







# "ORIGINAL INSTRUCTIONS"

# IMPORTANT NOTE:

Read this manual carefully before installing or operating your new heat pump. Make sure to save this manual for future reference.



For downloading manual for this product, please enter the model name at this link:



SK

Pre stiahnutie manuálu k tomuto produktu zadajte modelové označenie do nasledujúceho odkazu:



R Za preuzimanje priručnika za ovaj proizvod unesite naziv modela na ovu vezu:



SL

Za prenos navodil za uporabo tega izdelka, vnesite ime modela na tej povezavi:



IT

Per scaricare il manuale di questo prodotto, inserisci il nome del modello a questo link:





Pro stažení manuálu k tomuto produktu zadejte modelové označení do následujícího odkazu:



- DE
- Um das Handbuch für dieses Produkt herunterzuladen, geben Sie bitte den Modellnamen für diesen Link ein:



- HU
- Termék kézikönyvének letöltéséhez írja be a modell megnevezését az alábbi linkre:



- RU
- Чтобы загрузить руководство для этого продукта, введите обозначение модели по следующей ссылке:



ES

Para descargar el manual de este producto, ingrese la designación del modelo en el siguiente enlace:



- This manual gives detailed description of the precautions that should be brought to your attention during operation.
- In order to ensure correct service of the wired controller please read this manual carefully before using the unit.
- For convenience of future reference, keep this manual after reading it.

# CONTENTS

10	GENE	RAL SAFETY PRECAUTIONS	01
•	1.1	About the documentation	01
•	1.2	For the user	01
2 A	GL	ANCE OF THE USER INTERFACE	02
•	2.1	The appearance of the wired controller	02
•	2.2	Status icons	
3 U	ISING	G HOME PAGES	03
4 N	IENU	JSTRUCTURE	05
•	4.1	About the menu structure	05
•	4.2	To go to the menu structure	05
•	4.3	To navigate in the menu structure	05
5 E	SASI	CUSAGE	05
•	5.1	Screen Unlock	05
•	5.2	Turning ON/OFF controls	
•	5.3	Adjusting the temperature	
•	5.4	Adjusting space operation mode	08
6 C	PER	ATION	08
•	6.1	Operation Mode	08
•	6.2	Preset Temperature ·····	08
•	6.3	Domestic Hot Water(DHW)	11
•	6.4	Schedule	13
•	6.5	- F	15
•	6.6		18
•	6.7	Service Information	18
•	6.8	Operation Parameter ·····	19
•	6.9	For Serviceman	20
•		Network Configuration Guidelines	21
•	6.11	SN VIEW	21
7 N	IENU	J STRUCTURE : OVERVIEW	22

# 1 GENERAL SAFETY PRECAUTIONS

# 1.1 About the documentation

 The precautions described in this document cover very important topics, follow them carefully.

#### ▲ DANGER

Indicates a situation that results in death or serious injury.

.....

### ▲ DANGER: RISK OF ELECTROCUTION

Indicates a situation that could result in electrocution.

#### ▲ DANGER: RISK OF BURNING

Indicates a situation that could result in burning because of extreme hot or cold temperatures.

### 

Indicates a situation that could result in death or serious injury.

### 

Indicates a situation that could result in minor or moderate injury.

# 

Indicates a situation that could result in equipment or property damage.

#### -----

### **i** INFORMATION

Indicates useful tips or additional information.

# 1.2 For the user

• If you are not sure how to operate the unit, contact your installer.

The appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children must be supervised to ensure that they do not play with the product.

### 

DO NOT rinse the unit. This may cause electric shocks or fire.

• Unit are marked with the following symbol:

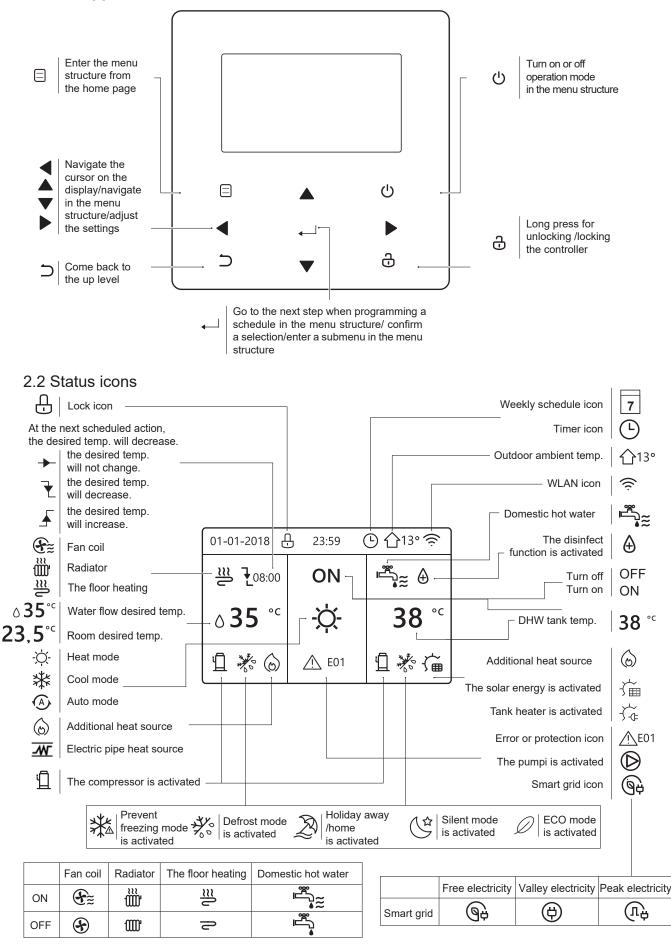


This means that electrical and electronic products can not be mixed with unsorted household waste. Do NOT try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and of other parts must be done by an authorized installer and must comply with applicable legislation. Units must be treated at a specialized treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

• Placed in a location away from radiation.

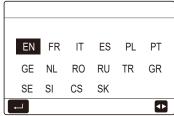
# **2 A GLANCE OF THE USER INTERFACE**

# 2.1 The appearance of the wired controller



# **3 USING HOME PAGES**

When you turn on the wired controller, the system will enter the language selection page, You can choose your preferred language, then press , to enter the home pages. If you don't press , in 60 seconds, the system will enter in the currently selected language.

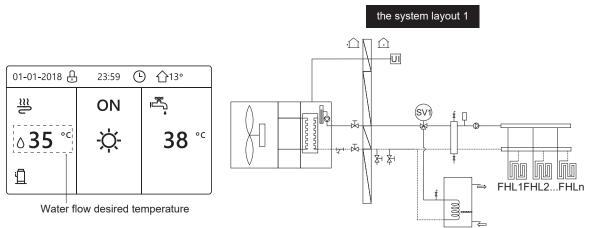


You can use the home pages to read out and change settings that are meant for daily usage. What you can see and do on the home pages is described where applicable. Depending on the system layout, the following home pages may be possible:

- Water flow desired temperature
- Room desired temperature
- Domestic hot water temperature

#### home page1 :

If the WATER FLOW TEMP. is set YES and ROOM TEMP. is set NON.(See **"FOR SERVICEMAN" > "TEMP. TYPE SETTING" in "Installation and owner's manual"**). The system has the function including floor heating and domestic water, home page 1 will appear:

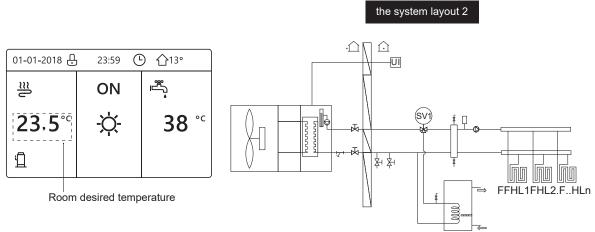


### NOTE

All the pictures in the manual are used to explain, the actual pages in the screen may have some difference.

#### home page2 :

If the WATER FLOW TEMP. is set NON and ROOM TEMP. is set YES(See **"FOR SERVICEMAN" > "TEMP. TYPE SETTING" on "Installation and owner's manual"**). The system has the function including floor heating and domestic hot water, home page 2 will appear:

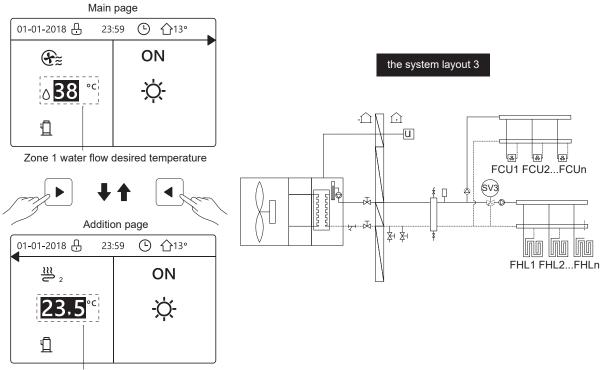


### NOTE

The wired controller should be installed in the floor heating room to check the room temperature.

#### home page3:

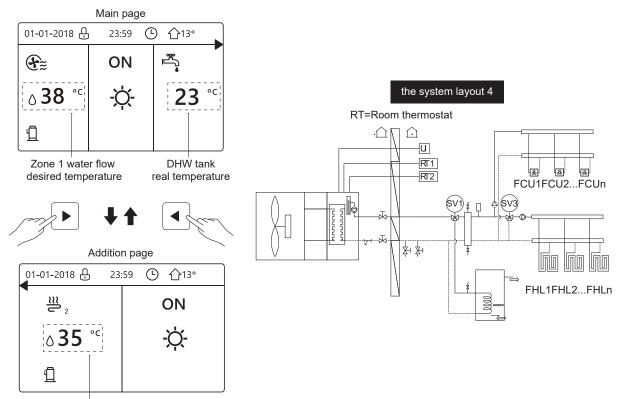
If the DHW MODE is set NON (See "FOR SERVICEMAN" > "DHW MODE SETTING " in "Installation and owner's manual ", and if "WATER FLOW TEMP." is set YES, "ROOM TEMP." is set YES,(See "FOR SERVICEMAN" > "TEMP. TYPE SETTING " in "Installation and owner's manual "). There will be main page and additional page. The system has the function including floor heating and space heating for fan coil, home page 3 will appear:



Zone 2 room desired temperature

#### home page4 :

If the ROOM THERMOSTAT is set DOUBLE ZONE or DOUBLE ZONE is set YES. There will be main page and addition page. The system has the function including floor heating, space heating for fan coil and domestic hot water, home page 4 will appear:



Zone 2 water flow desired temperature

# **4 MENU STRUCTURE**

# 4.1 About the menu structure

You can use the menu structure to read out and configure settings that are NOT meant for daily usage. What you can see and do in the menu structure is described where applicable. For an overview of the menu structure, see " **7 Menu structure: Overview**".

