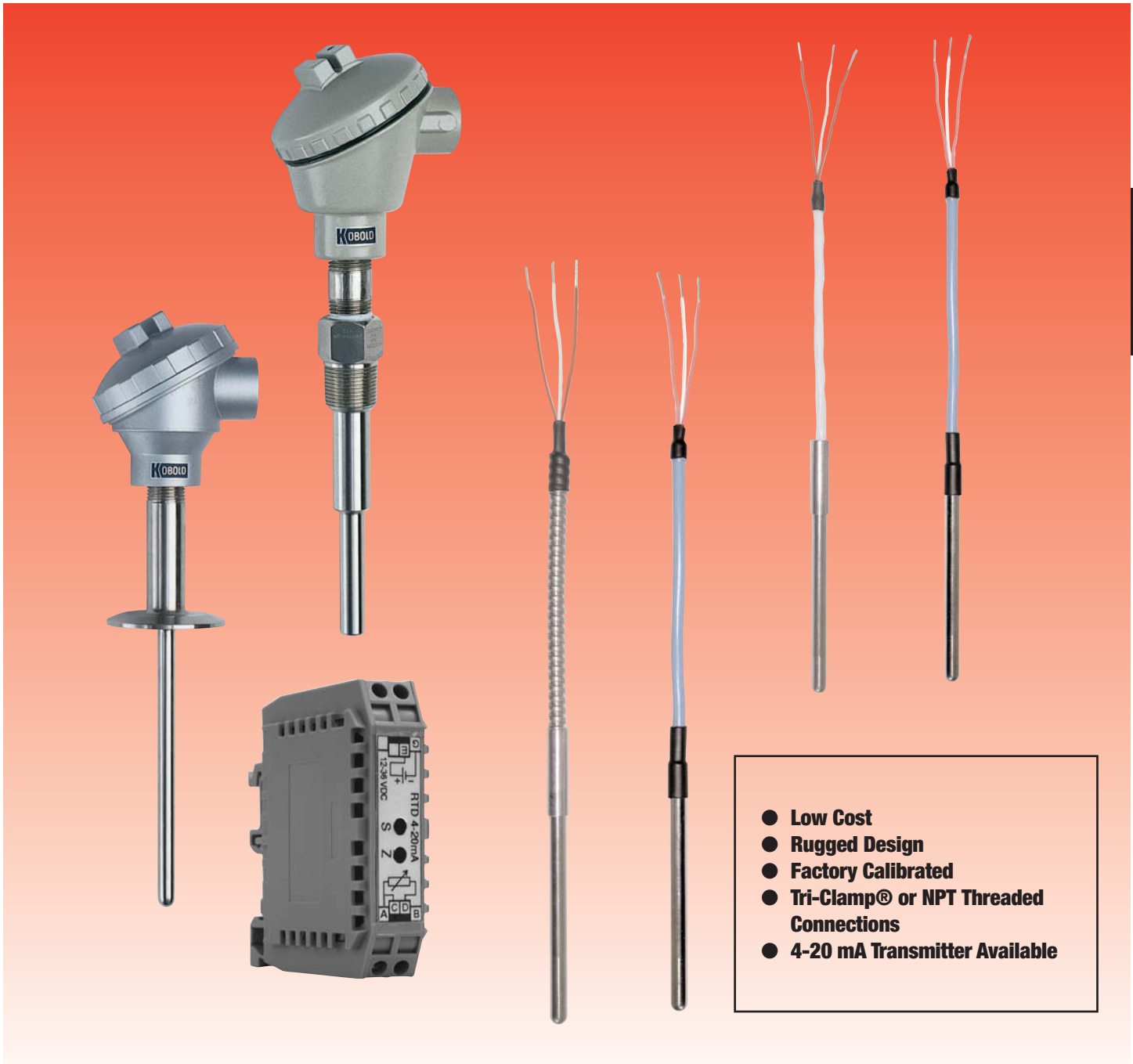


# TSR RTD TEMPERATURE PROBES



Flow  
Pressure  
Level  
Temperature  
measurement  
monitoring  
control



T2

- Low Cost
- Rugged Design
- Factory Calibrated
- Tri-Clamp® or NPT Threaded Connections
- 4-20 mA Transmitter Available



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Model:  
TSR



The KOBOLD series TSR employs a resistive thermal device (RTD) to measure process temperature. Utilizing the relationship between resistance and temperature change in metals, RTDs provide a very stable and repeatable output. This makes them well suited for industrial applications which require a high degree of measuring accuracy over a wide range of temperatures. The probes employ a Pt-100 RTD element which is hermetically sealed in a 316 stainless steel probe. The TSR is available in an RTD only version or RTD with head-mounted 2-wire 4-20 mA transmitter. NPT or Tri-Clamp® connections are standard.



