

# 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  $\mu\text{m}$

#### Supply Voltage

24 V DC  $\pm$  5%

#### Maximum Current Draw

100 mA

#### Maximum Loop Impedance

-CRT models: 900  $\Omega$  (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

	Sensing head	Electronics Module
<b>Construction</b>	Stainless Steel 316	Cast aluminium
<b>Dimensions</b>	$\varnothing$ 12 x 48 mm (see diagram)	98(w) x 64(h) x 36(d) mm
<b>Mounting</b>	M12 x 1.5 mm thread	Two M4 screw holes for wall mounting (see diagram)
<b>Fibre Optic Cable Length (sensing head to electronics module)</b>	3 m, 5 m or 10 m	
<b>Cable Connections</b>	Removable screw terminal blocks (see Connections) Conductor size: 28 AWG to 18 AWG	
<b>Output Cable Gland</b>	Suitable for cable diameters 3.0 to 6.5 mm	

### ENVIRONMENTAL

	Sensing head	Electronics Module (without touch screen)	Electronics Module (with touch screen)
<b>Environmental Rating</b>	IP65 (NEMA 4)	IP65 (NEMA 4)	
<b>Ambient Temperature Range</b>	0°C to 200°C	0°C to 60°C	0°C to 60°C
<b>Relative Humidity</b>	Maximum 95% non-condensing	Maximum 95% non-condensing	Maximum 95% non-condensing
<b>CE Marked</b>	Yes	Yes	Yes
<b>RoHS Compliant</b>	Yes	Yes	Yes

### ELECTROMAGNETIC COMPATIBILITY STANDARDS:

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

## TOUCH SCREEN

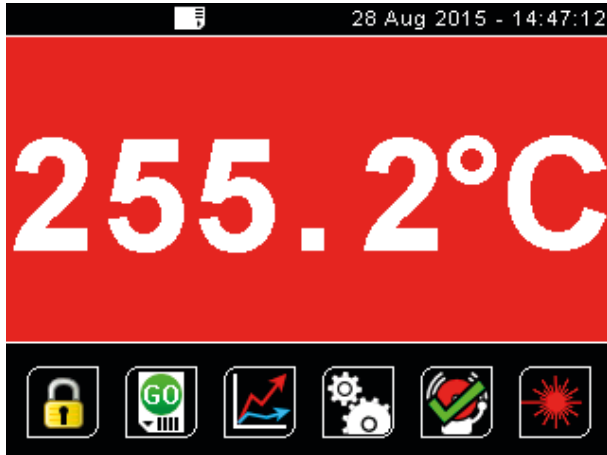
The backlit touch screen interface mounted in the lid of the electronics module provides a large, bright display of the measured temperature, as well as controls allowing full configuration of the sensor. The graph view shows the history of the measured temperature.

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.

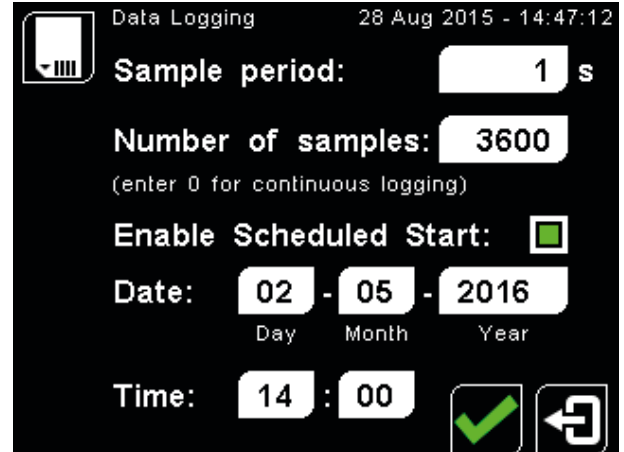
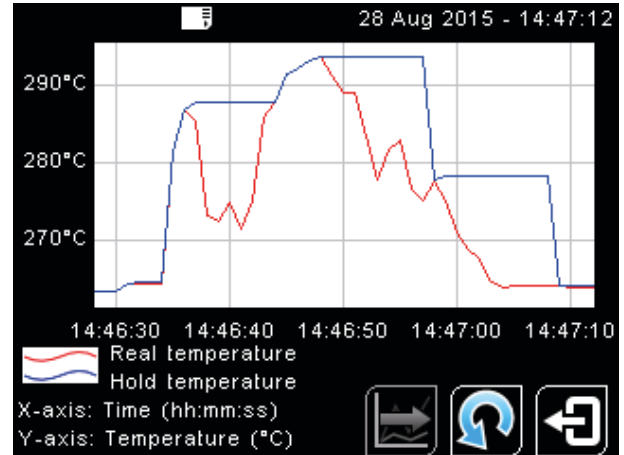
## TOUCH SCREEN SPECIFICATIONS

