PROCESS SENSORS CORPORATION

PSC-SR54NL PSC-SR54NV

2-Color Pyrometer Series
For Industrial and R&D Applications

Two-Color or Ratio Pyrometers measure temperatures from the ratio of radiation signals of two adjacent wavelengths as opposed to measuring the absolute intensity within one wavelength, as with one-color pyrometers. The advantages and benefits of using two-color sensors are the following:

- ⇨ **Automatic compensation for viewing though dirty windows, dust and partial smoke between sensor and target.**
- ⇨ **Compensation for changes in target emissivity i.e. gray bodies—targets with the same emissivity on both wavelengths.**
- ⇨ **Measures smaller target than sensor's field of view (FOV/Spot Size) i.e. measures weighted peak temperature within FOV.**
- ⇨ **Unaffected by moving targets within FOV.**

APPLICATIONS

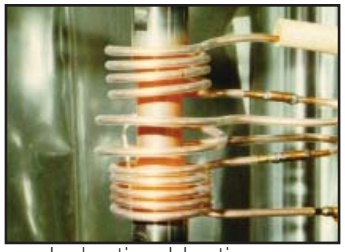
- Induction Heating
- Steel Industry
- Heat Treating of Metals
- Kilns
- Vacuum Furnaces
- Welding
- Composites
- Sintering
- Nuclear
- Research and Development

FEATURES

- High Accuracy/Repeatability with Self-Contained Stand Alone Operation
- Wide Temperature Ranges from 500° to 3000°C (932° to 5432°F)
- Integrated Red Laser or Video Camera Sighting
- High Resolution Optics Up to FOV 200:1
- Fixed Focus Optics
- Fast Response Time – 5 milliseconds, adjustable
- Simultaneous Analog and Digital Outputs
- 4-20mA and Digital RS-485 Communications
- Durable, Compact Stainless-Steel Housing
- Innovative, Rugged Design Accessories

Typical Applications


Steel Processing

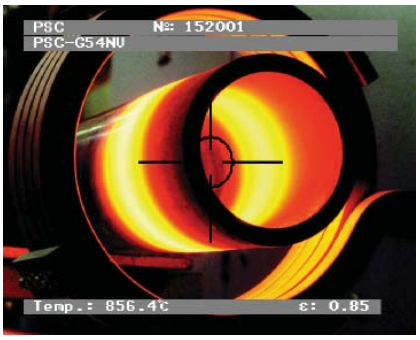

Induction Heating


Kilns

Process Sensors 2-Color Non-contact Infrared Thermometers have universal applications and can also be switched and operated in a one-color or single wavelength mode. In one-color mode, operators have the choice of deriving the analog output signal from the shorter or longer wavelength or both. Using digital communication, these temperature measurement results can be recorded and compared to quickly determine whether the target is a gray body radiator or not.

The PSC-SR54NL (Laser) and PSC-SR54NV (video) two-color pyrometers are available with five versatile temperature ranges.


Laser Aiming




Video Camera

Table 1: Temperature Range and Spectral Response

Models	PSC-SR54NL PSC-SR54NV
Spectral Response	0.8 to 1.1µm
Temperature Ranges	500° to 1200°C 932° to 2192°F
	600° to 1400°C 1112° to 2552°F
	700° to 1800°C 1292° to 3272°F
	800° to 2500°C 1472° to 4532°F
	900° to 3000°C 1652° to 5432°F

Table 2: Fixed Focus Optics

Temperature Range	Optics Aperture	Distance/Spot Size		
		Focused at 25.59" (650 mm)	Focused at 78.74" (2000 mm)	Focused at 157.48" (4000 mm)
932° to 2192°F (500° to 1200°C)	**0.32 inch (8.0 mm)**	0.51 in. (13.0 mm)	1.57 in. (40.0 mm)	3.14 in. (80.0 mm)
1112° to 2552°F (600° to 1400°C)	**0.24 inch (6.0 mm)**	0.25 in. (6.5 mm)	0.78 in. (20.0 mm)	1.57 in. (40.0 mm)
1292° to 3272°F (700° to 1800°C)	**0.24 inch (6.0 mm)**	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
1472° to 4532°F (800° to 2500°C)	**0.24 inch (6.0 mm)**	0.13 in. (3.5 mm)	0.39 in (10.0 mm).	0.78 in. (20.0 mm)
1652° to 5432°F (900° to 3000°C)	**0.24 inch (6.0 mm)**	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)