#### 4.2 To go to the menu structure

From a home page, press " 🗐 ". Result: The menu structure appear:

MENU	1/2
OPERATION MODE	
PRESET TEMPERATURE	
DOMESTIC HOT WATER(DHW)	
SCHEDULE	
OPTIONS	
CHILD LOCK	
	ŧ
MENU	2/2
SERVICE INFORMATION	
OPERATION PARAMETER	
FOR SERVICEMAN	
WLAN SETTING	
SN VIEW	
ENTER	Ð

4.3 To navigate in the menu structure

Use"V", " $\blacktriangle$ " to scroll.

# **5 BASIC USAGE**

5.1 Screen Unlock

If the icon  $\bigcirc$  is on the screen, the controller is locked. The following page is displayed:

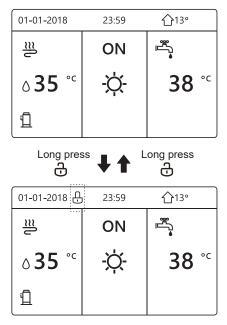
01-01-2018 🕂	23:59	<b>☆</b> 13°	]
_≝	ON	• 	
∆ <b>35</b> °°	-ờ-	<b>38</b> °c	
Ĩ			

Press any key, the icon  $\bigcirc$  will flash. Long press the "  $\bigcirc$  " key. The icon  $\bigcirc$  will disappear, the interface can be controlled.

01-01-2018	_ 23:59	<b>①</b> 13°	<b>4</b>
J≋	ON	•	
∆ <b>35</b> °°	-Ò-	<b>38</b> <sup>∘</sup>	
Ē			

The interface will be locked if there is no handing for a long time(about 120 seconds:it can be set by the interface, see **"6.7 SERVICE INFORMATION"**.)

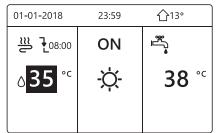
If the inerface is unlocked, long press " 🖰 ", the interface will be locked.



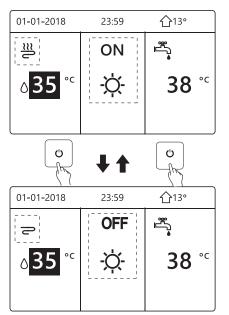
# 5.2 Turning ON/OFF controls

5.2.1 Use the interface to turn on or off the unit for space heating or cooling.

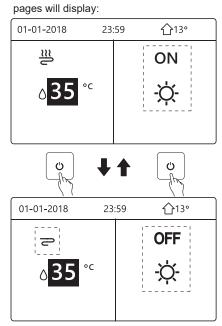
- The ON/OFF of the unit is controlled by the interface if do not activate ROOM THERMOSTAT.(see "ROOM THERMOSTAT SETTING " in " Installation and owner's manual")
- Press "◀ "、"▲" on home page, the black cursor will appear:



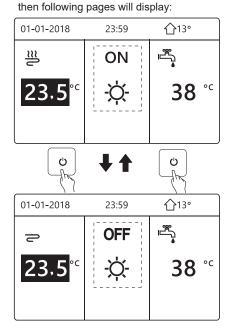
1 ) When the cursor is on the temperature of space operation mode side (Including heat mode  $\dot{\phi}$ , cool mode  $\dot{k}$  and auto mode  $\dot{A}$ ), press "ON/OFF" key to turn on/off space heating or cooling .



If the DHW TYPE is set NON, then following

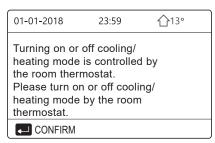


If the TEMP. TYPE is set ROOM TEMP. ,

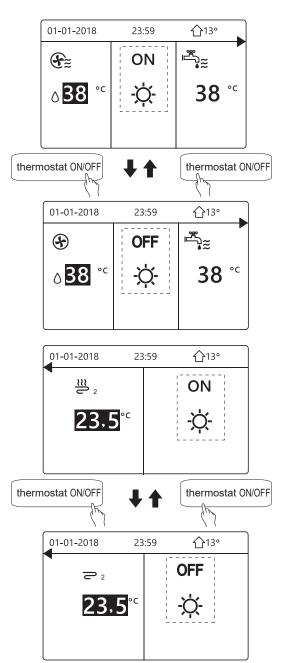


5.2.2 Use the room thermostat to turn on or off the unit for space heating or cooling.

 The room thermostat is set MODE SET (see "ROOM THERMOSTAT SETTING" in "Installation and owner's manual "). The unit operation mode and ON /OFF controlled by room thermostat, press O on the interface, the following page will display:



② The room thermostat is SET ONE ZONE or DOUBLE ZONE (see "ROOM THERMOSTAT SETTING" in "Installation and owner's manual "). The room thermostat control the unit ON/OFF, operation mode is set on HMI interface. The following pages show room thermostat control DOUBLE ZONE:

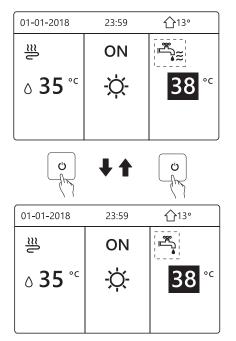


5.2.3 Use the interface to turn on or off the unit for DHW.Press "▶"、 "▼"on home page, the black cursor will appear:

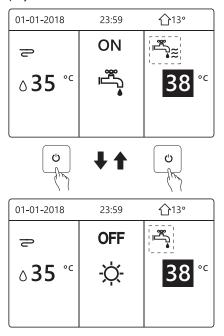
01-01-2018	23:59	<b>☆</b> 13°
ി≋	ON	° **
<b>∂35</b> °°	-À-	<b>38</b> °c

When the cursor is on the temperature of DHW mode. Press "  $\dot{\texttt{O}}$  " key to turn on/off the DHW mode.

If the space operation mode is ON, then following pages will display:

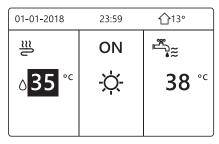


If the space operation mode is OFF, then following pages will display:

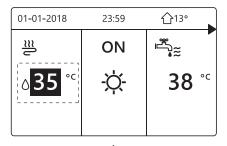


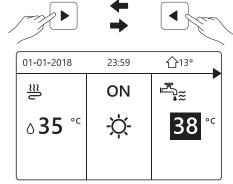
# 5.3 Adjusting the temperature

Press "  $\blacktriangleleft$  "  $\checkmark$  "  $\blacktriangle$  " on home page, the black cursor will appear:



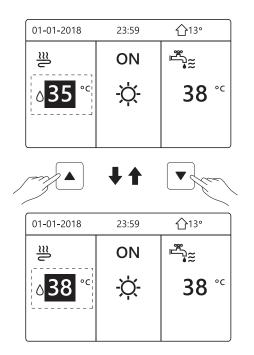
If the cursor is on the temperature, use the " $\blacktriangleleft$ ", " $\blacktriangleright$ " to select and use " $\nabla$ ", " $\blacktriangle$ " to adjust the temperature.



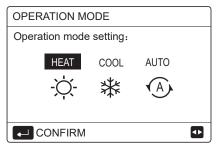




01-01-2018	23:59	<b>①</b> 13°
<u>₩</u> 2		ON
23,5	PC .	-ờ-



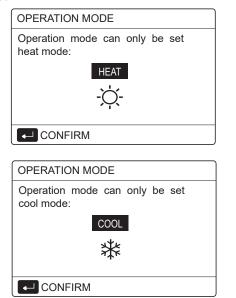
# 5.4 Adjusting space operation mode



 There are three modes to be selected including HEAT, COOL and AUTO mode. Use the "◄", "▶" to scroll, press "←" to select.

Even you don't press \_\_ button and exit the page by pressing ⊃ button, the mode would still be effective if the cursor had been moved to the operation mode.

If there is only HEAT(COOL) mode, the following page will appear:

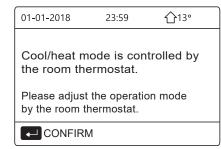


The operation mode can not be changed.

If you select…	Then the space operation mode is	
-Ò- HEAT	Always heating mode	
₩ cool	Always cooling mode	
AUTO	Automatically changed by the software based on the outdoor temperature (and depending on installer settings of the indoor temperature), and takes monthly restrictions into account. Note: Automatic changeover is only possible under certain conditions. See the "FOR SERVICEMAN"> "AUTO MODE SETTING" in "Installation and owner's manual".	

 Adjust space operation mode by the room thermostat , see "ROOM THERMOSTAT" on "Installation and owner's manual".

Go to "  $\square$  ">"OPERATION MODE", if you press any key to select or adjust, the page will appear:



# 6 OPERATION

#### 6.1 Operation Mode

See "5.4 Adjusting space operation mode"

#### 6.2 Preset Temperature

PRESET TEMPERATUER has PRESET TEMP.\ WEATHER TEMP. SET\ECO MODE 3 items.

#### 6.2.1 PRESET TEMP.

PRESET TEMP. function is used to set different temperature on different time when the heat mode or cool mode is on.

• PRESET TEMP. =PRESET TEMPERATUER

 $\bullet~$  The PRESET TEMP. function will be off in these conditions.

1) AUTO mode is running.

2) TIMER or WEEKLY SCHEDULE is running.

The following page will appear:

PRESET TEMPERATURE			1/2
PRE TEM		WEATHER TEMP.SET	ECO MODE
NO.		TIME	TEMP.
1		00:00	25°C
2		00:00	25°C
3		00:00	25°C
			€ ₽

PRESET TEMPERATURE 2/2				
PRE TEM		WEATHER TEMP.SET	ECO MODE	
NO.		TIME	TEMP.	
4		00:00	25°C	
5		00:00	25°C	
6		00:00	25°C	
			€ ●	

When double zone is activated, The PERSET TEMP. function only works for zone 1.

use "◀"、 "▶ "、 "▼"、 "▲" to scroll and use "♥"、 "▲" to adjust the time and the temperature. When the cursor is on "∎", as the following page:

PRES	ET TE	1/2	
PRESET TEMP.		WEATHER TEMP.SET	ECO MODE
NO.		TIME	TEMP.
1		00:00	25°C
2		00:00	25°C
3		00:00	25°C
	SELEC	€ ₽	

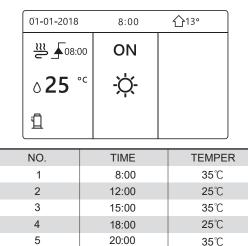
You press " $\leftarrow$ ", and the " $\blacksquare$ " becomes "  $\blacksquare$ ". The timer 1 is selected.

