

# 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 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  $\mu$ m

#### Supply Voltage

24 V DC ± 5%

#### Maximum Current Draw

100 mA

#### Maximum Loop Impedance

-CB and -CRT models: 900  $\Omega$  (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)

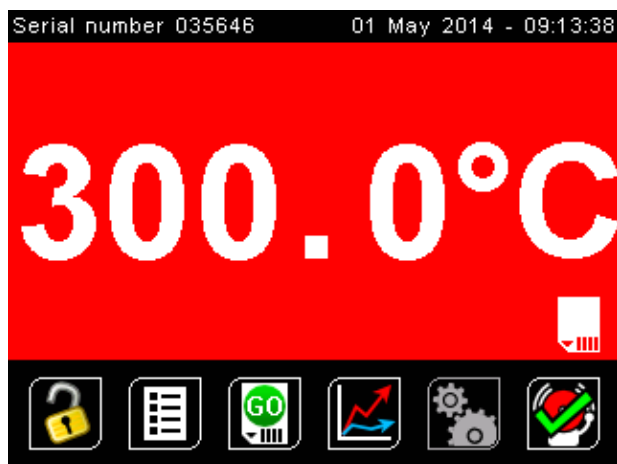
The optional backlit touch screen interface mounted in the lid of the electronics module provides a large, bright display of the measured temperature, as well as controls allowing full configuration of the sensor. The graph view shows the history of the measured temperature.

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.

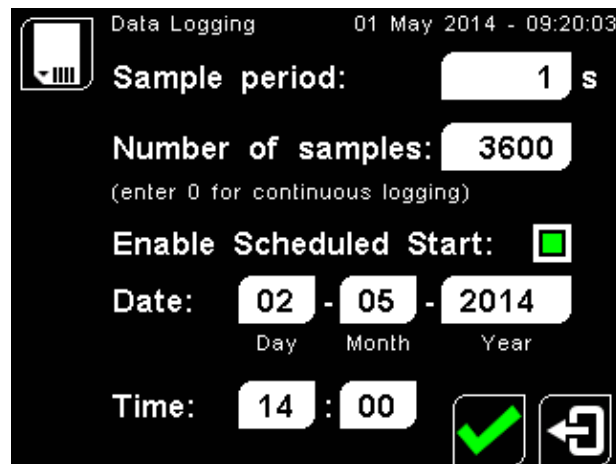
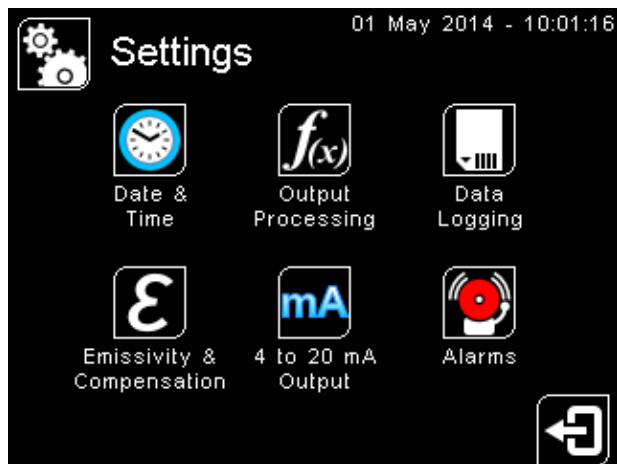
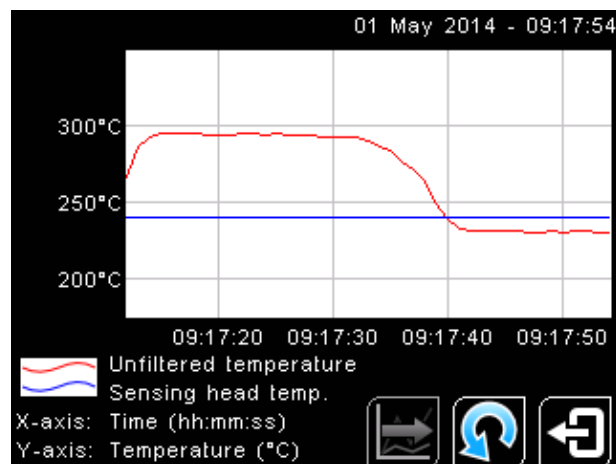
## TOUCH SCREEN SPECIFICATIONS

