

NCT-2000

Intelligent Temperature Controller with Digital Display

USER MANUAL

Please read this manual thoroughly for the instruction of correct usage before using this product and keep this manual as a reference.

CAUTION WHEN OPERATING

- I Before cleaning the controller, please ensure that the power is switch off.
- I Please remove stains on the display panel by using a soft cloth only.
- I No scrubbing or touching the display panel with any hard object, the display panel can be easily scratched.
- I Do not press any button on the display panel using pointy objects such as ballpoint pen or screw driver, it can easily scratch the panel or damage buttons on the panel.

I. Confirmation of the product

Please confirm the product you received is in full agreement with the model that you selected according to the following codes:

NCT □-□□□□□-□-□-□
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- | | |
|---|--|
| <p>① Panel size (mm)
D: 96×96 E: 72×72
F: 96×48 (Vertical type)</p> <p>② Model: 2</p> <p>③ Control Mode
0: On-Off Control
4: On-Off PID Control (heating Type)</p> <p>④ Timing Output
0: no timing output
1: Relay Output
2: Buzzer Output (internal)
3: Buzzer Output (external)</p> <p>⑤ Timer Mode
0: NO timing
1: Timer Startup by a switch and display counting down</p> | <p>2: High and low temperature control, Timer Startup by a short current and display counting down</p> <p>3: Timer Startup with set temperature and Counting down</p> <p>4: Turn switch on to start timer and the relay will be closed. When the timer reaches the preset value, the relay will be opened.</p> <p>5: Release switch to start timing, display will show remaining time, when the timer research preset value, the relay will be closed.</p> <p>6: Releasing switch to start timing, the relay will be closed, when the time reaches the preset value, the relay will be opened.</p> <p>⑥ Output Type
Omit: Relay Output
V: Logic Output (for the control of solid-state relay SSR)
G: SRC ((under 300W only)
WG: external silicon controlled rectifier
WR: external relay</p> <p>⑦ Thermocouples types:
K: 0-700℃; E: 0-400℃; J: 0-550℃</p> <p>⑧ LRL</p> <p>⑨ URL</p> |
|---|--|

II. Installation

2.1 Caution when installing

Please install the controller under the following conditions:

- I Temperature: 0 to 50 degrees C.
- I Atmospheric pressure: 86 to 106kPa
- I Humidity: 45% to 85% RH.

Please avoid the following conditions during installation:

- I Rapid temperature changes, leading to dew condensation.
- I Corrosive gases (especially sulfide gas, ammonia, etc.) or flammable gases.
- I Direct vibration or shock
- I Contact with water, oil, chemicals, steam, smoke, or hot water
- I High concentrations of atmospheric dust, salt or iron particles
- I Large inductive interference, resulting in static electricity, magnetic fields or noise.
- I Direct sunlight.
- I Radiant heat sources, etc

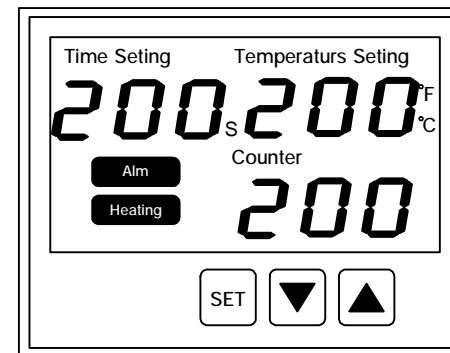
2.2 Mounting Process

- (1) Cut out rectangle holes on the panel for installing the controller according to the required hole size.
- When installing more than one controller, the minimum horizontal and vertical distance between two holes should be 25mm and 30mm respectively.
- (3) Insert the controller into the hole on the panel.
- (4) Insert mounting bracket in the slot for mounting the controller.
- (5) Push the mounting bracket tightly to connect the instrument and the panel firmly.

Accessories:

- Two mounting bracket
- Operation Manual (also available on our website)

2.3 Panel layout



- ① Temperature Setting
 - Display the measuring or set temperature or according to the instrument's state to display the various types of prompt code.
- ② Counter Setting
 - Display or Setting the time or according to the instrument's state to display the various type of parameters.
- ③ Indicator
 - ALM indicator for alarm, Twinkling at working.
 - Heating indicator for heating output, Bright at working.
 - TIME Setting indicator for timing, Bright at work
- ④, ⑤ Digital Adjustment Key
 - Used to modify the setting value and the control parameters, or for entering in the timing state.
- ⑥ SET Key
 - Used to modify the setting value, calling out, modify and confirm the parameters.

2.4 Key Performance

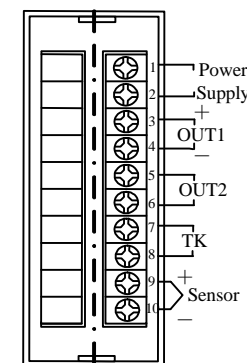
- 1) Measurement accuracy: 0.5%±1dig
- 2) Power: 220VAC
- 3) Operation Temperature: 0 ~ 50℃
- 4) Fuzzy PID control
- 5) This product conforms with the "Q/SQG01-1999 Intelligent Digital Display Adjustor" Standard Regulation.

