

REX Series Temperature Controller User Manual

Before using this product, please carefully read the instructions for the proper use and proper preservation.
(Please read the operating manual for the proper use of this product before using.)

Wiring warning

- To prevent instrument damage or failure, the choice of the appropriate fuse protected power cord and input / output lines to prevent the current impact.
- To prevent electric shock or instrument failure, power only after the completion of all the wiring work. Do not use near flammable gases.
- Fire, explosion or damage to the instrument, flammable, explosive gas, vapor emissions places is prohibited. Do not modify the instrument.
- To prevent the accident or instrument failure, non-altered instrument.

SUMMARY

REX-C □ □ □ Series Intelligent industrial accommodator / temperature controller is dedicated microprocessor multifunction regulating instruments. It uses a switching power supply and surface mount technology (SMT), and thus the instrument is compact, reliable performance, unique self-diagnostic function, the self-tuning function and intelligent control functions, so that the operator can get good results by a simple operation. Main features: Multiple thermocouple, RTD, analog signal free to enter, free to set the range, the software tune zero full-scale, cold end separate temperature measurement, auto-zeroing amplifier accuracy of better than 0.5% FS. Fuzzy theory combined with conventional PID control fast and smooth, state-of-the-art setting program. Output optional: relay contact, logic level, SCR single-phase, three-phase over zero or phase shift trigger pulse, analog, attach Road definable alarm contact output.

The main technical indicators

1. Measurement Precision: $\pm 0.5\%FS$
2. Cold junction Compensation error: $\pm 2^{\circ}C$ (0-50 °C within the software correction)
3. Resolution: 14bit
4. Sampling Period: 0.5 Secretary
5. Power Supply: AC 85-265V 50Hz
6. Control Mode: industrial-grade expert self-tuning PID technology, compared with the traditional PID control with rapid temperature control, fast response, small overshoot, high precision control
7. Insulation Resistance: $>500m\Omega$ (500VDC)
8. Dielectric Strength: 1500VCA/min
9. Power Consumption: $< 10VA$
10. Occasions Environment: 0-50°C, 30-85% RH non-corrosive gases

Model defined selection

Model Identification

REX-C □ □ □ - □ □ □ □ - □ * □ □

- ① Meter Size (see Table 1)
- ② Control Mode
F: PID control and automatic speech inverse action
D: PID control automatically play a positive action
- ③ Input Type and Range (see Table 2)
- ④ Main Output
N: No output
M: Relay contact output
V: the voltage pulse output (SSR)
8: Current output
T: SCR zero output
G: SCR shift like pulse output
- ⑤ The First Channel Alarm Type (ALM1)
N: not set alarm
A: upper limit deviation alarm
B: lower limit deviation alarm
C: up and down significant deviation alarm
D: range alarm
E: with standby limit deviation alarm
F: lower limit deviation alarm with standby
G: lower limit deviation alarm with standby
H: upper limit input value alarm
J: lower limit input value alarm
K: upper limit input alarm with standby
L: lower limit input alarm with standby
- ⑥ Second Channel Alarm Type ALM2 (same as ALM1)

Table 1

Unit: mm

| Model | Surface frame (W×H) | Shape (W×H×D) | Hole size (W×H) |
|----------|---------------------|---------------|-----------------|
| REX-C100 | 48×48 | 44×44×100 | (44+1)×(44+1) |
| REX-C400 | 48×96 | 44×92×100 | (44+1)×(92+1) |
| REX-C700 | 72×72 | 68×68×100 | (68+1)×(68+1) |
| REX-C900 | 96×96 | 92×92×100 | (92+1)×(92+1) |

