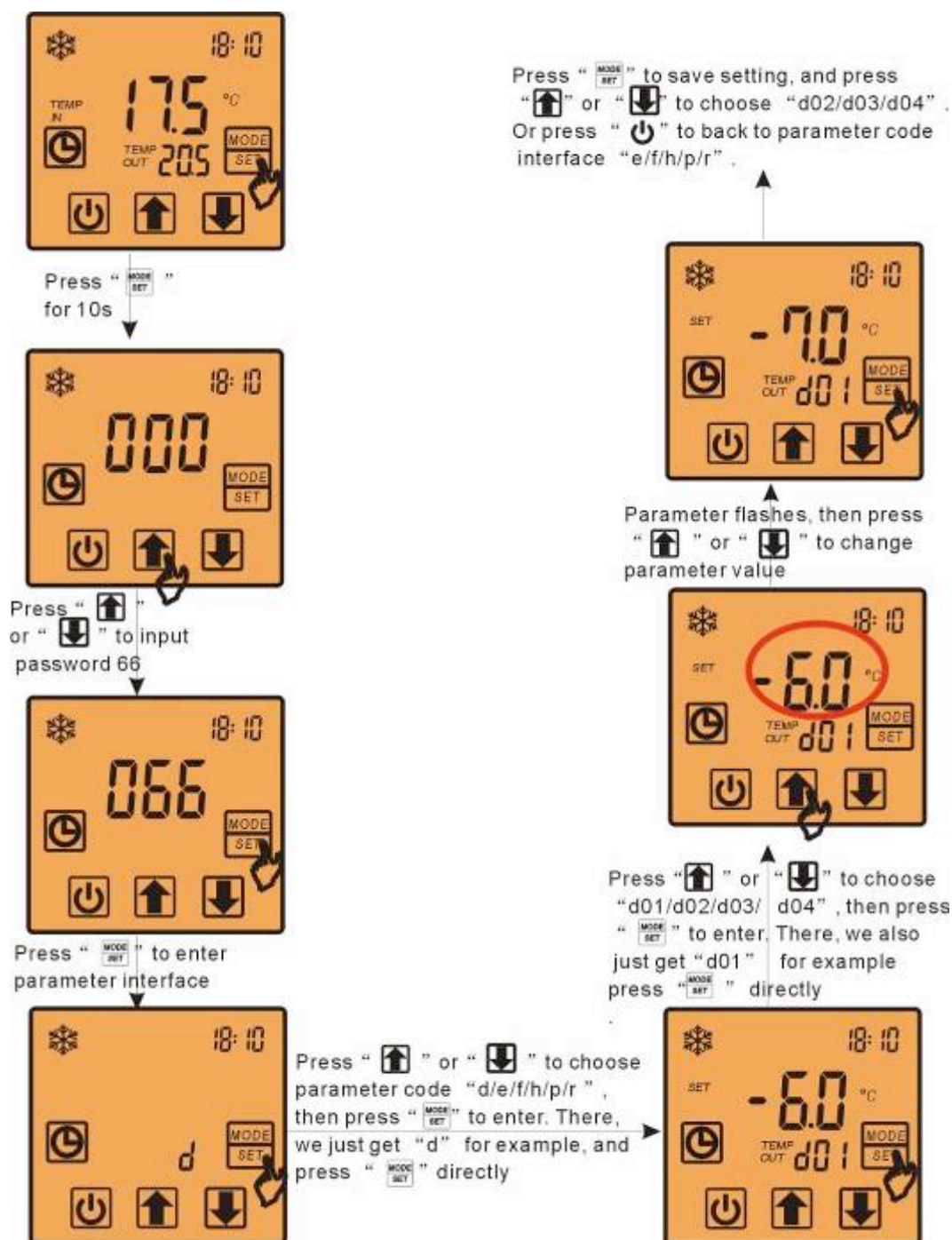
Accessible with the 66 "factory" password, allow the configuration of all the unit parameters.

User parameters

Accessible with the 22 "User" passwords, allow the configuration of the parameters that typically can be set by the user.

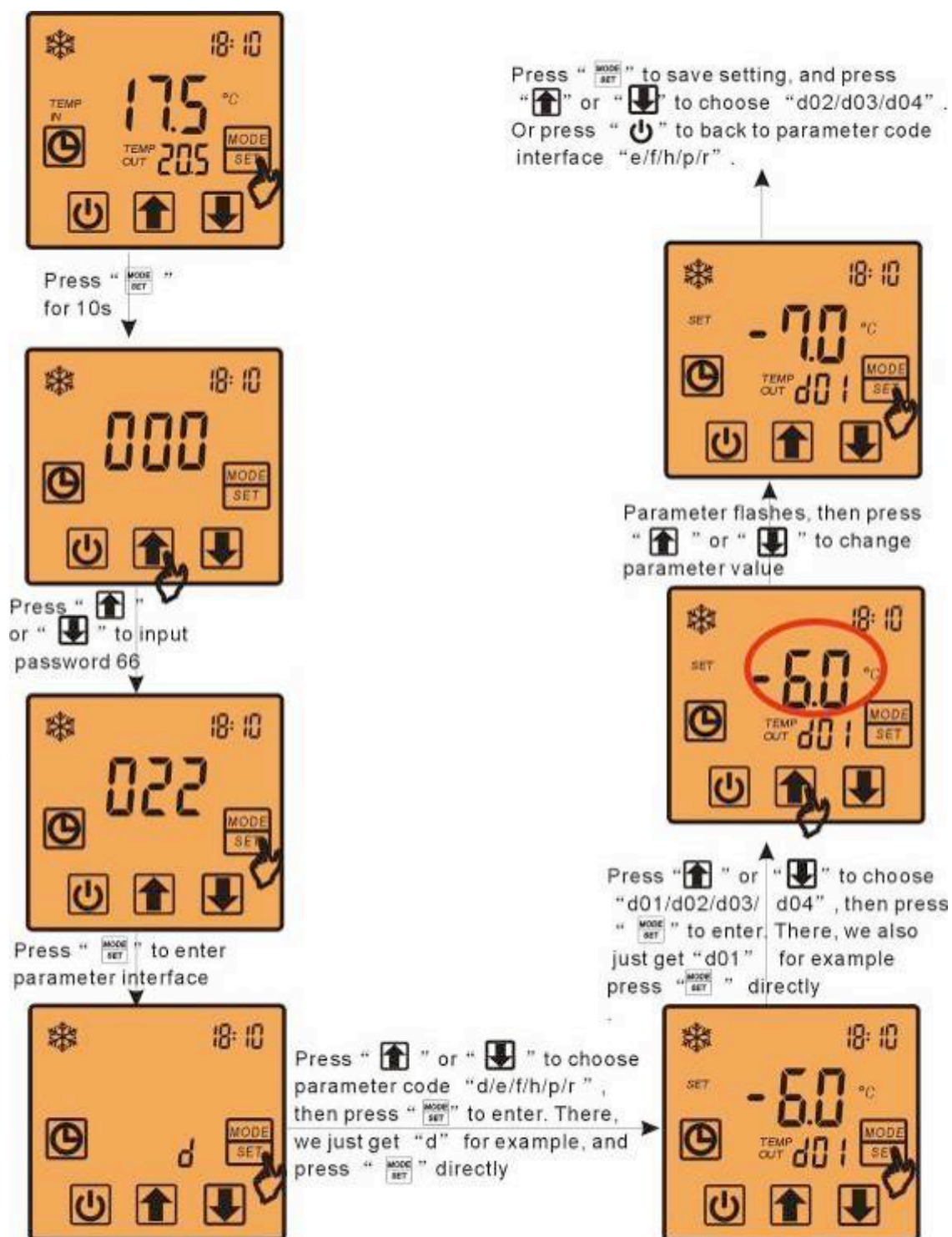
level	Level name	password
U	User	22
F	Factory	66

Factory Parameter Setting



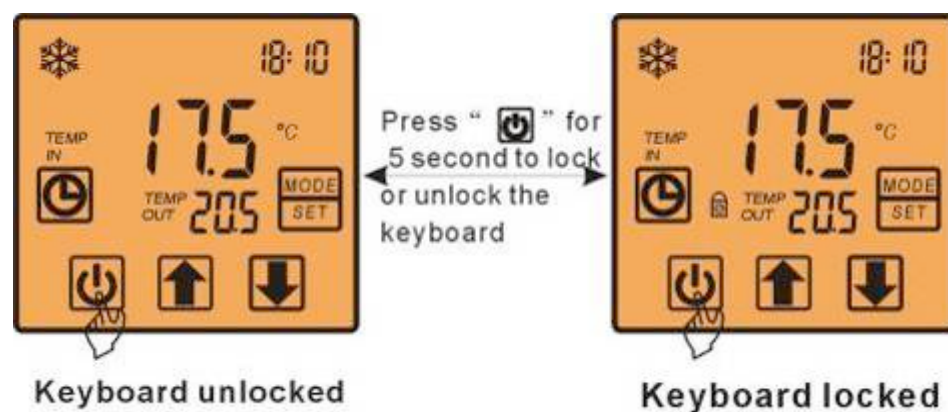
- Attention: 1) The other steps are the same with parameter "d01";
- 2) Press "on/off" twice can exit parameter interface;
- 3) If there is no operation in 20 seconds, the system will remember the previous setting and exit the setting.

User Parameter Setting



- Attention: 1) The other steps are the same with parameter "d01";
- 2) Press "on/off" twice can exit parameter interface;
 - 3) If there is no operation in 20 seconds, the system will remember the Previous setting and exit the setting interface.

