

# PSC-SR56N

## 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 through 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

- Steel and Metals
- Vacuum Furnace
- Semiconductor
- Induction Heating
- Kilns
- Welding
- Ceramics/Composites
- Sintering/Graphite
- Nuclear
- R & D

### FEATURES

- Temperature Display and Parameter Controls on IR Sensor Rear Panel
- Thru-lens, Laser or Integrated Color Video Camera Sighting
- Temperature Ranges Spanning from 500° to 3000°C
- 4-20mA and RS-485 Interface
- Choice of Fixed Focus Optics
- Fast Response Time from 5ms, Adjustable up to 100 seconds
- Emissivity Independent Measurement
- Compact, Robust Stainless Steel Housing
- RS-485 Modbus Interface Integration into Existing Data Acquisition Systems
- Rugged Hardware Designed for Harsh Industrial Continuous Operations

## Typical Applications



Process Sensors 2-Color Non-Contact Infrared Thermometers have universal applications and can also be switched and operated in a 1-Color or single wavelength mode. In 1-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.

The PSC-SR56N 2-Color pyrometers are available with five versatile temperature ranges and a choice of four fixed focus optics types. Special custom optics are available at additional cost.

**Table 1: Temperature Range and Spectral Response**

Models	<b>PSC-SR56NT</b> <b>PSC-SR56NL</b> <b>PSC-SR56NV</b> <b>PSC-SR56NEV</b>
Spectral Response	0.7µm 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



PSC-SR56NT



PSC-SR56NL



PSC-SR56NEV



PSC-SR56NV





**Table 2: Fixed Focus Optics**

Temperature Range	Optics Aperture	Distance/Spot Size			
		Focused at 9.84" (250 mm)	Focused at 25.59" (650 mm)	Focused at 78.74" (2000 mm)	Focused at 157.48" (4000 mm)
500° to 1200°C 932° to 2192°F	<b>0.32 inch (8.0 mm)</b>	0.196 in. (5.0 mm)	0.51 in. (13.0 mm)	1.57 in. (40.0 mm)	3.14 in. (80.0 mm)
600° to 1400°C 1112° to 2552°F	<b>0.24 inch (6.0 mm)</b>	0.098 in. (2.5 mm)	0.25 in. (6.5 mm)	0.78 in. (20.0 mm)	1.57 in. (40.0 mm)
700° to 1800°C 1292° to 3272°F	<b>0.24 inch (6.0 mm)</b>	0.051 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
800° to 2500°C 1472° to 4532°F	<b>0.24 inch (6.0 mm)</b>	0.051 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
900° to 3000°C 1652° to 5432°F	<b>0.24 inch (6.0 mm)</b>	0.051 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)

# MODEL SELECTION GUIDE

## PSC-SR56N Series

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

1. Select Model Number:	2. Select Temperature Range in °C:	3. Select Fixed Focus Optics in mm:	4. Select Accessories Codes:
 PSC-SR56NT Thru-lens  PSC-SR56NL Laser  PSC-SR56NV Video  PSC-SR56NEV Electronic Viewfinder	0500° to 1200°C 932° to 2192°F	250	Choose 1 of 2 Jacket Codes:
	0600° to 1400°C 1112° to 2552°F	650	JW = Protective Cooling Jacket With integrated Air Purge
	0700° to 1800°C 1292° to 3272°F	2000	00 = No Protective Jacket
	0800° to 2500°C 1472° to 4532°F	4000	Choose 1 of 2 Air Purge Codes:
	0900° to 3000°C 1652° to 5432°F		AP = Air Purge Assembly (connects to IR Sensor)
			00 = No Air Purge Assembly
<b>Example:</b> Model PSC-SR56NL-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.).			

## PSCSpot Software for PSC-SR56N Series

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-SR56N 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.

