

PRO 100 and 200 Series

Multi-Wavelength Infrared Temperature Sensors



Unit shown is a PRO 200 series with Fibre Optic Sensing Head

- Wide temperature range from 150 to 2475°C
- Industry leading signal dilution capability
- Revolutionary ESP algorithms provide 'aim and read' capability for applications where single and dual wavelength sensors cannot take readings
- Views through obstructions like steam, smoke, plasma, dirty optics, dust and most common window materials
- Can be used in applications with a partially filled field of view caused by mechanical obstructions and a small or wandering target

GENERAL SPECIFICATIONS

PRO 100 SERIES – Visual Aiming, Multi-Wavelength (Mλ) Sensors						
PRO Model	Nominal Spectral Response (microns)	TEMPERATURE RANGE	FIELD OF VIEW		SIGNAL DILUTION	
			Standard or Wide Angle Optics	High Resolution Optics	Exceeds 20:1 Above	Maximum
120-05	2 μm	150 to 475 °C	D/17	n/a	190°C	1800:1
120-20	2 μm	200 to 600 °C	D/25 or D/17	D/50	275°C	2400:1
120-36	2 μm	300 to 1040 °C	D/75 or D/50	D/100	400°C	1950:1
120-40	2 μm	475 to 1475 °C	D/75	D/100	550°C	2400:1
110-10	1.5 μm	375 to 1150 °C	D/2 or D/35	D/50	500°C	6000:1
110-15	1.5 μm	400 to 1375 °C	D/2 or D/35	D/50	500°C	6000:1
110-20	1.5 μm	475 to 1750 °C	D/2 or D/35	D/50 or D/100	660°C	6000:1
110-30	1.5 μm	550 to 2200 °C	D/2 or D/35	D/50 or D/100	720°C	6000:1
110-40	1 μm	600 to 1100 °C	D/30 or D/17	n/a	720°C	2350:1
110-50	1 μm	700 to 1375 °C	D/75 or D/17	n/a	860°C	2350:1
110-65	1 μm	875 to 1750 °C	D/100 or D/25	D/150	1040°C	2350:1
110-70	1 μm	925 to 2475 °C	D/100 or D/25	D/150	1300°C	2350:1

PRO 200 SERIES – Fibre Optic, Multi-Wavelength (Mλ) Sensors								
PRO Model	Nominal Spectral Response (microns)	TEMPERATURE RANGE	FIELD OF VIEW		FIBRE CABLE		SIGNAL DILUTION	
			Standard Resolution Optics	High Resolution Optics	Max. Length	Type of Cable	Exceeds 20:1 Above	Maximum
220-20	2 μm	200 to 600 °C	D/2 or D/16	n/a	90 cm	Quartz	240°C	550:1
220-25	2 μm	260 to 600 °C	D/2 or D/12	D/35	1.2 m	Quartz	275°C	1500:1
220-36	2 μm	300 to 1040 °C	D/2 or D/35	D/50	1.8 m	Quartz	400°C	1500:1
220-40	2 μm	475 to 1475 °C	D/16 or D/50	D/100	1.8 m	Quartz	550°C	1500:1
210-10	1.5 μm	375 to 1150 °C	D/2 or D/12	D/35	9.1 m	Quartz	500°C	6000:1
210-15	1.5 μm	400 to 1375 °C	D/.75 or D/12	D/35	9.1 m	Glass	540°C	6000:1
210-20	1.5 μm	475 to 1750 °C	D/.75 or D/12	D/50	9.1 m	Glass	660°C	6000:1
210-30	1.5 μm	550 to 2200 °C	D/.75 or D/12	D/50	9.1 m	Glass	720°C	6000:1
210-40	1 μm	600 to 1100 °C	D/.75 or D/16	n/a	6 m	Glass	720°C	2250:1
210-50	1 μm	700 to 1375 °C	D/.75 or D/35	D/50	9.1 m	Glass	860°C	2250:1
210-65	1 μm	875 to 1750 °C	D/.75 or D/50	D/100	9.1 m	Glass	1040°C	2250:1
210-70	1 μm	925 to 2475 °C	D/.75 or D/50	D/100	9.1 m	Glass	1300°C	2250:1

(i) FOV Selection: d=D/F, where d=Measured Target Diameter, D=Working Distance, F=Optical Resolution Factor
(ii) Fibre Cables are available in the following lengths: 91cm, 1.8m, 3m, 6m, 7.6m, 9.1m

The PRO 100 and 200 series multi-wavelength infrared temperature sensors are designed to accurately measure non-greybody materials in applications where single and dual wavelength sensors cannot. These include aluminium extrusion and molten aluminium streams, iron and steel streams, galvanised and stainless steel production.

These sensor's industry leading signal dilution factor allows them to measure very small and wandering targets, and tolerate misalignment, dirty lenses and partially filled fields of view, while still giving accurate readings.

Their intuitive text based configuration system makes the PRO series simple and quick to programme for even the most demanding application, while advanced ESP algorithms and signal processing ensure that these sensors always provide valid readings, or hold the last valid reading until another can be taken. This further removes errors from poor alignment and transient process conditions that could cause unnecessary errors in other systems.

