ETR-4300

1/4 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 Set Point and CT**
- **Event input for Changing Function and Set Point**
- **Hardware Lockout and Remote Lockout Protection**
- **Loop Break Alarm**
- **Heater Break Alarm**
- **Sensor Break Alarm and Bumpless Transfer**
- **RS-485, RS-232 Communication**
- **Analog Retransmission**
- **A Wide Variety of Output Modules Available**

Description

The ETR-4300 with **Smarter Logic** offers extensive features that are rarely available on a 1/4 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 1/4 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:

- The 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 is excellent for cooking or other batch applications
- Digital Communications permits networking with other controllers and computers.

ETR-4300

1/4 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 - 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:

All Models can be configured as:
- On/off, Proportional (P)
- Proportional w/manual reset, Proportional/Integral (PI)
- Proportional Derivative (PD)
- Proportional/Integral/Derivative (PID)

Heating and Cooling Proportional Band: 0-900˚F (0-482˚C)

Integral (Reset): 0-1000 Seconds

Derivative (Rate): 0-360 Seconds

Ramp Rate: 0-99.9˚F (0-55.5˚C)/Minute

Dwell Timer: 0-6553.5 minutes

Cooling Overlap/Deadzone: Adjustable dead band from -199.9 to +199˚F/-110.0 - +111.0˚C

Manual Mode: Configurable or automatic transfer to open loop control should sensor no longer function

Heating or Cooling Cycle Time: 0.1-100.0 seconds

Sensor Break Protection: Configurable status of control and secondary outputs

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

POWER

Supply Voltage: 90-264Vac, 50/60Hz; 11-28VAC/VDC optional

Consumption: Less than 5VA

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: 4-20mA/0-20mA

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

Triac: 1A/240VAC

Secondary Output (A1): Form C relay for deviation, process or band alarm. 2A/240VAC

Secondary Output (A2): Form A Relay 2A/240VAC

Communications: RS-485, RS-232 serial

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

INDICATION

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

Selectable Decimal Placement: For normal or high resolution 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: 0.1˚C/˚C Ambient

External Resistance: 100 ohms, maximum

Common Mode Rejection: 120dB

Normal Mode Rejection: 60dB

Input Impedance: 10M ohms

Operating Temperature for Rated Accuracy: 14-122˚F (-10 to 50˚C)

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

Insulation: 20M ohm minimum (500VDC)

Breakdown: 2000VAC, 50/60Hz, 1 minute

Vibration: 10 - 55Hz, amplitude 1mm

Shock: 200m/s² (20 grams)

Dimensions: 3-3/4"W x 3-3/4"H x 2-5/8"D (96mmW x 96mmH x 66mmD)
Depth behind panel: 2" (53mm)
Weight: 5oz. (142 grams)

ETR-4300

1/4 DIN Temperature Controller with Smarter Logic® *(cont'd.)*

Ordering Information

Complete the model number using the matrix provided.

Model	Microprocessor based temperature controller with Smarter Logic®
ETR-4300	1/4 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, SSR
C	SSR Drive 14V/40mA

Code	Output 2/Alarm 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 20V/25mA DC Output Power Supply
8	Isolated 12V/40mA DC 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-4300	**4**	**1**	**1**	**1**	**00**	**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

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.

SINGLE CHANNEL