

### TECHNICAL DATA

# Thermalert® 4.0

## Highlights

- Wide temperature range from -40 to 2300 °C (-40 to 4172 °F)
- Multiple spectral models for applications such as metals, glass and plastics
- Best in class ambient temperature up to 85 °C (185 °F)
- Wide choice of optics
- Fast response time down to 10 ms
- Laser sighting
- Compact, rugged design in stainless steel
- Galvanic isolated outputs
- Real time background temperature compensation
- Simple, two-wire installation or RS485 communication
- Software for remote configuration, monitoring and field calibration
- Multiple analog and digital interfaces
- Power over Ethernet (PoE)
- PROFINET IO and EtherNet/IP fieldbus communication, HART Protocol optional
- Flame models
- LTD model for extreme dusty environments
- Intrinsically-safe models for use in potentially explosive atmospheres (dust, gas)

## Back Panels



Thermalert 4.0 supports 2-wire loop



Thermalert 4.0 with 4-pin connector



Thermalert 4.0 with 6-pin connector



Thermalert 4.0 with 12-pin connector



## General Specifications

**Environmental Rating** IP65 / NEMA-4

### Operating Ambient Temperature

without cooling	-20 to 85 °C (-4 to 185 °F)
with air cooling	120 °C (248 °F)
with water cooling	175 °C (347 °F)
with ThermoJacket	315 °C (599 °F)

**Storage Temperature** -20 to 85 °C (-4 to 185 °F)

**Relative Humidity** 10 to 95%, non-condensing

**Weight** 500 g (17.6 oz)

## Electrical Specifications

### Power Supply

2-Wire	12 to 28.8 VDC
4-Wire	Power over Ethernet
6/12-Wire	24 VDC nominal (20 to 48 VDC), 100 mA @ 24 V

### 2-Wire

Analog	4 to 20 mA
Digital	USB (for setup only)

### 4-Wire (M12)

Digital network communication interface Ethernet, EtherNet/IP, PROFINET IO, Full duplex, 100 Mbit/s

### 6-Wire

Analog	0/4 to 20 mA, 0 to 10 V, J/K thermocouple
Digital	RS485, USB (for setup only)

### 12-Wire (M16)

Analog	output 0/4 to 20 mA, 0 to 10 V, input 0 to 10 V for emissivity setting, and background temperature compensation
Digital	RS485, USB (for setup only) alarm output, trigger input

## Measurement Specifications

	<b>LT</b>	<b>G5</b>	<b>G7</b>	<b>P7</b>	<b>P3</b>
<b>Temperature Range</b>	<b>LTD-04</b> -20 to 500 °C (-4 to 932 °F)  <b>LT-07, LT-15, LT-30, LTB-30</b> -20 to 600 °C (-4 to 1112 °F)  <b>LT-50, LT-70</b> -40 to 1000 °C (-40 to 1832 °F)	<b>G5-30</b> 250 to 1650 °C (482 to 3002 °F)  <b>G5-70</b> 450 to 2250 °C (842 to 4082 °F)	<b>G7-70</b> 300 to 900 °C (572 to 1652 °F)	<b>P7-30</b> 10 to 360 °C (50 to 680 °F)	<b>P3-20</b> 25 to 450 °C (77 to 842 °F)
<b>Spectral Response</b>	8 to 14 μm	5 μm	7.9 μm	7.9 μm	3.43 μm
<b>System Accuracy<sup>1</sup></b>	$\pm 1\%$ of reading or $\pm 1.0\text{ °C}$ ( $2.0\text{ °F}$ ) for $T_{\text{meas}} > 0\text{ °C}$ ( $32\text{ °F}$ ) for $T_{\text{meas}} \leq 0\text{ °C}$ ( $32\text{ °F}$ ): $\pm [1.0\text{ °C} + 0.1 \cdot (0\text{ °C} - T_{\text{meas}})]$ with $T_{\text{meas}}$ in °C $\pm [2.0\text{ °F} + 0.1 \cdot (32\text{ °F} - T_{\text{meas}})]$ with $T_{\text{meas}}$ in °F				$\pm (3\text{ °C} + 1\%$ of reading) for $T_{\text{meas}} > 75\text{ °C}$ ( $167\text{ °F}$ )
<b>Repeatability<sup>2</sup></b>	$\pm 0.3\text{ °C}$ ( $0.6\text{ °F}$ ) or 0.3% of reading <sup>3</sup>				$\pm 1\text{ °C}$ ( $2\text{ °F}$ ) or 0.5% of reading <sup>3</sup>
<b>Response Time<sup>4</sup></b>	<b>LT-07, LT-15, LTD-04:</b> 150 ms <b>LT-30, LTB-30:</b> 30 ms <b>LT-50, LT-70:</b> 130 ms	<b>G5-30, G5-70</b> 60 ms	<b>G7-70</b> 130 ms	<b>P7-30</b> 130 ms	<b>P3-20</b> 130 ms <sup>6</sup>
<b>Optical Resolution (D:S)</b>	<b>LTD-04:</b> 4:1 <b>LT-07:</b> 7:1 <b>LT-15:</b> 15:1 <b>LT-30, LTB-30:</b> 33:1 <b>LT-50:</b> 50:1 <b>LT-70:</b> 70:1	<b>G5-30</b> 33:1  <b>G5-70</b> 70:1	<b>G7-70</b> 70:1	<b>P7-30</b> 33:1	<b>P3-20</b> 20:1
<b>Focus Distance</b>	<b>LT-07<sup>5</sup></b> CFO 50 mm (2 in)  <b>LT-15<sup>5</sup>, LTD-04</b> SFO 1520 mm (60 in)  <b>LT-30, LTB-30</b> SFO 1520 mm (60 in) CF1 76 mm (3 in) CF2 200 mm (7.9 in)  <b>LT-50</b> SFO 1520 mm (60 in) CF2 200 mm (7.9 in)  <b>LT-70</b> SF2 1250 mm (49 in) CF2 200 mm (7.9 in)	<b>G5-30</b> SFO 1520 mm (60 in)  <b>G5-70</b> SF2 1250 mm (49 in)	<b>G7-70</b> SF2 1250 mm (49 in)	<b>P7-30</b> SFO 1520 mm (60 in)	<b>P3-20</b> SF4 500 mm (20 in)
<b>Smallest Measurement Spot</b>	<b>LT-07</b> CF 7.1 mm (0.28 in)  <b>LT-30, LTB-30</b> CF1 2.3 mm (0.09 in) CF2 6.1 mm (0.24 in)  <b>LT-50</b> CF2 4 mm (0.16 in)  <b>LT-70</b> SF2 17.9 mm (0.7 in) CF2 2.9 mm (0.11 in)	<b>G5-70</b> SF2 17.9 mm (0.7 in)	<b>G7-70</b> SF2 17.9 mm (0.7 in)		

