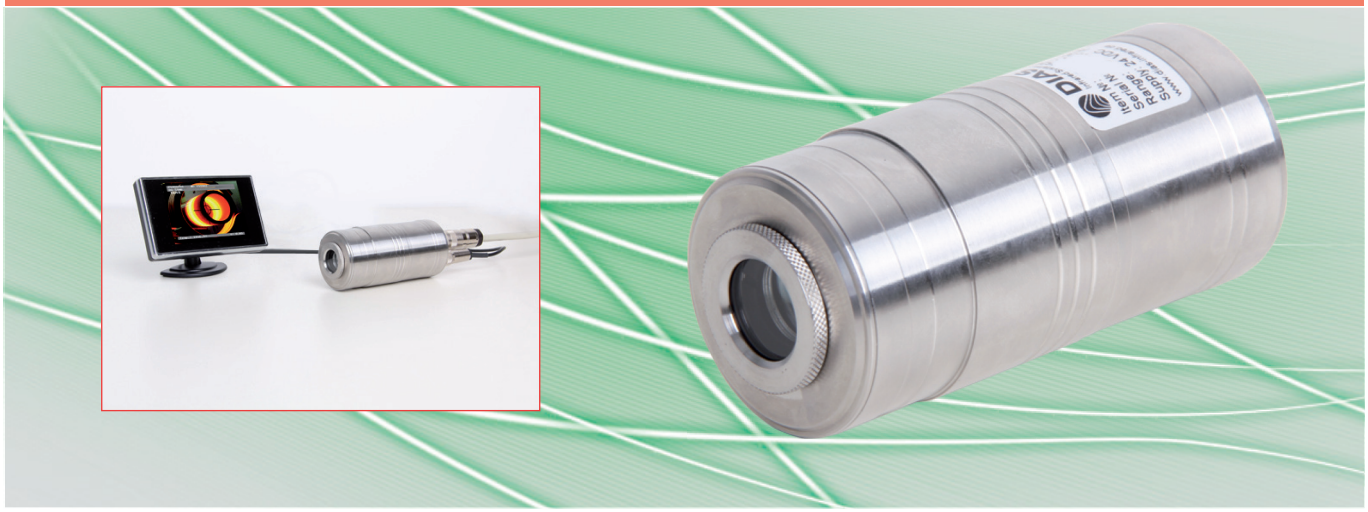
PYROSPOT DG 54N/DG 54NV

Pyrometer for industrial application

Overview

Digital pyrometers with RS-485 interface



Special features

- For temperature measurements between 200 °C and 2500 °C
- Temperature linear output 0/4 to 20mA
- Integrated RS-485 interface
- Integrated laser aiming light or video camera
- Robust stainless steel housing
- Very short response times from 2 ms

Description and application

The digital DIAS pyrometer PYROSPOT DG 54N is specifically designed for industrial purposes. This devices are suitable for non-contact temperature measurement from 200 °C on different surfaces like metal, graphite or ceramics.

The solid and compact stainless steel housing allows usage even under rough environmental conditions. Measuring spot sizes from 2.2 mm for the PYROSPOT Series 54 can be easily realized. 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.

Use the optional integrated red laser aiming light for the exact aiming of the pyrometer to the measurement object .The optional integrated video camera module (DG 54NV) provides an anti-glare aiming of the pyrometer even when the measurement object is very hot. 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.

The PYROSPOT DG 54N 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.

Typical application areas:

- Steel and metal industry
- Furnace industry
- Soldering applications
- Ceramic industry

Picture credit: Stahl-Zentrum

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DIAS Infrared Systems

Technical data										
Type	**DG 54N/DG 54NV**									
Temperature ranges	200 °C to 1200 °C		200 °C to 2000 °C		250 °C to 1500 °C		350 °C to 2000 °C		250 °C to 2500 °C	
Distance ratio	200 : 1		200 : 1		300 : 1		300 : 1		300 : 1	
Optics[1]	several fixed optics (type 650, 2000, 4000)									
Part number	Laser	Video	Laser	Video	Laser	Video	Laser	Video	Laser	Video
650	5541063204	5541083204	5541063208	5541083208	5541063205	5541083205	5541063206	5541083206	5541063207	5541083207
2000	5541066204	5541086204	5541066208	5541086208	5541066205	5541086205	5541066206	5541086206	5541066207	5541086207
4000	5541067204	5541087204	5541067208	5541087208	5541067205	5541087205	5541067206	5541087206	5541067207	5541087207
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C									
Spectral range	1.5 µm to 1.8 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 54N: Laser aiming light, 630 … 680 nm, class II, < 1 mW DG 54NV: 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, ∅ 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	PYROSPOT DG 54N/DG 54NV, manual, inspection sheet, software PYROSOFT Spot, without connection cable (please order separately)									

[1] Further fixed optics on request, e.g. 220 mm, 200 : 1. [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.

