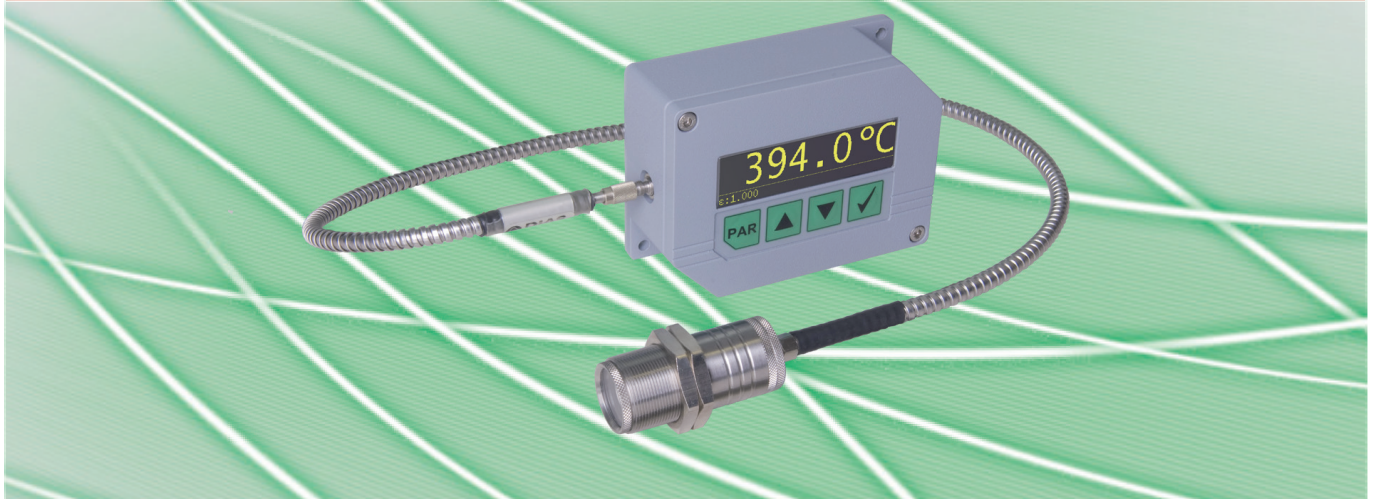


# PYROSPOT DGF 11N/DGEF 11N

## Pyrometer with fibre cable for industrial application

### Overview

#### Digital pyrometers with RS-485 interface



### Features

- For temperature measurements between 150 °C and 2500 °C
- Short response times from 2 ms
- Vario optics with measuring field diameter from 0.7 mm
- RS-485 interface
- Display and keyboard
- Applicable up to 250 °C ambient temperature

### Description and applications

The digital pyrometers PYROSPOT DGF 11N and DGEF 11N are specifically designed for industrial purpose. The devices are suitable for temperature measurement from 150 °C on many different surfaces for example metals, ceramics or graphite.

The solid body with fibre optics cable allows usage even under rough environmental conditions. The bright temperature display is visible even over long distance.

With a fast response time of only 2 ms ( $t_{95}$ ) these pyrometers are also suitable for fast measuring processes. The vario optics for fibre optical head realizes spot sizes from 0.7 mm diameter. A special vacuum lead through or variants with quartz or sapphire glass are also available.

The integrated laser aiming light enables to focus the measuring object exactly. 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 parameterizing and software evaluation even in bus systems.

