

Infrared Thermometers stationary

TIR-S.../TIR-F...



Typ: TIR-SN

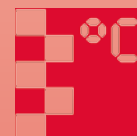


Typ: TIR-FA



Typ: TIR-F...

- Measuring range: -20 ... +300 °C to 1100 ... 2500 °C
- Accuracy: 0.8% of reading +1 °C ... 1.5% of temperature range
- Output: 4-20 mA, thermoelectric voltage type J, K 10 mV/°C
- Adjustable emissivity
- Non-contact temperature measurement
- Easy operation



T2

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Description

TIR-FA is a good value stationary infrared sensor for non-contact temperature measurement of non-metallic surfaces or painted, coated or anodised metals.

The small housing dimensions enable the integration of the instruments in compact production machines; the solid and robust design of the instrument guarantees reliability even in rough industrial environments. With the built-in air purge the lens can be protected from contamination with dust and moisture. This enables the instrument to be adapted to various measuring tasks.

The TIR-FA is an analog measuring device that provides 3 different outputs.

Special Features

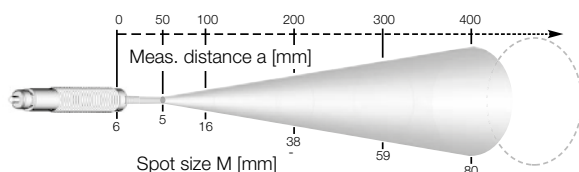
- Built-in air purge unit to keep clean the lens in dusty environments
- Easy installation and connecting
- Stainless steel housing with PG 11 thread for easy mounting
- Very small housing dimensions, suited for use in confined spaces
- Up to 70 °C operating temperature without cooling

Typical Applications

- Plastics
- Glass
- Liquids
- Textile
- Wood
- Food
- Asphalt
- Varnish
- Painted metals
- Rubber
- Ceramic
- Coated metals
- Paint
- Paper
- Anodised metals

Optics

The optics is fixed to a distance of 50 mm, i.e. at this distance the optic achieves its smallest spot size in relation to the measuring distance. The spot size will be enlarged in any other distance (shorter or longer). Please note that the measuring object must be at least as big as the spot size.

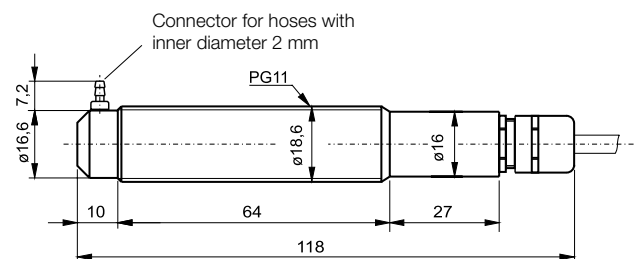


Technical Details

Power supply:	18 ... 30 V _{DC}
Output:	10 mV/°C or thermocouple model J or K
Load:	min. 50 kΩ
Emissivity ε:	95% (fixed)
Exposure time t ₉₀ :	300 ms
Uncertainty:	1.5% of temperature range or 2.5 °C*
Repeatability:	1% of reading or 1 °C*
Noise (NETD, σ=1):	<0.2 °C
Ambient temperature:	0 ... 70 °C
Storage temperature:	-20 ... 70 °C
Relative humidity:	no condensing conditions
Housing:	stainless steel
Weight:	150 g
Mounting position:	any
Connection cable:	1 m
Air purge unit:	for connecting hose with 2 mm inner diameter
Protection:	IP65 (DIN 40050)
CE label:	according to EU directives about electromagnetic immunity

* The larger value is valid

Dimensions [mm]



Order Details (Example: TIR-FA V12)

