Revo series | SECR04-R0

SECR04-R0+MD01-04_V 1.0 - 2024.12

Refrigerated cabinet controller Instructions

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Revo Plus | SECR04-R0

SECR04-R0+MD01-04_V 1.0 - 2024.12

Refrigerated cabinet controller
Instructions

SAFETY ATTENTION

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. This product is installed in an electric box with DIN 35 rail.
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. The power input must be within the range specified in the manual
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. 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. To prevent induced noise, please keep power wires away from high-voltage wires.
8. Please avoid installing the product in a position with strong magnetic field, noise, violent vibration and impact.
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. Sensor wires and signal wires shall be away from power and load wires and installed separately
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.

EN

Contents

1 Product description

SECR04 is part of Revo+ family and designed for plug-in or semi plug-in(waterloop) refrigerated cabinets with variable speed compressor. It integrates functions like variable speed compressor control, electronic expansion valve (EEV) control, cabinet temperature control, synchronized defrosting control, evaporator fan control, as well as lighting control. Minimum and stable suction superheat is maintained by EEV as well as our world-class PID algorithm, the refrigeration system becomes more energy-efficient and intelligent.

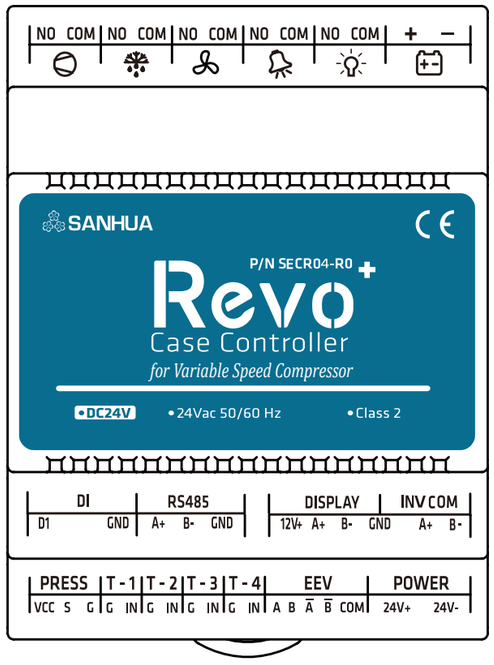
Storage Conditions: -30~55 ℃ Relative Humidity≤95%RH

Operating Conditions: -30~55℃, Relative Humidity ≤95%RH

Certification Requirements: EMC Certification: IEC61000-6-1, IEC61000-6-3;

Material Requirements: Compliant with RoHs requirements

1.1 SECR04-R0 Controller Basic Information



Item	Details
Dimension (WxHxD)	80(W)mm x 106(H)mm x 54(D)mm
Power supply	24Vac+10%/-15%, 50/60Hz; 24Vdc+10%/-15%, class 2
Power consumption	Maximum power 10W (24Vdc) or 25VA (24Vac)
Interfaces	1.Pluggable terminal (M3): Min/max wire diameter 0.34 to 2.5mm^2, Torque 0.5N.m, Current≤3A 2.XHP terminal: For pressure transmitters, temperature sensors and EEV.
Communication	RS485:Modbus;DISPLAY:Remote display INVCOM:RS485 for Variable speed driver

2 Product configuration

2.1 Ordering Code

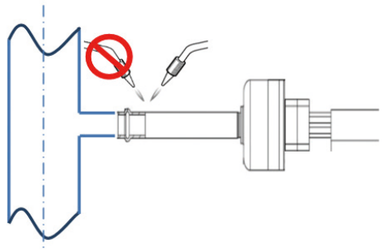
Item	Remarks	Part number	Description	Order code
1	Master controller	SECR04-R0	Main controller	
2	Voltage type pressure transmitter (Output signal: 0.5~3.5V)	YCQB02H01-1	1/4" soldering, 2m lead wire	
		YCQB02H18-1	1/4" soldering, 4.9m lead wire	
		YCQB02L12-1	Internal thread: SAE-1/4" 7/16-20UNF-2B, 2m lead wire	
		YCQB02L28-1	Internal thread: SAE-1/4" 7/16-20UNF-2B, 4.9m lead wire	
3	Temperature Sensor (NTC 5 K)	NTC2A1	2m lead wire	/
		NTC5A1	5m lead wire	/
4	Discharge temperature sensor (NTC 50K)	NTC2B1	2m lead wire	/
		NTC3B1	3m lead wire	/
5	Remote Display(Optional)	MD01-04	Display, set parameters	
6	Backup power (optional)	SP02		

2.2 Sensor Information

Items		Description
Temperature sensor	Sensor type	NTC 5KΩ@25 ℃ Beta value: 3970K
	Lead wire – Length x Diameter	2/5/9m x 0.5mm
	Enclosure	IP 67
	Accuracy	+/- 0.3 ℃ (25 ℃)
	Measuring range	-50℃~ 50℃
Temperature sensor *	Sensor type	NTC 50KΩ@25 ℃ Beta value: 3950K
	Lead wire – Length x Diameter	2/5 m x 0.5mm
	Enclosure	IP 67
	Accuracy	+/- 2 ℃ (25 ℃)
	Measuring range	0℃ ~ 135℃
Pressure transmitter	Power supply voltage	YCQB: (5±0.25) VDC
	Output signal	YCQB: (0.5 to 3.5) VDC
	Total accuracy	±2.0% F.S. (-30℃/+85℃), ±0.8% F.S. (-40℃/+40℃)
	Enclosure	IP 67

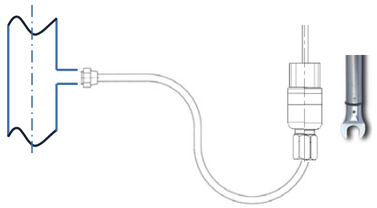
★ **Note:** Above table shows only the standard model of pressure transmitter recommended by Sanhua, if you choose other models, please make sure the output signal is always 0.5~3.5V.

2.3 Sensor installation instructions



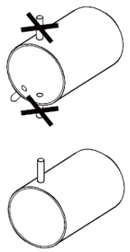
Weld the pressure transmitter

- Plug the copper welded joint of the pressure transmitter into the pressure access port of the system refrigerant copper pipe



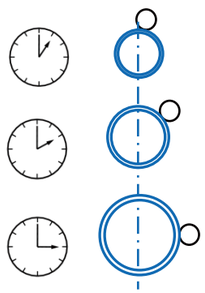
Screw the pressure transmitter

- Attach the pressure transmitter directly to the copper tube pressure tap through the thread
- Or use 7/16-20 UNF threaded flexible pipe connection (1/4 "SAE flare)