MODEL SELECTION GUIDE
PSC-SR54NL and PSC-SR54NV

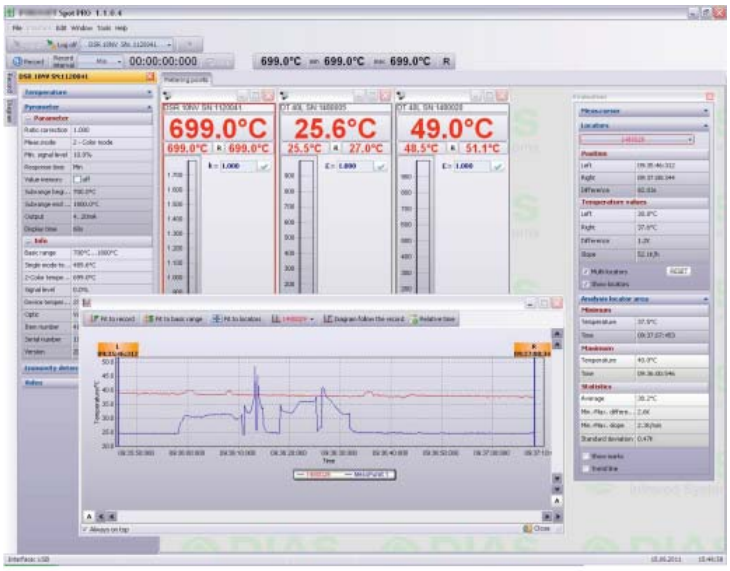
Build the model number by selecting instrument specifications required from each column.

<table>
<tr><th>1. Select Model Number:</th><th>2. Select Temperature Range in °C:</th><th>3. Select Fixed Focus Optics in mm:</th><th>4. Select Accessories Codes:</th></tr>
<tr><td rowspan="7">PSC-SR54NL
LASER SIGHTING
 
or
PSC-SR54NV
VIDEO CAMERA
  </td><td>0500° to 1200°C
932° to 2192°F</td><td rowspan="3">650</td><td>Choose 1 of 2 Jacket Codes:</td></tr>
<tr><td>0600° to 1400°C
1112° to 2552°F</td><td>JW = Protective Cooling Jacket
With integrated Air Purge</td></tr>
<tr><td rowspan="2">0700° to 1800°C
1292° to 3272°F</td><td rowspan="2">00 = No Protective Jacket</td></tr>
<tr><td rowspan="2">2000</td></tr>
<tr><td rowspan="2">0800° to 2500°C
1472° to 4532°F</td><td>Choose 1 of 2 Air Purge Codes:</td></tr>
<tr><td rowspan="2">4000</td><td>AP = Air Purge Assembly
(connects to IR Sensor)</td></tr>
<tr><td>0900° to 3000°C
1652° to 5432°F</td><td>00 = No Air Purge Assembly</td></tr>
<tr><td colspan="4">Example: Model PSC-SR54N-0700-1800-650-JW-00 includes laser sighting, temperature range of 700 to 1800°C, 650mm fixed focus optics and Protective Cooling Jacket with integrated Air Purge. (Refer to Accessories page.).</td></tr>
</table>

PSCSpot Software for PSC-SR54NL and PSC-SR54NV

PSCSpot software is used for manual set-up and adjustment of pyrometer parameters that include ratio correction, emissivity, sub-temperature range, data storage settings and response time to the application. The no-cost PSCSpot software is included with the purchase of an optional RS485 to USB adapter and connection cable. The PSCSpot software facilitates recording, and creation and retention of graphic or table files.

The PSC-SR54 Series is equipped with 4 to 20mA analog output and RS-485 interface, so that files can be utilized and evaluated for quality assurance purposes. The PSCSpot software allows data recording in real-time via a PC with minimum computer requirements of: 500MHz clock frequency and any Windows® operating system.



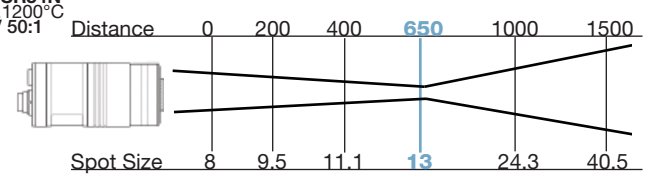
FOV DIAGRAMS

PSC-SR54NL and PSC-SR54NV

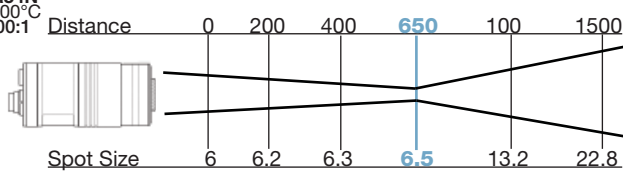
(All measurements in mm)