Fixed optics				
Measurement distance a [mm]	**Aperture D [mm]**	**a = 650**	**a = 2000**	**a = 4000**
Temperature range		Measuring field diameter M [mm]		
200 °C to 1200 °C	10.0	3.5	10.0	20.0
250 °C to 1500 °C	8.0	2.2	6.7	13.3
350 °C to 2000 °C	5.0	2.2	6.7	13.3
200 °C to 2000 °C	5.0	3.5	10.0	20.0
250 °C to 2500 °C	3.5	2.2	6.7	13.3

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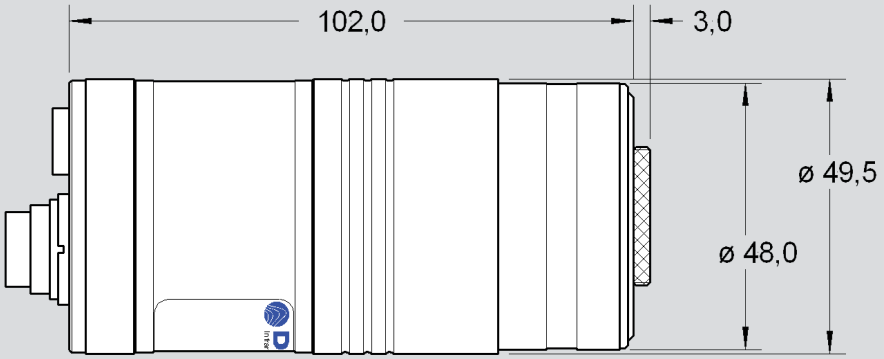
Technical data Video-Kamera (DG 54NV)	
Video signal	Composite video signal approx. 1Vss at 75 Ω (galvanically isolated, video signal can be deactivated via software)
Color norm	PAL (B), 50 Hz (optional color norm NTSC (M), 60 Hz)
Resolution	1/3 inch video chip 628 × 586 pixels (NTSC option: 510 × 496 pixels)
Exposure control	automatic
Visible field	approx. 8 % × 6 % of adjusted measurement distance (NTSC option: 6.5 % × 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

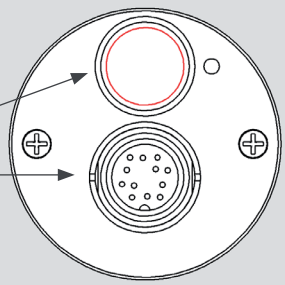
Dimensional drawing pyrometer

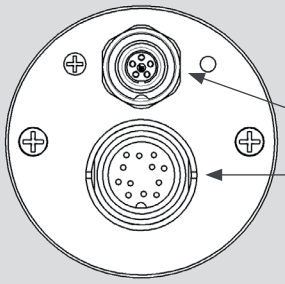


Option laser aiming light:

laser button

12 pin device connection





Option video camera:

5 pin video circular plug

12 pin device connection

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Electrical, mechanical and optical accessories[1]			Part number	
Connection cable, straight plug, 12 pin		length 2 m length 5 m length 10 m length 15 m length 20 m length 25 m length 30 m	3310A11111 3310A11112 3310A11113 3310A11114 3310A11115 3310A11116 3310A11117	
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	
Mounting angle		adjustable	3310A21050	
Cooling jacket		including air purge unit, without mounting angle	3310A23050	
Ball flange		thread M40 × 1.5	3310A24020	
Air purge unit			3310A22050	
Power supply PSU 15		24 V DC, 0.6 A	3310A12010	
Ring nut		with quartz glass window with sapphire glass window	3310A34022 3310A34052	
TFT monitor	TFT monitor industrial	3.5" with 2 m connection cable[2]	3310A16110	3310A16120
Adaptor		video/USB	3310A14030	
DHP 1040		handheld programming device	3310A17010	

[1] More accessories on request. [2] Cable lengths 5 m and 10 m also available.

Selected accessories

Mounting angle, adjustable

Part number: 3310A21050

Cooling jacket

Part number: 3310A23050

Air purge unit

Part number: 3310A22050

Ball flange

Part number: 3310A24020

Screwed coupling for ball flange

Part number: 3310A24021

Handheld programming device DHP 1040

Part number: 3310A17010

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