

DUAL WAVELENGTH TEMPERATURE SYSTEMS

For Noncontact Temperature Measurement and Control

TempMatic 8000 Series
Visual Aiming Sensors



FiberView 9000 Series
Fiber Optic Sensors



Williamson

Innovators in Noncontact Temperature Measurement

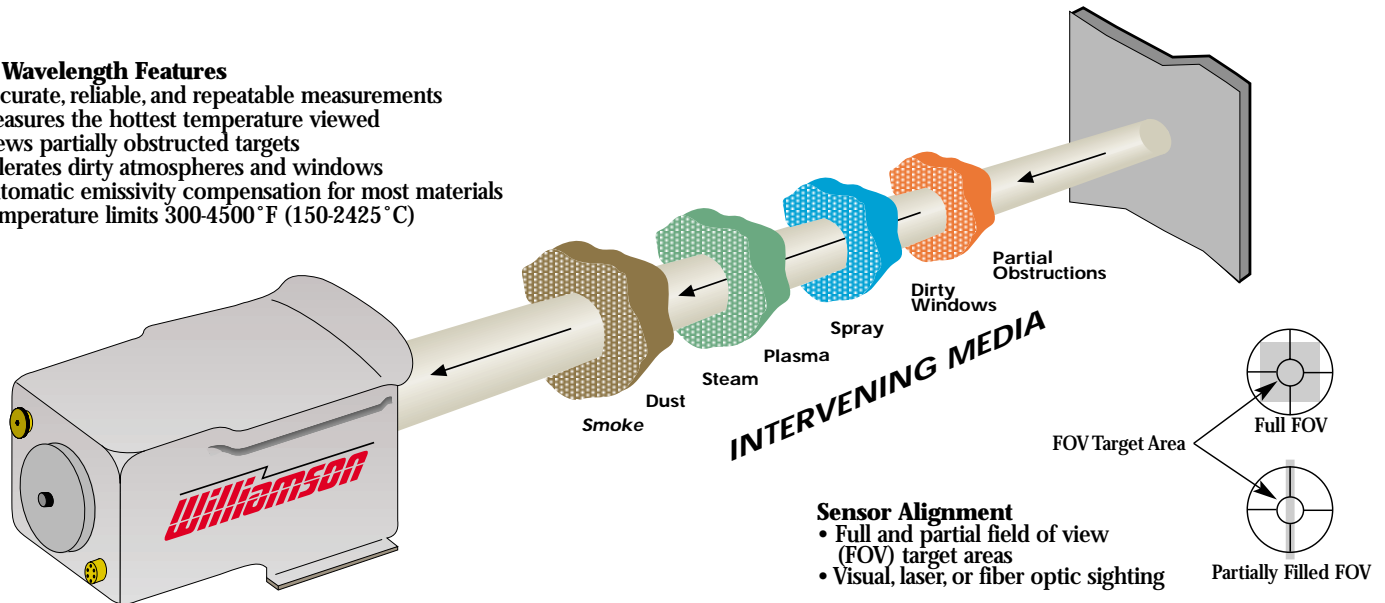
A SIMPLE SOLUTION TO COMPLEX PROBLEMS

The dual-wavelength TempMatic 8000 and FiberView 9000 Series sensors are designed to provide high performance and low maintenance operation in demanding industrial environments. These dual-wavelength sensors are commonly used in many applications where single wavelength sensors do not meet the application accuracy requirements. Typically, dual-wavelength sensors are used to:

- Measure surfaces with low or varying emissivity, like most metals.
- View through obstructions or intervening media, like induction coils or a dirty window.
- Measure small or wandering targets which do not completely fill the measured target area, like a wire or molten stream.

Dual Wavelength Features

- Accurate, reliable, and repeatable measurements
- Measures the hottest temperature viewed
- Views partially obstructed targets
- Tolerates dirty atmospheres and windows
- Automatic emissivity compensation for most materials
- Temperature limits 300-4500° F (150-2425° C)



Improving Quality and Productivity Through Temperature Measurement

UNEQUALLED PERFORMANCE FOR PROCESS MONITORING AND CONTROL

Williamson's dual wavelength sensors with their unique single detector design provide superior temperature measurement capabilities.

Higher Signal Dilution Factors of up to 1500:1—The sensors operate properly when the target energy signal is diluted up to 99%. This occurs with low emissivity surfaces, obstructions, partially filled field of views, or any combination of the above.

