



Revo SE | SECR06
V 1.4 - 2025.09

Thermostat Instructions



SAFETY ATTENTION

1.
1.

Although the internal electronic circuit of this product has been protected to some extent, the components will still be damaged if it operates in a humid environment for a long time. Therefore, please avoid installing and operating in rain, moisture and other liquids.
2.
2.

This product is installed in an electric box through panel mounting type.
3.
3.

This product can be used under the following environmental conditions:

a. indoor; b. In an environment with pollution level 2; c. Altitude 2000m or below.
4.
4.

The power input must be within the range specified in the manual.
5.
5.

To turn on or off the power supply of this product, please use a circuit breaker or switch meeting IEC 60947-1 or IEC 60947-3 standards and install it in a position close to and convenient for customer operation.
6.
6.

Wire used for this product must meet the flammability grade Fv1 (V-1 or above), The thickness of the wire should be 0. 34 mm² (AWG24) or above.
7.
7.

To prevent induced noise, please keep power wires away from high-voltage wires.
8.
8.

Please avoid installing the product in a position with strong magnetic field, noise, violent vibration and impact.
9.
9.

When extending the length of the sensor wire, please use the shielded wire. Do not extend it unless necessary to avoid affecting the accuracy of the sensor.
10.
10.

Sensor wires and signal wires shall be away from power and load wires and installed separately.
11.
11.

Avoid using this product near the equipment generating strong high-frequency noise (such as high-frequency welding machine, high-frequency sewing machine, high-frequency wireless telegraph, high-capacity SCR controller, etc.)



Scrap disposal: This product is composed of metal parts and plastic parts.
All parts must be disposed of separately in accordance with local regulations on scrap disposal.

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1 Product description

SECR06 is part of Revo SE family and designed for plug-in or semi-plug-in cabinets with or without variable speed compressors. It integrates compressor frequency control (specific model only), cabinet temperature control (dual temperature settings), defrosting control, evaporator fan control, lighting control as well as other functions.

Revo SE is also an ideal solution for similar refrigeration system with mechanical expansion devices.

Storage conditions: -30~55 °C Relative humidity≤95%RH

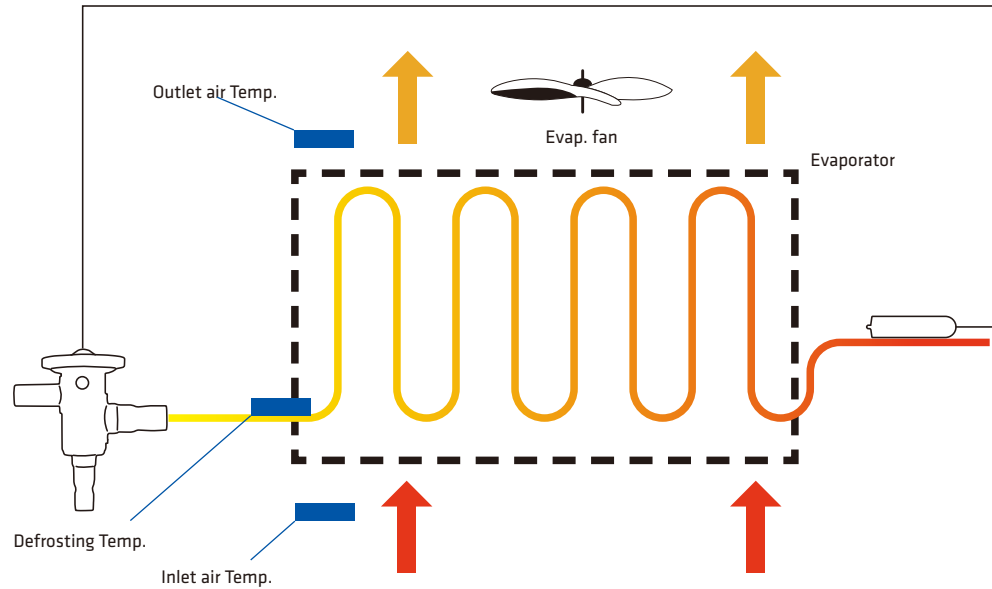
Working conditions: -30~55 °C Relative humidity≤95%RH

Meet the following standard requirements:

EMC certification: IEC61000-6-2, IEC61000-6-4

Material requirements: comply with RoHs requirements (hazardous substances)

1.1 Schematic diagram of input signal of display cabinet



1.2 Basic information of SECR06 thermostat

Items	Description
Dimension have (WxHxD)	Fixed on a panel with a 71mm x 29mm hole
Power supply	220Vac+10%/-15%, 50/60Hz, class 2
Power	Maximum power 3. 6W
Connection	1. Pluggable terminal (M3) Min/max wire diameter 0. 34~2. 5mm ² Torque 0. 5N. m, Current ≤3A 2. XHP terminal: for temperature sensor
Communication	Modbus RTU

2 Product configuration

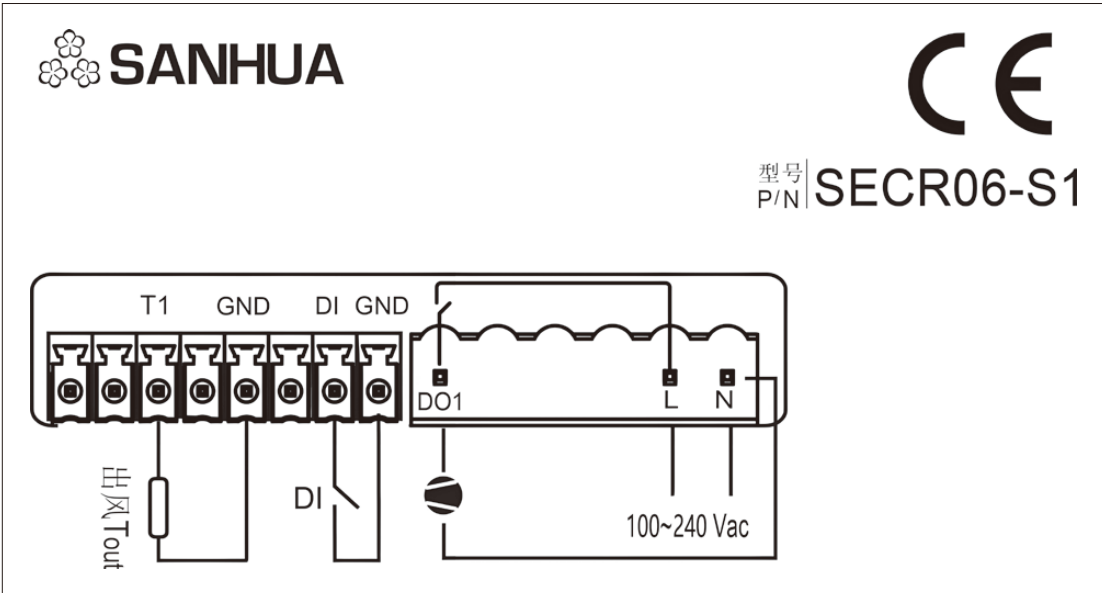
2.1 Ordering Code

Item	Remarks	Product number	Description
1	Main controller	SECR06-S1	Thermostat for cooler
		SECR06-S2	Thermostat for freezer
		SECR06-S3	Controller for inverter system
2	Temperature sensor	NTC3A1	3m
		NTC6A1	6m

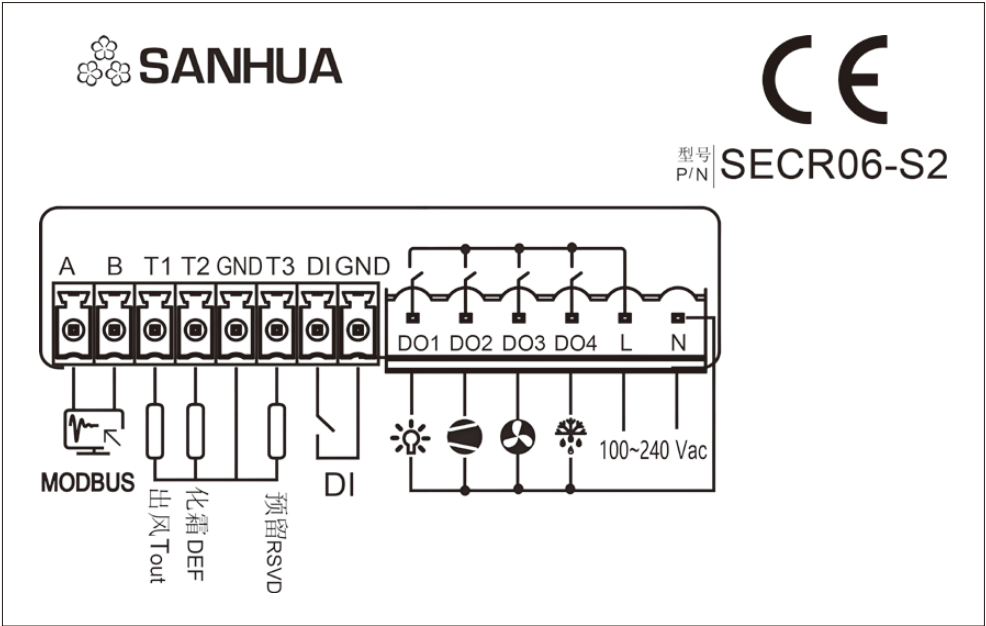
2.2 Sensor information

Item	Product description	
Temperature sensor	Sensor type	NTC 5KΩ β value: 3970K
	Lead wire – Length x Diameter	2/5/9m x 0. 5 mm ²
	Enclosure	IP 67
	Accuracy	±1°C (-40°C)
	Measuring range	-40°C~105°C

2.3 Schematic diagram of functional connection

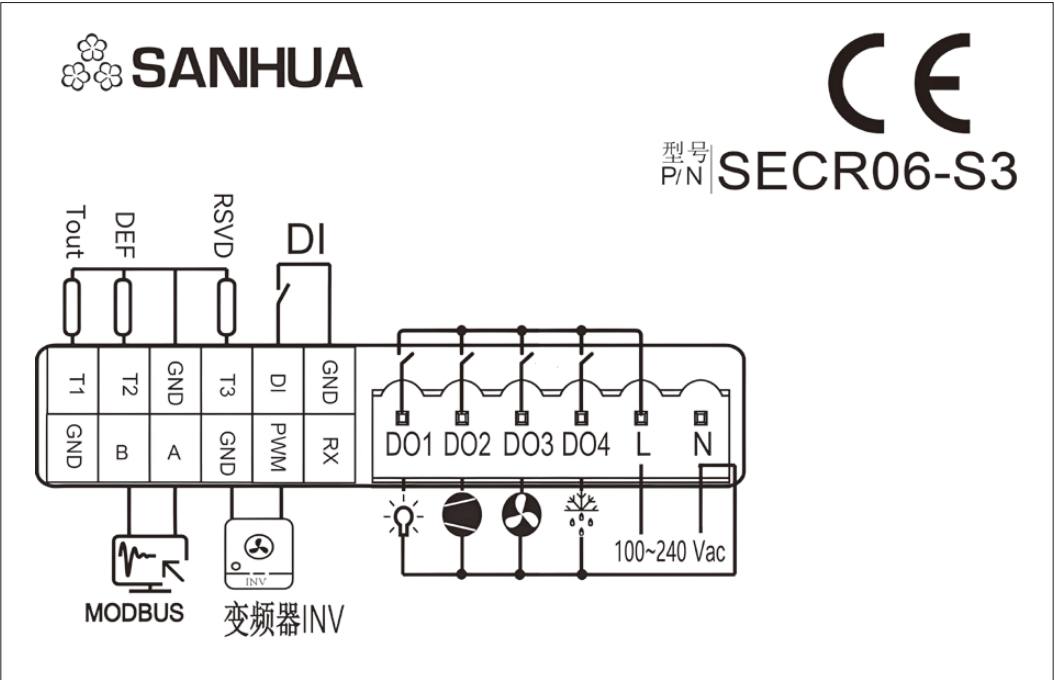


Printed	Port name	Pin	Functional Description	Remarks
L N	Power supply	L	100~240Vac	/
		N		
T1	Temperature sensor	G	Outlet air temperature sensor	PT1000/NTC 5K B3970
		IN		
DI	Digital input	DI	Door control function	Configurable
		GND		
	D01 Relay output	D01	Cooling Control	LL solenoid valve or compressor Normally open contacts (Resistive load Max. 8A 250Vac) (Inductive load Max. 3A 250Vac)



P/N: SEC R06-S2

Screen printing	Port name	Pin	Function description	Remarks
L N	Power supply	L	100V~240Vac	Total current of D01-D04 should not exceed 10A
		N		
MODBUS	RS485 communication	A	Connect to upper-level computer or monitoring system	MODBUS RTU
		B		
T1	Temperature sensor	T1	Outlet air temperature (configurable)	PT1000/NTC 5K B3970
T2	Temperature sensor	T2	Defrosting temperature (configurable)	PT1000/NTC 5K B3970
T3	Temperature sensor	T3	Reserved (configurable)	PT1000/NTC 5K B3970
DI	Digital input	DI	Door control function (configurable)	Passive signal interface
		GND		
	D01 Relay 1 output	D01	Control lighting (configurable)	Normally open contacts (Resistive load Max. 8A 250Vac) (Inductive load Max. 3A 250Vac)
	D02 Relay 2 output	D02	Cooling Control (configurable)	LL solenoid or compressor Normally open contacts (Resistive load Max. 8A 250Vac) (Inductive load Max. 3A 250Vac)
	D03 Relay 3 output	D03	Control Evaporator fan	Normally open contacts (Resistive load Max. 5A 250Vac) (Inductive load Max. 1A 250Vac)
	D04 Relay 2 output	D04	Defrost control	Normally open contacts (Resistive load Max. 5A 250Vac) (Inductive load Max. 1A 250Vac)



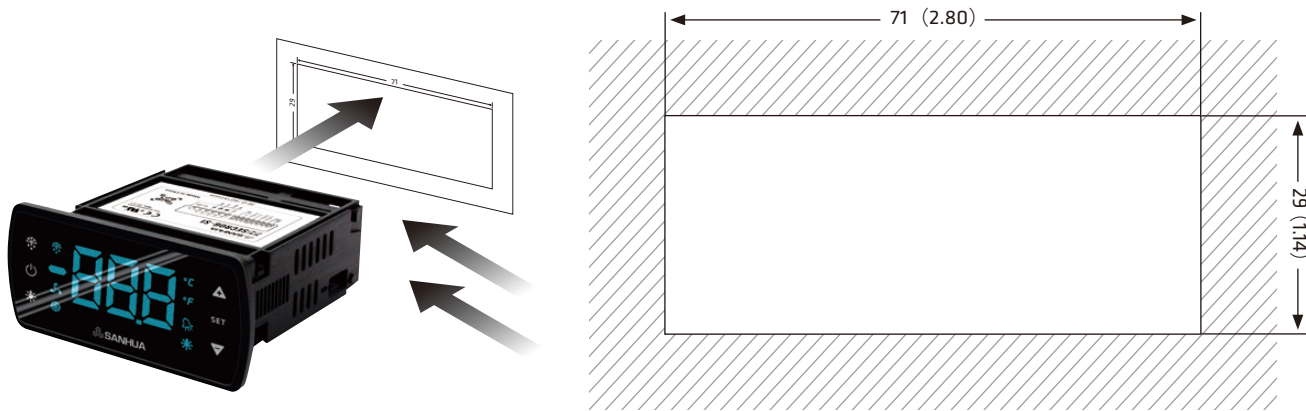
P/N: SEC R06-S3

Screen printing	Port name	Pin	Function description	Remarks
L N	Power supply	L	100V~240Vac	Total current of D01-D04 should not exceed 10A
		N		
MODBUS	RS485 communication	A	Connect to upper-level computer or monitoring system	MODBUS RTU
		B		
T1	Temperature sensor	T1	Outlet air temperature (configurable)	PT1000/NTC 5K B3970
T2	Temperature sensor	T2	Defrosting temperature (configurable)	PT1000/NTC 5K B3970
T3	Temperature sensor	T3	Reserved (configurable)	PT1000/NTC 5K B3970
DI	Digital input	DI	Door control function (configurable)	Passive signal interface
		GND		
	D01 Relay 1 output	D01	Control lighting (configurable)	LL solenoid or compressor Normally open contacts (Resistive load Max. 8A 250Vac) (Inductive load Max. 3A 250Vac)
	D02 Relay 2 output	D02	Cooling Control	LL solenoid or compressor Normally open contacts (Resistive load Max. 8A 250Vac) (Inductive load Max. 3A 250Vac)
	D03 Relay 3 output	D03	Control the evaporator fan	Normally open contacts (Resistive load Max. 5A 250Vac) (Inductive load Max. 1A 250Vac)
	D04 Relay 2 output	D04	Defrosting Control	Normally open contacts (Resistive load Max. 5A 250Vac) (Inductive load Max. 1A 250Vac)
	Variable speed driver output	GND	Control the compressor frequency	Optional with TTL communication or PWM
		TX (PWM)		
		RX		

Difference Comparison Table						
Model	Temperature sensor	Multi-function DI	Relay	RS485	RTC Real-Time Clock	Variable Frequency Drive
SECR06-S1	1	1	1	1	0	0
SECR06-S2	3	1	4	1	1	0
SECR06-S3	3	1	4	1	1	TTL/PWM

2.4 Installation

Disconnect the power supply before any installation



Put the thermostat into the hole firstly and fix it with a clip.

