IMPAC IS 310 AND IGA 310

Small, stationary infrared thermometers for non-contact temperature measurement of metallic surfaces, graphite, or ceramics between 300 and 2500°C (572 and 4532°F).

The Impac® IS 310 and IGA 310 are stationary pyrometers for non-contact temperature measurement of metallic surfaces, graphite, and ceramics, etc. The very small housing dimensions enable the integration of the pyrometer in compact production machines, the two-wire technique ensures very easy electrical connection, and the solid and robust design of the instrument guarantees reliability, even in rough industrial environments. For optimal match to the application, three different focusable optics with small spot sizes are available.

PRODUCT HIGHLIGHTS

- Very small housing dimensions for easy installation, suitable for use in confined spaces
- Two-wire technique for current supply and temperature measurement at the same time
- Internal digital signal processing for high accuracy
- High quality optics for detection of small measuring objects
- Built-in LED targeting light for easy alignment to the measuring object

TYPICAL APPLICATIONS

- Preheating
- Annealing
- Tempering
- Welding
- Forging
- Hardening
- Sintering
- Melting
- Soldering
- Brazing
- Rolling

AT A GLANCE

Temperature Ranges

IS 310
650 to 1800°C (MB 18)
800 to 2300°C (MB 23)
1150 to 2500°C (MB 25)

IGA 310
300 to 1300°C (MB 13L)
500 to 1500°C (MB 15)

Spectral Range

IS 310
0.8 to 1.1 µm

IGA 310
1.45 to 1.8 µm

Measurement Uncertainty

< 1500°C: 0.8% oR + 1°C
> 1500°C: 1% oR + 1°C

Repeatability

0.3% oR

Optics

3 fixed optics:
a = 250 mm, 600 mm, and 1400 mm

TECHNICAL DATA

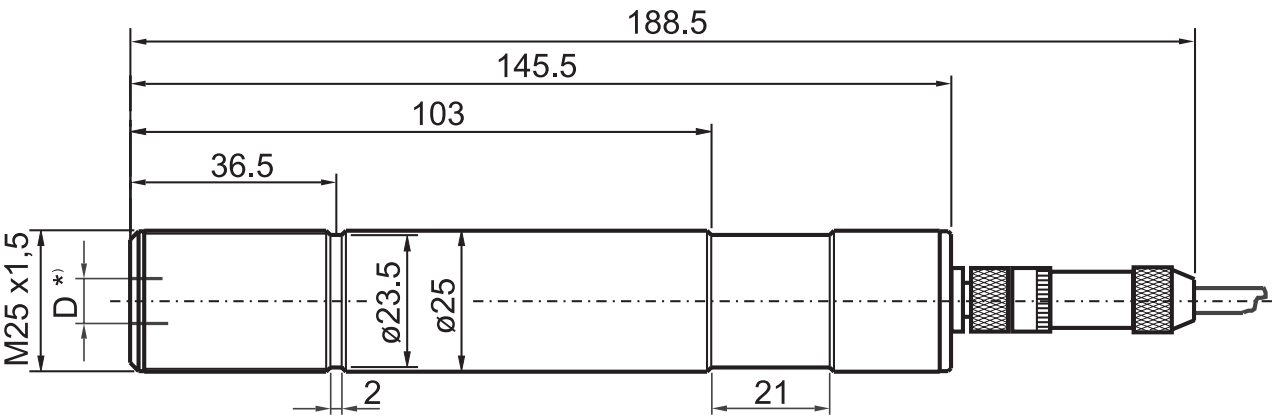
Measurement, Communication, and Inteface Specifications		
Temperature Range	IS 310	650 to 1800°C (1202 to 3272°F) (MB 18)
		800 to 2300°C (1472 to 4172°F) (MB 23)
		1150 to 2500°C (2102 to 4532°F) (MB 25)
	IGA 310	300 to 1300°C (572 to 2372°F) (MB 13L)
		500 to 1500°C (932 to 2732°F) (MB 15)
Spectral Range	IS 310: 0.8 to 1.1 µm	
	IGA 310: 1.45 to 1.8 µm	
Detector	IS 310: Si photo diode	
	IGA 310: InGaAs photo diode	
Measurement Uncertainty ($\varepsilon = 1, T_{amb.} = 23°C$)	Up to 1500°C: 0.8% of measured value + 1°C	
	Above 1500°C: 1% of measured value + 1°C	
Repeatability ($\varepsilon = 1, T_{amb.} = 23°C$)	0.3% of measured value	
Emissivity ε	0.2 to 1; adjustable	
Sighting	LED targeting light	
Analog Output	4 to 20 mA, load independent current, linear temperature output	
Response Time t_{90}	10 ms	