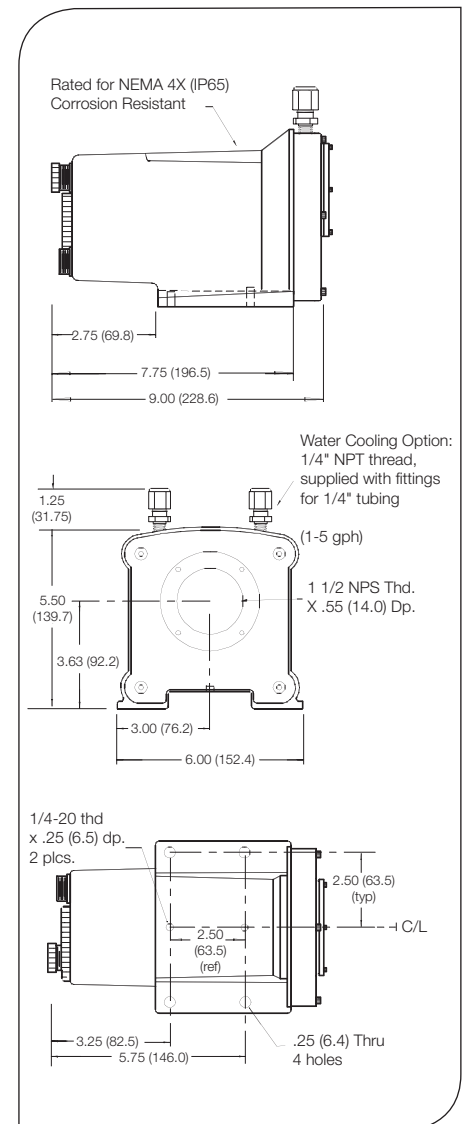
Fibre-optic and traditional camera style versions of the PRO multi-wavelength sensors are available to suit all mounting conditions. Either laser or through lens sighting is available on all camera style models. Aim light sighting is available on all fibre-optic style modules. All come with bi-directional RS-485 communications for configuration and measurement readings.

GENERAL SPECIFICATIONS - Continued

Accuracy	0.25% to 0.5% of Reading or 2°C (varies by model)
Repeatability	Better than 1°C
Response Time	
Constant Target:	50 ms (sensor); 100 ms (interface module)
Intermittent Target:	200 ms (98% of Reading - 4τ)
CE Certification	EMI / RFI for heavy industry; LVD (Low Voltage Directive)
Ambient Temperature Limits	
Sensor Head:	-17 to 60°C
Interface Module:	50°C
Sensor w/ Water Cooling:	95-175°C (varies with water rate and temperature)
Fibre Optic Assembly:	200°C
Input Power	
Stand-alone Sensor:	24 V DC (300 mA);
With Interface Module:	90-260 V AC, 50/60 Hz
Input and Output Signals	
Stand-alone Configuration:	
Analogue Mode	<ul style="list-style-type: none"> • 4-20 mA or 0-20 mA (1000 Ω max. impedance. Shunt resistors produce voltage outputs.) • TTL Alarm with 2 mA at 5 V DC rating • External Peak Hold Reset • Select parameter, scale, & range of output & alarm
Digital Mode	<ul style="list-style-type: none"> • Bi-directional RS485 communications • RS232 with a converter • Used to connect to the Interface Module
System Configuration with Interface Module:	
2 Programmable Analogue Outputs	<ul style="list-style-type: none"> • 4-20 mA or 0-20 mA (1000 Ω max. impedance. Shunt resistors produce voltage outputs.) • Select parameter, scale, and range
3 Analogue Inputs	<ul style="list-style-type: none"> • Sample and Hold • External Peak Hold Reset • Analogue input for remote parameter adjustments
Bi-directional Serial Communications	<ul style="list-style-type: none"> • RS232 and RS485 simultaneously
2 Programmable Relay Alarms	<ul style="list-style-type: none"> • Form C (4 A at 250 V AC or 2.5 A at 30 V DC) • Select alarm parameter and set point • TTL rating is 2 mA at 5 V DC • Select alarm parameter and set point
1 Programmable TTL Alarm	<ul style="list-style-type: none"> • Filtered Temperature, Unfiltered Temperature, Ambient Temperature, Signal Dilution, and Signal Strength / Emissivity
Programmable Output and Alarm Parameters	Filtered Temperature, Unfiltered Temperature, Ambient Temperature, Signal Dilution, and Signal Strength / Emissivity
Signal Conditioning	Average Time, Peak Hold Delay, Temperature Scale (°F/°C) Adjustment, ESP Offset, ESP Selection
Status Messages	Out of Range, Ambient Warning, Check Sensor Cable, and Aiming System Status (optional)
Diagnostics	System Test, Analogue Output Tests, Alarm Tests, Menu Access/Security
Enclosure Rating	
Sensor:	IP65 - Coated Aluminium Casting
Interface Module:	IP52 front panel - Anodised Aluminium Housing
Dimensions	
Sensor:	229 mm x 140 mm x 152 mm
Interface Module:	178 mm x 96 mm x 96 mm
Weight	
Sensor:	3.4 kg
Interface Module:	1 kg

PRO SERIES OPTIONS AND ACCESSORIES

IM	Programmable Interface Module (see above)
25/25S/25RS	PID Controllers with Power Supply, 4-20 mA Output, and Signal Conditioning Options
PS	Power Supply for Stand Alone Sensors 24 V DC (700 mA) to 90-260 V AC (50/60 Hz)
AP	Air Purge
WCAP	Water Cooling Air Purge
SB	Swivel Bracket
LA	Laser Aiming (For PRO 100 Series only)
AL	Aim Light (For PRO 200 Series only)
Cable Sheathings	Armour Guard (AG), Stainless Steel Braid (SSB), Gooseneck (GN) (for PRO 200 Series only)



Calex Electronics Limited

PO Box 2, Leighton Buzzard, Bedfordshire, England LU7 4AZ
 Tel: +44 (0)1525 373178/853800 Fax: +44 (0)1525 851319 Lo-call Tel: 0845 3108053
 E-mail: info@calex.co.uk Online: http://www.calex.co.uk

Issue B - Jan 10
 Specifications subject to change without notice