

PYROSPOT DT 54L

Pyrometer for industrial application

Overview

Digital pyrometers with RS-485 interface



Special features

- For temperature measurements between -40 °C and 1000 °C
- Temperature linear output 0/4 to 20 mA, switchable
- Integrated RS-485 interface
- Integrated double laser
- Robust stainless steel housing
- Very short response time of 10 ms

Description and application

The digital DIAS pyrometers DT 54L are specially designed for industrial purposes. They are suitable for temperature measurement between -40 °C and 1000 °C on different non-metallic or coated metallic surfaces.

The solid and compact stainless steel housing allows usage even under rough ambient conditions. The PYROSPOT DT 54L realizes measurement field sizes from 2.6 mm. With a minimum response time of only 10 ms (t_{90}) the devices are also suitable for fast measuring tasks.

The standard 0/4 to 20 mA temperature linear output signal allows an easy implementation in existing measurement and control systems.

Use the integrated double laser for a correct alignment of the pyrometer to the measurement object. The double laser simplifies substantially the adjustment under difficult local conditions where the pyrometer is difficult to reach or the measurement object cannot be viewed directly.

The DT 54L possesses a galvanically isolated RS-485 interface. So the devices are bus-compatible and use the Modbus RTU protocol.

You can connect the pyrometer via an optional available interface adapter RS-485 to USB with a computer. By connecting the pyrometer with a PC parameters like emissivity, sub temperature range, data storage settings and response time can be adjusted by using the comfortable parameterization and evaluation software PYROSOFT Spot.

The parameters can also be adjusted via RS-485 interface and the optional available handheld programming device DHP 1040.

Typical application areas:

- Glass and ceramic industry
- Kiln engineering
- Paper and packaging industry
- Food industry



Image credit: „Equipment of paper mill“ by Naqiewei, Copyright 2014, used with licence from Shutterstock.de

PYROSPOT DT 54L

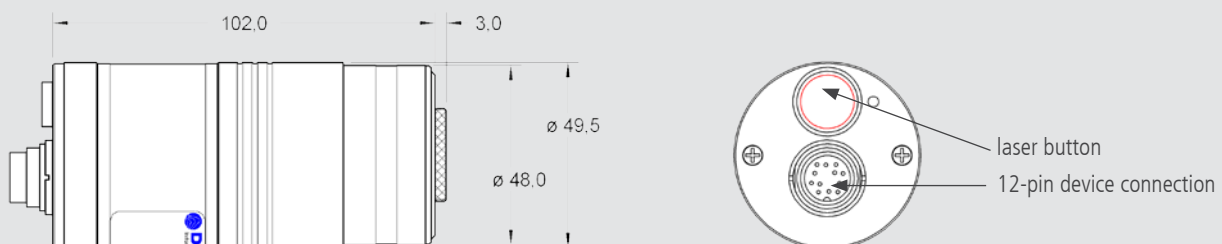
Pyrometer for industrial application

Technical data

Type	DT 54L			
Temperature range	0 °C to 1000 °C	-40 °C to 1000 °C		
Fixed optics	75	200	600	1500
Part number	4548261202	4548262201	4548263201	4548264201
Sub temperature range	adjustable via RS-485 interface within temperature range, minimum span 50 °C			
Spectral range	8 µm to 14 µm			
Distance ratio	approx. 100 : 1	approx. 75 : 1		
Measurement uncertainty ¹	0.6 % of measured value in °C or 1 K ²			
Reproducibility ¹	0.3 % of measured value in °C or 0.5 K ²			
NETD ³	< 0.15 K ⁴			
Response time (t90)	10 ms (min.), adjustable via RS-485 interface			
Emissivity	0.200 to 1.000, adjustable via RS-485 interface			
Data storage	minimum/maximum data storage, adjustable via RS-485 interface			
Output	0/4 to 20 mA, temperature linear, max. burden: 700 Ω			
Interface	RS-485 (galvanically isolated), half duplex, max. baud rate 115 kBd, data protocol Modbus RTU			
Aiming	double laser, 645 nm to 660 nm, class II, < 1 mW			
Switching output/threshold	1 opto relay, R _{Load} min. 48 Ω (galvanically isolated)/adjustable within temperature range			
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro			
Parameters	emissivity, response time, data storage, sub temperature range, transmissivity, ambient radiation, adjustable via RS-485 interface			
Power supply	24 V DC ± 25 %, residual ripple 500 mV			
Power consumption	max. 1.5 W			
Operating temperature	0 °C to 70 °C			
Storage temperature	-20 °C to 70 °C			
Weight	approx. 600 g			
Housing	stainless steel round housing with plug connector, length approx. 105 mm, diameter 50 mm			
Protection class	IP 65 (according to DIN EN 60529 und DIN 40050)			
CE symbol	according to EU regulations (EN 50 011)			
Scope of delivery	PYROSPOT DT 54L, manual, inspection sheet, PYROSOFT Spot for Windows® (without connection cable, please order separately)			

¹ Specifications for black bodies, T_{ambient} = 23 °C, t95 = 1 s. ² Whichever is higher value. ³ Noise equivalent temperature difference. ⁴ T_{ambient} = 23 °C, ε = 1, t95 = 100 ms, T_{Object} = 100 °C

