Non-contact Standalone Temperature Sensors to Serve a Wide Range of Applications
Modline® 5

If reliable, accurate temperature measurement and easy operation are critical to your process, look to the features of the Modline 5 series

Outstanding Performance
Like the long line of superior, industrial-strength IRCON infrared thermometers before it, Modline 5 is a top performer. Designed to serve a variety of applications and withstand hostile environments with accuracy and repeatability, you can rely on Modline 5 with your process.

Intelligent, Assured Accuracy
With Modline 5, temperature should no longer be in question when monitoring your process. Modline 5 thermometers include System Health Check, calibration check and other smart features that help verify optimal operation. It will automatically detect that it is performing correctly, or let you know where it is not. Even the lens window can automatically monitor itself to assure it is clear of debris!

Small, Durable and Capable
Designed to withstand long terms in harsh environments, all components of the sensor are contained within a sealed, stainless steel NEMA 4 (IP65) enclosure. With a diameter less than 2.25”, it is one of the most capable small infrared thermometers on the market.

Flexible Control Possibilities
With abilities to function both standalone and networked, standard I/O signal interfaces (both analog and bi-directional RS-485 digital) enable operation with other systems and devices. Achieve insight, quality and efficiency like never before with Modline 5 sensors integrated with your process.

Simple Installation and Operation
It all adds up to low overall costs. Beyond being a top performer in terms of reliable accuracy and flexible control possibilities, count on Modline 5 being easy to operate:

- Precise focus takes only a twist
- Free software simplifies configuration and lets you monitor sensor operation remotely
- Match Function takes the guess-work out of setting emissivity
- Sensor Health Check and Dirty Window Detector option automatically monitors sensor conditions so that you will not have to
- Accessories are designed to allow configuration and focus changes without having to physically remove the sensor

Precise focus, rear-adjustable optics
Focus precisely on target using a small spot size by twisting the back portion of the sensor housing

Automatic Sensor Health Check
Built-in ‘smart’ electronics assure accuracy

Emissivity Match function
If you already know the temperature, the sensor can determine the emissivity

2-Color dual detector models available
For handling tough temperature measurement jobs

Dirty Window Detector (DWD) option
Assure accuracy and reduce maintenance time

Smart line of accessories
Simplify operation and assure a long sensor life

Durable, sealed, stainless steel enclosure
NEMA 4 (IP65) rated enclosure fully protects electronic components -- even the display and keypad

Built-in, thru-the-lens Visual or Laser sighting
See exactly what the sensor measures

Flexible control options
Integrate Modline 5 sensors with your process

Free PC software for remote setup, configuration and monitoring provided with each sensor

New 56 Series highlights:
- 2 Micron Unit
- Lower Temperature Range (down to 50 °C)
- Thermo-Electrically Cooled Detector
- Internal Self-Calibration Feature

New 56 Series features:
- 2 Micron Unit
- Thermo-Electrically Cooled Detector
- Internal Self-Calibration Feature

56 Series:
- 122° - 1472° F
- 50° - 800° C
- 2 µm

NEW SERIES!
2 micron sensors ideal for spot welding or induction heating as well as low-temperature rubber, thick plastic, or textile applications
Sensor Options:

Beyond having a selection of lenses and temperature and spectral ranges to choose from, each Modline 5 sensor can be ordered with the following helpful options:

**Dirty Window Detector (DWD)**

All infrared sensors will experience some loss of measurement accuracy if the window becomes obscured due to dust, condensation, or other contaminants. The Modline 5 series offers an innovative Dirty Window Detector (DWD) option to address this matter. The DWD automatically detects if build-up on the window is present and sends an alarm output to notify you. Even in relatively clean environments where fluctuations in signal accuracy can have an extreme effect on a reading, the DWD provides added insurance that the temperature measurement is accurate.

A traditional solution for preventing build-up is to install an air purge accessory, designed to continuously blow compressed air across the sensor lens or window. While this solution typically works well, there are cases where it is not always practical, such as when sensor mounting space is limited or when an air source is unreliable or expensive to install.

If you require multiple levels of assurance, the small Modline 5 APA air purge is designed to function with the Modline 5 sensor with the DWD option installed.

**Thru-The-Lens Laser Sighting**

With the built-in Laser Sighting option, the size of the laser spot represents the detection area or “spot” size.

It is a helpful tool for verifying the precise focal area where temperature will be measured, and for focusing on targets that are difficult to see.

The laser is turned on and off by pressing a button on the rear display. If the sensor is mounted in a difficult-to-reach location, the laser can also be triggered on and off by remote switch or other devices connected through the sensor cable.

