

## A250\A450 FO PL

Pyrometer with fibre cable for industrial application

### Overview

Digital pyrometers with RS-485 interface



### Features

- For temperature measurements between 250 °C and 2500 °C
- Several spectral ranges
- RS-485 interface
- Very fast response times from 5 ms
- Robust stainless steel housing
- Several fixed and vario optics available

### Description and applications

The digital pyrometers A250\A450 FO PL are specifically designed for industrial purpose. The devices are suitable for high temperature measurement from 250 °C on many different surfaces for example metals, ceramics or graphite.

The solid body in stainless steel housing with fibre cable and protection window for optics allows usage even under rough environmental conditions.

With a fast response time of only 5 ms ( $t_{95}$ ) these Pyrometers are also suitable for fast measuring processes.

The different optics realize spot sizes from 0.7 mm diameter. Several Laser rejection filters are applicable.

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

The A250\A450 FO PL are equipped with a galvanically isolated RS-485 interface, which allows parameterizing and software evaluation even in bus systems.

The integrated LED or laser aiming light enables to focus the measuring object exactly. The size of the LED aiming light is identical to the measuring field.

Via an optional interface module (RS-485 to USB) parameters like emissivity, sub range, response time and storage can be easily adjusted by using the convenient parameterizing and evaluation software AST NET1. The parameters can also be adjusted via RS-485 interface with the optional available handheld programming device DHP 1040.

Typical application areas:

- Steel industry
- Furnace industry
- Soldering applications
- Ceramic industry
- Metal industry



# PA250\A450 FO PL

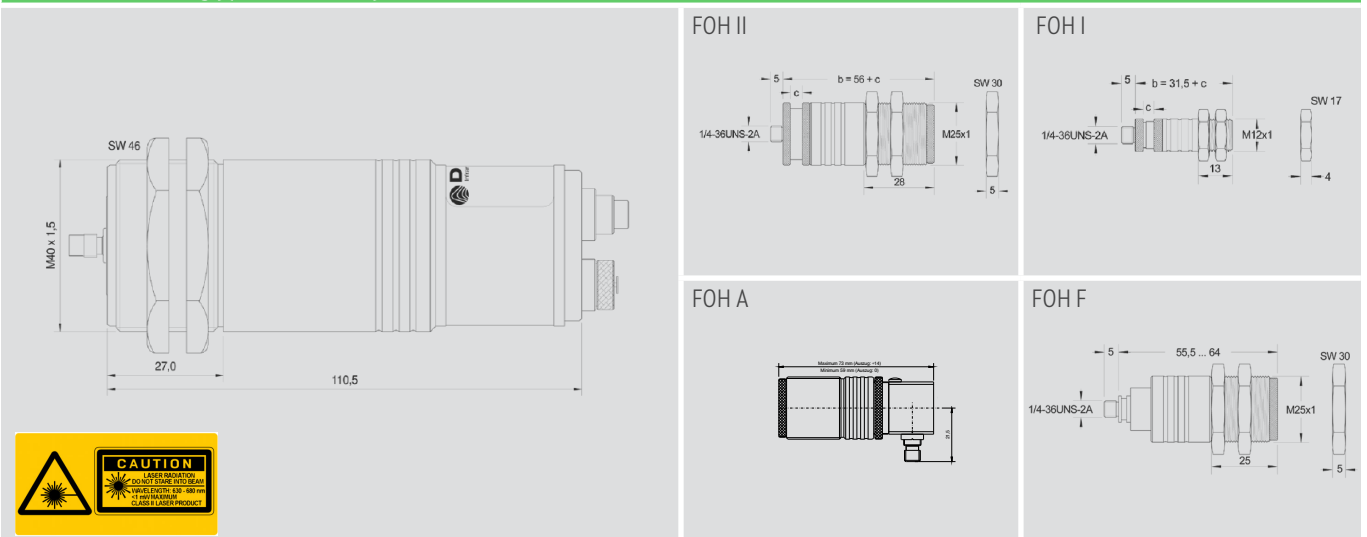
## Pyrometer with fibre cable for industrial application

