

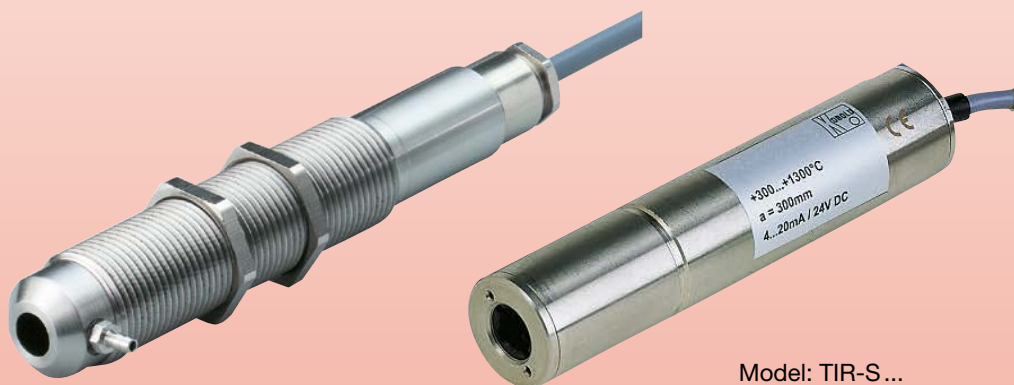


Infrared Thermometers for Fixed Installations



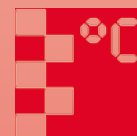
measuring
•
monitoring
•
analysing

TIR-S...



Model: TIR-S...

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



T2

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Description

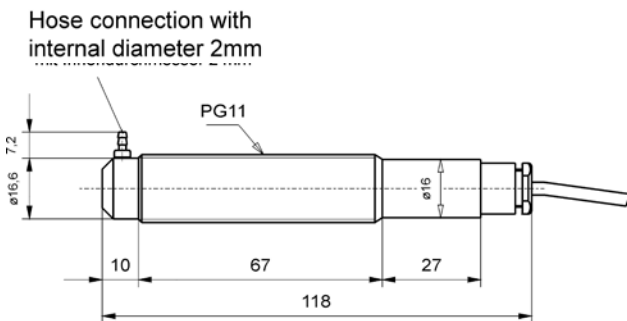
Temperatures of non-metallic materials between 0°C and 500°C can be measured by non-contacting means with the infrared transmitter TIR-SA. The emission value of the target must be known for accurate measurements. The TIR-SA is adjusted at the factory for the emission value of most non-metallic materials. 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.

Special Features

- Low cost version
- Emittance factory set
- Measuring ranges 0°C...500°C for all non-metallic materials
- Small dimensions
- Output: voltage (model J or K) 10 mV/°C
- Simple connection and installation

Dimensions [mm]



Technical Data

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 reading 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...+85 °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, 1m

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

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 features:

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
- High 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 (by hand) by adjusting the emittance.