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

#### Typical application areas:

- Steel industry
- Kiln engineering
- Hardening
- Welding
- Metal industry



# PYROSPOT DGF 11N/DGEF 11N

## Pyrometer with fibre cable for industrial application

Technical data					
Type	DGF 11N				DGEF 11N
Temperature ranges	250 °C to 1500 °C	350 °C to 2000 °C	250 °C to 2000 °C	400 °C to 2500 °C	150 °C to 1200 °C
Order number	5111010205	5111010206	5111010208	5111010207	5111010223
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C				
Spectral range	1.5 µm to 1.8 µm				2.0 µm to 2.6 µm
Optics	FOH I (aperture D = 6 mm), FOH II (aperture D = 9 mm) or FOH F (aperture D = 9 mm)				
Distance ratio	see table				
Measurement uncertainty <sup>1</sup>	0.5 % of meas. value in °C + 1 K				0.5 % of meas. value in °C + 2 K
Reproducibility <sup>1</sup>	0.1 % of meas. value in °C + 0.5 K				0.3 % of meas. value in °C + 1 K
NETD <sup>1,2</sup>	0.1 K				0.5 K
Transmittance	50 % to 100 %				
Ambient radiation	adjustable within temperature range				
Response time (t <sub>95</sub> )	2 ms <sup>3</sup> , adjustable up to 100 s				
Emissivity	0.050 bis 1.000				
Storage	minimum-/maximum value storage				
Output	0/4 to 20 mA, adjustable via software, temperature linear, max. burden: 500 Ω (galvanically isolated)				
Interface	RS-485 (galvanically isolated), half duplex, max. 115 kBd, Modbus RTU				
Aiming	laser aiming light, 630 nm to 680 nm, class II, < 1mW				
Switching output/threshold	1 opto relay, R <sub>load</sub> min. 48 Ω/adjustable within temperature range				
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro				
Parameters <sup>4</sup>	ratio correction, emissivity, transmissivity, response time, temperature unit °C or °F, storage, settings, sub temperature range of output, switching thresholds of switching output				
User controls	display and keys for parameter settings				
Power supply	24 V DC ± 25 %, residual ripple 500 mW				
Power consumption	max. 1.5 W (without load on switching output)				
Operating temperature	0 °C to 45 °C (electronics), 0 °C bis 250 °C (optical head) 0 °C to 250 °C (fibre cable), 0 °C to 150 °C (fibre cable with 90° curve)				
Storage temperature	-20 °C to 70 °C				
Weight	approx. 600 g (without fibre cable and optical head)				
Dimensions	approx. 110 mm × 80 mm × 40 mm				
Housing	alu housing with plug connector, display and keyboard				
Safety class	IP 65 (DIN 40 050)				
CE symbol	according to EU regulations (EN 50 011)				
Scope of delivery	PYROSPOT DGF/DGEF 11N, user manual, inspection sheet, PYROSOFT Spot for Windows® (without connecting cable, fibre cable and optics, please order separately)				

<sup>1</sup>T<sub>ambient</sub> = 23 °C, ε = 1, t<sub>95</sub> = 1 s <sup>2</sup>Noise equivalent temperature difference. <sup>3</sup>With dynamic adaptation at low signal level. <sup>4</sup>Adjustable via software and interface or directly at the device.

Fibre cables, stainless steel Ø 200 µm - Order numbers				Fibre cables, stainless steel Ø 400 µm - Order numbers			
Temperature range	length	straight	90° curve	Temperature range	length	straight	90° curve
DGF 11N 250 °C to 2500 °C	1.5 m	3310A42001	3310A42011	DGEF 11N 150 °C to 1200 °C	1.5 m	3310A44001	3310A44011
	2.0 m	3310A42002	3310A42012		2.0 m	3310A44002	3310A44012
	2.5 m	3310A42003	3310A42013		2.5 m	3310A44003	3310A44013
	5.0 m	3310A42004	3310A42014		5.0 m	3310A44004	3310A44014
	7.5 m	3310A42005	3310A42015		7.5 m	3310A44005	3310A44015
	10.0 m	3310A42006	3310A42016		10.0 m	3310A44006	3310A44016
	15.0 m	3310A42007	3310A42017		15.5 m	3310A44007	3310A44017

Other lengths on request! Variants with vacuum lead through or special quartz and sapphire glass available.

# PYROSPOT DGF 11N/DGEF 11N

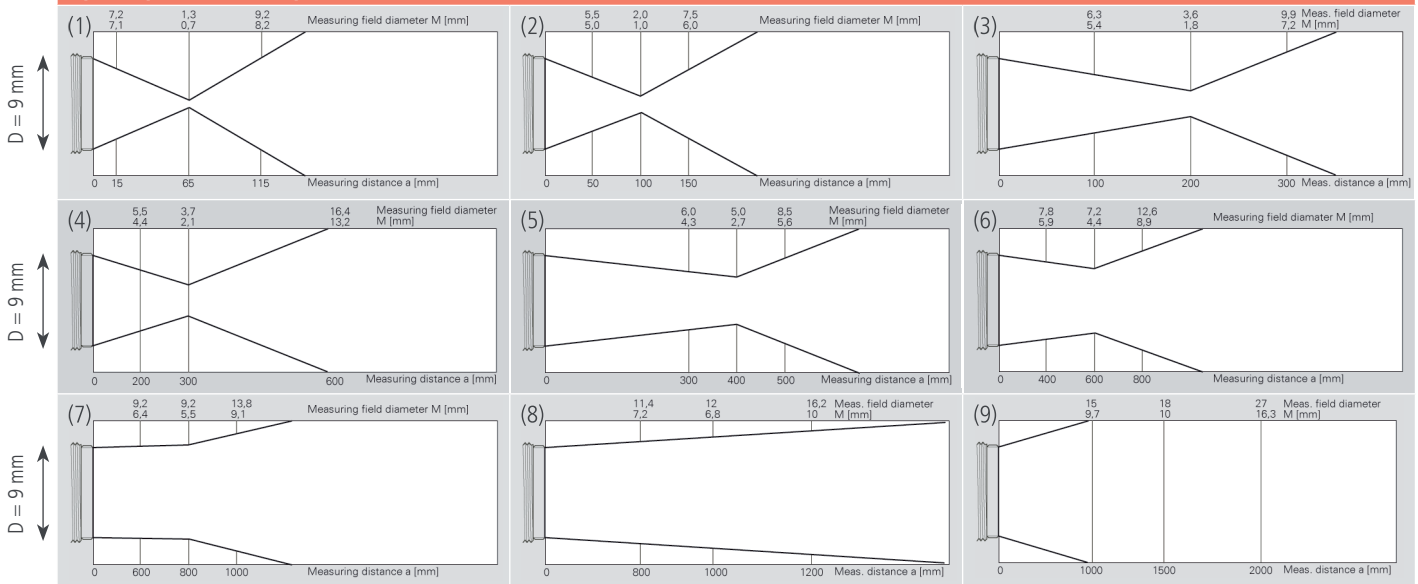
## Pyrometer with fibre cable for industrial application

