

## Pyrometers for industry and research

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#### **Features**

- For temperature measurements between 600 °C and 3000 °C
- Display and keyboard for emissivity ratio adjustment
- Widely independent from emissivity

- Aiming: aiming light, through-lens sighting or camera module
- Short response times from 5 ms
- Temperature linear output 0/4 to 20 mA

#### **Description and applications**

The digital pyrometers PYROSPOT DSR 10N/DSR 10NV are spefically designed for industry and research applications. They utilize the 2-colour system which has the advantage of measurement widely independent from the emissivity.

The solid construction in form of a compact housing with a protection window for optics allows usage even under rough environmental conditions. With a short response time of only 5 ms (t95) these pyrometers are also suitable for fast measuring processes. The vario optics with quartz glass protection window realise measuring field diameters from 1.2 mm.

The integrated LED or laser aiming light or, the alternative throughlens sighting, enables an exact focus on the measurement object. With the optional color video module (PYROSPOT DSR 10NV) the alignment of the pyrometers to the target can be monitored visually and the entire process can be recorded and documented.



The temperature linear standard output signal of 0/4 to 20 mA allows easy implementation in existing measurement and controll systems. The device is equipped with a galvanically isolated RS-485 interface which allows parameterising and software evaluation even in bus systems.

The ratio correction K and the emissivity (in single channel mode) is also adjustable via push-buttons and display directly on the device. All parameters can be easily adjusted to the application by using the convenient software PYROSOFT Spot.

Typical pyrometer application areas:

- Steel industry
- Kiln engineering
- Hardening
- Welding
- Metal industry



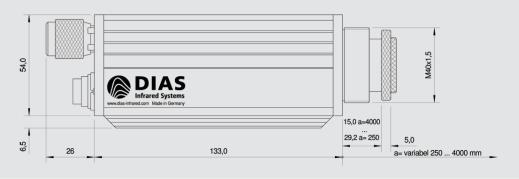
"Black netbook isolated on white" Copyright Patryk Kosmider, 2012, "Manufacture of pipes" Copyright Bork, 2012, used under license from Shutterstock.de



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Technical data								
Туре	DSR 10N/DSR 10NV	DSR 10N/DSR 10NV	DSR 10N/DSR 10NV	DSR 10N/DSR 10NV	DSR 10N/DSR 10NV			
Temperature range	500 °C to 1200 °C	600 °C to 1400 °C	700 °C to 1800 °C	800 °C to 2500 °C	900 °C to 3000 °C			
Sub temperature range	adjustable within temperature range, minimum span 50 °C							
Spectral range	0.7 μm to 1.1 μm							
Optics	vario optics with quartz glass protection window, measuring field diameters from 1.2 mm							
Distance ratio	50:1 100:1 200:1							
Measurement uncertainty 1	0.5 % of measured value							
Reproducibility 1	0.2 % of measured value							
Transmissivity	50 % to 100 %							
Ambient radiation	adjustable within temperature range							
NETD <sup>2</sup>	0.1 K <sup>1</sup>							
Response time (t95)	5 ms, adjustable up to	5 ms, adjustable up to 100 s						
Ratio correction K	0.800 to 1.200, adjustable at the device or via interface							
Emissivity	0.050 to 1.000, adjustable at the device (single channel mode) or via interface							
Storage	minimum and maximun	minimum and maximum value storage, adjustable via RS-485 interface						
Output	0/4 to 20 mA, switchable via software, temperature linear, max. burden 500 $\Omega$ (galvanically isolated)							
Interface	RS-485 (galvanically isolated), half duplex, baudrate up to 115 kBd, data protocol Modbus RTU							
Switching output/threshold	1 Opto relay, $R_{load}$ min. 48 $\Omega$ /adjustable within temperature range							
Aiming	LED aiming light, laser a	LED aiming light, laser aiming light (630 to 680 nm, class II, < 1 mW), through-lens sighting or camera module (DSR 10NV)						
Software	PYROSOFT Spot for Wir	dows®, optional: PYROS	OFT Spot Pro					
Parameters	ratio correction, emissivity, transmissivity, ambient radiation, response time, temperature unit °C or °F, storage settings, sub temperature range of measurement output, switching thresholds of switching output (adjustable via software and interface)							
User controls	ratio correction or emissivity control push-buttons (resolution 0.001), aiming light push-button, display							
Power supply	24 V DC ± 25 %							
Power consumption	max. 1.5 W (without loa	max. 1.5 W (without load at switching output)						
Operating temperature	0 °C to 70 °C	0 °C to 70 °C						
Storage temperature	−20 °C to 70 °C							
Weight	approx. 520 g							
Dimensions	$54 \times 54$ mm, length 170 mm							
Housing	compact housing with plug connector, display, push-buttons and optics protection window							
Safety class	IP 65 (DIN 40 050)							
CE symbol	according to EU regulat	according to EU regulations (EN 50 011)						
Scope of delivery	PYROSPOT DSR 10N/DSR 10NV, mounting screw nut, inspection sheet, manual, PYROSOFT Spot for Windows® (without connection cable, please order separately)							
$^{1}T_{Ambient} = 23$ °C, $\epsilon = 1$ , $t95 = 1$ s. $^{2}$ I	Noise equivalent temperature dif	ference.						