Electrical Specifications	
Power Supply	24 VDC ±25%, stabilized, ripple 500 mV
	5 to 30 VDC for LED targeting light (I ≤ 30 mA)
Max Load	500 Ω @ 24 V power supply
	Max 200 Ω at 18 V
	Max 800 Ω at 30 V
Connection Cable	2 to 30 m length, connection via connector

Environmental Specifications	
Protection Class	IP 65 (DIN 40 050)
Ambient Temperature	0 to 70°C (32 to 158°F)
Storage Temperature	-20 to 70°C (-4 to 158°F)
Housing	Stainless steel
Weight	275 g (~0.606 lb)
CE Label	According to EU directives about electromagnetical immunity

1 MB is a shortcut used for temperature range (in German:Messbereich).
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.

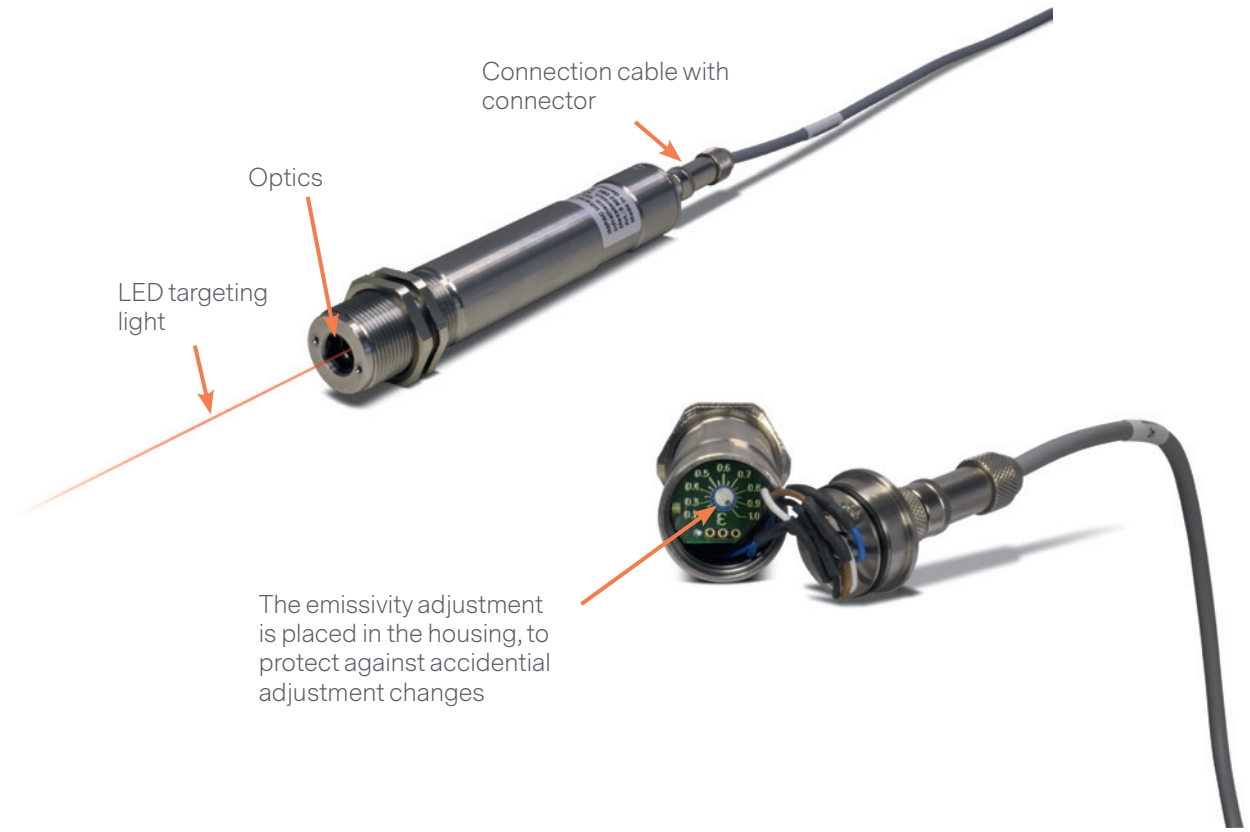
DIMENSIONS[1]



