# Digital Pyrometers **PYROSPOT**

## Non-contact Temperature Measurement

## −40 °C to 3000 °C

# PYROSPOT Series
## Digital pyrometers for non-contact temperature measurement

Our **PYROSPOT** series digital pyrometers are **radiation thermo-meters** that provide non-contact temperature measurement from **–40 °C to 3000 °C**. They are characterized by their robust design, excellent accuracy and high reliability. They are particularly suitable for use in industrial environments.

Extensive accessories allow the pyrometers to be individually adapted to the application or integrated into system solutions. For configuration of the pyrometers and analysis of the measured values the Windows® software **PYROSOFT Spot** is available.

We offer a **very wide range of pyrometers** with an **excellent price/performance ratio**. Therefore you will find the right product for your application.

For measurements on objects with variable or unknown emissivity, our **ratio pyrometers**, which are included in many PYROSPOT series, are also suitable. Our **pyrometers with fiber optics** are particularly suitable for measurements in hot ambient conditions or hard-to-reach measuring points.

All fixed pyrometers have a **temperature linear 0/4 to 20 mA output**. **USB** or **RS-485** are available as **digital, galvanically isolated interfaces**. The RS-485 interface uses the **Modbus RTU** data protocol. The pyrometers equipped with this interface can be easily integrated into existing bus systems and process controls. Integration into local networks is possible with our pyrometers with **Ethernet interface** or the **Ethernet interface box DCU$^{IoP}$**.

## ••• Find the right device for every material and measuring temperature range

| Material | Measuring temperature range | Spectral range | Device designation |
|---|---|---|---|
| Nonmetals | –40 °C to 1000 °C | 8 µm to 14 µm | "L" |
| Ultrathin glass | 300 °C to 1100 °C | around 7.7 µm | "U" |
| Glass surfaces | 50 °C to 2500 °C | around 5.0 µm | "G" |
| Hot $CO_2$ | 500 °C to 2000 °C | around 4.5 µm/4.6 µm | "C" |
| Measurement through flames | 100 °C to 2500 °C | around 3.9 µm | "F" |
| Semidconductors, metals | 50 °C to 1800 °C | 3.5 µm to 4.0 µm | "MF" |
| Thin plastic films | 50 °C to 400 °C | around 3.43 µm | "P" |
| Ceramics, metals | 20 °C to 1000 °C | 3 µm to 5 µm | "M" |
| Metals, ceramics | 50 °C to 2200 °C | 2.0 µm to 2.8 µm | "N" |
| Metals, ceramics, graphite | 200 °C to 2500 °C | 1.5 µm to 1.8 µm | "N" |
| Tungsten | 500 °C to 2500 °C | around 1.25 µm | "NT" |
| Silicon, metals | 400 °C to 2500 °C | around 0.88 µm | "N" |
| Metals, glass melts | 500 °C to 3000 °C | 0.8 µm to 1.1 µm | "N" |
| Liquid metals | 1000 °C to 2500 °C | around 0.55 µm | "N" |

"To minimize physically caused temperature measurement errors due to emissivity inaccuracies, you should measure at the shortest possible wavelength. Furthermore, spectral ranges should be used in which the measured object has a particularly high emissivity and the environment causes low interference. In the overview you can see typical spectral ranges, recommended temperature ranges and example applications".

Daniel Wagner, sales engineer and pyrometer specialist at DIAS Infrared GmbH

## ••• What does the device designation mean?

Our pyrometers are labeled according to a special scheme that helps you identify the IR sensor type, instrument series, spectral range, and some special features.

For example: PYROSPOT DA 10GV
Pyrometer with semiconductor photodiode infrared sensor of series 10, sectral range "G" and video module

| PYROSPOT | D | _ _ | _ | _ | _ _ | _ | _ _ |
|---|---|---|---|---|---|---|---|
| DIAS | | | | | | | |

**Infrared detector**
**S**, **G**, **A**, **GE**, **GA** – Semiconductor photodiodes
**P**, **PE** – Semiconductor photoresistors,
**T** – Thermopile, **Y** – pyroelectric detector

