

PYROSPOT DA 10C und DT 40C

Special pyrometers for temperature measurement of hot CO₂

Overview

Digital special pyrometer with RS-485 or USB interface



Features

- For temperature measurement between 500 °C and 2000 °C
- Through-lens sighting (PYROSPOT DA 10C)
- Device with RS-485 interface (DA 10C)
- Special spectral range
- Device with USB interface (DT 40C)
- Low-cost 2-wire version (DT 40C)

Description and application

The digital pyrometers PYROSPOT DA 10C and PYROSPOT DT 40C are special instruments for temperature measurement of CO₂ containing flames and hot combustion gases in a narrow band spectral range around 4.5 µm or 4.6 µm

The solid IP65 housing allows usage even under rough environmental conditions.

With a variable response time the pyrometer can be adjusted flexibly to the appropriate application conditions.

The universal optics provide an usage in many different installations.

The DA 10C pyrometer has an integrated through-the-lens sighting, which allows it to be conveniently adjusted to the measured object.

The temperature linear standard output signal of 0/4 to 20 mA (DA 10C) or 4 mA to 20 mA (DT 40C) allows easy implementation in measurement and control systems.

The DA 10C is equipped with a galvanically isolated RS-485 interface that provides the data acquisition even in bus systems. The DT 40C has a USB interface for parameterization.

All parameters can be adjusted optimally with the extensive parameterization and evaluation software PYROSOFT Spot.

Typical application areas of the pyrometers are:

- Temperature measurement of combustion and smoke gasses
- Measurement of flame temperatures
- Firing technique



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Technical data		
Type	DA 10C	DT 40C
Temperature range	500 °C to 2000 °C	500 °C to 1800 °C
Sub temperature range	adjustable within temperature range, minimum span 50 °C	
Spectral range	about 4.6 µm	about 4.5 µm
Optics	vario optics	fixed optics
Distance ratio	approx. 100 : 1	approx. 50 : 1
Measurement uncertainty ¹	0.5 % of measured value + 1 K	1 % of measured value + 1 K
Reproducibility ¹	0.2 % of measured value + 1 K	0.5 % of measured value + 1 K
NETD ²	0.1 K ³	0.2 K ³
Response time (t ₉₅)	1 ms, adjustable up to 100 s	60 ms, adjustable from 60 ms to 100 s
Emissivity	0.100 to 1.000	0.200 to 1.000
Data storage	minimum/maximum value storage	
Output	0/4 to 20 mA, switchable via software and directly at the device, temperature linear, max. burden 700 Ω	4 to 20 mA, temperature linear, max. burden 700 Ω at 24 V
Interface	RS-485 interface (galvanically isolated), half duplex, baud rate up to 115 k Bd, data protocol Modbus RTU	USB interface (galvanically isolated)
Aiming	through-lens sighting	none
User controls	keys, display	none
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro	
Parameters	emissivity, response time, data storage, sub temperature range, adjustable via software and interface or directly at the device	emissivity, response time, data storage, sub temperature range, adjustable via software and interface
Switching output, switching threshold	one opto relays, R _{last} min. 48 Ω, switching threshold adjustable within measuring temperature range	none
Power supply	24 V DC ± 25 %	
Power consumption	max. 1.5 W	max. 0.6 W
Operating temperature	0 °C to 70 °C	
Storage temperature	-20 °C to 70 °C	
Weight	approx. 520 g	approx. 450 g
Dimensions	54 × 54 mm, length 170 mm	thread M40 × 1.5, length 125 mm
Housing	compact housing with plug connector, display and keys	stainless steel housing with plug connector
Safety class	IP65 (according to DIN 40 050)	
CE symbol	according to EU regulations (EN 50 011)	
Scope of delivery	PYROSPOT DA 10C or DT 40C with mounting screw nut, inspection sheet, manual, PYROSOFT Spot for Windows® (without connection cable, please order separately)	

¹ T_{ambience} = 23 °C, ε = 1, t₉₅ = 1 s. ² Noise equivalent temperature difference. ³ T_u = 23 °C, ε = 1, t₉₅ = 100 ms, T_{Object} = 700 °C.

Vario optics (DA 10C)

Measurement distance a [mm]	Measuring field diameter M [mm]	Aperture D [mm]
400 to 4500	4 to 60	11.6

Optics 1200 mm (DT 40C)

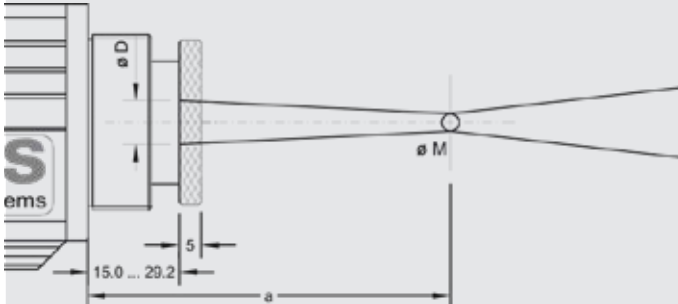
Measurement distance a [mm]	0	100	300	600	900	1200	1500
Measuring field diameter M [mm]	15.0	15.0	16.5	18.8	21	24	33.8

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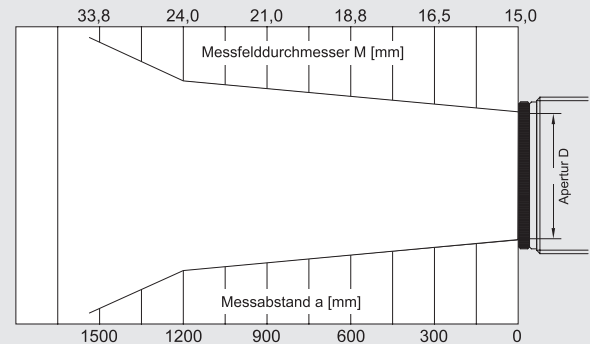
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Measuring field

Vario optics (DA 10C)



Optics 1200 mm (DT 40C)



Detailed view: Display (DA 10C)

The digital display shows the current measured value and the emissivity set as well as further information.

