

AST A250C 55 A250C 55V

Ratio pyrometer for industrial application

Overview

Digital pyrometers with RS-485 interface



Special features

- For temperature measurements between 300 °C and 2300 °C
- Temperature linear output 0/4 to 20 mA, switchable
- Display, keys and RS-485 interface
- Different fixed optics
- Laser aiming light, integrated color video camera or through-lens sighting
- Very short response time 5 ms

Description and application

The digital AST A250C 55 ratio pyrometers are specially designed for industrial use. They are suitable for temperature measurements from 300 °C on a variety of surfaces, such as metals, graphite or ceramics. The A250C 55 measures the infrared radiation in two neighboring wavelength ranges and determines the temperature value.

With different fixed optics, target sizes starting from 0.8 mm are available. Ratio correction can be set directly at the device using buttons and display. All other parameters are adjusted via interface and software, for example AST NET.

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 5 ms (t_{95}), 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 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 A250C 55V). 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



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| Technical data | | | | | | | | |
|--|--|-------------------|-----------------------|-------------------|-----------------------|-------|-----------------------|------------|
| Type | A250C 55 A250C 55V | | | | | | | |
| Temperature range | 300 °C to 1100 °C | 350 °C to 1300 °C | 400 °C to 1600 °C | 500 °C to 2300 °C | | | | |
| Optics | different fixed optics (type 250, 650 ,2000, 4000) | | | | | | | |
| Part number | Through-lens sighting | | Through-lens sighting | | Through-lens sighting | | Through-lens sighting | |
| | Laser | Video | Laser | Video | Laser | Video | Laser | Video |
| 250 | 5553072202 | | 5553072203 | | 5553072204 | | 5553072205 | |
| | 5553062202 5553082202 | | 5553062203 | 5553082203 | 5553062204 5553082204 | | 5553062205 5553082205 | |
| 650 | 5553073202 | | 5553073203 | | 5553073204 | | 5553073205 | |
| | 5553063202 5553083202 | | 5553063203 | 5553083203 | 5553063204 5553083204 | | 5553063205 5553083205 | |
| 2000 | 5553076202 | | 5553076203 | | 5553076204 | | 5553076205 | |
| | 5553066202 5553086202 | | 5553066203 | 5553086203 | 5553066204 5553086204 | | 5553066205 5553086205 | |
| 4000 | 5553077202 | | 5553077203 | | 5553077204 | | 5553077205 | |
| | 5553067202 5553087202 | | 5553067203 | 5553087203 | 5553067204 5553087204 | | 5553067205 | 5553087205 |
| Sub temperature range of analog output | adjustable within measuring temperature range, minimum span 50 °C | | | | | | | |
| Spectral range | 1.5 µm to 1.9 µm | | | | | | | |
| Ratio correction K | 0.800 to 1.200 | | | | | | | |
| Emissivity ε | 0.050 to 1.000 (1-channel mode) | | | | | | | |
| Response time (t ₉₅) | 5 ms ₃ , adjustable up to 100 s | | | | | | | |
| Measurement uncertainty ₁ | 0.5 % of measured value in °C + 1 K | | | | | | | |
| Reproducibility ₁ | 0.2 % of measured value in °C + 0.5 K | | | | | | | |
| NETD ₂ | 0.1 K ₁ | | | | | | | |
| Transmittance | 50 % to 100 % | | | | | | | |
| 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 | A250C 55: laser aiming light (630 ... 680 nm, class II, < 1 mW) or through-lens sighting ₄ A250C 55V: video camera, composite video, galvanically isolated (PAL (B), 50 Hz or optional NTSC (M), 60Hz) | | | | | | | |
| Switching output/ Switching threshold | 1 opto 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 ratio correction, pilot light button (option) | | | | | | | |
| Parameters | - adjustable via interface and software: ratio correction, emissivity, transmittance, response time, memory settings, sub temperature range of measuring output, switching threshold of switching output - adjustable additionally on the device with push-buttons and display: ratio correction | | | | | | | |
| 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 ₅ | | | | | | | |
| 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 according to 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 A250C 55 55V, user manual, inspection sheet, software AST NET, without connection cable (please order separately) | | | | | | | |

₁ Specifications for black body radiator, T_{ambience} = 23 °C, t₉₅ = 1 s. ₂ Noise equivalent temperature difference. ₃ With dynamic adaption at low signal level. ₄ Operating temperature up to 50 °C due to the risk of burns. ₅ AST250C NV: 0 °C to 45 °C.

