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S80 Thermocouple Temperature Probes

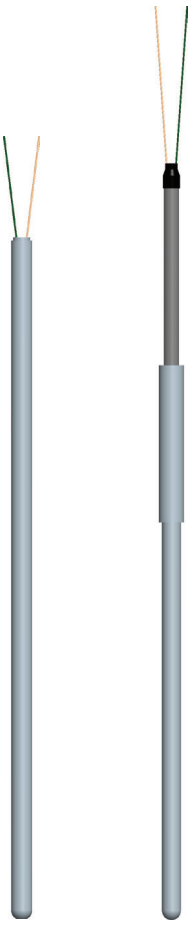
Thermocouple Temperature probes with mineral insulation, available with optional connectors.

TYPICAL USES

- Industrial probes for chemical, petrochemical and power plants
- For a wide range of process applications—vapors, gases, liquids and non-abrasive substances—provided that these are compatible with the sheath material
- Flexible configurations, heavy duty MgO
- Special designs for intrinsically safe and non-incendive applications
- Available with remote heads and flex armor

DESCRIPTION

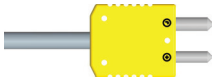
These probes are supplied as either single or dual sensors. The sensor(s) is (are) housed inside a flexible metal sheath. With or without extension lead wire, process connection on request. If fitted, the extension lead wire (with or without protective spring and/or electromagnetic shielding) can be provided with PVC, silicone, PTFE or fiberglass insulation. The soldering between the extension lead wire and the sheathed cable is enclosed in a sealed transition.



Probe with extension lead wire

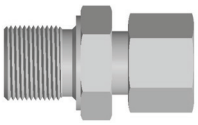
S80 Thermocouple Options

Connector



Round Pin

Compression Fitting



Protection Spring on lead wire

SPECIFICATIONS

Insert Stem Diameter:	⅛, 3⁄16, ¼, 3 mm, 4.5 mm, 6 mm, 8 mm
Stem Length:	Minimum: 50 mm/2 in Maximum: 3 m/120 in
Sensor Type & Range	Thermocouples* Type J -40 to 750 °C Type E -200 to 800 °C Type K -200 to 1200 °C Type N 0 to 1200 °C Type T -200 to 350 °C
Wiring Configuration:	Thermocouples, Single or Dual

OPTIONAL APPROVALS

FM Intrinsically safe:	Class I, Division 1, Groups A, B, C, D T4 for -55 °C ≤ Ta ≤ 80 °C T5 for -55 °C ≤ Ta ≤ 55 °C T6 for -55 °C ≤ Ta ≤ 40 °C
FM Nonincedive:	Class I, Division 2, Groups A, B, C, D T4 for -55 °C ≤ Ta ≤ 80 °C T5 for -55 °C ≤ Ta ≤ 55 °C T6 for -55 °C ≤ Ta ≤ 40 °C
ATEX or IECEx:	ATEX or IECEx II 1 G Ex ia IIC T6 Ga -50 °C to 60 °C II 2 G Ex ib IIC T6 Gb -50 °C to 60 °C II 2 G Ex e IIC T6 Gb -55 °C to 60 °C

(1) Absolute temperature in °C
* Consultant factory for design configurations needed for using thermocouples in high temperatures

KEY BENEFITS

- **Flexible designs for critical applications**
- **Fast response times**

Thermocouples (ASTM E230)

	Type J	Type K	Type E	Type N	Type T
Standard	±2.2 °C or ±0.0075*|t|(1)	±2.2 °C or ±0.0075*|t|(1)	±1.7 °C or ±0.0050*|t|(1)	±2.2 °C or ±0.0040*|t|(1)	±1.0 °C or ±0.0075*|t|(1)
Special	±1.1 °C or ±0.0040*|t|(1)	±1.1 °C or ±0.0040*|t|(1)	±1.0 °C or ±0.0075*|t|(1)	±1.1 °C or ±0.0040*|t|(1)	±0.5 °C or ±0.0040*|t|(1)

Thermocouples (IEC 60584-2)