Table 2 Input Scope Table

| | Input | Measure Scope | Code | Measure Scope | Code | Measure Scope | Code | |
|---------------|--------------------|-----------------|----------------|----------------|----------------|----------------|------------|-----|
| Thermo Couple | | 0-200°C | K01 | 0-400°C | K02 | 0-600°C | K03 | |
| | K | 0-800°C | K04 | 0-1000°C | K05 | 0-1200°C | K06 | |
| | | 0-1372°C | K07 | 0-100°C | K13 | 0-300°C | K14 | |
| | J | 0-200°C | J01 | 0-400°C | J02 | 0-600°C | J03 | |
| | | 0-800°C | J04 | 0-1000°C | J05 | 0-1200°C | J06 | |
| | R#1 | 0-1600°C | R01 | 0-1769°C | R02 | 0-1350°C | R03 | |
| | S#1 | 0-1600°C | S01 | 0-1769°C | S02 | | | |
| | B#1 | 400-1800°C | B01 | 0-1769°C | B02 | | | |
| | E | 0-800°C | E01 | 0-1000°C | E02 | | | |
| | N | 1-1300°C | N01 | 0-1300°C | N02 | | | |
| | T#2 | -199.9-400.0°C | T01 | -199.9-100.0°C | T02 | -199.9-200.0°C | T03 | |
| | | 0-350.0°C | T04 | | | | | |
| | Thermal Resistance | Pt100 | -199.9-649.0°C | D01 | -199.9-200.0°C | D02 | -100-50°C | D03 |
| | | | -100-100°C | D04 | -100-200.0°C | D05 | 0.0-50.0°C | D06 |
| 0.0-100°C | | | D07 | 0.0-200.0°C | D08 | 0.0-300.0°C | D09 | |
| 0.0-500°C | | | D10 | | | | | |
| Cu50 | | -50.0-150°C | P01 | 0.0-150.0°C | P02 | 0.0-100.0°C | P03 | |
| | | 0.0-50.0°C | P04 | -50.0-100.0°C | P05 | -50.0-50.0°C | P06 | |
| | | -50-150°C | P07 | 0-150°C | P08 | 0-100°C | P09 | |
| | | 0-50°C | P10 | | | | | |
| | | Standard Signal | 0-5VDC | 0.0-100.0°C | 401 | | | |
| | | | 1-5VDC | 0.0-100.0°C | 601 | | | |
| 0-20Ma#3 | 0.0-100.0°C | | 701 | | | | | |
| 4-20Ma#3 | 0.0-100.0°C | | 801 | | | | | |

#1 Can not guarantee the accuracy scope of 0-399°C.

#2 To ensure accuracy in the scope of -199-100°C.

#3 A resistor of 250Ω is needed between the input terminals external

INSTALLATION

Precautions

1. Instrumentation installed in the following environments
 - Atmospheric Pressure: 86-106kpa
 - Ambient Humidity: 0-50°C
 - Ambient temperature: 45-85% RH
2. Installation should pay attention to the following circumstances
 - Drastic changes in the ambient humidity may cause condensation
 - Corrosive, flammable gas
 - Direct vibration or shock theme structure
 - Water, oil, chemicals, smoke or steam pollution
 - Excessive dust, salt, or metal powders
 - Air conditioning blowing straight
 - Direct sunlight
 - The accumulation of heat radiation

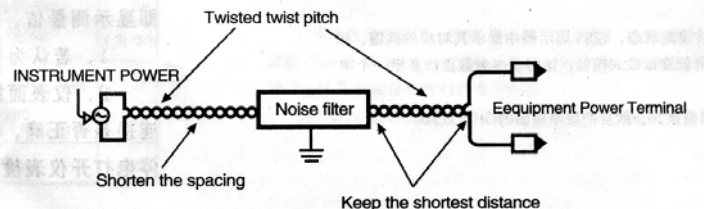
Installation Process

1. Panel cutout disk played a the rectangular square hole to install the meter.
2. Multiple instrument installation, the distance between the left and right holes should be greater than 25mm, up and down two holes distance should be greater than 30 mm.
3. Embedded in the instrument panel cutout within.
4. Instrument mounting hole into the mounting bracket.
5. Pushed tight mounting bracket to the instrument with the disk is firmly bonded to tighten the screws.

Wire Connection

Wiring

- (1) thermocouple input, you should use the corresponding compensation wire.
- (2) RTD input, you should use the same cross-sectional area of the low resistance, the same material, the same length of three wire.
- (3) input signal line should be away from the instrument power cord, power supply and load lines to avoid noise
- (4) The instrument power cord is usually not the power supply line interference, such as interference, noise filter must be used, and using a noise filter should note the following:
 - 1) shorten the power cord plug full twist pitch, the shorter the distance, the better.
 - 2) install a noise filter on the dashboard and grounded to minimize the the short noise filter output terminals, the wiring distance
 - 3) Do not install insurance, and switch the noise filter output, this will reduce the effect of the noise filter
- (5) The power is turned on after 5-6 seconds preparation time meter relay output external connection loop signal use, and with a time delay relay
- (6) Do not over tighten the terminal screws, use the appropriate terminal screw lug.



