PYROSPOT DS 44N and DG 44N

Pyrometer for industrial application

Overview

Digital pyrometer with RS-485 interface

Features

- For temperature measurements between 250 °C and 2500 °C
- Temperature linear output 0/4 to 20 mA
- Integrated RS-485 interface
- Very short response times from 5 ms
- Robust stainless steel housing
- Several fixed and vario optics available

Description and applications

The digital pyrometers PYROSPOT DS 44N and PYROSPOT DG 44N are specifically designed for industrial purpose. The devices are suitable for high temperature measurement from 250 °C on many different surfaces for example metals, ceramics or graphite.

The solid body in stainless steel housing with protection window for optics allows usage even under rough environmental conditions.

With a fast response time of only 5 ms (t_{95}) these pyrometers are also suitable for fast measuring processes. Several fixed or vario optic types realise Target sizes from 1.2 mm.

The temperature linear standard output signal of 0/4 to 20 mA allows easy implementation in existing measurement and control systems.

The DS 44N / DG 44N are equipped with a galvanically isolated RS485 interface which allows parameterizing and software evaluation even in bus systems.

The integrated LED or laser aiming light enables to focus the measuring object exactly. The size of the LED aiming light is identical to the measuring field.

Via optional interface module (RS-485 to USB) parameters like emissivity sub range, response time and storage can be easily adjusted by using the comfortable parameterizing and evaluation software PYROSOFT Spot. The parameters can also be adjusted via RS-485 interface with the optional available handheld programming device DHP 1040.

Typical application areas:

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

PYROSPOT DS 44N and DG 44N

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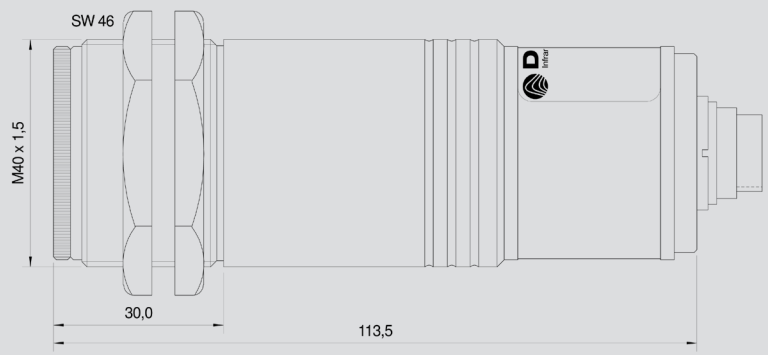
Technical data										
Typ	**DS 44N**				**DG 44N**					
Temperature range	600 °C to 1800 °C		800 °C to 2500 °C		250 °C to 1300 °C		250 °C to 2000 °C		350 °C to 1800 °C	
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C									
Spectral range	0.8 µm to 1.1 µm				1.5 µm to 1.8 µm					
Optics	several fixed optics (type 210, 290, 650 and 4000) with quartz glass protection window, vario optics									
Order number	LED	Laser	LED	Laser	LED	Laser	LED	Laser	LED	Laser
Optics 210	4440051201	4440061201	4440051202	4440061202	4441051201	4441061201	4441051203	4441061203	4441051202	4441061202
Optics 290	4440052201	4440062201	4440052202	4440062202	4441052201	4441062201	4441052203	4441062203	4441052202	4441062202
Optics 650	4440053201	4440063201	4440053202	4440063202	4441053201	4441063201	4441053203	4441063203	4441053202	4441063202
Optics 4000	4440054201	4440064201	4440054202	4440064202	4441054201	4441064201	4441054203	4441064203	4441054202	4441064202
Vario optics	4440001201	4440011201	4440001202	4440011202	4441001201	4441011201	4441001203	4441011203	4441001202	4441011202
Distance ratio	approx. 100 : 1		approx. 200 : 1		approx. 100 : 1		approx. 100 : 1		approx. 200 : 1	
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 [1,2]	0.1 K									
Response time (t_{95})	5 ms, adjustable up to 100 s, adjustable via RS-485 interface									
Emissivity	0.05 to 1.00, adjustable via RS-485 interface									
Storage	minimum and maximum value storage, adjustable via RS-485 interface									
Output	0/4 to 20 mA, switchable via Software, temperature linear, max. burden: 500 Ω									
Interface	RS-485 (galvanically isolated), half duplex, baudrate 115 kBd, data protocol Modbus RTU									
Aiming	integrated LED or laser aiming light									
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro									
Parameters	emissivity, response time, storage, sub temperature range, adjustable via RS-485 interface and software									
Power supply	24 V DC ± 25 %, residual ripple 500 mV									
Power consumption	max. 1.5 W									
Operating temperature	0 °C to 70 °C									
Storage temperature	–20 °C to 70 °C									
Weight	appr. 455 g									
Dimensions	thread M40 × 1.5, length 125 mm									
Housing	stainless steel housing with plug connector									
Safety class	IP 65 (according to DIN EN 40050)									
CE symbol	according to EU regulations									
Scope of delivery	PYROSOFT DS 44N or DG 44N, manual, mounting screw nuts, inspection sheet, PYROSOFT Spot for Windows® (without connecting cable, please order separately)									

[1] Specifications for black body radiator, T_u = 23 °C, ε = 1, t_{95} = 1 s. [2] Noise equivalent temperature difference.

