PRO 80 and 90 Series
Dual-Wavelength Infrared Temperature Sensors

Unit shown with optional Air Purge
and Programmable Interface Module

- Wide temperature range from 150°C to 2475°C
- A signal dilution capability as much as 50 times greater than other two-colour technology allows the PRO series sensor to view smaller hot spots, through greater obstructions, with better accuracy.
- Views through optical obstructions such as scale, heavy steam, smoke, water spray, dirty optics, and mechanical obstruction.
- ESP Filtering provides advanced emissivity and signal dilution based signal conditioning and qualification.
- Single-detector design assures long-term calibration stability.
- Self-aligning to the hottest temperature viewed.
- Views through common window materials.

GENERAL SPECIFICATIONS

The PRO 80 and 90 series dual-wavelength infrared thermometers have been designed specifically with hostile operating conditions and low and variable target emissivity in mind. They are highly recommended for the measurement of low- or variable-emissivity materials, for measurement through optical obstructions, and for measurement of small or wandering targets.

Able to measure temperature, emissivity, and signal dilution, dual-wavelength sensors are available in a camera style or fibre optic configuration. The fibre optic sensors are available with a wide range of fibre cable sheathings ranging from the 1.3 mm diameter monofilament to the 44.5 mm diameter Armour Guard system.
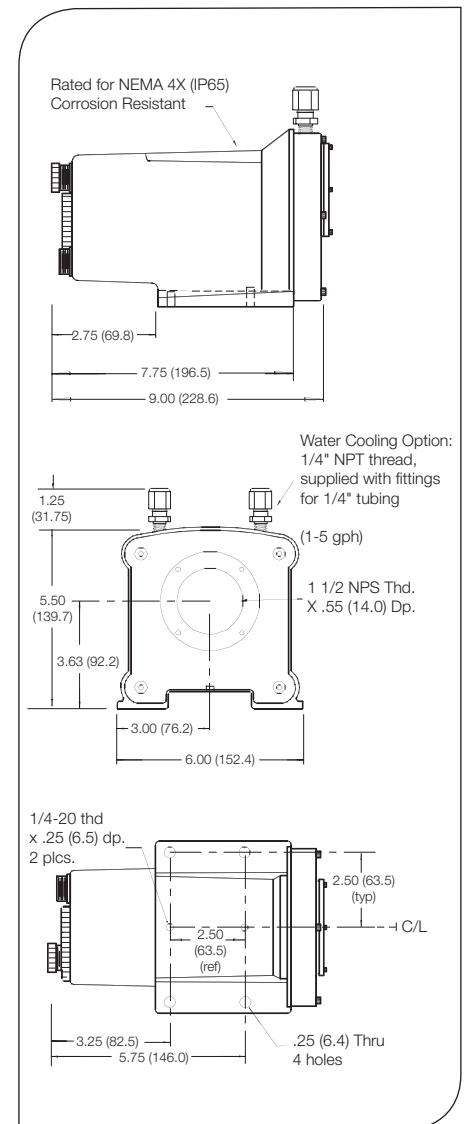
Perhaps the most significant technical features associated with the PRO series dual-wavelength sensors are the industry-leading signal dilution capability and the ability to measure and utilise emissivity and signal dilution values through advanced signal conditioning. These features allow the PRO sensors to provide unequalled performance and functionality over a broad range of applications.

PRO 80 SERIES – Visual Aiming, Dual-Wavelength (2λ) 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
82-05	2 µm	150 to 475 °C	D/17	n/a	190°C	1800:1
82-20	2 µm	200 to 600 °C	D/25 or D/17	D/50	220°C	2400:1
82-36	2 µm	300 to 1040 °C	D/25 or D/50	D/75	400°C	1950:1
82-40	2 µm	475 to 1475 °C	D/25, D/50 or D/75	D/100	525°C	2400:1
81-10	1.5 µm	375 to 1150 °C	D/50	D/75	500°C	6000:1
81-15	1.5 µm	400 to 1375 °C	D/100 or D/25	D/150	540°C	6000:1
81-20	1.5 µm	475 to 1750 °C	D/100 or D/25	D/120	660°C	6000:1
81-30	1.5 µm	550 to 2200 °C	D/100 or D/25	D/120	720°C	6000:1
81-40	1 µm	600 to 1100 °C	D/30 or D/17	n/a	700°C	2350:1
81-50	1 µm	700 to 1375 °C	D/75 or D/17	n/a	815°C	2350:1
81-65	1 µm	875 to 1750 °C	D/100 or D/25	D/150	980°C	2350:1
81-70	1 µm	925 to 2475 °C	D/100 or D/25	D/150	1250°C	2350:1

