

# PYROSPOT DGRF 11N

Ratio pyrometers with fibre cable for industrial application

## Overview

Digital ratio pyrometers with RS-485 interface



## Features

- For temperature measurements between 300 °C and 900 °C
- Short response times from 5 ms
- Vario optics with measurement field diameters from 1.4 mm
- RS-485 interface
- Display and keyboard
- Applicable up to 250 °C ambient temperature

## Description and applications

The digital ratio pyrometers PYROSPOT DGRF 11N are specifically designed for industrial temperature measurement from 300 °C. They utilize the 2-colour system which has the advantage of measurement widely independent from the emissivity.

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 5 ms (t95) these pyrometers are also suitable for fast measurement processes. The vario optics for fibre optical head realizes spot sizes from 1.4 mm diameter.

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 parameterizing and evaluation software PYROSOFT Spot the parameters can be easily adjusted to the application.

Typical application areas:

- Monitoring of the cooling down temperatures in the heat treatment of metals
- Stress relief annealing
- Recrystallization annealing
- Tempering

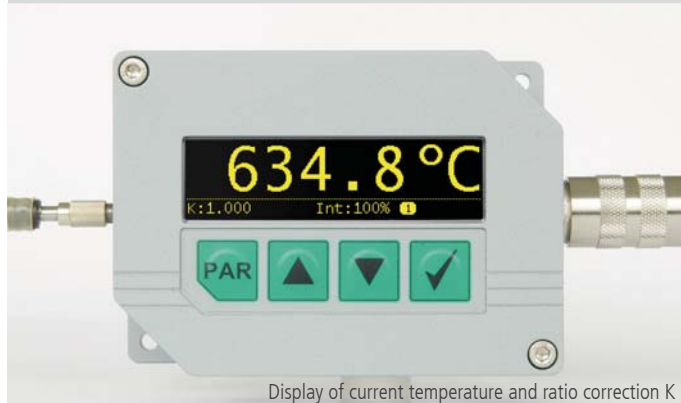


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## Ratio pyrometers with fibre cable for industrial application

Technical data	
Type (Order number)	DGRF 11N (5113010202)
Temperature range	300 °C to 900 °C
Sub temperature range	adjustable within temperature range, minimum span 50 °C
Spectral range	1.5 µm to 1.9 µm
Optics	vario optics ROH I-100, ROH II-65, ROH II-250
Distance ratio	see table
Measurement uncertainty <sup>1</sup>	0.5 % of measured value
Reproducibility <sup>1</sup>	0.2 % of measured value
Transmissivity	50 % to 100 %
NETD <sup>1</sup>	0.1 K <sup>2</sup>
Response time (t95)	5 ms, adjustable up to 100 s
Ratio correction K	0.800 to 1.200
Emissivity	0.050 to 1.000
Storage	minimum and maximum value storage
Output	0/4 to 20 mA, switchable, temperaturlinear, max. burden: 500 Ω (galvanically isolated)
Interface	RS-485 (galvanically isolated), half duplex, max. baudrate 115 kBd, Modbus RTU
Aiming	laser aiming light, 630 nm to 680 nm, class II, < 1 mW
Switching output/thresholds	1 opto relay, R <sub>load</sub> min. 48 Ω/adjustable within temperature range
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro
Parameters	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 keyboard for parameter setting
Power supply	24 V DC ± 25 %, residual ripple 500 mV
Power consumption	max. 1.5 W (without load on switching output)
Operating temperature	0 °C to 60 °C (electronics), 0 °C to 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	appr. 600 g (without fibre cable and optical head)
Dimensions	appr. 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 DGRF 11N, manual, inspection sheet, PYROSOFT Spot for Windows® ( <b>without</b> connection cable, fibre cable and optical head, please order separately)

<sup>1</sup> Noise equivalent temperature difference. <sup>2</sup> T<sub>ambient</sub> = 23 °C, ε = 1, t95 = 1 s.



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## Optics

### ROH I-100 (Order number 3310A50011)

Measuring distance a [mm]	0	100	165	225	300	500	700	1000
Temperature range	Measuring field diameter M [mm]							
DGRF 11N (300 °C to 900 °C)	6.0	1.8	2.8	4.0	5.4	9.0	13.0	18.0
Aperture D [mm]	6.0							