Technical Data

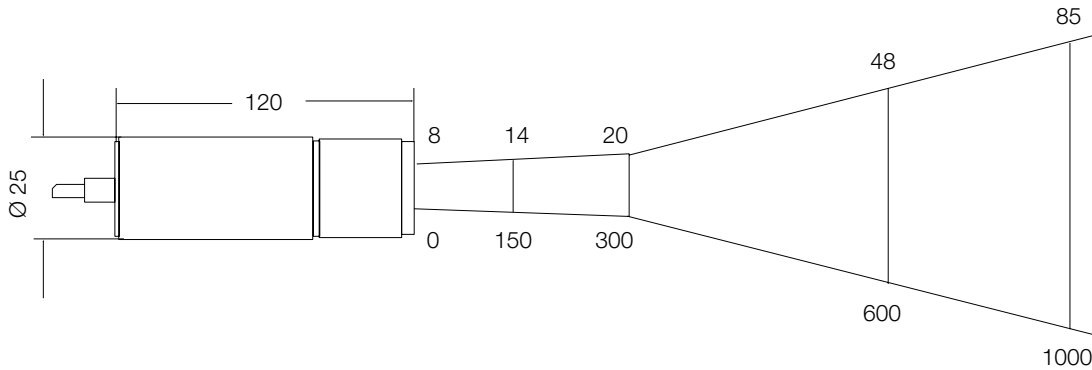
Measuring accuracy:	±1.5% of full scale
Repeatability:	0.5% of full scale ± 2 °C (TIR-SN) 0.5% of full scale (TIR-SG/TIR-SS)
Temperature drift:	0.02% of f.s./°C (TIR-SG/TIR-SS) 0.03% of full scale/°C of range 0...60 °C (TIR-SN...) 0.02% of full scale/°C of range > 60 °C (TIR-SN...)
Analogue output:	4-20 mA linear
Max. load:	500 Ω (with 24 V _{DC})
Response time (t ₉₀):	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 temperature:	0...+70 °C
Storage temperature:	-20...+70 °C
Housing:	stainless steel
Protection:	IP 65 (according to DIN 40050)
Installation position:	any
Connection cable:	2 m hard-wired
Weight:	215 g

Order Details (Example: TIR-SN 410G)

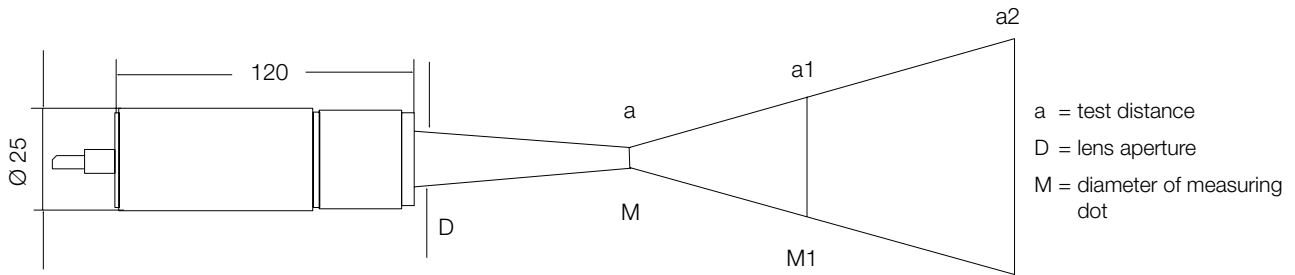
Model	Measuring ranges	Optics	Infrared detector	Applications
TIR-SN410...	0...+100°C	..G = optic 300 mm (1:15) (standard)	Thermopile Spectral range: 8-14 μm	Plastics, rubber, glass, paper, textiles, asphalt, liquids, paints, wood, food, no bright metal
TIR-SN420...	0...+200°C			
TIR-SN430...	-20...+300°C			
TIR-SN450...	0...+500°C			
TIR-SG480...	+300...+800°C	..A = optic 90 mm ..C = optic 300 mm (1:60) ..E = optic 600 mm laser aiming light (standard)	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-SG4T2...	+400...+1200°C			
TIR-SG4T3...	+300...+1300°C			
TIR-SS4T3...	+650...+1300°C	Si-photodiode Spectral range: 0.8-1.1 μm		
TIR-SS4T8...	+650...+1800°C			
TIR-SS4Z5...	+1100...+2500°C			

Dimensions [mm]

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



Model	Optics [mm]	D [mm]	a [mm]	M [mm]	a1 [mm]	M1 [mm]	a2 [mm]	M2 [mm]
TIR-SG...A	90	9	90	2.2	200	11	400	30
TIR-SG...C	300	9	300	5.0	600	15	800	21
TIR-SG...E	600	9	600	10.0	1000	16	2000	38
TIR-SS...A	90	5	110	1.6	200	6	400	16
TIR-SS...C	300	5	300	3.7	600	11	800	16
TIR-SS...E	600	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 preventing dust depositing on optics. For connection to cooling water circuit and compressed air. Material stainless steel