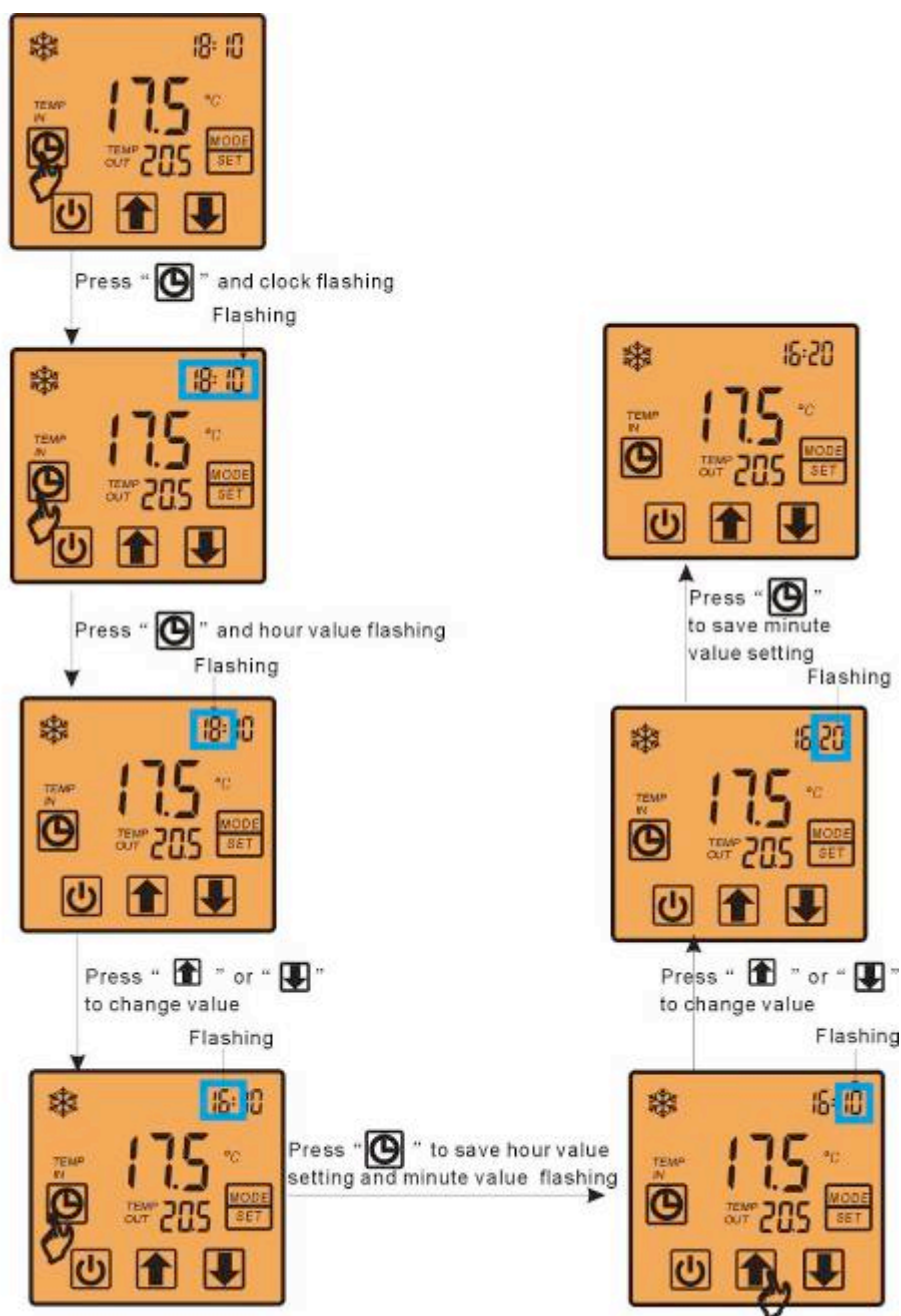
e) Keyboard lock and unlock



In on/off interface, press "on/off" for 5 seconds, the keyboard will lock.

When the keyboard is locked, press "on/off" for 5 seconds, the keyboard will be unlocked.

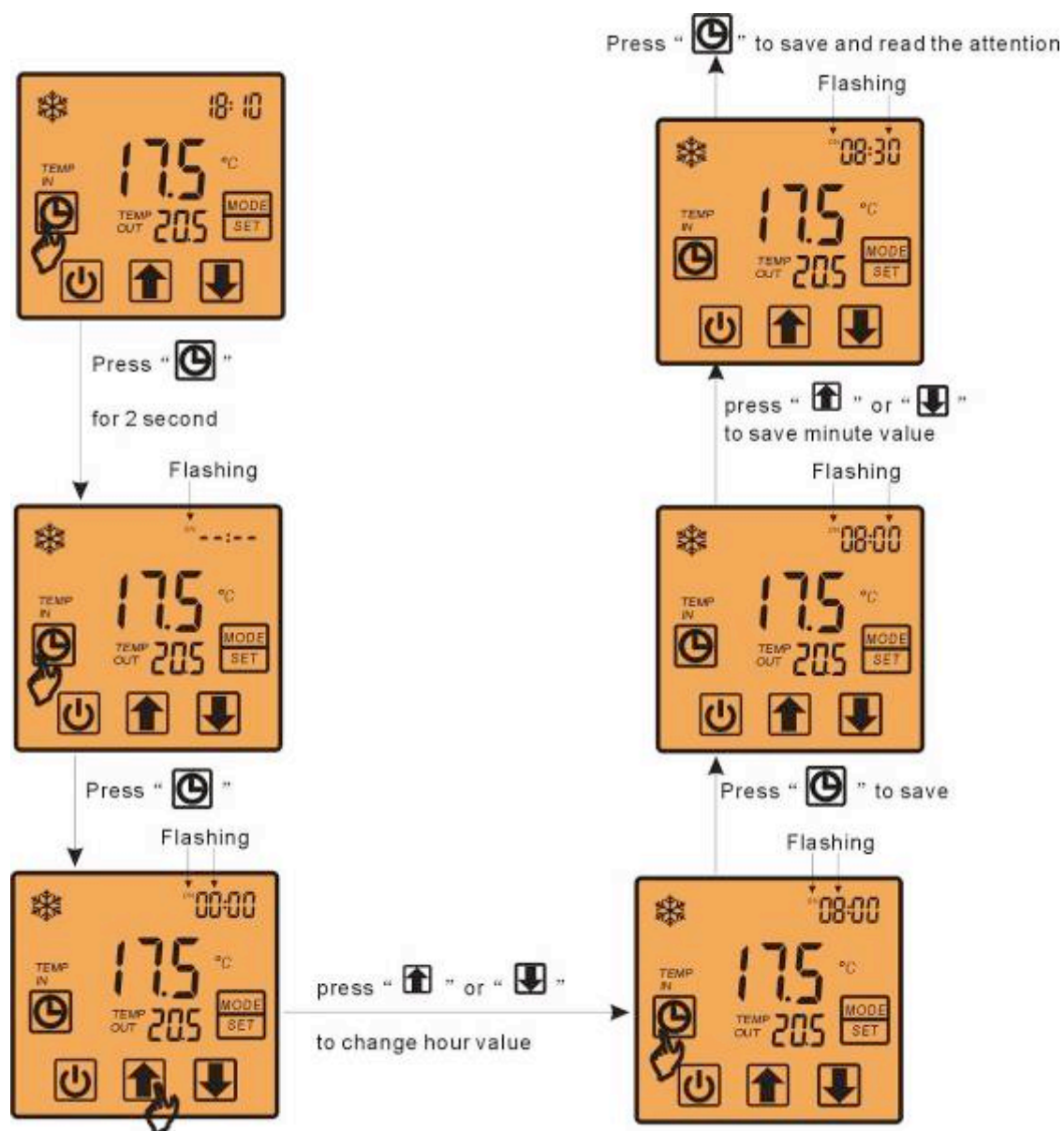
f) Clock setting



- Attention:
- 1) Press "clock" to save clock setting parameter and back to main Interface.
 - 2) Press " on/off" will not save setting parameter and returns to main interface.
 - 3) If there is no operation for 5s, system will remember parameter setting and returns to the main interface.

