

PyroMini 2.2

Miniature Infrared Temperature Sensor for Demanding Applications with Optional Touch Screen



Model shown includes optional touch screen interface

- 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 1550°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

Emissivity Setting Range

0.10 to 1.00

Emissivity 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, t_{90}

≥240 ms (90% response)

Spectral Range

2.0 to 2.6 μ m

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

| | Sensing head | Electronics Module |
|---------------------|----------------------------|--|
| Construction | Stainless Steel 316 | Cast aluminium |
| Dimensions | Ø 18 x 45 mm (see diagram) | 98(w) x 64(h) x 36(d) mm |
| Mounting | M16 x 1 mm thread | Two M4 screw holes for wall mounting (see diagram) |

Cable Length (sensing head to electronics module)

1 m (standard), up to 30 m (optional)

Weight with 1 m Cable

390 g (approx)

Cable Connections

Removable screw terminal blocks (see Connections)

Conductor size: 28 AWG to 18 AWG

Suitable for cable diameters 3.0 to 6.5 mm

Output Cable Gland

ENVIRONMENTAL

| | Sensing head | Electronics Module (without touch screen) | Electronics Module (with touch screen) |
|----------------------------------|----------------------------|---|--|
| Environmental Rating | IP65 (NEMA 4) | IP65 (NEMA 4) | |
| Ambient Temperature Range | 0°C to 70°C | 0°C to 60°C | 0°C to 60°C |
| Relative Humidity | Maximum 95% non-condensing | Maximum 95% non-condensing | Maximum 95% non-condensing |
| CE Marked | Yes | Yes | Yes |
| RoHS Compliant | Yes | Yes | Yes |

ELECTROMAGNETIC COMPATIBILITY STANDARDS:

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

TOUCH SCREEN (-CRT AND -BRT MODELS)

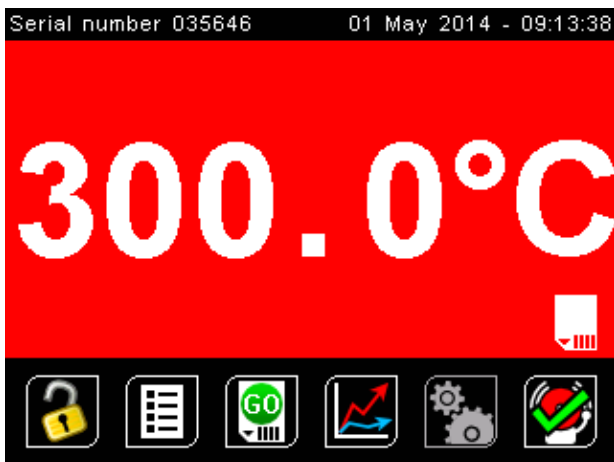
The optional backlit touch screen interface mounted in the lid of the electronics module provides a large, bright display of the measured temperature, as well as controls allowing full configuration of the sensor. The graph view shows the history of the measured temperature.

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.

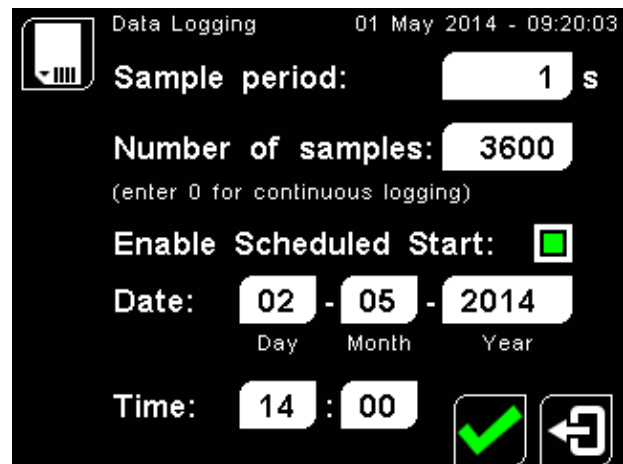
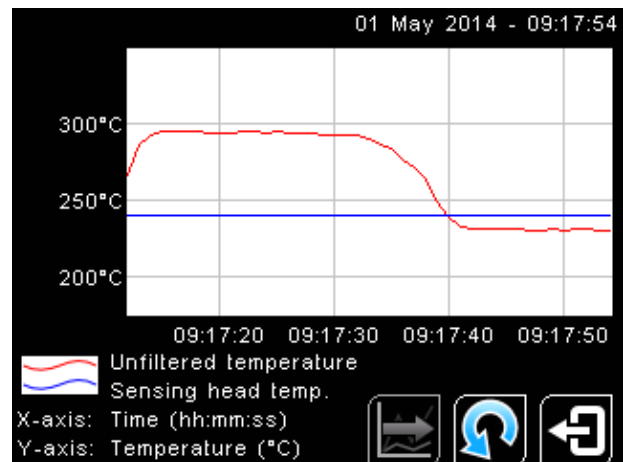
TOUCH SCREEN SPECIFICATIONS