You press " ← " again, and the " **V** " becomes "∎". The timer 1 is unselected.

PRES	1/2			
PRE TEM		WEATHER TEMP.SET	ECO MODE	
NO.		TIME	TEMP.	
1	$\square$	08:00	35°C	
2	$\square$	12:00	25°C	
3	$\lor$	15:00	35°C	

Use "◀"、 "▶"、 "♥"、 "▲" to scroll and use "♥"、 "▲" to adjust the time and the temperature.Six periods and six temperatures can be set.

For example: Now time is 8:00 and temperature is 30°C. We set the PRESET TEMP as following table. The following page will appear:



TEMP. ↑

6



8:0012:0015:0018:0020:0023:00

25℃

#### i INFORMATION

23:00

When the space operation mode is changed, the PRESET TEMP. is off automatically.

The PRESET TEMP. function can be used in the heat mode or cool mode. But if the operation mode is changed, the PRESET TEMP. function needs to be reset again.

The running preset temperature is valid when the unit is OFF. It will run according to the next preset temperature when the unit turn on again.

#### 6.2.2 WEATHER TEMP. SET

WEATHER TEMP. SET=WEATHER TEMPERATURE
SET

• WEATHER TEMP.SET function is used to preset the desired water flow temperature depending on the outside air temperature.During the warmer weather the heating is reduced.To save energy, the weather temp.set can decrease the desired water flow temperature when the outdoor air temperature increased in heating mode.

The following page will appear:

PRESET TEMPERATURE		
PRESET WEATHER TEMP. TEMP.SET		ECO MODE
ZONE1 C-MODE LOW TEMP.		OFF
ZONE1 H-MODE LOW TEMP.		OFF
ZONE2 C-MODE LOW TEMP.		OFF
ZONE2 H-MODE LOW TEMP.		OFF
ి ON/OFF		¢

# i INFORMATION

• WEATHER TEMP. SET have four kinds of curves :1.the curve of the high temperature setting for heating,2.the curve of the low temperature setting for heating, 3.the curve of the high temperature setting for cooling ,4.the curve of the low temperature setting for cooling. It only uses the curve of the high temperature is set for heating, if the high temperature is set for heating.

It only uses the curve of the low temperature setting for heating, if the low temperature is set for heating.

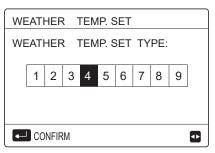
It only uses the curve of the high temperature setting for cooling, if the high temperature is set for cooling.

It only uses the curve of the low temperature setting for cooling, if the low temperature is set for cooling.

• See "FOR SERVICEMAN"> "COOL MODE SETTING" and > "HEAT MODE SETTING" in "Installation and owner's manual".

• The desired temperature (T1S) can't be adjusted, when the temperature curve is set ON.

 If you want to use heat mode in zone 1 ,you select "ZONE1 H-MODE LOW TEMP". If you want to use cool mode in zone 1, you select "ZONE1 C-MODE LOW TEMP". If you select "ON", the following page will appear:



Use '◀ "、 "▶' 'to scroll .Press "← " to select.

PRESET TEMPERATURE				
PRESET TEMP.	WEATHER TEMP.SET	ECO MODE		
ZONE1 C-MODE	ON			
ZONE1 H-MODE	OFF			
ZONE2 C-MODE	ZONE2 C-MODE LOW TEMP			
ZONE2 H-MODE	OFF			
ు ON/OFF		Ð		

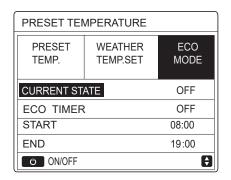
 If the weather TEMP.SET is activated, the desired temperature can not be adjusted on the interface.Press the "♥"、 "▲" to adjust the temperature on home page. The following page will appear:

01-01-2018	23:59	<b>企</b> 13°		
Weather tomp	oot function			
Weather temp.set function is on. Do you want to turn off it?				
NO	YE	S		

Move to "NO",press "  $\leftarrow$  " to come back to home page,move to "YES",press "  $\leftarrow$  " to reset the WEATHER TEMP. SET.

PRESET TEMPERATURE				
PRESET TEMP.	WEATHER TEMP.SET	ECO MODE		
ZONE1 C-MODE	ZONE1 C-MODE LOW TEMP			
ZONE1 H-MODE	ZONE1 H-MODE LOW TEMP			
ZONE2 C-MODE	ZONE2 C-MODE LOW TEMP			
ZONE2 H-MODE	OFF			
් ON/OFF		Ð		

#### 6.2.3 ECO MODE





EC	0	МО	DE	SE	Г					
EC	ECO MODE SET TYPE:									
	1	2	3	4	5	6	7	8	9	
	CO	NFIR	M							♪

Use ' $\blacktriangleleft$  "、 ">"to scroll .Press "  $\leftarrow$  " to select. The following page will appear:

PRESET TEMPERATURE			
PRESET TEMP.	WEATHER TEMP.SET	ECO MODE	
CURRENT STATE ON			
ECO TIMER		OFF	
START		08:00	
END	19:00		
ර ON/OFF		Ð	

PRESET TEMPERATURE			
PRESET TEMP.	WEATHER TEMP.SET	ECO MODE	
CURRENT STATE		OFF	
ECO TIMER		ON	
START		08 <mark>:00</mark>	
END		19:00	
ADJUST		◆	

When the cursor is on the "START" or on the "END",you can use "◀"、 "▶ "、 "▼"、 "▲" to scroll and use "▼" 、 "▲" to adjust the time.

#### **i** INFORMATION

• ECO MODE SET have two kinds of

curves :1.the curve of the high temperature setting for heating, 2.the curve of the low temperature setting for heating,

It only uses the curve of the high temperature setting for heating, if the high temperature is set for heating.

It only uses the curve of the low temperature setting for heating, if the low temperature is set for heating.

• See "FOR SERVICEMAN">"HEAT MODE SETTING" in "Installation and owner's manual".

• The desired temperature (T1S) can't be adjusted, when the ECO mode is ON.

• You can selet the low or hige temperature setting for heating to see the "Table  $1\sim2$ ".

• If ECO MODE is ON and ECO TIMER is OFF,the unit run ECO mode all the time.

• If ECO MODE is ON and ECO TIMER is ON, the unit run ECO mode according to the start time and end time.

# 6.3 Domestic Hot Water(DHW)

DHW mode typically consists of the following : 1) DISINFECT 2) FAST DHW 3) TANK HEATER

4) DHW PUMP

#### 6.3.1 Disinfect

The DISINFECT function is used to kill the legionella.In disinfect function the tank temperature will be reached 65~70 C forcely. The disinfect temperature is set in FOR SERCICEMAN.See "FOR SERCICEMAN" > "DHW MODE" > "DISINFECT" in "Installation and owner's manual (M-thermal split indoor unit)".

Go to "  $\boxdot$  " > "DOMESTIC HOT WATER" > "DISINFECT". Press "  $\smile$  ". The following page will appear:

DOMESTIC HOT WATER (DHW)				
DIS- INFECT	FAST DHW	TANK HEATER	DHW PUMP	
CURREN	T STATE		ON	
OPERATE	DAY		FRI	
START			23:00	
ి ON/C	)FF		<b>†</b> •	
(1	5		They are	
		NATER (DH	łW)	
DOMEST	FAST DHW	NATER (DF TANK HEATER	DHW	
DIS-	FAST DHW	TANK	DHW	
DIS- INFECT	FAST DHW	TANK	DHW PUMP	
DIS- INFECT CURREN	FAST DHW	TANK	DHW PUMP OFF	
DIS- INFECT CURRENT	FAST DHW <b>STATE</b> DAY	TANK	DHW PUMP OFF FRI	

Use "◀"、 "▶ "、 "▼ "、 "▲" to scroll and use "▼"、 "▲" to adjust the parameters when setting "OPERATE DAY" and "START". If the OPERATE DAY is set FRIDAY and the START is set 23:00,

the disinfect function will be activated on 23:00 Friday. If the disinfect function is running,the following page will appear:

23:59	<b>①</b> 13°
ON	≞≋ ⊕
-ờ-	<b>38</b> °⊂

#### 6.3.2 Fast DHW

The FAST DHW function is used to force the system to operate in DHW mode.

The heat pump and the booster heater or addition heater will operate for DHW mode together, and the DHW desired temperature will be changed to  $60 \,\mathrm{C}$ .

Go to  $\square$  > DOMESTIC HOT WATER >FAST DHW. Press "  $\leftarrow$  ":

DOMESTIC HOT WATER (DHW)				
DIS- INFECT	FAST DHW	TANK DHW HEATER PUMF		
CURREN	T STATE		ON	
<b>ు</b> 0N/0	DFF			
DOMEST		WATER (DH	(W)	
DIS- INFECT	FAST DHW	TANK HEATER	DHW PUMP	
CURREN	T STATE		OFF	

Use " <sup>O</sup> " key to select ON or "OFF".

#### i INFORMATION

If CURRENT STATE is OFF, the FAST DHW is invalid, and if CURRENT STATE is ON, the FAST DHW function is effective. The FAST DHW function is once effective.

#### 6.3.3 TANK HEATER

The tank heater function is used to force the tank heater to heat the water in tank. In the same situation, the cooling or heating is required and the heat pump system is operating for cooling or heating, however there still is a demand for the hot water.

Also, even if the heat pump system fails, TANK HEATER can be used to heat water in tank.

Go to "  $\boxminus$  " > "DOMESTIC HOT WATER" > "TANK HEATER". Press "  $\hookleftarrow$  ".

DOMESTIC HOT WATER (DHW)					
DIS- INFECT	FAST TANK DHW DHW HEATER PUMI				
CURREN	CURRENT STATE ON				
ٹ ON/C	)FF				
C C C					
DOMEST		WATER (DH	(W)		
DIS- INFECT	FAST DHW	TANK HEATER	DHW PUMP		
CURREN	CURRENT STATE OFF				
ٹ ON/0	)FF				

Use " ტ " to select ON or OFF. Use " ⊃ " to exit.