	Type J	Type K	Type E	Type N	Type T
Class 1	±1.5 °C or ±0.0040*|t|(1)	±1.5 °C or ±0.0040*|t|(1)	±1.5 °C or ±0.0040*|t|(1)	±1.5 °C or ±0.0040*|t|(1)	±0.5 °C or ±0.0040*|t|(1)
Class 2	±2.5 °C or ±0.0075*|t|(1)	±2.5 °C or ±0.0075*|t|(1)	±2.5 °C or ±0.0075*|t|(1)	±2.5 °C or ±0.0040*|t|(1)	±1.0 °C or ±0.0075*|t|(1)
Class 3	N/A	±2.5 °C or ±0.0040*|t|(1)	±2.5 °C or ±0.0150*|t|(1)	±2.5 °C or ±0.0150*|t|(1)	±1.0 °C or ±0.0150*|t|(1)

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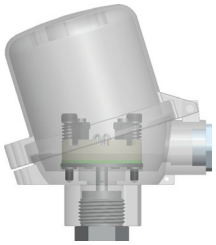
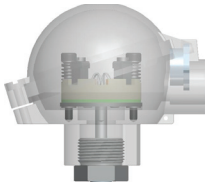
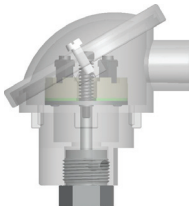
OPTIONAL S80 HEADS



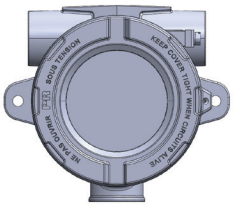
BUZH-AL
Type E



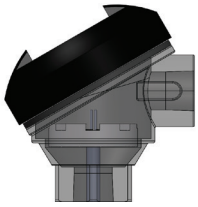
BUZH-AL
Type D



DIN B
Type B



PR 7501 with display
Type P



Cast Iron
Type Y

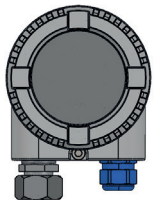
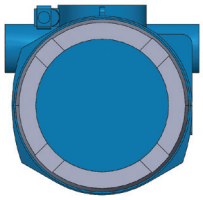


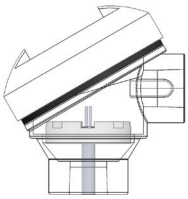
ABB Housing
Type V

SCCA-AL
Type N

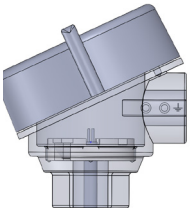
SCCI-Stainless Steel
Type G



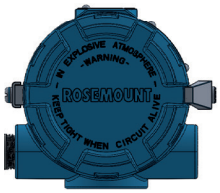
E&H Display Housing
Type H



Polypropylene
Type A

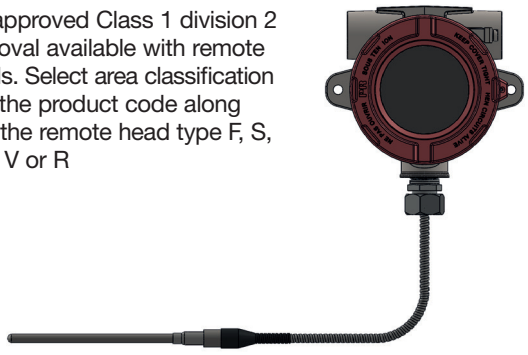


Type F Ex d - AL
Type S Ex d Stainless Steel



Rosemont Housing
Type R

FM approved Class 1 division 2 approval available with remote heads. Select area classification N in the product code along with the remote head type F, S, P, H, V or R