| | |
|------------------------------------|---|
| Touch Screen Display Format | 2.83" (72 mm) resistive touch TFT, 320 x 240 pixels, backlit |
| Configurable Parameters | Temperature range, temperature units, emissivity setting, reflected energy compensation, alarms, signal processing, Modbus address (-BRT models), date and time, data logging |
| Temperature Units | °C or °F configurable |
| Temperature Resolution | 0.1° |
| Alarm Configuration | Two alarms with adjustable level, individually configurable as HI or LO. Alarm 2 can be set to target temperature or sensing head internal temperature |
| Signal Processing | Average, peak hold, valley hold, minimum, maximum |

EXAMPLE SCREENSHOTS



Screen shown with red background to indicate alarm condition



DATA LOGGING SPECIFICATIONS

| | |
|--------------------------------|--|
| Data Logging Interval | 1 to 86,400 seconds (1 day) |
| MicroSD Card | Max. capacity: 2 GB (not included) |
| Internal Clock Battery | 1 x BR 1225 3V (not included) |
| Variables Logged | Target temperature, sensing head temperature, electronics module temperature, max, min, average, emissivity setting, reflected energy compensation temperature, alarm events |
| File format | .csv |
| Configurable Parameters | Sample period, number of samples, scheduled start date and time |

DATA LOGGING (-CRT AND -BRT MODELS)

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.

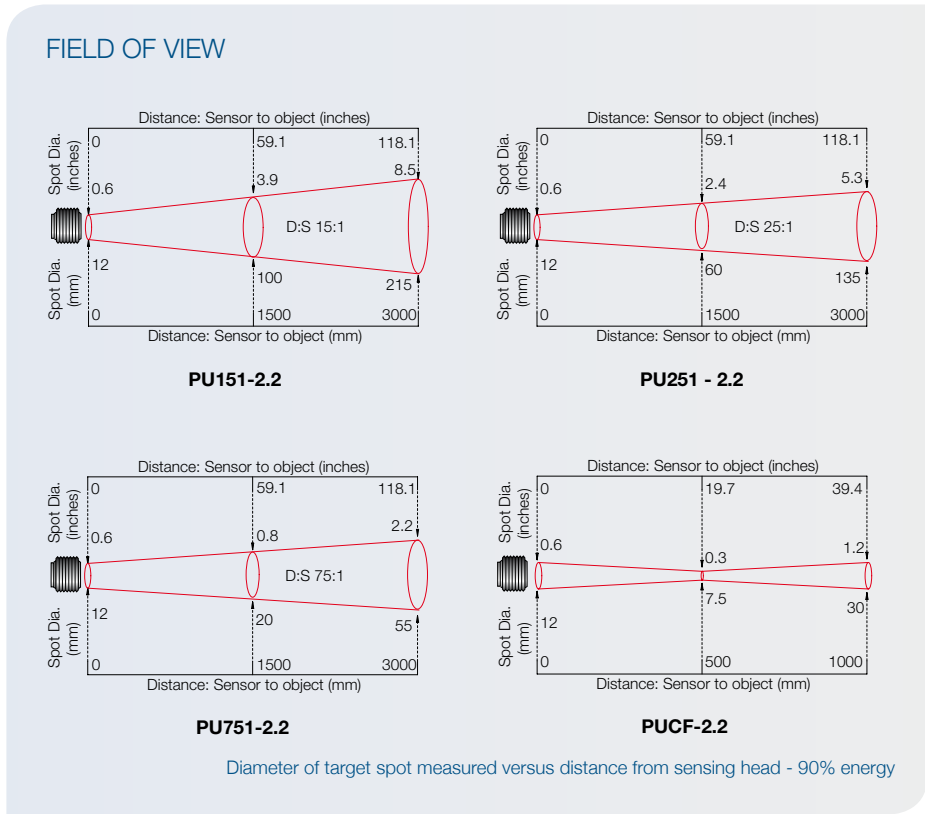
MODEL NUMBERS

| Series | Field of View | Measurement Temperature Range | Output and Interface |
|--------|---------------|-------------------------------|----------------------|
| PM2.2 | 151 | PT | CB |
| | 251 | MT | CRT |
| | 751 | | BB |
| | CF | | BRT |



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



-CB models: Fixed 4 to 20 mA output scale (e.g. -MT: 250°C @ 4 mA, 1000°C @ 20 mA)

