





## Technical Data

Model	DS09	DI13	DI16
Temperature ranges	600 – 1500°C 700 – 1800°C	1000 – 3500°C	250 – 1400°C 300 – 1500°C
Temp. sub ranges	Any temperature sub-range adjustable within the temperature range (minimum span 50°C)		
Spectral range	0.7–1.1 μm	1.27 μm	1.45–1.8 μm
Detector	Silicon	InGaAs	InGaAs
Response time $t_{90}$	1 ms (with dynamical adaptation at low signal levels), adjustable up to 10 s		
Uncertainty ( $\epsilon = 1$ , $t_{90} = 1s$ , $T_A = 20-26^\circ C$ )	Up to 1500°C: 0.15% of measured value in °C + 1K Up to 2500°C: 0.2% of measured value in °C Up to 3000°C: 0.3% of measured value in °C Up to 3500°C: 0.4% of measured value in °C		
Temperature coefficient	32 ppm/°C ambient temperature change in a range of 10 to 40°C		
Repeatability ( $\epsilon = 1$ , $t_{90} = 1s$ , $T_A = 20-26^\circ C$ )	0.06% of measured value		
Parameters	Adjustable: temperature sub ranges, response time, peak picker, emissivity, device address, interface delay, baud rate. Readable: device temperature		
Emissivity $\epsilon$	0.050–1.000 (corresponds 5–100% in 0.1% steps)		
Analog output	0–10 V DC, load > 100 kΩ Resolution: 16 Bit, corresponds < 0.007% of temperature range		
Serial interface	RS485, half duplex 4.8 to 115.2 kBaud, resolution via interface: 0.01°C or 0.01°F		
Peak picker	Automatic hold mode or manual time settings to clear (reset) or external clear via configurable input		
Display	10 digit LED display (5 mm high) for temperature in °C or °F, temperature above end of temp. range or below beginning of temp. range, heat-up time or active targeting light. Resolution 0.01°C or 0.01°F		
Power requirement	24 V DC (18–30V DC), maximal 20 VA		
Isolation	Measurement circuit and analog output (circuit 1) are galvanically isolated from power supply. Serial interface (circuit 2) is galvanically isolated from power supply. Circuit 1 and circuit 2 galvanically isolated from each other.		
Sightings (optional)	<ul style="list-style-type: none"> <li>Through lens sighting with adjustable attenuation filter for eye protection of bright targets &gt; 1800°C</li> <li>Laser targeting light (red, <math>\lambda = 650</math> nm, <math>P &lt; 1</math> mW, class II to IEC 60825-1)</li> </ul>		
Ambient temperature	0–50°C		
Storage temperature	-20–70°C		
Relative humidity	No condensing conditions		
Housing / protection class	Aluminum, IP65 to DIN 40 050 with connector		
Weight	1300 g		
CE label	According to EU directives for electromagnetic immunity		

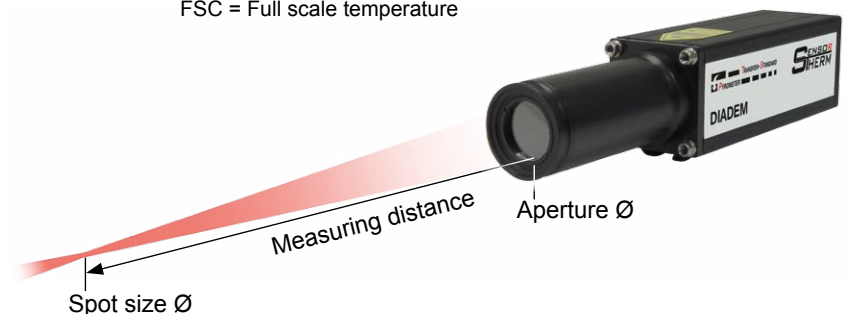
## Device versions / Optics

Optics	Measuring distance a [mm]	Spot size diameter M [mm]			Aperture Ø D [mm]
		DS09	DI13	DI16	
OD09-A0	600 mm	1.1 mm	1.4 mm	1.6 mm	15 mm (FSC < 1800°C) 8 mm (FSC ≥ 1800°C)
OD09-B0	800 mm	1.5 mm	1.9 mm	2.2 mm	
OD09-C0	1200 mm	2.4 mm	3.1 mm	3.4 mm	

FSC = Full scale temperature

**Fixed focus optics** are factory set to a specific measurement distance to achieve the smallest possible spot size.

The pyrometer must be properly aligned to the measurement object to detect the temperature correctly. In the focus point of the lens (focal distance) the spot size diameter is smallest. Measurements out of the focus distance are also possible (in front of or behind the focus distance) to determine the average temperature of a bigger spot.



## Maintenance

Sensortherm pyrometers are designed to provide long and trouble-free operation. The selection of ultra-long-life components specifically for the Diadem models assures resilience and durability.

To comply with the narrow technical specifications, the pyrometer should be regularly checked by Sensortherm. Calibration and adjustment is recommended after 2 years.

