SINGLE WAVELENGTH 1λ TEMPERATURE SYSTEMS

For Noncontact Temperature Measurement and Control

TempMatic 4000 Series
Visual Aiming Sensors

FiberView 5000 Series
Fiber Optic Sensors

Williamson
Innovators in Noncontact Temperature Measurement

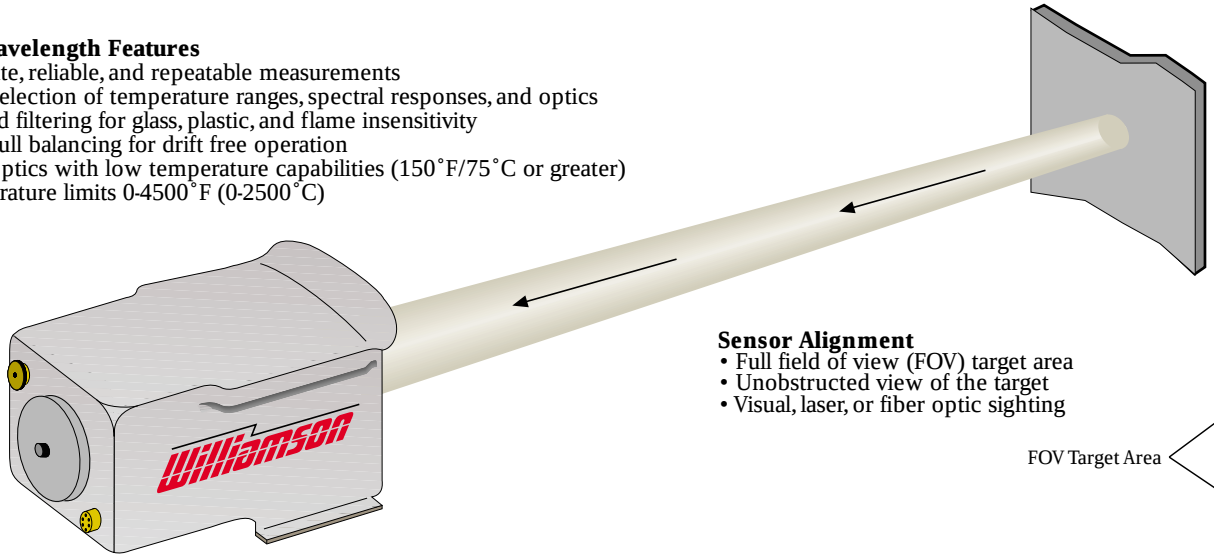
INNOVATIVE TEMPERATURE MEASUREMENT

SOLUTIONS FOR MANY INDUSTRIAL APPLICATIONS

The single-wavelength TempMatic 4000 and FiberView 5000 Series sensors are designed to provide high performance and low maintenance operation in demanding industrial environments. These single wavelength sensors are used to measure most common materials in general purpose applications. Typical applications are in the glass, steel, electronics, petrochemical, heat treating, paper, and plastics industries, as well as many others. As with all single wavelength designs, these sensors require an unobstructed view of the measured target and a relatively constant surface emissivity.

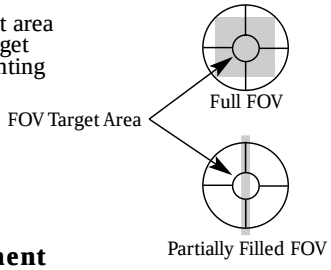
Single Wavelength Features

- Accurate, reliable, and repeatable measurements
- Wide selection of temperature ranges, spectral responses, and optics
- Infrared filtering for glass, plastic, and flame insensitivity
- Auto null balancing for drift free operation
- Fiber optics with low temperature capabilities (150˚F/75˚C or greater)
- Temperature limits 0-4500˚F (0-2500˚C)



Sensor Alignment

- Full field of view (FOV) target area
- Unobstructed view of the target
- Visual, laser, or fiber optic sighting



Improving Quality and Productivity Through Temperature Measurement

HIGH PERFORMANCE FOR PROCESS MONITORING AND CONTROL

The 4000 and 5000 Series sensors are intended for use where accuracy and durability are essential to improve product quality, increase productivity, and reduce costs.

Versatile, High Performance Design: For optimal process monitoring and control, these sensors offer a wide selection of temperature ranges, infrared filters, precision optics, and fast response times that can be used to provide accurate and repeatable temperature measurements.

