

PYROSPOT DS 4N/DG 4N

Pyrometer for industrial application

Overview

Digital pyrometer with RS-485 interface



Features

- For temperature measurements between 250 °C and 2500 °C
- 0/4 to 20 mA temperature linear output, switchable
- RS-485 interface
- Two opto relay outputs, potential-free
- Small sensor head
- Display and programming keyboard

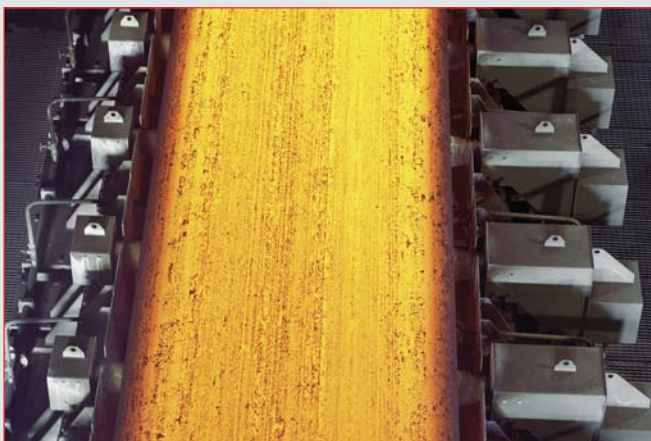
Description and applications

The digital pyrometers PYROSPOT DS 4N/DG 4N are specifically designed for industrial purpose. The devices are suitable for temperature measurement from 250 °C to 2500 °C on many different nonmetallic or coated metallic surfaces.

The solid body allows usage even under rough environmental conditions. The bright OLED as a display is visible even over long distance. The very small sensor head allows even the acquisition of measuring object which are difficult of access.

The temperature linear standard output signal of 0/4 to 20 mA allows easy implementation in existing measuring and controlling systems. The device is equipped with a galvanically isolated RS-485 interface, which allows parameterising and software evaluation even in bus systems.

All parameters are adjustable via push-buttons and display directly on the device. Also by using the comfortable parameterising and evaluation software PYROSOFT Spot the parameters can be easily adjusted to the application.



Typical application areas:

- Steel industry
- Furnace industry
- Soldering applications
- Ceramic industry
- Metal industry

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Technical data								
Type	DS 4N				DG 4N			
Temperature range	600 °C to 1800 °C		800 °C to 2500 °C		250 °C to 1300 °C		350 °C to 1800 °C	
Sensor head cable length	2.5 m	5.0 m	2.5 m	5.0 m	2.5 m	5.0 m	2.5 m	5.0 m
Part numbers: Close lens Standard optics	4040041211 4040043211	4040041221 4040043221	4040041212 4040043212	4040041222 4040043222	4041041211 4041043211	4041041221 4041043221	4041041212 4041043212	4041041222 4041043222
Spectral range	0.8 µm to 1.1 µm				1.5 µm to 1.8 µm			
Internal data processing	digital							
Emissivity ε	0.050 to 1.000, adjustable (factory setting: 1.000)							
Sub temperature range	adjustable within temperature range, minimum span 50 °C							
Response time (t95)	10 ms, adjustable 100 s							
Measurement uncertainty ¹	1 % of measured value in °C							
Reproducibility ¹	0.5 % of measured value in °C							
NETD ²	< 0.1 K							
Output	0/4 to 20 mA, switchable, temperature linear, max. burden 700 Ω							
Interface	RS-485 (galvanically isolated), half duplex, max. baudrate 115 kBd, data protocol Modbus RTU							
More inputs/outputs	Input for clear maximum and minimum value storage, 2 opto relay switching outputs, potential free, max. 60 V DC/42 V AC _{eff} 500 mA							
Data storage	minimum/maximum value storage							
User controls	temperature display, keyboard, display for parameterizing							
Parameters	emissivity, transmission, response time, data storage, analog output, sub temperature range, switching output, address, baudrate, temperature unit °C or °F, adjustable via keyboard and display as well as via software							
Power supply	24 V DC ± 25 %, residual ripple 500 mV							
Power consumption	approx. 2 W							
Operating temperature	sensor head: 0 °C to 125 °C, electronics box: 0 °C to 70 °C							
Storage temperature	–20 °C to 70 °C							
Safety class	IP65 (DIN EN 60529, DIN 40050)							
Weight	approx. 500 g							
Dimensions	approx. 110 mm × 80 mm × 40 mm (electronics box)							
CE symbol	according to EU regulations							
Test regulations	EN 55 011: 1998							
Scope of delivery	DS 4N/DG 4N with connected sensor head, manual, inspection sheet, software PYROSPOT Spot							

¹ Specifications for black body radiator, T_{ambient} = 23 °C, t95 = 1 s. ² Noise equivalent temperature difference.