g) Timer on and off setting

Timer on setting



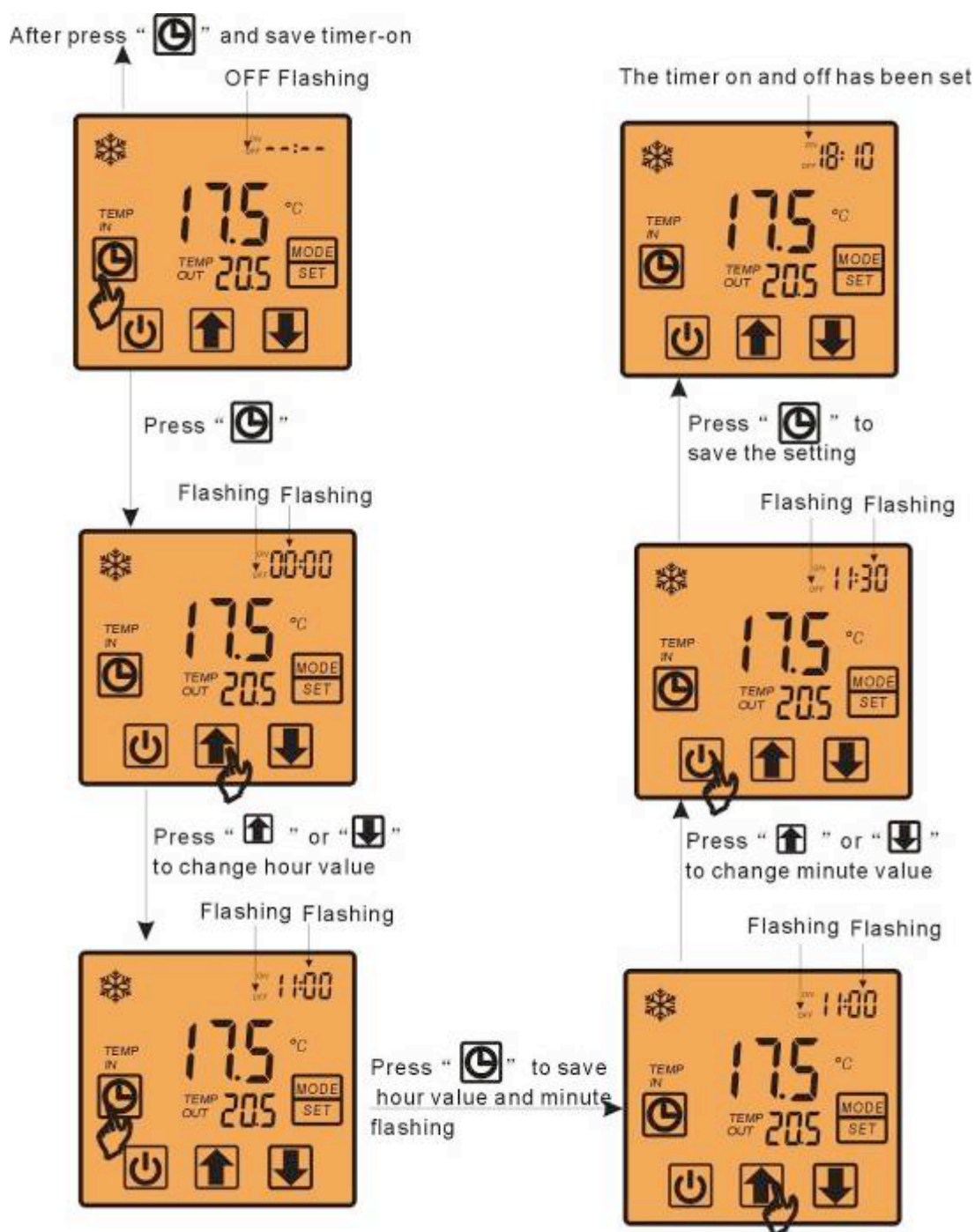
- Attention: a) After the final step, "OFF" will flash, you can press "clock" to go on to set the timer off.
- b) If you only want to set the timer on, then after the final step just press "on/off" to back to main interface.
- c) If there is no operation for 5s, system will remember clock setting and back to the main interface.

Timer off setting

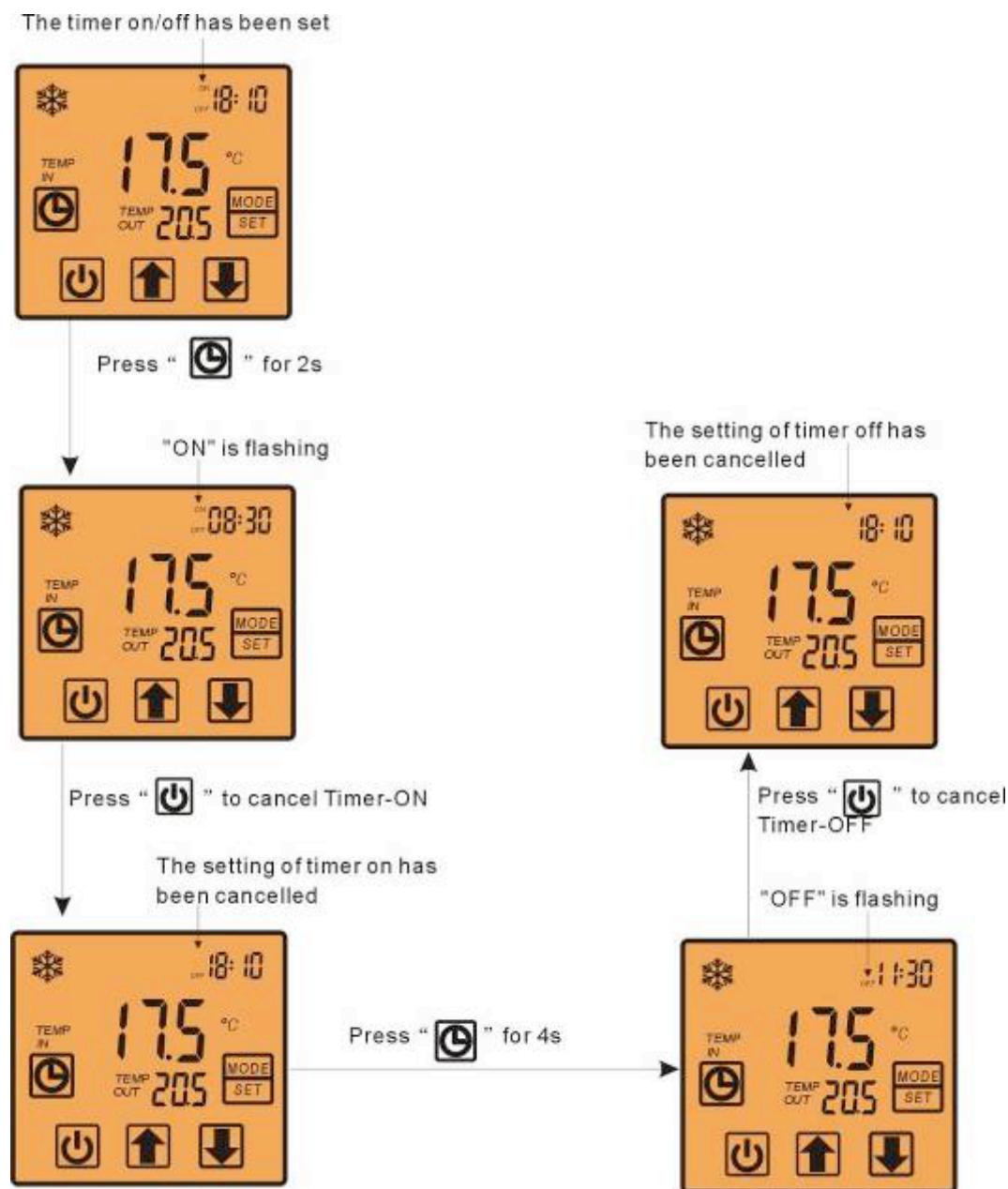
Notes:

- A) At the main interface, press "clock" until the "off" is flashing, you can set the timer off.
- B) After the last step of timer-on, press "clock" to get into timer off setting interface.
- C) If there is no operation for 5s, system will remember clock setting and return to the main interface.

Now we take B) situation for example, the timer off operation as follow:



The operation of canceling of timer on /off



Attention: If there is only timer-off for system, press "clock" for 4s and "OFF" flashes, then press "on/off" key to cancel timer-off.

The upload / download operation

1) Press mode for 10s, and input password 66/22, pressing “mode” to enter parameter setting interface, as following:

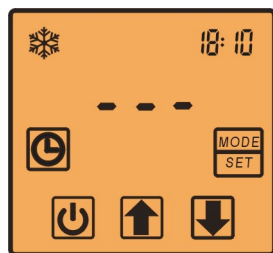


2) Upload: Press “UP” for 2s; Download: Tap “DOWN”.

During upload/ download process, the dash will flashing. When it has been done, system enter next interface.

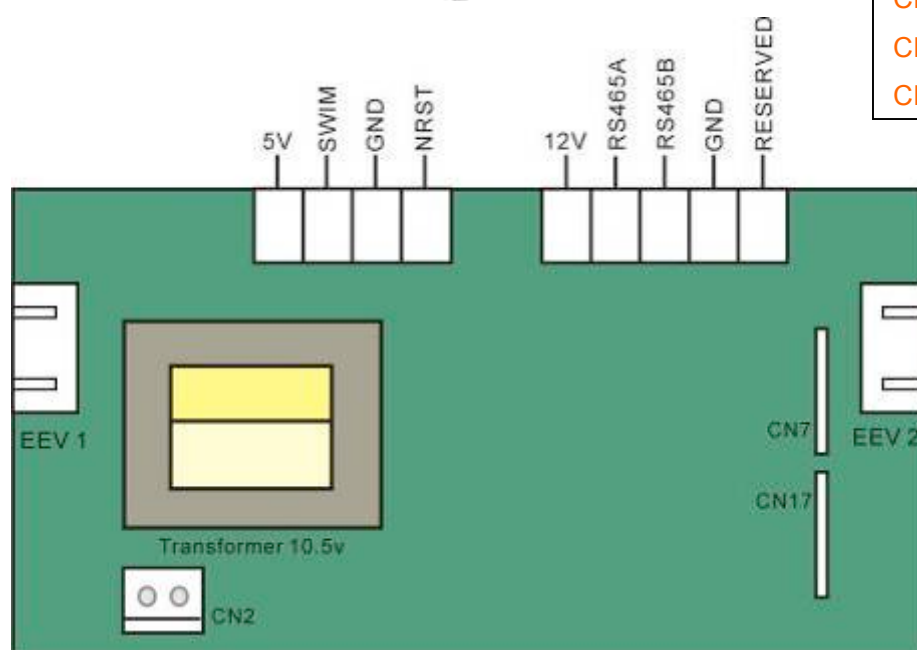
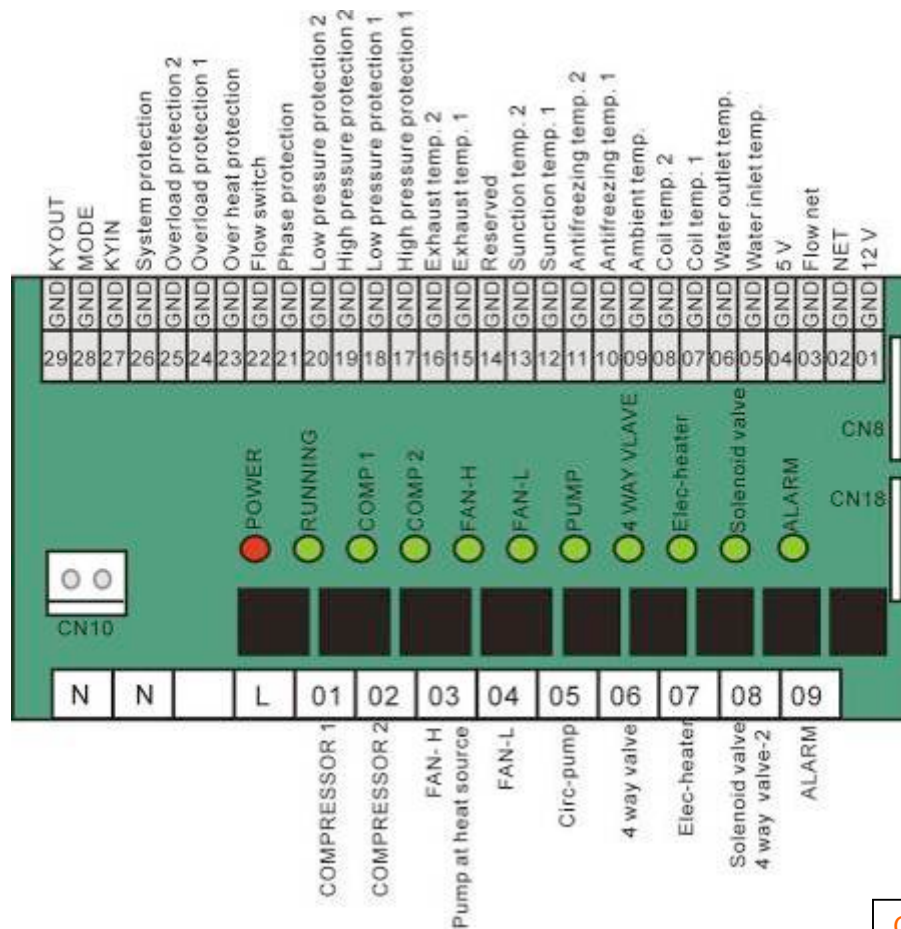


