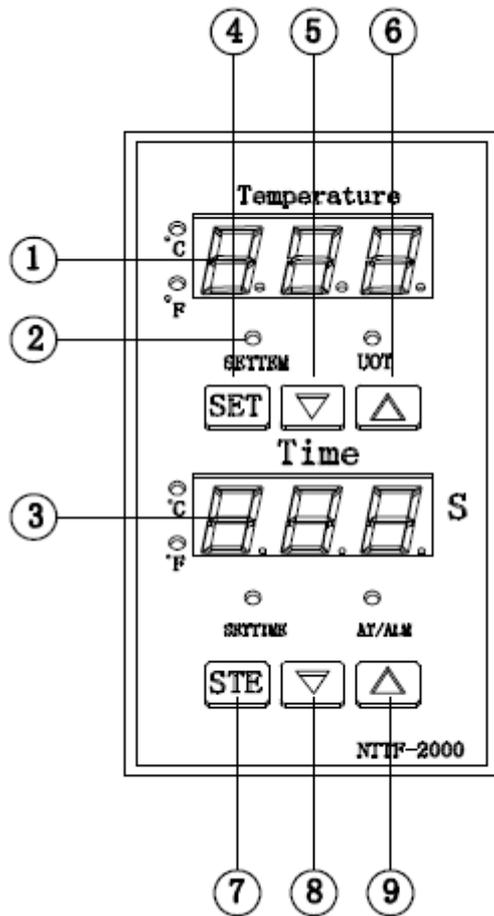


1. Brief Instrubiuon about NTTF- - 2421V Digital Controller



- ① Display device for the set temperature (Green color) : to display the measuring temperature.
- ② Display device for the set time (Red color): to display the set time.
- ③ Four Indicators:
 - SETTEM: indicator of the set temperature (Green), lightling while set up the temperature
 - OUT: indicator of the heating output (Green), lightling while in working
 - SETTIM: indicator of the set time (Green), lightling while set up the set time
 - AT/ALM: indicator of Timing (Red), lightling while in working.
- ④ Temperature function key: using to modify the set value of temperature, call out, update and confirm the parameters.
- ⑤ Decrease key of the set temperature: using to modify the value of the set temperature and the control parameters.
- ⑥ Increase key of the set temperature: using to modify the value of the set temperature and the control parameters
- ⑦ Time function key: using to modify and confirm the value of the set time.
- ⑧ Decrease Key of the set time: using to modify the value of the set time.
- ⑨ Add Key of the set time: using to modify the value of set time.

2. More about Digital Controller:

One. Set the Control parameters: Press SET button on the upper controller for 4 seconds above, it displays prompt code of the parameter (please refer to the below schedule table of the control parameters for detail information), Press ▲ or ▼ button to make the under panel displays the needed value of this parameter. Continue to press the SET button of upper controller, the upper panel displays the prompt code of each parameter in turn, Press ▲ or ▼ button to display its needed value. Again press the SET button on the upper controller for above 4 seconds, the system return to its standard mode (no press the button after 1 minute , the system come back to its standard mode automatically).

Two, If under the Time controller displays an “ooo”, the thermocouple is in reverse connection, else above the Time controller displays an “ooo” , the thermocouple is in open current or the measuring temperature exceeds the measurement range of the instrument.

Three, The Auto-tuning function of the instrument's parameters: After 20 seconds of pressing the left ▲ button on the upper controller, the AT indicator is twinkle and the controller begins to startup the Auto-tuning. After the temperature goes through once or twice of oscillation, then the AT indicator extinguishes. The instrument will control the process with the updated parameters, which will be permanently persevered.

3. Table of Digital Controller's Parameters:

Press ▲ and ▼ button at the same time, the upper panel displays LK, set it to 88, then Press SET button, it'll display the below prompt code.

Prompt Code	Name	Setting Range	Explanation	Factory Value
$r\bar{t}$	Measuring Revise	-100~100°C	Used to revise the measuring deviation caused by the thermocouple and compensating line	0
rt				
$A\bar{r}$	Overshoot Suppression	0~100°C	Decreasing Ar can reduce the temperature overshoot. When SP changes, Ar have to re-set. After auto-tuning, Ar will be adjusted automatically according to SP. when P = 0, Ar becomes the Dead Band of the control, while Ar=0 the Band is equal to 0.4°C and when Cr=0, Ar is the reset of time proportional control	100
Ar				
\bar{P}	Proportional Range	0~800	Proportional control: The more P, the less the proportional control and the lower the system gain. When P is too big, the time of the temperature to achieve its setting value is too long; otherwise if P is too small, the measuring temperature will appear oscillation .	30
P				
\bar{T}	Control Period	1~100 Seconds	Relay output is not less than 20 seconds; for SSR external device, T takes 3 seconds.	20 3
T				
$\bar{C}r$	System Constant	0~999	Concerned with heating power, heating-up time, the location of the thermocouple, the Proportion Range of the instrument and other factors. The general inertia of the major targets of Cr should be larger. Generally for the control process with large inertia, Cr should be larger. When P≠0、Cr=0, the system is a time proportional control one	240
Cr				
$\bar{L}C$	Coded Lock	0~2	LC = 0: All parameters can be modified; LC = 1: can only modify the setting point value (SP); LC = 2: All parameters can not be modified.	0
LC				

Prompt Code	Name	Setting Range	Explanation	Factory Value
S n	Calibration Mark		K: 0~700°C E: 0~400°C J: 0~550°C	0
Sn				
r U n	Operating Mode	0; 1; 2;	Run=0 express Timing Setup by switch and time counting reversely ; Run=1 express Timing Setup by the set temperature, when temperature arrives to its set value, begin the time counting reversely automatically; Run=2 express system with both of high and low temperature control, when temperature is less than the low set value, system have an output, when arrives the low set value, the system have no output, and arrives the high set value the system have no output and close the switch and begin the time counting reversely.	0
run				
F t	Filter Coefficient	0~255	The less the Filter Coefficient, the more sensitive the response, but too less of the Filter Coefficient may cause oscillation; otherwise the display will be relatively stable	200
Ft				
C F	Temperature Transformation	0; 1;	Centigrade temperature while CF=0; Fahrenheit temperature while CF=1	0
CF				
d F	Dead Band	0~100°C	This parameter can adjust the Dead Band of the ON-Off instrument	0
dF				
r L	Lower Limit of the Range		According to the user's requirement	0
rL				
r H	Upper Limit of the Range	0~400°C	Adjusting rH can make the range of the instrument 0~rH(°C)	User Requirement
rH				