

ETR-8300

1/8 DIN Temperature Controller with Smarter Logic®



- **Fast Input Sample Rate (5 times per second)**
- **Differential Control**
- **PID Auto-Tune Function**
- **Sleep Mode Function**
- **Ramp to Set Point with Dwell Timer**
- **Programmable Inputs (Thermocouple, RTD, mA, Vdc)**
- **Analog Input for Remote Setpoint or CT**
- **Event Input for Changing Function and Set Point**
- **Hardware Lockout with Remote Lockout Protection**
- **Loop Break Alarm**
- **Heater Break Alarm**
- **Sensor Break Alarm with Bumpless Transfer**
- **RS-485, RS-232 Communication**
- **Analog Retransmission**
- **A Wide Variety of Output Modules Available**



Description

The ETR-8300 with **Smarter Logic** offers extensive features on a 1/8 DIN controller. In addition to universal field selectable inputs, **auto tuning of PID** parameters and a selection of various control outputs, this controller has an additional analog input and an event input; an analog output or digital communications; and other software features which make this controller a stand out among 1/8 DINs.

Flexible Second Input:

The control sensor input is the primary input. The second input can be set up as a CT (current transformer) input to monitor the actual heater current and alarm if a heater is lost. The second input can also be used as a remote set point, or this input can make the controller a differential controller via a temperature transmitter (the difference in temperature between input 1 and 2).

Event Input:

The Event input can be used for various functions: selecting between Set point 1 and set point 2, between PID1 and PID2 parameters, resetting the alarms, disabling outputs or locking out the operator parameters.

Analog Retransmit:

This analog output can retransmit to a PLC or recorder the Process value, input 2 value, the difference between input 1 and 2, the set point, the output 1 or 2 value, or the deviation between the set point and Process variable.

Other Features:

- Bumpless transfer on a sensor break continues to switch the output at the same percentage to prevent a possibly damaging change in output
- Sensor sample rates of 5 times a second, controlling processes such as pressure and flow are possible
- Up to 4 outputs – provides flexibility
- Dwell Timer – excellent for cooking or other batch applications
- Digital Communications permit networking with other controllers and computers

ETR-8300

1/8 DIN Temperature Controller with Smarter Logic® (cont'd.)

Control Specifications

UNIVERSAL INPUT SELECTIONS

Display in temperature or engineering units
Input Set 1

Input 1: Thermocouple - J,K,T,E,B,R,S,N,L
RTD-PT 100 DIN, PT100 JIS
Current or Voltage - 4-20mA,
0-20mA, 0-1V, 0-5V, 1-5V
and 0-10V

Input 2: Analog input for remote set point
adjustment 4-20mA, 0-20mA,
0-1V, 0-5V, 1-5V and 0-10V, or CT
for heater break

Input 3: Event input

CONTROL FEATURES

Temperature Range: Selectable

Set Point: Full range adjustable

Control Modes:

Can be configured as:

- On/off, Proportional (P)
- Proportional with manual reset
- Proportional/Integral (PI)
- Proportional Derivative (PD)
- Proportional/Integral/Derivative (PID)

Heating and Cooling

Proportional Band: 0-900°F (0-500°C)

Integral (Reset): 0-1000 Seconds

Derivative (Rate): 0-360 Seconds

Ramp Rate: 0-900.0°F
(0-500.0°C)/Minute

Dwell Timer: 0-6553.5 minutes

Cooling

Overlap/Deadzone: Adjustable dead band
from -36% to +36%
of PB1

Manual Mode:

Configurable or auto-
matic transfer to open
loop control if sensor
should no longer
function

Heating or Cooling

Cycle Time: 0.1-100.0 seconds

Sensor Break

Protection: Configurable status of con-
trol and secondary outputs

Control Action: Selectable - Direct action
for cooling; reverse action
for heating

POWER

Supply Voltage: 90-264Vac, 50/60Hz; 11-
26 VAC/VDC optional

Consumption: Less than 15VA

Data Retention: EEPROM

OUTPUTS

Main output with 3 optional independent
outputs

Outputs 1 and 2:

Relay: SPST relay rated 2A, 240V
maximum resistive load

Pulsed Voltage: 5V/30mA SSR Drives
(Code 2)
14V/40mA SSR Drives
(Code C)

Current: Isolated 4-20mA/0-20mA

Voltage: Isolated 1-5V/0-5V/0-10V

Triac: 1A/240VAC

Output 2 Only

DC Power supply: 20V/25mA,
12V/40mA/5V/80mA

- Alarm:**
- Alarm 1 Output: Form C relay
for deviation, process or band
alarm, 2A/240VAC
 - Alarm 2 Output: Form A Relay,
2A/240VAC

