

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	PSC-SR56NT PSC-SR56NL PSC-SR56NV PSC-SR56NEV
Spectral Response	0.7 μ m to 1.1 μ m
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	0.32 inch (8.0 mm)	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	0.24 inch (6.0 mm)	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	0.24 inch (6.0 mm)	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	0.24 inch (6.0 mm)	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	0.24 inch (6.0 mm)	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	0500° to 1200°C 932° to 2192°F	250	Choose 1 of 2 Jacket Codes:
 PSC-SR56NL Laser	0600° to 1400°C 1112° to 2552°F	650	JW = Protective Cooling Jacket With integrated Air Purge
 PSC-SR56NV Video	0700° to 1800°C 1292° to 3272°F	2000	00 = No Protective Jacket
 PSC-SR56NEV Electronic Viewfinder	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)
Example: 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.

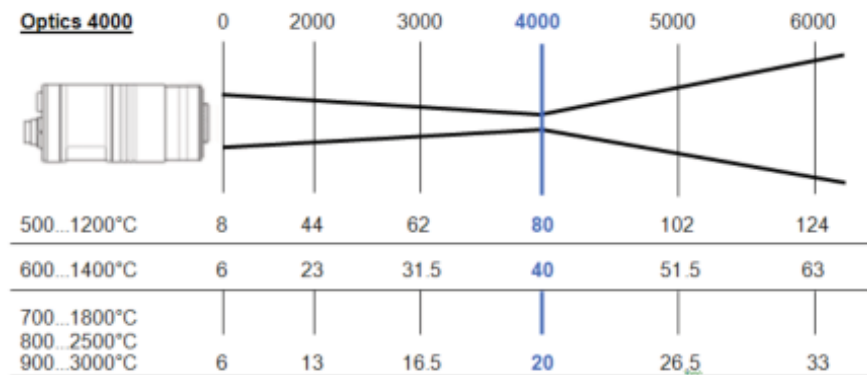
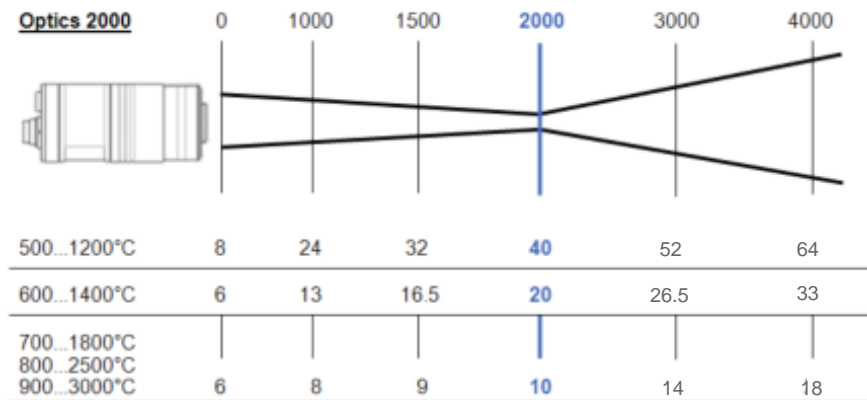
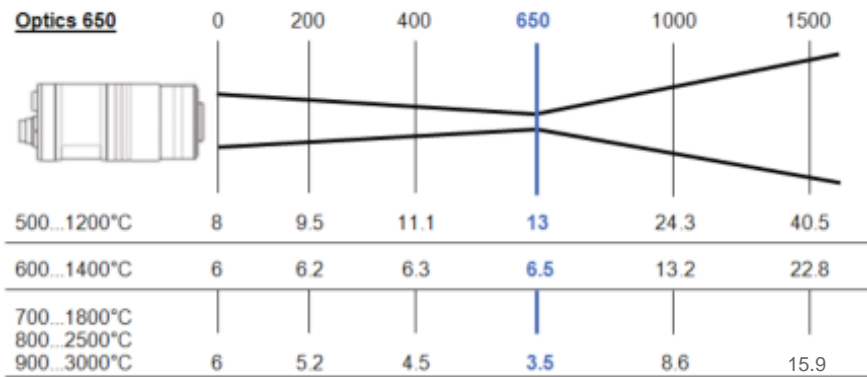
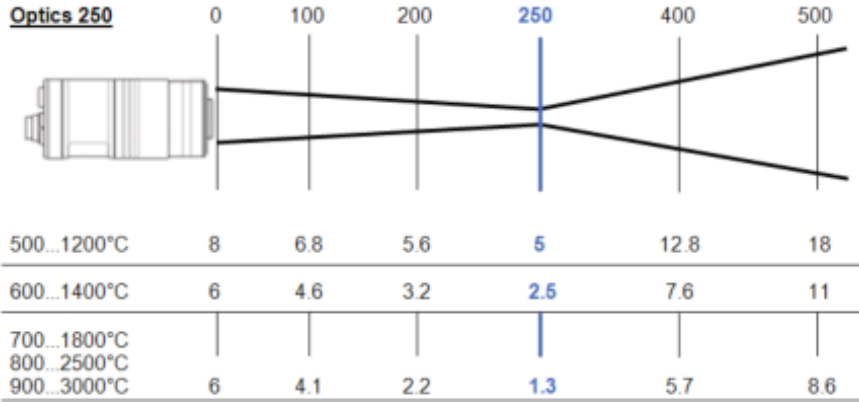
The PSC-SR56N Series is equipped with 4 to 20mA analog output and RS-485 interface, so that files can be utilized and evaluated for quality assurance purposes. The PSCSpot software allows data recording in real-time via a PC with minimum computer requirements of 500MHz clock frequency and any Windows® operating system.



