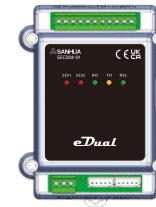
SANHUA

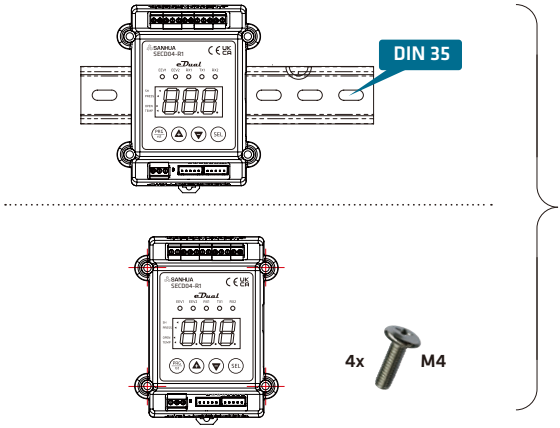
SECD04-R1/R2/01/02

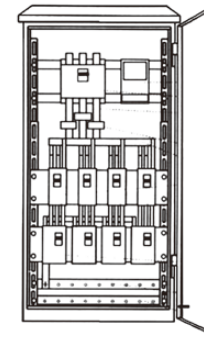
Dual EEV Controller Installation Instructions

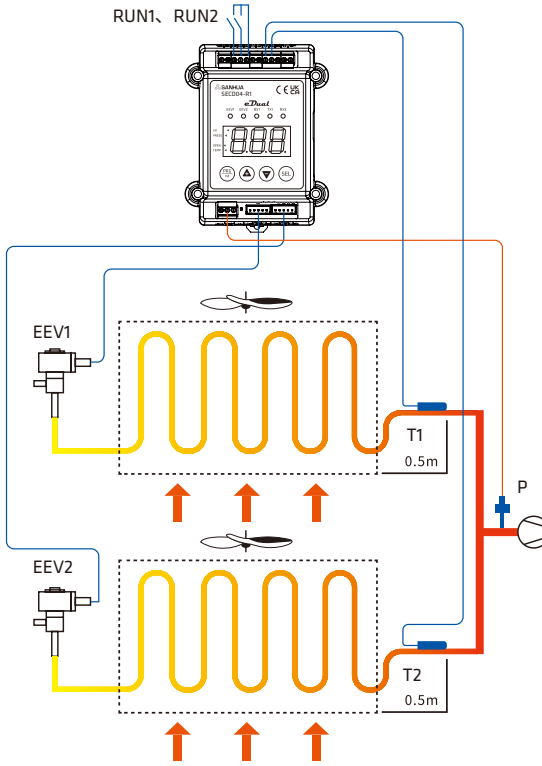
0.Model Description

	Model	Description	Drawing
Standard version	SECD04-R1	-Voltage type -With LED status display -With digital tube display and button operation	
	SECD04-R2	-Current type -With LED status display -With digital tube display and button operation	
Simplified version	SECD04-01	-Voltage type -With LED status	
	SECD04-02	-Current type -With LED status	

1. Installation Notes







- We recommend to install the temperature and pressure sensors within 0.5m from the evaporator to prevent ambient temperature and pressure drop interference for the superheat calculation

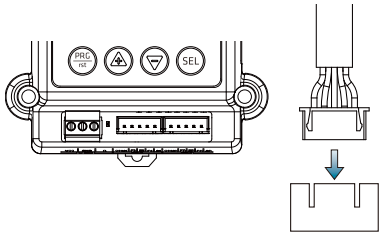
Note: All four controller models share the same installation method.

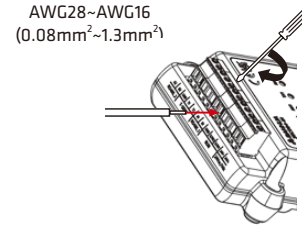
2. Wire Connections

Type	Function	Label		Description			
Pluggable terminal	Power input	24Vac/Vdc	24V+	AC24V or DC24V			
			24V-				
	Start/Stop signal	RUN（S/W）	GND	Short IIN1 andIN2 to GND to close the circuit.			
			IN1	Passive Switch Signal 1# closes when the compressor is running and opens when the compressor stops. It must be closed in both Manual Mode and Driver Mode.			
			IN2	Passive Switch Signal 2# closes when the compressor is running and opens when the compressor stops. It must be closed in both Manual Mode and Driver Mode.			
	Host Communication	RS485	B-	RS485 B-			
			A+	RS485 A+			
	Temp. sensor	T-SENS	T1	1# Temp. sensor, NTC5K/β3970、NTC10K/β3977、NTC10K/β3435			
			T2	2# Temp. sensor,NTC5K/β3970、NTC10K/β3977、NTC10K/β3435			
			GND	Temp. sensor GND			
	Cascading Communication	INTERCOM	B-	RS485 B-			
			A+	RS485 A+			
XHP terminal	Pressure transmitter	P-SENS	VCC	Power	YCQB: +5V (Voltage type)	YCQC: 10-30Vdc (Current type)	
			S	S	YCQB: 0.5-3.5V/0.5-4.5V (Voltage type)	YCQC: 4-20mA (Current type)	
			GND	GND	YCQB: GND (Voltage type)	YCQC: N/A (Current type)	
	Expansion valve1#	EEV1	A				
			B				
			$\overline{A}$				
			$\overline{B}$				
			COM				
	Expansion valve2#	EEV2	A				
			B				
			$\overline{A}$				
			$\overline{B}$				
			COM				

Safety Tips:

1. Do not turn on the power before completing the wiring, cut off the power before changing the wiring;
2. The RUN port (compressor signal) is a passive port. Adding a voltage may cause the controller burn out;
3. While selecting a transformer or switching power supply, ensure that the minimum power is as follows:
With DPF/LPF/T valve：20W（DC24V），30VA（AC24V）；
4. Do not apply voltage to the RS485 port. Applying voltage may damage the controller and cause a fire.
5. After completing terminal wiring, ensure all connectors are fully inserted into their sockets. The expansion valve coil plug must also be fully inserted into its socket, and connections must be inspected to prevent disconnection during operation.





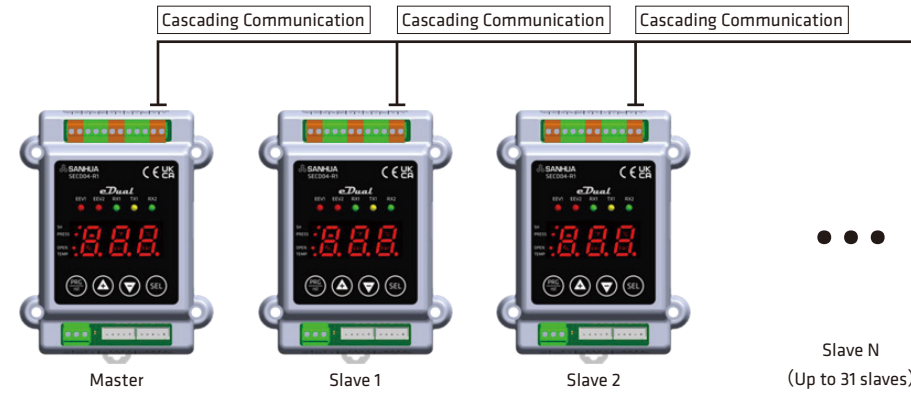
The 4 controllers are wired in the same way, and there are two options for wiring, as follows:

Option 1	Option 2
Valve 1 and Valve 2 each use independent start/stop signal ports for control.	Valve 1 and Valve 2 are controlled via the RUN(S/W)IN1 port for start/stop operations, while the RUN(S/W)IN2 port is used as the defrosting signal input port. To activate Option 2, set the host parameter[Start/Stop 2# Redefined as Defrosting] (address 40017) to 1.
	