### Specifications

#### Temperature Range

**Normal Range:** -58°F to +390°F  
**Extended Range:** -320°F to +1100°F

**Maximum Pressure:** 1450 PSIG

**Wetted Parts:** 316 SS

#### Electrical Specifications

**RTD Type:** Pt-100 Class B per DIN 43670  
 $\alpha = 0.00385$

**RTD Accuracy:**  $\pm 0.55^\circ\text{F}$  at 32°F

**Temperature Drift:** 0.003 °F/°F

#### Connection Housing

**Threaded Probes:** Aluminum, NEMA 4

**Tri-Clamp® Probes:** Polypropylene, NEMA 4

#### Transmitter Specifications

**Output:** 4-20 mA 2-wire

**Supply Voltage:** 10-36 VDC

**Loop Resistance:**  $R_{\text{max}} = 50(V_{\text{supply}} + 10)$

**Accuracy:**  $\pm 0.1\%$  of Span

**Zero Drift:**  $\pm 0.025\%/^\circ\text{F}$

**Span Drift:**  $\pm 0.025\%/^\circ\text{F}$

#### Order Numbers for 1/2" Tri-Clamp® RTD Probes

Immersion Depth	Model Number
2 1/2"	TSR-32025
4"	TSR-32040
6"	TSR-32060

### KOBOLD TSR RTD Temperature Probes

#### Order Numbers for Threaded RTD Probes

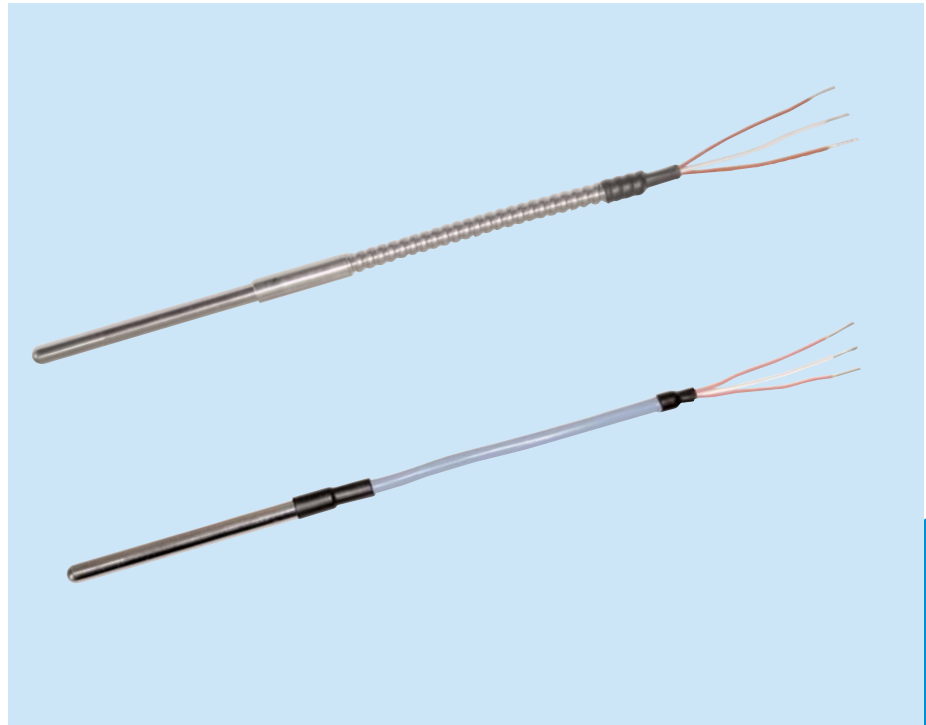
Immersion Depth	Connection Size NPT		Options
	1/2"	3/4"	
2 1/2"	TSR-12025	TSR-22025	Suffix "-ET" Extended Temperature Range -320 to 1100°F
4 1/2"	TSR-12045	TSR-22045	
6"	TSR-12060	TSR-22060	
7 1/2"	TSR-12075	TSR-22075	
10 1/2"	TSR-12105	TSR-22105	

