LUMASENSE TECHNOLOGIES

IMPAC Infrared Temperature Sensors

Stationary, digital pyrometer for non-contact temperature measurement in ranges between 50 and 1800 °C

IGA 6/23 Advanced

CE

- Wide temperature ranges for flexible process adaptation
- Highest accuracy and repeatability in its class
- Fully digital core for sub-ranging and adopted analog output
- Reponse time of 0.5 ms 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 IGA 6/23 Advanced is a digital, compact, and fast infrared measuring instruments for non-contact temperature measurement on metals, ceramics, or graphite.

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

The fast response time of only 0.5 ms 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:

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

Technical Data

Measurement Specifications

Temperature Ranges:	50 to 1000 °C (MB 10) 75 to 1300 °C (MB 13) 150 to 1800 °C (MB 18)
Sub Range:	Any range adjustable within the temperature range, minimum span 50 °C
Spectral Range:	2 to 2.6 µm (main wavelength 2.3 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
Exposure Time t_{90}:	0.5 ms; (with dynamic adaption at low signal levels) adjustable to: 1 ms; 3 ms; 5 ms; 10 ms; 50 ms; 250 ms; 1 s; 3 s; 10 s
Measurement Uncertainty: (ε = 1, t_{90} = 1 s, $T_{Amb.}$ = 25 °C)	< 1500 °C: 0.3% of reading in °C + 2 °C > 1500 °C: 0.6% of reading in °C
Repeatability: (ε = 1, t_{90} = 1 s, $T_{Amb.}$ = 25 °C)	0.15% of reading in °C + 1 °C

Optical Specifications

Sighting: 	Built-in laser aiming light (max. power level < 1 mW, λ = 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:	MB 10: approx. 50:1 MB 13: approx. 100:1 MB 18: 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: **M**ess**b**ereich)

Note: The calibration / adjustment of this pyrometer is carried out in accordance with VDI/VDE 3511, Part 4.4.

See http://info.lumasenseinc.com/calibration for more information.

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, ambient temperature compensation, 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

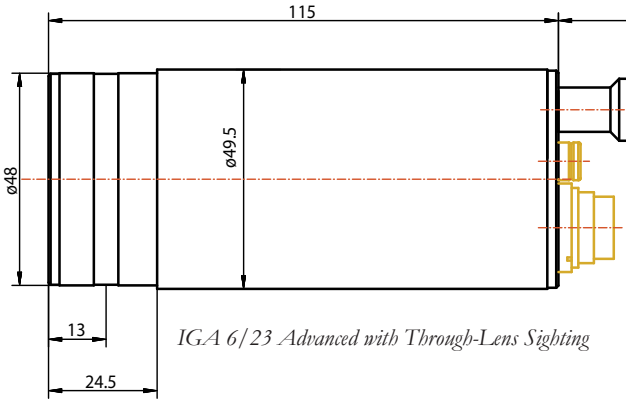
Analog Output:	Adjustable 0 to 20 mA or 4 to 20 mA, linear (via digital interface)
Digital Interface:	RS485 addressable (half-duplex) Baud rate: 1200 Bd to 115.2 kBd (on request RS232 (not addressable))
Maximum Value Storage:	Built-in single or double storage. Clearing with adjusted time t_{clear} (off;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

Electrical

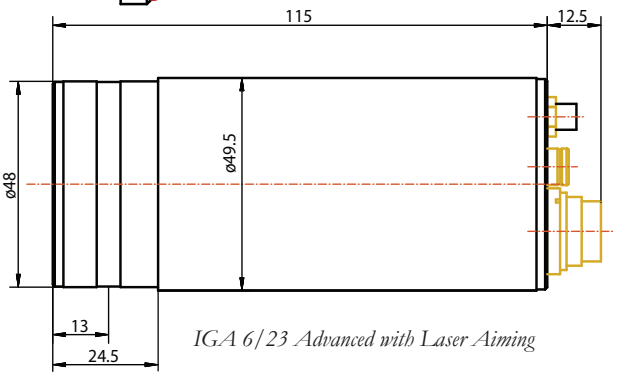
Power Supply:	24 V DC ± 25%, ripple must be less than 50 mV
Power Consumption:	Max. 3 W (incl. laser)
Load (analog output):	0 to 500 Ω
Isolation:	Power supply, analog output, and digital interface are galvanically isolated from each other

