PyroCube

IR Temperature Sensor with Fast Response Time, Small Measured Spot and Continuous LED Sighting

PyroCube sensor with optional touch screen interface

- Measures from 0°C to 500°C

- Fast response time: 10 milliseconds

- Ideal for small targets - measurement area as small as 1.6 mm diameter

- Continuous LED sighting on all models - shows the position and size of the measurement spot while readings are being taken

- Multilingual touch screen interface (optional) for temperature display, data logging, sensor configuration and alarms

- Measures surface temperature of paper, thick plastics, food, rubber, electronic components, cable, ceramics, textiles, painted surfaces and some metals, as well as many other materials

PYROCUBE SENSOR SPECIFICATIONS

MEASUREMENT

Temperature range
0°C to 500°C

Response time (95% of step change)
10 ms to 5 s, adjustable via averaging function

Target sighting
Red LED built-in as standard on all models.
Indicates the measured spot size. Switchable on/off*

Measurement accuracy†
± 3°C or 1%, whichever is greater

Repeatability†
± 0.5°C

Resolution†
< 0.5°C

Emissivity setting
Adjustable 0.3 to 1.0

Optics
See Field of View Diagrams on page 2

ELECTRICAL

Outputs
1 analogue output and 1 alarm output

Analogue output
4-20 mA (set by default), 0-20 mA, mV/°C or voltage‡, selectable via optional touch screen interface.

Alarm output
1 open drain alarm output, rated 27 V DC, 0.2 A *

Supply voltage
5 to 27 V DC, 100 mA max

Digital communications
RS232C Modbus RTU, non isolated

MECHANICAL

Weight (without cable)
80 g

ENVIRONMENTAL

Environmental rating
IP67

Operating ambient temperature
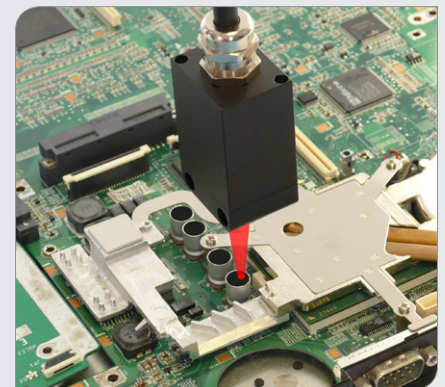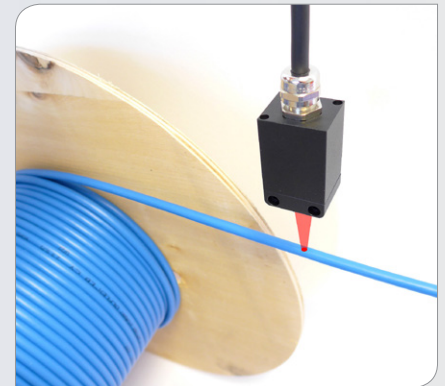0°C to 50°C

Storage temperature
-15°C to 70°C

Operating ambient humidity
30% to 85% RH non condensing

DISPLAY

Optional PM030 touch screen terminal for indication, configuration, data logging and alarm outputs


* When used without the PM030 touch screen interface, the sensor is configurable to use either the LED sighting, or the open drain alarm output.

When used with the PM030, both the LED sighting and the PM030's two alarm relay outputs may be used simultaneously.
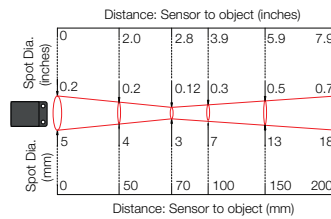
† Ambient temperature 23 ± 5°C, emissivity 1.0, averaging time 50 ms

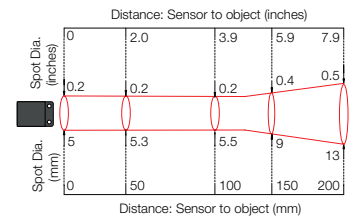‡Voltage can be 0-1, 0-5, or 0-10 V DC, depending on model (see Model Numbers).

CALEX
ELECTRONICS LIMITED

FIELD OF VIEW DIAGRAMS
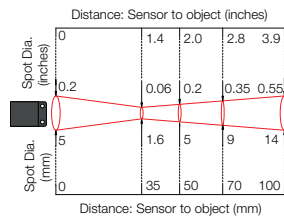
PCU-S1.6

PCU-S3.0

PCU-S5.5

Accuracy specifications are valid up to the maximum distances shown

PM030 TOUCH SCREEN INTERFACE

- Optional wall-mounted display, data logging, configuration and alarm unit for PyroCube sensor

- **Read the temperature**
  The large, bright backlit temperature display is visible from a distance and turns red in an alarm condition.

