AST A250 55N/55NV

Pyrometer for industrial application

Overview

Digital pyrometers with RS-485 interface

Special features

- For temperature measurements between 200 °C and 2500 °C
- Temperature linear output 0/4 to 20 mA, switchable
- Display, keys and RS-485 interface
- Different fixed optics or vario optics with motor focus
- Laser aiming light, integrated color video camera or through-lens sighting
- Very short response time 2 ms

Description and application

The digital AST A250 55N pyrometers are specially designed for industrial use. They are suitable for temperature measurements from 200 °C on a variety of surfaces, such as metals, graphite or ceramics. With different fixed optics, target sizes starting from 0.8 mm are available. As an option a vario optics with motorized focus is possible. For example, if the devices are installed in hart-to-reach places, the user can conveniently change or adjust the focus. Emissivity and motor focus can be set directly at the device using buttons and display. All other parameters are adjusted via interface and software, for example AST NET1.

Even in harsh environments, the compact and robust IP 65 stainless steel housing of the pyrometer can withstand. With a minimum response time of only 2 ms (t95), the devices also realize fast measuring tasks.

Thanks to the temperature linear standard output signal of 0/4 to 20 mA, the pyrometers can be easily integrated into existing measurement and control systems. The pyrometer has a galvanically isolated RS-485 interface. The device is thus bus capable and uses the Modbus RTU protocol. The connection to local networks can be supported by an Ethernet interface box.

The integrated red laser aiming light helps to precisely align the pyrometer with the target. If the objects are very hot, it is recommended to use an integrated color video camera instead of the laser as a aiming variant (AST A250 55NV). Thus, a glare-free alignment is easily possible. The integrated video camera also facilitates installation in difficult local conditions, where the pyrometer is difficult to reach or the measurement object is not visible. Optionally, a through-lens sighting is available.

Typical application areas:

- Steel and metal industry
- Furnace industry
- Soldering applications
- Ceramic industry

Image source: Stahl-Zentrum

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Technical data										
Type	**A25055N/55NV**									
Measuring temperature range	200 °C to 1200 °C		250 °C to 1500 °C		350 °C to 2000 °C		250 °C to 2500 °C		200 °C to 2000 °C	
Optics	different fixed optics (type 250, 650 ,2000, 4000) or optionally vario optics with motor focus									
Part number	Through-lens sighting		Through-lens sighting		Through-lens sighting		Through-lens sighting		Through-lens sighting	
	Laser	Video	Laser	Video	Laser	Video	Laser	Video	Laser	Video
250	5551072204		5551072205		5551072206		5551072207		5551072208	
	5551062204	5551082204	5551062205	5551082205	5551062206	5551082206	5551062207	5551082207	5551062208	5551082208
650	5551073204		5551073205		5551073206		5551073207		5551073208	
	5551063204	5551083204	5551063205	5551083205	5551063206	5551083206	5551063207	5551083207	5551063208	5551083208
2000	5551076204		5551076205		5551076206		5551076207		5551076208	
	5551066204	5551086204	5551066205	5551086205	5551066206	5551086206	5551066207	5551086207	5551066208	5551086208
4000	5551077204		5551077205		5551077206		5551077207		5551077208	
	5551067204	5551087204	5551067205	5551087205	5551067206	5551087206	5551067207	5551087207	5551067208	5551087208
Vario optics	5551021204		5551021205		5551021206		5551021207		5551021208	
	5551011204	5551031204	5551011205	5551031205	5551011206	5551031206	5551011207	5551031207	5551011208	5551031208
Sub temperature range of analog output	adjustable within measuring temperature range, minimum span 50 °C									
Spectral range	1.5 µm to 1.8 µm									
Emissivity ε	0.050 to 1.000									
Response time (t_{95})	2 ms [3], adjustable up to 100 s									
Measurement uncertainty[1]	0.5 % of measured value in °C +1 K									
Reproducibility[1]	0.1 % of measured value in °C + 0.5 K									
NETD[2]	0.1 K[1]									
Transmittance	50 % to 100 %									
Ambient radiation	adjustable within measuring temperature range									
Analog output	0/4 mA to 20 mA, temperature linear, maximum burden 500 Ω (galvanically isolated)									
Interface	RS-485 (galvanically isolated), half duplex, max. 115 kBd, Modbus RTU protocol									
Aiming	A250 55N: laser aiming light (630 … 680 nm, class II, < 1 mW) or through-lens sighting 4 A250 55NV: video camera, composite video, galvanically isolated (PAL (B), 50 Hz or optional NTSC (M), 60									
Switching output/ Switching threshold	1 oHz)pto relay, RBurden min. 48 Ω (galvanically isolated)/adjustable within measuring temperature range									
Operating and display elements	Two push-buttons for „Parameter menu", „Enter", „Up" and „Down", OLED with standard display of temperature and emissivity, pilot light button (option)									
Parameters	– adjustable via interface and software: emissivity, transmittane, ambient radiation, response time, memory settings, sub temperature range of measuring output, switching threshold of switching output, motor focus – adjustable additionaly on the device with push-buttons and display: emissivity, motor focus									
Power supply	24 V DC ± 25 %, residual ripple 500 mV									
Power consumption	max. 1.5 W (without burden on switching output)									
Operating temperature	0 °C to 70 °C									
Storage temperature	–20 °C to 70 °C									
Weight	approx. 600 g									
Housing	stainless steel housing with plug connector, length approx. 105 mm (without through-lens sighting), diameter 50 mm									
IP code	IP65 nach DIN EN 60529 und DIN 40050									
Test regulations	EN 55 011:1998, limit class A									
CE symbol	according to EU regulations									
Scope of delivery	AST 250 55N/55NV, user manual, inspection sheet, software AST NET1 without connection cable (please order seperately)									

[1] Specifications for black body radiator, T = 23 °C, t = 1 s. [2] Noise equivalent temperature difference. [3] With dynamic adaption at low signal level. [4] Operating temperature up to 50 °C due to $_{ambience\ 95}$ the risk of burns.

