Temperature Controllers

Navigation Guide

OMRON AUTOMATION & SAFETY

Quick Link M229 omron247.com

Quick Link M426 omron247.com

Quick Link M442 omron247.com

Quick Link M425 omron247.com

Quick Link M439 omron247.com

Quick Link M427 omron247.com

	Basic		Temperature/Process			
Product Line	**E5C2 (1/16 DIN Plug-in)**	**E5CB (1/16 DIN)**	**E5GC (1/32 DIN)**	**E5CC-U (1/16 DIN plug-in)**	**E5DC (22.5 mm (w) socket mounted)**	**E5AC (1/4 DIN), E5EC (1/8 DIN), E5CC (1/16 DIN)**
Selling Tips	• Analog dial allows user to easily select desired temperature range • Socket mounting assists in quick wiring • On/Off or PD models allows controller to be used in a variety of applications • Dual scaling (C or F) allows user to select	• Easy to ready LCD display • 250 ms sampling rate • Parameters can be configured via Thermo-mini • Autotune function can be performed from front panel keys	• Panel Mounted • 50 ms High Speed sampling allows more precise heater control • Removable screw or spring clamp terminal blocks (depending on model) • Parameters can be configured using CX-Thermo	• Socket mounted • 50 ms High Speed sampling allows more precise heater control • Parameters can be configured using CX-Thermo	• DIN rail mounting • 50 ms High Speed sampling allows more precise heater control • Built in "AND/OR" logic allows user to configure to their application • Parameters can be configured using CX-Thermo	• 50 ms High Speed sampling allows more precise heater control • Built in "AND/OR" logic allows user to configure to their application • Parameters can be configured using CX-Thermo
Typical Applications	Lab Equipment, Medical/Clinical Equipment, Environmental Equipment, Plastic Extrusion Equipment, Blow Molding Equipment, Industrial Ovens/Furnaces, Textile Mfg. Equipment, Food & Beverage Processing Equipment, Hot Runner Plastic Injection Equipment, Packaging Equipment, Boilers					
Supply Voltage	100-120VAC or 200-240VAC, 50/60 Hz	100-120VAC or 200-240VAC, 50/60 Hz	100-240 VAC, 24 VAC/VDC	100-240 VAC, 24 VAC/DC	100-240 VAC, 24 VAC/DC	100-240 VAC, 24 VAC/DC
Input Types	Thermocouple: J, K; Platinum RTD, Thermistor	Thermocouple: K,J,T,R; RTD: Pt100, JPt100	Thermocouple: K, J, T, E, L, U, N, R, S, B, W, or PL II; RTD: JPt100, Pt100; Current: 4 to 20mA or 0 to 20mA; Voltage: 1 to 5V, 0 to 5V, or 0 to 10V			
Output Types	Relay: (SPDT, 3A, 250 VAC), Voltage: (5 VDC, 10mA)	Relay: (SPDT, 3A, 250 VAC), Voltage: (5 VDC, 10mA)	Relay: (SPST-NO, 3A @ 250 Vac) Voltage: 12VDC @ 21mA Current: 4 to 20mA or 0 to 20mA	Relay: (SPST-NO, 3A @ 250 Vac) Voltage: 12VDC @ 21mA Current: 4 to 20mA or 0 to 20mA	Relay: (SPST-NO, 3A @ 250 Vac) Voltage: 12VDC @ 21mA Current: 4 to 20mA or 0 to 20mA	*Relay: (SPST-NO, 3A @ 250 Vac) *Voltage: 12VDC @ 21mA *Current: 4 to 20mA or 0 to 20mA *Linear Voltage Output: 0 to 10 Vdc (Transfer Output Only)
Control	On/Off, PD (separate models)	On/Off, 2-PID (with auto-tuning)	On/Off, 2-PID (with auto-tuning)	On/Off, 2-PID (with auto-tuning)	On/Off, 2-PID (with auto-tuning)	On/Off, 2-PID (with auto-tuning)
Accuracy	TC/RTD (±2%)	TC: ±1 Digit Max (±0.5% of indicated value); RTS: ±1 Digit Max (±0.5% of indicated value)	TC: ±1 Digit Max (±0.3% of indicated value) ; RTD: ±1 Digit Max (±0.2% of indicated value) Analog: ±1 Digit Max (±0.2% FS)	TC: ±1 Digit Max (±0.1% of indicated value); RTD: ±1 Digit Max (±0.2% of indicated value) Analog: ±1 Digit Max (±0.2% FS)	TC: ±1 Digit Max (±0.3% of indicated value) RTD: ±1 Digit Max (±0.2% of indicated value) Analog: ±1 Digit Max (±0.2% FS)	
Sampling Rate	20 Sec.	250 ms	50 ms	50 ms	50 ms	50 ms
Display (mm)	Analog Dial	PV: 16.2	PV: 10.5 SV: 5.0	PV: 15.2 SV: 7.1	PV: 8.5 SV: 8.0	E5AC: E5CC: PV: 15.2 SV: 7.1 E5EC: PV: 18.0, SV: 11.0
Set-up Software (CX-Thermo)	No	Thermo-mini	Yes	Yes	Yes	Yes
Heater Burnout	No	No	Yes	No	Yes	Yes
Communications Available	No	No	RS-485 , Protocol: CompoWay/F, Modbus RTU	No	RS-485 , Protocol: CompoWay/F, Modbus RTU	RS-485, Protocol: CompoWay/F, Modbus RTU
Program Capacity (Ramp/Soak)	No	No	2 Simple Patterns	2 Simple Patterns	2 Simple Patterns	2 Simple Patterns
IP Rating (Front Cover)	NEMA 4 rating only if Y92-48B is used	NEMA 4X/IP66	NEMA 4X/IP66	NEMA 1 / IP20	NEMA 1 / IP20	NEMA 4X/IP66
Approvals	UL, CSA, SEV	cULus				

