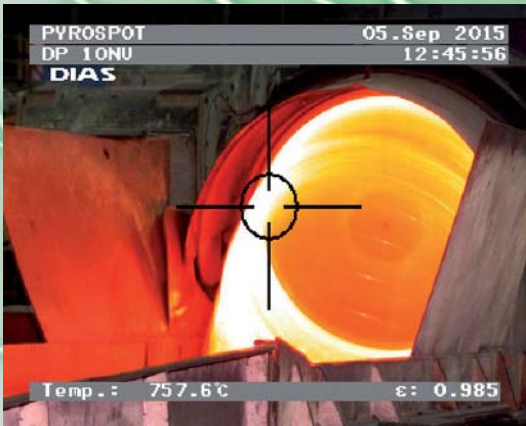


PYROSPOT DP 10N/DP 10NV

Pyrometers for industry and research

Overview

Digital pyrometers with RS-485 interface



Features

- For temperature measurements between 50 °C and 1200 °C
- Display and keys for displaying the temperature and parameterizing
- Operating temperature range up to 70 °C
- Vario optics with aiming light, through-lens sighting or video color module
- Short response times from 1.5 ms
- Standard 0/4 to 20 mA temperature linear output signal

Description and applications

The digital pyrometers PYROSPOT DP 10N/DP 10NV are specially designed for industry and research applications. The devices are suitable for temperature measurement from 50 °C on many different surfaces for example metals, ceramics or graphite.

The solid construction in form of a compact housing allows usage even under rough environmental conditions. With a short response time of only 1.5 ms (t95) these pyrometers are also suitable for fast measuring processes. The vario optics realise measuring field diameters from 0.7 mm.

The integrated LED or laser aiming light or the alternative through-lens sighting enables to focus the measuring object exactly.

Use the optional integrated color video modul (DP 10NV) to monitor the aiming of the pyrometer at the measurement object.

The parameters of the pyrometer are adjustable via push-buttons and display directly on the device or by using the convenient parameterizing and evaluation software PYROSOFT Spot.

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

Typical pyrometer application areas:

- Steel industry
- Kiln engineering
- Welding installations
- Ceramic industry
- Metal industry
- Hardening
- Forging
- Rolling
- Preheating
- Sintering