3) Waiting for a few seconds, then the screen will show the following:



4) Finally, press “on/off” to back to the main interface.

2. PCB I/O Ports description



CN2 connect with CN10
 CN8 connect with CN7
 CN18 connect with CN17

3. Troubleshooting

Code	Failure	Reason	Solution
P01	Water inlet temp. sensor failure	Temp. Sensor is broken	Check or change it
P02	Water outlet temp. sensor failure	Temp. Sensor is broken	Check or change it
P03	Heat recovery temp. sensor failure	Temp. Sensor is broken	Check or change it
P04	Ambient temp. sensor failure	Temp. Sensor is broken	Check or change it
P15	Coil temp. sensor 1 failure	Temp. Sensor is broken	Check or change it
P25	Coil temp. sensor 2 failure	Temp. Sensor is broken	Check or change it
P17	Suction temp. sensor 1 failure	Temp. Sensor is broken	Check or change it
P27	Suction temp. sensor 2 failure	Temp. Sensor is broken	Check or change it
P181	Exhaust temp. sensor 1 failure	Temp. Sensor is broken	Check or change it
P281	Exhaust temp. sensor 2 failure	Temp. Sensor is broken	Check or change it
P19	Antifreezing temp. sensor 1 failure	Temp. Sensor is broken	Check or change it
P29	Antifreezing temp. sensor 2 failure	Temp. Sensor is broken	Check or change it
E11	High pressure protection 1 (HP1)	HP 1 switch is broken	Check or change it
E21	High pressure protection 2 (HP2)	HP 2 switch is broken	Check or change it
E12	Low pressure protection 1 (LP1)	LP 1 switch is broken	Check or change it
E22	Low pressure protection 2 (LP2)	LP 2 switch is broken	Check or change it
E03	Water flow protection	Flow switch is broken	Check or change it
E031	Water flow protection at heat source side	Flow switch is broken	Check or change it
E032	Water flow protection at using side	Flow switch is broken	Check or change it
E04	Over-heat protection	Electric heater is overheat	Check it's function
E101	Over-load protection 1	Compressor is overload	Check it's function
E201	Over-load protection 2	Compressor is overload	Check it's function
E06	Temp. Difference between inlet and outlet	Temp. Difference>13℃	Temp. Difference<13℃, And power off
E17	Antifreezing protection 1	Antifreezing temp. 1<2℃	9℃<Antifreezing temp. 1
E27	Antifreezing protection 2	Antifreezing temp. 2<2℃	9℃<Antifreezing temp. 2
E171	Antifreezing protection 1 at using side	Antifreezing temp. 1 at using side<2℃	9℃<Antifreezing temp. 1
E271	Antifreezing protection 2 at using side	Antifreezing temp. 2 at using side<2℃	9℃<Antifreezing temp. 2
E172	Antifreezing protection 1 at heat source side	Antifreezing temp. 1at heat source side<2℃	9℃<Antifreezing temp. 1
E272	Antifreezing protection 2 at heat source side	Antifreezing temp. 2at heat source side<2℃	9℃<Antifreezing temp. 2
E19	Primary antifreezing protection	2℃<inlet temp.≤4℃, Ambient temp.≤0℃	9℃<inlet water temp. 1
E29	Secondary antifreezing protection	inlet temp.≤2℃, Ambient temp.≤0℃	18℃<inlet water temp. 1
P128	Exhaust temp. 1 is too high	Exhaust temp. 1 > 120℃	Check Refrigerant
P282	Exhaust temp. 2 is too high	Exhaust temp. 2 > 120℃	Check Refrigerant
E05	System protection	System protection switch is broken	Check or change it
/	Defrosting	/	/
E08	Communication failure	Communication failure between wire controller and main board	Check the connection between wire controller and main board
EE	Power phase failure	Power phase error or shortage	Check the power phase

4. Parameter

◆ Parameter table

Parameter and description		Setting value		Default level	Mod bus address
		Code	Setting		
/ Hardware parameter	Whether enable system 1 high pressure switch	/01	0/1	F	44701
	Whether enable system 2 high pressure switch	/02	0/1	F	44702
	Whether enable system 1 low pressure switch	/03	0/1	F	44703
	Whether enable system 2 low pressure switch	/04	0/1	F	44704
	Whether enable phase monitor protection	/05	0/1	F	44705
	Whether enable water flow protection	/06	0/1	F	44706
	Whether enable electrical heater Overload protection	/07	0/1	F	44707
	Whether enable system 1 overload protection	/08	0/1	F	44708
	Whether enable system 2 overload protection	/09	0/1	F	44709
	Whether enable remote on/off switch	/10	0/1	F	44710
	Whether enable system protect	/11	0/1	F	44711
	Whether enable Outlet probe	/12	0/1	F	44712
	Whether enable Coil 1 probe	/13	0/1	F	44713
	Whether enable Coil 2 probe	/14	0/1	F	44714
	Whether enable Ambient probe	/15	0/1	F	44715
	Whether enable deice 1 probe	/16	0/1	F	44716
	Whether enable deice 2 probe	/17	0/1	F	44717
	Whether enable Suction 1 probe	/18	0/1	F	44718
	Whether enable Suction 2 probe	/19	0/1	F	44719
	Whether enable exhaust 1 probe	/20	0/1	F	44720
	Whether enable exhaust 2 probe	/21	0/1	F	44721
	Whether enable ΔT1 protect	/22	0/1	F	44722
	Whether enable Cooling mode	/23	0/1	F	44723
	Whether enable Economic heating	/24	0/1	F	44724
	Whether enable AUTO mode	/25	0/1	F	44725
	Whether enable Heating mode	/26	0/1	F	44726
	Whether enable High demand	/27	0/1	F	44727
	Whether enable heat recovery temperature	/28	0/1	F	44728
A Protection parameter	high pressure alarm time delay	A01	0	F	46501
	Low pressure alarm time delay	A02	300	F	46502
	Stop unit air temperature	A03	-15	F	46503
	Antifreeze setting temperature	A04	2/4	U	46504
	Antifreeze differential protection	A05	5	F	46505
	Discharge temp. protection setting	A06	120	F	46506

Swimming pool heat pump

	Discharge temp. differential protection	A07	30	F	46507
	inlet/out differential protection setting value	A08	13	F	46508
	Start spraying air temperature	A09	35	F	46509
C Compressor parameter	Minimum on time	C01	120	F	46701
	Minimum off time	C02	180	F	46702
	Delay between starts of the 2 compressors	C03	300	F	46703
	Rotation	C04	0/1/2	F	46704
d Defrost Parameter	Start defrosting temperature	d01	-7	U	46801
	End defrost temperature	d02	13	U	46802
	defrosting cycle	d03	45	U	46803
	Maximum defrosting time	d04	8	U	46804
	Minimum defrosting time	d05	3	F	46805
	Defrost mode	d06	0	F	46806
	Defrost heater control	d07	1	F	46807
	Defrost AUTO set	d08	4	F	46808
E EEV parameter	EEV 1 mode	E01	1	U	46901
	Super heat 1	E02	/	F	46902
	Initial place 1	E03	/	U	46903
	EEV 2 mode	E04	1	U	46904
	Super heat 2	E05	/	F	46905
	Initial place 2	E06	/	U	46906
	Minimum place	E07	/	F	46907
	Defrost place	E08	/	F	46908
	Cooling place	E09	/	F	46909
	Low exhaust	E10	50	F	46910
	High exhaust	E11	90	F	46911
F Fan parameter	Fan parameter	F01	0/1/2/3/4	U	47001
	Coil temperature in high speed fan mode (Cooling)	F02	40	F	47002
	Coil temperature in low speed fan mode (Cooling)	F03	15	F	47003
	Coil temperature when the fan stop (Cooling)	F04	10	F	47004
	Coil temperature in high speed fan mode (Heating)	F05	10	F	47005
	Coil temperature in low speed fan mode (Heating)	F06	20	F	47006
	Coil temperature when the fan stop (Heating)	F07	30	F	47007
	Fan start low speed running time	F08	0	F	47008
	Fan stop low speed running time	F09	8	F	47009
	Fan quantity	F10	1/2	F	47010
	Fan speed control temp.	F11	0/1	F	47011
H System Parameter	Automatic restarting	H01	1	F	47201
	System quantity	H02	1/2	F	47202
	4-way valve polarity	H03	0/1	F	47203
	4-way valve control	H04	0	F	47204
	Model(cooling only/heating & cooling/auxiliary electrical heating/heating only)	H05	0/1/2/3	U	47205

