

X Non-contact thermometry best done
with *INFRATHERM* pyrometers



IS 12-TSP · IGA 12-TSP

Fully digital, extremely precise TS pyrometer

Transfer-Standard-Pyrometer for exact inspection of calibration sources

- ◆ Temperature ranges between 200 and 2520°C
- ◆ Resolution of only 0.01°C
- ◆ Built-in 5-digit LED display
- ◆ Digital interface
- ◆ Focusable optics



IS 12-TSP and **IGA 12-TSP** are extremely precise and long-term stable transfer standard pyrometers which can be used for the checking of calibration sources.

Calibration sources are subject to heavy wear due to the extremely high temperatures which they have to produce. This can lead to the fact that, over time, the temperature display at the controller no longer corresponds to the radiation temperature in the spectral range being investigated. If high precision measurements are required on the calibration source over long periods of time, we recommend that regular checks are carried out.

The IS 12-TSP or IGA 12-TSP transfer standard pyrometers have been specially designed for this purpose. They are available in several temperature ranges between 200 and 2520°C and in various spectral ranges, which means that they can be used with calibration sources with which pyrometers with Silicon or Indium Gallium Arsenide detectors can be checked.

The detectors in the TS pyrometer are thermostatically controlled to achieve this high precision. This means that the measurement is, to a large extent, independent of surrounding temperature variations and allows a resolution of 0.01 °C to be achieved.

Use of a TS pyrometer ensures that temperature values as stipulated by national institutes can be transferred to your own calibration sources to guarantee traceability to the ITS90 international temperature scale.

In order to guarantee an adherence to high technical specifications, the TS pyrometer should be checked regularly by IMPAC. This is, however, only necessary every 2 years thanks to the pyrometer's solid construction.

Technical data

	IS 12-TS	IGA 12-TSP
Temperature ranges:	600 ... 2520°C 850 ... 2520°C	200 ... 1020°C 250 ... 1400°C
Spectral range:	0.94 μm (at temperature range 600 ... 2520°C) 0.65 μm (at temperature range 850 ... 2520°C)	1.57 μm
Accuracy: ($\epsilon=1$, $t_{90}=1$ s, $T_{amb.}=23^{\circ}\text{C}$)	Below 1500°C: 0.15% of measured value in °C + 1°C Above 1500°C: 0.25% of measured value in °C	
Repeatability : ($\epsilon=1$, $t_{90}=1$ s, $T_{amb.}=23^{\circ}\text{C}$)	1°C	
Resolution:	Up to 1000°C: 0.01°C on interface and display; Above 1000°C: 0.1°C on display, 0.01°C on digital interface < 0.025% of temperature range at the analog output	
Subrange:	Any range adjustable within the temperature range, minimum span 51°C	
Signal processing:	Fotoelectric current, digitized immediately	
Power supply:	24 V DC (15 ... 40 V DC) or 24 V AC (12 ... 30 V AC), 48 ... 62 Hz	
Power consumption:	Max. 14 W	
Analog output:	Linear 0 ... 20 mA or 4 ... 20 mA, DC, switchable; load max. 500 Ohm	
Test current output:	Fixed 10 mA	
Serial interface:	Switchable at the pyrometer: RS232 or RS485 (addressable), half duplex; baud rate 2.4 up to 115 kBd	
Display:	Built-in 5 digit LED display, additional function LED's	
Isolation:	Power supply, digital interface, analog output are galvanically isolated against each other and housing	
Parameters:	Adjustable at the instrument or via serial interface: emissivity ϵ , response time t_{90} , clear time for maximum value storage t_{CL} , subrange, 0 ... 20 or 4 ... 20 mA, switch points for limit switches, °C / °F, interface RS232 or RS485, address, baud rate, test current output Additionally adjustable (only via interface): keyboard lock, recalibration (with special software)	
Emissivity ϵ :	0.100 ... 1.000 in $\frac{1}{1000}$ steps	
Exposure time t_{90} :	< 1 ms (with dynamical adaptation at low signal levels), factory setting 1 s, adjustable up to 10 s	
Maximum value storage:	Built-in single or double storage. Clearing with adjusted time t_{clear} , extern, via interface or automatically with the next measuring object	
Limit switches:	2 relay outputs (change-over contacts), switch power max. 30 W (I_{max} : 1 A, U_{max} : 60 V DC)	
Sighting:	Built-in parallax free thru-lens view finder; additionally laser targeting light (temperature range 850 ... 2520°C only with view finder)	
Control panel:	4 keys, operate with tip of ball-point pen	
Protection class:	IP65 (DIN 40 050)	
Ambient temperature:	0 ... 60°C at the housing	
Storage temperature:	-20 ... 70°C	
Humidity:	No condensating conditions	
Weight:	2.2 kg	
CE-label:	According to EU directives about electromagnetic immunity	

Instrument's equipment



Optics

The pyrometers are fitted with one of the focusable optics listed here (can be chosen on ordering). This means that it is possible to set the pyrometer to the required measurement distance very quickly (the measured distances in the table are stated from the front edge of the lens).



