DIAS
Infrared Systems

Digital Pyrometers **PYROSPOT**

Non-contact Temperature Measurement

–40 °C to 3000 °C

PYROSPOT Series

Digital pyrometers for non-contact temperature measurement

Our digital pyrometers **PYROSPOT** are **radiation thermometers** for a non-contact measurement of temperature between **–40 °C bis 3000 °C** . They are characterized by robust housings, excellent accuracy and high reliability. The pyrometers are specifically suitable for the use in industrial environments.

By an extensive range of accessories pyrometers can be customized individually to the application and integrated into system solutions. For the parameterization of the pyrometers and interpretation of the measured data the Windows® software **PYROSOFT Spot** is available.

We offer you an outmostly wide pyrometer range with an excellent cost-performance ratio. So you can find the suitable product for your application.

To minimize physically caused temperature measurement failures resulting from emissivity inaccuracies, you should measure at a short wavelength. There are typical spectral ranges, recommended temperature ranges and application in the overview:

Materials	Temperature range	Spectral range	Device type
Non-metals	–40 °C to 1000 °C	8 µm to 14 µm	„L"
Ultrathin glass	300 °C to 1200 °C	about 7.7 µm	„U"
Glass surfaces	100 °C to 2500 °C	4.8 µm to 5.2 µm	„G"
CO_2 measurements	500 °C to 1800 °C	about 4.5 µm	„C"
Measurement through flames	300 °C to 2500 °C	about 3.9 µm	„F"
Ceramic, metals, graphite	20 °C to 2500 °C	3.0 µm to 5.0 µm	„M"
Metals, ceramic, graphite	150 °C to 2500 °C	1.4 µm to 1.8 µm	„N"
Metals, glass melts	500 °C to 3000 °C	0.8 µm to 1.1 µm	„N"

Our **ratio pyrometers** contained in a lots of PYROSPOT series are suitable for measurements on objects with changing or unknown emissivity. Pyrometers with **fiber optics** are specifically suitable for measurements in hot environment conditions or measurements points that are not easy to reach.

All pyrometers have **a 0/4 to 20 mA temperature linear output.** As **digital interfaces USB** or **RS-485** are available that are **galvanically isolated.** The RS-485 interface uses the data protocoll **Modbus RTU**. In this way the pyrometers equipped with that kind of interface can be integrated without any problems into existing bus systems and process controls. The integration in local networks is possible with the **Ethernet interface box DCU^{IoP}**.

What does the device name mean?

PYROSPOT **D** – – – – – – – – – –

DIAS

Detector
S – Silicium, **G** – InGaAs, **GE** – ext. InGaAs
P – PbS, **PE** – PbSe, **T** – Thermopile,
Y – pyroelectric Detector

R – Ratio pyrometers

F – Fiber optics

Device series 4, 10, 11, 30, 34, 40, 42, 44, 48, 54, 56, 80

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

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

PYROSPOT Series 5x

High-precision, very fast pyrometers for operations in industry

Series **56 – Extremely powerful pyrometers with display and parameterization keys**

- Different fixed optics with very small measurement field diameters from 0.7 mm
- Very fast response times t95 from 2 ms
- Large assortments of aiming possibilities
- Compact and robust stainless steel housing with protection class IP65

Device type	Spectral range	Temperature range	Distance ratio	t95	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 aiming light, color video camera, through-lens sighting, electr. viewfinder
DG 56N	1.5 µm to 1.8 µm	200 °C to 2500 °C	200 : 1 to 300 : 1	2 ms	RS-485	Laser aiming light, color video camera, through-lens sighting, electr. viewfinder
DT 56G	about 5 µm	100 °C to 2500 °C	75 : 1 to 100 : 1	10 ms[1)]	RS-485	Double laser
DT 56L	8 µm to 14 µm	–40 °C to 1000 °C	75 : 1 to 100 : 1	10 ms[1)]	RS-485	Double laser
Ratio pyrometer						
DSR 56N	0.7 µm to 1.1 µm	500 °C to 3000 °C	50 : 1 to 300 : 1	5 ms	RS-485	Laser aiming light, color video camera, through-lens sighting, electr. viewfinder