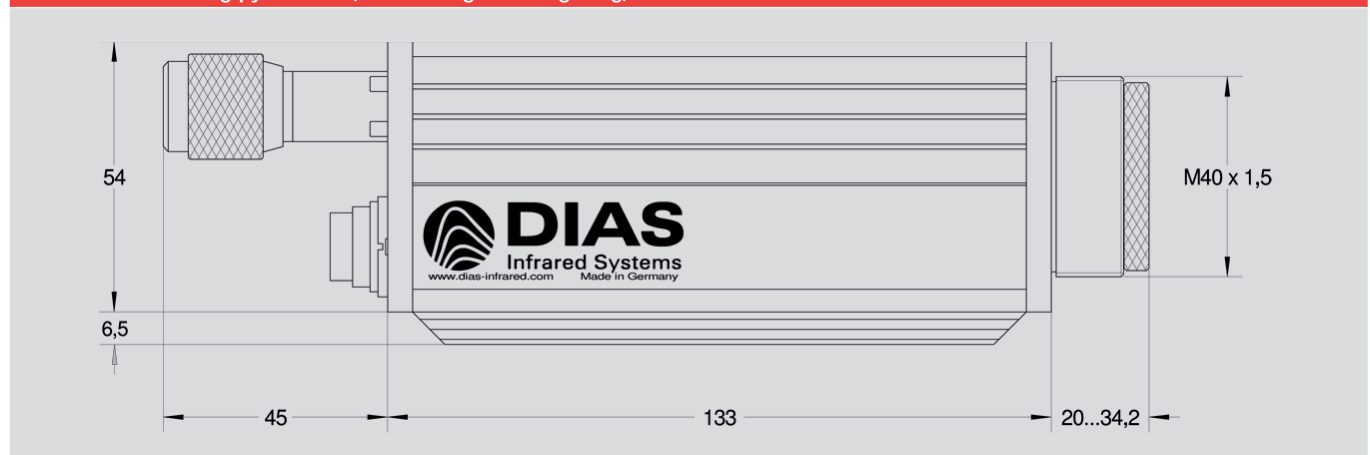
PYROSPOT DP 10N/DP 10NV

Pyrometers for industry and research

Technical data				
Type	DP 10N/DP 10NV	DP 10N/DP 10NV	DP 10N/DP 10NV	DP 10N/DP 10NV
Temperature range	50 °C to 500 °C	75 °C to 600 °C	100 °C to 850 °C	150 °C to 1200 °C
Sub temperature range	adjustable within temperature range, minimum span 50 °C			
Spectral range	2.0 µm to 2.8 µm			
Optics	measuring field diameters from 0.7 mm, vario optics			
Measurement uncertainty ¹	up to 400 °C: 2 K, over 400 °C: 0.3 % of measured value + 1 K			
Reproducibility ¹	0.1 % of measured value + 1 K			
NETD ²	0.1 K ³			
Response time (t95)	1.5 ms, adjustable up to 100 s			
Emissivity	0.010 to 1.000, adjustable at the device or via interface			
Storage	minimum and maximum value storage, adjustable at the device or via interface			
Output	0/4 to 20 mA, switchable via software or adjustable at the device, temperature linear, max. burden 700 Ω			
Switching output/Switching threshold	1 opto relay, R _{Burden} min. 48 Ω (galvanically isolated)/adjustable within temperature range			
Interface	RS-485 (galvanically isolated), half duplex, baudrate up to 115 kBd, data protocol Modbus RTU			
Aiming	LED aiming light, laser aiming light, through-lens sighting or color video module			
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro			
Parameters ⁴	emissivity, response time, temperature unit °C or °F, storage, sub temperature range, transmission, ambient compensation, video parameters, key lock			
User controls	Keys for „Parameter Menu“, „Enter“, „Up“ and „Down“, aiming light push-button, display			
Power supply	24 V DC ± 25 %			
Power consumption	max. 3.6 W (without load at switching output)			
Operating temperature	0 °C to 70 °C			
Storage temperature	-20 °C to 70 °C			
Weight	appr. 520 g			
Dimensions	54 × 54 mm, length 170 mm			
Housing	compact housing with plug connector, display and push-buttons			
Safety class	IP 65 (DIN 40 050)			
CE symbol	according to EU regulations (EN 50 011)			
Scope of delivery	PYROSPOT DP 10N/DP 10NV, mounting screw nut, inspection sheet, manual, PYROSOFT Spot for Windows® (without connection cable, please order separately)			

¹T_{ambient} = 23 °C, ε = 1, t95 = 1 s. ²Noise equivalent temperature difference. ³T_{ambient} = 23 °C, ε = 1, t95 = 10 ms. T_{Object DP 10N (50 °C to 500 °C)} = 100 °C, T_{Object DP 10N (75 °C to 600 °C)} = 150 °C, T_{Object DP 10N (100 °C to 850 °C)} = 200 °C, T_{Object DP 10N (150 °C to 1200 °C)} = 300 °C. ⁴Adjustable via software and interface or directly at the device.

Dimensional drawing pyrometer (with through-lens sighting)

