PyroMini 2.2

Miniature Infrared Temperature Sensor for Demanding Applications with Optional Touch Screen

- Short-wavelength measurement for low-emissivity targets such as steel rollers and many other metal surfaces
- Miniature sensing head and configurable electronics module
- Touch screen (optional) for temperature indication and configuration. Screen turns bright red in alarm condition for maximum visibility
- Temperature ranges from 100°C to 2000°C
- Adjustable emissivity setting on all models
- Data logging to MicroSD Card (optional) on touch screen models
- 4 to 20 mA or RS485 Modbus outputs
- Alarm relay outputs rated 24 V DC (optional) - no need for separate trip amplifier
- Resistant to interference from movement of sensing head cable - ideal for mounting on robot arms
- Maximum, minimum, average and instantaneous readings, peak or valley hold, reflected energy compensation
- Optional mounting brackets, air purge collar and laser sighting tool
- Sensing head sealed to IP65

GENERAL SPECIFICATIONS

Temperature Range
PT models: 100°C to 400°C
MT models: 250°C to 1000°C
HT models: 450°C to 2000°C

Maximum Temperature Span (-CRT models)
Full temperature range (up to 1590°C)

Minimum Temperature Span (-CRT models)
100°C

Output
4 to 20 mA or RS485 Modbus (up to 247 sensors may be installed on a single Modbus network)

Field of View
See table of Model Numbers

Accuracy
± 2°C or 1% of reading, whichever is greater

Repeatability
± 0.5°C or 0.5% of reading, whichever is greater

EMISSION SETTING RANGE
0.10 to 1.00

EMISSION SETTING METHOD
-CB models: via two rotary switches in electronics box
-BB and -BRT models: via RS485
-CRT and -BRT models: via touch screen

Response Time, t90
≥240 ms (90% response)

Spectral Range
2.0 to 2.6 μm

Supply Voltage
24 V DC ± 5%

Maximum Current Draw
100 mA

MAXIMUM LOOP IMPEDANCE
-CB and -CRT models: 900 Ω (4 to 20 mA output)

Alarm Relays (-CRT and -BRT models)
2 x Single Pole Changeover alarm relays rated 24 V DC, 1 A, isolated 500 V DC

MECHANICAL

<table>
<thead>
<tr>
<th>Sensing head</th>
<th>Electronics Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Stainless Steel 316</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Ø 18 x 45 mm (see diagram)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>96(w) x 64(h) x 36(d) mm</td>
</tr>
<tr>
<td>Mounting</td>
<td>M16 x 1 mm thread</td>
</tr>
<tr>
<td>Cable Length</td>
<td>1 m (standard), up to 30 m (optional)</td>
</tr>
<tr>
<td>Weight with 1 m Cable</td>
<td>390 g (approx)</td>
</tr>
<tr>
<td>Cable Connections</td>
<td>Removable screw terminal blocks (see Connections)</td>
</tr>
<tr>
<td>Output Cable Gland</td>
<td>Suitable for cable diameters 3.0 to 6.5 mm</td>
</tr>
</tbody>
</table>

ENVIRONMENTAL

<table>
<thead>
<tr>
<th>Sensing head</th>
<th>Electronics Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Rating</td>
<td>IP65 (NEMA 4)</td>
</tr>
<tr>
<td>Environmental Rating</td>
<td>IP65 (NEMA 4)</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>0°C to 70°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>0°C to 60°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>0°C to 60°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>Maximum 95% non-condensing</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>Maximum 95% non-condensing</td>
</tr>
<tr>
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<td>Maximum 95% non-condensing</td>
</tr>
<tr>
<td>CE Marked</td>
<td>Yes</td>
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<td>CE Marked</td>
<td>Yes</td>
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<td>Yes</td>
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<td>CE Marked</td>
<td>Yes</td>
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<tr>
<td>RoHS Compliant</td>
<td>Yes</td>
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<td>Yes</td>
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<td>Yes</td>
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</table>

ELECTROMAGNETIC COMPATIBILITY STANDARDS:

<table>
<thead>
<tr>
<th>Class</th>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC Directive</td>
<td>EN61326-1:2006</td>
<td>Electrical equipment for measurement, control and laboratory use – Industrial</td>
</tr>
<tr>
<td>-Immunity</td>
<td>IEC 61000-4-2</td>
<td>Electrostatic Discharge Immunity</td>
</tr>
<tr>
<td>-Immunity</td>
<td>IEC 61000-4-3</td>
<td>Electromagnetic Field Immunity</td>
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<tr>
<td>-Immunity</td>
<td>IEC 61000-4-4</td>
<td>Burst Immunity</td>
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<tr>
<td>-Immunity</td>
<td>IEC 61000-4-5</td>
<td>Surge Immunity</td>
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<tr>
<td>-Emissions</td>
<td>IEC 61000-4-6</td>
<td>Conducted RF Immunity</td>
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<td>-Emissions</td>
<td>EN 55022A</td>
<td>RF Emissions Class A</td>
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<tr>
<td>-Emissions</td>
<td>EN 55022B</td>
<td>RF Emissions Class B</td>
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</table>

CALEX ELECTRONICS LIMITED
TOUCH SCREEN (-CRT AND -BRT MODELS)

The optional backlit touch screen interface mounted in the lid of the electronics module provides a large, bright display of the measured temperature, as well as controls allowing full configuration of the sensor. The graph view shows the history of the measured temperature.