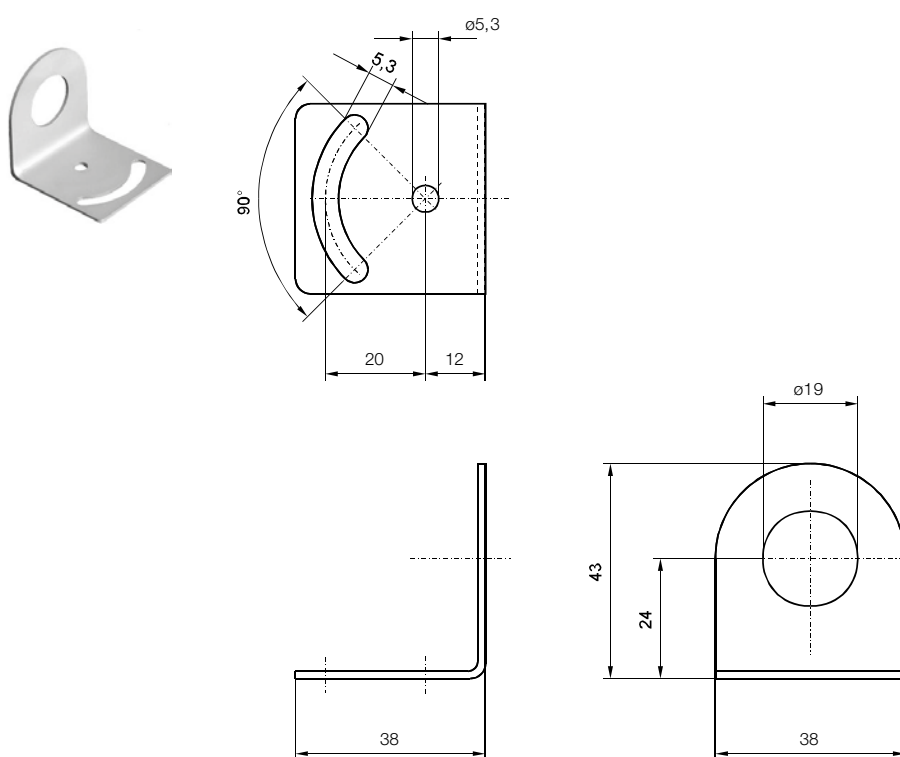
Measuring range	10 mV/°C	Output Model J	Model K
0 ... 120 °C	TIR-FA V12	TIR-FA J12	TIR-FA K12
0 ... 300 °C	TIR-FA V30	TIR-FA J30	TIR-FA K30
100 ... 500 °C	TIR-FA V50	TIR-FA J50	TIR-FA K50

Accessories for stationary infrared measuring instruments (TIR-FA)

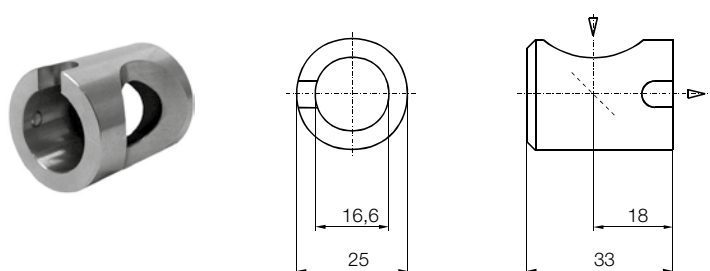
Model	
TIR-ZA100	Mounting support, fixed
TIR-ZA150	90° mirror
TIR-ZA200	Mounting support, adjustable
TIR-ZA900	Cooling housing

Dimensions Accessories [mm]

TIR-ZA100

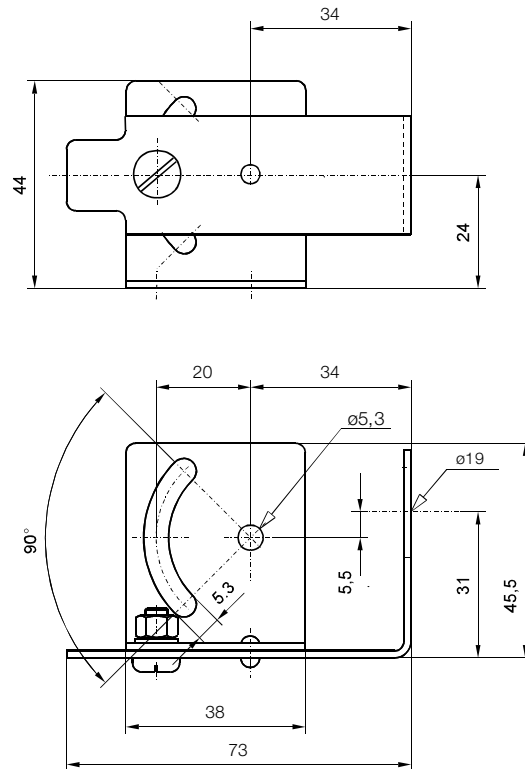


TIR-ZA150

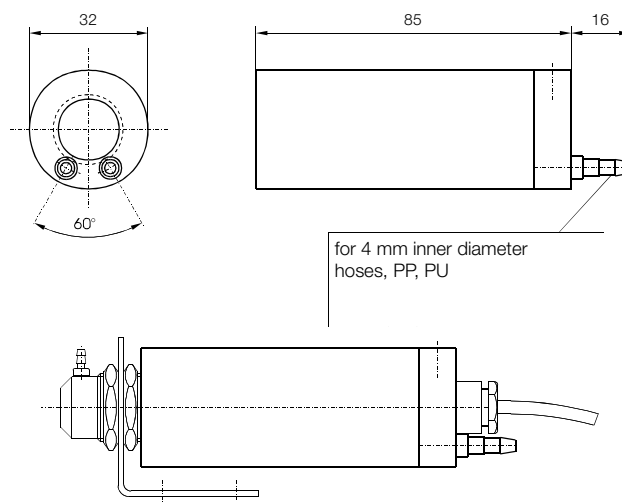


Dimensions Accessories [mm] (continuation)

TIR-ZA200



TIR-ZA950



Description

The TIR-SN is a stationary pyrometer for non-contact temperature measurement of non-metallic surfaces or painted, coated or anodised metals.

