

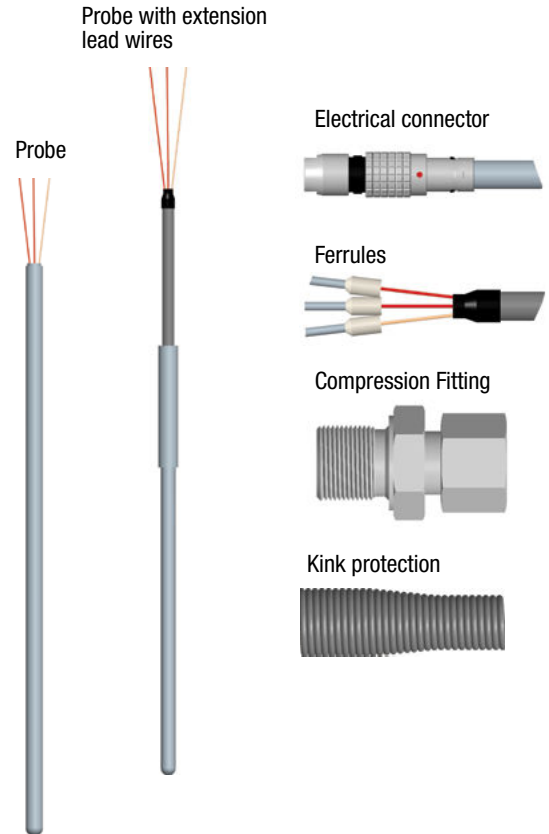
Electrical Thermometer for Thermocouples (S80) and RTD (S81)

TYPICAL USES

- For chemical and petrochemical plants, refineries, utilities, pulp and paper, etc.
- For a wide range of process: vapors, gases and liquids
- Flexible configurations, heavy duty MgO
- Special designs for intrinsically safe and non-incendive applications

DESCRIPTION

- Power Generation
- Reactors
- Storage Tanks
- Cooling Towers
- Industrial equipment Manufacture
- Industrial Ovens
- HVAC/R
- Food and Beverage
- Pharmaceutical and Biotech



SPECIFICATIONS

Model:	Thermocouple S81 RTD S81
Stem Diameter:	3 mm, 4.5 mm, 6 mm, 8 mm
Stem Length:	min. 50 mm max. 3000 mm
Stem Material:	Stainless steel 316L (1.4401) Inconel 600 (2.4816)
Insulation Material:	Compacted pure MgO (Magnesium oxide)
Senore Types and max. Range:	RTD: Pt100 -200 up to 600 °C Pt1000 -40 up to 600 °C Thermocouples: Type J -40 up to 750 °C Type E -200 up to 800 °C Type K -200 up to 1000 °C Type N -200 up to 1000 °C
Wiring Configuration:	RTD (single or dual) as 2, 3 or 4 wire Thermocouple (single or dual) as 2 wire
Cable Connection:	Miniature electrical connector (male or female) Leads with ferrules
Extension Cables:	PVC: -20 ...+105 °C Silicone: -60 ...+180 °C PTFE (Teflon®): -75 ...+240 °C Fibre glass: -60 ...+400 °C
Insulation Resistance:	For RTD $\geq 100 \text{ M}\Omega$ with $U = 250 \text{ VDC}$ For TC $\geq 1 \text{ G}\Omega$ with $U = 500 \text{ VDC}$
Sensitive Length of	
RTD:	7 to 40 mm
Thermocouple:	< 5mm
Minimum Immersion Length:	in liquids: 40 mm + 4 * \emptyset in gases/vapour: 40 mm + 7 * \emptyset



KEY BENEFITS

- Flexible designs for critical applications
- Highly accurate and repeatable

Ingress Protection:	Ex i	IP20
	Ex e	IP54

APPROVALS

Accuracy Classes: (RTD - IEC 60751)	Class A:	$\pm(0,15 + 0,0020 * t)$
	Class B:	$\pm(0,30 + 0,0050 * t)$
	1/2 Class B:	$\pm(0,15 + 0,0025 * t)$
	1/3 Class B:	$\pm(0,10 + 0,0017 * t)$

