

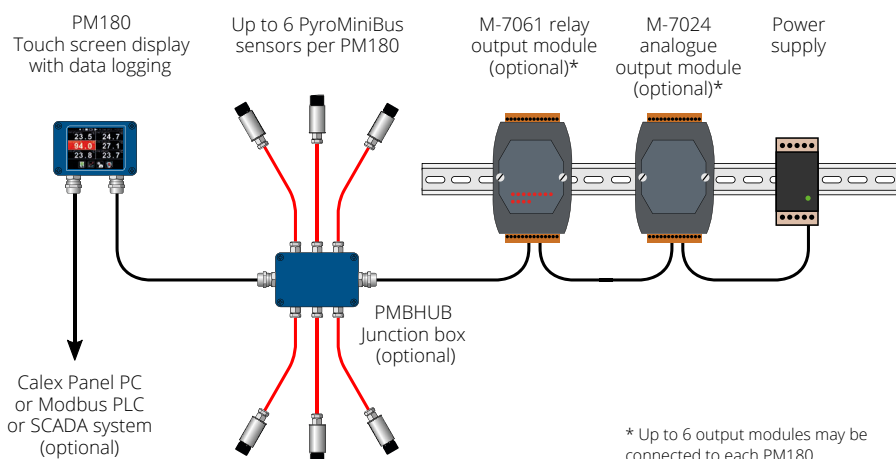
# PyroMiniBus

## Infrared Temperature Sensors with RS485 Modbus for Multi-Channel Installations



- Miniature non-contact temperature sensors
- RS485 Modbus communications - sensors can be connected directly to third-party Modbus hardware
- Optional Calex touch screen terminal for configuration, display, alarms and data logging
- Low-cost standalone 6-channel system
- Connect to larger systems using the PM180's separate Modbus Master and Slave interfaces
- Analogue and alarm relay outputs via optional modules
- Conforms to industrial EMC standards
- Ideal for continuous temperature monitoring at multiple locations e.g. busbar surface temperature in switchgear cabinets

### PM180 AS MODBUS MASTER



PyroMiniBus sensors are designed to measure the surface temperature of non-reflective materials in industrial applications, from -20°C to 1000°C.

Sensors have direct RS485 Modbus communications, allowing them to be connected directly to third-party Modbus hardware.

They are sealed to IP65, built from 316 stainless steel, and fully tested to industrial EMC standards.

They can measure food, paper, thick plastics, asphalt, paint, bulk materials and organic materials, as well as most dirty, rusty or oily surfaces.

#### ROBUST

PyroMiniBus sensors have an operating temperature rating of up to 120°C with no need for cooling.

#### COMPACT

The sensors measure just 45 mm long (plus cable gland), so they can fit into the smallest of spaces.

#### CONFIGURABLE

Up to 6 sensors can be connected to the optional PM180 interface module, which provides temperature display, configuration, and high-capacity data logging to a MicroSD Card.

Analogue and relay outputs are available via separate DIN rail mounted modules.

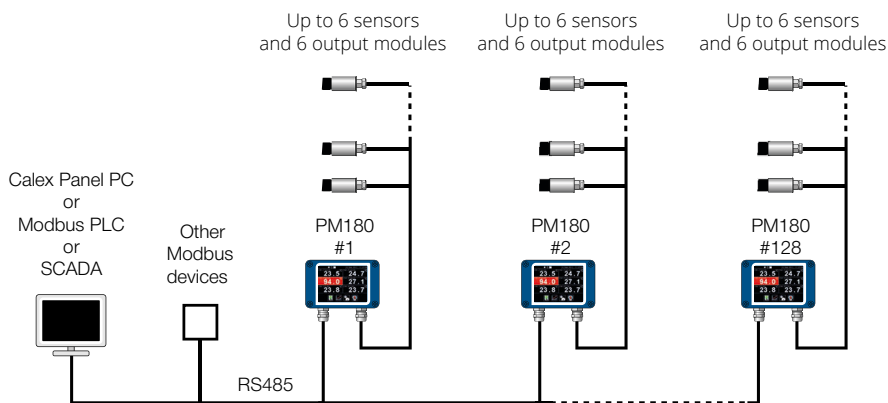
#### LOW COST

With up to 6 sensors connected to one PM180, the PyroMiniBus is an ideal low-cost non-contact temperature measurement system.

#### NETWORKABLE

PyroMiniBus sensors and PM180 sub-networks may be connected directly to an RS485 Modbus SCADA system or PLC. It is possible to measure the temperature of hundreds of locations on the same network.