Selectable Infrared Wavelengths — To view through plasma, water, and thermal sprays as well as to measure target temperatures as low as 300° F (150° C).

Improved Performance Characteristics — Reduced application noise, drift free operation, and greater long term calibration stability.

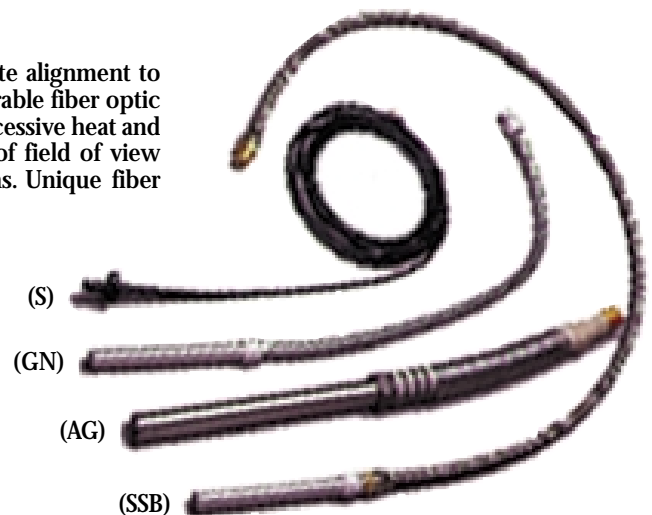
Typical Maximum Signal Dilution Factor Values	
Sensor	Dilution Ratio
8100/9100	1500:1
8200/9200	500:1
8300	100:1
Two Color Design*	25:1

*Source available upon request

PRECISE SENSOR ALIGNMENT

The TempMatic 8000 Series uses visual (SLR) or laser aiming for accurate alignment to measure very small or distant targets. The FiberView 9000 Series uses durable fiber optic cables to access targets in confined or obstructed areas and to survive excessive heat and hostile conditions. Both of these systems are available with a variety of field of view options and accessories that can be used to solve difficult applications. Unique fiber optic accessories for the 9000 Series include:

- **Sealed Fiber Cable (S)** — Industrial sheathing used to protect against dirt, oil, water, and lubricants.
- **Gooseneck System (GN)** — Semi-rigid sheathing used for quick and easy alignment for critical aiming applications.
- **ArmorGuard System (AG)** — Heavy duty, flexible stainless steel armor with two layers of insulation for maximum protection with applications in and around flames and high ambient temperatures.
- **Stainless Steel Braided System (SSB)** — Flexible and durable conduit with an inner Teflon tube that provides general purpose protection for heavy industrial applications.



SYSTEM SPECIFICATIONS AND



RUGGED SENSORS THAT ARE EASY TO INSTALL AND OPERATE

With Williamson's advanced single detector design and broad selection of sensor models and accessories, it is easy to customize each sensor for maximum performance. The sensors are available as a system configuration with a 1/4 DIN remote digital display, which provides five simultaneous output signals, or as a stand alone sensor with a 4-20 mA output. Each sensor is protected in a rugged NEMA 4 (IP65) enclosure and includes a variety of options and accessories to facilitate installation and provide added protection for tough industrial environments. A variety of remote PID control and alarm options are also available for closed loop control and turn key applications.

SPECIFICATIONS FOR THE 8000 AND 9000 SERIES

Detailed information about the sensor temperature range, spectral response, and field of view options are included on the back page.



Stand Alone Sensor Controls



Remote Digital Display

SENSOR SPECIFICATIONS

Accuracy	±0.75% full scale	
Repeatability	±0.25% full scale	
Field of View	99% of the Measured Value	
Sensor Input Power	Standard: ±15 Vdc (200mA) Optional: 24Vdc (150mA)	
Output Signal	Linear 4-20mA (0-500ohms)	
Standard Sensor Adjustments	±Surface Index Factor (SIF), Adjustable Response Time, Adjustable Peak Hold, Status Indicators	
Response Time (98% of reading, 4σ)	8100/9100	Standard: 100ms to 15sec Fast (FRT): 75ms to 5sec Extended (XRT): 100ms to 90sec
	8200/ 8300/ 9200	Standard: 200ms to 15sec Fast (FRT): 125ms to 5sec Extended (XRT): 200ms to 90sec
Ambient Temperature Range	8100/9100	32-140 °F (0-60 °C)
	8200/9200	32-120 °F (0-50 °C)
	8300	32-110 °F (0-43 °C)
	With Water Cooling: 200-350 °F (95-175 °C) max. Fiber Optic Cable: 400 °F (200 °C) max.	
CE Certification	EMI/RFI for Heavy Industry LVD - Low Voltage Directive	
Enclosure	Aluminum Casting with NEMA 4 (IP65) Rating	
Dimensions	8.50in x 5.25in x 6.00in (21.6cm x 13.3cm x 15.2cm)	
Weight	6.75 lbs (3kg)	
Warranty	2 years	

