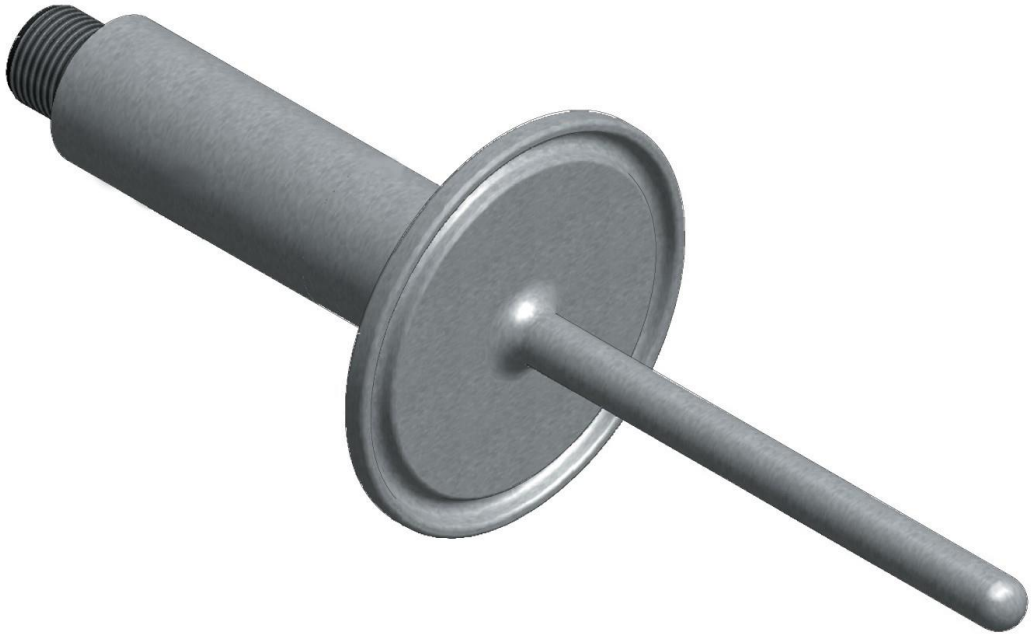
The Series 450 Programmable Integral Temperature Transmitter is ideal for monitoring temperature in highly moist or corrosive environments and in small areas such as pipes and tanks. The unit consists of a 4-wire Pt100 RTD sensor, built-in (4 to 20) mA transmitter, and process connection. The integral design eliminates all external screw connections, simplifying the electrical installation process and solving the problems caused by moisture, loose connections, and corrosion. A "quick disconnect" M12 plug adapter connects the transmitter to a PC for ease of calibration, re-programming, and wiring accuracy.

SERIES 450 PROGRAMMABLE INTEGRAL TEMPERATURE TRANSMITTER



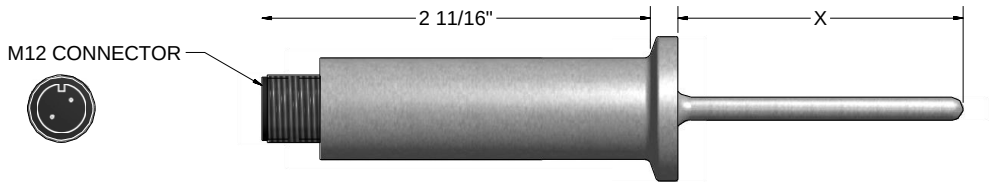
Application Areas

- PC programmable temperature transmitter for converting Pt100 input signal into a scalable (4 to 20) mA analog output signal
- Platinum Resistance Thermometer (RTD)
- Ideal for use in applications where sanitary wash-down procedures are required
- Compact design is well suited for use in small areas such as tanks and pipes
- Used for measuring temperatures from (-51 to 160) °C [-60 to 320] °F

Features and Benefits

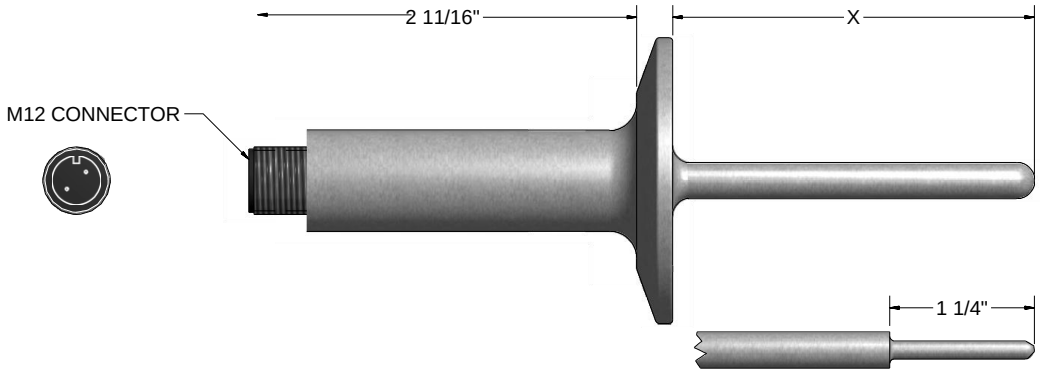
- PC programmable transmitter with (4 to 20) mA output
- Reliable measurements despite fluctuations in ambient temperature
- Available in threaded and Clean-In-Place (CIP) connections
- RFI/EMI Protected
- c UL us UL Recognized Component