### Technical data

Type	A450FO		A250FO		
Temperature ranges	600 °C to 1800 °C	800 °C to 2500 °C	250 °C to 1300 °C	250 °C to 2000 °C	350 °C to 1800 °C
Order number	4440000201 (LED) 4440010201 (Laser)	4440000202 (LED) 4440010202 (Laser)	4441000201 (LED) 4441010201 (Laser)	4441000203 (LED) 4441010203 (Laser)	4441000202 (LED) 4441010202 (Laser)
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C				
Spectral range	0.8 µm to 1.1 µm		1.5 µm to 1.8 µm		
Optics	several optical heads (vario optics FOH I-100, FOH II-65 and FOH II-250, FOH A-150 and FOH A-225, fixed optics FOH F)				
Measurement uncertainty <sup>1</sup>	0.5 % of measured value in °C + 1 K				
Reproducibility <sup>1</sup>	0.1 % of measured value in °C + 0.5 K				
NETD <sup>1,2</sup>	0.1 K				
Response time (t <sub>95</sub> )	5 ms, adjustable up to 100 s, adjustable via RS-485 interface				
Emissivity	0.05 to 1.00, adjustable via RS-485 interface				
Storage	minimum and maximum value storage, adjustable via RS-485 interface				
Output	0/4 to 20 mA, switchable via software, temperature linear, max. burden: 500 Ω				
Interface	RS-485 (galvanically isolated), half duplex, baudrate up to 115 kBaud, data protocol Modbus RTU				
Aiming	integrated LED or laser aiming light				
Software	AST NET1 for Windows®, optional: AST NET1 Pro				
Parameters	emissivity, response time, storage, sub temperature range, adjustable via RS-485 interface and software				
Power supply	24 V DC ± 25 %, residual ripple 500 mV				
Power consumption	max. 1.5 W				
Operating temperature	0 °C to 70 °C (electronics), 0 °C bis 250 °C (optical head) 0 °C to 250 °C (fibre cable), 0 °C to 150 °C (fibre cable with 90° curve)				
Storage temperature	-20 °C to 70 °C				
Weight	appr. 450 g				
Dimensions	thread M40 × 1.5, length 125 mm				
Housing	stainless steel housing with plug connector				
Safety class	IP 65 (according to DIN EN 40050)				
CE symbol	according to EU regulations				
Scope of delivery	A250\A450 FO PL, manual, mounting screw nuts, inspection sheet, Ast NET1 for Windows® (without connecting cable, fibre cable and optics, please order separately)				

<sup>1</sup>Specifications for black body radiator, T = 23 °C, ε = 1, t = 1 s. <sup>2</sup>Noise equivalent temperature difference. ambient 95

### Dimensional drawing pyrometer and optical heads FOH I, FOH II, FOH A and FOH F



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## Optical heads FOH I, FOH II, FOH A and FOH F

Vario optics type	FOH II-65	FOH II-250	FOH I-100	FOH A-150	FOH A-225
Measuring distance a [mm]	65 ... 300	250 ... 2500	100 ... 1000	150 ... 230	225 ... 2500
Measuring temperature range	Target size M [mm]				
DSF 44N (600 °C to 1800 °C)	1.3 ... 5.0	3.0 ... 31.0	1.8 ... 18.0	2.0 ... 3.0	3.0 ... 31.0
DSF 44N (800 °C to 2500 °C)	0.7 ... 2.5	1.7 ... 17.0	0.9 ... 9.0	1.1 ... 1.7	1.7 ... 17.0
DGF 44N (250 °C to 1300 °C)	1.3 ... 5.0	3.0 ... 31.0	1.8 ... 18.0	2.0 ... 3.0	3.0 ... 31.0
DGF 44N (250 °C to 2000 °C)	1.3 ... 5.0	3.0 ... 31.0	1.8 ... 18.0	2.0 ... 3.0	3.0 ... 31.0
DGF 44N (350 °C to 1800 °C)	0.7 ... 2.5	1.7 ... 17.0	0.9 ... 9.0	1.1 ... 1.7	1.7 ... 17.0
Part number	3310A50020	3310A50025	3310A50010	3310A52020	3310A52025