FOV DIAGRAMS

PSC-SR56N Series

(All measurements in mm)

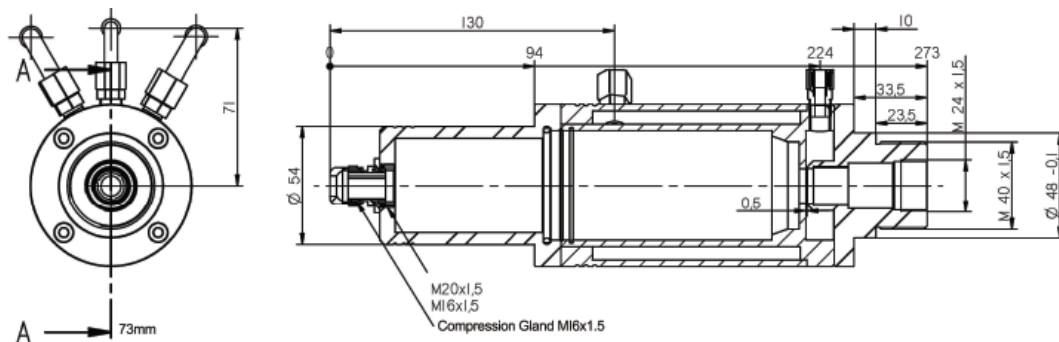


ACCESSORIES PSC-SR56N Series

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.

		
<p>STAINLESS STEEL COOLING JACKET WITH INTEGRATED AIR PURGE PSC-3310A23056</p>	<p>STAINLESS STEEL COOLING JACKET WITH ADJUSTABLE AIMING FLANGE PSC-3310A24020</p>	<p>STAINLESS STEEL BALL AND SOCKET AIMING FLANGE PSC- 3310A11132</p>
		
<p>AIR PURGE PSC-3310A22050</p>	<p>REMOVABLE SEALED WINDOW ASSEMBLY Part number dependant upon window material</p>	<p>ADJUSTABLE MOUNTING BRACKET PSC-3310A21050</p>
		
<p>DHP1040 HAND HELD PROGRAMMER PSC-331A17010</p>	<p>CONNECTION CABLE PSC-3310A1111</p>	<p>CONNECTION CABLE WITH RIGHT ANGLE CONNECTOR PSC-310A11132</p>

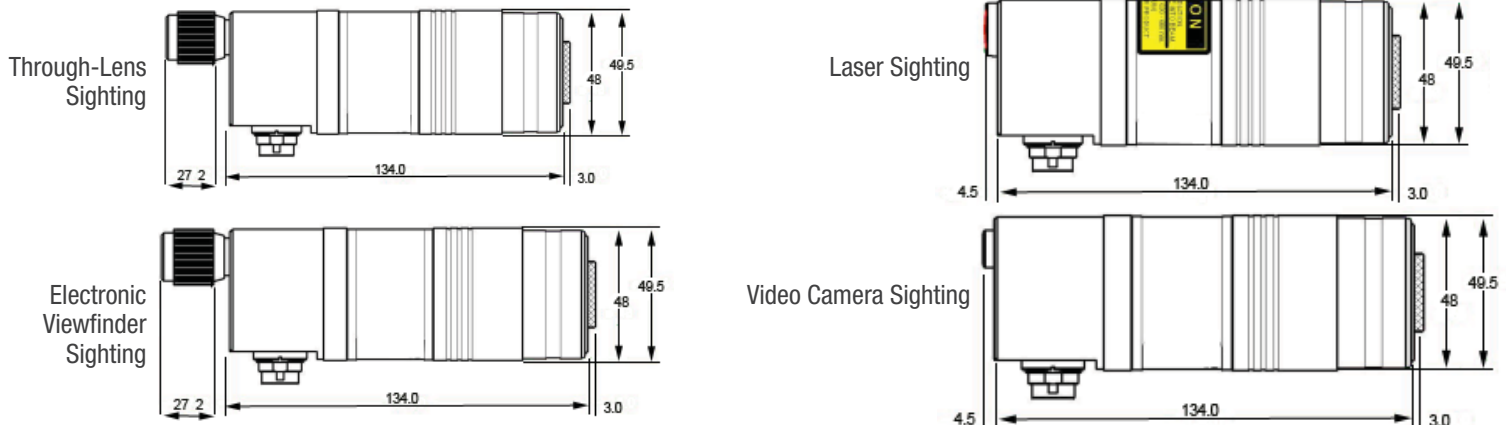
Cooling Jacket with integrated Air Purge Dimensions (in mm)



