

Diadem DS09 / DI16

Highly-accurate digital Standard-Transfer Pyrometer for extensive inspection of calibration sources

- Thermostatically controlled detector
- High resolution A/D- and D/A-converters,
- Analog output signal 16 bit resolution
- Display resolution 0.01°C
- Selected, extremely long term stable electronic components
- High quality achromatic lenses
- Consequential design configuration in 3 galvanically isolated circuits



To achieve this pinpoint accuracy, all components which may have interference onto signal processing are separated and contained in the external power supply housing.

Just following this consequential design configuration the Diadem preciseness and long-term stability is not only available for laboratory applications but also for difficult measurement tasks in rough industrial environments.

Chart 1: Model and temperature ranges

Model	Diadem DI16	Diadem DS09
Spectral range	1.45 – 1.8 µm	0.7 – 1.1 µm
Standard temperature ranges	250 – 1200°C	600 – 1500°C
	300 – 1300°C	700 – 1800°C
	400 – 1500°C	
Wide temp. range	250 – 1400°C	

Chart 2: Objectives

Objective	Measuring distance	Spot size diameter
OD09-0A	400 mm	1.6 mm
OD09-0B	800 mm	3.2 mm
OD09-0C	1200 mm	4.8 mm

Objectives: The infrared energy radiated by the target is centered directly on the detector by fixed focus achromatic lenses. The detector is sensitive to infrared radiation in an area called cone of vision. The diameter of it at focused distance (spot size) may be taken from chart 2. Standard temperature ranges have a 15 mm diameter cone of vision (aperture) in front of the lens and wide temperature ranges 25 mm. This conically area has to be kept free from any intervening objects.

Optical Alignment: Diadem Standard-Transfer Pyrometers are available with 3 different solutions for aiming the device onto the target. Number one and most popular method is the built in laser aiming light that is also helpful for focusing. Number two is a sight through optics version with reticle-defined target which is advantageous for applications where aiming onto hot, incandescent targets is needed. The viewing telescope of these units, with full-scale temperatures above 1300°C, is equipped with a dimmable sight attenuation filter to protect the eye. Finally, the third solution is a build in video camera for all applications where neither the laser nor the sight through version can be used.

Software SensorWin: The software *SensorWin* is available for automatic or manual set up of the pyrometer, for recording and for saving of graphical or table files. Additionally these files can be used for quality assurance purposes because the parameter settings are recorded too. Minimum system requirement: PC with current operating system.

