

# PyroSight Series

## Industrial Infrared Thermometers



PyroSight Series with  
Line-of-Sight or Integrated  
Laser Aiming Alignment

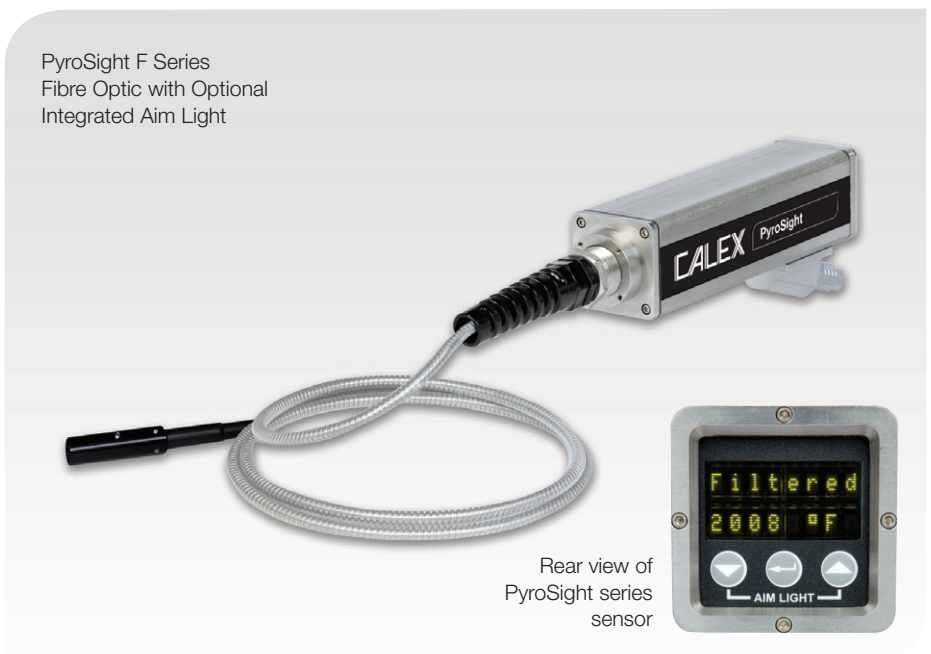
The PyroSight series of non-contact infrared thermometers provides accurate and reliable measurements for a wide range of industrial applications.

- Temperature ranges up to 2475°C
- Traditional or fibre-optic versions
- Optional laser sighting or aiming light
- Built-in digital display and controls
- Optional interface module
- Adjustable range, emissivity and signal processing
- Precision optics
- Rugged stainless steel enclosure

PyroSight series sensors feature a variety of input, output, and alarm options to enable advanced process monitoring and control. Each sensor can be configured to operate as a stand alone sensor or with a remote Interface Module.

The sensor can be set to an analogue (A) configuration for operation with a digital indicator, PID Controller, or PLC. In addition to providing an analogue output, the sensor may be configured for an alarm relay output (default) or a remote analogue input for adjustment of the sensor's alarm set-point or emissivity.

Alternatively the sensor can be set to a digital (D) configuration (RS485) for operation with the Interface Module, a PC or a PLC. The 1/4 DIN Interface Module includes an RS232 connector for interface with the PyroSight PC Software.



|                    | Stand Alone Sensor (A) | Sensor with Interface Module (D) |
|--------------------|------------------------|----------------------------------|
| Analogue Output(s) | One                    | Two                              |
| Relay Alarm(s)     | One                    | Two                              |
| Analogue Input     | One                    | One                              |
| Digital Interface  | RS485                  | RS485 & RS232                    |
| Input Power        | 24 V DC                | 90-260 V AC                      |

