# MWx-AS Aluminum Strip Pyrometer Datasheet

Williamson
Where Wavelength Matters

## How MWx Pyrometers with Dynamic ESP Technology Work

- Multi-wavelength pyrometers are used to measure the temperature of non-greybody materials. These are materials for which the emissivity not only varies, but varies differently at different wavelengths.
- Traditional multi-wavelength pyrometers use static, application-specific algorithms to compensate for complex emissivity characteristics. The MW pyrometers assume that the surface conditions for these applications are relatively consistent.
- The Williamson MWx pyrometer uses Dynamic ESP Technology to compensate for more significant variation in surface character and conditions without adjustments. For example, at the aluminum hot rolling mill, the surface character of the aluminum varies dramatically as it goes through the reversing mill, so the traditional MW technology is not appropriate.

## MWx-AS Application

Current applications for the MWx-AS technology at the Aluminum Hot Rolling Mill:

- Ingot
- Reversing/Roughing Mill
- Finishing Mill

## Reversing Mill Accuracy

With its Dynamic ESP Technology, no adjustments to the MWx were required to achieve the following results. These results are obtained using the Reversing Mill algorithm and using the same default parameter settings across all alloys and for all passes. Results for 1000, 4000 and 8000 series alloys are pending.

**Aluminum Hot Rolling Mill On-Line Results**

| | Middle Passes (Typically Pass 5 to 11) | | Final Passes (Typically Pass 12 to 18) | |
|---|---|---|---|---|
| Alloy | Average Variance | Standard Deviation | Average Variance | Standard Deviation |
| 2000 | -1˚C | 4.4˚C | -2˚C | 1.7˚C |
| 3000 | 4˚C | 3.9˚C | 2˚C | 3.4˚C |
| 5000 | 2˚C | 3.2˚C | 2˚C | 2.1˚C |
| 6000 | -2˚C | 4.7˚C | -4˚C | 4.3˚C |
| 7000 | 1˚C | 2.9˚C | -1˚C | 3.0˚C |

## Specifications

MWx Technology


*Traditional Style MWx*

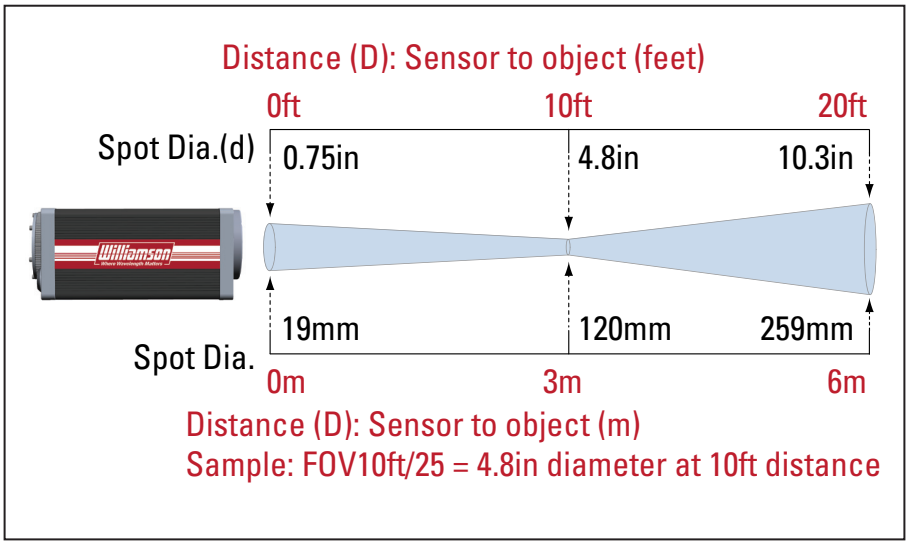
**MWx Specifications**

| | |
|---|---|
| **Temperature Limits** | 300 to 600°C / 575 to 1100°F |
| **Spectral Response** | Range of precisely selected narrow wavelength bands |
| **Optical Resolution** | D/25, D/17 |
| **Accuracy** | 0.5% of reading or 2°C whichever is greater |
| **Repeatability** | Better than 1°C |
| **E-Slope** | 0.000 to 2.000 |
| **Response and Update Time** | 50ms (initial response) with 25ms update time |
| **Analog Output** | 0/4-20mA output (max impedance 1000 ohms) |
| **Alarms** | One field-selectable N.O. or N.C. Relay rated 1A@24V |
| **Analog Input** | 4-20mA/0-20mA input (impedance 250 ohms) |
| **Digital Communications** | Bi-Directional RS485 and RS232 Multidrop communications available |
| **Human Interface** | Built-in menu system with Averaging, Peak/Valley Hold (Time or Temp Reset), Programmable Outputs & Alarms & ESP Filters |
| **Measured Parameters** | Filtered and Unfiltered Temperature, Ambient Temperature, Signal Strength/Emissivity, Signal Dilution & Rate of Change |
| **Input Power** | 24Vdc (300mA) |
| **Ambient Temperature Limits** | 0 to 150°F / -17 to 65°C<br>with Water Cooling Plate: 350°F/175°C (varies with water rate & temp) with Protective Cooling Jacket: 600˚F / 315˚C |
| **Enclosure Rating** | Corrosion resistant enclosure w/ NEMA4X (IP65) rating. Optional IECEX and ATEX enclosures are available |
| **Weight** | 3.6lbs (1.6kg) |
| **Dimensions** | 3.5in x 3.5in x 8.25in / 89mm x 89mm x 210mm |
| **Certification** | Calibration certificate is standard with each unit<br>CE: EMI / RFI for heavy industry; LVD ( Low Voltage Directive) |
| **Warranty** | 2 years |

# Multi-Wavelength Technology

## Sample Field of View

Multi-wavelength pyrometers may be used at any distance as long as the measured target fills the sensor's viewing area (i.e. a full FOV). 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.