PRO 90 SERIES – Fibre Optic, Dual-Wavelength (2λ) 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
92-20	2 µm	200 to 600 °C	D/2 or D/16	n/a	90 cm	Quartz	275°C	550:1
92-25	2 µm	260 to 600 °C	D/2 or D/16	D/35	1.2 m	Quartz	275°C	1500:1
92-36	2 µm	300 to 1040 °C	D/2 or D/35	D/50	1.8 m	Quartz	400°C	1500:1
92-40	2 µm	475 to 1475 °C	D/16 or D/50	D/100	1.8 m	Quartz	550°C	1500:1
91-10	1.5 µm	375 to 1150 °C	D/2 or D/35	D/50	9.1 m	Quartz	500°C	6000:1
91-15	1.5 µm	400 to 1375 °C	D/2 or D/35	D/50	9.1 m	Quartz	500°C	6000:1
91-20	1.5 µm	475 to 1750 °C	D/2 or D/35	D/50 or D/100	9.1 m	Quartz	660°C	6000:1
91-30	1.5 µm	550 to 2200 °C	D/2 or D/35	D/50 or D/100	9.1 m	Quartz	720°C	6000:1
91-40	1 µm	600 to 1100 °C	D/.75 or D/16	n/a	6 m	Glass	700°C	2250:1
91-50	1 µm	700 to 1375 °C	D/.75 or D/35	D/50	9.1 m	Glass	815°C	2250:1
91-65	1 µm	875 to 1750 °C	D/.75 or D/50	D/100	9.1 m	Glass	980°C	2250:1
91-70	1 µm	925 to 2475 °C	D/.75 or D/50	D/100	9.1 m	Glass	1250°C	2250:1

(i) Temperature Range Selection: The temperature units (°F/°C) can be selected in the sensor or display menu.
(ii) FOV Selection: d=D/F, where d=Measured Target Diameter, D=Working Distance, F=Optical Resolution Factor
(iii) Fibre Cables are available in the following lengths: 91cm, 1.8m, 3m, 6m, 7.6m, 9.1m

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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:	PRO 81 & 91: -17 to 60°C
	PRO 82 & 92: -17 to 50°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	• 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	• Bi-directional RS485 communications
	• RS232 with a converter
	• Used to connect to the Interface Module
System Configuration with Interface Module:	
2 Programmable Analogue Outputs	• 4-20 mA or 0-20 mA (1000 Ω max. impedance. Shunt resistors produce voltage outputs.)
	• Select parameter, scale, and range
3 Analogue Inputs	• Sample and Hold
	• External Peak Hold Reset
	• Analogue input for remote parameter adjustments
Bi-directional Serial Communications	• RS232 and RS485 simultaneously
2 Programmable Relay Alarms	• Form C (4 A at 250 V AC or 2.5 A at 30 V DC)
	• Select alarm parameter and set point
1 Programmable TTL Alarm	• TTL rating is 2 mA at 5 V DC
	• Select alarm parameter and set point
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, Slope Adjustment
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 80 Series only)
AL	Aim Light (For PRO 90 Series only)
Cable Sheathings	Armour Guard (AG), Stainless Steel Braid (SSB), Gooseneck (GN) (For PRO 90 Series only)

Rated for NEMA 4X (IP65) Corrosion Resistant

2.75 (69.8)
7.75 (196.5)
9.00 (228.6)

Water Cooling Option: 1/4" NPT thread, supplied with fittings for 1/4" tubing
(1-5 gph)

1.25 (31.75)
5.50 (139.7)
3.63 (92.2)
3.00 (76.2)
6.00 (152.4)

1 1/2 NPS Thd. X .55 (14.0) Dp.

1/4-20 thd x .25 (6.5) dp. 2 plcs.
2.50 (63.5) (typ)
C/L
2.50 (63.5) (ref)
3.25 (82.5)
5.75 (146.0)
.25 (6.4) Thru 4 holes