

PYROSPOT DS 40N and DG 40N

Pyrometer for industrial application

Overview

Digital 2-wire pyrometers with integrated USB interface



Features

- For temperature measurements between 250 °C and 2500 °C
- 4 to 20 mA temperature linear output
- Integrated USB interface for stand-alone operation
- Maximum and minimum value storage
- Stainless steel housing
- Several fixed and vario optics available

Description and applications

The digital pyrometers PYROSPOT DS 40N and PYROSPOT DG 40N are specifically designed for industrial purposes. 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 10 ms (t_{95}) these pyrometers are also suitable for fast measuring processes. Several fixed optic types realize Target sizes from 1.2 mm.

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

The DS 40N/DG 40N are equipped with an integrated, galvanically isolated USB interface on the back side. The USB interface simplifies parameterization and data evaluation via software, without needing an additional power supply.

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.

Due to direct USB connection parameters like emissivity sub range, response time and data storage are all easy adjusted through the user friendly parameterization and evaluation software PYROSOFT Spot or optional handheld programming device DHP 1040.

Typical application areas:

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



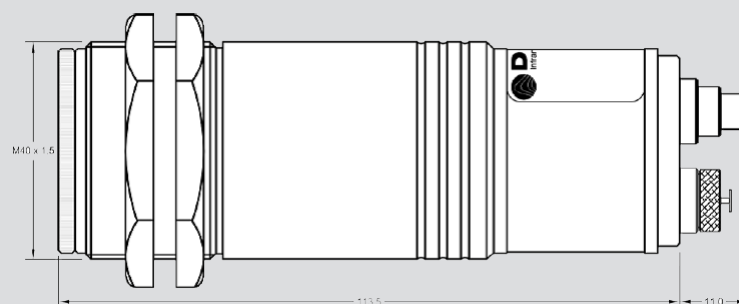
PYROSPOT DS 40N and DG 40N

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Technical data										
Type	DS 40N				DG 40N					
Temperature range	600 °C to 1800 °C		800 °C to 2500 °C		250 °C to 1300 °C		350 °C to 1800 °C		250 °C to 2000 °C	
Sub temperature range of analog output	adjustable within temperature range via USB interface, minimum span 50 °C									
Spectral range	0.8 µm to 1.1 µm				1.5 µm to 1.8 µm					
Optics	several fixed optics (Typ 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	4400051301	4400061301	4400051302	4400061302	4401051301	4401061301	4401051302	4401061302	4401051303	4401061303
Optics 290	4400052301	4400062301	4400052302	4400062302	4401052301	4401062301	4401052302	4401062302	4401052303	4401062303
Optics 650	4400053301	4400063301	4400053302	4400063302	4401053301	4401063301	4401053302	4401063302	4401053303	4401063303
Optics 4000	4400054301	4400064301	4400054302	4400064302	4401054301	4401064301	4401054302	4401064302	4401054303	4401064303
Vario optics	4400001301	4400011301	4400001302	4400011302	4401001301	4401011301	4401001302	4401011302	4401001303	4401011303
Distance ratio	approx. 100 : 1		approx. 200 : 1		approx. 100 : 1		approx. 200 : 1		approx. 100 : 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)	10 ms, adjustable up to 100 s via USB interface									
Emissivity	0.05 to 1.00, adjustable via USB interface									
Data storage	maximum and minimum value storage, adjustable via USB interface									
Output	4 to 20 mA, temperature linear, max. burden: 600 Ω at 24 V									
Interface	galvanically isolated USB interface									
Aiming	integrated LED- or laser aiming									
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro									
Parameters	emissivity, response time, data storage, sub range, adjustable via USB interface and software									
Power supply	24 V DC ± 25 %, residual ripple 500 mV, LED or laser aiming light: 7 V to 30 V DC, < 200 mW									
Power consumption	max. 0.6 W (without aiming light)									
Operating temperature	0 °C to 70 °C									
Storage temperature	−20 °C to 70 °C									
Weight	appr. 450 g									
Dimensions	thread M40 × 1.5, length 125 mm									
Housing	stainless steel with plug connector and protection window									
Safety class	IP 65 (according to DIN EN 60526 and DIN 40050)									
CE symbol	according to EU regulations									
Scope of delivery	PYROSPOT DS 40N or DG 40N, manual, mounting screw nuts, inspection sheet, PYROSOFT Spot for Windows® (without connecting cable, please order separately)									

¹ For black body radiators, T_u = 23 °C, t₉₅ = 1 s. ² Noise equivalent temperature difference.

Dimensional drawing



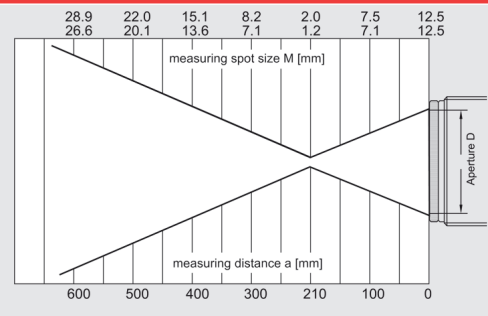
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Optics 210, 290, 650 and 4000

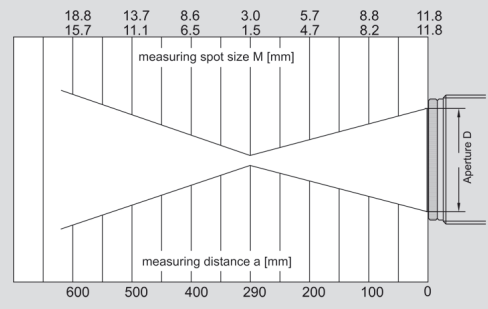
Optics 210 (sharp point at a = 210 mm measuring distance, aperture = 12.5 mm)