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ORDERING CODE Example:	S80	S	R	K	N	2	1	3	7	2
Area Classification										
S - Standard		S								
J - Intrinsic Safety - ia (Class 1 Div. 1)										
B - Intrinsic Safety - ib										
E - Increased Safety										
N - Non-Incendive (Class 1 Div. 2)										
Sheath Diameter										
R - ⅛″ Ø3.18 mm			R							
S - 3⁄16″ Ø4.76 mm										
U - ⅜″ Ø9.53 mm										
V - ½″ Ø12.70 mm										
W - 10 mm										
T - ¼″ Ø6.35 mm										
3 - 3 mm										
4 - 4.5 mm										
6 - 6 mm										
8 - 8 mm										
Thermocouple Type										
E - E -Temperature range: -200 to 800 °C										
J - J -Temperature range: -40 to 750 °C										
K - K -Temperature range: -200 to 1,200 °C				K						
N - N -Temperature range: 0 to 1,200 °C										
T - T -Temperature range: -200 to 350 °C										
Accuracy or Class										
N - ANSI MC 96.1: Standard					N					
S - ANSI MC 96.1: Special										
1 - IEC 60584-2: Class 1										
2 - IEC 60584-2: Class 2										
3 - EC 60584-2: Class 3										
Junction										
1 - Ungrounded										
2 - Grounded						2				
3 - Ungrounded, vibration-proof										
4 - Ungrounded, vibration-proof										
Electrical Circuit										
1 - Single							1			
2 - Dual										
Sheath Material										
1 - AISI 316 / 1.4401										
3 - Inconel® 600 / 2.4816								3		
Wire Termination										
A - Standard plain stripped leads (1½″)										
B - Spade lugs #8										
C - ¼″ Push on connector										
D - With miniature female connector										
E - With miniature female and additional male connector										
F - With standard female connector										
G - With standard female and additional male connector										
7 - Stripped									7	
3 - With miniature male connector										
4 - With miniature male and female connector										
5 - With standard male connector										
6 - With standard male and female connector										
Connector Strain Relief										
- - Non-applicable (no connector)										
1 - Crimp - Braze adapter (for use with Flex Armor and no wire options)										
2 - Grommet - for regular wire option, with no flex armor										2
3 - Bracket - for regular wire option, with no flex armor										

Cont. on next page

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ORDERING CODE Example: (Continued)	B	X	X	-	M	M	C3
Remote Head Type							
- - Non-applicable (no remote head)							
F - Ex d Aluminum (Available with FM Class 1 Div. 2 approval)							
S - Ex d Stainless steel (Available with FM Class 1 Div. 2 approval)							
G - SCCI Stainless steel							
N - SCCA Aluminum							
B - DIN B Aluminum	B						
D - BUZ Aluminum							
E - BUZH Aluminum							
P - PR 7501 (Available with FM Class 1 Div. 2 approval)							
Y - Cast iron (N/A with FM approval)							
A - Polypropylene (N/A with FM approval)							
H - E&H Housing (Available with FM Class 1 Div. 2 approval)							
R - Rosemount housing Ex d (Available with FM Class 1 Div. 2 approval)							
V - ABB Housing Ex d (Available with FM Class 1 Div. 2 approval)							
2 - Ex d Aluminum with dual conduits (Available with FM Class 1 Div. 2 approval)							
3 - Ex d Stainless Steelwith dual conduits (Available with FM Class 1 Div. 2 approval)							
Length Probe							
X - L=(min=50, max=10000) (add actual length in mm L=?? at the end of ordering code)		X					
Length Cable							
X - Lc=(min=100, max=10000) (add actual length in mm LC=?? at the end of ordering code)			X				
Flex Armor							
- - Without				-			
1 - With flex armor							
2 - Flex armor with PVC jacket							
3 - Flex armor with white PTFE jacket							
4 - Flex armor with black PTFE jacket							
5 - Flex armor with PVC jacket Thermocouple color coding							
Lead Wire							
M - PVC					M		
N - Silicon							
O - PTFE							
P - Fiberglass							
- - Without							
Lead Wire Options							
M - With protective spring on lead wire						M	
N - Without protective spring on lead wire							
O - Electrically shielded, with protective spring							
P - Electrically shielded, without protective spring							
Q - With stainless steel braided cover, with protective spring							
R - With stainless steel braided cover, without protective spring							
- - Without							
Process Connection							
-- - Without connection							
C1 - Compression fitting ¼ NPT, AISI 316							
C2 - Adjustable compression fitting with gland TFE ¼″ AISI 316							
C3 - Compression fitting ½ NPT, AISI 316							C3
C4 - Adjustable compression fitting with gland TFE ½″ AISI 316							
B1 - Non-adjustable compression fitting ¼ NPT, brass							
B2 - Adjustable compression fitting with gland TFE ¼″ brass							
B3 - Non-adjustable compression fitting ½ NPT, brass							
B4 - Adjustable compression fitting with gland TFE ½″ brass							
A1 - Compression fitting G ¼″ AISI 316							
A3 - Compression fitting G ½″ AISI 316							
Y1 - Adjustable spring loaded, double thread ½ NPT, AISI 316							
Y2 - Adjustable spring loaded, double thread ½ NPT, AISI 316 with oil seal							
Y3 - Nipple union spring loaded nipple ½ NPT							
Y4 - Nipple union spring loaded nipple ½ NPT with oil seal							
Z1 - Bayonet Lockcap and spring							
Z2 - Adjustable Bayonet Lockcap and spring							