<b>Touch Screen Display Format</b>	2.83" (72 mm) resistive touch TFT, 320 x 240 pixels, backlit
<b>Configurable Parameters</b>	Temperature range (-CRT models), temperature units, emissivity setting, reflected energy compensation, alarms, signal processing, Modbus address (-BRT models), date and time, data logging
<b>Temperature Units</b>	°C or °F configurable
<b>Temperature Resolution</b>	0.1°
<b>Alarm Configuration</b>	Two alarms with adjustable level, individually configurable as HI or LO. Alarm 2 can be set to target temperature or sensing head internal temperature
<b>Signal Processing</b>	Average, peak hold, valley hold, minimum, maximum
<b>Languages</b>	English, Chinese (simplified), Japanese

## EXAMPLE SCREENSHOTS



Screen shown with red background to indicate alarm condition



## DATA LOGGING SPECIFICATIONS

<b>Data Logging Interval</b>	1 to 86,400 seconds (1 day)
<b>MicroSD Card</b>	Max. capacity: 32 GB (not included)
<b>Internal Clock Battery</b>	1 x BR 1225 3V (not included)
<b>Variables Logged</b>	Target temperature, electronics module temperature, max, min, average, emissivity setting, reflected energy compensation temperature, alarm events
<b>File format</b>	.csv
<b>Configurable Parameters</b>	Sample period, number of samples, scheduled start date and time

## 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.

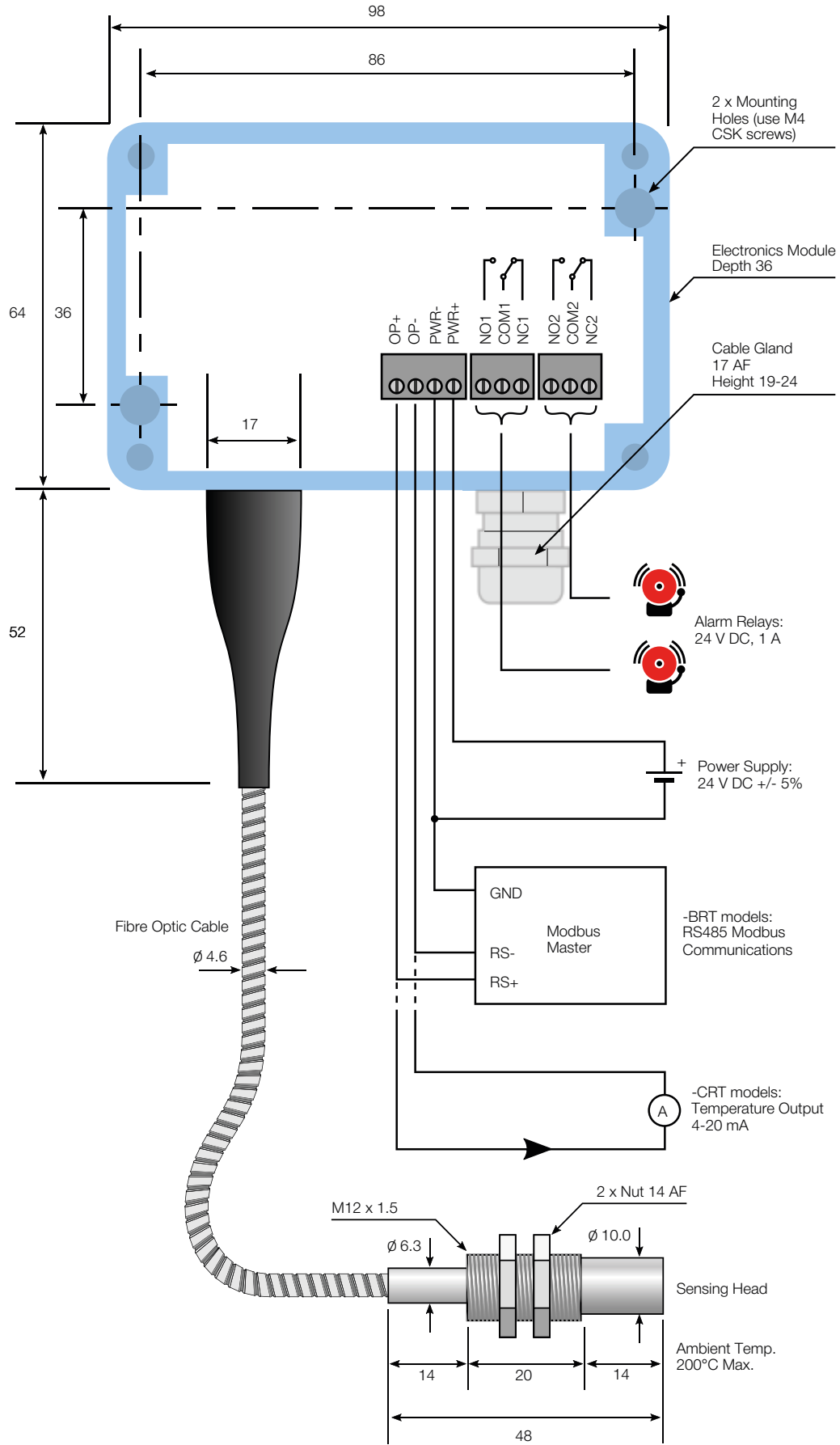
Data is stored in .csv format and can be viewed and edited easily using spreadsheet software.