Dimensions in mm

1 Aperture D depending on instrument type, see optics.

FEATURES



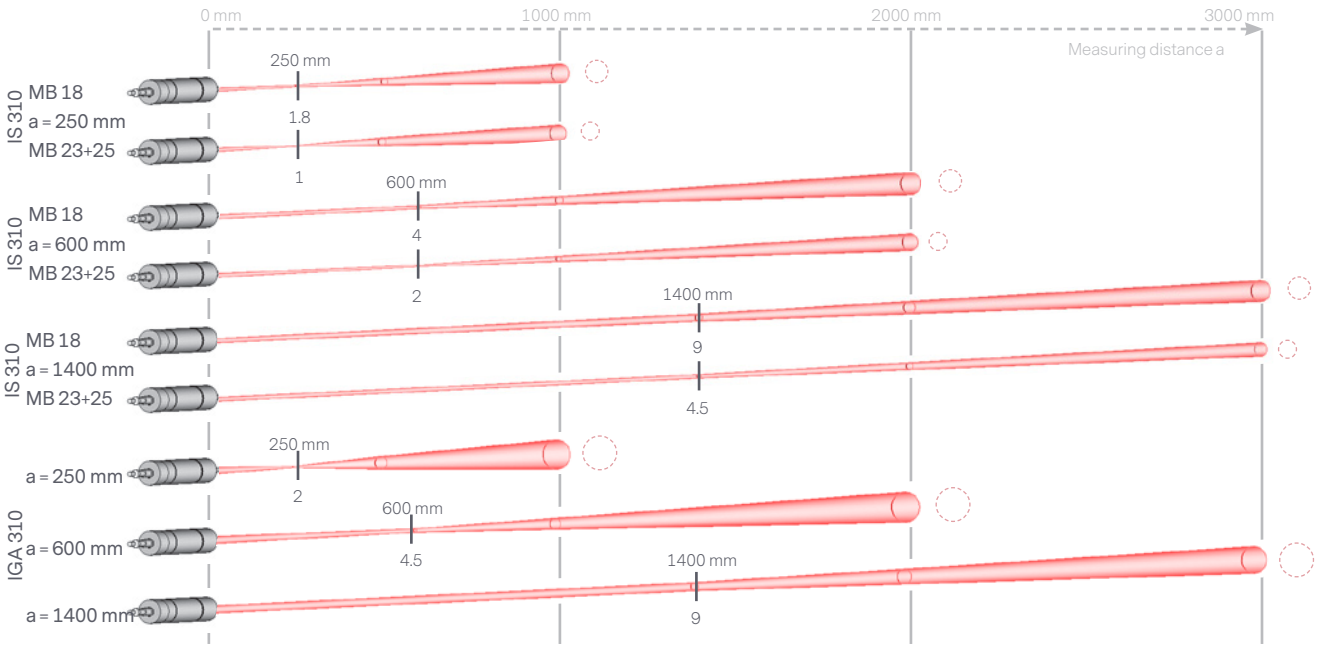
OPTICS

The pyrometers are equipped ex works with one of the following optics. These optics are fixed to a certain distance, i.e. at these distances each optic achieves its smallest spot size in relation to the measuring distance. The spot size will change in any other distance (shorter or longer). Please note that the measuring object must be at least as big as the spot size.

The following table shows the size of the spots (spot size M in mm) at a given measuring distance a. Values between the stated data can be calculated by interpolation. The spot size for measuring distance 0 is equivalent to the aperture diameter D of the optics, this value is used e.g. to calculate measuring distances in intermediate distances.

