

PYROSPOT DG 10N/DG 10NV

Pyrometers for industry and research

Overview

Digital pyrometers with RS-485 interface



Features

- For temperature measurement between 200 °C and 2500 °C
- Keyboard and display for emissivity and temperature
- Temperature linear output 0/4 to 20 mA
- Aiming: aiming light, through-lens sighting or camera module
- Short response times from 2 ms
- Vario optics

Description and applications

The digital pyrometers PYROSPOT DG 10N/DG 10NV are specifically designed for industry and research applications. The devices are suitable for temperature measurement from 200 °C on many different surfaces, for example metals, ceramics or graphite.

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 2 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 through-lens sighting, enables an exact focus on the measurement object. With the optional color video module (DG 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 control systems. The device is equipped with a galvanically isolated RS-485 interface which allows parameterising and software evaluation even in bus systems.

The emissivity 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 parameterizing and evaluation software PYROSOFT Spot.

Typical pyrometer application areas:

Steel industry, metal industry, ceramic industry, kiln engineering, soldering installations



PYROSPOT DG 10N/DG 10NV

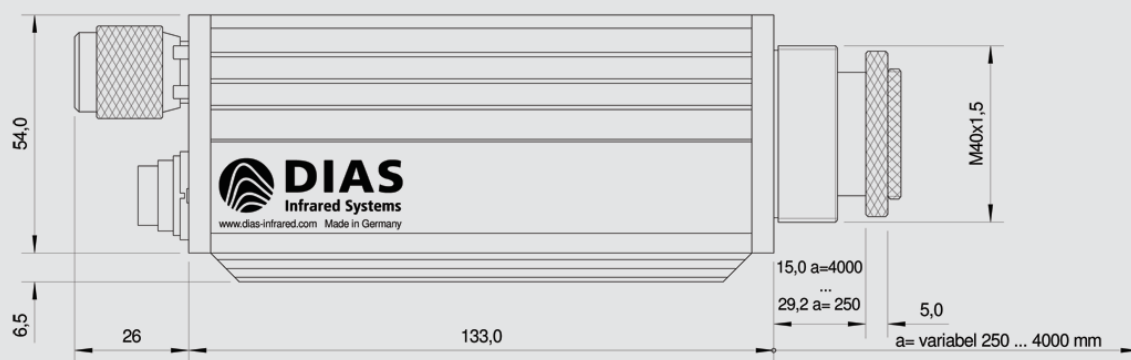
Pyrometers for industry and research

Technical data

Type	DG 10N/DG 10NV	DG 10N/DG 10NV	DG 10N/DG 10NV	DG 10N/DG 10NV	DG 10N/DG 10NV
Temperature range	200 °C to 1200 °C	200 °C to 2000 °C	250 °C to 1500 °C	350 °C to 2000 °C	350 °C to 2500 °C
Sub temperature range	adjustable within temperature range, minimum span 50 °C				
Spectral range	1.5 µm to 1.8 µm				
Optics	vario optics with quartz glass protection window, measuring field diameters from 1.2 mm				
Distance ratio	approx. 200 : 1				
Measurement uncertainty ¹	0.5 % of measured value				
Reproducibility ¹	0.1 % of measured value				
Transmissivity	50 % to 100 %				
Ambient radiation	adjustable within temperature range				
NETD ²	0.1 K ¹				
Response time (t95)	2 ms, adjustable up to 100 s				
Emissivity	0.050 to 1.000, adjustable at the device or via RS-485 interface				
Storage	minimum and maximum value storage, adjustable via interface				
Output	0/4 to 20 mA, switchable via software, temperature linear, max. burden 500 Ω (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 Ω/adjustable within temperature range				
Aiming	LED aiming light, laser aiming light (630 to 680 nm, class II, < 1 mW), through-lens sighting or camera module (DG 10NV)				
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro				
Parameters	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	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 load at switching output)				
Operating temperature	0 °C to 70 °C				
Storage temperature	-20 °C to 70 °C				
Weight	appr. 520 g				
Dimensions	54 × 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 regulations (EN 50 011)				
Scope of delivery	PYROSPOT DG 10N/DG 10NV, mounting screw nut, inspection sheet, manual, PYROSOFT Spot for Windows® (without connection cable, please order separately)				

¹T_{ambient} = 23 °C, ε = 1, t95 = 1 s. ²Noise equivalent temperature difference.