Temperature Controllers

Navigation Guide

OMRON AUTOMATION & SAFETY

Quick Link M422 omron247.com

Quick Link M423 omron247.com

Quick Link M424 omron247.com

Quick Link M326 omron247.com

Quick Link M436 omron247.com

	Multi-Loop Rack Mount Process/Temperature Controller		Multi Loop Panel	1/4, 1/8, 1/16 DIN Ramp/Soak	
Product Line	**EJ1**	**E5ZN**	**E5AR (1/4 DIN) and E5ER (1/8 DIN)**	**E5CN-HT (1/16 DIN), E5EN-HT (1/8 DIN), E5AN-HT (1/4 DIN)**	**E5AC-T (1/4 DIN), E5EC-T (1/8 DIN), E5CC-T (1/16 DIN)**
Selling Tips	• For an in-panel multiple loop temperature and process control for up to 256 loops • Accepts 17 different input types • Higher resolution can be selected for 6 commonly used Thermal Couples/RTD, RS-485 and RS-232 communications available to connect to an HMI • Flexibility with easy communication with PLC, Programmable with CX-Thermal, PID or On/Off control programmable • Event inputs, Remote Setpoint Transfer output, Connection to G3ZA power controllers	• Can combine 16 units for 32 temperature loops • Socket mountable • Controller can be removed from socket during applications making it "Hot Swappable" • Controllers and sockets can be ganged together • Units can be programmed via setting display unit or via HMI using RS-485 and RS-232 communications.	• E5AR can control up to 4 loops • E5ER can control up to 2 loops • 50 mS sampling period allows controller to be used in applications requiring high-speed response • Bar graph shows MV (manipulated variable), valve opening or deviation • Calculation function allows controller to be used in application where square root calculation and broken-line approximation is needed • Available with RS-485 or DeviceNet communication	• Can be used to replace E5_K-PRR and E5_K-TAA series controllers • Performs Ramp/Soak functions • 60ms High Speed sampling allows more precise heater control • Features new programmable control function allowing a total of 8 programs to be stored with 32 segments in each program • Parameters can be configured using CX-Thermo	• 8 segments which can hold 32 segments (256 programs) • "Segment Jump" allows users to jump to specified segment • 50ms High Speed sampling allows more precise heater control • Built in "AND/OR" logic allows user to configure to their application • Parameters can be configured using CX-Thermo
Typical Applications	Plastic Extrusion Equipment, Blow Molding Equipment, Industrial Ovens/Furnaces, Textile Mfg. Equipment, Food & Beverage Processing Equipment, Hot Runner Plastic Injection Equipment, Packaging Equipment				
Supply Voltage	24 VDC	24VDC	100 to 240 VAC , 24 VAC, 24 VDC	100-240 VAC, 24 VAC/DC	100-240 VAC, 24 VAC/DC