<sup>1</sup> at ambient temperature  $23\text{ °C} \pm 5\text{ °C}$  ( $73\text{ °F} \pm 9\text{ °F}$ ),  $\epsilon = 1.0$ , and calibration geometry

<sup>2</sup> at ambient temperature  $23\text{ °C} \pm 5\text{ °C}$  ( $73\text{ °F} \pm 9\text{ °F}$ )

<sup>3</sup> whichever is greater

<sup>4</sup> 90% value

<sup>5</sup> Plastic lens only, no ATEX/IECEx/CCC-IS option

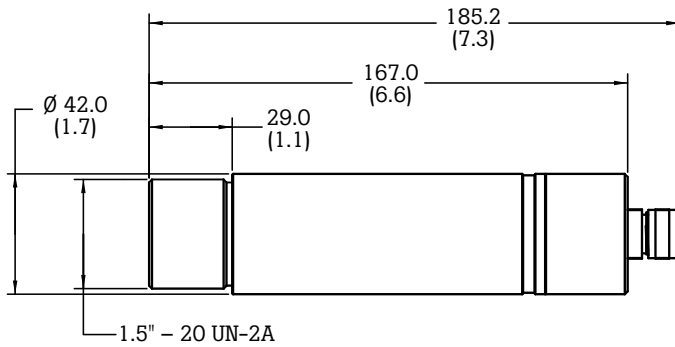
<sup>6</sup> 10 s for  $T_{\text{target}} < 150\text{ °C}$  ( $302\text{ °F}$ )

