

Resistance Temperature Sensors

Thermistors

Watlow thermistors are designed to ensure fast, accurate and repeatable temperature measurement. Thermistors are highly sensitive to small changes in temperature and maintain accurate temperatures over a limited range. These sensors are made with either epoxy-coated or glass-coated constructions and can be used in the most demanding environmental conditions.

Performance Capabilities

- Epoxy thermistors are suitable for use from -75 to 302°F (-60 to 150°C). Glass-coated thermistors are available for use from -75 to 500°F (-60 to 260°C). Please contact the factory for availability. Thermistors have an accuracy of $\pm 1\%$ at 77°F (25°C).

Features and Benefits

Designed to maintain accuracy over the life of the sensor

- Improved process control

High resistance

- Large signal change compared to RTDs minimizing the impact of lead wire resistance errors

Interchangeable

- Maintains good system repeatability

Small mass and internal heat transfer paste

- Quick time response

Point sensitive

- Able to sense temperature in a very specific location



Typical Applications

Heating, ventilation and air conditioning (HVAC)

- Air conditioning
- Refrigeration and freezer temperature control

Food preparation

- Deep fryers
- Food storage systems

Medical

- Blood analysis and dialysis equipment
- Infant incubators

Industrial electronics

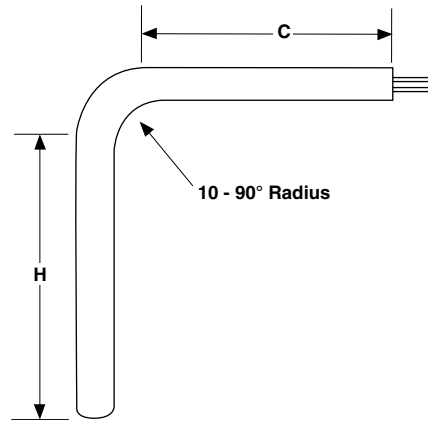
- Fluid temperature measurement
- Liquid level indicators

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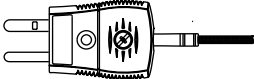
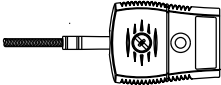
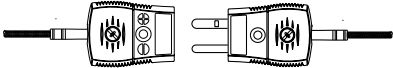

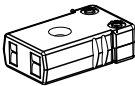
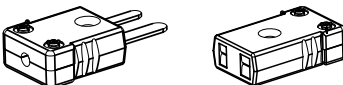
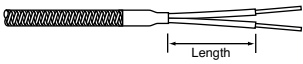
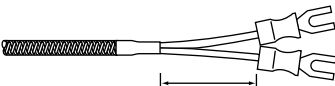
Thermistors

Bends

Diameter in.	Standard Bend Radius in.	Minimum "H" Dimension in.	Minimum "C" Dimension in.
0.125	3/8	2	2
0.188	3/8	2	2
0.250	1/2	2	2



Lead Terminations

Termination	Code	Length
 <p>Standard Male Plug</p>	A	—
 <p>Standard Female Jack</p>	B	—
 <p>Standard Male Plug with Mating Connector</p>	C	—
 <p>Miniature Male Plug</p>	J	—
 <p>Miniature Female Jack</p>	K	—
 <p>Miniature Male Plug with Mating Connector</p>	K	—
 <p>Split Leads</p>	T	1 1/2*
 <p>#8 Spade Lugs</p>	U	1 1/2*

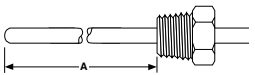
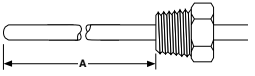
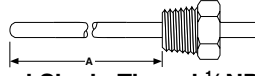
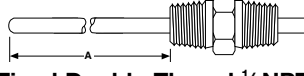
* When style contains jacketed wire.

