PROCESS SENSORS®
CORPORATION

PSC-SR10NL / PSC-SR10NT / PSC-SR10NV

a KPM ANALYTICS brand

2-Color Pyrometers for industry and research

Overview

Digital ratio pyrometers with RS-485 modbus RTU interface
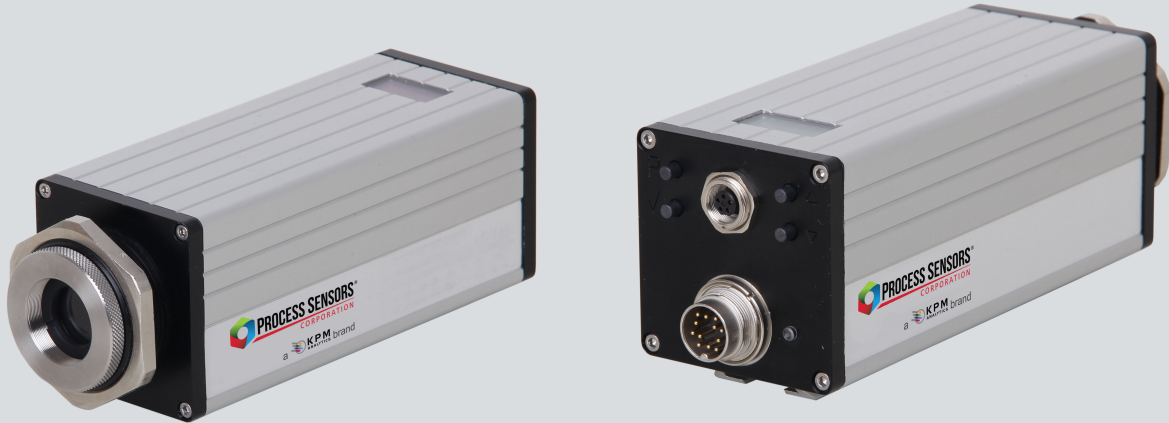
Features

- Temperature ranges from 500 °C to 3000 °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-SR10NL / SR10NT / SR10NV 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-SR10NV), 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
- Kilns
- Welding
- Metal pour streams
- Ceramics

- Vacuum furnaces
- Semiconductor processes
- Composites
- Sintering
- Research and Development
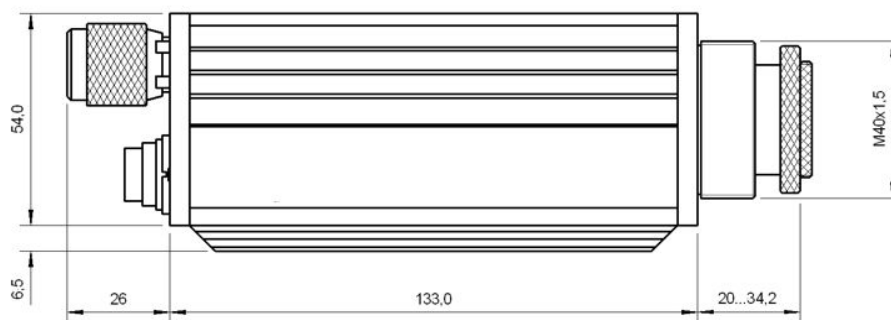- Molten Glass

PSC-SR10NL / PSC-SR10NT / PSC-SR10NV
2-Color Pyrometers for industry and research

Technical data					
Type	**PSC -SR10NL / PSC-SR10NT / PSC-SR10NV**				
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	approx. 50 : 1	approx. 100 : 1	approx. 200 : 1	approx. 300 : 1	approx. 300 : 1
Sub temperature range of analog output	adjustable within temperature range, minimum span 50 °C				
Spectral range	0.7 µm to 1.1 µm				
Optics	various optics with quartz glass protection window, spot sizes from 0.8 mm / 0.31"				
Measurement uncertainty [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-SR10NL / PSC-SR10NT / PSC-SR10NV, mounting screw nut, inspection sheet, manual, PSC- Spot for Windows® (without connection cable, please order separately)				

