ETR-3400

1/32 DIN Temperature Controller with Smarter Logic®

- **Automatic Tuning of PID Parameters**
- **Universal Sensor Input**
- **Selectable Set Point or Process Value Display**
- **Analog Input for Remote Set Point Adjustment**
- **Event Input**
- **Loop Break Alarm**
- **Heater Break Alarm**
- **5 Per Second Sample Rate**
- **Digital Communications**
- **NEMA 4X/IP65**
- **3 Year Warranty**

Description

The ETR-3400 with **Smarter Logic** offers extensive features that are rarely available on a 1/32 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 1/32 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.

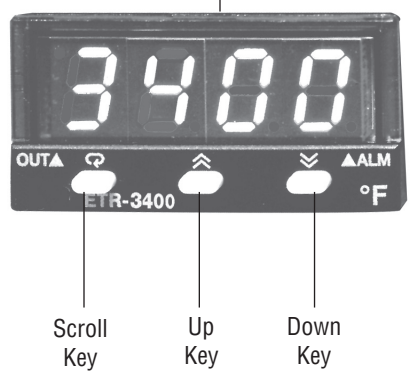
Other Features:

- 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 per second allow controlling processes such as pressure and flow.
- NEMA 4X front panel rating can be used in applications requiring washing with a direct spray.
- Up to 3 outputs provide flexibility.
- Dwell Timer is excellent for cooking or other batch applications.
- Digital Communications permits networking with other controllers and computers.

External Lockout Code
- Prevents accidental or unauthorized changes

Non-Volatile Memory
Retains process parameters when power is off

Set Point/Process Parameter Display
- Process display updated 5 times per second
- Menu and error codes
- Output Percentage
- Calibration parameter
- Selectable set point or process value



NEMA 4X Front Panel
- Water and corrosion proof

Automatic Tuning
- Eliminates complicated and time consuming manual tuning procedures
- Smarter Logic practically eliminates overshoot and temperature variations.
- Universal Input
- Analog Input for remote set point adjustments
- Heater Break alarm
- Serial Communications or analog retransmission of process value

SINGLE CHANNEL

ETR-3400

1/32 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
CT for heater break
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: 0-430 minutes

Anti-Reset (Wind-up): Inhibits integral action outside proportional band

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

Manual Mode: Configurable or automatic transfer to open loop control and secondary output

Heating or Cooling Cycle Time: 0.1 to 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: 90-264 VAC, 50/60Hz; 20-23 VAC/VDC optional

Consumption: Less than 15VA

Data Retention: 10 Years (EEPROM)

OUTPUTS

Main output with 2 optional independent secondary outputs

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 0-10V, minimum impedence 500K ohms

Triac: 1A/240 VAC

Secondary Output (A1): 5V/30mA SSR Drives (Code 2)
14V/40mA SSR Drives (Code C)

Secondary Output (A2): Form A Relay - 2A/240 VAC
Alarm functions: Dwell timer, Deviation hi/low alarm, PV1 High/Low alarm, PV2 High/Low alarm, PV1 or PV2 High Low alarm, PV1- PV2 High Low alarm, Loop break alarm, Sensor Break alarm

Alarm Mode: Normal, latching, hold, latching/hold

Communications: RS-485, RS-232 serial

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

INDICATION

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

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 - 50˚C)

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

Insulation: 20M ohm minimum (500VDC)

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

Vibration: 10 - 55Hz, amplitude 1mm

Shock: 200m/s² (20 grams)

Dimensions: 1-7/8"W x 15/16"H x 4-5/16"D (48mmW x 24mmH x 110mmD)
Depth behind panel: 3-7/8" (76mm)
Panel Cutout: 7/8"x1-25/32" (22X45mm)
Weight: 4oz. (113 grams)

ETR-3400

1/32 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-3400	1/32 DIN; universal field selectable inputs; PID autotuning; selection of various control outputs; additional analog and event inputs; analog or digital communications

Code — Power Input

Code	
4	90-264 VAC, 50/60 Hz
5	11-26 VAC or VDC

Code — Signal Input

Code	
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: 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

Code	
1	Relay rated 2A/240 VAC
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/240 VAC
C	SSR Drive 14V/40mA

Code — Output 2/Alarm 2

Code	
0	None
1	Form A Relay 2A/240 VAC
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/240 VAC
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

Code	
1	5V Logic Output

Code — Communications

Code	
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-3400	4	1	1	1	1	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.