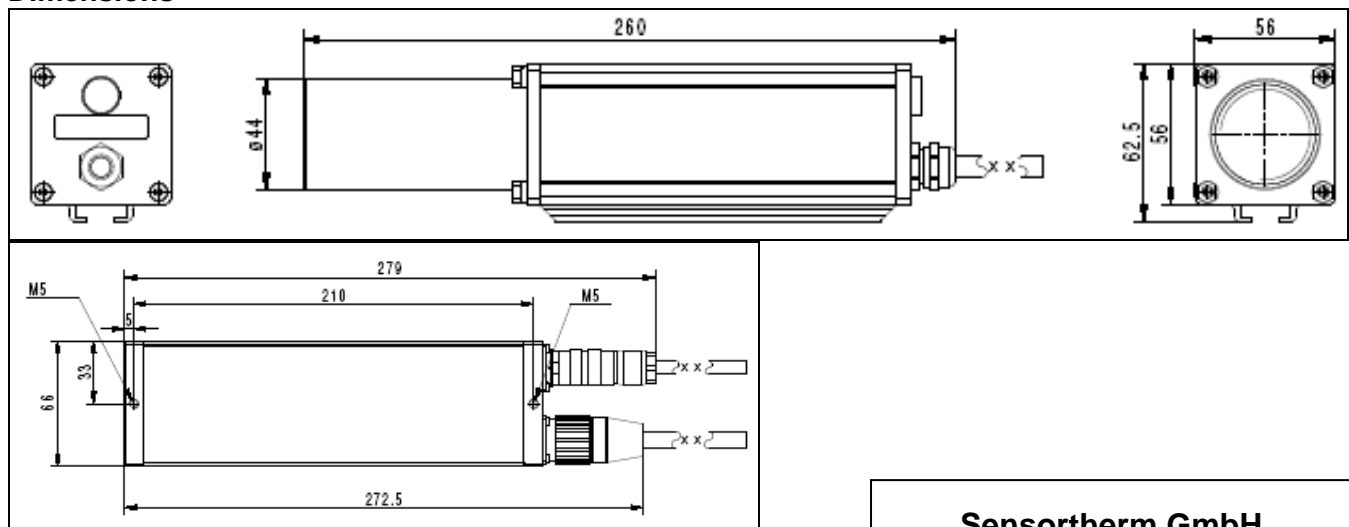
Technical Data

Spectral range:	Diadem DS09: 0.7–1.1 μm , Diadem DI16: 1.45–1.8 μm
Response time t_{90} :	Standard temp. ranges: 1 ms, wide temp range 5 ms, with dynamic adaption at low signal levels, adjustable up to 10 s
Signal conditioning:	Photocurrent of detector will be digitalized immediately
Measurement uncertainty: ($\epsilon = 1$, $t_{90} = 1\text{s}$, $T_{\text{Amb}} = 20 - 26^\circ\text{C}$)	Up to 1500°C 0.15% of measured value +1 K Up to 2500°C 0.2% of measured value Traceable to international temperature scale ITS 90
Repeatability ($\epsilon = 1$, $t_{90} = 1\text{s}$, $T_{\text{Amb}} = 20 - 26^\circ\text{C}$)	0.06% of measured value
Analog output signal:	0 (2)– 10 VDC load > 100 k Ω
Resolution:	16 bit voltage output corresponds to < 0.005% temperature range
Digital interface:	RS485 half duplex 4.8 to 921 kBaud, resolution 0.01 $^\circ\text{C}$
Temperatur- / status indicator:	10 digits LED display installed in rear panel, resolution 0.01 $^\circ\text{C}$. Via <i>SensorWin</i> software resolution 0.1 $^\circ\text{C}$
Emissivity:	0.050 to 1.000 adjustable via digital interface in 1/1000 steps
Ambient temperature:	0 to 50 $^\circ\text{C}$
Temperature coefficient:	32 ppm/ $^\circ\text{C}$ ambient temperature change between 10 to 40 $^\circ\text{C}$
Storage temperature:	-20 to 70 $^\circ\text{C}$
Relative humidity:	no condensing conditions
Power supply:	24 V DC (18 – 30 V DC) max 50 mV ripple, 20 VA max
Peak picker:	Build-in peak picker (single or double maximum value storage), reset either periodically by preset clear time or via digital interface
Protection class	IP65
3 isolation circuits:	1. Measurement circuit, analog- and optional video output galvanically isolated from power supply. 2. Digital communication galvanically isolated from power supply. 3. Circuit 1 and circuit 2 galvanically isolated from each other
CE label:	According to EU directives for electromagnetic immunity

Accessories

AK43-05	5 m interconnecting cable for power supply to Diadem pyrometer and to transmit the digital and the analog output signal to a terminal strip
HA30-0x	Precision linear stage made of special aluminum alloy for high dimensional stability, fine thread spindle travel from 25 mm (HA30-02) up to max 150 mm (HA30-15)
HA31-15	Precise positioning unit via worm gear drive, with adjustable dovetail guides, adjustment range: +/- 15 $^\circ$, affix able via locking screw

Dimensions



Scope of Delivery:

Pyrometer including 2 m long interconnecting cable with 17-pin M-23 cable plug

Power supply/Signal conditioner box with 17- and 12-pin flange connectors

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