

# Temperature Controllers

From General-purpose Temperature Controllers  
To Specialized Modules for  
High-speed Industrial Networks Such As EtherCAT

- Universal input for thermocouple, RTD, DC current/voltage and potentiometer
- Convenient PC software to facilitate the parameter tuning while checking trend graphs
- Auto-tuning function for automatic PID parameter setting

Wall  
Mounted



New  
1/16 DIN size

Panel/Flush  
Mounted



# Large 19.5-mm-high (.77") LED display for PV value (TC10EM) General-purpose temperature controller with highly legible displays

- Discrete inputs usable to switch PID bank or operation mode
- The TC10EM can provide for two control loops.  
Remote SP function is available for single loop control setting.
- Control outputs configurable to MV, PV or alarm

Modbus, 96 × 96 mm panel size

## TEMPERATURE CONTROLLER



Model **TC10EM**

- Two PID controllers in one package.
- Universal input × 2 points, control output × 4 points, discrete input × 2 points, clamp-on current sensor (Model: CLSE) input × 2 points
- IP65 protection for the front panel



Modbus

New 1/16 DIN size

Modbus, 48 × 48 mm panel size

## TEMPERATURE CONTROLLER



Model **TC10CM**

- One PID controller
- Universal input × 1 point, control output × 4 points, clamp-on current sensor (Model: CLSE) input × 1 point
- IP66 protection for the front panel



Modbus

Modbus, 48 × 96 mm panel size

## TEMPERATURE CONTROLLER

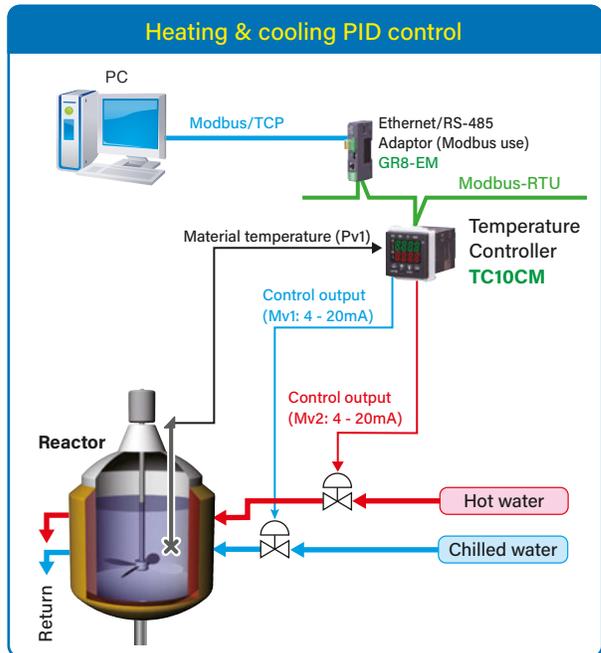
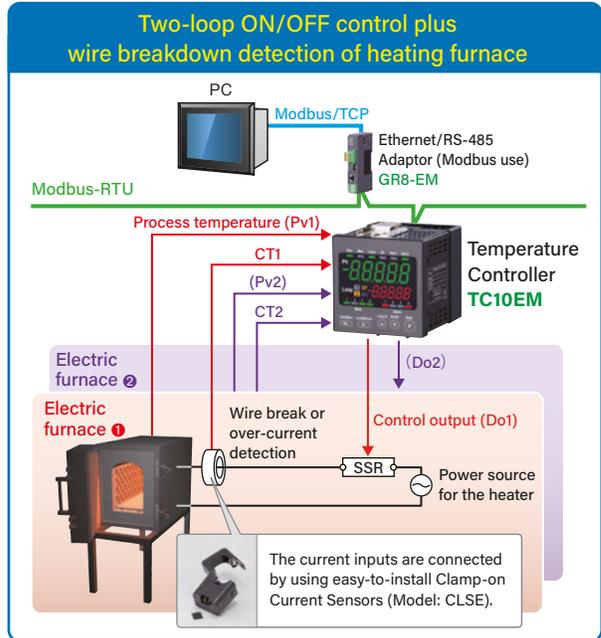


Model **TC10NM**

- One PID controller
- Universal input × 1 point, control output × 4 points, discrete input × 2 points, clamp-on current sensor (Model: CLSE) input × 1 point
- IP65 protection for the front panel



Modbus

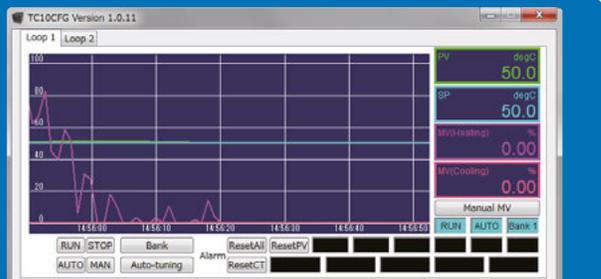


## PC CONFIGURATOR SOFTWARE

Trend of PV/MV and various status signals can be monitored in real time on the PC screen. Parameters can be saved and loaded to facilitate commissioning and calibration of the system.