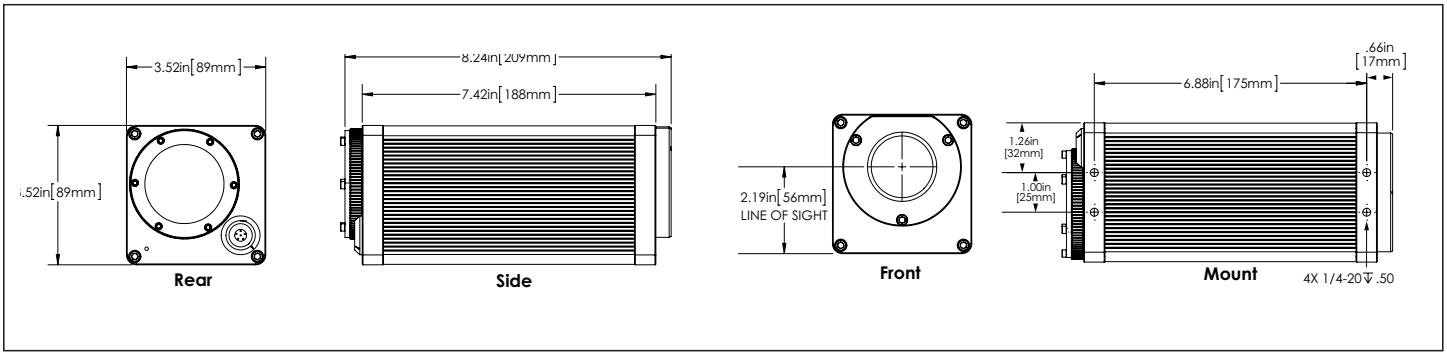

## Local and Remote User Interface


Local Interface

- Increase Value
- Decrease Value
- Menu
- Enter
- Aiming On/Off
- Through Lens Aiming *(local interface only)*


Remote Interface

## Pro Series Dimensions

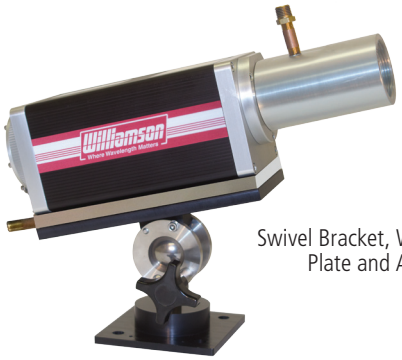


## Sample Part Numbers

| A – Model | B – Wavelength | C – Temp Code | Temp Scale | D – Field of View | E – Sensor Output | F – Options | G – Accessories | H – Cable |
|---|---|---|---|---|---|---|---|---|
| MWx | AS | 11 | F- or C- | 10ft/25- or 3m/25 | A- or D- | VALA- | IM-SB-PCJ-AP | CF040 or CM012 |

## Traditional Style Mounting and Protective Accessories

Popular Williamson accessories include: Swivel Bracket (SB), Water Cooling Plate (WC), Air Purge (AP), Protective Cooling Jacket (PCJ) and a Remote Interface Module (IM).



Swivel Bracket, Water Cooling Plate and Air Purge

Protective Cooling Jacket

### E – Sensor Output *(Select One)*

| Part No. | Description |
|---|---|
| A | Set to Analog Output/Input with linear mA output |
| D | Set to Digital Communications for operation w/ Interface Module or for 4-wire digital operation |

### F – Options *(Must Be Specified at Time of Order)*

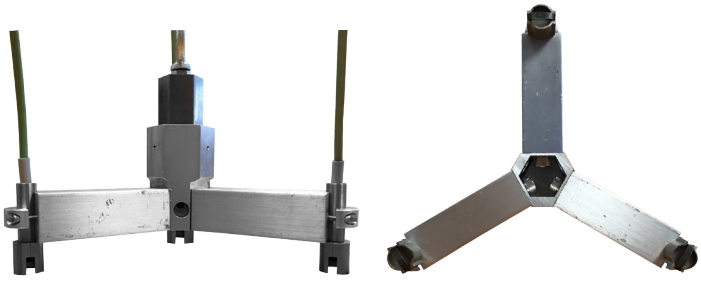
| Part No. | Description |
|---|---|
| LA | Laser Aiming |
| VALA | Visual Aiming and Laser Aiming |

### G-Accessories

| Part No. | Description |
|---|---|
| AP | Air Purge |
| SB | Swivel Bracket |
| PCJ | Protective Cooling Jacket |
| IM | Interface Module, 1/4DIN, Outputs, Inputs, Relay Alarms, 24Vdc Power to Sensor, Input Power (90-260Vac) |
| WC | Water Cooling Plate |
| VCS | Vortex Cooling System includes Filter & Regulator |

## Thermocouple Probe Assembly

The MWx Dynamic ESP Technology was created through a series of on-line trials that compared the pyrometer readings with thermocouple data. For this purpose, Williamson has developed a three pronged thermocouple probe assembly to ensure the best possible reference temperature. The reference temperature takes an average of all three of the Anritsu ribbon probes and compares it to an MWx pyrometer that is aimed at the same area. This reference measurement may be made at every pass where operators are able to hold the strip stopped for a few seconds.



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