Note: The thickness of the mounting panel must within 0.8~2.5mm to ensure the safe and stable installation of the product.

2. 5 Display the correspondence table

CHT	0	1	2	3	4	5	6	7	8	9	aA	bB	cC	dD	eE	fF	gG	hH
Display	0	1	2	3	4	5	6	7	8	9	AA	bb	cC	dD	EE	FF	GG	HH
CHT	il	jj	kK	IL	mM	nN	oO	pP	qQ	rR	sS	tT	uU	vV	wW	xX	yY	zZ
Display	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z

Page number	1. Pr	2. Pr	3. Pr	4. Pr	5. Pr	6. Pr	7. Pr	8. Pr	9. Pr
Display	A	b	c	d	F	G	H	i	J
Page number	10. Pr	11. Pr	12. Pr	13. Pr	14. Pr	15. Pr	16. Pr	17. Pr	
Display	L	L	n	o	P	q	S	t	

3 Instructions

3.1 Display panel



Buttons and indicator lights

Definition		Description
Buttons	set	Long press to enter parameter setting mode or confirm settings
	▲	Increase value or previous page
	▼	Decrease value or next page
	❄️	Polling between Forced cooling and forced defrosting
	⏻	On/off button
	💡	Lighting keys
LED Display	💡	Always on when the lighting is turned on
	❄️	Always on in cooling mode
	🔥	Always on in defrosting mode
	🔔	Always on in case of any alarm
	🌀	Always on while the evaporator fan is turned on

Address	Description	Code	Units	Interval	Min.	Max.	Default
40111	Display Mode	b 10	0: cabinet temperature; 2: T2 temperature; 4: T4 temperature	1: T1 temperature 3: T3 temperature			0

Display the current cabinet temperature as default; In unlocked mode, you can select the desired display interface, and it will automatically return to cabinet temperature without any operation after 1 minute.

In unlocked status Press ▲ to modify the display, press ▲ or ▼ to select the desired contents to display, press SET to confirm the selection.

Note: If temperature sensor is not connected, the screen will show ---.

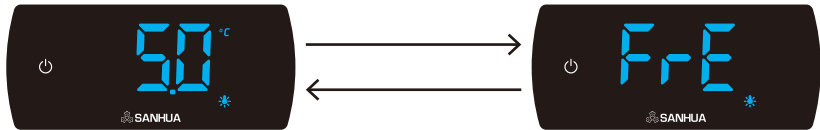


Code	Meaning
r0	Cabinet temperature
r1	T1 temperature
r2	T2 temperature
r3	T3 temperature
r4	T4 temperature

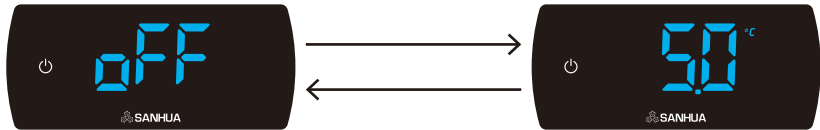
In normal cooling mode, the switch button is displayed by breathing and the screen will show the selected content above.



In case of alarm occurs and the alarm code is set to show, the alarm code and the selected display content are shown alternately, and the alarm indicator light is ON.



If the cabinet is turned off, the OFF sign and the current cabinet temperature are shown alternately. The switch button is displayed by breathing and other buttons are not shown.



You can set the temperature of the thermostat in metric or imperial unit, you can set whether to display the decimal point, and you can also set whether to turn on the buzzer when the alarm occurs.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40084	Imperial units	RD3	0: Metric unit 1: Imperial unit				0
40085	Display decimal point	RD4	0: No 1: Yes				1
40086	Buzzer	RD5	0: Off 1: On				1
40088	Display fault code	RD7	0: No 1: Yes				1

[Display decimal point]: If set not to display decimal point, the temperature display and adjust span is 1. For example, the current target temperature is 5°C, when the target temperature is increased, the next target temperature is 6°C, otherwise, the next target temperature is 5.1°C, you can choose whether to display the decimal point according to the actual accuracy requirements.

[Buzzer] If set as ON, when the alarm occurs, the buzzer will always ON until the alarm is canceled or the thermostat is operated after unlocked. For unlocking, refer to the parameter setting steps in Section 3.2, After a short press of the On/off button the display will show "L OC" and the SET indicator will light up. Long-press the Set key 3 seconds to complete the unlocking process. This action will turn off the current alarm buzzer but not disable the alarm prompt.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40089	OFF:Shutdown without displaying OFF	RD8	0: Yes 1: No				0
40090	Shutdown Lighting Enable	RD9	0: Disable 1: Enable				1

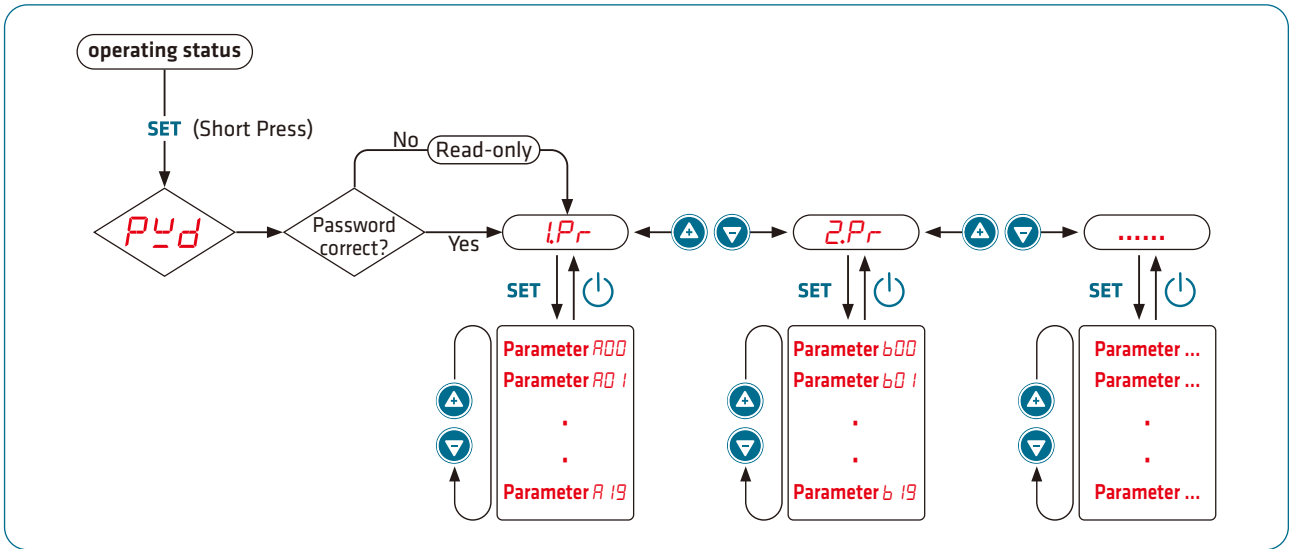
During normal shutdown, the thermostat's "OFF" status and the cabinet temperature alternate display. When it is not desired to show "OFF", set **[Shutdown No OFF Display]** to 1; in this case, only the cabinet temperature will be displayed during shutdown.

When independent control of the lighting is required during the shutdown state, configure **[Shutdown Lighting Enable]**. Once enabled, long-pressing the lighting button can turn the lighting on or off.

3.2 Parameter setting steps



The thermostat display is locked by default with cabinet temperature alone is displayed; The switch button is displayed by breathing. Short press the switch button, and Loc will be displayed and SET button will be ON as well, long press SET the button for 3 seconds to unlock it, and all the keys will be ON.



① Press the SET button on the display to activate the setting mode and you will see Pyd on the screen. Press the up or down arrow to enter password and press SET to confirm the password. Press SET again to enter the specific parameter page and the 1st page will be 1Pr. Once you are on a specific page, you can press the up or down arrow to access to different parameters.

② Once the password is correct you will enter the page number menu (1Pr ~ 19Pr). Press the up or down arrow to visit different page menu and press SET to confirm.

③ Press SET to select the specific parameter and press the up or down arrow to modify the value and press to save the settings and it will return to the upper level of the menu.

④ In unlocked status short press the snowflake button to switch from the cooling to defrosting or vice versa.

⑤ In unlocked status press the light button to turn ON/OFF the lighting.

⑥ In unlocked status press the up arrow button to enter the cabinet temperature setting, then you can adjust the target cabinet temperature by pressing the up or down arrow.

⑦ In unlocked status press the down arrow button to enter the display setting mode, and screen will display r0 to r4 [Address 40111]. Press the up or down arrow to select the content to be displayed.

⑧ After 1 min without any key operation, the parameter setting mode will automatically exit.

The thermostat supports a copy mode, allowing parameters to be copied to other thermostats after one thermostat completes its parameter settings.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40093	Copy mode	R12	0: Normal mode 1: Copy mode				0

When the copy mode is selected, follow the operational steps below.

1. Connect the RS485 communication lines between the two thermostat ports: connect A to A and B to B, then power on both controllers.
2. Set the copy mode of the copy device (master) (with parameters already configured) to "1-copy mode", and press SET to confirm.
3. At this point, the master will display "cPy". Long-press the down arrow, and the master will display "PSL" to start copying is complete, it will return to displaying "cPy".
4. Replace the slave controller, connect the slave's RS485-lines to the master (A to A, B to B), and repeat Step 3.



Address	Description	Code	Units	Interval	Min.	Max.	Default
40081	Password	/	/	1	1	999	5

3.3 Temperature sensor Settings

The function of the temperature sensor is configurable, and the system can freely configure the function of each temperature sensor.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40177	T1 Feature selection	<i>F 16</i>	0: Disabled 1: Inlet air temperature 2: Outlet air temperature 3: Defrosting temperature 4: Condensing temperature				2
40178	T2 feature selection	<i>F 17</i>					3
40179	T3 Feature Selection	<i>F 18</i>					0
40180	T4 Feature Selection	<i>F 19</i>					0

★ For T-2 function selection, the S1 thermostat defaults to 0 (not enabled).

If there is deviation between measured temperature sensor and the actual temperature, a fixed offset value can be set to correct the deviation.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40166	T-1 sensor offset correction	<i>F05</i>	°C	0.1	-9.9	9.9	0
40167	T-2 sensor offset correction	<i>F06</i>	°C	0.1	-9.9	9.9	0
40168	T-3 sensor offset correction	<i>F07</i>	°C	0.1	-9.9	9.9	0
40169	T-4 sensor offset correction	<i>F08</i>	°C	0.1	-9.9	9.9	0

The thermostat is compatible with both NTC sensors or PT1000 sensors, the type of temperature sensors can be selected.

Note: The type selection will be valid for all temperature sensors, either NTC or PT1000.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40172	DI function	<i>F 11</i>	0: Digital input; 1: Temperature Sensor T4				0
40176	Sensor type selection	<i>F 15</i>	0: NTC β value 3970 (5K); 1: PT1000 2: NTC β value 3435 (10K); 3: NTC β value 3977 (10K);				0

In situations where multiple temperature sensors are required, the DI can be configured as a temperature sensor T4.

Note: The T4 temperature probe only supports NTC type.

The real-time temperature can be displayed during defrosting, or set to change slowly, the greater the display stability coefficient, the slower the temperature changes. If displays DEF during defrosting is selected, DEF sign will show until the end of defrosting drip time. If Keep DEF sign after defrosting is not 0, DEF sign will stay until the end of timing.

You can set whether to display real-time temperature when defrosting, or display DEF indicates that it is in the state of defrosting, you can set the maximum and minimum value of the display temperature if real-time temperature display mode is selected.

At the end of defrosting, you can set a certain time delay before displaying the real-time temperature.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40112	Cabinet temperature display during defrosting	<i>b 11</i>	0: STABILIZING DISPLAY; 1: REAL-TIME TEMPERATURE; 2: DISPLAY <i>DEF</i>				2
40113	Cabinet temperature display delay after defrosting	<i>b 12</i>	Min	1	0	250	3
40114	Cabinet temperature display stabilizing factor	<i>b 13</i>	/	1	1	10	1
40115	Cabinet temperature display upper limit	<i>b 14</i>	°C	0.1	-50	50	50.0
40116	Cabinet temperature display lower limit	<i>b 15</i>	°C	0.1	-50	50	-50.0
40117	Cabinet temperature weighting factor	<i>b 16</i>	/	1	0	100	100

T(cabinet temperature) = [outlet air temperature] × ([cabinet temperature weighting factor] /100) + [inlet air temperature] x(1- [cabinet temperature weighting factor] /100)

[Cabinet temperature display stabilizing factor] if it is 1, display real-time value

If the value is between 2-10, the value 2 = 1 second, the value 10 = 5 seconds, and so on. If every time the temperature changes is less than 1 °C, the temperature displays the real changes with the constant time interval. If the temperature changes more than 1°C, the temperature display changes with the constant time interval, but each time change will not exceed 0. 2°C.

If only outlet air temperature is used, then the weighting factor should remain at 100, and if only inlet temperature is used, then the weighting factor should be set to 0.

3.4 Relay configuration

Address	Description	Code	Units	Interval	Min.	Max.	Default
40181	D01 Function definition	<i>000</i>	0: Disabled 2: Auxiliary relay 4: Defrosting heater 6: Lighting2 8: Compressor		1: Lighting 3: Evaporating fan 5: Alarm 7: Non-condensation heater 9: Liquid line solenoid		1
40182	D02 Function definition	<i>001</i>					8
40183	D03 Function Definition	<i>002</i>					3
40184	D04 Function Definition	<i>003</i>					4

The function of each relay is configurable. It will be disabled if set to 0, the relay will be functional only if it is configured to specific function.

3.5 Lighting and auxiliary relay output Settings

Lighting relay output function: when the register is written to 1, the relay signal will be ON, when it is written to 0, the relay signal will be OFF;

According to the setting of **[day and night mode relay selection]**, after entering the night time, the relay will be OFF, after the end of the night time, turn on the relay, it is recommended to use the auxiliary relay while using the night curtain function alone, if you need to control the lighting, use the lighting relay.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40146	Lighting output	<i>d05</i>	0: Relay OFF 1: Relay ON				0
40147	Auxiliary relay	<i>d06</i>	0: Relay OFF 1: Relay ON				0
40218	Day-night mode relay selection	<i>H 15</i>	0: Disabled	1: Lighting	2: Auxiliary relay		0
40090	Power Off Lightning Enable	<i>R09</i>	0: Power Off Lightning Disabled 1: Power Off Lightning Enabled				1

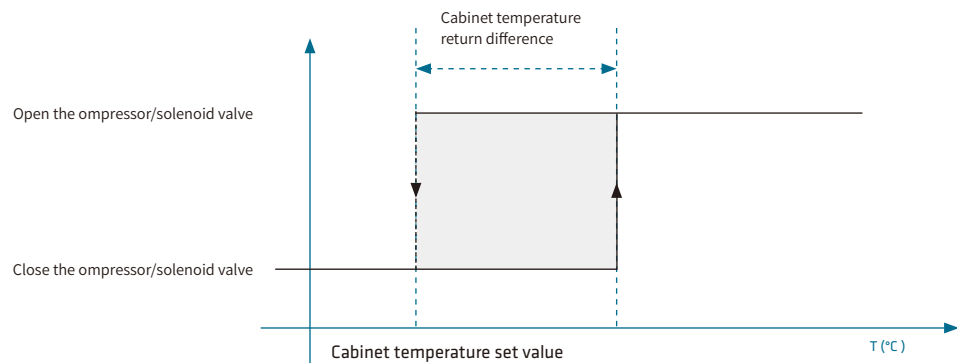
Address	Description	Code	Units	Interval	Min.	Max.	Default
40212	Lighting 2 start - hour	<i>H 11</i>	Hour	1	0	23	5
40213	Lighting 2 Start - minutes	<i>H 12</i>	Min	1	0	59	0
40214	Lighting 2 off - hour	<i>H 13</i>	Hour	1	0	23	10
40215	Lighting 2 off - minutes	<i>H 14</i>	Min	1	0	59	0

The lighting 2 relay is ON when the time runs to **[lighting 2 start - hour]** and **[lighting 2 start - minute]**, and OFF when the time runs to **[lighting 2 off - hour]** and **[lighting 2 off - minute]**.

4 Functional Instruction

4.1 Cabinet temperature control

In the cooling process, during the daytime, when the cabinet temperature $\geq$ (cabinet temperature setting value + daytime cabinet temperature offset), or during the night time when the cabinet temperature $\geq$ (cabinet temperature setting value + night cabinet temperature increment + night cabinet temperature offset), and the system is not within the protection period, the compressor/liquid line solenoid valve control relay will be ON, when the cabinet temperature $\leq$ cabinet temperature setting value, the compressor/liquid line solenoid valve control relay will be OFF.



If the cabinet temperature sensor fails (short or open circuit), to avoid the high temperature of the cabinet and damage the stored goods, you can set the a fail-safe operation interval (the cooling will be ON and OFF within preset durance).

