

PYROSPOT DG 55N/DG 55NV

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
- Vario optics with motor focus
- Laser aiming light, integrated color video camera or through-lens sighting
- Very short response time 2 ms

Description and application

The digital DIAS PYROSPOT DG 55N pyrometers are specially designed for industrial use. They are suitable for temperature measurements from 200 °C on a variety of surfaces, such as metals, graphite or ceramics.

A special feature of this pyrometer is the vario optics with motor focus. For example, if the devices are installed in hard-to-reach places, the user can conveniently change or adjust the focus via interface and software. Alternatively, motor focus and the emissivity parameter can be set directly on the device using buttons and display. All other parameters are adjusted via interface and software, for example PYROSOFT Spot.

Even in harsh environments, the compact and robust IP 65 stainless steel housing of the pyrometer can withstand. With a minimum response time of only 2 ms (t_{95}), the devices also realize fast measuring tasks. The vario optics focus motorized and precise already small measuring fields from 1.0 mm diameter.

Thanks to the temperature linear standard output signal of 0/4 to 20 mA, the pyrometers can be easily integrated into existing measurement and control systems. The pyrometer has a galvanically isolated RS-485 interface. The device is thus bus capable and uses the Modbus RTU protocol. The connection to local networks can be supported by an Ethernet interface box.

The integrated red laser aiming light helps to precisely align the pyrometer with the target. If the objects are very hot, it is recommended to use an integrated color video camera instead of the laser as a aiming variant (PYROSPOT DG 55NV). Thus, a glare-free alignment is easily possible. The integrated video camera also facilitates installation in difficult local conditions, where the pyrometer is difficult to reach or the measurement object is not visible. Optionally, a through-lens sighting is available.

Typical application areas:

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



Image source: Stahl-Zentrum

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Technical data

Type		DG 55N/DG 55NV				
Measuring 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		160 : 1	240 : 1	240 : 1	240 : 1	160 : 1
Optics		vario optics with motor focus				
Aiming (Part no.)	Laser	5551011204	5551011205	5551011206	5551011207	5551011208
	Color camera	5551031204	5551031205	5551031206	5551031207	5551031208
	Through-lens sighting	5551021204	5551021205	5551021206	5551021207	5551021208
Analog output		0/4 mA to 20 mA, temperature linear, maximum burden 500 Ω (galvanically isolated)				
Sub temperature range of analog output		adjustable within measuring 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 ³ , adjustable up to 100 s				
Measurement uncertainty ¹		0.5 % of measured value in °C + 1 K				
Reproducibility ¹		0.1 % of measured value in °C + 0.5 K				
NETD ²		0.1 K ¹				
Transmittance		50 % to 100 %				
Ambient radiation		adjustable within measuring temperature range				
Interface		RS-485 (galvanically isolated), half duplex, max. 115 kBd, Modbus RTU protocol				
Aiming		DG 55N: laser aiming light (630 ... 680 nm, class II, < 1 mW) or through-lens sighting DG 55NV: video camera, composite video, galvanically isolated (PAL (B), 50 Hz or optional NTSC (M), 60 Hz)				
Switching output/ Switching threshold		1 opto relay, R _{Burden} min. 48 Ω (galvanically isolated)/adjustable within measuring temperature range				
Operating and display elements		Two push-buttons for „Parameter menu“, „Enter“, „Up“ and „Down“, OLED with standard display of temperature and emissivity, pilot light button (option)				
Parameters		— adjustable via interface and software: emissivity, transmittance, ambient radiation, response time, memory settings, sub temperature range of measuring output, switching threshold of switching output, motor focus — adjustable additionally on the device with push-buttons and display: emissivity, motor focus				
Power supply		24 V DC ± 25 %, residual ripple 500 mV				
Power consumption		max. 1.5 W (without burden on switching output)				
Operating temperature		0 °C to 70 °C				
Storage temperature		−20 °C to 70 °C				
Weight		approx. 750 g				
Housing		stainless steel housing with plug connector, length approx. 105 mm, diameter 50 mm				
IP code		IP65 nach DIN EN 60529 und DIN 40050				
Test regulations		EN 55 011:1998, limit class A				
CE symbol		according to EU regulations				
Scope of delivery		PYROSPOT DG 55N/DG 55NV, user manual, inspection sheet, software PYROSOFT Spot, without connection cable (please order separately)				

¹ Specifications for black body radiator, T_{ambience} = 23 °C, t₉₅ = 1 s. ² Noise equivalent temperature difference. ³ With dynamic adaption at low signal level.