Swimming pool heat pump

	Type	H06	0/1/2	F	47206
	Class	H07	0/1	F	47207
	Capacity Control	H08	1	F	47208
H System Parameter	Coil sensor function	H09	0/1	F	47209
	Physical address	H10	1	F	47210
	Baud rate	H11	3	F	47211
	Parity bit	H12	0	F	47212
	Stop bit	H13	1	F	47213
P Water pump parameter	Water pump mode	P01	2	U	48001
	Water pump running cycle	P02	30	U	48002
	Water pump running time	P03	3	U	48003
	Delay in switching on the compressor after switching on the pump	P04	1	U	48004
	Filter	P05	0	F	48005
	Start filter 1	P06	10	F	48006
	Stop filter 1	P07	12	F	48007
	Start filter 2	P08	15	F	48008
	Stop filter 2	P09	17	F	48009
r Temp. parameter	Inlet water setting temperature (cooling)	r01	?	F	48201
	Inlet water setting temperature (Heating)	r02	?	F	48202
	Target setting temperature (Auto mode)	r03	27	F	48203
	Cooling differential	r04	1	F	48204
	Cooling stop differential	r05	1	F	48205
	Heating differential	r06	1	F	48206
	Heating stop differential	r07	1	F	48207
	Minimum set point in Cooling	r08	8	F	48208
	Maximum Cooling set point	r09	28	F	48209
	Minimum Heating set point	r10	15	F	48210
	Maximum Heating set point	r11	40/55	F	48211
	Electrical ΔT_6	r12	2	F	48212
	Electrical Ambient	r13	15	U	48213
	Electrical Delay	r14	30	U	48214
	Electrical force	r15	5	F	48215
	Compensation	r16	0/1	F	48216
	Maximum ΔT_7	r17	5	F	48217
	Cooling compensation constant	r18	1	F	48218
	Cooling compensation start air temperature	r19	35	F	48219
	Heating compensation start air temperature	r20	5	F	48220
	Whether enable heat recovery	r21	0	F	48221
	The target temperature Of heat recovery	r22	50°C	U	48222
	Temperature differential of heat recovery	r23	5°C	F	48223
	The temperature to stop heat recovery	r24	10°C	F	48224
	Temperature differential to stop heat recovery	r25	5°C	F	48225

Swimming pool heat pump

	Electric heater mode	r26	0	F	48226
	Ambient temperature to start up antifreezing heater	r27	3°C	F	48227
	Temperature differential to stop antifreezing heater	r28	3°C	F	48228
U Water flow parameter	flow meter	U01	0/1	F	48501
	Pulse	U02	205	F	48502
	Flow protect	U03	0	F	48503
	Flow alarm	U04	0.3	F	48504
S Switch state checking	System1 HP	S01	CL/OP	F/U	28301
	System2 HP	S02	CL/OP	F/U	28302
	System1 LP	S03	CL/OP	F/U	28303
	System2 LP	S04	CL/OP	F/U	28304
	Phase monitor	S05	CL/OP	F/U	28305
	Water Flow switch	S06	CL/OP	F/U	28306
	Electrical heater overload	S07	CL/OP	F/U	28307
	COMP1 overload	S08	CL/OP	F/U	28308
	COMP2 overload	S09	CL/OP	F/U	28309
	on/off switch	S10	CL/OP	F/U	28310
	mode switch	S11	CL/OP	F/U	28311
	System protect	S12	CL/OP	F/U	28312
	Water flow	S13	CL/OP	F/U	28313
T Temp. checking	Inlet water temp.	T01	-30~99°C	F/U	28401
	Outlet water temp.	T02	-30~99°C	F/U	28402
	Coil 1 temperature	T03	-30~99°C	F/U	28403
	Coil 2 temperature	T04	-30~99°C	F/U	28404
	Ambient temperature	T05	-30~99°C	F/U	28405
	Antifreeze 1 temperature	T06	-30~99°C	F/U	28406
	Antifreeze 2 temperature	T07	-30~99°C	F/U	28407
	Suction 1 temperature	T08	-30~99°C	F/U	28408
	Suction 2 temperature	T09	-30~99°C	F/U	28409
	Exhaust 1 temperature	T10	-30~99°C	F/U	28410
	Exhaust 2 temperature	T11	-30~99°C	F/U	28411
	Hot water temperature	T12	-30~99°C	F/U	28412
O Load output	Compressor 1 output	O1	CL/OP	F/U	27901
	Compressor 2 output	O2	CL/OP	F/U	27902
	Fan output (High speed)	O3	CL/OP	F/U	27903
	Fan output (Low speed)	O4	CL/OP	F/U	27904
	Circulate pump output	O5	CL/OP	F/U	27905
	4-way valve output	O6	CL/OP	F/U	27906
	Heat element output	O7	CL/OP	F/U	27907
	Alarm output	O8	CL/OP	F/U	27908
	Spray valve output	O9	CL/OP	F/U	27909
	Electronic Expansion valve 1 output	O10	0~500	F/U	27910
	Electronic Expansion valve 2 output	O11	0~500	F/U	27911

◆ Description of the parameters

/—— Hardware parameter: Setting whether system enable relevant hardware.
 From parameter "/ 01" to "/ 28 ", setting whether system enable relevant hardware.
 0=NO, 1=YES

A——Protection parameter

A01——High pressure alarm time delay

Establish the delay time when there is high pressure alarm.

A02——Low pressure alarm time delay

Establish the delay time when there is low pressure alarm.

A03——Stop unit air temp.

Establish temperature for stopping the unit.

A04——Antifreeze setting temperature

This represents the temperature (antifreeze set point) at the evaporator outlet below which an antifreeze alarm is activated.

A05——Antifreeze differential protection

This represents the delay in the activation of the antifreeze alarm when starting system

A06——Discharge temperature protection setting

This represents the temperature (discharge temp. protection set point) at the condenser inlet over which a protection alarm is activated.

A07——Discharge temperature differential protection

This represents the delay in the activation of the protection alarm when starting system

A08——in /outlet differential protection setting value

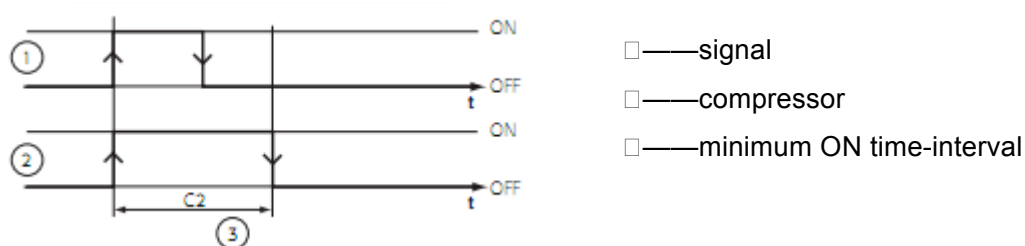
Establishes differential temperature protection for water inlet and outlet

A09——Start spraying air temp.

Establishes ambient temperature when system needing to start up spraying valve.

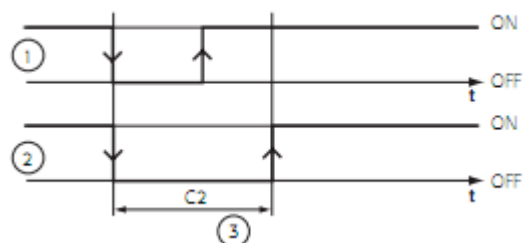
C——Compressor parameter

C01——This establishes the time that the compressor must remain ON for when started, even if the stop signal is sent.



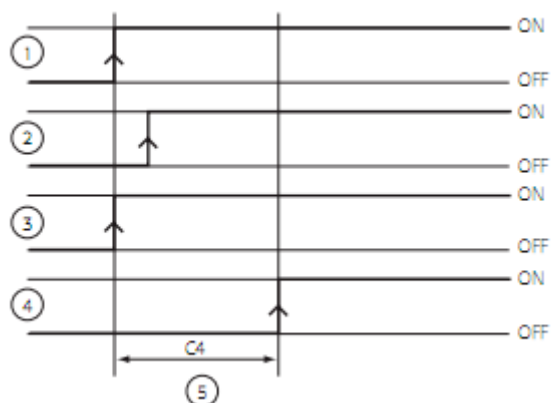
C02——this establishes the time that the compressor must remain OFF for when stopped, even if the start signal is sent.

Swimming pool heat pump



- — signal
- — compressor
- — minimum ON time-interval

C03 — Start delay between compressors



- — 1st signal
- — 2nd signal
- — 1st compressor
- — 2nd compressor
- — time delay between two compressors ON

C04 — Rotation (for the two systems)

C04=0, system will start up compressors in rotation, count the compressor's running time and record it. When turn off the unit, the system will firstly shut off the compressor that running time is longer; when turn on the system, it will firstly turn on the compressor which running time is shorter.

C04=1, when there is only need one compressor, system will start up compressor 1 firstly;

C04=2, when there is only need one compressor, system will start up compressor 2 firstly;

D — Defrost Parameter

D01 — Start defrost temperature

To start defrostation, the condition must be valid for the time d03.

D02 — End defrost temperature

Establishes the temperature above which the defrost cycle ends.

