NA8810 （449801）

Main Function and Technique Index

Main Function:

☞ **Refrigeration Controlling (Refrigeration / heat):** temperature display, temperature controlling (refrigeration/heat mode can be set)，compressor start delay protection, temperature sensor error alarm.

☞ **External alarm:** one external alarm input, it can be set to 5 modes: always open, always open locked, always closed, always closed locked or forbidden.

Main Technique Index:

- **Temperature display range:** -50～150℃(The resolution is 0.1℃)
  -58～302℉(The resolution is 0.1℉)
- **Power supply:** AC 220V±10% or AC 380V±10% 50Hz (Refer to the wiring diagram)
- **Operating environment:** temperature -10℃～50℃, humidity≤85%.
- **Relay contact capability:** 20A/250VAC (pure resistive load)
- **Temperature sensor:** NTC R25=5kΩ, B (25/50) =3470K
- **Executive standard:** Q/320585 XYK 01 (NA8810-CTA)

Operating Guide

Panel:

What's the meaning of the index lights on the panel?

The function of the LED on the panel is showing below:

Index Light	Name	Light	Flash
	Temp Setting	In the state of temp setting	-
	Refrigeration	Refrigerating	Ready to refrigerate, in the state of compressor start delay protection
	Heat	Heating	Ready to heat, in the state of compressor start delay protection
	-	-	-
	-	-	-
	Alarm	-	Alarm state

The meaning of the LED display

The LED usually shows temperature, if it shows "SHr", it means the temperature sensor is short, and "OPE" means the temperature sensor is open. The temperature and the alarm code (Axx) will show alternately when in the alarm state.

The code is showing below:

Code	Signification	Explanation
A11	External alarm	Alarm from external alarm signal, please refer to the internal parameter code "F50"
A21	Temperature sensor error	Open or short（showing "OPE" or "SHr"）

How to set the temperature?

Press the key "set" for at least 2 seconds, then enter the state of temperature setting, here the LED displays the setting temperature, then using "▲" key or "▼" key can change the parameter（the key"▲"adds 0.1°C, the key"▼"minuses 0.1°C, press and hold it over 0.5 seconds can add or minus rapidly）. After setting, press "set" again, then exit the state of parameter setting. (The setting temp range is limited by the parameters F13 and F14, please refer to the advanced operation). Pressing the key "M" in the setting process means cancel and exit, but the setting value will not be saved.

How to refrigerate (or heat) forcibly?

When displaying current temperature, the temperature is between "setting temperature－temperature difference" and "setting temperature＋temperature difference", the system may or not refrigerate, here you

press the key "▲" and hold it for 5 seconds, the controller will enter the refrigeration state forcibly when in the refrigeration state, and stop refrigeration when the temperature is below "setting temperature－temperature difference"; the controller will enter the heat state forcibly when in the heat state, and stop heating when the temperature is above "setting temperature＋temperature difference".

✓ Advanced Operation

Press the key "M" and hold it for 5 seconds, and if you have set the password, the LED display the "PAS" to hint you to enter the password, you can use the key "▲" and "▼" to enter the password, if the password is correct, the LED will display the parameter code, use "▲" or "▼" to select the parameter code，Pressing the "set" key can make it to show the value of the parameter after select the parameter, here you use "▲" or "▼" to set the parameter(pressing the key and not release can add or minus rapidly), then press the "set" key to return to the state of showing parameter code after finishing setting. Pressing the key "M" can exit the parameter setting state when display the parameter code, pressing the key "M" means cancel when in the process of setting parameter, and the parameter will not be changed.

Internal parameter code is showing below:

Sort	Code	Parameter Name	Range	Factory setting	Unit	Remark
Temperature	F11	Setting temperature	F14 – F13	28	℃/℉	The setting range is limited by F13 and F14
	F12	Temperature difference	0.1 – 20	0.5	℃/℉	Control the temperature difference, please refer to the temperature controlling
	F13	Max setting temperature	-58 - 302	60	℃/℉	Notice: the controller will follow the rule of F14<F11<F13 forcibly, if you find out that one parameter can not be adjusted, it is because the parameter is limited by other parameters, you must first adjust other parameters
	F14	Min setting temperature	-58 – 302	5	℃/℉	
	F19	Temp sensor adjustment	-20 – 20	0.0	℃/℉	Adjust the temperature sensor bias
Compressor	F21	Compressor delay time	0 -- 10	0	min	
	F29	Compressor controlling mode (temp controlling mode)	COOL / HEAT	COOL	-	COOL: refrigeration mode HEAT: Heat mode
Alarm	F50	External alarm mode	0 -- 4	0	-	0: without external alarm 1: always open, unlocked 2: always open, locked 3: always closed, unlocked 4: always closed, locked
System setting	F80	Password	OFF 0001 -- 9999	281	-	OFF means no password 0000 means clearing password
	F81	Temperature unit	C/F	C	-	C: Centigrade F: Fahrenheit
Testing	F98	Reserved				
	F99	Test self	**This function can attract all relays in turn, and please don't use it when the controller is running!**			
	End	Exit				

