

TR-400 series



- Analog type precision recorder using 180mm wide chart paper
- 4 types of recording available: 1 pen, 2-pen, 6-dot printing and 12-dot printing
- Wide range of applications:
Heat control in textile dyeing, brewing, electric and heavy oil furnace, laboratories and various industrial machinery

Shinko

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|-------------------|----|---------------------------------|---------------------|
| Model name | | TR-4 | Series name: TR-400 |
| Measuring point | 01 | 1 point (1 pen type) | |
| | 02 | 2-point (2- pen type) | |
| | 06 | 6-point (6-dot printing type) | |
| | 12 | 12-point (12-dot printing type) | |
| Input | E | Thermocouple | |
| | R | RTD | |
| | V | DC voltage | |
| | A | DC current | |
| Option | LH | High/Low limits alarm | |
| | PR | Controller parallel running *1 | |

*1: This can be applied only to the dot printing type.

- **Input** Thermocouple : K, J, T, R
RTD : Pt100, JPt100
DC voltage : 0 to 10mV DC
DC current : 4 to 20mA DC (Input resistance: 10Ω)
- **Indicating structure** : Automatic self-balancing type
Scale length : 180mm
Chart paper : Folding type, Effective recording width 180mm
Width : 200mm, Length 20m
Recording form : Ink pen serial recording (TR-401, TR-402)
: Ink pad dot printing recording (TR-406, TR-412)
Ink color : 1st pen; Red (TR-401, TR-402)
2nd pen; Green (TR-402)
Dot printing color : 1: Red, 2: Black, 3: Light blue, 4: Green,
5: Brown, 6: Purple (TR-406, TR-412)
7: Orange, 8: Gray, 9: Blue, 10: Olive green
11: Scarlet, 12: Violet (TR-412)

- **Indicating performance**
Indicating accuracy : Within $\pm 0.5\%$ of full scale
However, DC voltage and DC current input:
Within $\pm 0.25\%$ of full scale
Dead band : 0.1% of full scale
Balancing speed : Approx. 2.0s (50Hz), Approx. 1.6s (60Hz)
Chart feed speed : 12.5, 25, 50, 100mm/h
Dot printing interval : 6s (50Hz), 5s (60Hz)
Allowable signal source resistance:
Thermocouple input : 150Ω or less
RTD input : 10Ω or less per wire
DC voltage input : 10kΩ or less
Input resistance : Thermocouple input : Approx. 8MΩ
DC voltage input : Approx. 8MΩ
Maximum common mode voltage : 250V AC
Common mode rejection ratio : 150dB or greater
Series mode rejection ratio : 50dB or greater

- **Power supply**
110V, 115V, 220V, 230V and 240V AC (Must be specified)
Allowable voltage fluctuation: Within $\pm 10\%$ of DC voltage
Frequency: 50/60Hz

- **General structure**
External dimensions : 288×288×300mm (W×H×Dmm)
Mounting method : Flush
Front door : Aluminum die-cast [Black (Munsell N1.5) coating]
Case : Steel plate (Metallic silver coating)

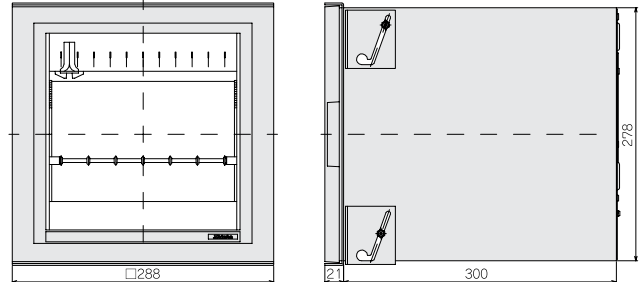
- **Insulation resistance**
Measuring terminal-Ground terminal : 20MΩ or greater, at 500V DC
Power terminal-Ground terminal : 20MΩ or greater, at 500V DC
Measuring terminal-Power terminal : 20MΩ or greater, at 500V DC

- **Dielectric strength**
500V AC for 1 minute between Measuring terminal-Ground terminal
1000V AC for 1 minute between Power terminal-Ground terminal
1000V AC for 1 minute between Measuring terminal-Power terminal

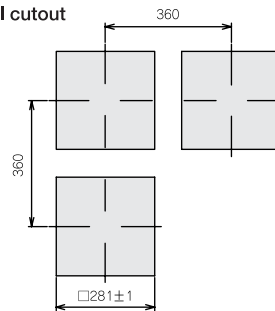
- **Power consumption** : Approx. 23VA (TR-401), 28VA (TR-402),
Approx. 24VA (TR-406, TR-412)
- **Ambient temperature** : -10 to 50°C
- **Ambient humidity** : 30 to 90%RH (No condensing)
- **Weight** : Approx. 12kg (TR-401), Approx. 13.5kg (TR-402),
Approx. 12.5kg (TR-406, TR-412)

- **Options High/Low limits alarm [LH]**
Alarm system: High/Low limits
Setting range: 0 to 100% for full scale
(However, the setting values for high limit and low limit do not cross.)
Setting accuracy: $\pm 0.5\%$ of input span
Dead band: 0.6% of input span
Contact capacity: 1A 100V AC (Resistive load),
0.5A 200V AC (Resistive load)
- **Controller parallel running [PR]**
This option needs to be added in a parallel running configuration, when thermocouple input type dot printing recorder TR-406 or TR-412 shares the same thermocouple with other thermocouple input type controller.

External dimensions

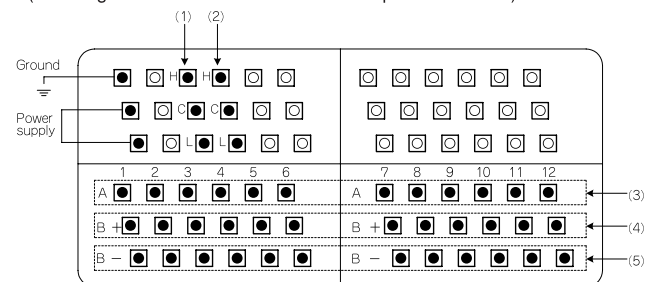


Panel cutout



Terminal arrangement

(The diagram below: TR-412 series with Option LH added)



- (1): High limit alarm terminal
- (2): Low limit alarm terminal
- (3): RTD input terminal (A) row
- (4): RTD input terminal (B), Thermocouple input terminal (+), DC current input terminal (+) and DC voltage input terminal (+) row
- (5): RTD input terminal (B), Thermocouple input terminal (-), DC current input terminal (-) and DC voltage input terminal (-) row

● To ensure safe and correct use, thoroughly read and understand the manual before using this instrument.

● This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after consulting purpose of use with our agency or main office.
(Never use this instrument for medical purposes with which human lives are involved.)

● External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Also proper periodic maintenance is required.

● This instrument must be used under the conditions and environment described in the manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in the manual.

Caution with respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument is not illegally exported.



· This catalog is as of December 2004. Specifications are subject to change without prior notice.
· If you have any inquiries, please consult our agency or with us directly.

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