**R – Ratio pyrometer**

**F – Fiber optics**

**Device series**  4, 10, 11, 25, 30, 34, 40, 42, 44, 47, 48, 54, 55, 56, 80

**Spectral range**
N, M, P,  F, C, G, U, L (please refer overview)

**Additional designation: F** – Flames, **G** – Glass, **T** – Tungsten, **V** – Video camera

# ••• Our PYROSPOT series at a glance

| PYROSPOT Series | RS-485 | Ethernet | USB | Parameterization interface | 4 … 20 mA | 0/4 … 20 mA | Switching output | Laser | Laser aiming light adapter | LED | Video | Through-lens sighting | Fixed optics | Vario optics | Vario optics motorfocus | Fiber optics | Stainless steel round housing IP65 | Aluminum compact housing IP65 | Seperate electronics box | Display and user controls | Portable |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Interface / Output / Aiming-Target / Optics / Housing** | | | | | | | | | | | | | | | | | | | | | |
| **Series 4x** — Universal, compact and robust pyrometer for industrial application | | | | | | | | | | | | | | | | | | | | | |
| Series 40 | | | ✓ | | ✓ | | | ✓ | ✓ | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | | | |
| Series 42 | | | | | ✓ | | | ✓ | ✓ | | | | ✓ | | | | ✓ | | | ✓ | |
| Series 44 | ✓ | | | | | ✓ | | ✓ | ✓ | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | | | |
| Series 47 | | ✓ | | | | ✓ | | ✓ | ✓ | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | | | |
| Series 48 [1] | | | | | | | ✓ | | ✓ | | | | ✓ | | | | ✓ | | | ✓ | |
| **Series 5x** — High-precision and fast pyrometers for industrial application | | | | | | | | | | | | | | | | | | | | | |
| Series 54 | ✓ | | | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | | ✓ | | | | |
| Series 55 | ✓ | | | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | ✓ | | ✓ | | | ✓ | |
| Series 56 | ✓ | | | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | | ✓ | | | ✓ | |
| **Series 1x** — Highly accurate pyrometers for industry and research | | | | | | | | | | | | | | | | | | | | | |
| Series 10 | ✓ | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | | ✓ | | ✓ | |
| Series 11 | ✓ | | | | ✓ | ✓ | ✓ | | | | | | ✓ | ✓ | | ✓ | | | ✓ | ✓ | |
| **More** | | | | | | | | | | | | | | | | | | | | | |
| Series 4 | ✓ | | | | | ✓ | ✓ | | | | | | ✓ | | | | | | ✓ | ✓ | |
| Series 25 | | | | ✓ | ✓ | | | | ✓ | | | | ✓ | | | | | | ✓ | | |
| Series 30 | | | ✓ | | ✓ | | | | | | | | ✓ | | ✓ | | | | ✓ | ✓ | |
| Series 34 | ✓ | | | | ✓ | | | | | | | | ✓ | | ✓ | | | | ✓ | ✓ | |
| Series 80 | | | ✓ | | | | | ✓ | | | ✓ | | ✓ | | | | | | | ✓ | ✓ |

Each series of our PYROSPOT range is characterized by a variety of technical features. The matrix gives you a quick overview of the most important main features.

Different housing shapes allow you to optimally adapt to the environmental conditions prevailing on site.

# ••• Housing variants

| | Round housings | | | Compact housing | Separate electronics box | Portable |
|---|---|---|---|---|---|---|
| **Series** | 25 | 40, 42, 44, 47, 48 | 54, 55, 56 | 10 | 4, 11, 30 [2], 34 [2] | 80 |
| **Dimensions** | M25×1, length 98 mm | M40×1.5, length 125 mm | ∅ 50 mm, length 105-140 mm | 54 × 54 × 170 mm³ (H × W × L) | 80 × 110 × 40 mm³ (H × W × D) | 230 × 135 × 85 mm³ (H × W × L) |
| **Material** | Stainless steel (IP65) | Stainless steel (IP65) | Stainless steel (IP65) | Aluminum (IP65) | Aluminum, stainless steel (IP65) | Aluminium, plastics (IP50) |