### ROH II-65 (Order number 3310A50021)

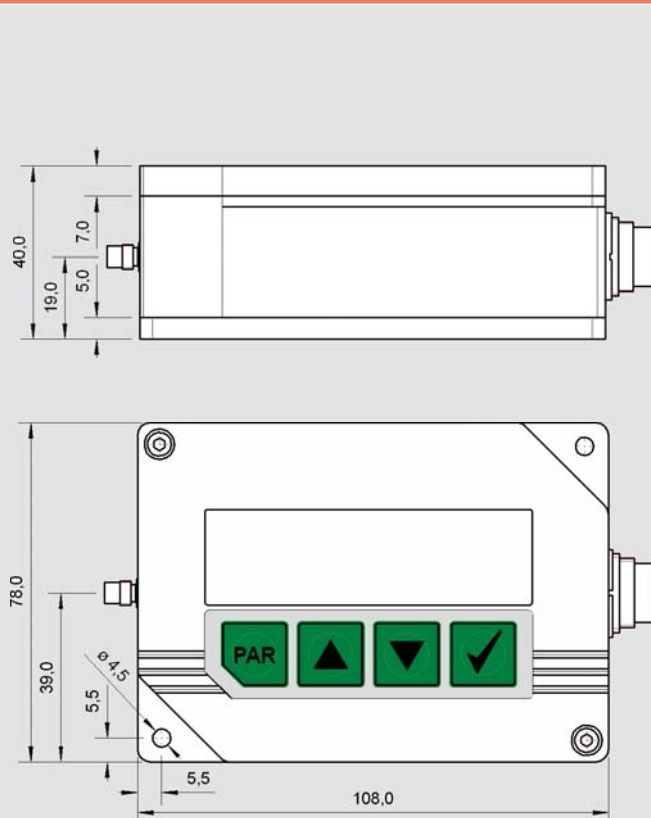
Measuring distance a [mm]	0	65	85	110	150	200	240	300
Temperature range	Measuring field diameter M [mm]							
DGRF 11N (300 °C to 900 °C)	9.0	1.4	1.8	2.2	2.8	3.6	4.2	5.0
Aperture D [mm]	9.0							

### ROH II-250 (Order number 3310A50026)

Measuring distance a [mm]	0	250	400	600	800	1000	2000	2500
Temperature range	Measuring field diameter M [mm]							
DGRF 11N (300 °C to 900 °C)	9.0	3.4	5.4	8.8	11.0	13.6	26.0	34.0
Aperture D [mm]	9.0							

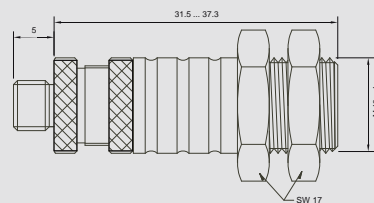
## Dimensional drawings

### Dimensional drawing pyrometer

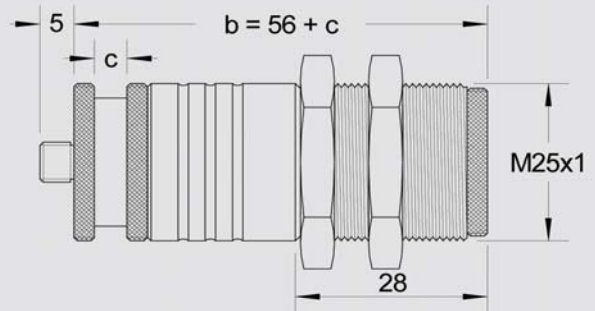


### Dimensional drawings optical heads ROH

#### ROH I



#### ROH II



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### Fibre cables, stainless steel $\varnothing$ 400 $\mu$ m – Order numbers

Length	1.5 m	2.0 m	2.5 m	5.0 m	7.5 m	10 m	15 m
straight	3310A44001	3310A44002	3310A44003	3310A44004	3310A44005	3310A44006	3310A44007
90°-curve	3310A44011	3310A44012	3310A44013	3310A44014	3310A44015	3310A44016	3310A44017

Further lengths available on request.

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

Electrical accessories <sup>1</sup> - Order numbers			Mechanical and optical accessories <sup>1</sup>	
Connecting cable 12 pin	straight plug	angulated plug		
Length 2 m	3310A11111	3310A11131	Mounting angle fixed for optical head ROH I	3310A21014
Length 5 m	3310A11112	3310A11132	Mounting angle fixed for optical head ROH II	3310A21522
Length 10 m	3310A11113	3310A11133	Mounting angle adjustable for optical head ROH II	3310A21523
Length 15 m	3310A11114	3310A11134	Air purge unit for ROH II	3310A22520
Interface module RS-485 to USB	3310A14020		Sighting tube 100 mm	3310A22530
Interface module RS-485 to ProfiBus DP	3310A14021		Sighting tube 300 mm	3310A22535
Power supply PSU 15 (24 V DC, 1 A)	3310A12010		Mirror for ROH II, stainless steel, 90°	3310A31020

<sup>1</sup> Selected accessories.

### Selected accessories - pictures

Mounting angle, adjustable	Mounting angle, adjustable, for ROH II	Air purge unit for ROH II
Order number:: 3310A21523 	Order number:: 3310A21520 	Order number:: 3310A22520 
Mirror 90° for ROH II	Power supply	Sighting tube (100 mm)
Order number:: 3310A31020 	Order number:: 3310A12010 	Order number: 3310A22530 

Technische Änderungen vorbehalten. Technical details are subject to change. 21.04.16



We are certified for many years according to ISO 9001

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