Panel Name and Ministries Function

| No | Panel Description | Content Description |
|----|-------------------|---|
| 1 | PV | Measurement Value / Mode Display Value |
| 2 | SV | Settings / Mode Content Displayed Value |
| 3 | OUT1 | Output 1 Indicator |
| 4 | OUT2 | Output 2 Indicator |
| 5 | AT | PID Automatic Calculation Indicator |
| 6 | ALM1 | Alarm 1 Indicator |
| 7 | ALM2 | Alarm 2 Indicator |
| 8 | ^ | Increase the Key |
| 9 | V | Reduce the Key |
| 10 | < | Shift Key |
| 11 | SET | Set / Mode Key |

Operational Processes

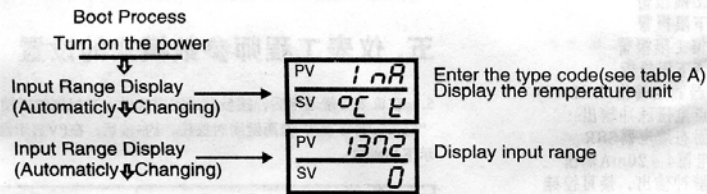


Table A

| Display | P | I | D | S | B | E | N | T | Pt | Cu | mV | mA | V |
|------------|------------------|---|---|---|---|---|---|-----------------------|-------|---------------------|----|----|---|
| Input mode | Thermocouple(TC) | | | | | | | Thermoresistance(RTD) | | Voltage and Current | | | |
| | K | J | R | S | B | E | N | T | Pt100 | Cu50 | mV | mA | V |

Setting Mode:

SV/PV normal display state, click the "SET" button, the SV display is flashing by pressing the "<" button, find the desired set temperature digits, and then click the "SET" button, the meter turn to the SV/PV Normal display state

Parameter Setting Mode:

This parameter is used to set the alarm, PID constants and other parameters. Normal display mode, press and hold the "SET" button for three seconds, the PV display shows the parameter setting mode, display the corresponding values in the "SV" display parameters in the following table, press the "SET" button to display symbols:

Note: display the reply feature native When the operator parameter setting modify operation not to return to the main display mode, the instrument will return to the main display mode automatically after 30 seconds, the altered parameters are not saved. Meter read prior to use or modify the parameters. The following processes such as instrument no such function will not display this content.

| Display Character | Name | Specification | Setting Range | Factory Default |
|-------------------|-------|--|---|-----------------|
| | PV/SV | Measured values / settings | Full scale | |
| AL1 | AL1 | The first set of alarm settings | Full scale | |
| AL2 | AL2 | The second set of alarm settings | Full scale | |
| AT | ATU | Self-tuning When the temperature effect is not ideal to use this!!! | 0: off auto-tuning 1: self-tuning | 0 |
| P | P | Proportional band (see*1) | 0 - full scale When set to 0 for position control | 30 |
| I | I | Integration time (sec) | 0 - 3600 seconds When set to 0, no integral action | 240 |
| D | D | Derivative time (seconds) | 0 - 3600 seconds When set to 0, no derivative action | 60 |
| Ar | Ar | Reference values (see*2) | AT automatically set | 25 |
| T | T | Working period (seconds) | In proportion to the time period of 0-100 seconds | (see*3) |
| OH | OH | The main control does not work bandwidth | 1-100 unit (PV) | 2 |
| SC | SC | Measurement error correction | -200-200 unit (PV) | 0 |
| LCK | LCK | Data lock (see*4) | 0000-0111 | 0000 |

- * 1: When ≠ 0, instrumentation for PID control, the need to rationalize the set values of the "I D", the first to open the "AT" self-tuning function, so that the control to achieve the best when P = 0, ON / OFF control, must be set to control the value of the return difference "OH".
 - * 2: This is the PID internal reference values ?? are not normally required to man-made, "AT" comes with the set will automatically set this value.
 - * 3: The relay contact output 20 seconds 2 seconds flip-flop output / gate flow control tube output voltage pulse output / thyristor control tube drive.
 - * 4: Set data lock (LCK) function
Set data lock function is used to prevent some often set parameters Ukrainian operation, in the three forbidden lock state parameters for each level state ban lock parameter locked can not be set or changed but monitoring.
1. When LCK = 0000, all parameters can be modified
 2. When LCK = 0001, the data can not be modified, except SV, AL1, AL2
 3. When LCK = 0011, all the data can not be modified, except SV
 4. When LCK = 0111, all of the data can not be modified

