PYROSPOT DGE 10N/DGE 10NV
Pyrometers for industry and research

DIAS
Infrared Systems

Overview

Digital pyrometers with RS-485 interface

Features

- For temperature measurements between 100 °C and 1200 °C
- Keys and display for parameterization and representation of the measured temperature
- Vario optics with aiming light, through-lens sighting or camera module
- Short response times from 2 ms
- Temperature linear output 0/4 to 20 mA

Description and applications

The digital pyrometers PYROSPOT DGE 10N/DGE 10NV are specifically designed for industry and research applications. The devices are suitable for temperature measurement from 100 °C on many different surfaces for example metals, ceramics or graphite.

The solid construction in form of a compact housing with a protection window for optics allows usage even under rough environmental conditions. With a short response time of only 2 ms (t_{95}) these pyrometers are also suitable for fast measuring processes. The vario optics with quartz glass protection window realise measuring field diameters from 1.2 mm.

The integrated LED or laser aiming light or, the alternative through-lens sighting, enables an exact focus on the measurement object. With the optional color video module (DGE 10NV)the alignment of the pyrometers to the target can be monitored visually and the entire process can be recorded and documented.

The temperature linear standard output signal of 0/4 to 20 mA allows easy implementation in existing measurement and controll 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 at the device or by using the convenient parameterizing and evaluation software PYROSOFT Spot.

Typical pyrometer application areas:

Steel industry, metal industry, ceramic industry, kiln engineering, soldering installations

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Technical data		
Type	**DGE 10N/DGE 10NV**	**DGE 10N/DGE 10NV**
Temperature range	100 °C to 850 °C	150 °C to 1200 °C
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C	
Spectral range	2.0 µm to 2.6 µm	
Optics	vario optics with quartz glass protection window, measuring fields from 1.2 mm	
Distance ratio	approx. 100 : 1	approx. 200 : 1
Measurement uncertainty [1]	0.5 % of measured value in °C + 2 K	
Reproducibility [1]	0.3 % of measured value in °C + 1 K	
Transmittance	50 % to 100 %	
Ambient radiation	adjustable within temperature range	
NETD [1,2]	0.5 K	
Response time (t_{95})	2 ms [3], adjustable up to 100 s	
Emissivity	0.050 to 1.000, adjustable at the device or via interface	
Storage	minimum and maximum value storage, adjustable via interface	
Output	0/4 to 20 mA, switchable via software, temperature linear, max. burden 500 Ω (galvanically isolated)	
Interface	RS-485 (galvanically isolated), half duplex, baudrate up to 115 kBd, data protocol Modbus RTU	
Switching output/threshold	1 Opto relay, R_{Load} min. 48 Ω/adjustable within temperature range	
Aiming	LED aiming light, laser aiming light (630 to 680 nm, class II, < 1 mW), through-lens sighting or camera module (DGE 10NV)	
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro	
Parameters [4]	emissivity, transmittance, ambient radiation, response time, temperature unit °C or °F, storage settings, sub temperature range of measurement output, switching thresholds of switching output, 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. 1.5 W	
Operating temperature	0 °C to 45 °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, push-buttons and optics protection window	
Safety class	IP 65 (DIN 40 050)	
CE symbol	according to EU regulations (EN 50 011)	
Scope of delivery	PYROSPOT DGE 10N/DGE 10NV, mounting screw nut, inspection sheet, manual, PYROSOFT Spot for Windows® (without connection cable, please order separately)	

[1] $T_{ambient}$ = 23 °C, ε = 1, t_{95} = 1 s. [2] Noise equivalent temperature difference. [3] With dynamic adaption at low signal level. [4] Adjustable via software and interface or directly at the device.

Dimensional drawing pyrometer (with through-lens sighting)

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Vario optics

Measuring distance a [mm]	250	300	350	500	800	4000	Aperture diameter ∅ D [mm]		Order number	
Optics pullout [mm]	29.2	25.5	23.5	20.3	18.0	15.0	at		LED aiming light	Laser aiming light
Device	Measuring field diameter M [mm]						a = 250 mm	a = 4000 mm	Through-lens sighting	Camera module
100 °C to 850 °C	2.5	3.0	3.5	5.0	8.0	40.0	8.0	6.5	5101002222	5101012222
									5101022222	5101032222
150 °C to 1200 °C	1.2	1.5	1.7	2.5	4.0	20.0	8.0	6.5	5101002223	5101012223
									5101022223	5101032223