**Unique Emissivity Match Function**

What can be a complex and frustrating process – determining emissivity to achieve correct temperature readings – is simplified with the Modline 5 Match Function. Simply aim the sensor at the target and adjust settings to the known temperature – Emissivity settings will be automatically adjusted.

**Calibration Transfer Standard**

The convenience of on-site sensor calibration testing is possible with the Transfer Standard option. Supplied with calibration software and NIST-traceable calibration results, a Transfer Standard Modline 5 sensor can be a tool against which all your other Modline 5 sensors are measured (see page 5 for detail).
Rear Display Controls

All settings can be controlled through the keypad on the back of the sensor. The bright alphanumeric LED display provides menu prompts; temperature display in °C or °F; and alarm prompts if critical conditions exist. The display can be viewed clearly through a protective window that comes standard with the unit.

Modview Configuration Software

ModView Configuration Software is a PC-based setup and monitoring tool supplied with every Modline 5 sensor. It enables communication between the PC and a sensor through bi-directional RS-485 digital communications:

- All sensor parameters can be viewed and adjusted through a PC, using a single window “dashboard”
- Settings files can be saved and re-used for configuring other Modline 5 sensors
- A trend screen provides real-time, graphical display of temperature readings
- Temperature data can be recorded over time and exported as a CSV file for archiving, trending and reporting purposes

Multi-Sensor Interface (MSI)

Centrally and simultaneously monitor multiple temperature points and alarms, and remotely configure and adjust settings for up to twelve Modline 5 sensors – on the production floor, over your company network or the Internet.

The MSI incorporates a 10” NEMA 4 display with touch keys, processing capabilities and multiple communication ports, enabling greater process monitoring and control flexibility.

The system comes pre-programmed to function with Modline 5 sensors, can capture and save trend data, and can communicate with process control, PLC and SCADA systems using RS-232, 485, or ethernet.
Sensor Power and Interface Options:

There are three options to power and connect a Modline 5 sensor:

- **Modline 5 POI (Power/Output/Input) Box:**
  The Modline 5 POI Box combines a Terminal Strip Plate and Switching Power Supply (described below) within a NEMA 4 rated enclosure with conduit connection ports. It enables easy wiring of the Modline 5 sensor cable, overall system CE certification compliance, and connectivity with external systems.

- **Modline 5 Terminal Strip Plate (TSP) and Switching Power Supply:**
  If you want to use your own enclosure and continue to assure CE compliance of your Modline 5 system, a Switching Power Supply and Terminal Strip Plate (similar to that supplied with the POI Box above) may be purchased separately. The power supply provides 24 VDC/635 mA output and requires 100 to 240 VAC 50/60 Hz input. The Terminal Strip Plate enables easy wiring of the sensor cable, connectivity with external systems and is required to maintain Modline 5 system CE compliance.

- **Modline 5 Terminal Strip Plate (TSP):**
  If you would prefer to use your own enclosure and power supply, the Modline 5 Terminal Strip Plate is sold independently.

Sensor Calibration Testing:

**Modline 5 Transfer Standard Sensors with ModView Calibration Software enable the convenience of on-site calibration**

For operations that require frequent sensor calibration testing due to regulatory or process requirements, IRCON offers Modline 5 Transfer Standard units. Modline 5 Transfer Standard sensors are validated to extremely high precision (traceable to NIST) at our factory, and supplied with a detailed calibration certificate.

Using a Modline 5 Transfer Standard sensor with ModView Calibration Software (included with each Transfer Standard unit purchase) and a blackbody source, you can test and calibrate other Modline 5 sensors on-site to assure the same levels of accuracy. ModView Calibration Software may be purchased independently.

IRCON also offers a range of blackbody source products and sensor calibration testing services – conducted at your location or with the sensor(s) shipped to an IRCON service center near you.
Sensor Specifications

Performance

<table>
<thead>
<tr>
<th>Spectral Region</th>
<th>52 Series</th>
<th>5R Series (Ratio)</th>
<th>5G Series</th>
<th>56 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.85 - 1.1µm</td>
<td>0.75 - 1.05µm; 1.0 - 1.1µm (ratio mode)</td>
<td>1.6 µm</td>
<td>2.0-2.8 µm (56-0315 only)</td>
</tr>
<tr>
<td>Accuracy @ 25°C</td>
<td>0.3% of reading, +1°C</td>
<td>0.5% of reading, plus 2°C</td>
<td>0.3% of reading, +1°C</td>
<td>0.3% of reading, +1°C, or 2°C (whichever is greater)</td>
</tr>
</tbody>
</table>