ERROR message indicates

| Message | Specification | Exclusion Method |
|---------|--|---|
| Err | Equipment Error | Please send overhaul |
| 0000 | Input the disconnection polarity reversed or exceeds the input range | Please check whether the input signal error |
| UUUU | Input the disconnection polarity reversed or exceeds the input range | Please check whether the input signal error |

The instrumentation technical parameters mode settings

After a normal power meter, according to the parameter setting mode to enter the ice to find data lock parameter "LCK" to code "1000", then press the "SET" button and the "two key while holding down for about 30 seconds PV display shows "GOD" = 0000 can be obtained, press the "SET" button and cycle through the following parameters:

| Display Character | Settings | Specification | Scale Range | |
|-------------------|-------------|---|--|---|
| SL1 | 0 0 0 0 | K | 0-1372°C | |
| | 0 0 0 1 | J | 0-1200°C | |
| | 0 0 1 0 | R | 0-1769°C | |
| | 0 0 1 1 | S | 0-1769°C | |
| | 0 1 0 0 | B | 0-1820°C | |
| | 0 1 0 1 | E | 0-800°C | |
| | 0 1 1 0 | N | 0-1300°C | |
| | 0 1 1 1 | T | -200-400°C-199.9-400.0°C | |
| | 1 0 0 0 | Pt100 | -200-650°C-199.9-650.0°C | |
| | 1 0 0 1 | cu50 | -50-150°C-50.0-150.0°C | |
| | 1 0 1 0 | 0-400 Ω | -1999°C-9999°C | |
| 1 0 1 1 | 0-50mV | -1999°C-9999°C | | |
| 1 1 0 0 | 0-20mA | -1999°C-9999°C | | |
| 1 1 0 1 | 0-5V(0-10V) | -1999°C-9999°C | | |
| SL2 | 0 0 0 0 | Slightly | | |
| SL3 | 0 0 0 0 | Slightly | | |
| SL4 | 0 0 0 0 | First alarm function is not set | | |
| | 0 0 0 1 | Upper limit deviation alarm | Type selection of the first alarm (AL1) | |
| | 0 0 1 0 | Upper / lower limit deviation alarm | | |
| | 0 0 1 1 | Process value alarm | | |
| | 0 1 0 1 | Lower limit deviation alarm | | |
| | 0 1 1 0 | With alarm (alarm) region | | |
| | 0 1 1 1 | Process value lower limit alarm | | |
| | 0 0 0 0 | Standby alarm function | | |
| | 1 0 0 0 | Standby alarm function | | |
| | SL5 | 0 0 0 0 | | The second set of alarm function is set |
| SL6 | 0 0 0 0 | Positive action control (cooling) | | The main control forward / reverse action selection |
| | 0 0 0 1 | The inverse operation control (heating) | | |
| | 0 0 0 0 | Master time proportional output | | |
| | 0 0 0 1 | Master continuous output (4-20mA) | | |
| SL7 | 0 0 0 0 | Incentive alarm | Incentive alarm / non-incentive alarm / the first alarm | |
| | 0 0 0 1 | Non-incentive alarm | | |
| | 0 0 0 0 | Incentive alarm | | |
| SL8 | 0 0 1 0 | Non-incentive alarm | Incentive alarm / non-incentive alarm / the second alarm | |
| | 0 0 0 0 | Slightly | | |
| SL9 | 0 0 0 0 | Slightly | | |
| SL10 | 0 0 0 0 | Slightly | | |
| SL11 | 0 0 0 0 | Slightly | | |

When "COD" = 0001, press the "SET" button and cycle through the following parameters:

| Display Character | Factory Default | Specification | Setting Range |
|-------------------|---------------------|---|--------------------|
| SLH | According to orders | Set the measuring range upper limit | See above table |
| SLL | According to orders | Set the measurement range limit | See above table |
| PGdF | 0 | Decimal places | 0-3 |
| OH | 2 or 2.0 | AT comes with no action given output bandwidth | 0-100 or 0.0-100.0 |
| AH1 | 2 or 2.0 | The first alarm output is not active bandwidth | 0-100 or 0.0-100.0 |
| AH2 | 2 or 2.0 | The second alarm output is not active bandwidth | 0-100 or 0.0-100.0 |
| dF | 1 | Digital filter constant | 0-100 |

Instrument maintenance and preservation Instrument since the billing from the date eighteen months the internal factors manufacture quality failure by the company responsible for the comprehensive warranty, Damage due to improper use of the company charge a repair cost of the company meter lifelong maintenance, Instrumentation in complete packaging stored in dry and ventilated place non-corrosive gases.