

1/16 DIN PID Controllers

Temperature and Process



Features:

- Single loop temperature / process controller
- 1/16 DIN (48 × 48 mm)
- Profiler function – 2 programs × 16 segment
- 70 mm depth behind panel
- Universal input and 2 or 3 outputs

The markets for industrial and scientific equipment demand that controllers not only provide a cost-effective and compact solution but also add-value to the overall competitive characteristics of the machine by offering improved aesthetic design or enhanced functions and diagnostics. The E6C economy controller has been designed to encompass these requirements by a global market leader in temperature and process control products

Specifications:

Features:

Control Types	: Full PID with Pre-tune, manual tuning, or on-ff control, heat only or heat and cool
Output Configuration	: Output 1 and 2; Relay or SSR drive. Output 3; Relay, SSR drive, Linear DC (mA / V), RS485 Comms
HMI	: 4 button operation, dual 4 digit 10 mm and 8 mm high LED displays, optional choice of colours (Red / Red, Red / Green), plus 3 LED output indicators. Function button: Profiler Control (Run, Hold, Stop, Reset) or auto / manual control (user defined)

Input:

Thermocouple	: J, K, B, C, D, L, N, R, S, T, PtRh 20% : 40%
RTD	: 3 wire PT100, 50 per lead maximum (balanced)
DC Linear	: 0 to 20 mA, 4 to 20 mA, 0 to 50 mV, 10 to 50 mV, 0 to 5 V, 1 to 5 V, 0 to 10 V, 2 to 10 V
Impedance	: >10 M resistive, except DC mA (5) and V (47 k)
Accuracy	: 0.1% of full range, 1LSD (thermocouple 1°C for internal CJC)
Sampling	: 4 per second, 250 ms
Sensor Break Detection	: Thermocouple and RTD - Control goes to off. High alarms activate. Linear (4 to 20 mA, 2 to 10 V and 1 to 5 V only) - Control goes to off. Low alarms activate

Control:

Tuning Types	: Automatic pre-tune and manual tuning
Proportional Bands	: 0.5% to 999.9% of input span in range units, or On / Off control
Automatic Reset	: Integral time constant, 1 s to 99 minutes 59 seconds and off
Rate	: Derivative Time Constant, 1 s to 99 minutes 59 seconds and off
Manual Reset	: Proportional output power Bias 0 to 100%. (-100 to 100)
Differential	: On / Off switching differential 0.1% to 10% of input span
Cycle Time	: Selectable from 0.1 to 512 seconds (SSR output) : Selectable from 0.5 to 512 seconds (relay output)

Profile:

Number of Programs	: 2, each with 16 free-form segments (Ramp / dwell / Step / End) maximum segment length 99 hours 59 minutes
Delayed Start	: Maximum 99 hours 59 minutes delay from initiation to program start
Guaranteed Soak	: Holds program if PV out of specified hold band during dwell segments

1/16 DIN PID Controllers



Temperature and Process

Program Cycles : 1 to 9,999 or infinite (continuously restarts program at end)
 Ramp Rate Definition : Either ramp rate or time to target setpoint
 Power Loss Recovery : Continue profile from point of power fail or end profile and return to controller mode

Alarms:

Alarm Types : Process High, Process Low, Band and Deviation. Band and Deviation (high or low) alarm values are relative to the current setpoint value. Hysteresis; A dead-band from 1 LSD to full span (in display units) before deactivation of the alarm

Outputs:

Control and Alarm Relays : Contacts SPST 2 A resistive at 120 / 240 V ac, >300,000 operations (Out 3 >500,000 operations)
 : Out 1 and 2 Basic safety from universal input and SSR drive
 : Out 3 Reinforced safety from universal input and SSR drive
 SSR driver outputs : Drive capability >10 V dc in 500 minimum, non-isolated
 DC linear outputs : 0 to 20 mA, 4 to 20 mA into 500 maximum, 0 to 10 V, 2 to 10 V, 0 to 5 V into 500 minimum
 : Accuracy 0.25% at 250 (Degrades linearly to 0.5% for increasing burden to specified units)
 : Basic safety from universal input and SSR drive
 : Reinforced safety isolation from mains and relay circuits

Serial Communications:

Physical : RS485 at 1,200, 2,400, 4,800, 9,600, 19,200 or 38,400 bps
 Protocol : Modbus RTU
 Isolation : Basic safety from universal input and SSR drive
 : Reinforced safety isolation from mains and relay circuits

Operating and environmental:

Temperature and RH : 0 to 55°C (-20 to 80°C storage), 20% to 95% RH non-condensing
 Power Supply : 100 to 240 V 50 / 60 Hz ±10% 7.5 VA or optional 20 to 48 V ac 50 / 60 Hz or 22 to 65 V dc 5 W (low voltage version)
 Front Panel Protection : IP66 (IP20 behind panel)

Conformance:

Standard : CE
 EMI : Complies with EN61326
 Safety Considerations : Complies with EN61010-1. Pollution Degree 2, Installation Category II

Weights and Dimensions:

Weight : 0.21 kg maximum
 Dimensions : 1/16 DIN , 48 × 48 mm ; 70 mm (Depth Behind Panel)

	RS485	RLY	SSR/LIN						
Output 3 (Option)	B	NO	+	6	7	L			Power
	COM	COM		5	8	N			
	A	NC	-	4	9	NO	-	Out 1	
Universal Input				3	10	COM	+	Out 2	
		-	+	2	11	NO	-		
		+	-	1	12	COM	+		
	RTD	mA	TC/mV/V			RLY	SSR		



