

# PYROSPOT DS 42N and DG 42N

## Pyrometers for industrial application

### Overview

#### Pyrometer with emissivity adjustment



### Features

- Digital 2-wire pyrometers for 250 °C to 2500 °C
- Several spectral ranges
- Integrated laser aiming light
- Several fixed optics available
- Stainless steel housing
- Temperature linear output from 4 to 20 mA

### Descriptions and applications

The digital pyrometers PYROSPOT DS 42N and PYROSPOT DG 42N are especially designed for industrial purpose. The devices are suitable for high temperature measurement from 250 °C of 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 (t95) these pyrometers are also suitable for fast measuring processes. Several fixed optic types realise measuring field diameters from 1.2 mm.

The integrated laser aiming light enables to focus the measuring object exactly.

The temperature linear standard output signal of 4 to 20 mA allows easy implementation in existing measuring and controlling systems. Emissivity can be adjusted directly at the device.

Typical application areas:

- Steemaking
- Glass
- Ceramics
- Furnace
- Metal industry



Emissivity can be adjusted directly at the device



# PYROSPOT DS 42N and DG 42N

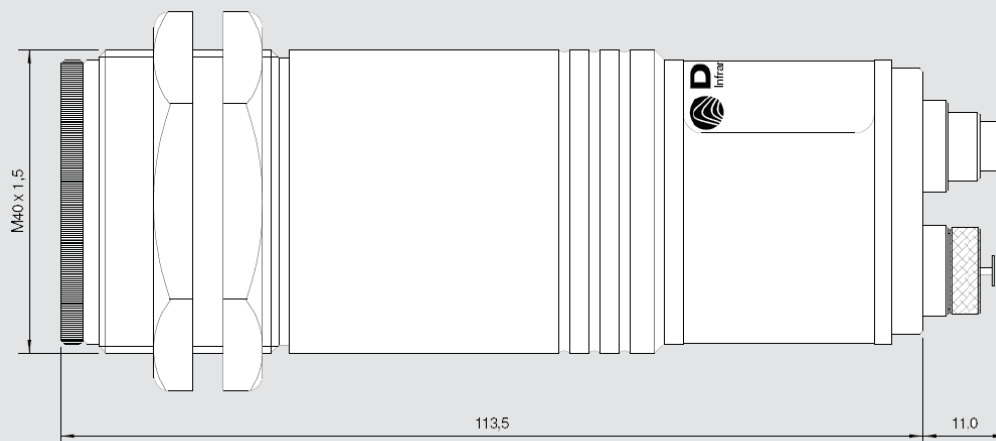
## Pyrometers for industrial application

### Technical data

| Type                                 | DS 42N  |  | DG 42N   |  |
|--------------------------------------|---|--|--|--|
| Temperature range                    | 600 °C to 1800 °C   | 800 °C to 2500 °C  | 250 °C to 1300 °C  | 350 ° to 1800 °C   |
| Sub temperature range                | optional factory-set: adjustable within temperature range, minimum span 50 °C   |  |  |  |
| Spectral range                       | 0.8 µm to 1.1 µm  |  | 1.5 µm bis 1.8 µm  |  |
| Optics (Order numbers)               | 210 (4420061001),<br>290 (4420062001),<br>650 (4420063001),<br>4000 (4420064001)  | 210 (4420061002),<br>290 (4420062002),<br>650 (4420063002),<br>4000 (4420064002) | 210 (4421061001),<br>290 (4421062001),<br>650 (4421063001),<br>4000 (4421064001) | 210 (4421061002),<br>290 (4421062002),<br>650 (4421063002),<br>4000 (4421064002) |
| Measurement uncertainty <sup>1</sup> | 0.5 % of measured value in °C   |  |  |  |
| Reproducibility <sup>1</sup>         | 0.1 % of measured value in °C   |  |  |  |
| NETD <sup>2</sup>                    | < 0.1 K <sup>-1</sup>   |  |  |  |
| Response time (t95)                  | 10 ms, optional factory-set up to 100 s   |  |  |  |
| Emissivity                           | 0.050 to 1.00, adjustable (factory setting when delivered: 1.00)  |  |  |  |
| Data storage                         | maximum value storage, optionally adjustable ex works   |  |  |  |
| Output                               | 4 to 20 mA, temperature linear, max. burden: 500 Ω at 24 V  |  |  |  |
| Aiming                               | integrated laser aiming light   |  |  |  |
| Power supply                         | 24 V DC ± 25 %, residual ripple 500 mV, 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   |  |  |  |
| Safety class                         | IP 65 (according to DIN EN 60529 and DIN 40050)   |  |  |  |
| CE symbol                            | according to EU regulations   |  |  |  |
| Scope of delivery                    | PYROSPOT DS 42N or DG 42N with optics, manual, inspection sheet, two mounting screw nuts, connecting cable 5 m, 5 -pin. Other cable lengths on request. |  |  |  |

<sup>1</sup> Specifications for black body radiators,  $T_u = 23\text{ °C}$ ,  $\epsilon = 1$ ,  $t_{95} = 1\text{ s}$ . <sup>2</sup> Noise equivalent temperature difference.