Note:

(1) When the controller operates as a slave, the pressure transmitter is not connected.

Cascaded communication requires connecting the cascaded communication RS 485 ports in parallel, as shown in the figure below (other connections are omitted for brevity).



Notes:

(1) When cascading, the slave controller does not connect to the pressure transmitter.

(2) If the host parameter [Start/Stop Signal Sharing](Address 40020) is set to 1, the slave does not need a start/stop signal wire; the slave follows the host's start/stop commands.

(3) If the host parameter [Defrosting Signal Sharing] (Address 40019) is set to 1, the slave does not need a defrosting signal wire; the slave follows the host's defrosting commands.

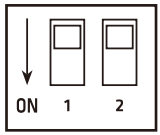
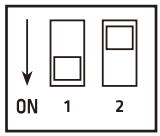
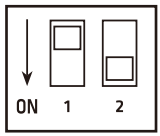
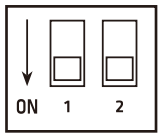
3.Technical parameters

Item	Description
Power Supply	24Vac +10%/-15%, 50/60Hz or 24Vdc+10%/-10%
Maximum Power	Load Capacity DPF/LPF/T Valve：20W（DC24V），30VA（AC24V）
Interface & Wire Diameter	Plug-in Terminal (M2): 28AWG~16AWG(0.08mm²~1.3mm²) XH Terminal: 30AWG~22AWG(0.05mm²~0.32mm²)
Input Port	1-channel Independent Pressure Transmitter Input: 1、YCQB: (0.5 ～ 3.5)Vdc or (0.5 ～ 4.5)Vdc, 5Vdc Power Supply; 2、YCQC: (4 ～ 20)mA , (10-30)Vdc Power Supply
	2-channel Independent Temperature Sensor Input： NTC 5K（β=3970K），(-40 ～ 105) °C Or NTC 10K（β=3977K），(-40 ～ 150) °C Or NTC 10K（β=3435K），(-50 ～ 110) °C
	2-channel Independent Start/Stop Signal (Passive) Input
Output Port	2-channel Independent Unipolar 5-wire Electronic Expansion Valve Output
Communication Port	2-channel Independent RS-485 Communication，9600，8，N，1（Default）
Protection Class	IP20
Installation Method	Mounting: DIN 35mm (EN60715) Rail or M4 Screw Terminal
Operating Ambient Temperature	(-30~60)°C , relative Humidity≤95%RH，Non-condensing
Storage Temperature	(-40~70)°C , relative Humidity≤95%RH，Non-condensing
Pollution level	2

Item	Description
Electrical Strength	AC1800V×1sec，Leakage Current≤5mA
Insulation Resistance	＞100MΩ (DC500V)
Certification	CE
EMC	IEC61000-4-2、IEC61000-4-3、IEC61000-4-4、IEC61000-4-5、IEC61000-4-6、IEC61000-4-11
Altitude	2000m 以下
Dimensions	87(W)mm x 115(H)mm x 32(D)mm

4.DIP Switch Configuration

In the default state, all DIP switches are set to OFF (all switches oriented upward, suitable for most applications). The two DIP switches are used to select the electronic expansion valve type. When using preset valve types, Valve 1 and Valve 2 must be configured with the same type; for custom valves, Valve 1 and Valve 2 can be set to different types. The DIP switch states are detected only within 1 second after power-on, and any changes require a controller restart to take effect.

DIP Switch State	Value	Valve Type
 Default state	0	1-2 Phase Excitation, 500 Steps, 30PPS LPF valve、DPF valve
	1	2Phase Excitation, 2000 Steps, 100PPS O-type Valve
	2	Undefined, handled as default
	3	Custom Valves 1# Valve parameters are configured via registers 40057–40063. 2# Valve parameters are configured via registers 40117–40123.

5.Panel Display and Interaction

LED	Description
★ SH	Display current superheat
PRESS	Display pressure sensor value
OPEN	Display current EEV opening (%)
TEMP	Display temperature sensor value
°C /bar	A metric unit of temperature/pressure
°F /psi	A Imperial unit of temperature/pressure
⚠	Lighting while alarming
🔧	Flickering with forced open valve ratio
EEV1	Displaying 1# Valve Parameters
EEV2	Displaying 2# Valve Parameters
TX1, RX1, RX2	Flickering at communication

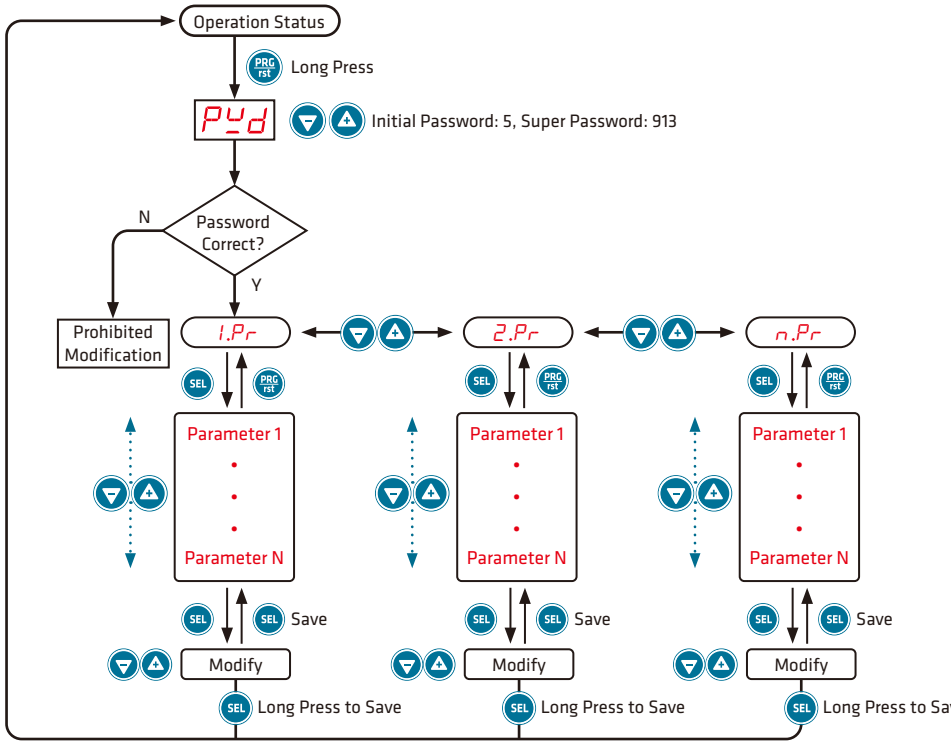
★ Default display of the current suction superheat; press ▲ or ▼ key to switch the display content, SEL key to switch the valve 1 and valve 2 parameters, view the other real-time data, no key operation for 1 minute after the automatic return to the "SH" data display.

Key	Function Description
PRG	On the normal operation display interface, long press to enter the parameter setting interface; on the parameter setting interface, short press to return to the parameter table;
▲ ▼	witch panel display parameters (short press); Increase/decrease parameter set values (long press/short press);
SEL	Confirm key; On the normal operation display interface, short press to switch parameters of Valve 1# / Valve 2# ; When setting parameters, long press for 3 seconds to save parameters.