IS 310								
Type	**a:M[1]**	**a [mm]**	**M [mm]**	**a_1 [mm]**	**M_1 [mm]**	**a_2 [mm]**	**M_2 [mm]**	**D [mm]**
MB 18	140 : 1	250	1.8	600	11.6	1000	23	5.2
MB 23 + MB 25	250 : 1	250	1	600	9.7	1000	20	
MB 18	150 : 1	600	4	1000	10.1	2000	26	
MB 23 + MB 25	300 : 1	600	2	1000	6.8	2000	20	
MB 18	155 : 1	1400	9	2000	15.1	3000	25	
MB 23 + MB 25	310 : 1	1400	4.5	2000	8.7	3000	16	

IGA 310								
Type	**a:M[1]**	**a [mm]**	**M [mm]**	**a_1 [mm]**	**M_1 [mm]**	**a_2 [mm]**	**M_2 [mm]**	**D [mm]**
MB 13L + MB 15	125 : 1	250	2	600	17.4	1000	35	9
	135 : 1	600	4.5	1000	13.5	2000	36	
	155 : 1	1400	9	2000	16.8	3000	30	



1 a :M; distance ratio (90% intensity); M: spot size; a: measuring distance; D: aperture (effective lens diameter).

REFERENCE NUMBERS

IS 310			
Optics	Temperature Range		
	650 to 1800°C (MB 18)	800 to 2300°C (MB 23)	1100 to 2500°C (MB 25)
a = 250 mm	3 902 210	3 902 250	3 902 310
a = 600 mm	3 902 220	3 902 260	3 902 320
a = 1400 mm	3 902 230	3 902 270	3 902 330

IGA 310		
Optics	Temperature Range	
	300 to 1300°C (MB 13)	500 to 1500°C (MB 15)
a = 250 mm	3 902 050	3 902 110
a = 600 mm	3 902 060	3 902 120
a = 1400 mm	3 902 070	3 902 130

Scope of Delivery

Instrument, works certificate, and operation manual.

Ordering Note

A connection cable is not included in scope of delivery and needs to be ordered separately.

ACCESSORIES

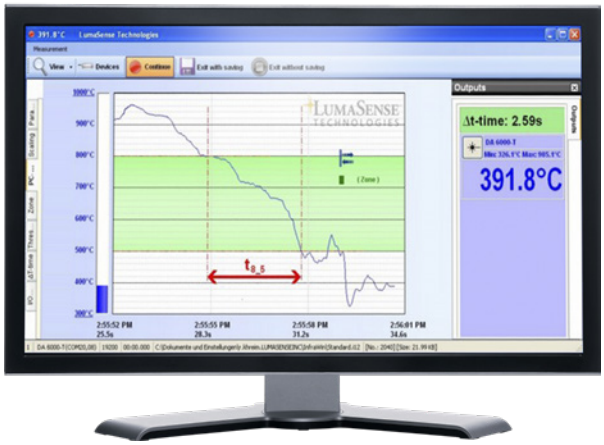
PN	Description
3 821 610	Connection cable IS/IGA 310, 2 m
3 821 620	Connection cable IS/IGA 310, 5 m
3 821 630	Connection cable IS/IGA 310, 10 m
3 821 640	Connection cable IS/IGA 310, 15 m
3 821 650	Connection cable IS/IGA 310, 20 m
3 821 660	Connection cable IS/IGA 310, 25 m
3 821 670	Connection cable IS/IGA 310, 30 m
3 834 210	Adjustable mounting support
3 843 460	SCA 300, scanning attachment with quartz glass window; 24 VAC/DC
3 834 230	Adjustable mounting support, stainless steel
3 835 180	Air purge unit, stainless steel
3 835 240	Air purge unit with 90° mirror
3 837 480	Water cooling jacket for Series 310, stainless steel, with integrated air purge unit
3 835 290	Air purge unit for scanning attachment
3 890 610	Galvanic separator for measuring output (carrier rail mounting housing)
3 863 010	Converter IW 5-C (4 to 20 mA in 0 to 20 mA)
3 846 170	Mounting tube
3 852 290	Power supply NG DC for DIN rail mounting; 100 to 240 VAC ⇒ 24 VDC, 1 A
3 852 280	Power supply, 230 V AC, 500 mA, ⇒ 24 V DC, for C/Z-carrier rail mounting
3 890 640	DA 4000-N, Digital display, with integrated 2-wire power supply
3 891 210	DA 4000-N: LED-display, 2-wire power supply, 115 V AC
3 890 650	DA 4000: LED-display, 2-wire power supply, 2 limit switches (relay contacts), 230 VAC
3 891 220	DA 4000: LED-display, 2-wire power supply, 2 limit switches (relay contacts), 115 VAC
3 890 520	DA 6000: LED digital display, digital and analog input, 2 limit switches, maximum value storage, analog output, RS232
3 890 530	DA 6000: like the DA 6000-N, but with analog input and 2 limit switches for the RS485 interface
3 890 150	DA 6000-T, digital display, for measurement of the cool down time t_{8_5} from 800 to 500°C (for welding processes)

