KOBOLD

T2

Model: TIR-S...

+300...+1300°C
a ≈ 300mm
4...20mA / 24V DC

- Measuring range:
  -30...300°C to 1100...2500°C
- Measuring accuracy: ±1.5 % of full scale
- Output: 4-20 mA, voltage
  model J, K 10 mV/°C
- Adjustable emittance
- Non-contact measurement
- Simple operation

°C

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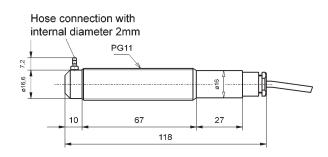Internet: www.kobold.com

Model:
TIR-S...

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Description

Temperatures of non-metallic materials between 0°C and 500°C can be measured by non-contacting means with the infrared transmitter TIR-SA. The emission value of the target must be known for accurate measurements. The TIR-SA is adjusted at the factory for the emission value of most non-metallic materials. Thus for example the temperatures of plastic, wood, textiles, glass, liquids or foodstuffs can be easily measured.

The TIR-SA is small, rugged and, with its stainless steel case, also suitable for service in rough service environments. The sensor can be delivered with three different measuring ranges each with three different outputs. The relationship of the diameter of the measuring dot to the test distance is 1:5 for the optics.

Dimensions

Hose connection with internal diameter 2mm

PG11

ø16,6 7,2

ø16

10   67   27

118

Special Features

● Low cost version

● Emittance factory set

● Measuring ranges between 0°C and 500°C for all non-metallic materials.

● Small dimensions

● Output: voltage (model J or K) 10 mV/°C

● Simple connection and installation

Technical Details

Spectral range:	8 - 14 µm
Detector:	thermopile
Output resistance:	50 Ω
Outputs:	10 mV/°C thermal e.m.f. for model J thermal e.m.f. for model K
Min. load impedance:	50 kΩ
Emittance:	0.95 factory set
Response time:	300 ms
Repeatability:	±1% of the measured value or (±1°C*)
Measurement uncertainty:	±1.5% of span or 2.5°C (* the greater value applies)
Optics:	D = 1 : 5
Supply voltage:	24 V_{DC} ± 25% (ripple 50 mV)
Current consumption:	8 mA
Sensor operating temperature:	0 ... 70°C
Storage temperature:	-30 ... 80°C
Housing:	stainless steel
Protection type:	IP 65 (according to DIN 40 050)
Protection category:	I (according to VDE 0411)
Installation position:	any
Weight:	125 g
Connection cable:	PVC, 1 m

Order Details (Example: **TIR-SA V12**)

Measuring ranges	Output		
	10 mV/°C	Model J	Model K
0...120°C	**TIR-SA V12**	**TIR-SA J12**	**TIR-SA K12**
0...300°C	**TIR-SA V30**	**TIR-SA J30**	**TIR-SA K30**
100...500°C	**TIR-SA V50**	**TIR-SA J50**	**TIR-SA K50**

02 / 03-2008

Description

The infrared thermometers in the device series TIR-SN, TIR-SG and TIR-SS are designed for non-contact temperature measurement of metallic and non-metallic surfaces. They are suitable for general-purpose service and are remarkable for the following special features:

- Linear current output, two-wire circuitry
- Measuring ranges from -20 ... +300 to 1100 ... +2500°C
- Simple connection and installation
- Fast response times
- Small size of measuring dot
- Adjustable emittance
- Large range of applications with different infrared detectors
- Stainless steel case
- Suitable for use in the food industry
- Good measuring accuracy

Three different infrared thermometers each with three different infrared detectors are available for a variety of measurement applications. This is necessary to allow the use of the optimum infrared wavelength for each temperature range. Model TIR-SG and TIR-SS devices can be delivered with different optics, with which the relationship between size of measuring dot and distance can be varied. The sensor is aligned with the test specimen on a stand or with the measuring instrument support and senses the temperature by noncontacting means on the surface according to the size of the measuring dot. The measured value is continuously transmitted through the analogue output as a 4 - 20 mA signal. The measuring instrument can be adapted to the measurement application (at hand) by adjusting the emittance.
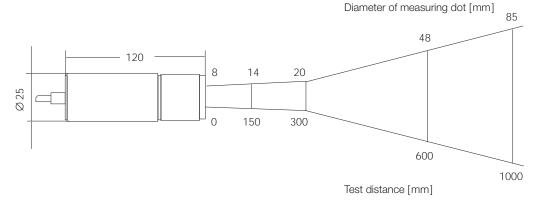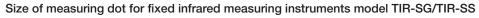
Technical Details