Controller Panel Introduction - Simplified Version

LED	Description	
EEV1	Indicator for Valve 1# Opening	0% Opening: Off 0~100% Opening: 1Hz Flashing 100% Opening: Constantly On
EEV2	Indicator for Valve 2# Opening	
RX1	RS-485 Data Reception: Lights Up	
TX1	RS-485 Data Transmission: Lights Up	
RX2	Pressure Sharing Data Reception: Lights Up	

Parameter Setting Logic



a. When the controller is powered on and running, press and hold the key for more than 3 seconds to enter the parameter setting mode.

b. When the panel displays PWD, press the key until the panel shows "5" (Initial password: 5), then press again to enter the parameter list. "PWD" press the key until the panel shows "5" (Initial password: 5), then press again to enter the parameter list.

c. 1.Pr、2.Pr、3.Pr...represent Parameter Table 1, Parameter Table 2, Parameter Table 3..., respectively, Press the key to switch between parameter tables.

d. After selecting a parameter table, press the key to enter it. If you want to switch to another parameter table, press the key to return to the parameter table selection interface.

e. Press key to confirm the parameter to be modified or viewed. Then use the keys to adjust the parameter value. After modification, press key to save and return to the parameter table.

f. After modifying all parameters, press and hold the key for 3 seconds to save the settings and return to the initial operation interface.

Remarks:

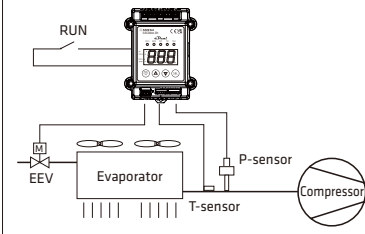
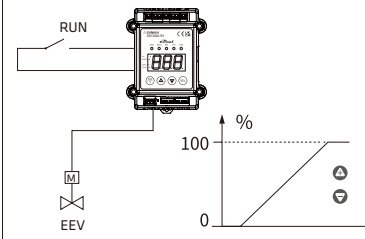
- If the password is entered incorrectly or no password is entered, parameter queries are allowed, but parameter modifications are not permitted.
- After entering parameter operations, if there are no operations within 3 minutes, the interface will automatically exit to the normal operation display screen after 3 minutes.
- If the password is forgotten after modification, it can be accessed using the super password (value: 913).

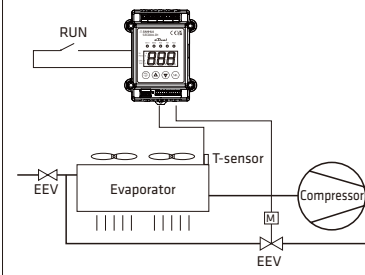
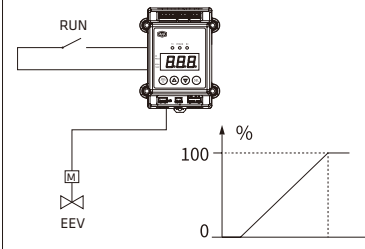
6.Operating Modes and Start-Stop Methods

6.1 Controller operating mode related registers

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
1.Pr	40013	1# Control Mode	A 12	1	0~2	0	0=Superheat mode 1=Manual mode 2=Temperature control mode
1.Pr	40014	12# Control Mode	A 13	1	0~2	0	0=Superheat mode 1=Manual mode 2=Temperature control mode
2.Pr 5.Pr	40024 40084	1# 485 Communication Control Opening 2# 485 Communication Control Opening	b03 E03	1‰	-1~1000	-1	-1=Disabled
2.Pr 5.Pr	40026 40086	1# Manual Mode Opening 2# Manual Mode Opening	b05 E05	0.1%	0~100	0	
4.Pr 7.Pr	40071 40131	1# Temperature control direction 2# Temperature control direction	b05 C 10	1%	0~1	0	0=When the temperature is greater than the target, the opening decreases 1=When the temperature is greater than the target, the opening increases

6.2 Controller operating mode

Activation Conditions	Description	Wiring
[Control Mode]=0	**Automatic Superheat Control Mode (Default Mode):** Collects signals of evaporator outlet pressure and temperature, calculates the suction superheat, and controls the opening of the electronic expansion valve.	
[Control Mode]=1	**Manual Control Mode:** Sets the [Manual Mode Opening] via panel buttons to directly control the valve opening ratio.	

Activation Conditions	Description	Wiring
[Control Mode]=2	**Temperature Control mode:** Controls the valve opening of the electronic expansion valve via temperature. When the [Temperature control direction] parameter is set to 0, if the current temperature exceeds the target temperature, the valve opening decreases; conversely, the valve opening increases.	
[Control Mode]!=1 [485 Communication Control Opening]≥0	**485 Communication Control Valve Opening:** Sets the [485 Communication Control Opening] via Modbus communication to directly control the valve opening ratio.	

6.3 Valve start/stop mode selection

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
2.Pr 5.Pr	40022 40082	1# Start-Stop Mode 2# Start-Stop Mode	b01 E01	1	0~2	1	0=Constantly Active State 1=Signal Input 2=Communication Input
2.Pr 5.Pr	40023 40083	1# 485 Start-Stop Signal 2# 485 Start-Stop Signal	b02 E02	1	0~1	0	0= Valve Stopped 1=Valve Running

The valve starts when any of the following conditions are met; otherwise, it stops:

(1) [Start-Stop Mode]=0;

(2) [Start-Stop Mode]=1, and the start-stop signal is closed;

(3) [Start-Stop Mode]=2, and [485 Start-Stop Signal]=1;

(4) The slave device receives the start command sent by the master device.

6.4 Opening following

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
1.Pr	40010	Valve 2# Opening Follows Valve 1#	A09	1	0~1	0	0=Not Follow 1=Follow

If [Valve 2# Opening Follows Valve 1#]=1, during automatic superheat control, the opening degree of Valve 2# will follow the opening degree of Valve 1# . The pressure, temperature, superheat, and alarm of Valve 2# will not affect the operation of Valve 2#.

7.Main parameter setting

7.1 Refrigerant selection

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
1.Pr	40001	Refrigerant	R00	1	-1~36	5	-1=User-defined 5=R507
8.Pr	40141	Refrigerant User-defined Parameter A1	J00	1	-20000~20000	9975	R449A
8.Pr	40142	Refrigerant User-defined Parameter A2	J01	1	-20000~20000	-2020	
8.Pr	40143	Refrigerant User-defined Parameter A3	J02	1	-20000~20000	2424	

There are currently 37 commonly used refrigerants available in the controller:

NO.	Refrigerant	NO.	Refrigerant	NO.	Refrigerant	NO.	Refrigerant	NO.	Refrigerant
-1	User-defined	7	R1234YF	15	R744A(N_2O)	23	R407H	31	R1270
0	R22	8	R290	16	R32	24	R454C	32	R1233zdE
1	R404A	9	R450A	17	R245FA	25	R455A	33	R1234zeZ
2	R410A	10	R513A	18	R23	26	R454B	34	R452C
3	R134A	11	R448A	19	R407A	27	R452B	35	R457A
4	R407C	12	R449A	20	R407F	28	R600A	36	R515B
5	R507	13	R452A	21	R124	29	R600		
6	R1234ZE	14	R744(CO_2)	22	R717	30	R454A		

7.2 Target superheat setting

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
2.Pr 5.Pr	40021 40081	1# Superheat setting value 2# Superheat setting value	b00 E00	M: 0.1K US: 0.1K	M: 0.5~30 US: 0.9~54	M: 6 US: 10.8	Superheat mode
2.Pr 5.Pr	40021 40081	1# Temperature setpoint 2# Temperature setpoint	b00 E00	M: 0.1°C US: 0.1 °F	M: -50 ~ 150 US: -58 ~ 302	M: 6 US: 42.8	Temperature control mode

If the target superheat value is too small, it may lead to incomplete evaporation of the refrigerant; if the target value is too large, the evaporator efficiency will be excessively low.

