Fully digital, extremely precice Transfer Standard Pyrometer for exact inspection of calibration sources

IS 12-TSP • IGA 12-TSP

CE

- Temperature ranges between 200 and 3000 °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 3000 °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 extend, 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 LumaSense. This is, however, only necessary every 2 years thanks to the pyrometer's solid construction.

Technical Data

Measurement Specifications		
Temperature Ranges:	**IS 12-TS** 530 ... 1900 °C 600 ... 2520 °C 850 ... 2520 °C 600 ... 3000 °C	**IGA 12-TSP** 200 ... 1020 °C 250 ... 1400 °C 300 ... 1700 °C
Sub Range:	Any range adjustable within the temperature range, minimum span 51 °C	
Spectral Range:	**IS 12-TS** 0.94 µm (at temperature ranges 530 to 1900 °C and 600 to 2520 °C / 3000 °C) 0.65 µm (at temperature range 850 to 2520 °C)	**IGA 12-TSP** 1.57 µm
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	
Emissivity ε:	0.100 to 1.000 in 1/1000 steps	
Measurement Uncertainty: (ε = 1, t_{90} = 1 s, $T_{amb.}$ = 23 °C)	Below 1500 °C: 0.15% of measured value in °C + 1 °C Above 1500 °C: 0.25% of measured value in °C Above 2700 °C: 0.35% of measured value in °C	
Repeatability: (ε = 1, t_{90} = 1 s, $T_{amb.}$ = 23 °C)	1 °C	
Interface		
Display:	Built-in 5 digit LED display, additional function LED's	
Control Panel:	4 keys, operate with tip of ball-point pen	
Sighting: 	Built-in parallax free thru-lens view finder; additionally laser targeting light (max. power level < 1 mW, λ = 630 - 680 nm, CDRH class II) (at IS 12-TSP with temperature range 850 - 2520 °C only with view finder)	
Parameters:	Adjustable at the instrument or via serial interface: Emissivity ε, exposure time t_{90}, clear time for maximum value storage t_{Clear}, temperature sub range, analog output 0 to 20 or 4 - 20 mA, switch points for limit switches, temperature display in °C / °F, interface RS232 or RS485, address, baud rate, test current output Additionally adjustable (only via interface): keyboard lock, recalibration (with special software)	

Note: The determination of the technical data of this pyrometer is carried out in accordance with VDI/VDE IEC TS 62942-2, the calibration / adjustment in accordance with VDI/VDE 3511, Part 4.4.
See http://info.lumasenseinc.com/calibration for more information.

Communication	
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
Limit Switches:	2 relay outputs (change-over contacts), switch power max. 30 W (Imax: 1 A, Umax: 60 V DC)
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
Electrical	
Power Supply:	24 V DC (15 to 40 V DC), or 24 V AC (12 to 30 V AC), 48-62 Hz
Power Consumption:	Max. 14 W
Isolation:	Power supply, digital interface, analog output are galvanically isolated against each other and housing
Environmental Specifications	
Protection Class:	IP65 (DIN 40 050)
Ambient Temperature:	0 - 60 °C at the housing
Storage Temperature:	-20 to 70 °C
Relative Humidity:	Non condensing conditions
Weight:	2.2 kg
CE Label:	According to EU directives about electromagnetic immunity

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 Spot size M_{90} [mm]	Focusable optics IGA 12-TSP Spot size M_{90} [mm]			
	Measuring distance a [mm]	All temperature ranges	200 to 1020 °C	250 to 1400 °C	300 to 1700 °C	Objective length [mm]
Optics 1	a = 275 mm	0.7	2	1.1	0.9	30
	a = 400 mm	1.1	3	1.6	1.3	9
	a = 520 mm	1.5	4.2	2.2	1.8	0
Optics 2	a = 385 mm	1	2.7	1.5	1.2	30
	a = 700 mm	1.9	5.2	3	2.4	8.5
	a = 1125 mm	3.4	8.5	4.9	3.9	0
Optics 3	a = 540 mm	1.4	3.5	2	1.6	30
	a = 3000 mm	8.5	23	13	10	3
	a = 9000 mm	26	72	38	30	0
	Aperture D *):	13.5 - 17	13.5 - 17			