Dimensional drawing



PYROSPOT DS 44N and DG 44N

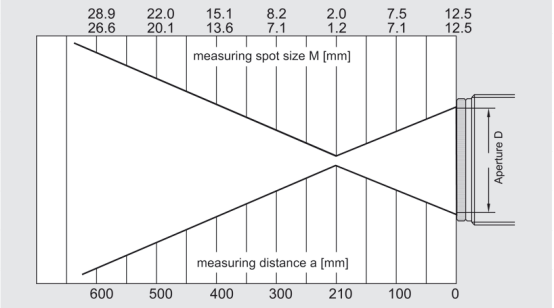
Pyrometer for industrial application

DIAS Infrared Systems

Opticstypes 210, 290, 650 and 4000

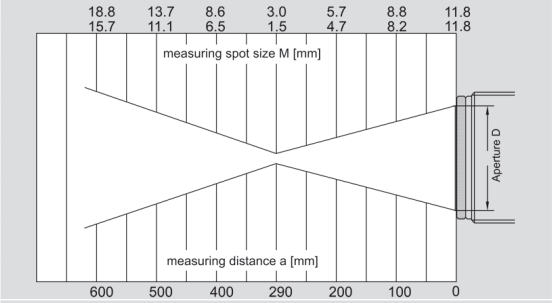
Optics 210 (sharp point at a = 210 mm measuring distance, aperture ∅ D = 12.5 mm)

Measuring distance a [mm]	0	100	**210**	300	400	500	600
Temperature range	Target size M [mm]						
DS 44N (600 °C to 1800 °C)	12.5	7.5	**2.0**	8.2	15.1	22.0	28.9
DS 44N (800 °C to 2500 °C)	12.5	7.1	**1.2**	7.1	13.6	20.1	26.6
DG 44N (250 °C to 1300 °C)	12.5	7.5	**2.0**	8.2	15.1	22.0	28.9
DG 44N (250 °C to 2000 °C)	12.5	7.5	**2.0**	8.2	15.1	22.0	28.9
DG 44N (350 °C to 1800 °C)	12.5	7.1	**1.2**	7.1	13.6	20.1	26.6



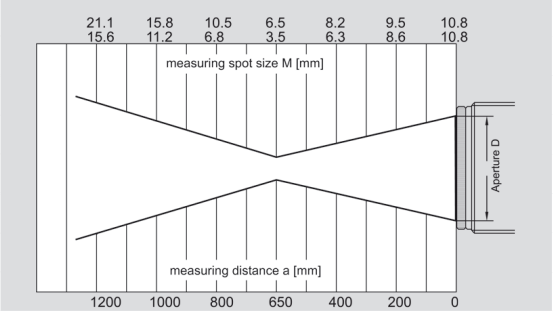
Optics 290 (sharp point at a = 290 mm measuring distance, aperture ∅ D = 11.8 mm)

Measuring distance a [mm]	0	100	200	**290**	400	500	600
Temperature range	Target size M [mm]						
DS 44N (600 °C to 1800 °C)	11.8	8.8	5.7	**3.0**	8.6	13.7	18.8
DS 44N (800 °C to 2500 °C)	11.8	8.2	4.7	**1.5**	6.5	11.1	15.7
DG 44N (250 °C to 1300 °C)	11.8	8.8	5.7	**3.0**	8.6	13.7	18.8
DG 44N (250 °C to 2000 °C)	11.8	8.8	5.7	**3.0**	8.6	13.7	18.8
DG 44N (350 °C to 1800 °C)	11.8	8.2	4.7	**1.5**	6.5	11.1	15.7



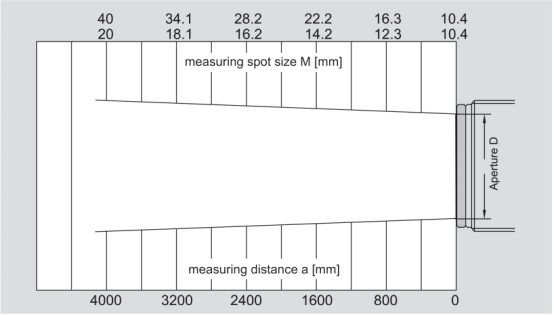
Optics 650 (sharp point at a = 650 mm measuring distance, aperture ∅ D = 10.8 mm)

