ASHCROFT®
Trust the shield.®

S10 RTD's & Thermocouples, Metric Connections

TYPICAL USES

- Process temperature measurements for industrial, process and power generation.
- Exhaust gas temperature measurements for diesel engines.
- Oven temperature measurements for industrial drying ovens.
- Special designs for intrinsically safe and non-incendive application.

DESCRIPTION

The Ashcroft S10 temperature sensor assemblies provide accurate temperature measurements for most applications. Each temperature sensor assembly consists of a spring loaded temperature sensor insert, a connection head and lag extension. The assembly may also include an optional terminal block for wiring and/or transmitters. Thermocouple assemblies are manufactured to either to IEC 60584-2 or ASTM E230 and RTD assemblies are manufactured to IEC 60751.

With DIN lag extension

Interior View

SPECIFICATIONS

Ashcroft Series:	S10
Sheath Diameter:	3 mm, 4.5 mm, 6 mm, 8 mm
Stem Length:	Minimum: 50 mm/2 in Maximum: 3 m/120 in
Sensor Type & Measuring Range	RTDs Platinum 385 Pt 100 –196 to +600 °C Pt 1000 –40 to +600 °C 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:	RTDs single or dual 2 Wire 3 Wire 4 Wire Thermocouples Single or dual
Accuracy Class	(IEC 60751) Class A: ±(0.15 + 0.0020 * |t|(1)) Class B: ±(0.30 + 0.0050 * |t|(1)) 1/2 Class B: ±(0.15 + 0.0025 * |t|(1)) 1/3 Class B: ±(0.10 + 0.0017 * |t|(1))

KEY BENEFITS

- **Flexible designs to work in most applications**
- **Designs for hazardous locations**

Thermocouples (ASTM E230)

	Type J	Type K	Type E	Type N
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)
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)

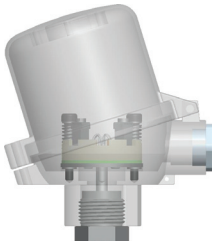
Thermocouples (IEC 60584-2)

	Type J	Type K	Type E	Type N
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)
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)
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)

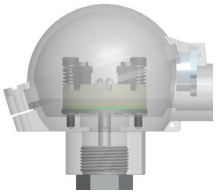
(1) Absolute temperature in °C

S10 RTD's & Thermocouples, Metric Connections

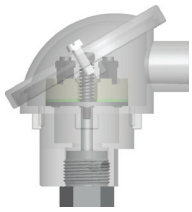
Optional S10 Heads



BUZH-AL
Type E



BUZ-AL
Type D



DIN B
Type B

BBK-PA
Type C

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

ASHCROFT®
Trust the shield.®

S10 RTD's & Thermocouples, Metric Connections

S10 RTD ORDERING CODE Example:	S10	1	6	1	A	A	B	1	D	2	S
Area Classification											
1 - Standard		1									
3 - Intrinsic Safety - ia											
B - Intrinsic Safety - ib											
E - Increased Safety											
N - Non-Incendive											
Sheath Diameter											
3 - 3 mm											
4 - 4.5 mm											
6 - 6 mm			6								
8 - 8 mm											
RTD Type											
1 - Pt 100 Platinum 385 temperature coefficient				1							
2 - Ni 120											
3 - Pt 1000 Platinum 385 temperature coefficient											
Accuracy or Class (IEC 60751)											
A - Class A (-100 to 450 °C wire wound RTD)(-30 to 300 °C thin film RTD)					A						
B - Class B (-196 to 600 °C wire wound RTD)(-50 to 500 °C thin film RTD)											
D - Class AA - 1⁄3 DIN (-50 to 250 °C wire wound RTD)(0 to 150 °C thin film)											
RTD Element/Range											
A - –50/+500 °C						A					
B - –196/+600 °C											
D - vibrations-proof											
Electrical Circuit											
A - Single 2 wires											
B - Single 3 wires							B				
C - Single 4 wires											
D - Dual 2 wires											
E - Dual 3 wires											
F - Dual 4 wires											
Sheath Material											
1 - AISI 316L / 1.4404								1			
Head Type											
B - DIN B Aluminum											
D - BUZ Aluminum									D		
E - BUZH Aluminum											
C - BBK - Plastic											
Instrument Connection - ½ NPT Conduit Connection											
M - M20 x 1.5											
P - Pg 16											
2 - ½" NPT										2	
Head Conduit Gland											
- - Without											
P - Polyamide PA, for unarmored cable											
L - Nickel plated brass, for unarmored cable											
M - Nickel plated brass, single seal for armoured cable											
N - Nickel plated brass, double seal for armoured cable											
S - Stainless steel, for unarmored cable											S
T - Stainless steel, single seal for armoured cable											
U - Stainless steel, double seal for armoured cable											