*) Depending on the objective length

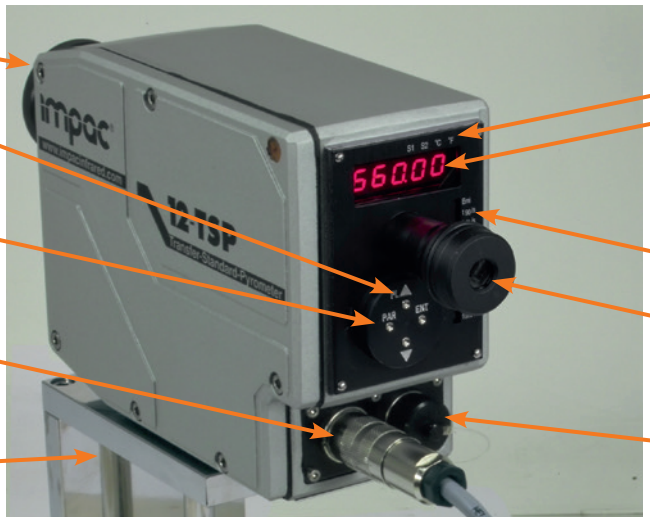
Reference Numbers

Reference Numbers	Type	Spectral range	Temperture range	Sighting
3 840 700	IS 12-TSP	940 nm	530 to 1900 °C	View finder, laser targeting light
3 840 710	IS 12-TSP	940 nm	600 to 2520 °C	View finder, laser targeting light
3 840 720	IS 12-TSP	940 nm	600 to 3000 °C	View finder, laser targeting light
3 840 760	IS 12-TSP	650 nm	850 to 2520 °C	View finder
3 840 810	IGA 12-TSP	1570 nm	200 to 1020 °C	View finder, laser targeting light
3 840 820	IGA 12-TSP	1570 nm	250 to 1400 °C	View finder, laser targeting light
3 840 830	IGA 12-TSP	1570 nm	300 to 1700 °C	View finder, laser targeting light

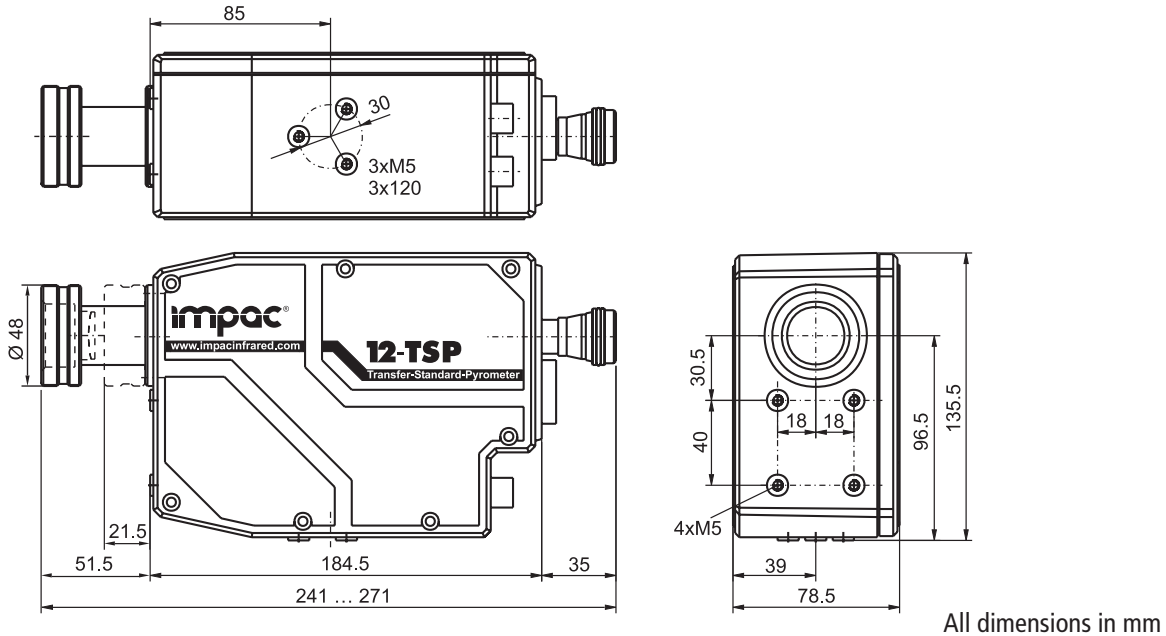
Ordering note: When ordering please select one optics (included in scope of delivery).

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 according to ITS 90 (IS 12-TSP, 600 - 3000 °C: work certificate up to 2500 °C), user manual.

Instrument's Equipment



Dimensions



All dimensions in mm

Accessories

Ball and socket mounting

Adjustment base

Cooling plate

Delivery
in plastic case

Accessories

3 820 340	Connection cable, 5 m length, angled connector
3 820 530	Connection cable, 10 m length, angled connector
3 820 540	Connection cable, 15 m length, angled connector
3 820 830	Connection cable, 20 m length, angled connector
3 820 840	Connection cable, 25 m length, angled connector
3 820 550	Connection cable, 30 m length, angled connector
3 821 120	Additional cable for limit switches, 5 m
3 834 200	Ball and socket mounting
3 826 630	Adjustment base
3 837 200	Cooling plate

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