Series **54 – Extra powerful pyrometers with very good cost-performance ratio**

- Parameterization via RS-485 interface
- Laser aiming light or color video camera as focussing aid
- Special pyrometers for measurements in combustion chambers
- Compact and robust stainless steel housing with protection class IP65

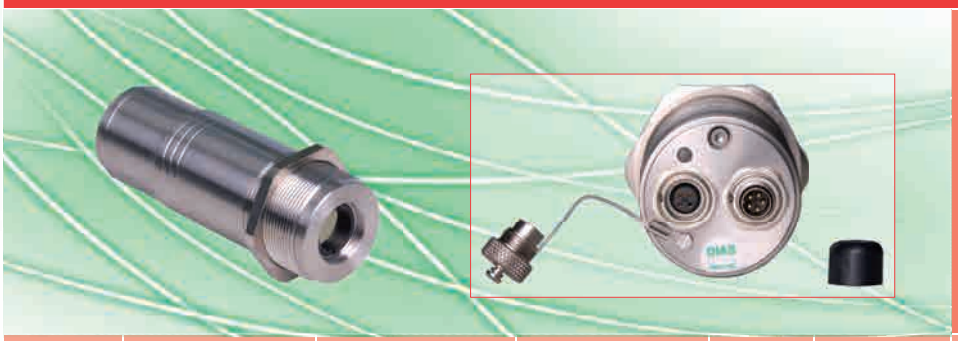
Device type	Spectral range	Temperature range	DIstance ratio	t95	Interface	Aiming/targeting aid
DS 54N	0.8 µm to 1.1 µm	550 °C to 3000 °C	200 : 1 to 300 : 1	2 ms	RS-485	Laser aiming light, color video camera
DG 54N	1.5 µm to 1.8 µm	200 °C to 2500 °C	200 : 1 to 300 : 1	2 ms	RS-485	Laser aiming light, color video camera
DT 54G	about 5 µm	100 °C to 2500 °C	75 : 1 to 100 : 1	10 ms[1)]	RS-485	Double laser
DT 54U	about 7.7 µm	350 °C to 1200 °C	65 : 1	50 ms	RS-485	Double laser
DT 54L	8 µm to 14 µm	–40 °C to 1000 °C	75 : 1 to 100 : 1	10 ms[1)]	RS-485	Double laser
Ratio pyrometer						
DSR 54N	0.7 µm to 1.1 µm	500 °C to 3000 °C	50 : 1 to 300 : 1	5 ms	RS-485	Laser aiming light, color video camera
Special pyrometer for combustion chambers						
DSR 54NF	0.7 µm to 1.1 µm	700 °C to 3000 °C	200 : 1	5 ms	RS-485	Laser aiming light, color video camera

Series 5x with accessories

PYROSPOT Series 4x

Universal, compact and robust pyrometer for industrial application

Series **40 – All-around applicable 2-wire pyrometers with USB interface**



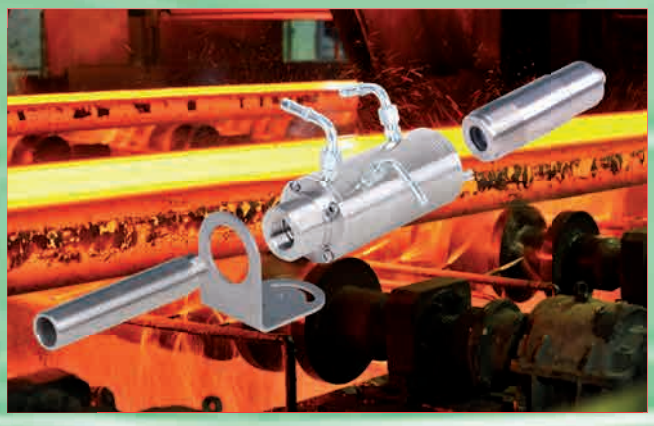
- Different fixed and vario optics with very small measurement field diameters from 0.7 mm
- Integrated LED or laser aiming light
- Pyrometer with fiber optics available
- Stainless steel housing IP65