## GENERAL SPECIFICATIONS

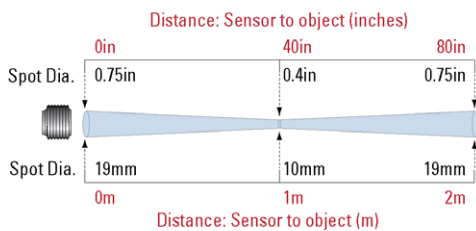
| PyroSight Series Sensors without fibre-optic sensing head |                             |                   |                            |  |  |
|---|-----------------------------|-------------------|----------------------------|--|--|
| Model   | Spectral Response (microns) | Temperature Range | Field of View              |  |  |
|   |                             |                   | Standard Resolution Optics | Minimum Focal Distance with Line of Sight Aiming | Minimum Focal Distance with Laser Aiming |
| Short-Wavelength Sensors                                  |                             |                   |                            |  |  |
| PS100-LT-0.9  | 0.9 µm                      | 540 to 1375°C     | D/100                      | 25 cm  | 25 cm                                    |
| PS100-MT-0.9  | 0.9 µm                      | 650 to 1750°C     | D/100                      | 25 cm  | 25 cm                                    |
| PS100-HT-0.9  | 0.9 µm                      | 760 to 2475°C     | D/100                      | 25 cm  | 25 cm                                    |
| PS50-LT-1.6   | 1.6 µm                      | 260 to 1150°C     | D/50                       | 25 cm  | 25 cm                                    |
| PS100-MT-1.6  | 1.6 µm                      | 315 to 1375°C     | D/100                      | 25 cm  | 25 cm                                    |
| PS100-HT-1.6  | 1.6 µm                      | 375 to 1750°C     | D/100                      | 25 cm  | 25 cm                                    |
| PS50-MT-2.2   | 2.2 µm                      | 150 to 1100°C     | D/50                       | 25 cm  | 25 cm                                    |
| PS100-HT-2.2  | 2.2 µm                      | 200 to 1375°C     | D/100                      | 25 cm  | 25 cm                                    |
| Specialty-Wavelength Sensors                              |                             |                   |                            |  |  |
| PS20-LT-5.0   | 5 µm                        | 95 to 540°C       | D/20                       | 25 cm  | 10 cm                                    |
| PS20-HT-5.0   | 5 µm                        | 200 to 800°C      | D/20                       | 25 cm  | 10 cm                                    |
| PS20-LT-7.9   | 7.9 µm                      | 30 to 315°C       | D/20                       | 25 cm  | 10 cm                                    |
| PS20-HT-7.9   | 7.9 µm                      | 100 to 600°C      | D/20                       | 25 cm  | 10 cm                                    |
| PS40-HT-7.9   | 7.9 µm                      | 260 to 1375°C     | D/40                       | 25 cm  | 25 cm                                    |
| Long-Wavelength Sensors                                   |                             |                   |                            |  |  |
| PS40-LT-14  | 8 to 14 µm                  | 0 to 260°C        | D/40                       | 25 cm  | 25 cm                                    |
| PS40-HT-14  | 8 to 14 µm                  | 0 to 550°C        | D/40                       | 25 cm  | 25 cm                                    |

