

## High Performance Fibre Optic Pyrometer



- Temperature ranges from 100°C to 2,000°C
- Miniature fibre optic sensing head for ambient temperatures up to 150°C
- Bright green through-lens LED aiming light
- Choice of precision optics for large or small targets
- Extremely fast 1 ms response time
- Short measurement wavelength for improved performance on reflective metal surfaces, compared with general-purpose models
- 4-20 mA, voltage, alarm outputs
- RS-232 communications
- Optional display and configuration unit
- Conforms to industrial EMC standards

### TEMPERATURE RANGES

Application	Model	Measurement Temperature Range	Model	Measurement Temperature Range	Model	Measurement Temperature Range
Low temperature	FC-TL	100°C to 1500°C	FC-PL	220 to 1650°C	FC-AL	500 to 2000°C
High temperature	FC-TM	180°C to 2000°C	FC-PM	300 to 2000°C	FC-AM	600 to 2000°C
High temperature with smallest measured spot	FC-TH	240°C to 2000°C	FC-PH	400 to 2000°C	FC-AH	700 to 2000°C
Spectral response		2.0 to 2.5 $\mu$ m		0.8 to 1.6 $\mu$ m		0.8 to 1.0 $\mu$ m

### GENERAL SPECIFICATIONS

<b>Aiming light</b>	Green LED, through-lens (shows size and location of measurement area)
<b>Accuracy*</b>	Measurements below 800°C: $\pm 4^\circ\text{C}$ 800°C to 1200°C: $\pm 0.5\%$ of reading 1000°C to 2000°C: $\pm 1.0\%$ of reading
<b>Repeatability*</b>	$\pm 2^\circ\text{C} \pm 0.2\%$ of reading
<b>Measurement resolution*</b>	Measurements within 50°C of minimum of measurement temperature range: $3^\circ\text{C}$ Measurements within 50°C of minimum of measurement temperature range: $1^\circ\text{C}$ Otherwise: $0.5^\circ\text{C}$
<b>Response time (95%)</b>	Analogue output: 0.001 to 5 s Adjustable via averaging function
<b>Warm up time</b>	1 minute
<b>Analogue output type</b>	4 to 20 mA (set by default) Can be changed via PM030 or RS-232 to: 0 to 20 mA, mV/ $^\circ\text{C}$ , or 0 to 1 V DC Other voltage output ranges available: contact Calex
<b>RS-232C communications</b>	Output swing width: $\pm 4$ V approx. Baud rate: 4800, 9600, 19200, 38400, 57600, 115200 bps (selectable)
<b>Alarm output</b>	Open drain, 27 V DC, 0.2 A
<b>Alarm hysteresis</b>	Adjustable, $0^\circ\text{C}$ to $99.9^\circ\text{C}$
<b>Peak hold</b>	0.01 to 10 s, time or discharge mode, configurable
<b>Emissivity setting</b>	Adjustable, 0.3 to 1.0 (default setting 0.95) in 0.001 increments Emissivity may be set as low as 0.05 with reduced accuracy
<b>Supply voltage</b>	4.7 to 27 V DC, 0.1 A max