-CRT models: 4 to 20 mA output is configurable within this range

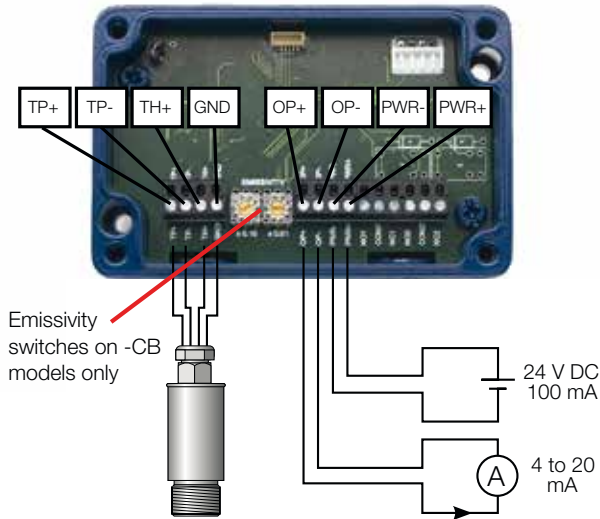
-BB and -BRT models: Digital output, full temperature range

EXAMPLE: PM2.2-251-MT-BRT

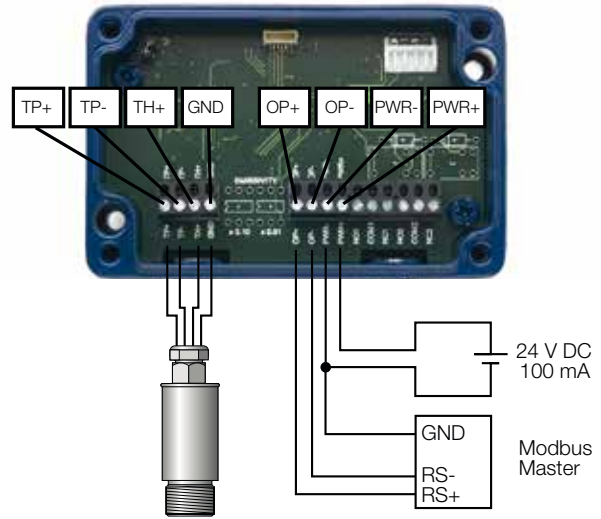
| Series | Field of View | Measurement Temperature Range | Output and Interface |
|---------------------------|----------------------------------|-------------------------------|---|
| PM2.2 PyroMini 2.2 | 251 25:1 divergent optics | MT 250°C to 1000°C | BRT RS485 Modbus output and two alarm relay outputs, with touch screen |

CONNECTIONS

-CB and -CRT models

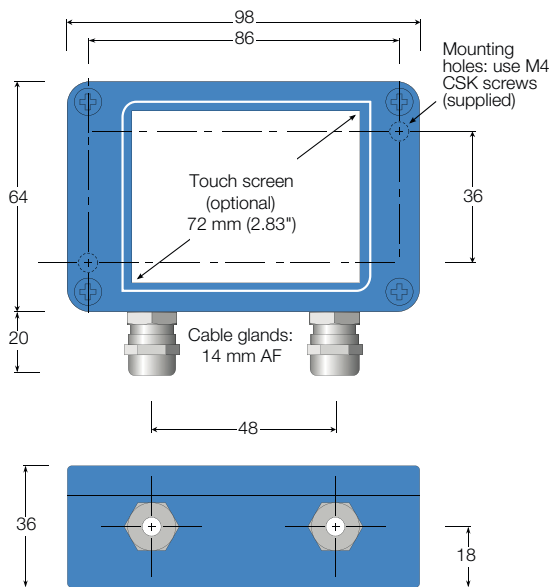


-BB and -BRT models

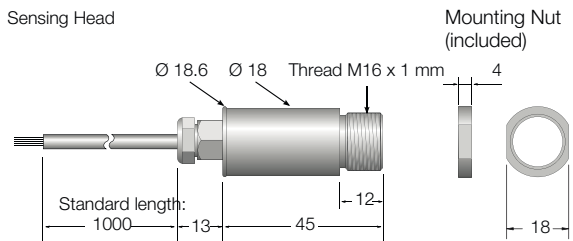


DIMENSIONS AND ACCESSORIES

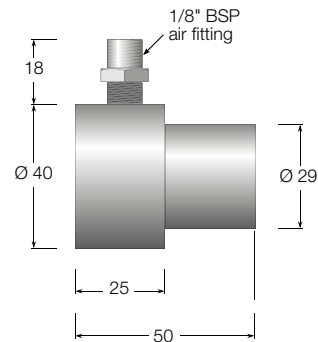
Electronics Module



Sensing Head



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



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