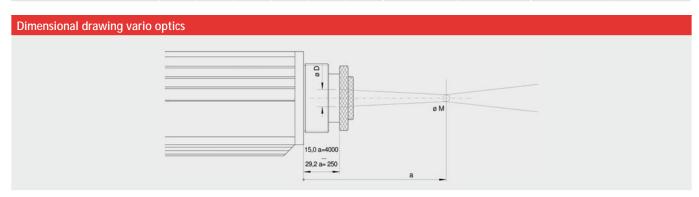
#### Dimensional drawing pyrometer (with through-lens sighting)





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Vario optics										
Measuring distance a [mm]	250	300	350	500	800	4000	Aperture diameter Ø D [mm] Pai		Part number	
Optics pullout [mm]	29.2	25.5	23.5	20.3	18.0	15.0	at		LED	Laser
Temperature range	Measuring field diameter M [mm] $a = 250 \text{ mm}$ $a = 40 \text{ m}$				a = 4000 mm	Through-lens sighting	Video module			
500 °C to 1200 °C	5.0	6.0	7.0	10.0	16.0	80.0	8.0	6.5	5102001201	5102011201
									5102021201	5102031201
600 °C to 1400 °C	2.5	3.0	3.5	5.0	8.0 40.0 8.0 6.5	6.5	5102001202	5102011202		
									5102021202	5102031202
700 °C to 1800 °C	1.2	1.5	1.7	2.5	4.0	20.0	8.0	6.5	5102001203	5102011203
									5102021203	5102031203
800 °C to 2500 °C	°C to 2500 °C 1.2 1.5 1.7 2.5 4.0 20.0 8.0 6.	6.5	5102001204	5102011204						
						5102021204	5102031204			
900 °C to 3000 °C	1.2 1.5	1.7 2.5	2.5	4.0	20.0	8.0	6.5	5102001205	5102011205	
									5102021205	5102031205



Technical data video camera (DSR 10NV)					
Video signal	Composite video signal approx. 1Vss at 75 $\Omega$ (galvanically isolated, video signal can be deactivated via software)				
Color norm	PAL (B), 50 Hz (optional color norm NTSC (M), 60 Hz)				
Resolution	1/3 inch video chip 628 $\times$ 586 pixels (NTSC option: 510 $\times$ 496 pixels)				
Exposure control	automatic				
Visible field	approx. 8 % $\times$ 6 % of adjusted measurement distance (NTSC option: 6.5 % $\times$ 5 %)				
Date/time	Real-time clock with minimum 3 days power reserve, adjustable via software				
Durable image displays	Target mark in measurement spot size , measurement temperature, emissivity				
Optional image displays	Via software: serial number, device name or user-defined text (16 characters), date, time, temperature unit °C/°F, 12/24 hours display				







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Electrical, mech	hanical and optical acc	Order number			
Connection cable, 12 pin, angulate plug		length 2 m length 5 m length 10 m length 15 m length 20 m length 25 m length 30 m			
Video connection cable		length 2 m length 5 m length 10 m length 15 m length 20 m length 25 m length 30 m	3310A16521 3310A16522 3310A16523 3310A16524 3310A16525 3310A16526 3310A16527		
Interface module		RS-485 to USB	3310A14020		
Power supply PSU	J 15	24 V DC, 0.6 A	3310A12010		
Mounting angle		adjustable	3310A21020		
Air purge adapto	r	stainless steel, purge air 0.1 to 0,5 bar, oil-free	3310A22020		
Window slide		without window	3310A21210		
Vacuum flange		KF 16 with quartz window with sapphire window (scratch-proof)	3310A24015 3310A34021 3310A34051		
Mounting angle		for cooling jacket	3310A23036		
DHP 1040		handheld programming device for parameterizing	3310A17010		
TFT monitor	TFT-monitor industrial	3.5" with 2 m cable <sup>2</sup>	3310A16110	3310A16120	
Adapter		Video/USB	3310A14030		
<sup>1</sup> More accessories	available. <sup>2</sup> Cable lengths 5 n	and 10 m also available.			

#### Detailed view: display

The digital display shows current temperature value and emissivity setting.



#### Detailed view: back side

The emissivity can be adjusted by using the two keys on the back side of the device. The value settings will be stored automatically.





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