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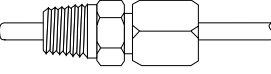
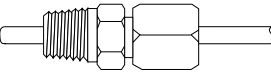
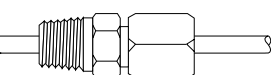
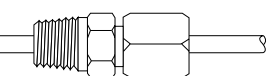
Thermistors

Fitting Options

Fixed Fittings

Fitting Type	Material	Sheath Size in.	NPT Thread Size in.	Hex Size in.	Length in.	Code
 <p>Fixed Single Thread 1/8 NPT Customer Specified</p>	303 SS	0.063 to 0.250	1/8	7/16	11/16	A
 <p>Fixed Single Thread 1/4 NPT Customer Specified</p>	303 SS	0.125 to 0.250	1/4	9/16	7/8	B
 <p>Fixed Single Thread 1/2 NPT Customer Specified</p>	303 SS	0.125 to 0.250	1/2	7/8	1	D
 <p>Fixed Double Thread 1/2 NPT Customer Specified</p>	303 SS	0.125 to 0.250	1/2	7/8	1 ³ / ₄	F

Compression Fittings

Fitting Type	Material	Sheath Size in.	NPT Thread Size in.	Hex Size in.	Length in.	Code
 <p>Non-Adjustable Compression Brass</p>	Brass	0.125	1/8	1/2	1	J
		0.188	1/8	1/2	1 ¹ / ₈	J
		0.250	1/8	1/2	1 ³ / ₁₆	J
 <p>Non-Adjustable Compression SS</p>	303 SS	0.063	1/8	1/2	1 ¹ / ₄	L
		0.125	1/8	1/2	1 ¹ / ₄	L
		0.188	1/8	1/2	1 ⁵ / ₁₆	L
		0.250	1/8	1/2	1 ⁵ / ₁₆	L
 <p>Adjustable Compression TFE Gland</p>	303 SS	0.063	1/8	1/2	1 ¹ / ₄	G
		0.125	1/8	1/2	1 ¹ / ₄	G
		0.188	1/8	1/2	1 ¹ / ₄	G
		0.250	1/4	7/8	2 ⁷ / ₁₆	X
 <p>Adjustable Compression Lava Gland</p>	303 SS	0.063	1/8	1/2	1 ¹ / ₄	Q
		0.125	1/8	1/2	1 ¹ / ₄	Q
		0.188	1/8	1/2	1 ¹ / ₄	Q
		0.250	1/4	7/8	2 ⁷ / ₁₆	V

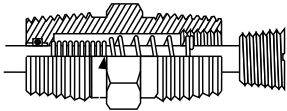
Compression Fittings: Compression fittings are shipped finger-tight on the sheath allowing field installation. Once non-adjustable fittings are deformed, they cannot be relocated. Adjustable fittings come with TFE or lava sealant glands.

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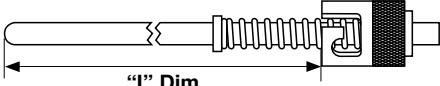
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Fitting Options (Continued)

Adjustable Spring Loaded

Fitting Type	Material	Sheath Size in.	NPT Thread Size in.	Hex Size in.	Length in.	Code
	316 SS	0.250	1/2	7/8	2	H

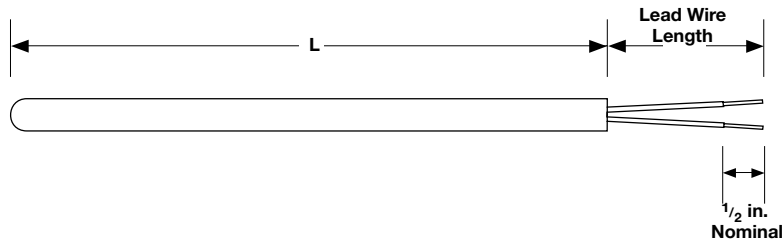
Bayonet Lockcap and Spring

Fitting Type	Material	Sheath Size in.	Length in.	Code
	Plated Steel	0.125	1 ⁵ / ₈	W
	Plated Steel	0.188	1 ⁵ / ₈	W