If the cabinet temperature is calculated by the weight of the outlet air temperature and the inlet air temperature, if one of the temperature sensors fails, the cabinet temperature value can be calculated by introducing the **[probe fault cabinet temperature offset]**.

It is calculated by the following formula:

$$\text{[Probe fault cabinet temperature offset]} = \text{[inlet air temperature]} - \text{[Outlet air temperature]}$$

If the outlet air temperature probe fails, the inlet air temperature probe is used as the cabinet temperature sensor

$$\text{[current cabinet temperature]} = \text{[inlet air temperature]} - \text{[probe fault cabinet temperature offset]} * (100 - \text{[cabinet temperature weighting factor]}) / 100.$$

If the inlet air temperature probe fails, the outlet air temperature probe is used as the cabinet temperature sensor

$$\text{[current cabinet temperature]} = \text{[outlet air temperature]} + \text{[probe fault cabinet temperature offset]} * (\text{[cabinet temperature weighting factor]}) / 100.$$

To avoid the frequent start of the compressor due to too short setting time of defrosting time or dripping time, **[Minimum interval between two starts]**, **[Minimum compressor running time]**, **[Minimum compressor shut-down time]** can be set, and the function can be turned off when set to 0.

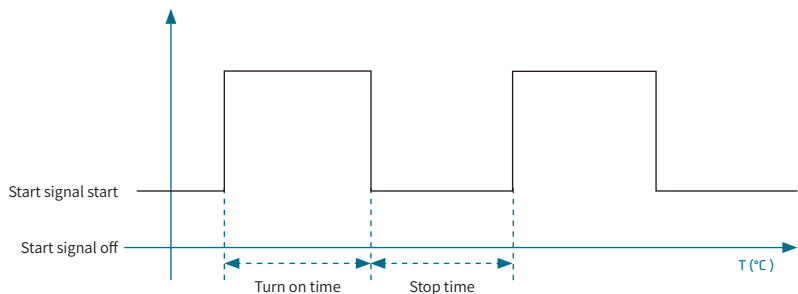
To avoid damage to the compressor caused by the too long running time of the compressor, the Maximum single running time of the compressor can be set. When it is set to 0, the function is turned off. The defrosting can start before the end of the compressor protection time.

Revo SE supports both fixed speed compressors and variable speed compressors. You can change the settings through the parameters, the default for S1 & S2 model is fixed speed compressor while for S3 the default is variable speed compressor, if liquid line solenoid valve is configured, pump down function can be applied before compressor OFF to pump the refrigerant out from the evaporator.

For pump down function, the door control DI needs to be configured as a low-pressure input, and when the DI is closed, the pump down will be stopped.

When the compressor starts, you can configure the **[compressor start delay after opening the valve]**, to balance the pressure first, and then start the compressor.

Note: It is necessary to configure the relay between the liquid supply valve and the compressor or the compressor model of the liquid supply valve relay is the variable frequency compressor.



Address	Description	Code	Units	Interval	Min.	Max.	Default
40101	Cabinet temperature fail-safe: operation interval	b00	Min	1	1	20	10
40102	Cabinet temperature fail-safe: shut-down interval	b01	Min	1	1	20	5
40103	Cabinet temperature target	b02	°C	0.1	b19	b18	4.0
40104	Daytime cabinet temperature OFFSET	b03	°C	0.1	1	10.0	3.0
40105	Night-time Temperature increment	b04	°C	0.1	-3.0	10.0	1.0
40106	Night-time cabinet temperature OFFSET	b05	°C	0.1	1	10.0	3.0
40109	cabinet temperature offset with probe failure	b08	°C	0.1	0	20.0	0
40119	Max. Cabinet temperature target	b18	°C	0.1	-50	50	50
40120	Min. Cabinet temperature target	b19	°C	0.1	-50	50	-50

Address	Description	Code	Units	Interval	Min.	Max.	Default
40121	Startup delay time	c00	Min	1	0	600	1
40122	Minimum interaval between two starts	c01	Min	1	1	600	7
40123	Minimum compressor shutdown time	c02	Min	1	0	15	2
40124	Minimum compressor operation time	c03	Min	1	0	15	2
40125	Maximum single rumming time of the compressor	c04	Min	1	0	199	0
40126	Defrosting priority over comptessor protection	c05	0: Compressor protection as priority 1: Defrosting as priority				0
40127	Compressor type	c06	0: fixed speed; 1: variable speed				0
40128	Maximum pump down time	c07	Sec	1	0	900	0
40129	Compressor startup delay after solenoid valve opening	c08	Sec	1	0	60	5
40130	Exit of pump down	c09	0: Pressure; 1: Time				1

Note: the compressor type for SECR06-S3 is variable speed. [40127] = 1

If all the cabinet temperature sensors are detected to be open or short circuit, the controller will start/stop cooling according to the fail-safe setting of **[Cabinet temperature fail-safe: operation interval]** **[Cabinet temperature fail-safe: shut-down interval]** until the sensors return to normal.

[Max. Cabinet temperature target] **[min. Cabinet temperature target]** limit the set of **[daytime cabinet temperature target]** not to exceed the maximum set point and minimum set point range. If the set range is exceeded, the setting is invalid.

[Minimum interval between two starts] is defined as the interval between the previous start and the next start, which is used to limit the number of starts of the compressor by 1 hour and is affected by the minimum shutdown time of the compressor.

[Minimum compressor shutdown time] set the minimum time (minutes) for the compressor to stay OFF. Since the last shutdown, the compressor must not start again before the defined minimum time has passed. (Except for forced cooling operation)

[Minimum compressor operation time] set the minimum running time of the compressor. The compressor must last the defined minimum amount of time after turning it on before it can be turned off. (Except for forced defrosting operation)

To end the evacuation mode, you can select either a time-based or pressure-based criterion. When pressure is selected, the door control needs to be configured as a low-pressure switch: the evacuation will stop when the doow control switch closes. If the door control switch remains unclosed for an extended period, the evacuation will also stop after the maximum evacuation time elapses.

4.2 Defrosting control

There are 4 ways to start the defrosting automatically, there are 1) Fixed point defrosting according to schedule 2) Defrost according to the cooling time 3) Defrosting interval and 4) Adaptive defrosting. Select from **[defrosting start mode]** 0 (schedule), 1 (cooling time), 2 (defrosting interval), and 3(Adaptive defrosting) and with default setting 0. Schedule mode: The defrosting start according to the time. Through this setting method, user can freely set the defrosting time to avoid the peak time of defrosting, and according to the different defrosting time, the free setting of two defrosting intervals. The maximum number of defrosting can be set is 8 times within 24 hours. If the defrosting hour is set to -1, the defrosting time is invalid. You can set whether you need to open the defrosting time every day and set it in the corresponding schedule to open the defrosting time count.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40241	Monday Schedule	J00	Day	0: OFF 1: ON			1
40242	Tuesday Schedule	J01	Day				1
40243	Wednesday Schedule	J02	Day				1
40244	Thursday Schedule	J03	Day				1

Address	Description	Code	Units	Interval	Min.	Max.	Default
40245	Friday Schedule	J04	Day	0: OFF 1: ON			1
40246	Saturday Schedule	J05	Day				1
40247	Sunday schedule	J06	Day				1
40221	1# defrosting clock	100	Hour	1	-1	23	8
40222	1# defrost minutes	101	Min	1	0	59	0
40223	2# defrosting clock	102	Hour	1	-1	23	14
40224	2# defrosting minutes	103	Min	1	0	59	0
40225	3# defrosting clock	104	Hour	1	-1	23	20
40226	3# defrosting minutes	105	Min	1	0	59	0
40227	4# defrosting clock	106	Hour	1	-1	23	2
40228	4# defrosting minutes	107	Min	1	0	59	0
40229	5# defrosting clock	108	Hour	1	-1	23	-1
40230	5# Defrosting minutes	109	Min	1	0	59	0
40231	6# defrosting clock	110	Hour	1	-1	23	-1
40232	6# defrosting minutes	111	Min	1	0	59	0
40233	7# defrosting clock	112	Hour	1	-1	24	-1
40234	7# defrosting minutes	113	Min	1	0	59	0
40235	8# defrosting clock	114	Hour	1	-1	24	-1
40236	8# defrosting minutes	115	Min	1	0	59	0
40237	★ Defrosting start mode	116	0: Fixed point defrosting according to schedule; 1: Defrost according to the cooling time; 2: Defrosting interval. 3: Adaptive Defrosting				3. 0
40238	Defrosting at power on	117	0: NO 1: YES				0
40240	Compressor delay for reversed flow defrosting	119	Sec	1	0	300	0
40259	Adaptive Defrosting Trigger Threshold	J18	°C	0.1	0	30	5

Address	Description	Code	Units	Interval	Min.	Max.	Default
40261	Defrosting interval	200	Hour	0. 1	0	99. 9	3
40262	Defrosting exit temperature	201	°C	0. 1	-50	50	8
40263	Defrosting time	202	Min	1	0	100	30
40264	Drip time	203	Min	1	0	100	0
40265	Pre-cooling time	204	Min	1	0	100	0
40268	Evaporator fan control during defrosting	207	0: Always off; 1: same as [Evaporative fan mode]				1
40269	Evaporator fan control during dripping	208	0: Always off 1: Same as [evaporative fan Mode] 2: On				1
40272	Defrosting relay output time with natural defrosting	211	Min	1	0	100	10
40273	Maximum interval before defrosting	212	Hour	1	0	240	24
40274	Automatic defrosting threshold at low temperature	213	°C	0. 1	-50	50	-50
40275	Automatic defrosting delay at low temperature	214	Min	1	0	240	0
40278	End Defrosting mode	217	0: Fixed time; 1: Defrosting exit temperature; 2: Time + defrosting exit temperature				1
40279	Disable Defrosting	218	0: enabled 1: disabled				0
40280	Type of defrosting	219	0: Electric defrosting 1: Natural defrosting 2: Hotgas defrosting				0

Defrosting start mode: S1 defaults to defrosting interval and does not support selecting time-scheduled defrosting.

Cooling time mode: when the continuous cooling time reaches the set value,. start the first defrosting.

Defrosting interval: The defrosting interval is the time from the start of the last defrosting to the start of the next defrosting.

Note: When the defrost interval is set to 0, defrosting will not start. In this case, defrosting can only be triggered by a key press, door control, or when the **[maximum defrosting interval time]** is reached.

Adaptive Defrosting: The thermostat continuously monitors the evaporator temperature. When the evaporator temperature deviates from the reference evaporator temperature (without frost) by the **[Adaptive Defrosting Trigger Threshold]**, and the interval time exceeds the **[Defrost Interval]**. a defrost cycle will be triggered.

Power On defrosting: if the exit defrosting mode is related to temperature, while the evaporating temperature ≥ the defrosting exit temperature, directly enter the cooling mode, otherwise enter the defrosting mode.

There are generally three ways of defrosting: natural defrosting, electric defrosting and hot gas defrosting. Users can set custom defrosting methods and can adapt to different defrosting methods through different parameters. To ensure stable operation of the cabinet, it is necessary to configure the defrosting parameters reasonably.

If natural defrosting is selected, you can configure **[Defrosting relay output time with natural defrosting]** to turn on the relay for a set time and turn off.

Defrosting is usually divided into several stages:

1. In the defrosting stage, the defrosting type needs to be configured before entering the defrosting stage. The controller supports electric defrosting, natural defrosting, hot gas defrosting and customized defrosting. For natural defrosting, you can set the defrosting relay output time, after defrosting started (state 3), defrosting relay will be ON and continue for **[defrosting relay output time]** and then be OFF. This is designed to use defrosting relay to run condensing fan in reversed direction, thus to blow the dust out from the condenser surface (if any). If you exit the defrosting (state 3), even if the [defrosting relay output time] is not reached, the defrosting relay will also be OFF.

[Defrosting exit mode] can be configured as following of which only electric defrosting can choose time + temperature control, natural defrosting and hot gas defrosting can only choose time mode or temperature mode:

- a. Time mode: **[defrosting time]** Turn off the heater/hot gas solenoid valve relay when it reaches the set value
- b. Temperature mode: When the temperature detected by the defrosting temperature sensor is greater than the **[defrosting exit temperature]**, turn off the heater/hot gas solenoid valve relay to end the defrosting, or when the temperature detected by the defrosting temperature sensor is less than the **[defrosting exit temperature]**, but the defrosting time reaches the set value of **[defrosting time]**, defrosting will be end.
- c. Time + temperature mode: when the temperature detected by the defrosting temperature sensor is greater than the **[defrosting exit temperature]**, turn off the heater/hot gas solenoid valve relay; when the temperature detected by the defrosting temperature sensor is less than the **[defrosting exit temperature]**, turn on the heater/hot gas solenoid valve relay; when the defrosting time reaches the set value of **[defrosting time]**, turn off the defrosting.

Before hot gas defrosting:

- 1) Stop the compressor.
- 2) After **[Compressor delay for reversed flow defrosting]** /2 time.
- 3) Relay ON, open the hot gas valve.
- 4) After **[Compressor delay for reversed flow defrosting]** /2 time.
- 5) Turn on the compressor.

Note: if **[compressor reverse switching delay]** is not 0, the compressor will not perform the pump down before shutting down.

Hot gas defrosting end:

- 1) Compressor OFF.
- 2) After **[Compressor delay for reversed flow defrosting]** /2 time.
- 3) Relay OFF, close the hot gas valve.
- 4) After **[Compressor delay for reversed flow defrosting]** /2 time.
- 5) Go into dripping state.

2. Dripping phase: if **[dripping time]** is not 0, enter the dripping phase, the heater/hot gas solenoid valve relay is OFF; If the **[dripping time]** is 0, skip the dripping phase and go to next phase.

3. Pre-cooling stage: To avoid that the evaporator fan will blow the hot air into the cabinet after the end of defrosting, the system can run for a period to cool down the evaporator without turning on the evaporator fan. During this time, the liquid line solenoid valve/compressor will work. If the pre-cooling time is set to 0, it will not enter this stage.

4. Cooling stage: compressor/liquid line solenoid valve are open and close According to the cabinet temperature. The compressor/liquid line solenoid valve are open, while the evaporator fan is optional to be ON or OFF.

In the defrosting stage and the dripping stage, the parameters of [defrosting stage evaporation fan mode] and **[dripping stage evaporation fan mode]** can be set respectively to open the evaporation fan or not.

In case RTC (real-time clock) circuit is damaged, the defrosting is not operated for a long time, the defrosting can be activated by the **[maximum interval before defrosting]** to prevent the loss of the defrosting function.

If the heat transfer efficiency is poor due to serious frosting, it will cause the evaporator temperature to continue to drop. You can configure

[Automatic defrosting threshold at low temperature] and [Automatic defrosting delay at low temperature] to automatically activate the defrosting. Once the temperature is lower than [Automatic defrosting threshold at low temperature] for a time of [Automatic defrosting delay at low temperature], Automatic defrosting will be activated.

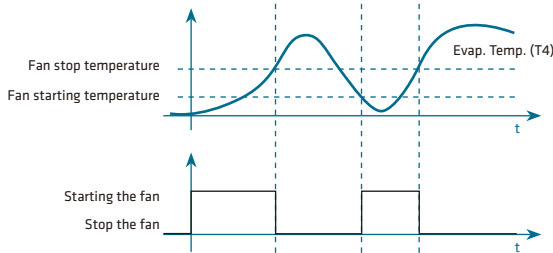
4.3 Evaporator fan control

When the temperature control is running, the [evaporation fan mode] can be set to the following:

- The evaporating fan is always on
- When the compressor/liquid line solenoid valve is OFF, the evaporating fan is OFF
- According to the temperature of the defrosting temperature probe:

If the defrosting temperature probes temperature < fan start temperature, the evaporating fan will be turned on.

If defrosting temperature probe temperature > fan stop temperature, evaporating fan will be stopped.



When defrosting starts, the parameters of [defrosting fan mode] can be configured as the following:

- Same configuration as [evaporating fan mode] parameters
- Always off

Address	Description	Code	Units	Interval	Min.	Max.	Default
40141	Evaporate fan mode	d00	0: Always on 1: When the compressor/liquid line solenoid valve is OFF, the evaporation fan is OFF 2: Control according to the defrosting temperature				0
40142	Fan start temperature	d01	°C	0.1	-50.0	50.0	4.0
40143	Fan stop temperature	d02	°C	0.1	-50.0	50.0	7.0

If [pre-cooling time] is not 0, the evaporating fan will be forced to shut down after entering the pre-cooling stage.

4.4 Non-condensing control

Pulse control to the slide rail heating to realize energy saving. Pulse control can be applied according to the day/night load or humidity.

Relay or analog output is designed to allow long cycle time. e.g. According to the day and night load, the controller can be set to have different operating time. The controller can set total cycle time, and the percentage of the slide rail heating time.