The very small housing dimensions enable the integration of the pyrometer into compact production machines, the 2-wire technique enables very easy electrical connection.

The solid and robust design of the instrument guarantees high operational safety even in rough industrial environments.

Special Features

- Very small housing dimensions for easy installation, suitable for use in confined spaces
- 2-wire technique for current supply and temperature measurement at the same time
- Stainless steel housing
- Easy electrical and mechanical installation
- Suitable for food industry
- Ambient temperature up to 70 °C without cooling

Typical Applications

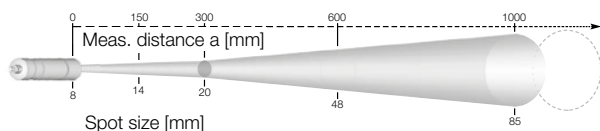
- Plastics
- Rubber
- Paper
- Ceramics
- Food
- Fluids
- Painted parts
- Asphalt
- Wood
- Glass
- Coated metals



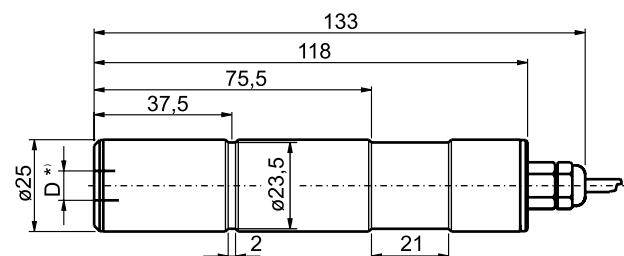
Technical Details

Spectral range:	8 ... 14 μm
Optics:	Ge lens
Output:	4 ... 20 mA, load independent current, temperature linear
Max load:	500 Ω bei 24 V power supply
Emissivity ϵ :	0.4 ... 1; adjustable
Response time t_{90} :	300 ms
Uncertainty:	1,5% of measuring range/°C ($\epsilon = 1$, $T_U = 23^\circ\text{C}$)
Repeatability:	1% of measuring range
Temp. dependence:	0 ... 60 °C: 0.03% of measuring range per °C (23 °C)
Distance ratio:	15 : 1
Power supply:	24 V _{DC} \pm 25% stabilised, ripple <50 mV
Ambient temperature:	0 ... 70 °C
Storage temperature:	-20 ... 70 °C
Housing:	stainless steel
Protection:	IP 65 (DIN 40050)
Weight::	215 g
Connection cable:	2 m length, fixed
CE label:	according to EU directives about electromagnetic immunity

Optics



Dimensions [mm]



Order Details (Example: TIR-SN 410G)

Model	Measuring range	Optics	Infrared detector	Applications
TIR-SN410...	0 ... +100 °C	..G = optic 300 mm (1:15) (standard)	Thermopile spectral range: 8-14 μm	Plastics, rubber, paper, ceramics, food, fluids, painted parts, asphalt, wood, glass, coated metals no bright metal
TIR-SN420...	0 ... +200 °C			
TIR-SN430...	-20 ... +300 °C			
TIR-SN450...	0 ... +500 °C			



Description

The TIR-FS and TIR-FG are stationary pyrometers for non-contact temperature measurement of metallic surfaces, graphite, ceramics, etc.

The very small housing dimensions enable the integration of the pyrometer in compact production machines, the 2-wire technique ensures very easy electrical connection, and the solid and robust design of the instrument guarantees reliability, even in rough industrial environments.

The pyrometers are equipped with a connector for electrical installation, this offers the option to use connection cables up to 30 m.

For optimal match 3 different focusable optics with small spot sizes are available.

Special Features

- Very small housing dimensions for easy installation, suited for use in confined spaces
- 2-wire technique for current supply and temperature measurement at the same time
- Internal digital signal processing for high accuracy
- High quality optics for detection of small measuring objects
- Built-in LED targeting light for easy alignment to the measuring object

Typical Applications

- Preheating
- Annealing
- Tempering
- Welding
- Forging
- Hardening
- Sintering
- Melting
- Soldering
- Brazing
- Rolling