If TANK HEATER is effect, the following page will appear:

01-01-2018	23:59	<b>①</b> 13°
≅ C	ON	Ĩ **
∆ <b>35</b> °°	-ờ-	<b>38</b> °℃
		, Ţ₫

### **i** INFORMATION

If CURRENT STATE is OFF, TANK HEATER is invalid.

If the T5(sensor of tank) is fault ,tank heater can't work.

#### 6.3.4 DHW Pump

DOMESTIC HOT WATER (DHW) 1/2				
DIS- INFECT	FAST DHW	TANK HEATER	DHW PUMP	
NO.	START	NO.	START	
T1 🗆	00:00	T4 🗌	00:00	
T2 🗆	00:00	T5 🗌	00:00	
T3 🗆	00:00	Т6 🗌	00:00	

DOMESTIC HOT WATER (DHW) 2/2					
DIS- INFECT	FAST DHW	TANK HEATER	DHW PUMP		
NO.	START	NO.	START		
T7 🗆	00:00	T10 🗌	00:00		
T8 🗌	00:00	T11 🗌	00:00		
Т9 🗆	00:00	T12 🗌	00:00		
			€ ⊅		

Move to " $\blacksquare$ ", press "  $\leftarrow$  " to select or unselect.(  $\Box$  the timer is selected.)

DOMESTIC HOT WATER (DHW) 1/2				
DIS- INFECT	FAST DHW	TANK HEATER	DHW PUMP	
NO.	START	NO.	START	
T1 🛛	00:00	T4 🗌	00:00	
T2 🗌	00:00	T5 🗌	00:00	
T3 🗆	00:00	T6 🗌	00:00	

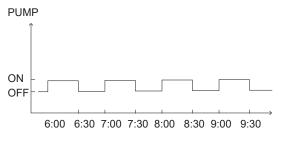
Use " $\blacktriangleleft$ ', " $\triangleright$ ", " $\checkmark$ ", " $\blacktriangle$ " to scroll and use " $\checkmark$ ", " $\blacktriangle$ " to adjust the parameters.

For example:you have set the parameter about the DHW PUMP(See "FOR SERVICEMAN">"DHW MODE SETTING" on "Installation and owner's manual"). PUMP RUNNING TIME is 30 minutes.

Set as follows:

NO.	START
1	6:00
2	7:00
3	8:00
4	9:00

The PUMP will run as follows:



# 6.4 Schedule

SCHEDULE menu contents as follows:

- 1) TIMER
- 2) WEEKLY SCHEDULE
- 3) SCHEDULE CHECK
- 4) CANCEL TIMER

#### 6.4.1 Timer

If the weekly schedule function is on, the timer is off, the later setting is effective. If the Timer is activated, (b) is displayed on home page.

SCHEDULE 1/2					
TIMER	WEEKLY SCHEDULE				CANCEL TIMER
NO.	START	ΕN	ID	MODE	TEMP
1	00:00	00:	00	HEAT	0°C
2 🗆	00:00	00:	00	HEAT	0°C
3 🗆	00:00	00:	00	HEAT	0°C

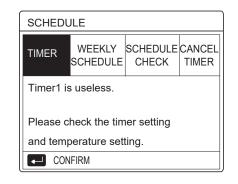
SCHEDULE 2/2					
TIMER	WEEKLY SCHEDULE		SCHEDULE CHECK		CANCEL TIMER
NO.	START	ΕN	ID	MODE	TEMP
4	00:00	00:	00	HEAT	0°C
5 🗆	00:00	00:	00	HEAT	°℃
6 🗆	00:00	00:00		HEAT	0°C
					€ ●

Use "◀ "、 "▶ "、 "▼"、 "▲" to scroll and use "▼"
 "▲" to adjust the time, the mode and the temperature.

Move to "∎", press " → " to select or unselect.( ▲the timer is selected. \_the timer is unselected.) six timers can be set.

If you want to cancel the TIMER, you move the cursor to " ♥ ",press " ← ",the ♥ become □,the timer is invalid.

If you set the start time later than the end time or the temperature out of range of the mode. The following page will appear:

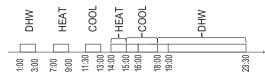


# Example:

Six timers is set as following:

NO.	START	END	MODE	TEMP
T1	1: 00	3: 00	DHW	50°C
T2	7:00	9: 00	HEAT	28℃
Т3	11: 30	13: 00	COOL	20℃
T4	14: 00	16: 00	HEAT	28℃
T5	15: 00	19: 00	COOL	20℃
T6	18: 00	23: 30	DHW	<b>50</b> ℃

The unit will run as following:



The operation of the controller at the following time:

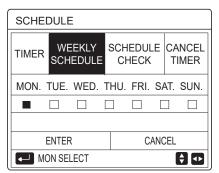
TIME	The operatin of the controller
1: 00	DHW mode is turned ON
3: 00	DHW mode is turned OFF
7: 00	HEAT MODE is turned ON
9: 00	HEAT MODE is turned OFF
11: 30	COOL MODE is turned ON
13: 00	COOL MODE is turned OFF
14: 00	HEAT MODE is turned ON
15: 00	COOL MODE is turned ON and HEAT MODE is turned OFF
18: 00	DHW MODE is turned ON and COOL MODE is turned OFF
23: 30	DHW mode is turned OFF

#### **i** INFORMATION

If the start time is same to the end time in one timer, the timer is invalid.

#### 6.4.2 Weekly schedule

If the timer function is on and the weekly schedule is off, the later setting is effective.If WEEKLY SCHEDULE is activated, 7 is displayed on the home page.



First select the days of the week you wish to schedule. Use "◀ "、 "▶"to scroll, press " ← " to select or unselect the day.

" MON " means that the day is selected, "MON" means that the day is unselected.

### **i** INFORMATION

We must set two days at least when we want to enable WEEKLY SCHEDULE function.

SCHEE	DULE						
TIMER	WEEF SCHED			IEDUI HECK		Canc Time	
MON. T	UE. WI	ED. T	HU.	FRI.	SAT	. SU	N.
		] [					
E	ENTER			C	ANCE	EL	
MC	N SELEC	Т				¢	¢

Use " $\blacktriangleleft$ "or " $\triangleright$ " to SET, press"ENTER".The Monday to Friday are selected to be scheduled and they have the same schedule.

The following pages will appear:

SCHE	SCHEDULE 1/2					
TIMER	WEEKLY SCHEDUL			CANCEL TIMER		
NO.	START	END	MODE	TEMP		
1	00:00	00:00	HEAT	0°C		
2 🗆	00:00	00:00	HEAT	0°C		
3 🗆	00:00	00:00	HEAT	0°C		
				€ ₽		

SCHED	SCHEDULE 2/2				
TIMER	WEEK SCHED		HEDULE CHECK	CANCEL TIMER	
NO.	START	END	MODE	TEMP	
4	00:00	00:00	HEAT	0°C	
5 🗆	00:00	00:00	HEAT	0°C	
6 🗆	00:00	00:00	HEAT	0°C	
				<b>+</b>	

Use " $\blacktriangleleft$ ", " $\blacktriangleright$ ", " $\checkmark$ ", " $\blacktriangle$ " to scroll and adjust the time ,the mode and the temperature. Timers can be set, including start time and end time,mode and temperature. The mode includes heat mode, cool mode and DHW mode.

The setting method refer to timer setting. The end time must be later than the start time. Otherwise this will show that Timer is useless.

#### 6.4.3 Schedule check

schedule check can only check the weekly schedule.

SCHE	SCHEDULE				
TIMER	WEEKLY	SCHE CHE	-		
WEE	KLY SCHEDUL	E CHE	CK		
	ENTER		🖨 🖸		
WEE	KLY SCHEDU	LE CH	IECK		
DAY	NO MODE	SET	START END		
	T1 🗌 HEAT	0°C	00:00 00:00		
	T2 🗌 HEAT	0°C	00:00 00:00		
MON	T3 🗌 HEAT	0°C	00:00 00:00		
	T4 🗌 HEAT	0°C	00:00 00:00		
_	T5 🗌 HEAT	0°C	00:00 00:00		
	T6 🗌 HEAT	0°C	00:00 00:00		

Press " $\mathbf{\nabla}$ ", " $\mathbf{\Delta}$ ", the timer from Monday to Sunday will appear:

6.4.4 CANCEL TIMER

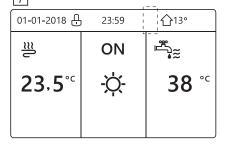
SCHEDULE			
TIMER	WEEKLY SCHEDULE	SCHEDULE CHECK	CANCEL TIMER
Do you want to cancel the			
timer a	and weekly so	hedule?	
NO YES			
ENTER 🗘 🗘			

Use "◀ "、 "▶ "、 "♥"、 "▲"to move to "YES", press " ← " to cancel timer. If you want to exit CANCEL TIMER, press "BACK".

If TIMER or WEEKLY SCHEDULE is activated, timer icon " ()" or weekly schedule icon " 7 " will display on the home page.

01-01-2018 🕂	23:59	⊙¦☆13°
ി≋	ON	 *≈
23,5 <sup>°°</sup>	-ờ-	<b>38</b> ° <sup>℃</sup>

If TIMER or WEEKLY SCHEDULE is canceled, icon" or " $\boxed{7}$ " will disappear on the home page.



#### INFORMATION

You have to reset TIMER/WEEKLY SCHEDULE, if you change the WATER FLOW TEMP. to the ROOM TEMP. or you change the ROOM TEMP. to the WATER FLOW TEMP.

The TIMER or WEEKLY SCHEDULE is invalid, if ROOM THERMOSTAT is activated.

#### **i** INFORMATION

- The ECO has the highest priority, the TIMER or WEEKLY SCHEDULE has the second priority and the PRESET TEMP. or WEATHER TEMP. SET has the lowest priority.
- The PRESET TEMP. or WEATHER TEMP. SET becomes invalid, when we set the ECO valid. We must reset the PRESET TEMP. or WEATHER TEMP. SET when we set the ECO invalid.
- TIMER or WEEKLY SCHEDULE is invalid when ECO is valid. TIMER or WEEKLY SCHEDULE is activated when the ECO is not running.
- TIMER and WEEKLY SCHEDULE are on the same priority. The later setting function is valid. The PRESET TEMP. becomes invalid when TIMER or WEEKLY SCHEDULE is valid. The WEATHER TEMP. SET is not affected by the setting of TIMER or WEEKLY SCHEDULE.

