NA6810-2 User Guide

Main Function and Technique Index

Main Function:

☞ **Refrigeration Controlling (Refrigeration / heat):** temperature showing, 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.

☞ **Real Time Clock (RTC):** Internal RTC, it is still running when power off, and it supplies an accurate time.

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:** 8A/250VAC (pure resistive load)
- **Temperature sensor:** NTC R25=5kΩ, B (25/50) =3470K
- **Executive standard:** Q/320585 XYK 01 (NA6810-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 F24
	Heat	Heating	Ready to heat, in the state of F24
	-	-	-
	-	-	-
	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"）
A99	Over probation time	If you have set the probation time F87, the alarm occurs when the accumulative running time is over probation time, and the controller can not work.

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 look over and adjust the real clock time?

Press the key “Set” to enter the state of displaying time when in the state of displaying temperature. Press the key “Set” for some time to enter the state of adjusting time, and press the key “Set” to return to the state of displaying temperature.

In the state of adjusting time, the hour part of the LED flashes, and you can adjust the hour by using the key “▲” and “▼”, then press the key “Set”, and the minute part of the LED flashes, you can also use the key “▲” and “▼” to adjust the value, then press the key “Set” again to exit. Pressing the key “M” in the adjusting process means giving up and exiting, but the time will not be saved.

✓ 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	62.0	℃/℉	The setting range is limited by F13 and F14
	F12	Temperature difference	0.1 ～ 20	1.0	℃/℉	Control the temperature difference, please refer to the temperature controlling
	F13	Max setting temperature	-58 ～ 302	302	℃/℉	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	-58	℃/℉	
	F19	Temp sensor adjustment	-20 ～ 20	0.0	℃/℉	Adjust the temperature sensor bias
Compressor	F20	Compressor delay when power on	0 ～ 10	3	min	
	F21	Compressor delay time	0 ～ 10	3	min	
	F24	Continuous low temp or high temp accumulative time	1 ～ 21	7	day	
	F29	Compressor controlling mode (temp controlling mode)	COOL / HEAT	HEAT	-	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
RTC	F60	Set the RTC time	00：00～23：59	-	-	
System setting	F80	Password	OFF 0001 ～ 9999	OFF	-	OFF means no password 0000 means clearing password
	F81	Temperature unit	C/F	C	-	C: Centigrade F: Fahrenheit
	F85	Display accumulative running time	-	-	hour	
	F86	Accumulative running time reset	-	-	-	
	F87	Probation time	OFF 1 ～ 9999	OFF	hour	The controller will stop if the accumulative time is over probation time, and show the alarm code “A99”. OFF means no probation time
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 after F24 when the temperature of the temperature sensor is over "setting temperature ＋ temperature difference", and it stops refrigerating when the temperature is under "setting temperature"; In heat mode, the controller begins to heat after F24 when the temperature of the temperature sensor is under "setting temperature", and it stops heating when the temperature is over "setting temperature ＋ temperature difference".

In refrigeration mode, the controller begins to add up continuous high temperature time when the temperature of the temperature sensor is over "setting temperature ＋ temperature difference", if the temperature is below "setting temperature ＋ temperature difference", continuous high temperature time is given up, and starts adding up continuous high temperature time again when the temperature of the temperature sensor is over "setting temperature ＋ temperature difference" again; In heat mode, the controller begins to add up continuous low temperature time when the temperature of the temperature sensor is below "setting temperature", if the temperature is over "setting temperature", continuous low temperature time is given up, and starts adding up continuous low temperature time again when the temperature of the temperature sensor is below "setting temperature" again.

Compressor delay when power on

The compressor delay when power on is set by F20, for example, 3 minutes, the controller does not start the compressor within 3 minutes after power on.

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.

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.

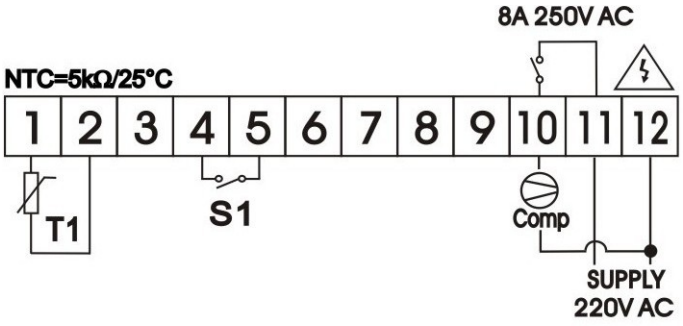
Probation time

A probation time can be set (F87), the controller can add up the running time after power is on, if the accumulative running time is over the probation time, the controller will stop and display the alarm code A99, if you want to eliminate the limit of probation time, set the F87 to "OFF", also you can use the F86 to clear the accumulative running time, and you can try to use it again. The parameter F85 can be used to examine the accumulative running time of the controller (hour).

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:



T1:Temperature Sensor

S1:External Alarm Signal

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 sensors which are supplied by our company.**
4. **The RTC power of the controller is supplies by super capacitance, and the RTC can run for 3 days when power cut, if the power cut time is over 3 days, you may adjust the RTC again.**