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

## EXAMPLE SCREENSHOTS



Screen shown with red background to indicate alarm condition



## DATA LOGGING SPECIFICATIONS

<b>Data Logging Interval</b>	1 to 86,400 seconds (1 day)
<b>MicroSD Card</b>	Max. capacity: 2 GB (not included)
<b>Internal Clock Battery</b>	1 x BR 1225 3V (not included)
<b>Variables Logged</b>	Target temperature, sensing head temperature, electronics module temperature, max, min, average, emissivity setting, reflected energy compensation temperature, alarm events
<b>File format</b>	.csv
<b>Configurable Parameters</b>	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	HT	BB
	CF	HT	BRT

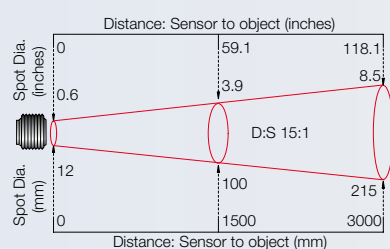
### SERIES PM2.2



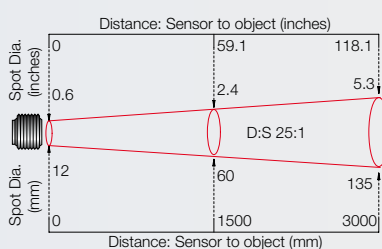
### OUTPUT AND INTERFACE

- 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

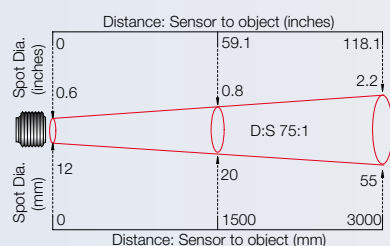
### FIELD OF VIEW



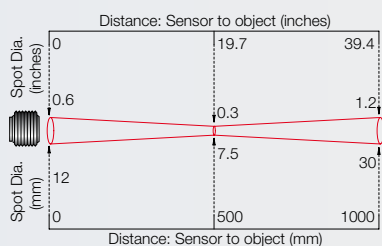
**PU151-2.2**



**PU251 - 2.2**



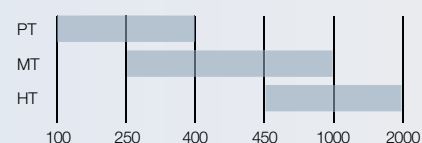
**PU751-2.2**



**PUCF-2.2**

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

### MEASUREMENT TEMPERATURE RANGE (°C)



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

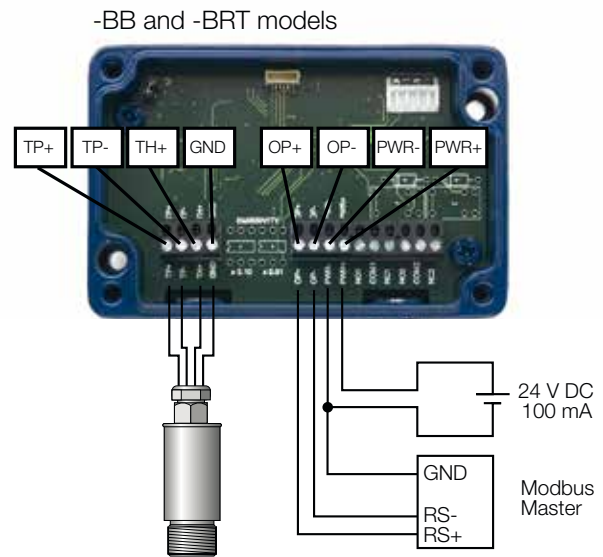
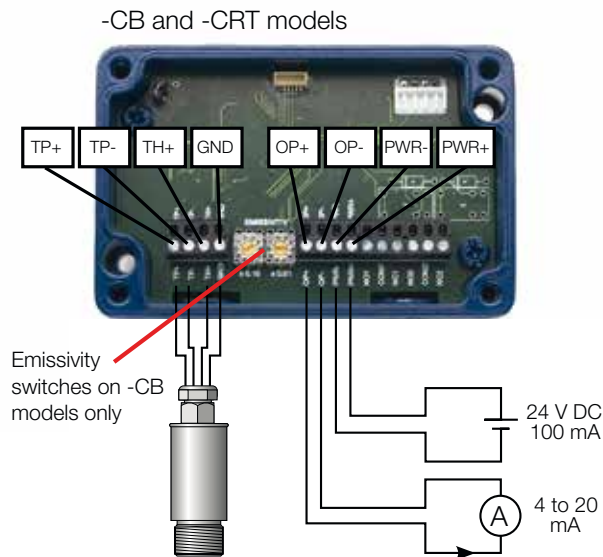
**-CRT models:** 4 to 20 mA output is configurable within this range

