

AST A450C PL \ NV \ TL 54

Ratio pyrometer for industrial application

Overview

Digital ratio pyrometer with RS-485 interface



Special features

- For temperature measurements between 500 °C and 3000 °C
- Temperature linear output 0/4 to 20mA
- Integrated RS-485 interface
- Laser aiming light, color video camera or through-lens sighting
- Robust stainless steel housing
- Very short response times from 5 ms

Description and application

The digital ratio pyrometer AST A450C is specifically designed for industrial purposes. This device is suitable for non-contact temperature measurement from 500 °C on different surfaces like metal, graphite or ceramics. It measures the infrared radiation in two adjacent wavelengths and determines therefrom the temperature value.

The solid and compact stainless steel housing allows usage even under rough environmental conditions. Measuring spot sizes from 0.8 mm for the AST A450C can be easily realized. With a minimal response time of only 5 ms (t_{95}) the devices are usable for fast measuring tasks.

The temperature linear standard output signal of 0/4 to 20 mA allows an easy implementation in existing measurement and control systems. The connection to local networks can be supported by an Ethernet interface box. The AST A450C possesses a RS-485 interface. The devices are bus-compatible in this way and use the Modbus RTU protocol.

Use the optional integrated red laser aiming light for the exact aiming of the pyrometer to the measurement object. The optional integrated video camera module (AST 450C NV) provides an anti-glare aiming of the pyrometer even when the measurement object is very hot. It substantially facilitates the adjustment under difficult local conditions where the pyrometer is not easy to reach or the measurement object cannot be seen directly. A through-lens sighting is available as a further option.

You can connect the pyrometer via an optionally available interface adaptor RS-485 to USB with a PC. Connect the pyrometer to a PC to adjust the parameters ratio correction, emissivity, sub temperature range, data storage settings and response time to the application by using the comfortable parameterizing and evaluation software AST NET1.

Typical application areas:

- Steel and metal industry
- Furnace industry
- Hardening
- Welding



Bildnachweis: Stahl-Zentrum

AST A450C PL \ NV \ TL 54

Ratio pyrometer for industrial application

Technische Daten

Type	AST A450C PL \ NV \ TL 54									
Temperature range	500 °C to 1200 °C	600 °C to 1400 °C	700 °C to 1800 °C	800 °C to 2500 °C	900 °C to 3000 °C					
Distance ratio	50 : 1	100 : 1	200 : 1	300 : 1	300 : 1					
Optics ¹	several fixed optics (type 250, 650, 2000, 4000)									
Part number	Laser	Video	Laser Video		Laser	Video	Laser	Video	Laser	Video
	Through-lens sighting		Through-lens sighting		Through-lens sighting		Through-lens sighting		Through-lens sighting	
250	5542062201	5542082201	5542062202	5542082202	5542062203	5542082203	5542062204	5542082204	5542062205	5542082205
650	5542072201		5542072202		5542072203		5542072204		5542072205	
	5542063201	5542083201	5542063202	5542083202	5542063203	5542083203	5542063204	5542083204	5542063205	5542083205
2000	5542073201		5542073202		5542073203		5542073204		5542073205	
	5542066201	5542086201	5542066202	5542086202	5542066203	5542086203	5542066204	5542086204	5542066205	5542086205
4000	5542076201		5542076202		5542076203		5542076204		5542076205	
	5542067201	5542087201	5542067202	5542087202	5542067203	5542087203	5542067204	5542087204	5542067205	5542087205
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C									
Spectral range	0.7 µm to 1.1 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 ² , adjustable up to 100 s									
Measurement uncertainty ³	0.5 % of measured value in °C + 1 K									
Reproducibility ³	0.2 % of measured value in °C + 0.5 K									
NETD ^{3,4}	0.1 K									
Transmittance	50 % to 100 %									
Ambient radiation	adjustable within temperature range									
Output	0/4 mA to 20 mA, temperature linear, burden max. 500 Ω (galvanically isolated)									
Interface	RS-485 (galvanically isolated), half duplex, max. 115 kBd, Modbus RTU									
Storage	maximum/minimum value storage									
Aiming	A450C PL: Laser aiming light, 630 ... 680 nm, class II, < 1 mW, option: through-lens sighting; A450CN NV: Video camera, composite video signal PAL (B), 50Hz (galvanically isolated), optional NTSC (M),									
Switching output/threshold	Hz60 1 opto relay, R _{Load} min. 48 Ω (galvanically isolated)/adjustable within temperature range									
Parameters	adjustable via interface and software: ratio correction, emissivity, transmittance, response time, data storage settings, sub range of measurement output, switching thresholds of switching output									
Power supply	24 V DC ± 25 %, residual ripple 500 mV									
Power consumption	max. 1.5 W (without load at switching output)									
Operating temperature	0 °C to 70 °C									
Storage temperature	-20 °C to 70 °C									
Weight	approx. 600 g									
Housing	stainless steel round housing with plug connector, length: approx. 105 mm (without through-lens sighting), Ø 50 mm									
Safety class	IP65 according to DIN EN 60529 and DIN 40050									
Test regulations	EN 55 011:1998, limit class A									
CE symbol	according to EU regulations									
Scope of delivery	AST A450C PL NV TL 54 manual, inspection sheet, software AST NET1 without connection cable (please order separately)									