Continued on next page

ASHCROFT®
Trust the shield.®

S10 RTD's & Thermocouples, Metric Connections

S10 RTD ORDERING CODE Example: (Cont'd)	X	C	-	52	R3	-	-	3P	T
Inset Nominal Length									
X - LN=... (min=50, max=100000). (add actual length in mm LN=?? at the end of ordering code)	X								
Lag Length									
- Lag length (add actual length in mm N=?? At the end of code)									
X - N=... (min=50, max=1000)									
N - N= 150mm									
F - N= 16mm									
C - N= 27mm		C							
- - Without									
-									
Lag Extension									
F5 - DIN Ø11/7 AISI 316/ 1.4401 N=150									
F6 - DIN Ø14/11 AISI 316/ 1.4401 N=150									
F8 - DIN Ø11/7 AISI 316/ 1.4401 N=non std									
F9 - DIN Ø14/11 AISI 316/ 1.4401 N=non std									
51 -Threaded connection cyl.									
52 - Threaded connection conical				52					
-- - Without lag extension, without plug									
4- - Without lag extension, with plug									
Process Connection									
Q3 - Thread G½ A									
Q4 - Thread G¾ A									
S6 - Thread M14 x 1.5									
S7 - Thread M18 x 1.5									
R3 - Thread ½ NPT					R3				
A3 - Compression fitting G ½ A, AISI 316									
C3 - Compression fitting ½" NPT, AISI 316									
-- - Without connection									
Electical Connection									
- - With terminal block						-			
1 - With transmitter Not available with FM IS or NI approval									
3 - Without terminal block, with flying leads									
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	
3P - 3 points									
5P - 5 points									
3D - 3 points									
5D - 5 points									
Marking									
- - Without									
T - Label in stainless steel with tag									T
Prices subject to change without notice • All prices subject to escalation									

N=27 Extension length in mm

LN=400 Nominal length in mm

mm = inches x 25.4

ASHCROFT®
Trust the shield.®

S10 RTD's & Thermocouples, Metric Connections

S10 TC ORDERING CODE Example:	S10	S	K	1	N	1	1	3	D	M	S
Area Classification											
S - Standard - General Purpose		S									
J - Intrinsic Safety - ia											
B - Intrinsic Safety - ib											
E - Increased Safety											
N - Non-Incendive											
Sheath Diameter											
3 - 3 mm											
4 - 4.5 mm											
6 - 6 mm											
8 - 8 mm											
Thermocouple Type											
E - Temperature range: -200 to 800 °C											
J - Temperature range: -40 to 750 °C											
K - Temperature range: -200 to 1,200 °C											
N - Temperature range: 0 to 1,200 °C											
T - Temperature range: -200 to 350 °C											
Accuracy or Class											
N - ASTM E230: Standard limits					N						
S - ASTM E230: Special limits											
1 - IEC 60584-2 : class 1											
2 - IEC 60584-2 : class 2											
3 - IEC 60584-2 : class 3											
Junction											
1 - ungrounded						1					
2 - grounded											
3 - ungrounded, vibrations-proof											
4 - grounded, vibrations-proof											
Electrical Circuit											
1 - Single							1				
2 - Dual											
Sheath Material											
1 - AISI 316 / 1.4401											
3 - Inconel 600/ 2.4816								3			
Head Type											
B - DIN B Aluminum											
D- BUZ Aluminum									D		
E- BUZH Aluminum											
C- BBK - Plastic											
Instrument Connection - ½ NPT Conduit Connection										M	
M - M20 x 1.5											
A - adapter M20x1.5											
P - Pg 16											
Head Conduit Gland											
- - Without											
P - Polyamide PA, for unarmored cable											
L - Nickel Plated Brass, for unarmored cable											
M - Nickel Plated Brass, single seal for armoured cable											
N - Nickel Plated Brass, double seal for armoured cable											
S - Stainless steel, for unarmored cable											S
T - Stainless steel, single seal for armoured cable											
U - Stainless steel, double seal for armoured cable											