#### Order Numbers for RTD Transmitters

Range °F	Transmitter Only	Mounted in RTD Probe
-58 to +120	TSR-8101	TSR-8201
32 to 120	TSR-8102	TSR-8202
32 to 212	TSR-8103	TSR-8203
32 to 400	TSR-8104	TSR-8204
32 to 600	TSR-8105	TSR-8205
32 to 750	TSR-8106	TSR-8206
32 to 1100	TSR-8107	TSR-8207
32 to 1500	TSR-8108	TSR-8208

Non-standard range add model number suffix "-E"  
 (Specify desired range when ordering)

RTD thermoelements consist of a 1/4 inch diameter smooth bore measuring probe made of 316 stainless steel. An attached cable connects the thermoelement to the user's data acquisition system or to a signal conditioner to convert the RTD output to a linear analog signal. The cable is available in a variety of materials to match the environmental conditions and temperature measuring requirements. Both the thermoelement and attached cable can be ordered in any length based on the requirements of the application. In addition to the thermoelements, KOBOLD offers a DIN rail mounted analog temperature transmitter providing a complete temperature measurement solution.



T2

**Thermoelement Specifications**

**TSR-100K Series, PVC Cable**

RTD Type: Pt-100, 3-wire  
 $\alpha=0.00385$   
 Measuring Range: -10 to 212°F  
 Probe Diameter: 1/4"  
 Wire Material: 3 Ft. PVC jacketed  
 3-conductor,  
 22 AWG

**TSR-100L Series, Teflon Cable**

RTD Type: Pt-100, 3-wire  
 $\alpha=0.00385$   
 Measuring Range: -58 to 390°F  
 Probe Diameter: 1/4"  
 Wire Material: 3 Ft. Teflon jacketed  
 3-conductor,  
 22 AWG

**TSR-120H Series, Teflon Cable, Temperature Isolated**

RTD Type: Pt-100, 3-wire  
 $\alpha=0.00385$   
 Measuring Range: -320 to 1100°F  
 Probe Diameter: 1/4"  
 Wire Material: 3 Ft. Teflon jacketed  
 3-conductor,  
 22 AWG

**TSR-140H Series, Teflon Cable, Temperature Isolated**

RTD Type: Pt-100, 3-wire  
 $\alpha=0.00385$   
 Measuring Range: -320 to 1100°F  
 Probe Diameter: 1/4"  
 Wire Material: SS Armored  
 3 Ft. Teflon,  
 3-conductor,  
 22 AWG

**Temperature Transmitter Specifications (TSR-9000 Series)**

Input Type: Pt-100 RTD  
 Output; 4-20 mA, 2-wire  
 Power  
 Requirement: 10-36 VDC  
 Accuracy: 0.1% of span  
 Zero Drift:  $\pm 0.0025\%/^{\circ}\text{F}$   
 Span Drift:  $\pm 0.0025\%/^{\circ}\text{F}$

Open Circuit Detection: Current output > 23mA  
 Packaging: DIN Rail, NEMA 1  
 Dimensions (L x W x H): 2.50" x .71" x 2.44"

**KOBOLD TSR RTD Temperature Probes**

**TSR Thermoelement Ordering Information**

Part Number	Description
TSR-100KS3450	3 Ft. PVC cable, -10 to 212°F
TSR-100LS3450	3 Ft. Teflon cable, -58 to 390°F
TSR-120HS3450	3 Ft. Teflon cable, -320 to 1100°F
TSR-140HS3450	3 Ft. SS armored cable, -320 to 1100°F
Custom cable length, add suffix "-EC". Specify desired cable length.	
Accessories	
TSR-FT44FH4BZSS	1/4" 316 SS bore through compression fitting x 1/4" NPT male
TSR-FT48FH4BZSS	1/4" 316 SS bore through compression fitting x 1/2" NPT male

**\*When ordering, specify desired probe length.**



TSR DIN Rail Transmitter Ordering Information	
Part Number	Description
TSR-9101	-58 to 120°F
TSR-9102	32 to 120°F
TSR-9103	32 to 212°F
TSR-9104	32 to 400°F
TSR-9105	32 to 600°F
TSR-9106	32 to 750°F
TSR-9107	32 to 1100°F
Non-standard range, add suffix "-E", specify desired range.	