¹ Further fixed optics on request. ² With dynamic adaption at low signal level. ³ Specifications for black body radiator, T = 23 °C, t = 1 s. ⁴ ambient 95° Noise equivalent temperature difference. ⁵ Operating temperature up to 50 °C only due to risk of burns.

Fixed optics	Measuring distance a [mm]	250	650	2000	4000
Temperature range	Aperture D [mm]	Measuring field diameter M [mm]			
500 °C to 1200 °C	8.0	5.0	13.0	40.0	80.0
600 °C to 1400 °C	6.0	2.5	6.5	20.0	40.0
700 °C to 1800 °C	6.0	1.3	3.5	10.0	20.0
800 °C to 2500 °C	6.0	0.8	2.2	6.7	13.3
900 °C to 3000 °C	6.0	0.8	2.2	6.7	13.3

AST A450C PL \ NV \ TL 54

Ratio pyrometer for industrial application

Technical data Video-Kamera (AST A450CN NVTL)

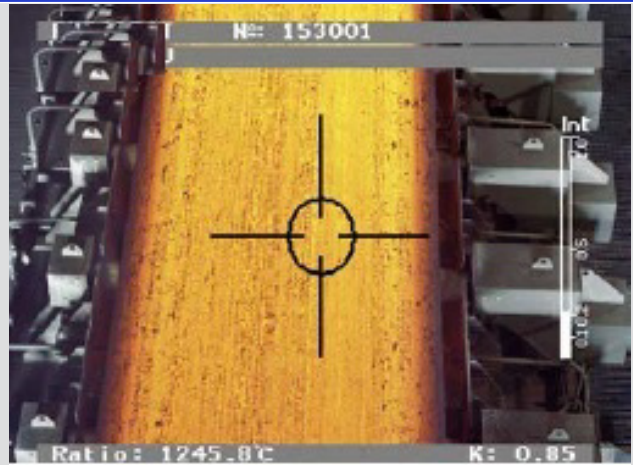
Video signal	Composite video signal approx. 1V _{ss} at 75 Ω (galvanically isolated, video signal can be deactivated via software)
Color norm	PAL (B), 50 Hz (optional color norm NTSC (M), 60 Hz)
Resolution	1/3 inch video chip 628 × 586 pixels (NTSC option: 510 × 496 pixels)
Exposure control	automatic
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, 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

