

PYROSPOT DG 54NH/DG 54NHV

Special pyrometer for temperature measurement of flames

Overview

Digital pyrometers with RS-485 interface



Special features

- For temperature measurements between 500 °C and 2500 °C
- Temperature linear output 0/4 to 20mA
- Integrated RS-485 interface
- Color video camera or through-lens sighting
- Robust stainless steel housing
- Very short response times from 2 ms

Description and application

The digital DIAS pyrometers PYROSPOT DG 54NH are specifically designed for industrial purposes. They are suitable for temperature measurements of flames based on hydrogen, ammonia and hydrocarbons.

The solid and compact stainless steel housing allows usage even under rough environmental conditions. Different fixed optics are available for the pyrometers PYROSPOT DG 54NH. With a minimal response time of only 2 ms (t_{95}) the devices are usable for fast measuring tasks.

The temperature linear standard output signal of 0/4 to 20 mA allows an easy implementation in existing measurement and control systems.

The integrated video camera module (DG 54NHV) provides an anti-glare aiming of the pyrometer. It substantially facilitates the adjustment under difficult local conditions where the pyrometer is not easy to reach or the measurement object cannot be seen directly. A through-lens sighting is available as an option.

The PYROSPOT DG 54NH possesses a RS-485 interface. The devices are bus-compatible in this way and use the Modbus RTU protocol.

You can connect the pyrometer via an optionally available interface adaptor RS-485 to USB with a PC. Connect the pyrometer to a PC to adjust the parameters emissivity, sub temperature range, data storage settings and response time to the application by using the comfortable parameterizing and evaluation software PYROSOFT Spot.



Picture credit: Shutterstock.de/Drpixel

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Technical data		
Type	DG 54NH/DG 54NHV	
Temperature ranges	500 °C to 2500 °C	
Distance ratio	100 : 1	
Optics ¹	several fixed optics (type 650, 2000, 4000)	
Part number	Color video camera	Through-lens sighting
650	5541083262	5541073262
2000	5541086262	5541076262
4000	5541087262	5541077262
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C	
Spectral range	around 1.86 µm	
Emissivity ε	0.050 to 1.000	
Response time (t_{95})	2 ms ² , adjustable up to 100 s	
Measurement uncertainty ³	0.5 % of measured value in °C + 1 K	
Reproducibility ³	0.1 % of measured value in °C + 0.5 K	
NETD ^{3,4}	0.1 K	
Transmittance	50 % to 100 %	
Ambient radiation	adjustable within temperature range	
Output	0/4 mA to 20 mA, temperature linear, burden max. 500 Ω (galvanically isolated)	
Interface	RS-485 (galvanically isolated), half duplex, max. 115 kBd, Modbus RTU	
Aiming	DG 54NH: Through-lens sighting ⁵ DG 54NHV: Video camera, composite video signal PAL (B), 50Hz (galvanically isolated), optional NTSC (M), 60 Hz	
Switching output/threshold	1 opto relay, R_{Load} min. 48 Ω (galvanically isolated)/adjustable within temperature range	
Parameters	adjustable via interface and software: emissivity, transmittance, ambient radiation, response time, data storage settings, sub range of measurement output, switching thresholds of switching output	
Power supply	24 V DC ± 25 %, residual ripple 500 mV	
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	approx. 600 g	
Housing	stainless steel round housing with plug connector, length: approx. 105 mm (without through-lens sighting), Ø 50 mm	
Safety class	IP65 according to DIN EN 60529 and DIN 40050	
Test regulations	EN 55 011:1998, limit class A	
CE symbol	according to EU regulations	
Scope of delivery	DG 54NH/DG 54NHV, manual, inspection sheet, software PYROSOFT Spot, without connection cable (please order separately)	

¹ Further fixed optics on request. ² With dynamic adaption at low signal level. ³ Specifications for black body radiator, $T_{ambient} = 23$ °C, $t_{95} = 1$ s. ⁴ Noise equivalent temperature difference. ⁵ Operating temperature up to 50 °C only due to risk of burns.

