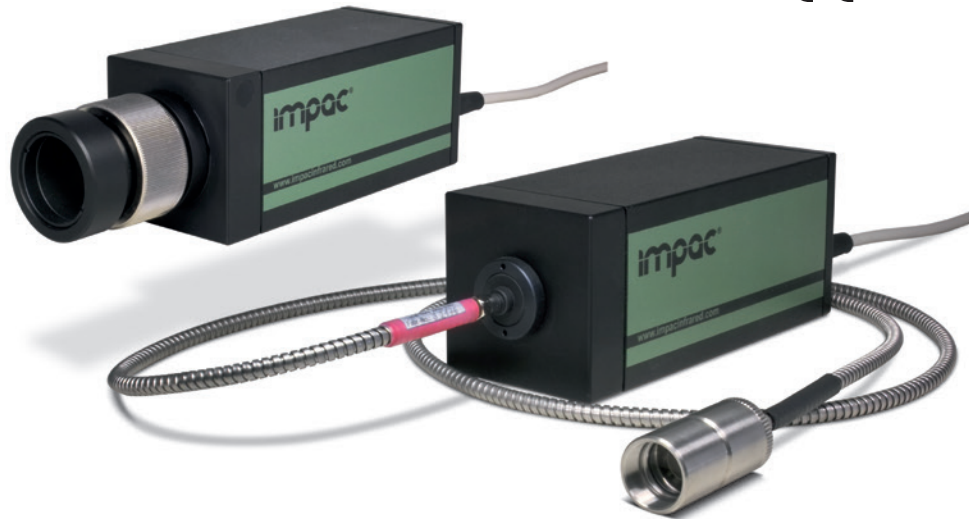


High-speed pyrometer for non-contact temperature measurement of metallic surfaces, graphite, or ceramics between 160 °C and 2500 °C

## IGA 740 • IGA 740-LO

CE

- Extremely fast response time of only 6  $\mu$ s for measurements of fast moving objects or fast temperature changes
- High quality optics for detection of small measuring objects
- Built-in LED targeting light for easy alignment to the measuring object; IGA 740 also available with view finder
- Laser protection filter (optional) to shield the laser wavelength for laser applications



The series 740 pyrometers are stationary instruments for non-contact temperature measurement of metallic surfaces, graphite, ceramics, etc. With the extremely fast response time of only 6  $\mu$ s, they are suitable for use in high speed applications.

Two types are available, the compact instrument IGA 740 with integrated optics and the IGA 740-LO with fiber and optical head.

The IGA 740 is available with either focusable or macro optics. With the focusable optics, a measuring distance between 450 and 3000 mm can be adjusted to achieve the smallest spot sizes. The macro optics provides, at a fixed distance, a spot size of only 0.7 mm or 1 mm, depending on the temperature range.

The IGA 740-LO uses an optical fiber and an optical head for transmitting the radiation. The fiber and optical head are unaffected by electromagnetic interferences (e.g. induction) and can be used in very high ambient temperatures up to 260 °C without cooling.

For easy alignment to the measuring object, the instruments are equipped with an LED targeting light that shows the size of the spot. Alternatively, the IGA 740 can be delivered with a view finder.

### Typical applications:

- Laser applications (laser cutting, laser welding, soldering, etc.)
- Material development / -testing
- Combustion engines
- Airbag testing
- Wafer control
- Turbines
- Plasma measurements
- Explosion processes

## Technical Data

### Measurement Specifications

Temperature Ranges:	IGA 740	160...1000 °C (MB 10) 300 ... 1400 °C (MB 14) 300 ... 2300 °C (MB 23) 500 ... 2500 °C (MB 25)
	IGA 740-LO	200...1000 °C (MB 10) 300 ... 1400 °C (MB 14) 300 ... 2300 °C (MB 23) 500 ... 2500 °C (MB 25)
Spectral Ranges:		1.58 ... 1.8 µm (MB 14 + 25); 1.58 ... 2.2 µm (MB 10); 2.0 ... 2.2 µm (MB 23)
Detector:		Ge photo diode (MB 14 + 25); InGaAs photo diode (MB 10 + 23)
Sighting:		IGA 740: LED targeting light or view finder IGA 740-LO: LED targeting light
Emissivity $\epsilon$ :		0.1 ... 1; continuously adjustable
Response time $t_{95}$ :		9 µs via current output, 6 µs via voltage output
Measurement Uncertainty:		0.75% of reading ( $\epsilon = 1$ , $t_{95} = 1$ s, $T_{amb.} = 25$ °C)
Repeatability:		< 0.3% of reading ( $\epsilon = 1$ , $t_{95} = 1$ s, $T_{amb.} = 25$ °C)