Technical Details

Spectral Ranges:	TIR-FS 0.8 ... 1.1 μm TIR-FG 1.45 ... 1.8 μm
Detector:	TIR-FS Si photo diode TIR-FG InGaAs photo diode
Output:	4 ... 20 mA, load independent current, linear temperature output
Max load:	500 Ω bei 24 V power supply, max. 200 Ω at 18 V max. 800 Ω at 30 V
Emissivity ϵ :	0.2 ... 1; adjustable
Response time t_{90} :	10 ms
Meas. uncertainty:	up to 1500 °C: 0.8% of reading +1 °C above 1500 °C: 1% of reading +1 °C ($\epsilon=1$, $T_{\text{umg.}}=23$ °C)
Repeatability:	0.3% of reading ($\epsilon=1$, $T_{\text{umg.}}=23$ °C)
Power supply:	24 V _{DC} \pm 25% stabilised, ripple <50 mV 5 ... 30 V _{DC} for LED targeting light ($I \leq 30$ mA)
Sighting:	LED targeting light
Ambient temperature:	0 ... 70 °C
Storage temperature:	-20 ... 70 °C
Relative humidity:	no condensing conditions
Housing:	stainless steel
Protection:	IP65 (DIN 40050)
Mounting position:	any
Weight:	275 g
Connection cable:	2 m - 30 m length, connection via connector
CE label:	according to EU directives about electromagnetic immunity

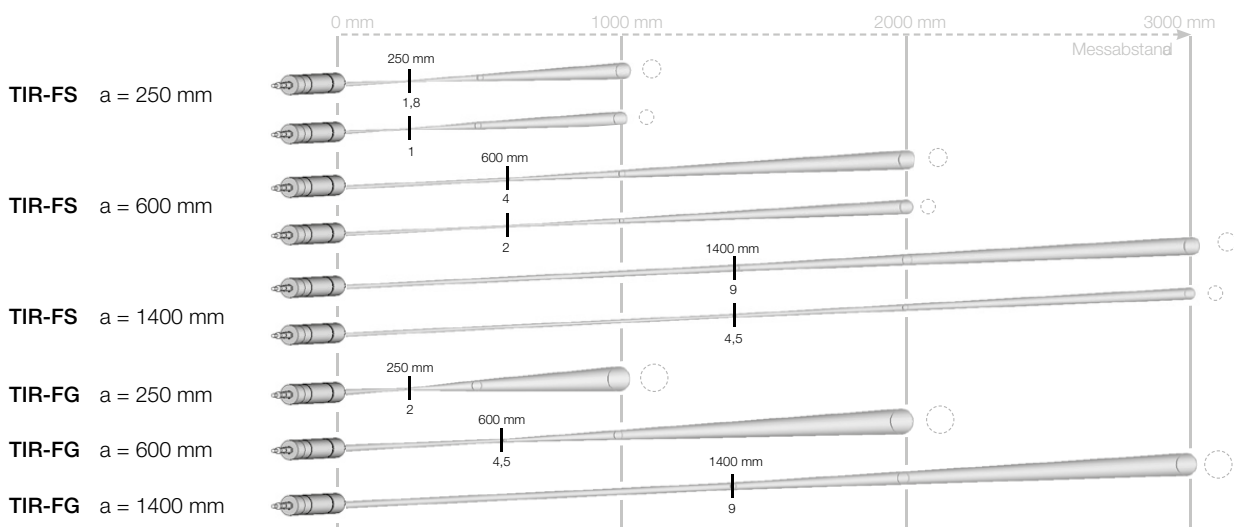
Optics

The pyrometers are equipped ex works with one of the following optics. These optics are fixed to a certain distance, i.e. at these distances each optic achieves its smallest spot size in relation to the measuring distance. The spot size will change in any other distance (shorter or longer). Please note that the measuring object must be at least as big as the spot size.

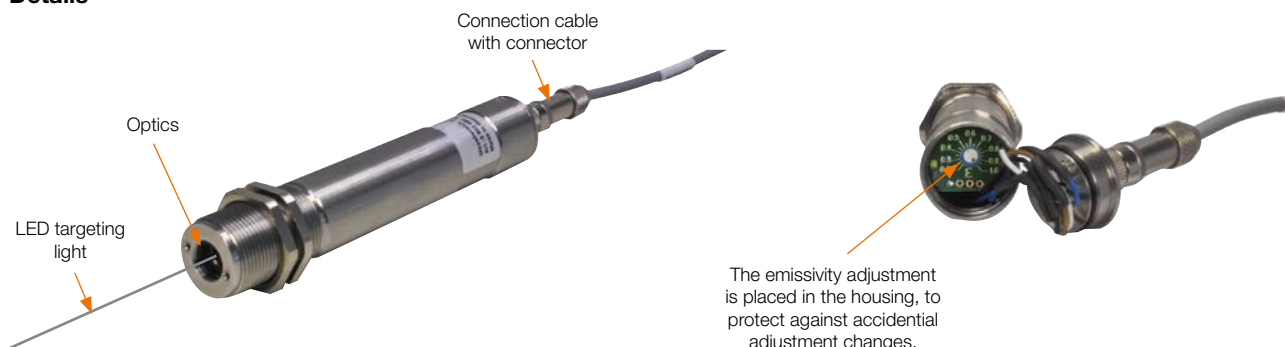
The following table shows the size of the spots (spot size M in mm) at a given measuring distance a. Values between the stated data can be calculated by interpolation. The spot size for measuring distance 0 is equivalent to the aperture diameter D of the optics, this value is used e.g. to calculate measuring distances in intermediate distances.