III. 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 noise interference.

3.2 Wiring Terminal's configuration



IV. Operation

4.1 The order of calling out the various functions

- Selection of the measurement range: After the instrument is power on, the Temperature displays In and the Time displays K to express the input type K. 2 seconds later, the Temperature displays 400, the time displays 0, it means the measuring range from 0~400. Again after 2 seconds, the system enters its normal working state.
- Enter the normal working state: “Temperature” display the measuring value, means the current temperature; “Time” display or Setting when the Switch input must be closed, it display the working time; When Heating output, the “heating” light flashing. When alarm output, the light of “Alm” is flashing.
- Setting of the temperature: Push the “Set” key, “Temperature Setting” lights flashing, then push ▲ or ▼ key to make its needed value. Then Push the “Set” key again, enter the normal working state.
- Setting of Timing: Push the key “Set”, “Time setting” lights flashing. Then push ▲ or ▼ key to make the needed value. Again push the “Set” key to promote the system return to its standard mode. (If no key has pushed down, after 1 minute the system will come to its standard mode).
- Setting of the control parameters: Push the “Set” key above 4 seconds, the Temperature display shows the prompt code of the parameter (detail can see the schedule table of the control parameters) and then push ▲ or ▼ key to make its needed value. Continue push the “Set” key can display the prompt code of each of another parameter in turn. Again push ▲ or ▼ Key to update the value of parameter to its needed value, and again push the “Set” 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).
- If it displays the “ooo” is appeared, the thermocouple is in reverse connection, else it displays the “ooo” is appeared, the thermocouple is in open current or the measuring temperature exceeds the measurement range.
- Counter function: Once Switch input closed, Counter displays 1.

4.2 The schedule table of the control parameter

Prompt Symbol	Name	Setting Range	Illustration	Beginning Value
ALI	Setting of Alarm	-199~Range℃	Setting of Alarm 1. Insensitive interval of alarm is equal to a constant value 0.4 (This value is meaningless)	50 or 50.0
AL1				
P P	Proportional band (Heating Side)	0~400℃	Proportional Control: The more the value of P, the less the proportional action and the less the system gain; only acting on the heating side. (P=0 is ON/OFF Control)	30
I I	Integral Time	0~990 Seconds	Integral Time: The more the value of I, the less the Integral action I=0 is PD Control, Ar= (Remained Error/P)×100	240
d d				
Ar Ar	Differential Time	0~990 Seconds	Differential time: The more the Value of D, the more the differential action, which is able to overcome overshoot (D=0 is PI Control)	60
Ar Ar				
T T	Control period (Heating Side)	1~100 Seconds	When the relay output≤20s, SSR and SI-controlled switch transwitch≤2s, continuous output T is equal to 1s, only acting on heating side	20
Pb Pb	Offset of the Process Value	-198 ~ 998℃	Using for correct the measurement error caused by the sensor and the compensate line of the thermocouple	0
run	Time Control Mode	0~16	0 or 10: when switch is on, display will start counting down to 0. When the relay is closed, the alarm will be turned on until the switch is off and the relay is open. The alarm shall stop to complete one cycle of operation. 1 or 11: when switch is on, display will start counting down to 0 as relay is closed. When relay is open, the alarm will be turned on until the switch is off. The alarm shall stop to complete one cycle of operation. 2 or 12: High and low temperature control. Output will be set when the temperature is below the preset value. Output will be reset when the preset value is reached. When the temperature of ON switch is below than the high temperature preset value, output will be set. When the high temperature preset value is reached, output will be reset and the counting down will start. 3 or 13: Switch on to start counting down. The relay is closed or the alarm is on when remaining time is 0 until it has been switch off and on again. Once switch is cycled, the relay will be opened and the alarm will be stopped to complete one cycle of operation. 4 or 14: Switch on to start counting down and the relay will be closed. When remaining time is 0, the relay will be opened or the alarm will be turned on. Cycle and hold on switch to complete one cycle of operation. 5 or 15: Switch on and off to start counting down, when remaining time is 0, the relay will be closed or the alarm will be turned on. The relay will open or the alarm is off until the next time release the switch to start to complete one cycle of operation. 6 or 16: Releasing switch to start counting down, the relay will be closed or the alarm will be turned on. When remaining time is 0, the relay is open and one cycle of operation is completed until the next release of the switch to start, the relay will be closed and the alarm will be stopped. Others: not applicable; Note: when the digit segment of 10s is one, mute the device by press any key.	0
Run				
LCK LCK	coded lock	000, 001, 002	000: All parameters can be updated 001: Only the Set Point Value can be updated 002: All parameters cannot be updated.	0

Notice: Change of each function parameter in the table may alter the control effect of the system.

V. Service and Maintenance

- This controller is under warranty for 12 months since the day of purchase (the warranty only stands if the problem is caused by the malfunction due to manufacturing). Any repairment for damages caused by improper use of the controller will be charged. The controller is provided with lifetime maintenance and repair on cost.
- Please keep the controller in a dry place with air and NO corrosive gas.

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