Pyrometer with TFT monitor

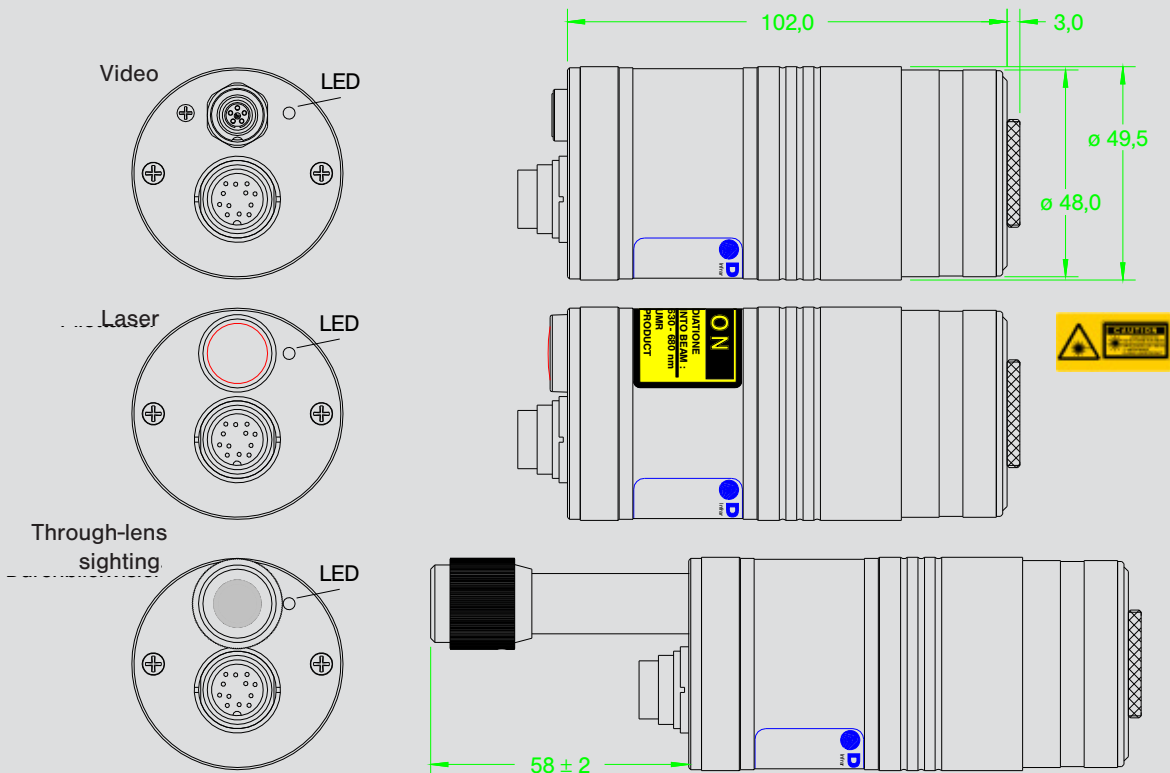


The video image can be displayed via the additionally available TFT monitor.

Detailed view of video image



Dimensional drawing pyrometer



AST A450C PL \ NV \ TL 54

Ratio pyrometer for industrial application

Electrical, mechanical and optical accessories:		Part number		
Connection cable, straight plug, 12 pin	length 2 m	3310A1111		
	length 5 m	3310A1112		
	length 10 m	3310A1113		
	length 15 m	3310A1114		
	length 20 m	3310A1115		
	length 25 m	3310A1116		
	length 30 m	3310A1117		
Video connection cable	length 2 m	3310A16521		
	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	thread M40 × 1.5	3310A24020		
Air purge unit		3310A22050		
Power supply PSU 15	24 V DC, 0.6 A	3310A12010		
Ring nut	with quartz glass window with sapphire glass window	3310A34022 3310A34052		
TFT monitor	TFT monitor industrial	3.5" with 2 m connection cable ²	3310A16110	3310A16120
Adaptor	video/USB	3310A14030		
DHP 1040	handheld programming device	3310A17010		
Ethernet interface box DCU _{IoT}	for the integration in local networks and for parameterization	3310A13500		

¹ More accessories on request. ² Cable lengths 5 m and 10 m also available.

Selected accessories

Mounting angle, adjustable	Cooling jacket	Air purge unit
Part number: 3310A21050 	Part number: 3310A23050 	Part number: 3310A22050 
Ball flange Part	Ethernet interface box DCU _{IoT}	Handheld programming device DHP 1040
number: 3310A24020 	Part number: 3310A13500 	Part number: 3310A17010 

Technical details are subject to change. 23.03.21



Accurate Sensors Technology Ltd.
Turag house Blue Street, Misgav
Industrial Park Israel

Phone: +972 4 9990025
sales@accuratesensors.com
www.accuratesensors.com