Dimensional drawing pyrometer



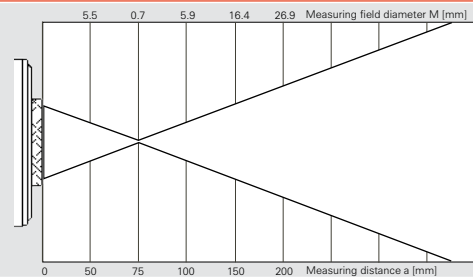
PYROSPOT DT 54L

Pyrometer for industrial application

Optics types 75, 200, 600 and 1500 (aperture D = 15 mm)

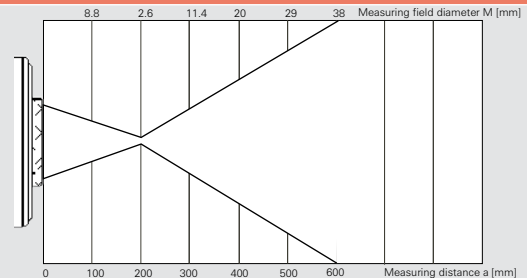
Optics 75 (sharp point at a = 75 mm measuring distance, marked bold)

Measuring distance a [mm]	0	50	75	100	150	200	250
Temperature range	Measuring field diameter M [mm]						
DT 54L (0°C to 1000 °C)	15.0	5.5	0.7	5.9	16.4	26.9	37.3



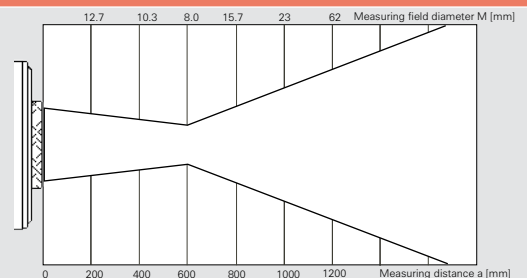
Optics 200 (sharp point at a = 200 mm measuring distance, marked bold)

Measuring distance a [mm]	0	100	200	300	400	500	600
Temperature range	Measuring field diameter M [mm]						
DT 54L (-40 °C to 1000 °C)	15.0	8.8	2.6	11.4	20	29	38



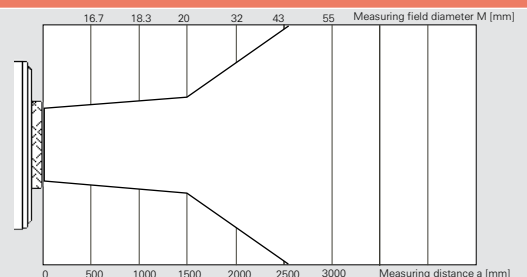
Optics 600 (sharp point at a = 600 mm measuring distance, marked bold)

Measuring distance a [mm]	0	200	400	600	800	1000	2000
Temperature range	Measuring field diameter M [mm]						
DT 54L (-40 °C to 1000 °C)	15.0	12.7	10.3	8.0	15.7	23	62



Optics 1500 (sharp point at a = 1500 mm measuring distance, marked bold)

Measuring distance a [mm]	0	500	1000	1500	2000	2500	3000
Temperature range	Measuring field diameter M [mm]						
DT 54L (-40 °C to 1000 °C)	15.0	16.7	18.3	20.0	32	43	55



Software PYROSOFT Spot

For evaluation and processing of measured data obtained DIAS provides two software 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.



^{*)} only for PYROSOFT Spot Pro

Further functions are for example:

- Measurement data logging with real-time display, parameterization of DIAS pyrometers
- Trigger functions^{*)} and auto save^{*)}
- Extensive statistical analysis of measurement data
- Measurement cursor, print functions, automatic emissivity determination
- Export of measured data as text file and automatic creation of Microsoft Excel® spreadsheets
- Integrated report function with customized templates for Microsoft Word®
- Integrated calculator for easy calculation of optics parameters

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Pyrometer for industrial application

Electrical, mechanical and optical accessories ¹		Part number
Connection cable, straight plug, 12 pin	Length 2 m	3310A11111
	Length 5 m	3310A11112
	Length 10 m	3310A11113
	Length 15 m	3310A11114
	Length 20 m	3310A11115
	Length 25 m	3310A11116
	Length 30 m	3310A11117
Connection cable, angulate plug, with aiming light button, 12 pin	Length 2 m	3310A11151
	Length 5 m	3310A11152
	Length 10 m	3310A11153
	Length 15 m	3310A11154
	Length 20 m	3310A11155
	Length 25 m	3310A11156
	Length 30 m	3310A11157
Mounting angle	adjustable	3310A21050
Cooling jacket	including air purge unit, without mounting angle	3310A23050
Ball flange	M40 × 1.5	3310A24020
Air purge unit		3310A22050
Power supply PSU 15	24 V DC, 0.6 A	3310A12010
DHP 1040	handheld programming device for pyrometer parameterization	3310A17010

¹ Further accessories on request.

Selected accessories – pictures

Mounting angle, adjustable	Cooling jacket	Air purge unit
Part number: 3310A21050 	Part number: 3310A23050 	Part number: 3310A22050 
Ball flange	Screwed coupling for ball flange	Handeld programming device DHP 1040
Part number: 3310A24020 	Part number: 3310A24021 	Part number: 3310A17010 