Pressure transmitter mounting position

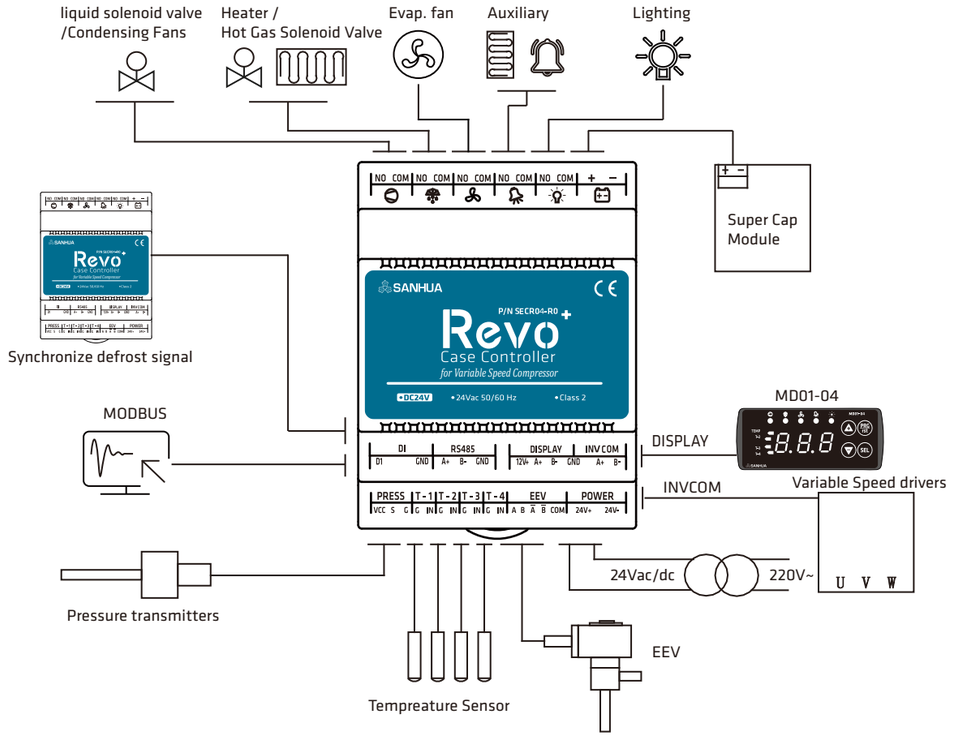
- Preferably installed at 2/3 height of the vertical pipe, and no more than 0.5m away from the evaporator
- If you need to install on the horizontal pipe, please install according to the position shown
- (Position A) : When the pipe contains part of the liquid, the installation point should be located at 45° below the side of the pipe. Do not measure pressure from the top of the pipe (which may be affected by air pressure) or the bottom of the pipe (which may be affected by dirt)
- (B position) : When the pipe is pure gas, the measuring point must be located at the top of the pipe to prevent the transmitter from contacting the condensate



Temperature sensor installation position

- Copper pipe diameter: 12-16 mm or 1/2-5/8 in. Temperature sensor installed at 1 o'clock position
- Copper pipe diameter: 18-22 mm or 3/4-7/8 in. Temperature sensor installed at 2 o'clock position
- Copper pipe diameter: 25-35 mm or 1-1 3/8 in. Temperature sensor installed at 3 o'clock position
- Preferably installed at 2/3 of the height of the vertical pipeline, and the distance from the evaporator is not more than 0.5m
- If it must be installed on the horizontal pipe, select the installation position of the sensor according to the diameter of the copper pipe according to the figure
- The temperature sensing bag of the sensor is pressed against the wall of the refrigerant copper pipe and secured by cable ties
- Use thermal insulation materials to wrap the temperature sensor to prevent external heat sources from affecting the measurement results

2.4 Controller function connection diagram



Printed	Port name	Pin	Function Description	Remarks
POWER	Power supply	24V+	24Vac or 24Vdc	See 2.5 Connecting a Power Supply for details
		24V-		
	Backup power	+	Backup power connection	
		-		
DISPLAY	Remote display	12V+	Differential communication signals, Connecting remote displays or a Manual operator	See 2.6 Connecting a Remote monitor or manual operator for details
		A+		
		B -		
		GND		
RS485	RS485 Communication	A+	Connect to upper level computer, main controller or monitoring system	MODBUS RTU
		B -		
		GND		
INVCOM	Inverter Communication	A+	RS485 for connecting the inverter	Sanhua standard inverters are available
		B -		
		GND		

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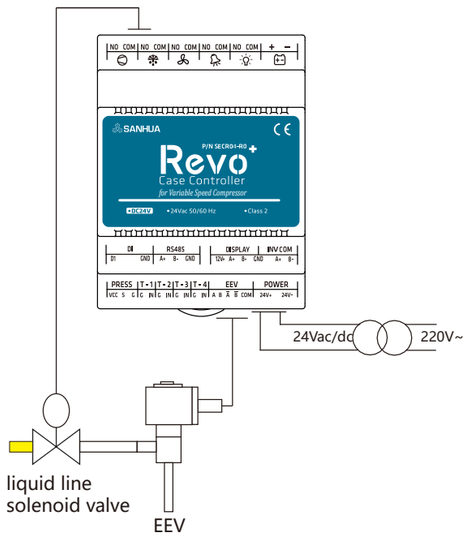
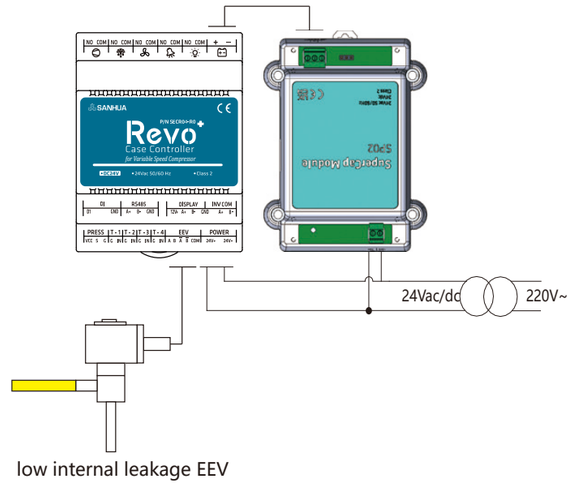
Printed	Port name	Pin	Function Description	Remarks
DI	Synchronized defrosting input signal for Slave controllers	D1	When multiple controllers need to be synchronized into defrosting, DI is used for slaver to get signal input from Master (lighting relay)	Slaver DI ==Master lighting relay(configured to sync defrosting)
		COM		
T-1	Temperature sensor	G	Suction temperature sensor (NTC 5KΩ@25℃ beta value: 3970K)	XHP plug-in type
		IN		
T-2	Temperature sensor	G	Discharge temperature sensor (NTC 50KΩ@25℃ β value: 3950K)	XHP plug-in type
		IN		
T-3	Temperature sensor	G	Cabinet outlet air temperature sensor (NTC 5KΩ@25℃ β value: 3970K)	XHP plug-in type
		IN		
T-4	Temperature sensor	G	Defrosting temperature sensor (NTC 5KΩ@25℃ beta value: 3970K)	XHP plug-in type
		IN		
PRESS	Pressure transmitter	G	Cable No. 3: Black	XHP plug-in type
		S	Cable No. 2: White	
		VCC	Cable No. 1: Red	
EEV	Electronic expansion valve	A	5 Pin unipolar electronic expansion valve	XHP plug-in type
		B		
		A		
		B		
		COM		
	Relay 1 Output	NO	Cooling Control [Compressor/Liquid line Solenoid valve/Condensing fan]	220V/3A
		COM		
	Relay 2 Output	NO	Control the electric heater or hot gas defrosting solenoid	220V/3A
		COM		
	Relay 3 Output	NO	Control the evaporator fan	220V/3A
		COM		
	Relay 4 Output	NO	Alarm (default)/ Non-condensing (configurable)	220V/3A
		COM		
	Relay 5 Output	NO	Control lighting(default) /synchronized defrosting(configurable)	220V/3A
		COM		

2.5 Connecting a Power Supply

When the liquid line solenoid valve is used, the solenoid valve will automatically close in case there is an unexpected power failure, and it is not necessary to be equipped with a backup power supply.