Dimensional drawing pyrometer (with through-lens sighting)



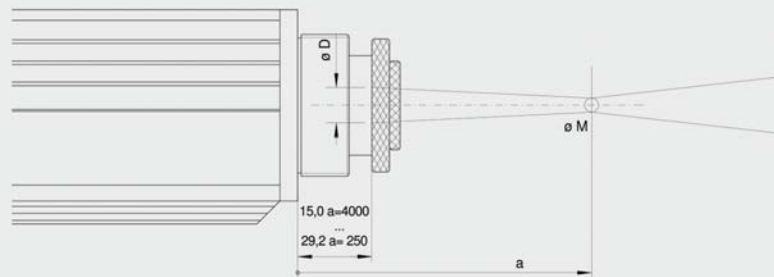
PYROSPOT DG 10N/DG 10NV

Pyrometers for industry and research

Vario optics

Measuring distance a [mm]	250	300	350	500	800	4000	Aperture diameter \varnothing D [mm]	Order number		
Optics pullout [mm]	29.2	25.5	23.5	20.3	18.0	15.0	at	LED aiming light	Laser aiming light	
Temperature range	Measuring field diameter M [mm]						a = 250 mm	a = 4000 mm	Through-lens sighting	Camera module
200 °C to 1200 °C	1.2	1.5	1.7	2.5	4.0	20.0	13.0	10.5	5101001204	5101011204
200 °C to 2000 °C	1.2	1.5	1.7	2.5	4.0	20.0	8.0	6.5	5101021204	5101031204
250 °C to 1500 °C	1.2	1.5	1.7	2.5	4.0	20.0	10.0	8.5	5101001208	5101011208
350 °C to 2000 °C	1.2	1.5	1.7	2.5	4.0	20.0	8.0	6.5	5101021208	5101031208
350 °C to 2500 °C	1.2	1.5	1.7	2.5	4.0	20.0	5.5	4.3	5101001205	5101011205
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Dimensional drawing vario optics



Technical data video camera (DG 10NV)

Video signal	Composite video signal approx. 1V _{ss} at 75 Ω (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

Pyrometer with TFT monitor



The video image can be displayed via the additionally available TFT monitor.

Detailed view of video image



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Electrical, mechanical and optical accessories ¹		Order number		
Connection cable, 12 pin, angulate plug	length 2 m	3310A11131		
	length 5 m	3310A11132		
	length 10 m	3310A11133		
	length 15 m	3310A11134		
	length 20 m	3310A11135		
	length 25 m	3310A11136		
	length 30 m	3310A11137		
Video connection cable	length 2 m	3310A16521		
	length 5 m	3310A16522		
	length 10 m	3310A16523		
	length 15 m	3310A16524		
	length 20 m	3310A16525		
	length 25 m	3310A16526		
	length 30 m	3310A16527		
Interface module	RS-485 to USB	3310A14020		
Power supply PSU 15	24 V DC, 0.6 A	3310A12010		
Mounting angle	adjustable	3310A21020		
Air purge adaptor	stainless steel, purge air 0.1 to 0,5 bar, oil-free	3310A22020		
Window slide	without window	3310A21210		
Vacuum flange	KF 16	3310A24015		
	with quartz window	3310A34021		
	with sapphire window (scratch-proof)	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 ²	3310A16110	3310A16120
Adapter	Video/USB	3310A14030		

¹ More accessories available. ² Cable lengths 5 m 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.