Optics 650

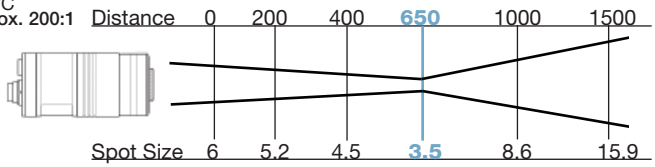
PSC-SR54N
500...1200°C
FOV 50:1



PSC-SR54N
600...1400°C
FOV 100:1

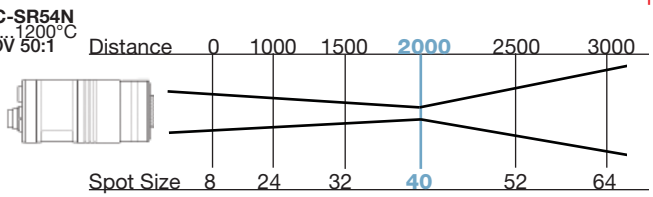


PSC-SR54N
700...1800°C
800...2500°C
900...3000°C
FOV approx. 200:1

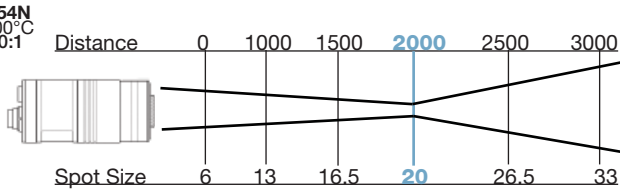


Optics 2000

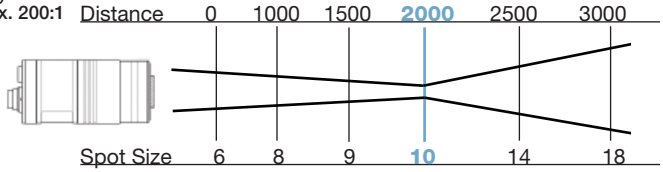
PSC-SR54N
500...1200°C
FOV 50:1



PSC-SR54N
600...1400°C
FOV 100:1

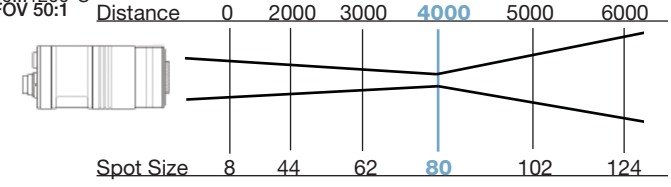


PSC-SR54N
700...1800°C
800...2500°C
900...3000°C
FOV approx. 200:1

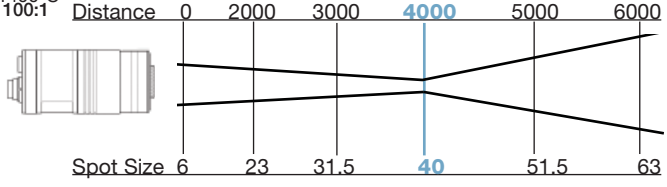


Optics 4000

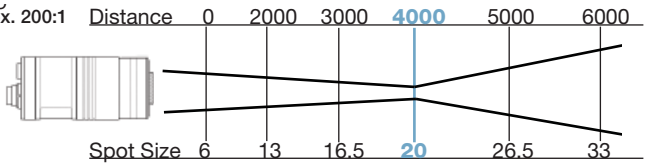
PSC-SR54N
500...1200°C
FOV 50:1



PSC-SR54N
600...1400°C
FOV 100:1



PSC-SR54N
700...1800°C
800...2500°C
900...3000°C
FOV approx. 200:1

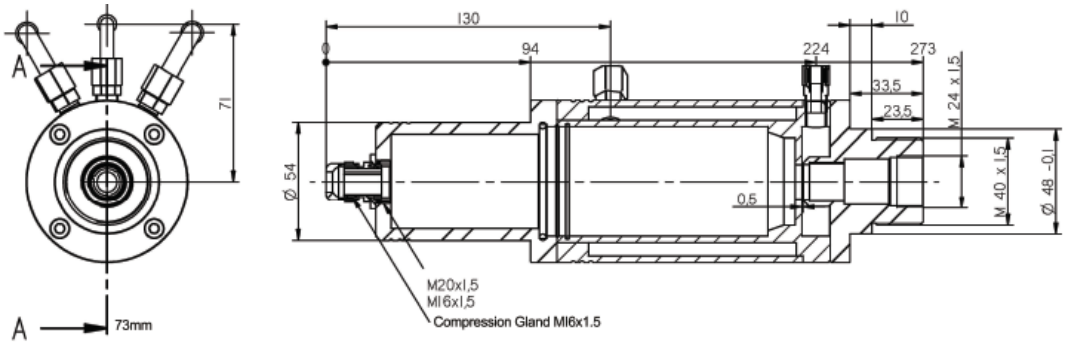


ACCESSORIES
PSC-SR54NL and PSC-SR54NV

The circumstances under which Process Sensors pyrometers are used are many and varied. In order to accommodate these differences and to ensure reliable, trouble-free operation, we have designed a large comprehensive family of accessories. Some are purely protective, while others simplify a measurement that would be difficult or impossible. Pictured below is a sampling.