### PM180 AS MODBUS SLAVE



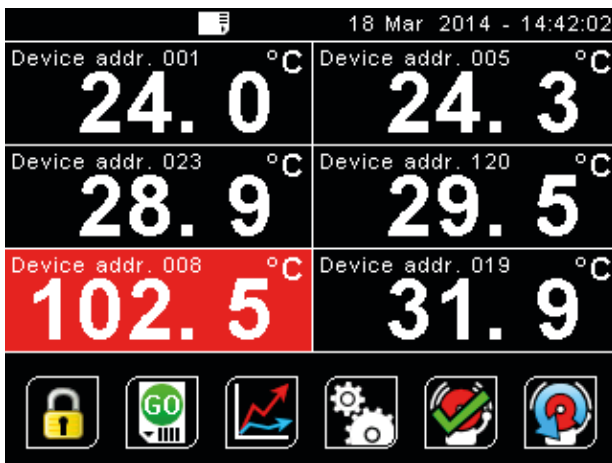
Each PM180 is a slave device on the main network and the master on each network of sensors. Up to 128 PM180 units can be connected to the same Modbus Master. This layout allows hundreds of sensors to be connected in a network.



## PM180

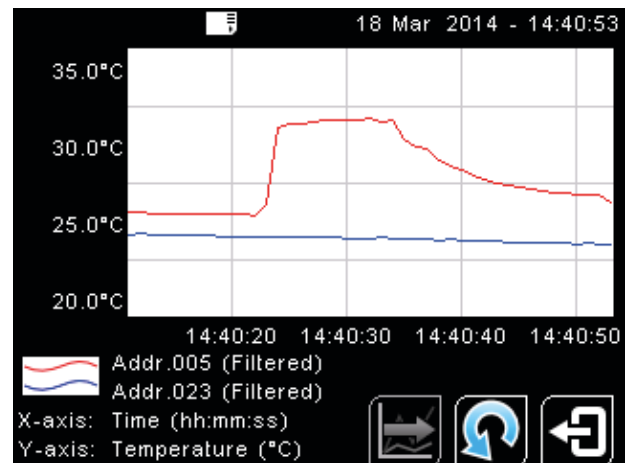
### Optional 6-Channel Touch Screen Terminal

- Configure, display and log data and alarm events
- Connect up to 6 sensors per terminal unit
- Operates as Modbus Master and Slave
- High capacity data logging to MicroSD Card
- Bright touch screen display with backlight
- Analogue and relay outputs via optional ICPDAS modules M-7061 and M-7024
- 2-channel scrolling temperature chart
- Selectable language: English, Chinese, Japanese



#### Intuitive touch screen interface

Display and configure all 6 channels individually or simultaneously. The display for each channel turns red in an alarm condition



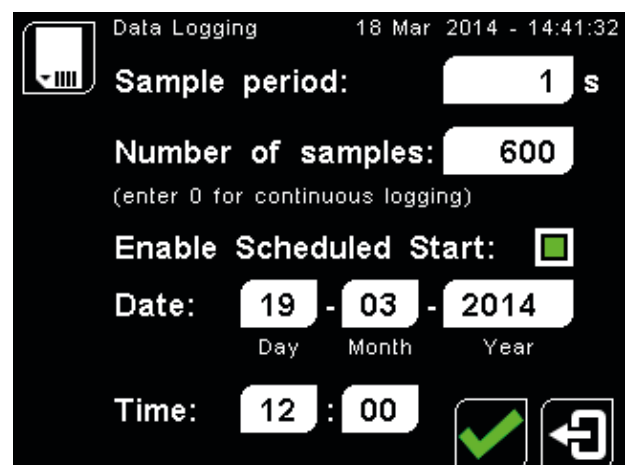
#### Temperature chart

Display temperature data from two channels in a scrolling graph



#### Password-protected settings

Configure options for each sensor, and the PM180 itself, via the touch screen interface



#### Data logging

Schedule a start time, or start and stop logging at the touch of an icon. Temperature data and alarm events may be logged to a MicroSD Card (not supplied)

