

PRO 80 and 90 Series

VISUAL AND FIBER OPTIC DUAL-WAVELENGTH NONCONTACT TEMPERATURE SYSTEMS

SENSOR SELECTION GUIDELINES

Dual-wavelength sensors tend to measure the hottest temperature viewed within the target area, and they provide automatic compensation for emissivity variation for greybody materials. With a unique single-detector design and the industry's highest signal dilution factor, Williamson's dual-wavelength sensors outperform all other ratio sensors when demanding application issues exist.

Typical demanding application issues include:

- Low or varying emissivity
- Intervening media such as dirty optics, scale, steam, dust, or water spray
- A partially filled field-of-view as a result of an obstruction or a small or wandering target

TEMPERATURE RANGE AND FIELD OF VIEW SPECIFICATIONS

<i>PRO 80 SERIES – Visual Aiming, Dual-Wavelength (2λ) Sensors</i>							
PRO Model	Nominal Spectral Response (microns)	TEMPERATURE RANGE		FIELD OF VIEW		SIGNAL DILUTION	
		Fahrenheit	Celsius	Standard or Large Resolution Optics	High Resolution Optics	Exceeds 20:1 Above	Top End
82-03	2 μm	200 - 600 °F	95 - 315 °C	D/17	n/a	375°F / 190°C	500:1
82-20	2 μm	400 - 1100 °F	200 - 600 °C	D/17	D/50	425°F / 220°C	2000:1
82-26	2 μm	500 - 1200 °F	260 - 650 °C	D/17	D/50	425°F / 220°C	2200:1
82-40	2 μm	900 - 2700 °F	475 - 1475 °C	D/75	D/100	975°F / 525°C	2000:1
81-10	1.5 μm	700 - 2100 °F	375 - 1150 °C	D/75 or D/17	n/a	925°F / 500°C	6000:1
81-15	1.5 μm	750 - 2500 °F	400 - 1375 °C	D/75 or D/17	n/a	1000°F / 540°C	6000:1
81-20	1.5 μm	900 - 3200 °F	475 - 1750 °C	D/100 or D/17	D/120	1225°F / 660°C	6000:1
81-30	1.5 μm	1000 - 4000 °F	550 - 2200 °C	D/100 or D/17	D/120	1325°F / 720°C	6000:1
81-40	1 μm	1100 - 2000 °F	600 - 1100 °C	D/30 or D/17	n/a	1300°F / 700°C	2250:1
81-50	1 μm	1300 - 2500 °F	700 - 1375 °C	D/75 or D/17	n/a	1500°F / 815°C	2250:1
81-65	1 μm	1600 - 3200 °F	875 - 1750 °C	D/100 or D/25	D/150	1800°F / 980°C	2250:1
81-70	1 μm	1700 - 4500 F	925 - 2475 °C	D/100 or D/25	D/150	2275°F / 1250°C	2250:1