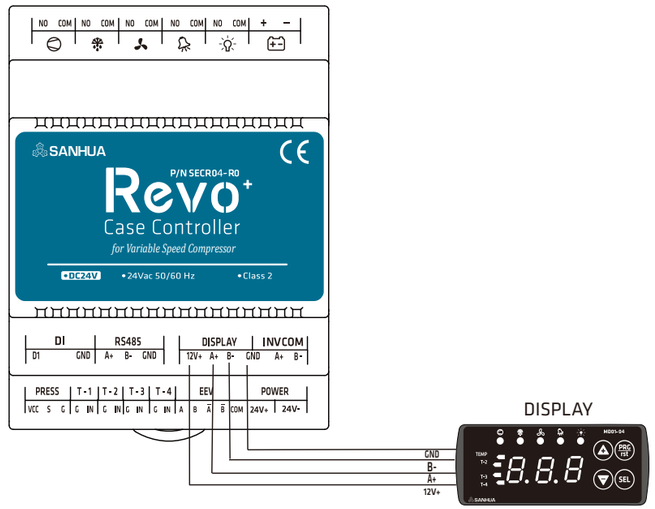
If a low internal leakage electronic expansion valve (such as LPF) is used, it is recommended to close the electronic expansion valve by the backup power supply in case of unexpected power off to the controller.





2.6 Connect a remote display or manual operator

All Settings on the controller can be performed on the remote display or manual operator.

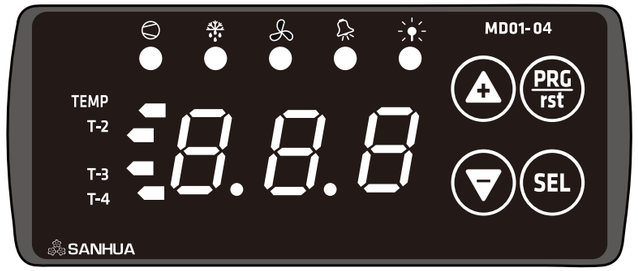


2.7 INVCOM Communication

The controller is connected to a variable speed driver.

3 Operation Instructions

3.1 Remote Display (or Manual operator) display panel

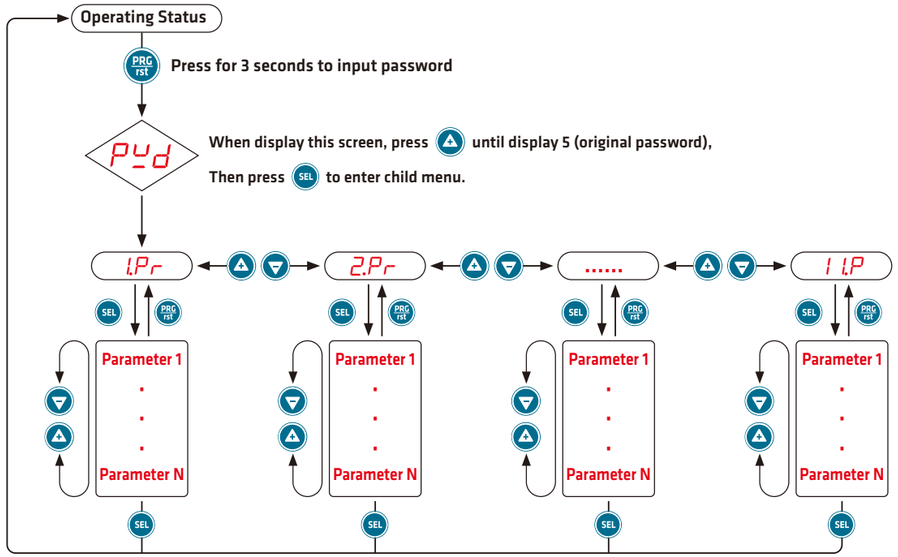


Buttons and indicators

Definition		Description
LED	PRG rst	Long press to enter parameter setting mode or short press to return to the previous level of the manual
	▲	Increase values or flip up
	▼	Decrease values or flip down
	SEL	Select & Save the settings
		Indicate light is on when the condensing fan control is on as the condensing fan control output will share the same output as cooling output.
		Indicate light is on when the heater or hot gas defrosting control is on
		Indicate light is on when the evaporation fan control is on
		Indicator light is on when alarm or non-condensing control is on
		Indicator light is on when the lighting control is on
	°C/bar	Unit of temperature/pressure
	★ TEMP	Displays the current cabinet temperature
	T-2	Display discharge temperature
	T-3	Display suction temperature
	T-4	Display defrosting temperature
	TEMP + T-2	Show suction pressure
	T-2 + T-3	Show superheat
	T-3 + T-4	Show EEV opening%

★ The current cabinet temperature is displayed by default; Press SEL key to switch the display content, view T-2 temperature, T-3 temperature and other parameters, No key operation after 1 minute the controller will automatic return to the current cabinet temperature display.

3.2 Parameter Setting Procedure



① Long press PRG rst key for 3 seconds, and enter the password through the ▲ ▼ key, press the SEL key to confirm, and enter the parameter setting mode (if the password is correct, the value can be modified by blinking, if the password is wrong, you can only review the parameters but cannot modify them; The default value of password is 5, which can only be modified through RS485 communication);

② Enter the password to enter the page number menu (1.Pr , 2.Pr , 3.Pr , 4.Pr , 5.Pr , 6.Pr , 7.Pr , 8.Pr , 10.P , 11.P), Press the ▲ ▼ key to select the page number menu to enter, and press SEL key to confirm.

③ Select the parameter to be modified by SEL key, and modify the value of the parameter by up or down button. After modification, press SEL key to save the parameter setting and enter the next parameter; Press PRG rst key to return to the page number menu.

④ Hold down the SEL key for 3 seconds to exit parameter setting mode. When there is no key operation, it will automatically exit the parameter setting mode after 1 minute.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40040	Password	/	/	1	1	999	5

3.3 Start control function vs. manual forced run function

① Long press the SEL button for 3 seconds, to start the control function, display "ON", again long press the SEL button for 3 seconds, to finish the control function, display "OFF", in the "OFF" state, the timing function is still running, refrigeration, defrosting, evaporation fan and other controls are not running.

② Long press the ▲ ▼ button for 3 seconds, to force the cooling to start in any other non-cooling mode, or to force the defrosting to start in cooling mode.

Note: This is an additional mandatory defrosting, and will not affect the original system defrosting Settings; the forced run function is invalid in the OFF control function (" OFF ") state.

③ Long press ▼ ▲ the button ▼ for 3 seconds to enter the cabinet temperature setting, flashing display the current target cabinet temperature setting value, at this time, short press ▼ ▲ or SEL key to adjust the target cabinet temperature setting value, press SEL key to complete the cabinet temperature modification, no key operation after 3 minutes to exit the cabinet temperature setting, return to real-time display.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40059	Manual forced run	/	0 to 2: polling bbetween Forced cooling and forced defrosting				0
40060	c19	/	0: OFF 1: ON				1

3.4 Parameter Setting

3.4.1 Refrigerant and electronic expansion valve parameters setting

Refrigerant and Electronic Expansion Valve Setting [1.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40042	Refrigerant	A01	0=R22; 1=R404A; 2=R410A; 3=R134a; 4=R407C; 5=R507; 6=R1234ze; 7=R1234yf; 8=R290; 9=R450A; 10=R513A; 11=R448A; 12=R449A; 13=R452A; 14=R744(CO_2); 15=R744(N_20); 16=R32; 17=R245fa; 18=R23; 19=R407A; 20=R407F; 21=R124; 22=R717; 23=R407H;				0	0
40043	Superheat setpoint	A02	K	0.1	0.5	30	4	
40045	Initial opening set value	A04	Sec	1	0	600	50	
40046	Initial opening duration	A05	%	0.1	0.1	99.9	1.0	
40047	P: Proportional gain	A06	Sec	1	0	999	50	
40048	I: Integral time	A07	Sec	1	0	999	30	
40049	D: Differential time	A08						
40050	★ Forced open valve ratio	A09	%	0.1	0	100	OFF(-1)	X 10
40054	Maximum opening of expansion valve	A13	%	1	0	100	100	
40055	Minimum opening of expansion valve	A14	%	1	0	100	0	

★ **Note:** As long as the forced opening ratio set value is not -1, the electronic expansion valve will be forced open to the set value after end of the initial opening duration and the opening will stay unchanged.