[1] PYROSWITCH Series 48. [2] Without display and user controls

# PYROSPOT Series 4x

## Universal, compact and robust pyrometers for industrial application

↗ Different fixed and vario optics with very small target sizes from 0.7 mm
↗ Laser or LED aiming light
↗ Pyrometer with fiber optics available
↗ Compact stainless steel housing IP65

| Device type | Spectral range | Temperature range | Distance ratio | t_{95} | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 40N | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 100 : 1 to 200 : 1 | 10 ms | USB | Laser or LED aiming light |
| DG 40N | 1.5 µm to 1.8 µm | 250 °C to 2000 °C | 100 : 1 to 200 : 1 | 10 ms | USB | Laser or LED aiming light |
| DT 40F | around 3.9 µm | 300 °C to 2500 °C | 50 : 1 | 60 ms | USB | Laser aiming light adapter or LED aiming light |
| DT 40C | around 4.5 µm | 500 °C to 1800 °C | 50 : 1 | 60 ms | USB | None |
| DT 40G | around 5.0 µm | 100 °C to 2500 °C | 50 : 1 | 60 ms | USB | Laser aiming light adapter or LED aiming light |
| DT 40U | around 7.7 µm | 300 °C to 1100 °C | 50 : 1 | 60 ms | USB | None |
| DT 40L | 8 µm to 14 µm | −40 °C to 1000 °C | 50 : 1 | 60 ms | USB | Laser aiming light adapter or LED aiming light |
| Pyrometers with fiber optics | | | | | | |
| DSF 40N | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 50 : 1 to 150 : 1 | 10 ms | USB | Laser or LED aiming light |
| DGF 40N | 1.5 µm to 1.8 µm | 250 °C to 2000 °C | 50 : 1 to 150 : 1 | 10 ms | USB | Laser or LED aiming light |

↗ Different fixed optics available
↗ Very good price-performance ratio
↗ Stainless steel housing IP65
↗ Extensive accessories, for example Cooling jacket, air purge unit

| Device type | Spectral range | Temperature range | Distance ratio | t_{95} | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 42N | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 100 : 1 to 200 : 1 | 10 ms | none | Laser aiming light |
| DG 42N | 1.5 µm to 1.8 µm | 250 °C to 1800 °C | 100 : 1 to 200 : 1 | 10 ms | none | Laser aiming light |
| DT 42G | around 5.0 µm | 100 °C to 2500 °C | 50 : 1 | 100 ms | none | Laser-aiming light adapter |
| DT 42L | 8 µm to 14 µm | −40 °C to 1000 °C | 50 : 1 | 100 ms | none | Laser-aiming light adapter |

↗ Very short switch times of only 1 ms
↗ Different fixed optics
↗ Protection class IP65
↗ Adjustable switching threshold

| Device type | Spectral range | Temperature range | Distance ratio | t_{95} | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DG 48N | 1.5 µm to 1.8 µm | 200 °C to 1800 °C | 45 : 1 to 200 : 1 | 1 ms | none | LED aiming light |

## Series **44** – Bus-compatible pyrometers with RS-485 interface

- ↗ Different fixed and vario optics with very small target sizes from 0.7 mm
- ↗ Ratio pyrometers and devices with fiber optics
- ↗ Robust stainless steel housing IP65

| Device type | Spectral range | Temperature range | Distance ratio | $t_{95}$ | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 44N | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 100 : 1 to 200 : 1 | 5 ms | RS-485 | Laser or LED aiming light |
| DG 44N | 1.5 µm to 1.8 µm | 250 °C to 2000 °C | 100 : 1 to 200 : 1 | 5 ms | RS-485 | Laser or LED aiming light |
| DGE 44N | 2.0 µm to 2.6 µm | 75 °C to 1200 °C | 80 : 1 to 200 : 1 | 5 ms | RS-485 | Laser aiming light |
| DA 44M | 3.0 µm to 5.0 µm | 20 °C to 1000 °C | 50 : 1 | 5 ms | RS-485 | Laser aiming light adapter or LED aiming light |
| DA 44MF | 3.5 µm to 4.0 µm | 50 °C to 1000 °C | 50 : 1 | 5 ms | RS-485 | Laser aiming light adapter or LED aiming light |
| DA 44F | around 3.9 µm | 100 °C to 2500 °C | 50 : 1 | 5 ms | RS-485 | Laser aiming light adapter or LED aiming light |
| DA 44G | around 5.0 µm | 50 °C to 2500 °C | 50 : 1 | 5 ms | RS-485 | Laser aiming light adapter or LED aiming light |
| DT 44L | 8 µm to 14 µm | −40 °C to 1000 °C | 50 : 1 | 10 ms[1] | RS-485 | Laser aiming light adapter or LED aiming light |
| Ratio pyrometers | | | | | | |
| DSR 44N | 0.7 µm to 1.1 µm | 600 °C to 2500 °C | 50 : 1 to 200 : 1 | 5 ms | RS-485 | Laser aiming light |
| Pyrometers with fiber optics | | | | | | |
| DSF 44N | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 50 : 1 to 150 : 1 | 5 ms | RS-485 | Laser or LED aiming light |
| DGF 44N | 1.5 µm to 1.8 µm | 250 °C to 2000 °C | 50 : 1 to 150 : 1 | 5 ms | RS-485 | Laser or LED aiming light |
| Ratio pyrometers with fiber optics | | | | | | |
| DSRF 44N | 0.7 µm to 1.1 µm | 700 °C to 1800 °C | 40 : 1 | 5 ms | RS-485 | Laser aiming light |

