

NTT-2000 Intelligent Digital Display Temperature Controller Operating Manual

Before use this product please read this manual carefully so as to use properly, and preserve it well in order to reference at any time.

Attentions to the operation

Cleaning instruments must be after power off.

Removing stains on the display devices have to apply the soft cloth or tissue paper.

The display devices are scratched easily so wiping or hitting it with a hard object is prohibited.

Prohibit use of the screwdriver, writing pen or other hard objects to operate the keys on the operation panel, otherwise will damage or scratch the keys.

1. Product Confirmation

Please refer to the following code table to confirm whether the model of service products are exactly as same as the selected.

Product Code

NTT□-□□□□ □□□

① ②③④⑤⑥ ⑦ ⑧ ⑨

Panel size code (mm)	⑤ The model code of Timing
E: 72×72	1: Timing Startup by a switch and display counting reversely
F: 96×48 (Vertical type)	2: High and low temperature control, Timing Startup by a short current and display counting reversely
F (H) : (Horizontal type)	3: Timing Startup with set temperature and Counting Reversely
G: 48×48	⑥Output Type Code
错误!未找到引用源。 Counting Reversely	
②Model Code: 2	Omit: Relay Output
③Control Model Code	V: Logic Output (for the control of solid-state relay SSR)
0: On-Off Control	⑦ Sensor Calibration Mark K: 0-800°C: E: 0-600°C
4: On-Off PID Control (heating Type)	⑧Lower Limit of the Range
④Timing Output Code	⑨Upper Limit of the Range
1: Relay Output	⑩ Specific requirements (as 72X72, "F" is for the split-type instrument)
2: Buzzer Output (internal)	
3: Buzzer Output (external)	

2. Installation

2.1 matters need attention

Instruments mounted on the environment following:

Atmospheric Pressure: 86...106KPa

Ambient Temperature: 0...50°C

Relative Humidity: 45...85RH%

Installation should pay attention to the following:

Dramatic changes in ambient temperature may cause condensation.

Corrosive, flammable gas

Direct impact or vibration of the main structure

Pollution by water, oil, chemicals, smoke or steam

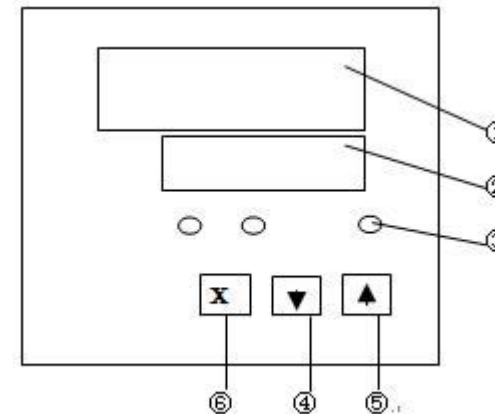
Too much dust, salt or metal powders

Direct air-conditioning blowing

The direct sunlight

The accumulation of heat radiation

2.3 Panel layout



①PV Display device (Red)

• Display the measuring temperature or according to the instrument's state to display the various types of prompt code.

② SV Display device (Green)

• Display the set temperature or according to the instrument's state to display the various type of parameters as the timing time and etc.

③ Indicator

• RUN indicator for auto-tuning (Green), Twinkling at working.
• OUT indicator for heating output (Green), Bright at working.

• TIME indicator for timing (Red), Bright at work

④ Decrease Key

• Used to modify the setting value and the control parameters, or for entering in the

self-tuning state

⑤ Increase Key

• Used to modify the setting value and the control parameters, or for entering in the timing state.

⑥ Function key

• Used to modify the setting value, calling out, modify and confirm the parameters.

2.4 Primary technical performances

1) Measuring Accuracy: 0.5%±1dig 2) Power Supply: 85~264VAC 3) Ambient Temperature: 0~50°C

2.2 the process of installation

(1) In accordance with the size of holes in the disk surface

to knock out the rectangular hole. For installation of a

number of instruments, the distance between the two

holes in horizontal direction should be larger than 25mm;

the distance between the two holes in Vertical direction

should be greater than 30mm.