Device type	Spectral range	Temperature range	Distance ratio	t95	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	LED or laser aiming light
DG 40N	1.5 µm to 1.8 µm	250 °C to 2000 °C	100 : 1 to 200 : 1	10 ms	USB	LED or laser aiming light
DT 40F	about 3.9 µm	300 °C to 2500 °C	50 : 1	60 ms	USB	LED aiming light
DT 40C	about 4.5 µm	500 °C to 1800 °C	50 : 1	60 ms	USB	none
DT 40G	about 5.0 µm	100 °C to 2500 °C	50 : 1	60 ms	USB	LED aiming light
DT 40U	about 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	LED aiming light
Fiber optics pyrometer						
DSF 40N	0.8 µm to 1.1 µm	600 °C to 2500 °C	50 : 1 to 100 : 1	10 ms	USB	LED or laser aiming light
DGF 40N	1.5 µm to 1.8 µm	250 °C to 2000 °C	50 : 1 to 100 : 1	10 ms	USB	LED or laser aiming light

Series **42 – Good value series with emissivity adjustment for first-time user**

- Different fixed optics available
- 2-wire device in stainless steel housing (IP65)
- Extensive accessories, e.g. cooling jacket, air purge unit

Device type	Spectral range	Temperature range	Distance ratio	t95	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	about 5.0 µm	100 °C to 2500 °C	50 : 1	100 ms	none	Laser aiming light adaptor
DT 42L	8 µm to 14 µm	–40 °C to 1000 °C	50 : 1	100 ms	none	Laser aiming light adaptor



PYROSPOT Series 4x

Universal, compact and robust pyrometer for industrial application

Series **44 – Bus-compatible pyrometer with RS-485 interface**

- Different fixed and vario optics with very small measurement field diameters from 0.7 mm
- Special ratio pyrometers and devices with fiber optics
- Robust stainless steel housing IP65

Device type	Spectral range	Temperature range	Distance ratio	t95	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	LED or laser 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	LED or laser aiming light
DGE 44N	2.0 µm to 2.6 µm	75 °C to 1200 °C	85 : 1 to 200 : 1	5 ms	RS-485	Laser aiming light
DT 44F	about 3.9 µm	300 °C to 2500 °C	50 : 1	10 ms[1)]	RS-485	LED aiming light
DT 44G	about 5.0 µm	100 °C to 2500 °C	50 : 1	10 ms[1)]	RS-485	LED aiming light
DT 44L	8 µm to 14 µm	–40 °C to 1000 °C	50 : 1	10 ms[1)]	RS-485	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
Fiber optics pyrometer						
DSF 44N	0.8 µm to 1.1 µm	600 °C to 2500 °C	50 : 1 bis 100 : 1	5 ms	RS-485	LED or laser aiming light
DGF 44N	1.5 µm to 1.8 µm	250 °C to 2000 °C	50 : 1 bis 100 : 1	5 ms	RS-485	LED or laser 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

Series **4 – Pyrometer with small remote sensor head and separate electronics**

- Large, easy to read OLED display and programmable keys
- Parameterization directly at the device
- Best cost-performance ratio for OEM application
- Protection class IP65

Device type	Spectral range	Temperature range	Distance ratio	t95	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
DT 4G	about 5.14 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

Series **48 – Fast temperature switch with potential-free output**

- Very short switch times of only 1 ms
- Different fixed optics
- Protection class IP65
- Option: Hot metal detector

Device type	Spectral range	Temperature range	Distance ratio	t95	Interface	Aiming/targeting aid
DG 48N	1.5 µm to 1.8 µm	200 °C to 1800 °C	65 : 1 to 200 : 1	1 ms	none	LED aiming light