Electronic expansion valve opening setting when cooling is stopped [2.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40067	Expansion valve at cooling OFF	b06	0: Fully Open 1: Keep the current opening 2: Run to set opening				0	
40068	Expansion valve opening at cooling OFF	b07	%	1	0	100	0	

Electronic expansion valve opening setting during defrosting [2.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40076	Expansion valve mode during defrosting	b15	0: Fully open 1: Keep the current opening 2: Run to set opening				0	
40077	Expansion valve opening during defrosting	b16	%	1	0	100	0	

3.4.2 Sensor Parameter setting [4.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40102	Sensor input filtering time	d01		1	1	100	10	
40105	Pressure sensor offset correction	d04	Bar	0.1	-9.9	9.9	0	
40109	T-1 Sensor offset correction	d08	℃	0.1	-9.9	9.9	0	
40110	T-2 Sensor offset correction	d09	℃	0.1	-9.9	9.9	0	
40111	T-3 sensor offset correction	d10	℃	0.1	-9.9	9.9	0	
40112	T-4 Sensor offset correction	d11	℃	0.1	-9.9	9.9	0	

3.4.3 Cabinet temperature parameter setting

Cabinet temperature display parameter setting [4.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40114	Cabinet temperature display upper limit	d13	℃	0.1	-40	40	25	
40115	Cabinet temperature display lower limit	d14	℃	0.1	-40	40	-30	
40116	★ Cabinet temperature display during defrosting	d15	0: STABILIZING DISPLAY; 1: REAL-TIME TEMPERATURE; 2: DISPLAY DEF				0	
40117	Cabinet temperature display stabilizing factor	d16	℃	0.1	-9.9	9.9	0	
40118	Keep DEF sign after defrosting	d17	℃	0.1	-9.9	9.9	0	

★ The real-time temperature can be displayed during defrosting, or choose 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.

Cabinet temperature target value parameter setting [2.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40061	★ Cabinet temperature fail-safe: operation interval	b00	Min	1	1	20	10	
40062	★ Cabinet temperature fail-safe: shut-down interval	b01	Min	1	1	20	5	
40063	Startup delay time	b02	Min	1	0	600	2	
40064	Minimum interval between two starts	b03	Min	1	1	600	2	
40065	★ Cabinet temperature target	b04	℃	0.1	-50	50	-24	X 10
40066	★ Cabinet temperature upper OFFSET	b05	℃	0.1	1	100	2	X 10
40256	★ Cabinet temperature lower OFFSET	r15	℃	0.1	0	5.0	3.0	X 10

★ When the cabinet temperature is higher than [cabinet temperature target] + [cabinet temperature upper OFFSET], start the cooling process, when the cabinet temperature is lower than [cabinet temperature target] - [cabinet temperature lower OFFSET], stop the cooling.

★ When the cabinet temperature sensor is failed, the controller will be into fail-safe mode and run between fixed operation and shut-down interval until the sensor returns to normal.

Time setting and night mode cabinet temperature setting [7.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40161	Night start clock	J00	Hour	1	0	23	22	
40162	Night start minute	J01	Min	1	0	59	30	
40163	End of night clock	J02	Hour	1	0	23	7	
40164	End of night minute	J03	Min	1	0	59	30	
40201	Current year	n00	Year	1	0	99	24	
40202	Current month	n01	Month	1	0	99	1	
40203	Current date	n02	Date	1	0	99	1	
40204	Current week	n03	Week	1	0	99	1	
40205	Current hour	n04	Hour	1	0	99	0	
40206	Current minute	n05	Min	1	0	99	0	
40207	Current second	n06	Sec	1	0	99	0	
40171	★ Nighttime cabinet temperature increment	J10	℃	0.1	-19.9	19.9	2	

★ The actual target value of cabinet temperature in night mode =[cabinet temperature target value] + [night cabinet temperature increment].

★ **Note:** The current hour and minute need to be set every time the power is powered on again after power failure, and it is recommended to calibrate the current hour and minute every other month.

Enable/Disable electronic expansion valve function [n.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40179	Electronic expansion valve control function	J18	0: Disabled 1: Enabled				1	

★ **Note:** When parameter [J18 electronic expansion valve control function] =0 (disabled), PO, PS, T10, T1S, MOP, LOP, HSH, LSH alarm will be shield. It is preferred by the systems using thermostatic expansion valve to disable electronic expansion valve control function without above alarms.

3.4.4 Defrosting parameter setting

Fixed-point defrosting according to schedule [d.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40197	Defrosting start mode	L16	0: Fixed point defrosting according to schedule; 1: Defrost according to the cooling time; 2: Defrosting interval				0	
40199	Define master or slave	L18	0: No master/slave definition, does not occupy the lighting relay 1: Sync defrosting as Master 2: Sync defrosting as Salve				0	
40181	★ 1# defrosting clock	L00	Hour	1	-1	23	23	
40182	1# defrosting minutes	L01	Min	1	0	59	30	
40183	★ 2# Defrosting clock	L02	Hour	1	-1	23	-1	
40184	2# defrosting minutes	L03	Min	1	0	59	0	
40185	★ 3# defrosting clock	L04	Hour	1	-1	23	-1	
40186	3# defrosting minutes	L05	Min	1	0	59	0	
40187	★ 4# defrosting clock	L06	Hour	1	-1	23	-1	
40188	4# defrosting minutes	L07	Min	1	0	59	0	
40189	★ 5# Defrosting clock	L08	Hour	1	-1	23	-1	
40190	5# defrosting minutes	L09	Min	1	0	59	0	
40191	★ 6# defrosting clock	L10	Hour	1	-1	23	-1	
40192	6# defrosting minutes	L11	Min	1	0	59	0	
40193	★ 7# defrosting clock	L12	Hour	1	-1	24	-1	
40194	7# defrosting minutes	L13	Min	1	0	59	0	
40195	★ 8# defrosting clock	L14	Hour	1	-1	24	-1	
40196	8# defrosting minutes	L15	Min	1	0	59	0	

★ When the clock value is set to -1, the time parameter (clock, minute) is OFF.