Response Time

- 6.6ms
- 10ms
- 6.6ms
- 10ms

Emissivity

- 0.100-1.000
- 0.100-1.000 (single color mode)
- 0.100-1.000 * (ratio mode)
- 0.100-1.000 * (ratio mode)

Repeatability

- @ 25°C 0.1% of full scale, plus 1 digit (all models)
- n/a
- n/a
- n/a

Signal Processing

- Peak Picker and Track & Hold (all models)
- Internal, thru-the-lens Visual (standard) or Laser (optional)

Inputs/Outputs

- Analog Output (scalable) 0-20mA, 4-20mA with 600 ohm Max. load
- Analog Input 4 - 20mA (emissivity or e-slope)
- Relay Output System Alarm (24 VAC/DC @1 amp resistive)
- Digital Input/Output RS-485 (user selectable, 57.6K max)
- Power Requirements 24 VDC +/- 5%, 8 Watts Max.

Operating Ambient Temperature

<table>
<thead>
<tr>
<th>Without Cooling</th>
<th>0 to 55°C / 32 to 130°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Air Cooling</td>
<td>0 to 105°C / 32 to 220°F</td>
</tr>
<tr>
<td>With Water Cooling</td>
<td>0 to 200°C / 32 to 400°F</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>20 to 70°C / -4 to 60°F</td>
</tr>
<tr>
<td>Cable Temperature</td>
<td>200°C (max) / 392°F (max)</td>
</tr>
</tbody>
</table>

Physical / Environmental

- Environmental Rating NEMA 4 (IP65)
- Weight (sensor only) 1.4 kg (3.1 lbs)
- Humidity 10 to 90% non-condensing
- Shock IEC 68-2-27
- Vibration IEC 68-2-6

Product Compliance

- EN 61010-1:2001, Safety Requirements
- EN 61326-1:1997 Immunity Test Req. for Industrial Locations
- UL 61010B-1, 2003, General Requirements
- CSA C22.2 No. 1010.1, 1997, General Requirements

Accessories

IRCON Modline 5 sensor hardware accessories are designed to simplify installation and maintenance, enable greater operator safety, and assure sensor accuracy and protection while operating in harsh environments.

WJA (Water Jacket Accessory) and BMA (Base Mount Adapter)

The Water Jacket Accessory (WJA) protects a Modline 5 sensor from extreme ambient temperatures.

Circulating water or air through the jacket lining helps to maintain a constant and cool sensor operating temperature, assuring greater accuracy and long term reliability.

The adjustable Base Mounting Adapter (BMA) can be used for mounting the WJA. If flange mounting is preferred, the Mounting Flange - Large (MFL) or Mounting Flange - Small (MFS) can also be used.
Sensor Selection and Ordering

The Modline 5 sensor model number, lens, cable length and any factory installed options you prefer must be specified at the time you place your order.

SENSOR AND LENS ORDERING NUMBERS:

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Spectral Range</th>
<th>Lens and Optical Resolution</th>
<th>Primary Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-1410 500 to 1400 °C</td>
<td>932 to 2552 °F</td>
<td>0.85 - 1.1 µm</td>
<td>D/100 D/90 D/80</td>
</tr>
<tr>
<td>52-2020 600 to 2000 °C</td>
<td>1112 to 3632 °F</td>
<td>0.85 - 1.1 µm</td>
<td>D/200 D/180 D/160</td>
</tr>
<tr>
<td>52-3024 750 to 3000 °C</td>
<td>1382 to 5432 °F</td>
<td>0.85 - 1.1 µm</td>
<td>D/240 D/216 D/192</td>
</tr>
<tr>
<td>5R-1410 600 to 1400 °C</td>
<td>1112 to 2552 °F</td>
<td>0.75 - 1.05 µm; 1.0 - 1.1 µm</td>
<td>D/100 D/90 D/80</td>
</tr>
<tr>
<td>5R-1810 700 to 1800 °C</td>
<td>1292 to 3272 °F</td>
<td>0.75 - 1.05 µm; 1.0 - 1.1 µm</td>
<td>D/100 D/90 D/80</td>
</tr>
<tr>
<td>5R-3015 1000 to 3000 °C</td>
<td>1832 to 5432 °F</td>
<td>0.75 - 1.05 µm; 1.0 - 1.1 µm</td>
<td>D/150 D/135 D/120</td>
</tr>
<tr>
<td>5G-1007 250 to 1000 °C</td>
<td>482 to 1832 °F</td>
<td>1.6 µm</td>
<td>D/75 D/67 D/60</td>
</tr>
<tr>
<td>5G-1415 300 to 1400 °C</td>
<td>572 to 2552 °F</td>
<td>1.6 µm</td>
<td>D/150 D/135 D120</td>
</tr>
<tr>
<td>5G-2024 350 to 2000 °C</td>
<td>662 to 3632 °F</td>
<td>1.6 µm</td>
<td>D/240 D/216 D/192</td>
</tr>
<tr>
<td>56-0315 50 to 300 °C</td>
<td>122 to 572 °F</td>
<td>2.0 - 2.8 µm</td>
<td>D/100 D/150 D/105</td>
</tr>
<tr>
<td>56-0415 100 to 400 °C</td>
<td>212 to 752 °F</td>
<td>2.3 - 2.6 µm</td>
<td>D/150 D/135 D/105</td>
</tr>
<tr>
<td>56-0815 200 to 800 °C</td>
<td>392 to 1472 °F</td>
<td>2.3 - 2.6 µm</td>
<td>D/150 D/135 D/105</td>
</tr>
</tbody>
</table>