- TC10EM, TC10CM, TC10NM ..... Model: **TC10CFG**
- R3-TC2 ..... Model: **R3CON**
- R8-TC2 ..... Model: **RCFG**

• PC Configurator Cable (Model: COP-US) is required to connect the module to a PC.



• The PC Configurator Software can be downloaded for free of charge from our website.

# Monitoring/control system can be easily built in combination with the R3 Series I/O modules

- Temperature control module installed inside a control panel
- Temperature control module handled as one of the R3 Series I/O modules

R3 Series Remote I/O

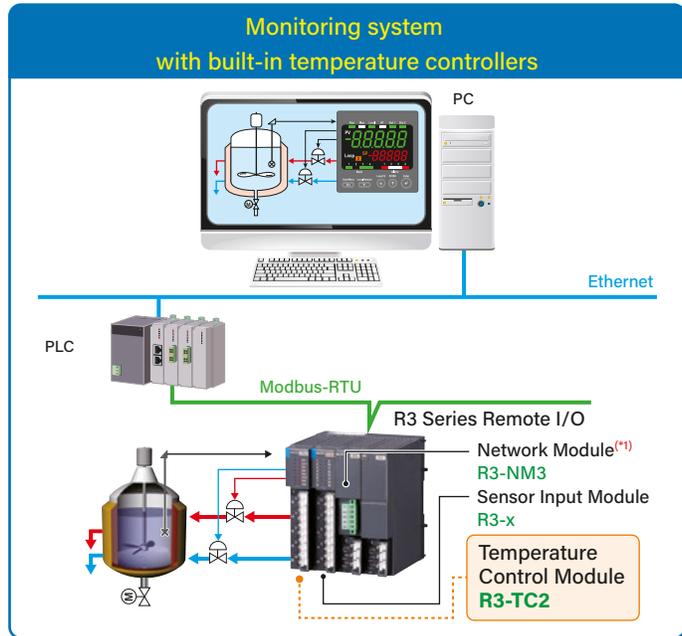
## TEMPERATURE CONTROL MODULE

Model **R3-TC2**

- Two PID controllers in one package
- Universal input × 2 points, control output × 4 points, discrete input × 2 points, clamp-on current sensor (Model: CLSE) input × 2 points



**Modbus**



(\*1) Only the R3-NM3 is compatible with Temperature Control Modules.

# Direct control of temperature via high-speed industrial open network such as EtherCAT

- Temperature control module installed inside a control panel
- Communication data such as control parameters can be transmitted cyclically thanks to the high-speed capability of EtherCAT

R8 Series Remote I/O

## TEMPERATURE CONTROL MODULE



Model **R8-TC2**

- Two PID controllers in one package
- Universal input × 2 points, control output × 2 points, clamp-on current sensor (Model: CLSE) input × 2 points
- Compatible to various open network protocols



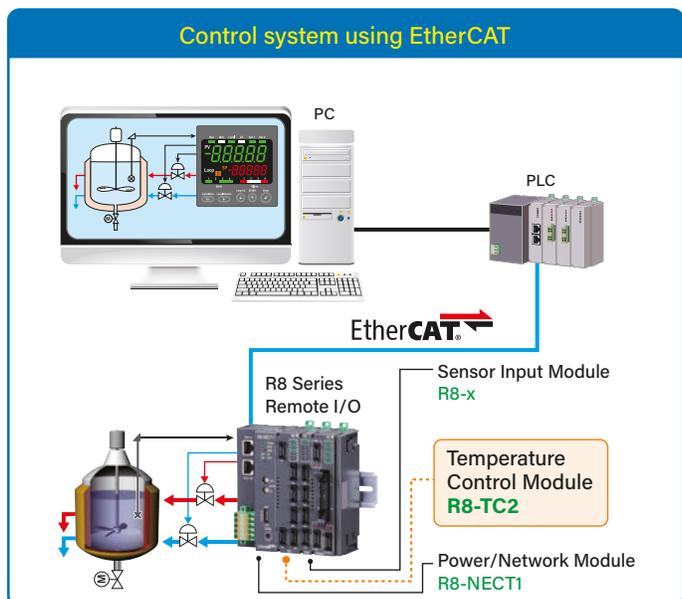
**EtherCAT**

**EtherNet/IP**

**Modbus**

**CC-Link**

**DeviceNet**



# Main Specifications

		TEMPERATURE CONTROLLER			TEMPERATURE CONTROL MODULE	
	4-digit LED display type	5-digit LED display type	5-digit LED display type			
						