Alarm events can also be logged to the MicroSD Card.

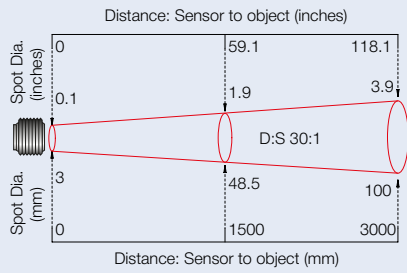
A MicroSD card with SD card adapter is available as an optional accessory.

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.

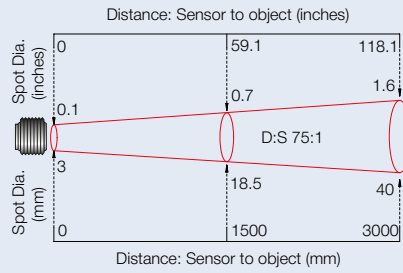
# CONNECTIONS AND DIMENSIONS



## FIELD OF VIEW



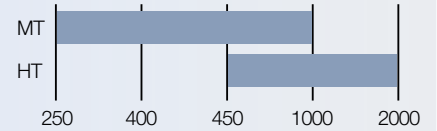
**-301**



**-751**

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

## MEASUREMENT TEMPERATURE RANGE (°C)



**-CRT models:** 4 to 20 mA output is configurable within this range

**-BRT models:** Digital output, full temperature range

## MODEL NUMBERS



**FM2.2** - **301** - **HT** - **CRT** - **5M**

### Fibre Optic Cable Length

**3M** = 3 metres  
**5M** = 5 metres  
**10M** = 10 metres

### Output and Interface

**CRT** = 4-20 mA output, two alarm relay outputs, with touch screen  
**BRT** = RS485 Modbus output, two alarm relay outputs, with touch screen

### Temperature Range

**MT** = 250°C to 1000°C  
**HT** = 450°C to 2000°C

### Field of view

**301** = 30:1 divergent optics  
**751** = 75:1 divergent optics

### Series

**FM2.2** = FibreMini with 2.2 µm spectral response

## ACCESSORIES ALSO AVAILABLE

<b>MSD</b>	MicroSD Card with SD Card adapter: stores logged data
<b>CALCERTA</b>	Calibration certificate
<b>ABF</b>	Adjustable mounting bracket
<b>FBF</b>	Fixed mounting bracket
<b>APF</b>	Air purge collar
<b>PM180</b>	6-channel Modbus temperature indicator with touch screen interface and data logging
<b>PMK</b>	Panel Mounting Kit