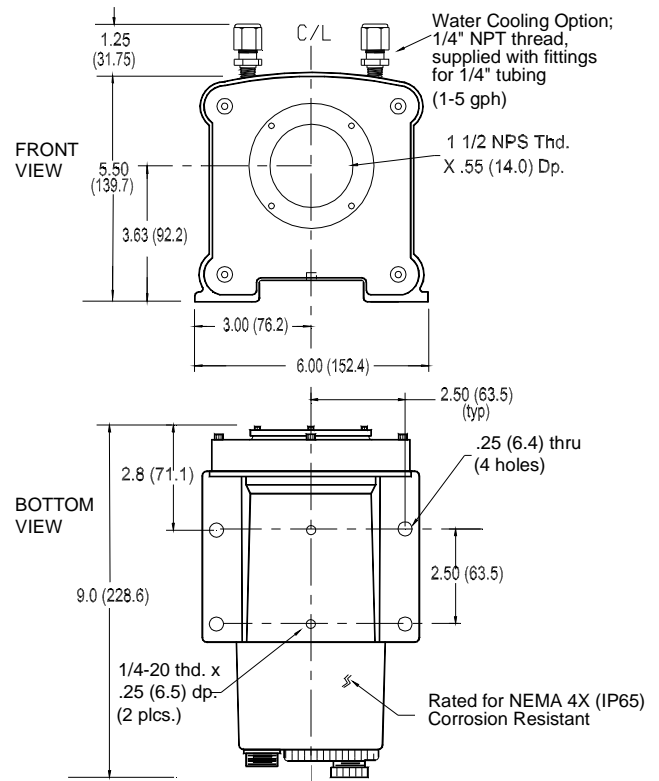
<i>PRO 90 SERIES – Fiber Optic, Dual-Wavelength (2λ) Sensors</i>										
PRO Model	Nominal Spectral Response (microns)	TEMPERATURE RANGE		FIELD OF VIEW			FIBER CABLE		SIGNAL DILUTION	
		Fahrenheit	Celsius	Standard Resolution Optics (2)	High Res. I Optics	High Res. II Optics	Max. Length	Type of Cable	Temperature Where Exceeds 20:1	Top End
92-20	2 μm	400 - 1100 °F	200 - 600 °C	D/2 or D/12	n/a	D/50	3ft / 91cm	Quartz	525°F / 275°C	2000:1
92-25	2 μm	500 - 1100 °F	260 - 600 °C	D/2 or D/16	D/35	D/50	3ft / 91cm	Quartz	525°F / 275°C	2000:1
92-40	2 μm	900 - 2700 °F	475 - 1475 °C	D/2 or D/16	D/50	D/75	6ft / 1.8m	Quartz	1025°F / 550°C	2000:1
91-10	1.5 μm	700 - 2100 °F	375 - 1150 °C	D/2 or D/12	D/35	D/50	30ft / 9.1m	Quartz	925°F / 500°C	6000:1
91-15	1.5 μm	750 - 2500 °F	400 - 1375 °C	D/.75 or D/12	D/35	D/50	30ft / 9.1m	Quartz	1000°F / 540°C	6000:1
91-20	1.5 μm	900 - 3200 °F	475 - 1750 °C	D/.75 or D/12	D/50	D/75	30ft / 9.1m	Quartz	1225°F / 660°C	6000:1
91-30	1.5 μm	1000 - 4000 °F	550 - 2200 °C	D/.75 or D/12	D/50	D/75	30ft / 9.1m	Quartz	1325°F / 720°C	6000:1
91-40	1 μm	1100 - 2000 °F	600 - 1100 °C	D/.75 or D/12	n/a	D/50	20ft / 6m	Glass	1300°F / 700°C	2250:1
91-50	1 μm	1300 - 2500 °F	700 - 1375 °C	D/.75 or D/12	D/35	D/50	25ft / 7.6m	Glass	1500°F / 815°C	2250:1
91-65	1 μm	1600 - 3200 °F	875 - 1750 °C	D/.75 or D/16	D/50	D/75	30ft / 9.1m	Glass	1800°F / 980°C	2250:1
91-70	1 μm	1700 - 4500 F	925 - 2475 °C	D/.75 or D/16	D/50	D/75	30ft / 9.1m	Glass	2275°F / 1250°C	2250:1

- **Temperature Range Selection:** The temperature units (°F/°C) can be selected in the sensor or display menu.
- **FOV Selection:** $d=D/F$, where d =Measured Target Diameter, D =Working Distance, F =Optical Resolution Factor
- **Fiber Cables** are available in the following lengths: 3ft (91cm), 6ft (1.8m), 10ft (3m), 20ft (6m), 25ft (7.6m), 30ft (9.1m)
- Models above show selected capabilities. Consult Williamson for **custom temperature ranges, wavelengths, and optics.**
- Two year **warranty** on all sensors.