	CE IP66	CE IP65	CE IP65			CE
Model	<b>TC10CM</b>	<b>TC10NM</b>	<b>TC10EM</b>	<b>R3-TC2</b>	<b>R8-TC2</b>	
GENERAL SPECIFICATIONS						
Number of control loops	One loop		Two loops			
Isolation	Pv1 to CT1 to Mv1 or Mv2 to Do1 or Do2 to Modbus to power	Pv1 to CT1 to Di1 or Di2 to Mv1 to Mv2 to Do1 or Do2 to Modbus to power	Pv1 to PV2 to CT1 to CT2 to Di1 or Di2 to Mv1 or Mv2 to Do1 or Do2 to Modbus to power	Pv1 to Pv2 to CT1 or CT2 to Di or Di2 to Mv1 or Mv2 to Do1 or Do2 to internal bus or internal power	Pv1 to Pv2 to Mv1 to Mv2 to exc. supply to CT1 or CT2 to internal bus or internal power	
Control mode	Standard PID, heating and cooling control (ON/OFF, PID)					
Proportional band (P)	0.1 to 999.9 (temperature unit)	0.1 to 3200.0 (temperature unit)				
Integral time (I)	0 to 3999 sec.					
Derivative time (D)	0.0 to 999.9 sec.					
Auto-tuning method	Limit cycle method					
Alarm	Deviation high/low limit, absolute high/low limit, etc.					
Sampling cycle	100 msec.					
Control cycle	1.0 to 99.9 sec.					
Mv output range	-5 to +105 %					
INPUT SPECIFICATIONS						
●Universal input (Pv)						
DC current input	0 - 20 mA DC					
DC voltage input	-1000 to +1000 mV DC, -10 to +10 V DC					
Thermocouple	(PR), K (CA), E (CRC), J (IC), T (CC), B (RH), R, S, C (WRe 5-26), N, U, L, P (Platinel II)					
Potentiometer	0 to 4000 Ω					
Resistor	0 to 4000 Ω					
RTD (2-wire or 3-wire)	Pt 100 (JIS '97, IEC), Pt 500, Pt 1000, Pt 50 Ω, JPt 100 (JIS '89), Ni 508.4 Ω, CU 10 (25°C)					
●CT input	Clamp-on current sensor (Model: CLSE): 5 A, 50 A, 100 A, 200 A, 400 A, 600 A					
●Discrete Input (Di)	-	2 points				-
OUTPUT SPECIFICATIONS (Specify one output type when ordering)						
Control output (Mv, Do)	<ul style="list-style-type: none"> <li>0 - 20 mA DC (2 points) + Open collector (2 points)</li> <li>0 - 10 V DC (2 points) + Open collector (2 points)</li> <li>12 V pulse (2 points) + Open collector (2 points)</li> </ul>	<ul style="list-style-type: none"> <li>0 - 20 mA DC (2 points) + Open collector (2 points)</li> <li>0 - 10 V DC (2 points) + Open collector (2 points)</li> <li>12 V pulse (2 points) + Open collector (2 points)</li> <li>N.O. relay (2 points) + Open collector (2 points)</li> </ul>	<ul style="list-style-type: none"> <li>0 - 20 mA DC (2 points) + Auxiliary relay (2 points)</li> <li>0 - 10 V DC (2 points) + Auxiliary relay (2 points)</li> <li>12 V pulse (2 points) + Auxiliary relay (2 points)</li> <li>N.O. relay (2 points) + Auxiliary relay (2 points)</li> </ul>	<ul style="list-style-type: none"> <li>0 - 20 mA DC (2 points) + Open collector (2 points)</li> <li>0 - 10 V DC (2 points) + Open collector (2 points)</li> <li>12 V pulse (2 points) + Open collector (2 points)</li> </ul>	<ul style="list-style-type: none"> <li>0 - 20 mA DC (2 points)</li> <li>0 - 10 V DC (2 points)</li> <li>12 V pulse (2 points)</li> </ul>	
INSTALLATION						
Operating temperature	-10 to +55°C (14 to 131°F)					
Operating humidity	30 to 90 %RH (non-condensing)	5 to 90 %RH (non-condensing)			30 to 90 %RH (non-condensing)	
Atmosphere	No corrosive gas or heavy dust					
Mounting	Panel flush mounting			Installation Base (Model: R3-BSx)	DIN rail	
External dimensions	W48 × H48 × D100.5 mm (1.89" × 1.89" × 3.96")	W48 × H96 × D108 mm (1.89" × 3.8" × 4.25")	W96 × H96 × D108 mm (3.8" × 3.8" × 4.25")	W27.5 × H130 × D109 mm (1.08" × 5.12" × 4.29")	W24 × H115 × D59 mm (0.94" × 4.53" × 2.32")	



Website



Request Info

Your local representative: