DISAI Automatic Systems

Advanced Energy

IMPAC IN 5

Pyrometer for non-contact temperature measurement of non-metallic surfaces or painted, coated, or anodized metals between -32 and 900°C (-25.6 and 1652°F).

The Impac® IN 5 infrared thermometers are specially designed digital pyrometers in two wire format. This format combines the high accuracy of the digital signal processing with the simple connection and operating with two wires. The robust design of the instrument guarantees high operational safety, even in rough industrial environments. For optimal match of the instrument to the application (size of the measuring object, distance) different optics are available.

PRODUCT HIGHLIGHTS

- Two wire format with analog output 4 to 20 mA
- High accuracy due to digital linearization of the output
- Small spot sizes, min. 2 mm
- Adjustable exposure time
- Compact housing

TYPICAL APPLICATIONS

- Plastics
- Fluids
- Rubber
- Painted parts
- Paper
- Asphalt
- Ceramics
- Wood
- Textiles
- Glass
- Food
- Coated metals

AT A GLANCE

Temperature Ranges

0 to 100°C (MB 1)
0 to 200°C (MB 2)
0 to 300°C (MB 3)
0 to 400°C (MB 4)
0 to 500°C (MB 5)
0 to 900°C (MB 9)
-32 to 50°C (MB 0.5)
-32 to 900°C (MB 9L)
(Additional MB on request)

Spectral Range

8 to 14 µm

Repeatability

0.3% oR or 0.6°C

Optics

3 fixed optics:
100 mm, 300 mm, 800 mm

TECHNICAL DATA

Measurement Specifications		
Temperature Ranges	0 to 100°C (32 to 212°F) (MB 1)	0 to 900°C (32 to 1652°F) (MB 9)
	0 to 200°C (32 to 392°F) (MB 2)	-32 to 50°C (-25.6 to 122°F) (MB 0.5)
	0 to 300°C (32 to 572°F) (MB 3)	-32 to 900°C (-25.6 to 1652°F)(MB 9L)
	0 to 400°C (32 to 752°F) (MB 4)	(Additional MB on request)
	0 to 500°C (32 to 932°F) (MB 5)	
IR Detector	Thermopile	
Data Handling	Digital	
Spectral Range	8 to 14 µm	
Emissivity ε	0.2 to 1.0 adjustable	
Measurement Uncertainty T_{amb} (ε =1, t_{90} = 1 s)	T = -32 to 0°C	2°C (T_{amb} = 15 to 30°C)
		2.5°C (T_{amb} = 0 to 15°C or 30 to 63°C)
	T = 0 to 300 °C	0.6% of reading in °C or 2°C (T_{amb} = 15 to 30°C)[1]
		1% of reading in °C or 2.5°C (T_{amb} = 0 to 15°C or 30 to 63°C)[1]
	T = 300 to 900°C	1% of reading in °C (T_{amb} = 15 to 30°C)
		1.3 % of reading in °C (T_{amb} = 0 to 15°C or 30 to 63°C)
Repeatability (ε =1, t_{90} = 1 s)	0.3% of reading in °C or 0.6°C[1]	
Noise Equivalent Temperature Difference (NETD) (ε =1, t_{amb} = 23°C)	@ t_{90} = 80 ms: 0.2°C (@ 23°C measuring temperature)	
	@ t_{90} = 1 s: 0.05°C (@ 23°C measuring temperature)	
Optics	Germanium (Ge)	

Environmental Specifications	
Protection Class	IP 65 (DIN 40050)
Ambient Temperature	0 to 70°C (32 to 158°F)
Storage Temperature	-20 to 70°C (-4 to 158°F)
Relative Humidity	Non-condensing conditions
Weight	Approx 410 g (~0.90 lbs)
Housing	Stainless steel
CE Label	According to EU directives about electromagnetical immunity

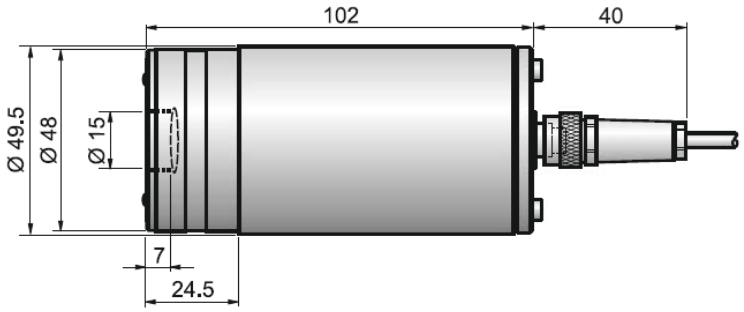
Electrical Specifications	
Power Supply	24 VDC (10 to 30 V)
Power Consumption	Max 20 mA
Load (analog output)	Max 700 Ω @ 24 V (max 100 Ω @ 12 V)