• PRSET TEMP. and WATHER TEMP.SET are on the same priority. The later setting function is valid.

#### **INFORMATION**

All about the time set items(PRESET TEMP. ECQ DISINFECT、 DHW PUMP. TIMER WEEKLY SCHEDULE、 SILENCE MODE、 HOLIDAY HOME), the ON/OFF of the corresponding function can be activated from the start time to the end time.

### 6.5 Options

OPTIONS menu contents as following: 1) SILENT MODE

- 2) HOLIDAY AWAY
- 3) HOLIDAY HOME
- 4) BACKUP HEATER

#### 6.5.1 Silent Mode

The SILENT MODE is used to decrease the sound of the unit. However, it also decreases the heating/cooling capacity of the system. There are two silent mode levels. level2 is more silent than level1, and the heating or cooling capacity is also more decreasing.

There are two methods to use the silent mode:

1) silent mode in all time;

2) silent mode in timer.

• Go to the home page to check if silent mode is activated. If the silent mode is activated," (\* " will be displayed on the home page.

OPTIONS			1/2
SILENT MODE	HOLIDAY AWAY	HOLIDAY HOME	BACKUP HEATER
CURRENT STATE			OFF
SILENT LEVEL			LEVEL 1
TIMER1 START			12:00
TIMER1 END			15:00
් ON/OFF			¢

Use " 🖒 " to select ON or OFF.

Description:

If CURRENT STATE is OFF, SILENT MODE is invalid.

When you select SILENT LEVEL, and press " → " or " ► ". The following page will appear:

OPTIONS			
SILENT MODE	HOLIDAY AWAY	HOLIDAY HOME	BACKUP HEATER
CURRENT STATE ON			ON
SILENT LEVEL		LEVEL 1	
TIMER1 START		12:00	
TIMER1 END		15:00	
ADJUST			<₽

LEVEL 1

OPTIONS			
SILENT HOLIDAY HOLIDAY BACKUF MODE AWAY HOME HEATER			
CURRENT STATE ON			ON
SILENT LEVEL		LEVEL 2	
TIMER1 START		12:00	
TIMER1 END		15:00	
ADJUST			•

LEVEL 2

You can use "▼"、 "▲" to select level 1 or level 2. Press

If the silent TIMER is selected, Press " $\leftarrow$ " to enter, the following page will appear.

OPTIONS			2/2
SILENT MODE	HOLIDAY AWAY	HOLIDAY HOME	BACKUP HEATER
TIMER1 OF			OFF
TIMER2 START 22			<mark>22</mark> :00
TIMER2 END			07:00
TIMER2			OFF
🖨 ADJU	IST		♪

There are two timers for setting. Move to "∎", press "↓↓" to select or unselect.

If the two time are both unselected,the silent mode will operate in all time.Otherwise, it will operate according as the time.

#### 6.5.2 Holiday Away

• If the holiday away mode is activated,  $\overset{>}{\gg}$  will display on the home page.

The holiday away function is used to prevent frozen in the winter during the outside holiday, and return the unit before the end of the holiday.

Go to "⊜" > "OPTIONS" > "HOLIDAY AWAY". Press " →" . The following page will appear:

OPTIONS 1/			1/2
SILENT MODE	Holiday Away	HOLIDAY HOME	BACKUP HEATER
CURRENT STATE OFF			OFF
DHW MODE ON			ON
DISINFECT OI			ON
HEAT MODE O			ON
ON/OFF			

OPTIONS 2			2/2
SILENT MODE	Holiday Away	HOLIDAY HOME	BACKUP HEATER
FROM	FROM 00-00-2000		
UNTIL	UNTIL 00-00-2000		
ADJUST			

Usage example: You go away during the winter.The current date is 2018-01-31,two days later is 2018-02-02, it is the beginning date of the holiday.

• If you are in the following situation:

In 2 days, you go away for 2 weeks during the winter.
You want to save energy, but prevent your house from freezing.

Then you can do the following:

1) Configure the holiday away the following settings:

Use  $\forall \mathbf{V} \in \mathbf{V}$  to select "OFF" of "ON" and use  $\forall \mathbf{A}$ ".  $\mathbf{V} = \mathbf{V} = \mathbf{V}$ .  $\mathbf{A}$ " to scroll and adjust.

Setting	Value
Holiday away	ON
From	2 February 2018
Until	16 February 2018
Operation mode	Heating
disinfect	ON

### **i** INFORMATION

• If DHW mode in holiday away mode is ON, The disinfect set by user is invalid.

• If holiday away mode is ON, The timer and weekly schedule are invalid except exit.

• If the CURRENT STATE is OFF, the HOLIDAY AWAY is OFF.

• If the CURRENT STATE is ON, the HOLIDAY AWAY is ON.

• Disinfecting the unit on 23:00 of the last day if disinfect is ON.

• When in holiday away mode, the climate related curves previously set is invalid, and the curves will automatically take effect after the holiday away mode is ends.

• The preset temperature is invalid when in holiday away mode, but the preset value still display on the main page.

#### 6.5.3 Holiday Home

The holiday home function is used to deviate from the normal schedules without having to change them during the holiday at home.

• During your holiday, you can use the holiday mode to deviate from your normal schedules without having to change them.

Period	Then
Before and after your holiday	Your normal schedules will be used.
During your holiday	The configured holiday settings will be used.

If the holiday home mode is activated,  $\overset{>}{\gg}$  will display on the home page. Go to "  $\boxminus$  "> "OPTIONS" > "HOLIDAY HOME".

OPTIONS				
SILENT MODE	HOLIDAY AWAY	D/ (OI (OI		
CURREN	CURRENT STATE OFF			
FROM		00-00-2000		
UNTIL		00-00-2000		
TIMER		ENTER		
ර ON/OFF ◀►				

Use " <sup>(</sup>U) " to select "OFF" or "ON" and use "◀ "、 "▶ "、 "▼"、 "▲" to scroll and adjust.

If the CURRENT STATE is OFF, the HOLIDAY HOME is OFF.

If the CURRENT STATE is ON, the HOLIDAY HOME is ON.

Use " $\nabla$ ", " $\blacktriangle$ " to adjust the date.

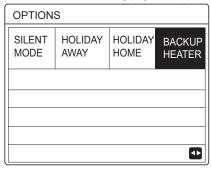
• Before and after your holiday, your normal schedule will be used.

• During your holiday, you save energy and prevent your house from freezing.

### **i** INFORMATION

You have to exit Holiday away or Holiday home, if you change the operation mode of the unit.

#### 6.5.4 Backup Heater



IBH=Indoor unit backup heater. AHS=Additional heating source.

• If IBH and AHS is set valid by DIP switch on the main control board of hydraulic module, The following page will appear:

OPTIONS				
SILENT HOLIDAY HOLIDAY BACKUI MODE AWAY HOME HEATER				
BACKUP HEATER ON				
	055			
ON/OFF				

Use " () " to select "OFF" or "ON" .

### **i** INFORMATION

• If the operation mode is auto mode in space heating or cooling side, the buckup heater function can not be selected.

• The BACKUP HEATER function is invalid when only ROOM HEAT MODE enabled.

# 6.6 Child Lock

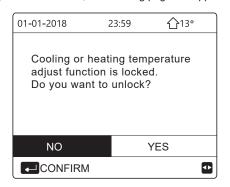
CHILD LOCK	
Please input the password:	
1 2 3	
ENTER 🖨 ADJUST	¢

Input the corrent password, the following page will appear:

CHILD LOCK	
COOL/HEAT TEMP. ADJUST	UNLOCK
COOL/HEAT MODE ON/OFF	UNLOCK
DHW TEMP. ADJUST	UNLOCK
DHW MODE ON/OFF	UNLOCK
B LOCK/UNLOCK	ŧ

Use " $\mathbf{\nabla}$ ", " $\mathbf{A}$ " to scroll and " $\mathbf{O}$ " to select LOCK or UNLOCK.

The cool/heat temperature can't be adjusted when the COOL/HEAT TEMP. ADJUST is locked. If you want to adjust the cool/heat temperature when cool/heat temperature is locked, the following page will appear:



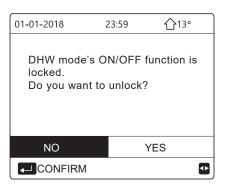
The cool/heat mode can't turn on or off when the COOL/HEAT MODE ON/OFF is locked.If you want to turn on or off the cool/heat mode when COOL/HEAT MODE ON/OFF is locked, the following page will appear:

01-01-2018	23:59	<b>①</b> 13°
Cooling or hea ON/OFF is loc Do you want to	ked.	S
NO	YE	S
		₽

The DHW temperature can't be adjusted when the DHW TEMP. ADJUST is locked. If you want to adjust the DHW temperature when DHW TEMP. ADJUST is locked, the following page will appear:

01-01-2018	23:59	습13°
DHW temperatu is locked. Do you want to		unction
NO	YE	S
		₽

The DHW mode can't turn on or off when the DHW MODE ON/OFF is locked. If you want to turn on or off the DHW mode when DHW MODE ON/OFF is locked, the following page will appear:



### 6.7 Service information

#### 6.7.1 About service information

Service information menu contents as following: 1) SERVICE CALL 2) ERROR CODE 3) PARAMETER 4) DISPLAY

6.7.2 How to go to service information menu

- "  $\leftarrow$  ". The following page will appear:

The service call can show the service phone or mobile nember. The installer can input the phone number. See "FOR SERVICEMAN".

		_		
SERVIC	E INFC	R	RMATION	
SERVICE CALL	ERROI CODE	٦	PARAMETER	DISPLAY
PHONE	NO. **	**	****	
MOBILE	NO. **	**	*****	
				•

Error code is used to show when the fault or proction happen and show the mean of the error code.