**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

Protection Class:	IP54 (according to DIN 40 050)
Ambient Temperature:	IGA 740: 0 to 40 °C IGA 740-LO: 0 to 40 °C (instrument), max. 260 °C (fiber / optical head)
Storage Temperature:	-20 to 70 °C
Relative Humidity:	Non condensating conditions
Dimensions:	IGA 740 (L x W x H): 235 mm x 70 mm x 70 mm IGA 740-LO (L x W x H): 200 mm x 70 mm x 70 mm
Weight:	IGA 740: ~1.2 kg IGA 740-LO: instrument ~0.9 kg; fiber ~250 g; optical head ~150 g
CE Label:	According to EU directives about electromagnetical immunity

### Electrical & Communications

Output:	0 or 4 - 20 mA (specify when ordering), temperature linear, max. load 500 $\Omega$ and 0 - 10 V linear voltage output (via BNC connector)
Power Supply:	24 V DC or AC; max. current consumption 0.2 A

## Measuring Stations

The IGA 740 and IGA 740-LO pyrometers are also available as temperature measuring stations.

In addition to the pyrometer, these packages include a Bench unit, Digital Display, USB Interface, Power Supply, Connecting Cable, Software, 1.5 m optical fiber (only for IMGA 740-LO).

47402-01990	IMGA 740, 160 ... 1000 °C, USB-interface
47401-01990	IMGA 740, 300 ... 1400 °C, USB-interface
47402-02990	IMGA 740, 300 ... 2300 °C, USB-interface
47401-02990	IMGA 740, 500 ... 2500 °C, USB-interface
47400-09990	IMGA 740, 350 ... 3500 °C, USB-interface

47402-11990	IMGA 740-LO, 200 ... 1000 °C, optical fiber 1.5 m, USB-interface
47401-11990	IMGA 740-LO, 300 ... 1400 °C, optical fiber 1.5 m, USB-interface
47402-12990	IMGA 740-LO, 300 ... 2300 °C, optical fiber 1.5 m, USB-interface
47401-12990	IMGA 740-LO, 500 ... 2500 °C, optical fiber 1.5 m, USB-interface
47400-19990	IMGA 740-LO, 400 ... 3000 °C, optical fiber 1.5 m, USB-interface
47400-18990	IMGA 740-LO, 350 ... 3500 °C, optical fiber 1.5 m, USB-interface

# Optics

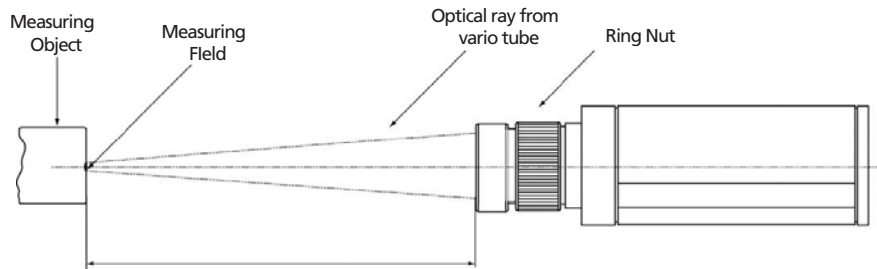
Depending on the application, the instrument is available with different optics. The selection mainly depends on the required spot size (size of the measuring object) and the measuring distance. For the Focusable Optics, as well as the Fiber Optical Heads, the measuring distances are measured

from the leading edge of the optics. For the Macro Optics, they are measured from the pyrometer's front edge.

Optical fiber and optics are not included in the scope of delivery of the IGA 740-LO and must be ordered separately.

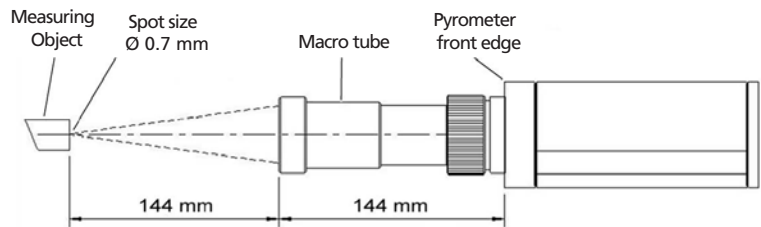
## IGA 740 - Focusable Optics

Measuring distance [mm]	450	600	800	1000	1200	1400	1600	1800	2000	2500	3000
Spot size Ø [mm]	2.5	4.0	6.0	8.0	10.5	11.5	13.0	14.0	15.0	20.0	28.0

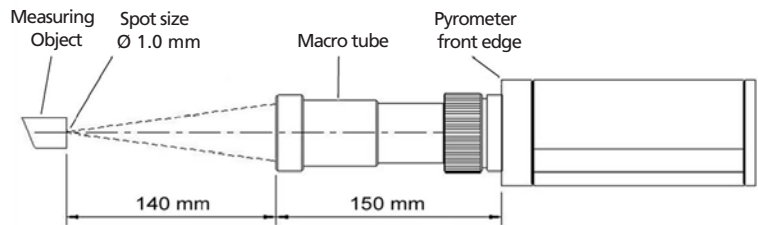


## IGA 740 - Macro Optics

Range	MB 14 + 25	MB 10 + 23
Measuring distance [mm]	288	290
Spot size Ø [mm]	0.7	1