PRO 80 AND 90 SPECIFICATIONS				
ACCURACY	0.25% of Reading or 2°C			
REPEATABILITY	Better than 1°C			
RESPONSE TIME	Constant Target: 50ms Initial Measurement: 400ms			
CE CERTIFICATION	EMI / RFI for heavy industry; LVD (Low Voltage Directive)			
AMBIENT TEMPERATURE LIMITS	Sensor Head: -40 to 140°F (-40 to 60°C), Models 82-03, 82-40 & 92-40: 32 to 120°F (-17 to 50°C) Interface Module: 0 to 120°F (50°C) Sensor w/ Water Cooling: 200-350°F (95-175°C) (this varies with water rate and temperature) Fiber Optic Assembly: 400°F (200°C)			
INPUT POWER	Stand-alone Sensor: 24Vdc (300mA); With Interface Module: 90-260Vac, 50/60Hz			
INPUT AND OUTPUT SIGNALS	Stand-Alone Configuration: A field-accessible jumper is used to select analog or digital mode.			
	<table border="0"> <tr> <td style="vertical-align: top;"> Analog Mode <ul style="list-style-type: none"> • 4-20 mA or 0-20 mA (1000ohm max. impedance. Shunt resistors produce voltage outputs.) • TTL Alarm with 2mA at 5Vdc rating • External Peak Hold Reset • Select parameter, scale, & range of output & alarm </td> <td style="vertical-align: top;"> Digital Mode <ul style="list-style-type: none"> • Bi-directional RS485 communications • RS232 with a converter • Used to connect to the Interface Module </td> </tr> </table>	Analog Mode <ul style="list-style-type: none"> • 4-20 mA or 0-20 mA (1000ohm max. impedance. Shunt resistors produce voltage outputs.) • TTL Alarm with 2mA at 5Vdc 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 	
	Analog Mode <ul style="list-style-type: none"> • 4-20 mA or 0-20 mA (1000ohm max. impedance. Shunt resistors produce voltage outputs.) • TTL Alarm with 2mA at 5Vdc 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 		
<table border="0"> <tr> <td colspan="2">System Configuration with Interface Module</td> </tr> <tr> <td style="vertical-align: top;"> 2 Programmable Analog Outputs <ul style="list-style-type: none"> • 4-20 mA or 0-20 mA (1000ohm max. impedance. Shunt resistors produce voltage outputs.) • Select parameter, scale, and range 3 Analog Inputs <ul style="list-style-type: none"> • Sample and Hold • External Peak Hold Reset • Analog input for remote parameter adjustments </td> <td style="vertical-align: top;"> 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 (4A at 250Vac or 2.5A at 30Vdc) • Select alarm parameter and set point 1 Programmable TTL Alarm <ul style="list-style-type: none"> • TTL rating is 2 ma at 5Vdc • Select alarm parameter and set point </td> </tr> </table>	System Configuration with Interface Module		2 Programmable Analog Outputs <ul style="list-style-type: none"> • 4-20 mA or 0-20 mA (1000ohm max. impedance. Shunt resistors produce voltage outputs.) • Select parameter, scale, and range 3 Analog Inputs <ul style="list-style-type: none"> • Sample and Hold • External Peak Hold Reset • Analog 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 (4A at 250Vac or 2.5A at 30Vdc) • Select alarm parameter and set point 1 Programmable TTL Alarm <ul style="list-style-type: none"> • TTL rating is 2 ma at 5Vdc • Select alarm parameter and set point
System Configuration with Interface Module				
2 Programmable Analog Outputs <ul style="list-style-type: none"> • 4-20 mA or 0-20 mA (1000ohm max. impedance. Shunt resistors produce voltage outputs.) • Select parameter, scale, and range 3 Analog Inputs <ul style="list-style-type: none"> • Sample and Hold • External Peak Hold Reset • Analog 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 (4A at 250Vac or 2.5A at 30Vdc) • Select alarm parameter and set point 1 Programmable TTL Alarm <ul style="list-style-type: none"> • TTL rating is 2 ma at 5Vdc • Select alarm parameter and set point 			

PRO SERIES MENU SYSTEM	
PROGRAMMABLE OUTPUT & 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
ESP FEATURE	ESP Filters for Signal Strength & Signal Dilution
DIAGNOSTICS	System Self Test, Analog Output Tests, Alarm Tests, Menu Access/Security
STATUS MESSAGES	Out of Range, Ambient Warning, Communications

PRO SERIES OPTIONS AND ACCESSORIES	
23	Programmable Interface Module (see above)
25 /25S /25RS	PID Controllers w/ power supply, & 4-20mA Output
PS	Power Supply 24Vdc (700mA) to 90-260Vac (50/60Hz)
AP	Air Purge
WCAP	Water Cooling Air Purge
SB	Swivel Bracket
LA, AL	Laser Aiming, Built-in Aim Light
Fiber Cable Sheathings	Teflon-Sealed Stainless Steel Monocoil Standard, Armor Guard (AG), Stainless Steel Braid (SSB), Gooseneck (GN), and Monofilament (M) options.



January 2004

WILLIAMSON CORPORATION, 70 Domino Drive, Concord, Massachusetts 01742

Tel (978) 369-9607 • Fax (978) 369-5485 • (800) 300-8367 (USA)

E-Mail sales@williamsonir.com • Web Site: www.williamsonir.com