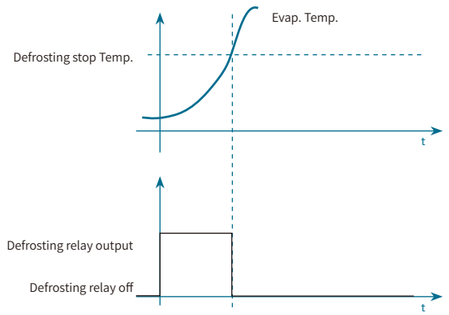
Set the defrosting parameters according to the cooling time [d.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40070	Continuous cooling time before defrosting	b09	Hour	0.1	0	99.9	1.0	

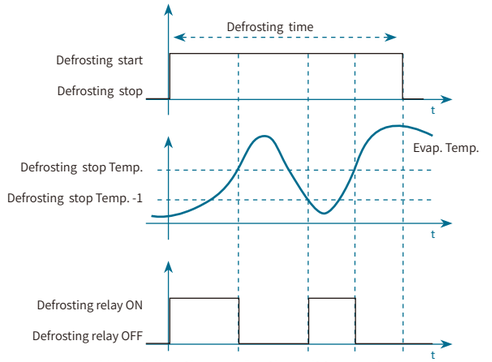
Defrosting process parameter setting [d.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40069	Close compressor/liquid solenoid valve during defrosting	b08	0: Closed 1: Not closed				0	
40071	★ End Defrosting mode	b10	0: Fixed time; 1: Defrosting exit temperature; 2: Time + defrosting exit temperature				0	
40072	Defrosting exit temperature	b11	℃	1	-50	50	10	X 10
40073	Defrosting time	b12	Min	1	0	100	40	
40074	Drip time	b13	Min	1	0	100	5	
40075	★ Pre-cooling time	b14	Min	1	0	100	3	

★ Comparison of Defrosting modes



Mode: follow defrosting temperature



Mode: follow time + defrosting exit temperature

The difference between the above two defrosting modes:

1) Following defrosting temperature alone, as long as the defrosting temperature sensor reaches the defrosting exit temperature, the defrosting will exit;

2) Following time + defrosting exit temperature mode, within the set time durance , the system may enter or exit the defrosting state several times.

★ **Pre-cooling mode**

When the defrosting and dripping time is over, the system enters the cooling mode. To avoid the fan blowing hot air into the freezer, the pre-cooling mode can be activated; Compared with the real cooling mode, during the pre-cooling time, the evaporator fan is OFF.

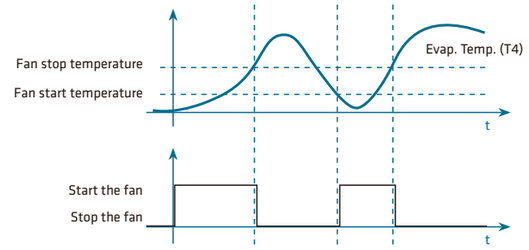
3.4.5 Time setting

Evaporator fan control during cooling process [d.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40081	Evaporator fan mode	c00	0: Always on. 1: Synchronized with condensing fan/solenoid valve; 2: Follow defrosting temperature probe				0	
40082	★ Fan start temperature	c01	℃	0.1	-50	50	4	X 10
40083	★ Fan stop temperature	c02	℃	0.1	-50	50	7	X 10

★ Once evaporator fan mode is selected to follow defrosting temperature probe, the fan will start/stop depending on the defrosting temperature probe temperature:

If the defrosting temperature probe temperature < fan start temperature, evaporation fan is ON; If defrosting temperature probe temperature > fan stop temperature, evaporation fan is OFF.



Evaporator fan control during defrosting and dripping [2.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40078	Evaporator fan control during defrosting	b17	0: Always off; 1: same as [Evaporative fan mode]				1	
40079	Evaporator fan control during dripping	b18	0: Always off 1: Same as [evaporative fan Mode] 2: On				1	

3.4.6 Non-condensing/alarm and lighting function [3.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40084	Non-condensing/alarm function	c03	0: Relay OFF; 1: Relay output; 2: Set as alarm				2	
40085	Non-condensing ON time	c04	min	1	0	600	5	
40086	Non-condensing OFF time	c05	min	1	0	600	10	
40087	Lighting output	c06	0: Disabled; 1: Enabled; 2: Follow night mode				3	

3.4.7 Alarm Mode [5.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40121	MOP Alarm Mode	F00	0: Off 1: Activated				1	
40122	MOP Alarm value	F01	Bar	0.1	-1	50	9	
40123	MOP Alarm Delay	F02	Min	1	1	999	1	
40124	MOP Alarm reset	F03	Bar	0.1	-1	50	8	
40125	Low pressure alarm mode	F04	0: Off 1: Activated				1	
40126	Low pressure alarm value	F05	Bar	0.1	-1	50	-1	
40127	Low pressure alarm delay	F06	Min	1	1	999	15	
40128	Low pressure alarm reset	F07	Bar	0.1	-1	50	0.2	
40129	Low superheat alarm mode	F08	0: Off 1: Activated				1	
40130	Low superheat alarm value	F09	K	0.1	0.5	30	0.5	
40131	Low superheat alarm delay	F10	Min	1	1	300	15	
40132	Low superheat alarm reset	F11	K	0.1	1	30.5	3	
40133	High superheat alarm mode	F12	0: Off 1: Activated				0	
40134	High superheat alarm value	F13	K	1	10	40	30	
40135	High superheat alarm delay	F14	Min	1	1	600	10	
40136	High superheat alarm reset	F15	K	1	7	37	27	

Alarm mode [b.Pr]

Address	Name	Code	Units	Interval	Lower limit	Upper limit	Default	Remarks
40148	Cabinet temperature too high alarm mode	H07	0: Off 1: Activated				0	
40149	Cabinet temperature too high alarm value	H08	℃	0.1	-40	40	-10	
40150	Cabinet temperature too high alarm delay	H09	Min	1	1	600	60	
40151	Cabinet temperature too high alarm reset	H10	℃	0.1	-40	40	-12	
40152	Cabinet temperature too low alarm mode	H11	0: Off 1: Activated				1	
40153	Cabinet temperature too low alarm value	H12	℃	0.1	-40	40	-35	
40154	Cabinet temperature too low alarm delay	H13	Min	1	1	600	10	
40155	Cabinet temperature too low alarm reset	H14	℃	0.1	-40	40	-30	
40156	★ Cooling overtime mode	H15	0: Off 1: Activated				0	
40157	★ Cooling overtime alarm	H16	Min	1	1	999	120	

★ Once cooling overtime mode is activated, if the system does not reach the cabinet temperature setting target value within the set time, and the controller outputs alarm information..

4 Variable speed compressor control

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.

4.1 Select the model ID of the inverter compressor

Once Sanhua Leaderway variable speed driver is used, the SECR04 controller can accurately control the driver by selecting the approved compressor model [parameter P17] from the driver specification provided by Leaderway/Sanhua.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40238	Compressor Model ID	P17	/	1	0	255	0

4.2 Maximum and minimum operating speed of the inverter compressor

When the compressor is running, the speed range is limited to the maximum speed corresponding to [40224] and the minimum speed corresponding to [40225].

Address	Description	Code	Units	Interval	Min.	Max.	Default
40224	Maximum compressor speed	P03	Rps	1	20	100	80
40225	Minimum compressor speed	P04	Rps	1	20	100	30

4.3 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
40222	Compressor start-up command	P01	Rps	1	20	100	40
40223	Compressor start-up stage hold time	P02	Sec	1	0	180	60

After the compressor receives the start command, run [40223] seconds with [40222] Rps, and when the hold time is over, the compressor will enter the normal run phase.

4.4 Variable speed compressor in normal operation stage

In normal operation stage, the compressor will run according to the difference between the set cabinet temperature and the actual cabinet temperature, through the differential PID algorithm to determine and execute the frequency increase and decrease. At the same time, it is also controlled by limited frequency reduction protection.

The actual output speed range is between [40225] and [40224].

Address	Description	Code	Units	Interval	Min.	Max.	Default
40065	Cabinet temperature target	b04	℃	0.1	-50.0	50.0	-24.0
40253	Cabinet temperature adjustment parameter 1	r12	/	1	1	100	10
40254	Cabinet temperature adjustment parameters 2	r13	/	1	1	100	15

4.5 Variable speed compressor in oil return stage

Once the oil return function (40239) is enabled, the oil return operation takes effect.

