

Data Sheet

S80 Thermocouple Temperature Probes

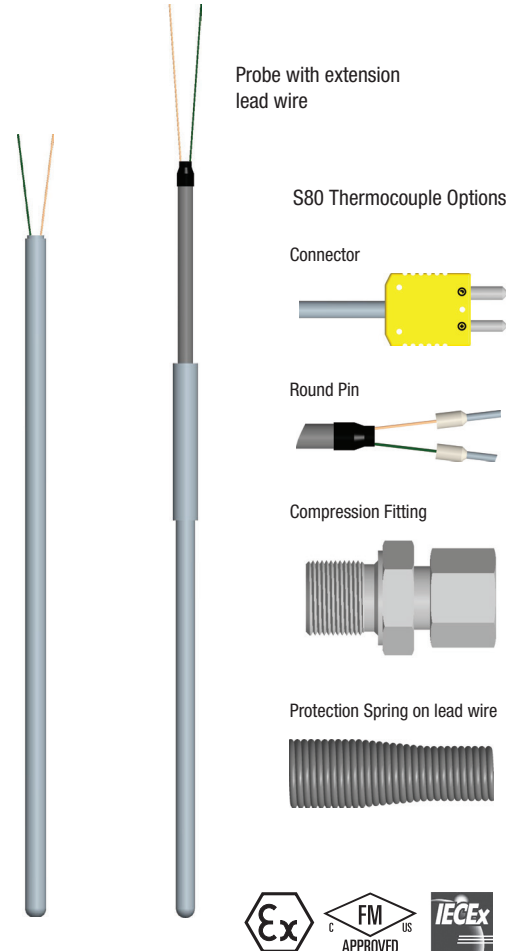
Thermocouple Temperature probes with mineral insulation, available with optional connectors.

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.



SPECIFICATIONS

Insert Stem Diameter: 1/8, 3/16, 1/4, 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 1000 °C
 Type N -200 to 1000 °C
 Type T -250 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 Nonincendive: 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

KEY BENEFITS

- Flexible designs for critical applications
- Fast response times

Thermocouples (ANSI MC 96.1)

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

Thermocouples (IEC 60584-2)

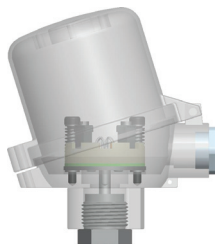
	Type J	Type K	Type E	Type N	Type T
Class 1	±1.5 °C or ±0.0040* ⁽¹⁾	±1.5 °C or ±0.0040* ⁽¹⁾	±1.5 °C or ±0.0040* ⁽¹⁾	±1.5 °C or ±0.0040* ⁽¹⁾	±0.5 °C or ±0.0040* ⁽¹⁾
Class 2	±2.5 °C or ±0.0075* ⁽¹⁾	±2.5 °C or ±0.0075* ⁽¹⁾	±2.5 °C or ±0.0075* ⁽¹⁾	±2.5 °C or ±0.0040* ⁽¹⁾	±1.0 °C or ±0.0075* ⁽¹⁾
Class 3	N/A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

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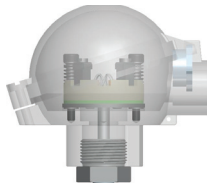
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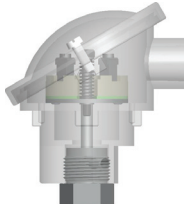
OPTIONAL S80 HEADS



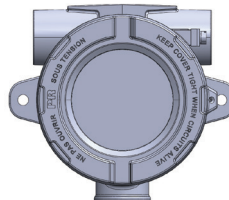
BUZH-AL
Type E



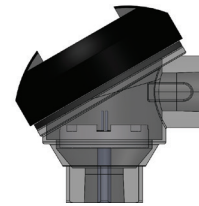
BUZH-AL
Type D



DIN B
Type B



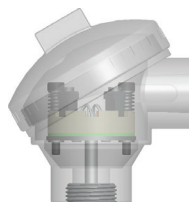
PR 7501 with display
Type P



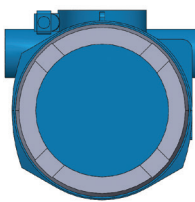
Cast Iron
Type Y



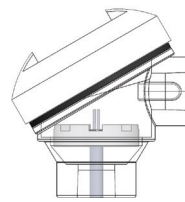
SCCA-AL
Type N



SCCI-Stainless Steel
Type G



E&H Display Housing
Type H



Polypropylene
Type A

OPTIONAL APPROVALS

FM Intrinsically Safe: Class I, Division 1, Groups A, B, C, D
T4 for $-55\text{ °C} \leq T_a \leq 80\text{ °C}$
T5 for $-55\text{ °C} \leq T_a \leq 55\text{ °C}$
T6 for $-55\text{ °C} \leq T_a \leq 40\text{ °C}$