### MECHANICAL SPECIFICATIONS

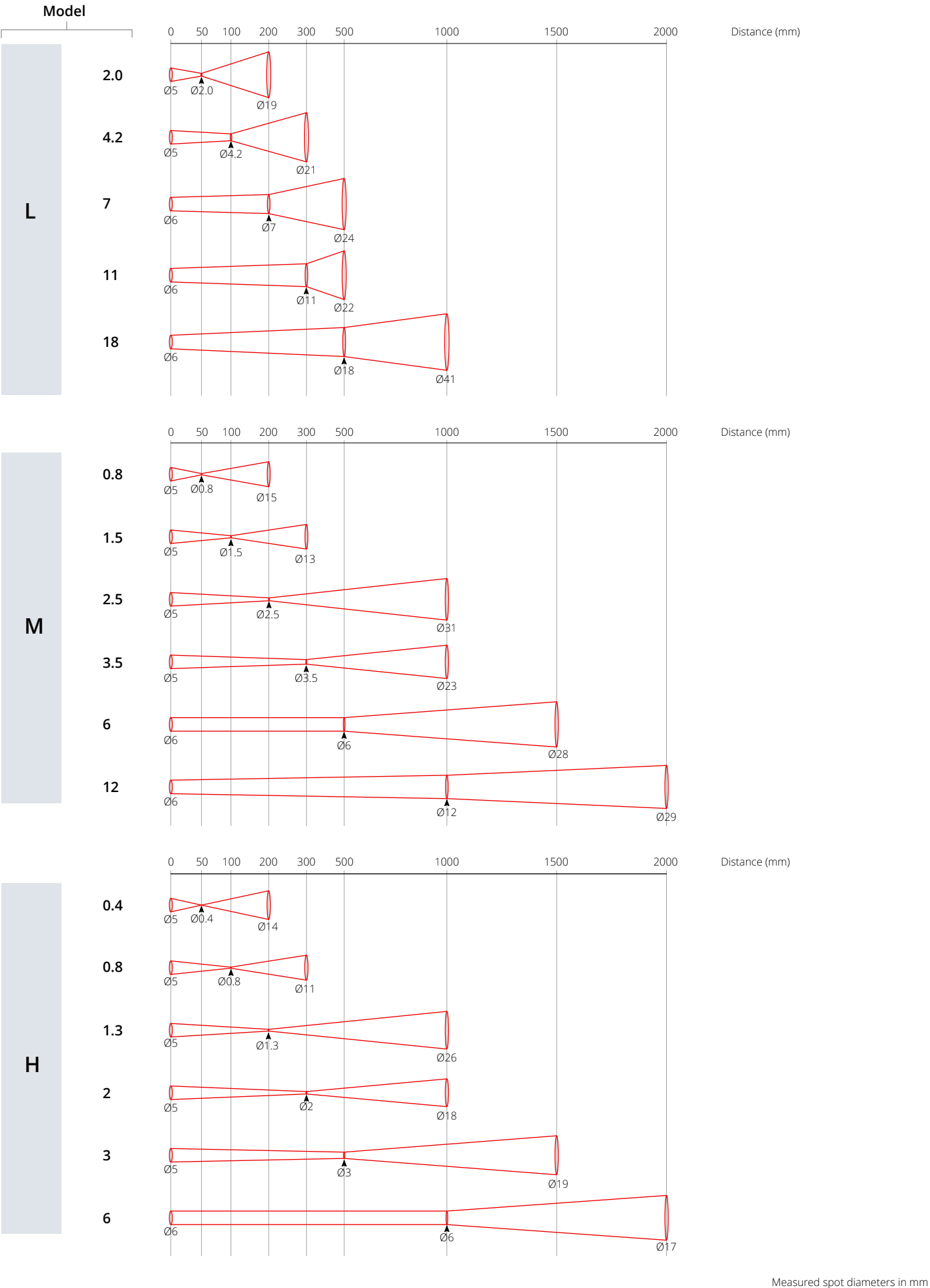
<b>Output cable length</b>	2 m, 5 m, or 10 m according to model number
<b>Fibre optic cable length</b>	According to model number: 1 m to 10 m (L models) 1 m to 28 m (M and H models)
<b>Construction</b>	Sensing head and electronics module: Anodised aluminium Fibre optic cable jacket: Stainless steel
<b>Minimum bend radius (fibre optic cable)</b>	L models: 150 mm M and H models: 70 mm

### ENVIRONMENTAL SPECIFICATIONS

<b>Ambient (operating) temperature range</b>	Fibre optic cable and sensing head: $0^\circ\text{C}$ to $150^\circ\text{C}$ Electronics module: $0^\circ\text{C}$ to $50^\circ\text{C}$
<b>Minimum measurable temperature (FC-T models only)</b>	Ambient temperature: Up to $50^\circ\text{C}$ Minimum measurable temperature: $100^\circ\text{C}$ Depending on ambient temperature (sensing head) Ambient temperature: Up to $70^\circ\text{C}$ Minimum measurable temperature: $160^\circ\text{C}$ Ambient temperature: Up to $120^\circ\text{C}$ Minimum measurable temperature: $240^\circ\text{C}$
<b>Storage temperature range</b>	$-15^\circ\text{C}$ to $70^\circ\text{C}$
<b>Ambient humidity</b>	30% to 85% RH non-condensing

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

A choice of optics is available for each FibreCube temperature range (M, L, H) , e.g. for FC-**AM** sensors, choose from the "**M**" optics below.  
Note: Smaller measured spot sizes are available. If the below options are not suitable, contact Calex to discuss special optics.