7.3 Start opening ratio and duration time

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
2.Pr 5.Pr	40029 40089	1# Start opening ratio 2# Start opening ratio	b08 E08	1%	0~100	40	
2.Pr 5.Pr	40030 40090	1# Start opening ratio duration time 2# Start opening ratio duration time	b09 E09	1Sec	0~999	10	

1) After powering on, the electronic expansion valve returns to the fully closed position. Once the compressor start/stop signal (RUN) is connected, the controller will firstly open the electronic expansion valve to the start opening ratio and maintain this opening for start open ratio duration time. After that, the controller will adjust the valve according to the selected control mode.
2) Start opening ratio and Start opening ratio duration time are not working in manual mode.

7.4 Forced valve opening

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
2.Pr 5.Pr	40027 40087	1# Forced Valve Opening Ratio of Expansion Valve 2# Forced Valve Opening Ratio of Expansion Valve	b06 E06	0.1%	-0.1~100	-0.1	-0.1=Disabled

If the [Forced Valve Opening Ratio of Expansion Valve] is greater than or equal to 0, after the [Initial Opening Holding Time] elapses, the controller will forcefully open the electronic expansion valve to the set value of [Forced Valve Opening Ratio of Expansion Valve] and keep it unchanged. This operation takes precedence over the set values of [485 Communication Control Opening], [Manual Mode Opening], [Sensor Fault Valve Opening], and the valve opening control under various alarm modes.

7.5 RS-485 communication controls valve opening

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
	40024 40084	1# 485 Communication Control Opening 2# 485 Communication Control Opening	b03 E03	1%	-0~1000	-1	-1=Disabled

When in automatic control mode, the valve opening can be directly controlled by setting [485 Communication Control Opening] via 485 communication.

7.6 Cascade Communication Settings

The controller is default configured to automatically select between master or slave mode. When a pressure transmitter is inserted, the controller will automatically become the master. Note: Do not configure more than one master controller in the same system. It is recommended to set this parameter of the master to "1" after the controller is installed.

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
1.Pr	40006	Forced Master/Slave Mode	A05	1	0~2	0	0=Automatic Selection 1=Forced Master 2=Forced Slave

If [Forced Master/Slave Mode]=0, when the controller is connected to a pressure transmitter and the pressure transmitter is operating normally, the controller will automatically become the master; otherwise, it will automatically become the slave. Automatic selection only occurs within 60 seconds after startup or within 60 seconds after setting [Forced Master/Slave] to 0; after this period, the mode remains fixed and no longer changes.

If [Forced Master/Slave Mode]=1, the controller acts as the master, sharing pressure data and the pressure sensor's fault status.

If [Forced Master/Slave Mode]=2, the controller acts as the slave, using the shared pressure data.

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
1.Pr	40004	Temperature sharing switch	A03	1	0~1	0	0=Temperature sharing disabled 1=Temperature sharing enabled
1.Pr	40019	Defrosting Signal Sharing	A 18	1	0~1	0	0=Not shared; 1=Shared
1.Pr	40020	Start/Stop Signal Sharing	A 19	1	0~1	0	0=Not shared; 1=Shared

When the [Temperature sharing switch] of the main controller is set to 1, the main controller will prioritize sharing data from functioning temperature probes with the slave controller and itself. If both temperature probes of the main controller are functioning properly, it will prioritize sharing data from Probe 1. When the temperature probe of the slave controller is functioning properly, the slave controller will prioritize using its own temperature probe data.

When [Start/Stop Signal Sharing]=1, Valve # 1 and Valve # 2 of the controller share the start/stop signal; if acting as the master controller, it will also share the local start/stop signal with other slave controllers through cascading.

When [Defrosting Signal Sharing]=1, Valve # 1 and Valve # 2 of the controller share the defrosting signal; if acting as the master controller, it will also share the local defrosting signal with other slave controllers through cascading.

7.7 Restore Factory Settings

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
8.Pr	40149	Restore Factory Settings	J08	1	-1~999	-1	-1=Inactive; Password or 913=Restore Factory Settings

When factory reset is required:

RS485 Communication: After setting [Restore Factory Settings] to the password value (default: 5) or 913, the controller will automatically restart, and the factory reset will be completed successfully.

Key Operation: Change the corresponding parameter to the password value (default: 5) or 913, then long-press the key (SEL) ; the controller will automatically restart, and the factory reset will be completed successfully.

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
8.Pr	40148	Reset Command	J07	1	0~1	0	0=Invalid; 1=Valid

When [Reset Command]=1, the controller restarts.

8.Alarm Modes

8.1 Alarm table

Fault Name	Alarm Short Name	Valve Action
RUN signal disconnected	StP	Close Valve
Pressure transmitter disconnected	PoP	Execute according to [Sensor Fault Valve Opening]
Pressure transmitter short circuit	PSt	Execute according to [Sensor Fault Valve Opening]
Temperature sensor disconnected	toP	Execute according to [Sensor Fault Valve Opening]
Temperature sensor short circuit	tSt	Execute according to [Sensor Fault Valve Opening]
MOP Temperature sensor short circuit	noP	Integral Close Valve
LOP low pressure alarm	LoP	Close Valve
Superheat Control Mode: High superheat alarm Temperature Control Mode: High temperature alarm	HSH	Close Valve
Superheat Control Mode: Low superheat alarm Temperature Control Mode: Low temperature alarm	LSH	Close Valve
Low temperature freezing alarm	FrE	No effect

Note: For the MOP alarm, after the system suction pressure exceeds the set value and the delay time, an alarm is triggered, and the electronic expansion valve is forcibly closed.

8.2 Start-stop signal disconnection

When the start-stop signal is disconnected, an StP alarm is triggered and the valve closes.

8.3 Start-stop signal disconnection

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
2.Pr 5.Pr	40028 40088	1# Sensor Fault Valve Opening 2# Sensor Fault Valve Opening	b07 E07	1%	-1~100	50	-1=Maintain Current Opening 0=Valve Closed

When the pressure sensor is disconnected (PoP) or short-circuited (PSt), or the temperature sensor is disconnected (toP) or short-circuited (tSt), it indicates a sensor fault. In case of a sensor fault, operation follows the [Sensor Fault Valve Opening]. In superheat mode, when acting as the main controller, a fault in the pressure transmitter is considered a pressure sensor fault (short circuit or disconnection). When acting as the slave controller, a pressure sensor fault (short circuit or disconnection) is only considered if there is a fault in the pressure transmitter and no pressure shared data. In temperature control mode, pressure sensor short-circuit and disconnection faults are ignored.

8.4 MOP high-pressure alarm (Effective only in superheat mode)

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
2.Pr 5.Pr	40039 40099	1# MOP Alarm Mode 2# MOP Alarm Mode	b18 E18	1	0~1	1	0=Closed 1=Auto-reset
3.Pr 6.Pr	40040 40100	1# MOP Alarm Value 2# MOP Alarm Value	b19 E19	M: 0.1bar US: 1psi	M: -1~50 US: -15~725	M: 9 US: 130	
3.Pr 6.Pr	40041 40101	1# MOP Alarm Delay Time 2# MOP Alarm Delay Time	C00 F00	1Sec	0~999	60	
3.Pr 6.Pr	40042 40102	1# MOP Alarm Release Value 2# MOP Alarm Release Value	C01 F01	M: 0.1bar US: 1psi	M: -1~8.9 US: -15~129	M: 8 US: 116	
3.Pr 6.Pr	40043 40103	1# MOP Valve Closing Coefficient 2# MOP Valve Closing Coefficient	C02 F02	1	0~800	200	0=Valve Not Closed

Alarm Trigger Condition: [MOP Alarm Mode]=1, pressure value > [MOP Alarm Value], and the duration exceeds [MOP Alarm Delay Time].

