

PYROSPOT DS 56N/DS 56NV

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 integrated RS-485 interface
- Laser aiming light or integrated color video camera
- Optional through-lens sighting or electronic viewfinder
- Very short response times 2 ms

Description and application

The digital DIAS pyrometer PYROSPOT DS 56N 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 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.

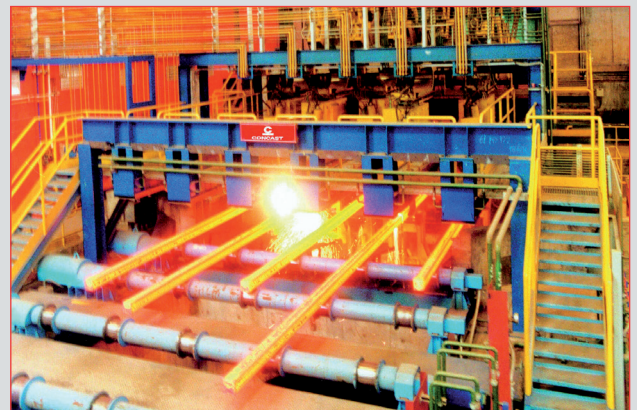
Use the integrated red laser aiming light for the exact aiming of the pyrometer to the measurement object. The optional integrated video camera module (DS 56NV) provides an anti-glare aiming of the pyrometer even when the measurement object is very hot. It substantially facilitates the adjustment under 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 DS 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



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Technical data

Type	DS 56N/DS 56NV									
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	
Distance ratio	200 : 1		300 : 1		300 : 1		300 : 1		300 : 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	5560062201	5560082201	5560062202	5560082202	5560062203	5560082203	5560062204	5560082204	5560062205	5560082205
	5560072201	5560072271	5560072202	5560072272	5560072203	5560072273	5560072204	5560072274	5560072205	5560072275
650	5560063201	5560083201	5560063202	5560083202	5560063203	5560083203	5560063204	5560083204	5560063205	5560083205
	5560073201	5560073271	5560073202	5560073272	5560073203	5560073273	5560073204	5560073274	5560073205	5560073275
2000	5560066201	5560086201	5560066202	5560086202	5560066203	5560086203	5560066204	5560086204	5560066205	5560086205
	556076201	5560076271	5560076202	5560076272	5560076203	5560076273	5560076204	5560076274	5560076205	5560076275
4000	5560067201	5560087201	5560067202	5560087202	5560067203	5560087203	5560067204	5560087204	5560067205	5560087205
	5560077201	5560077271	5560077202	5560077272	5560077203	5560077273	5560077204	5560077274	5560077205	5560077275
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, temperatur linear, burden max. 500 Ω (galvanically isolated)									
Interface	RS-485 (galvanically isolated), half duplex, max. 115 kBd, data protocol Modbus RTU									
Aiming	DS 56N: laser aiming light, 630 ... 680 nm, class II, < 1 mW, optional optical through-lens sighting ⁵ DS 56NV: video camera, composite video signal PAL (B), 50Hz (galvanically isolated) or NTSC (M), 60 Hz, optional electroni- cal 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 DS 56N/DS 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]			
550 °C to 1500 °C	10.0	1.3	3.5	10.0	20.0
600 °C to 1800 °C	6.0	0.8	2.2	6.7	13.3
800 °C to 2500 °C	8.0	0.8	2.2	6.7	13.3
900 °C to 3000 °C	4.0	0.8	2.2	6.7	13.3
600 °C to 3000 °C	4.0	0.8	2.2	6.7	13.3

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Technical data DS 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



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

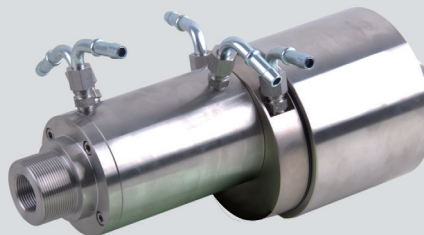
Mounting angle, adjustable

Part number: 3310A21050



Cooling jacket

Part number: 3310A23056



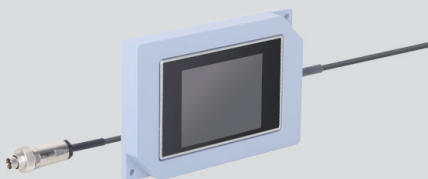
Air purge unit

Part number: 3310A22050



TFT monitor (industrial)

Part number: 3310A16120



Ball flange

Part number: 3310A24020



Power supply PSU 15

Part number: 3310A12010

