



SINOCLIMA

Transport refrigeration system



HENAN SINOCLIMA INDUSTRY CO.,LTD.

www.sinoclima.com

TRANSPORT REFRIGERATION

USER MANUAL_(QF650BD)

-with Electric Standby

About Us

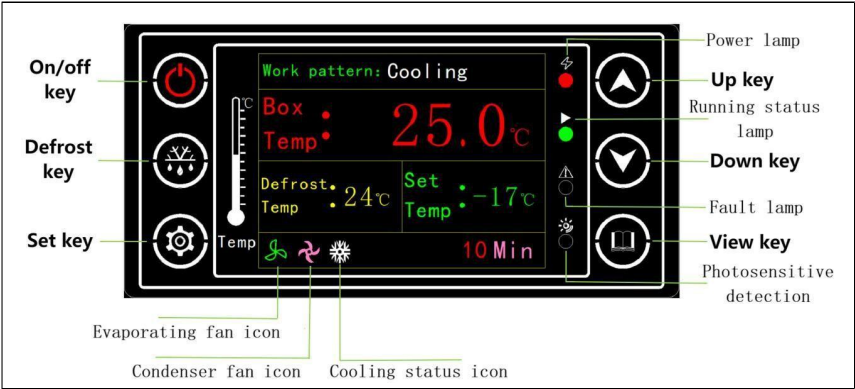
Sinoclima was adopting the ATP international standard and taking the latest Europe&American technology. We also imported the most advanced production equipment and spare parts from Germany, Italy, Japan, and the USA. Effectively improving product quality and market competitiveness. With advanced technology, high product configuration, low failure rate, and low maintenance cost, we have won the customer's unanimous praise. Products have been exported to Australia, Southeast Asia, Africa, The Middle East, South America, Russia, and European countries.









1. TECHNICAL PARAMETERS

Rated voltage	DC24V / 12V
Voltage detection range	DC0V ~ DC50V
Operating Voltage Range	DC20V ~ DC30V / DC9V ~ DC16V
Rated operating current	Less than 100mA
Operating Temperature Range	-30℃ ~ 80℃
Operating humidity range	5% ~ 95%
Temperature display accuracy	0.1℃
Temperature display range	-35℃ ~ 60℃
Temperature setting accuracy	1℃
Brightness adjustment range	Level 1-3
Evaporator fan control output	MAX 3A
Condenser fan control output	MAX 3A
Compressor control output	MAX 3A
Defrost solenoid valve control output	MAX 3A
Temperature sensor model	Rb=5K B=3470 at 25℃
High/low pressure switch signal type	Ground when normal,disconnect when fault
External Dimension	140*61*27mm
Temperature detection and control standards	Box temperature control is based on the return air temperature sensor; Defrost temperature control is based on defrost temperature sensor

2. CONTROL PANEL









Description of some icons			
	Cooling status icon		Condenser fan icon
	Heating status icon		Defrost status icon
	Evaporator fan icon		4G network connection icon

3.INTERFACE DEFINITION

QF650 Interface Pinout (From lead direction)																	
<div><div></div><table><tr><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td></tr><tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table></div>				14	13	12	11	10	9	8	7	6	5	4	3	2	1
14	13	12	11	10	9	8											
7	6	5	4	3	2	1											
1	Low Pressure Switch Detection		8	Controller DC power positive pole													
2	Controller DC power supply negative pole		9	High Pressure Switch Detection													
3	Temperature sensor input (public)		10	Box temperature sensor output													
4	N/A		11	Defrost temperature sensor output													
5	Fuse Detection		12	Evaporator fan Control signal													
6	Defrosting solenoid valve control signal		13	Road Compressor control signal													
7	Exhaust temperature sensor(optional)		14	Condenser fan control signal													

