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S50 Industrial RTDs & Thermocouples With NPT Connections

TYPICAL USES

- Industrial process, petrochemical, oil and gas applications
- Process temperature measurements for oil, gas and power generation systems
- Process control, monitoring asset protection
- General purpose or hazardous area

DESCRIPTION

Ashcroft S50 temperature sensor assemblies provide accurate temperature measurements. Each temperature sensor assembly consists of a spring loaded temperature sensor, magnesium oxide, (MgO), insulated insert, connection head and lag extension. The assembly may also include an optional terminal block and/or transmitters.

Thermocouple assemblies are manufactured to IEC 60584-2 or ANSI MC 96.1 and RTDs assemblies are manufactured to IEC 60751.

Ex d Head with Nipple-Union-Nipple extension

SSCA Head

SPECIFICATIONS

Ashcroft Series:	S50
Sheath 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 & Measuring Range	RTDs Platinum 385 Pt 100 –200 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 +1000°C Type N –200 to +1000°C
Wiring Configuration:	RTDs - single or dual 2 Wire 3 Wire 4 Wire Thermocouples - single or dual
Accuracy Class	RTDs - (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

- Industrial process applications.
- Designs for hazardous locations.

Thermocouples (ANSI MC 96.1)

	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)

(1) Absolute temperature in °C

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)

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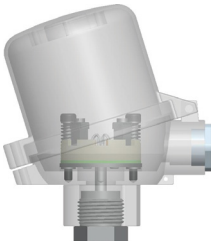
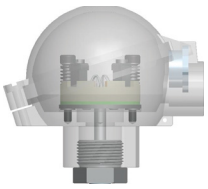
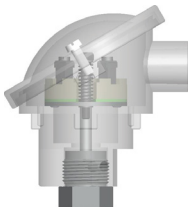
Optional S50 Heads



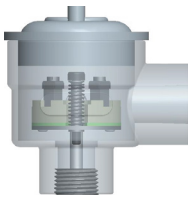
BUZH-AL
Type H



BUZH-AL
Type D



DIN B
Type B



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

SCCA-AL
Type N

SCCI-Stainless Steel
Type G

OPTIONAL APPROVALS

FM Explosion Proof:	Class I, Division 1, Groups A, B, C, D T4 for –40°C ≤ Ta ≤ +80°C T6 for –40°C ≤ Ta ≤ +60°C
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 II 2 G Ex d IIC T6 Gb –55°C to +60°C

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S50 Industrial RTDs

S50 RTD ORDERING CODE Example:	S50	1	T	1	A	A	B	A	D	2
Area Classification										
S - Standard - General Purpose		1								
D - Explosion Proof. Must order head type F or S										
J - Intrinsic Safety - ia										
B - Intrinsic Safety - ib										
E - Increased safety										
N - Non-Incendive										
Sheath Diameter										
R - ⅛" Ø3.18 mm										
S - 3⁄16" Ø4.76 mm										
T - ¼" Ø6.35 mm			T							
3 - 3 mm										
4 - 4.5 mm										
6 - 6 mm										
8 - 8 mm										
RTD Type										
1 - Pt 100 Platinum 385 Temperature Coefficient				1						
Accuracy or Class (IEC 60751)										
A - Class A					A					
B - Class B										
C - ½ DIN										
D - Class AA - 1⁄3 DIN										
RTD Element/Range										
A - –50/+400°C						A				
B - –200/+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										
A - 316SS - AISI 316L/ 1.4404										
Head Type										
F - Ex d Aluminum										
S - Ex d Stainless Steel										
G - SCCI Stainless Steel										
N - SCCA Aluminum										
B - DIN B Aluminum										
D - BUZ Aluminum									D	
E - BUZH Aluminum										
Instrument Connection (Conduit Connection is ½ NPT)										
2 - ½ NPT										2
N - ¾ NPT										
M - M20 x 1.5										
A - Adapter M20x1.5										
P - Pg 16										

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S50 Industrial RTDs

S50 RDT ORDERING CODE Example: (Cont'd)	-	X	N	-	H9	R3	-	-	3P	T
Head Conduit Gland										
- - Without	-									
P - Polyamide PA, for unarmored cable										
L - Nickel plated brass, for unarmored cable										
M - Nickel plated brass, single seal for braided cable										
N - Nickel plated brass, double seal for braided cable										
S - Stainless steel, for unarmored cable										
T - Stainless steel, single seal for braided cable										
U - Stainless steel, double seal for braided cable										
Inset Nominal Length										
X - LN=... (min=50, max=100000). Add actual nominal length in mm at end of ordering code LN=??		X								
Lag Length										
- - Extension length (add actual length N=?? at the end of ordering code in mm)										
N - N= ... (min=40, max=1000) (min=1.6", max=39")			N							
0 - N= 0 mm										
B - N= 40 mm										
M - N= 100 mm (4 inches)										
U - N= 120 mm										
-				-						
Lag Extension										
-- - Without lag extension, without plug Select 0 Lag Length above										
4 - - Without lag extension, with plug Select 0 Lag Length above										
H6 - Nipple AISI 316, N=40 Select B Lag Length above										
H7 - Nipple AISI 316, N=100 Select M Lag Length above										
H9 - Nipple AISI 316, N= non std Select N Lag Length above					H9					
J7 - Nipple-Union-Nipple AISI 316, N=120 Select U Lag Length above										
J9 - Nipple-Union-Nipple AISI 316, N= not std Select N Lag Length above										
LH - Telescopic lag extension AISI 316, N=125...200 Select N Lag Length above										
Process Connection										
R3 - Thread ½' NPT						R3				
C3 - Compression fitting ½' NPT, AISI 316										
-- - Without connection										
Electrical Connection										
- - With DIN 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										
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