[1] $t_{90}$

## Series **47** – Pyrometers with Ethernet interface

- ↗ Compact pyrometers with Ethernet interface
- ↗ Integrated web server, Modbus-TCP protocol
- ↗ Robust stainless steel housing IP65

| Device type | Spectral range | Temperature range | Distance ratio | $t_{95}$ | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 47N | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 100 : 1 to 200 : 1 | 5 ms | Ethernet | Laser or LED aiming light |
| DG 47N | 1.5 µm to 1.8 µm | 250 °C to 2000 °C | 100 : 1 to 200 : 1 | 5 ms | Ethernet | Laser or LED aiming light |
| DA 47M | 3.0 µm to 5.0 µm | 20 °C to 1000 °C | 50 : 1 | 5 ms | Ethernet | Laser aiming light adapter or LED aiming light |
| DA 47MF | 3.5 µm to 4.0 µm | 50 °C to 1000 °C | 50 : 1 | 5 ms | Ethernet | Laser aiming light adapter or LED aiming light |
| DA 47F | around 3.9 µm | 100 °C to 2500 °C | 50 : 1 | 5 ms | Ethernet | Laser aiming light adapter or LED aiming light |
| DA 47G | around 5.0 µm | 50 °C to 2500 °C | 50 : 1 | 5 ms | Ethernet | Laser aiming light adapter or LED aiming light |
| DT 47L | 8 µm to 14 µm | −40 °C to 1000 °C | 50 : 1 | 10 ms[1] | Ethernet | Laser aiming light adapter or LED aiming light |
| Pyrometers with fiber optics | | | | | | |
| DSF 47N | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 50 : 1 to 150 : 1 | 5 ms | Ethernet | Laser or LED aiming light |
| DGF 47N | 1.5 µm to 1.8 µm | 250 °C to 2000 °C | 50 : 1 to 150 : 1 | 5 ms | Ethernet | Laser or LED aiming light |

[1] $t_{90}$

# PYROSPOT Series 5x

## High-precision, very fast pyrometers for operations in industry

↗ Parameterization via RS-485 interface

↗ Laser aiming light, color video camera or through-lens sighting

↗ Special pyrometers for measurement in combustion chambers

↗ Robust stainless steel housing IP65

| Device type | Spectral range | Temperature range | Distance ratio | $t_{95}$ | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 54N | 0.8 µm to 1.1 µm | 550 °C to 3000 °C | 200 : 1 to 300 : 1 | 2 ms | RS-485 | Laser, video, through-lens sighting |
| DG 54N | 1.5 µm to 1.8 µm | 200 °C to 2500 °C | 200 : 1 to 300 : 1 | 2 ms | RS-485 | Laser, video, through-lens sighting |
| Ratio pyrometers | | | | | | |
| DSR 54N | 0.7 µm to 1.1 µm | 500 °C to 3000 °C | 50 : 1 to 300 : 1 | 5 ms | RS-485 | Laser, video, through-lens sighting |
| Special pyrometer for combustion chambers | | | | | | |
| DSR 54NF | 0.7 µm to 1.1 µm | 700 °C to 2500 °C | 200 : 1 | 5 ms | RS-485 | Laser, video |
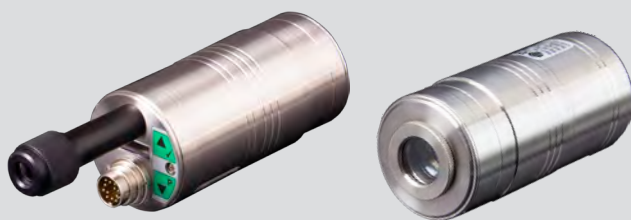
↗ Different fixed optics or vario optics with motorfocus (adjustable in 8 steps, no external moving parts)