PYROSPOT Series 1x

High-precision pyrometer for industry and research

Series 10 – Fast pyrometers with display, keys for parameterization and vario optics

- Different vario optics with very small measurement field diameters from 0.7 mm
- Integrated display for measured values and parameters
- Push buttons for parameterization
- Various aiming/targeting aids

Device type	Spectral range	Temperature range	Distance ratio	t95	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	Each pyrometer is equipped with an integrated LED or laser aiming light, a through-lens sighting or a color video camera
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	
DP 10N	2.0 µm to 2.8 µm	50 °C to 1200 °C	100 : 1 to 200 : 1	1,5 ms	RS-485	
DPE 10M	3.0 µm to 5.0 µm	20 °C to 1000 °C	100 : 1 to 150 : 1	1,5 ms	RS-485	
DPE 10MF	about 3.9 µm	50 °C to 2500 °C	100 : 1 to 200 : 1	1,5 ms	RS-485	
DPE 10C	about 4.5 µm	500 °C to 2000 °C	100 : 1	1,5 ms	RS-485	Through-lens sighting
DY 10G	about 5 µm	100 °C to 2500 °C	100 : 1	30 ms	RS-485	Each pyrometer is equipped with an integrated LED or laser aiming light, a through-lens sighting or a color video camera
DY 10U	about 7.8 µm	250 °C to 1300 °C	70 : 1	30 ms	RS-485	
DY 10L	8 µm to 14 µm	0 °C to 1000 °C	80 : 1 to 100 : 1	30 ms	RS-485	
Ratio pyrometer						
DSR 10N	0.7 µm to 1.1 µm	500 °C to 3000 °C	50 : 1 to 300 : 1	5 ms	RS-485	LED or laser aiming light, through-lens sighting or 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	
Transfer radiation thermometer set for calibration						
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	about 3.9 µm	200 °C to 1500 °C	75 : 1	1 s	RS-485	Through-lens sighting
DY 10G cal	4.8 µm to 5.2 µm	100 °C to 1400 °C	75 : 1	1 s	RS-485	Laser aiming light
DY 10L cal	8 µm to 14 µm	0 ° to 1000 °C	75 : 1	1 s	RS-485	Laser aiming light

Series 11 – Robust and fast fiber optics pyrometer with display and control keys

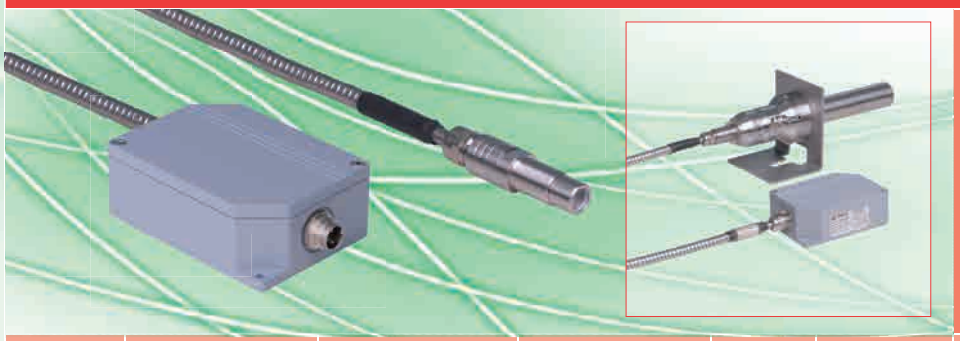
- Vario and fixed optics available
- Devices with fiber optics and optical head for ambient conditions up to 250 °C
- Large OLED display and keys for parameterization
- Protection class IP65

Device type	Spectral range	Temperature range	Distance ratio	t95	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
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	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 pyrometer						
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

PYROSPOT Series 3x

Pyrometer with fiber optics for glass industry

Series 30/34 – Extremely temperature-resistant pyrometer with excellent cost-performance ratio