Measuring accuracy:	±1.5% of full scale
Repeatability:	0.5% of full scale ± 2°C (TIR-SN)
	0.5% of full scale (TIR-SG/TIR-SS)
Temperature drift:	0.02% of full scale / °C (TIR-SG/TIR-SS)
	0.03% of full scale / °C of range 0 ... 60°C (TIR-SN...)
	0.02% of full scale / °C of range > 60°C (TIR-SN...)
Analogue output:	4 - 20 mA linear
Max. load:	500 Ω (with 24 V$_{DC}$)
Response time (t90):	300 ms (TIR-SN..)
	10 ms (TIR-SG/TIR-SS)
Emittance:	0.4 ... 1 (TIR-SN...)
	0.2 ... 1 (TIR-SG/TIR-SS)
Supply voltage:	18 - 30 V$_{DC}$, ripple < 50 mV
Operating temp.:	0 ... +70°C
Storage temp.:	-20 ... +70°C
Housing:	stainless steel
Protection:	IP 65 (according to DIN 40050)
Installation position:	any
Connection cable:	2 m
Weight:	215 g

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Order Details (Example: **TIR-SN 410G**)

Model	Measuring ranges	Optics	Infrared detector	Applications
TIR-SN410... **TIR-SN420...** **TIR-SN430...** **TIR-SN450...**	0 to +100°C 0 to +200°C -20 to +300°C 0 to +500°C	**..G** = optic 300 mm (1:15) (standard)	Thermopile Spectral range: 8 - 14 µm	Plastics, rubber, glass, paper, textiles, asphalt, liquids, paints, wood, food, **no bright metal**
TIR-SG480... **TIR-SG4T2...** **TIR-SG4T3...**	+300 to +800°C +400 to +1200°C +300 to +1300°C	**..A** = optic 90 mm **..C** = optic 300 mm (1:60) **..E** = optic600 mm	InGaAs photodiode Spectral range: 1.45 - 1.8 µm	Bright metals, glass, glass forms and so forth, ceramic, heat treatment, processes, hardening, annealing, sintering, soldering, starting
TIR-SS4T3... **TIR-SS4T8...** **TIR-SS4Z5...**	+650 to +1300°C +650 to +1800°C +1100 to +2500°C	Laser aiming light (standard)	Si-photodiode Spectral range: 0.8 - 1.1 µm	

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Size of measuring dot for fixed infrared measuring instruments model TIR-SN

Size of measuring dot for fixed infrared measuring instruments model TIR-SG/TIR-SS

a = Test distance [mm]
D = lens aperture [mm]
M = diameter of measuring dot [mm]

Model	Optics	D	a	M	a1	M1	a2	M2
TIR-SG...A	90 mm	9	90	2.2	200	11	400	30
TIR-SG...C	300 mm	9	300	5.0	600	15	800	21
TIR-SG...E	600 mm	9	600	10.0	1000	16	2000	38
TIR-SS...A	90 mm	5	110	1.6	200	6	400	16
TIR-SS...C	300 mm	5	300	3.7	600	11	800	16
TIR-SS...E	600 mm	5	600	8.0	1000	14	2000	30

Accessories for stationary infrared measuring instruments

TIR-ZS100	Adjustable mounting for rough environment. Material stainless steel
TIR-ZS200	Installation and alignment support
TIR-ZS300	Installation tube
TIR-ZS400	Stainless steel vent nozzle to prevent dust depositing on optics
TIR-ZS500	Bracket for flange system
TIR-ZS600	Tube support with vent nozzle and flange
TIR-ZS700	Bracket with silica glass pane for flange system
TIR-ZS800	Ceramic tube 600 mm closed for flange system, max. 1600°C
TIR-ZS900	Cooling housing with integrated vent nozzle for cooling the infrared thermometer and preventingdust depositing on optics. For connection to cooling water circuit and compressed air.

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