

DIGITAL-DISPLAY TEMPERATURE CONTROLLER

TCD/TCR SERIES

Manual Instructions

Pls read the following safety considerations before use

■ Safety Considerations

※ Please observe all safety considerations for safe and proper product operations to avoid hazards.

※ Safety considerations are categorized as follows.

⚠ Warning Failure to follow these instructions may result in serious injury or death.

⚠ Caution Failure to follow these instructions may result in personal injury or product damage.

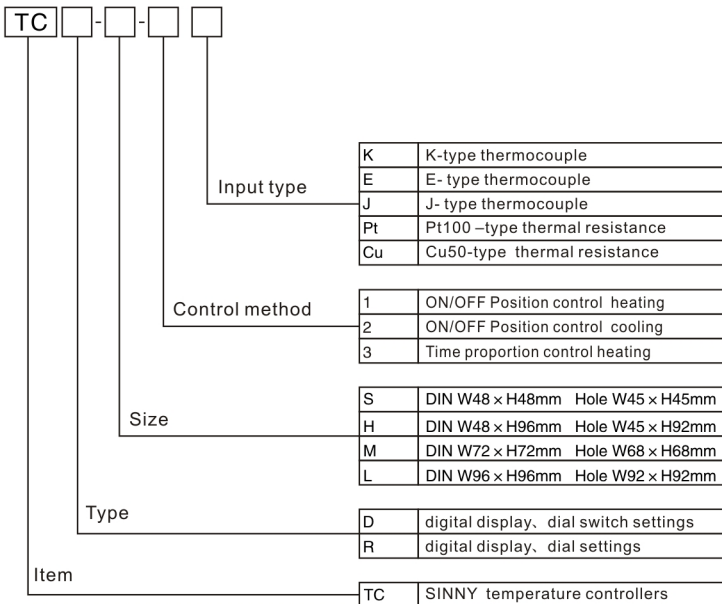
⚠ Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.) Failure to follow this instruction may result in personal injury, fire, or economic loss.
- The unit must be installed on a device panel before use.
Failure to follow this instruction may result in electric shock.
- Do not connect, repair, or inspect the unit while connected to a power source.
Failure to follow this instruction may result in electric shock.
- Check the terminal numbers before connecting the power source.
Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit. Please contact us if necessary.
Failure to follow this instruction may result in electric shock or fire.

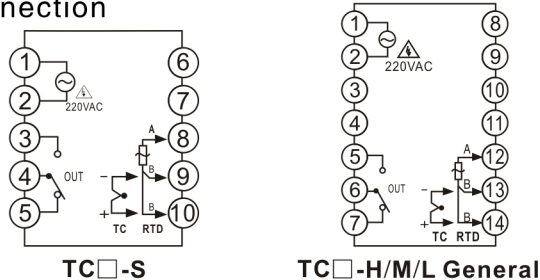
⚠ Caution

- Do not use the unit outdoors.
Failure to follow this instruction may result in shorten the life cycle of the unit, or electric shock.
- When connecting the power input and relay output cables, use AWG20(0.05m²) cables and make sure to tighten the terminal screw bolt above 0.74N.m to 0.90N.m.
Failure to follow this instruction may result in fire due to contact failure.
- Use the unit within the rated specifications.
Failure to follow this instruction may result in shorten the life cycle of the unit, or fire.
- Do not use loads beyond the rated switching capacity of the relay contact.
Failure to follow this instruction may result in insulation failure, contact melt, contact failure, relay broken or fire.
- Do not use water or oil-based detergent when cleaning the unit. Use dry cloth to clean the unit.
Failure to follow this instruction may result in electric shock or fire.
- Do not use the unit where flammable or explosive gas, humidity, direct sunlight, radiant heat, vibration, or impact may be present.
Failure to follow this instruction may result in fire or explosion.
- Keep dust and wire residue from flowing into the unit.
Failure to follow this instruction may result in fire or product damage.
- Check the polarity of the measurement input contact before wiring the temperature sensor.
Failure to follow this instruction may result in fire or explosion.
- For installing the unit with reinforced insulation, use the power supply unit which basic level is ensured.