## PM030 - TOUCH SCREEN INTERFACE FOR FIBRECUBE (ALL MODELS)



Optional wall-mounted display, data logging, configuration and alarm unit for FibreCube 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.

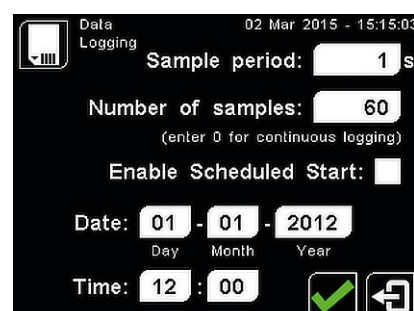
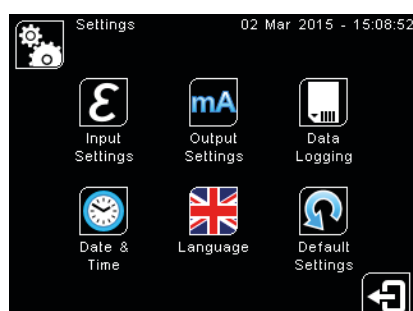
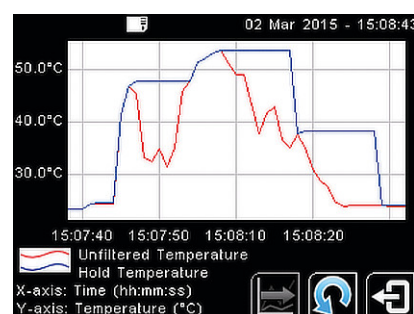
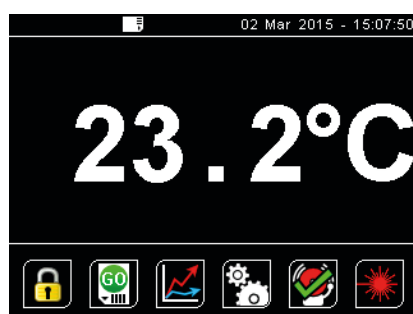
- **Accurate measurements, even with reflections of hot objects**

Place the sensor outside an oven or furnace and accurately measure the temperature of objects inside by using the Reflected Energy Compensation feature.