Accuracy Classes: (TC - ANSI MC 96.1)		Standard	Special
	Type J	$\pm 2,2 \text{ }^\circ\text{C}$ or $\pm 0,0075 * t $	$\pm 1,1 \text{ }^\circ\text{C}$ or $\pm 0,0040 * t $
	Type E	$\pm 1,7 \text{ }^\circ\text{C}$ or $\pm 0,0050 * t $	$\pm 1,0 \text{ }^\circ\text{C}$ or $\pm 0,0075 * t $
	Type K	$\pm 2,2 \text{ }^\circ\text{C}$ or $\pm 0,0075 * t $	$\pm 1,1 \text{ }^\circ\text{C}$ or $\pm 0,0040 * t $
	Type N	$\pm 2,2 \text{ }^\circ\text{C}$ or $\pm 0,0040 * t $	$\pm 1,1 \text{ }^\circ\text{C}$ or $\pm 0,0040 * t $

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APPROVALS

Accuracy Classes: (TC - IEC 60584-2)	Class 1	Class 2	Class 3
Type J	±1,5 °C or ±0,0040 * t	±2,5 °C or ±0,0075 * t	N/A
Type E	±1,5 °C or ±0,0040 * t	±2,5 °C or ±0,0075 * t	±2,5 °C or ±0,0150 * t
Type K	±1,5 °C or ±0,0040 * t	±2,5 °C or ±0,0075 * t	±2,5 °C or ±0,0040 * t
Type N	±1,5 °C or ±0,0040 * t	±2,5 °C or ±0,0040 * t	±2,5 °C or ±0,0150 * t

APPROVALS

Available Approvals: FM, ATEX, IECEx, SIL2, INMETRO, EAC, CCC, AMI, ExNEPSI



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:



 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

SENSING ELEMENT TYPES



RTD

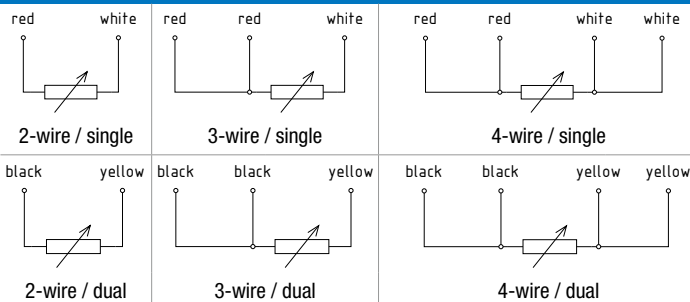


TC - ungrounded



TC - grounded

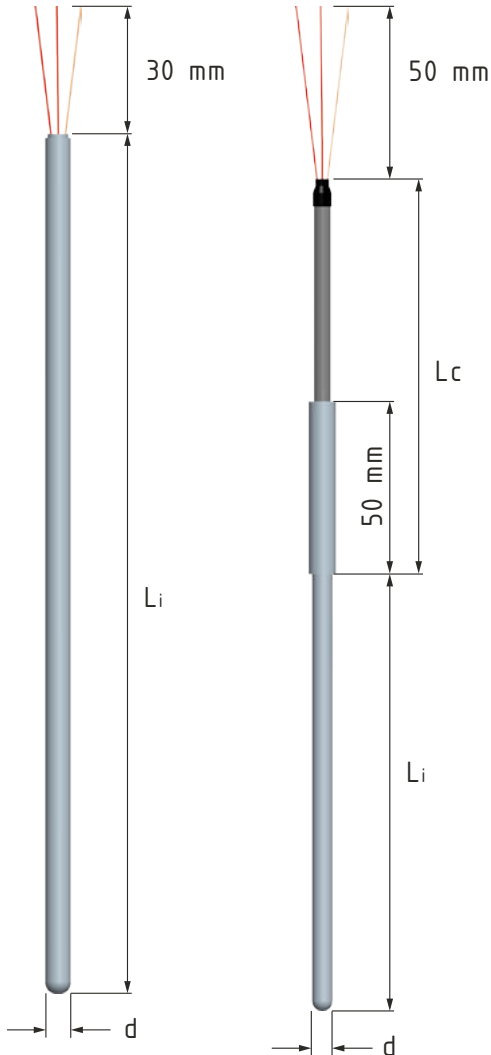
MEASUREMENT CIRCUITS - COLOR IDENTIFICATION FOR RTD



Electrical Thermometer for Thermocouples (S80) and RTD (S81)

DIMENSIONS IN MM [INCH]

For reference only, consult Ashcroft for specific dimensional drawings



HOW TO ORDER S81 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 base of the lead wire transition piece 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.

d = Stem diameter
 LC = Length lead wire
 L = Insertion length