DISPLAY SPECIFICATIONS

Linear Output Signals	4-20mA, 0-100mV, 0-1V, 0-10V, & 1mV/degree (scaled to temperature)
Input Power	110Vac (50/60Hz): 90 - 130Vac (250mA), or 220Vac (50/60Hz): 180 - 260Vac (125mA)
Ambient Temperature Range	32-140 °F (0-60 °C)
Dimensions	1/4 DIN: 8.95in x 3.78in x 3.78in (22.7cm x 9.6cm x 9.6cm)
Weight	4.0 lbs (1.8kg)

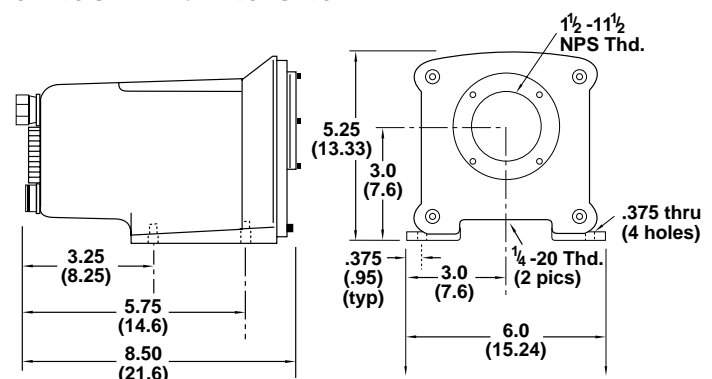
DISPLAY MODELS AND OPTIONS

20	Display, Power Supply, and Five Linear Outputs
22	Display, Power Supply, Five Linear Outputs, and Dual Set Point Alarms and Dual Logic Controller
25/25S/25RS	PID Controllers with Power Supply, 4-20mA Output, and Signal Conditioning Options.
RS232	Optional RS232 Serial Output

SENSOR OPTIONS AND ACCESSORIES

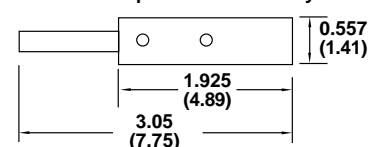
PS110/PS220	Power Supply Module for Stand Alone Sensors ±15Vdc (200mA) to 110/220Vac (50/60Hz)
AP	Air Purge
WCAP	Water Cooling Air Purge
SB	Swivel Mounting Bracket
TMB	Adjustable Tilt Mounting Bracket
LA	Laser Aiming for the 8000 and 9000 Series
PACS	Purge Air Control System
Fiber Optic Cables	3ft (91cm), 6ft (1.8m), 10ft (3m), 20ft (6m), 25ft (7.6m), 30ft (9.1m) lengths
	Available in bifurcated/multi-leg configurations Monofilament cables 0.05in (1.3mm) diameter.
AL/RAL/FPAL Cable Sheathings	Aim Light with three switch options See previous page.

SENSOR DIMENSIONS



Legend = in. (cm)

Fiber Optic Lens Assembly



SYSTEMS DESIGNED FOR DIFFICULT APPLICATIONS

Dual wavelength applications can be found throughout many industries. The following lists some typical dual wavelength applications.

- Measures low and varying emissivity surfaces in heat treating and metal processing applications.
- Measures small or unsteady targets typically found in wire processing, induction heating, welding, and molten pours.
- Views through dirty optics, oxides, scaling, water spray, and excessive airborne contamination in steel mills.
- Views through dirty optics, oil mist, and water spray in glass forming mold applications.
- Measures flames and small airborne particles in waste incinerators, recovery boilers, and flare pilots.
- Views through severe dust storms common in rotary kilns.
- Views through plasma and thermal sprays in material science, diamond deposition, and research applications.
- Used for unusual applications where single wavelength sensors have limited effectiveness.

