

AST A450 PL PLV 54 Pyrometer for industrial application

Overview

Digital pyrometers with RS-485 interface



Special features

- For temperature measurements between 550 °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 2 ms

Description and application

The digital AST pyrometer A450 PL 44 is specifically designed for industrial purposes. This devices are suitable for non-contact temperature measurement from 550 °C on different surfaces like metal, graphite or ceramics.

The solid and compact stainless steel housing allows usage even under rough environmental conditions. Measuring spot sizes from 0.8 mm for the AST Series 54 can be easily realized. With a minimal response time of only 2 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.

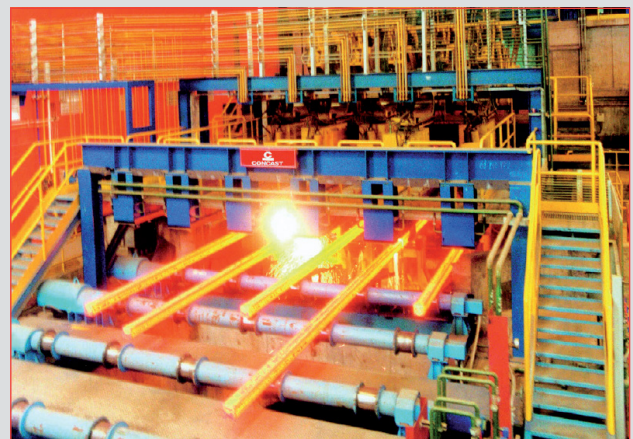
Use the optional integrated red laser aiming light for the exact aiming of the pyrometer to the measurement object. The optional integrated video camera module (A450 PL PLV 54) provides an anti-glare aiming of the pyrometer even when the measurement object is very hot. It substantially facilitates the 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.

The A450 PL PLV 54 possesses a RS-485 interface. The devices are bus-compatible in this way and use the Modbus RTU protocol.

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 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
- Soldering applications
- Ceramic industry



AST A450 PL PLV 54

Pyrometer for industrial application

Technical data

Type	A450 PL PLV 54									
Temperature ranges	550 °C to 1500 °C	600 °C to 1800 °C	800 °C to 2500 °C	900 °C to 3000 °C	600 °C to 3000 °C					
Distance ratio	200 : 1	300 : 1	300 : 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	5540062201	5540082201	5540062202	5540082202	5540062203	5540082203	5540062204	5540082204	5540062205	5540082205
650	5540072201		5540072202		5540072203		5540072204		5540072205	
	5540063201	5540083201	5540063202	5540083202	5540063203	5540083203	5540063204	5540083204	5540063205	5540083205
2000	5540073201	5540066201	5540073202	5540066202	5540073203	5540066203	5540073204	5540066204	5540073205	5540066205
	5540086201		5540086202		5540086203		5540086204		5540086205	
4000	5540076201		5540076202		5540076203		5540076204		5540076205	
	5540067201	5540087201	5540067202	5540087202	5540067203	5540087203	5540067204	5540087204	5540067205	5540087205
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C									
Spectral range	0.8 µm to 1.1 µm									
Emissivity ε	0.050 to 1.000									
Response time (t ₉₅)	2 ms ² , adjustable up to 100 s									
Measurement uncertainty ₃	0.5 % of measured value in °C + 1 K									
Reproducibility ₃	0.1 % 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									
Aiming	A450 PL 54: Laser aiming light, 630 ... 680 nm, class II, < 1 mW, option: through-lens sighting; A450 PLV 54 : Video camera, composite video signal PAL (B), 50Hz (galvanically isolated), optional NTSC (M),									
Switching output/threshold	1 opto relay, RLoad min. 48 Ω (galvanically isolated)/adjustable within temperature range									
Parameters	adjustable via interface and software: emissivity, transmittance, ambient radiation, 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 A450 PL PLV 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_{ambient} = 23 °C, t₉₅ = 1 s. 4 Noise equivalent temperature difference. 5 Operating temperature up to 50 °C only due to risk of burns.

Fixed optics

Measurement distance a [mm]	Apertur D [mm]	a = 250	a = 650	a = 2000	a = 4000
Temperature range		Measuring field diameter M [mm]			
550 °C to 1500 °C	10.0	1.3	3.5	10.0	20.0
600 °C to 1800 °C	6.0	0.8	2.2	6.7	13.3
800 °C to 2500 °C	8.0	0.8	2.2	6.7	13.3
900 °C to 3000 °C	4.0	0.8	2.2	6.7	13.3
600 °C to 3000 °C	4.0	0.8	2.2	6.7	13.3

