

PYROSPOT DS 54N/DS 54NV

Pyrometer for industrial application

Overview

Digital pyrometers with RS-485 interface



Special features

- For temperature measurements between 550 °C and 3000 °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 DS 54N is specifically designed for industrial purposes. This device is suitable for non-contact temperature measurement from 550 °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.

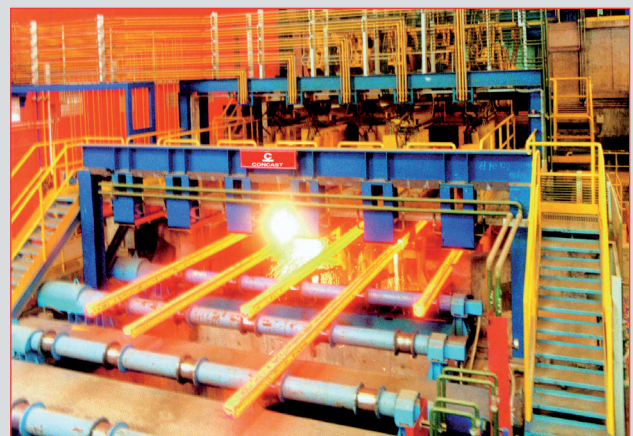
Use the optional integrated red laser aiming light for the exact aiming of the pyrometer to the measurement object. The optional integrated video camera module (DS 54NV) provides an anti-glare aiming of the pyrometer even when the measurement object is very hot. It substantially facilitates the adjustment under difficult local conditions where the pyrometer is not easy to reach or the measurement object cannot be seen directly.

The PYROSPOT DS 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



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Technical data										
Type	DS 54N/DS 54NV									
Temperature ranges	550 °C to 1500 °C		600 °C to 1800 °C		800 °C to 2500 °C		900 °C to 3000 °C		600 °C to 3000 °C	
Distance ratio	200 : 1		300 : 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	5540063201	5540083201	5540063202	5540083202	5540063203	5540083203	5540063204	5540083204	5540063205	5540083205
2000	5540066201	5540086201	5540066202	5540086202	5540066203	5540086203	5540066204	5540086204	5540066205	5540086205
4000	5540067201	5540087201	5540067202	5540087202	5540067203	5540087203	5540067204	5501087204	5540067205	5540087205
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C									
Spectral range	0.8 µm to 1.1 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	DS 54N: Laser aiming light, 630 ... 680 nm, class II, < 1 mW DS 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, 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	PYROSPOT DS 54N/DS 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]	Apertur D [mm]	a = 650	a = 2000	a = 4000
Temperature range		Measuring field diameter M [mm]		
550 °C to 1500 °C	10.0	3.5	10.0	20.0
600 °C to 1800 °C	6.0	2.2	6.7	13.3
800 °C to 2500 °C	8.0	2.2	6.7	13.3
900 °C to 3000 °C	4.0	2.2	6.7	13.3
600 °C to 3000 °C	4.0	2.2	6.7	13.3

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Technical data Video-Kamera (DS 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 $\times$ 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

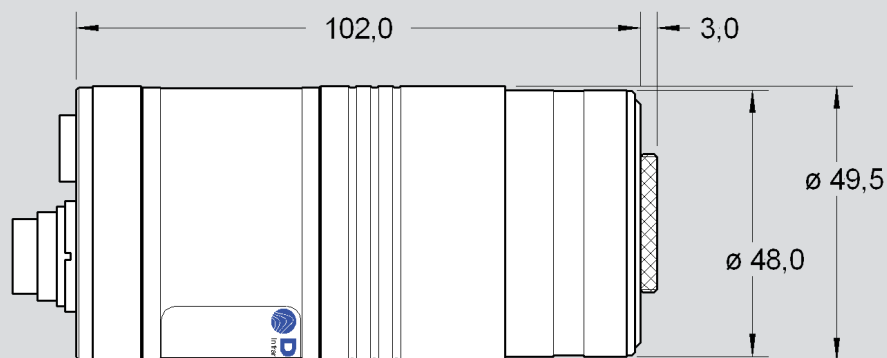


The video image can be displayed via the additionally available TFT monitor.

Detailed view of video image

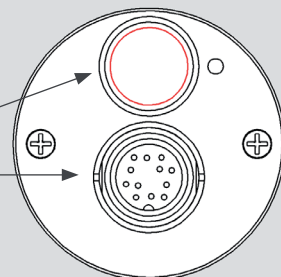


Dimensional drawing pyrometer



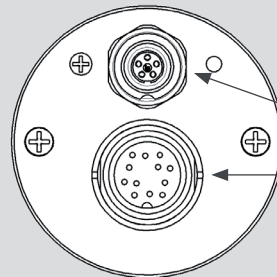
Option laser aiming light:

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		3310A11111	
	length 5 m		3310A11112	
	length 10 m		3310A11113	
	length 15 m		3310A11114	
	length 20 m		3310A11115	
	length 25 m		3310A11116	
	length 30 m		3310A11117	
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	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		3310A34022	
	with sapphire glass window		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