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 ε	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: 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	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)				

Product Dimensions in mm



PROCESS SENSORS CORPORATION

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PSC-G56N / PSC-S56N

1 Color Pyrometer Series

For Industrial and R&D Applications



The Stand Alone PSC-G56N and PSC-S56N One-Color Pyrometer Series provide pinpoint accuracy over an incredibly wide temperature range with customizable options. Choose from integrated laser aiming light, through lens sighting, or real-time color video camera sighting as well as an electronic viewfinder. The series offers ten distinct temperature ranges and four high-resolution, fixed focus optics choices.

These compact digital sensors are specifically designed for accuracy and reliability in harsh industrial and demanding laboratory applications. The PSC-G56N and PSC-S54N Series' 0/4 to 20mA output allows easy integration to existing measurement and control systems. RS-485 interface capability facilitates connection to a PC to allow all parameter settings to be set and adjusted using the PSCSpot software and optional RS-485 to USB connector.

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, Electronic Viewfinder Sighting
- Temperature Ranges Spanning from 200° to 3000°C
- 0/4-20mA and RS-485 Interface
- Choice of Fixed Focus Optics
- Fast Response Time from 2ms, Adjustable up to 100 seconds
- Compact, Robust Stainless Steel Housing
- RS-485 Modbus Interface Integration into Existing Data Acquisition Systems
- Rugged Hardware Designed for Harsh Industrial Continuous Operations
- Custom Optics Available

Table 1: Temperature Range and Spectral Response

Models	PSC-G56NT PSC-G56NL PSC-G56NV PSC-G56NEV	PSC-S56NT PSC-S56NL PSC-S56NV PSC-S56NEV
Spectral Response	1.5µm to 1.8µm	0.8µm to 1.1µm
Temperature Ranges	200° to 1200°C 392° to 2192°F	550° to 1500°C 1022° to 2732°F
	250° to 1500°C 482° to 2732°F	600° to 1800°C 1112° to 3272°F
	350° to 2000°C 662° to 3632°F	800° to 2500°C 1472° to 4532°F
	250° to 2500°C 482° to 4532°F	900° to 3000°C 1652° to 5432°F
	200° to 2000°C 392° to 3632°F	600° to 3000°C 1112° to 5432°F



PSC-G56NT
PSC-S56NT
THRU-LENS SIGHTING



PSC-G56NL
PSC-S56NL
LASER SIGHTING



PSC-G56NEV
PSC-S56NEV
ELECTRONIC VIEWFINDER



PSC-G56NV
PSC-S56NV
VIDEO CAMERA

Table 2: Fixed Focus Optics PSC-G56N Series

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)
200° to 1200°C 392° to 2192°F	0.39 inch (10.0 mm)	0.05 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
250° to 1500°C 482° to 2732°F	0.32 inch (8.0 mm)	0.05 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
350° to 2000°C 662° to 3632°F	0.19 inch (5.0 mm)	0.05 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
250° to 2500°C 482° to 4532°F	0.19 inch (5.0 mm)	0.05 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
200° to 2000°C 392° to 332°F	0.13 inch (3.5 mm)	0.05 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)