4.OPERATION

Icon	Definition	Description
	ON/FF	<p>1.Power on operation: While the vehicle engine is running, short press the ON/OFF key will start the refrigerating system.</p> <p>If the system is normal, it will enter the cooling or heating mode according to the set temperature.</p> <p>2. Shutdown operation: Press the ON/OFF key for 2 seconds and the shutdown process will commence.</p>

Icon	Definition	Description
	UP KEY	In the normal operation of the refrigeration system, short press the "UP key" or "DOWN key", the set temperature in the display area will change (accuracy is 1℃), and short press the "SET key", you can change the setting temperature. *Advanced Setting Parameter"H3" allows you to adjust the maximum allowable setting value.
	DOWN KEY	*Advanced Setting Parameter "H4" allows you to adjust the minimum allowable setting value
	DEFROST	In cooling mode and the defrost temperature is lower than the defrost stop temperature. Press and hold the "Defrost" button for more than 2 seconds, the defrost indicator lights up, enter into the manual defrosting.
	SET KEY	
	VIEW KEY	During normal system operation, short press the "View" button , you can check: System voltage,The current operating time (accuracy is 1 minute), the accumulated operating time (accuracy is 1 hour), the time to next defrosting, etc.

5.OPERATION FUNCTION

Definition	Description
COOLING FUNCTION	At cooling mode,If the set temperature is lower than inside box temperature ,the cooling indicator light on.When the inside box temperature reach set temperature the cooling indicator will twinkle.the inside box temperature equal to setting temperature plus cooling temperature difference(E2),the controller start cooling .

	<p>When cooling system working ,the output signal is compressor signal,evaporator fan signal,and condenser signal.</p> <p>Note : when inside box temperature sensor fail,the setting temperature below 0 degree,the system begin to cooling .</p>
HEATING FUNCTION	<p>At heating mode ,the set temperature is higher than inside box temperature,the heating indicator light on ,when inside box temperature reach to set temperature,the heating indicator begin to twinkle.the inside temperature go down to setting temperature reduce to heating difference (E3),the controller start heating.</p> <p>Heating system working ,the output signal is compressor signal ,evaporator fan signal and defrost solenoid valve signal.</p> <p>(If the condenser fan is to be operated, the advanced parameter "H14" needs to be set to on.)</p> <p>Note: 1,when the inside box temperature sensor fail,the setting temperature is above 0 °C,the heating system working.</p> <p>2.if heating temperature difference (E3) set as "OFF", the heating system turn off.</p>
DEFROSTING FUNCTION	<p>1,Auto Defrost</p> <p>In cooling mode,the defrost interval time (E1) reaches and the defrost temperature is lower than the defrost stop temperature ,the system executes defrost and the defrost indicator lights up.</p> <p>2,Manual Defrost</p> <p>In cooling mode and the defrost temperature is lower than the defrost stop temperature. Press and hold the "Defrost" button for more than 2 seconds, the defrost indicator lights up, enter into the manual defrosting.</p> <p>3,Temperature difference defrost</p> <p><i>Note: This defrost function needs to be activated when the advanced parameter "H10" is "open"</i></p> <p>In cooling mode, when the defrost temperature is lower than the advanced parameter "H12", and the temperature inside the box minus the defrost temperature is greater than the advanced parameter "H11", the system executes defrost, and the defrost indicator lights up.</p> <p>When the defrost temperature is higher than the defrost stop temperature (E4) or defrost execution (H1) arrives, then stop defrost.</p> <p>the output signals are: compressor signal, defrost solenoid valve signal (if you need</p>

