PyroMiniBus
Multi-Channel Infrared Temperature Monitoring System

thermo-electra
temperature sensor solutions

- Miniature non-contact temperature sensors with RS485 Modbus communications
- Touch screen terminal for configuration, display, alarms and data logging
- Low-cost standalone 6-channel system
- Build 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

PM180 AS MODBUS MASTER

PM180
Touch screen display with data logging

Up to 6 PyroMiniBus sensors

M-7061 relay output module (optional)*

M-7024 analogue output module (optional)*

Power supply

PMBHUB (optional)

Modbus PLC or SCADA system (optional)

* Up to 6 output modules may be connected to each PM180

PM180 AS MODBUS SLAVE

Modbus Master e.g. SCADA system in control room

Other Modbus devices

Up to 6 sensors and 6 output modules

PM180 #1

Up to 6 sensors and 6 output modules

PM180 #2

Up to 6 sensors and 6 output modules

PM180 #247

RS485

Each PM180 is a slave device on the main network and the master on each network of sensors.

The PyroMiniBus is an industrial infrared temperature monitoring system, with miniature sensing heads and optional display modules.

PyroMiniBus sensors are designed to measure the surface temperature of non-reflective materials in industrial applications, from -20°C to 1000°C. 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
To measure more than 6 locations, PyroMiniBus sensors and PM180 sub-networks may be connected to an RS485 Modbus SCADA system or PLC. It is possible to measure the temperature of hundreds or thousands of locations on the same network.

CALEX
ELECTRONICS LIMITED
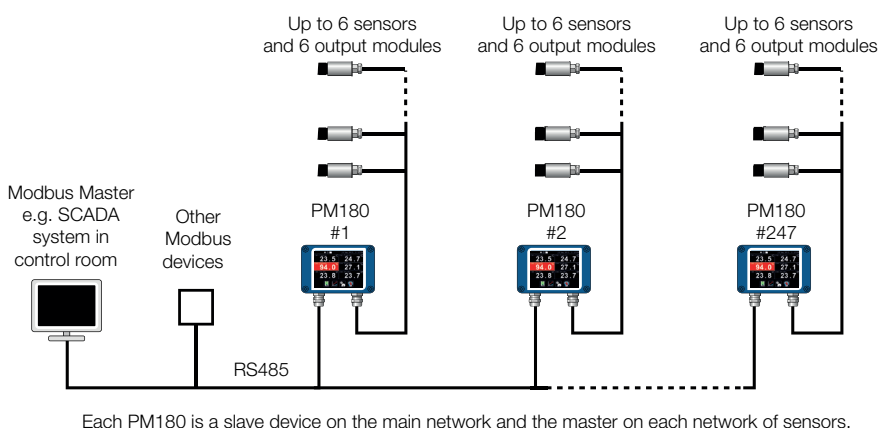
PM180 6-CHANNEL TOUCH SCREEN TERMINAL

- Configure, display and log data and alarms from up to 6 sensors per terminal unit, simultaneously or individually
- Operates as Modbus master and Modbus slave
- High capacity data logging to MicroSD Card
- Bright touch screen with backlight
- Analogue and relay outputs via optional ICP DAS modules
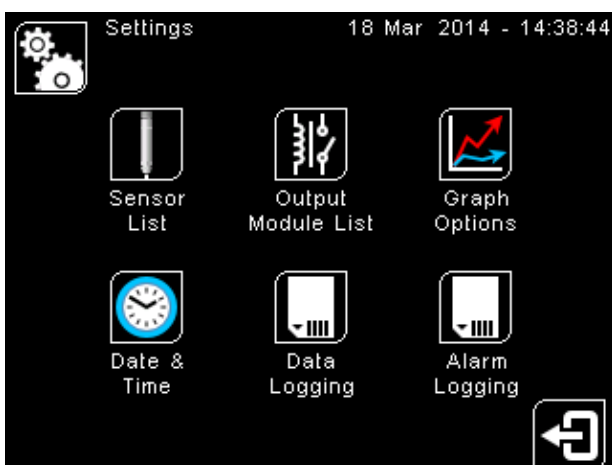- 2-channel scrolling temperature chart
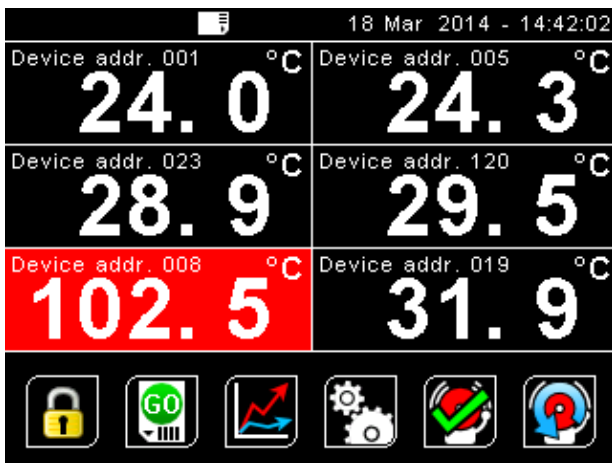
Intuitive touch screen interface

