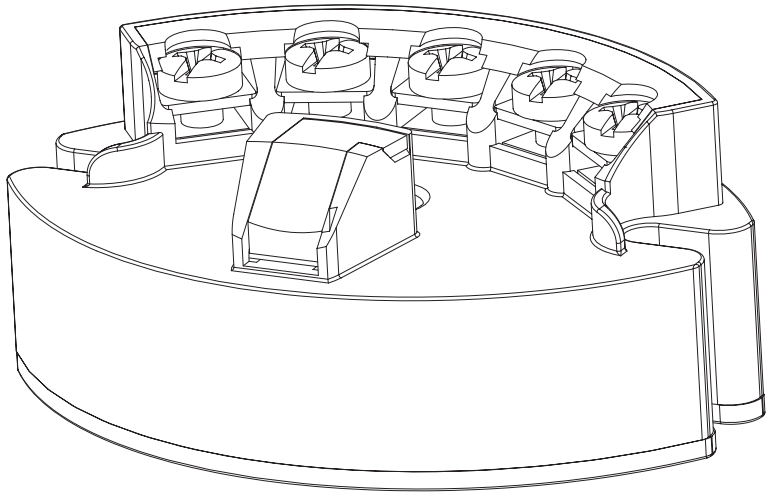
Series 440 Programmable RTD Temperature Transmitter

The Series 440 programmable RTD temperature transmitter is a two-wire transmitter with an analog output. It has measurement input for Pt100 resistance thermometers (RTD) in 2 or 3 wire connection. Setting up of the transmitter is done using the 440-CABLE. These small units can be mounted in Pyromation heads or they can be used for surface mounting by using a 35 mm DIN rail mounting clip.

TEMPERATURE HEAD TRANSMITTER

Universal head transmitter for Pt100 resistance thermometers (RTD) settable using a PC, for installation in a sensor head.



Patent #D350, 596

Application Areas

- PC programmable temperature head transmitter for converting Pt100 input signal into an scaleable (4 to 20) mA analog output signal
- Platinum Resistance thermometer (RTD)
- Online configuration using PC with SETUP connector.

Features and Benefits

- Universally PC programmable for Pt100 signals
- 2 wire technology, (4 to 20) mA analog output
- High accuracy in total ambient temperature range
- Fault signal on sensor break or short circuit
- RFI/EMI Protected, CE marked
- c UL us UL Recognized Component
- FM CSA General Purpose and non-incendive for use in hazardous locations
- Online configuration during measurement using SETUP connector
- Output simulation

Resistance Thermometer Input (RTD)

TYPE	MEASUREMENT RANGE	MINIMUM RANGE
Pt100 (α = 0.003 85 $^{o}C^{-1}$)	(-200 to 650) °C [-328 to 1202] °F	10 ˚C [18 ˚F]
Connection Type	2 or 3 wire connection cable resistance compensation possible in the 2 wire system (0 to 20) Ω	
Sensor cable resistance	maximum 11 Ω per cable	
Sensor current	≤ 0.6 mA	

Output (Analog)

Output signal	(4 to 20) mA or (20 to 4) mA
Transmission as	Temperature linear
Maximum load	($V_{power\ supply}$ - 10 V) / 0.023 A (current output)
Digital filter 1st degree	(0 to 8) s
Induced current required	≤ 3.5 mA
Current limit	≤ 23 mA
Switch on delay	4 s (during power 1_a = 3.8 mA)
Electronic response time	1 s

Failure Mode

Undershooting measurement range	Decrease to 3.8 mA
Exceeding measurement range	Increase to 20.5 mA
Sensor breakage/short circuit	≤ 3.6 mA or ≥ 21.0 mA

Electronic Connection

Power supply	U_b = (10 to 30) V dc, polarity protected
Allowable ripple	U_{ss} ≤ 5 V at U_b ≥ 13 V, f_{max} = 1 kHz

Resistance Thermometer Accuracy (RTD)