Product Schematic

Dimensions in mm



IGA 6/23 Advanced with Through-Lens Sighting



IGA 6/23 Advanced with Laser Aiming

Sighting

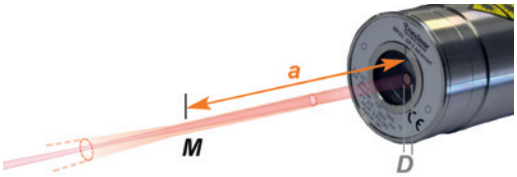
IGA 6/23 Advanced with Through-Lens Sighting

IGA 6/23 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:



IGA 6/23 Advanced			
distance *a* [mm]	Spot diameter M [mm] MB 10	Spot diameter M [mm] MB 13	Spot diameter M [mm] MB 18
210	4.2	2.1	0.6
300	6	3	0.9
500	10	5	1.5
800	16	8	2.3
1300	26	13	3.7
2000	40	20	5.8
5000	100	50	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 6/23 Advanced	50 to 1000 °C (MB 10)	3 914 220	3 914 210
	75 to 1300 °C (MB 13)	3 914 260	3 914 250
	150 to 1800 °C (MB 18)	3 914 300	3 914 290

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 key for pilot light, 5 m
3 820 330	Connection cable, 5 m, straight connector*
3 820 500	Connection cable, 10 m, straight connector*
3 820 510	Connection cable, 15 m, straight connector*
3 820 810	Connection cable, 20 m, straight connector*
3 820 820	Connection cable, 25 m, straight connector*
3 820 520	Connection cable, 30 m, straight connector*
3 820 340	Connection cable, 5 m, 90° connector*
3 820 530	Connection cable, 10 m, 90° connector*
3 820 540	Connection cable, 15 m, 90° connector*
3 820 830	Connection cable, 20 m, 90° connector*
3 820 840	Connection cable, 25 m, 90° connector*
3 820 550	Connection cable, 30 m, 90° connector*
3 852 290	Power supply NG DC for DIN rail mounting; 100 to 240 V AC ⇒ 24 V DC, 1 A
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
3 890 640	DA 4000-N: LED digital display to be built into the switchboard, 230 V AC
3 891 210	DA 4000-N: LED digital display to be built into the switchboard, 115 V AC
3 890 650	DA 4000: like the DA 4000-N, but additionally with 2 limit switches, 230 V AC
3 891 220	DA 4000: like the DA 4000-N, but additionally with 2 limit switches, 115 V AC
3 890 570	DA 6000-N digital display, to allow adjustment of Pyrometer through RS485 interface
3 890 530	DA 6000: like the DA 6000-N, but with analog input and 2 limit switches for the RS485 interface.
3 890 630	LD24-UTP; large digital indicator, 57 mm height of digits
3 843 250	ROT 5 scanning mirror attachment up to 70°
3 843 490	SCA 5, External Scanner Series 5 & 6 with fused silica window, 24 V AC/DC
3 834 210	Adjustable mounting support (Series 5 & 6)
3 846 260	Instrument's support (Series 5 & 6)
3 846 290	Instrument's support (Series 5 & 6) with fused silica window
3 835 160	Air purge unit, aluminium
3 835 590	90° mirror for Series 5, quartz glass window
3 837 230	Water cooling jacket (heavy duty) with integrated air purge unit
3 846 590	Vacuum flange KF16 with quartz glass window

*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

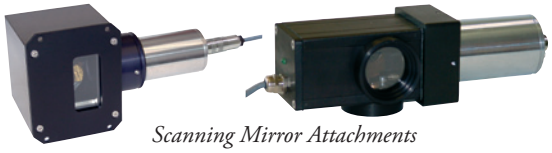
Fast Digital Controllers

Mechanical Accessories

Mounting Brackets

Air Purges

Air/Water Cooled enclosures



Scanning Mirror Attachments

LumaSense Technologies — Awakening Your 6th Sense

Americas and Australia
Sales & Service
Santa Clara, CA
Ph: +1 800 631 0176
Fax: +1 408 727 1677

Europe, Middle East, Africa
Sales & Service
Frankfurt, Germany
Ph: +49 69 97373 0
Fax: +49 69 97373 167

India
Sales & Support Center
Mumbai, India
Ph: +91 22 67419203
Fax: +91 22 67419201

China
Sales & Support Center
Shanghai, China
Ph: +86 133 1182 7766
Fax: +86 21 5877 2383

info@lumasenseinc.com

www.lumasenseinc.com

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