- Mono fiber optics with fixed optics
- Air purge unit with quick fastener
- 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	> 100 : 1	10 ms	USB	none
DSF 34NG	0.8 µm to 1.1 µm	600 °C to 1800 °C	> 100 : 1	10 ms	RS-485	none

PYROSPOT Series 8x

Portable pyrometers for the use in the heavy industry

Series 80 – Fast portable pyrometer with precision optics

- High accurancy
- Easily focusable precision optics
- 2.5" TFT display with measurement field mark and measured value display
- Robust housing

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

PYROTHERM Black body calibration sources

Infrared calibration sources

PYROTHERM CS 120
Temperature range:
–15 °C to 120 °C

PYROTHERM CS 400
Temperature range:
50°C to 400 °C

PYROTHERM CS 500
Temperature range:
50 °C to 500 °C

PYROTHERM CS 1500
Temperature range:
300 °C to 1500 °C

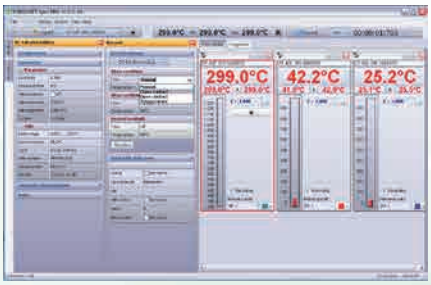
PYROTHERM CS F35 to F150
Fixed temperatures:
35 °C to 150 °C

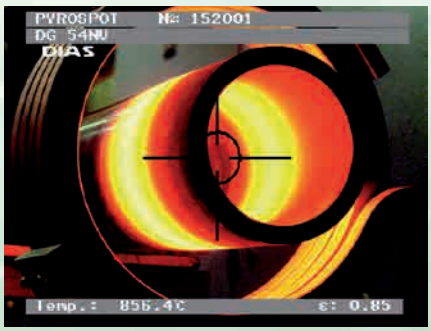
DIAS Infrared Systems

A wide range of accessories is available for all PYROSPOT series

Accessories	Series 4	Series 10	Series 11	Series 30/34	Series 40	Series 42	Series 44	Series 48	Series 54/56
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		✓	✓		✓	✓	✓	✓	✓
Window slide		✓			✓	✓	✓	✓	✓
Protection window		✓	✓		✓	✓	✓	✓	✓
Ring nut with protection glass		✓	✓		✓	✓	✓	✓	✓
Connection cable		✓	✓	✓	✓	✓	✓	✓	✓
Interface module RS-485 to USB	✓	✓	✓	✓*)			✓		✓
Interface module RS-485 to ProfiBus DP	✓	✓	✓	✓*)			✓		✓
Ethernet interface box DCU^{IoP}		✓	✓	✓*)			✓		✓
Interface module video to USB		✓							✓
Power supply 24 V	✓	✓	✓	✓	✓	✓	✓	✓	✓
Digital display	✓	✓	✓	✓	✓	✓	✓		✓
Display and control unit		✓	✓	✓	✓	✓	✓		✓
Handheld programming device DHP 1040		✓	✓	✓	✓		✓		✓
TFT display 3.5"		✓							✓

More accessories available on request. *) Only available for series 34.





Detailed view video image

Software PYROSOFT Spot

For evaluation and processing of measured data obtained DIAS provides two variants for its pyrometer **PYROSPOT**. These are the free Windows software **PYROSOFT Spot** and the pay version **PYROSOFT Spot Pro**. The Pro version allows the measurement, visualization and measurement recording of several simultaneously connected pyrometers, whereas this is possible with the free version only for one connected pyrometer.

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[1)]
– Integrated calculator for easy calculation of optics parameter
– Display and parameterizing of optional digital display and control unit DCU200 and digital displays[1)]
– Automatic emissivity determination
– Report generation from template document

The video image can be viewed via a TFT display which is available additionally.

[1)] only available for PYROSOFT Spot Pro

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