SENSOR SELECTION GUIDE FOR THE 8000 AND 9000 SERIES

TEMPMATIC 8000 SERIES - Dual-Wavelength / Visual Aiming							
Sensor Model	Spectral Response (microns)	Temperature Range		Field Of View*			Applications
		(°F)	(°C)	Standard Resolution Optics (D/F)	Large Resolution Optics (D/F)**	High Resolution Optics (D/F)	
8100UT	1.25 & 1.50	850 - 1600	450 - 875	D/40	D/25	n/a	General Purpose, High Temperatures
8100VT	1.25 & 1.50	1000 - 1800	550 - 975	D/50	D/25	n/a	
8100LT	0.81 & 0.90	1200 - 2000	650 - 1100	D/30	D/25	n/a	
8100A	0.81 & 0.90	1500 - 2500	800 - 1375	D/70	D/25	n/a	
8100B	0.71 & 0.81	2000 - 3000	1100 - 1650	D/100	D/25	D/130	
8100C	0.71 & 0.81	2500 - 3500	1375 - 1925	D/100	D/25	D/130	
8100D	0.71 & 0.81	3000 - 4000	1650 - 2200	D/100	D/25	D/130	
8100E	0.81 & 0.90	1700 - 3000	925 - 1650	D/100	D/25	D/130	
8100F	0.81 & 0.90	1800 - 4000	975 - 2200	D/100	D/25	D/130	
8100G	0.81 & 0.90	1700 - 4400	925 - 2425	D/100	D/25	D/130	
8200LT	2.1 & 2.4	400 - 7500	200 - 400	D/25	D/25	n/a	Low Temperatures, and view thru Plasma and Clean Flames
8200A	2.1 & 2.4	500 - 1000	250 - 550	D/50	D/25	D/65	
8200B	2.1 & 2.4	700 - 1500	375 - 800	D/80	D/50	D/110	
8200C	2.1 & 2.4	1000 - 2000	550 - 1100	D/80	D/60	D/110	
8200D	2.1 & 2.4	1100 - 2400	575 - 1300	D/80	D/80	D/110	
8200E	2.1 & 2.4	1500 - 2700	800 - 1475	D/80	D/80	D/110	
8300A	3.6 & 4.0	300 - 600	150 - 300	D/20	D/20	n/a	

** Large resolution optics are recommended for "wire type" applications involving a small or moving target.

FIBERVIEW 9000 SERIES - Dual-Wavelength / Fiber Optics									
Sensor Model	Spectral Response (microns)	Temperature Range		Field Of View*			Fiber Cable Selection		Application
		(°F)	(°C)	Standard Resolution Optics (D/F)	High Resolution I Optics (D/F)	High Resolution II Optics (D/F)	Maximum Length	Cable Grade	
9100UT	1.25 & 1.50	700 - 1500	375 - 800	D/2, D/12	n/a	D/50	30ft/9.1m	Far IR	General Purpose, High Temperatures
9100VT	1.25 & 1.50	1000 - 1800	550 - 975	D/2, D/16	n/a	D/75	30ft/9.1m	Far IR	
9100LT	0.81 & 0.90	1200 - 2000	650 - 1100	D/.75, D/12	n/a	D/50	10ft/3m	Near IR	
9100A	0.81 & 0.90	1500 - 2500	800 - 1375	D/.75, D/12	D/35	D/50	25ft/7.6m	Near IR	
9100B	0.71 & 0.81	2000 - 3000	1100 - 1650	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR	
9100C	0.71 & 0.81	2500 - 3500	1375 - 1925	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR	
9100D	0.71 & 0.81	3000 - 4000	1650 - 2200	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR	
9100E	0.81 & 0.90	1700 - 3000	925 - 1650	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR	
9100F	0.81 & 0.90	1800 - 4000	975 - 2200	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR	
9100G	0.81 & 0.90	1700 - 4400	925 - 2425	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR	
9200LT	2.1 & 2.4	600 - 1100	300 - 600	D/2, D/12	n/a	D/50	3ft/91cm	Far IR	Low Temp. & view thru Plasma & Clean Flames
9200A	2.1 & 2.4	750 - 1400	400 - 750	D/2, D/16	D/50	D/75	6ft/1.8m	Far IR	
9200B	2.1 & 2.4	1200 - 2200	650 - 1200	D/2, D/16	D/50	D/75	6ft/1.8m	Far IR	

*FOV Selection: $d = D/E$, d = Measured Target Diameter, D = Working Distance, F = Optical Resolution
 Consult with Williamson for custom temperature ranges, wavelengths, optics, and fiber optic cable lengths.
 Specifications are subject to change without notice. Made in USA