- **Record the temperature history**
  See a graph of the measured temperature, and log more than a year of data to a single MicroSD Card. The data is stored in a simple text format that can be imported easily into Excel.

- **Configure the sensor**
  All the sensor's configuration settings can be adjusted via the intuitive touch screen interface.

- **Trigger temperature alarms**
  Two alarms are individually configurable as high, low, band or error. The screen turns bright red to signal an alarm condition, and the built-in 24 V, 1 A relay outputs can be connected directly to alarm sounders and beacons.

- **Accurate measurements, even with reflections of hot objects**
  Place the sensor outside an oven or furnace and accurately measure the temperature of objects inside by using the Reflected Energy Compensation feature.

PM030 SPECIFICATIONS

Display Format
2.83" (72 mm) resistive touch TFT, 320x240 pixels, backlit

Configurable Parameters
Language (English, Chinese, Japanese)
Temperature units °C/°F
Displayed temperature
LED sighting on/off
Password
Date & time (for data logging time stamps)
Peak hold period, decay level
Averaging period
Correction (gain/offset)
Emissivity setting (with teach function)
Reflected energy compensation (with teach function)
Output type
Output temperature range
Polarity on error
Alarm mode, levels, hysteresis

Outputs (from touch screen module)
Retransmitted analogue output from sensor, plus 2 relays, rated 24 V DC, 1 A

Output Type	Effective Minimum Output	Output Accuracy (additional to Measurement Accuracy)
0 to 1 V DC	30 mV	±1.5 mV
mV/°C	30 mV	±1.5 mV
0 to 20 mA	0.2 mA	±0.02 mA
4 to 20 mA	4.0 mA	±0.02 mA
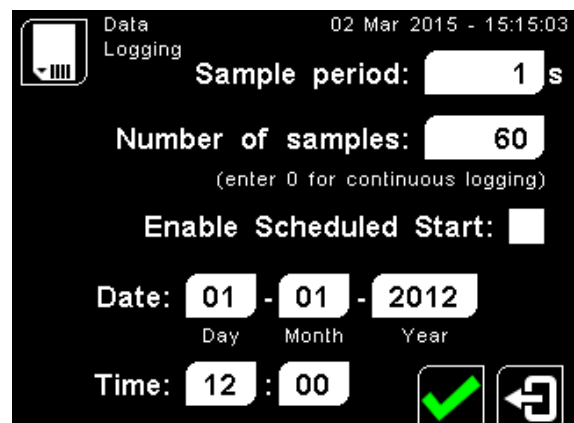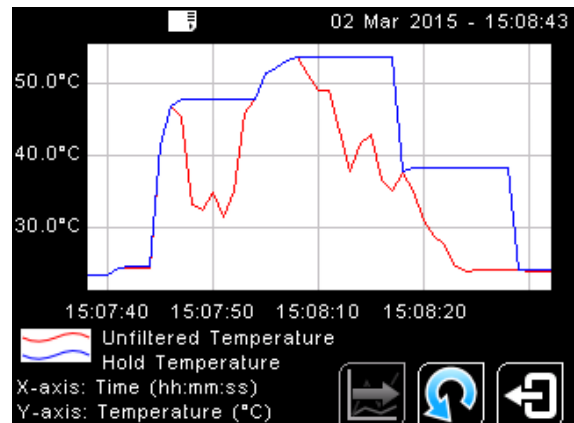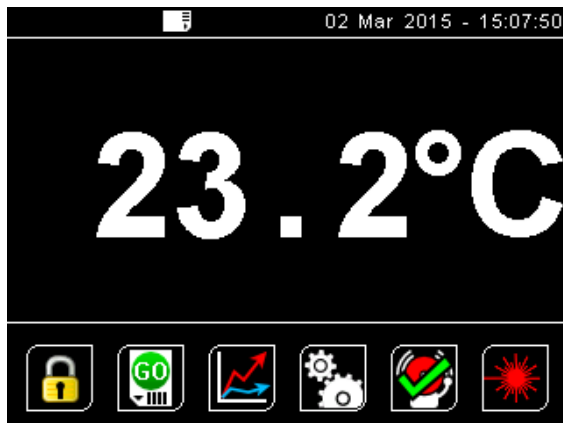
PM030 DATA LOGGING SPECIFICATIONS

