NA6826 User Guide

☞ Main Function and Technique Index

Main Function:

The controller is the special controller for heat pump water heater, it contains 2 temperature sensors (water temperature, outdoor temperature), 2 control outputs (compressor, fan) and one alarm signal input (used for high and low pressure protection). Its main function is showing below:

☞ **Temperature Display and Controlling:** It can display water tank temperature and outdoor temperature, and control the temperature in water tank between the temperature upper and lower limit.

☞ **Defrost Controlling:**

☞ **External alarm:** one outside 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, used for real time defrost.

☞ **Others:** Temperature upper and lower limit can be set, direction of four-way valve can be set, compressor start delay protection, temperature sensor error alarm and so on.

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% (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 (NA6826-HTF)

🕮 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	-
	-	-	-
	Heat	Heating	Ready to heat, in the state of compressor start delay protection
	Defrost	Defrosting	Ready to defrost, 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	Water temperature sensor error	Open or short（showing “OPE” or “SHr”）
A22	Outdoor machine sensor error	Open or short（showing “OPE” or “SHr” when press the key “↓”）
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 read the outdoor temperature?***

When displaying current temperature, press “↓” key, Controller will display defrosting temperature. Loose “↓” key, then return to current temperature. Notice that if you press the key and hold it for 5 seconds, the controller will enter or exit the defrosting state forcibly.

☝ ***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.

☝ ***How to heat forcibly?***

When displaying current temperature, the temperature is between “setting temperature－temperature difference” and “setting temperature＋temperature difference”, the system may or not heat, here you press the key “▲” and hold it for 5 seconds, 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	50	℃/℉	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	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	10	℃/℉	
	F18	Evaporator sensor adjustment	-20 – 20	0.0	℃/℉	Adjust the outdoor machine sensor bias
	F19	Temp sensor adjustment	-20 – 20	0.0	℃/℉	Adjust the temperature sensor bias
Compressor	F21	Compressor delay time	0 -- 10	3	min	
Defrosting	F31	Defrost start temperature	−20 – 80	−2	℃/℉	

	F32	Defrost end temperature	0 – 100	10	℃/℉	
	F33	Defrost start time	1 – 999	30	min	
	F34	Max defrost time	Off, 1 – 99	10	min	Off means no defrost
	F37	Defrost mode	0 -- 3	0	-	0: four-way valve, on when defrosting 1: four-way valve, off when defrosting 2: bypass valve 3: electric heat
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
	F59	Buzzer alarm sound duration	Off, 0.1 -- 10, On	0.5	min	Off: No alarm sound On: Alarm sound is always on until pressing any key
RTC	F60	Set the RTC time	00：00—23：59	-	-	
	F61	Period 1 start time	00：00—23：59 OFF	05：00	-	OFF means not using
	F62	Period 1 end time	00：00—23：59 OFF	07：00	-	
	F63	Period 2 start time	00：00—23：59 OFF	16：00	-	
	F64	Period 2 end time	00：00—23：59 OFF	18：00	-	
	F65	Period 3 start time	00：00—23：59 OFF	22：00	-	
	F66	Period 3 end time	00：00—23：59 OFF	00：00	-	
	F69	Run Mode	0/1	0	-	0：Automatic 1：Economical
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

Temperature controlling point is controlled by “setting temperature (F11, or press the “set” key for some time to set)” and “temperature difference(F12)”. 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.

Auto defrosting principle

The controller first detects the temperature of outdoor machine when it begins to heat. If it is lower than "defrost start temperature", the controller will first turn on defrosting, then turn on heating after defrosting ends. In addition, the controller will supervise the temperature of outdoor machine when heating normally, and decide whether need to defrost according to the time of the outdoor machine in the continuous low temperature state. In other words, the defrosting calculagraph begins to time when the outdoor machine temperature is lower than "defrost start temperature", and turns on the defrosting when the value of time reaches "defrost start time". The calculagraph will be cleared if the outdoor machine temperature is higher than "defrost start temperature" when timing, and it begins to time again when the outdoor machine temperature is lower than "defrost start temperature" next time. In other words, the value of defrosting calculagraph shows the continuous low temperature time of the outdoor machine.

The controller will turn on the compressor and cross valve after defrosting, and the heat pump is used for defrosting. The controller can check the defrosting effect with the temperature of outdoor machine, if the temperature of outdoor machine goes up to the "defrost end temperature", the controller will turn off the function of defrosting. If the defrosting time is above "max defrost time", the controller will turn off defrosting forcibly.

The process above can only run in heating state, in other words, the controller will not turn on defrosting in non-heating state.

Compressor and fan state in different state is showing below:(1 means on, 0 means off)

State	Compressor Output	Fan Output
Heat	1	1
Defrost	0	1
Stand By	0	0

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". 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.

Running in different period of time

The controller contains real time clock, and can time accurately. In "Econ Mode", the controller will ensure that whether need to heat according to water temperature, otherwise the current time is in or not in the setting period of time, if it is not in the setting period of time, then the controller will not heat whether the water temperature is high or low.

The controller can be set 3 heat periods of time at most, if you don't need some periods of time, you can set the starting time and ending time which you don't need as "OFF".

In addition, if the ending time is earlier than starting time, the controller considers this ending time is next day. For example, the period of time is "22:00"to"03:30", the controller considers it as 22:00 at night to 03:30 next day.

Probation time

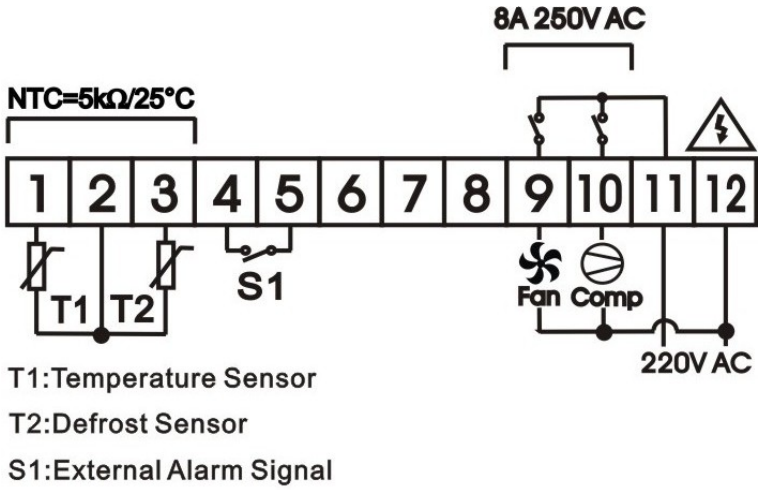
A probation time can be set (F87), the controller can add up the running time after power is on, if the accumulative running time is over the probation time, the controller will stop and display the alarm code A99, if you want to eliminate the limit of probation time, set the F87 to "OFF", also you can 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:



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.**