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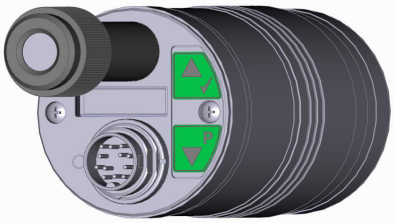
Fixed optics						
Measurement distance a [mm]		a = 250	a = 650	a = 2000	a = 4000	
Temperature range	Distance ratio	Target size M [mm]				Aperture ⌀ [mm]
200 °C to 1200 °C	200 : 1	1.3	3.5	10	20	10.0
250 °C to 1500 °C	300 : 1	0.8	2.2	6.7	13	8.0
350 °C to 2000 °C	300 : 1	0.8	2.2	6.7	13	5.0
250 °C to 2500 °C	300 : 1	0.8	2.2	6.7	13	3.5
200 °C to 2000 °C	200 : 1	1.3	3.5	10	20	5.0

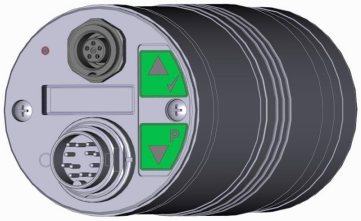
Vario optics with motor focus (adjustable in 8 steps) 240 360										
Measurement distance a [mm]				540	800	1200	1800	2500	4000	
Temperature range	Distance ratio	Target size M [mm]								Aperture⌀ [mm]
200 °C to 1200 °C	160 : 1	1.5	2.3	3.4	5.0	7.5	11	16	25	10.0
250 °C to 1500 °C	240 : 1	1.0	1.5	2.3	3.4	5.0	7.5	11	17	8.0
350 °C to 2000 °C	240 : 1	1.0	1.5	2.3	3.4	5.0	7.5	11	17	5.0
250 °C to 2500 °C	240 : 1	1.0	1.5	2.3	3.4	5.0	7.5	11	17	3.5
200 °C to 2000 °C	160 : 1	1.5	2.3	3.4	5.0	7.5	11	16	25	5.0

Technical data A250 55NV with video camera	
Video signal	Composite video signal approx. 1Vss at 75 Ω (galvanically isolated, video signal can be deactivated via software)
Color norm	PAL (B), 50 Hz (optional color norm NTSC (M), 60 Hz)
Resolution	1/3 inch video chip 628 × 586 pixels (NTSC option: 510 × 496 pixels)
Exposure control	automatic
Visible field	approx. 8 % × 6 % of adjusted measurement distance (NTSC option: 6.5 % × 5 %)
Date/time	Real-time clock with minimum 3 days power reserve, adjustable via software
Durable image displays	Target mark in measurement spot size , measurement temperature, emissivity
Optional image displays	Via software: serial number, device name or user-defined text (16 characters), date, time, temperature unit °C/°F, 12/24 hours display
The video image can be displayed via the additionally available TFT monitor.	

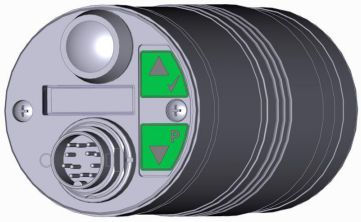
Pyrometers with differenct aiming variants



Through-lens sighting



Video camera



Laser aiming light

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Electriacal, mechanical and optical accessories[1]			Part number	
Connection cable, straight plug, 12 pin	Connection cable, angulated plug, 12 pin	Length 2 m Length 5 m Length 10 m Length 15 m Length 20 m Length 25 m Length 30 m	3310A11111 3310A11112 3310A11113 3310A11114 3310A11115 3310A11116 3310A11117	3310A11131 3310A11132 3310A11133 3310A11134 3310A11135 3310A11136 3310A11137
Video connection cable		Length 2 m Length 5 m Length 10 m Length 15 m Length 20 m Length 25 m Length 30 m	3310A16521 3310A16522 3310A16523 3310A16524 3310A16525 3310A16526 3310A16527	
Mounting angle		adjustable	3310A21050	
Cooling jacket		including air purge unit, without mounting angle	3310A23050	
Ball flange		M40 × 1,5	3310A24020	
Air purge unit		stainless steel	3310A22050	
Power supply PSU 15		24 V DC, 0.6 A	3310A12010	
Threaded ring		with protection window quartz glass with protection window sapphire glass	3310A34022 3310A34052	
TFT monitor	TFT monitor industrial	3.5" with 2 m cable[2]	3310A16110	3310A16120
Adapter		Video/USB	3310A14030	
Handheld programming device DHP 1040		mobile handheld device for pyrometer parameterization	3310A17010	
Ethernet interface box DCU$_{IoP}$		for integration into local networks and parameterization	3310A13500	

[1] More accessories on request. [2] Cable length 5 m or 10 m available, too.

Selected accessories – Images

Mounting angle, adjustable

Part number: 3310A21050

Cooling jacket

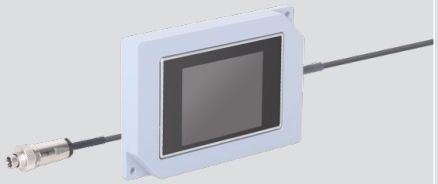
Part number: 3310A23050

Air purge unit

Part number: 3310A22050

TFT monitor industrial

Part number: 3310A16120



Ball flange

Part number: 3310A24020

Ethernet Interface-Box DCU$_{IoP}$

Part number: 3310A13500

ISO 9001
Certified
Quality Management System
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