Macro Optics MB 14 + 25



Macro Optics MB 10 + 23



## IGA 740-LO - Fiber Optical Heads

	Type	Measuring distance [mm]	Spot size Ø [mm]	Optical Fiber	Temp. range	Aperture
Standard	LVO 25	80 ... 300	1.6 ... 4.3	blue	all	13
	LVO 35	250 ... 1000	3.5 ... 11	blue	all	21
Special	LVO 25-S1	115 ... 300	0.4 ... 1.5	red	>400 °C	10
	LVO 25-S2	200 ... 240	0.85 .. 1.1	red	>350 °C	12
	LVO 25-S3	78	0.3	red	>400 °C	10
	LVO 25-S4	60	0.5	red	all	11
	LVO 25-S5	70 .. 200	1 ... 2.6	blue	all	12
	LVO 25-S6	250 ... 500	3.5 ... 6.3	blue	all	16
	LVO 25-S9	74 ... 284	1 .. 3.8	red	all	10
	LVA 25	110 ... 800	0.7 ... 3	red	all	13

## Reference Numbers

IGA 740					
	Temp. Range	Focusable optics		Macro optics	
		0 ... 20 mA	4 ... 20 mA	0 ... 20 mA	4 ... 20 mA
LED Targeting Light	160 ... 1000 °C	47402-01010	47402-01020	47402-01110	47402-01120
	300 ... 1400 °C	47401-01010	47401-01020	47401-01110	47401-01120
	300 ... 2300 °C	47402-02010	47402-02020	47402-02110	47402-02120
	500 ... 2500 °C	47401-02010	47401-02020	47401-02110	47401-02120
View finder	160 ... 1000 °C	47402-01210	47402-01220	47402-01310	47402-01320
	300 ... 1400 °C	47401-01210	47401-01220	47401-01310	47401-01320
	300 ... 2300 °C	47402-02210	47402-02220	47402-02310	47402-02320
	500 ... 2500 °C	47401-02210	47401-02220	47401-02310	47401-02320

IGA 740-LO			
	Temp. Range	0 ... 20 mA	4 ... 20 mA
LED Targeting Light	200 ... 1000 °C	47402-11200	47402-11400
	300 ... 1400 °C	47401-11200	47401-11400
	300 ... 2300 °C	47402-12200	47402-12400
	500 ... 2500 °C	47401-12200	47401-12400

**Scope of delivery:** Pyrometer with retaining pin, inspection sheet, and operation manual

**Ordering note:** A connection cable (as well as optical fiber and optical head for IGA 740-LO) is not included in scope of delivery and must be ordered separately

## Accessories

30007-50040	Connection cable, 4 m, 5-pin straight plug	30002-10020	Ball and socket mounting for Series 740, clamp mounting with retaining pin M12
30007-50075	Connection cable, 7.5 m, 5-pin straight plug	30006-32150	Mounting support for LVO 25, with retaining pin Ø 10 mm
30007-50100	Connection cable, 10 m, 5-pin straight plug	30006-32160	Mounting support for LVO 35, with retaining pin Ø 10 mm
30007-50150	Connection cable, 15 m, 5-pin straight plug	30006-32120	Ball and socket mounting for LVO 25
30007-50200	Connection cable, 20 m, 5-pin straight plug	30006-32130	Ball and socket mounting for LVO 35
30007-91040	BNC cable for 0 ... 10 V output, 4 m	30006-32020	90° mirror for LVO 25
30007-91075	BNC cable for 0 ... 10 V output, 7.5 m	30006-32220	Air purge unit for LVO 25
30007-91100	BNC cable for 0 ... 10 V output, 10 m	30006-32230	Air purge unit for LVO 35
30007-91150	BNC cable for 0 ... 10 V output, 15 m	30006-33122	Laser protection filter for integration in LVO 25 & LVA 25, 920...1100 nm
30007-91200	BNC cable for 0 ... 10 V output, 20 m	30006-33132	Laser protection filter for integration in LVO 35, 920...1100 nm
3 852 190	Power supply NG AC; 230 V AC ⇒ 24 V DC, 750 mA		
3 852 540	Power supply NG 0D, 85...265 V AC ⇒ 24 V DC, 600 mA		
3 852 550	Power supply NG 2D, 85...265 V AC ⇒ 24 V DC, 600 mA, with 2 limit switches		
30002-30020	Scanner SC1 with screwed flange		
30002-10010	Ball and socket mounting for Series 740, screw mounting with retaining pin M12		

## LumaSense Technologies

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

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