Communications: RS485, RS232 Serial

Analog Output: 4-20mA/0-20mA, 1-5V/0-
5V and 0-10V; Analog
retransmission of process
value, set point, output %,
deviation

INDICATION

Dual 4-Digit red .4" LED Process Value Display

Selectable Decimal

Placement: For normal or high resolu-
tion display. Example:
0000; 000.0; 00.00; or
0.000

°F/°C: Selectable with 2 LED
indicators

Sample Rate: 5 Samples/second

SPECIFICATIONS

Accuracy: ±0.1% of span, ± least
significant digit

Control Stability: ±0.15% (typical) of full
scale

**Cold Junction
Compensation:** ±1.5uV/°C

**External
Resistance:** 100 ohms, maximum

**Common Mode
Rejection:** 120dB

**Normal Mode
Rejection:** 55dB

Input Impedance: 10M ohms

**Operating Temperature
for Rated Accuracy:** 14-122°F (-10 - 50°C)

Humidity: 0-90% RH
(non-condensing)

Shock: 200m/s² (20 grams)

Dimensions: 1-7/8"W x 3-3/4"H x 2-
1/2"D
(48mmW x 96mmH x
80mmD)

Depth behind panel: 2-9/16"
(65mm)

Weight: 5oz. (142 grams)

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1/8 DIN Temperature Controller with Smarter Logic® (cont'd.)

Ordering Information

Complete the model number using the matrix provided.

Accessories

CC94-1	RS-232 Interface Cable (2M)
CT94-1	Current Transformer for CT Input/Heater Break Option
SNA10A	Smart Network Adaptor for Third Party Software. Converts one channel of RS-485 or RS-422 to RS-232 Network.
SNA10B	Smart Network Adapter for ETR-Net Software. Converts 255 channels of RS-485 or RS-422 to RS-232 Network.

Model	Microprocessor based temperature controller with Smarter Logic®						
ETR-8300	1/8 DIN; universal field selectable inputs; PID autotuning; selection of various control outputs; additional analog and event inputs; analog or digital communications						
	Code	Power Input					
	4	90-264 Vac, 50/60 Hz					
	5	11-26Vac or Vdc					
		Code	Signal Input				
		1	Standard Input				
			Input 1 - Universal input Thermocouple J,K,T,E,B,R,S,N,L RTD: PT100 DIN, PT100 JIS Current: 4-20mA, 0-20mA Voltage: 0-1V, 0-5V, 1-5V, 0-10V				
			Input 2 - CT and Analog Input*** CT: 0-50 Amp, AC Current Transformer Analog Input: 4-20mA, 0-20mA, 0-1V, 0-5V, 1-5V, 0-10V				
			Input 3 - Event Input (EI)**				
		Code	Output 1				
		1	Relay rated 2A/240Vac				
		2	Pulsed voltage to drive SSR, 5V/30mA				
		3	Isolated 4 - 20mA/0 - 30mA				
		4	Isolated 1 - 5/0 - 5V*				
		5	Isolated 0 - 10V				
		6	Triac Output 1A/240Vac				
		C	SSR Drive 14V/40mA				
		Code	Output 2				
		0	None				
		1	Form A Relay 2A/240Vac				
		2	Pulsed voltage to drive SSR, 5V / 30mA				
		3	Isolated 4 - 20mA/0 - 20mA*				
		4	Isolated 1 - 5/0 - 5V*				
		5	Isolated 0 - 10V				
		6	Triac Output 1A/240Vac, SSR				
		7	Isolated 20/25mA DC Output Power Supply				
		8	Isolated 12/40mA CD Output Power Supply				
		9	Isolated 5V/80mA DC Output Power Supply				
		C	SSR Drive 14V/40mA				
		Code	Alarm 1 and Alarm 2				
		00	None				
		11	Two Form C Relays 2A/240Vac				
		Code	Communications				
		0	None				
		1	RS-485 Interface				
		2	RS-232 Interface**				
		3	Retransmit 4 - 20mA, 0 - 20mA*				
		4	Retransmit 1 - 5V/0 - 5V*				
		5	Retransmit 0 - 10V				
ETR-8300	4	1	1	1	11	1	Typical Model Number

* Range set by front keyboard
 ** Alternative between RS-232 and Event Input
 *** Order CT94-1 if Heater Break Function is required