

PYROSPOT DA 47MF

Ethernet pyrometer for industrial application

Overview

Digital pyrometers with Ethernet interface and web server



Features

- For temperature measurements between 50 °C and 1000 °C
- Temperature linear output 0/4 to 20 mA
- Ethernet interface 100 Mbit/s
- Integrated web server
- Short response times from 5 ms
- Different fixed optics available
- Optionally integrated LED aiming light or laser aiming light adapter
- Robust stainless steel housing

Description and application

The digital pyrometers PYROSPOT DA 47MF are especially designed for industrial applications. They are suitable for temperature measurements from 50 °C to 1000 °C in the medium spectral range (MWIR) between 3.5 µm and 4.0 µm.

The solid construction in a compact IP65 stainless steel housing ensures use even under harsh environmental conditions.

With a response time of only 5 ms (t_{95}), these pyrometers are also suitable for fast measurements. Different optics variants realize measuring fields from 1.6 mm diameter.

The optional integrated LED pilot light allows the exact alignment of the pyrometer to the measuring object. Even at high temperatures, the pilot light can be seen very clearly.

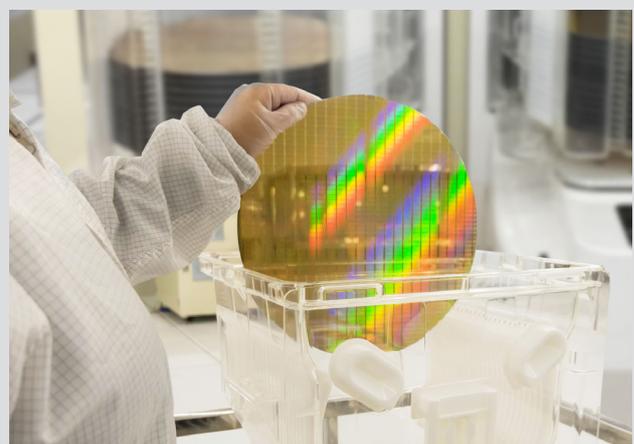
The devices are equipped with an Ethernet interface, which allows data transfer to local networks. Via an integrated web server or the Modbus-TCP protocol, the parameters can be optimally adapted to the application.

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

Also for parameterization and measured value recording the comprehensive parameterization and evaluation software PYROSOFT Spot can be used.

Typical applications of the pyrometers are:

- Semiconductor industry
- Metal industry
- Measurement through combustion gases
- Kiln engineering



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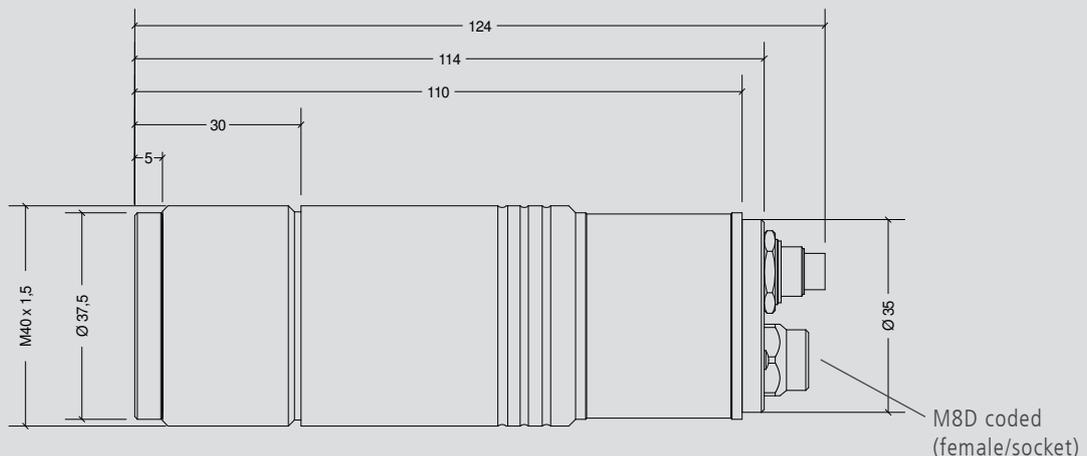
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Technische Daten

