

FLUKE[®]

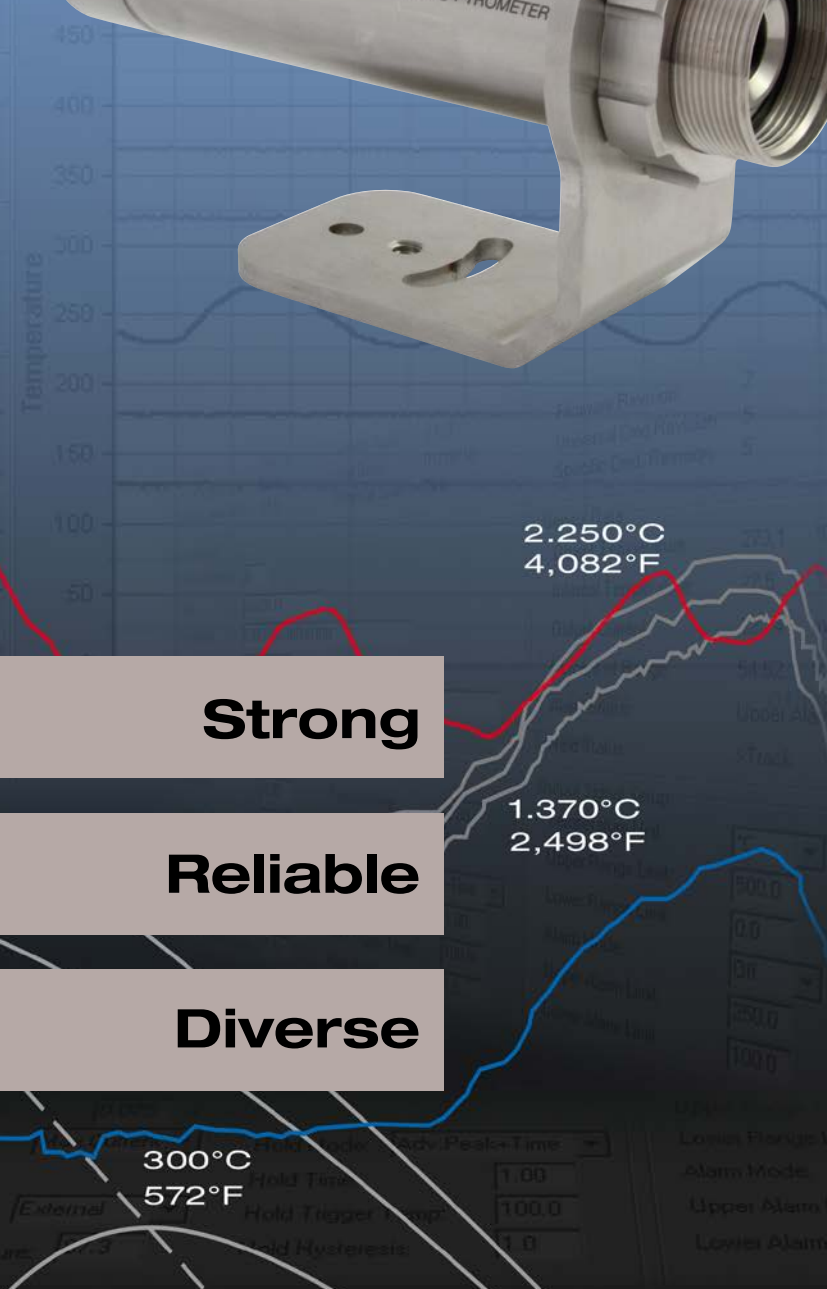
**Process
Instruments**

Thermalert[®] 4.0 Series

Infrared Pyrometers



131°C
Uyon
320°C
Product
269°C



Strong

Reliable

Diverse

Ambient Control External Ambient Temperature

Hold Time

Hold Trigger

Hold Hysteresis

Peak-Time


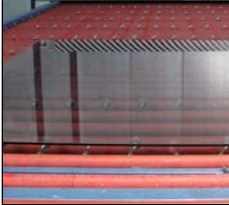




1.00
100.0
1.0

Lower Alarm Limit

Alarm Mode

Upper Alarm Limit

Lower Alarm Limit

LT	G5	G7	P3	P7	MT
-40 to 1000 °C (-40 to 1832 °F)	250 to 2250 °C (482 to 4082 °F)	300 to 900 °C (572 to 1652 °F)	25 to 450 °C (77 to 842 °F)	10 to 360 °C (50 to 680 °F)	200 to 2250 °C (392 to 4082 °F)
8 to 14 µm	5 µm	7.9 µm	3.43 µm	7.9 µm	3.9 µm
up to 70:1	up to 70:1	up to 70:1	20:1	33:1	up to 70:1
Low temperature applications, such as thick plastics, asphalt, carpeting, coated paper, thermoforming, food, coke, coal and cement	Glass surface temperature for bending, tempering, annealing and sealing	Ultra-thin drawn glass	Extrusion and converting of thin films like polyethylene, polypropylene, and polystyrene thin films	Production and converting of films of polyester (PET), fluoroplastic, Teflon®, acrylic, nylon (polyamide), polyurethane, PVC	Furnace refractory, flame hardening and brazing
					