FM Non-Incendive: Class I, Division 2, Groups A, B, C, D
T4 for $-55\text{ °C} \leq T_a \leq 80\text{ °C}$
T5 for $-55\text{ °C} \leq T_a \leq 55\text{ °C}$
T6 for $-55\text{ °C} \leq T_a \leq 40\text{ °C}$

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
II 2 G Ex d IIC T6 Gb -55 °C to 60 °C

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S80 Thermocouple Temperature Probes

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

ORDERING CODE	Example:	S80	S	R	K	N	2	1	3	7	2
Area Classification											
S - Standard			S								
J - Intrinsic Safety - ia											
B - Intrinsic Safety - ib											
E - Increased Safety											
N - Non-Incendive											
Sheath Diameter											
R - 1/8" Ø3.18 mm				R							
S - 3/16" Ø4.76 mm											
T - 1/4" 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 1000 °C					K						
N - N -Temperature range: -200 to 1000 °C											
T - T -Temperature range: -250 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 - 1/4" 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
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Thermocouple Temperature probes with mineral insulation, available with optional connectors.

ORDERING CODE	Example: (Continued)	B	X	X	-	M	M	C3	3	-	3P	T	LC=900	L=400
Remote Head Type														
- - Non-applicable (no remote head)													Lead wire length in mm	Insertion length in mm
G - SSCI Stainless steel														
N - SCCA Aluminum														
B - DIN B Aluminum		B												
D - BUZ Aluminum														
E - BUZH Aluminum														
P - PR 7501 (N/A with FM approval)														
Y - Cast iron (N/A with FM approval)														
A - Polypropylene (N/A with FM approval)														
H - E&H Housing (N/A with FM 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														
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														
3									3					
Certifications														
- - None required														
F - FM														
A - ATEX														
X - IECEx														
S - SIL 2 + ATEX														
I - INMETRO														
D - ATEX + IECEx														
2 - SIL 2														
P - EAC (Gost R) + Metrological Russia														
Calibration Report														
- - Without														
3P - 3 points single													3P	
5P - 5 points single														
3D - 3 points dual														
5D - 5 points dual														
Tagging														
- - Without														
T - Label in stainless steel with tag														T

mm = inches x 25.4

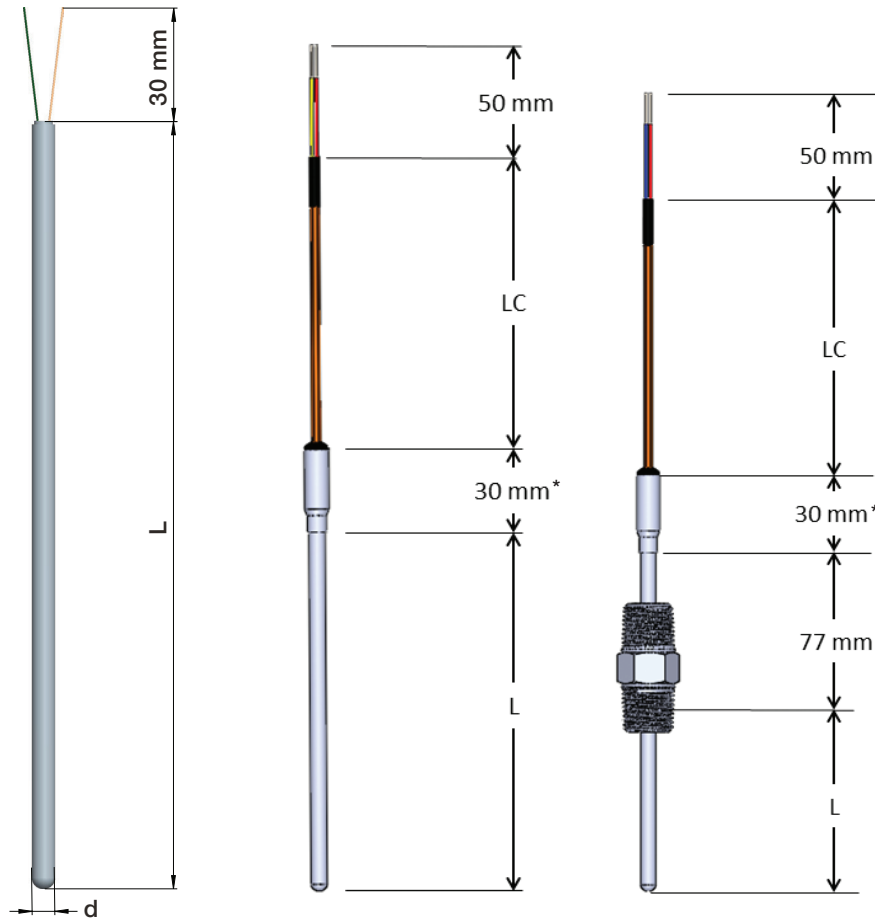
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DIMENSIONS in [] are millimeters

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