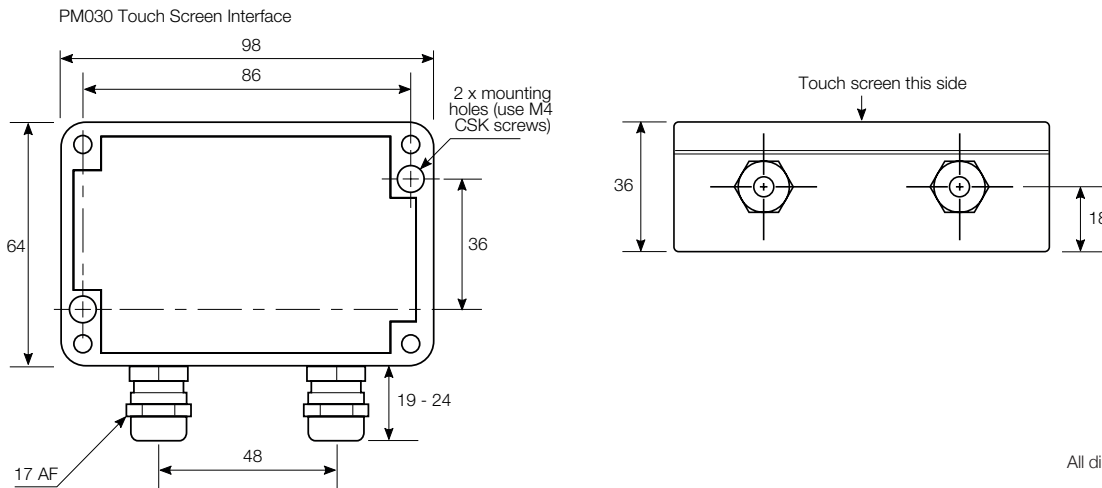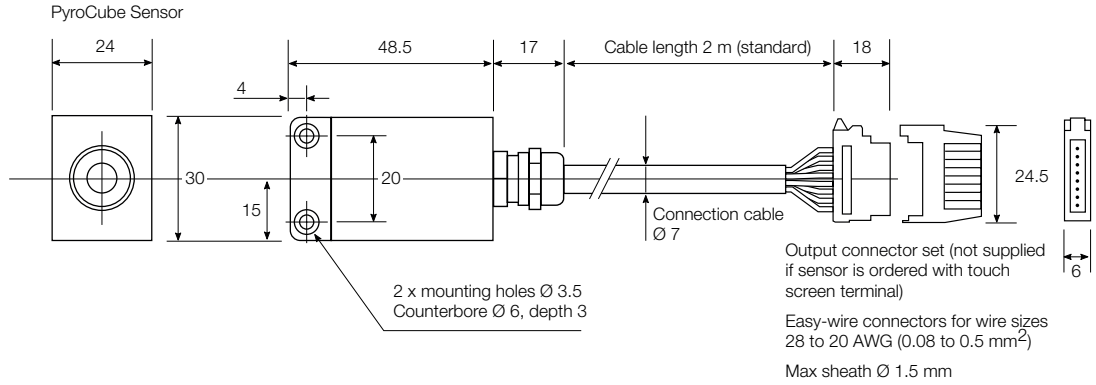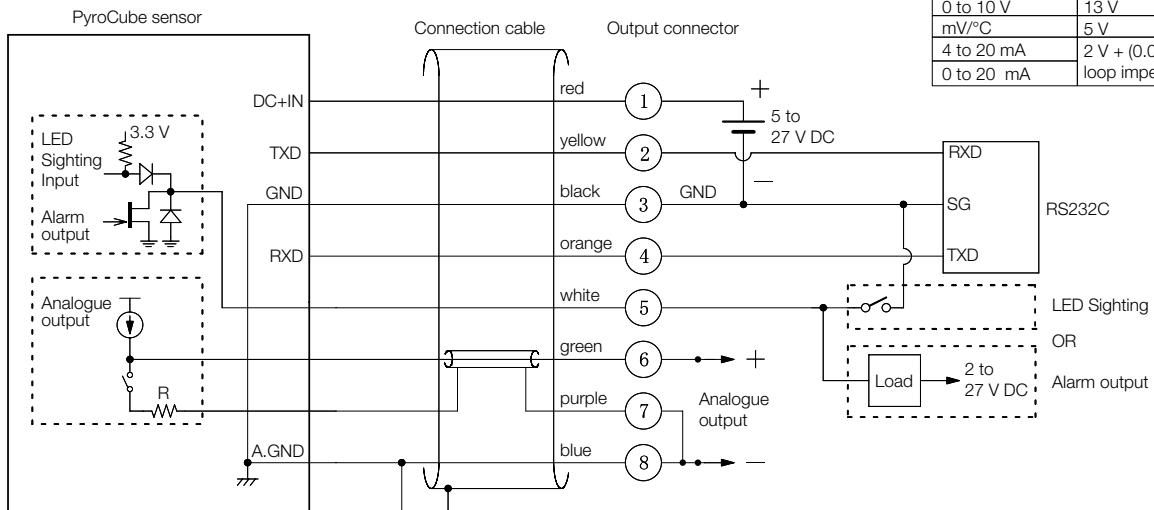|			
Storage	MicroSD Card (optional), max. 32 GB, equal to 16 years of data at the fastest sample rate of 1 per second	**Configurable Parameters** Data logging:	Sample period Number of samples Scheduled start
Sample Interval	1 second to 1 day (configurable)	Alarm logging:	Log times when triggered,
Internal Clock Battery	1 x BR 1225, 3 V (not included)		acknowledged, reset
Variables Logged	Instantaneous, max, min and average target temperatures; sensing head and electronics module temperatures; emissivity setting, reflected energy compensation temperature, alarm events		Log data while triggered