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Standard Industrial Thermistor with Insulated Leads Style TB



Ordering Information

Part Number

①	②	③ Sheath O.D. (in.)	④ Lead Wire Const.	⑤ Fittings	⑥ Lead Wire Term.	⑦ Temp. Rating & Accuracy	⑧ ⑨ Sheath Length "L" (in.)	⑩ Sheath Length "L" (fract. in.)	⑪ Element/ Resistance	⑫ Sheath	⑬ ⑭ Lead Wire Length "E" (ft)	⑮
T	B		B							0		0

③	Sheath O.D. (in.)
H =	0.188
J =	0.250

④	Lead Wire Construction
B =	Standard - PFA

⑤	Fittings
If required, enter order code from pages 90 to 91. If none enter "0".	

⑥	Lead Wire Termination
T =	Standard leads
U =	Leads with spade lugs

⑦	Temperature Rating and Accuracy
A* =	-75 to 302°F (-60 to 150°C) $\pm 1\%$ accuracy @ 25°C
B** =	-75 to 500°F (-60 to 260°C) $\pm 15\%$ accuracy @ 25°C
* Only available with 1,000, 2,200, 3,000 or 10,000 Ω	
** Only available with 100,000 Ω	

⑧ ⑨	Sheath Length "L" (in.)
Whole inches: 02 to 36	

⑩	Sheath Length "L" (fractional in.)
0 =	0
4 =	$\frac{1}{2}$ in.

⑪	Element/Resistance at 77°F (25°C)
E =	1,000 Ω
G =	3,000 Ω
T =	100,000 Ω
F* =	2,200 Ω
* Compatible with EZ-ZONE controllers	

⑫	Sheath Construction
0 =	316 SS

⑬ ⑭	Lead Wire Length "E" (ft)
Whole feet: 01 to 99	

Features and Benefits

Rigid 316 stainless steel sheath

- Ideal for industrial applications

Cold end epoxy seal

- Rated to 260°C (500°F)

Internal heat transfer paste

- Quick time response

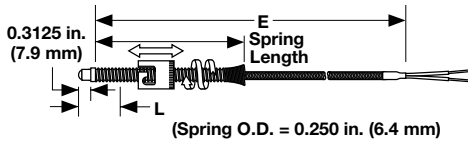
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Specialty Construction Styles

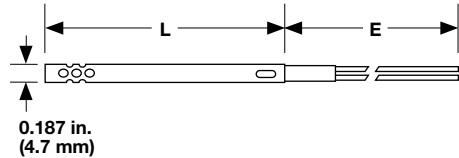
Adjustable Spring Style

Part Number 10 = 6 in.
Part Number 11 = 12 in.