GENERAL SPECIFICATIONS continued

| PyroSight F Series Sensors with fibre-optic sensing head |                             |                   |                   |                            |                        |               |             |
|--|-----------------------------|-------------------|-------------------|----------------------------|------------------------|---------------|-------------|
| Model  | Spectral Response (microns) | Temperature Range | Field of View     |                            |                        | Fibre Cable   |             |
|  |                             |                   | Wide Angle Optics | Standard Resolution Optics | Minimum Focal Distance | Type of Cable | Max. Length |
| Short-Wavelength Sensors                                 |                             |                   |                   |                            |                        |               |             |
| PSF.75-LT-0.9  | 0.9 µm                      | 540 to 1375°C     | D/.75             | -                          | 0 cm                   | Glass         | 3ft/ 91cm   |
| PSF35-LT-0.9   | 0.9 µm                      | 540 to 1375°C     | -                 | D/35                       | 5.1 cm                 | Glass         | 3ft/ 91cm   |
| PSF35-MT-0.9   | 0.9 µm                      | 650 to 1750°C     | n/a               | D/35                       | 5.1 cm                 | Glass         | 10ft / 3m   |
| PSF50-HT-0.9   | 0.9 µm                      | 760 to 2475°C     | n/a               | D/50                       | 5.1 cm                 | Glass         | 30ft / 9.1m |
| PSF2-LT-1.6  | 1.6 µm                      | 260 to 1150°C     | D/2               | -                          | 0 cm                   | Quartz        | 10ft / 3m   |
| PSF15-LT-1.6   | 1.6 µm                      | 260 to 1150°C     | -                 | D/15                       | 5.1 cm                 | Quartz        | 10ft / 3m   |
| PSF2-MT-1.6  | 1.6 µm                      | 315 to 1375°C     | D/2               | -                          | 0 cm                   | Quartz        | 30ft / 9.1m |
| PSF15-MT-1.6   | 1.6 µm                      | 315 to 1375°C     | -                 | D/15                       | 5.1 cm                 | Quartz        | 30ft / 9.1m |
| PSF35-HT-1.6   | 1.6 µm                      | 375 to 1750°C     | n/a               | D/35                       | 5.1 cm                 | Glass         | 30ft / 9.1m |
| PSF2-LT-2.2  | 2.2 µm                      | 150 to 1100°C     | D/2               | -                          | 0 cm                   | Quartz        | 30ft / 9.1m |
| PSF15-LT-2.2   | 2.2 µm                      | 150 to 1100°C     | -                 | D/15                       | 5.1 cm                 | Quartz        | 30ft / 9.1m |
| PSF2-HT-2.2  | 2.2 µm                      | 200 to 1375°C     | D/2               | -                          | 0 cm                   | Quartz        | 30ft / 9.1m |
| PSF35-HT-2.2   | 2.2 µm                      | 200 to 1375°C     | -                 | D/35                       | 5.1 cm                 | Quartz        | 30ft / 9.1m |

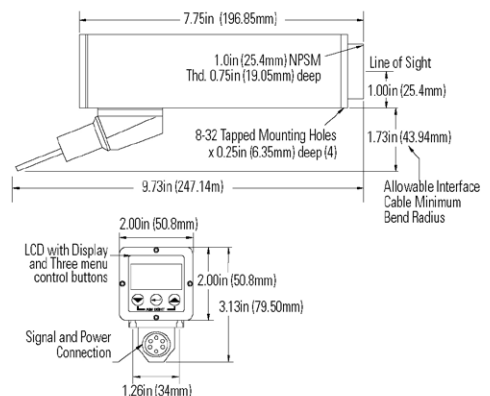
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|---------------------------------|--|-----------------------------------|---|
| <b>Temperature Limits</b>       | -45 to 2500°C (actual sensor ranges vary by model)   | <b>Digital Interface</b>          | Bi-Directional RS485 and RS232 communications   |
| <b>Spectral Response</b>        | Complete Range of Short, Long, and Speciality Wavelengths  | <b>Operator Interface</b>         | Built-in Menu System with Access to Averaging, Peak/Valley Hold (Time or Temp Reset), Programmable Outputs and Alarms   |
| <b>Optical Resolution</b>       | Range of Optics with Nominal Spot Size based on 90% of Energy  | <b>Measured Parameters</b>        | Filtered and Unfiltered Temperature, Ambient Temperature & Rate of Change   |
| <b>Accuracy</b>                 | Short Wavelength Models: 0.25% of Reading or 2°C whichever is greater<br>All other Models: 0.5% of Reading or 2°C whichever is greater   | <b>Input Power</b>                | Sensor: 24 V DC (300 mA); Interface Module: 90 to 260 V AC 50/60 Hz   |
| <b>Repeatability</b>            | Better than 1°C  | <b>Ambient Temperature Limits</b> | Sensor: -17 to 60°C, with Water Cooling limit is 175°C (varies with water rate and temp)<br>Fibre Optic Cable & Lens Barrel: 200°C<br>Interface Module: -17 to 50°C           |
| <b>Emissivity</b>               | 0.010 to 1.500   | <b>Enclosure Rating</b>           | Sensor: Stainless Steel Enclosure with IP65 Rating. Optional NEMA 7 and ATEX enclosures are available<br>Interface Module: IP52 Front Panel with Anodized Aluminium Enclosure |
| <b>Response and Update Time</b> | Short Wavelength Models: 5 ms (95% of Response) with 5 ms Update Time<br>All other Models: 75 ms (95% of Response) with 5 ms Update Time<br>Interface Module: 100 ms Update Time | <b>Weight</b>                     | Sensor: 1.3 kg; Interface Module: 1 kg  |
| <b>Analogue Outputs</b>         | 4 to 20 mA or 0 to 20 mA output (maximum impedance 1000 Ω)   | <b>Dimensions</b>                 | Sensor: 197 mm x 51 mm x 79 mm<br>Interface Module: 178 mm x 96 mm x 96 mm  |
| <b>Alarms</b>                   | Sensor: SPST relay rated 2 A @ 24 V<br>Interface Module: Two SPDT relays rated 2 A @110 V AC   | <b>CE Certification</b>           | EMI/ RFI for heavy industry; LVD ( Low Voltage Directive)   |
| <b>Analogue Input</b>           | Sensor: 4 to 20 mA or 0 to 20 mA input (impedance 250 Ω)<br>Interface Module: 4 to 20 mA or 0 to 20 mA input (impedance 237.5 Ω)   |                                   |   |

