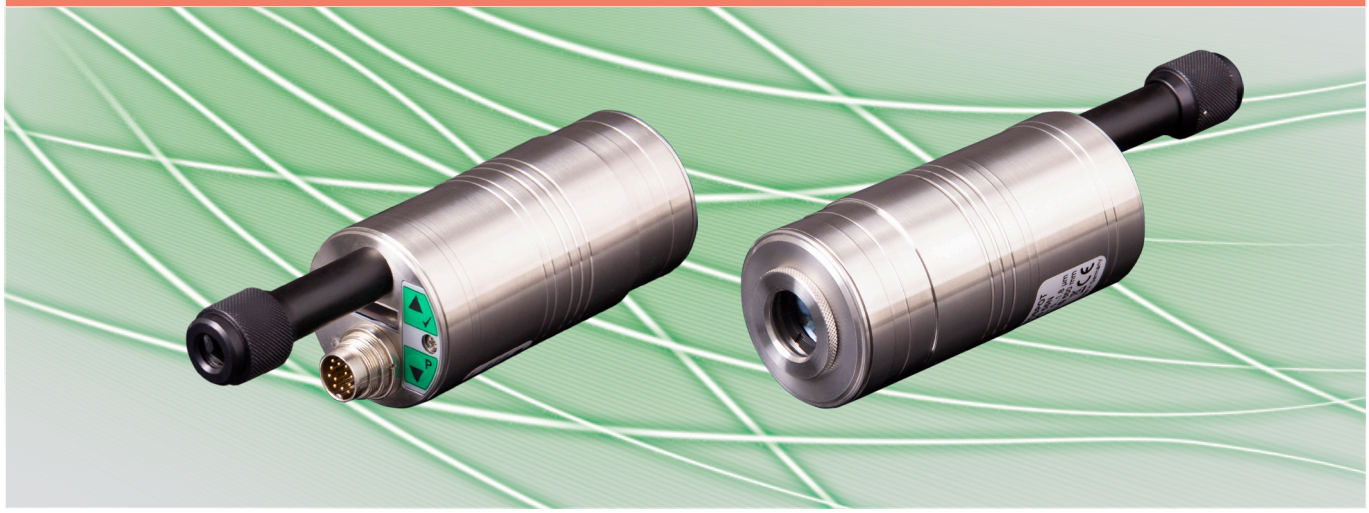
PYROSPOT DS 55N/DS 55NV

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 20 mA, switchable
- Display, keys and RS-485 interface
- Different fixed optics or 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 DS 55N pyrometers are specially designed for industrial use. They are suitable for temperature measurements from 550 °C on a variety of surfaces, such as metals, graphite or ceramics.

With different fixed optics, target sizes starting from 0.8 mm are available. As an option a vario optics with motorized focus is possible. For example, if the devices are installed in hart-to-reach places, the user can conveniently change or adjust the focus. Emissivity and motor focus can be set directly at 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.

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 DS 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: Shutterstock.de/Bondgrunge

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DIAS Infrared Systems

Technical data										
Type	**DS 55N/DS 55NV**									
Measuring temperature range	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	
Optics	different fixed optics (type 250, 650 ,2000, 4000) or optionally vario optics with motor focus									
Part number	Through-lens sighting		Through-lens sighting		Through-lens sighting		Through-lens sighting		Through-lens sighting	
	Laser	Video	Laser	Video	Laser	Video	Laser	Video	Laser	Video
250	5550072201		5550072202		5550072203		5550072204		5550072205	
	5550062201	5550082201	5550062202	5550082202	5550062203	5550082203	5550062204	5550082204	5550062205	5550082205
650	5550073201		5550073202		5550073203		5550073204		5550073205	
	5550063201	5550083201	5550063202	5550083202	5550063203	5550083203	5550063204	5550083204	5550063205	5550083205
2000	5550076201		5550076202		5550076203		5550076204		5550076205	
	5550066201	5550086201	5550066202	5550086202	5550066203	5550086203	5550066204	5550086204	5550066205	5550086205
4000	5550077201		5550077202		5550077203		5550077204		5550077205	
	5550067201	5550087201	5550067202	5550087202	5550067203	5550087203	5550067204	5550087204	5550067205	5550067205
Vario optics	5550021201		5550021202		5550021203		5550021204		5550021205	
	5550011201	5550031201	5550011202	5550031202	5550011203	5550031203	5550011204	5550031204	5550011205	5550031205
Sub temperature range of analog output	adjustable within measuring 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 [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									
Analog output	0/4 mA to 20 mA, temperature linear, maximum burden 500 Ω (galvanically isolated)									
Interface	RS-485 (galvanically isolated), half duplex, max. 115 kBd, Modbus RTU protocol									
Aiming	DS 55N: laser aiming light (630 … 680 nm, class II, < 1 mW) or through-lens sighting [4] DS 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, transmittane, ambient radiation, response time, memory settings, sub temperature range of measuring output, switching threshold of switching output, motor focus – adjustable additionaly 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. 600 g									
Housing	stainless steel housing with plug connector, length approx. 105 mm (without through-lens sighting), 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 DS 55N/DS 55NV, user manual, inspection sheet, software PYROSOFT Spot, without connection cable (please order seperately)									