Continued on next page

ASHCROFT®
Trust the shield.®

S10 RTD's & Thermocouples, Metric Connections

S10 RTD ORDERING CODE Example: (Cont'd)	X	C	-	52	R3	-	-	3P	T
Inset Nominal Length									
X - LN=... (min=50, max=100000) (add actual length in mm LN=?? at the end of ordering code)	X								
Lag Length									
- - Lag length (add actual length in mm N=?? At the end of code)									
X - N= ... (min=40, max=1000)		X							
N - N= 150mm									
F - N= 16mm									
C - N= 27mm									
- - Without									
-			-						
Lag Extension									
F5 - DIN Ø11/7 AISI 316/ 1.4401 N=150									
F6 - DIN Ø14/11 AISI 316/ 1.4401 N=150									
F8 - DIN Ø11/7 AISI 316/ 1.4401 N=non std				F8					
F9 - DIN Ø14/11 AISI 316/ 1.4401 N=non std									
51 - Threaded connection cyl.									
52 - Threaded connection conical									
- - Without lag extension, without plug									
4 - Without lag extension, with plug									
Process Connection									
Q3 - Thread G ½ A									
Q4 - Thread G ¾ A									
S6 - Thread M14 x 1.5									
S7 - Thread M18 x 1.5									
R3 - Thread ½ NPT					R3				
A3 - Compression fitting G ½ A, AISI 316									
C3 - Compression fitting ½ NPT, AISI 316									
-- - Without connection									
Electical Connection									
- - With terminal block						-			
1 - With transmitter									
3 - Without terminal block, with flying leads									
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								3P	
5P - 5 points									
3D - 3 points									
5D - 5 points									
Tagging									
- - Without									
T - Label in stainless steel with tag									T

Prices subject to change without notice • All prices subject to escalation

N=27 Extension length in mm

LN=400 Nominal length in mm

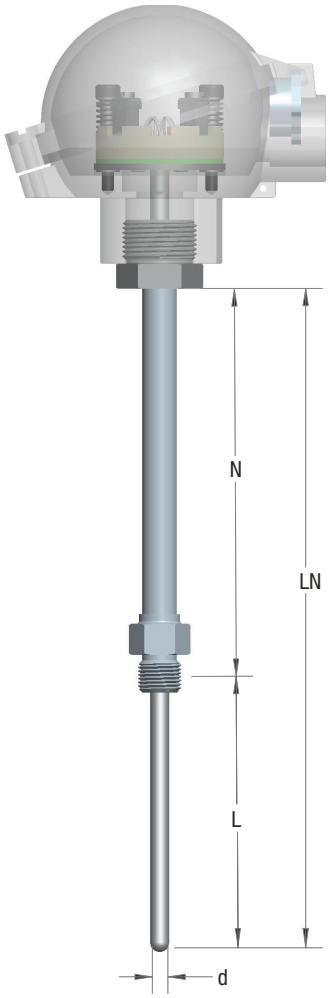
mm = inches x 25.4

ASHCROFT®
Trust the shield.®

S10 RTD's & Thermocouples, Metric Connections

DIMENSIONS in [ ] are millimeters

For reference only, consult Ashcroft for specific dimensional drawings



HOW TO ORDER S10 TEMPERATURE PROBES:

- The ordering code is built by selecting the appropriate configuration for the various sections of the ordering code.
- The Insert nominal length LN is measured from base of the head to the tip of the probe.
- The lag extension length N is measured from the base of the head to the center of the threads on the lag extension.
- LN can be calculated by adding the lag extension length N to the probe insertion length L.
- The N length and the LN 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

d = Stem diameter

N = Lag Extension Length

L = Insertion Length

LN = Insert Nominal Length

LN = N + L