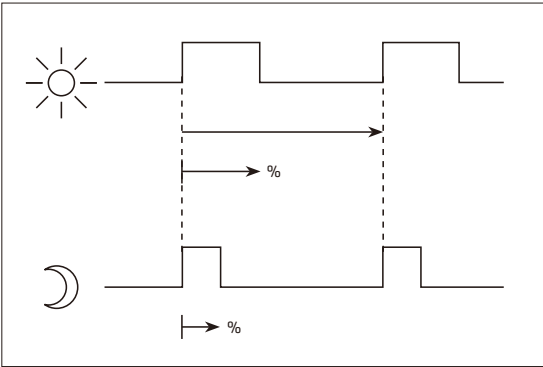
If you use a relay to realize a non-condensing heating function, one of the relay functions needs to be configured as 7: Non-condensing heating function,

During the defrosting, you can choose to turn on or off the non-condensing heating.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40281	Non-condensing control mode	L00	0: Disabled 1: Control according to heating time 2: Control according to dew point 3: Always ON				0
40282	Non-condensing ON time at daytime	L02	%	1	0	100	100
40283	Non-condensing ON time at night-time	L03	%	1	0	100	100
40284	Enable non-condensing control	L04	0: Disabled 1: Enabled				0
40285	Door humidity	L05	RH%	0.1	0	100	0
40286	Door temperature	L06	°C	0.1	-50	50	0
40287	Non-condensing heating cycle	L07	Min	1	1	60	5
40288	min. dew point of Non-condensing heating	L08	°C	0.1	-10	50	8
40289	100% dew point of Non-condensing heating	L09	°C	0.1	-10	50	17
40290	Type of defrosting	L10	%	1	0	100	30

If the non-condensing control mode for is 1:

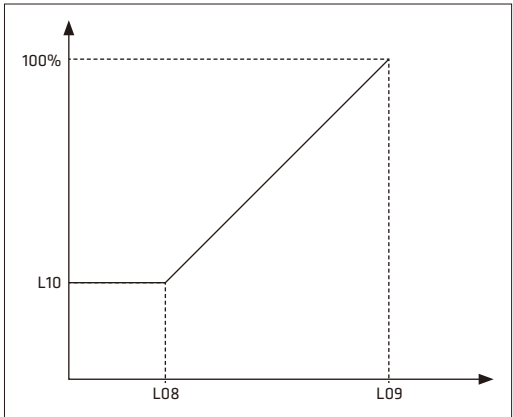
ON/OFF according to the day and night different settings



Run time is defined by the [Non-condensing ON time at daytime], [Non-condensing ON time at night-time] and [non-condensing heating cycle]

If the non-condensing control mode is 2:

Control according to the dew point. The dew is calculated according to the input of humidity and temperature.



Control the PWM output according to the calculated dew point temperature.

Note: to do it, you may need to have a monitoring system to collect the humidity and temperature input.

4.5 Alarm set

Address	Description	Code	Units	Interval	Min.	Max.	Default
40318	Defrosting time with defrosting probe failure	n17	Min	1	0	180	10
40319	Fail-safe with condensing temperature	n18	0: non-stop; 1: shutdown				0
40321	Condensing temperature control mode	a00	0: Disabled; 1: Automatic reset; 2: Manual reset				0
40322	Condensing temperature alarm value	a01	°C	0.1	-40	70	45
40323	Condensing temperature alarm delay	a02	Min	1	1	600	0
40324	Condensing temperature alarm reset	a03	°C	0.1	-40	70	40
40325	Condensing temperature protection value	a04	°C	0.1	-40	70	55
40326	Condensing temperature protection delay	a05	Min	1	0	600	3
40327	Condensing temperature protection reset	a06	°C	0.1	-40	70	50
40328	Cabinet temperature too high mode	a07	0=disabled; 1=enabled				1
40329	Cabinet temperature too high alarm value	a08	°C	0.1	-40.0	40.0	10.0
40330	Cabinet temperature too high alarm delay	a09	Min	1	1	600	60
40331	Cabinet temperature too high alarm reset	a10	°C	0.1	-40.0	40.0	9.0
40332	Cabinet temperature too low alarm mode	a11	0=disabled; 1=enabled				1
40333	Cabinet temperature too low alarm value	a12	°C	0.1	-40.0	40.0	-40
40334	Cabinet temperature too low alarm delay	a13	Min	1	1	600	10
40335	Cabinet temperature too low alarm reset	a14	°C	0.1	-40.0	40.0	0
40336	Cooling overtime mode	a15	0=disabled; 1=enabled				0

Address	Description	Code	Units	Interval	Min.	Max.	Default
40337	Cooling overtime alarm	<i>a 16</i>	Min	1	1	999	60
40341	Anti-freezing alarm protection mode	<i>P00</i>	0: Disabled; 1: Automatic reset; 2: Manual reset				1
40342	Anti-freezing protection threshold	<i>P01</i>	°C	0.1	-50	20	-40
40343	Anti-freezing protection delay	<i>P02</i>	Min	1	0	15	3
40344	Anti-freezing protection reset	<i>P03</i>	°C	0.1	-50	20	-10

During the defrosting status (the way of defrosting exit is temperature related) and if the defrosting temperature probe fails, defrosting will end after **[Defrosting time with defrosting probe failure]**.

If the condensing temperature control mode is set to 1, the condensing temperature collected by the temperature probe can be used for the condensing temperature control function.

If the condensing temperature > **[Condensing temperature alarm value]** and last for **[Condensing temperature alarm delay]**, high condensing temperature alarm occurs, alarm output and fault alarm mode displays *CHL*.

If the condensing temperature > **[Condensing temperature protection value]** and last for **[Condensing temperature protection delay]**, high condensing temperature protection occurs to stop the system, alarm output and fault alarm mode displays *CHL*.

Cabinet Temperature alarm: **[Cabinet temperature too low alarm mode]** is enabled, when the cabinet temperature is lower than [Cabinet temperature too low alarm value]and last for **[Cabinet temperature too low alarm delay]** time, alarm will occur. When cabinet temperature is higher than **[Cabinet temperature too low alarm reset]**, the alarm will be reset.

[Cabinet temperature too high mode] is enabled, when the cabinet temperature is higher than **[Cabinet temperature too high alarm value]** and last for **[Cabinet temperature too high alarm delay]** time, alarm will occur. When cabinet temperature is lower than **[Cabinet temperature too high alarm reset]**, the alarm will be reset.

[Cooling overtime mode] is enabled, the continuous cooling time is more than **[Cooling overtime alarm]**, alarm will occur.

[Anti-freezing alarm protection mode]: If the temperature from defrosting temperature sensor is lower than **[Anti-freezing protection threshold]** and last for **[Anti-freezing protection delay]** time, fault alarm mode displays *FrE* and the system will be shut-down.

4.6 Door control (DI) setting

Through the ON/OFF connection between D1 and GND, you can realize different functions.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40170	DI: function selection	<i>F09</i>	0: Disabled 1: Dual temperature setting with one system 2: Cooling Control 3: Day and night mode switch 4: Polling between cooling and defrosting 5: Lighting Control 6: Low Pressure Switch 7: External alarm signal 8: Compressor stop switch 9: Compressor non-stop switch 10: Disable defrosting 11: External defrosting signal 12: ECO Start				0
40171	Opposite the door control function	<i>F10</i>	0: Normal; 1: Opposite				0
40339	Defrosting exit maximum waiting timeDoor Control alarm delay	<i>a 18</i>	Min	1	0	240	0

If DI function is set as **[Dual temperature setting with one system]**:

Once DI switches from ON to OFF, the controller will switch to all parameters in group 2.

Once DI switches from OFF to ON, the controller will switch to all parameters in group 1.

Note: When switching from the **[Dual temperature setting with one system]** function to other functions, it will return to Group 1.

If DI function is set as **[Cooling Control]**:

Once the DI signal is short-circuited, cooling will start and stop while DI is disconnected.

If DI function is set as **[lighting control]**:

Once the DI signal is short circuit, lighting will be turned on, and off while DI is disconnected.

If DI function is set as **[Polling between cooling and defrosting]**:

Every time the DI signal switches, the system mode will rotate between cooling and defrosting.

If DI function is set as **[Day and night mode switch]**:

Every time the DI signal switches, the system mode will rotate between day and night parameters.

If DI function **[Door Control alarm delay]** is set Not 0

After the [Door Control alarm delay] time, alarm occurs.

If DI function is set as **[Disable defrosting]**:

Once the DI signal is connected, the defrosting will not run, and it helps to skip defrosting during operation time of the store.

If DI function is set as **[Compressor stop switch]**:

Once the DI signal is disconnected, the compressor and evaporating fan will be stopped, and the lighting will be turned on.

If DI runction is set as **[Compressor non-stop switch]**:

Once the DI signal is disconnected, the compress or will keep running but the evaporating fan will be stopped.

If DI function is set as **[Low Pressure Switch]**:it is used for pump down purpose and the signal is used to indicate whether pump down is finished or not.

If DI function is set as **[external defrosting signal]**:

Make sure the defrosting start mode is set as **[external defrosting signal]** and once the DI signal is connected, defrosting will start, and an external device can control the defrosting process.

If DI function is set as [ECO Start], closing the switch will automatically enter Night Mode, and opening the switch will enter Day Mode. In this case, day-night switching prioritizes the door control signal and ignores the time signal.

Note:

- For dual temperature setting, parameters like Passwords, Refrigerant, Communications set parameters and Time setting parameters are fixed value; there are no dual parameters available for them.
- Once the dual temperature switch is carried out, the controller will automatically restart.

4.7 Communication set

SECR06 controller supports RS485 communication, MODBUS communication protocol, PC or upper-level controller that supported MODBUS protocol based on RS485 communication.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40157	Communication ID set	<i>d 16</i>	/	1	1	250	1
40158	Communications speed setting	<i>d 17</i>	0=4800, NONE, 1 2=19200, NONE, 1 4=4800, NONE, 2 6=19200, NONE, 2 8=4800, EVEN, 1 10=19200, EVEN, 1 12=4800, EVEN, 2 14=19200, EVEN, 2 16=4800, ODD, 1 18=19200, ODD, 1 20=4800, ODD, 2 22=19200, ODD, 2 1=9600, NONE, 1 3=38400, NONE, 1 5=9600, NONE, 2 7=38400, NONE, 2 9=9600, EVEN, 1 11=38400, EVEN, 1 13=9600, EVEN, 2 15=38400, EVEN, 2 17=9600, ODD, 1 19=38400, ODD, 1 21=9600, ODD, 2 23=38400, ODD, 2				1

4.8 Clock set

Configure the current clock and the clock at night, you can set different parameters once the clock runs at night.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40201	★ Night-time start - clock	<i>H00</i>	Hour	1	0	23	22
40202	★ Night-time start - minutes	<i>H01</i>	Min	1	0	59	30
40203	★ Night-time end olock	<i>H02</i>	Hour	1	0	23	7
40204	★ Night-time end - minutes	<i>H03</i>	Min	1	0	59	30
40205	★ Current clock	<i>H04</i>	Hour	1	0	23	12
40206	★ Current minute	<i>H05</i>	Min	1	0	59	30
40207	★ Current second	<i>H06</i>	Sec	1	0	59	0
40208	★ Years	<i>H07</i>	Year	1	0	99	23
40209	★ Month	<i>H08</i>	Month	1	1	12	1

Address	Description	Code	Units	Interval	Min.	Max.	Default
40210	★ Day	H09	Day	1	1	31	1
40211	★ Week	H10	Week	1	1	7	2
40218	Day-night mode relay selection	H17	Day	0: None; 1: Lighting relay; 2: Auxiliary relay			1
40219	Day-night switching interval	H18	Min	1	0	60	0
40220	Lighting linked to night curtain	H19	Week	0: No linkage; 1: Linked			0

★ S1 does not have a clock module.

The controller is equipped with an internal real-time clock (RTC) with power-loss memory, which can be used to initiate defrosting. This clock has a minimum power storage capacity of 7 days (168 hours), with a control accuracy of 20 PPM at room temperature (25°C) and 100 PPM across the full temperature range. Under low-temperature conditions (below -25°C), the power-loss storage time will be correspondingly reduced due to the characteristics of supercapacitors, Depending on the reuirements for time accuracy, the time can be recalibrated periodically-for example, if the maximum allowable error does not exceed1 minute, it is recommended to recalibrate the time every 30 days.

When the scheduled time for day-night mode switching is reached, you can select which relay will actuate to automatically turn the lighting on/off or operate the night curtain.

If **[Lighting linked to night curtain]** is set to 1, manually turning on the lighting will automatically switch to daytime mode, and manually turning off the lighting will automatically switch to nighttime mode. Additionally, the lighting switching is protected by the **[Daytime switching interval]** time.

5 Variable speed compressor (S3 version)

The on/off signal of the variable speed compressor is synchronized with the compressor/solenoid valve start and stop signal sent by the controller. The variable speed compressor runs within the speed range allowed by the compressor, and its operation process is divided into startup stage, normal operation stage and oil return operation stage. The compressor frequency reduction protection runs throughout the whole operation stage. If the system uses variable speed compressors, compressor type needs to be configured:

Address	Description	Code	Units	Interval	Min.	Max.	Default
40127	Compressor type	c6	0: fixed speed; 1: variable speed				0

Note: the compressor type for SECR06-S3 is variable speed. [40127] = 1

5.1 Maximum and minimum operating speeds of an inverter compressor.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40384	Maximum compressor speed	S03	Rps	1	20	80	80
40385	Minimum compressor speed	S04	Rps	1	20	40	30

5.2 Variable speed compressor in startup stage

After the variable speed compressor is started, it will run for a period time with lower frequency. This stage is called the compressor startup stage. The startup parameters are as follows:

Address	Description	Code	Units	Interval	Min.	Max.	Default
40382	Compressor start-up command	S01	Rps	1	20	60	40
40383	Compressor start-up stage hold time	S02	Sec	1	0	180	60

5.3 Typical operating stages of an inverter compressor

In normal operation stage, the compressor will run according to the difference between the set cabinet temperature and the actual cabinet temperature. At the same time, it is also controlled by limited frequency reduction protection.

The control of the difference between the set temperature of the compressor and the temperature of the cabinet is shown in the following formula:

$$\Delta Rps = p * e(t) + i * (e(t) - e(t-1))$$

Actual frequency = current frequency + ΔRps.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40416	Compressor stop cabinet temperature offset	t15	°C	0.1	0	5	2
40413	Cabinet temperature adjustment parameter 1	t12	/	1	1	100	10
40414	Cabinet temperature adjustment parameter 2	t13	/	1	1	100	15

The variable speed compressor will not stop immediately when the system reach the Cabinet temperature target, only when the cabinet temperature is lower than **[Cabinet temperature target] – [Compressor stop cabinet temperature offset]**, the compressor will stop.

5.4 Variable speed compressor in oil return stage

Once the oil return function (40399) is enabled, the oil return operation takes effect. Pre-condition before entering the oil return stage: the compressor runs below the low frequency (40401) Rps with the cumulative operation (40403) time (minutes);

Pre-condition before clearing oil return cumulative time: in normal operation stage the compressor runs above high frequency (40402) Rps continuous operation (40404) time(minutes), then cumulative time for oil return will be cleared.

Pre-condition before exiting oil return operation: after the compressor frequency rises to (40262) Rps and continuous operation for (40264) time(minutes), the low frequency accumulation time will be cleared, and the oil return stage will exit.

If there is limited frequency protection in oil return running stage, the limited frequency protection will take over as priority.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40399	The oil return function	S18	0: Not enabled; 1: Enabled				0
40386	Compressor frequency at oil return stage	S05	Rps	1	30	80	60
40401	Compressor low frequency for before oil return stage	t00	Rps	1	30	50	45
40402	Compressor high frequency for oil return exit	t01	Min	1	55	70	65
40403	Compressor low frequency cumulative time to enter oil return	t02	Min	1	60	240	180
40404	Compressor high frequency cumulative time to exit oil return	t03	Min	1	1	5	5

5.5 Frequency reduction and shutdown protection for variable speed compressor

In case the condensing temperature is too high, or the high pressure is too high, or the driver itself is protected or faulty, the protection limit and frequency reduction will run as priority.

Condensing temperature limit and frequency reduction protection:

Address	Description	Code	Units	Interval	Min.	Max.	Default
40417	Frequency limit with too high condensing temperature	E16	0: Not enabled; 1: Enabled				0
40405	Condensing temperature limit for frequency limit	E04	°C	1	-40	105	47
40406	Condensing temperature limit for protection	E05	°C	1	-40	105	52
40407	Condensing temperature adjustment parameters 1	E06	/	1	1	100	10
40408	Condensing temperature adjustment parameters	E07	/	1	1	100	15

Variable speed drive failure protection: When the compressor drive itself fails to protect, the main control will stop sending commands to the driver to start the compressor.

5.6 Drive Mode

The controller supports TTL and PWM mode to drive the compressor, and PWM mode controls the compressor frequency according to the PWM frequency. The multiplier relationship between the two frequencies is set by the [frequency multiple of PWM mode], and the default is 30. For example, when the PWM frequency is 150hz, the compressor speed is 150*30=4500rpm. The duty cycle is 50% and cannot be changed.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40400	Compressor drive mode	S19	0: TTL mode; 1: PWM mode				0
40398	PWM mode frequency multiple	S17	/	1	1	100	30

Note: The controller will restart when the mode is switched

The compressor runs at [hot gas defrosting frequency] during hot gas defrosting, at [pre-cooling frequency] during pre-cooling stage, and at [lowest operating frequency] during pump down.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40395	Hot gas defrosting frequency	S14	rps	1	1	100	70
40396	Pre-cooling frequency	S15	rps	1	1	100	70
40397	Abnormal cabinet temperature frequency	S16	rps	1	1	100	70

6 Fault code and fault judgment

The fault display is turned on by default. When the fault code is displayed, the fault code and the numerical display are alternately changed once per second. By operating button to turn off the fault display.