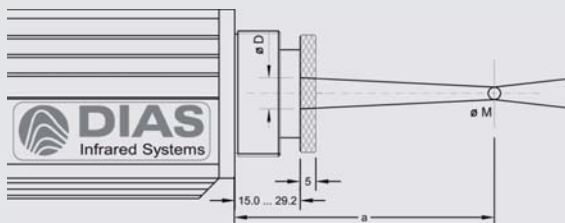


PYROSPOT DP 10N/DP 10NV

Pyrometers for industry and research

Vario optics					Part number			
Optics	Temperature range	Measuring field diameter M [mm]	Measurement distance a [mm]	Aperture D [mm]	LED aiming light	Laser aiming light	Through-lens sighting	Video module
I	50 °C to 500 °C	1.3 to 2.8	125 to 150	11.6	5104001201	5104011201	5104021201	5104031201
	75 °C to 600 °C	1.1 to 2.6			5104001202	5104011202	5104021202	5104031202
	100 °C to 850 °C	0.9 to 1.6			5104001203	5104011203	5104021203	5104031203
	150 °C to 1200 °C	0.7 to 1.5			5104001204	5104011204	5104021204	5104031204
II	50 °C to 500 °C	2.0 to 4.4	210 to 350	11.6	5104002201	5104012201	5104022201	5104032201
	75 °C to 600 °C	1.8 to 3.7			5104002202	5104012202	5104022202	5104032202
	100 °C to 850 °C	1.7 to 2.5			5104002203	5104012203	5104022203	5104032203
	150 °C to 1200 °C	1.5 to 1.8			5104002204	5104012204	5104022204	5104032204
III	50 °C to 500 °C	3.1 to 9.3	320 to 800	11.6	5104003201	5104013201	5104023201	5104033201
	75 °C to 600 °C	3.0 to 8.6			5104003202	5104013202	5104023202	5104033202
	100 °C to 850 °C	2.9 to 7.6			5104003203	5104013203	5104023203	5104033203
	150 °C to 1200 °C	2.8 to 6.8			5104003204	5104013204	5104023204	5104033204
IV	50 °C to 500 °C	2.4 to 8.6	260 to 570	11.6	5104004201	5104014201	5104024201	5104034201
	75 °C to 600 °C	2.1 to 8.2			5104004202	5104014202	5104024202	5104034202
	100 °C to 850 °C	1.6 to 5.0			5104004203	5104014203	5104024203	5104034203
	150 °C to 1200 °C	1.3 to 3.4			5104004204	5104014204	5104024204	5104034204

Dimensional drawing vario optics



Color video module (DP 10NV)

- PAL (50 Hz), optional NTSC (60 Hz)
- 628 × 586 pixels (PAL) or 510 × 496 pixels (NTSC)
- Composite video signal approx. 1 V_{SS} at 75 Ω (galvanically isolated)
- Target mark in size of measurement field, display of measurement, temperature, emissivity
- Exposure control automatically or manually



Detailed view: Display

The digital display shows the current measurement value and the emissivity set.

Current measurement temperature



Set emissivity value

Status switching output

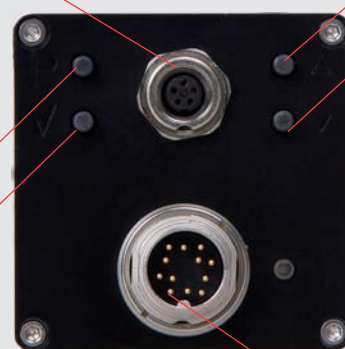
Detailed view: rear side of the device

The parameters can be set by using the keys on the rear side of the device. The value set is transferred directly.

Through-lens sighting, pilot light or video connector

Keys for „Up“ and „Down“

Keys for „Parameter Menu“ and „Enter“



Plug connection and interface

PYROSPOT DP 10N/DP 10NV

Pyrometers for industry and research

Electrical, mechanical and optical accessories (more accessories on request)		Part number	
Connection cable, 12 pin, angled plug	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	
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	
Interface adapter	RS-485 to USB	3310A14020	
Power supply PSU 15	24 V DC, 0.6 A	3310A12010	
Mounting angle	Adjustable	3310A21020	
Air purge unit	Stainless steel, purge air 0.1 to 0.5 bar, oil-free	3310A22020	
Window slide	without window	3310A21210	
Vacuum flange	KF 16	3310A24015	
	with quartz glass	3310A34021	
	with sapphire glass (scratch-proof)	3310A34051	
Cooling jacket	including air purge unit	3310A23031	
Mounting angle	for cooling jacket	3310A23036	
ATEX housing		3310A23100	
Handheld programming device DHP 1040	mobile device for pyrometer parameterization	3310A17010	
TFT display	TFT display industrial	3.5" with 2 m cable	3310A16110 3310A16120
Adapter	Video/USB	3310A14030	

Selected accessories – images

Mounting angle, adjustable

Part number: 3310A21020



Ball and socket mounting

Part number: 3310A21025



Cooling jacket

Part number: 3310A23031



Cooling plate

Part number: 3310A23020



Air purge unit

Part number: 3310A22020



ATEX housing

Part number: 3310A23100

