

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 ϵ : | 0.050 to 1.000 in steps of 1/1000 |
| Transmittance τ : | 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 |

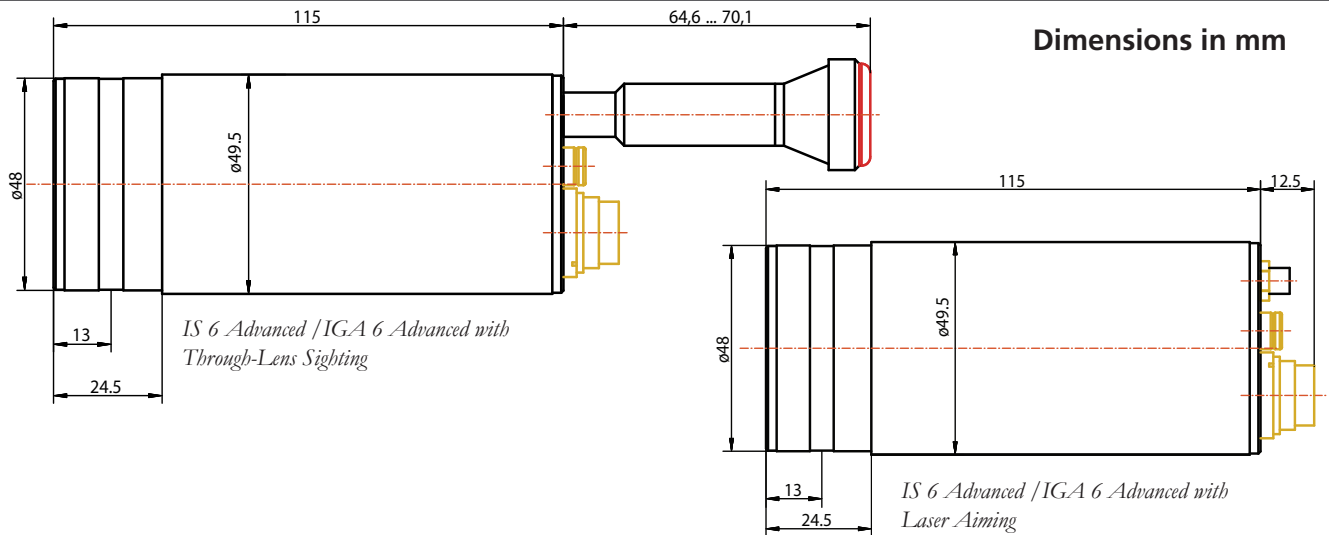
Communication

| | |
|------------------------|---|
| 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 Ω |
| 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

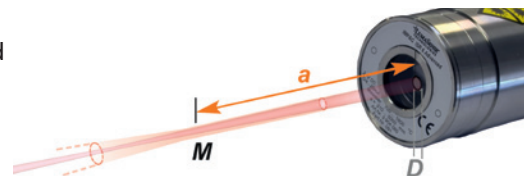


IS 6 Advanced / IGA 6 Advanced with Laser Aiming

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



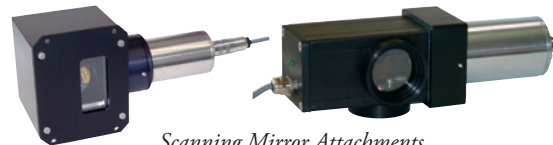
Mounting Brackets



Air Purges



Air/Water Cooled enclosures



Scanning Mirror Attachments

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