Alarm Action: The MOP high-pressure over-alarm is triggered; if [MOP Integral Valve Closing Coefficient]=0, the valve does not close; otherwise, the electronic expansion valve closes.

Alarm Reset Condition: Pressure value < [MOP Alarm Release Value].

Alarm Reset Action: The MOP high-pressure over-alarm is reset, and automatic superheat control is resumed.

MOP Valve Closing Integral Time: When [MOP Alarm Mode]=1 and in superheat control mode, if the pressure value > [MOP Alarm Value], the valve closes based on the difference between the current pressure and the alarm pressure, as well as the integral time. A larger pressure difference results in faster valve closing; a larger integral time results in slower valve closing. If the integral time is set to 0, the MOP valve closing function is disabled.

MOP Integral Valve Closing Function:

- When [MOP Alarm Mode] is set to 0: No MOP alarm or MOP integral valve closing function is activated.
- When [MOP Alarm Mode]=1 and [MOP Valve Closing Coefficient]=0: The MOP alarm function is active, but the valve does not close after the alarm is triggered.
- When [MOP Alarm Mode]=1 and [MOP Valve Closing Coefficient] ≠ 0: If the real-time pressure exceeds [MOP Alarm Value], the MOP protection function is activated, interrupting superheat control. The valve closes at a certain rate to regulate pressure. Since valve closing follows an integral action, the closing speed directly depends on the difference between the real-time pressure and [MOP Alarm Value], as well as the [MOP Valve Closing Coefficient] setting. The greater the pressure exceeds [MOP Alarm Value], and the smaller the [MOP Valve Closing Coefficient], the faster the valve closes. Conversely, a larger [MOP Valve Closing Coefficient] or a smaller pressure difference results in slower valve closing.

If the real-time pressure drops below [MOP Alarm Value] during valve closing, the MOP integral valve closing function is canceled, and automatic superheat regulation resumes.

Examples:

Set [MOP Alarm Value] to 90, [MOP Valve Closing Coefficient] to 800, and maintain the current pressure at 91. The valve closing rate is: 10% closure in 60 seconds.

Set [MOP Alarm Value] to 90, [MOP Valve Closing Coefficient] to 1, and maintain the current pressure at 91. The valve closing rate is: Immediate full-speed closure to 0.

8.5 LOP low-pressure alarm (Effective only in superheat mode)

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
3.Pr 6.Pr	40052 40112	1# LOPAlarm Mode 2# LOPAlarm Mode	C11 F11	1	0~1	0	0=Disabled 1=Auto-reset
3.Pr 6.Pr	40053 40113	1# LOP Alarm Value 2# LOP Alarm Value	C12 F12	M: 0.1bar US: 1psi	M: -0.8~17.7 US: -12~256	0	
3.Pr 6.Pr	40054 40114	1# LOP Alarm Delay Time 2# LOP Alarm Delay Time	C13 F13	1Sec	5~200	5	
3.Pr 6.Pr	40055 40115	1# LOP Alarm Release Value 2# LOP Alarm Release Value	C14 F14	M: 0.1bar US: 1psi	M: -0.5~18 US: -7~261	M: 0.3 US: 4	

Alarm trigger condition: [LOP alarm mode]=1, when the pressure value is less than [LOP Alarm Mode], and the duration exceeds [LOP alarm delay time].

Alarm action: The digital tube displays "Lop" alarm, the LOP low-pressure under-alarm is set, and the electronic expansion valve closes.

Alarm reset condition: The pressure value is greater than [LOP Alarm Release Value].

Alarm reset action: The LOP low-pressure under-alarm is reset, and superheat automatic control is resumed.

8.6 HSH High Superheat Alarm

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
3.Pr 6.Pr	40044 40104	1# HSHAlarm Mode 2# HSHAlarm Mode	C03 F03	1%	0~1	0	0=Disabled 1=Auto reset
3.Pr 6.Pr	40045 40105	1# HSH Alarm Value 2# HSH Alarm Value	C04 F04	M: 0.1K US: 0.1K	M: 10~40 US: 18~72	M: 30 US: 54	Superheat mode
3.Pr 6.Pr	40045 40105	1# HSH Alarm Value 2# HSH Alarm Value	C04 F04	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 80 US: 176	Temperature control mode
3.Pr 6.Pr	40046 40106	1# HSH Alarm Delay Time 2# HSH Alarm Delay Time	C05 F05	1Min	1~600	3	
3.Pr 6.Pr	40047 40107	1# HSH Alarm Release Value 2# HSH Alarm Release Value	C06 F06	M: 0.1K US: 0.1K	M: 7~37 US: 13~67	M: 27 US: 49	Superheat mode
3.Pr 6.Pr	40047 40107	1# HSH Alarm Release Value 2# HSH Alarm Release Value	C06 F06	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 70 US: 158	Temperature control mode

In superheat control mode, HSH indicates excessively high superheat; in temperature control mode, it indicates excessively high temperature. The [HSH Alarm Release Value] should be set lower than the [HSH Alarm Value].

Alarm trigger condition: [HSH Alarm Mode]=1, when superheat exceeds [HSH Alarm Value], and the duration exceeds [HSH Alarm Delay Time].

Alarm reset condition: If superheat is less than [HSH Alarm Release Value].

Alarm reset action: The HSH high superheat alarm is set, and automatic control is resumed.

8.7 LSH Low Superheat Alarm

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
2.Pr 5.Pr	40035 40095	1# LSH Alarm Mode 2# LSH Alarm Mode	b 14 E 14	1	0~1	0	0=Closed 1=Auto-reset
2.Pr 5.Pr	40036 40096	1# LSH Alarm Value 2# LSH Alarm Value	b 15 E 15	M: 0.1K US: 0.1K	M: 0.5~30 US: 0.9~54	M: 0.5 US: 0.9	Superheat mode
2.Pr 5.Pr	40036 40096	1# LSH Alarm Value 2# LSH Alarm Value	b 15 E 15	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 0.5 US: 32.9	Temperature control mode
2.Pr 5.Pr	40037 40097	1# LSH Alarm Delay Time 2# LSH Alarm Delay Time	b 16 E 16	1Sec	1~300	15	
2.Pr 5.Pr	40038 40098	1# LSH Alarm Release Value 2# LSH Alarm Release Value	b 17 E 17	M: 0.1K US: 0.1K	M: 1~30.5 US: 1.8~54.9	M: 3 US: 5.4	Superheat mode
2.Pr 5.Pr	40038 40098	1# LSH Alarm Release Value 2# LSH Alarm Release Value	b 17 E 17	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 3 US: 37.4	Temperature control mode

In superheat control mode, LSH indicates excessively low superheat; in temperature control mode, it indicates excessively low temperature. The [LSH Alarm Release Value] should be set higher than the [LSH Alarm Value].

Alarm trigger condition: [LSH Alarm Mode]=1, when superheat is less than [LSH Alarm Value], and the duration exceeds [LSH Alarm Delay Time].

Alarm action: The digital tube displays an "LSH" alarm, the LSH low superheat alarm is set, and the electronic expansion valve closes.

Alarm reset condition: If superheat is greater than [LSH Alarm Release Value].

Alarm reset action: The LSH low superheat alarm is reset, and automatic control is resumed.