Model	a: M*	a [mm]	M [mm]	a ₁ [mm]	M ₁ [mm]	a ₂ [mm]	M ₂ [mm]	D [mm]
TIR-FS	140 : 1	250	1.8	600	11.6	1000	23	5,2
	250 : 1		1		9.7		20	
	150 : 1	600	4	1000	10.1	2000	26	
	300 : 1		2		6.8		20	
	155 : 1	1400	9	2000	15.1	3000	25	
	310 : 1		4.5		8.7		16	
TIR-FG	125 : 1	250	2	600	17.4	1000	35	9
	135 : 1	600	4.5	1000	13.5	2000	36	
	155 : 1	1400	9	2000	16.8	3000	30	

* a: M; distance ratio (90% intensity), M: spot size, a: measuring distance, D: aperture (effective lens diameter)

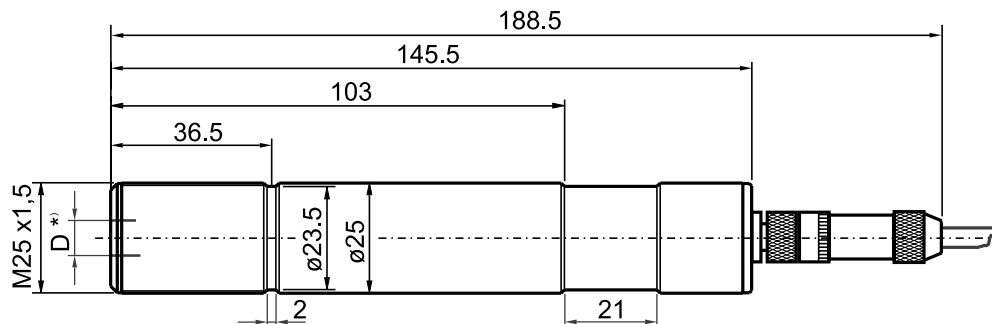


Details



Order Details (Example: TIR-FG)

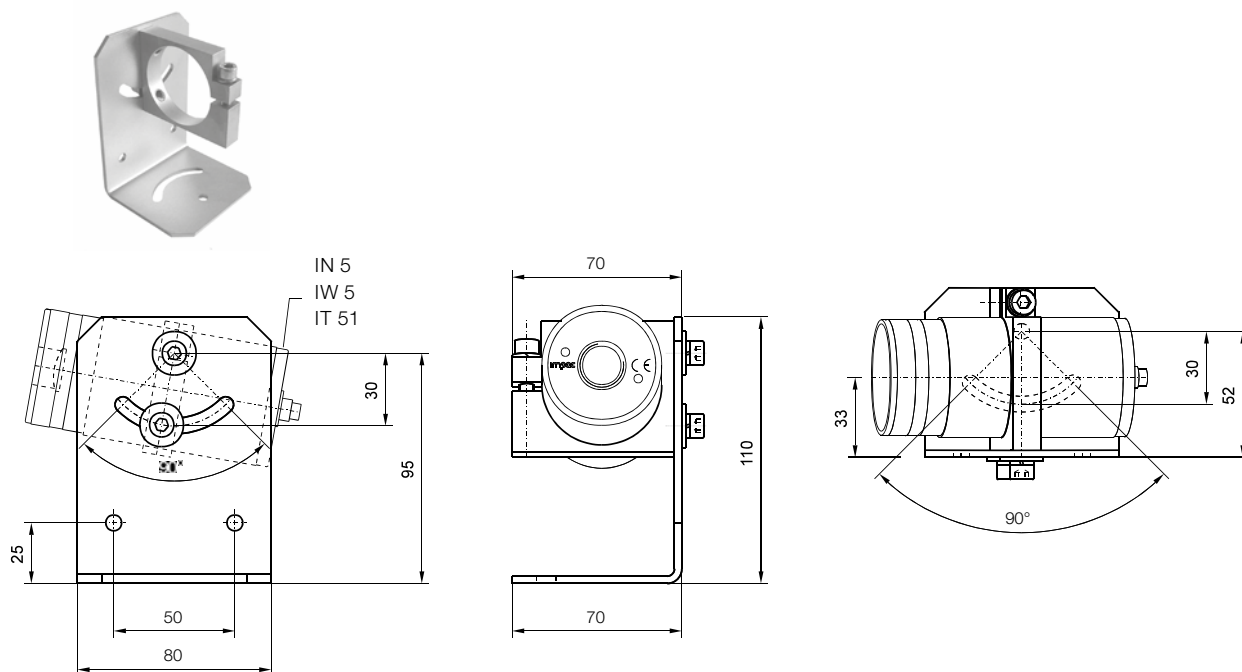
Model	Measuring range	Optics	Infrared detector	Applications
TIR-FG4T3...	+300 ... +1300°C	..H = optic 250 mm ..E = optic 600 mm ..K = optic 1400 mm	InGaAs- photodiode spectral range: 1.45-1.8 µm	Preheating, annealing, tempering, welding, forging, hardening, sintering, melting, soldering, brazing, rolling
TIR-FG4T5...	+500 ... +1500°C			
TIR-FS4T8...	+650 ... +1800°C	..K = optic 1400 mm	Si-photodiode spectral range: 0.8-1.1 µm	
TIR-FS4Z3...	+800 ... +2300°C			
TIR-FS4Z5...	+1100 ... +2500°C			