Typ	DA 47MF
Measuring temperature range	50 °C to 1000 °C
Sub temperature range	adjustable within temperature range, minimum span 50 °C
Spectral range	3.5 µm to 4.0 µm
Optics	different fixed optics (type 100, 300 and 800), aperture diameter D = 15 mm
Distance ratio	approx. 50 : 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	0.1 K ⁴
Response time (t ₉₅)	5 ms (min.), adjustable up to 100 s
Emissivity	0.050 to 1.000
Data storage	minimum/maximum value storage
Output	0/4 to 20 mA, temperature linear, max. burden: 700 Ω
Interface	Ethernet 100 Mbit/s, web server, data protocol Modbus-TCP
Aiming	optional: integrated LED aiming light or laser aiming light adapter
Software	PYROSOFT Spot for Windows®, optional: PYROSOFT Spot Pro
Parameters	adjustable via web server or Modbus-TCP: emissivity, response time, storage, sub range, transmittance, ambient compensation, analog output, pilot light additionally adjustable via Modbus-TCP: network configuration
Power supply	24 V DC ± 25 %, residual ripple 500 mV
Power consumption	max. 1.5 W (without pilot light)
Operating temperature	0 °C to 70 °C
Storage temperature	-20 °C to 70 °C
Weight	approx. 450 g
Dimensions	thread M40 × 1.5, length 124 mm
Housing	Stainless steel with plug connectors, link LED
Protection class	IP 65 (according to DIN EN 60529 and DIN 40050)
CE symbol	according to EU regulations
Scope of delivery	PYROSPOT DA 47MF, user manual, mounting screw nuts, inspection sheet, PYROSOFT Spot for Windows® (without connection cable, please order separately)

¹ Specifications for black body radiator, 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} = 200 °C.

Dimensional drawing



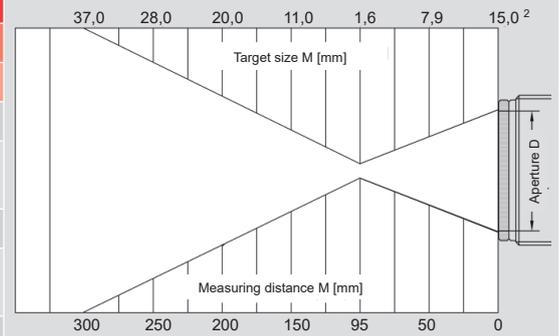
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Optics types 100, 300 and 800

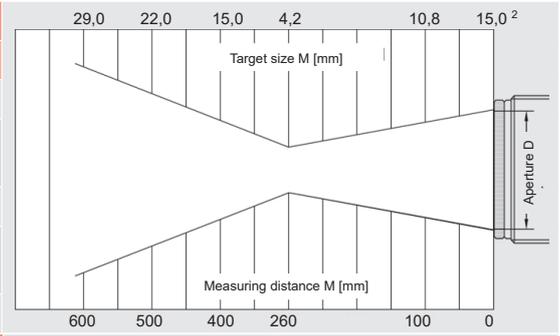
Optics 100 (Focus point at a = 95 mm measurement distance)

Measurement distance a [mm]	0	50	95	150	200	250	300
Measurement range	Target size M [mm]						
DA 47MF (50 °C to 1000 °C) without LED pilot light	15.0	7.9	1.6	11.0	20.0	28.0	37.0
DA 47MF (50 °C to 1000 °C) with LED pilot light ¹	13.0	7.2	2.0	12.0	19.0	27.0	35.0



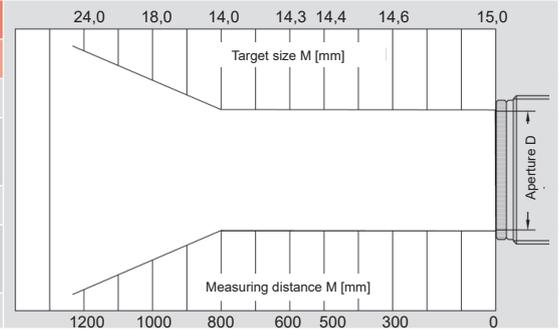
Optics 300 (Focus point at a = 250/260 mm measurement distance)

