

PSC-GR10NL / PSC-GR10NT / PSC-GR10NV

2-Color Pyrometers for industry and research

Overview

Digital ratio pyrometers with RS-485 modbus RTU interface



Features

- Temperature ranges from 300 °C to 2300 °C
- Display keys for sensor parameters and temperature menu
- Independent from emissivity
- Sees through dirty windows/dusty conditions
- Aiming: laser, through-lens, or video camera sighting
- Fast response times from 5 ms
- Outputs 0/4 to 20 mA and RS485 modbus RTU
- Variable focus optics

Description and applications

The digital pyrometers PSC-GR10NL / GR10NT / GR10NV are designed for industry and research applications.

The self-contained two-color IR sensors includes a protection quartz window for its' optical lens. Along with a rugged protective cooling jacket, the pyrometer can withstand incredibly harsh and dirty environmental conditions.

With a short response time of only 5 ms, these pyrometers are suitable for fast measuring processes. Various focusable optics enable measuring spot sizes from 0.8 mm / 0.31". The integrated laser aiming light or alternative thru-lens sighting, enables pinpoint focus on the measurement object.

With the optional color video output (PSC-GR10NV), the measured target can be monitored visually and recorded.

The linear temperature output signal of 0/4 to 20 mA offers easy implementation in pre-existing measurement and control systems. The device is equipped with a galvanically isolated RS-485 interface which allows parameter adjustment and software evaluation even in bus systems.

All parameters are adjustable via IR temperature sensor push-buttons, top rear display, or a PC with PSC Spot software.

Typical pyrometer application areas:

- Induction heating
- Steels and Metals
- Brazing
- Welding pre-heat
- Ceramics
- Vacuum furnaces
- Semiconductor processes
- Composites
- Research and Development



PSC-GR10NL / PSC-GR10NT / PSC-GR10NV

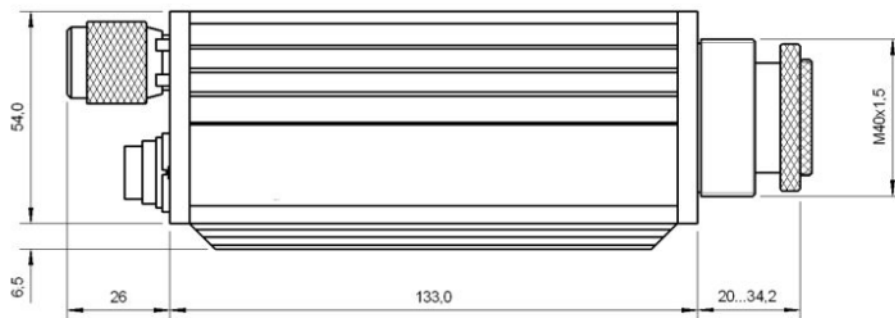
2-Color Pyrometers for industry and research

Technical data

Type	PSC -GR10NL / PSC-GR10NT / PSC-GR10NV			
Temperature range	300 °C to 1100 °C	350 °C to 1300 °C	400 °C to 1600 °C	500 °C to 2300 °C
Distance ratio	approx. 100 : 1	approx. 133 : 1	approx. 200 : 1	approx. 300 : 1
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C			
Spectral range	1.5 µm to 1.9 µm			
Optics	various optics with quartz glass protection window, spot sizes from 0.8 mm / 0.31"			
Accuracy ¹	0.5 % of measured value in °C + 1°C			
Reproducibility ¹	0.2 % of measured value in °C + 0.5°C			
Transmittance	50 % to 100 %			
NETD ^{1,2}	0.1 K			
Response time (t ₉₅)	5 ms ³ , adjustable up to 100 s			
Ratio correction K	0.800 to 1.200, adjustable at the device or via interface			
Emissivity	0.050 to 1.000, adjustable at the device or via interface			
Storage	minimum and maximum value storage, adjustable via RS-485 interface			
Output	0/4 to 20 mA, switchable via software, max. burden 500 Ω (galvanically isolated)			
Interface	RS-485 (galvanically isolated), half duplex, baudrate up to 115 kBd, data protocol Modbus RTU			
Switching output/threshold	1 solid state relay, R _{Load} min. 48 Ω/adjustable within temperature range			
Aiming	Laser aiming light (630 to 680 nm, class II, < 1 mW), through-lens sighting or video output (PSC-SR10NV)			
Software	PSC- Spot for Windows®, optional: PSC- Spot Pro			
Parameters ⁴	ratio correction, emissivity, transmittance, ambient radiation, response time, temperature unit °C or °F, storage settings, sub temperature range of measurement output, switching thresholds of switching output, key lock			
User controls	Keys for "Parameter Menu", "Enter", "Up" and "Down", aiming laser light push-button, display			
Power supply	24 V DC ± 25 %			
Power consumption	max. 1.5 W (without load at switching output)			
Operating temperature	0 °C to 70 °C / 0°F to 158°F			
Storage temperature	-20 °C to 70 °C			
Weight	approx. 520 g			
Dimensions	54 × 54 mm, length 170 mm // 2.12" x 2.12" x 6.69"			
Housing	compact housing with plug connector, display, push-buttons and optics protection window			
Safety class	IP 65 (DIN 40 050)			
CE symbol	according to EU regulations (EN 55 011)			
Scope of delivery	PSC-GR10NL / PSC-GR10NT / PSC-GR10NV, mounting screw nut, inspection sheet, manual, PSC- Spot for Windows® (without connection cable, please order separately)			

¹T_{Ambient} = 23 °C, ε = 1, t₉₅ = 1 s. ²Noise equivalent temperature difference. ³With dynamic adaption at low signal level. ⁴Adjustable via software and interface or directly at the device.