❄ Basic Operating Principle

Temperature controlling

The controller has 2 temperature controlling mode: Refrigeration and Heat(F29).Temperature controlling point is controlled by "setting temperature (F11, or press the "set" key for some time to set)" and "temperature difference(F12)".In refrigeration mode, the controller begins to refrigerate when the temperature of the temperature sensor is over "setting temperature ＋ temperature difference", and it stops refrigerating when the temperature is under "setting temperature － temperature difference"; In heat mode, the controller begins to heat when the temperature of the temperature sensor is under "setting temperature － temperature difference", and it stops heating when the temperature is over "setting temperature ＋ temperature difference"

Compressor delay time

The compressor delay time is set by F21, for example, 3 minutes. The controller contains a "compressor halt calculagraph", and it begins to time when compressor stops, the program first check the calculagraph before booting the compressor next time, the program will immediately boot the compressor if the calculagraph reach 3 minutes ,if the calculagraph doesn't reach 3 minutes ,it will boot again when the calculagraph reaches 3 minutes. Thus you can ensure that the boot alternation is over 3 minutes after halt,

so it can prevent to breaking the compressor as a result of frequent boot. In addition, the controller doesn't boot the compressor within 3 minutes after turning on the power supply, thus the compressor can also be protected in the state of power cut and then power on.

External alarm

The controller can connect a switching value as external alarm source (Pin 4, 5), when the external alarm occurs, the controller stops, displays the alarm code "A11" and generates alarm output. External alarm signal has 5 modes (F50):

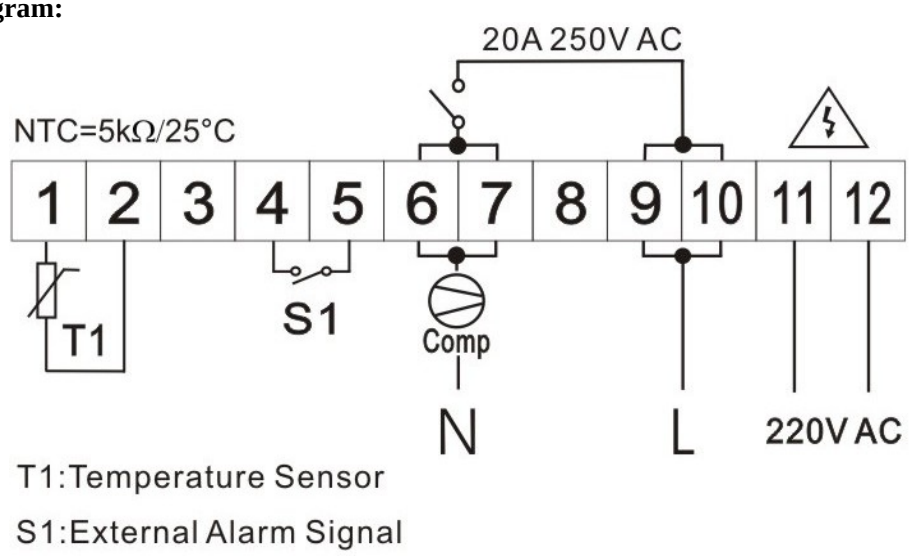
0: without external alarm
1: always open, unlocked
2: always open, locked
3: always closed, unlocked
4: always closed, locked

"Always open" means in normal state, external alarm signal is open, if closed, the controller will give an alarm; "Always closed" is on the contrary. "Locked" means that when external alarm signal becomes normal, the controller is still in the alarm state, and it needs to press any key to resume.

Password

In order to prevent irrespective persons from changing the parameters, you can set a password (F80), and if you have set a password, the controller will hint you to enter the password after you press the key "M" for 5 seconds, you must enter the correct password, and then you can set the parameters. If you don't need the password, you can set F80 to "OFF". Notice that you must remember the password, and if you forget the password, you can not enter the set state.

Wiring Diagram:



Notice:

1. **Please read the guide carefully before using, and set the parameter accurately.**
2. **Please place the temperature sensor at the place of air return of the air-cooler.**
3. **Please use the temperature sensor which is supplied by our company.**