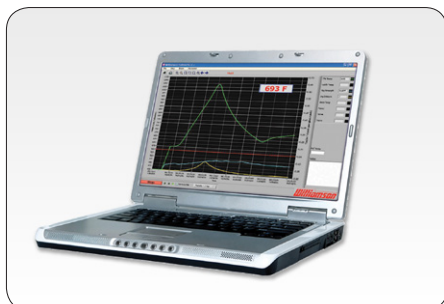
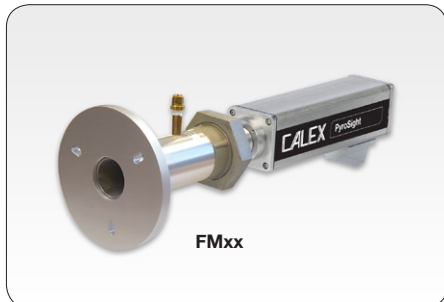
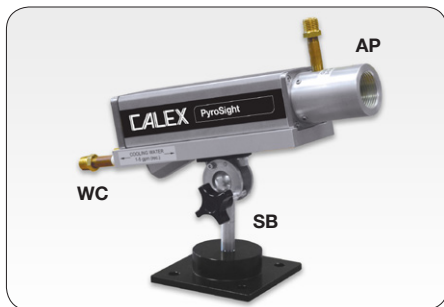
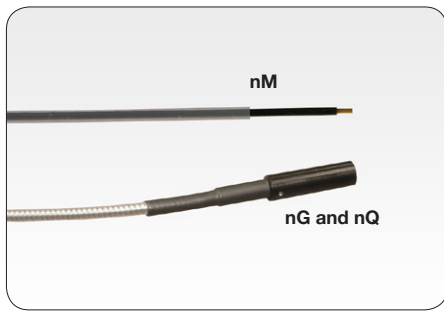
SAMPLE FIELD OF VIEW (FOV)



PyroSight sensors may be used at any distance as long as the measured target fills the sensor's viewing area. The diameter (d) of the viewing area is calculated as  $d = D/F$  where D is the focal distance of the sensor from the target and F is the optical resolution factor of the sensor. The part number for the sample FOV below is FOV1m/100 where the focal distance D is 1 m, the optical resolution factor F is 100, and the diameter of the viewing area is 10 mm.