Measuring distance a [mm]	0	200	400	**650**	800	1000	1200
Temperature range	Target size M [mm]						
DS 44N (600 °C to 1800 °C)	10.8	9.5	8.2	**6.5**	10.5	15.8	21.1
DS 44N (800 °C to 2500 °C)	10.8	8.6	6.3	**3.5**	6.8	11.2	15.6
DG 44N (250 °C to 1300 °C)	10.8	9.5	8.2	**6.5**	10.5	15.8	21.1
DG 44N (250 °C to 2000 °C)	10.8	9.5	8.2	**6.5**	10.5	15.8	21.1
DG 44N (350 °C to 1800 °C)	10.8	8.6	6.3	**3.5**	6.8	11.2	15.6



Optics 4000 (sharp point at a = 4000 mm measuring distance, aperture ∅ D = 10.4 mm)

Measuring distance a [mm]	0	400	800	1000	1500	2000	**4000**
Temperature range	Target size M [mm]						
DS 44N (600 °C to 1800 °C)	10.4	13.4	16.3	17.8	21.5	25.2	**40.0**
DS 44N (800 °C to 2500 °C)	10.4	11.4	12.3	12.8	14.0	15.2	**20.0**
DG 44N (250 °C to 1300 °C)	10.4	13.4	16.3	17.8	21.5	25.2	**40.0**
DG 44N (250 °C to 2000 °C)	10.4	13.4	16.3	17.8	21.5	25.2	**40.0**
DG 44N (350 °C to 1800 °C)	10.4	11.4	12.3	12.8	14.0	15.2	**20.0**



Vario optics

DS 44N

Temperature range	Measuring distance a	Target size M	Aperture ∅ D
600 °C to 1800 °C	300 mm to 800 mm	3.0 mm to 8.6 mm	10 mm
800 °C to 2500 °C	300 mm to 800 mm	1.5 mm to 5.5 mm	10 mm

DG 44N

Temperature range	Measuring distance a	Target size M	Aperture ∅ D
250 °C to 1300 °C	300 mm to 800 mm	3.0 mm to 8.6 mm	10 mm
250 °C to 2000 °C	300 mm to 800 mm	3.0 mm to 8.6 mm	10 mm
350 °C to 1800 °C	300 mm to 800 mm	1.5 mm to 5.5 mm	10 mm

Pyrometer with vario optics. The cooling jacket ist only suitable for devices with fixed optics.

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Electrical, mechanical and optical accessories[1]			Order number	
Connecting cable, straight plug, 12-pin	Connecting cable, angulate plug, with aiming light button, 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	3310A11151 3310A11152 3310A11153 3310A11154 3310A11155 3310A11156 3310A11157
Interface module		RS-485 to USB	3310A14020	
Power supply		24 V DC, 0.6 A	3310A12010	
Mounting angle		fixed adjustable	3310A21010 3310A21011	
Air purge unit		stainless steel, purge air 0.1 to 0.5 bar, oil free	3310A22010	
Water cooling jacket [2]		stainless steel with integrated air purge unit	3310A23010	
Vacuum flange KF16		with quartz window or with sapphire window	3310A24010 and 3310A34021 3310A24010 and 3310A34051	
Mirror		90°, with integrated air purge unit	3310A24110	
ATEX explosion protection housing			3310A23100	
DHP 1040		mobile handheld programming device	3310A17010	

[1] More accessories available. [2] Only available for pyrometers with fixed optics.

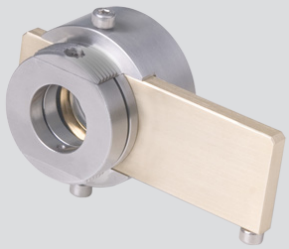
Selected accessories – pictures

Mounting angle, adjustable

Order number: 3310A21011

Window slide

Order number: 3310A21210



Air purge unit

Order number: 3310A22010

Water cooling jacket

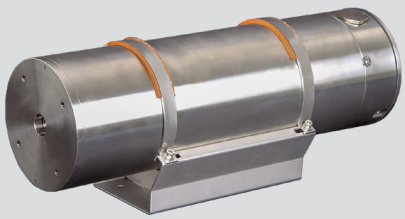
Order number: 3310A23010

Handheld programming device DHP 1040

Order number: 3310A17010

ATEX explosion protection housing

Order number: 3310A23100



Technische Änderungen vorbehalten. Technical details are subject to change. 25.06.21

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