Input Types	Thermocouple: K, J, T, E, L, U, N, R, S, B, W, or PL II, RTD: JPt100, Pt100, Current: 4 to 20mA or 0 to 20mA, Voltage: 1 to 5V, 0 to 5V, or 0 to 10V, Infrared TS	Voltage: (12Vdc @ 21mA), Transistor: (30Vdc @ 100mA), Current: (4 to 20 mA or 0 to 20mA)	Thermocouple: K,J,T,T,E,L,U,N,R S, B, W: Platinum resistance thermometer: Pt100; Current input: 4 to 20 mA DC, 0 to 20 mA DC (including remote SP input); (input impedance:150 ohms for current input, approx. 1Mohm for voltage input)	Thermocouple: K, J, T, E, L, U, N, R, S, B, W, or PL II RTD: JPt100, Pt100 Current: 4 to 20mA or 0 to 20mA Voltage: 1 to 5V, 0 to 5V, or 0 to 10V	Thermocouple: K, J, T, E, L, U, N, R, S, B, W, or PL II RTD: JPt100, Pt100 Current: 4 to 20mA or 0 to 20mA Voltage: 1 to 5V, 0 to 5V, or 0 to 10V
Output Types	Voltage: (12 VDC @ 21 mA), Transistor: (30 VDC @ 100 mA), Current: (4 to 20 mA or 0 to 20 mA)	Voltage: 12VDC, Transistor: 30VDC, Max load current: 100mA, Residual Voltage: 1.5V	Voltage (pulse) output: 12 VDC, 40 mA max. with short-circuit protection circuit; Current output: 0 to 20 mA DC, 4 to 20 mA DC; load: 500ohms max. (including transfer output) (Resolution: Approx. 54,000 for 0 to 20 mA DC); Relay output: Position proportional control type (open, closed) N.O. 250VAC, 1 A (including inrush current)	Relay: (SPST-NO, 3A @ 250 VAC), Voltage: (12 VDC @ 21 mA), Current: (4 to 20 mA or 0 to 20 mA), Linear Voltage Output: (0 to 10 VDC)	Relay: (SPST-NO, 3A @ 250 Vac), Voltage: 12VDC @ 21mA, Current: 4 to 20mA or 0 to 20mA, Linear Voltage Output: 0 to 10 Vdc (Transfer Output Only)
Control	On/Off, 2-PID (with auto-tuning)	On/Off, 2-PID (with auto-tuning)	On/Off, 2-PID	On/Off, 2-PID (with auto-tuning)	On/Off, 2-PID (with auto-tuning)
Accuracy	TC/RTD (±0.5% of indicated value), Analog ±0.5% FS ±1 digit max.	TC (±0.5% of indicated value or ±1° C, whichever is greater) ±1 digit max., RTD (±0.5% of indicated value or ±0.5° C, whichever is greater) ±1 digit max., Analog ±0.5% FS ±1 Digit Max.	TC with cold junction compensation: ±1% PV or ±1°C (whichever is greater) ±1 digit max; TC with cold junction without compensation: ±1% FS or ±1°C (whichever is smaller) ±1 digit; Analog input: ±0.1% FS ±1 digit max, Position-proportional potentiometer input: ±5% FS ±1 digit max	TC (±0.1% of indicated value, RTD (±0.1% of indicated value), Analog ±0.1% FS ± 1 digit max.	TC: ±1 Digit Max (±0.3% of indicated value) RTD: ±1 Digit Max (±0.2% of indicated value) Analog: ±1 Digit Max (±0.2% FS)
Sampling Rate	250 ms	500 ms	50 ms	60 ms	50 ms
Display (mm)	N/A	Optional 1/16 DIN Setting Display Unit	7 Segment	5 digit; 11 segment; PV: 11 mm height, SV: 6.5 mm height; 2 row	E5AC-T: PV: 18.0 SV: 11.0 MV: 7.8 E5EC-T: PV:25.0 SV:15.0 MV:9.5 E5CC-T: PV:15.2 SV:7.1
Set-up Software (CX-Thermo)	Yes	Yes	Yes	Yes	Yes
Heater Burnout	Yes	Yes	Yes	Yes	Yes
Communications Available	RS-232C, RS-422, RS-485 (CompoWay/F, Modbus)	RS-485 (CompoWay/F and/or DeviceNet)	RS-485 and DeviceNet	RS-232C, RS-485 and USB (E58-CIFQ1 cable), Protocol: CompoWay/F, Modbus RTU	RS-485, Protocol: CompoWay/F, Modbus RTU
Program Capacity (Ramp/Soak)	No	No	Yes	8 Programs: 32 Segments	256 Segements (8 programs, 32 segments)
IP Rating (Front Cover)	N/A	n/a	NEMA 4X/IP66	NEMA 4X/IP66	NEMA 4X/IP66
Approvals	CE, UR	CE, UR	CE, cRUus	cULus, CE	UL Listed, CSA