

AST DA 44M Pyrometer for industrial application

Overview

Digital pyrometer with RS-485 interface



Features

- For temperature measurements between 20 °C and 1000 °C
- Temperature linear output 0/4 to 20 mA
- RS-485 interface
- Short response time from 5 ms
- Several fixed optics available
- Robust stainless steel

Description and applications

The digital pyrometers AST DA 44M are specifically designed for application in industry. The devices are suitable for temperature measurement from 20 °C to 1000 °C within the midwave infrared (MWIR) between 3 μ m and 5 μ m.

The solid body in stainless steel housing 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 optic types realise measuring field diameters from 1.6 mm.

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

The devices are 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.

The optional integrated LED aiming light allows exact alignment the measuring object. The LED size is identical to measuring spot size and visible even at high temperatures.

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 or the Ethernet Interface-Box DCU_{ioP}.

Typical application areas:

- Steel industry
- Kiln engineering
- Soldering
- Ceramics

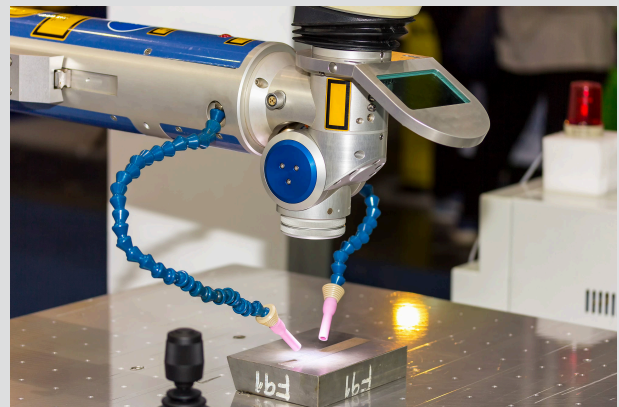


Image source: Shutterstock.de/sspopov

AST DA 44M

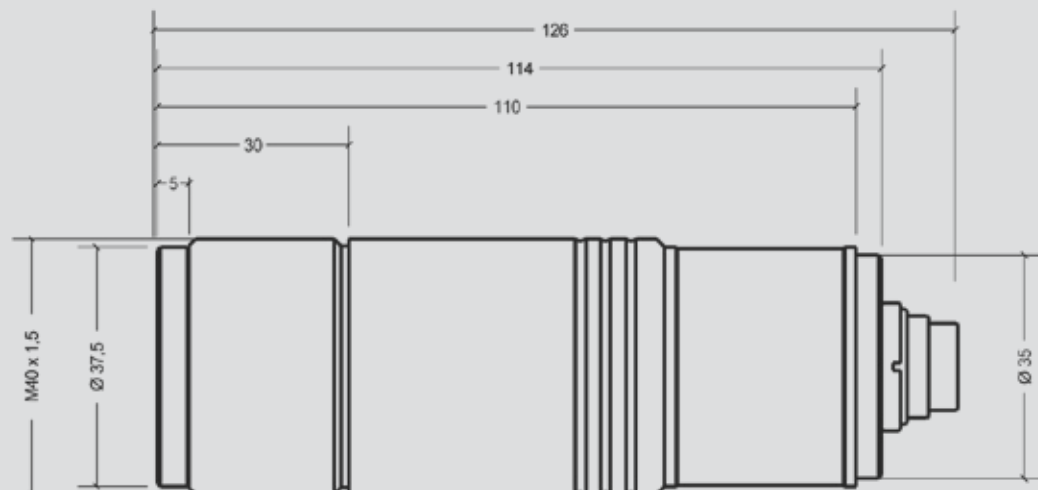
Pyrometer for industrial application

Technical data

Type	DA 44M	DA 44M
Measuring temperature range	20 °C to 850 °C	30 °C to 1000 °C
Sub temperature range	adjustable via RS-485 interface within temperature range, minimum span 50 °C	
Spectral range	3 μm to 5 μm	
Optics	several fixed optics (type 100, 300 and 800), aperture diameter D = 15 mm	
Distance ratio	approx. 50 : 1	
Measurement uncertainty ¹	0.6 % of meas. value in °C or 1 K ²	
Reproducibility ¹	0.3 % of meas. value in °C or 0.5 K ²	
NETD ³	0.1 K ⁴	