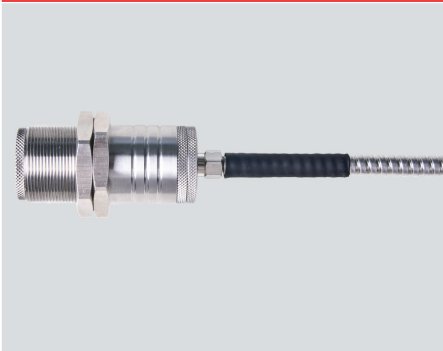
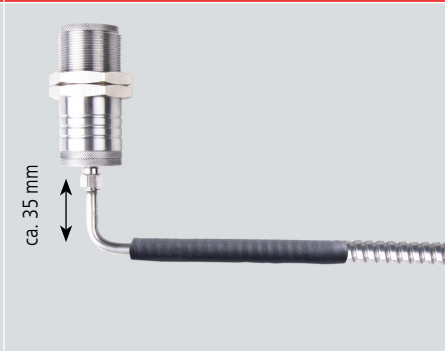
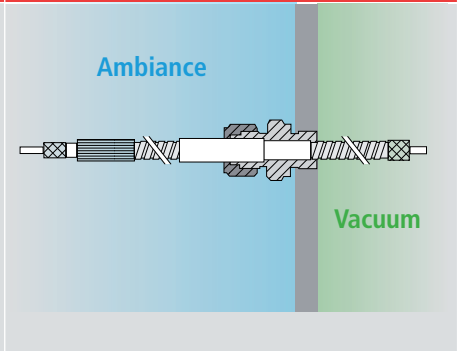
Optics			
Vario optics type	FOH II-65	FOH II-250	FOH I-100
Measurement distance a [mm]	65 ... 300	250 ... 2500	100 ... 1000
Measurement range	Measuring field diameter M [mm]		
DGF 11N (250 °C to 1500 °C)	0.7 ... 2.5	1.7 ... 17.0	0.9 ... 9.0
DGF 11N (350 °C to 2000 °C)	0.7 ... 2.5	1.7 ... 17.0	0.9 ... 9.0
DGF 11N (250 °C to 2000 °C)	0.7 ... 2.5	1.7 ... 17.0	0.9 ... 9.0
DGF 11N (400 °C to 2500 °C)	0.7 ... 2.5	1.7 ... 17.0	0.9 ... 9.0
DGEF 11N (150 °C to 1200 °C)	1.3 ... 5.0	3.0 ... 31.0	1.8 ... 18.0
Order number	3310A50020	3310A50025	3310A50010



Fixed optics type FOH	F-65 (1)	F-100 (2)	F-200 (3)	F-300 (4)	F-400 (5)	F-600 (6)	F-800 (7)	F-1000 (8)	F-1500 (9)
Measurement distance a [mm]	65	100	200	300	400	600	800	1000	1500
Measurement range	Measuring field diameter M [mm]								
DGF 11N (250 °C to 1500 °C)	0.7	1.0	1.8	2.1	2.7	4.4	5.5	6.8	10.0
DGF 11N (350 °C to 2000 °C)	0.7	1.0	1.8	2.1	2.7	4.4	5.5	6.8	10.0
DGF 11N (250 °C to 2000 °C)	0.7	1.0	1.8	2.1	2.7	4.4	5.5	6.8	10.0
DGF 11N (400 °C to 2500 °C)	0.7	1.0	1.8	2.1	2.7	4.4	5.5	6.8	10.0
DGEF 11N (150 °C to 1200 °C)	1.3	2.0	3.6	3.7	5.0	7.2	9.2	12.0	18.0
Order number	3310A51006	3310A51010	3310A51020	3310A51030	3310A51040	3310A51060	3310A51080	3310A51100	3310A51150