## SPECIFICATIONS



### PYROMINIBUS SENSOR SPECIFICATIONS

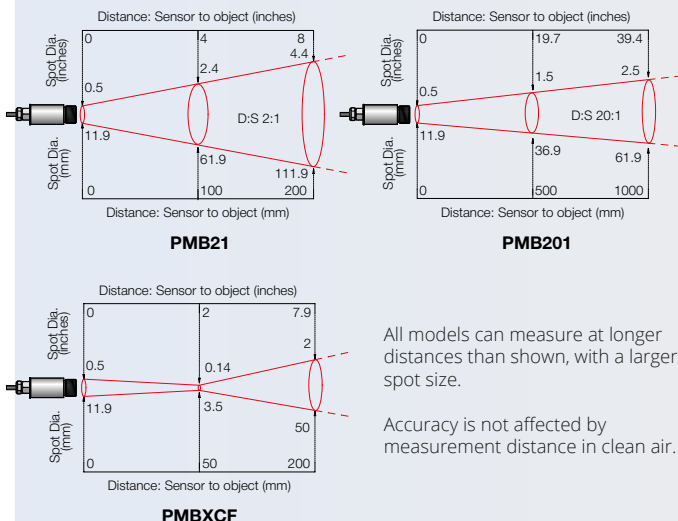
General	
<b>Temperature Range</b>	-20°C to 1000°C
<b>Interface</b>	RS485 Modbus RTU
<b>Accuracy</b>	±1% of reading or ±1°C whichever is greater
<b>Repeatability</b>	± 0.5% of reading or ± 0.5°C whichever is greater
<b>Emissivity Setting</b>	0.2 to 1.0
<b>Response Time</b>	125 ms (90% response)
<b>Spectral Range</b>	8 to 14 μm
<b>Supply Voltage</b>	24 V DC (min. 6 V DC / max. 28 V DC)
<b>Supply Current</b>	50 mA max.
<b>Baud Rate</b>	9600 baud *
<b>Format</b>	8 data bits, no parity, 1 stop bit *

\* Other configurations available on request

Configuration	
<b>Configuration Method</b>	Via PM180 touch screen, or directly via RS485 Modbus
<b>Configurable Parameters</b>	Emissivity Setting, Averaging, Reflected Energy Compensation
Mechanical	
<b>Construction</b>	Stainless Steel
<b>Dimensions</b>	18 mm diameter x 45 mm long
<b>Thread Mounting</b>	M16 x 1 mm pitch
<b>Cable Length</b>	1m (can be extended or ordered with longer length)
<b>Weight with Cable</b>	85 g
Environmental	
<b>Environmental Rating</b>	IP65
<b>Ambient Temperature</b>	0°C to 120°C
<b>Relative Humidity</b>	95% max. non-condensing
Conformity	
<b>See PM180 Specification (right)</b>	
Network Size	
<b>Max. No. of Devices</b>	247 sensors per Modbus Master

### OPTICS

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



All models can measure at longer distances than shown, with a larger spot size.

Accuracy is not affected by measurement distance in clean air.