The strong, reliable, diverse solution... saving you time and money



Strong

Built for use in harshest environments, the Thermalert 4.0 Pyrometer withstands ambient temperatures up to 85 °C (185 °F) without extra cooling. The sensor supports many wavelengths and can be used for a broad range of applications. Intrinsically safe models are available for use in potentially explosive areas (dust, gas).

Reliable

Designed to handle wider temperature ranges, this infrared sensor comes with superior in class optical resolution. 2-wire loop powered RS-485 as well as digital (Ethernet, EtherNet/IP, PROFINET IO) and analog outputs are available to meet your process requirements. Galvanic isolated outputs ensure correct readings.

Diverse

- Sensors are rugged, smart and easy-to-install
- Laser sighting available for all instruments
- Backward compatibility with legacy sensors and accessories
- Broad range of accessories available (high temperature enclosures, cables, etc.)
- 2-year warranty

The Thermalert 4.0 Series Pyrometers provide accurate temperature measurements for a wide variety of process control applications. With various types of communications, the Thermalert 4.0 sensor with laser aiming, provides the features you need to control your process in a compact, integrated package that is easy to install and operate.



Thermalert 4.0 with 12-pin connector supporting comprehensive input/output capabilities





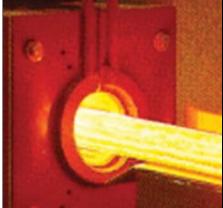


Thermalert 4.0 supports 2-wire loop for simultaneous power supply and analog output



Thermalert 4.0 with 6-pin terminal providing analog out and RS-485 communications

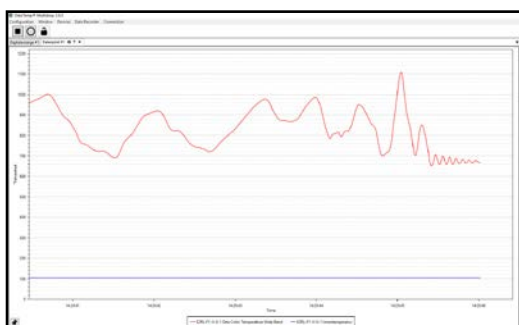
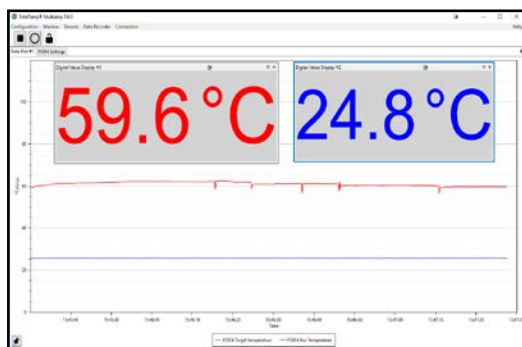


Thermalert 4.0 with 4-pin connector providing PROFINET IO and EtherNet IP (certified)

HT	3M	2M	1M	CO ₂	CO	NO _x
500 to 2000 °C (932 to 3632 °F)	100 to 600 °C (212 to 1112 °F)	250 to 1400 °C (482 to 2552 °F)	500 to 2300 °C (932 to 4172 °F)	120 to 1650 °C (250 to 3002 °F)		
2.2 μm	2.3 μm	1.6 μm	1 μm	4.24 μm	4.64 μm	4.47 μm
60:1	70:1	150:1	150:1	33:1		
Ferrous and nonferrous metals, induction heating, furnaces, laboratory research	Rolling mills, wire coating and annealing, laser welding, plastic tubing extensions	Non ferrous and unoxidized metals, galvanizing lines and steel annealing	Semiconductor, metals forging, molten glass	Flame or flue gas temperature measurement for incineration plants, boilers or power station		
	 Courtesy of Trumpf, Ditzingen					

Software

DataTemp® Multidrop software provides you with the tools you need to configure your sensors - then monitor temperatures on a real-time graphical display. The bar graph feature shows temperature profiles across a web or at various spots along a process. Use the program to record and archive your process temperatures. High and low alarms are shown, making it easy to identify out of range conditions.



Accessories

A wide variety of options and accessories are available to customize the installation of your Thermalert 4.0 Pyrometer.

Lens protectors and air purge collars offer protection in harsh environments. The Water-/air-cooled housings can be specified for operation in ambient temperatures up to 175 °C (315 °F).



