

PYROSPOT DGE 55N

Pyrometer for industrial application

Overview

Digital pyrometers with RS-485 interface



Special features

- For temperature measurements between 75 °C and 2200 °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 or integrated through-lens sighting
- Very short response time from 2 ms

Description and application

The digital DIAS PYROSPOT DGE 55N pyrometers are specially designed for industrial use. They are suitable for temperature measurements from 75 °C on a variety of surfaces, such as metals, graphite or ceramics.

With different fixed optics, target sizes starting from 1.3 mm are available. As an option a vario optics with motorized focus is possible. For example, if the devices are installed in hard-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 through-lens sighting instead of the laser as a aiming variant.

Typical application areas:

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



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Technical data

Type	DGE 55N							
Measuring temperature range	75 °C to 650 °C	100 °C to 800 °C	150 °C to 1200 °C	150 °C ¹ to 2200 °C				
Optics	different fixed optics (type 250, 650 ,2000, 4000) or optionally vario optics with motor focus							
Part number	Laser	Through-lens sighting	Laser	Through-lens sighting	Laser	Through-lens sighting	Laser	Through-lens sighting
250	5551062221	5551072221	5551062222	5551072222	5551062223	5551072223	5551062224	5551072224
650	5551063221	5551073221	5551063222	5551073222	5551063223	5551073223	5551063224	5551073224
2000	5551066221	5551076221	5551066222	5551076222	5551066223	5551076223	5551066224	5551076224
4000	5551067221	5551077221	5551067222	5551077222	5551067223	5551077223	5551067224	5551077224
Vario optics	5551011221	5551021221	5551011222	5551021222	5551011223	5551021223	5551011224	5551021224
Sub temperature range of analog output	adjustable within measuring temperature range, minimum span 50 °C							
Spectral range	2.0 µm to 2.6 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 + 2 K							
Reproducibility ³	0.3 % of measured value in °C + 1 K							
NETD ⁴	0.5 K ³							
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	DGE 55N: laser aiming light (630 ... 680 nm, class II, < 1 mW) or through-lens sighting							
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 45 °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 DGE 55N, user manual, inspection sheet, software PYROSOFT Spot, without connection cable (please order separately)							

¹ For trend measurements from 100 °C. ² With dynamic adaption at low signal level. ³ Specifications for black body radiator, T_{ambience} = 23 °C, t₉₅ = 1 s. ⁴ Noise equivalent temperature difference.

Pyrometers with different aiming variants



Through-lens sighting



Laser aiming light



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Fixed optics

Measurement distance a [mm]	a = 250	a = 650	a = 2000	a = 4000		
Temperature range	Distance ratio	Target size M [mm]			Aperture Ø [mm]	
75 °C to 650 °C	80 : 1	3.5	8.5	25	50	10.0
100 °C to 800 °C	100 : 1	2.5	6.5	20	40	8.0
150 °C to 1200 °C	200 : 1	1.3	3.3	10	20	6.0
150 °C to 2200 °C	130 : 1	2.0	5.0	15	30	6.0

Vario optics with motor focus (adjustable in 8 steps)

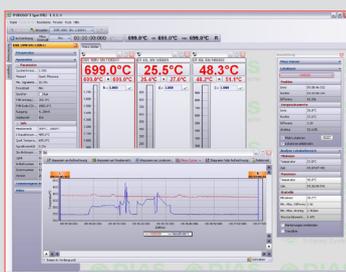
Measurement distance a [mm]	240	360	540	800	1200	1800	2500	4000		
Temperature range	Distance ratio	Target size M [mm]							Aperture Ø [mm]	
75 °C to 650 °C	65 : 1	3.7	5.5	8.3	12	19	28	39	62	10.0
100 °C to 800 °C	80 : 1	3.0	4.5	6.8	10	15	23	31	50	8.0
150 °C to 1200 °C	160 : 1	1.5	2.3	3.4	5.0	7.5	11	16	25	6.0
150 °C to 2200 °C	100 : 1	2.4	3.6	5.4	8.0	12	18	25	40	6.0

Dimensional drawing: Pyrometer with through-lens sighting



Software PYROSOFT Spot

For evaluation and processing of measured data obtained DIAS provides two software variants for its pyrometer **PYROSPOT**. These are the free Windows software **PYROSOFT Spot** and the pay version **PYROSOFT Spot Pro**. The Pro version allows the measurement, visualization and measurement recording of several simultaneously connected pyrometers, whereas this is possible with the free version only for one connected pyrometer.



Further functions are for example:

- Measurement data logging with real-time display, parameterization of DIAS pyrometers
- Trigger functions^{*)} and auto save^{*)}
- Extensive statistical analysis of measurement data
- Measurement cursor, print functions, automatic emissivity determination
- Export of measured data as text file and automatic creation of Microsoft Excel[®] spreadsheets
- Integrated report function with customized templates for Microsoft Word[®]
- Integrated calculator for easy calculation of optics parameters

^{*)}only for PYROSOFT Spot Pro

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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
Connection cable, angulated plug, 12 pin	Length 2 m	3310A11131
	Length 5 m	3310A11132
	Length 10 m	3310A11133
	Length 15 m	3310A11134
	Length 20 m	3310A11135
	Length 25 m	3310A11136
	Length 30 m	3310A11137
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	3310A34022
	with protection window sapphire glass	3310A34052
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 
Handheld programming device DHP 1040	Ball flange	Ethernet Interface-Box DCU ^{loP}
Part number: 3310A1710 	Part number: 3310A24020 	Part number: 3310A13500 