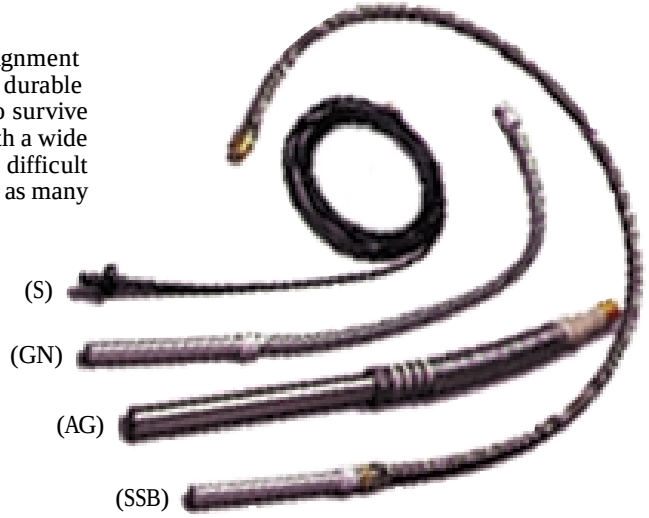
Auto Null Balancing Design: For long term drift free operation, the 4200 and 5200 sensors use a patented auto null balancing design that provides greater calibration stability for short wavelength sensors at low temperatures. This unique design is used for applications such as cold rolling steel and low temperature induction heating processes where temperatures can be below 500˚F (260˚C) and the surface has a low or varying emissivity.

Selection of Infrared Wavelengths: For most applications, it is recommended to select the sensor with the shortest possible wavelength in order to minimize any effects of changing emissivity. However, unique applications, such as the measurement of visually transparent materials like glass or plastics, require thoughtful wavelength selection. For these applications, Williamson offers a variety of precision narrow band filters, that are highlighted on the back page.

PRECISE SENSOR ALIGNMENT

The TempMatic 4000 Series uses visual (SLR) or laser aiming for accurate alignment to measure very small or distant targets. The FiberView 5000 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 wide variety of field of view options and accessories that can be used to solve difficult applications.The 5000 Series includes a fiber integrity check cavity as well as many unique accessories which 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 ACCESSORIES

RUGGED SYSTEMS THAT ARE EASY TO INSTALL AND OPERATE

With Williamson's advanced 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 4000 AND 5000 SERIES

Detailed information about the sensor temperature range, spectral response, field of view, and response time 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	Emissivity, Adjustable Response Time, Adjustable Peak Hold, Status Indicators
Response Time	98% of reading, 4τ – See back page
Ambient Temperature Range	4100/4400 4500/4800 32-140˚F (0-60˚C) 4900/5100
	4200/4300 5200 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	8.50" x 5.25" x 6.00" (21.6cm x 13.3cm x 15.2cm)
Weight	6.75 lbs (3kg)
Warranty	2 years

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 4000 and 5000 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
	Monofilament cables 0.05in (1.3mm) diameter.
AL/RAL/FPAL	Aim Light with three switch options
Cable Sheathings	See previous page.
For other mounting accessories, consult Williamson	

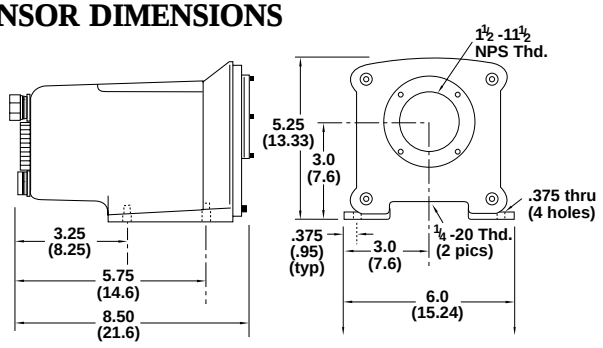
DISPLAY SPECIFICATIONS

Linear Output Signals	4-20mA, 0-100mV, 0-1V, 0-10V, and 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: 8.95" x 3.78" x 3.78" (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 DIMENSIONS



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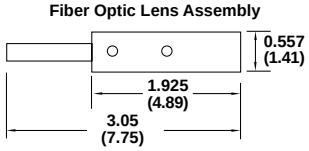
Fiber Optic Lens Assembly