Alarm code	Alarm meaning	Alarm code	Alarm meaning
E1a	T1 temperature sensor circuit	Inu	Inverter faulty
E15	T1 temperature sensor short circuit	inE	Inverter communication lost
E2a	T2 temperature sensor open circuit	HCE	cabinet temperature too high
E25	T2 temperature sensor short circuit	LCE	cabinet temperature too low
E3a	T3 Temperature sensor open circuit	che	Condensing temperature too high alarm
E35	T3 Temperature sensor short circuit	CHC	Condensing temperature too high protection
E4a	T4 Temperature sensor is open	EL	Overtime cooling alarm
E45	T4 Temperature sensor short circuit	FrE	Anti-freezing protection alarm
E4E	T4 wrong configuration	doP	Door open alarm
CEE	Abnormal cabinet temperature	drE	DI alarm

7 Communication Protocol

SECR06 controller supports RS485 communication, MODBUS communication protocol, PC or upper-level controller that supported MODBUS protocol based on RS485 communication.

7.1 Description of communication protocol

Item	Description
Transmission line connection	Multiple wire transfer
Communication methods	RS485 (2 wire, half duplex)
Baud rate	9600 by default, configurable
Parity, data, stop bit	None, 8 data, 1 stop bit (modifiable)
Protocol type	Modbus RTU mode
Function code	Read keep registers (0 x03)/default single register (0 x06)/preset register (0 x10)
Maximum number of read words	32
Cable type	Belden 9841/9842, LG LIREV-AMESB
Polling interval	≥ 500ms
Mailing address	See instructions for details



温控器安装操作手册

· 阅读并保存此手册 ·

Revo SE | SECR06
V 1.4 - 2025.09

温 控 器 安 装 操 作 手 册



安全须知

- 1. 本产品内部的电子电路虽然做了一定的防护，但长时间在潮湿环境下运行仍然会导致元器件受损，因此请避免在雨水、湿气以及其他液体等环境中安装运行。
- 2. 本产品使用卡扣固定于机柜上。
- 3. 本产品可在以下环境条件下使用：
 - a. 室内
 - b. 污染等级为 2 的环境下
 - c. 海拔 2000m 或以下
- 4. 电源输入必须在说明书指定的范围内。
- 5. 打开或关闭本产品的电源，请使用满足 IEC 60947-1 或 IEC 60947-3 标准的断路器或开关，安装于近距离并方便客户操作的位置。
- 6. 用于本产品的输入输出导线必须满足易燃等级 FV1（v-1 级或以上），导线粗细应不低于 AWG 24。
- 7. 为防止产生感应噪声，请确保高压线和电源线分开。
- 8. 请避免将产品安装于具有强磁场、噪声、剧烈振动和冲击存在的位置。
- 9. 延长传感器导线长度时，请使用屏蔽线，非必要情况请勿延长避免影响传感器精度。
- 10. 传感器导线和信号线应远离电源和负载导线，并单独安装。
- 11. 请避免在产生强烈高频噪声的设备附近使用本产品（如高频焊接机、高频缝纫机、高频无线电报、大容量 SCR 控制器等）。



废品处理：本产品是由金属零件和塑料件组成。
所有的部件必须按照当地关于废品处理的法规单独进行处理。

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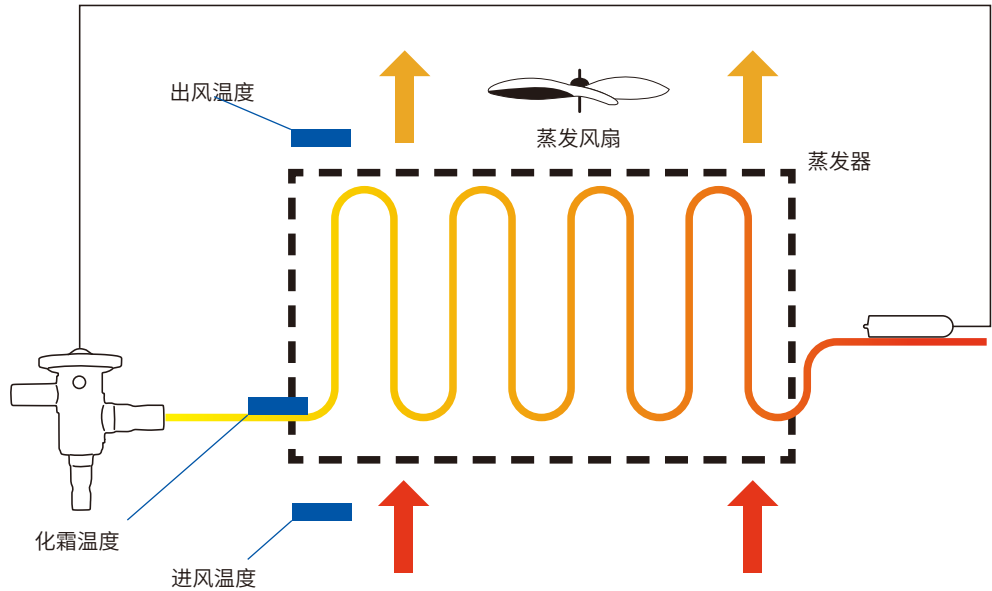
1 产品说明

SECR06 隶属于 Revo SE 系列，专为定频或变频压缩机的自携式或者半自携式冷柜设计。该控制器集成以下功能：压缩机频率控制（仅特定型号支持）、柜温控制（支持一机双温）、化霜控制、蒸发器风扇控制、照明控制以及其他辅助功能。Revo SE 系列是采用机械膨胀装置的同类制冷系统的理想解决方案。

储存条件：-30~55℃，相对湿度≤ 95%RH；
工作条件：-30~55℃，相对湿度≤ 95%RH；

满足认证要求：
EMC 认证：IEC61000-6-2，IEC61000-6-4；
材料要求：符合 RoHs 要求（有害物质）；

1.1 陈列柜输入信号示意图



1.2 SECR06 温控器基本信息

项目	详细信息
安装尺寸	固定开孔为 71mm x 29mm 的面板上
电源	220Vac+10%/-15%, 50/60Hz, class 2
功率	最大功率为 3.6W
接口	1. 插拔式端子 (M3): 最小 / 最大引线尺寸 0.34~2.5mm ² , 扭矩 0.5N.m, 电流≤ 3A。 2.XHP 端子: 温度传感器
通讯	Modbus RTU

2 产品配置

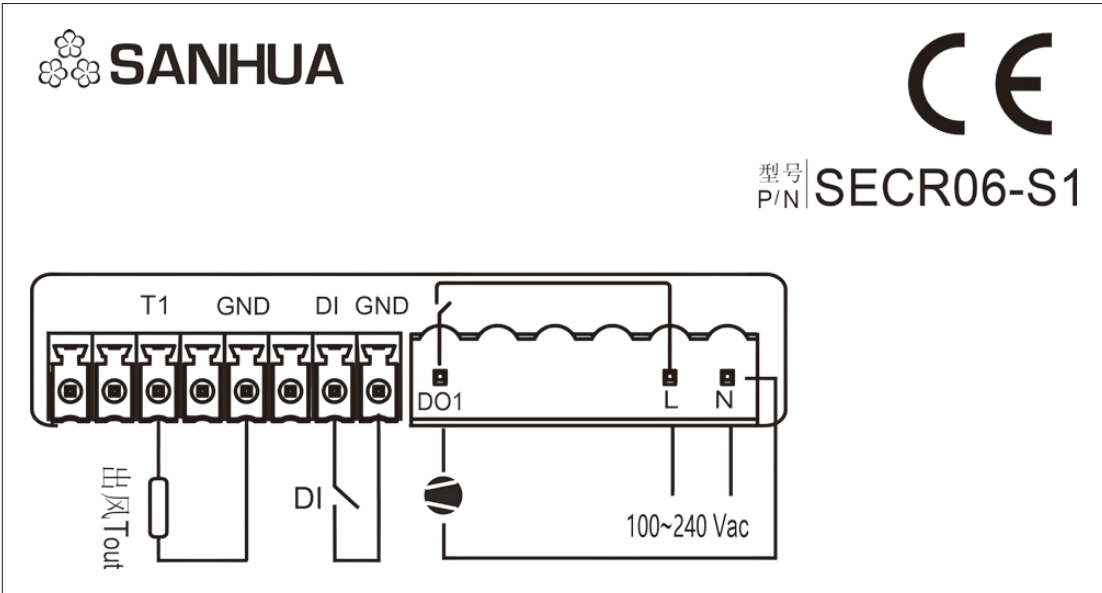
2.1 订购代码

序号	备注	产品型号	规格
1	主控制器	SECR06-S1	冷藏款
		SECR06-S2	冷冻款
		SECR06-S3	变频款
2	温度传感器 (NTC 5K)	NTC3A1	3 米
		NTC6A1	6 米

2.2 传感器信息

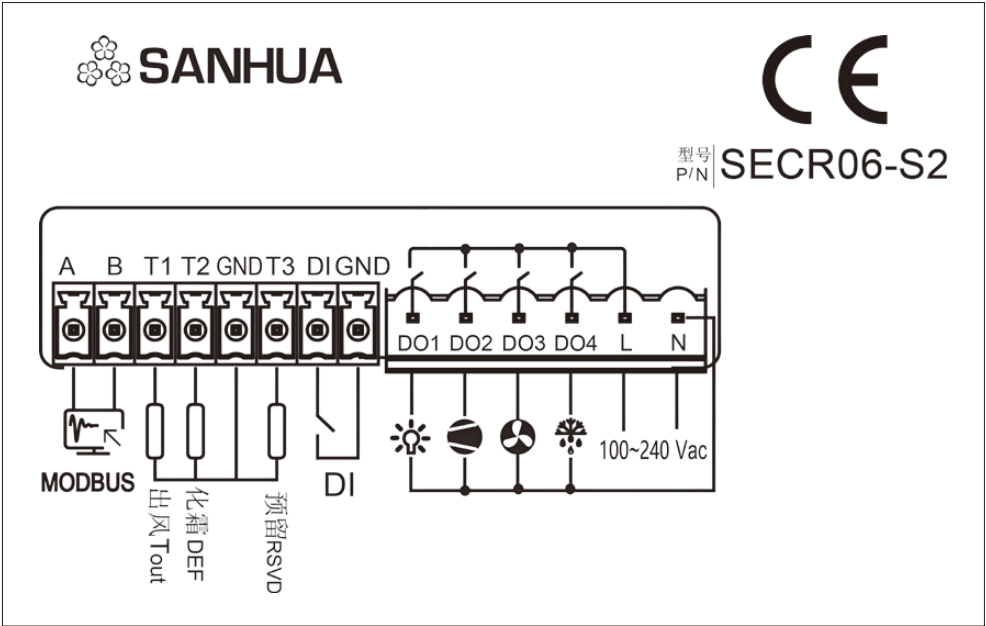
项目	产品描述	
温度传感器	传感器类型	NTC 5KΩ β value: 3970K
	引线规格	2/5/9m x 0.5 mm ²
	保护等级	IP 67
	精度	±1℃ (-40℃)
	量程	-40℃~105℃

2.3 控制器功能连接示意图



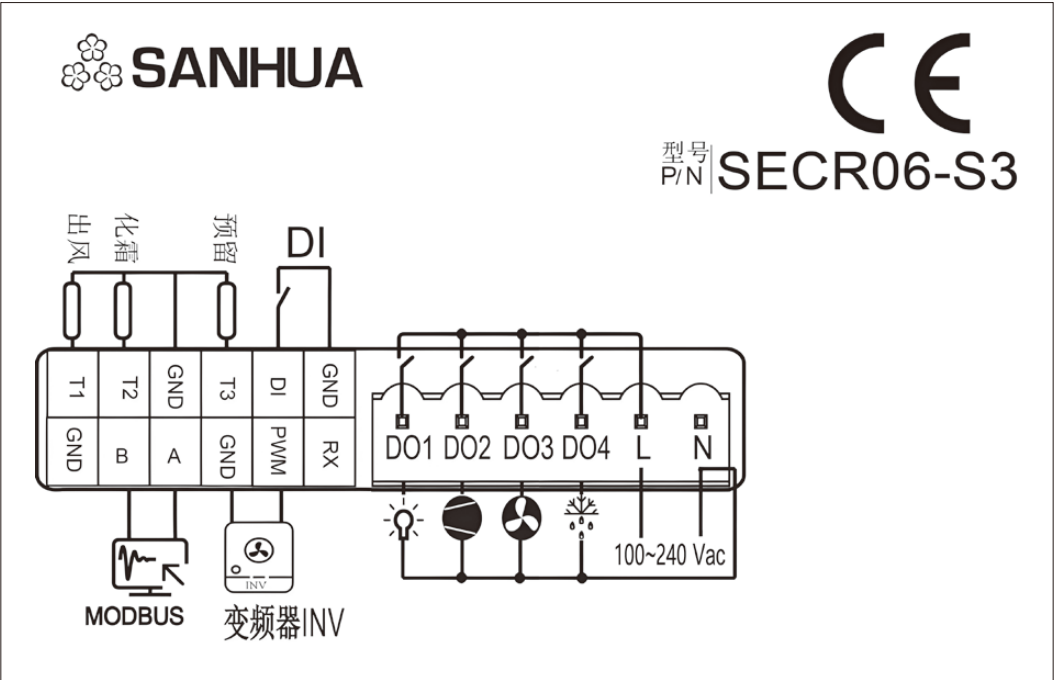
型号：SECR06-S1

丝印代码	端口名称	端口编号	功能描述	备注
L N	电源	L N	100~240Vac	/
T1	温度传感器	G IN	出风温度传感器	PT1000/NTC 5K B3970
DI	数字信号输入	DI GND	门控功能	可配置
	D01 继电器输出	D01	控制液管路电磁阀或压缩机	常开触点 (阻性负载 8A 250Vac 感性负载 3A 250Vac)



型号：SECR06-S2

丝印代码	端口名称	端口编号	功能描述	备注
L N	电源	L	100~240Vac	D01-D04 总电流最大不能超过 10A
		N		
MODBUS	RS485 通讯	A	差分通讯信号， 连接上位机、主控等	MODBUS RTU
		B		
T1	温度传感器	T1	出风温度（可配置）	PT1000/NTC 5K B3970
T2	温度传感器	T2	化霜温度（可配置）	PT1000/NTC 5K B3970
T3	温度传感器	T3	预留（可配置）	PT1000/NTC 5K B3970
DI	数字信号输入	DI	门控功能（可配置）	无源信号接口
		GND		
	D01 继电器输出	D01	控制照明（可配置）	常开触点 (阻性负载 8A 250Vac 感性负载 3A 250Vac)
	D02 继电器输出	D02	控制液管路电磁阀 或压缩机（可配置）	常开触点 (阻性负载 8A 250Vac 感性负载 3A 250Vac)
	D03 继电器输出	D03	控制蒸发器风扇	常开触点 (阻性负载 5A 250Vac 感性负载 1A 250Vac)
	D04 继电器输出	D04	控制化霜	常开触点 (阻性负载 5A 250Vac 感性负载 1A 250Vac)



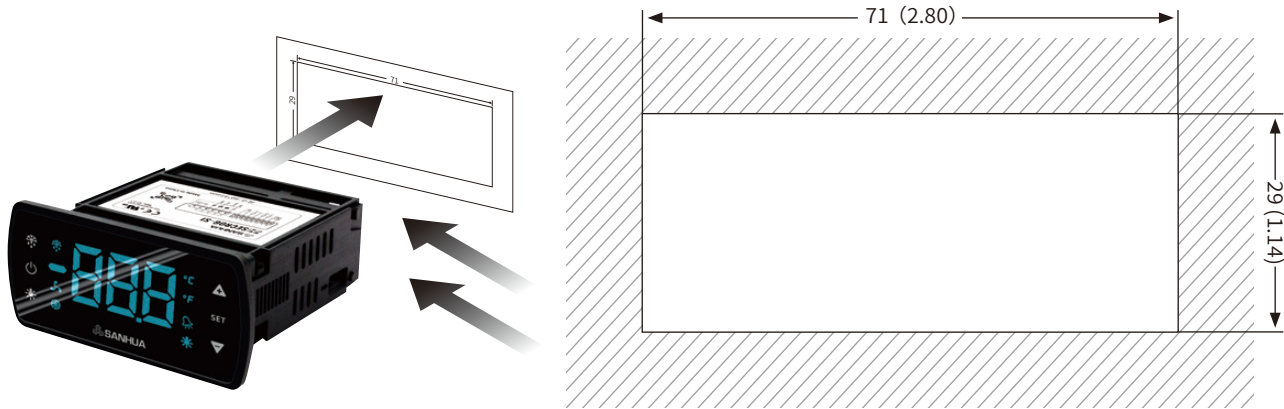
型号：SECR06-S3

丝印代码	端口名称	端口编号	功能描述	备注
L N	电源	L	100V~240Vac	D01-D04 总电流最大不能超过 10A
		N		
MODBUS	RS485 通讯	A	差分通讯信号， 连接上位机、主控等	MODBUS RTU
		B		
T1	温度传感器	T1	出风温度（可配置）	PT1000/NTC 5K B3970
T2	温度传感器	T2	化霜温度（可配置）	PT1000/NTC 5K B3970
T3	温度传感器	T3	预留（可配置）	PT1000/NTC 5K B3970
DI	数字信号输入	DI	门控功能（可配置）	无源信号接口
		GND		
	D01 继电器 1 输出	D01	控制照明（可配置）	常开触点 (阻性负载 8A 250Vac 感性负载 3A 250Vac)
	D02 继电器 2 输出	D02	控制液管路电磁阀 或压缩机	常开触点 (阻性负载 8A 250Vac 感性负载 3A 250Vac)
	D03 继电器 3 输出	D03	控制蒸发器风扇	常开触点 (阻性负载 5A 250Vac 感性负载 1A 250Vac)
	D04 继电器 2 输出	D04	控制化霜	常开触点 (阻性负载 5A 250Vac 感性负载 1A 250Vac)
	压缩机驱动信号输出	GND	控制器压缩机频率	可使用 TTL 通讯或者 PWM 控制
		TX (PWM)		
		RX		

