PYROSPOT DA 10F/DA 10FV

Pyrometer for industry and research

DIAS
Infrared Systems

Digital pyrometers with RS-485 interface

Features

- For temperature measurements between 200 °C and 2500 °C
- Display and keys for displaying the temperature and parameterizing
- Vario optics with aiming light, through-lens sighting or video color module
- Short response times from 1 ms
- Standard 0/4 to 20 mA temperature linear output signal

Description and applications

The digital pyrometers PYROSPOT DA 10F/DA 10FV are specially designed for industry and research applications. The devices are suitable for temperature measurement betwen 200 °C and 2500 °C especially for measurements through flames und combustion gases.

The solid construction in form of a compact housing allows usage even under rough environmental conditions. With a short response time of only 1 ms (t_{95}) these pyrometers are also suitable for fast measuring processes. The vario optics realize measuring field diameters from 1.0 mm.

The integrated LED or laser aiming light or the alternative through-lens sighting enables to focus the measuring object exactly.

Use the optional integrated color video modul (DA 10FV) to monitor the aiming of the pyrometer at the measurement object.

The parameters of the pyrometer are adjustable via push-buttons and display directly on the device or by using the convenient parameterizing and evaluation software PYROSOFT Spot.

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

The device is equipped with a galvanically isolated RS-485 interface which allows parameterizing and software evaluation even in bus systems. The connection to local area networks can be supported by an Ethernet interface box DCU[IoP].

Typical pyrometer application areas:

- Measurement through flames
- Kiln engineering
- Measurement through combustion gases
- Glass industry
- Metal industry
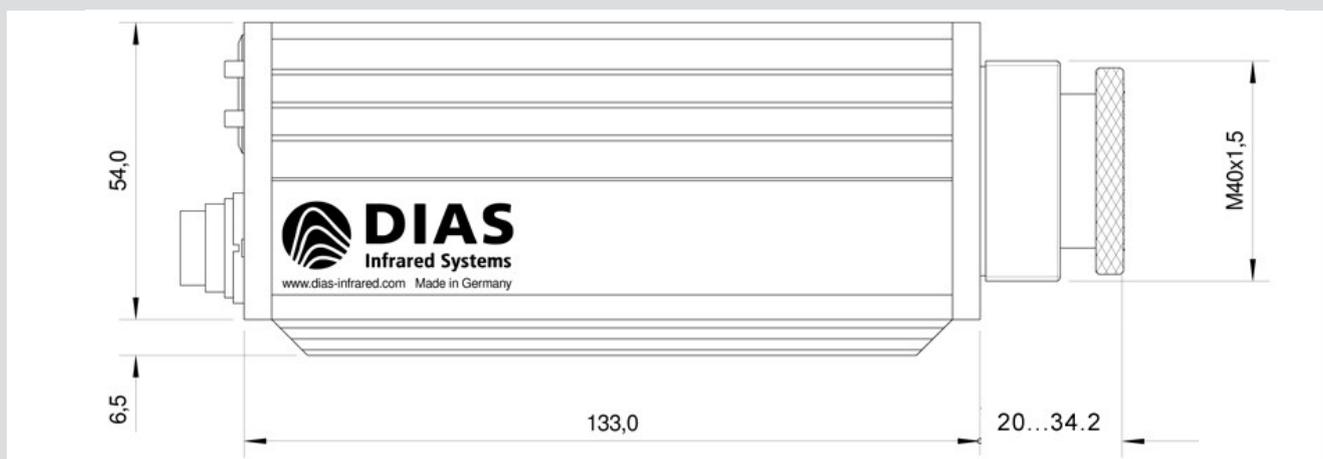
PYROSPOT DA 10F/DA 10FV
Pyrometer for industry and research

Technical data		
Type	**DA 10F/DA 10FV**	**DA 10F/DA 10FV**
Measuring temperature range	200 °C to 1800 °C	500 °C to 2500 °C
Sub temperature range	adjustable within measuring temperature range, minimum span 50 °C	
Spectral range	around 3.9 µm	
Optics	vario optics, measuring field diameters from 1.0 mm, distance ratio approx. up to 130 : 1	
Measurement uncertainty [1]	0.6 % of measured value in °C or 1 K [3]	
Reproducibility [1]	0.3 % of measured value in °C or 0.5 K [3]	
NETD [2]	0.1 K [4]	
Response time (t_{95})	1 ms, adjustable up to 100 s via RS-485 interface or directly at the device	
Emissivity ε	0.010 to 1.000, adjustable via RS-485 interface or directly at the device	
Data Storage	minimum/maximum value storage, adjustable via RS-485 interface or directly at the device	
Output	0/4 to 20 mA, switchable via RS-485 interface or directly at the device, temperature linear, max. burden 700 Ω	
Interface	RS-485 (galvanically isolated), half duplex, baudrate up to 115 kBd, data protocol Modbus RTU	
Switching output/Switching threshold	1 opto relay, R_{Burden} min. 48 Ω (galvanically isolated)/adjustable within temperature range	
Aiming	LED aiming light, laser aiming light, through-lens sighting or color video module (DA 10FV)	
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro	
Parameters	emissivity, response time, temperature unit °C or °F, storage, sub temperature range, transmittance, ambience compensation, video parameter, adjustable via RS-485 interface or directly at the device	
User controls	aiming light push-button, four control keys, display	
Power supply	24 V DC ± 25 %, residual ripple 500 mV	
Power consumption	max. 2 W	
Operating temperature	0 °C to 70 °C	
Storage temperature	−20 °C to 70 °C	
Weight	appr. 500 g	
Dimensions	54 mm × 54 mm, length 170 mm	
Housing	compact housing with plug connector, display and push-buttons	
Protection class	IP65 (DIN 40 050, DIN EN 60529)	
CE symbol	according to EU regulations (EN 50 011)	
Scope of delivery	PYROSPOT DA 10F/DA 10FV, mounting screw nut, inspection sheet, manual, PYROSOFT Spot for Windows® (without connection cable, please order separately)	