Dimensional drawing vario optics

∅ D

∅ M

15,0 a=4000
...
29,2 a= 250

a

CAUTION
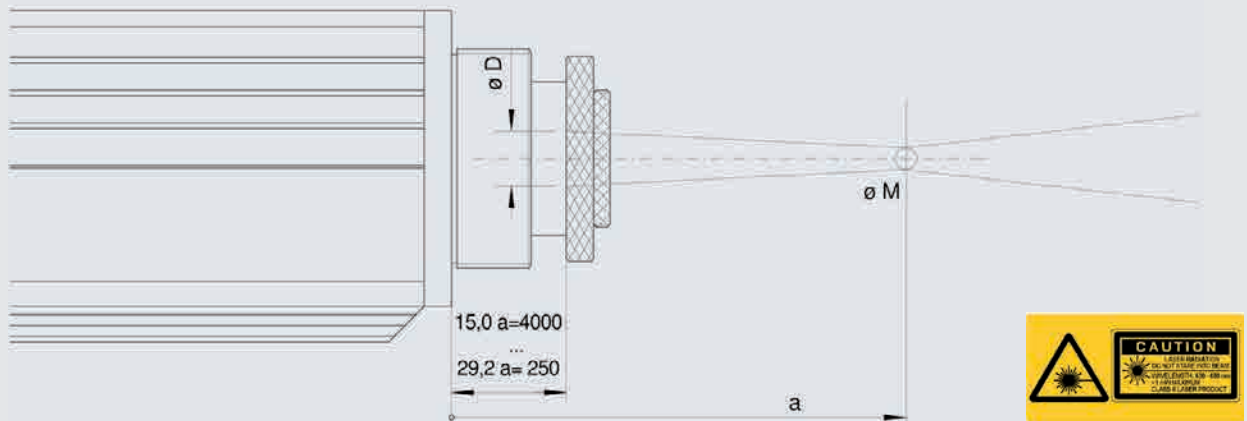
Technical data video camera (DGE 10NV)

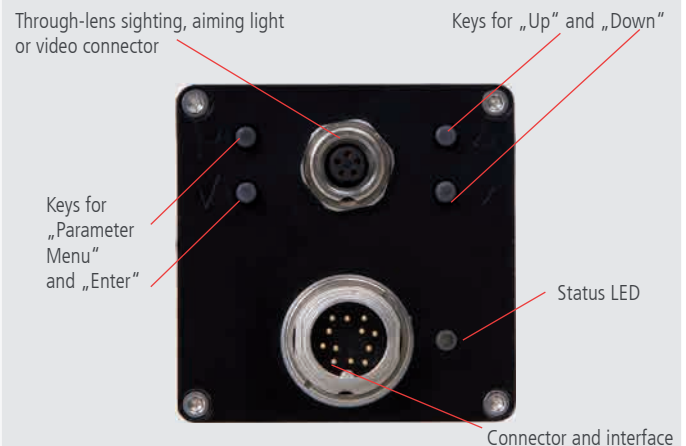|	
Video signal	Composite video signal approx. 1Vss at 75 Ω (galvanically isolated, video signal can be deactivated via software)
Video norm	PAL (B), 50 Hz (optional video norm NTSC (M), 60 Hz)
Resolution	1/3 inch video chip 628 × 586 pixels (NTSC option: 510 × 496 pixels)
Exposure control	Automatic or manual via software or device
Visible field	approx. 8 % × 6 % of adjusted measurement distance (NTSC option: 6.5 % × 5 %)
Date/Time	Real-time clock with minimum 3 days power reserve, adjustable via software
Durable image displays	Target mark in measurement spot size; spectral pyrometers: measurement temperature, emissivity
Optional displays	Via software: serial number, device name or user-defined text (16 characters), date, time, temperature unit °C/°F, 12/24 hours display
White balance	Automatic or manual via software or device

Detailed view: Display

The digital display shows the current measured value and the emissivity set as well as further information.

Current measured temperature

Emissivity set

Status exposure control

Key lock

Status switching output
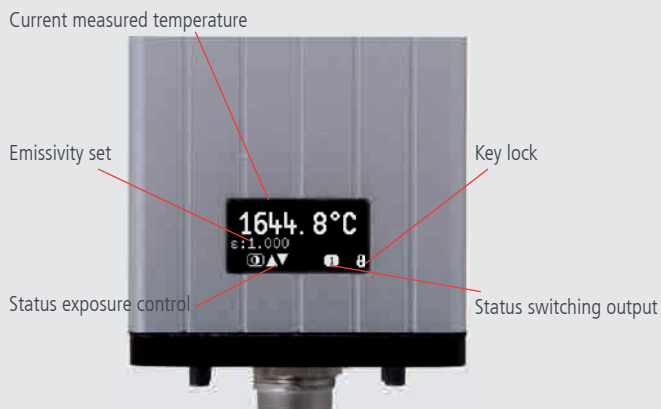
Detailed view: Rear side

The parameters can be adjusted with the keys at the rear side of the device. The set value is taken over directly.

Through-lens sighting, aiming light or video connector

Keys for „Up" and „Down"

Keys for „Parameter Menu" and „Enter"

Status LED

Connector and interface

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Electrical, mechanical and optical accessories (more accessories on request)		Part number	
Connection cable, 12 pin, angled plug	Length 2 m Length 5 m Length 10 m Length 15 m Length 20 m Length 25 m Length 30 m	3310A11131 3310A11132 3310A11133 3310A11134 3310A11135 3310A11136 3310A11137	
Video connection cable	Length 2 m Length 5 m Length 10 m Length 15 m Length 20 m Length 25 m Length 30 m	3310A16521 3310A16522 3310A16523 3310A16524 3310A16525 3310A16526 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 with quartz glass with sapphire glass (scratch-proof)	3310A24015 3310A34021 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	Ball and socket mounting	Cooling jacket
Part number: 3310A21020	Part number: 3310A21025	Part number: 3310A23031

Cooling plate	Air purge unit	ATEX housing
Part number: 3310A23020	Part number: 3310A22020	Part number: 3310A23100