MINIATURE CIP RTD ASSEMBLY



See Food & Dairy Section For Ordering Information

CIP RTD ASSEMBLY



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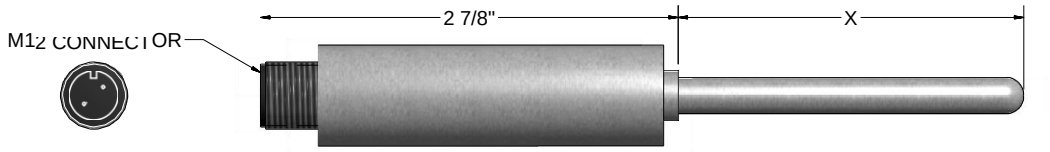
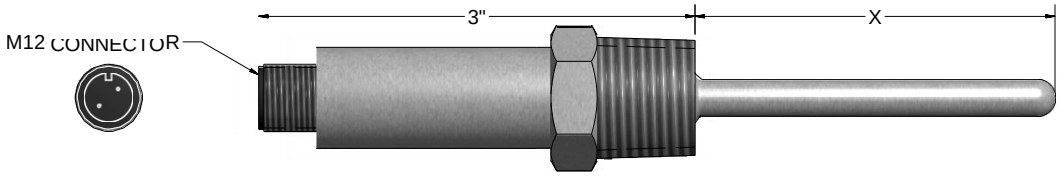
RTD ASSEMBLY WITH NO PROCESS FITTING



See RTD Section For Ordering Information

RTD ASSEMBLY WITH THREADED CONNECTION



See RTD Section For Ordering Information

INPUT

Resistance Thermometer Input (RTD)

TYPE	MEASUREMENT RANGE	MINIMUM RANGE
Pt100 (α = 0.003 85)	(-51 to 160) °C [-60 to 320] °F	10 ˚C [18 ˚F]
Connection Type	4 wire connection (standard)	
Sensor current	≤ 0.6 mA	

OUTPUT

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)
Induced current required	≤ 3.5 mA
Current limit	≤ 23 mA
Switch on delay	2 s
Electronic response time	1 s

Failure Mode

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

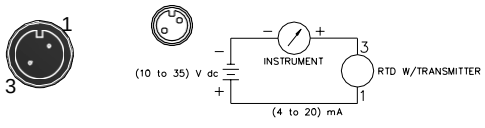
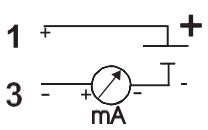
ACCURACY

Accuracy

Electronics measurement error	0.1 °C or 0.08% [1]
Reference conditions	Calibration temperature (23 ± 5) °C [73 ± 9] °F
Sensor measurement error	Class A ± (0.15 + 0.002 |t|) °C Class B ± (0.3 + 0.005 |t|) °C Grade B ± (0.25 + 0.0042 |t|) °C Class AA ± (0.01 + 0.0017 |t|) °C 1/5 Class B ± (0.06 + 0.0017 |t|) °C |t| = value of temperature without regard to sign, °C
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 × (full scale value + 200) + 50 ppm/°C of set measuring range) × Δϕ Δϕ = deviation of ambient temperature from the reference operation condition
Electronics 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 and value of 20 mA
[3] Under reference conditions

Electrical Connection

Electrical connection	  (10 to 35) V dc (4 to 20) mA Electrical connection of the compact thermometer (view from above) - M12 plug, 4-pin Pin 1: Power supply (10 to 35) V dc; Current output (4 to 20) mA Pin 2: PC configuration cable connection Pin 3: Power supply 0 V dc; current output (4 to 20) mA Pin 4: PC configuration cable connection
Power supply	U_b = (10 to 35) V dc, polarity protected
Allowable ripple	$U_{ss} \leq 3V$ at $U_b \geq 13V$, $f_{max} = 1$ kHz

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
Ingress protection	IP 67
Shock resistance	4g / (2 to 150) Hz as per IEC 60 068-2-6
EMC immunity	Interference immunity and interference emission as per EN 61 326-1 (IEC 1326)

Process

	MAXIMUM AMBIENT	MAXIMUM PROCESS
Process temperature limit	to 25 °C [77 °F] to 40 °C [104 °F] to 60 °C [140 °F] to 85 °C [185 °F]	160 °C [320 °F] 135 °C [275 °F] 120 °C [248 °F] 100 °C [212 °F]

Approvals

c UL us	UL Recognized Component
3-A AUTHORIZED 74-	3-A Sanitary Council Standard 74- (CIP sensors only)