FibreMini
Fibre Optic Infrared Temperature Sensor for Harsh Applications

- Temperature ranges from 250°C to 2000°C
- Miniature sensing head withstands 200°C ambient temperature
- Short measurement wavelength for improved accuracy on metals
- No electronics in the sensing head - ideal for use near induction heaters and strong electromagnetic fields
- Touch screen display with configuration and data logging
- Choice of analogue or digital output
- Alarm relays on all models
- Advanced signal processing functions
- Built-in laser sighting, simultaneous with measurement

GENERAL SPECIFICATIONS
Temperature Range
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
Choice of optics (see Optics)
Accuracy
±1% of reading
Repeatability
±0.5% of reading
Emissivity Setting Range
0.10 to 1.00
Emissivity Setting Method
-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 μm
Supply Voltage
24 V DC ± 5%
Maximum Current Draw
100 mA
Maximum Loop Impedance
-CRT models: 900 Ω (4 to 20 mA output)
Alarm Relays
2 x Single Pole Changeover alarm relays rated 24 V DC, 1 A, isolated 500 V DC

MECHANICAL
<table>
<thead>
<tr>
<th>Sensing head</th>
<th>Electronics Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Cast aluminium</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Ø 12 x 48 mm (see diagram)</td>
</tr>
<tr>
<td>Mounting</td>
<td>M12 x 1.5 mm thread</td>
</tr>
<tr>
<td>Fibre Optic Cable Length</td>
<td>3 m, 5 m or 10 m</td>
</tr>
<tr>
<td>(sensing head to electronics module)</td>
<td>Removable screw terminal blocks (see Connections)</td>
</tr>
<tr>
<td>Cable Connections</td>
<td>Conductor size: 28 AWG to 18 AWG</td>
</tr>
<tr>
<td>Output Cable Gland</td>
<td>Suitable for cable diameters 3.0 to 6.5 mm</td>
</tr>
</tbody>
</table>

ENVIRONMENTAL

<table>
<thead>
<tr>
<th>Sensing head</th>
<th>Electronics Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Rating</td>
<td>IP65 (NEMA 4)</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>0°C to 200°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>Maximum 95% non-condensing</td>
</tr>
<tr>
<td>CE Marked</td>
<td>Yes</td>
</tr>
<tr>
<td>RoHS Compliant</td>
<td>Yes</td>
</tr>
</tbody>
</table>

ELECTROMAGNETIC COMPATIBILITY STANDARDS:
EN61326-1, EN61326-2-3 (Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements - Industrial)
TOUCH SCREEN

The 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 turns bright red to provide an immediate and obvious alarm indication. Alarm modes and levels can be configured via the touch screen.

DATA LOGGING SPECIFICATIONS

- **Data Logging Interval**: 1 to 86,400 seconds (1 day)
- **MicroSD Card**: Max. capacity: 32 GB (not included)
- **Internal Clock Battery**: 1 x BR 1225 3V (not included)
- **Variables Logged**: Target temperature, electronics module temperature, max., min., average, emissivity setting, reflected energy compensation temperature, alarm events
- **File format**: .csv

DATA LOGGING (-CRT AND -BRT MODELS)

The FibreMini can be used as a standalone data logger.

All models 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 MicroSD card larger than 2 GB, years of data can be stored, even at the fastest possible sample rate of 1 per second.

Data is stored 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 inside the electronics module. 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.
CRT models:
- Temperature Output: 4-20 mA

Alarm Relays:
- 24 V DC, 1 A

Power Supply:
- 24 V DC +/- 5%

BRT models:
- RS485 Modbus Communications

Connections and Dimensions:
- Fibre Optic Cable: 4.6
- M12 x 1.5
- 2 x Mounting Holes (use M4 CSK screws)
- Electronics Module: Depth 36
- Cable Gland: 17 AF
- Height 19-24
- Sensing Head
- Ambient Temp.: 200°C Max.
- 2 x Mounting Holes (use M4 CSK screws)
- Modbus Master
- 2 x Nut 14 AF
- 2 x Nut 14 AF
- Dimensions: 98 x 86 x 52
**Model Numbers**

<table>
<thead>
<tr>
<th>Series</th>
<th>FM2.2</th>
<th>251</th>
<th>HT</th>
<th>CRT</th>
<th>5M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field of view</td>
<td>Diameter of target spot measured versus distance from sensing head - 90% energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Range (°C)</td>
<td>MT = 250°C to 1000°C</td>
<td>HT = 450°C to 2000°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spot Dia. (inches)</td>
<td>0.6</td>
<td>2.4</td>
<td>0.8</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Distance: Sensor to object</td>
<td>12</td>
<td>60</td>
<td>20</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>0 to 1500</td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spot Dia. (mm)</td>
<td>59.1</td>
<td>5.3</td>
<td>59.1</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Distance: Sensor to object</td>
<td>0</td>
<td>135</td>
<td>0</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>0 to 1500</td>
<td>3000</td>
<td></td>
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**Accessories Also Available**

- **MSD**: MicroSD Card with SD Card adapter: stores logged data
- **CALCERTA**: Calibration certificate
- **ABF**: Adjustable mounting bracket
- **FBF**: Fixed mounting bracket
- **APF**: Air purge collar
- **PM180**: 6-channel Modbus temperature indicator with touch screen interface and data logging

**FIELD OF VIEW**

- **FM2.2 - 251**
- **HT**

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<th>Field of view</th>
<th>FM2.2 = FibreMini with 2.2 µm spectral response</th>
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**MEASUREMENT TEMPERATURE RANGE (°C)**

- **MT**: 250°C to 1000°C
- **HT**: 450°C to 2000°C

- **-CRT models**: 4 to 20 mA output is configurable within this range
- **-BRT models**: Digital output, full temperature range