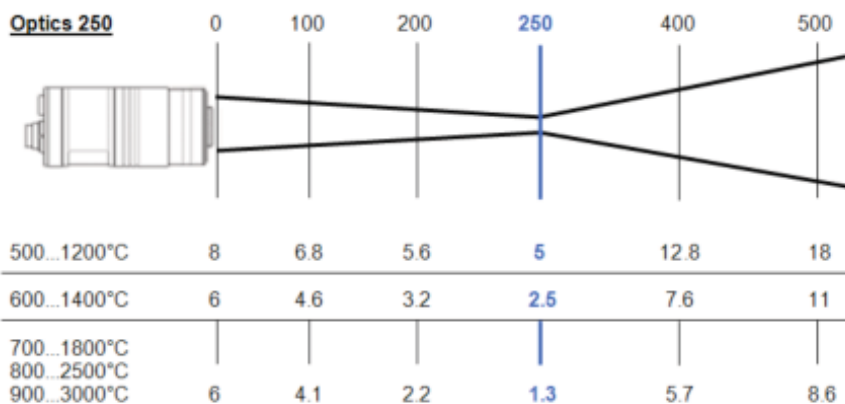


# FOV DIAGRAMS

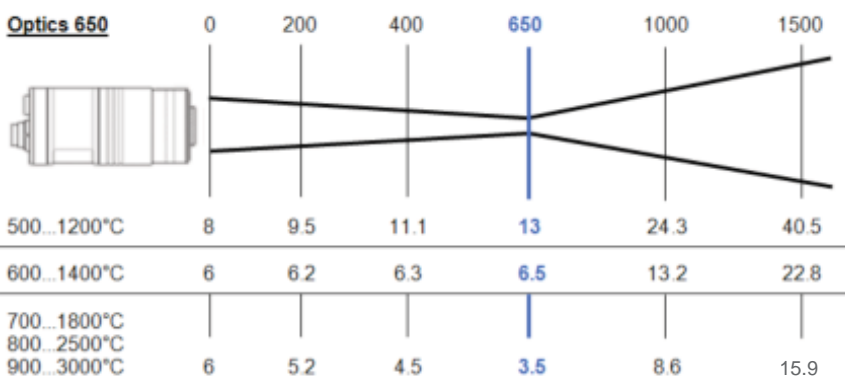
## PSC-SR56N Series

(All measurements in mm)