PYROSIGHT DIMENSIONS





## OPTIONS

| ProSight Series   |   |
|---|---|
| LA  | Laser Aiming  |
| PyroSight F Series  |   |
| The standard fibre optic cables (nG and nQ) are sealed with a Teflon jacket over a stainless steel sheath and are available in lengths of 1 m to 9 m. The cable diameter is 6.5 mm with a lens assembly that is 77 mm x 14 mm diameter.             |   |
| For added protection, the flexible, lightweight Stainless Steel Braid (SSB) is available with a built in air purge and a stainless steel sight tube with a 1 inch pipe thread.  |   |
| For applications with very confined access and the potential for electromagnetic interference, the mono-filament fibre cables (nM) with a Teflon sheathing and Teflon outer jacket offer a smaller diameter of 1.3 mm and non-conductive packaging. |   |
| nG  | Teflon Sealed Glass Fibre Optic Cable (n=length in feet)  |
| nQ  | Teflon Sealed Quartz Fibre Optic Cable (n=length in feet)   |
| nM  | Mono-filament Fibre Cable with Teflon sheathing and Teflon outer jacket (does not include lens and offers D/2 optics) |
| SSB   | Stainless Steel Braided Conduit includes flexible, lightweight conduit, air purge and a stainless steel sight tube    |
| AL  | Built in Aim Light  |
| 3QT   | Non-conductive Ceramic Quartz Tip, 83 mm Long, threads onto end of fibre cable  |
| ATEX  | ATEX Enclosure  |

| Sensor Cable |   |
|--------------|---|
| OC           | Sensor Connector Kit (no Cable)   |
| nCF          | Sensor Cable. Lengths (n) ordered in increments of 10 feet  |
| nCM          | Sensor Cable. Lengths (n) ordered in increments of 3 meters   |
| R            | Reverse Orientation of Connector 180°   |
| nPT          | Sensor Cable is Pigtail/Hard-wired. Lengths (n) ordered in increments of 10 ft./3m, 20 ft./6m, 30 ft./12m |

N.B. The standard fibre optic cable lengths (n) are 3ft/0.9m, 6ft/1.8m, 10ft/3m, 15ft/4.6m, 20ft/6.1m, 25ft/7.6m, and 30ft/9.1m. Consult Calex for custom lengths, cables with vacuum bushings and right angle bends.

## ACCESSORIES

| PyroSight Series   |                              |
|--|------------------------------|
| To simplify installation and provide additional protection to the sensor, Calex offers a Swivel Bracket (SB) and Water Cooling Air Purge (WCAP) accessories. The recommended air flow is 1.5 to 5 m3/hr and water flow is 2 to 12 l/min. |                              |
| AP   | Air Purge Assembly           |
| WCAP   | Water Cooling Air Purge      |
| SB   | Swivel Bracket (includes MP) |
| FMxx   | A Selection of Flange Mounts |

| PyroSight F Series  |   |
|---|---|
| To simplify the installation and alignment of the PyroSight F series sensors, Calex offers a Site Tube Swivel Bracket (STSB) and a Fibre Optic Swivel Bracket (FOSB) that also includes the Air Purge (FOAP) accessory as standard. |   |
| FOAP  | Fibre Optic Air Purge Assembly                          |
| WC  | Water Cooling for Fibre Optic Sensors                   |
| FOSB  | Fibre Optic Swivel Mounting Bracket (includes FOAP)     |
| STSB  | Sight Tube Swivel Bracket (use with SSB)                |
| RAM   | Right Angle Mirror for Fibre Optic Systems              |
| FOFMxx  | A Selection of Fibre Optic Flange Mounts                |
| STFMxx  | A Selection of Sight Tube Flange Mounts (used with SSB) |

| All Models   |  |
|--|--|
| Calex's PyroSight PC Software can be used to adjust sensor settings as well as log and analyse data from the sensor. It requires a Windows XP based PC, an Interface Module, and a USB to RS232 converter with a DB9 male connector. |  |
| IM   | Interface Module with Display, Output, and Power Supply      |
| PACS   | Purge Air Control/Filter System                              |
| VCS  | Vortex Cooling System (requires WC)                          |
| MP   | Mounting Plate   |
| PSS  | PyroSight PC Software for Windows XP with USB to RS232 Cable |
| NIST   | NIST Calibration Certificate                                 |

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