Dimensions [mm]

Accessories for stationary infrared measuring instruments (TIR-SN/-FS/-FG)

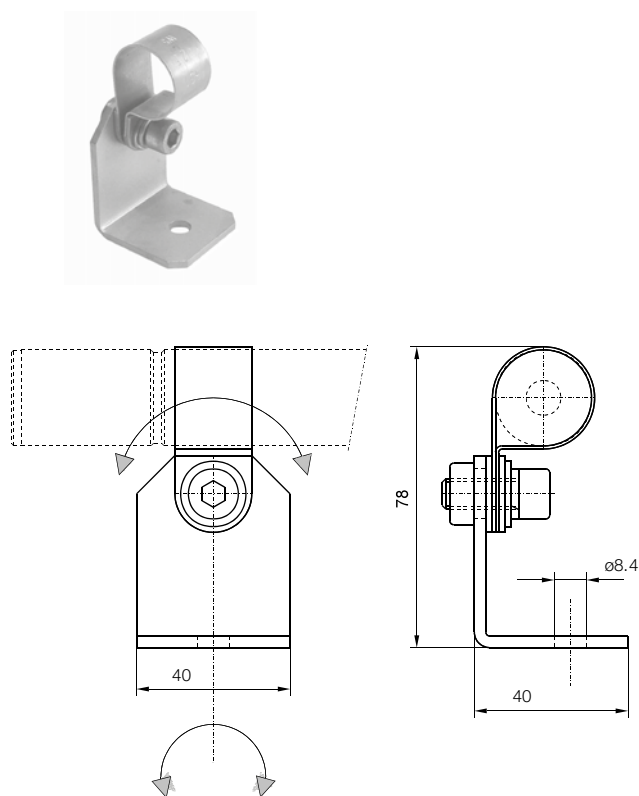
Model		TIR-SN	TIR-FS/-FG
TIR-ZS100	Adjustable mounting for rough environment. Material stainless steel	x	x
TIR-ZS200	Installation and alignment support	x	x
TIR-ZS300	Installation tube	x	x
TIR-ZS400	Stainless steel vent nozzle to prevent dust depositing on optics	x	x
TIR-ZS500	Bracket for flange system	x	x
TIR-ZS600	Tube support with vent nozzle and flange	x	x
TIR-ZS700	Bracket with silica glass pane for flange system	x	x
TIR-ZS800	Ceramic tube 600 mm closed for flange system, max. 1600 °C	x	x
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.	x	-
TIR-ZS910	Material stainless steel	-	x
TIR-ZF610	Connection cable TIR-FG/TIR-FS, 2 m	-	x
TIR-ZF620	Connection cable TIR-FG/TIR-FS, 5 m	-	x
TIR-ZF630	Connection cable TIR-FG/TIR-FS, 10 m	-	x
TIR-ZF640	Connection cable TIR-FG/TIR-FS, 15 m	-	x
TIR-ZF650	Connection cable TIR-FG/TIR-FS, 20 m	-	x
TIR-ZF660	Connection cable TIR-FG/TIR-FS, 25 m	-	x
TIR-ZF670	Connection cable TIR-FG/TIR-FS, 30 m	-	x

Dimensions Accessories [mm]