Dimensional drawing for through-lens sighting pyrometer version (mm)



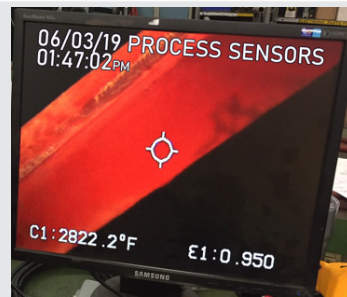
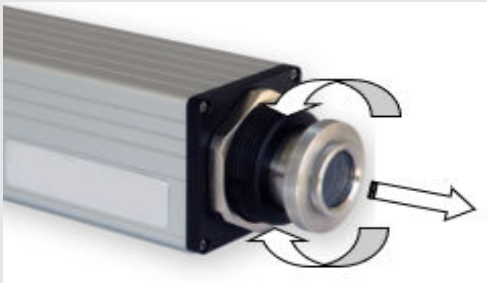
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Variable Focus optics

Measuring distance from [mm]	250	300	350	500	800	4000	Lens Aperture diameter [mm]		Part number	
							at		Through-lens sighting	Laser
Temperature range	Spot Size [mm]						a = 250 mm	a = 4000 mm		Video camera
300 °C to 1100 °C	2.5	3.0	3.5	5.0	8.0	40.0	8.0	6.5	PSC-5103021202	PSC-5103011202
										PSC-5103031202
350 °C to 1300 °C	1.9	2.3	2.7	3.8	6.0	30.0	8.0	6.5	PSC-5103021203	PSC-5103011203
										PSC-5103031203
400 °C to 1600 °C	1.2	1.5	1.8	2.5	4.0	20.0	8.0	6.5	PSC-5103021204	PSC-5103011204
										PSC-5103031204
500 °C to 2300 °C	0.8	1.0	1.2	1.7	2.6	13.0	8.0	6.5	PSC-5103021205	PSC-5103011205
										PSC-5103031205

Focusing adjustment of optics and video output



Technical data video camera (PSC-GR10NV)

Video signal	Composite video signal approx. 1Vss at 75 Ω (galvanically isolated, video signal can be deactivated via software)
Video Types	NTSC (M), 60 Hz or PAL (B), 50 Hz
Resolution	1/3 inch video chip 628 × 586 pixels (NTSC option: 510 × 496 pixels)
Exposure control	Automatic or manual via software or device
Visible field of view	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
Image displays	Target spot size displayed on imager. Ratio mode: measure temperature, K factor, intensity bar 1-channel mode: measurement temperature, emissivity
Display Values	Adjustable via software: serial number, device name or user-defined text (16 characters), date, time, temperature unit °C/°F, 12/24 hours display
White balance	Automatic or manual via software or device

Temperature / Menu Display

Depending on the selected operation mode, the main display is different. When in ratio mode, the device shows in addition to the emissivity the ratio correction (K) and the intensity.

Current measured temperature

K factor set
(slope
correction)

emissivity set



intensity

status switching output

Rear Sensor Panel

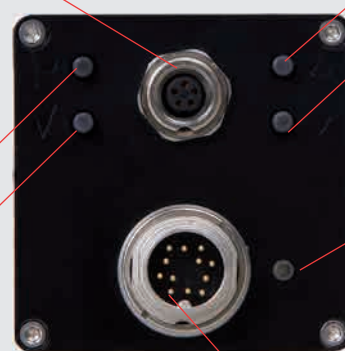
The parameters can be adjusted with the keys at the rear side of the device. The set value is taken over directly.

Through-lens sighting, aiming light
or video connector

Up and Down Keys

Keys for
"Parameter
Menu"
and "Enter"

Status LED



Connector and interface

PSC-GR10NL / PSC-GR10NT / PSC-GR10NV

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Electrical, mechanical and optical accessories (more accessories on request)		Part number	
Connection cable, 12 pin, right angle	Length 2 m Length 5 m Length 10 m Length 15 m Length 20 m Length 25 m Length 30 m	PSC-3310A11131 PSC-3310A11132 PSC-3310A11133 PSC-3310A11134 PSC-3310A11135 PSC-3310A11136 PSC-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	PSC-3310A16521 PSC-3310A16522 PSC-3310A16523 PSC-3310A16524 PSC-3310A16525 PSC-3310A16526 PSC-3310A16527	
Interface adapter	RS-485 to USB converter	PSC-3310A14020	
Power supply	24 V DC, 1.5 A	PSC-950-004	
Mounting angle	Adjustable	PSC-3310A21020	
Air purge unit	Stainless steel, purge air 0.1 to 0.5 bar, oil-free	PSC-3310A22020	
Window slide	without window	PSC-3310A21210	
Vacuum flange	KF 16 with quartz glass with sapphire glass (scratch-proof)	PSC-3310A24015 PSC-3310A34021 PSC-3310A34051	
Cooling jacket	including air purge unit	PSC-3310A23031	
Mounting angle	for cooling jacket	PSC-3310A23036	
ATEX housing		PSC-3310A23100	
Handheld programming device DHP 1040	mobile device for pyrometer parameterization	PSC-3310A17010	
TFT display	TFT display industrial	PSC-3310A16110	PSC-3310A16120
Adapter	Video/USB	PSC-3310A14030	

Selected accessories – images

Mounting bracket, adjustable

Part number: PSC-3310A21020



Ball and socket mount

Part number: PSC-3310A21025



Cooling jacket

Part number: PSC-3310A23031



Cooling plate

Part number: PSC-3310A23020



Air purge unit

Part number: PSC-3310A22020



RS485 to USB Converter with cable

Part number: PSC-3310A14020

