ExTemp
Intrinsically Safe Infrared Temperature Sensor

• Suitable for hazardous areas, Zone 0, 1 and 2 (gas), and Zone 20, 21 and 22 (dust), with a suitable Intrinsically Safe isolator
• 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 - ideal for offshore applications
• IP65 sealed
• Supplied with up to 25 m cable

General Specifications
Temperature range
Maximum Temperature Span: 1000°C
Minimum Temperature Span: 100°C
Output: 4 to 20 mA
Field of View: See table of Model Numbers
Accuracy: ± 1°C or 1%, 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: Configurable via optional adapters
Response Time: 240 ms (90% response)
Spectral Range: 8 to 14 μm
Supply Voltage: 12 to 24 V DC ± 5%
Maximum Current Draw: 25 mA
Maximum Loop Impedance: See Application Guide (available separately)

Environmental
Environmental Rating: IP65 (NEMA 4)
Ambient Temperature Range: 0°C to 70°C (Operating range)
Relative Humidity: Max. 95% non-condensing
CE Marked: Yes
RoHS Compliant: Yes

Mechanical
Construction: Stainless Steel 316
Major Dimensions: Ø 20 x length 150 mm (see Dimensions)
Mounting: M20 x 1.5 mm thread, length 46 mm, supplied with two mounting nuts
Cable Length: 5 m, 10 m or 25 m as standard (contact Calex for information on extending the cable)
Weight with 5 m Cable: 475 g

Hazardous Area Classification
The ExTemp is ATEX, IECEx and TIIS certified.
ATEX Classification
Ex II 1GD
IECEx Classification (Gas) Ex ia IIC T4 Ga
IECEx Classification (Dust) Ex ia IIIC T135°C IP65 Da
Ambient Temperature Rating: -20°C ≤ Ta ≤ 70°C
Maximum DC Input Voltage: Ui = 28 V
Maximum Input Current: Ii = 93 mA
Maximum Input Power: Pi = 650 mW
Maximum Internal Capacitance: Ci = 8 nF
Maximum Internal Inductance: Li = 0 mH
ATEX Certificate Number: CML14ATEX2079
IECEx Certificate Number: IECEx CML 14.0032
TIIS Certificate Number: TC21097

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: EXTEMP SENSOR

Hazardous Area
(All Zones IIC and IIC)

Safe Area
(Non-Hazardous)

ExTemp sensor

Ground the sensor at one point only

Certified Intrinsically Safe Isolator
(e.g. MTL model 5541)

LCT
(USB adapter)

PC with software

Optional

Measurement instrumentation

Power supply

CONFIGURATION

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

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

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

Calex Config 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 sensor. It allows up to 224 ExTemp 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 ≤ 30 m within buildings, for RS-485 & loop terminals
**Hazardous Area**
(All Zones IIIC and IIC)

- ExTemp sensor

**Safe Area**
(Non-Hazardous)

- Certified Intrinsically Safe Isolator
  - 4-20 mA
  - Controller or Indicator (Optional)

**Model Numbers**

<table>
<thead>
<tr>
<th>EX</th>
<th>151</th>
<th>LT</th>
<th>C</th>
<th>25</th>
</tr>
</thead>
</table>

**Dimensions (mm)**

- Cable gland (Must not be opened)
- Two mounting nuts (Included)
- Cable Length: 5 m, 10 m, 25 m as standard
- Contact Calex for information about extending the cable

**Accessories**

- **FBL**: Fixed mounting bracket (1-axis rotation)
- **ABL**: Adjustable mounting bracket (2-axis rotation)
- **APM**: Air purge collar (for 15:1, 30:1, Close Focus optics)
- **APMW**: Air purge collar (for 2:1 optics)
- **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

**Network Layout: LCT-485 Interface**

- Hazardous Area
- Safe Area
- Modbus Master (e.g. PLC, SCADA etc)

**Note:**
- Grounding, power supply lines, RS-485 repeaters and RS-485 termination resistors not shown

**Certified Intrinsically Safe Isolator**

- 4-20 mA
- Controller or Indicator (Optional)

**Cable Length**

- 5 = 5 m
- 10 = 10 m
- 25 = 25 m
Contact Calex for information regarding extending the cable

**User Configurable**

- C = Configurable via optional adapters

**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

**On all models, temperature range may be rescaled between limits -20°C and 1000°C via optional adapters and software**

**Field of View**

- 21 = 2:1 divergent optics
- 151 = 15:1 divergent optics
- 301 = 30:1 divergent optics
- CF = Close focus optics (Spot Ø 5 mm at distance 100 mm)