SERVICI	E INFOR	RMATION		
SERVICE CALL	ERROR CODE	PARAME	TER	DISPLAY
E2	#00	14:10	01	-01-2018
E2	#00	14:00	01	-01-2018
E2	#00	13:50	01	-01-2018
E2	#00	13:20	01	-01-2018
	R			•

Press ← the page will appear:

SERVICI	E INFOR	MATION		1/2
SERVICE CALL	ERROR CODE	PARAMET	ER	DISPLAY
E2	#00	14:10	01	-01-2018
E2	#00	14:00	01	-01-2018
E2	#00	13:50	01	-01-2018
E2	#00	13:20	01	-01-2018
	R			¢

press  $\hfill \sqcup$  to show the mean of the error code :

01-01-2018	23:59	<b>☆</b> 13°
E2 comunica controller and		
Please conta	ct your dea	ıler.
COMFIRM		#00
i INFC	RMATIC	N

A total of eight fault codes can be recorded.

The parameter function is used to display the main parameter, there are two pages to show the parameter:

SERVICE INFORMATION			1/2
SERVICE CALL	ERROR CODE	PARAMETER	DISPLAY
ROOM SET TEMP.			<b>26</b> ℃
MAIN SET TEMP.			55℃
TANK SET TEMP.			55℃
ROOM ACTUAL TEMP.			24°C

SERVICE	E INFOR	MATION	2/2
SERVICE CALL	ERROR CODE	PARAMETER	DISPLAY
MAIN ACTUAL TEMP.			26℃
TANK ACTUAL TEMP.			55℃
SMART GRID RUNNING TIME			0 Hrs

The DISPLAY function is used to set the interface:

SERVICE	E INFOR	MATION	1/2
SERVICE CALL	ERROR CODE	PARAMETER	DISPLAY
TIME			12:30
DATE		30	3-08-2018
LANGUA	GE		EN
BACKLIG	SHT		ON
ENTE	ER		♪
SERVICE	E INFOR	MATION	2/2
SERVICE CALL	ERROR CODE	PARAMETER	DISPLAY
BUZZER			ON
SCREEN		IME	ON 120SEC
SCREEN	I LOCK T	IME NNING TIME	120SEC
SCREEN	I LOCK T		120SEC

Use "  $\leftarrow$ " to enter and use "  $\triangleleft$  "  $\triangleright$  "  $\triangleright$  "  $\checkmark$  "  $\checkmark$  "  $\blacklozenge$ " to scroll.

# 6.8 Operation Parameter

This menu is for installer or service engineer reviewing the operation parameter.

• At home page, go to "  $\boxminus$  " > "OPERATION PARAMETER".

• Press "→ ". There are nine pages for the operating parameter as following. Use "▼ " \ "▲" to scroll.

• Press"▶" and "◀" to check slave units' operation parameter in cascade system. The address code in the upper right corner will change from "#00" to "#01"、 "#02" etc. accordingly.

OPERATION PARAMETER	#00
ONLINE UNITS NUMBER	1
OPERATE MODE	COOL
SV1 STATE	ON
SV2 STATE	OFF
SV3 STATE	OFF
PUMP_I	ON
	1/9 🖨
OPERATION PARAMETER	#00
PUMP_O	OFF
PUMP_C	OFF
PUMP_S	OFF
PUMP_D	OFF
PIPE BACKUP HEATER	OFF
TANK BACKUP HEATER	ON
ADDRESS	2/9 🖨
	#00
GAS BOILER	OFF
T1 LEAVING WATER TEMP.	35°C
WATER FLOW	1.72m3/h
HEAT PUMP CAPACTIY	11.52kW
POWER CONSUM	1000kWh
Ta ROOM TEMP.	25°C
▲ ADDRESS	3/9 🖨
	#00
T5 WATER TANK TEMP.	53°C
Tw2 CIRCUIT2 WATER TEMP	
TIS' C1 CLI. CURVE TEMP.	35°C
TIS2' C2 CLI. CURVE TEMP.	35°C
TW_O PLATE W-OUTLET TEN	MP. 35°C
TW I PLATE W-INLET TEMP.	30°C
	4/9
	#00
Tbt1 BUFFERTANK UP TEMP	
IDU BUFFERTAINK_UP TEMP	
Tbt2 BUFFERTANK_LOW TEN	ИР. 35°С
 Tsolar	ИР. 35°С 25°С
 Tsolar	ИР. 35°С
 Tsolar	ИР. 35°С 25°С
 Tsolar	MP. 35°C 25°C 0-2019V01
Tsolar IDU SOFTWARE 01-09	ИР. 35°С 25°С
Tsolar IDU SOFTWARE 01-09 ADDRESS	AP. 35°C 25°C -2019V01 5/9 ₽
Tsolar IDU SOFTWARE 01-09 ADDRESS OPERATION PARAMETER	AP. 35°C 25°C -2019V01 5/9 € #00-
Tsolar IDU SOFTWARE 01-09 ADDRESS OPERATION PARAMETER ODU MODEL	/IP. 35°C 25°C -2019V01 5/9 € #00- 6kW
Tsolar IDU SOFTWARE 01-09 ADDRESS OPERATION PARAMETER ODU MODEL COMP.CURRENT	AP. 35°C 25°C -2019V01 5/9 € #00- 6kW 12A
Tsolar IDU SOFTWARE 01-09 ADDRESS OPERATION PARAMETER ODU MODEL COMP.CURRENT COMP.FREQENCY	AP. 35°C 25°C -2019V01 5/9 €€ #00- 6kW 12A 24Hz
Tsolar IDU SOFTWARE 01-09 ADDRESS OPERATION PARAMETER ODU MODEL COMP.CURRENT COMP.FREQENCY COMP.RUN TIME	AP. 35°C 25°C -2019V01 5/9 € #00- 6kW 12A 24Hz 54 MIN

OPERATION PARAMETER       #00         FAN SPEED       60∪R/MIN         IDU TARGET FREQUENCY       46Hz         FREQUENCY LIMITED TYPE       5         SUPPLY VOLTAGE       230V         DC GENERATRIX VOLTAGE       420V         DC GENERATRIX CURTENT       18A         ADDRESS       7/9 €         OPERATION PARAMETER       #00         TW_O PLATE W-OUTLET TEMP.       30°C         T2 PLATE F-OUT TEMP.       30°C         T2 PLATE F-IN TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         MADDRESS       8/9 €         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       5°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01         MI SOFTWARE       9/9 €			
IDU TARGET FREQUENCY46HzFREQUENCY LIMITED TYPE5SUPPLY VOLTAGE230VDC GENERATRIX VOLTAGE420VDC GENERATRIX CURRENT18AADDRESS7/9 €OPERATION PARAMETER#00TW_O PLATE W-OUTLET TEMP.30°CT2 PLATE F-OUT TEMP.35°CTDP COMP. SUCTION TEMP.5°CTp COMP. DISCHARGE TEMP.75°COPERATION PARAMETER#00T3 OUTDOOR EXCHARGE TEMP.5°CT4 OUTDOOR AIR TEMP.5°CTF MODULE TEMP.5°CTF MODULE TEMP.5°CTF MODULE TEMP.5°CTF MODULE TEMP.5°CTH OOMP. PRESSURE2300kPaODU SOFTWARE01-09-2018V01HMI SOFTWARE01-09-2018V01	OPERATION PARAMET	ER	#00
FREQUENCY LIMITED TYPE       5         SUPPLY VOLTAGE       230V         DC GENERATRIX VOLTAGE       420V         DC GENERATRIX CURENT       18A         ADDRESS       7/9         OPERATION PARAMETER       #00         TW_O PLATE W-OUTLET TEMP.       30°C         T2 PLATE F-OUT TEMP.       30°C         T2 PLATE F-OUT TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         ADDRESS       8/9         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       55°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01         HMI SOFTWARE       01-09-2018V01	FAN SPEED	600	R/MIN
SUPPLY VOLTAGE       230V         DC GENERATRIX VOLTAGE       420V         DC GENERATRIX CURENT       18A         ■ ADDRESS       7/9         OPERATION PARAMETER       #00         TW_O PLATE W-OUTLET TEMP.       35°C         TW_I PLATE W-INLET TEMP.       30°C         T2 PLATE F-OUT TEMP.       35°C         T2B PLATE F-IN TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         ● ADDRESS       8/9         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       5°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01         HMI SOFTWARE       01-09-2018V01	IDU TARGET FREQUE	NCY	46Hz
DC GENERATRIX VOLTAGE       420V         DC GENERATRIX CURRENT       18A         I ADDRESS       7/9 €         OPERATION PARAMETER       #00         TW_O PLATE W-OUTLET TEMP. 35°C       30°C         T2 PLATE W-INLET TEMP.       30°C         T2 PLATE F-OUT TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         I ADDRESS       8/9 €         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         T4 OUTDOOR AIR TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       5°C         ODU SOFTWARE       01-09-2018V01	FREQUENCY LIMITED	TYPE	5
DC GENERATRIX CURRENT       18A         ▲ ADDRESS       7/9         OPERATION PARAMETER       #00         TW_O PLATE W-OUTLET TEMP.       35°C         T2 PLATE F-OUT TEMP.       35°C         T2B PLATE F-IN TEMP.       35°C         Tp COMP. DISCHARGE TEMP.       75°C         ▲ ADDRESS       8/9         ØPERATION PARAMETER       #00         T2 PLATE F-IN TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         ▲ ADDRESS       8/9         ØPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01         HMI SOFTWARE       01-09-2018V01	SUPPLY VOLTAGE		230V
▲ ADDRESS       7/9         OPERATION PARAMETER       #00         TW_O PLATE W-OUTLET TEMP. 35°C         TW_I PLATE W-INLET TEMP.       30°C         T2 PLATE F-OUT TEMP.       35°C         T2B PLATE F-IN TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         ▲ ADDRESS       8/9         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       5°C         ODU SOFTWARE       01-09-2018V01         HMI SOFTWARE       01-09-2018V01	DC GENERATRIX VOL	TAGE	420V
OPERATION PARAMETER       #00         TW_O PLATE W-OUTLET TEMP.       35°C         TW_I PLATE W-INLET TEMP.       30°C         T2 PLATE F-OUT TEMP.       35°C         T2B PLATE F-IN TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         TADDRESS       8/9         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         TF MODULE TEMP.       55°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01         HMI SOFTWARE       01-09-2018V01	DC GENERATRIX CUR	RENT	18A
TW_O PLATE W-OUTLET TEMP.       35°C         TW_I PLATE W-INLET TEMP.       30°C         T2 PLATE F-OUT TEMP.       35°C         T2B PLATE F-IN TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         ADDRESS       8/9         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01			7/9 🖨
TW_I PLATE W-INLET TEMP.       30°C         T2 PLATE F-OUT TEMP.       35°C         T2B PLATE F-IN TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Th COMP. DISCHARGE TEMP.       75°C         ADDRESS       8/9         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01	OPERATION PARAMET	ER	#00
T2 PLATE F-OUT TEMP.       35°C         T2B PLATE F-IN TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         ADDRESS       8/9         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         TF MODULE TEMP.       5°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01         HMI SOFTWARE       01-09-2018V01	TW_O PLATE W-OUTLE	ET TEMP	. 35°C
T2B PLATE F-IN TEMP.       35°C         Th COMP. SUCTION TEMP.       5°C         Tp COMP. DISCHARGE TEMP.       75°C         ADDRESS       8/9         OPERATION PARAMETER       #00         T3 OUTDOOR EXCHARGE TEMP.       5°C         T4 OUTDOOR AIR TEMP.       5°C         TF MODULE TEMP.       55°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01         HMI SOFTWARE       01-09-2018V01	TW_I PLATE W-INLET	TEMP.	30°C
Th COMP. SUCTION TEMP.5°CTp COMP. DISCHARGE TEMP.75°C▲ ADDRESS8/9 €OPERATION PARAMETER#00T3 OUTDOOR EXCHARGE TEMP.5°CT4 OUTDOOR AIR TEMP.5°CTF MODULE TEMP.55°CP1 COMP. PRESSURE2300kPaODU SOFTWARE01-09-2018V01HMI SOFTWARE01-09-2018V01	T2 PLATE F-OUT TEMF	».	35°C
Tp COMP. DISCHARGE TEMP.75°C▲ ADDRESS8/9OPERATION PARAMETER#00T3 OUTDOOR EXCHARGE TEMP.5°CT4 OUTDOOR AIR TEMP.5°CTF MODULE TEMP.55°CP1 COMP. PRESSURE2300kPaODU SOFTWARE01-09-2018V01HMI SOFTWARE01-09-2018V01	T2B PLATE F-IN TEMP.		35°C
ADDRESS8/9OPERATION PARAMETER#00T3 OUTDOOR EXCHARGE TEMP. 5°CT4 OUTDOOR AIR TEMP.5°CTF MODULE TEMP.55°CP1 COMP. PRESSURE2300kPaODU SOFTWARE01-09-2018V01HMI SOFTWARE01-09-2018V01	Th COMP. SUCTION TE	EMP.	5°C
OPERATION PARAMETER#00T3 OUTDOOR EXCHARGE TEMP.5°CT4 OUTDOOR AIR TEMP.5°CTF MODULE TEMP.55°CP1 COMP. PRESSURE2300kPaODU SOFTWARE01-09-2018V01HMI SOFTWARE01-09-2018V01	Tp COMP. DISCHARGE	TEMP.	75°C
T3 OUTDOOR EXCHARGE TEMP. 5°CT4 OUTDOOR AIR TEMP.5°CTF MODULE TEMP.55°CP1 COMP. PRESSURE2300kPaODU SOFTWARE01-09-2018V01HMI SOFTWARE01-09-2018V01			8/9 🖨
T4 OUTDOOR AIR TEMP.       5°C         TF MODULE TEMP.       55°C         P1 COMP. PRESSURE       2300kPa         ODU SOFTWARE       01-09-2018V01         HMI SOFTWARE       01-09-2018V01	OPERATION PARAMET	ER	#00
TF MODULE TEMP.         55°C           P1 COMP. PRESSURE         2300kPa           ODU SOFTWARE         01-09-2018V01           HMI SOFTWARE         01-09-2018V01	T3 OUTDOOR EXCHAR	GE TEM	P. 5°C
P1 COMP. PRESSURE 2300kPa ODU SOFTWARE 01-09-2018V01 HMI SOFTWARE 01-09-2018V01	T4 OUTDOOR AIR TEM	IP.	5°C
ODU SOFTWARE         01-09-2018V01           HMI SOFTWARE         01-09-2018V01	TF MODULE TEMP.		55°C
HMI SOFTWARE 01-09-2018V01	P1 COMP. PRESSURE	23	300kPa
HMI SOFTWARE 01-09-2018V01	ODU SOFTWARE	01-09-20	018V01
◆ ADDRESS 9/9 €		01-09-20	)18V01
	ADDRESS		9/9 🖨