Response time (t ₉₅)	5 ms (min.), adjustable via RS-485 interface	
Emissivity ⁵	0.050 to 1.000, adjustable via RS-485 interface	
Storage	minimum and maximum value storage, adjustable via RS-485 interface	
Output	0/4 to 20 mA, temperature linear, max. burden: 700 Ω	
Interface	RS-485 (galvanically isolated), half duplex, max. baudrate 115 k Bd, data protocol Modbus RTU	
Aiming	none, optional: integrated LED aiming light or laser aiming light adaptor	
Software	AST NET1 for Windows®	
Parameters	emissivity, response time, storage, sub range, adjustable via RS-485 interface and software	
Power supply	24 V DC ± 25 %, residual ripple 500 mV	
Power consumption	max. 1.5 W (without aiming 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 126 mm	
Housing	stainless steel with plug connector	
IP code	IP 65 (according to DIN EN 60529 and DIN 40050)	
CE symbol	according to EU regulations	
Scope of delivery	AST DA 44M, manual, inspection sheet, mounting screw nuts, AST NET1 for Windows® (without connecting cable, please order separately)	

¹ For black body radiator, T = 23 °C, t = 1 s. ² Whichever is higher value. ³ Noise equivalent temperature difference. ⁴ T = 23 °C, ε = 1, t = 100 ms, T = 100 °C, T = 200 °C. ambient 95 ambient 95 Object (20 °C to 850 °C) Object (30 °C to 1000 °C)

Dimensional drawing

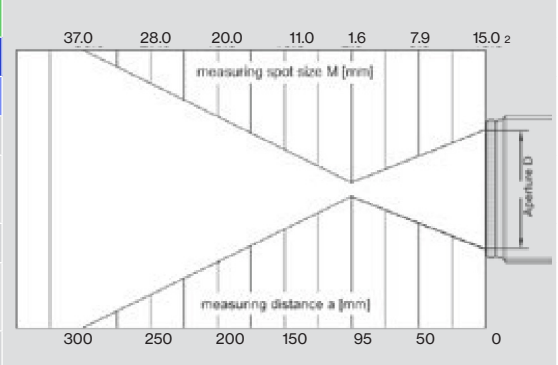


AST DA 44M Pyrometer for industrial application

Optics 100, 300 and 800

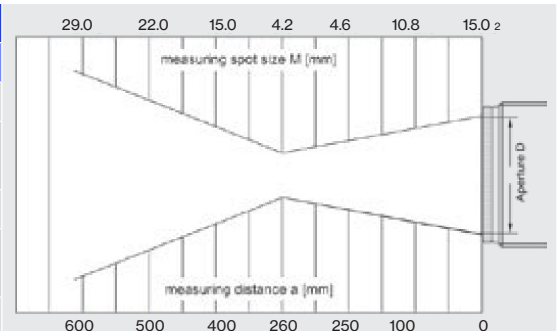
Optics 100 (sharp point at a = 95 mm measuring distance, marked bold)

Measuring distance a [mm]	0	50	95	150	200	250	300
Temperature range	Measuring field diameter M [mm]						
DA 44M (20 °C to 1000 °C) without LED aiming light	15.0	7.9	1.6	11.0	20.0	28.0	37.0
DA 44M (20 °C to 1000 °C) with LED aiming light	13.0	7.1	1.7	11.0	18.0	26.0	34.0



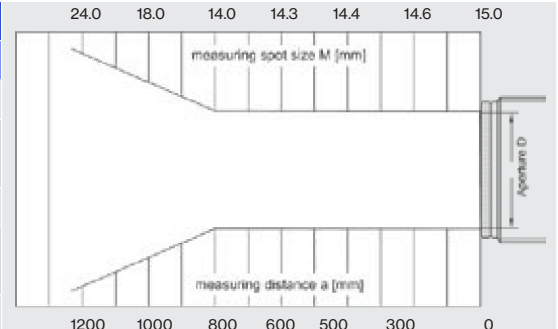
Optics 300 (sharp point at a = 250/260 mm measuring distance, marked bold)