■ Model composition



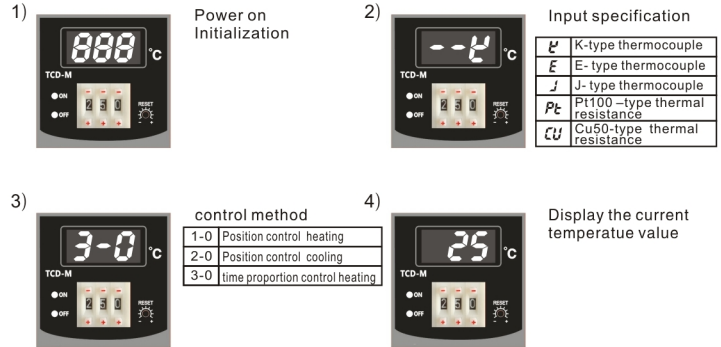
■ Connection



■ Specifications

| | |
|-------------------------|---|
| Power supply | 220V 50/60Hz |
| Allowable voltage range | 90-110% of rated voltage |
| Power consumption | under 5VA |
| Input type | TC K E J RTD Pt100 Cu50 |
| Display accuracy | ± 0.3% |
| Control output | Relay contact output 250VAC 5A 1 NO 1 NC |
| Control method | ON/OFF Position control Time proportion control |
| RESET adjustment range | 0-10°C |
| Sampling period | 50ms |
| Relay life cycle | Mechanical above 2.5 million times Electrical above 100000times |
| Dielectric strength | 3000VAC 50/60Hz for 1min. (between all terminals and case) |
| Vibration | 0.75mm amplitude at frequency 5 to 55HZ (for 1 min.) in each X, Y, Z direction for 2 hours. |
| Insulation resistance | Min. 100MΩ (at 500VDC megger) |
| Noise resistance | Square shaped noise by noise simulator (pulse width 1μs) ±2kV R-phase, S-phase |
| Memory retention | Approx. 10years (non-volatile semiconductor memory type) |
| Environment | Ambient temp -5~40°C storage: -10~50 °C Ambient humi 35%~85%RH storage: 35~85% |

■ Operation



■ Temperature setting and control

- Under ON/OFF State control: after the power on, set the required temperature setting value and start running. When the actual temperature is lower than the set value, the ON green light is bright, and the constant open contact of output relay connects and the constant closed contact disconnects; when the actual value reaches or exceeds the set value, the OFF red light is bright, and the constant open contact of the output relay disconnects and the constant closed contact is connected.
- Under the time proportion control: after the power on, set the required temperature setting value and start running. When the actual temperature does not enter the proportional band, the ON green light is bright, the constant open contact of the output relay connects and the constant closed contact disconnects. When entering the proportional band, the relay starts to switch regularly, the higher the temperature, the shorter the output time will be, and vice versa, it's also a way to control the temperature by changing the average heat power of the load.
- The using method of panel "RESET" for potentiometer. When time proportion controls the heating system balance, the actual value is lower than the set value of the static error correction due to high or low of the heating power of the load. The adjustment of the potentiometer can eliminate the deviation in order to adapt to different conditions.

■ Fault information

| Information | explain | remedy |
|-------------|---|-----------------------------|
| HHH | Input broken, reverse connection input range overstep | check the fault information |
| LLL | Input broken, reverse connection input range overstep | check the fault information |

■ Caution

- Pls separate the unit wiring from high voltage lines or power lines to prevent inductive noise.
 - For crimp terminal, select following shaped terminal (M3).
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- Install a power switch or circuit breaker to control the power supply.
 - The power switch or circuit breaker should be installed where it is easily accessible by the user.
 - The unit is for temperature controller. Do not use the unit as volt-meter or ampere-meter.
 - When using RTD temperature sensor, must wire it as 3-wire type. If cable is extended, use 3 wires which are same thickness as the line. It might cause the deviation of temperature when line resistance is different.
 - If power line and input signal line are close each other, install line filter for noise protection at power line and use shielded input signal line.
 - Keep away from the high frequency instruments. (High frequency welding machine & sewing machine, large capacity SCR controller)
 - When supplying the measured input, the unit displays HHH or LLL, the measured input may have problem. Turn off the power to the unit and check the line.
 - This unit may be used in the following environments.
 - It shall be used indoor
 - pollution degree 2
 - Altitude up to 2000m
 - installation category II

※ Failure to follow these instructions may result in product damage.