TIR-ZS100

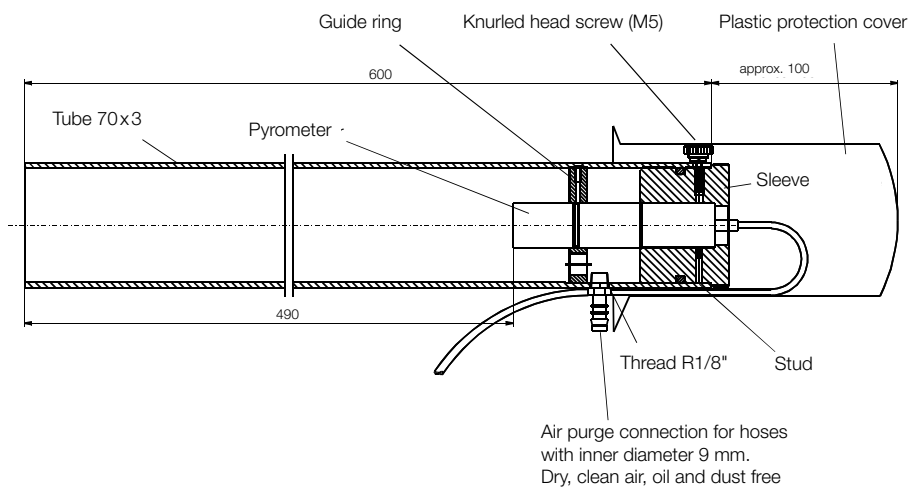


TIR-ZS200

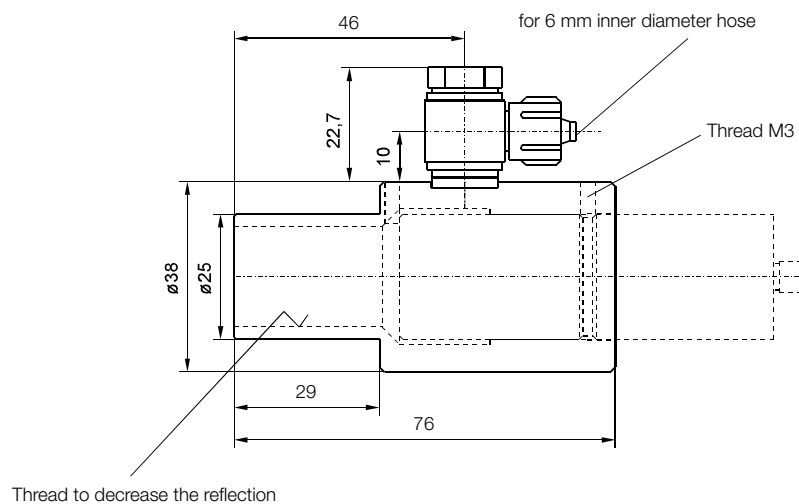


Dimensions Accessories [mm] (continuation)