### Optical path of fixed optics FOH F



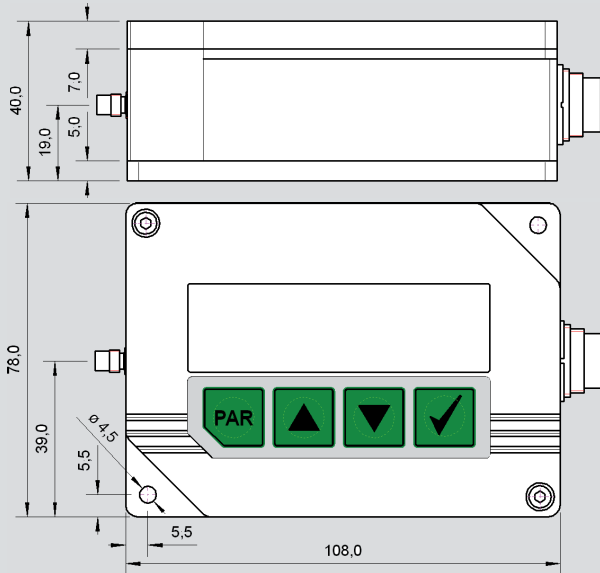
Fibre cable (200 µm, 400 µm)	Fibre cable 90° curve	Fibre cable with vacuum lead through
		

# PYROSPOT DGF 11N/DGEF 11N

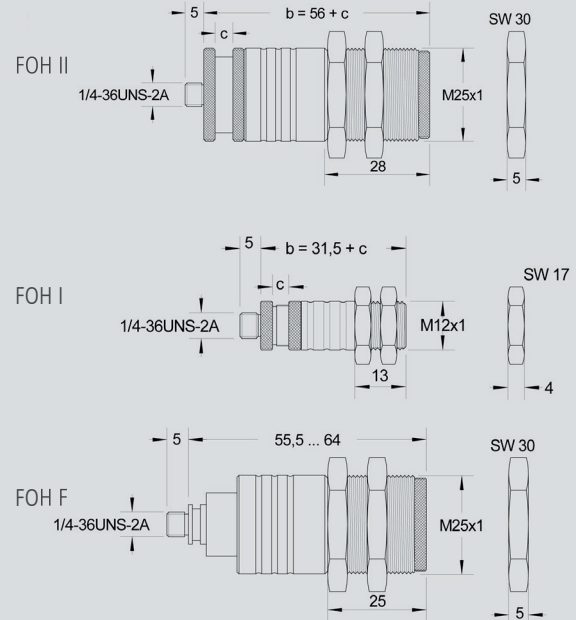
## Pyrometer with fibre cable for industrial application

### Dimensional drawings

#### Dimensional drawing pyrometer



#### Dimensional drawing optical heads



### Electrical accessories<sup>1</sup> – Order numbers

Connecting cable 12 pin	straight plug	angulated plug
Length 2 m	3310A11111	3310A11131
Length 5 m	3310A11112	3310A11132
Length 10 m	3310A11113	3310A11133
Length 15 m	3310A11114	3310A11134
Interface module RS-485 to USB	3310A14020	
Interface module RS-485 to ProfiBus DP	3310A14021	
Power supply PSU 15 (24 V DC, 1 A)	3310A12010	

### Mechanical and optical accessories<sup>1</sup>

Mounting angle, fixed for optical head FOH I	3310A21014
Mounting angle, fixed for optical head FOH II	3310A21522
Mounting angle, adjustable for optical head FOH II	3310A21523
Air purge for FOH II	3310A22520
Sighting tube 100 mm	3310A22530
Sighting tube 300 mm	3310A22535
Mirror for FOH II, stainless steel, 90°	3310A31020

<sup>1</sup> Selected accessories, more available.

### Selected accessories - Pictures

#### Mounting angle, adjustable, for FOH II

Order number: 3310A21523



#### Mounting angle, adjustable, for FOH II

Order number: 3310A21520



#### Air purge for FOH II

Order number: 3310A22520



#### Mirror 90° for FOH II

Order number: 3310A31020



#### Power supply

Order number: 3310A12010



#### Sighting tube (100 mm)

Order number: 3310A22530