Measuring distance a [mm]	0	100	250	260	400	500	600
Temperature range	Measuring field diameter M [mm]						
DA 44M (20 °C to 1000 °C) without LED aiming light	15.0	10.8	4.6	4.2	15.0	22.0	29.0
DA 44M (20 °C to 1000 °C) with LED aiming light	15.0	11.0	4.5	5.3	17.0	25.0	32.0



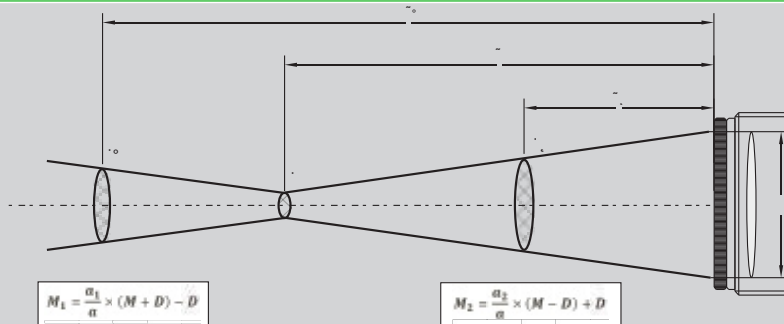
Optics 800 (sharp point at a = 800 mm measuring distance, marked bold)

Measuring distance a [mm]	0	300	500	600	800	1000	1200
Temperature range	Measuring field diameter M [mm]						
DA 44M (20 °C to 1000 °C) without LED aiming light	15.0	14.6	14.4	14.3	14.0	18.0	24.0
DA 44M (20 °C to 1000 °C) with LED aiming light	15.0	14.6	14.4	14.3	14.0	18.0	24.0



1 With attachment lens tubus. Aperture D = 13 mm, length 24 mm, Ø 19 mm. 2 Target size without LED aiming light.

Calculation of measuring field diameter



Part numbers

Device	Optics 100	300	800
DA 44M (20 °C to 850 °C)	4449141201, 4449151201 (LED)	4449142201, 4449152201 (LED)	4449143201, 4449153201 (LED)
DA 44M (30 °C to 1000 °C)	4449141202, 4449151202 (LED)	4449142202, 4449152202 (LED)	4449143202, 4449153202 (LED)
(LED = with LED aiming light)			

AST DA 44M

Pyrometer for industrial application

Electrical, mechanical and optical accessories:			Order number	
Connecting cable, straight plug, 12-pin	Connecting cable, with pilot light Button angled plug, 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 PSU 15	24 V DC, 0.6 A	3310A12010		
Mounting angle	fixed, adjustable	3310A21010		
		3310A21011		
Ball and socket mounting		3310A21012		
Air purge unit	stainless steel, purge air 0.1 to 0.5 bar, oil-free	3310A22010		
Cooling jacket	stainless steel, with integrated air purge unit	3310A23010		
Vacuum flange	KF 16 (without window) with zinc selenide window	3310A24010		
		3310A24010 + 3310A34041		
Laser aiming light adaptor	adapter (only for devices without integrated LED aiming light)	3310A33010		
DHP 1040	portable handheld device for pyrometer programming	3310A17010		
Ethernet Interface-Box DCU _{IO} P	For the connection in local networks and parameterizing	3310A13500		
1 More accessories available.				

Selected accessories – images

Mounting angle, adjustable	Window slide (without window)	Air purge unit for series 40/42/44
Order number: 3310A21011	Order number: 3310A21210	Order number: 3310A22010
		
Cooling jacket	Ethernet Interface-Box DCU _{IO} P	Digital display DD 200/210
Order number: 3310A23010	Order number: 3310A13500	Order number: 3310A13020/3310A13025
		