D03 — Defrosting cycle

Represents delay between two successive defrost cycle. The first time, when coil temperature is lower than D01, there must be valid for the time d03 to start the defrostation.

D04 — Maximum defrosting duration

Represents the maximum duration of the defrost cycle (the defrost ends when the maximum duration has been arrived, even if the defrost hasn't finished)

D05 — Minimum defrosting duration

Represent the minimum duration of the defrost cycle (the defrost continues even if the value read by the condenser probe exceed the end temperature)

D06 — Defrost mode

D06=0: the mode is normal defrost;

D06=1: the mode is economical defrostation; (Two systems can defrostation alone)

D06=2: there is no defrostation function for system.

Swimming pool heat pump

D07—Defrost electric heater control

D07=0: There is no influence to electric heater when defrosting;

D07=1: Electric heater is started up by force.

D08—Defrost AUTO set

When ambient temperature \geq D08, system will use economical mode to defrost;

When ambient temperature $<$ D08, system will use normal mode to defrost;

E—EEV parameter

E01—EEV 1 mode

E01=0: EEV 1 is running by manual operation;

E01=1: EEV 1 is running by automatic operation;

E02—Target Super heat 1 (TSH)

E03—Initial position 1

If E01=0, represents expansive valve fix this position always.

If E01=1, represents expansive valve initiation position

The EEV2 action is the same with EEV1's.

E04—EEV 2 mode

E05—Target Super heat 2

E06—Initial position 2

If E04=0, represents expansive valve fix this position always.

If E04=1, represents expansive valve initiation position.

E07—Minimum position

E08—Defrost position

Fix the EEV position during system is defrosting.

E09—Cooling position

Fix the EEV position during system at cooling mode.

E10—Low exhaust

E11—High exhaust

When exhaust temp. \leq E10, the EEV place won't expand;

When exhaust temp. \geq E11, the EEV place won't reduce.

F—Fan parameter

Normally, Fan will start up 5s ahead of Compressor and 30s later to close down. When at defrosting, Fan running situation is according to deforet control.

F01—Fan parameter

F01=0: in low speed fan mode;

F01=1: in high speed fan mode;

F01=2: the fan running modes depend on coil or ambient temperature (F02-F07);

Attention: The temperature probe is decided by F11

F01=3: the fan runs at low speed during F08-F09, the fan runs at high speed during other time;

F01=4: the fan running mode is depend on F02 and F03, fan will at low speed if one condition of fan running low speed mode is met;

F02—Coil or ambient temperature set point for high speed fan mode (Cooling)

This represents if the temperature above F02, the fan will on high speed (Cooling)

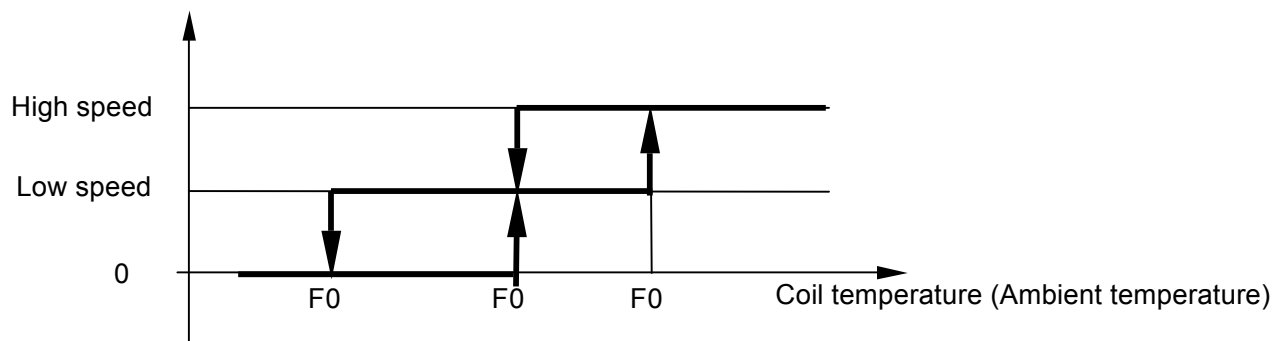
F03—Coil or ambient temperature set point for low speed fan mode (Cooling)

Swimming pool heat pump

This represents if the temperature below which the fans remain on at low speed (Cooling)

F04—Coil or ambient temperature set point for the fan stop (Cooling)

This represents the temperature in reference to F03 below which the fans are stopped.



At cooling mode, F11=0, when H02=1, Fan speed is decided by coil temperature.

When H02=2, Fan speed is decided by the higher of the two coil temperature.

F05—Coil or ambient temperature set point for high speed fan mode (Heating)

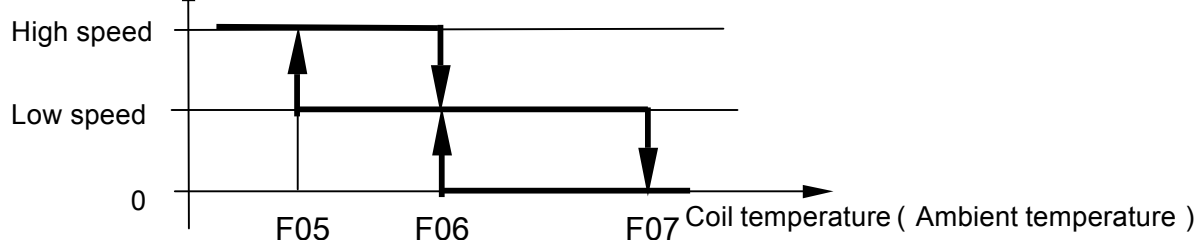
This represents the temperature above which the fans remain on at high speed (Heating)

F06—Coil or ambient temperature set point for low speed fan mode (Heating)

This represents the temperature below which the fans remain on at low speed (Heating)

F07—Coil or ambient temperature set point for the fan stop (Heating)

This represents the temperature in reference to F06 below which the fans are stopped.



At cooling mode, when H02=1, Fan speed is decided by coil temperature.

When H02=2, Fan speed is decided by the lower of the two coil temperature.

F08—Fan start low speed running time (Just for F01=3)

F09—Fan stop low speed running time (Just for F01=3)

F10—Fan quantity

When F10=1, there is just one Fan system;

Fan will start up when one compressor is on and Fan will shut off after both compressors has turned off.

When F10=2, there are two Fan systems;

Fan high speed port is used as system 1, Fan low speed port is used as system 2. Normally, Fan will start up 5s ahead of Compressor and 30s later to close down. And there is no speed regulated function for Fans.

F11—Fan speed control temp.

When F11=0, Fan speed is decided by coil temperature of system1 and system 2;

When F11=1, Fan speed is decided by ambient temperature. At this time, F02-F07 are also according to ambient temp. But not coil temperature.

Attention:

Swimming pool heat pump

1) When H06=0/1, Fan-high-speed port has output when Fan is at high speed. And vice versa. (For single system, Fan-high-speed port and low-speed port can not get output at the same time)

2) When H06=2, It is water to water heat pump, Fan-high-speed port is used as water pump at heat source and all the F parameters is invalid.

H——System Parameter

H01——Automatic restart

H01=0: disable automatic restart; H01=1: enable automatic restart

H02——System quantity

H02=1: Just one system; H02=2: Two systems;

H03——4-way valve polarity

H03=0: when system in heating mode, 4-way valve is power on;

H03=1: when system in heating mode, 4-way valve is power off.

H04——4-way valve control

H04=0: 4-way valve is action after compressor has shut off;

H04=1: 4-way valve can action when compressor is running;

H05——Model (cooling only/heating & cooling/auxiliary electrical heating/heating only)

H05=0: only cooling;

H05=1: heating, cooling and automatic; (there is no electrical heating)

H05=2: auxiliary electrical heating; (there is no automatic)

H05=3: only heating.

H06——Type

H06=0: swimming pool; (there are heating, cooling, automatic modes)

H06=1: Air to water heat pump; (there are heating, cooling, electrical heating modes)

H06=2: Water to water heat pump. (there are heating, cooling, electrical heating modes)

Attention: 1) When H06=2: system has no defrostation, the coil temperature is used as

Antifreezing or evaporation temperature, the fan-high port is used as pump port in heat source side, and the fan-low port is disabled.

2) If "/23 /24 /25 /26 /27" parameters are set 0, then H05 H06 setting is invalid.

H07——Class

H07=0: when /10=0, system is operated by controller;

When /10=1, system is operated by controller and KYIN port;

H07=1: system is operated by remote signal, controller can only read parameter and check switches alarming state;

H08——Capacity Control

H08=0, there is no capacity control for compressor;

The time of second compressor starting up and shutting off is 5s delay than the first one.

H08=1, there is capacity control for compressor;

The first compressor starts up at (target temp.± differential), the second compressor starts up at (target temp. ± 2*differential)

H09——Coil sensor function

This parameter is just for water to water heat pump.

H09=0, coil sensor is used as antifreezing temperature;

H09=1, coil sensor is used as evaporation temperature.

Swimming pool heat pump

Attention: 1) H06=2 and H09=0, coil temperature of system1 and system2 is used as antifreezing temperature.

2) H06=2 and H09=1, coil temperature of system1 and system2 is used as evaporation temperature.

3) H06≠2, H09 parameter is disabled.

H10—Modbus address

H11—Baud rate (1200*2n) (n=0、1、2、3、4、5)

H12—Parity bit

H12=0, There is no parity bit;

H12=1, the parity bit is odd number;

H12=2, the parity bit is even number.

H13—Stop bit

P—Water pump parameters

P01—Water pump mode

P01=0, water pump will always on except on standby and alarm.