Pre-condition before entering the oil return stage: the compressor runs in the low frequency (40241) Rps below the cumulative operation (40243) time (minutes);

Pre-condition before clearing oil return cumulative time: the compressor runs in normal operation stage with high frequency (40242) Rps above continuous operation (40244) time(minutes), then cumulative time for oil return will be cleared.

Pre-condition before exiting oil return operation: after the compressor frequency rises to (40241) Rps continuous operation (40243) time(minutes) , the low frequency accumulation time will be cleared, and the oil return stage will exit.

When the oil return operation is running, the suction pressure frequency reduction and protection are invalid. Other limited frequency protections are valid once they are enabled. If there is limited frequency protection in oil return running stage, the limited frequency protection will take over as priority. Oil return stage exit after running for (40244) the set time.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40239	The oil return function	P18	0: disabled 1: enabled				0
40226	Compressor frequency at oil return stage	P05	Rps	1	30	100	60
40241	Compressor low frequency for before oil return stage	r00	Rps	1	30	50	45
40242	Compressor high frequency for oil return exit	r01	Min	1	55	70	65
40243	Compressor low frequency cumulative time to enter oil return	r02	Min	1	60	240	180
40244	Compressor high frequency cumulative time to exit oil return	r03	Min	1	1	5	5

4.6 Frequency reduction and shutdown protection for variable speed compressor

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

Discharge temperature limit frequency reduction protection:

Address	Description	Code	Units	Interval	Min.	Max.	Default
40257	Frequency limit with too high discharge temperature	r16	0: disabled 1: enabled				1
40245	Discharge temperature limit for frequency limit	r04	℃	1	95	105	100
40246	Discharge temperature limit for protection	r05	℃	1	105	115	110
40247	Discharge temperature adjustment parameters 1	r06	/	1	1	100	10
40248	Discharge temperature adjustment parameters 2	r07	/	1	1	100	15

Suction pressure limit frequency reduction protection:

Address	Description	Code	Units	Interval	Min.	Max.	Default
40258	Frequency limit with lower suction pressure	r 17	0: disabled 1: enabled				1
40249	Suction pressure limit for frequency limit	r08	0.01 Bar	1	100	999	40
40250	Suction pressure limit for protection	r09	0.01 Bar	1	80	999	10
40251	Suction pressure adjustment parameter 1	r10	/	1	1	100	10
40252	Suction pressure adjustment parameters 2	r11	/	1	1	100	15

High pressure switch CUT-OFF protection: (optional and the pressure switch should be connected to Sanhua Leaderway variable speed driver and the CUT-OFF signal is delivered to Revo+ via Modbus).

Once the high pressure CUT-OFF lasts for 2 minutes, the compressor stops for safety purpose. Within these 2 minutes, the compressor drops 2Rps every 10 seconds until the pressure switch CUT-IN (Auto reset) again.

Address	Description	Code	Units	Interval	Min.	Max.	Default
40259	Frequency limit for high pressure	r18	0: disabled 1: enabled				0
40255	high pressure cut-off delay	r14	Sec	1	0	500	120

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

The list of driver failure protection is as following:

Register address	Corresponding driver fault code
40271	B0: Fail-Press Overcurrent protection (rms/pk)
	B1: Fault - Reserved ()
	B2: Fault - Reserved ()
	B3: Fail-IPM module protection /IPM Hardware overcurrent protection
	B4: Fail-AD Bias exception (IPM/PFC/4051)
	B5: Fault - press lack of phase protection
	B6: Fault - The press failed to start
	B7: Fault - press out of step protection
	B8: Fault - Reserved ()
	B9: Fault - Reserved ()
	B10: Fault -IPM overtemperature protection
	B11: Fault - The IPM temperature sensing packet is faulty
	B12: Fault -VDC undervoltage protection
	B13: Fail-VDC Overvoltage protection
	B14: Fault - Charging loop failure
	B15: Fault - Communication failure
40272	B0: Fault -PFC Overcurrent Protection (rms)
	B1: Fault - Reserved ()
	B2: Fault -PFC module protection /PFC Hardware overcurrent protection
	B3: Fail-VDC Overvoltage Protection (Hardware)(three-phase)
	B4: Fault -VAC Lack of Phase Protection (Hardware)(three-phase)
	B5: Fault -VAC Phase Out Protection /VAC Unbalance Protection (Software)(three-phase)
	B6: Fault - Reserved
	B7: Fault - Reserved
	B8: Fault - Reserved
	B9: Fault - Reserved
	B10: Fault -PFC module overtemperature protection
	B11: Fault - The PFC temperature sensing packet is faulty
	B12: Failure -VAC undervoltage protection
	B13: Fail-VAC Overvoltage protection
	B14: Fault -E2 chip /E2 data abnormal
	B15: Fault - Reserved

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5 Communication Protocol

SECR04 controller supports RS485 and MODBUS communication protocol, upper-level computer or controller that supports MODBUS protocol based on RS485 communication.

5.1 Description of communication protocols

Register address	Corresponding driver fault code
Items	Description
Transmission line connection	Multiwire transmission
Communication method	RS485 (2-wire, half-duplex)
Baud rate	Default 9600, which can be configured as 4800,9600
Parity, data, stop bit	None, 8 data, 1 stop bit (not modifiable)
Protocol type	Modbus RTU mode
Function code	Read Hold register (0x03)/Preset Single Register (0x06)
Maximum number of read words	32
Cable type	Belden 9841/9842, LG LIREV-AMESB
Polling interval	> 1000ms

5.2 Read-only Parameter Communication Address

Address	Name	Units
40000	T-1 Suction temperature	℃
40001	T-2 Discharge temperature	℃
40002	T-3 Cabinet outlet air temperature	℃
40003	T-4 defrosting temperature	℃
40004	Cabinet temperature	℃
40005	Suction pressure	bar(g)
40006	Saturated evaporating temperature	℃
40007	Superheat	℃
40008	EEV opening	%
40009	Alarm Status 1	
40010	Alarm Status 2	

5.3 Alarm parameters communication address and fault code definition

40010 alarm flag bit																
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
						IICE	T4S	T4O	T3S	T3O	T2S	T2O	T1S	T1O	PS	PO

PO: pressure sensor open, indicating that the pressure transmitter has an open circuit

PS: The pressure sensor is short, and the pressure transmitter has an short circuit

TxO: indicates that the Tx temperature detection circuit is open

TxS: Tx temperature detection short circuit

IICE: IIC error, communication with the display board is lost

Note 1: When PO/PS/T1O/T1S alarm in the system causes the electronic expansion valve controller to shut down, the inverter compressor must also stop simultaneously.

Note 2: When parameter [J18 electronic expansion valve control function] =0 (not enabled), PO, PS, T1O, T1S alarm shield.

40011 alarm flag bit																
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
								EL	PC	HC	LCT	HCT	LSH	HSH	LOP	MOP

MOP: Pressure too high

LOP: Pressure too low

HSH: Superheat too high

LSH: Superheat too low

HCT: Too high cabinet temperature

LCT: Too low cabinet temperature

HC: Condensing temperature too high

PC: Condensation temperature protection

EL: Cooling overtime

Note 1: When the MOP/LOP/HSH/LSH alarm of the system causes the electronic expansion valve controller to shut down, the variable speed compressor must also stop simultaneously..

Note 2: When parameter [J18 electronic expansion valve control function] =0 (not enabled), MOP, LOP, HSH, LSH alarm shield.

