

Stationary, digital pyrometer for non-contact temperature measurement in ranges between 250 and 3000 °C

## IS 6 Advanced • IGA 6 Advanced



- Widest temperature ranges for most flexible process adaptation
- Highest accuracy and repeatability in its class
- Fully digital core for sub-ranging and adopted analog output
- Response time of 120 µs for very fast and highly dynamic processes
- High-end optics with manual focus capability
- 4 digit LED display
- Robust, stainless steel sensor for harsh environments (IP65/NEMA4)



The pyrometers IS 6 Advanced and IGA 6 Advanced are digital, compact, and fast infrared measuring instruments for non-contact temperature measurement on metals, ceramics, or graphite.

For optimal match to the application, the instruments are equipped with a high-end optics with manual focus.

The fast response time of only 120 µs facilitates the measurement of fast and dynamic processes or short temperature peaks.

The integrated 4 digit LED display indicates the current measuring temperature or the currently set measuring distance.

For a precise alignment of the pyrometers to the measuring object, the instruments are optionally equipped with a laser targeting light or a view finder.

The pyrometers can be connected to a PC through an RS485 to USB connection, enabling you to make parameter adjustments using the InfraWin software. The software can be used for temperature indication, data logging, and further analyzing of complete temperature processes.

### Typical applications:


- Steel Making
- Induction processes (e.g. Hardening, Welding, Brazing, Soldering etc.)
- Heating and cooling processes
- Melting
- Casting
- Annealing
- Rolling
- Forging
- Sintering

# Technical Data

## Measurement Specifications

Temperature Ranges:	250 to 2500 °C (MB 25), IGA 250 to 1800 °C (MB 18), IGA 600 to 3000 °C (MB 30), IS 600 to 1800 °C (MB 18), IS
Sub Range:	Any range adjustable within the temperature range, minimum span 50 °C
Spectral Ranges:	IS: 0.7 to 1.1 µm IGA: 1.45 to 1.8 µm
Resolution:	0.1 °C or 0.2 °F at interface; < 0.0015% of adjusted temperature range at analog output, 16 bit; 1 °C or 1 °F on display
Emissivity $\epsilon$ :	0.050 to 1.000 in steps of 1/1000
Transmittance $\tau$ :	0.050 to 1.000 in steps of 1/1000
Response Time $t_{90}$ :	120 µs (for IGA 6 Advanced, it is recommended for measuring temperatures below 300 °C to set a response time of 1 ms (min); adjustable to min; 1 ms; 3 ms; 5 ms; 10 ms; 50 ms; 250 ms; 1 s; 3 s; 10 s
Measurement Uncertainty:	< 1500 °C: 0.3% of reading in °C + 2 °C ( $\epsilon = 1$ , $t_{90} = 1$ s, $T_{Amb.} = 25$ °C) > 1500 °C: 0.6% of reading in °C
Repeatability:	0.15% of reading in °C + 1 °C ( $\epsilon = 1$ , $t_{90} = 1$ s, $T_{Amb.} = 25$ °C)

## Optical Specifications

Sighting:	 Built-in laser aiming light (max. power level < 1 mW, $\lambda = 630$ to 680 nm, CDRH class II) or through-lens sighting
Optics:	Manually focusable from rear cover measuring distance $a = 210$ to 5000 mm
Distance Ratio:	approx. 350 : 1

## Environmental Specifications

Protection Class:	IP 65 IEC 60529 (value in mated condition)
Operating Position:	any
Ambient Temperature:	0 to 70 °C at housing
Storage Temperature	-20 to 80 °C
Relative Humidity:	Non condensating conditions
Weight:	0.6 kg
Housing:	Stainless steel
CE Label:	According to EU directives about electromagnetic immunity

**Note:** MB is a shortcut used for temperature range (in German: Messbereich)

## Interface

Connection:	12-pin connector
Display (in rear cover):	LED, 4 digit matrix, 5 mm high temperature signal or measuring distance
Parameters:	Adjustable via interface: emissivity, sub range, settings for maximum value storage, address, baud rate, transmittance, response time $t_{90}$ , 0 to 20 mA or 4 to 20 mA analog output range, °C / °F  Readable via interface: measured value, internal temperature of the unit, measuring distance