FACTORY-INSTALLED SENSOR OPTIONS:

Each item below must be specified with each sensor ordered.

| Cable Length | The length of the interconnecting cable between a Modline 5 sensor connector port and POI Box / Terminal Strip Plate may be tailored to your requirements up to a maximum of 350 feet (107 meters). |
| Laser Sight | The built-in thru-the-lens Laser sight option must be specified at the time of order -- unless specified, Visual sight will be installed. |
| Dirty Window Detector | The DWD option (supplied with ESA accessory) requires factory installation -- unless specified, a sensor without DWD will be shipped. |
| Transfer Standard | Calibration Transfer Standard model sensors, supplied with ModView Calibration Software will be shipped with this option selected. ModView Calibration Software may be ordered independently without a Transfer Standard sensor. See pages 3 and 5 for more detail. |

Formula to determine measurement area spot size:

\[ d = \frac{D}{F} \]

- \( d \) = Diameter of desired spot size at focal point
- \( D \) = Distance from front of sensor to focal point (w/DWD, add 2.6” or 66mm from hood tip)
- \( F \) = Optical Resolution factor of sensor model and lens combination

Lens Focusing Range

- \( 2A \) or \( 2B \) or \( 2C \)
- \( 6A \) or \( 6B \) or \( 6C \)

MFL (Mounting Flange - Large)
The MFL can be mated to a Modline 5 sensor by bolting it to the Universal Adapter Assembly (UAA), Air Purge (APA), or Water Jacket (WJA) accessory. It has a bolt pattern that also matches other IRCON products.

MFS (Mounting Flange - Small)
The smaller MFS mounting flange is available, designed with a bolt pattern to match many infrared thermometers on the market. Like the MFL, the MFS can be mated to a Modline 5 sensor by bolting it to the Air Purge Accessory (described below).

APA (Air Purge accessory)
This specially designed air purge is used to help keep Modline 5 sensor optics clean. This unit mounts to the front of the sensor and requires the UAA or WJA to mount it in place.

Note: Specifications subject to change without notice.
Experience the Difference

Count on IRCON to help you find solutions to your temperature monitoring challenges. IRCON offers on-site equipment demonstrations, consulting, training and other arrangements to help you experience our products and prove their ability to meet your needs.

About IRCON

If you are looking for solutions to difficult temperature measurement and monitoring challenges, IRCON is the company to call. IRCON offers a product range and experience that are unmatched in the industry.

In business since 1962, IRCON products perform with accuracy and repeatability in the harshest and most volatile conditions requiring precise temperature measurement and control.

Our solutions are designed to suit a wide variety of applications, with a product line capable of measuring temperatures from -50° to 6500°F (-50° to 3500°C).

Whether you do research or are in the business of manufacturing or processing metals, glass, plastics, ceramics, paper, textiles, chemicals, packaging, food or pharmaceutical, chances are IRCON has a solution to address your situation.

Global Service and Support Solutions

Beyond leading-edge products and expertise, you can count on IRCON for a variety of valuable services and support options, including:

- Product warranty programs
- Fixed repair cost programs
- On-site repair and preventative maintenance
- On-site technical consulting and troubleshooting
- Operator training
- Sensor re-calibration and certification service

Through our network of nearly 150 distributors around the globe, and service centers in North America, Europe, and Asia – no matter where you are, IRCON specialists are near you to assist.

For additional information, please visit our web site, contact an IRCON specialist in your area, or submit a request at http://www.ircon.com/tech_request

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