8.8 FrE Freeze Prevention Alarm

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
3.Pr 6.Pr	40048 40108	1# FrE Freeze Prevention Alarm Mode 2# FrE Freeze Prevention Alarm Mode	C07 F07	1	0~1	0	0=Disabled 1=Auto-reset
3.Pr 6.Pr	40049 40109	1# FrE Freeze Prevention Alarm Value 2# FrE Freeze Prevention Alarm Value	C08 F08	M: 0.1°C US: 0.1 °F	M: -40~40 US: -40~104	M: 0 US: 32	
2.Pr 5.Pr	40050 40110	1# FrE Freeze Prevention Alarm Delay Time 2# FrE Freeze Prevention Alarm Delay Time	C09 F09	1Sec	5~200	30	
3.Pr 6.Pr	40051 40111	1# FrE Freeze Prevention Alarm Release Value 2# FrE Freeze Prevention Alarm Release Value	C 10 F 10	M: 0.1°C US: 0.1 °F	M: -37~43 US: -34~109	M: 3 US: 37	

Alarm trigger condition: [FrE Freeze Prevention Alarm Mode]=1, when the suction temperature is less than [FrE Freeze Prevention Alarm Value], and the duration exceeds [FrE Freeze Prevention Alarm Delay Time].

Alarm action: The digital tube displays an "FrE" alarm, and the FrE Freeze Prevention Alarm is set.

Alarm reset condition: If the suction temperature is greater than [FrE Freeze Prevention Alarm Release Value].

Alarm reset action: The FrE Freeze Prevention Alarm is reset.

9.Parameter List

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
I.Pr	40001	Refrigerant	A00	1	-1~36	5	-1=User-defined 5=R507

Currently, there are 37 common types of refrigerants available for selection in the controller. For specific options, refer to the section: 7. Main Parameter Settings 1. Refrigerant Selection.

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
I.Pr	40002	Metric/Imperial	A01	1	0~1	0	0=Metric (M) 1=Imperial (US)
I.Pr	40003	Pressure Transmitter Short Circuit Alarm Switch	A02	1	0~1	0	0=Alarm Off 1=Alarm On
I.Pr	40004	Temperature sharing switch	A03	1	0~1	0	0=Temperature sharing disabled 1=Temperature sharing enabled
I.Pr	40005	Pressure Transmitter Type	A04	1	0~1	1	0=0.5~3.5V 1=0.5~4.5V
I.Pr	40006	Force Master/Slave Mode	A05	1	0~2	0	0=Automatic Selection 1=Forced Master 2=Forced Slave
I.Pr	40007	Sensor Input Filter Time	A06	1Sec	0~100	10	
I.Pr	40008	Pressure Sensor Maximum Value	A07	M: 0.1bar US: 1psi	M: -1.9~99.9 US: -19~999	M:20(Voltage Type) 12(Current Type) US:290(Voltage Type) 174(Current Type)	
I.Pr	40009	Pressure Sensor Minimum Value	A08	M: 0.1bar US: 1psi	M: -1.9~99.9 US: -19~999	M:-1(Voltage Type) -1(Current Type) US:-14(Voltage Type) -14(Current Type)	
I.Pr	40010	Valve 2# Opening Follows Valve 1#	A09	1	0~1	0	0=Not Follow 1=Follow
I.Pr	40011	1# Temperature Sensor Offset Correction	A10	M: 0.1K US: 0.1 °F	-19.9~19.9	0	
I.Pr	40012	2# Temperature Sensor Offset Correction	A11	M: 0.1K US: 0.1 °F	-19.9~19.9	0	
I.Pr	40013	1# Control Mode	A12	1	0~2	0	0=Superheat mode 1=Manual mode 2=Temperature control mode
I.Pr	40014	2# Control Mode	A13	1	0~2	0	0=Superheat mode 1=Manual mode 2=Temperature control mode
I.Pr	40015	1# Pressure Compensation	A14	M: 0.1bar US: 1psi	M: -9.9~9.9 US: -143~143	0	
I.Pr	40016	2# Pressure Compensation	A15	M: 0.1bar US: 1psi	M: -9.9~9.9 US: -143~143	0	

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
1.Pr	40017	Redefine 2# Start/Stop as Defrosting	A16	1	0~1	0	0=Disable Redefinition 1=Enable Redefinition
1.Pr	40018	Forced Defrosting Command	A17	1	0~1	0	0=Disable Defrosting 1=Enable Defrosting
1.Pr	40019	Defrosting Signal Sharing	A18	1	0~1	0	0=Disable Sharing 1=Enable Sharing
1.Pr	40020	Start/Stop Signal Sharing	A19	1	0~1	0	0=Disable Sharing 1=Enable Sharing
2.Pr 5.Pr	40021 40081	1# Superheat setting value 2# Superheat setting value	b00 E00	M: 0.1K US: 0.1K	M: 0.5~30 US: 0.9~ 54	M: 6 US: 10.8	Superheat mode
2.Pr 5.Pr	40021 40081	1# Temperature setpoint 2# Temperature setpoint	b00 E00	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 6 US: 42.8	Temperature control mode
2.Pr 5.Pr	40022 40082	1# Start-Stop Mode 2# Start-Stop Mode	b01 E01	1	0~2	1	0=Normally Open State 1=Signal Input 2=Communication Input
	40023 40083	1# 485 Start-Stop Signal 2# 485 Start-Stop Signal		1	0~1	0	0=Valve Running 1=Valve Stopped
	40024 40084	1# 485 Communication Control Opening 2# 485 Communication Control Opening		1%	-1~1000	-1	-1=Not Enabled
2.Pr 5.Pr	40026 40086	1# Manual Mode Opening 2# Manual Mode Opening	b05 E05	0.1%	0~100	0	
2.Pr 5.Pr	40027 40087	1# [Forced Valve Opening Ratio of Expansion Valve 2# [Forced Valve Opening Ratio of Expansion Valve	b06 E06	0.1%	-0.1~100	-0.1	-0.1=Not Enabled
2.Pr 5.Pr	40028 40088	1# Sensor Fault Valve Opening 2# Sensor Fault Valve Opening	b07 E07	1%	-1~100	50	-1=Maintain Current Opening 0=Valve Closed
2.Pr 5.Pr	40029 40089	1# Start opening ratio 2# Start opening ratio	b08 E09	1%	0~100	40	
2.Pr 5.Pr	40030 40090	1# Start opening ratio duration time 2# Start opening ratio duration time	b09 E09	1Sec	0~999	10	
2.Pr 5.Pr	40031 40091	1# Temperature Sensor Type 2# Temperature Sensor Type	b10 E10	1	0~3	0	0=NTC5K(-55~125°C) β:3970 1=NTC10K(-40~150°C) β:3977 2=NTC10K(-50~110°C) β:3435 3=NTC50K(-40~150°C) β:3950