Table 3: Fixed Focus Optics PSC-S56N Series

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)
550° to 1500°C 1022° to 2732°F	0.39 inch (10.0 mm)	0.05 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
600° to 1800°C 1112° to 3272°F	0.32 inch (8.0 mm)	0.05 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	0.19 inch (5.0 mm)	0.05 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	0.19 inch (5.0 mm)	0.05 in. (1.3 mm)	0.13 in. (3.5 mm)	0.39 in. (10.0 mm)	0.78 in. (20.0 mm)
600° to 3000°C 1112° to 5432°F	0.13 inch (3.5 mm)	0.05 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-G56N 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-G56NT Thru-lens	0200° to 1200°C 392° to 2192°F	250	Choose 1 of 2 Jacket Codes:
	0250° to 1500°C 482° to 2732°F	650	JW = Protective Cooling Jacket With integrated Air Purge
 PSC-G56NL Laser	0350° to 2000°C 662° to 3632°F	2000	00 = No Protective Jacket
	 PSC-G56NV Video	0250° to 2500°C 482° to 4532°F	4000
 PSC-G56NEV Electronic Viewfinder		0200° to 2000°C 392° to 3632°F	
Example: Model PSC-G56NV-0250-1500-650-JW-00 includes video camera sighting, temperature range of 250 to 1500°C, 650mm fixed focus optics and protective cooling jacket with integrated air purge. (Refer to Accessories page)			

MODEL SELECTION GUIDE

PSC-S56N Series

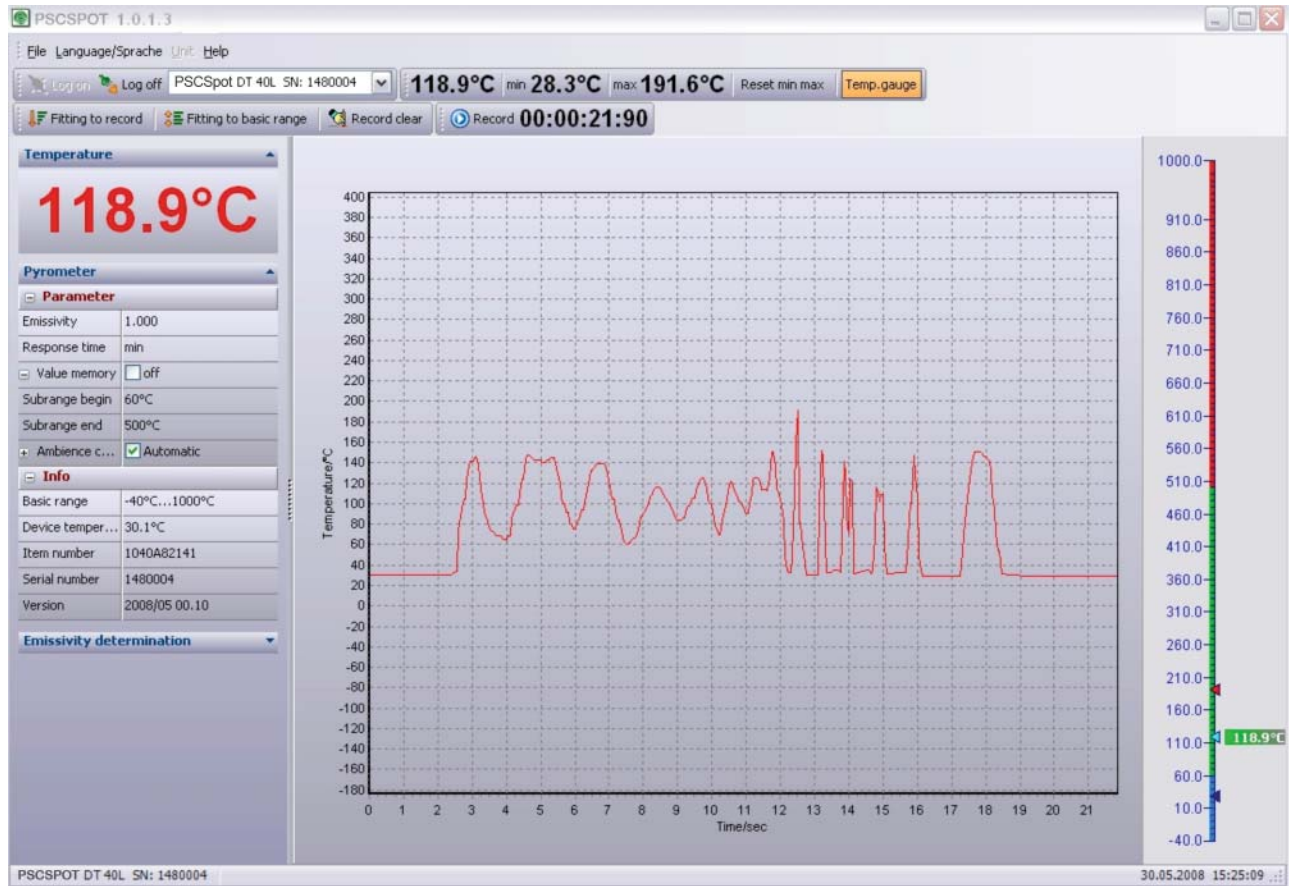
Build the model number by selecting instrument specifications required from each column.