↗ Display and keys for emissivity/ motorfocus

| Device type | Spectral range | Temperature range | Distance ratio | $t_{95}$ | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 55N | 0.8 µm to 1.1 µm | 550 °C to 3000 °C | 160 : 1 to 300 : 1 | 2 ms | RS-485 | Laser, video, through-lens sighting |
| DG 55N | 1.5 µm to 1.8 µm | 200 °C to 2500 °C | 160 : 1 to 300 : 1 | 2 ms | RS-485 | Laser, video, through-lens sighting |
| DGE 55N | 2.0 µm to 2.6 µm | 75 °C to 2200 °C | 80 : 1 to 200 : 1 | 2 ms | RS-485 | Laser, through-lens sighting |
| Ratio pyrometers | | | | | | |
| DSR 55N | 0.7 µm to 1.1 µm | 500 °C to 3000 °C | 40 : 1 to 300 : 1 | 5 ms | RS-485 | Laser, video, through-lens sighting |

## ••• Examples for mechanical accessories



Series 54/55 with air purge unit and adjustable mounting angle



Series 54/55 with cooling jacket including air purge, sleeve for ball flange and ball flange

↗ Different fixed optics with very small target size from 0.7 mm

↗ Laser aiming light, color video camera or through-lens sighting

↗ Stainless steel housing IP65

| Device type | Spectral range | Temperature range | Distance ratio | $t_{95}$ | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 56N | 0.8 µm to 1.1 µm | 550 °C to 3000 °C | 200 : 1 to 300 : 1 | 2 ms | RS-485 | Laser, video, through-lens sighting |
| DG 56N | 1.5 µm to 1.8 µm | 200 °C to 2500 °C | 200 : 1 to 300 : 1 | 2 ms | RS-485 | Laser, video, through-lens sighting |
| DGE 56N | 2.0 µm to 2.6 µm | 75 °C to 2200 °C | 80 : 1 to 200 : 1 | 2 ms | RS-485 | Laser, through-lens sighting |
| Ratio pyrometers | | | | | | |
| DSR 56N | 0.7 µm to 1.1 µm | 500 °C to 3000 °C | 50 : 1 to 300 : 1 | 5 ms | RS-485 | Laser, video, through-lens sighting |

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# PYROSPOT Serien 1x

## High-precision pyrometers for industry and research

↗ Different vario optics with very small target sizes from 0.7 mm

↗ Integrated display for showing measured values and parameters

↗ Keys for parameterization

↗ A lot of different aiming aids

| Device type | Spectral range | Temperature range | Distance ratio | $t_{95}$ | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 10N | 0.8 µm to 1.1 µm | 550 °C to 3000 °C | 200 : 1 to 300 : 1 | 2 ms | RS-485 | |
| DGA 10N | around 0.88 µm | 400 °C to 2500 °C | 50 : 1 to 200 : 1 | 2 ms | RS-485 | |
| DG 10NT | around 1.25 µm | 500 °C to 2500 °C | 200 : 1 | 2 ms | RS-485 | |
| DG 10N | 1.5 µm to 1.8 µm | 200 °C to 2500 °C | 200 : 1 to 300 : 1 | 2 ms | RS-485 | |
| DGE 10N | 2.0 µm to 2.6 µm | 100 °C to 1200 °C | 100 : 1 to 200 : 1 | 2 ms | RS-485 | Each pyrometer is equipped with a LED or laser aiming light, a through-lens sighting or a color video camera |
| DP 10N | 2.0 µm to 2.8 µm | 50 °C to 1200 °C | 100 : 1 to 200 : 1 | 1,5 ms | RS-485 | |
| DA 10M | 3 µm to 5.0 µm | 30°C to 1400 °C | 100 : 1 to 130 : 1 | 1 ms | RS-485 | |
| DPE 10M | 3.0 µm to 5.0 µm | 20 °C to 1000 °C | 75 : 1 to 150 : 1 | 1,5 ms | RS-485 | |
| DA 10MF | 3.5 µm to 4.0 µm | 75 °C to 1800 °C | 100 : 1 to 130 : 1 | 1 ms | RS-485 | |
| DPE 10MF | 3.5 µm to 4.0 µm | 50 °C to 2500 °C | 75 : 1 to 200 : 1 | 1,5 ms | RS-485 | |
| DA 10F | around 3.9 µm | 200 °C to 2500 °C | 100 : 1 to 130 : 1 | 1 ms | RS-485 | |
| DA 10C | around 4.6 µm | 500 °C to 2000 °C | 100 : 1 | 1 ms | RS-485 | Through-lens sighting |
| DA 10G | around 5.0 µm | 75 °C to 2500 °C | 100 : 1 to 130 : 1 | 1 ms | RS-485 | Each pyrometer is equipped with a LED or laser aiming light, a through-lens sighting or a color video camera |
| DY 10L | 8 µm to 14 µm | 0 °C to 1000 °C | 80 : 1 to 100 : 1 | 30 ms | RS-485 | |
| Ratio pyrometers | | | | | | |
| DSR 10N | 0.7 µm to 1.1 µm | 500 °C to 3000 °C | 50 : 1 to 300 : 1 | 5 ms | RS-485 | Each pyrometer is equipped with a LED or laser aiming light, a through-lens sighting or a color video camera |
| DSR 10NF | 0.7 µm to 1.1 µm | 600 °C to 2500 °C | 100 : 1 to 300 : 1 | 5 ms | RS-485 | |
| DGR 10N | 1.5 µm to 1.9 µm | 300 °C to 2300 °C | 100 : 1 to 300 : 1 | 5 ms | RS-485 | |