		
STAINLESS STEEL COOLING JACKET with INTEGRATED AIR PURGE PSC-3310A23050	STAINLESS STEEL COOLING JACKET WITH ADJUSTABLE AIMING FLANGE	STAINLESS STEEL BALL and SOCKET AIMING FLANGE (adjustable) PSC-3310A24020
		
AIR PURGE PSC-3310A22050	REMOVABLE SEALED WINDOW ASSEMBLY Part number dependant upon window material	ADJUSTABLE MOUNTING BRACKET PSC-3310A21050
		
DHP1040 HAND HELD PROGRAMMER PSC-331A17010	CONNECTION CABLE PSC-3310A1111	CONNECTION CABLE WITH RIGHT ANGLE CONNECTOR PSC-3310A11132

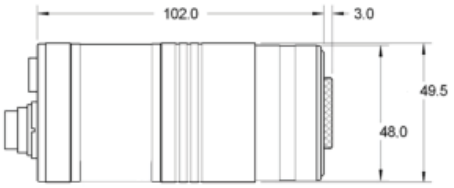
Cooling Jacket with integrated Air Purge Dimensions (in mm)



SPECIFICATIONS
PSC-SR54NL and PSC-SR54NV

Temperature Range	500° to 1200°C 932° to 2192°F	600° to 1400°C 1112° to 2552°F	700° to 1800°C 1292° to 3272°F	800° to 2500°C 1472° to 4532°F	900° to 3000°C 1652° to 5432°F
Sub Temperature Range	Adjustable Within Overall Temperature Range, Minimum Span 50°C (122°F)				
Field of View Ratio	50:1	100:1	200:1	200:1	200:1
Accuracy	0.5% of Measured Value in °C				
Reproducibility	0.1% of Measured Value in °C				
Aiming	PSC-SR54NL: Laser, 630…680 nm, Class II, <1 mW PSC-SR54NV: Video Camera, Composite Video Signal NTSC (M), 60Hz or PAL (B), 50Hz				
Choice of Optics Types	650mm, 2000mm, 4000mm				
Spectral Range	0.8µm to 1.1µm				
Ratio Correction K	0.800 to 1.200				
Emissivity	0.050 to 1.000				
Response Time (t95)	5 ms (min.) Adjustable up to 100 seconds				
NETD	0.1K				
Transmissivity	50% to 100%				
Output	0/4 mA to 20 mA, Linear, Max. Load 500 Ω (Galvanically Isolated)				
Interface	RS-485 (Galvanically Isolated), Half Duplex, Max. 115 kBd, Modbus RTU				
Switching Output/Threshold	1 Opto Relay, R_{Load} Min. 48Ω (Galvanically Isolated) Adjustable Within Temperature Range				
Parameters	Adjustable Via Interface and Software, or at Device using handheld programmer: Ratio Correction, Emissivity, Transmissivity, 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. 1.5W (Without Load at Switching Output)				
Operating Temperature	0° to 70°C (32° to 158°F)				
Storage Temperature	-20° to 70°C (-4° to 158°F)				
Weight	600 grams (1 lb. 5.16 oz.)				
Housing	Stainless Steel Cylindrical Housing with Plug Connector 4.1” (105 mm)L x 2” (50mm) OD				
Safety Class	IP65 According to DIN EN 60529 and DIN 40050				
Test Regulation	EN 55 011: 1998, Limit Class A				
CE Symbol	According to EU Regulations				
Standard Equipment	PSC-SR54N/PSC-SR54NV, Operation Manual, Inspection Sheet. No-cost PSCSpot Software is included with the purchase of an optional RS485 to USB adapter and connection cable that must be ordered separately				

Sensor Dimensions (in mm)



PROCESS SENSORS CORPORATION

IR Temperature Sales Office: 787 Susquehanna Avenue, Franklin Lakes, NJ USA • Tel: 774-399-0461
Corporate Headquarters: 8 Technology Drive, Westborough, MA USA • Tel: 774-399-0500
Global Offices–Sales and Support: United Kingdom, Poland, Malaysia www.ProcessSensorsIR.com • irtemp@kpmanalytics.com