### i INFORMATION

The power consumption parameter is optional. If some parameter is not be activated in the system, the parameter will show "--" The heat pump capacity is for reference only, not used to judge the ability of the unit. The accuracy of sensor is  $\pm 1$  °C. The flow rates parameters are calculated according to the pump running parameters, the deviation is different at different flow rates, the maximum of deviation is 15%. The flow parameters are calculated according to the electrical parameters of the pump operation. The operating voltage is different and the deviation is different. The display value is 0 when the voltage is less than 198V.

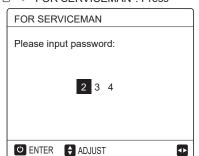
# 6.9 For Serviceman

6.9.1 About For Serviceman

FOR SERVICEMAN is used for installater and service engineer.

- Setting the function of equipment.
- Setting the parameters.

6.9.2 How To Go To For Serviceman



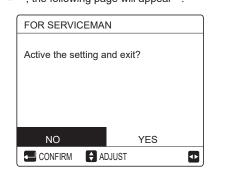
• The FOR SERVICEMAN is used for installer or service engineer. It is NOT instended the home owener alters setting with this menu.

• It is for this reason password protection is requierd to prevent unauthorised access to the service settings.

• The password is 234.

#### 6.9.3 How To Exit For SERVICEMAN

If you have set all the parameter. Press "  $\supset$  ", the following page will appear :



Select "YES" and press " , " to exit the FOR SERVICEMAN.

After exiting the FOR SERVICEMAN, the unit will be turned off.

# 6.10 Network Configuration Guidelines

- The wired controller realizes intelligent control with a built-in module, which receives control signal from the APP.
- Before connecting the WLAN, please check for it if the router in your environment is active and make sure that the wired controller is well-connected to the wireless signal.
- During the Wireless distribution process, the LCD icon " ?" flashes to indicate that the network is being deployed. After the process is completed, the icon " ?" will be constantly on.

#### 6.10.1 Wired Controller Setting

The wired controller settings include AP MODE and RESTORE WLAN SETTING.

WLAN SETTING	
AP MODE	
RESTORE WLAN SETTING	
	_
ENTER	•

Press ", the following page will appear:

AP MODE		
Do you want to act WLAN network and		
NO	YES	
CONFIRM		

Use "◄", "▶" to move to"YES", press "←" to select AP mode. Select AP Mode correspondingly on the mobile device and continue the follow-up settings according to the APP prompts.

#### 

After enter Ap mode, if it's not connected with mobile phone, the LCD icon " 🗢 " will flash 10 minutes then disappear.

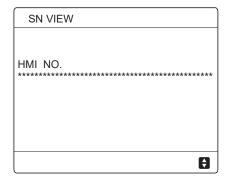
If it's connected with the mobile phone, the icon "  $\widehat{\boldsymbol{\varsigma}}$  " will be constantly display.

RESTORE WLAN	RESTORE WLAN SETTING							
Do you want to restore the WLAN setting and exit?								
NO YES								
CONFIRM		₽						

Use "◀", "▶" to move to "YES", press ", " to restore WLAN setting.Complete the above operation and wireless configuration is reset.

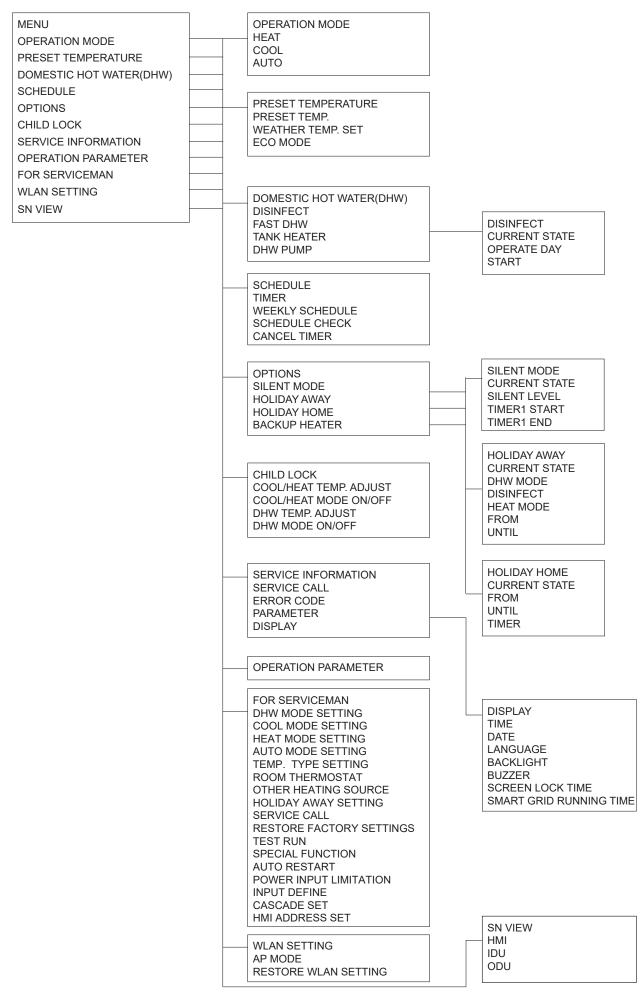
AP Mode connecting WLAN:

# 6.11 SN VIEW



SN VIEW	#1
IDU NO.	
ODU NO.	
	¢

# 7 MENU STRUCTURE : OVERVIEW



FOR SERVICEMAN
1 DHW MODE SETTING
2 COOL MODE SETTING
3 HEAT MODE SETTING
4 AUTO MODE SETTING
5 TEMP. TYPE SETTING
6 ROOM THERMOSTAT
7 OTHER HEATING SOURECE
8 HOLIDAY AWAY SETTING
9 SERVICE CALL
10 RESTORE FACTORY SETTINGS
11TEST RUN
12 SPECIAL FUNCTION
13 AUTO RESTART
14 POWER INPUT LIMI
TATION
15 INPUT DEFINE
16 CASCADE SET
17 HMI ADDRESS SET