DIMENSIONS

PyroCube Sensor

24 · 48.5 · 17 · Cable length 2 m (standard) · 18

4

30 · 20

15

Connection cable Ø 7

24.5

6

2 x mounting holes Ø 3.5
Counterbore Ø 6, depth 3

Output connector set (not supplied if sensor is ordered with touch screen terminal)

Easy-wire connectors for wire sizes 28 to 20 AWG (0.08 to 0.5 mm^2)

Max sheath Ø 1.5 mm

PM030 Touch Screen Interface

98

86

2 x mounting holes (use M4 CSK screws)

64

36

Touch screen this side

36

18

19 - 24

17 AF

48

All dimensions in mm

PYROCUBE CONNECTIONS - SENSOR ONLY

Analogue output	Minimum supply voltage
0 to 1 V	5 V
0 to 5 V	8 V
0 to 10 V	13 V
mV/°C	5 V
4 to 20 mA	2 V + (0.02 A x
0 to 20 mA	loop impedance [Ω])

PyroCube sensor · Connection cable · Output connector

DC+IN — red — 1 — + 5 to 27 V DC

LED Sighting Input · 3.3 V

Alarm output

TXD — yellow — 2 — RXD

GND — black — 3 — GND — SG — RS232C

RXD — orange — 4 — TXD

Analogue output

white — 5 — LED Sighting

OR

green — 6 — + · Load · 2 to 27 V DC · Alarm output

purple — 7 — Analogue output

R

A.GND — blue — 8 — −

PM030 CONNECTIONS

Red
Yellow
Black
Orange
White
Green
Purple
Blue

OP-
OP+
PWR+
PWR-

NO1
COM1
NC1

NO2
COM2
NC2

PyroCube Sensor

Alarm Relays
24 V DC, 1 A

Power Supply
+ 5 to 27 V DC

Temperature Output:
0-20 mA
4-20 mA
mV/C
0-1 V DC
0-5 V DC
0-10 V DC

ACCESSORIES

FBC Mounting bracket

PWC Protective lens cover

APC Air purge collar

ADP Airless dust protector

RAM Right angled mirror

WCJ Water Cooling Jacket

PCMCE5 5 m extension cable with connectors

MODEL NUMBERS

| PCU | - | S1.6 | - | 2M | - | 1V |

Voltage output option
1V = 0 to 1 V DC
5V = 0 to 5 V DC
10V = 0 to 10 V DC
Note: All models also have 0-20 mA,
4-20 mA, and mV/°C outputs as standard.

Cable length
2M = 2 metres
5M = 5 metres
10M = 10 metres

Field of view
S1.6 = 1.6 mm measured spot diameter at 35 mm distance
S3.0 = 3.0 mm measured spot diameter at 70 mm distance
S5.5 = 5.5 mm measured spot diameter at 120 mm distance

Series
PCU = PyroCube sensor

124.3°C

PM030   Touch screen interface module for PyroCube sensor