### Dimensional drawing



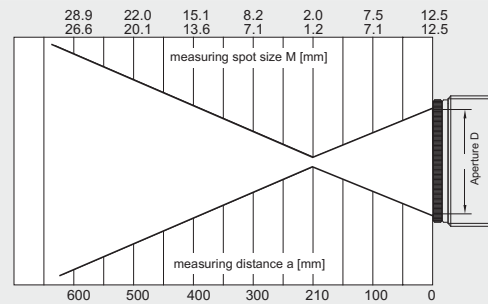
# PYROSPOT DS 42N and DG 42N

## Pyrometers for industrial application

### Optics 210, 290, 650 and 4000

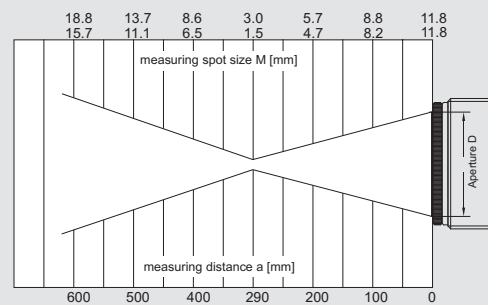
#### Optics 210 (sharp point at a = 210 mm measuring distance)

| Measuring distance a [mm]  | 0                               | 100 | 210        | 300 | 400  | 500  | 600  |
|----------------------------|---------------------------------|-----|------------|-----|------|------|------|
| Temperature range          | Measuring field diameter M [mm] |     |            |     |      |      |      |
| DS 42N (600 °C to 1800 °C) | 12.5                            | 7.5 | <b>2.0</b> | 8.2 | 15.1 | 22.0 | 28.9 |
| DS 42N (800 °C to 2500 °C) | 12.5                            | 7.1 | <b>1.2</b> | 7.1 | 13.6 | 20.1 | 26.6 |
| DG 42N (250 °C to 1300 °C) | 12.5                            | 7.5 | <b>2.0</b> | 8.2 | 15.1 | 22.0 | 28.9 |
| DG 42N (350 °C to 1800 °C) | 12.5                            | 7.1 | <b>1.2</b> | 7.1 | 13.6 | 20.1 | 26.6 |
| Aperture D ∅               | 12.5                            |     |            |     |      |      |      |



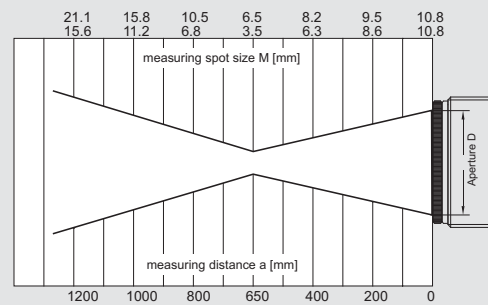
#### Optics 290 (sharp point at a = 290 mm measuring distance)

| Measuring distance a [mm]   | 0                               | 100 | 200 | 290        | 400 | 500  | 600  |
|-----------------------------|---------------------------------|-----|-----|------------|-----|------|------|
| Temperature range           | Measuring field diameter M [mm] |     |     |            |     |      |      |
| DS 42N (600 °C bis 1800 °C) | 11.8                            | 8.8 | 5.7 | <b>3.0</b> | 8.6 | 13.7 | 18.8 |
| DS 42N (800 °C bis 2500 °C) | 11.8                            | 8.2 | 4.7 | <b>1.5</b> | 6.5 | 11.1 | 15.7 |
| DG 42N (250 °C bis 1300 °C) | 11.8                            | 8.8 | 5.7 | <b>3.0</b> | 8.6 | 13.7 | 18.8 |
| DG 42N (350 °C bis 1800 °C) | 11.8                            | 8.2 | 4.7 | <b>1.5</b> | 6.5 | 11.1 | 15.7 |
| Aperture D ∅                | 11.8                            |     |     |            |     |      |      |



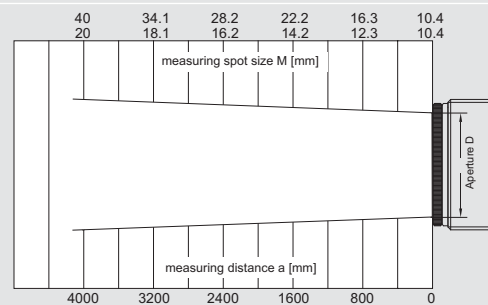
#### Optics 650 (sharp point at a = 650 mm measuring distance)

| Measuring distance a [mm]   | 0                               | 200 | 400 | 650        | 800  | 1000 | 2000 |
|-----------------------------|---------------------------------|-----|-----|------------|------|------|------|
| Temperature range           | Measuring field diameter M [mm] |     |     |            |      |      |      |
| DS 42N (600 °C bis 1800 °C) | 10.8                            | 9.5 | 8.2 | <b>6.5</b> | 10.5 | 15.8 | 21.1 |
| DS 42N (800 °C bis 2500 °C) | 10.8                            | 8.6 | 6.3 | <b>3.5</b> | 6.8  | 11.2 | 15.6 |
| DG 42N (250 °C bis 1300 °C) | 10.8                            | 9.5 | 8.2 | <b>6.5</b> | 10.5 | 15.8 | 21.1 |
| DG 42N (350 °C bis 1800 °C) | 10.8                            | 8.6 | 6.3 | <b>3.5</b> | 6.8  | 11.2 | 15.6 |
| Aperture D ∅                | 10.8                            |     |     |            |      |      |      |