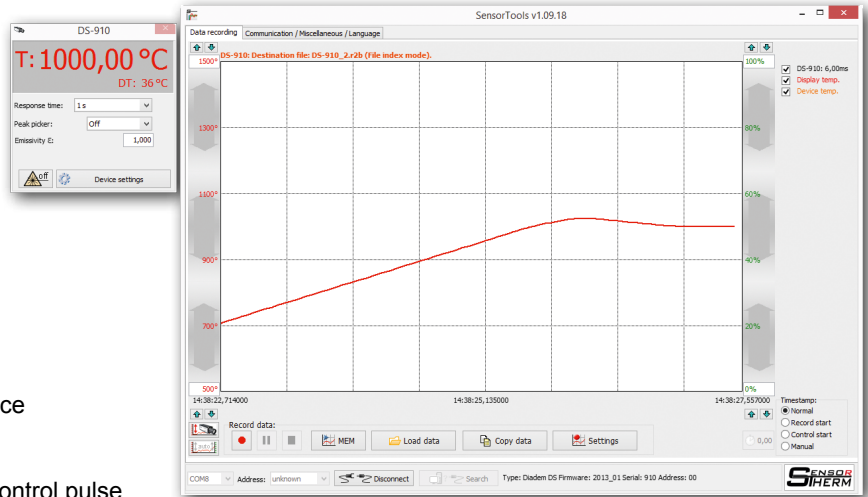
## Software *SensorTools*

The PC software *SensorTools* is our standard software for

- Measured value display
- Measured value recording
- Processing the results
- Display devices inside temperature
- Changing pyrometer parameters

Program functions:

- Change pyrometer parameters
- Playback of recorded data
- Adapted graphics mode to computer performance
- Export measured values in csv files
- Record interval setting for acceptable data size
- Back time recording of measured values after control pulse
- Devices with laser targeting light: switching on and off
- External start and stop of the recording measured values (via control input on the pyrometer)
- Create service files with settings for remote diagnostics

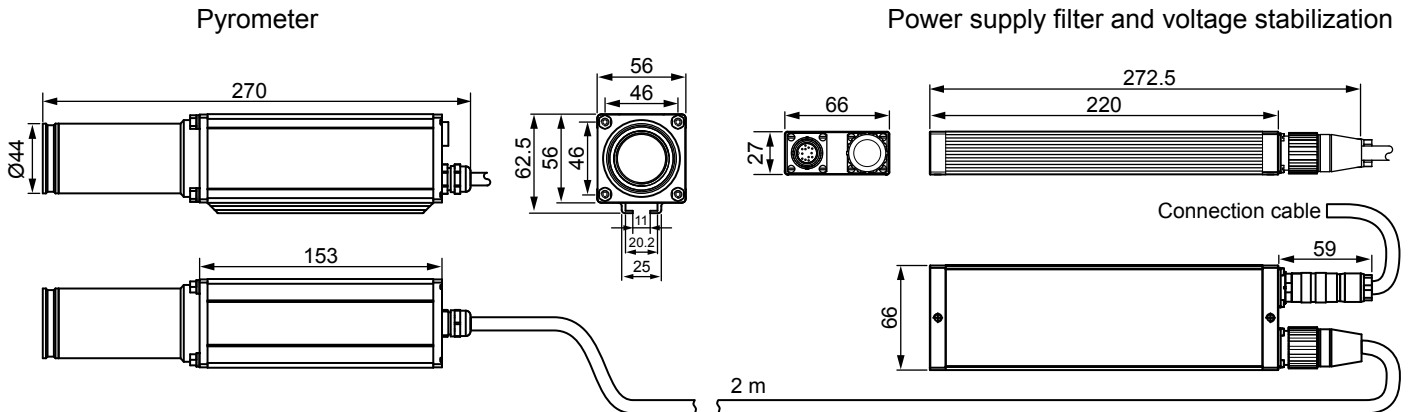


## Recommended Accessories

HA10	Mounting bracket
KG20	Aluminum cooling plate
AL11 / AL43	Connection cable (available in 5 m steps) with 12-pin right angle connector (AL11) / straight connector (AL43)
AV11 / AV43	Connection cable, interface converter RS485↔USB, 12-pin right angle connector (AV11) / straight connector (AV43)
WB23-2-1-05	Wiring-Box: ready-made connection kit with desktop power supply, 5 m pyrometer connection cable and interface converter RS485↔USB
NG12 / 15	Power supply 24 VDC: DIN rail power supply 1.6 A/ desktop power supply 2.5 A

## Dimensions

Dimensions in mm



## Reference Numbers

Diadem DS09	Specify with temperature range, sighting method and optics
Diadem DI13	Specify with sighting method and optics
Diadem DI16	Specify with temperature range, sighting method and optics

**Note:** *SensorTools* software is included in scope of delivery,  
Connection cables are not included in scope of delivery and have to be ordered separately.

Sensortherm reserves the right to make changes in scope of technical progress or further developments.

Sensortherm-Datasheet\_Diadem\_DS09\_DI13\_DI16 (June 20, 2016)

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