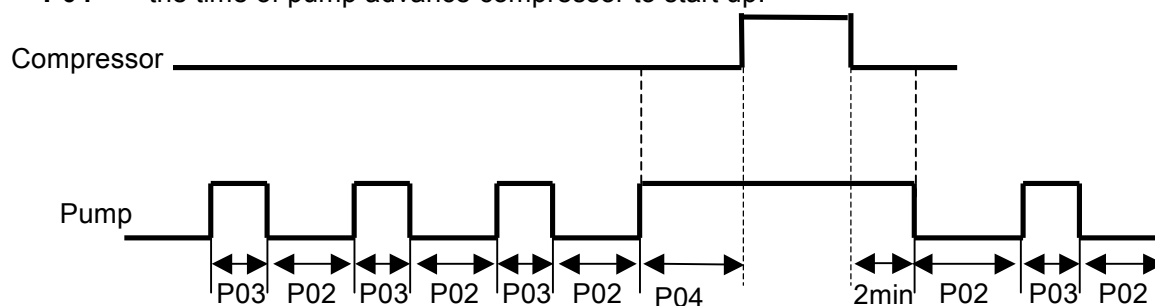
P01=1, water pump will operate depend on compressor, and has 2 minutes delay after the compressor has stopped;

P01=2, water pump will be started and stopped at regular intervals after compressor stop. Depend on P02 and P03.

P02—Water pump start interval time

P03—minimum on time that the pump remains on.

P04—the time of pump advance compressor to start up.



P05—Pump filter

Pump filter: when compressor has stopped, pump will run during p05-p06/p07-p08;

P05=0, NO; P05=1, YES.

P06—the time to start filter 1

P07—the time to stop filter 1

P08—the time to start filter 2

P09—the time to stop filter 2

R—Temperature parameter

R01—Cooling set point

Inlet water setting temperature (Cooling)

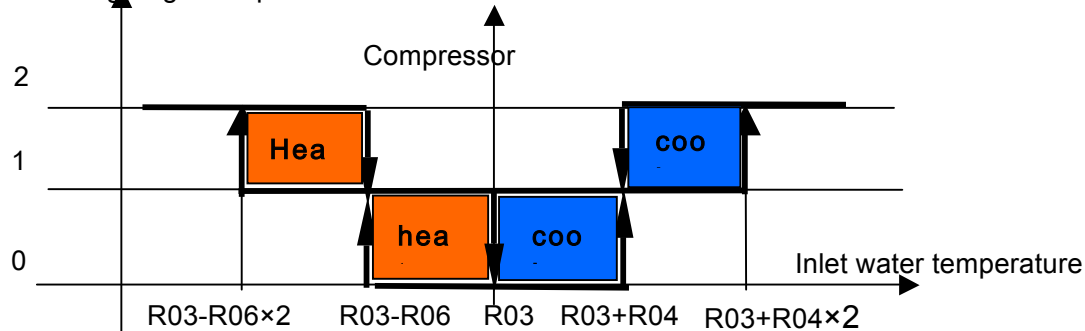
R02—Heating set point

Inlet water setting temperature (Heating)

R03—AUTO set point (Auto mode)

Swimming pool heat pump

The setting target temperature of automatic mode.

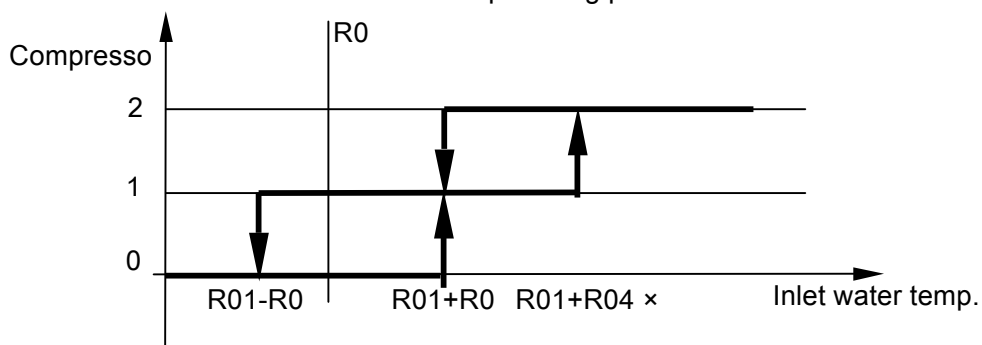


R04—Start differential of cooling

This represents the difference between R01 and start cooling point.

R05—Stop differential of cooling

This represents the difference between R01 and stop cooling point.

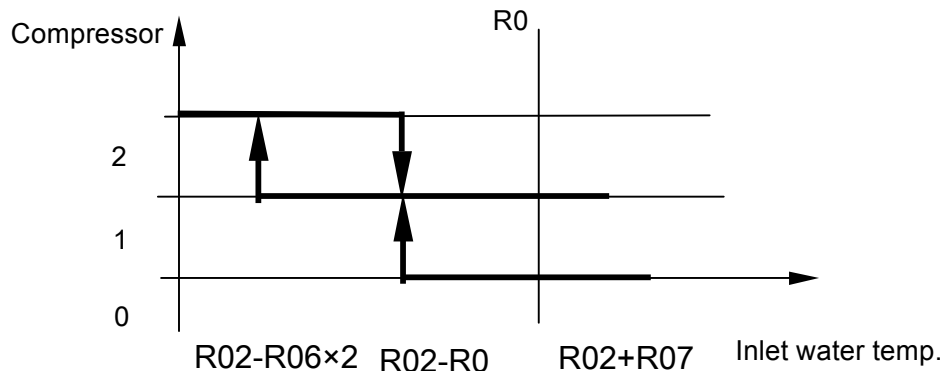


R06—Start differential of heating

This represents the difference between R02 and start heating point.

R07—Stop differential of heating

This represents the difference between R02 and stop heating point.



R08—Minimum set point in Cooling

Establish the minimum limit for setting the Cooling set point

R09—Maximum Cooling set point

Establishes the maximum limit for setting the Cooling set point

R10—Minimum Heating set point

Establish the minimum limit for setting the Heating set point

R11—Maximum Heating set point

Establish the maximum limit for setting the Heating set point

R12—Electrical ΔT_6

This represents the temperature differential in the activation for the Electrical heater

Swimming pool heat pump

R13—Electrical Ambient

Establish ambient temperature for starting up electrical heater.

R14—Electrical delay

This represents the delay in the activation of the Electrical heater

R15—Electrical Force

This represents ambient temperature in the activation of the Electrical heater when without delay.

R16—Compensation

Establish whether there is compensation function for system or not.

R17—Maximum ΔT

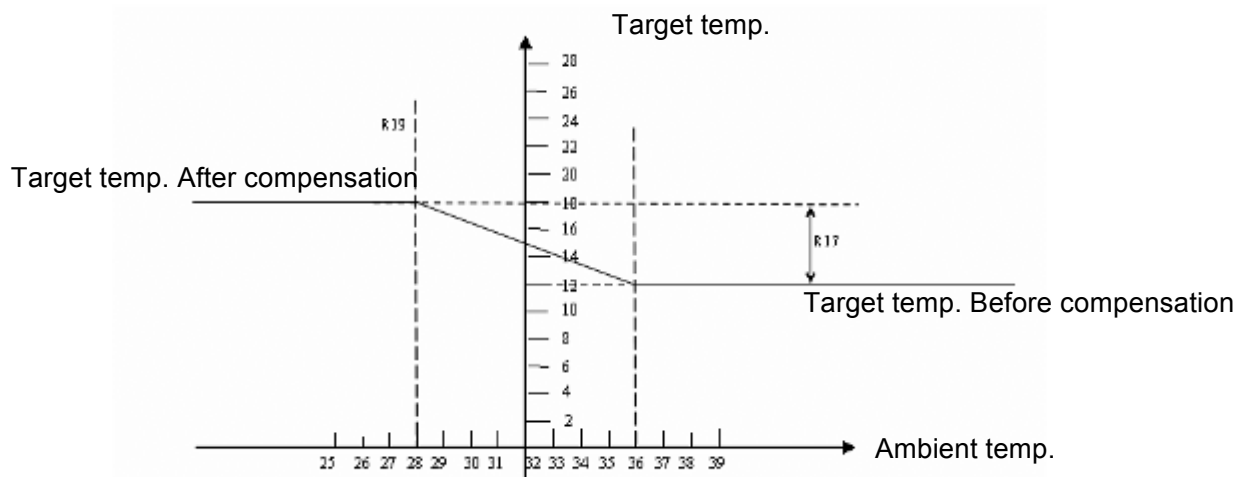
Indicates the maximum deviation from the set point beyond which compensation is stopped.

R18—Compensation constant

Sets the coefficient that controls the compensation algorithm

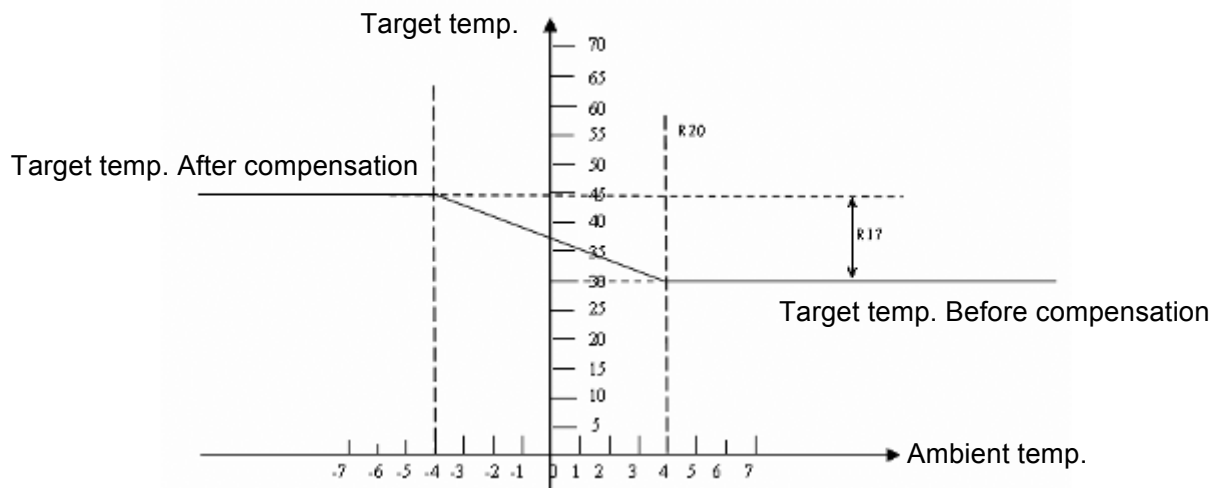
R19—Cooling compensation start air temp.