Fixed optics type FOH F	F-65	F-100	F-200	F-300	F-400	F-600	F-800	F-1000	F-1500
Measuring distance a [mm]	65	100	200	300	400	600	800	1000	1500
Temperature range	Measuring field diameter M [mm]								
A450FO (600 °C to 1800 °C)	1.3	2.0	3.6	3.7	5.0	7.2	9.2	12.0	18.0
A450FO (800 °C to 2500 °C)	0.7	1.0	1.8	2.1	2.7	4.4	5.5	6.8	10.0
A250FO (250 °C to 1300 °C)	1.3	2.0	3.6	3.7	5.0	7.2	9.2	12.0	18.0
DGF A250FO (250 °C to 2000 °C)	1.3	2.0	3.6	3.7	5.0	7.2	9.2	12.0	18.0
A250FO (350 °C to 1800 °C)	0.7	1.0	1.8	2.1	2.7	4.4	5.5	6.8	10.0
Order number	3310A51006	3310A51010	3310A51020	3310A51030	3310A51040	3310A51060	3310A51080	3310A51100	3310A51150

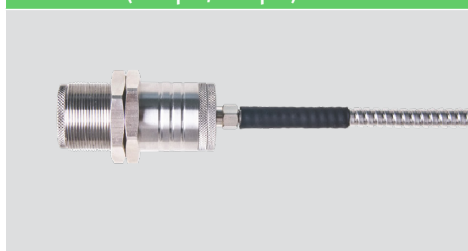
## Fibre cable, stainless steel Ø 400 µm – order numbers

## Fibre cable, stainless steel Ø 200 µm – order numbers

Temperature range	length	straight	90° curve	Temperature range	length	straight	90° curve
A450FO (600 °C to 1800 °C) A250FO (250 °C to 1300 °C) A250FO (250 °C to 2000 °C)	1.5 m	3310A44001	3310A44011	A450FO (800 °C to 2500 °C) A250FO (350 °C to 1800 °C)	1.5 m	3310A42001	3310A42011
	2.0 m	3310A44002	3310A44012		2.0 m	3310A42002	3310A42012
	2.5 m	3310A44003	3310A44013		2.5 m	3310A42003	3310A42013
	5.0 m	3310A44004	3310A44014		5.0 m	3310A42004	3310A42014
	7.5 m	3310A44005	3310A44015		7.5 m	3310A42005	3310A42015
	10 m	3310A44006	3310A44016		10 m	3310A42006	3310A42016
	15 m	3310A44007	3310A44017		15 m	3310A42007	3310A42017

More lengths on request! Variants available with vacuum lead-through or special quartz and sapphire rod optics.

## Fibre cable (200 µm, 400 µm)



## Optical heads FOH F, FOH II, FOH I



## Fibre cable 90° curve



## Optical head FOH A, 90° angled



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Electrical, mechanical and optical accessories:			Order number	
Connecting cable, straight plug, 12-pin	Connecting cable, angulate plug, with aiming light button	length 2 m	3310A11111	3310A11151
		length 5 m	3310A11112	3310A11152
		length 10 m	3310A11113	3310A11153
		length 15 m	3310A11114	3310A11154
		length 20 m	3310A11115	3310A11155
		length 25 m	3310A11116	3310A11156
		length 30 m	3310A11117	3310A11157
Interface module		RS-485 to USB	3310A14020	
Power supply PSU 15		24 V DC, 0.6 A	3310A12010	
Mounting angle		fixed, for FOH I fixed, for FOH II adjustable, for FOH II	3310A21014 3310A21522 3310A21523	
Air purge unit for FOH II		stainless steel, purge air 0.1 to 0.5 bar, oilfree	3310A22520	
Ball and socket mounting		for FOH II	3310A21521	
Sighting tube		100 mm for air purge unit FOH II 300 mm for air purge unit FOH II	3310A22530 3310A22535	
DHP 1040		mobile handheld programming device for pyrometer parameterizing	3310A17010	

1 More accessories available.

### Selected accessories – pictures

Mounting angle, adjustable	Mounting angle, adjustable for FOH II	Mirror 90° for FOH II
Order number: 3310A21011	Order number: 3310A21520	Order number: 3310A31020
		
Air purge unit for FOH II	Handheld programming device DHP 1040	Digital display DD 200/210
Order number: 3310A22520	Order number: 3310A17010	Order number: 3310A13020/3310A13025
		

Technical details are subject to change. 10.02.23



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