

ExTempMini

Miniature Intrinsically Safe Infrared Temperature Sensor for High Ambient Temperatures

ATEX
IECEX
JapanEx
UKCA



- Suitable for gas hazardous areas, Zone 0, 1 and 2 (sensing head) with a suitable Intrinsically Safe isolator
- Miniature sensing head for use in high ambient temperatures up to 180°C
- Temperature range: -20°C to 1000°C
- Two wire, 4-20 mA output
- Rescalable output and adjustable emissivity setting via optional USB and RS-485 adapters
- Fast response time and high stability
- Stainless steel 316 housing on sensing head - ideal for offshore applications
- IP65 sealed
- Supplied with up to 25 m sensing head cable

SPECIFICATIONS

GENERAL

Measurement Temperature Range	-20°C to 1000°C (see table of Model Numbers)
Output	Two-wire 4 to 20 mA (loop powered)
Minimum Temperature Span	100°C
Maximum Temperature Span	1000°C
Field of View	See table of Model Numbers
Accuracy	± 1°C or 1% of reading, whichever is greater
Repeatability	± 0.5°C or 0.5%, whichever is greater
Emissivity Setting Range	0.20 to 1.00 (pre-set to 0.95)
Emissivity Setting Method	User configurable via optional USB / RS-485 adapters
Response Time, t_{90}	240 ms (90% response)
Spectral Range	8 to 14 μ m
Supply Voltage	12 to 24 V DC \pm 5%
Minimum Sensor Voltage	11.4 V DC
Maximum Current Draw	25 mA

ENVIRONMENTAL

	Main Enclosure	Sensing Head
Environmental Rating	IP65 (NEMA 4)	IP65 (NEMA 4)
Ambient (Operating) Temperature Range	0°C to 70°C	0°C to 180°C
Ambient Pressure Range	80 kPa (0.8 bar) to 110 kPa (1.1 bar)	80 kPa (0.8 bar) to 110 kPa (1.1 bar)
Relative Humidity	Max. 95% non-condensing	Max. 95% non-condensing
CE Marked	Yes	Yes
RoHS Compliant	Yes	Yes

MECHANICAL

	Main Enclosure	Sensing Head
Construction	Painted aluminium	Stainless Steel 316
Major Dimensions	99 x 65 x 35 mm	\varnothing 20 x length 69 mm including cable gland (see Dimensions)
Mounting	2 x mounting holes, use M4 socket head screws	M20 x 1.5 mm thread, length 20 mm, supplied with two mounting nuts
Cable Length (Sensing Head)	-	Choice of 5 m, 10 m or 25 m factory-fitted. Contact Calex for information about extending cable.
Weight with 5 m Cable	TBD	TBD
Cable Connections	Removable screw terminal blocks (see Connections). Conductor size 22 AWG to 14 AWG (0.326 mm ² to 2.08 mm ²)	-
Output Cable Gland	Suitable for cable diameters 3.5 to 7.0 mm	-

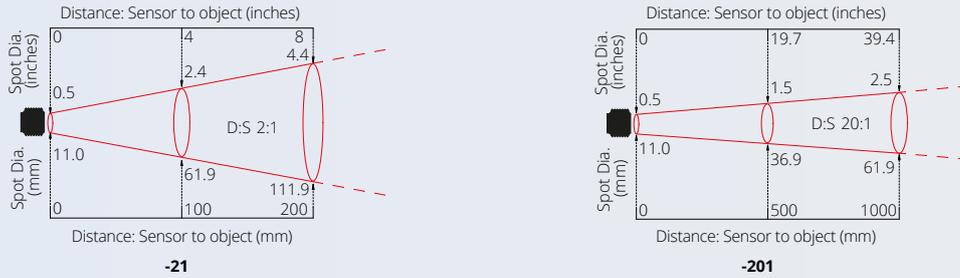
HAZARDOUS AREA CLASSIFICATION

	Main Enclosure	Sensing Head	
Ambient Temperature Rating	-20°C \leq Ta \leq 70°C	-20°C \leq Ta \leq 115°C	-20°C \leq Ta \leq 180°C
ATEX Classification	Ex II 2 G	Ex II 1 G	Ex II 1 G
IECEX Classification (Gas)	Ex ia [ja Ga] IIC T4 Gb	Ex ia IIC T4 Ga	Ex ia IIC T3 Ga