SENSOR SELECTION GUIDE FOR THE 4000 AND 5000 SERIES

TEMPMATIC 4000 SERIES - Single-Wavelength / Visual Aiming

Sensor Model	Spectral Response (microns)	Temperature Range (˚F)	Temperature Range (˚C)	Field Of View* Standard Resolution Optics (D/F)	Field Of View* High Resolution Optics (D/F)	Response Time	Application
4100A	1.5 to 1.65	500 - 1000	260 - 550	D/50	n/a	Std: 50ms-15sec Fast: 4ms-5sec Ext: 100ms-90sec	High temperature measurements for steel, foundry, forging, heat treating and semiconductor applications. Allows for viewing through glass windows. Most effective for minimizing the effects of changing emissivity.
4100B	1.5 to 1.65	800 - 1500	425 - 800	D/50	D/65		
4100C	1.5 to 1.65	1000 - 2200	550 - 1200	D/50	D/65		
4100D	0.8 to 1.0	1500 - 2500	800 - 1375	D/100	D/200		
4100E	0.8 to 1.0	1800 - 3000	975 - 1650	D/100	D/200		
4100F	0.8 to 1.0	2000 - 3500	1100 - 1925	D/100	D/200		
4100G	0.8 to 1.0	2500 - 4500	1375 - 2500	D/100	D/200		
4200A	2.8 to 3.3	125 - 350	50 - 175	D/80	n/a	**Range A-E** Std: 300ms-15sec Fast: 150ms-5sec Ext: 300ms-90sec **Range F-H** Std: 200ms-15sec Fast: 100ms-5sec Ext: 200ms-90sec	Medium temperature measurements involving the production and processing of metals, textiles, and thick plastics. Allows for viewing through quartz windows.
4200B	2.8 to 3.3	150 - 400	75 - 200	D/80	n/a		
4200C	2.0 to 2.5	200 - 600	100 - 300	D/100	D/150		
4200D	2.0 to 2.5	400 - 900	200 - 500	D/100	D/150		
4200E	2.0 to 2.5	500 - 1200	250 - 650	D/100	D/150		
4200F	2.0 to 2.5	800 - 1800	425 - 1000	D/100	D/150		
4200G	2.0 to 2.5	1000 - 2000	550 - 1100	D/100	D/150		
4200H	2.0 to 2.5	1500 - 3000	800 - 1650	D/100	D/150		
4300A	3.43 ± 0.05	125 - 350	50 - 175	D/10	n/a	Std: 300ms-15sec Fast: 150ms-5sec Ext: 300ms-90sec **Consult factory for A & B Ranges**	Designed for thin, clear films and coatings that exhibit the C-H absorption band at 3.43 microns. Materials include polyethylene, polypropylene, and others.
4300B	3.43 ± 0.05	150 - 400	75 - 200	D/10	n/a		
4300C	3.43 ± 0.05	200 - 600	100 - 300	D/25	n/a		
4300D	3.43 ± 0.05	300 - 600	150 - 300	D/25	n/a		
4300E	3.43 ± 0.05	400 - 700	200 - 375	D/50	n/a		
4400LT	3.7 to 3.9	400 - 1400	200 - 750	D/60	n/a	Std: 200ms-15sec Fast: 100ms-5sec Ext: 200ms-90sec	Insensitive to combustion gases and flames. Ideal for measuring inside furnaces and combustion chambers with flames (i.e. reheat furnaces). This requires a sapphire window.
4400A	3.7 to 3.9	600 - 1800	300 - 975	D/60	n/a		
4400B	3.7 to 3.9	800 - 2200	425 - 1200	D/100	n/a		
4400C	3.7 to 3.9	1200 - 3000	650 - 1650	D/100	D/150		
4400D	3.7 to 3.9	2000 - 4000	1100 - 2200	D/100	D/150		
4500A	4.9 to 5.3	200 - 1000	100 - 550	D/60	n/a	Std: 200ms-15sec Fast: 100ms-5sec Ext: 200ms-90sec	Measures glass surface temperatures in glass processing and used in applications where quartz infrared heaters are used. (1) CO2 Filter for Flame Measurement.
4500B	4.9 to 5.3	500 - 1500	250 - 800	D/100	n/a		
4500C	4.9 to 5.3	500 - 2500	250 - 1375	D/100	D/150		
4500D (1)	4.3 to 4.5	1000 - 4000	550 - 2200	D/100	n/a		
4800A	7.6 to 8.4	85 - 600	30 - 300	D/60	n/a	Std: 200ms-15sec Fast: 100ms-5sec Ext: 200ms-90sec	For plastic film and plastic-based materials. Also for high temperature products opaque at 8 microns (e.g. thin glass)
4800B	7.6 to 8.4	200 - 1000	100 - 550	D/60	D/80		
4800C	7.6 to 8.4	500 - 1500	250 - 800	D/100	D/150		
4800D	7.6 to 8.4	500 - 2500	250 - 1375	D/100	D/150		
4900A	8.0 to 14.0	0 - 500	0 - 250	D/60	D/80	Std: 200ms-15sec Fast: 100ms-5sec Ext: 200ms-90sec	General low-temperature processing applications such as paper, textiles, food, and others.
4900B	8.0 to 14.0	0 - 1000	0 - 550	D/60	D/80		
4900C	8.0 to 14.0	200 - 1000	100 - 550	D/60	D/80		
4900D	8.0 to 14.0	300 - 2000	150 - 1100	D/60	D/100		