1. Select Model Number:	2. Select Temperature Range in °C:	3. Select Fixed Focus Optics in mm:	4. Select Accessories Codes:
 PSC-S56NT Thru-lens	0550°C to 1500°C 1022° to 2732°F	250	Choose 1 of 2 Jacket Codes:
	0600° to 1800°C 1112° to 3272°F	650	JW = Protective Cooling Jacket With integrated Air Purge
 PSC-S56NL Laser	0800° to 2500°C 1472° to 4532°F	2000	00 = No Protective Jacket
	 PSC-S56NV Video	0900° to 3000°C 1652° to 5432°F	4000
 PSC-S56NEV Electronic Viewfinder		0600° to 3000°C 1112° to 5432°F	
Example: Model PSC-S56NL-0900-3000-4000-JW-00 includes laser sighting, temperature range of 900 to 3000°C, 4000mm fixed focus optics and protective cooling jacket with integrated air purge. (Refer to Accessories page)			

PSCSpot Software for PSC-G56N and PSC-S56N 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 RS-485 to USB adapter and connection cable. The PSCSpot software facilitates recording, and creation and retention of graphic or table files.

The PSC-G56N and PSC-S56N Series is equipped with 0/4 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.

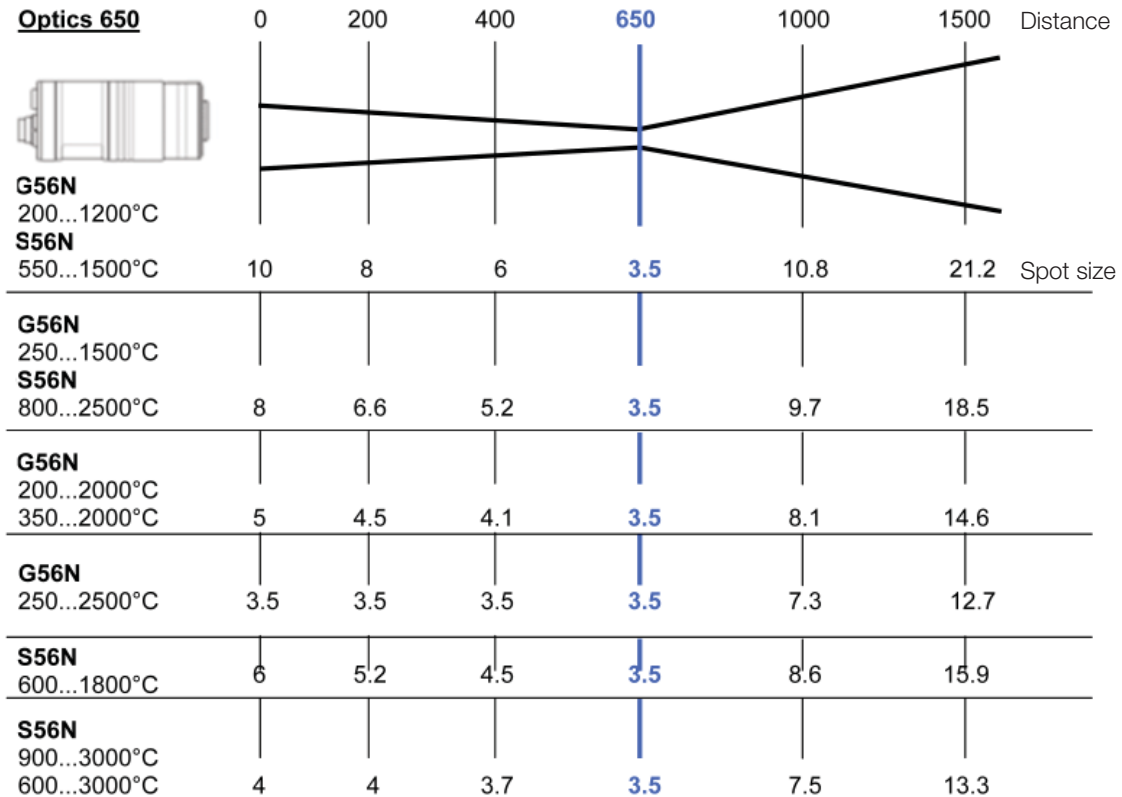
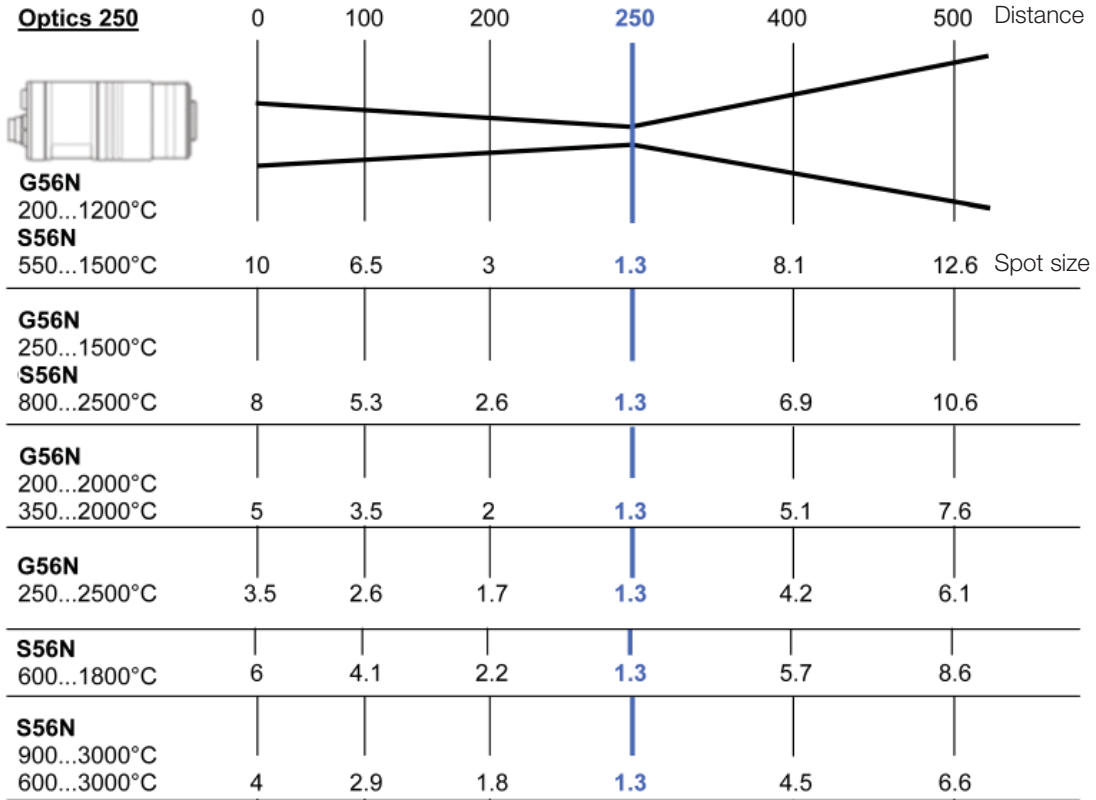