Maximum DC Input Voltage	Ui = 28 V
Maximum Input Current	Ii = 93 mA
Maximum Input Power	Pi = 0.651 W
Maximum Internal Capacitance	Ci = 5.17 nF
Maximum Internal Inductance	Li = 1.99 μ H
ATEX Certificate Number	CML 22ATEX2007X
IECEX Certificate Number	IECEX CML 22.0001X
JapanEx Certificate Number	CML 22JPN2009X
UKCA Certificate Number	CML 22UKEX2008X

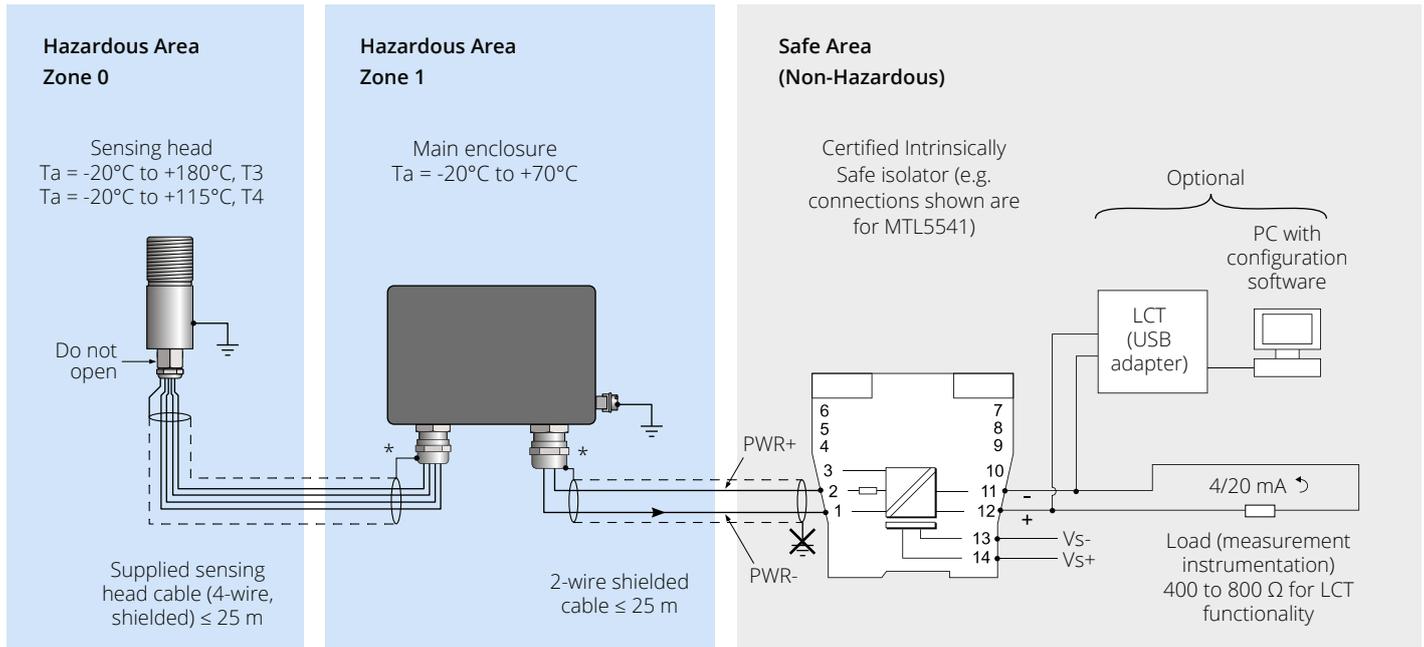
OPTICS

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



Note: The sensor will measure at longer distances than shown, with a larger measured spot diameter. Contact Calex for more information.

CONNECTIONS: EXTEMPMINI SENSOR



* Cable shield is terminated in main enclosure gland - see OUTPUT CABLE INSTALLATION in Operator's Guide

CONFIGURATION

A choice of optional adapters is available to allow configuration of the ExTempMini sensor.

Both adapters must be connected on the safe side of an Intrinsically Safe isolator.

The isolator must be capable of digital communications over 4-20 mA, and correct loop polarity must be observed.

Configurable settings include the emissivity setting, 4-20 mA temperature range, averaging, peak and valley hold processing and reflected energy compensation.



LCT
USB adapter
For sensor configuration



LCT-485
RS-485 network interface
allows configuration and continuous measurement from multiple sensors via a network)



LCT

The Loop Configuration Tool (LCT) allows the ExTemp or ExTempMini sensor to be connected to a PC via USB.

CalexConfig software makes it easy to configure the sensor.

For more information on the software, please see www.calex.co.uk/software and the Software data sheet.