Interface and Communication Specifications	
Parameters	Adjustable on the pyrometer: Emissivity, Exposure time
Analog Output	4 to 20 mA (linear)
Response Time t_{90}	0.08 s; adjustable in the pyrometer: 0.5 s, 1 s, 2 s, 5 s

1 Whichever value is greater. The instrument must be at a constant ambient temp. for a minimum of 15 min. and has to be connected to the power supply.

2 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



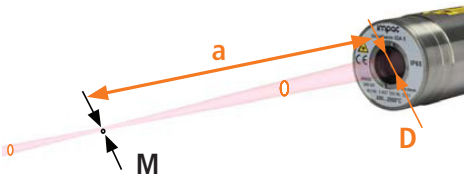
Dimensions in mm

OPTICS

Optics for IN 5		
	Distance a [mm]	Spot Size M_{90} [mm]
Optics 100	100	2
	200	18
	300	35
Optics 300	300	6
	600	22
	1000	45
Optics 800	800	16
	1500	36
	2500	68
Aperture D [mm]		15

The pyrometers are equipped ex works with one of the specified optics. Each optic is focused at a certain distance (main measuring distance). At these distances, each lens achieves its smallest spot size. Normally the spot size will increase at any other distance (shorter or longer).

For each optic, some example values for measuring distance (measured from the front of the lens) and spot size are listed in the table. Keep this in mind when considering the mounting position of the pyrometer as well as the size of the measuring object (the measuring object must be at least as big as the spot size).



REFERENCE NUMBERS

IN 5								
Temperature Range[1]	0 to 100°C	0 to 200°C	0 to 300°C	0 to 400°C	0 to 500°C	0 to 900°C	-32 to 50°C	-32 to 900°C
Reference Number	3 869 010	3 869 020	3 869 030	3 869 040	3 869 050	3 869 090	3 869 100	3 869 080

1 Other temperature ranges on request.

Scope of Delivery

Pyrometer with selected optic, works certificate, operation manual

Ordering Notes

A connection cable is not included in scope of delivery and must be ordered separately. When ordering please select one optic: a = 100, a = 300, or a = 800.

ACCESSORIES

PN	Description
3 820 210	Connection cable for IN 5, 2 m
3 820 560	Connection cable for IN 5, 5 m
3 820 570	Connection cable for IN 5, 10 m
3 820 580	Connection cable for IN 5, 15 m
3 820 590	Connection cable for IN 5, 30 m
3 852 290	Power supply NG DC for DIN rail mounting; 100 to 240 VAC ⇒ 24 VDC, 1 A
3 852 550	Power supply NG 2D for DIN rail mounting; 85 to 265 VAC ⇒ 24 VDC, 600 mA with 2 settable limit switches
3 891 220	DA 4000: LED-display, 2-wire power supply, 2 limit switches (relay contacts), 115 VAC
3 890 650	DA 4000: LED-display, 2-wire power supply, 2 limit switches (relay contacts), 230 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
3 826 510	PI 6000: PID programmable controller, extremely fast, for digital IMPAC pyrometers
3 843 500	SCA 5, Scanner for Series 5 with CaF2 window; 24 VAC/DC
3 834 210	Adjustable mounting support (Series 5 and 6)
3 835 160	Air purge unit, aluminium
3 835 440	Air purge unit, stainless steel
3 837 230	Water cooling jacket (heavy duty) with integrated air purge unit (with metric mounting threads)
5 837 230	Water cooling jacket (heavy duty) with integrated air purge unit (with UNC mounting threads)
3 837 350	Water cooling jacket (heavy duty) with protection window (with metric mounting threads)
3 837 370	Water cooling jacket (light duty) with integrated air purge unit (with metric mounting threads)
5 837 370	Water cooling jacket (light duty) with integrated air purge unit (UNC mounting threads)
3 837 400	Water cooling jacket (light duty) with protection window (with metric mounting threads)
3 846 100	Mounting tube
3 846 120	Flange tube[1]
3 837 540	Cooling plate for series 5 and 6, with air purge
3 846 630	Vacuum flange KF16 with protection window
3 846 660	Spare protection window, Ø 25 x 3 with Viton-O-ring

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