2 COOL MODE SETTING 2.1 COOL MODE 2.2 t_T4_FRESH_C 2.3 T4CMAX 2.4 T4CMIN 2.5 dT1SC 2.6 dTSC 2.7 t_INTERVAL_C 2.8 T1SetC1 2.9 T1SetC2 2.10 T4C1 2.11 T4C2 2.12 ZONE1 C-EMISSION 2.13 ZONE2 C-EMISSION	1 DHW MODE SETTING 1.1 DHW MODE 1.2 DISINFECT 1.3 DHW PRIORITY 1.4 PUMP_D 1.5 DHW PRIORITY TIME SET 1.6 dT5_ON 1.7 dT1S5 1.8 T4DHWMAX 1.9 T4DHWMIN 1.10 t_INTERVAL_DHW 1.11 dT5_TBH_OFF 1.12 T4_TBH_ON 1.13 t_TBH_DELAY 1.14 T5S_DISINFECT 1.15 t_DI_HIGHTEMP
4 AUTO MODE SETTING 4.1 T4AUTOCMIN 4.2 T4AUTOHMAX	1.16 t_DI_MAX 1.17 t_DHWHP_RESTRICT 1.18 t_DHWHP_MAX 1.19 PUMP_D TIMER 1.20 PUMP_D RUNNING TIME 1.21 PUMP_D DISINFECT RUN
5.1 WATER FLOW TEMP. 5.2 ROOM TEMP. 5.3 DOUBLE ZONE	3 HEAT MODE SETTING 3.1 HEAT MODE 3.2 t_T4_FRESH_H 3.3 T4HMAX 3.4 T4HMIN
6 ROOM THERMOSTAT 6.1ROOM THERMOSTAT	3.5 dT1SH 3.6 dTSH 3.7 t INTERVAL H
7 OTHER HEATING SOURCE 7.1 dT1_IBH_ON 7.2 t_IBH_DELAY 7.3 T4_IBH_ON 7.4 dT1_AHS_ON 7.5 t_AHS_DELAY 7.6 T4_AHS_ON 7.7 IBH LOCATE	3.8 T1SetH1 3.9 T1SetH2 3.10 T4H1 3.11 T4H2 3.12 ZONE1 H-EMISSION 3.13 ZONE2 H-EMISSION 3.14 t_DELAY_PUMP
7.8 P_IBH1 7.9 P_IBH2 7.10 P_TBH	
<ul> <li>8 HOLIDAY AWAY SETTING</li> <li>8.1 T1S_H.AH</li> <li>8.2 T5S_H.ADHW</li> </ul>	
9 SERVICE CALL PHONE NO. MOBILE NO.	
10 RESTORE FACTORY SETTINGS	
11 TEST RUN	
12 SPECIAL FUNCTION	
- 13 AUTO RESTART 13.1 COOL/HEAT MODE 13.2 DHW MODE	
14 POWER INPUT LIMITATION 14.1 POWER LIMITATION	16 CASCADE SET 16.1 PER_START 16.2 TIME_ADJUST
<ul> <li>15 INPUT DEFINE(M1M2)</li> <li>15.1 M1M2</li> <li>15.2 SMART GRID</li> <li>15.3 Tw2</li> <li>15.4 Tbt1</li> <li>15.5 Tbt2</li> <li>15.6 Ta</li> </ul>	16.3 ADDRESS RESET 17 HMI ADDRESS SET 17.1 HMI SET 17.2 HMI ADDRESS FOR BMS 17.3 STOP BIT
15.7 Ta-adj 15.7 Ta-adj 15.8 SOLAR INPUT 15.9 F-PIPE LENGTH 15.10 RT/Ta_PCB 15.11 PUMP_I SILENT MODE 15.12 DFT1/DFT2	

Table1	The environment tem	perature curve of the lo	ow temperature setting for heating

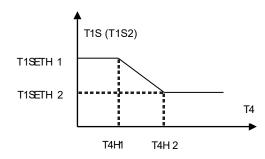
T4	≤ -20	- 19	- 18	- 17	- 16	- 15	- 14	- 13	- 12	- 11	- 10	-9	- 8	-7	-6	- 5	- 4	- 3	-2	- 1	0
1- T1S	38	38	38	38	38	37	37	37	37	37	37	36	36	36	36	36	36	35	35	35	35
2- T1S	37	37	37	37	37	36	36	36	36	36	36	35	35	35	35	35	35	34	34	34	34
3- T1S	36	36	36	35	35	35	35	35	35	34	34	34	34	34	34	33	33	33	33	33	33
4- T1S	35	35	35	34	34	34	34	34	34	33	33	33	33	33	33	32	32	32	32	32	32
5- T1S	34	34	34	33	33	33	33	33	33	32	32	32	32	32	32	31	31	31	31	31	31
6- T1S	32	32	32	32	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30	29
7- T1S	31	31	31	31	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	28
8- T1S	29	29	29	29	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	26
T4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	≥	20
1- T1S	35	35	34	34	34	34	34	34	33	33	33	33	33	33	32	32	32	32	32	32	32
2- T1S	34	34	33	33	33	33	33	33	32	32	32	32	32	32	31	31	31	31	31	31	31
3- T1S	32	32	32	32	32	32	31	31	31	31	31	31	30	30	30	30	30	30	29	29	29
4- T1S	31	31	31	31	31	31	30	30	30	30	30	30	29	29	29	29	29	29	28	28	28
5- T1S	30	30	30	30	30	30	29	29	29	29	29	29	28	28	28	28	28	28	27	27	27
6- T1S	29	29	29	29	29	29	28	28	28	28	28	28	27	27	27	27	27	27	26	26	26
7- T1S	28	28	28	28	28	28	27	27	27	27	27	27	26	26	26	26	26	26	25	25	25
8- T1S	26	26	26	26	26	26	26	25	25	25	25	25	25	25	25	24	24	24	24	24	24

Table2 The environment temperature curve of the high temperature setting for heating

T4	≤ -20	- 19	- 18	- 17	- 16	- 15	- 14	- 13	- 12	- 11	- 10	-9	- 8	-7	- 6	- 5	- 4	- 3	-2	- 1	0
1- T1S	55	55	55	55	54	54	54	54	54	54	54	54	53	53	53	53	53	53	53	53	52
2- T1S	53	53	53	53	52	52	52	52	52	52	52	52	51	51	51	51	51	51	51	51	50
3- T1S	52	52	52	52	51	51	51	51	51	51	51	51	50	50	50	50	50	50	50	50	49
4- T1S	50	50	50	50	49	49	49	49	49	49	49	49	48	48	48	48	48	48	48	48	47
5- T1S	48	48	48	48	47	47	47	47	47	47	47	47	46	46	46	46	46	46	46	46	45
6- T1S	45	45	45	45	44	44	44	44	44	44	44	44	43	43	43	43	43	43	43	43	42
7- T1S	43	43	43	43	42	42	42	42	42	42	42	42	41	41	41	41	41	41	41	41	40
8- T1S	40	40	40	40	39	39	39	39	39	39	39	39	38	38	38	38	38	38	38	38	37
T4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	≥ 2	20
1- T1S	52	52	52	52	52	52	52	51	51	51	51	51	51	51	51	50	50	50	50	50	50
2- T1S	50	50	50	50	50	50	50	49	49	49	49	49	49	49	49	48	48	48	48	48	48
3- T1S	49	49	49	49	49	49	49	48	48	48	48	48	48	48	48	47	47	47	47	47	47
4- T1S	47	47	47	47	47	47	47	46	46	46	46	46	46	46	46	45	45	45	45	45	45
5- T1S	45	45	45	45	45	45	45	44	44	44	44	44	44	44	44	43	43	43	43	43	43
6- T1S	42	42	42	42	42	42	42	41	41	41	41	41	41	41	41	40	40	40	40	40	40
7- T1S	40	40	40	40	40	40	40	39	39	39	39	39	39	39	39	38	38	38	38	38	38
8- T1S	37	37	37	37	37	37	37	36	36	36	36	36	36	36	36	35	35	35	35	35	35

The automatic setting curve

The automatic setting curve is the ninth curve, this is the calculation:



State:In the setting the wired controller, if T4H2<T4H1, then exchange their value; if T1SETH1<T1SETH2, then exchange their value.

Table3 The environment temperature curve of the low temperature setting for cooling

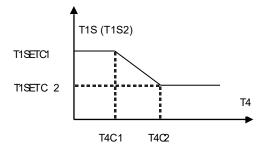
T4	- 10≤ T4<15	15≤ T4<22	22≤ T4<30	30≤ T4
1- T1S	16	11	8	5
2- T1S	17	12	9	6
3- T1S	18	13	10	7
4- T1S	19	14	11	8
5- T1S	20	15	12	9
6- T1S	21	16	13	10
7- T1S	22	17	14	11
8- T1S	23	18	15	12

Table4 The environment temperature curve of the high temperature setting for cooling

T4	- 10≤ T4<15	15≤ T4<22	22≤ T4<30	30≤ T4
1- T1S	20	18	17	16
2-T1S	21	19	18	17
3- T1S	22	20	19	17
4-T1S	23	21	19	18
5- T1S	24	21	20	18
6- T1S	24	22	20	19
7-T1S	25	22	21	19
8- T1S	25	23	21	20

The automatic setting curve

The automatic setting curve is the ninth curve, this is the calculation:



State: In the setting the wired controller, if T4C2<T4C1, then exchange their value; if T1SETC1<T1SETC2, then exchange their value.

# NOTE CONCERNING PROTECTION OF ENVIRONMENT



This product must not be disposed of via normal household waste after its service life, but must be taken to a collection station for the recycling of electrical and electronic devices. The symbol on the product, the operating instructions or the packaging indicate such disposal procedures. The materials are recyclable in accordance with their respective symbols. By means of re-use, material recycling or any other form of recycling old appliances you are making an important contribution to the protection of our environment. Please ask your local council where your nearest disposal station is located.

F

# PRODUCER

SINCLAIR CORPORATION Ltd. 16 Great Queen Street WC2B 5AH London United Kingdom www.sinclair-world.com

This product was manufactured in China (Made in China).

# REPRESENTATIVE

SINCLAIR Global Group s.r.o. Purkynova 45 612 00 Brno Czech Republic

# TECHNICAL SUPPORT

SINCLAIR Global Group s.r.o. Purkynova 45 612 00 Brno Czech Republic Tel.: +420 800 100 285 | Fax: +420 541 590 124 www.sinclair-solutions.com | info@sinclair-solutions.com