Consult factory for additional configurations

N=60 Lag length in mm

LN=400 Nominal length in mm

mm = inches x 25.4

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S50 Thermocouples

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N - Non-Incendive										
Sheath Diameter										
R - ⅛" Ø3.18 mm										
S - 3⁄16" Ø4.76 mm										
T - ¼" Ø6.35 mm			T							
3 - 3 mm										
4 - 4.5 mm										
6 - 6 mm										
8 - 8 mm										
Thermocouple Type										
E - temperature range: –200...+ 800°C										
J - temperature range: –40...+ 750°C										
K - temperature range:–200...+ 1000°C				K						
N - temperature range: –200...+ 1000°C										
Accuracy or Class										
N - ANSI MC 96.1: Standard Limits					N					
S - ANSI MC 96.1: Special Linimts										
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										
F - Ex d Aluminum										
S - Ex d Stainless Steel										
G - SCCI Stainless Steel										
N - SCCA Aluminum										
B - DIN B Aluminum										
D - BUZ Aluminum									D	
E - BUZH Aluminum										
Instrument Connection (Conduit Connection is ½ NPT)										
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M - M20 x 1.5										
A - Adapter M20x1.5										
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Inset Nominal Length										
X - LN=... (min=50, max=100000) (add actual length LN=?? At the end of ordering code in mm)		X								
Lag Length										
- - Extension length (add actual length N=?? at the end of ordering code in mm)										
N - N= ... (min=40, max=1000) (min=1.6", max=39")			N							
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B - N= 40 mm										
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U - N= 120 mm										
-				-						
Lag Extension										
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H6 - Nipple AISI 316, N=40 Select B Lag Length above										
H7 - Nipple AISI 316, N=100 Select M Lag Length above										
H9 - Nipple AISI 316, N= non std Select N Lag Length above					H9					
J7 - Nipple-Union-Nipple AISI 316, N=120 Select U Lag Length above										
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Process Connection										
R3 - Thread ½" NPT						R3				
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-- - Without connection										
Electrical Connection										
- - With DIN terminal block							-			
1 - With transmitter. Not available with FM IS or NI Approval.										
3 - Without terminal block, with flying leads										
Certifications										
- - None								-		
F - FM										
2 - SIL 2										
A - ATEX										
S - SIL 2 + ATEX										
I - INMETRO										
X - IECEx										
D - ATEX + IECEX										
P - EAC (Gost R) + Metrological Russia										
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

Consult factory for additional configurations

N=60	LN=400
Lag length in mm	Nominal length in mm

mm = inches x 25.4

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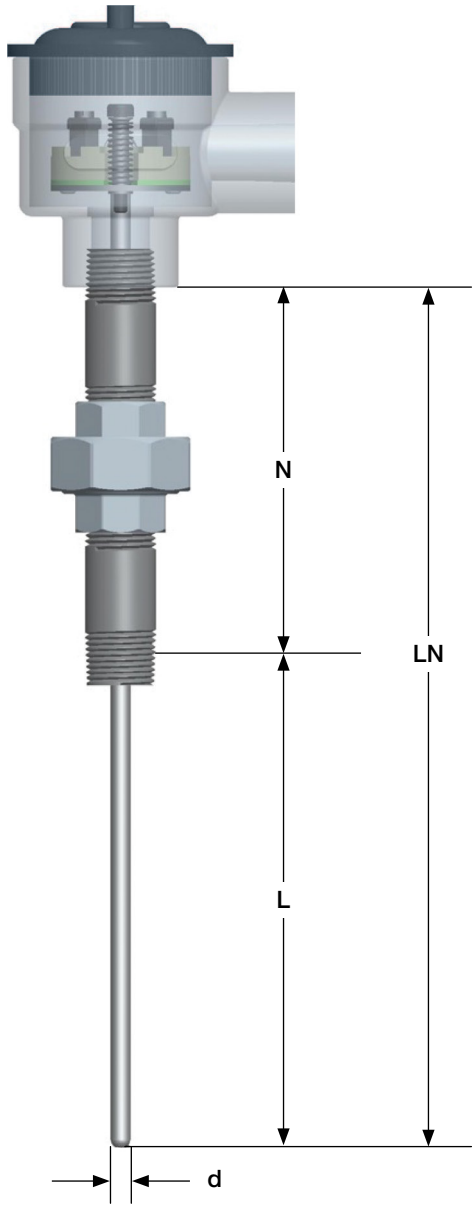
DIMENSIONS in [ ] are millimeters

For reference only, consult Ashcroft for specific dimensional drawings



HOW TO ORDER S50 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 product 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

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