Vario optics with motor focus (adjustable in 8 steps)

Measurement distance a [mm]		240	360	540	800	1200	1800	2500	4000
Measuring temperature range	Aperture diameter D [mm]	Target size M [mm]							
200 °C to 1200 °C	10	1.5	2.3	3.4	5.0	7.5	11	16	25
250 °C to 1500 °C	8.0	1.0	1.5	2.3	3.4	5.0	7.5	11	17
350 °C to 2000 °C	5.0	1.0	1.5	2.3	3.4	5.0	7.5	11	17
250 °C to 2500 °C	3.5	1.0	1.5	2.3	3.4	5.0	7.5	11	17
200 °C to 2000 °C	5.0	1.5	2.3	3.4	5.0	7.5	11	16	25

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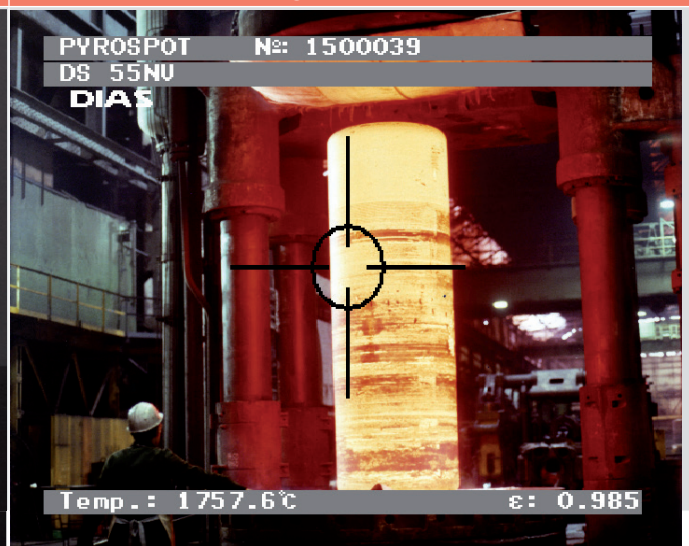
Technical data DG 55NV with video camera

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 industrial



Detailed view of video image



Pyrometer with different aiming variants



Laser aiming light



Through-lens sighting



Video camera






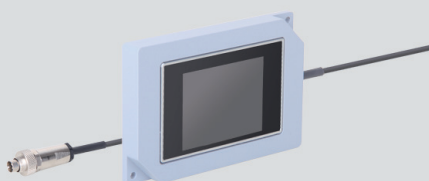

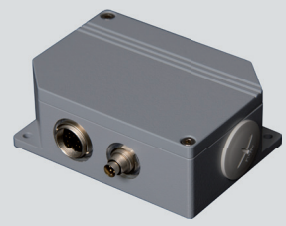
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Electrical, mechanical and optical accessories ¹			Part number	
Connection cable, straight plug, 12 pin	Connection cable, angulated plug, 12 pin	Length 2 m	3310A11111	3310A11131
		Length 5 m	3310A11112	3310A11132
		Length 10 m	3310A11113	3310A11133
		Length 15 m	3310A11114	3310A11134
		Length 20 m	3310A11115	3310A11135
		Length 25 m	3310A11116	3310A11136
		Length 30 m	3310A11117	3310A11137
		Video connection cable		Length 2 m
		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 cable ²	3310A16110	3310A16120
Adapter		Video/USB	3310A14030	
Handheld programming device DHP 1040		mobile handheld device for pyrometer parameterization	3310A17010	
Ethernet interface box DCU ^{loP}		for integration into local networks and parameterization	3310A13500	

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	Ethernet Interface-Box DCU ^{loP}
Part number: 3310A16120 	Part number: 3310A24020 	Part number: 3310A13500 



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