In alarm conditions, the display changes colour to provide an immediate and obvious alarm indication. Alarm modes and levels can be configured via the touch screen.

DATA LOGGING SPECIFICATIONS

The PyroMini can be used as a standalone data logger.

PyroMini models -CRT and -BRT include a MicroSD card slot for data logging, which can be configured via the touch screen interface. The user can select the sample rate and the number of samples to be taken and schedule the data logging to start at a certain time.

With a 2 GB card, the user can store 28.4 million readings, which provides almost 1 year’s worth of data at the fastest possible sample rate of 1 per second.

Data is stored on the MicroSD card in .csv format and can be viewed and edited easily using spreadsheet software. Alarm events can also be logged to the MicroSD Card.

A MicroSD card with SD card adapter is available as an optional accessory.

The MicroSD card slot and battery holder are located on the touch screen circuit board in the lid of the PyroMini. Readings are time and date stamped using the sensor’s internal clock. The clock is reset when the power is disconnected, or it will continue if the optional battery is fitted.
Series | Field of View | Measurement Temperature Range | Output and Interface
--- | --- | --- | ---
PM2.2 | 151 | PT | CB
| 251 | MT | CRT
| 751 | HT | BB
| CF | | BRT

**SERIES PM2.2**

PyroMini 2.2 series infrared temperature sensor with miniature sensing head and separate electronics module

**MEASUREMENT TEMPERATURE RANGE (°C)**

- **PT**
  - 100°C to 200°C
  - 200°C to 400°C
  - 400°C to 800°C
  - 800°C to 1000°C
  - 1000°C to 1200°C
  - 1200°C to 1400°C
  - 1400°C to 1600°C
  - 1600°C to 1800°C
  - 1800°C to 2000°C

- **MT**
  - 200°C to 400°C
  - 400°C to 800°C
  - 800°C to 1000°C
  - 1000°C to 1200°C
  - 1200°C to 1400°C
  - 1400°C to 1600°C
  - 1600°C to 1800°C
  - 1800°C to 2000°C

- **HT**
  - 200°C to 400°C
  - 400°C to 800°C
  - 800°C to 1000°C
  - 1000°C to 1200°C
  - 1200°C to 1400°C
  - 1400°C to 1600°C
  - 1600°C to 1800°C
  - 1800°C to 2000°C

**OUTPUT AND INTERFACE**

- **-CB**
  - 4 to 20 mA output, no screen

- **-CRT**
  - 4 to 20 mA output and two alarm relay outputs, with touch screen

- **-BB**
  - RS485 Modbus output, no screen

- **-BRT**
  - RS485 Modbus output and two alarm relay outputs, with touch screen

**EXAMPLE: PM2.2-251-MT-BRT**

<table>
<thead>
<tr>
<th>Series</th>
<th>Field of View</th>
<th>Measurement Temperature Range</th>
<th>Output and Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM2.2</td>
<td>251</td>
<td>250°C to 1000°C</td>
<td>BRT RS485 Modbus output and two alarm relay outputs, with touch screen</td>
</tr>
</tbody>
</table>

**Diameter of target spot measured versus distance from sensing head - 90% energy**

PU151-2.2

PU251-2.2

PU751-2.2

PUCF-2.2

Model shown does not include screen
**CONNECTIONS**

- CB and -CRT models

- BB and -BRT models

Emissivity switches on -CB models only

24 V DC
100 mA

4 to 20 mA

**DIMENSIONS AND ACCESSORIES**

Electronics Module

Sensing Head

Mounting Nut (included)

Air Purge Collar

All dimensions in mm

**ACCESSORIES ALSO AVAILABLE**

- **MSD** MicroSD Card with SD Card adapter: stores logged data (-CRT and -BRT models)
- **PM2.2CE** Extended cable between sensing head and electronics module (up to 30 m length)
- **CALCERTA** Calibration certificate
- **LSTS** Laser sighting tool
- **ABS** Adjustable mounting bracket
- **FBS** Fixed mounting bracket
- **DLSB** Dual Laser Sighting Bracket
- **APSN** Air purge collar
- **PM180** 6-channel Modbus temperature indicator with touch screen interface and data logging