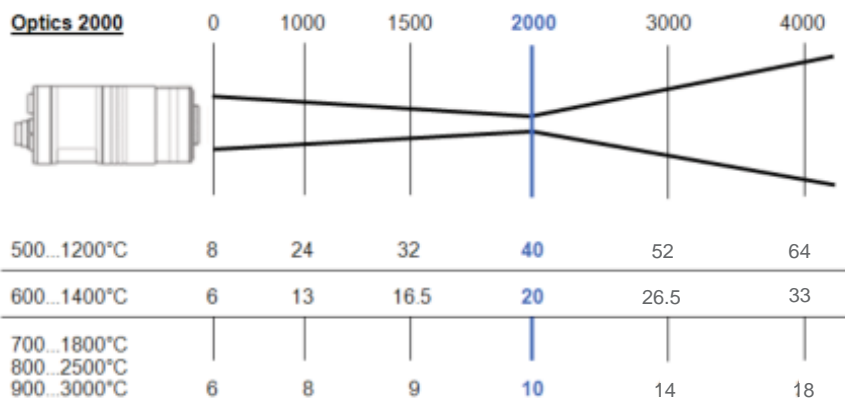
**Optics 250**



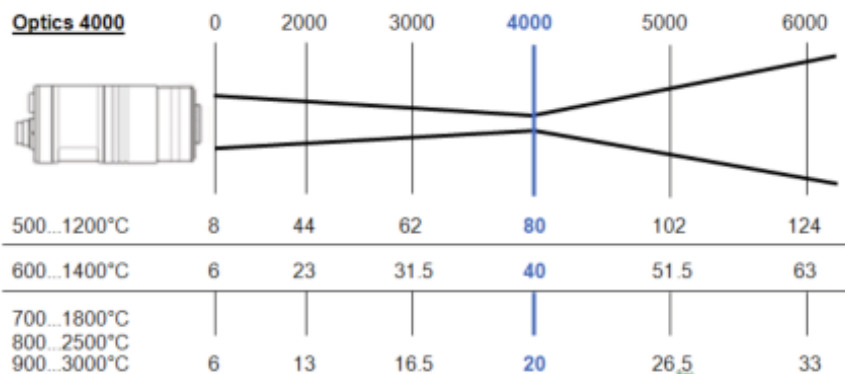
**Optics 650**



**Optics 2000**



**Optics 4000**

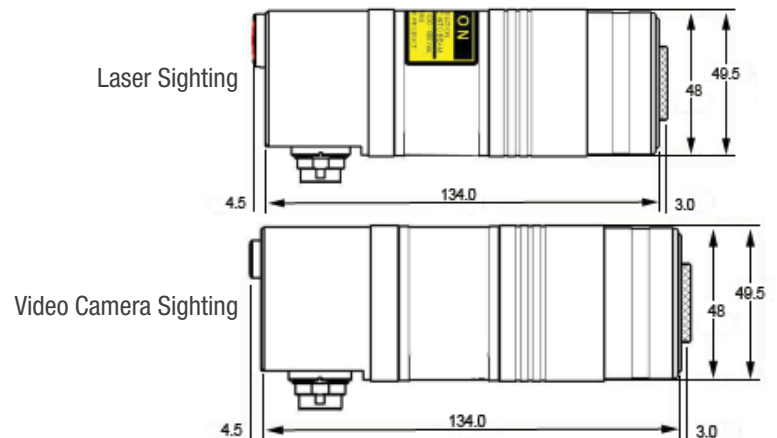
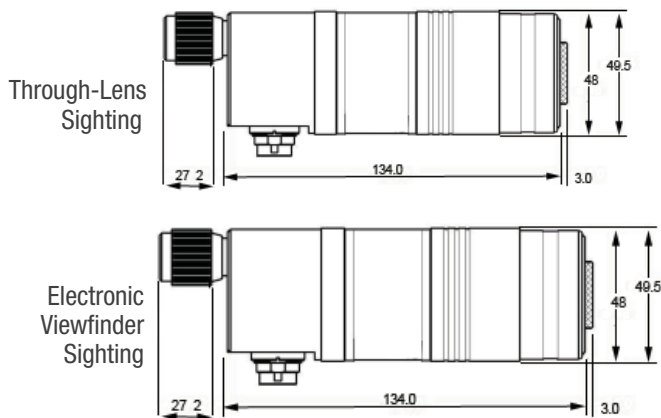


## ACCESSORIES PSC-SR56N Series

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 otherwise. Pictured below is a sampling.

		
STAINLESS STEEL COOLING JACKET WITH INTEGRATED AIR PURGE PSC-3310A23056	STAINLESS STEEL COOLING JACKET WITH ADJUSTABLE AIMING FLANGE PSC-3310A24020	STAINLESS STEEL BALL AND SOCKET AIMING FLANGE 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-310A11132

Product Dimensions in mm





## SPECIFICATIONS **PSC-SR56N Series**

Temperature Range	500° to 1200°C	600° to 1400°C	700° to 1800°C	800° to 2500°C	900° to 3000°C
	932° to 2192°F	1112° to 2552°F	1292° to 3272°F	1472° to 4532°F	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-SR56NT: Through Lens Sighting PSC-SR56NL: Laser Aiming Light, 630...680 nm, Class II, <1 mW PSC-SR56NV: Video Camera, Composite Video Signal NTSC (M), 60Hz or PAL (B), 50Hz PSC-SR56NEV: Electronic Viewfinder				
Choice of Optics Types	250mm, 650mm, 2000mm, 4000mm				
Spectral Range	0.7µm to 1.1µm				
Ratio Correction K	0.800 to 1.200				
Emissivity $\epsilon$	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 $\Omega$ (Galvanically Isolated)				
Interface	RS-485 (Galvanically Isolated), Half Duplex, Max. 115 kBd, Modbus RTU				
Switching Output/Threshold	1 Opto Relay, R <sub>Load</sub> Min. 48 $\Omega$ (Galvanically Isolated) Adjustable Within Temperature Range				
Parameters	Adjustable via Interface and Software, or at Device: Ratio Correction, Emissivity, Transmissivity, Response Time, Data Storage Settings, Sub Range of Measurement Output, Switching Thresholds of Switching Output				
Power Supply	24 V DC $\pm$ 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	1 lb. 10.45 oz (750 grams)				
Housing	Stainless Steel Cylindrical Housing w/Plug Connector 140mm w/o through lens sighting or electrical viewfinder				
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-SR56N, Operation Manual, Inspection Sheet, PSCSpot Software, without connection cable (must be ordered separately)				

### PROCESS SENSORS CORPORATION

IR Temperature Sales Office: 787 Susquehanna Avenue, Franklin Lakes, NJ 07417 USA • Tel: 774-399-0461

Corporate Headquarters: 8 Technology Drive, Westborough, MA 01581 USA • Tel: 774-399-0500

www.ProcessSensorsIR.com • irtemp@kpmanalytics.com