INFRAWIN 5 OVERVIEW

InfraWin is easy-to-use measurement and evaluation software for remote configuration of stationary, digital Impac brand pyrometers.

This software allows the user to remotely adjust and control settings for one or two pyrometers from a single computer. InfraWin also allows the user to simultaneously monitor and control temperatures.

- Display temperature data as color bars and online graphics
- Capture downstream evaluations as tables, graphics or text files
- Calculate the spot size for different measuring distances
- Features UPP standard (Universal Pyrometer Protocol)



Pyrometer Settings

An Impac digital pyrometer connected to a PC will be automatically detected by the software. All available parameters are adjustable, including emissivity, response time, maximum value storage, output signal and sub range.

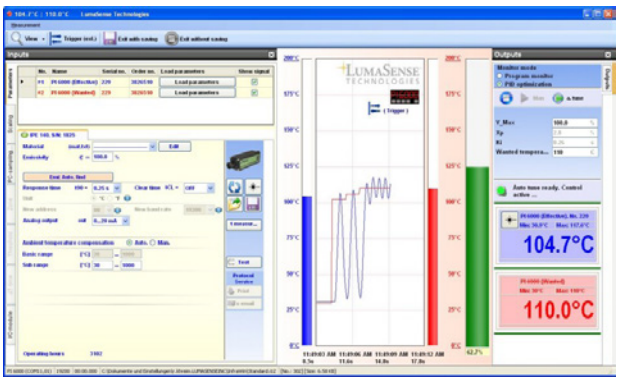
Further special functions are adjustable for example controllers or TV parameters on instruments available with these functions. Changes are transmitted directly to the pyrometer.

Measurement with Color Bar

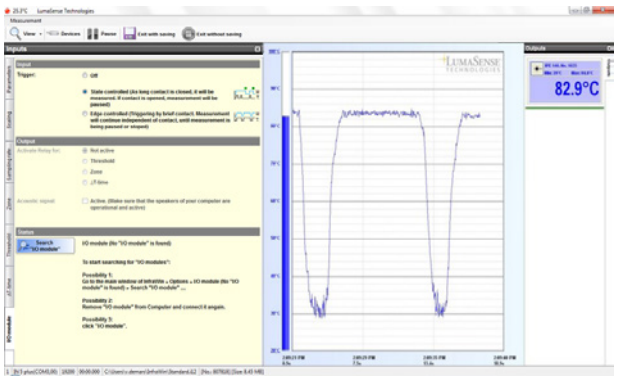
In this window a temperature value for the upper or lower limit can be adjusted numerically or with the mouse. The acquired minimum and maximum value is indicated as well as the inner temperature of the pyrometer. The emissivity is changeable during the measurement at any time.

Infrared Calculator

After input of the aperture and the focused spot size per datasheet, the calculation of spot sizes at non-focused distances is possible.



Measurement with Internal Temperature of radiation temperature and internal instrument temperature. Parameters can be changed during the measurement.



I/O Module allows users to trigger measurement externally and gives a potential free output contact.

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

PRECISION | POWER | PERFORMANCE

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ENG-ISIGA310-235-01 5.19