MT	HT	3M	2M	1M	CO2	CO	NOX
<b>MT-30</b> 200 to 1000 °C (392 to 1832 °F)  <b>MT-70</b> 450 to 2250 °C (842 to 4082 °F)	500 to 2000 °C (932 to 3632 °F)	<b>3M-70</b> 100 to 600 °C (212 to 1112 °F)	<b>2M-150</b> 250 to 1400 °C (482 to 2552 °F)	<b>1ML-150</b> 500 to 1650 °C (932 to 3002 °F)  <b>1MH-150</b> 650 to 2300 °C (1202 to 4172 °F)	<b>CO2-30</b>  Flame Detection 120 to 1650 °C (250 to 3002 °F)	<b>CO-30</b>	<b>NOX-30</b>
3.9 µm	2.2 µm	2.3 µm	1.6 µm	1 µm	4.24 µm	4.64 µm	4.47 µm
± 1% of reading or ±1.0 °C (2.0 °F) for T <sub>meas</sub> > 0 °C (32 °F)  for T <sub>meas</sub> ≤ 0 °C (32 °F): ± [1.0 °C + 0.1*(0 °C – T <sub>meas</sub> )] with T <sub>meas</sub> in °C ± [2.0 °F + 0.1*(32 °F – T <sub>meas</sub> )] with T <sub>meas</sub> in °F		± (2 °C + 0.5% of reading)			± 1.0% of reading for T <sub>meas</sub> > 700 °C (1292 °F)  ± 2.0% of reading or ± 6 °C (12 °F) for T <sub>meas</sub> ≤ 700 °C (1292 °F)	± 1.0% of reading or ± 5 °C (10 °F)	± (2 °C + 1% of reading)
± 0.3 °C (0.6 °F) or 0.3% of reading <sup>3</sup>		± (1 °C + 0.25% of reading)			± 0.5% of reading for T <sub>meas</sub> > 700 °C (1292 °F)  ± 1% of reading or ± 3 °C for T <sub>meas</sub> ≤ 700 °C (1292 °F)	± 0.5% of reading or ± 2.5 °C (5 °F)	± 0.5% of reading
<b>MT-30, MT-70</b> 130 ms	<b>HT-60</b> 130 ms	<b>3M-70</b> 20 ms	<b>2M-150, 1ML-150, 1MH-150</b> 10 ms		<b>CO2-30, CO-30, NOX-30</b> 130 ms		
<b>MT-30</b> 33:1  <b>MT-70</b> 70:1	<b>HT-60</b> 60:1	<b>3M-70</b> 70:1	<b>2M-150, 1ML-150, 1MH-150</b> 150:1		<b>CO2-30, CO-30, NOX-30</b> 33:1		
<b>MT-30</b> SF0 1520 mm (60 in) CF1 76 mm (3 in) CF2 200 mm (7.9 in)  <b>MT-70</b> SF2 1250 mm (49 in) CF1 76 mm (3 in) CF2 200 mm (7.9 in)	<b>HT-60</b> SFO 1520 mm (60 in) CF1 76 mm (3 in) CF2 200 mm (7.9 in)	<b>3M-70</b> SFO 1520 mm (60 in) CF2 200 mm (7.9 in)	<b>2M-150, 1ML-150, 1MH-150</b> SFO 1520 mm (60 in) CF2 200 mm (7.9 in)		<b>CO2-30, CO-30, NOX-30</b> SFO 1520 mm (60 in)		
<b>MT-30</b> CF1 2.3 mm (0.09 in) CF2 6.1 mm (0.24 in)  <b>MT-70</b> SF2 17.9 mm (0.7 in) CF1 1.1 mm (0.04 in) CF2 2.9 mm (0.11 in)	<b>HT-60</b> CF1 1.3 mm (0.05 in) CF2 3.3 mm (0.13 in)	<b>3M-70</b> CF2 2.9 mm (0.11 in)	<b>2M-150, 1ML-150, 1MH-150</b> SFO 10.1 mm (0.4 in) CF2 1.3 mm (0.05 in)				

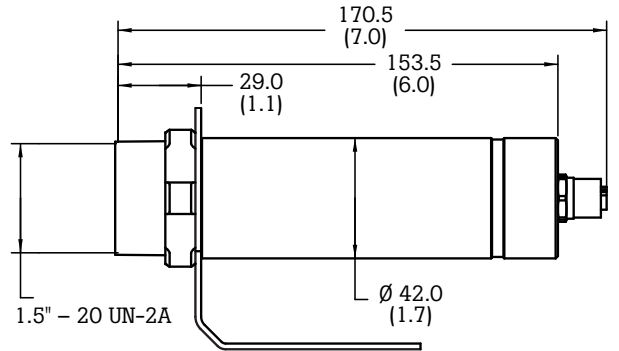
**Laser:** laser available per standard (except LT-07, LT-15, LTB-30, LTD-04, P3, CO2, CO, NOX and HART models).  
 2-wire devices require an additional power supply via USB.

**Dimensions**

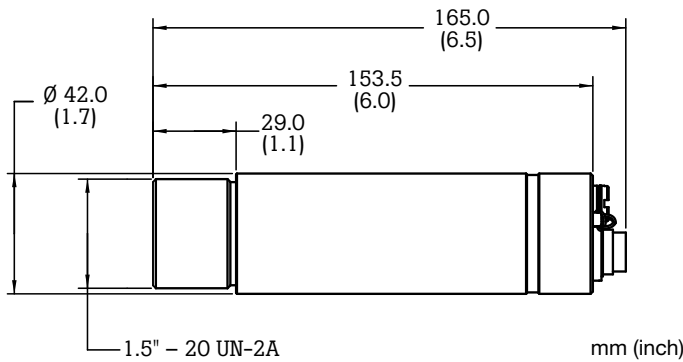
**2-Wire and 6-Wire model**



**4-Wire model**



**12-Wire model**



mm (inch)

**Intrinsic Safety Option**

Intrinsically safe sensing models (T40- ... -IS)

ATEX/IECEX/CCC-IS certification\*

ATEX	II 2G Ex ib IIC T4 Gb (Gas); II 2D Ex ib IIIC T135°C Db -20°C ≤ Ta ≤ +80°C (Dust)
IECEX	Ex ib IIC T4 Gb (Gas); Ex ib IIIC T135°C Db -20°C ≤ Ta ≤ +80°C (Dust)

\* Not available for sensors with plastic lens

**The Fluke Process Instruments Guarantee**

The Thermalert 4.0 Series is supported by a 2 year warranty. With a network of trained representatives and agents in over one hundred countries and offices located in the U.S., Germany and China, we provide local service and support.

**Fluke Process Instruments**

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10/2022 6010790F-EN