

## AST A150 Pyrometer for industrial application

### Overview

Digital pyrometer with RS-485 interface



### Features

- For temperature measurements between 75 °C and 1200 °C
- Temperature linear output 0/4 to 20 mA
- Integrated RS-485 interface
- Very short response times from 5 ms
- Robust stainless steel housing
- Several fixed and vario optics available

### Description and applications

The digital pyrometers AST A150 are specifically designed for industrial purpose. The devices are suitable for high temperature measurement from 75 °C on many different metallic surfaces.

The solid body in stainless steel housing with 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. Several fixed or vario optic types realise Target sizes from 1.5 mm the temperature linear standard output signal of 0/4 to 20 mA allows easy implementation in existing measurement and control systems.

The pyrometer 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 optional interface module (RS-485 to USB) parameters like emissivity sub range, response time and storage can be easily adjusted by using the comfortable 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:

- Preheating
- Tempering
- Hardening
- Soldering
- Rolling
- Heat treatment



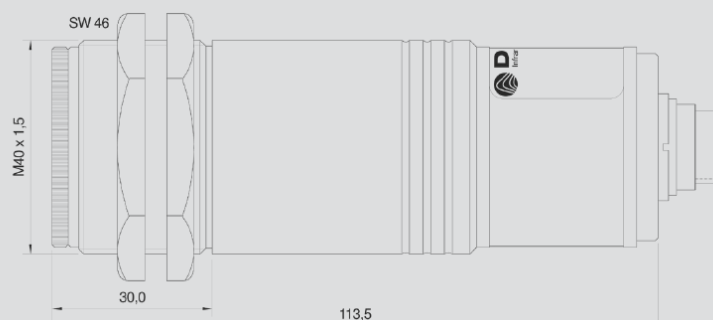
## AST A150 Pyrometer for industrial application

### Technical data

Typ	AST A150		
Temperature range	75 °C to 650 °C	100 °C to 800 °C	150 °C to 1200 °C
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C		
Spectral range	2.0 µm to 2.6 µm		
Optics	several fixed optics (type 290, 650 and 1500) with quartz glass protection window, vario optics		
Part number	Laser	Laser	Laser
Optics 290	4441062205	4441062206	4441062207
Optics 650	4441063205	4441063206	4441063207
Optics 1500	4441067205	4441067206	4441067207
Vario optics	4441011205	4441011206	4441011207
Distance ratio	approx. 85 : 1	approx. 130 : 1	approx. 200 : 1
Measurement uncertainty <sup>1</sup>	0.5 % of measured value in °C + 2 K		
Reproducibility <sup>1</sup>	0.3 % of measured value in °C + 1 K		
NETD <sup>1,2</sup>	0.5 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 115 kBd, data protocol Modbus RTU		
Aiming	integrated laser aiming light		
Software	AST NET1 for Windows®		
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 <sup>3</sup>		
Storage temperature	-20 °C to 70 °C		
Weight	appr. 455 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	AST A150 manual, mounting screw nuts, inspection sheet, AST NET1 for Windows® (without connecting cable, please order separately)		

<sup>1</sup> Specifications for black body radiator, T = 23 °C, ε = 1, t<sub>95</sub> = 1 s. <sup>2</sup> Noise equivalent temperature difference. <sup>3</sup> The measurement temperature must be at least 30 K higher than the operating temperature<sub>ambient</sub>.

### Dimensional drawing

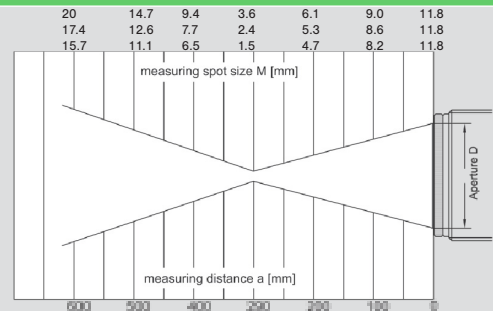


## AST A150 Pyrometer for industrial application

### Optics type 290, 650 and 1500

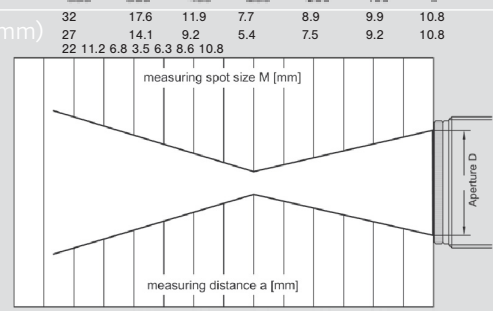
#### Optics 290 (sharp point at a = 290 mm measurement distance, aperture $\phi$ D = 11.8 mm)