40030 alarm flag bit (variable frequency system related)																
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
												LPP	InC	InV	TdH	HPP

HPP: High pressure switch alarm (reserved)

TdH: high discharge temperature alarm

InV: Variable speed driver alarm

InC: Variable speed driver communication failure

LPP: Low pressure alarm

Note 1: When HPP/TdH/InV/Inc/LPP alarm occurs in the system, the variable speed compressor must be stopped synchronously

5.4 Parameter communication address can be set

For details, see Sections 2 and 3.

Note "x 10" in Chapter 3 indicates that the value read in the address is 10 times the actual value.

SECR04-R0 - List of data								
Address	**Name**	**Code**	**Units**	**interval**	**Lower limit**	**Upper limit**	**Default**	**Remarks**
40041	Password	/	/	1	0	999	5	
40059	Manual forced run	/	0 to 2: polling bbetween Forced cooling and forced defrosting				0	Press the [+] [-] key at the same time to set
40060	Start control function	/	0: OFF 1: ON				1	Hold down the SEL key for 3 seconds to set
1. Set Pr refrigerant and PID parameters								
Address	**Name**	**Code**	**Units**	**interval**	**Lower limit**	**Upper limit**	**Default**	**Remarks**
40042	Refrigerant	R01	0=R22; 1=R404A; 2=R410A; 3=R134a; 4=R407C; 5=R507; 6=R1234ze; 7=R1234yf; 8=R290; 9=R450A; 10=R513A; 11=R448A; 12=R449A; 13=R452A; 14=R744(CO_2); 15=R744(N_2O); 16=R32; 17=R245fa; 18=R23; 19=R407A; 20=R407F; 21=R124; 22=R717; 23=R407H;				11	
40043	Superheat setpoint	R02	K	0.1	0.5	30	4	X 10

40045	Initial opening set value	A04	%	1	0	100	50	
40046	Initial opening duration	A05	Sec	1	0	600	50	
40047	P: Proportional gain	A06	%	0.1	0.1	99.9	1.0	X 10
40048	I: Integration time	A07	Sec	1	0	999	50	
40049	D: Differential time	A08	Sec	1	0	999	30	
40050	Force open valve ratio	A09	%	0.1	-0.1	100	OFF (0.1)	X 10
40054	Maximum opening of expansion valve	A13	%	1	0	100	100	
40055	Minimum opening of expansion valve	A14	%	1	0	100	0	

2. Pr cabinet temperature and defrosting parameter setting

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40061	Cabinet temperature fail-safe: operation interval	b00	Min	1	1	20	10	
40062	Cabinet temperature fail-safe: shut-down interval	b01	Min	1	1	20	5	
40063	Startup delay time	b02	Min	1	0	600	2	
40064	Minimum interval between two starts	b03	Min	1	1	600	2	
40065	Cabinet temperature target	b04	℃	0.1	-50	50	-24	X 10
40066	Cabinet temperature upper OFFSET	b05	℃	0.1	0.1	10	2	X 10
40067	Expansion valve at cooling OFF	b06	0: Fully Open 1: keep the current opening 2: Run to set opening					
40068	Expansion valve opening at cooling OFF	b07	%	1	0	100	0	
40069	Close compressor/liquid solenoid valve during defrosting	b08	0: Off 1: Not off				0	
40070	Continuous cooling time before defrosting	b09	Hour	0.1	0	99.9	6.0	
40071	End Defrosting mode	b10	0: fixed time; 1: defrosting exit temperature; 2: time + defrosting exit temperature				1	
40072	Defrosting exit temperature	b11	℃	0.1	-50	50	10.0	X 10
40073	Defrosting time	b12	Min	1	0	100	40	
40074	Drip time	b13	Min	1	0	100	5	
40075	Pre-cooling time	b14	Min	1	0	100	3	
40076	Expansion valve mode during defrosting	b15	0: Fully open 1: keep the current opening 2: Run to set opening					
40077	Expansion valve opening during defrosting	b16	%	1	0	100	0	
40078	Evaporator fan control during defrosting	b17	0: Always off; 1: same as [Evaporative fan mode]				1	
40079	Evaporator fan control during dripping	b18	0: Always off 1: same as [evaporative fan Mode] 2: On				1	
40080	Defrosting mode	b19	0: Electric defrosting; 1 : Natural defrosting				0	

3. Pr evaporator fan control and communication Settings

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40081	Evaporating fan mode	c00	0: always on. 1: Synchronized with condensing fan/solenoid valve; 2: follow defrosting temperature probe					
40082	Fan start temperature	c01	℃	0.1	-50	50	4.0	X 10
40083	Fan stop temperature	c02	℃	0.1	-50	50	7.0	X 10
40084	Non-condensing/alarm function	c03	0: Relay OFF; 1: Relay output; 2: Set as alarm					
40085	Non-condensing ON time	c04	Min	1	0	600	5	
40086	Non-condensing OFF time	c05	Min	1	0	600	10	
40087	Lighting output	c06	0: disabled; 1: Enabled; 2: follow night mode				2	
40097	RS485 communication ID Settings	c16	/	1	1	250	2	
40098	RS485 communication speed Settings	c17	48(0)=4800; 96 (1) = 9600				1	

4. Pr Sensor Settings

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40102	Sensor input filtering time	d01		1	1	100	10	
40103	Pressure sensor Max	d02	Bar	1	-1	99	20	
40104	Pressure sensor minimum	d03	Bar	1	-1	99	0	
40105	Pressure sensor offset correction	d04	Bbar	0.1	-9.9	9.9	0	X 10
40109	T-1 Temperature sensor offset correction	d08	℃	0.1	-9.9	9.9	0	X 10
40110	T-2 Temperature sensor offset correction	d09	℃	0.1	-9.9	9.9	0	X 10
40111	T-3 Temperature sensor offset correction	d10	℃	0.1	-9.9	9.9	0	X 10
40112	T-4 Temperature sensor offset correction	d11	℃	0.1	-9.9	9.9	0	X 10
40114	Cabinet temperature display upper limit	d13	℃	0.1	-40	40	25.0	X 10
40115	Cabinet temperature display lower limit	d14	℃	0.1	-40	40	-30	X 10
40116	Cabinet temperature display during defrosting	d15	0: stabilizing display; 1: real-time temperature; 2: Display DEF				2	
40117	Cabinet temperature display stabilizing factor	d16	/	1	1	10	5	
40118	Keep DEF sign after defrosting	d17	Min	1	0	300	60	

5. Pr Alarm Settings

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40121	MOP Alarm Mode	F00	0: Off 1: Activated				1	
40122	MOP Alarm value	F01	Bar	0.1	-1	50	9	X 10
40123	MOP Alarm Delay	F02	Min	1	1	999	1	
40124	MOP Alarm reset	F03	Bar	0.1	-1	50	8	X 10
40125	Low pressure alarm mode	F04	0: Off 1: activated				1	
40126	Low pressure alarm value	F05	Bar	0.1	-1	50	-0.1	X 10
40127	Low pressure alarm delay	F06	Min	1	1	999	15	
40128	Low pressure alarm reset	F07	Bar	0.1	-1	50	0.2	X 10
40129	Low superheat alarm mode	F08	0: Off 1: activated				1	
40130	Low superheat alarm value	F09	K	0.1	0.5	30	0.5	X 10
40131	Low superheat alarm delay	F10	Min	1	1	300	15	
40132	Low superheat alarm reset	F11	K	0.1	0.5	30.5	3	X 10
40133	High superheat alarm mode	F12	0: Off 1: activated				0	
40134	High superheat alarm value	F13	K	1	10	40	30	
40135	High superheat alarm delay	F14	Min	1	1	600	10	
40136	High superheat alarm reset	F15	K	1	7	37	27	