差异对照表						
型号	温度传感器	多功能 DI	继电器	RS485	RTC 实时时钟	变频驱动
SECR06-S1	1	1	1	1	0	0
SECR06-S2	3	1	4	1	1	0
SECR06-S3	3	1	4	1	1	TTL/PWM

2.4 装配

在任何装配前，请先断开电源。



先把温控器放进孔洞，使用卡扣固定，推荐孔洞尺寸为 71mm*29mm。
注：用于制作面板的金属板（或材料）的厚度必须保证产品的安全稳定安装（0.8~2.5mm）

2.5 显示对应表

CHT	0	1	2	3	4	5	6	7	8	9	aA	bB	cC	dD	eE	fF	gG	hH
Display	0	1	2	3	4	5	6	7	8	9	AA	BB	CC	DD	EE	FF	GG	HH
CHT	il	jJ	kK	lL	mM	nN	oO	pP	qQ	rR	sS	tT	uU	vV	wW	xX	yY	zZ
Display	il	jJ	kK	lL	mM	nN	oO	pP	qQ	rR	sS	tT	uU	vV	wW	xX	yY	zZ

Page number	1. Pr	2. Pr	3. Pr	4. Pr	5. Pr	6. Pr	7. Pr	8. Pr	9. Pr
Display	A	b	c	d	F	G	H	,	J
Page number	10. Pr	11. Pr	12. Pr	13. Pr	14. Pr	15. Pr	16. Pr	17. Pr	
Display	e	L	n	o	P	q	S	t	

3 操作说明

3.1 显示面板

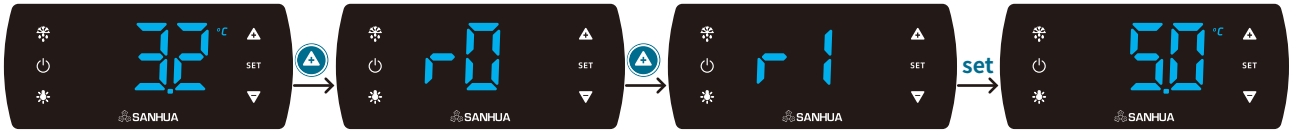


按钮及指示灯

定义		描述
按钮	set	长按进入参数设置模式或确认
	▲	增加或上翻
	▼	减少或下翻
	❄️	强制制冷，强制化霜轮询
	🔌	开关机按键
	💡	照明按键
LED 显示	💡	照明开启后常亮
	❄️	制冷开启时 LED 常亮
	🔥	加热器 / 热气电磁阀控制导通时 LED 常亮
	🔔	报警开启时 LED 常亮
	🌀	蒸发风扇导通时点亮

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40111	显示模式	b 10	0: 柜温; 2: T2 温度; 4: T4 温度	1: T1 温度; 3: T3 温度			0

默认显示柜温，在解锁模式下可以选择需要显示的界面，一分钟返回柜温显示。
在在解锁界面短按 ▲ 按键，进入显示编辑模式，通过 ▲ 与 ▼ 选择需要显示的内容，按 SET 键确认。
注：如果温度传感器未配置显示 ---。

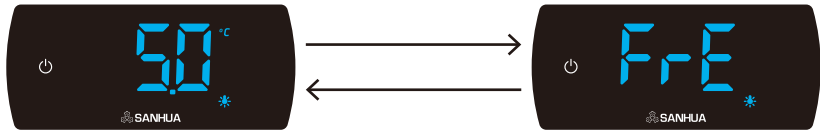


显示代码	内容
r0	柜温
r1	T1 温度
r2	T2 温度
r3	T3 温度
r4	T4 温度

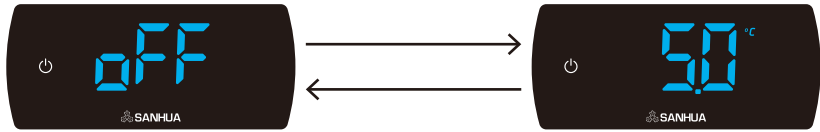
在制冷正常运行下，开关键呼吸显示，界面显示设定显示界面。



触发报警时，如果开启了报警代码显示，则会报警代码与设定显示界面交替显示，报警指示灯点亮。



在关机状态下 OFF 与当前柜温切换显示，此时开关按键呼吸闪烁，其余按键灯熄灭。



可以设置温控器的温度是公制还是英制，可以设置是否需要显示小数点，在触发报警时可以设置是否需要打开蜂鸣器报警。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40084	公英制单位	RD3	0: 公制; 1: 英制				0
40085	是否显示小数点	RD4	0: 不显示; 1: 显示				1
40086	蜂鸣器报警	RD5	0: 关闭; 1: 开启				1
40088	是否显示故障代码	RD7	0: 不显示; 1: 显示				1

【是否显示小数点】选择不显示时，显示和设置参数时的步进单位是 1，反之是 0.1，例如；当前目标温度为 5℃，当增加目标温度时，下一个目标温度就是 6℃，选择显示小数点，则下一个目标温度就是 5.1℃，可以根据实际精度要求选择是否需要显示小数点。

【蜂鸣器报警】选择开启时，当触发报警时，蜂鸣器会发出滴滴声，直至报警取消或者进入解锁界面操作温控器，解锁详见 3.2 参数设置步骤，短按开关键之后，显示 Loc，SET 灯点亮，长按 SET 按键，3 秒，完成解锁，关闭当次报警蜂鸣，但不关闭报警提示。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40089	关机不显示 OFF	RD8	0: 显示; 1: 不显示				0
40090	关机照明启用	RD9	0: 不启用; 1: 启用				1

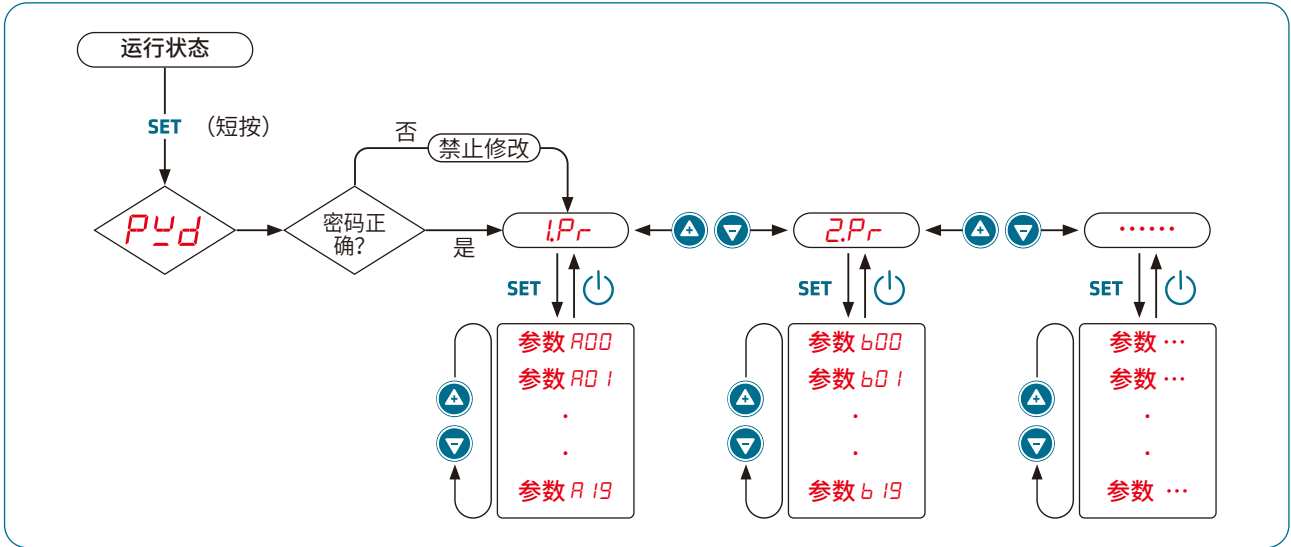
在正常状态关机时，温控器 OFF 与柜温交替显示，当不想要显示 OFF 时可以把【关机不显示 OFF】置 1，此时，关机只显示柜温。

当需要在关机状态单独控制照明时，可以设置【关机照明启用】，启用时，长按照明按键可以开启或者关闭照明。

3.2 参数设置步骤



温控器默认处于锁定状态，此时显示柜温，开关按键呼吸显示，短按开关按键，界面显示 Loc，此时按 SET 键点亮，长按 SET 按键 3 秒，完成解锁，所有按键点亮。



- ① 界面解锁后在显示界面短按 SET 按钮激活编辑界面，此时数码管显示 Pyd，通过 ▲ ▼ 输入密码后按 SET 按钮确认，此时可以编辑界面默认显示 1.Pr，可以通过上下按钮选择需要编辑的参数，按 SET 按钮确认，按 ⏻ 返回；
- ② 输入密码后进入页码菜单（1.Pr~17.Pr），通过 ▲ ▼ 键选择需进入的页码菜单，按 SET 键确认；
- ③ 通过 SET 键选择需要修改的参数，并使用 ▲ ▼ 按钮修改该参数的值，完成修改后按键保存设定返回上一界面；
- ④ 在解锁界面短按 ❄️ 按键进行化霜或制冷的切换；
- ⑤ 在解锁界面短按 ☀️ 按键可以关闭或者开启照明；
- ⑥ 在解锁界面短按 ▲ 进入柜温设置界面，此时可以操作 ▲ ▼ 调整目标柜温；
- ⑦ 在解锁界面短按 ▼ 进入显示设置模式，界面显示 rD~r4，可以通过 ▲ ▼ 选择需要显示的内容；
- ⑧ 无按键操作时，1 分钟后自动退出参数设置模式。

温控器支持拷贝模式，当一台温控器参数设置完成后可以把参数拷贝给其他温控器。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40093	拷贝模式	R12	0: 正常模式; 1: 拷贝模式				0

当选择拷贝模式时遵循以下方式操作。

- 1、把两个温控器端口的 485 线相连，A 对 A，B 对 B，之后两个控制器都接通电源；
- 2、把设置参数的拷贝器（主机）【拷贝模式】设置为 1 拷贝模式，按 SET 确认；
- 3、此时主机显示 cPy，长按 ▼，主机显示 PSt 开始拷贝，拷贝结束后重新显示 cPy；
- 4、更换从机控制器，从机 485 线与主机相互连接，按照第 3 步执行。



地址	描述	代码	单位	间隔	Min.	Max.	默认值
40081	密码	/	/	1	1	999	5

3.3 温度传感器设定

系统温度传感器的功能可配置，系统可以自由配置每个温度传感器的功能。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40177	T-1 功能选择	<i>F 16</i>	0: 不启用 1: 进风温度 2: 出风温度 3: 化霜温度 4: 冷凝温度				2
40178	★ T-2 功能选择	<i>F 17</i>					3
40179	T-3 功能选择	<i>F 18</i>					0
40180	T-4 功能选择	<i>F 19</i>					0

★ T-2 功能选择 S1 温控器默认为 0 不启用。

由于温度传感器与实际温度偏移一个固定值可以通过参数补偿传感器的温度。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40166	T-1 传感器偏移校正	<i>F05</i>	℃	0.1	-9.9	9.9	0
40167	T-2 传感器偏移校正	<i>F06</i>	℃	0.1	-9.9	9.9	0
40168	T-3 传感器偏移校正	<i>F07</i>	℃	0.1	-9.9	9.9	0
40169	T-4 传感器偏移校正	<i>F08</i>	℃	0.1	-9.9	9.9	0

控制器兼容 NTC 传感器或者 PT1000 传感器，可以选择使用的传感器类型。

注：所有温度传感器只能选择一种模式，例如都适配 NTC 或者都适配 PT1000。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40172	DI 功能选择	<i>F 11</i>	0: 数字输入； 1: 温度传感器 T4				0
40176	传感器类型选择	<i>F 15</i>	0: NTC β 值 3970 (5K) 1: PT1000 2: NTC β 值 3435 (10K) 3: NTC β 值 3977 (10K)				0

在需要使用多个温度传感器场合，可以把 DI 配置成温度触感器 T4 接口。

注：T4 温度探头只支持 NTC。

当系统波动比较大时，比如频繁开启柜门、放入新物品等，会导致温度显示波动加大，但实际上，旧的放置在里面的物品的温度并没有发生变化，因此可以采用【温度显示稳定系数】这一参数来对温度变化进行平滑波动，数值越大，温度显示越稳定，可以选择化霜时是否显示实时温度，或者显示 dEF 表明处于化霜状态，可以设置显示温度的最大值与最小值。

化霜结束时，防止柜温太高，可以设置一定时间后再显示实时温度。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40112	化霜时是否显示柜温变化	<i>b 11</i>	0: 不显示柜温变化 1: 显示柜温变化 2: 显示 <i>dEF</i>				2
40113	化霜结束柜温显示延时	<i>b 12</i>	Min	1	0	250	3
40114	温度显示稳定系数	<i>b 13</i>	/	1	1	10	1
40115	柜温显示上限	<i>b 14</i>	℃	0.1	-50	50	50.0
40116	柜温显示下限	<i>b 15</i>	℃	0.1	-50	50	-50.0
40117	柜温加权系数	<i>b 16</i>	/	1	0	100	100

T(柜温)=【出风温度】×(【柜温加权系数】/100)+【进风温度】×(1-【柜温加权系数】/100)

【温度显示稳定系数】如果为 1 的时候，显示实时值

如果在 2~10 之间的时候，【温度显示稳定系数】2 为 1 秒，10 为 5 秒，以此类推。如果温度变化在 1℃以下，按照时间常数间隔显示温度，温度变化在 1℃以上，按照时间常数每次变化不超过 0.2℃显示温度。

如果只使用出风温度，则把【柜温加权系数】设置为 100，如果值使用进风温度，则把【柜温加权系数】设置为 0。

3.4 继电器配置

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40181	★ DO1 功能定义	<i>G00</i>	0: 未使用， 2: 辅助继电器， 4: 电化霜， 6: 照明 2， 8: 压缩机，		1: 照明 3: 蒸发风扇 5: 报警 7: 防露加热 9: 供液阀		1
40182	★ DO2 功能定义	<i>G01</i>					8
40183	★ DO3 功能定义	<i>G02</i>					3
40184	★ DO4 功能定义	<i>G03</i>					4

★ S1 温控器 DO1 功能定义默认为压缩机，其余继电器不启用。

每个继电器的功能可配置。如果不需要使用可以配置成 0，继电器配置成相应的功能后，相应功能触发后才会吸合。

3.5 照明、辅助继电器输出设定

照明继电器输出功能：当寄存器被写入 1 的时候，继电器信号输出，当被写入 0 的时候，继电器信号关闭；根据【日夜模式继电器选择】的设定，进入夜间时间后，关闭相应的继电器，结束夜间时间后，打开继电器，单独使用夜帘功能时建议选择辅助继电器，如果需要控制照明，选择照明继电器。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40146	照明输出	<i>d05</i>	0: 继电器关闭 1: 继电器输出				0
40147	辅助继电器	<i>d06</i>	0: 继电器关闭 1: 继电器输出				0
40218	日夜模式继电器选择	<i>H 15</i>	0: 不启用；1: 照明；2: 辅助继电器				
40090	关机照明启用	<i>R09</i>	0: 关机不照明；1: 关机启用照明				1

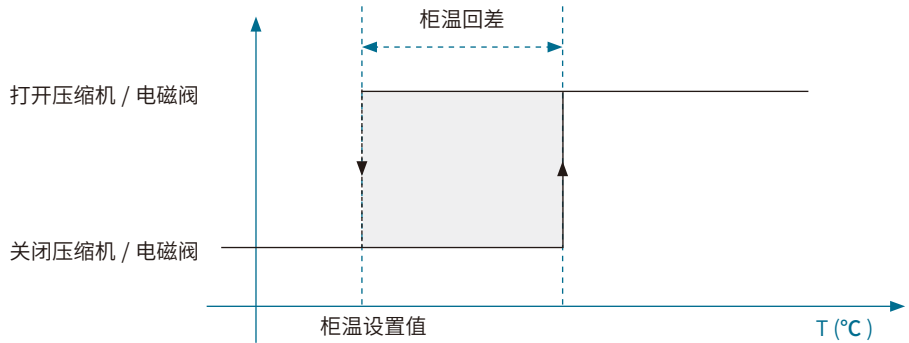
地址	描述	代码	单位	间隔	Min.	Max.	默认值
40212	照明 2 开始小时	<i>H 11</i>	Hour	1	0	23	5
40213	照明 2 开始分钟	<i>H 12</i>	Min	1	0	59	0
40214	照明 2 关闭小时	<i>H 13</i>	Hour	1	0	23	10
40215	照明 2 关闭分钟	<i>H 14</i>	Min	1	0	59	0