Measuring distance a [mm]	0	100	210	300	400	500	600
Temperature range	Target size M [mm]						
DS 40N (600 °C to 1800 °C)	12.5	7.5	2.0	8.2	15.1	22.0	28.9
DS 40N (800 °C to 2500 °C)	12.5	7.1	1.2	7.1	13.6	20.1	26.6
DG 40N (250 °C to 1300 °C)	12.5	7.5	2.0	8.2	15.1	22.0	28.9
DG 40N (250 °C to 2000 °C)	12.5	7.5	2.0	8.2	15.1	22.0	28.9
DG 40N (350 °C to 1800 °C)	12.5	7.1	1.2	7.1	13.6	20.1	26.6



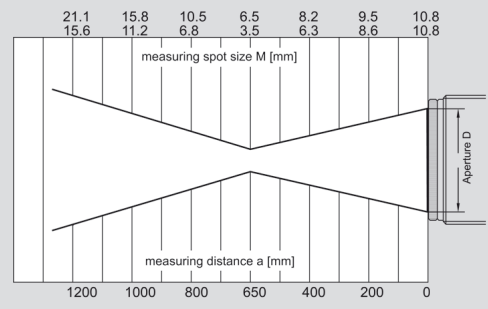
Optics 290 (sharp point at a = 290 mm measuring distance, aperture = 11.8 mm)

Measuring distance a [mm]	0	100	200	290	400	500	600
Temperature range	Target size M [mm]						
DS 40N (600 °C to 1800 °C)	11.8	8.8	5.7	3.0	8.6	13.7	18.8
DS 40N (800 °C to 2500 °C)	11.8	8.2	4.7	1.5	6.5	11.1	15.7
DG 40N (250 °C to 1300 °C)	11.8	8.8	5.7	3.0	8.6	13.7	18.8
DG 40N (250 °C to 2000 °C)	11.8	8.8	5.7	3.0	8.6	13.7	18.8
DG 40N (350 °C to 1800 °C)	11.8	8.2	4.7	1.5	6.5	11.1	15.7



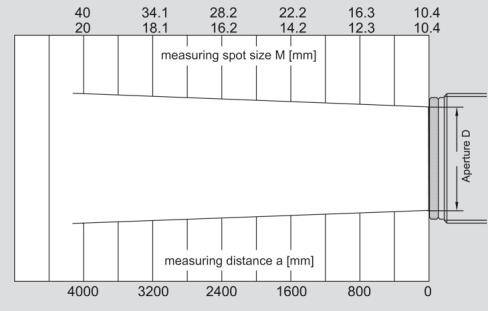
Optics 650 (sharp point at a = 650 mm measuring distance, aperture = 10.8 mm)

Measuring distance a [mm]	0	200	400	650	800	1000	1200
Temperature range	Target size M [mm]						
DS 40N (600 °C to 1800 °C)	10.8	9.5	8.2	6.5	10.5	15.8	21.1
DS 40N (800 °C to 2500 °C)	10.8	8.6	6.3	3.5	6.8	11.2	15.6
DG 40N (250 °C to 1300 °C)	10.8	9.5	8.2	6.5	10.5	15.8	21.1
DG 40N (250 °C to 2000 °C)	10.8	9.5	8.2	6.5	10.5	15.8	21.1
DG 40N (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 = 10.4 mm)

Measuring distance a [mm]	0	400	800	1600	2400	3200	4000
Temperature range	Target size M [mm]						
DS 40N (600 °C to 1800 °C)	10.4	13.4	16.3	22.2	28.2	34.1	40.0
DS 40N (800 °C to 2500 °C)	10.4	11.4	12.3	14.2	16.2	18.1	20.0
DG 40N (250 °C to 1300 °C)	10.4	13.4	16.3	22.2	28.2	34.1	40.0
DG 40N (250 °C to 2000 °C)	10.4	13.4	16.3	22.2	28.2	34.1	40.0
DG 40N (350 °C to 1800 °C)	10.4	11.4	12.3	14.2	16.2	18.1	20.0



Vario optics

DS 40N

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 40N

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 is only suitable for devices with fixed optics.

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Electrical, mechanical and optical accessories ¹		Order number
Connecting cable	length 2 m	3310A11511
	length 5 m	3310A11512
	length 10 m	3310A11513
	length 15 m	3310A11514
	length 20 m	3310A11515
	length 25 m	3310A11516
	length 30 m	3310A11517
USB connecting cable	length 1.8 m, screened	3310A14010
Power supply	24 V DC, 0.6 A	3310A12010
Mounting angle	fixed	3310A21010
	adjustable	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	3310A24010 and 3310A34021
	with sapphire window	3310A24010 and 3310A34051
Mirror	90°, with integrated air purge unit	3310A24110
DHP 1040	mobile handheld programming device	3310A17010

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

Selected accessories – pictures

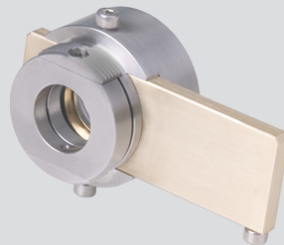
Mounting angle, adjustable

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



Digital display DD 200/210

Order number: 3310A13020/3310A13025