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
2.Pr 5.Pr	40032 40092	1# P: Proportional Gain 2# P: Proportional Gain	b11 E11	0.1%	0.1~99.9	1	
2.Pr 5.Pr	40033 40093	1# I: Derivative Time 2# I: Derivative Time	b12 E12	1Sec	0~999	50	
2.Pr 5.Pr	40034 40094	1# D: Derivative Time 2# D: Derivative Time	b13 E13	1Sec	0~999	30	
2.Pr 5.Pr	40035 40095	1# LSH Alarm Mode 2# LSH Alarm Mode	b14 E14	1	0~1	0	0=Closed 1=Auto-reset
2.Pr 5.Pr	40036 40096	1# LSH Alarm Value 2# LSH Alarm Value	b15 E15	M: 0.1K US: 0.1K	M: 0.5~30 US: 0.9~54	M: 0.5 US: 0.9	Superheat mode
2.Pr 5.Pr	40036 40096	1# LSH Alarm Value 2# LSH Alarm Value	b15 E15	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 0.5 US: 32.9	Temperature control mode
2.Pr 5.Pr	40037 40097	1# LSH Alarm Delay Time 2# LSH Alarm Delay Time	b16 E16	1Sec	1~300	15	
2.Pr 5.Pr	40038 40098	1# LSH Alarm Release Value 2# LSH Alarm Release Value	b17 E17	M: 0.1K US: 0.1K	M: 1~30.5 US: 1.8~54.9	M: 3 US: 5.4	Superheat mode
2.Pr 5.Pr	40038 40098	1# LSH Alarm Release Value 2# LSH Alarm Release Value	b17 E17	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 3 US: 37.4	Temperature control mode
2.Pr 5.Pr	40039 40099	1# MOP Alarm Mode 2# MOP Alarm Mode	b18 E18	1	0~1	1	0=Closed 1=Auto-reset
2.Pr 5.Pr	40040 40100	1# MOP Alarm Value 2# MOP Alarm Value	b19 E19	M: 0.1bar US: 1psi	M: -1~50 US: -15~725	M: 9 US: 130	
2.Pr 5.Pr	40041 40101	1# MOP Alarm Delay Time 2# MOP Alarm Delay Time	C00 F00	1Sec	0~999	60	
2.Pr 5.Pr	40042 40102	1# MOP Alarm Release Value 2# MOP Alarm Release Value	C01 F01	M: 0.1bar US: 1psi	M: -1~8.9 US: -15~129	M: 8 US: 116	
2.Pr 5.Pr	40043 40103	1# MOP Valve Closing Coefficient 2# MOP Valve Closing Coefficient	C02 F02	1	0~800	200	0=Valve Not Closed
3.Pr 6.Pr	40044 40104	1# HSHAlarm Mode 2# HSHAlarm Mode	C03 F03	1	0~1	0	0=Disabled 1=Auto reset
3.Pr 6.Pr	40045 40105	1# HSH Alarm Value 2# HSH Alarm Value	C04 F04	M: 0.1K US: 0.1K	M: 10~40 US: 18~72	M: 30 US: 54	Superheat mode
3.Pr 6.Pr	40045 40105	1# HSH Alarm Value 2# HSH Alarm Value	C04 F04	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 80 US: 176	Temperature control mode
3.Pr 6.Pr	40046 40106	1# HSH Alarm Delay Time 2# HSH Alarm Delay Time	C05 F05	1Min	1~600	3	
3.Pr 6.Pr	40047 40107	1# HSH Alarm Release Value 2# HSH Alarm Release Value	C06 F06	M: 0.1K US: 0.1K	M: 7~37 US: 13~67	M: 27 US: 49	Superheat mode

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
3.Pr 6.Pr	40047 40107	1# HSH Alarm Release Value 2# HSH Alarm Release Value	C06 F06	M: 0.1°C US: 0.1 °F	M: -50~150 US: -58~302	M: 70 US: 158	Temperature control mode
3.Pr 6.Pr	40048 40108	1# FrE Freeze Prevention Alarm Mode 2# FrE Freeze Prevention Alarm Mode	C07 F07	1	0~1	0	0=Disabled 1=Auto-reset
3.Pr 6.Pr	40049 40109	1# FrE Freeze Prevention Alarm Value 2# FrE Freeze Prevention Alarm Value	C08 F08	M: 0.1°C US: 0.1 °F	M: -40~40 US: -40~104	M: 0 US: 32	
2.Pr 5.Pr	40050 40110	1# FrE Freeze Prevention Alarm Delay Time 2# FrE Freeze Prevention Alarm Delay Time	C09 F09	1Sec	5~200	30	
3.Pr 6.Pr	40051 40111	1# FrE Freeze Prevention Alarm Release ValueValue 2# FrE Freeze Prevention Alarm Release Value	C10 F10	M: 0.1°C US: 0.1 °F	M: -37~43 US: -34~109	M: 3 US: 37	
3.Pr 6.Pr	40052 40112	1# LOPAlarm Mode 2# LOPAlarm Mode	C11 F11	1	0~1	0	0=Disabled 1=Auto-reset
3.Pr 6.Pr	40053 40113	1# LOP Alarm Value 2# LOP Alarm Value	C12 F12	M: 0.1bar US: 1psi	M: -0.8~17.7 US: -12~256	0	
3.Pr 6.Pr	40054 40114	1# LOP Alarm Delay Time 2# LOP Alarm Delay Time	C13 F13	1Sec	5~200	5	
3.Pr 6.Pr	40055 40115	1# LOP Alarm Release Value 2# LOP Alarm Release Value	C14 F14	M: 0.1bar US: 1psi	M: -0.5~18 US: -7~261	M: 0.3 US: 4	
3.Pr 6.Pr	40056 40116	1# Holding Current (Reserved) 2# Holding Current (Reserved)	C15 F15	1	0~1	0	0=No holding current 1=Holding current
3.Pr 6.Pr	40057 40117	1# Expansion Valve Excitation Mode 2# Expansion Valve Excitation Mode	C16 F16	1	0~1	0	0=1-2 Phase Excitation 1=2-2 Phase Excitation (Effective after restart)
3.Pr 6.Pr	40058 40118	1# Expansion Valve Total Steps 2# Expansion Valve Total Steps	C17 F17	1pulse	10~999	50	Actual steps=×10 (Effective after restart)
3.Pr 6.Pr	40059 40119	1# Expansion Valve Opening Steps 2# Expansion Valve Opening Steps	C18 F18	1pulse	0~999	30	(Effective after restart)
3.Pr 6.Pr	40060 40120	1# Expansion Valve Driving Speed 2# Expansion Valve Driving Speed	C19 F19	1PPS	1~500	30	(Effective after restart)
3.Pr 6.Pr	40061 40121	1# Expansion Valve Stopping Overstep Steps 2# Expansion Valve Stopping Overstep Steps	d00 H00	1pulse	0~999	8	(Effective after restart)

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
3.Pr 6.Pr	40062 40122	1# Expansion Valve Power-On Reset Overstep Ratio 2# Expansion Valve Power-On Reset Overstep Ratio	d01 H01	1%	0~100	12	
3.Pr 6.Pr	40063 40123	1# Expansion Valve Power-Off Valve Closing Speed (Reserved) 2# Expansion Valve Power-Off Valve Closing Speed (Reserved)	d02 H02	1PPS	1~500	90	
4.Pr 7.Pr	40064 40124	1# Expansion Valve Direction 2# Expansion Valve Direction	d03 H03	1	0~1	0	0=Forward 1=Reverse
4.Pr 7.Pr	40065 40125	1# Coil Excitation Time 2# Coil Excitation Time	d04 H04	1	30~500	50	(Effective after restart)
4.Pr 7.Pr	40066 40126	1# Expansion Valve Maximum Opening 2# Expansion Valve Maximum Opening	d05 H05	1%	0~100	100	
4.Pr 7.Pr	40067 40127	1# Expansion Valve Minimum Opening 2# Expansion Valve Minimum Opening	d06 H06	1%	0~100	0	
4.Pr 7.Pr	40069 40129	1# Expansion Valve Enable 2# Expansion Valve Enable	d08 H08	1	0~1	1	0=Disabled 1=Enabled (Effective after restart)
4.Pr 7.Pr	40070 40130	1# Defrosting Opening 2# Defrosting Opening	d09 C09	0.1%	0~100	100	
4.Pr 7.Pr	40071 40131	1# Temperature control direction 2# Temperature control direction	d10 C10	1	0~1	100	0=When the temperature is greater than the target, the opening decreases 1=When the temperature is greater than the target, the opening increases
8.Pr	40141	Refrigerant Custom Parameter A1	J00	1	-20000~20000	9975	R449A
8.Pr	40142	Refrigerant Custom Parameter A2	J01	1	-20000~20000	-2020	R449A
8.Pr	40143	Refrigerant Custom Parameter A3	J02	1	-20000~20000	2424	R449A
8.Pr	40144	Password	J03	1	0~999	5	
8.Pr	40145	Communication ID Setting	J04	1	1~254	1	
8.Pr	40146	Pressure Sharing Communication ID	J05	1	1~254	2	
8.Pr	40147	Communication Speed Setting	J06	1	0~29	1	1=9600、8 data bits, no parity, 1 stop bit