Typical Industrial Applications



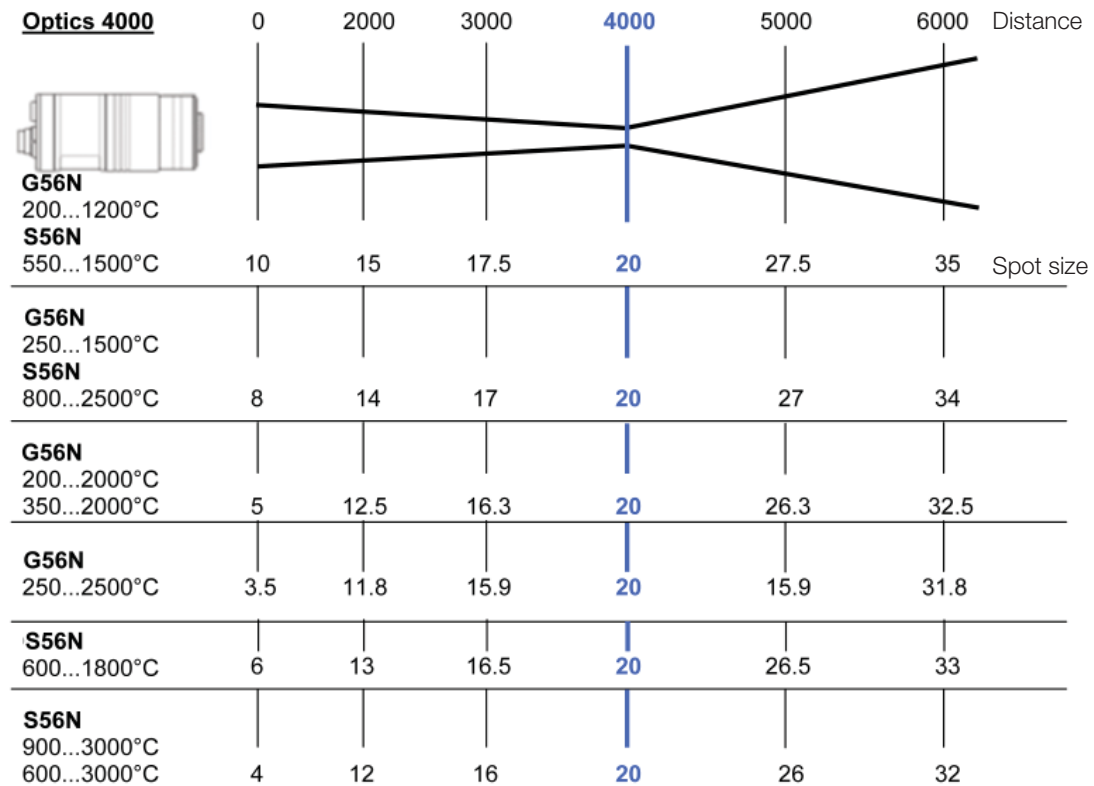
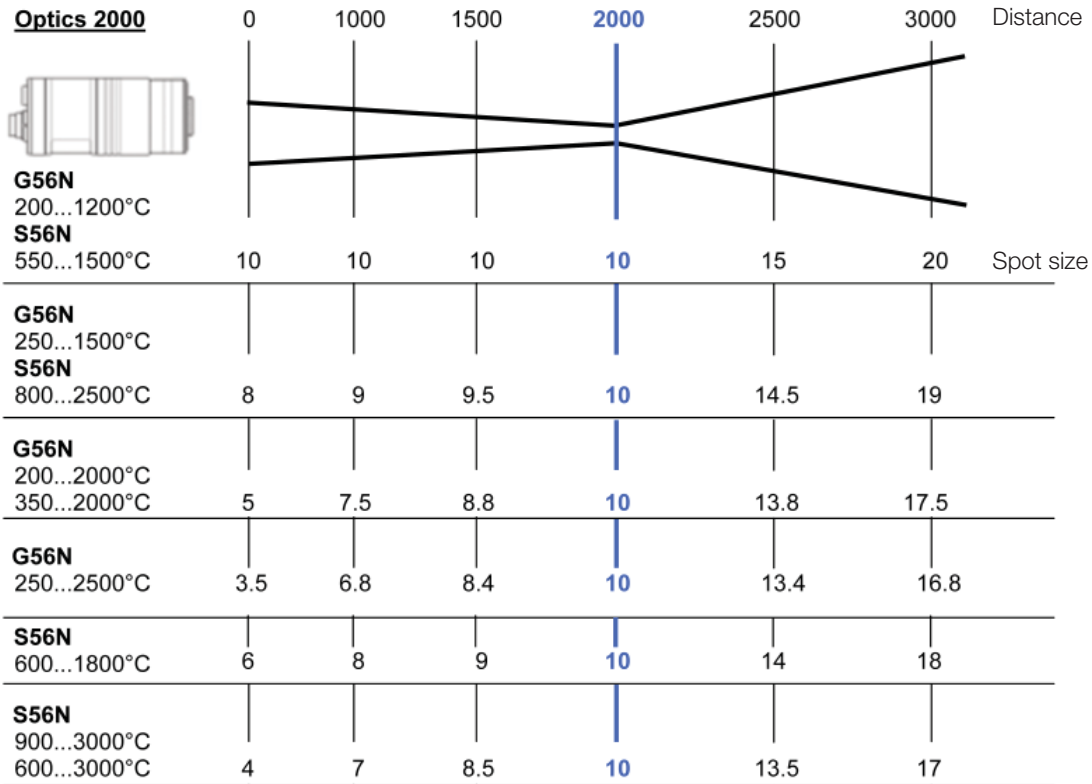
FOV DIAGRAMS

PSC-G56N and PSC-S56N Series (All measurements in mm)





FOV DIAGRAMS

PSC-G56N and PSC-S56N Series (All measurements in mm)