[1] $T_{Ambient}$ = 23 °C, ε = 1, t_{95} = 1 s. [2] Noise equivalent temperature difference. [3] With dynamic adaption at low signal level. [4] Adjustable via software and interface or directly at thr 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
500 °C to 1200 °C	5.0	6.0	7.0	10.0	16.0	80.0	8.0	6.5	PSC-5102001201	PSC-5102011201
									PSC-5102021201	PSC-5102031201
600 °C to 1400 °C	2.5	3.0	3.5	5.0	8.0	40.0	8.0	6.5	PSC-5102001202	PSC-5102011202
									PSC-5102021202	PSC-5102031202
700 °C to 1800 °C	1.2	1.5	1.7	2.5	4.0	20.0	8.0	6.5	PSC-5102001203	PSC-5102011203
									PSC-5102021203	PSC-5102031203
800 °C to 2500 °C	0.8	1.0	1.2	1.7	2.7	13.3	8.0	6.5	PSC-5102001204	PSC-5102011204
									PSC-5102021204	PSC-5102031204
900 °C to 3000 °C	0.8	1.0	1.2	1.7	2.7	13.3	8.0	6.5	PSC-5102001205	PSC-5102011205
									PSC-5102021205	PSC-5102031205

Focusing adjustment of optics and video output
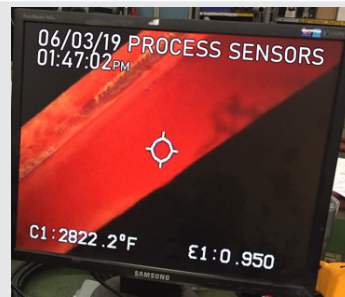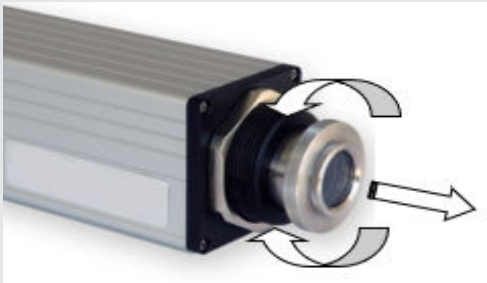
Technical data video camera (PSC-SR10NV)

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 additionto the emissivity the ratio correction (K) and the intensity.

Current measured temperature

K factor set (slope correction)

intensity

emissivity set

status switching output
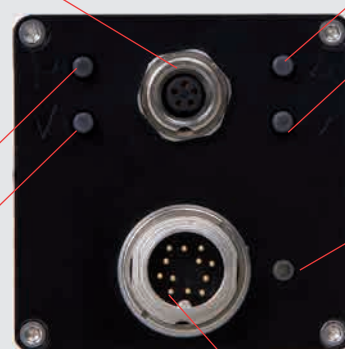

Rear Sensor Panel

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

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Electrical, mechanical and optical accessories (more accessories on request)		Part number
Connection cable, 12 pin, right angle	Length 2 m	PSC-3310A11131
	Length 5 m	PSC-3310A11132
	Length 10 m	PSC-3310A11133
	Length 15 m	PSC-3310A11134
	Length 20 m	PSC-3310A11135
	Length 25 m	PSC-3310A11136
	Length 30 m	PSC-3310A11137
Video connection cable	Length 2 m	PSC-3310A16521
	Length 5 m	PSC-3310A16522
	Length 10 m	PSC-3310A16523
	Length 15 m	PSC-3310A16524
	Length 20 m	PSC-3310A16525
	Length 25 m	PSC-3310A16526
	Length 30 m	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	PSC-3310A24015
	with quartz glass	PSC-3310A34021
	with sapphire glass (scratch-proof)	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	3.5" with 2 m cable	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

10/07/21