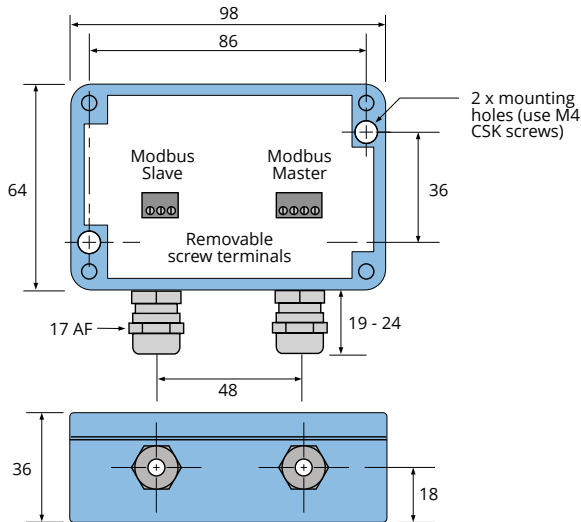


### PM180 SPECIFICATIONS

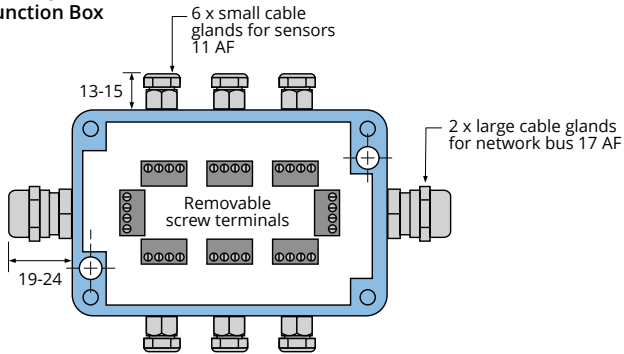
General	
<b>Compatible Sensor Types</b>	All models of PyroMiniBus and PyroBus sensors; -BB and -BRT models of PyroMini and FibreMini sensors. Up to 6 sensors per PM180.
<b>Display</b>	2.83" (72 mm) resistive touch TFT, 320 x 240 pixels, backlit
<b>Supply Voltage</b>	24 V DC (min. 10 V DC / max. 30 V DC)
<b>Maximum Current Draw</b>	100 mA
<b>Configurable Parameters (global)</b>	Temperature units, date and time, data logging, graph channels, alarm logging
<b>Configurable Parameters (per channel)</b>	Signal processing, emissivity setting, reflected energy compensation, alarms, Modbus address
<b>Alarm Configuration</b>	12 alarms (2 per sensor) with adjustable level, individually configurable as HI or LO.
<b>Temperature Units</b>	°C or °F selectable
<b>Temperature Resolution</b>	0.1°
<b>Signal Processing</b>	Averaging with configurable period
<b>Display Sample Period</b>	120 ms per sensor (720 ms in total for 6 sensors)
Data Logging	
<b>Logging Interval</b>	1 to 86,400 seconds (1 day)
<b>MicroSD Card</b>	Max. capacity: 32 GB (not included - stores years of logged data)
<b>Internal Clock Battery</b>	1 x BR 1225 3V (not included)
<b>Variables Logged</b>	Target temperature, sensing head temperature, alarm events
<b>File Format</b>	.csv (can be imported to Excel)
<b>Configurable Parameters</b>	Sample period, number of samples, scheduled start date and time
Mechanical	
<b>Construction</b>	Die Cast Aluminium
<b>Electrical Connections</b>	Removable screw terminals, 28 AWG to 18 AWG
<b>Dimensions</b>	98 (w) x 64 (h) x 36 (d) mm excluding cable glands
<b>Weight</b>	280 g
Environmental	
<b>Environmental Rating</b>	IP65
<b>Ambient Temperature</b>	0°C to 60°C
<b>Relative Humidity</b>	Maximum 95%, non-condensing
Conformity	
<b>RoHS Compliant</b>	Yes
<b>Electromagnetic Compatibility</b>	EN61326-1, EN61326-2-3 (Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements - <b>Industrial</b> )
Language	
<b>Languages</b>	Selectable: English, Chinese (Simplified) or Japanese
Network Size	
<b>Max. No. of Devices</b>	6 sensors per PM180 128 PM180 units per Modbus Master

## MAJOR DIMENSIONS

### PM180

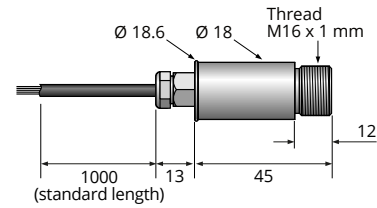


### PMBHUB Junction Box

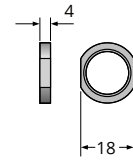


All dimensions in mm

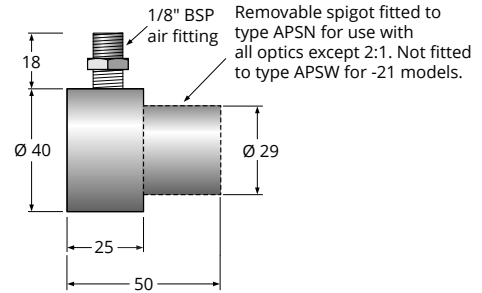
### PyroMiniBus Sensor



### Mounting Nut (included)



### Air Purge Collar



## PMBHUB SPECIFICATIONS

<b>Construction</b>	Die Cast Aluminium
<b>Electrical Connections</b>	Removable screw terminals, 28 AWG to 18 AWG
<b>Weight</b>	250 g
<b>Environmental Rating</b>	IP65
<b>Enclosure Dimensions</b>	Same as PM180
<b>Max. Ambient Temperature</b>	80°C

## SENSOR MODEL NUMBERS



**PMB** **201** - **3M**

**Cable length (blank)** 1 metre  
**nM** n metres  
 Maximum factory fitted length: 30 m  
 Can be extended using RS485 cable

**Field of view**  
**21** 2:1 wide-angle divergent optics  
**201** 20:1 general-purpose divergent optics  
**XCF** Close Focus optics (3.5 mm spot diameter at 50 mm distance)

**Series**  
**PMB** PyroMiniBus sensor

## SENSOR ACCESSORIES

- PMBHUB** IP65 junction box for 6 sensors
- FBS / ABS** Fixed or Adjustable mounting bracket
- DLSBFS / DLSBAS** Fixed or Adjustable mounting bracket with continuous laser sighting
- LSTS** Removable laser sighting tool
- PMBSC** RS485 network cable (connects PM180 to PMBHUB)
- CALCERTA** Calibration certificate
- PMK** Panel Mounting Kit for PM180
- PWS / SIWS** Protective plastic/silicon window in stainless steel holder

## PM180 ACCESSORIES

- MSD** MicroSD Card for PM180 data logging
- M-7061** 12-channel ICP DAS Modbus relay output module
- M-7024** 4-channel ICP DAS Modbus voltage or current analogue output module



**thermo-electra**  
 temperature sensor solutions

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