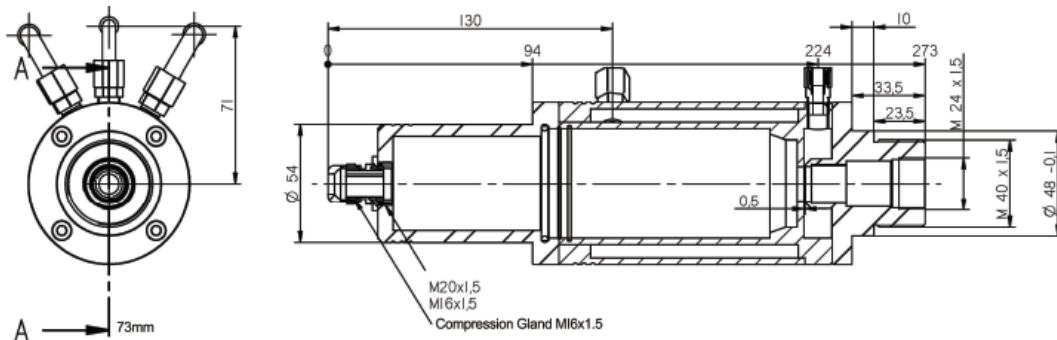


ACCESSORIES PSC-SR56N and PSC-S56N Series

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.

		
<p>STAINLESS STEEL COOLING JACKET WITH INTEGRATED AIR PURGE PSC-3310A23056</p>	<p>STAINLESS STEEL COOLING JACKET WITH ADJUSTABLE AIMING FLANGE PSC-3310A24020</p>	<p>STAINLESS STEEL BALL AND SOCKET AIMING FLANGE PSC- 3310A11132</p>
		
<p>AIR PURGE PSC-3310A22050</p>	<p>REMOVABLE SEALED WINDOW ASSEMBLY Part number dependant upon window material</p>	<p>ADJUSTABLE MOUNTING BRACKET PSC-3310A21050</p>
		
<p>DHP1040 HAND HELD PROGRAMMER PSC-331A17010</p>	<p>CONNECTION CABLE WITH STRAIGHT CONNECTOR PSC-3310A1111</p>	<p>CONNECTION CABLE WITH RIGHT ANGLE CONNECTOR PSC-310A11132</p>

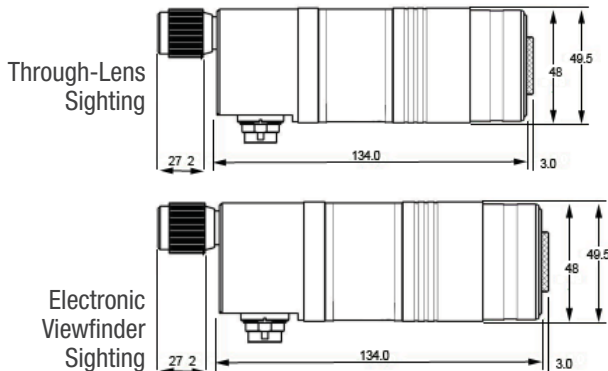
Cooling Jacket with integrated Air Purge Dimensions (in mm)



SPECIFICATIONS **PSC-G56N** and **PSC-S56N** Series

Temperature Range PSC-G56N Series	200° to 1200°C	250° to 1500°C	350° to 2000°C	250° to 2500°C	200° to 2000°C
	392° to 2192°F	482° to 2732°F	622° to 3632°F	482° to 4532°F	392° to 3632°F
Temperature Range PSC-S56N Series	550° to 1500°C	600° to 1800°C	800° to 2500°C	900° to 3000°C	600° to 3000°C
	1022° to 2732°F	1112° to 3272°F	1472° to 4532°F	1652° to 5432°F	1112° 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-G56NT and PSC-S56NT: Optical Through Lens Sighting PSC-G56NL and PSC-S56NL: Laser Aiming Light, 630...680 nm, Class II, <1 mW PSC-G56NV and PSC-S56NV: Video Camera, Composite Video Signal NTSC (M), 60Hz or PAL (B), 50Hz PSC-G56NEV and PSC-S56NEV: Electronic Viewfinder				
Choice of Optics Types	250mm, 650mm, 2000mm, 4000mm				
Spectral Range	PSC-G56N 1.5µm to 1.8µm		PSC-S56N 0.8µm to 1.1µm		
Ratio Correction K	0.800 to 1.200				
Emissivity ε	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, Temperature 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: 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	750 grams (1 lb. 10.45 oz.)				
Housing	S.S. Cylindrical Housing w/Plug Connector 140mm (w/o through lens sighting or electrical viewfinder), Ø 50mm				
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-G56N or PSC-S56N , Operation Manual, Inspection Sheet, PSC Spot Software, Without Connection Cable (Must be ordered separately)				

Product Dimensions in mm



PROCESS SENSORS CORPORATION

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