

PYROSPOT DG 56N/DG 56NV

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 20 mA, switchable
- Display, keys and integrated RS-485 interface
- Laser aiming light or integrated color video camera
- Optional through-lens sighting or electronic viewfinder
- Very short response time 2 ms

Description and application

The digital DIAS pyrometer PYROSPOT DG 56N is specifically designed for industrial purposes. This device is 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 0.8 mm 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 integrated red laser aiming light for the exact aiming of the pyrometer to the measurement object. The optional integrated video camera module (DG 56NV) 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. A through-lens sighting or an electronic viewfinder are also optionally available.

The PYROSPOT DG 56N possesses a RS-485 interface. The devices are bus-compatible in this way and use the Modbus RTU protocol.

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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Technical data										
Type	DG 56N/DG 56NV									
Temperature range	200 °C to 1200 °C		250 °C to 1500 °C		350 °C to 2000 °C		250 °C to 2500 °C		200 °C to 2000 °C	
Distance ratio	200 : 1		300 : 1		300 : 1		300 : 1		200 : 1	
Optics ¹	several fixed optics (type 250, 650, 2000, 4000)									
Part numbers	Laser	Color camera	Laser	Color camera	Laser	Color camera	Laser	Color camera	Laser	Color camera
	Through-lens sighting	Electronical viewfinder	Through-lens sighting	Electronical viewfinder	Through-lens sighting	Electronical viewfinder	Through-lens sighting	Electronical viewfinder	Through-lens sighting	Electronical viewfinder
250	5561062204	5561082204	5561062205	5561082205	5561062206	5561082206	5561062207	5561082207	5561062208	5561082208
	5561072204	5561072274	5561072205	5561072275	5561072206	5561072276	5561072207	5561072277	5561072208	5561072278
650	5561063204	5561083204	5561063205	5561083205	5561063206	5561083206	5561063207	5561083207	5561063208	5561083208
	5561073204	5561073274	5561073205	5561073275	5561073206	5561073276	5561073207	5561073277	5561073208	5561073278
2000	5561066204	5561086204	5561066205	5561086205	5561066206	5561086206	5561066207	5561086207	5561066208	5561086208
	5561076204	5561076274	5561076205	5561076275	5561076206	5561076276	5561076207	5561076277	5561076208	5561076278
4000	5561067204	5561087204	5561067205	5561087205	5561067206	5561087206	5561067207	5561087207	5561067208	5561087208
	5561077204	5561077274	5561077205	5561077275	5561077206	5561077276	5561077207	5561077277	5561077208	5561077278
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, temperatur linear, burden max. 500 Ω (galvanically isolated)									
Interface	RS-485 (galvanically isolated), half duplex, max. 115 kBd, data protocol Modbus RTU									
Aiming	DG 56N: laser aiming light, 630 ... 680 nm, class II, < 1 mW, optional optical through-lens sighting ⁵ DG 56NV: video camera, composite video signal PAL (B), 50Hz (galvanically isolated) or NTSC (M), 60 Hz, optional electronical viewfinder ⁵									
Switching output/threshold	1 opto relay, R _{Load} min. 48 Ω (galvanically isolated)/adjustable within temperature range									
Parameters	adjustable via interface and software or at the device: emissivity, transmissivity, 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. 750 g									
Housing	stainless steel round housing with plug connector, length: approx. 140 mm (without through-lens sighting or electrial viewfinder), 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 DG 56N/DG 56NV, manual, inspection sheet, software PYROSOFT Spot, without connection cable (please order separately)									

¹ Other 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 to avoid injury.

Fixed optics					
Measurement distance a [mm]	Aperture D [mm]	a = 250	a = 650	a = 2000	a = 4000
Temperature range		Measuring field diameter M [mm]			
200 °C to 1200 °C	10.0	1.3	3.5	10.0	20.0
250 °C to 1500 °C	8.0	0.8	2.2	6.7	13.3
350 °C to 2000 °C	5.0	0.8	2.2	6.7	13.3
200 °C to 2000 °C	5.0	1.3	3.5	10.0	20.0
250 °C to 2500 °C	3.5	0.8	2.2	6.7	13.3

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Technical data DG 56NV with video camera

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



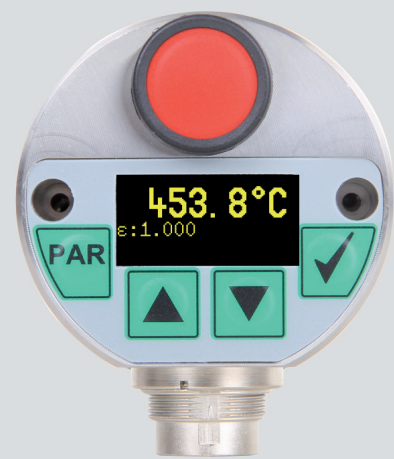
Pyrometer with different aiming variants



Optical through-lens sighting or
electronical viewfinder



video camera



laser aiming light



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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		3310A23056	
Ball flange	thread M40 × 1.5		3310A24020	
Air purge unit	stainless steel		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: 3310A23056



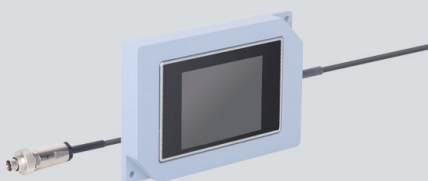
Air purge unit

Part number: 3310A22050



TFT monitor (industrial)

Part number: 3310A16120



Ball flange

Part number: 3310A24020



Power supply PSU 15

Part number: 3310A12010