(2) Instrument will be embedded inside the opening hole

(3) Insert the mounting brackets in the instrument install

slot

(4) Push tightly the mounting brackets and cause the instrument combined to the disk surface firmly and tighten the screws

4) Fuzzy PID control 5) Product is accordance with the standard of the "SQGC digital display controller".

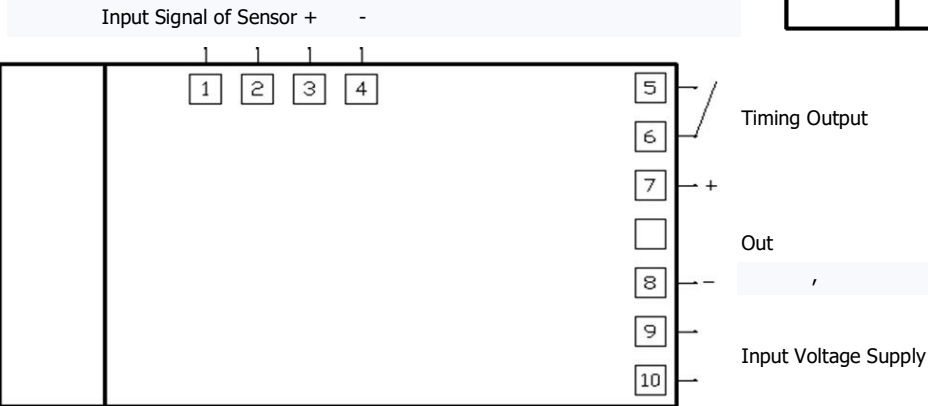
3. Wiring

3.1 Attention to the wiring

- (1) For thermocouple input the corresponding compensation line should be used.
- (2) Input signal lines should be far away from power supply and load lines to avoid interference.

Wiring of the NTTE-2000-T/F Instrument (the diagram is shown as below)

1 and 2 are Timing of Short-Current Setup

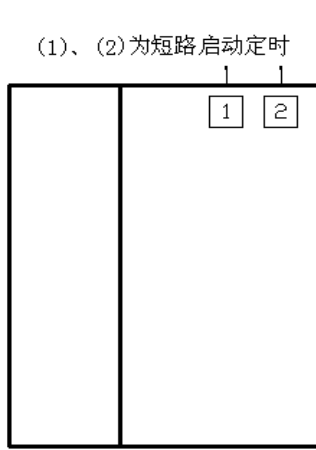


Wiring of the NTTE-2000 or NTTF(H) Instrument

Wiring of the NTTF-2000 or NTTF(H) Instrument

电源: Power Supply

输入信号: Input Signal, 开关: Switch



传感器输入信号

- +

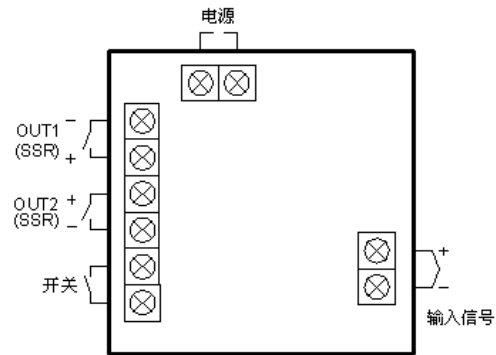
Note: For NTTG-2000, the terminals (5) (8) are used to Timing startup by short current.

