




NA220 User Guide


Main Functions


 **Refrigeration controlling:** temperature display, temperature controlling, compressor boot delay protection, Temperature controlling sensor error alarm.


 **Defrosting controlling:** controlled by both temperature and time, dripping, manual defrosting


Main Technique Index

 **Temperature display range:** -50~125°C (The step between -9.9 and 99.9°C is 0.1°C, else 1°C)


 **Temperature setting range:** -45~120°C (The step between -9.9 and 99.9°C is 0.1°C, else 1°C)

 **Power supply:** AC 220V±10% or 380V±10% 50Hz (Refer to the wiring diagram)

 **Operation Environment:** temperature -10°C~45°C, humidity≤85%.

 **Relay contact capability:** 2A/380VAC (pure resistive load)

 **Temperature sensor:** NTC R25=5kΩ, B (25/50) = 3470K

 **Executive standard:** Q/320585 XYK 01-2004 (NA220-CTD)

Operating Guide

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

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

LED	light	flash
Temperature upper limit	Set upper limit temperature(not revised)	Set upper limit temperature (has been revised)
Temperature lower limit	Set lower limit temperature(not revised)	Set lower limit temperature (has been revised)
Refrigeration	Refrigerating	The state of compressor boot delay protection
Defrost	Defrosting	Dripping

The meaning of the nixietube display

The nixietube usually shows temperature, if it shows “EE”, it means the temperature sensor is short, and “-EE” means the temperature sensor is open.

How to set the upper limit and lower limit temperature?

Press the key “set” and hold it for at least 2 seconds, the controller displays the “temperature upper limit”, and the LED of “temperature upper limit” lights, then using the key “▲” and “▼” can adjust the parameter. After setting, press the key “set”, then enter the state of “temperature lower limit”, using the key “▲” and “▼” can adjust the parameter, press the key “set”, then enter the state of “Defrosting cycle”, using the key “▲” or “▼” can adjust the parameter, press the key “set” again, then exit the state of setting 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)

Notice: 1. In the state of temperature setting, it will exit the state of setting if no one presses the key within 30 seconds.

2. The value can be only saved after exiting the state of setting. The value which has been set can not be saved if the power is off before exiting the state of setting.

How to defrost manually?

Press the key “▼” and hold it for at least 5 seconds, then enter the defrosting state. In defrosting state, press the “▼” key at least 5 seconds, this can finish the defrosting compulsively.

How to see defrosting temperature?

When displaying current temperature, press “▼” key, Micro-controller will display defrosting temperature. Loose “▼” key, then return to current temperature.

Advanced Operation

The controller can adjust some internal parameter to meet all kinds of need. The parameter is supplied for special technologist, and common users don't need to know. Please don't change the internal parameter of the controller casually, lest lead to the abnormity of the controller. The way to set the internal parameter is as below:

Use the code to enter the state of parameter setting, the code is “up-down-up-down-up-up-down”, Press the key “▲”, “▼” continuously in the state of showing current temperature, and it must be finished within 3 seconds, if the code is right, you can enter the state of parameter setting, here the nixietube shows “Fxx”, there into xx is a number, it means 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, then press the “set”

key to return to the state of showing parameter code after finishing setting. (**Notice: The parameter which has been changed can be only saved after returning to the state of “Fxx” by pressing the key “set”**)

Internal parameter code is showing below:

Sort	Code	Parameter Name	Range	Factory Setting	Unit	Remark
Temperature	F19	Temperature revision	-5 -- +5	0	°C	Revise the sensor bias
Compressor	F21	Compressor delay time	0 -- 10	3	min	
	F22	Compressor running frequency*	0 -- 10	0	-	Refer to the annotation
Defrosting	F31	Defrost cycle	0 -- 99	12	hour	0 means no defrosting
	F32	Defrost end temperature	5 -- 50	15	°C	
	F33	Defrost end time	1 -- 99	30	min	
	F34	Dripping time	0 -- 99	5	min	
Testing	F99	Check	This function can attract all relays in turn, and please don't use it when the controller is running!			
	F00	Exit				

*Annotation: “Compressor running frequency” is used when temperature sensor has error. This lets compressor run in the protected state. In this state, the cycle 30 minutes, compressor runs F22 x 3 minutes, stops 30-(F22 x 3) minutes. For example, F22 sets 3, when temperature sensor has error, compressor runs 9 minutes, stops 21 minutes, in the cycle. If don't need the function, F22 sets 0.

✳ Basic Operating Principle

🌀 Temperature controlling

Temperature controlling can be set according to “upper limit” and “lower limit”. If “upper limit temperature” is 20°C, “lower limit temperature” is 18°C, temperature sensor (refrigerator sensor) apperceives the temperature is higher than 20°C, the compressor runs, then the temperature is lower than 18°C, the compressor stops. Thus temperature can be controlled between 18°C and 20°C.

🌀 Compressor delay time

The controller contains a “compressor halt calculagraph”, and it begins to time when compressor stops, the program first check the calculagraph before starting the compressor next time, the program will immediately start the compressor if the calculagraph reach 3 minutes ,if the calculagraph doesn't reach 3 minutes ,it will start 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. (*Annotation: The time of boot delay protection can be adjusted, it sets to 3 minutes above.)

🌀 Auto defrosting principle

Micro-controller starts the defrosting function according to the defrosting cycle. After defrosted, Micro-controller can probe the evaporator temperature by defrosting temperature sensor. If this temperature reach the “Defrosting temperature”, defrost will stop, if defrosting time is longer than “defrosting time”, Micro-controller will also finish.

🌀 Dripping

Set the dripping water 5 minutes, after finishing defrosting, in 5 minutes, compressor doesn't run, in this state, “Defrost” LED will flash. But in two conditions Micro-controller can't come in dripping water state: one is finishing the defrosting manually, and the other is defrosting temperature sensor's error.

Notice:

1. Please place the temperature sensor at the place of air return of the air-cooler.
2. The earth terminal of the controller should be connected with the earth terminal of the electric cabinet reliably, be sure to connect the earth well.
3. Please use the temperature sensors which are supplied by our company.