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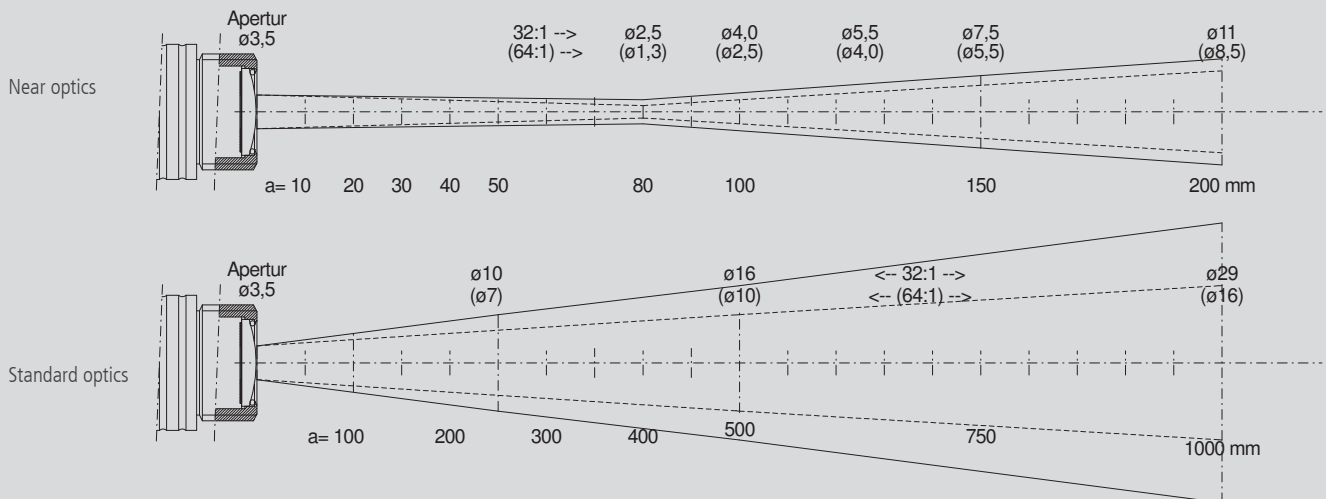
Display and Keyboard



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Near optics (aperture diameter 3.5 mm)				Standard optics (aperture diameter 3.5 mm)			
Meas. distance a [mm]	a = 80	a = 150	a = 200	Meas. distance a [mm]	a = 500	a = 1000	a = 1500
Distance ratio	Measuring field diameter M [mm]			Distance ratio	Measuring field diameter M [mm]		
32 : 1	2.5	7.5	11.0	32 : 1	16.0	29.0	42.0
64 : 1	1.3	5.5	8.5	64 : 1	10.0	16.0	22.0



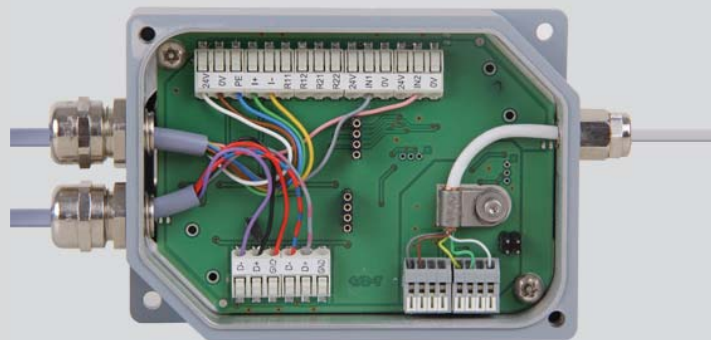
Optics variants:

DS 4N (600 °C to 1800 °C) and DG 4N (250 °C to 1300 °C) = 32 : 1

DS 4N (800 °C to 2500 °C) and DG 4N (350 °C to 1800 °C) = 64 : 1

Elektronics box

Opened electronics box with feeder clip and relay output



24V	Power supply +24 V DC	0V	– Feed-in for function input
0V	Power supply 0 V DC	24V	+ Feed-in for function input
PE	Potential GROUND, screen	IN2	Function input 2
I +	+ Analog output 0/4 to 20 mA	0V	– Feed-in for function input
I –	– Analog output 0/4 to 20 mA		
R11	Opto relay 1 pin 1, max. 60 V DC/42 V AC _{eff} 500 mA	D–	D– RS-485
R12	Opto relay 1 pin 2, max. 60 V DC/42 V AC _{eff} 500 mA	D+	D+ RS-485
R21	Opto relay 2 pin 1, max. 60 V DC/42 V AC _{eff} 500 mA	GND	GND RS-485
R22	Opto relay 2 pin 2, max. 60 V DC/42 V AC _{eff} 500 mA	D–	D– RS-485
24V	+ Feed-in for function input	D+	D+ RS-485
IN1	Function input 1, delete data storage	GND	GND RS-485

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Electrical, mechanical and optical accessories ¹		Part number
Mounting angle	fixed, stainless steel	3310A21014
Air purge unit		3310A22041
Air purge unit	angled	3310A22045
Compact housing	with air purge	3310A22040
Mirror	90°	3310A31030
Interface module	RS-485 to USB	3310A14020

¹ More accessories available.

Accessories

Mounting angle	Air purge unit	Compact housing
Part number: 3310A21014 	Part number: 3310A22041 	Part number: 3310A22040 
Air purge unit, angled	Mirror	Power supply PSU 15
Part number: 3310A22045 	Part number: 3310A31030 	Part number: 3310A12010 

Dimensional drawing pyrometer and sensor head