Measurement distance a	0	100	200	290	400	500	600
Temperature range	Target size M [mm]						
75 °C to 650 °C	11.8	9.0	61.1	3.6	9.4	14.7	20
100 °C to 800 °C	11.8	8.6	5.3	2.4	7.7	12.6	17.4
150 °C to 1200 °C	11.8	8.2	4.7	1.5	6.5	11.1	15.7



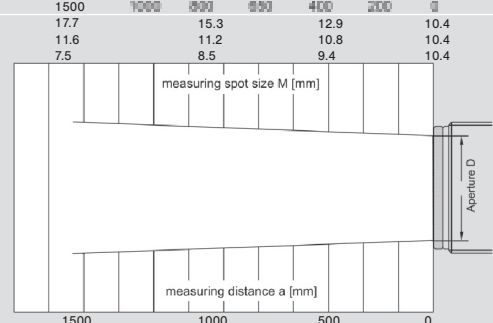
#### Optics 650 (sharp point at a = 650 mm measurement distance, aperture $\phi$ D = 10.8 mm)

Measurement distance a [mm]	0	200	400	650	800	1000	1500
Temperature range	Target size M [mm]						
75 °C to 650 °C	10.8	9.9	8.9	7.7	11.9	17.6	32
100 °C to 800 °C	10.8	9.2	7.5	5.4	9.2	14.1	27
150 °C to 1200 °C	10.8	8.6	6.3	3.5	6.8	11.2	22



#### Optics 1500 (sharp point at a = 1500 mm measurement aperture $\phi$ D = 10.4 mm)

Measurement distance a [mm]	0	500	750	1000	1250	1500	2000
Temperature range	Target size M [mm]						
75 °C to 650 °C	10.4	12.9	14.1	15.3	16.5	17.7	27
100 °C to 800 °C	10.4	10.8	11.0	11.2	11.4	11.6	18.9
150 °C to 1200 °C	10.4	9.4	8.9	8.5	8.0	7.5	13.5



### Vario optics

#### AST A150

Temperature range	Measurement distance	Target size M	Aperture $\phi$ D
75 °C to 650 °C	300 mm to 800 mm	3.6 mm to 10.3 mm	10 mm
100 °C to 800 °C	300 mm to 800 mm	2.4 mm to 8.5 mm	10 mm
150 °C to 1200 °C	300 mm to 800 mm	1.5 mm to 5.5 mm	10 mm



### Software AST A150

For evaluation and processing of measured data obtained AST provides a software variants for its pyrometer **AST NET1**.

Further functions are for example:

- Measurement data logging with real-time display, parameterization of AST 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

## AST A150 Pyrometer for industrial application

Electrical, mechanical and optical accessories:			Order number	
Connecting cable, straight plug, 12-pin	Connecting cable, angulate plug, with aiming light button, 12-pin	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	24 V DC, 0.6 A	3310A12010		
Mounting angle	fixed	3310A21010		
	adjustable	3310A21011		
Air purge unit	stainless steel, purge air 0.1 to 0.5 bar, oil free	3310A22010		
Water cooling jacket <sup>2</sup>	stainless steel with integrated air purge unit	3310A23010		
Vacuum flange KF16	with quartz window or with sapphire window	3310A24010 and 3310A34021 3310A24010 and 3310A34051		
Mirror	90°, with integrated air purge unit	3310A24110		
ATEX explosion protection housing		3310A23100		
DHP 1040	mobile handheld programming device	3310A17010		

<sup>1</sup> More accessories available. <sup>2</sup> Only available for pyrometers with fixed optics.

### Selected accessories – pictures

Mounting angle, adjustable	Window slide	Air purge unit
Order number: 3310A21011	Order number: 3310A21210	Order number: 3310A22010
		
Water cooling jacket	Handheld programming device DHP 1040	ATEX explosion protection housing
Order number: 3310A23010	Order number: 3310A17010	Order number: 3310A23100
		

Technical details are subject to change. 25.06.21



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