# PYROSPOT Series 1x

## High-precision pyrometers for industry and research

↗ Vario and fixed optics available with
   very small target sizes from 0.7 mm
↗ For environmental conditions up to 250 °C
↗ OLED display and keys for parameterization
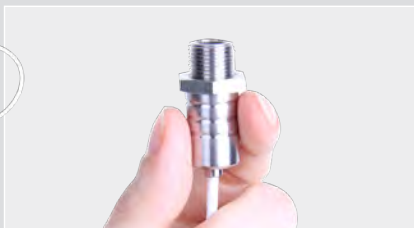↗ Protection class IP65

| Device type | Spectral range | Temperature range | Distance ratio | $t_{95}$ | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DSF 11N | 0.8 µm to 1.1 µm | 600 °C to 3000 °C | 100 : 1 to 150 : 1 | 2 ms | RS-485 | Laser aiming light |
| DGAF 11N | around 0.88 µm | 350 °C to 2500 °C | 15: 1 to 150 : 1 | 2 ms | RS-485 | Laser aiming light |
| DGF 11N | 1.5 µm to 1.8 µm | 250 °C to 2500 °C | 100 : 1 to 150 : 1 | 2 ms | RS-485 | Laser aiming light |
| DGEF 11N | 1.5 µm to 2.2 µm | 100 °C to 800 °C | 20 : 1 to 30 :1 | 2 ms | RS-485 | Laser aiming light |
| DGEF 11N | 2.0 µm to 2.6 µm | 150 °C to 1200 °C | 50 : 1 to 75 : 1 | 2 ms | RS-485 | Laser aiming light |
| Ratio pyrometers | | | | | | |
| DSRF 11N | 0.7 µm to 1.1 µm | 600 °C to 3000 °C | 50 : 1 to 150 : 1 | 5 ms | RS-485 | Laser aiming light |
| DGRF 11N | 1.5 µm to 1.9 µm | 300 °C to 2300 °C | 50 : 1 to 150 : 1 | 5 ms | RS-485 | Laser aiming light |

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# PYROSPOT Series 4

## Fixed pyrometers for industrial application

↗ Large OLED display and keys
↗ Parameterization directly at the device
↗ Best price-performance ratio for OEM
↗ Protection class IP65

| Device type | Spectral range | Temperature range | Distance ratio | $t_{95}$ | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 4N | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 32 : 1 to 64 : 1 | 10 ms | RS-485 | None |
| DG 4N | 1.5 µm to 1.8 µm | 250 °C to 1800 °C | 32 : 1 to 64 : 1 | 10 ms | RS-485 | None |
| DA 4P | around 3.43 µm | 50 °C to 400 °C | 15 : 1 | 40 ms | RS-485 | None |
| DT 4G | around 5.0 µm | 200 °C to 1800 °C | 20 : 1 | 100 ms | RS-485 | None |
| DT 4L | 8 µm to 14 µm | −40 °C to 1000 °C | 20 : 1 | 100 ms | RS-485 | None |