LCT-485 NETWORK INTERFACE

This DIN rail-mounted unit provides RS-485 Modbus RTU Slave communications for one ExTemp or ExTempMini sensor. It allows up to 224 sensors to be connected together in a network.

FEATURES

- Fault-tolerant RS-485 interface with up to 60 V over-voltage protection
- Isolated RS-485 interface for easy connection to separately powered buses
- Built-in 270 ohm loop resistor for simplified wiring

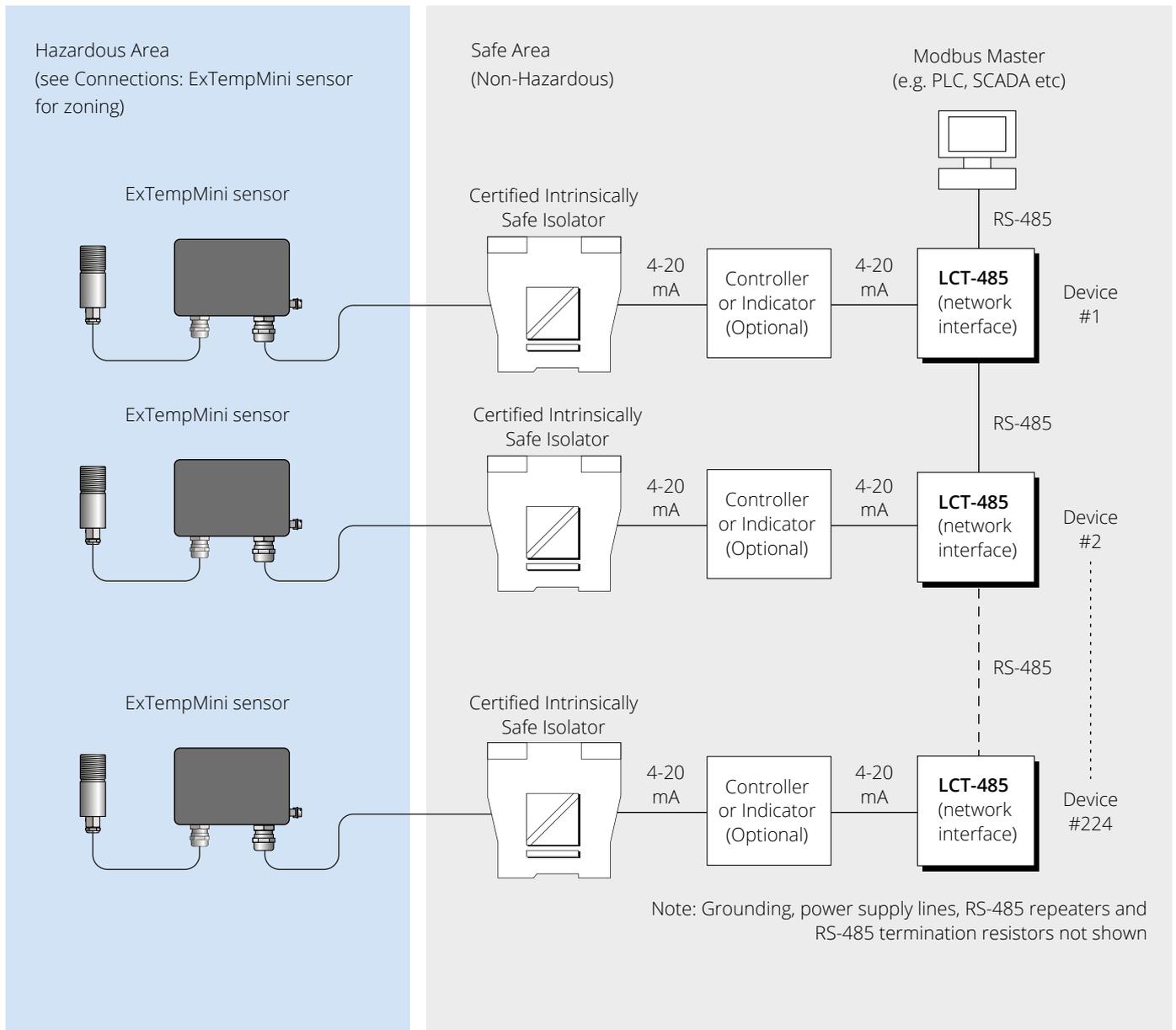
SPECIFICATIONS

Mounting	DIN rail (35 mm)
Dimensions	114(d) x 18(w) x 107(h) mm approx
Connections	Screw terminals for RS-485, power, and sensor loop
Supply voltage	6 to 28 V DC
Max current draw	50 mA
Protocol	Modbus RTU Slave
Baud rate	1200-57600 bps, detected automatically
Ambient temperature	-20°C to 70°C
EMC Conformity	BS EN 61326-1:2013 & EN 61326-2-3:2013*
Max. No. of Devices	Up to 224 x LCT-485 Slave devices per Modbus Master