TYPE	MEASUREMENT ACCURACY
Pt100	0.2 °C or 0.08% [1]
Reference conditions	Calibration temperature (23 ± 5) °C [73 ± 9] °F

General Accuracy

Influence of power supply	± 0.01%/V deviation from 24 V [2]
Load influence	± 0.02%/100 Ω [2]
Temperature drift	T_d = ± (15 ppm/°C × (range end value + 200) + 50 ppm/°C × measurement range) × $\Delta\vartheta$ $\Delta\vartheta$ = deviation of the ambient temperature according to the reference condition
Long term stability	≤ 0.1 °C/year [3] or ≤ 0.05%/year [1][3]

[1] % is related to the adjusted measurement range (the value to be applied is the greater)
[2] All data is related to a measurement end value of 20 mA
[3] Under reference conditions

ORDER CODES

Unconfigured Order Number: 440-00

Configured Order Number: 4 4 0 - 3 85 U - S (50-300) F

(1 = 3, 2 = 85, 3 = U, 4 = S (50-300), 5 = F)

1

CODE	DESCRIPTION
2	RTD (2-wire)
3	RTD (3-wire)

2

CODE	DESCRIPTION
85	100 ohm platinum (α = 0.003 85 $^{\circ}C^{-1}$)

3

CODE	DESCRIPTION
U	Upscale Burnout ≥ 21.0 mA
D	Downscale Burnout ≤ 3.6 mA

4

RANGE
S (lower limit – upper limit)

5

CODE	DESCRIPTION
C	Celsius
F	Fahrenheit

Accessories

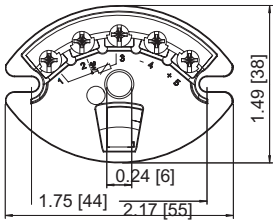
CODE	DESCRIPTION
440-CABLE	Communication Cable and Software (RS232)
440-CABLE-USB	Communication Cable and Software (USB)
440-DIN35	35 mm DIN rail mounting clip

Series 440 Programmable RTD Temperature Transmitter Specifications

Environmental Conditions

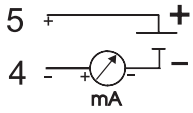
Ambient temperature	(-40 to 85) °C [-40 to 185] °F
Storage temperature	(-40 to 100) °C [-40 to 212] °F
Climatic class	EN 60 654-1, Class C
Condensation	Permitted
Shock resistance	4 g / (2 to 150) Hz according to IEC 60 068-2-6
EMC immunity	Interference immunity and interference emission according to EN 61 326-1 (1EC 1326)

Mechanical Construction

Dimensions	 Dimensions in inches [mm] 
Weight	Approximately 44 g
Materials	Housing: Polycarbonate • Potting: Polyurethane
Terminals	15 AWG (maximum)

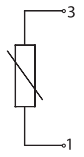
Terminal Connections

Power supply and current output

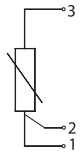


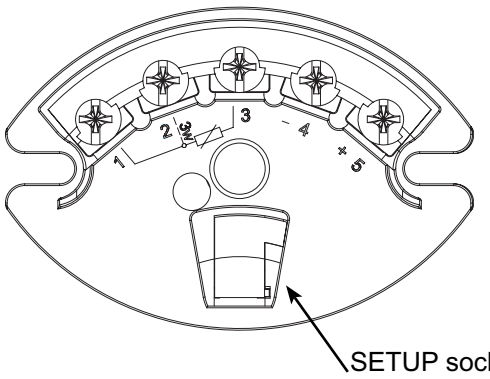
(10 to 30) V dc
(4 to 20) mA

2-Wire



3-Wire





Approvals

CE marked	Unit complies with the legal requirements set forth by the EU regulations.
c UL us	UL Recognized Component
FM CSA	General Purpose and non-incendive for use in hazardous locations Class I, Division 2 Groups A, B, C and D