Cont. on next page

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ORDERING CODE Example: (Continued)	3	-	3P	T	LC=900	L=400
Other Features						
3 - None	3					
9 - 90 degree bend						
A - ½ NPT cord grip						
B - ¾ NPT cord grip						
Z - Brazed transition						
S - Smooth transition						
Certifications						
- - None required		-				
F - FM						
A - ATEX						
X - IECEx						
S - SIL 2 + ATEX						
I - INMETRO						
D - ATEX + IECEX						
2 - SIL 2						
Calibration Report						
- - Without						
3P - 3 points single			3P			
5P - 5 points single						
3D - 3 points dual						
5D - 5 points dual						
XC - Custom calibration report						
Tagging						
- - Without						
T - Label in stainless steel with tag				T		

Lead wire length in mm	Insertion length in mm

mm = inches x 25.4

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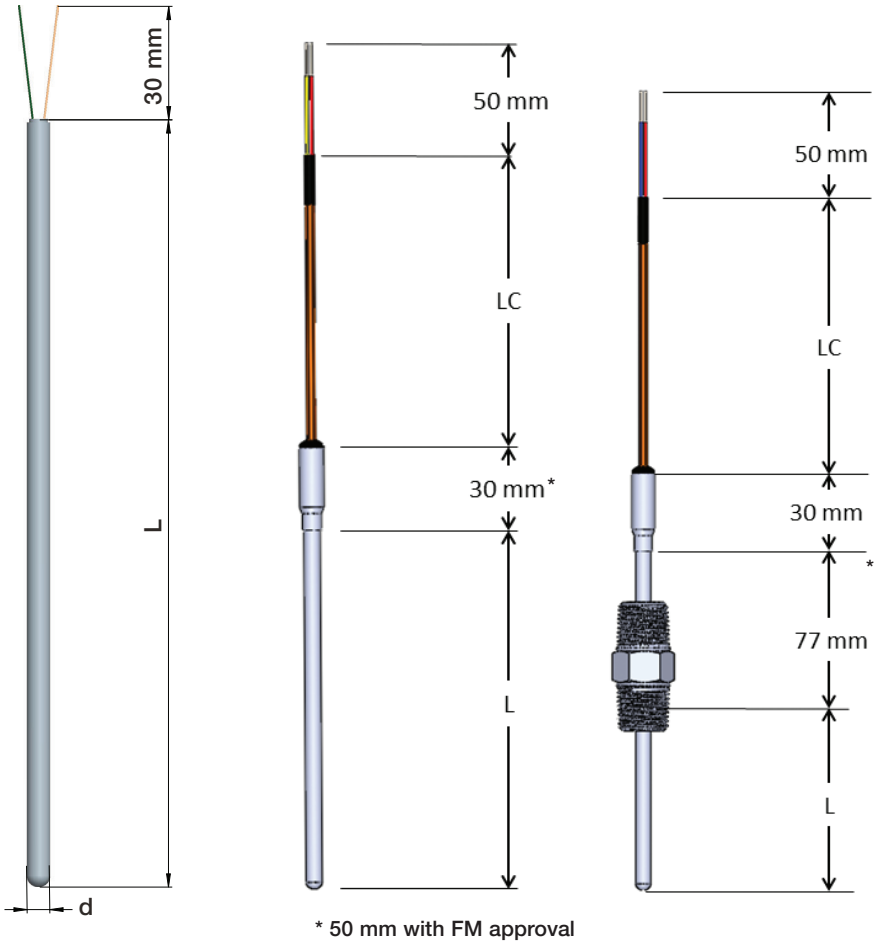
DIMENSIONS in [ ] are millimeters

For reference only, consult Ashcroft for specific dimensional drawings



* 50 mm with FM approval

HOW TO ORDER S80 TEMPERATURE PROBES:

- The ordering code is built by selecting the appropriate configuration for the various sections of the ordering code.
- The insert nominal length L is measured from top of the cable transition piece or center of threads to the tip of the probe.
- The lead wire length LC is measured for the base of the lead wire transition piece to the end of the lead wire jacket.
- The L length and the LC length are added to the end of the ordering code in millimeters.
- To convert inches to millimeters multiply by 25.4.
  mm = inches x 25.4
- Custom configurations are available.

d = Stem diameter

LC = Length lead wire

L = Insertion length