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

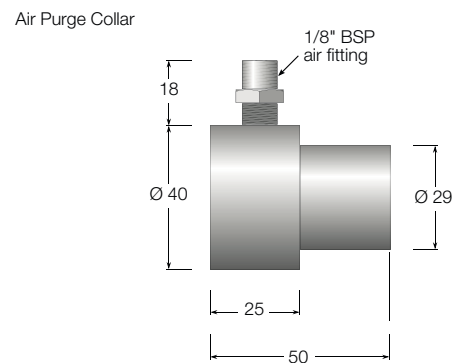
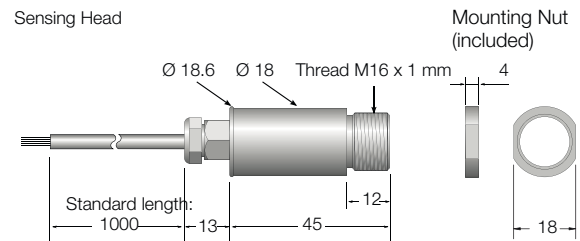
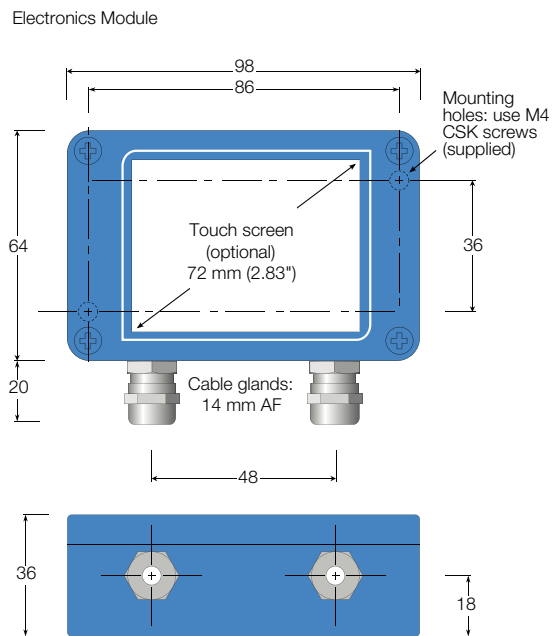
### EXAMPLE: PM2.2-251-MT-BRT

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

## CONNECTIONS



## DIMENSIONS AND ACCESSORIES



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



## Calex Electronics Limited

PO Box 2, Leighton Buzzard, Bedfordshire, England LU7 4AZ  
 Tel: +44 (0)1525 373178/853800 Fax: +44 (0)1525 851319 Lo-call Tel: 0845 3108053  
 E-mail: mail@calex.co.uk Online: <http://www.calex.co.uk>

**OneTemp<sup>®</sup>** pty ltd  
 MEASURE | CONTROL | RECORD  
[www.onetemp.com.au](http://www.onetemp.com.au)  
 1300 768 887