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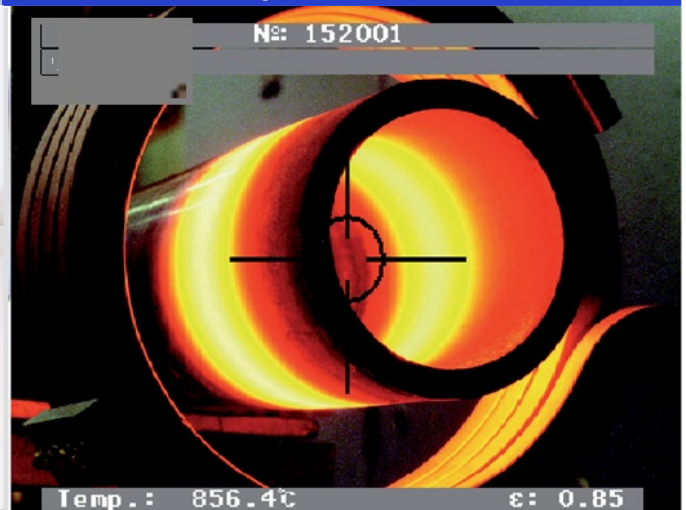
Technical data Video-Kamera (A450 PLV 54)

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

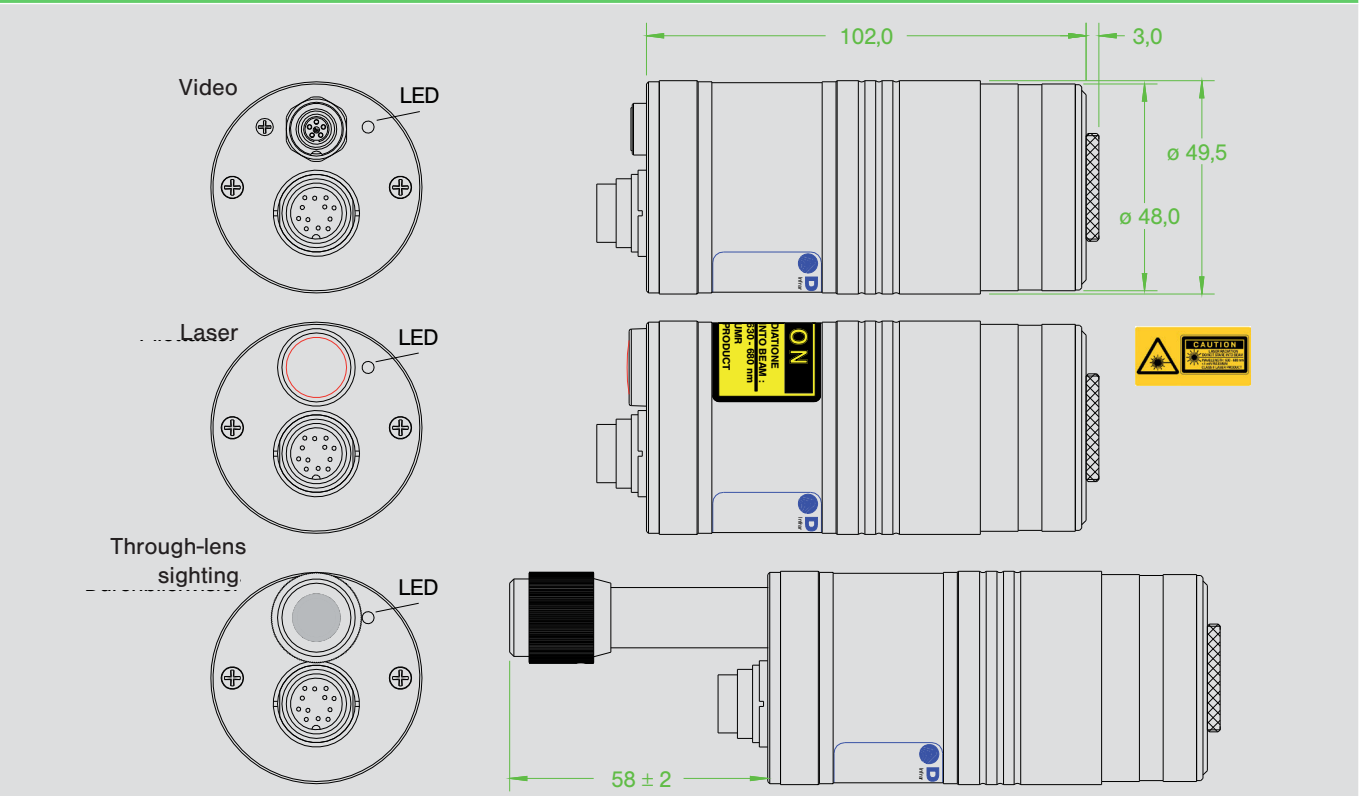
Pyrometer with TFT monitor



Detailed view of video image



Dimensional drawing pyrometer









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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		

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	Screwed coupling for ball flange	Handheld programming device DHP 1040
number: 3310A24020 	Part number: 3310A24021 	Part number: 3310A17010 

Technische Änderungen vorbehalten. Technical details are subject to change. 27.04.20



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