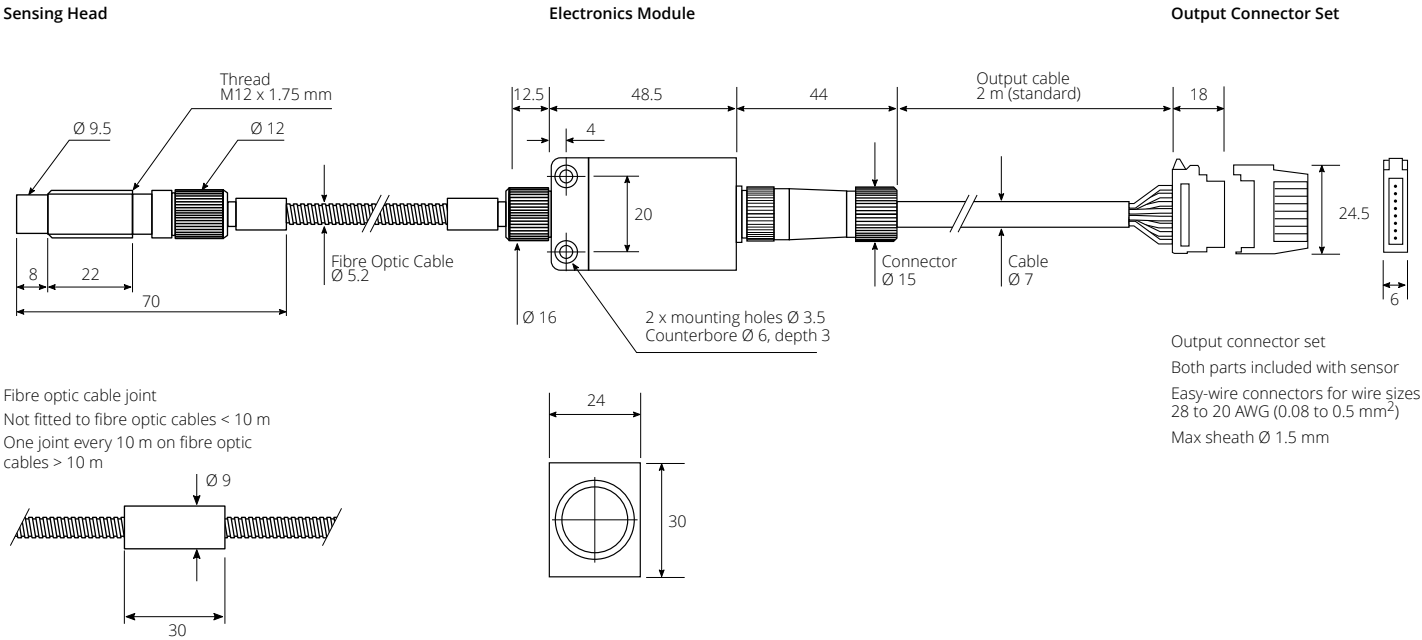
PM030 Specifications	
<b>Inputs</b>	1 x FibreCube or PyroCube sensor (any model)
<b>Outputs</b>	Retransmitted analogue output from sensor, and 2 relays, rated 24 V DC, 1 A
<b>Display Format</b>	2.83" (72 mm) resistive touch TFT, 320 x 240 pixels, backlit
<b>Touch Screen Display Format</b>	2.83" (72 mm) resistive touch TFT, 320 x 240 pixels, backlit
<b>Storage</b>	MicroSD Card (optional), max. 32 GB, equal to 16 years of data at the fastest sample rate of 1 per second
<b>Data Logging Interval</b>	1 second to 1 day (configurable)
<b>Internal Clock Battery</b>	1 x BR 1225 3V (not included)
<b>Variables Logged</b>	Instantaneous target temperature, hold temperature, alarm events
<b>File format</b>	.csv
<b>Configurable Parameters (Data Logging)</b>	Sample period Number of samples Scheduled start
<b>Configurable Parameters (Alarm Logging)</b>	Log times when triggered, acknowledged, reset Log data while triggered

Configurable Parameters
Languages English, Chinese (simplified), 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

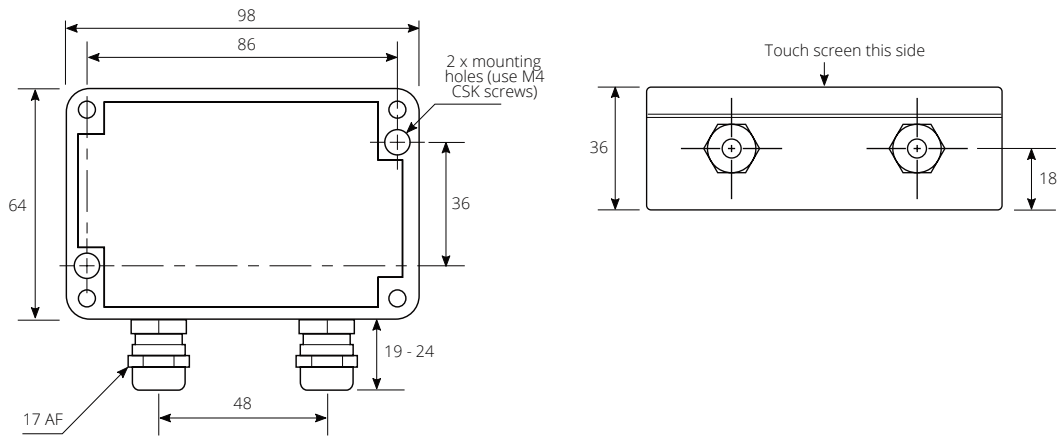
### SCREENSHOTS (PM030 interface)