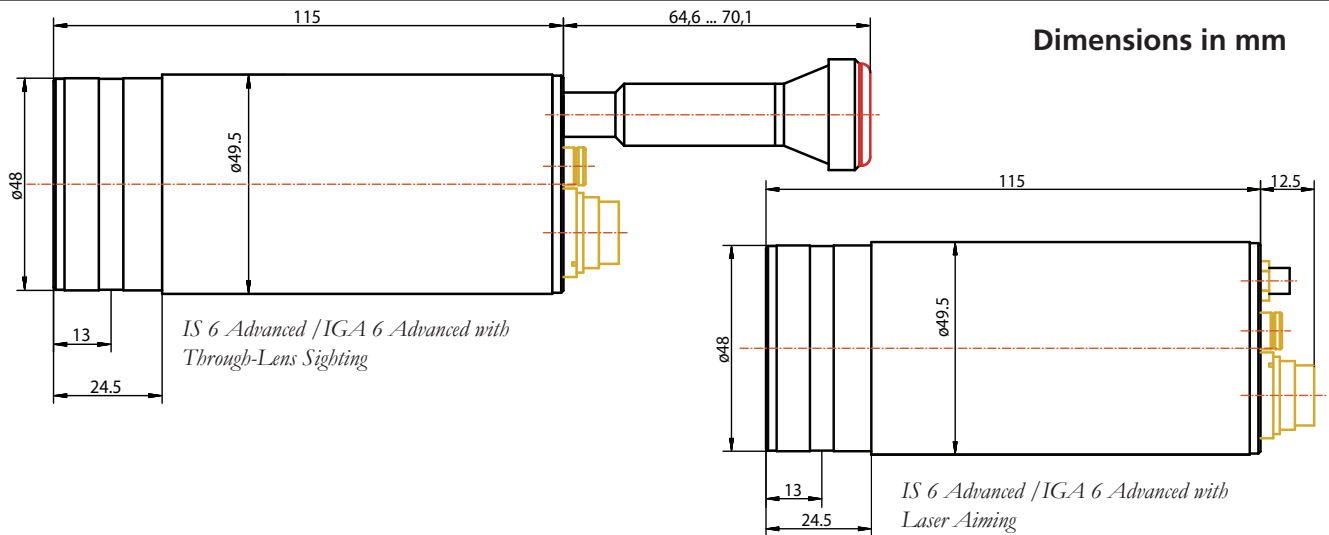
## Communication

Analog Output:	Adjustable 0 to 20 mA or 4 to 20 mA, linear (via digital interface)
Digital Interface:	RS485 addressable (half-duplex) Baud rate: 1200 Bd to 115.2 kBd (on request RS232 (not addressable))
Maximum Value Storage:	Built-in single or double storage. Clearing with adjusted time $t_{clear}$ (off; 10 ms; 50 ms; 250 ms; 1 s; 5 s; 25 s), via interface, automatically with the next measuring object, hold-function

## Electrical

Power Supply:	24 V DC $\pm$ 25%, ripple must be less than 50 mV
Power Consumption:	Max. 3 W (incl. laser)
Load (analog output):	0 to 500 $\Omega$
Isolation:	Power supply, analog output and digital interface are galvanically isolated from each other

## Product Schematic



## Sighting



IS 6 Advanced / IGA 6 Advanced with Through-Lens Sighting

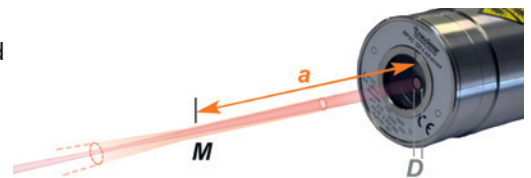


IS 6 Advanced / IGA 6 Advanced with Laser Aiming

## Optics

The optics can be manually adjusted at all distances between 210 mm and 5000 mm.