* for lines \leq 30 m within buildings, for RS-485 & loop terminals

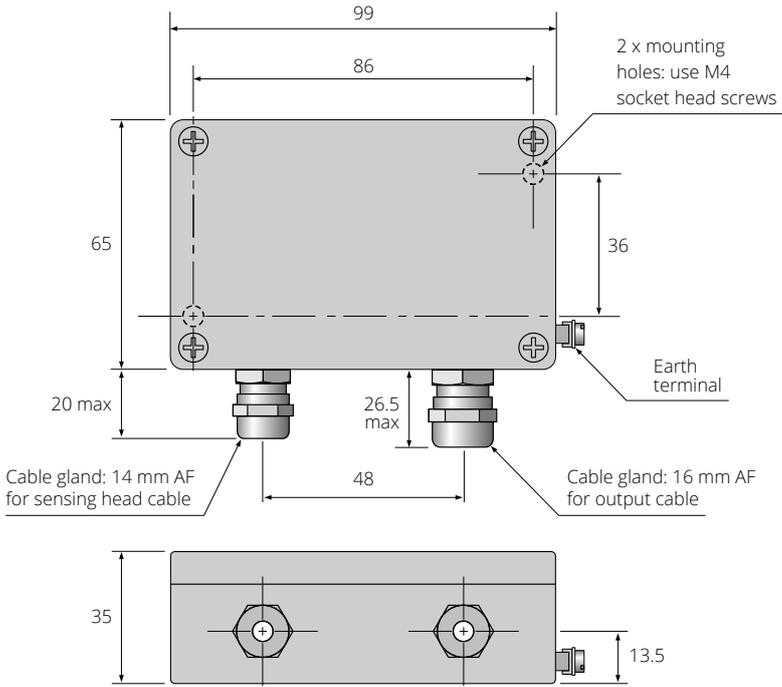


NETWORK LAYOUT: LCT-485 INTERFACE

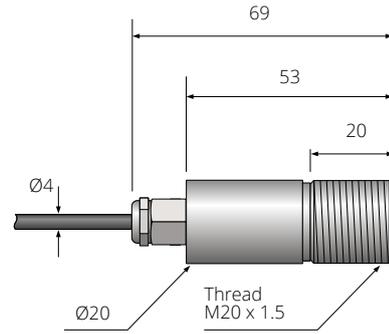


DIMENSIONS (mm)

Main enclosure



Sensing head



MODEL NUMBERS



ExTempMini infrared temperature sensor with miniature sensing head and separate electronics module. Supplied with 2 x mounting nuts and operator's guide

EXM8 - **201** - **LT** - **25**

Sensing Head Cable Length (m)

e.g.

- 5** = 5 m
- 10** = 10 m
- 25** = 25 m (maximum length)

The sensing head and electronics module are calibrated together as a pair. The sensing head cable length may not be modified by the user. Contact Calex for more information.

Measurement Temperature Range

- LT** = -20°C to 100°C
- MT** = 0°C to 250°C
- HT** = 0°C to 500°C
- XT** = 0°C to 1000°C
- ST** = Special temperature range

Temperature range may be rescaled between limits -20°C and 1000°C via optional adapters and software

Field of view (see OPTICS)

- 21** 2:1 divergent optics
- 201** 20:1 divergent optics

Series

EXM8 = ExTempMini infrared temperature sensor with miniature sensing head and separate electronics module. Supplied with 2 x mounting nuts and operator's guide. General-purpose, 8-14 µm spectral response, for non-reflective non-metal surfaces and painted metals.

Ambient temperature range (sensing head) 0°C to 180°C

ACCESSORIES

- FBL** Fixed mounting bracket (1-axis rotation)
- ABL** Adjustable mounting bracket (2-axis rotation)
- APM** Air purge collar for 20:1 optics (Not for use in Zone 0)
- APMW** Air purge collar for 2:1 optics (Not for use in Zone 0)
- CALCERTA** Calibration certificate, 3 temperature points, UKAS traceable
- LCT** USB configuration adapter (CalexConfig software available as a free download)
- LCT-485** RS-485 Modbus network interface