For extremely harsh environments, the ThermoJacket is recommended.

This rugged cast aluminum housing protects the sensor in ambient temperatures up to 315 °C (600 °F). It completely encloses the sensor, combining thermal and mechanical protection with air purging of the lens. The Thermalert 4.0 Pyrometer can be installed or removed while the ThermoJacket is in its mounted position.




The ThermoJacket protective enclosure enables use in ambient temperatures up to 315 °C (600 °F).

Key Features

- Durable stainless steel IP65 / NEMA4 enclosures designed to withstand ambient temperatures from -20 °C to 85 °C (-4 °F to 185 °F)
- Integrated laser sighting
- Galvanic isolated outputs
- Plastic lens option for food applications
- Analog input for ambient compensation and adjusting emissivity setting
- Multiple interfaces
 - 2-wire loop powered for analog communication
 - 12-wire M16 and 6-pin terminal block for digital communication (RS485)
- 4-wire Fieldbus
- Ethernet, EtherNet/IP, PROFINET IO
- HART Protocol optional
- Wide temperature ranges from -40 °C to 2300 °C (-40 °F to 4172 °F)
- Advanced signal processing
- Wide choice of focus distances
- ATEX/IECEX/CCC-IS certified models available

Compatibilities

Easy to upgrade from existing Raytek TX, XR or Marathon and Ircon Modline® 4 or 7 series installations. Direct fittings in old installation or adapter accessories allow you to use existing accessories.



In the heat of the moment, what is the temperature? Not knowing can mean the investment and labor of everyone and every material involved in the manufacturing process, from the raw to the finished product, is at risk. We take the heat and tell you its temperature. Precisely, accurately, and with the greatest of detail, all to ensure our customers' promise of quality is delivered.

We are Raytek, Ircon, and Datapaq. Combined, we have over 150 years of experience in temperature measurement. Individually, we have earned the respect of manufacturing's most valued names.

Together, we are Fluke® Process Instruments - a triad of the top performing, innovative, most rugged and dependable noncontact temperature measurement and profiling equipment made - a complete line of infrared sensors, line scanners, thermal imagers and profiling systems for use in today's most demanding environments.

Raytek, Ircon, and Datapaq. The first names in temperature control have become the last word in manufacturing with confidence:

Fluke Process Instruments

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.

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Worldwide Service

Fluke Process Instruments offers services, including repair and calibration. For more information, contact your local office.

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 10/2022 6010791D

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

	LT	G5	G7	P7	P3
Temperature Range	LTD-04 -20 to 500 °C (-4 to 932 °F) LT-07, LT-15, LT-30, LTB-30 -20 to 600 °C (-4 to 1112 °F) LT-50, LT-70 -40 to 1000 °C (-40 to 1832 °F)	G5-30 250 to 1650 °C (482 to 3002 °F) G5-70 450 to 2250 °C (842 to 4082 °F)	G7-70 300 to 900 °C (572 to 1652 °F)	P7-30 10 to 360 °C (50 to 680 °F)	P3-20 25 to 450 °C (77 to 842 °F)
Spectral Response	8 to 14 μm	5 μm	7.9 μm	7.9 μm	3.43 μm
System Accuracy¹	$\pm 1\%$ of reading or $\pm 1.0\text{ }^\circ\text{C}$ ($2.0\text{ }^\circ\text{F}$) for $T_{\text{meas}} > 0\text{ }^\circ\text{C}$ ($32\text{ }^\circ\text{F}$) for $T_{\text{meas}} \leq 0\text{ }^\circ\text{C}$ ($32\text{ }^\circ\text{F}$): $\pm [1.0\text{ }^\circ\text{C} + 0.1 * (0\text{ }^\circ\text{C} - T_{\text{meas}})]$ with T_{meas} in $^\circ\text{C}$ $\pm [2.0\text{ }^\circ\text{F} + 0.1 * (32\text{ }^\circ\text{F} - T_{\text{meas}})]$ with T_{meas} in $^\circ\text{F}$				$\pm (3\text{ }^\circ\text{C} + 1\%$ of reading) for $T_{\text{meas}} > 75\text{ }^\circ\text{C}$ ($167\text{ }^\circ\text{F}$)
Repeatability²	$\pm 0.3\text{ }^\circ\text{C}$ ($0.6\text{ }^\circ\text{F}$) or 0.3% of reading ³				$\pm 1\text{ }^\circ\text{C}$ ($2\text{ }^\circ\text{F}$) or 0.5% of reading ³
Response Time⁴	LT-07, LT-15, LTD-04: 150 ms LT-30, LTB-30: 30 ms LT-50, LT-70: 130 ms	G5-30, G5-70 60 ms	G7-70 130 ms	P7-30 130 ms	P3-20 130 ms ⁶
Optical Resolution (D:S)	LTD-04: 4:1 LT-07: 7:1 LT-15: 15:1 LT-30, LTB-30: 33:1 LT-50: 50:1 LT-70: 70:1	G5-30 33:1 G5-70 70:1	G7-70 70:1	P7-30 33:1	P3-20 20:1
Focus Distance	LT-07⁵ CFO 50 mm (2 in) LT-15⁵, LTD-04 SFO 1520 mm (60 in) LT-30, LTB-30 SFO 1520 mm (60 in) CF1 76 mm (3 in) CF2 200 mm (7.9 in) LT-50 SFO 1520 mm (60 in) CF2 200 mm (7.9 in) LT-70 SF2 1250 mm (49 in) CF2 200 mm (7.9 in)	G5-30 SFO 1520 mm (60 in) G5-70 SF2 1250 mm (49 in)	G7-70 SF2 1250 mm (49 in)	P7-30 SFO 1520 mm (60 in)	P3-20 SF4 500 mm (20 in)
Smallest Measurement Spot	LT-07 CF 7.1 mm (0.28 in) LT-30, LTB-30 CF1 2.3 mm (0.09 in) CF2 6.1 mm (0.24 in) LT-50 CF2 4 mm (0.16 in) LT-70 SF2 17.9 mm (0.7 in) CF2 2.9 mm (0.11 in)	G5-70 SF2 17.9 mm (0.7 in)	G7-70 SF2 17.9 mm (0.7 in)		