# PYROSPOT Series 2x and 3x

## Fixed pyrometers for industrial application

### Series 25 – Compact pyrometers with parameterization interface



- ↗ 2-wire pyrometers with convincing price-performance ratio
- ↗ Fixed optics
- ↗ Stainless steel housing IP65

| Device type | Spectral range | Temperature range | Distance ratio | t95 | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DT 25L | 8 µm to 14 µm | −20 °C to 700 °C | 40 : 1 | 200 ms | Parameter interface | Optional: laser-aiming light adapter |

### Series 30/34 – Extremely temperature resistant pyrometers with excellent price-performance ratio



- ↗ Pyrometers with fiber optics, e.g. for glass and brick industry
- ↗ Fixed optics with air purge unit and quick lock
- ↗ Protection class IP65

| Device type | Spectral range | Temperature range | Distance ratio | t95 | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DSF 30NG | 0.8 µm to 1.1 µm | 600 °C to 1800 °C | 200 : 1 | 10 ms | USB | None |
| DSF 34NG | 0.8 µm to 1.1 µm | 600 °C to 1800 °C | 200 : 1 | 10 ms | RS-485 | None |

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# PYROSPOT Series 8x

## Portable pyrometers for the use in heavy industry

### Series 80 – Fast portable pyrometers with TFT color display



- ↗ High accuracy
- ↗ Easily focusable vario optics
- ↗ 2.5" TFT display with target marking and measured value display
- ↗ Robust housing

| Device type | Spectral range | Temperature range | Distance ratio | t95 | Interface | Aiming/targeting aid |
|---|---|---|---|---|---|---|
| DS 80NV | 0.8 µm to 1.1 µm | 550 °C to 2500 °C | 200 : 1 | 5 ms | USB | TFT color display, laser |
| DG 80NV | 1.5 µm to 1.8 µm | 200 °C to 2000 °C | 200 : 1 | 5 ms | USB | TFT color display, laser |
| Ratio pyrometers | | | | | | |
| DSR 80NV | 0.7 µm to 1.1 µm | 500 °C to 2500 °C | 50 : 1 to 200 : 1 | 5 ms | USB | TFT color display, laser |

# Extras

## ••• Pyrometer software PYROSOFT Spot and PYROSOFT Spot Pro

For the evaluation and further processing of acquired measurement data DIAS offers two variants for its PYROSPOT pyrometers. These are the free Windows software **PYROSOFT Spot** and the paid version **PYROSOFT Spot Pro**. The Pro version allows the visualization and recording of measured values of several pyrometers connected at the same time, whereas the free version only allows this for one connected pyrometer. The video image can also be displayed on an additionally available TFT display.



**Further functions are:**

* Trigger functions[1]
* Extensive statistical analysis of measurement data[1]
* Export of measured data as text file and automatic creation of Excel spreadsheets
* Video functions for pyrometers with integrated camera module
* Integrated calculator for easy calculation of optics parameters
* Display and parameterization of the optional display unit and digital displays[1]
* Automatic emissivity determination
* Report generation from template document

[1] Only available for PYROSOFT Spot Pro

## ••• Accessories for all pyrometer series PYROSPOT

A wide range of mechanical, optical and electrical accessories are available for our pyrometer series.

| Accessories | Series 4 | Series 10 | Series 11 | Series 25 | Series 3x | Series 40 | Series 42/47 | Series 44 | Series 48 | Series 5x |
|---|---|---|---|---|---|---|---|---|---|---|
| Mounting angle, fixed | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mounting angle, adjustable | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ball and socket mounting | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | |
| Air purge unit | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sighting tube | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cooling plate | | ✓ | | | | | | | | |
| Cooling jacket with air purge unit | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| ATEX housing | | ✓ | | | | | | ✓ | | |
| Mirror 90° | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vacuum flange/Vacuum lead-through | | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Windlow slide | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Protection class | | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ring nut with protection class | ✓ | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Connection cable | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Interface adapter RS-485 to USB | ✓ | ✓ | ✓ | | ✓[2] | | | ✓ | | ✓ |
| Interface adapter RS-485 to ProfiBus DP | ✓ | ✓ | ✓ | | ✓[2] | | | ✓ | | ✓ |
| Ethernet Interface box DCU^IoP | | ✓ | ✓ | | ✓[2] | | | ✓ | | ✓ |
| Interface adapter video to USB | | ✓ | | | | | | | | ✓ |
| Power supply 24 V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Digital display | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| Display and control unit | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓[3] | ✓ | | ✓ |
| Handheld programming device DHP 1040 | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ |
| TFT display 3.5" | | ✓ | | | | | | | | ✓ |

More accessories available on request. [2] Only series 34. [3] Only series 42.