照明 2 继电器在时间运行到【照明 2 开始小时】与【照明 2 开始分钟】时吸合，在时间运行到【照明 2 关闭小时】与【照明 2 关闭分钟时】断开继电器。

4 功能说明

4.1 柜温控制

在制冷控制状态下，在日间时：当柜温 $\geq$ （柜温设置值 + 日间柜温设置回差）；夜间时：当柜温 $\geq$ （柜温设置值 + 夜间柜温增量 + 夜间柜温设置回差），且不在保护时间内时，压缩机 / 液管路电磁阀控制继电器打开，日间时：当柜温 $\leq$ 柜温设置值时，夜间时：当柜温 $\leq$ 柜温设置值 + 夜间柜温增量，压缩机 / 液管路电磁阀控制继电器关闭。



当柜温传感器发生故障（短路或者断路）时，为避免柜温升高损坏存放的物品，可以设置启动信号定时启动。
如果柜温是通过出风温度与进风温度加权计算的，这时其中一路温度传感器出现异常时，可以通过【探头故障柜温偏移量】来计算新的柜温值。
一般通过以下公式计算得出：

【探头故障柜温偏移量】= 【回风温度】 - 【出风温度】

当出风温度探头损坏时，此时以回风温度探头作为新的柜温传感器

【当前柜温】= 【进风温度】 - 【探头故障柜温偏移量】 * (100- 【柜温加权系数】) / 100;

当回风温度探头损坏时，此时以出风温度探头作为新的柜温传感器

【当前柜温】= 【出风温度】 + 【探头故障柜温偏移量】 * (【柜温加权系数】) / 100;

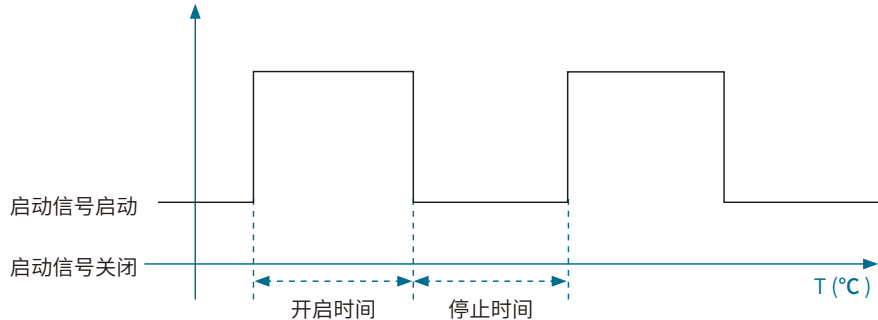
为避免因电网波动等影响导致的压缩机 / 液管路电磁阀等频繁启动，可设置【开启保护时间】，设置为 0 则关闭该功能。
为避免因诸如化霜时间、滴水时间设置时间较短时引起压缩机频繁启动，可设置【相邻两次启动保护时间】、【压缩机最小开机时间】、【压缩机最小关机时间】，设置为 0 则关闭该功能。

为避免压缩机长时间运行损坏压缩机可以设置【压缩机单次运行最大时间】，设置为 0 则关闭该功能，化霜时可以选择化霜优先于压缩机保护时间，则可以直接进入化霜状态。

本系统支持定频压缩机与变频压缩机，可以通过参数更改设置，在配置了供液阀与压缩机继电器或者配置了供液阀继电器与变频压缩机，压缩机停止时可以执行抽空用来抽空蒸发器。

当通过压力抽空时，需要把门控配置为低压开关，当开关闭合时，停止抽空。
压缩机启动时，可以配置【打开阀后压缩机启动延时】，以便先平衡压力，再启动压缩机。

注：需配置供液阀与压缩机继电器或者供液阀继电器压缩机型号为变频压缩机。



地址	描述	代码	单位	间隔	Min.	Max.	默认值
40101	柜温故障强制制冷间隔	b00	Min	1	1	20	10
40102	柜温故障停止制冷间隔	b01	Min	1	1	20	5
40103	柜温目标值	b02	°C	0.1	b19	b18	4.0
40104	日间柜温回差	b03	°C	0.1	1	10.0	3.0
40105	夜间柜温增量	b04	°C	0.1	-3.0	10.0	1.0
40106	夜间柜温回差	b05	°C	0.1	1	10.0	3.0
40109	探头故障偏移	b08	°C	0.1	0	20.0	0
40119	柜温目标最大值	b18	°C	0.1	-50	50	50
40120	柜温目标最小值	b19	°C	0.1	-50	50	-50

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40121	开机延时时间	c00	Min	1	0	600	1
40122	压缩机两次开启间隔时间	c01	Min	1	1	600	7
40123	压缩机最小关闭时间	c02	Min	1	0	15	2
40124	压缩机最小开启时间	c03	Min	1	0	15	2
40125	压缩机单次运行最大时间	c04	Min	1	0	199	0
40126	化霜优先于压缩机保护时间	c05	0：压缩机保护优先； 1: 化霜优先				0
40127	★压缩机类型	c06	0: 定频； 1: 变频				0
40128	最大抽空时间	c07	Sec	1	0	900	0
40129	打开阀后压缩机启动延时	c08	Sec	1	0	60	5
40130	结束抽空模式	c09	0: 压力； 1: 时间				1

★ 压缩机类型 S3 温控器默认为变频压缩机。
当检测到所有柜温传感器断路或短路时，控制器会按照【柜温故障强制制冷间隔】【柜温故障停止制冷间隔】强制性间隔制冷，直到传感器恢复正常。
【柜温目标最大设定点】【柜温目标最小设定点】限制设置的【日间柜温目标值】不超过此最大设定点和最小设定点范围。如果超过设定范围则设置无效。
【相邻两次启动间隔】定义为上一下启动到下一次启动的间隔时间，用以限制压缩机在 1 小时内的启动次数，受【压缩机最小关闭时间】影响。
【压缩机最小关闭时间】设置压缩机保持关闭状态的最小时间（分钟）。自上次关机起，压缩机不得在所选的最小时间过去之前再次启动。（手动强制制冷时除外）
【压缩机最小开机时间】设置压缩机的最小运行时间。压缩机必须在打开后持续所选的最小时间后才能关闭。（手动强制化霜时、化霜到滴水时除外）
结束抽空模式可以选择时间或压力，当选择压力时，需要把门控配置为低压开关，当门控闭合时停止抽空，当门控长时间不闭合时，经过最大抽空时间也会停止抽空。

4.2 化霜控制

化霜自动启动方式有四种，一种是时间表，一种是制冷时间，一种是化霜间隔，一种是自适应除霜。通过【化霜启动方式】选择。0（时间表），1（制冷时间），2（化霜间隔），3（自适应除霜）默认为 0。
时间表方式：化霜启动按照时间触发，通过此种设定方式，客户可以自由设定化霜时间以避免化霜高峰时间，以及根据各化霜时间的不同，自由设定相邻两次化霜间隔。化霜 24 小时内最多可设定 8 个启动化霜时间，即最多可设 8 次化霜。用户可以根据需求，通过选择化霜时刻开闭和设定对应化霜时间分钟，来设定 24 小时内的化霜需求。化霜小时若设为 -1，则该组化霜时刻无效，可以设置每天是否需要开启化霜时间，在相应的时间表置一就会开启化霜时间计数。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40241	周一时间表	J00	Day	0: 关闭 1: 开启			1
40242	周二时间表	J01	Day				1
40243	周三时间表	J02	Day				1
40244	周四时间表	J03	Day				1
40245	周五时间表	J04	Day				1
40246	周六时间表	J05	Day				1
40247	周日时间表	J06	Day				1

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40221	1# 化霜小时	100	Hour	1	-1	23	8
40222	1# 化霜分钟	101	Min	1	0	59	0
40223	2# 化霜小时	102	Hour	1	-1	23	14
40224	2# 化霜分钟	103	Min	1	0	59	0
40225	3# 化霜小时	104	Hour	1	-1	23	20
40226	3# 化霜分钟	105	Min	1	0	59	0
40227	4# 化霜小时	106	Hour	1	-1	23	2
40228	4# 化霜分钟	107	Min	1	0	59	0
40229	5# 化霜小时	108	Hour	1	-1	23	-1
40230	5# 化霜分钟	109	Min	1	0	59	0
40231	6# 化霜小时	110	Hour	1	-1	23	-1
40232	6# 化霜分钟	111	Min	1	0	59	0
40233	7# 化霜小时	112	Hour	1	-1	24	-1
40234	7# 化霜分钟	113	Min	1	0	59	0
40235	8# 化霜小时	114	Hour	1	-1	24	-1
40236	8# 化霜分钟	115	Min	1	0	59	0
40237	★化霜启动方式	116	0: 时间表; 1: 制冷时间方式; 2: 化霜间隔; 3: 自适应除霜				0
40238	上电融霜	117	0: 不启动; 1: 启动				0
40240	压缩机反向切换延时	119	Sec	1	0	300	0
400259	自适应化霜触发阈值	118	°C	0.1	0	30	5

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40261	化霜间隔	100	Hour	0.1	0	99.9	3
40262	化霜终止温度	101	°C	0.1	-50	50	8
40263	化霜持续时间	102	Min	1	0	100	30
40264	滴水时间	103	Min	1	0	100	0
40265	预制冷时间	104	Min	1	0	100	0
40268	化霜状态风扇模式	107	0: 一直关; 1: 同【蒸发风扇模式】				1
40269	滴水状态风扇模式	108	0: 一直关闭 1: 同【蒸发风扇模式】 2: 打开				1
40272	自然融霜输出时间	111	Min	1	0	100	10
40273	连续除霜最大时间间隔	112	Hour	1	0	240	24
40274	自动除霜低温阈值	113	°C	0.1	-50	50	-50
40275	自动除霜低温持续时间	114	Min	1	0	240	0
40278	退出化霜模式	117	0: 时间; 1: 温度; 2: 时间 + 温度控制				1
40279	除霜停用	118	0: 启用; 1: 停用				0
40280	除霜类型	119	0: 热融霜; 1: 自然融霜; 2: 热气旁通				0

- ★ 化霜启动方式 S1 默认为化霜间隔且无法选择按照时间表化霜。
- 制冷时间方式：当连续制冷时间达到设定值，进入一次化霜。
- 化霜间隔：化霜间隔时间为上一次化霜启动到下一次化霜启动的时间。
- 注：化霜间隔选择 0 时不启动化霜，此时只能通过按键或者门控或者达到【最大除霜间隔时间】才会触发化霜。
- 自适应化霜：温控器会持续监控蒸发器温度，当蒸发器温度与未结霜蒸发器温度相关【自适应化霜触发阈值】时，且间隔时间 > 【化霜间隔】，则会触发一次除霜。
- 上电化霜：如果上电化霜启用，当退出化霜模式与温度相关时，如果蒸发温度 ≥ 化霜退出温度时，直接进入制冷模式，否则进入化霜模式。

化霜一般有自然化霜、电加热化霜或者热气化霜三种方式进行用户可以设定自定义化霜方式，可以通过不同的参数配合来适应不同的化霜方式。为确保冷柜稳定运行，合理配置化霜参数是必要的。

选择除霜类型为自然融霜时，可以配置【自然融霜输出时间】，此时会先打开融霜继电器，到达设定时间后，融霜继电器关闭。

化霜通常分为几个阶段：

1. 化霜阶段，进入化霜阶段需要先配置化霜类型，控制器支持电融霜、自然融霜、热气融霜、自定义融霜。其中选择自然融霜，可以设置融霜输出时间，进入化霜（状态 3）后，化霜用继电器打开持续【融霜输出时间】后关闭。只要退出化霜（状态 3）即使未达到【融霜输出时间】，化霜用继电器也关闭。
- 【化霜退出模式】可以配置为以下三种，其中只有电融霜可以选择时间 + 温度控制，自然融霜与热气融霜只能选择时间模式或者温度模式：
- a. 时间模式：【化霜持续时间】到达设定值时关闭加热器 / 化霜用电磁阀继电器。
- b. 温度模式：化霜温度传感器检测温度大于【化霜终止温度】时，关闭加热器 / 化霜用电磁阀继电器，结束化霜，或当化霜温度传感器检测温度小于【化霜终止温度】，但是化霜时间到达【化霜持续时间】设定值时，关闭化霜。
- c. 时间 + 温度模式：化霜温度传感器检测温度大于【化霜终止温度】时，关闭加热器 / 化霜用电磁阀继电器，当化霜温度传感器检测温度小于【化霜终止温度】，开启加热器 / 热气电磁阀继电器，当化霜时间到达【化霜持续时间】设定值时，关闭化霜。

热气化霜前：

- ① 停止压缩机；
- ② 经过【压缩机反向切换延时】/2 的时间；
- ③ 继电器闭合，开启热气阀门；
- ④ 经过【压缩机反向切换延时】/2 的时间；
- ⑤ 开启压缩机；

注：如果【压缩机反向切换延时】不为 0，则压缩机停机时不执行抽空。

热气化霜结束：

- ① 压缩机停机；
- ② 经过【压缩机反向切换延时】/2 的时间；
- ③ 关闭继电器，关闭热气阀；
- ④ 经过【压缩机反向切换延时】/2 的时间；
- ⑤ 进入滴水状态；

2. 滴水阶段：如果【滴水时间】不为 0 时，进入滴水阶段，加热器 / 化霜用电磁阀继电器关闭；此时如果【滴水阶段】为 0 时，跳过滴水阶段进入下一阶段。

3. 预制冷阶段：为避免化霜刚结束之后，蒸发器风扇将热风吹入冷柜柜体内，此时可以让系统先运行一段时间，将蒸发器冷却下来。此时，压缩机 / 液管路电磁阀打开，蒸发器风扇暂未运行。预制冷时间如果设置为 0，则不进入此阶段。

4. 制冷阶段：此时，根据柜温控制压缩机 / 液管路电磁阀开闭，压缩机 / 液管路电磁阀打开，蒸发器风扇开闭可选。

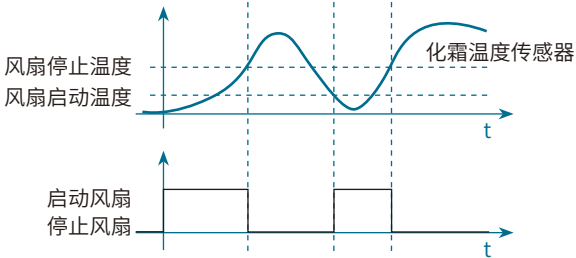
在化霜阶段和滴水阶段，可以分别设置【化霜阶段蒸发风扇模式】和【滴水阶段蒸发风扇模式】参数来选择是否开启蒸发风扇。

由于 RTC 电路损坏，长时间未进入化霜时可以通过【连续除霜最大时间间隔】进入化霜，当大于该时间未除霜时，会额外进行一次除霜，防止丢失化霜功能设为 0 为不启用该功能。

当由于结霜严重导致换热效率差时，会导致蒸发器温度持续下降，可以配置【自动除霜低温阈值】与【自动除霜低温持续时间】自动进入化霜，当化霜温度 < 【自动除霜低温阈值】且持续时间 > 【自动除霜低温持续时间】，则会额外触发一次除霜。

4.3 蒸发风扇控制

- 在温度控制运行时，可设置【蒸发风扇模式】为以下三种：
- a. 蒸发风扇一直开启
 - b. 当压缩机 / 液管路电磁阀关闭时，蒸发风扇关闭
 - c. 根据化霜温度探头温度判断：
如果化霜温度探头温度 < 风扇启动温度，蒸发风扇开启
如果化霜温度探头温度 > 风扇停止温度，蒸发风扇停止



- 当进入化霜时，可配置【化霜风扇模式】参数为以下两种：
- a. 同【蒸发风扇模式】参数的配置
 - b. 一直关闭

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40141	蒸发风扇模式	d00	0: 一直开启 1: 压缩机 / 液管路电磁阀关闭时，蒸发风扇关闭 2: 根据化霜温度控制				0
40142	风扇启动温度	d01	℃	0.1	-50.0	50.0	4.0
40143	风扇停止温度	d02	℃	0.1	-50.0	50.0	7.0