Focusable optics IS 12-TSP				
	Measuring distance <i>a</i> [mm]	Spot size <i>M</i> ₉₀ [mm]	Measuring distance <i>a</i> [mm]	Spot size <i>M</i> ₉₀ [mm]
		600 ... 2520°C		850 ... 2520°C
Optics 1	a = 277 mm	0.7	a = 271 mm	0.7
	a = 400 mm	1.1	a = 345 mm	0.9
	a = 533 mm	1.5	a = 518 mm	1.3
Optics 2	a = 388 mm	1	a = 380 mm	0.8
	a = 700 mm	1.9	a = 544 mm	1.2
	a = 1170 mm	3.4	a = 1180 mm	2.6
Optics 3	a = 550 mm	1.4	a = 537 mm	1.1
	a = 3000 mm	8.5	a = 925 mm	2
	a = 9500 mm	28	a = 12000 mm	27
Aperture <i>D</i> *):		13.5 ... 17	Aperture <i>D</i> *): 13.5 ... 17	

Focusable optics IGA 12-TSP			
	Measuring distance <i>a</i> [mm]	Spot size <i>M</i> ₉₀ [mm]	
		200 ... 1020°C	250 ... 1400°C
Optics 1	a = 280 mm	2	1.2
	a = 400 mm	3	1.7
	a = 520 mm	4.2	2.4
Optics 2	a = 390 mm	2.7	1.6
	a = 700 mm	5.2	3
	a = 1000 mm	8.5	4.9
Optics 3	a = 540 mm	3.5	2
	a = 3000 mm	23	13.2
	a = 4000 mm	40	24
Aperture <i>D</i> *):		13.5 ... 17	

*) depending on the objective length

Reference numbers

Ref. number	Type	Spectral range	Temp. range	Sighting
3 840 710	IS 12-TSP	940 nm	600...2520°C	View finder, laser targeting light
3 840 760	IS 12-TSP	650 nm	850...2520°C	View finder
3 840 810	IGA 12-TSP	1570 nm	200...1020°C	View finder, laser targeting light
3 840 820	IGA 12-TSP	1570 nm	250...1400°C	View finder, laser targeting light

Ordering note: When ordering please select one optics (included in scope of delivery).

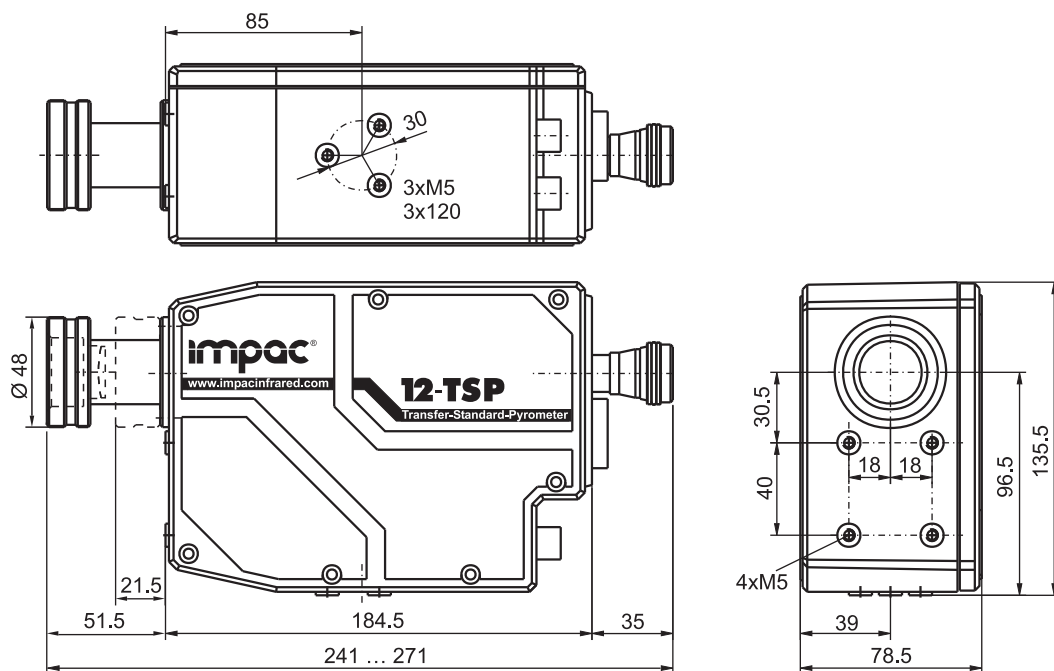
Scope of delivery: Instrument with one optics, case, power supply (service unit) NG 0S (100 ... 240 V AC, 50 ... 60 Hz ⇒ 24 V DC, 1 A) with 5 m connection cable to the pyrometer, PC analysing software *InfraWin*, work certificate, user manual.



Application scheme



Dimensions



All dimensions in mm

Accessories



Ball and socket mounting



Adjustment base



Scope of delivery

Accessories:

3 821 120 Additional cable for limit switches, 5 m

3 834 200 Ball and socket mounting

3 826 630 Adjustment base

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Specifications are subject to change without notice