Current measured temperature

Emissivity set

Key lock

Status switching output



Detailed view: Rear side (DA 10C)

The parameters can be adjusted with the keys at the rear side of the device. The set value is taken over directly.

Through-lens sighting

Keys for „Up” and „Down”

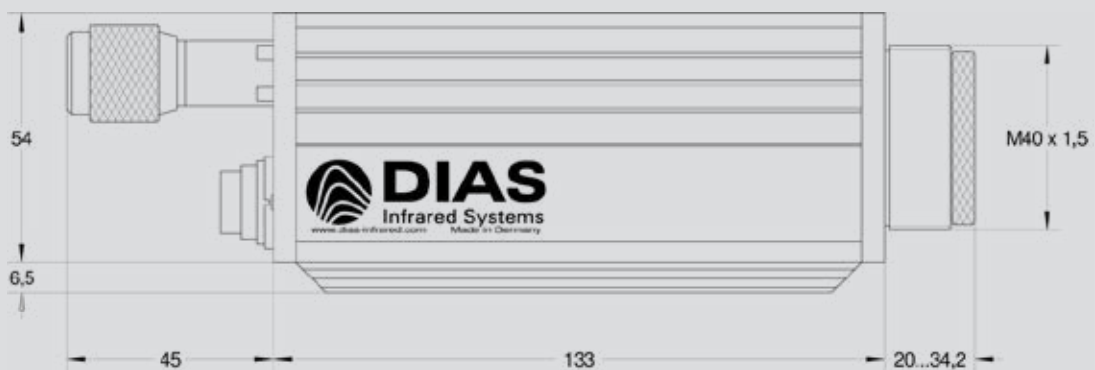
Keys for „Parameter Menu” and „Enter”

Status LED

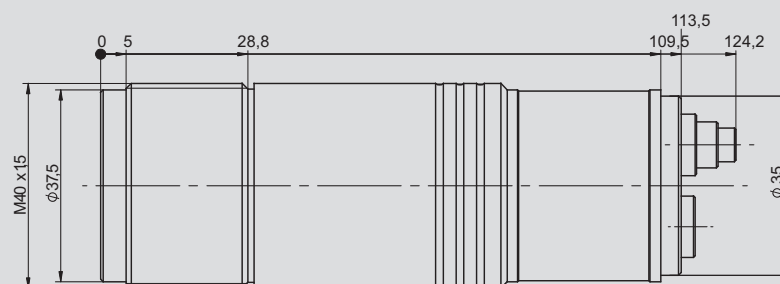
Connector and interface



Dimensional drawing PYROSPOT DA 10C



Dimensional drawing PYROSPOT DT 40C



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Electrical, mechanical and optical accessories¹				Part number	
connection cable, 12 pin, angled plug (DA 10C)	connection cable (DT 40C)	length 2 m		3310A11131	3310A11511
		length 5 m		3310A11132	3310A11512
		length 10 m		3310A11133	3310A11513
		length 15 m		3310A11134	3310A11514
		length 20 m		3310A11135	3310A11515
		length 25 m		3310A11136	3310A11516
		length 30 m		3310A11137	3310A11517
Interface adapter		RS-485 to USB		3310A14020	
USB connection cable		length 1.8 m, screened resolution		3310A14010	
Power supply PSU 15		24 V DC, 0.6 A		3310A12010	
Mounting angle (DA 10C)		adjustable		3310A21020	
Mounting angle (DT 40C)		fixed	adjustable	3310A21010	3310A21011
Air purge unit (DA 10C)		stainless steel, purge air 0.1 to 0.5 bar, oil-free		3310A22020	
Air purge unit (DT 40C)		stainless steel, purge air 0.1 to 0.5 bar, oil-free		3310A22010	
Vacuum flange (DA 10C)		KF 16 (different protection windows are available)		3310A24015	
Vacuum flange (DT 40C)		KF 16 (different protection windows are available)		3310A24010	
Water cooling jacket		for DA 10C	for DT 40C	3310A23031	3310A23010
DHP 1040		handheld programming device for parameterization		3310A17010	
Ethernet Interface Box DCU ^{loP 2}		for the implementation in local networks and for parameterization		3310A13500	

¹ More accessories on request. ² For DA 10C only.

Selected accessories – images

Cooling jacket (DA 10C)

Part number: 3310A23031



Mounting angle adjustable (DA 10C)

Part number: 3310A21025



Ethernet Interface Box DCU^{loP}

Part number: 3310A13500



Cooling jacket (DT 40C)

Part number: 3310A23020



Mounting angle adjustable (DT 40C)

Part number: 3310A22020



Air purge unit (DT 40C)

Part number: 3310A24110