Fixed optics				
Measurement distance a [mm]	Aperture D [mm]	a = 650	a = 2000	a = 4000
Temperature range		Measuring field diameter M [mm]		
500 °C to 2500 °C	10.0	6.5	20	40

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Technical data Video-Kamera (DG 54NHV)

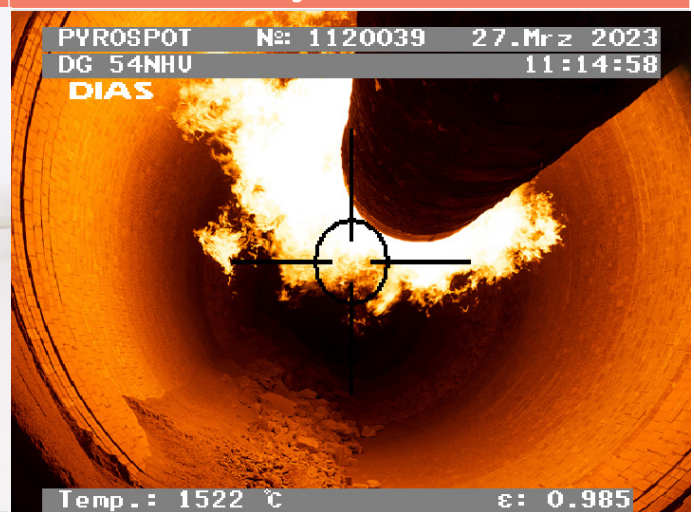
Video signal	Composite video signal approx. 1Vss at 75 Ω (galvanically isolated, video signal can be deactivated via software)
Color norm	PAL (B), 50 Hz (optional color norm NTSC (M), 60 Hz)
Resolution	1/3 inch video chip 628 \times 586 pixels (NTSC option: 510 \times 496 pixels)
Exposure control	automatic
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 $^{\circ}\text{C}/^{\circ}\text{F}$, 12/24 hours display

Pyrometer with TFT monitor

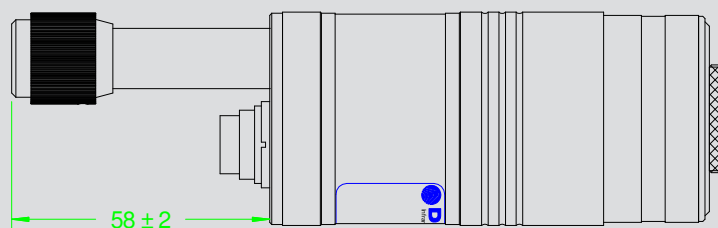
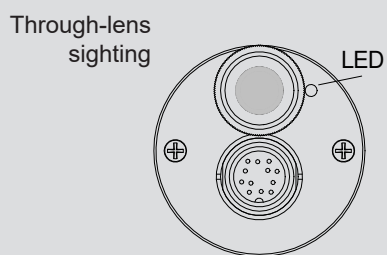
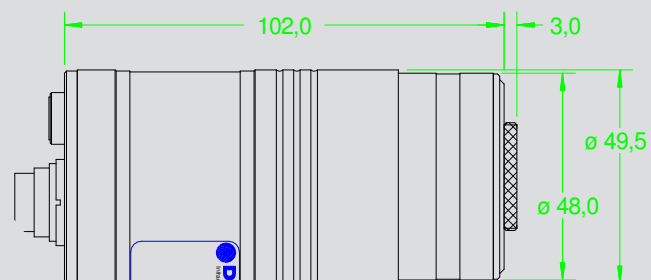
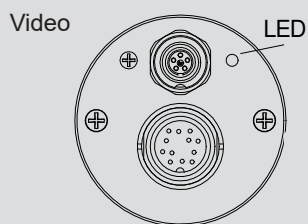


The video image can be displayed via the additionally available TFT monitor.

Detailed view of video image



Dimensional drawing pyrometer



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Electrical, mechanical and optical accessories¹			Part number	
Connection cable, straight plug, 12 pin	Connection cable, angulated plug, 12 pin	Length 2 m	3310A11111	3310A11131
		Length 5 m	3310A11112	3310A11132
		Length 10 m	3310A11113	3310A11133
		Length 15 m	3310A11114	3310A11134
		Length 20 m	3310A11115	3310A11135
		Length 30 m	3310A11117	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	
Mounting angle		adjustable	3310A21050	
Cooling jacket		including air purge unit, without mounting angle	3310A23050	
Ball flange		M40 × 1,5	3310A24020	
Air purge unit		stainless steel	3310A22050	
Power supply PSU 15		24 V DC, 0.6 A	3310A12010	
Threaded ring		with protection window quartz glass with protection window sapphire glass	3310A34022 3310A34052	
TFT monitor	TFT monitor industrial	3.5" with 2 m cable²	3310A16110	3310A16120
Adapter		Video/USB	3310A14030	
Handheld programming device DHP 1040		mobile handheld device for pyrometer parameterization	3310A17010	

¹ More accessories on request. ² Cable length 5 m or 10 m available, too.

Selected accessories – Images

Mounting angle, adjustable	Cooling jacket	Air purge unit
Part number: 3310A21050 	Part number: 3310A23050 	Part number: 3310A22050 
TFT monitor industrial	Ball flange	Handheld programming device DHP 1040
Part number: 3310A16120 	Part number: 3310A24020 	Part number: 3310A17010 



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