Page	Address	Parameter Name	Code	Step/Unit	Range	Default Value	Note
B.Pr	40148	Reset Command	J07	1	0~1	0	(Controller Restart) 0=Invalid 1=Valid
B.Pr	40149	Restore Factory Settingse	J0	1	-1~999	-1	1=Inactive; Password or 913 =Restore Factory Settingse

[40147: Communication Speed Setting] Options:

0=4800	8 data bits	no parity	1 stop bit	15=4800	8 data bits	no parity	2 stop bit
1=9600	8 data bits	no parity	1 stop bit	16=9600	8 data bits	no parity	2 stop bit
2=19200	8 data bits	no parity	1 stop bit	17=19200	8 data bits	no parity	2 stop bit
3=38400	8 data bits	no parity	1 stop bit	18=38400	8 data bits	no parity	2 stop bit
4=2400	8 data bits	no parity	1 stop bit	19=2400	8 data bits	no parity	2 stop bit
5=4800	8 data bits	even parity	1 stop bit	20=4800	8 data bits	even parity	2 stop bit
6=9600	8 data bits	even parity	1 stop bit	21=9600	8 data bits	even parity	2 stop bit
7=19200	8 data bits	even parity	1 stop bit	22=19200	8 data bits	even parity	2 stop bit
8=38400	8 data bits	even parity	1 stop bit	23=38400	8 data bits	even parity	2 stop bit
9=2400	8 data bits	even parity	1 stop bit	24=2400	8 data bits	even parity	2 stop bit
10=4800	8 data bits	odd parity	1 stop bit	25=4800	8 data bits	odd parity	2 stop bit
11=9600	8 data bits	odd parity	1 stop bit	26=9600	8 data bits	odd parity	2 stop bit
12=19200	8 data bits	odd parity	1 stop bit	27=19200	8 data bits	odd parity	2 stop bit
13=38400	8 data bits	odd parity	1 stop bit	28=38400	8 data bits	odd parity	2 stop bit
14=2400	8 data bits	odd parity	1 stop bit	29=2400	8 data bits	odd parity	2 stop bit

10. Communication Settings

10.1 RS485

Communication with the host computer. The SECD04 controller acts as a slave device. The host computer can communicate normally with the controller using either ID=255 or ID=[Communication ID Setting]. Regarding the communication baud rate: Within 4 seconds after power-on, the controller operates at a baud rate of 9600bps. If the controller receives and parses 9600bps data correctly within this 4-second window, it will continue to operate at "9600bps, 8 data bits, 1 stop bit, no parity" after the 4 seconds. If the controller fails to parse any data correctly within this 4-second period, it will instead operate at the baud rate specified in [Communication Speed Setting] after the 4 seconds.

Item	Description
Transmission line connection	Multi-line transmission
Communication method	RS485 (2-wire, half-duplex)
Baudrate	Default 9600bps, Range:2400~38400bps
Parity, data, stop bit	No parity/Even parity/Odd parity, 8 data bits, 1 stop bit/2 stop bits Default: No parity, 8 data bits, 1 stop bit
Protocol type	Modbus RTU
Function code	0x03, 0x06, 0x10
Max. number of words read	100
Cable type	Belden 9841/9842, LG LIREV-AMESB
Polling interval	>100ms

10.2 INTERCOM

INTERCOM Cascade Communication. Do not connect the host computer's RS-485 communication cable to this port; otherwise, it may cause errors in cascade communication data.

10.3 Communication Status Table

Address	Function	Unit	Type	Word Count	Remarks	MMI
40301	1# Current superheat	K	Analog signal	INT 16	-55.0 ~ 200.0	x10
40302	1# Current pressure	M: bar US: psi	Analog signal	INT 16	M: -1.00 ~ 99.00 US: -14.5 ~ 1438.7	M: x100 US: x10
40303	1# Expansion valve opening	%	Analog signal	INT 16	0.0 ~ 100.0	x10
40304	1# Current temperature	M: °C US: °F	Analog signal	INT 16	M: -100.0 ~ 200.0 US: -148.0 ~ 392.0	x10
40305	2# Current superheat	K	Analog signal	INT 16	-55.0 ~ 200.0	x10
40306	1# Saturation temperature	M: °C US: °F	Analog signal	INT 16	M: -55.0 ~ 200.0 US: -67.0 ~ 392.0	x10
40307	2# Expansion valve opening	%	Analog signal	INT 16	0.0 ~ 100.0	x10
40308	2# Current temperature	M: °C US: °F	Analog signal	INT 16	M: -100.0 ~ 200.0 US: -148.0 ~ 392.0	x10
40309	2# Current pressure	M: bar US: psi	Analog signal	INT 16	M: -1.00 ~ 99.00 US: -14.5 ~ 1438.7	M: x100 US: x10
40310	Pressure sensor pressure	M: bar US: psi	Analog signal	INT 16	-1.00 ~ 99.00	x100
40311	Current master	-	Analog signal	0=Slave; 1=Master		
40312	1# Alarm Register	-	Analog signal	INT 16	Determined by subsequent digital signals	
Bit0	Pressure sensor disconnected	-	Digital signal	bit	0: OFF	1: ON
Bit1	Pressure sensor short-circuited	-				
Bit2	1# Temperature sensor disconnected	-				
Bit3	1# Temperature sensor short-circuited	-				
Bit4	1#MOP	-				
Bit5	1#LOP	-				
Bit6	1#HSH	-				
Bit7	1#LSH	-				
Bit8	1# Freeze Prevention Alarm	-				
40313	2# Alarm Register	-	Analog signal	INT 16	Determined by subsequent digital signals	
Bit0	Pressure sensor disconnected	-	Digital signal	bit	0: OFF	1: ON
Bit1	Pressure sensor short-circuited	-				
Bit2	2# Temperature sensor disconnected	-				
Bit3	2# Temperature sensor short-circuited	-				
Bit4	2#MOP	-				
Bit5	2#LOP	-				

Address	Function	Unit	Type	Word Count	Remarks	MMI
Bit6	2#HSH	-	Digital signal	bit	0: OFF	1: ON
Bit7	2#LSH	-				
Bit8	2# Freeze Prevention Alarm	-				
40314	Valve type (DIP switch setting	-	Analog signal	INT 16	0 ~ 3	x1
40316	1#Run/Stop Input	-	Analog signal	INT 16	0: Stop	1: Run
40317	2#Run/Stop Input	-	Analog signal	INT 16	0: Stop	1: Run
40318	1# Expansion valve operation status	-	Analog signal	0 = Power-on reset; 1 = Normal reset; 2 = Resetting; 3 = Standby mode; 4 = Refrigeration start; 5 = Refrigeration running; 6 = Defrost running		
40319	2# Expansion valve operation status	-	Analog signal			
40327	2# Saturation temperature	M: °C US: °F	Analog signal	INT 16	M: -55.0 ~ 200.0 US: -67.0 ~ 392.0	x10