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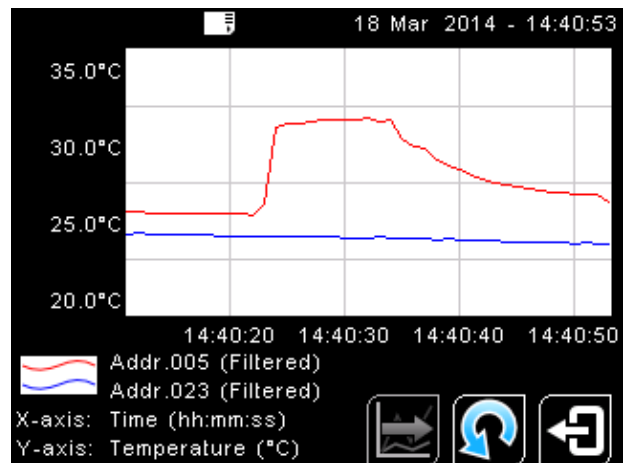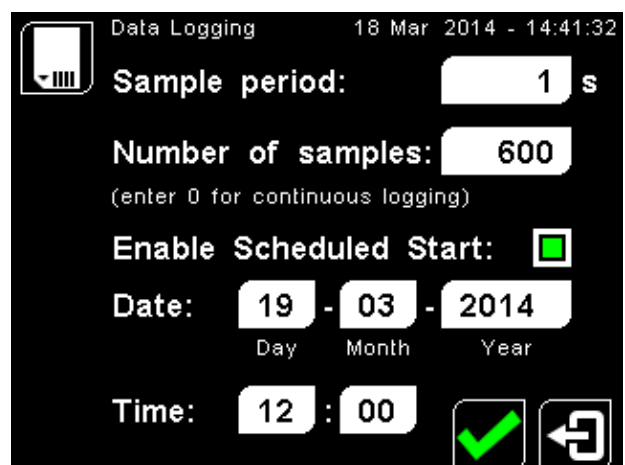

Temperature chart

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 SPECIFICATION

Temperature Range
-20°C to 1000°C

Interface
RS485 Modbus RTU

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

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

Emissivity Setting
0.2 to 1.0

Response Time, t_{90}
240 ms (90% response)

Spectral Range
8 to 14 µm

Supply Voltage
6 to 28 V DC

Supply Current
50 mA max.

Baud Rate
9600 baud *

Format
8 data bits, no parity, 1 stop bit *

* Other configurations available upon request

CONFIGURATION
Configuration Method
Via PM180 touch screen, or directly via RS485 Modbus

Configurable Parameters
Emissivity Setting, Averaging, Peak/Valley Hold Processing, Reflected Energy Compensation

MECHANICAL
Construction
Stainless Steel

Dimensions
18 mm diameter x 45 mm long

Thread Mounting
M16 x 1 mm pitch

Cable Length
1m (longer lengths available to order)

Weight with Cable
85 g

ENVIRONMENTAL
Environmental Rating
IP65

Ambient Temperature
0°C to 120°C

Relative Humidity
95% max. non-condensing

CONFORMITY
See PM180 Specification (right)

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

PMB21

PMB201

PM180 SPECIFICATION

Compatible Sensor Types
PyroMiniBus (all models), PyroBus (all models), PyroMini (-BB and -BRT models)

Display
2.83" (72 mm) resistive touch TFT, 320 x 240 pixels, backlit

Supply Voltage
10 to 30 V DC

Maximum Current Draw
100 mA

Configurable Parameters (global)
Temperature units, date and time, data logging, graph channels, alarm logging

Configurable Parameters (per channel)
Signal processing, emissivity setting, reflected energy compensation, alarms, Modbus address

Alarm Configuration
12 alarms (2 per sensor) with adjustable level, individually configurable as HI or LO.

Temperature Units
°C or °F selectable

Temperature Resolution
0.1°

Signal Processing
Average, peak hold, valley hold, minimum, maximum

Display Sample Period
120 ms per sensor (720 ms in total for 6 sensors)

DATA LOGGING
Logging Interval
1 to 86,400 seconds (1 day)

MicroSD Card
Max. capacity: 32 GB (not included - stores years of logged data)

Internal Clock Battery
1 x BR 1225 3V (not included)

Variables Logged
Target temperature, sensing head temperature, alarm events

File Format
.csv (can be imported to Excel)

Configurable Parameters
Sample period, number of samples, scheduled start date and time

MECHANICAL
Construction
Die Cast Aluminium

Electrical Connections
Removable screw terminals, 28 AWG to 18 AWG

Dimensions
98(w) x 64(h) x 36(d) mm excluding cable glands
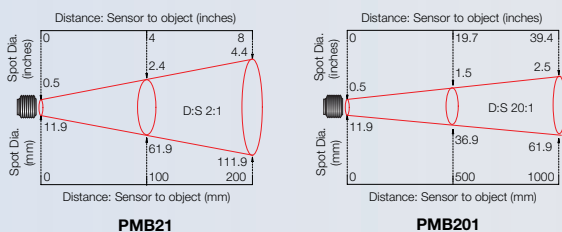
Weight
280 g

