

Digital pyrometer for non-contact temperature measurement of aluminum between 350 and 1050°C (addendum data sheet to IS 12)

## IS 12-AI (Addendum to Data Sheet IS 12; IGA 12)

- Pyrometer specially designed for measurements of aluminum
- 2 wide temperature ranges between 350 and 1050°C
- Spectral range: narrow band in the near infrared
- Short response time < 1.5 ms
- Small spot sizes
- Analog output 0 - 20 mA or 4 - 20 mA
- Digital interface RS232 or RS485
- Integrated maximum value storage
- Built-in digital display



The IS 12-AI is a development of the pyrometer IS 12, specially designed for the measurement of aluminum.

The robust die-cast housing with protection class IP65 is designed for the use in industrial environments.

The parameters of this digital instrument can be set directly via push buttons on the rear side of the instrument.

The built-in digital display indicates the corresponding parameters or the actual temperature reading in measuring mode.

The instrument's parameters can also be adjusted via digital interface with the optional available portable parametrizing device HT 6000 or in combination with the PC software InfraWin. The software additionally allows the display and recording of temperature values graphically and numerically.

The IS 12-AI can be aligned exactly on the measuring object with the optimized thru-lens view finder with spot indication.

For exact alignment of the measuring object the instruments are additionally equipped with a targeting light.

### Typical applications:

- Aluminum extrusion
- Rolling
- Billet heating and other heating processes

## Technical Data (different from IS 12)

Response time $t_{90}$ :	< 1.5 ms (with dynamical adaption at low signal levels) adjustable up to 10 s
Spectral range:	narrow band in the near infrared
Accuracy:	0.3% of measured value in °C + 1°C ( $\epsilon=1$ , $t_{90}=1$ s, $T_{Amb}=15$ to $40^{\circ}\text{C}$ , $T_M \geq 400^{\circ}\text{C}$ (MB 9), $T_M \geq 450^{\circ}\text{C}$ (MB 10.5))
Ambient temperature:	0 ... $70^{\circ}\text{C}$

## Optics

Fixed optics MB 9 (350 ... $900^{\circ}\text{C}$ )			Fixed optics MB 10.5 (400 ... $1050^{\circ}\text{C}$ )		
Optics	Measuring Distance a [mm]	Spot Size $M_{90}$ [mm]	Optics	Measuring Distance a [mm]	Spot Size $M_{90}$ [mm]
1-P	112	2.5	1	80	1.1
2-P	240	4.5	2	160	1.5
3-P	660	11.5	3	250	2.2
4-P	1300	22	4	660	5.5
5-P	5600	92	5	1300	11
Aperture D:	26		6	5600	45
			Aperture D: 19		

### Reference number (specify an optics when ordering):

3 840 200	350 to $900^{\circ}\text{C}$ (MB 9) with view finder and targeting light
3 840 210	350 to $900^{\circ}\text{C}$ (MB 9) with view finder and targeting light and built-in scanner
3 840 220	400 to $1050^{\circ}\text{C}$ (MB 10.5) with view finder and targeting light
3 840 230	400 to $1050^{\circ}\text{C}$ (MB 10.5) with view finder and targeting light and built-in scanner

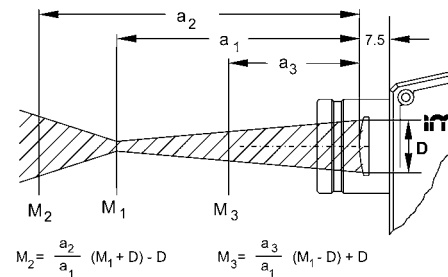
**Scope of delivery:** Instrument with one optics, works certificate and PC software InfraWin

**Accessories please see data sheet IS 12**

The IS 12-AI is supplied with one fixed optics shown in the table.

Select one optics corresponding to the required measuring distance of the application.

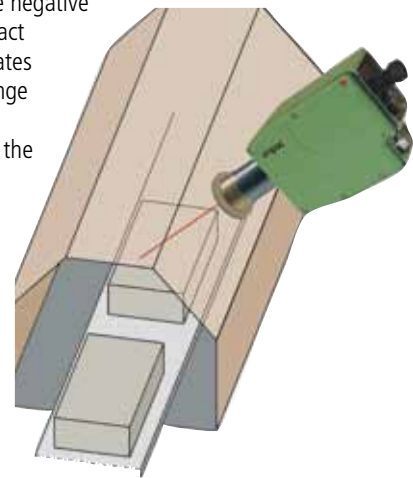
Spot sizes differing from the stated values can be calculated with the following equations.



## Application



The IS 12-AI is a special development of the well proven IS 10-AI for aluminum applications in temperature ranges between  $350$  and  $1050^{\circ}\text{C}$ . Conventional pyrometers - even 2-colour pyrometers - are not able to measure the temperature of aluminum correctly due to the special physical properties of aluminum. To avoid the negative influence of these properties in the non-contact temperature measurement the IS 12-AI operates in a special spectral range. In this spectral range solid aluminum has a very high and stable emissivity between 30 and 43%. That is why the instrument is suitable for aluminum applications such as extrusion, rolling, billet heating and other heating processes. Due to physical reasons the IS 12-AI is sensitive to light at the beginning of the temperature range. This sensitivity decreases with increasing temperature. In applications with low temperatures (at the start of the temperature range) the measuring area has to be screened against light to avoid its influence (see drawing).



## LumaSense Technologies

## Temperature and Gas Sensing Solutions

**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](mailto:info@lumasenseinc.com)

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[www.lumasenseinc.com](http://www.lumasenseinc.com)

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