[1] Specifications for black body radiator, $T_{ambience}$ = 23 °C, t_{95} = 1 s. [2] Noise equivalent temperature difference. [3] With dynamic adaption at low signal level. [4] Operating temperature up to 50 °C due to the risk of burns.

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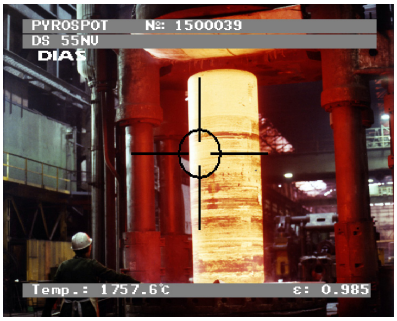
DIAS Infrared Systems

Fixed optics						
Measurement distance a [mm]		a = 250	a = 650	a = 2000	a = 4000	
Temperature range	Distance ratio	Target size M [mm]				Aperture ∅ [mm]
550 °C to 1500 °C	200 : 1	1.3	3.5	10.0	20	10.0
600 °C to 1800 °C	300 : 1	0.8	2.2	6.7	13	6.0
800 °C to 2500 °C	300 : 1	0.8	2.2	6.7	13	8.0
900 °C to 3000 °C	300 : 1	0.8	2.2	6.7	13	4.0
600 °C to 3000 °C	300 : 1	0.8	2.2	6.7	13	4.0

Vario optics with motor focus (adjustable in 8 steps)										
Measurement distance a [mm]		240	360	540	800	1200	1800	2500	4000	
Temperature range	Distance ratio	Target size M [mm]								Aperture ∅ [mm]
550 °C to 1500 °C	160 : 1	1.5	2.3	3.4	5.0	7.5	11	16	25	10.0
600 °C to 1800 °C	240 : 1	1.0	1.5	2.3	3.4	5.0	7.5	11	17	6.0
800 °C to 2500 °C	240 : 1	1.0	1.5	2.3	3.4	5.0	7.5	11	17	8.0
900 °C to 3000 °C	240 : 1	1.0	1.5	2.3	3.4	5.0	7.5	11	17	4.0
600 °C to 3000 °C	240 : 1	1.0	1.5	2.3	3.4	5.0	7.5	11	17	4.0

Technical data DS 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 × 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
The video image can be displayed via the additionally available TFT monitor.	



Pyrometers with differenct aiming variants

Through-lens sighting

Video camera

Laser aiming light

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Electriacal, mechanical and optical accessories[1]			Part number	
Connection cable, straight plug, 12 pin	Connection cable, angulated 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	3310A11131 3310A11132 3310A11133 3310A11134 3310A11135 3310A11136 3310A11137
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		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^{IoP}		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

Part number: 3310A21050

Cooling jacket

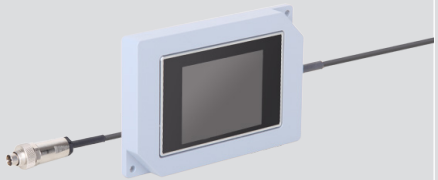
Part number: 3310A23050

Air purge unit

Part number: 3310A22050

TFT monitor industrial

Part number: 3310A16120

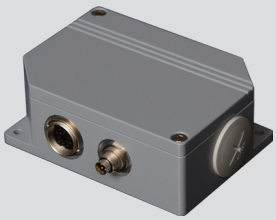


Ball flange

Part number: 3310A24020

Ethernet Interface-Box DCU^{IoP}

Part number: 3310A13500



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