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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 Ø [mm] | |
| 300 °C to 1100 °C | 100 : 1 | 2.5 | 6.5 | 20 | 40 | 6.0 |
| 350 °C to 1300 °C | 130 : 1 | 1.9 | 4.9 | 15 | 30 | 6.0 |
| 400 °C to 1600 °C | 200 : 1 | 1.3 | 3.5 | 10 | 20 | 6.0 |
| 500 °C to 2300 °C | 300 : 1 | 0.8 | 2.2 | 6.7 | 13 | 6.0 |

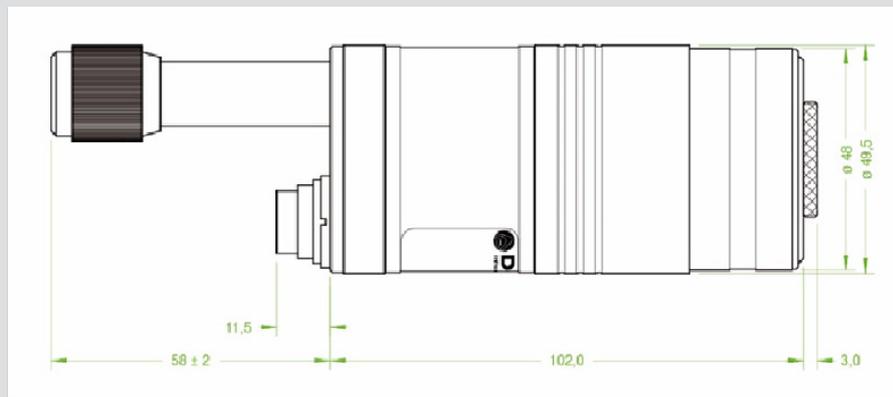
Technical data A250C 55 with video camera

| | |
|-------------------------|--|
| Video signal | Composite video signal approx. 1V _{ss} 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, K factor |
| 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.

Dimensional drawing: Pyrometer with through-lens sighting



Pyrometer with different aiming variants



Through-lens sighting



Video camera



Laser aiming light



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| Electrical, mechanical and optical accessories: | | | Part number | |
|---|--|--|--------------------------|------------|
| Connection cable, straight plug, 12 pin | Connection cable, angulated plug, 12 pin | Length 2 m | 3310A11111 | 3310A11131 |
| | | Length 5 m | 3310A11112 | 3310A11132 |
| | | Length 10 m | 3310A11113 | 3310A11133 |
| | | Length 15 m | 3310A11114 | 3310A11134 |
| | | Length 20 m | 3310A11115 | 3310A11135 |
| | | Length 30 m | 3310A11117 | 3310A11137 |
| | | Video connection cable | | Length 2 m |
| | | Length 5 m | 3310A16522 | |
| | | Length 10 m | 3310A16523 | |
| | | Length 15 m | 3310A16524 | |
| | | Length 20 m | 3310A16525 | |
| | | Length 25 m | 3310A16526 | |
| | | Length 30 m | 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 | |

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

Selected accessories – Images

| Mounting angle, adjustable | Cooling jacket | Air purge unit |
|--|--|--|
| Part number: 3310A21050  | Part number: 3310A23050  | Part number: 3310A22050  |
| TFT monitor industrial | Ball flange | Handheld programming device DHP 1040 |
| Part number: 3310A16120  | Part number: 3310A24020  | Part number: 3310A17010  |

Technical details are subject to change. 04.04.23



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