Sets the temperature above which the compensation function starts (cooling).



R20—Heating compensation start air temp.

Sets the temperature below which the compensation function starts (Heating).



Swimming pool heat pump

R21—whether enable heat recovery

R21=0, NO; R21=1, YES.

R22—the target temp. Of heat recovery

Establish differential temperature protection for water inlet and outlet

R23—temperature differential of heat recovery

R24—the temperature to stop heat recovery

R25—temperature differential to stop heat recovery

When R21=1, fan low-speed port is used as heat recovery output port.

Ambient temperature < R24, and unit type is swimming pool or air to water heat pump, heat recovery port without output;

Ambient temperature \geq R24+R25, or unit type is water to water heat pump, heat recovery control is as follows:

(a) Heat recovery temp. $T_{12} \leq R22 - R23$, heat recovery port with output;

(b) Heat recovery temp. $T_{12} \geq R22$, heat recovery port stop output;

R26—Electric heater mode

R26=0, hydraulic electrical heater

R26=1, tank electrical heater

R26=2, antifreezing heater band

R27—the ambient temperature for start up antifreezing heater band

R28—the temperature differential to stop antifreezing heater band

When ambient temperature < R27, antifreezing heater band will be started up;

When ambient temperature > R27 + R28, antifreezing heater band will be stopped;

U—Water flow parameter

U01—whether enable flow meter

U01=0, NO; U01=1, YES.

U02—Pulse (1L)

Actual water flow (L/minute) = Actual pulse every minute (N/minute) / U02 (N/L)

U03—Flow protect

U03=0, Water flow can only be checked by user;

U03=1, if water flow < U04, there will be flow too small alarm;

The malfunction will disappear when water flow \geq U04+0.3 m³ /h

U04—Flow alarm value

Establish the value when there is flow alarm.

Appendix I

NTC R-T Table (R25=5KΩ B25/50=3470K)

T(□)	R(KΩ)	T(□)	R(KΩ)	T(□)	R(KΩ)
-30.0	63.7306	14.0	7.7643	58.0	1.5636
-29.0	60.3223	15.0	7.4506	59.0	1.5142
-28.0	57.1180	16.0	7.1513	60.0	1.4666
-27.0	54.1043	17.0	6.8658	61.0	1.4206
-26.0	51.2686	18.0	6.5934	62.0	1.3763
-25.0	48.5994	19.0	6.3333	63.0	1.3336
-24.0	46.0860	20.0	6.0850	64.0	1.2923
-23.0	43.7182	21.0	5.8479	65.0	1.2526
-22.0	41.4868	22.0	5.6213	66.0	1.2142
-21.0	39.3832	23.0	5.4048	67.0	1.1771
-20.0	37.3992	24.0	5.1978	68.0	1.1413
-19.0	35.5274	25.0	5.0000	69.0	1.1068
-18.0	33.7607	26.0	4.8108	70.0	1.0734
-17.0	32.0927	27.0	4.6298	71.0	1.0412
-16.0	30.5172	28.0	4.4566	72.0	1.0100
-15.0	29.0286	29.0	4.2909	73.0	0.9800
-14.0	27.6216	30.0	4.1323	74.0	0.9509
-13.0	26.2913	31.0	3.9804	75.0	0.9228
-12.0	25.0330	32.0	3.8349	76.0	0.8957
-11.0	23.8424	33.0	3.6955	77.0	0.8695
-10.0	22.7155	34.0	3.5620	78.0	0.8441
-9.0	21.6486	35.0	3.4340	79.0	0.8196
-8.0	20.6380	36.0	3.3113	80.0	0.7959
-7.0	19.6806	37.0	3.1937	81.0	0.7730
-6.0	18.7732	38.0	3.0809	82.0	0.7508
-5.0	17.9129	39.0	2.9727	83.0	0.7293
-4.0	17.0970	40.0	2.8688	84.0	0.7086
-3.0	16.3230	41.0	2.7692	85.0	0.6885
-2.0	15.5886	42.0	2.6735	86.0	0.6690
-1.0	14.8913	43.0	2.5816	87.0	0.6502
0.0	14.2293	44.0	2.4934	88.0	0.6320
1.0	13.6017	45.0	2.4087	89.0	0.6144
2.0	13.0057	46.0	2.3273	90.0	0.5973
3.0	12.4393	47.0	2.2491	91.0	0.5808
4.0	11.9011	48.0	2.1739	92.0	0.5647
5.0	11.3894	49.0	2.1016	93.0	0.5492
6.0	10.9028	50.0	2.0321	94.0	0.5342

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7.0	10.4399		51.0	1.9656		95.0	0.5196
8.0	9.9995		52.0	1.9015		96.0	0.5055
9.0	9.5802		53.0	1.8399		97.0	0.4919
10.0	9.1810		54.0	1.7804		98.0	0.4786
11.0	8.8008		55.0	1.7232		99.0	0.4658
12.0	8.4385		56.0	1.6680		100.0	0.4533
13.0	8.0934		57.0	1.6149			

- 1) When there is some malfunction, test resistance value by multimeter, and compare the practical temperature with the above table, then you will know whether this NCT resistance is OK or not.
- 2) Generally, from above table, you can know the temperature by testing NTC resistance value.

Appendix II

NTC R-T Table (R25=50.000KΩ B25/50=3950K)

(Appendix II is for NTC resistance of exhaust temperature.)

T(°C)	R(KΩ)		T(°C)	R(KΩ)		T(°C)	R(KΩ)		T(°C)	R(KΩ)
-40.0	2009.2		0.0	168.10		40.0	26.507		80.0	6.3515
-39.0	1869.0		1.0	159.46		41.0	25.464		81.0	6.1541
-38.0	1739.6		2.0	151.32		42.0	24.468		82.0	5.9639
-37.0	1620.2		3.0	143.66		43.0	23.517		83.0	5.7805
-36.0	1509.8		4.0	136.43		44.0	22.608		84.0	5.6037
-35.0	1407.8		5.0	129.62		45.0	21.740		85.0	5.4333
-34.0	1313.5		6.0	123.19		46.0	20.911		86.0	5.2690
-33.0	1226.2		7.0	117.12		47.0	20.118		87.0	5.1105
-32.0	1145.3		8.0	111.39		48.0	19.359		88.0	4.9576
-31.0	1070.4		9.0	105.98		49.0	18.634		89.0	4.8104
-30.0	1001.0		10.0	100.87		50.0	17.940		90.0	4.6678
-29.0	936.58		11.0	96.040		51.0	17.276		91.0	4.5304
-28.0	876.76		12.0	91.470		52.0	16.641		92.0	4.3978
-27.0	821.21		13.0	87.148		53.0	16.032		93.0	4.2690
-26.0	769.58		14.0	83.057		54.0	15.450		94.0	4.1462
-25.0	721.58		15.0	79.185		55.0	14.892		95.0	4.0268
-24.0	676.92		16.0	75.519		56.0	14.357		96.0	3.9114
-23.0	635.35		17.0	72.045		57.0	13.845		97.0	3.8000
-22.0	596.63		18.0	68.754		58.0	13.353		98.0	3.6923
-21.0	560.55		19.0	65.634		59.0	12.882		99.0	3.5887
-20.0	526.92		20.0	62.676		60.0	12.430		100.0	3.4876

Swimming pool heat pump

-19.0	495.54		21.0	59.870		61.0	11.997		101.0	3.3903
-18.0	466.26		22.0	57.207		62.0	11.581		102.0	3.2978
-17.0	438.91		23.0	54.679		63.0	11.182		103.0	3.2052
-16.0	413.37		24.0	52.279		64.0	10.799		104.0	3.1172
-15.0	367.69		25.0	50.000		65.0	10.431		105.0	3.0320
-14.0	367.16		26.0	47.834		66.0	10.078		106.0	2.9497
-13.0	346.26		27.0	45.775		67.0	9.7393		107.0	2.8699
-12.0	326.70		28.0	43.818		68.0	9.4134		108.0	2.7927
-11.0	308.38		29.0	41.956		69.0	9.1002		109.0	2.7180
-10.0	291.22		30.0	40.185		70.0	8.7991		110.0	2.6457
-9.0	275.13		31.0	38.500		71.0	8.5096		111.0	2.5756
-8.0	260.05		32.0	36.896		72.0	8.2313		112.0	2.5077
-7.0	245.89		33.0	35.368		73.0	7.9637		113.0	2.4420
-6.0	232.60		34.0	33.913		74.0	7.7061		114.0	2.3783
-5.0	220.13		35.0	32.527		75.0	7.4584		115.0	2.3166
-4.0	208.40		36.0	31.206		76.0	7.2199		116.0	2.2568
-3.0	197.38		37.0	29.947		77.0	6.9904		117.0	2.1989
-2.0	187.02		38.0	28.746		78.0	6.7694		118.0	2.1427
-1.0	177.27		39.0	27.600		79.0	6.5566		119.0	2.0882
									120.0	2.0354

- 1) When there is some malfunction, test resistance value by multimeter, and compare the practical temperature with the above table, then you will know whether this NCT resistance is OK or not.
- 2) Generally, from above table, you can know the temperature by testing NTC resistance value.



Oasis Heat Pumps