TIR-ZS300

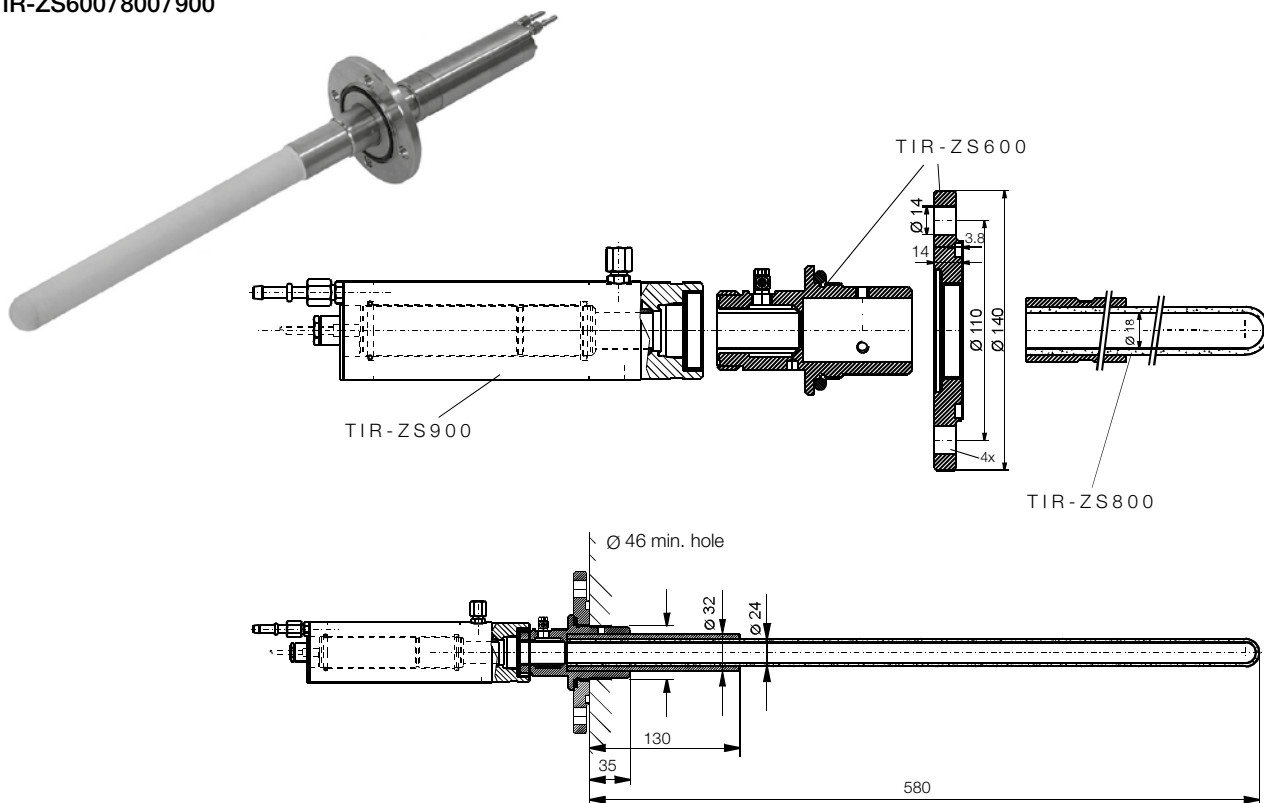


TIR-ZS400

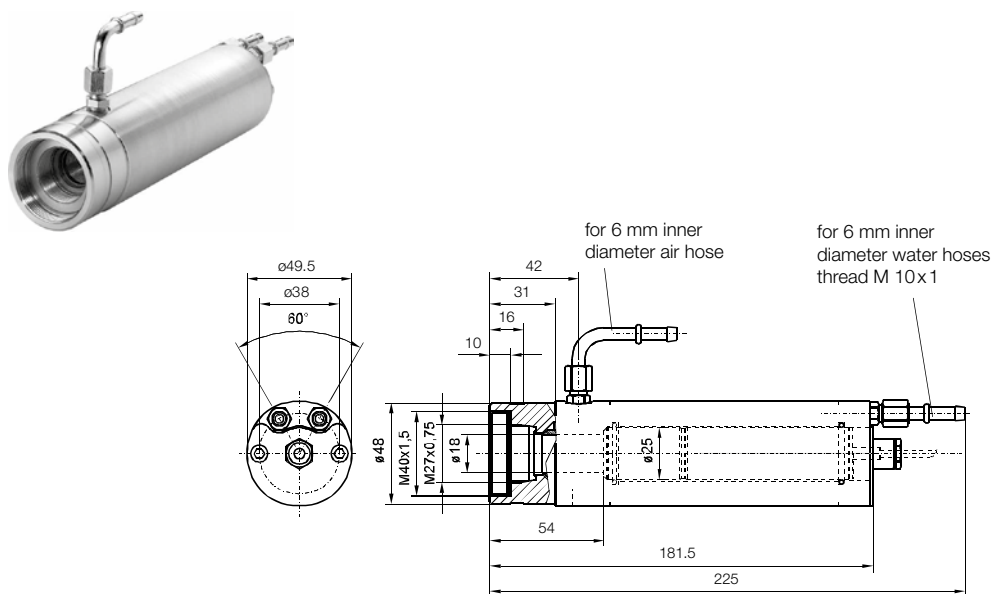


Dimensions Accessories [mm] (continuation)

TIR-ZS600/800/900

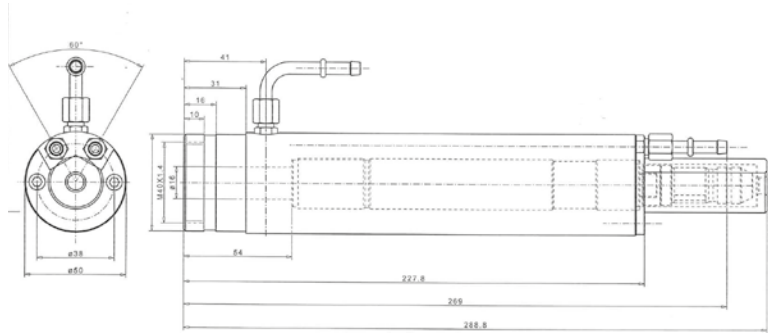


TIR-ZS900



Dimensions Accessories [mm] (continuation)

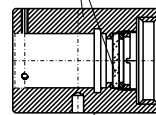
TIR-ZS910



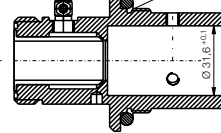
TIR-ZS500/600/700/800



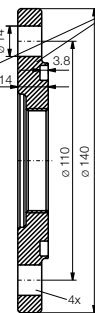
TIR-ZS700
with quartz window



TIR-ZS500
Standard



Tube support with air purge and flange
(TIR-ZS600)



Ceramic tube (TIR-ZS800)

