Temperature Controllers

O Please refer to FAQ on P.3771.

Temperature Controllers Guide

Misumi's Temperature Controllers can operate up to 20A in 100/200V on single phase or up

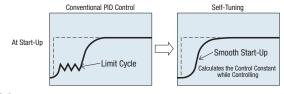
Features

remperature Cor Insulating Plates

Various types of temperature sensors and various types of input ranges can be set, therefore precise temperature control is possible. Also the control value has some fluctuations due to interference, the regulator can tune automatically and converge (stabilize) the fluctuation of control value because it has

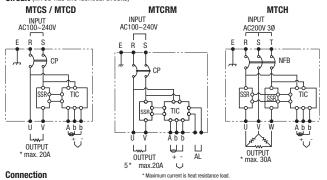
Moreover, when thermocouple or temperature measurement resistance burns out, protection circuit may

Difference Between Conventional PID Control & Self-Tuning



Input Type Thermocouple(K/J/R/T/N/S/B)
Temperature Measuring Resistor (Pf1002, JP1002)
"Switchable depending on the panel setting
"Thermocouple at the time of shipment (K)
Conditions of Operating Emperature 0~30°C (No condensation)
Over Current Cut-off Breaker Switch

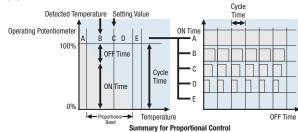
Circuit (MTCD has two identical circuits)



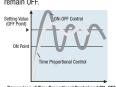
Universal Type, Temperature sensor selectable, is available, for a simple and compact line up of three kinds, such as compact, dual and high current type. And a new product "Universal and Compact Type with Alarm Function" have alarm output terminals. Specification of alarm output is same as the temperature controller (P.3772).

Control by Solid State Relay (SSR)

This is the control method where using proportional control (time proportional control) in the form of ON-OFF control, change the length of ON and OFF times in proportion to the variation against the setting value in the



This one set of ON and OFF cycle is constant, and is called a Cycle Time. Suppose one cycle time is 10 seconds. If the present value is lower than the Proportional Band, the controller output will remain ON. On the other hand if the present value is higher than the Proportional Band, the controller output will



Within the proportional band, the time proportion between ON and OFF may change in proportion to the variation against the setting value depending on the temperature. For example, when the current value is lower than the setting value and ON time s 7 seconds, OFF time can be 3 seconds and ON time can be longer than OFF time.

omparison of Time Proportional Control and ON-OFF Control

Warranty

Warranty Period: One year from the shipping date

Warranty Condition: Please present the guarantee card included at the time of delivery.

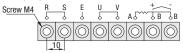
Coverage of Warranty: Problems or damages arising through the normal usage in compliance with the instruction manual included at the time of delivery

If trouble occurs during the warranty period even though the unit has been operated in the normal manner we will recover and repair or replace the unit.

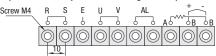
In the following cases, repairs are for consideration. We will recover the product and make an quotation. (1) When the damage caused by the factors out of warranty range and the product is repairable.

(2) When the damage has occurred beyond the warranty period and the product is repairable.

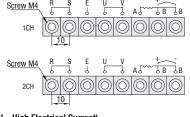
MTCS (Universal - Compact)



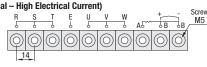
MTCRM (Universal – Compact with Alarming Function)



MTCD (Universal - Two-Series)



MTCH (Universal - High Electrical Current)



Connection with Sensors

+ - Red

- - White or Black

Temperature Measuring Resistor

B - Black or White

b - White or Black

(B and b have a choice between black and white.)

Connection with Alarm Operation (MTCRM Only)

Al - For alarm

Single-Phase 100V/200V

Connection with Power Supply

Power Connection E-Grounding Connection Heater Connection

Three-Phase 200V

S-Power Connection E-Grounding Connection

Contact for Repairs

MISUMI Corporation, Fluid Control Business Division, Fluid Control Business Team TEL:03-3647-7300 FAX:03-3647-7481

Precautions for Safety

Although this product is designed and manufactured with safety in mind, safety cannot be guaranteed for everything about it.

For example, when the SSR (load switch) incorporated in the product is damaged, the incidents, i.e. temperature increase, can be caused in spite of being controlled by TIC (temperature controller). To ensure safety in such a case when the temperature exceeds a preset level, consideration that a safety circuit may be provided to cut off primary power of this product is necessary.

The closer the current of the product approaches to the maximum rating level, the higher its temperature becomes. This can affect other equipment or shorten the service life, etc. (Expected service life can be doubled by a temperature drop of 10°C according to Arrhenius' Law.)

Be sure to keep sufficient allowance, considering each rating and safety in mind. Wire connection should be conducted by someone with expertise.

Electrical power plug and cord are not included. Select them according to the capacity of the heater you use.

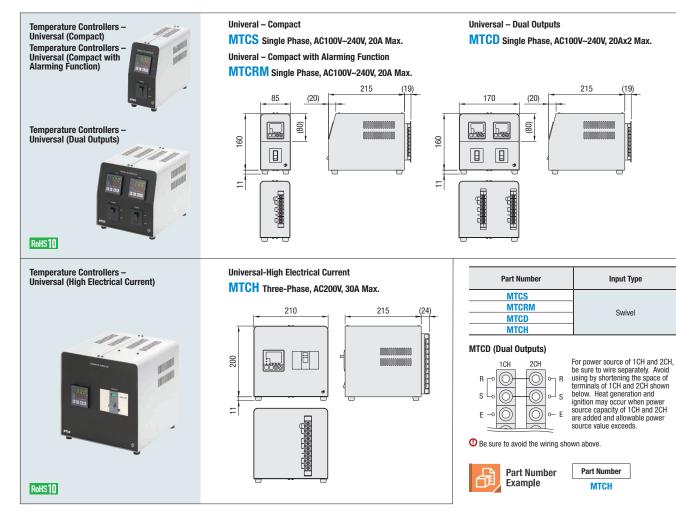
Safety precautions are particularly required in the following cases.

- Use under operating conditions not specified in the instruction manual
- Use in nuclear power systems, trains, motor vehicles, combustion and
- Use that may seriously affect human life or property and that particularly
- MTCH (Universal-High Electrical Current)

- MTCRM (Universal-Compact with Alarming Function) - MTCD (Universal-Dual Outputs)

Temperature Controllers

Universal (Compact with Alarming Function / Two-Series / High Electrical Current)



Types of Sensors

Thermocouples (K, J, R, T, N, S, B) and Pt100Ω, JPt100Ω sensors can be used for the universal type. * Thermocouple K is used before shipping.

Methods of Changing Sensor Types