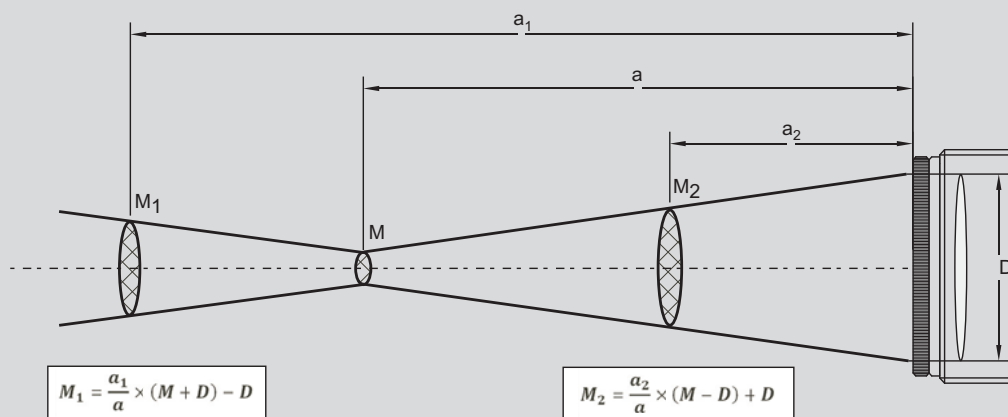


#### Optics 4000 (sharp point at a = 4000 mm measuring distance)

| Measuring distance a [mm]   | 0                               | 400  | 800  | 1600 | 2400 | 3200 | 4000        |
|-----------------------------|---------------------------------|------|------|------|------|------|-------------|
| Temperature range           | Measuring field diameter M [mm] |      |      |      |      |      |             |
| DS 42N (600 °C bis 1800 °C) | 10.4                            | 13.4 | 16.3 | 22.2 | 28.2 | 34.1 | <b>40.0</b> |
| DS 42N (800 °C bis 2500 °C) | 10.4                            | 11.4 | 12.3 | 14.2 | 16.2 | 18.1 | <b>20.0</b> |
| DG 42N (250 °C bis 1300 °C) | 10.4                            | 13.4 | 16.3 | 22.2 | 28.2 | 34.1 | <b>40.0</b> |
| DG 42N (350 °C bis 1800 °C) | 10.4                            | 11.4 | 12.3 | 14.2 | 16.2 | 18.1 | <b>20.0</b> |
| Aperture D ∅                | 10.4                            |      |      |      |      |      |             |



### Calculation of measuring field diameter



# PYROSPOT DS 42N and DG 42N

## Pyrometers for industrial application

### Electrical, mechanical and optical accessories<sup>1</sup>

|                            |                          |  |
|----------------------------|--------------------------|--|
| Connecting cable           | (3310A1151X)             | length 2 m, 5 m, 10 m, 15 m, 20 m, 25 m or 30 m  |
| Power supply PSU 15        | (3310A12010)             | 24 V DC, 0,6 A   |
| Digital display DD 200/210 | (3310A13020/3310A13025)  | for installation frame, with LED display   |
| Mounting angle             | (3310A21010, 3310A21011) | fixed or adjustable  |
| Ball and socket mounting   | (3310A21012)             |  |
| Air purge unit             | (3310A22010)             | stainless steel, cleaning air 0.1 to 0.5 bar, oil free   |
| Sighting tube              | (3310A22030, 3310A22035) | for air purge unit, 100 mm, 300 mm   |
| Cooling jacket             | (3310A23010)             | stainless steel with integrated air purge unit and mounting angle  |
| Vacuum flange              | (3310A24010)             | KF 16 with ZnSe window   |
| Mirror                     | (3310A24110)             | 90°, including air flushing  |
| Window slide               | (3310A21210)             |  |
| Windows                    | (3310A340X2)             | Protection window or for window slide, vacuum flange and cooling jacket, quartz glass, calcium fluoride, zinc selenide, sapphire glass, zinc sulfide |
| Emissivity enhancer        | (3310A26010)             |  |

<sup>1</sup> More accessories on request.

#### Mounting angle, adjustable

Order number: 3310A21011



#### Window slide (without window)

Order number: 3310A21210



#### Air purge unit for series 40/42/44

Order number: 3310A22010



#### Cooling jacket

Order number: 3310A23010



#### Power supply

Order number: 3310A12010



#### Digital display DD 200/210

Order number: 3310A13020/3310A13025