DIMENSIONS - FIBRECUBE SENSOR

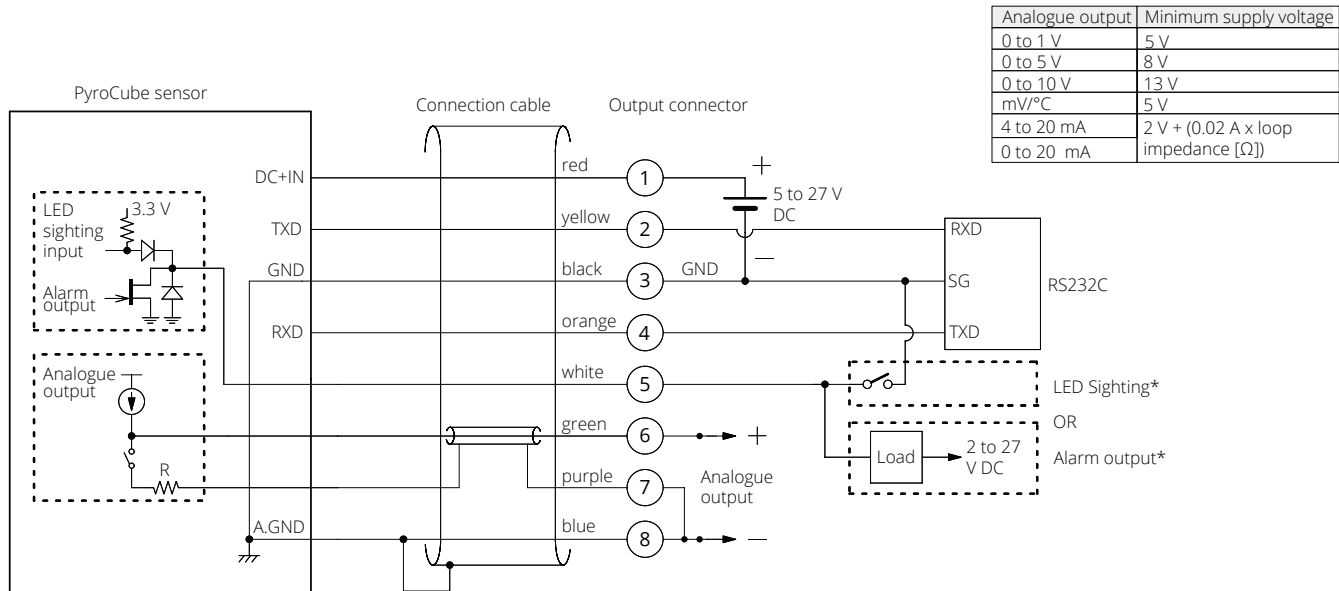


DIMENSIONS - PM030 TOUCH SCREEN INTERFACE



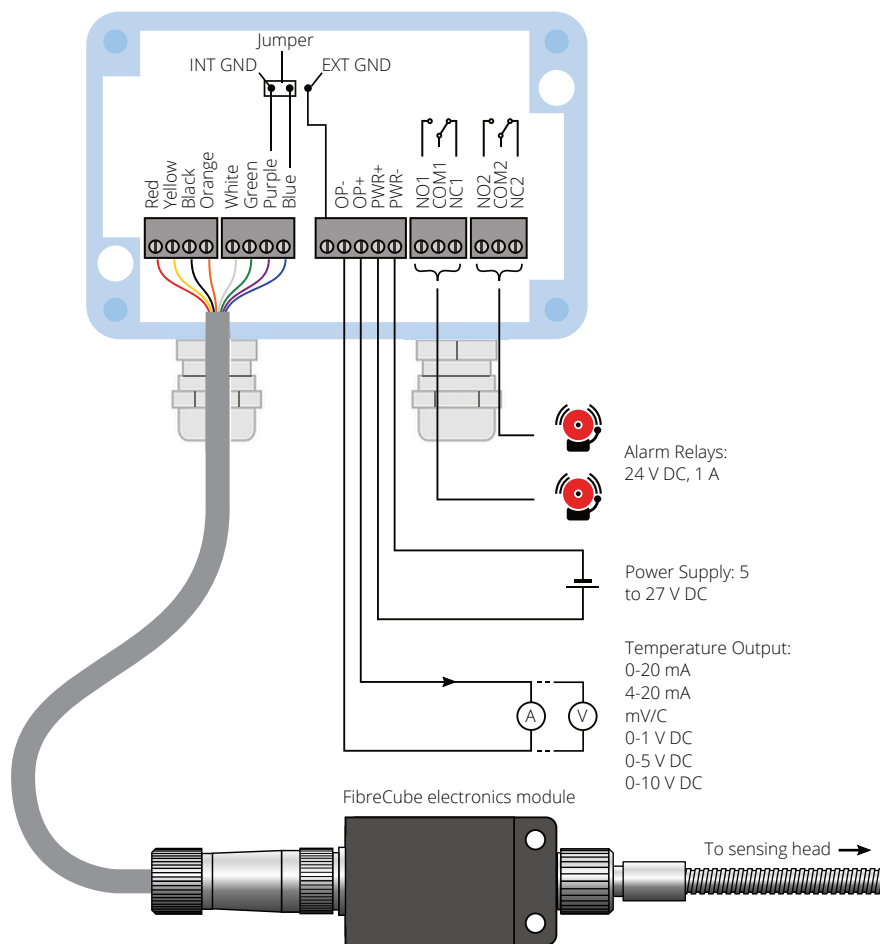
All dimensions in mm

CONNECTIONS - FIBRECUBE SENSOR