【预制冷时间】不为 0，进入预制冷阶段时蒸发风扇会强制关闭。

4.4 防露加热控制

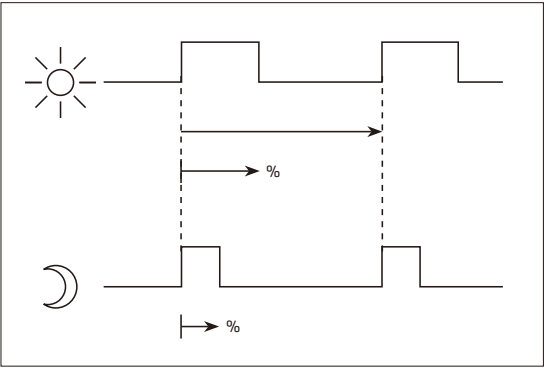
可以对滑轨加热的电源进行脉冲控制，以实现节能。脉冲控制可以根据日间 / 夜间负载或湿度进行控制。

继电器或模拟输出允许长循环时间时可以使用继电器输出。如。根据日间和夜间的脉冲控制可以为日间和夜间运行设定不同的打开时段。设定循环时间，以及滑轨加热打开时段的百分比。

如果使用继电器实现防露加热功能，其中一个继电器功能需要配置成 7：防露加热功能，除霜期间，可以选择关闭或打开防露加热。

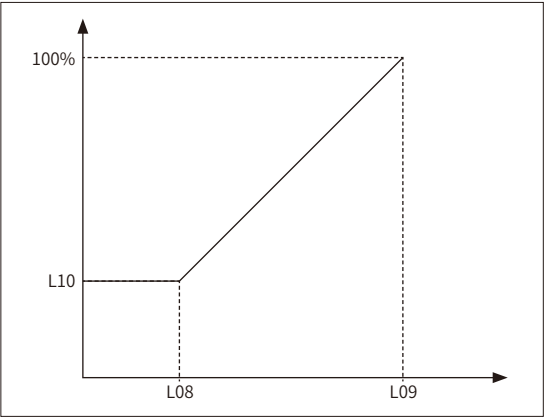
地址	描述	代码	单位	间隔	Min.	Max.	默认值
40281	防露控制模式	L00	0: 关闭 1: 根据时间控制 2: 根据输入参数计算露点控制 3: 长通				0
40282	日间开启时间	L02	%	1	0	100	100
40283	夜间开启时间	L03	%	1	0	100	100
40284	除霜防露控制	L04	0: 关闭防露；1: 开启防露				0
40285	柜门湿度	L05	RH%	0.1	0	100	0
40286	柜门温度	L06	℃	0.1	-50	50	0
40287	防露加热周期	L07	Min	1	1	60	5
40288	防露加热最小时露点值	L08	℃	0.1	-10	50	8
40289	防露加热 100% 时露点值	L09	℃	0.1	-10	50	17
40290	防露加热最小输出	L10	%	1	0	100	30

当【防露控制模式】为 1 时：
根据日间开启时间和夜间开始时间进行开启和关闭控制。



运行的时间由【日间开启时间】、【夜间开启时间】与【防露加热周期】控制。

当【防露控制模式】为 2 时：
根据输入的湿度与温度，计算露点控制。



根据计算的露点温度控制 PWM 输出。
注：如果需要露点控制，则需要搭配中央监控系统使用。

4.5 报警设定

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40318	化霜温度异常退出时间	n17	Min	1	0	180	10
40319	冷凝温度异常模式	n18	0: 不停机；1: 停机				0
40321	冷凝温度控制模式	a00	0: 关闭； 1: 激活 + 自动复位； 2: 激活 + 手动复位				0
40322	冷凝温度报警值	a01	℃	0.1	-40	70	45
40323	冷凝温度报警延时	a02	Min	1	1	600	0
40324	取消冷凝报警值	a03	℃	0.1	-40	70	40
40325	冷凝温度保护值	a04	℃	0.1	-40	70	55
40326	冷凝温度保护延时	a05	Min	1	0	600	3
40327	取消冷凝保护值	a06	℃	0.1	-40	70	50
40328	柜温高报警模式	a07	0= 关闭；1= 打开				1
40329	柜温高报警值	a08	℃	0.1	-40.0	40.0	10.0
40330	柜温高报警延迟时间	a09	Min	1	1	600	60
40331	取消柜温高报警	a10	℃	0.1	-40.0	40.0	9.0
40332	柜温低报警模式	a11	0= 关闭；1= 打开				1
40333	柜温低报警值	a12	℃	0.1	-40.0	40.0	-40
40334	柜温低报警延迟时间	a13	Min	1	1	600	10
40335	取消柜温低报警	a14	℃	0.1	-40.0	40.0	0
40336	制冷超时报警模式	a15	0= 关闭；1= 打开				0

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40337	制冷超时报警时间	<i>o l6</i>	Min	1	1	999	60
40341	防冻报警保护模式	<i>P00</i>	0: 关闭; 1: 激活 + 自动复位; 2: 激活 + 手动复位				1
40342	防冻保护阈值	<i>P01</i>	℃	0.1	-50	20	-40
40343	防冻保护延时	<i>P02</i>	Min	1	0	15	3
40344	防冻保护复位值	<i>P03</i>	℃	0.1	-50	20	-10

化霜温度探头故障时，处于化霜状态且退出化霜的方式为温度相关时，按【化霜温度异常退出时间】退出化霜。

当冷凝温度控制模式被设置为 1 的时候，可以利用温度探头采集的冷凝温度信息做冷凝温度控制功能

若冷凝温度 > 【冷凝温度高报警】，且持续时间 > 【冷凝温度高报警延时】，冷凝温度高报警触发，报警输出且故障报警模式下会显示 *cht*；

若冷凝温度 > 【冷凝温度高保护值】，且持续时间 > 【冷温度高保护延时】，冷凝温度保护触发，停机保护，报警输出且故障报警模式下会显示 *CHt*；

柜温报警：【柜温低报警模式】开启时，当柜温低于【柜温低报警值】，保持【柜温低报警延迟时间】，进行报警；当柜温高于【取消柜温低报警】值时报警复位。

【柜温高报警模式】开启时，当柜温高于【柜温高报警值】，保持【柜温高报警延迟时间】，进行报警；当柜温低于【取消柜温高报警】值时报警复位。

制冷超时模式激活后，在设定时间内，系统未达到柜温设定目标值，控制器输出报警信息。

防冻保护模式：若防冻保护模式开启，（化霜温度）低于【防冻保护阈值】保持【防冻保护延时】时间以上，则触发防冻保护报警，报警信号输出且故障报警模式下会显示 *FrE*，且停机保护。

4.6 门控设定

通过 D1 与 GND 之间开关连接，可以实现两组设定参数间切换。

当 DI 功能选择一机双温功能时：

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40170	DI：功能选择	<i>F09</i>	0: 未使用 1: 一机双温功能 2: 制冷开关 3: 日夜切换 4: 强制制冷化霜循环 5: 照明控制 6: 低压开关 7: 延时外部报警 8: 有停止功能的门开关 9: 无停止功能的门开关 10: 化霜停用 11: 化霜信号 12: ECO 启动				0
40171	门控功能反向	<i>F10</i>	0: 不反向；1: 反向				0
40339	门控报警延时	<i>o l8</i>	Min	1	0	240	0

当 DI 开关由打开切换为关闭的瞬间，所有参数切换为参数组 2 的设定。

当 DI 开关由关闭切换为打开的瞬间，所有参数切换为参数组 1 的设定。

注：当该功能从一机双温切换到其他功能则返回复参数组 1。

当 DI 功能选择制冷运行开关时：

门控信号短路时，开始制冷，断开时停止制冷。

当 DI 选择照明控制时：

门控信号短路时打开照明，门控信号断开时关闭照明。

当 DI 选择制冷强制制冷化霜循环功能时：

门控信号切换会强制切换制冷状态。

当 DI 选择日夜切换时：

门控信号短路或者的断开都会进行日夜切换。

当 DI 选择延时报警时，但经过【门控报警延时】之后会产生报警，如外接传感器时，可以通过门控触发报警功能。

当 DI 选择化霜停用时，如果门控吸合，则会忽略化霜请求，该功能有助于在营业时停用除霜。

当 DI 选择【有停止功能的门开关】门控断开时压缩机会停机，蒸发风扇停止，照明开启。

当 DI 选择【无停止功能的门开关】门控断开时压缩机正常运行，蒸发发风扇停止。

当 DI 选择【低压开关】这是配合抽空使用，用来指示是否已经抽空。

当 DI 选择【化霜信号】，则当门控闭合时额外进入一次化霜，此时可以通过外部设备控制温控器的化霜。

当 DI 选择【ECO 启动】，开关闭合时自动进入夜间模式，断开进入日间模式，此时日夜切换以门控信号为主，忽略时间信号。

注意：

- 1、密码、通讯设定参数，时间设定参数这些为固定值，不存在两组参数，一机双温切换时不进行变更。
- 2、使用 DI 进行一机双温切换时，控制器会自动重启。

4.7 通讯设定

SECR06 控制器支持 RS485 通讯，MODBUS 通讯协议，上位机或者支持基于 RS485 通讯的 MODBUS 协议的主控制器都可以与控制器进行通讯。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40157	通讯 ID 设置	<i>d l6</i>	/	1	1	250	1
40158	通讯速度设置	<i>d l7</i>	0=4800, NONE, 1 2=19200, NONE, 1 4=4800, NONE, 2 6=19200, NONE, 2 8=4800, EVEN, 1 10=19200, EVEN, 1 12=4800, EVEN, 2 14=19200, EVEN, 2 16=4800, ODD, 1 18=19200, ODD, 1 20=4800, ODD, 2 22=19200, ODD, 2		1=9600, NONE, 1 3=38400, NONE, 1 5=9600, NONE, 2 7=38400, NONE, 2 9=9600, EVEN, 1 11=38400, EVEN, 1 13=9600, EVEN, 2 15=38400, EVEN, 2 17=9600, ODD, 1 19=38400, ODD, 1 21=9600, ODD, 2 23=38400, ODD, 2		1

4.8 时钟设定

★ 配置当前时钟和夜间时钟，可以设置当时钟运行到夜间时，进入不同的参数

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40201	★夜间时间段开始小时	H00	Hour	1	0	23	22
40202	★夜间时间段开始分钟	H01	Min	1	0	59	30
40203	★夜间时间段结束小时	H02	Hour	1	0	23	7
40204	★夜间时间段结束分钟	H03	Min	1	0	59	30
40205	★当前小时	H04	Hour	1	0	23	12
40206	★当前分钟	H05	Min	1	0	59	30
40207	★当前秒	H06	Sec	1	0	59	0
40208	★年	H07	Year	1	0	99	23
40209	★月	H08	Month	1	1	12	1
40210	★日	H09	Day	1	1	31	1
40211	★周	H10	Week	1	1	7	2
40218	日夜模式继电器选择	H17	0：不选择； 1：照明继电器； 2：辅助继电器				1
40219	日夜切换间隔	H18	min	1	0	60	0
40200	照明联动夜市	H19	0：不联动； 1：联动				0

★ S1 不存在时钟模块。

控制器内部具有带掉电记忆的实时时钟，可用于启动除霜。此时钟最少具有 7 天 (168 小时) 的电源存储量，控制精度常温下 (25℃) 为 20PPM，全温度范围为 100PPM，在低温情况下 (-25℃以下) 受到超级电容特性影响，掉电储存时间会相应缩短，可以根据对时间精度的要求，每过一段时间后重新校准一次时间，例如允许最大误差不超过 1 分钟，则建议 30 天校准一次时间。

当达到时间进行日夜模式切换时可以选择哪个继电器执行动作可以自动开关照明或夜帘。

如果【照明联动夜帘】置 1，当手动开启照明时，自动切换为日间模式，当关闭照明时，自动切换为夜间模式。且切换照明受到【日间切换间隔】时间保护。

5 变频压缩机

变频压缩机与主控发送的压缩机启停信号同步。变频压缩机在压缩机允许的转速范围内运行，其运行过程总共分为启动阶段、通常运行阶段、回油运行阶段，在运行过程中，压缩机限降频保护始终贯穿其中。

如果系统使用变频压缩机，需要先配置压缩机类型：

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40127	压缩机类型	c6	0：定频；1：变频				0

5.1 变频压缩机最高运行转速和最低运行转速

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40384	压缩机最高转速	S03	Rps	1	20	80	80
40385	压缩机最低转速	S04	Rps	1	20	40	30

设定压缩机允许的最高转速与最低转速。

5.2 变频压缩机启动阶段

变频压缩机开机后，会在某个低频下运行一段时间，这个阶段称为压缩机启动阶段。

启动参数如下：

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40382	压缩机启动命令	S01	Rps	1	20	60	40
40383	压缩机启动阶段保持时间	S02	Sec	1	0	180	60

5.3 变频压缩机通常运行阶段

在通常运行阶段，压缩机根据设定温度与柜温的差值进行升降频判断和执行。同时还受到限降频保护的控制。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40416	压缩机停机柜温回差	t15	℃	0.1	0	5	2
40413	压缩机柜温调节参数 1	t12	/	1	1	100	10
40414	压缩机柜温调节参数 2	t13	/	1	1	100	15

变频控制器到达目标柜温并不会马上停止压缩机，当温度低于【目标柜温】-【停机柜温回差】则压缩机停机。

5.4 变频压缩机回油阶段

当选择回油功能启用后，回油运行生效。

进入回油条件：压缩机在低频【压缩机进入回油低频频率】Rps 以下累计运行【压缩机低频累计时间】分钟，则压缩机进入回油运行；

清除回油累计时间条件：压缩机在高频【压缩机清除回油高频频率】Rps 以上持续运行【压缩机清除回油持续运行时间】分钟，则压缩机清除回油累计时间；

压缩机进入回油运行：压缩机频率升至（40262）Rps 持续运行（40264）后，清除压缩机低频累计时间，退出回油。在回油阶段如果遇到限降频，则限降频优先。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40399	回油功能是否启用	S18	0：不启用；1：启用				0
40386	压缩机回油频率	S05	Rps	1	30	80	60
40401	压缩机进入回油低频频率	t00	Rps	1	30	50	45
40402	压缩机清除回油高频频率	t01	Min	1	55	70	65
40403	压缩机低频累计时间	t02	Min	1	60	240	180
40404	压缩机清除回油持续运行时间	t03	Min	1	1	5	5

5.5 变频压缩机限降频及停机保护

当变频压缩机遇到冷凝温度过高或者驱动自身保护或故障时，则优先执行保护限降频动作。

冷凝温度限降频保护：

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40417	压缩机冷凝温度限频是否启用	416	0：不启用；1：启用				0
40405	压缩机冷凝温度限频目标	404	℃	1	-40	105	47
40406	压缩机冷凝温度保护目标	405	℃	1	-40	105	52
40407	压缩机冷凝温度调节参数 1	406	/	1	1	100	10
40408	压缩机冷凝温度调节参数 2	407	/	1	1	100	15

驱动故障保护：

当驱动故障保护时，主控不再发送压缩机运行指令。

5.6 驱动模式

控制器支持 TTL 与 PWM 模式驱动压缩机，其中 PWM 模式根据 PWM 频率控制压缩机频率，两者频率之间成倍数关系，倍数通过【PWM 模式频率倍数】设置，默认为 30，例如 PWM 频率为 150hz，则压缩机转速为 150*30=4500rpm，占空比为 50% 不可更改。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40400	压缩机驱动模式	519	0：TTL 模式；1：PWM 模式				0
40398	PWM 模式频率倍数	517	/	1	1	100	30

注：进行模式切换时控制器会重启。

热气化霜时压缩机以【化霜频率】运行，预制冷时以【预制冷频率运行】，抽空时以【最低运行频率运行】，当检测到柜温传感器异常时以【柜温异常频率】运行。

地址	描述	代码	单位	间隔	Min.	Max.	默认值
40395	热气化霜频率	514	Rps	1	1	100	70
40396	预制冷频率	515	Rps	1	1	100	70
40397	柜温异常频率	516	Rps	1	1	100	70

6 故障代码及故障判断

故障显示默认打开，显示故障代码时，故障代码与数值显示 1 秒交替变换一次。通过操作按键关闭故障显示。

报警代码	报警涵义	报警代码	报警涵义
410	T1 温度传感器断路	108	变频器故障
415	T1 温度传感器短路	10C	变频通讯丢失
420	T2 温度传感器断路	HC4	柜温过高报警
425	T2 温度传感器短路	LC4	柜温过低报警
430	T3 温度传感器断路	ch4	冷凝温度过高报警
435	T3 温度传感器短路	CH4	冷凝温度过高保护
440	T4 温度传感器断路	EL	制冷超时报警
445	T4 温度传感器短路	FrE	防冻保护报警
44E	T4 配置异常	doP	柜门开启报警
CTE	柜温获取异常	drP	DI 报警

7 通讯协议

SECR06 控制器支持 RS485 通讯，MODBUS 通讯协议，上位机或者支持基于 RS485 通讯的 MODBUS 协议的主控制器都可以与控制器进行通讯。

7.1 通讯协议说明

项目	描述
传输线连接	多线传输
通讯方式	RS485（2 线，半双工）
波特率	默认 9600，可配置
奇偶校验，data，停止位	无，8 data，1 停止位（可修改）
协议类型	Modbus RTU 模式
功能码	读保持寄存器（0x03）/ 预设单一寄存器（0x06）/ 预设多寄存器（0x10）
最大读取字数	32
电缆类型	Belden 9841/9842, LG LIREV-AMESB
轮询间隔	≥ 500ms
通讯地址	详见说明书



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