FIBERVIEW 5000 SERIES - Single-Wavelength / Fiber Optics

Sensor Model	Spectral Response (microns)	Temperature Range (˚F)	Temperature Range (˚C)	Field Of View* Standard Resolution Optics (D/F)	Field Of View* High Resolution I Optics (D/F)	Field Of View* High Resolution II Optics (D/F)	Fiber Cable Selection Maximum Length	Fiber Cable Selection Cable Grade	Response Time	Application
5100VT	1.5 to 1.65	600 - 1000 F	325 - 550 C	D/2, D/12	n/a	D/50	6ft/1.8m	Far IR	Std: 50ms-15sec Fast: 4ms-5sec Ext: 100ms-90sec	General Purpose, High Temperatures
5100LT	1.5 to 1.65	700 - 1200 F	375 - 650 C	D/2, D/16	n/a	D/75	10ft/3m	Far IR		
5100A	0.75 to 1.0	1000 - 1500 F	540 - 800 C	D/.75, D/12	n/a	D/50	3ft/91cm	Near IR		
5100B	0.75 to 1.0	1200 - 1800 F	650 - 1000 C	D/.75, D/16	D/50	D/75	3ft/91cm	Near IR		
5100C	0.75 to 1.0	1300 - 2000 F	700 - 1100 C	D/.75, D/16	D/50	D/75	10ft/3m	Near IR		
5100D	0.75 to 1.0	1500 - 2200 F	800 - 1200 C	D/.75, D/16	D/50	D/75	20ft/6m	Near IR		
5100E	0.75 to 1.0	1600 - 2400 F	875 - 1300 C	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR		
5100F	0.75 to 1.0	1800 - 2800 F	975 - 1525 C	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR		
5100G	0.75 to 1.0	2000 - 3200 F	1100 - 1750 C	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR		
5100H	0.75 to 1.0	2200 - 3500 F	1200 - 1925 C	D/.75, D/16	D/50	D/75	30ft/9.1m	Near IR		
5200LT	2.0 to 2.5	150 - 400 F	75 - 200 C	D/2, D/12	n/a	D/50	3ft/91cm	Far IR	**LT Range** Std: 500ms-15sec Fast: 300ms-5sec Ext: 500ms-90sec **Range A-F** Std: 300ms-15sec Fast: 150ms-5sec Ext: 300ms-90sec	General Purpose, Low Temperatures
5200A	2.0 to 2.5	200 - 500 F	100 - 250 C	D/2, D/12	n/a	D/50	6ft/1.8m	Far IR		
5200B	2.0 to 2.5	300 - 600 F	150 - 300 C	D/2, D/16	D/50	D/75	6ft/1.8m	Far IR		
5200C	2.0 to 2.5	400 - 900 F	200 - 500 C	D/2, D/16	D/50	D/75	10ft/3m	Far IR		
5200D	2.0 to 2.5	500 - 1200 F	250 - 650 C	D/2, D/16	D/50	D/75	15ft/4.5m	Far IR		
5200E	2.0 to 2.5	800 - 1800 F	425 - 1000 C	D/2, D/16	D/50	D/75	25ft/7.6m	Far IR		
5200F	2.0 to 2.5	1000 - 2000 F	550 - 1100 C	D/2, D/16	D/50	D/75	30ft/9.1m	Far IR		

*FOV Selection: d = D/F, 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

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