# Networking and calibration

## ••• Integration into local networks – Ethernet interface box DCU$^{IoP}$

The integration into local networks for data transfer and parameterization can be done with our pyrometers with Ethernet interface (**PYROSPOT series 47**) or with the **Ethernet interface box DCU$^{IoP}$**. All PYROSPOT pyrometers with RS-485 interface can be connected to the Ethernet interface box DCU$^{IoP}$. This makes it possible to operate several pyrometers via one connection under one IP address. Video signals can also be transmitted.

A wireless connection also offers the possibility of uncomplicated commissioning, maintenance and on-site checks by means of smartphone or tablet web browsers. An integrated data logger enables the recording of measurement data from the pyrometers.

**Embedded OPC-UA:** For the fast implementation in your industrial automation

Temperature
°C

## ••• Calibration

For the calibration and verification of radiation thermometers and thermal imagers DIAS Infrared GmbH manufactures blackbody radiators. The following overview contains selected calibration sources of the **PYROTHERM** series.

| Calibration sources PYROTHERM | | |
|---|---|---|
| Device | Temperature range | Type |
| CS 120 | −15 °C to 120 °C | Surface radiator |
| CS 400 | 50 °C to 400 °C | Surface radiator |
| CS 500 | 50 °C to 500 °C | Surface radiator |
| CS 1200 | 300 °C to 1200 °C | Cavity radiator |
| CS 1500 | 300 °C to 1500 °C | Cavity radiator |
| CS F35 to F150 | 35 °C to 150 °C [1] | Surface radiator |
| CCS 130 | 30 °C to 130 °C [2] | Surface radiator |

[1] Fixed temperature factory-set between 35 °C and 100 °C (in 5 °C steps) and between 100 °C and 150 °C (in 10 °C steps) [2] Fixed temperatures factory-set between 30 °C and 130 °C (in 1 °C steps)

The digital DIAS **transfer radiation thermometers** of the **PYROSPOT 10 cal series** are particularly long-term stable and highly accurate calibrated instruments, which have been specially designed for checking calibration radiators and for traceable calibration of infrared temperature measuring instruments. The scope of delivery includes a test certificate with 10 measuring points (traceable to PTB standards) or an optional PTB calibration certificate. On request, we can perform the calibration of your infrared temperature measuring instruments in **our calibration laboratory as a service**.

| Transfer radiation thermometers for calibration | | | | | | |
|---|---|---|---|---|---|---|
| Device | Spectral range | Temperature range | Distance ratio | t95 | Interface | Aiming/targeting aid |
| DS 10N cal | 0.8 µm to 1.1 µm | 600 °C to 2500 °C | 200 : 1 | 1 s | RS-485 | Through-lens sighting |
| DG 10N cal | 1.5 µm to 1.8 µm | 300 °C to 1800 °C | 200 : 1 | 1 s | RS-485 | Through-lens sighting |
| DY 10F cal | around 3.9 µm | 200 °C to 1500 °C | 70 : 1 | 1 s | RS-485 | Through-lens sighting |
| DY 10G cal | around 5.0 µm | 100 °C to 1400 °C | 70 : 1 | 1 s | RS-485 | Laser aiming light |
| DY 10L cal | 8 µm to 14 µm | 0 °C to 1000 °C | 70 : 1 | 1 s | RS-485 | Laser aiming light |

# *Available in the UK and Ireland from…*



## *01433 620535     sales@tmseurope.co.uk*

TMS Europe Ltd was established in 1979 and has offered the DIAS range as the UK & Eire agent of DIAS Infrared GmbH since 2012. DIAS Infrared is based in Dresden, Germany and was founded in 1992.

TMS Europe Ltd is a UKAS accredited calibration laboratory No. 0461. We are ISO 17025 accredited for calibration on site and in our laboratory, as defined in our Schedule Of Accreditation ( see www.tmseurope.co.uk/soa ).

TMS Europe is also a manufacturer of temperature sensor probes for contact temperature measurement, temperature calibrators and furnaces – amoungst many other products.

## *Part of a range of thermal solutions from TMS Europe*

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Certificate Number 351