¹ at ambient temperature $23\text{ }^\circ\text{C} \pm 5\text{ }^\circ\text{C}$ ($73\text{ }^\circ\text{F} \pm 9\text{ }^\circ\text{F}$), $\epsilon = 1.0$, and calibration geometry

² at ambient temperature $23\text{ }^\circ\text{C} \pm 5\text{ }^\circ\text{C}$ ($73\text{ }^\circ\text{F} \pm 9\text{ }^\circ\text{F}$)

³ whichever is greater

⁴ 90% value

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

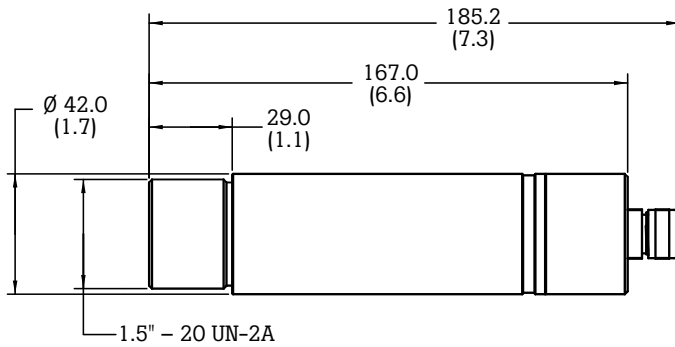
⁶ 10 s for T target $< 150\text{ }^\circ\text{C}$ ($302\text{ }^\circ\text{F}$)

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

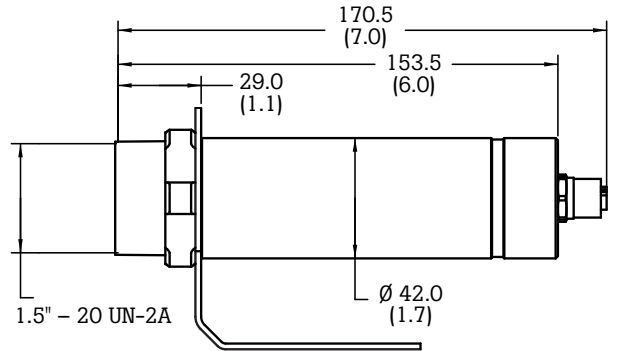
Laser: laser available per standard (except LT-07, LT-15, LTB-30, LTD-04, P3, CO2, CO and NOX models).
2-wire devices require an additional power supply via USB.

Dimensions

2-Wire and 6-Wire model

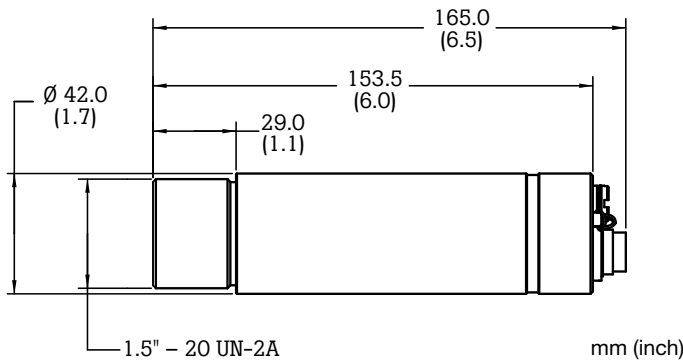


4-Wire model



mm (inch)

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.

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7/2022 6010790F-en