The table below shows examples of distances and the corresponding spot diameters:



IS 6 Advanced / IGA 6 Advanced	
distance a [mm]	Spot diameter M [mm]
210	0.6
300	0.9
500	1.5
800	2.3
1300	3.7
2000	5.8
5000	15

Effective aperture D for all temperature ranges:  
13 mm (focused to longest distance) to 15 mm (focused to shortest distance)

## Reference Numbers

Type	Temperature Range	With Through-Lens Sighting	With Laser Aiming
IGA 6	250 to 2500 °C (MB 25)	3 914 020	3 914 010
	250 to 1800 °C (MB 18)	3 914 060	3 914 050
IS 6	600 to 3000 °C (MB 30)	3 914 520	3 914 510
	600 to 1800 °C (MB 18)	3 914 560	3 914 550



**Scope of delivery:** Pyrometer with PC software InfraWin for adjustment and evaluation, Works Certificate, and Manual

**Ordering note:** A connection cable is not included in scope of delivery and must be ordered separately

## Accessories

3 820 320	Special connection cable with plug and additional pilot light switch, 5 m	3 890 640	DA 4000-N: LED digital display to be built into the switchboard
3 820 330	Connection cable, 5 m, straight connector*	3 890 650	DA 4000: like the DA 4000-N, but additionally with 2 limit switches
3 820 500	Connection cable, 10 m, straight connector*	3 890 570	DA 6000-N digital display, to allow adjustment of Pyrometer through RS485 interface
3 820 510	Connection cable, 15 m, straight connector*	3 890 530	DA 6000: like the DA 6000-N, but with analog input and 2 limit switches for the RS485 interface.
3 820 810	Connection cable, 20 m, straight connector*	3 890 630	LD24-UTP; large digital indicator, 57 mm height of digits
3 820 820	Connection cable, 25 m, straight connector*	3 843 250	ROT 5 scanning mirror attachment up to 70°
3 820 520	Connection cable, 30 m, straight connector*	3 843 490	SCA 5, External Scanner Series 5 & 6 with fused silica window, 24 V AC/DC
3 820 340	Connection cable, 5 m, 90° connector*	3 834 210	Adjustable mounting support (Series 5 & 6)
3 820 530	Connection cable, 10 m, 90° connector*	3 846 260	Instrument's support (Series 5 & 6)
3 820 540	Connection cable, 15 m, 90° connector*	3 846 290	Instrument's support (Series 5 & 6) with fused silica window
3 820 830	Connection cable, 20 m, 90° connector*	3 835 160	Air purge unit, aluminium
3 820 840	Connection cable, 25 m, 90° connector*	3 835 590	90° mirror for Series 5, quartz glass window
3 820 550	Connection cable, 30 m, 90° connector*	3 837 230	Water cooling jacket (heavy duty) with integrated air purge unit
3 852 290	Power supply NG DC for DIN rail mounting; 100 to 240 V AC ⇒ 24 V DC, 1 A	3 846 590	Vacuum flange KF16 with quartz glass window
3 852 550	Power supply NG 2D for DIN rail mounting; 85 to 265 V AC ⇒ 24 V DC, 600 mA with 2 settable limit switches		
3 826 720	USB to RS485 adapter cable, 1.8 m long		
3 826 510	PI 6000: PID programmable controller		

\*All connection cables include a short adapter cable with a 9-pin SUB-D connector. This connector may be used in combination with the RS485 to USB adapter.

## Accessory Overview

### Electrical Accessories



Industrial Power Supplies



Digital Display



Fast Digital Controllers

### Mechanical Accessories



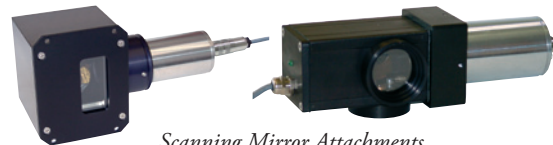
Mounting Brackets



Air Purges



Air/Water Cooled enclosures



Scanning Mirror Attachments

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## Awakening Your 6<sup>th</sup> Sense