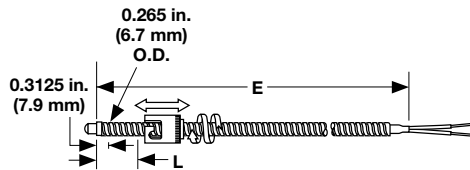
Open Air

Part Number 50



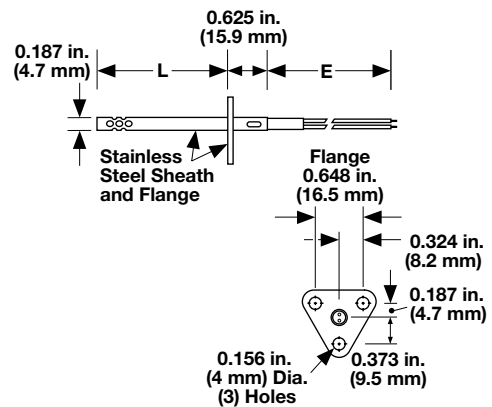
Adjustable Armor Style

Part Number 12



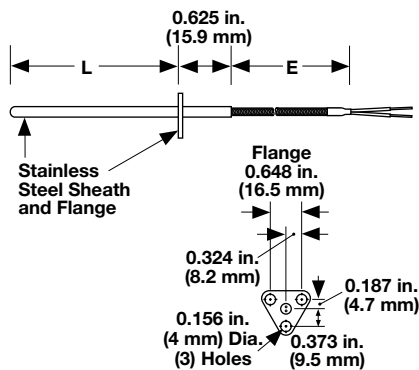
Open Air with Flange

Part Number 55



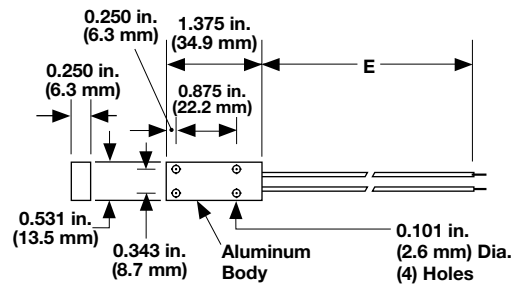
Cartridge with Flange

Part Number 25



Surface Mount

Part Number 80



Resistance Temperature Sensors

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Specialty Thermistors

Ordering Information

Part Number

①	② ③	④	⑤	⑥ ⑦	⑧	⑨ ⑩ ⑪	⑫
S	Const. Styles	Diameter (in.)	Element Type	Lead Type	Sheath Length "L" (in.)	Lead Wire Length "E" (ft)	Term.

② ③ Construction Styles	
10 =	6 inch adjustable spring style
11 =	12 inch adjustable spring style
12 =	Adjustable armor style
25 =	Cartridge with flange
50 =	Open air
55 =	Open air with flange
80 =	Surface mount
Note: See previous page for construction style drawings.	

④ Diameter (in.)	
D =	0.188
A =	Not applicable: surface mount

⑤ Element Type	
M =	Thermistor No. 11, 1,000Ω
N =	Thermistor No. 12, 3,000Ω
P =	Thermistor No. 16, 100,000Ω
Note: Contact the factory for other thermistors which are available on request. See Style TB thermistor.	

⑥ ⑦ Lead Type	
L4 =	Fiberglass and SS armor
M4 =	Fiberglass
N4 =	Fiberglass and SS overbraid
T2 =	PFA

⑧ Sheath Length "L" (in.)					
A =	Not applicable	K =	5.0 in.	T =	9.0 in.
C* =	1.5 in.	L =	5.5 in.	U =	9.5 in.
D =	2.0 in.	M =	6.0 in.	W =	10 in.
E =	2.5 in.	N =	6.5 in.	Y =	11 in.
F =	3.0 in.	P =	7.0 in.	Z =	12 in.
G =	3.5 in.	Q =	7.5 in.		
H =	4.0 in.	R =	8.0 in.		
J =	4.5 in.	S =	8.5 in.		
* 1.5 required for VAT construction: No. 10, 11, 12					

⑨ ⑩ ⑪ Lead Wire Length "E" (ft)			
012 =	1 ft	084 =	7 ft
024 =	2 ft	096 =	8 ft
036 =	3 ft	108 =	9 ft
048 =	4 ft	120 =	10 ft
060 =	5 ft	180 =	15 ft
072 =	6 ft		

⑫ Terminations	
A =	1.5 inch stripped split leads, no terminals
B =	No. 8 spade terminals
H =	0.25 in. female quick connect terminals

Specifications

- Metal oxide, sintered and encapsulated
- Negative temperature coefficient
- Non-linear temperature/resistance curve
- Resistance at 77°F (25°C) and ranges:

Epoxy Bead Tolerance			
Configuration	Resistance	Accuracy @ 25°C	Max. Temp.
#11	1K	±1%	150°C
#12	3K	±1%	150°C

Glass Bead Tolerance			
Configuration	Resistance	Accuracy @ 25°C	Max. Temp.
#16	100K	±20%	300°C