[1] Specifications for black body radiator, $T_{ambient}$ = 23 °C, ε = 1, t_{95} = 1 s. [2] Noise equivalent temperature difference. [3] Whichever is higher value. [4] At $T_{ambient}$ = 23 °C, t_{95} = 100 ms, ε = 1, $T_{Object\ (200\ °C\ to\ 1800\ °C)}$ = 400 °C, $T_{Object\ (500\ °C\ to\ 2500\ °C)}$ = 700 °C.

Dimensional drawing pyrometer (LED aiming light version)

PYROSPOT DA 10F/DA 10FV
Pyrometer for industry and research

Vario optics					Part number			
Optics	Temperature measurement range	Target size M [mm]	Measurement distance a [mm]	Aperture D [mm]	LED aiming light	Laser aiming light	Through-lens sighting	Color video module
I	200 °C to 1800 °C	1.0 to 1.3	130 to 140	11.6	5109401201	5109411201	5109421201	5109431201
I	500 °C to 2500 °C	1.0 to 1.3	130 to 140	11.6	5109401202	5109411202	5109421202	5109431202
II	200 °C to 1800 °C	1.3 to 1.9	170 to 190	11.6	5109402201	5109412201	5109422201	5109432201
II	500 °C to 2500 °C	1.3 to 1.9	170 to 190	11.6	5109402202	5109412202	5109422202	5109432202
III	200 °C to 1800 °C	1.8 to 2.9	230 to 290	11.6	5109403201	5109413201	5109423201	5109433201
III	500 °C to 2500 °C	1.8 to 2.9	230 to 290	11.6	5109403202	5109413202	5109423202	5109433202
IV	200 °C to 1800 °C	3.2 to 7.1	360 to 710	11.6	5109404201	5109414201	5109424201	5109434201
IV	500 °C to 2500 °C	3.2 to 7.1	360 to 710	11.6	5109404202	5109414202	5109424202	5109434202

Color video module (DA 10FV)

– PAL (50 Hz), optional NTSC (60 Hz)
– 628 × 586 pixels (PAL) or 510 × 496 pixels (NTSC)
– Composite video signal approx. 1 V_{SS} at 75 Ω (galvanically isolated)
– Target mark in size of measurement field, display of measurement, temperature, emissivity
– Exposure control automatically or manually

Detailed view: Display

The digital display shows the current measurement value and the emissivity set.

Current measurement temperature

Set emissivity value

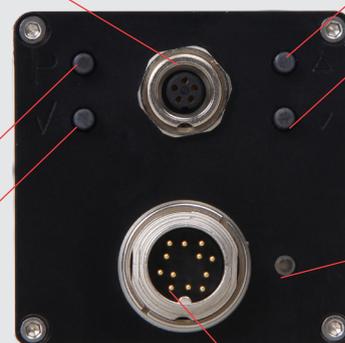Status switching output

Detailed view: Rear side of the device

The parameters can be set by using the control keys at the rear side of the device. The value set is transfered directly.

Through-lens sighting, pilot light or video connector

Keys for „Up" and „Down"

Keys for „Parameter Menu" and „Enter"

Status LED

Plug connection and interface

PYROSPOT DA 10F/DA 10FV
Pyrometer for industry and research

Electrical, mechanical and optical accessories[1]			Order number	
Connection cable, straight plug, 12 pin	Connection cable, angulate plug, 12 pin	length 2 m length 5 m length 10 m length 20 m	3310A11111 3310A11112 3310A11113 3310A11115	3310A11131 3310A11132 3310A11133 3310A11135
Video connection cable		length 2 m length 5 m length 10 m length 20 m	3310A16521 3310A16522 3310A16523 3310A16525	
Mounting angle		adjustable	3310A21020	
Air purge adapter		stainless steel, purge air 0.1 to 0.5 bar, oil-free	3310A22020	
Vacuum flange		KF 16 with sapphire window	3310A24015 3310A34051	
Mirror 90°		including air purge	3310A24110	
Power supply PSU 15		24 V DC, 0.6 A	3310A12010	
Interface module		RS-485 to USB	3310A14020	
Adapter		Video/USB	3310A14030	
TFT display/TFT display industrial		3.5" with 2 m cable	3310A16110/3310A16120	
Ethernet Interface-Box DCU[IoP]		for the connection in local networks and parameterizing	3310A13500	

[1] More accessories available.

Selected accessories

Mounting angle, adjustable
Order number: 3310A21020

Ball and socket mounting
Order number: 3310A21025

Cooling jacket
Order number: 3310A23031

Cooling plate
Order number: 3310A23020

Air purge unit
Order number: 3310A22020

Ethernet interface box DCU[IoP]
Order number: 3310A13500

Phone: +49 351 896 74-0
Fax: +49 351 896 74-99
Email: info@dias-infrared.de
Internet: www.dias-infrared.com

DIAS Infrared GmbH
Pforzheimer Straße 21
01189 Dresden
Germany