6. Pr Alarm Settings

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40148	Cabinet temperature too high alarm mode	H07	0: off 1: activated				1	
40149	Cabinet temperature too high alarm value	H08	℃	0.1	-40	40	-10	X 10
40150	Cabinet temperature too high alarm delay	H09	Min	1	1	600	60	
40151	Cabinet temperature too high alarm reset	H10	℃	0.1	-40	40	-12	X 10
40152	Cabinet temperature too low alarm mode	H11	0: disabled 1: activated				1	
40153	Cabinet temperature too low alarm value	H12	℃	0.1	-40	40	-35	X 10
40154	Cabinet temperature too low alarm delay	H13	Min	1	1	600	10	
40155	Cabinet temperature too low alarm reset	H14	℃	0.1	-40	40	-30	X 10
40156	Cooling overtime mode	H15	0: Off 1: activated				0	
40157	Cooling overtime alarm	H16	Min	1	0	999	120	

7. Pr Clock and night mode Settings

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40161	Night start clock	J00	Hour	1	0	23	22	
40162	Night start minute	J01	Min	1	0	59	30	
40163	End of night clock	J02	Hour	1	0	23	7	
40164	End of night minute	J03	Min	1	0	59	30	
40165	Current clock	J04	Hour	1	0	23	12	
40166	Current minute	J05	Min	1	0	59	30	
40171	Nighttime cabinet temperature increment	J10	℃	0.1	-19.9	19.9	2	X 10
40179	Electronic expansion valve control function	J18	0= Not enabled 1= enabled				1	

8. Pr fixed clock defrosting mode setting

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40181	1# defrosting clock	L00	Hour	1	-1	23	23	Set -1 for off
40182	1# defrosting minutes	L01	Min	1	0	59	30	
40183	2# Defrosting clock	L02	Hour	1	-1	23	-1	Set -1 for off
40184	2# defrosting minutes	L03	Min	1	0	59	0	
40185	3# defrosting clock	L04	Hour	1	-1	23	-1	Set -1 for off
40186	3# defrosting minutes	L05	Min	1	0	59	0	
40187	4# defrosting clock	L06	Hour	1	-1	23	-1	Set -1 for off
40188	4# defrosting minutes	L07	Min	1	0	59	0	
40189	5# Defrosting clock	L08	Hour	1	-1	23	-1	Set -1 for off
40190	5# defrosting minutes	L09	Min	1	0	59	0	
40191	6# defrosting clock	L10	Hour	1	-1	23	-1	Set -1 for off
40192	6# defrosting minutes	L11	Min	1	0	59	0	
40193	7# defrosting clock	L12	Hour	1	-1	23	-1	Set -1 for off
40194	7# defrosting minutes	L13	Min	1	0	59	0	
40195	8# defrosting clock	L14	Hour	1	-1	23	-1	Set -1 for off
40196	8# defrosting minutes	L15	Min	1	0	59	0	
40197	Defrosting start mode	L16	0: fixed point defrosting according to schedule; 1: defrost according to the cooling time; 2: defrosting interval				0	
40199	Define master or slave for defrosting	L18	0: No master/slave definition, does not occupy the lighting relay 1: Sync defrosting as Master 2: Sync defrosting as Salve				0	

9. Pr Real-time clock + internal parameters

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40201	Current year	n00	Year	1	24	99	24	
40202	Current month	n01	Month	1	1	12	1	
40203	Current date	n02	Date	1	1	31	1	
40204	Current week	n03	Week	1	1	7	1	
40205	Current hour	n04	Hour	1	0	23	0	
40206	Current minute	n05	Min	1	0	59	0	
40207	Current second	n06	Sec	1	0	59	0	

10. Pr Variable speed compressor parameter set 1

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40221	P_900_ Compressor forced control frequency	P00	/	1	-1	100	-1	
40222	P_901_ Compressor start frequency	P01	/	1	20	100	40	
40223	P_902_ Compressor start-up running time	P02	Min	1	0	180	60	
40224	P_903_ Maximum speed of Compressor	P03	/	1	20	100	80	
40225	P_904_ Minimum speed of Compressor	P04	/	1	20	100	30	
40226	P_905_ Compressor frequency at oil return stage	P05	/	1	20	100	60	
40227	P_906_ Upper compressor frequency jumping 1	P06	/	1	-1	100	-1	
40228	P_907_upper limit of compressor frequency jumping 2	P07	/	1	-1	100	-1	
40229	P_908_upper limit of compressor frequency jumping 3	P08	/	1	-1	100	-1	
40230	P_909_ Upper limit of compressor frequency jumping 4	P09	/	1	-1	100	-1	
40231	P_910_ Lower limit of compressor frequency jumping 1	P10	/	1	-1	100	-1	
40232	P_911_ Lower limit of compressor frequency jumping 2	P1	/	1	-1	100	-1	
40233	P_912_ Lower limit of compressor frequency jumping 3	P12	/	1	-1	100	-1	
40234	P_913_ Lower limit of compressor frequency jumping 4	P13	/	1	-1	100	-1	
40238	P_917_ Compressor model ID	P17	/	1	0	255	0	
40239	The oil return function	P18	/	0= disabled 1= enabled			0	

11. Pr Variable speed compressor parameter set 2

Address	Name	Code	Units	interval	Lower limit	Upper limit	Default	Remarks
40241	P_1000_ Compressor low frequency for before oil return stage	r00	/	1	30	50	45	
40242	P_1001_ Compressor high frequency for oil return exit	r01	/	1	55	70	65	
40243	P_1002_ Compressor low frequency cumulative time to enter oil return	r02	Min	1	60	240	180	

40244	P1003_ Compressor high frequency cumulative time to exit oil return	r03	Min	1	1	5	5	
40245	P_1004_ Discharge temperature limit for frequency limit	r04	℃	1	95	105	100	
40246	P_1005_ Discharge temperature limit for protection	r05	℃	1	105	115	110	
40247	P_1006_ Discharge temperature adjustment parameters 1	r06	/	1	1	100	10	
40248	P_1007_ Discharge temperature adjustment parameters 2	r07	/	1	1	100	15	
40249	P_1008_ Suction pressure limit for frequency limit	r08	0.01 Bar	1	0	999	40	
40250	P_1009_ Suction pressure limit for protection	r09	0.01 Bar	1	0	999	10	
40251	P_1010_ Suction pressure adjustment parameter 1	r10	/	1	1	100	10	
40252	P_1011_ Suction pressure adjustment parameter 2	r11	/	1	1	100	15	
40253	P_1012_ Cabinet temperature adjustment parameter 1	r12	/	1	1	100	10	
40254	P_1013_ Cabinet temperature adjustment parameter 2	r13	/	1	1	100	15	
40255	P_1014_ high pressure cut-off delay	r14	Sec	1	0	500	120	
40256	P_1015_ Cabinet temperature lower OFFSET	r15	℃	1	0	50	30	
40257	P_1016_ Frequency limit with too high discharge temperature	r16	/	0= disabled 1= enabled			1	
40258	P_1017_ Frequency limit with lower suction pressure	r17	/	0= disabled 1= enabled			1	
40259	P_1018_ Frequency limit for high pressure	r18	/	0= disable 1= enable			0	
40260	P_1019_ System adjustment period	r19	/	1	1	180	10	