	condenser fan operation, please set the advanced parameter "H14" for "open").
DRIPPING FUNCTION	After defrost, the system automatically enter into the draining function, the defrosting indicator flashes, when the draining time reaches the set time (H2), the system stops draining and turn to cooling or Cooling Waiting .There is no output signal when the water is dripping.
When the temperature is reached, if the evaporator fan is running?	When the temperature reaches the set temperature, if you want the evaporator fan to continue to run, please set the advanced parameter "H5" to "On".
If the defrost sensor alarm?	If the defrost sensor is faulty and no alarm is needed, please set the advanced parameter "H13" to "Off", if alarm is needed, please set it to "On".
Display Brightness Adjustment	When the system is on, the advanced parameter "H15" is set to "Auto Adjustment", the controller will adjust the brightness of the display according to the actual light, if the advanced parameter "H15" is set to "1~3", the controller will no longer adjust the brightness of the display automatically.
Alarm function	System fault conditions, the "display area" will display the corresponding fault description (see Table 1), Buzzer alert, short press the button can be temporarily shielded from fault codes and buzzer alert, 10 minutes later, the buzzer alert again, with this cycle, until troubleshooting.

Table 1

Description of the possible errors			
Error Code	Description	Error Code	Description
OPE1	Box temperature sensor open circuit	SHr1	Box temperature sensor short circuit
OPE2	Defrost temperature sensor open circuit	SHr2	Defrost temperature sensor short circuit
HPEr	High pressure fault	LPEr	Low pressure fault
HUEr	Supply voltage is too high	LUEr	Supply voltage is too low
FU01 COMP	Compressor fuse blown	FU02 COND	Condenser fan fuse blown
FU03 EVAP	Evaporator fan fuse blown	FU04 DEF	Defrost valve fuse blown

6.PARAMETER SETTING

6.1,Modify the parameter values

- 1. Press **SET** key **2 seconds** to Enter into the parameter setting interface.
- 2. Press **UP** or **DOWN** to choose parameters.
- 3. Press the **SET** key, display the parameter value
- 4. Press **UP** or **DOWN** to modify the value
- 5. Press **SET** key to save the new parameter value, and enter into next parameter setting process



Table 2

Codes	Definitions	Unit	Range	Accuracy	Default Value
E1	Defrost interval time	Minutes	30~600	1	120
E2	Cooling return Temperature difference	℃	1~20	1	2
E3	Heating return temperature difference	℃	1~20~OFF	1	OFF
E4	Defrost termination temperature	℃	0~30	1	15

6.2,Modify advanced parameter setting

- Press the **SET** key **5 seconds** to enter into the parameters setting interface.



Table 3(Note: Please do not change the advanced parameters arbitrarily,May cause improper operation)

Codes	Definitions	Unit	Range	Accuracy	Default Value
H1	Defrost execution time	Minutes	0~60	1	20
H2	Dripping time after defrost	Minutes	1~10	1	2
H3	Max set point temp	℃	10~40	1	35
H4	Min set point temp	℃	-35~10	1	-25
H5	Evaporator fan operating mode	OFF~ON OFF:Reach set temp ,Evap fan stop working; ON:Reach temp,Evap fan still working;			OFF
H6	Power supply voltage selection	12~24~AUTO	12: DC12V 24: DC24V AUTO: Auto		Auto
H7	Box temperature correction	℃	-10~10	1	0
H8	Voltage alarm differential	V	1~20	1	5
H9	Compressor min off time	S	10~250	10	10
H10	Temperature difference defrost mode	OFF~ON			OFF
H11	Defrost temperature difference	℃	1~24	1	24
H12	Operating temperature difference defrost: Defrost temperature	℃	-15~30	1	0
H13	Defrost sensor fault alarm	OFF~ON			ON
H14	Condenser fan is running while heating or defrosting mode	OFF~ON			OFF
H15	Screen brightness level	1~3~AUTO		1	Auto
H16	Display font color	Red-White-Yellow-Green			Red
H17	Fuse detect function switch	OFF~ON			ON
H18	Auto-Restart	OFF~ON			ON
H19	SPS-Function	OFF~ON			OFF

Note: Voltage alarm differential

12V voltage is based on 14V, 14V± (set value of H8) is the alarm stop voltage.


24V voltage is based on 26V, 26V± (set value of H8) is the alarm stop voltage.

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