Measurement distance a [mm]	0	100	250	260	400	500	600
Measurement range	Target size M [mm]						
DA 47MF (50 °C to 1000 °C) without LED pilot light	15.0	10.8	4.6	4.2	15.0	22.0	29.0
DA 47MF (50 °C to 1000 °C) with LED pilot light	15.0	11.0	4.8	5.6	18.0	26.0	33.0



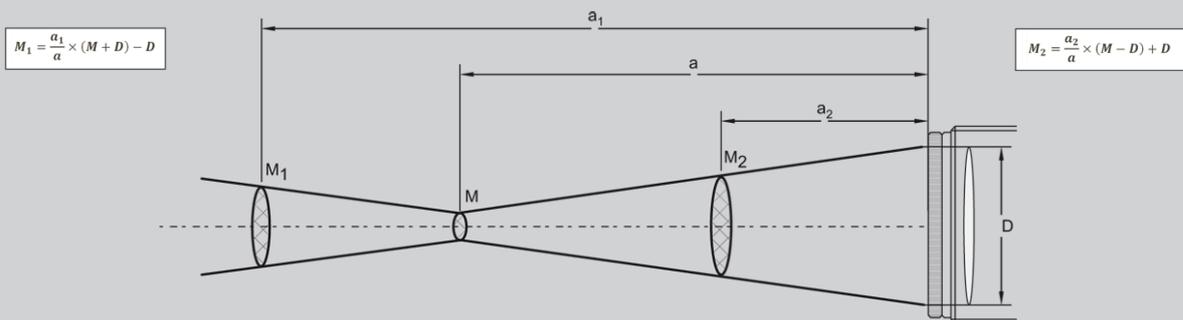
Optics 800 (Focus point at a = 800 mm measurement distance)

Measurement distance a [mm]	0	300	500	600	800	1000	1200
Measurement range	Target size M [mm]						
DA 47MF (50 °C to 1000 °C) without LED pilot light	15.0	14.6	14.4	14.3	14.0	18.0	24.0
DA 47MF (50 °C to 1000 °C) with LED pilot light	15.0	14.6	14.4	14.3	14.0	18.0	24.0



¹ With attachment tube, aperture D = 13 mm, length 24 mm, 19 mm ² Target size without LED pilot light.

Calculation of the target size



Part numbers

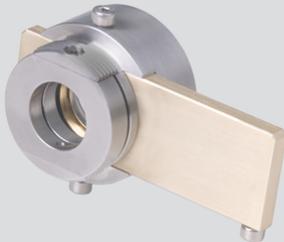
Device	Optics	100	300	800
DA 47MF (50 °C to 1000 °C)		4479341401, 4479351401 (LED)	4479342401, 4479352401 (LED)	4479343401, 4479353401 (LED)
(LED = with LED pilot light)				

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Electrical, mechanical and optical accessories ¹		Part number
Connection cable (5 pin)	length 5 m	3310A11512
	length 10 m	3310A11513
	length 15 m	3310A11514
Ethernet cable RJ45 (4 pin)	length 5 m	3310A11412
	length 10 m	3310A11413
	length 15 m	3310A11414
Power supply PSU 15	24 V DC, 0.6 A	3310A12010
Mounting angle	fixed	3310A21010
	adjustable	3310A21011
Ball and socket mounting		3310A21012
Air purge unit	stainless steel, purge air 0.1 to 0.5 bar, oil-free	3310A22010
Sighting tube for air purge unit	length 100 mm	3310A22030
	length 300 mm	3310A22035
Mirror	90°, including air purge	3310A24110
Cooling jacket	stainless steel with integrated air purge unit	3310A23010
Vacuum flange	KF 16 (without window)	3310A24010
	with sapphire window	3310A24010 + 3310A34051
Protection window	sapphire window with threaded ring	3310A34052
Ball flange	with sleeve	3310A24020 + 3310A24021
Laser pilot light adapter	screw-on attachment (only for version without integrated LED pilot light)	3310A33010

¹ More accessories on request.

Selected accessories – images		
Mounting angle, adjustable	Cooling jacket	Air purge unit
Part number: 3310A21011 	Part number: 3310A23010 	Part number: 3310A22010 
Window slide	Laser pilot light adapter	Power supply PSU 15
Part number: 3310A21210 (ohne Scheibe) 	Part number: 3310A33010 	Part number: 3310A12010 

Technische Änderungen vorbehalten. Technical details are subject to change. 04.04.22



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