ENVIRONMENTAL
Environmental Rating
IP65

Ambient Temperature Range
0°C to 60°C

Relative Humidity
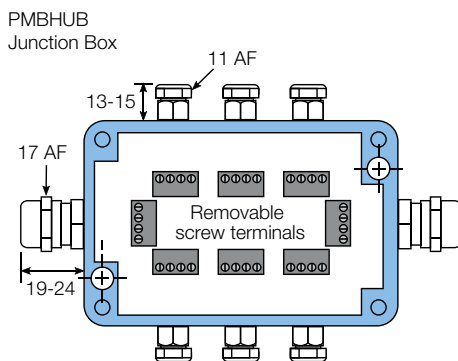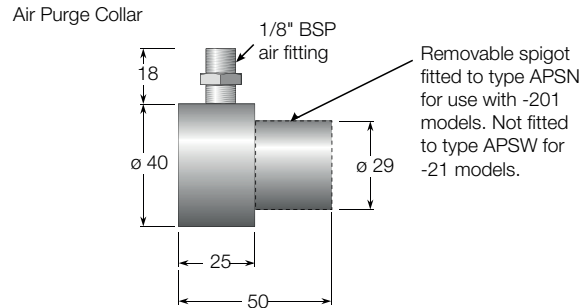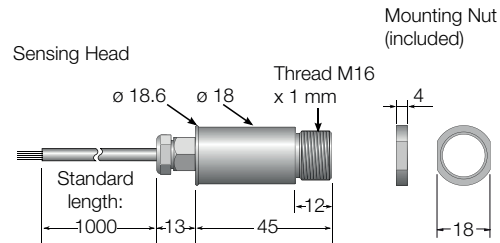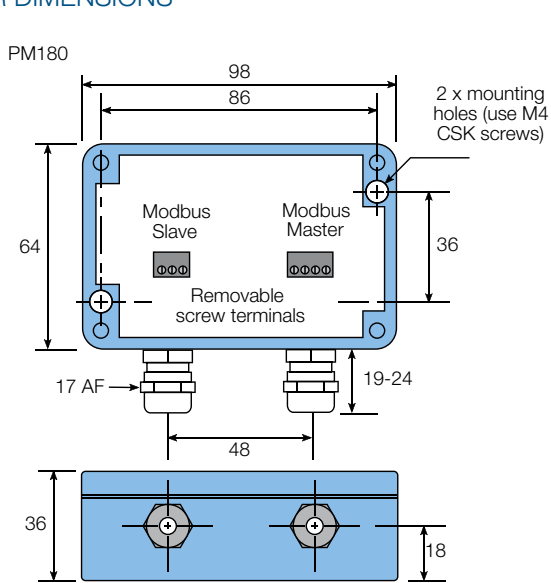Maximum 95%, non-condensing

CONFORMITY
CE Marked
Yes

RoHS Compliant
Yes

Electromagnetic Compatibility
EN61326-1, EN61326-2-3 (Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements - **Industrial**)

MAJOR DIMENSIONS

PM180

98
86
64
36
2 x mounting holes (use M4 CSK screws)

Modbus Slave
Modbus Master
Removable screw terminals

17 AF
19-24
48
36
18

Sensing Head

Mounting Nut (included)

ø 18.6
ø 18
Thread M16 x 1 mm
4

Standard length: 1000
13
45
12
18

Air Purge Collar

1/8" BSP air fitting

Removable spigot fitted to type APSN for use with -201 models. Not fitted to type APSW for -21 models.

18
ø 40
ø 29
25
50

PMBHUB Junction Box

11 AF
13-15
17 AF
19-24
Removable screw terminals

All dimensions in mm

PMBHUB SPECIFICATIONS

Construction
Die Cast Aluminium
Electrical Connections
Removable screw terminals, 28 AWG to 18 AWG
Weight
250 g
Environmental Rating
IP65
Enclosure Dimensions
Same as PM180

MODEL NUMBERS

PMB | **201**

Field of view
21 = 2:1 divergent optics
201 = 20:1 divergent optics

Series
PMB = PyroMiniBus sensor

PM180 6-channel touch screen terminal with data logging

SENSOR ACCESSORIES

IP65 junction box for 6 sensors **PMBHUB**

Adjustable mounting bracket **ABS**

Fixed mounting bracket **FBS**

Extended cable **PMBCE**

Calibration certificate **CALCERTA**

Laser sighting tool **LSTS**

Fixed or Adjustable mounting bracket with continuous laser sighting **DLSBFS / DLSBAS**

PM180 ACCESSORIES

International AC mains power supply for PM180
PM180MA

MicroSD Card for PM180 data logging **MSD**

12-channel Modbus relay output module **M-7061**

4-channel Modbus voltage or current analogue output module **M-7024**

Laser sighting tool

Air purge collar

Adjustable mounting bracket

Fixed mounting bracket