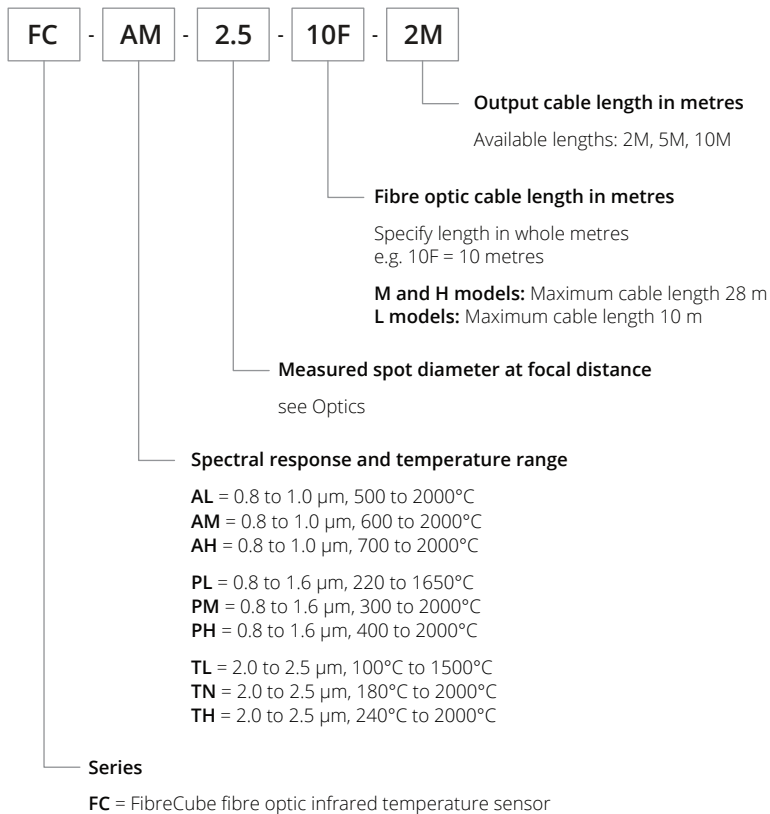


\* See LED SIGHTING AND ALARMS (with Specifications)

## CONNECTIONS - PM030



## MODEL NUMBERS



**PM030**

Touch screen interface module for FibreCube and PyroCube sensors (any model)

## ACCESSORIES