4. Operating

4.1 The order of calling out the various functions

- After the instrument is power on, the upper row displays InP and the lower row displays the calibration mark of the sensor to express the input type. 4 seconds latter, the upper row displays the upper limit of the measuring range and the lower row displays the lower limit of the measuring range then the measurement range is determined. Again after 4 seconds, the upper row displays the measuring value and the lower row displays the setting value. And then the system enters its normal working state.
- Setting of the temperature: Push the key X, the upper row displays the value of SP and push \uparrow or \downarrow key to make the lower row display its needed value. And push the \rightarrow key to promote the system to the ST setting mode.
- Setting of Timing: The upper row displays ST and push \uparrow or \downarrow key to make the lower row display the needed value. Again push the \rightarrow key to promote the system return to its standard mode.
- Setting of the control parameters: Push the \rightarrow key above 4 seconds, the upper row shows the prompt code of the parameter (detail can see the schedule table of the control parameters) and than push \uparrow or \downarrow key to make the lower row display its needed value. Continue push the \rightarrow key can make the upper row display the prompt code of each of another parameter in turn. Again push \uparrow or \downarrow Key to update the value of parameter to its needed value, and again push the X key above 4 seconds, the system returns back to its standard mode.(If no key has pushed down, after 1 minute the system will come to its standard mode).

Wiring of the NTTG-2000 Instrument



- If under the red display the "ooo" is appeared, the thermocouple is in reverse connection, else above the red display the "ooo" is appeared, the thermocouple is in open current or the measuring temperature exceeds the measurement range.

- The Auto-tuning function of the instrument's parameters: After 20 seconds of pushing down the \blacktriangle key, the AT indicator is twinkle and the controller begins to start its Auto-tuning. The temperature goes through one to two times of oscillation and the AT indicator extinguishes. The instrument will control the process with the updated parameters, which will be permanently persevered.

- The switch function of Celsius and Fahrenheit temperature: Hold down the key \blacktriangle or \blacktriangledown simultaneously, the upper row shows LK, again push the X key to prompt the upper row appears Sn and lower row appears K-C (Celsius temperature) or K-F (Fahrenheit temperature) and push \blacktriangle or \blacktriangledown key to carry out the transform of the scale of temperature.

- Selection of the measurement range: Hold down the key \blacktriangle or \blacktriangledown simultaneously, the upper row shows LK, again push the X key to prompt the upper row appears rL and lower row appears 0, and again push X key to make the upper row appear rH, at that time the rower row appears the needed measurement range.

4.2 The schedule table of the control parameters

See the table as right

5. Instrument Maintenance and Preservation

- Within eighteen months since the vote date of instrument, the factory is responsible to the full warranty for the product failures due to the manufacturing quality. As the result of damage caused by improper use, the factory accepts properly the repair costs, the factory carried out the life-long maintenance for our instrument.

- Instruments should be stored in the ventilated drying, non-corrosive gases place under the condition of complete package.

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Prompt Code	Name	Setting Range	Explanation	factory value
AL	Alarm setting	-200~800℃	Setting of the Alarm point, $AL>0$ is the upper limit alarm; $AL<0$ is the lower limit alarm, Output state is overturn automatically. The actual alarm point= $SP+SL$.	50
AL				
rt	Measuring revise	-100~100℃	Used to revise the measuring deviation caused by the thermocouple and compensating line	0
rt				
Ar	Overshoot suppression	0~100℃	Decreasing Ar can reduce the temperature overshoot, When SP changes, Ar have to re-set. After auto-tuning, Ar should be determined again and according to the value of SP be adjusted automatically. when $P = 0$, Ar becomes the Dead Band, while $Ar=0$ the Band equal to 0.4℃ and when $Cr=0$, Ar is the reset of time proportional control.	100
Ar				
P	Proportional Range	0~400℃	Proportional control: The more P, the less proportional control and the lower the system gain. When P is too large, the time of temperature to achieve its setting value is too long; otherwise if P is too small, the measuring temperature will appear oscillation	30
P				
T	Control Period	1~100秒	Relay output is not less than 20 seconds; for the external device of SSR or SCR, T takes 3 seconds.	20 3
T				
Cr	System Constant	1~999	Concerned with heating power of the controlled process, heating time, the location of the thermocouple, the proportion band of the instrument and other factors. Generally for the control process with large inertia, Cr should be larger. When $P\neq 0$, $Cr=0$, the system is a time proportional control one	240
Cr				
LC	coded lock	0~2	$LC = 0$: All parameters can be modified; $LC = 1$: can only modify a setting point value (SP); $LC = 2$: All parameters can not be modified.	0
LC				