

FLUKE®

59 MAX/59 MAX +

Infrared Thermometer

Users Manual

PN 4311999

March 2013

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Introduction

The Fluke 59 MAX and 59 MAX + Infrared Thermometers (the Product) can determine the surface temperature by measuring the amount of infrared energy radiated by the target's surface.

Warning

Read all safety information before you use the Product.

How to Contact Fluke

To contact Fluke, call one of the following telephone numbers:

- Technical Support USA: 1-800-44-FLUKE (1-800-443-5853)
- Calibration/Repair USA: 1-888-99-FLUKE (1-888-993-5853)
- Canada: 1-800-36-FLUKE (1-800-363-5853)
- Europe: +31 402-675-200
- Japan: +81-03-6714-3114
- Singapore: +65-6799-5566
- Anywhere in the world: +1-425-446-5500

Or, visit Fluke's website at www.fluke.com.

To register your product, visit <http://register.fluke.com>.

To see, print, or download the latest manual supplement, visit
<http://us.fluke.com/usen/support/manuals>.

Safety Information

A **Warning** identifies conditions and procedures that are dangerous to the user. A **Caution** identifies conditions and procedures that can cause damage to the Product or the equipment under test.

Table 1 tells you about symbols used on the Product and in this manual.



To prevent possible electrical shock, fire, or personal injury:

- **Read all safety Information before you use the Product.**
- **Do not use the Product if it operates incorrectly.**
- **Use the Product only as specified, or the protection supplied by the Product can be compromised.**
- **Examine the case before you use the Product. Look for cracks or missing plastic. Carefully look at the insulation around the terminals.**

- See emissivity information for actual temperatures. Reflective objects result in lower than actual temperature measurements. These objects pose a burn hazard.
- Do not look directly into the laser with optical tools (for example, binoculars, telescopes, microscopes). Optical tools can focus the laser and be dangerous to the eye.
- Do not look into the laser. Do not point laser directly at persons or animals or indirectly off reflective surfaces.
- Replace the batteries when the low battery indicator shows to prevent incorrect measurements.
- Do not use the Product around explosive gas, vapor, or in damp or wet environments.
- Use the Product only as specified or hazardous laser radiation exposure can occur.
- Carefully read all instructions.

Table 1. Symbols

Symbol	Meaning	Symbol	Meaning
	Risk of danger. Important information. See Manual.		Conforms to relevant North American Safety Standards.
	Warning. Laser.		Conforms to European Union directives.
	Battery		Conforms to relevant Australian standards.
	This product complies with the WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.		

Maintenance

Warning

To prevent possible electrical shock, fire, or personal injury, have an approved technician repair the Product.

Caution

To avoid damage to the Product, do not leave the thermometer on or near objects of high temperature.

How to Change the Battery

To install or change the AA IEC LR06 battery, open the battery compartment and replace the battery as shown in Figure 16.

How to Clean the Product

Use soap and water on a damp sponge or soft cloth to clean the Product case. Carefully wipe the surface with a moist cotton swab. The swab may be moistened with water. See Figure 17.

Specifications

	59 MAX	59 MAX +
Temperature Range	-30 °C to 350 °C (-22 °F to 662 °F)	-30 °C to 500 °C (-22 °F to 932 °F)
Accuracy (Calibration geometry with ambient temperature 23 °C ±2 °C)	≥ 0 °C: ± 2.0 °C or ± 2.0 % of reading, whichever is greater (≥ 32 °F: ± 4.0 °F or ± 2.0 % of reading, whichever is greater) ≥ -10 °C to < 0 °C: ± 2.0 °C (≥ 14 °F to < 32 °F: ± 4.0 °F) < -10 °C: ± 3.0 °C (< 14 °F: ± 6.0 °F)	≥ 0 °C: ± 1.5 °C or ± 1.5 % of reading, whichever is greater (≥ 32 °F: ± 3.0 °F or ± 1.5 % of reading, whichever is greater) ≥ -10 °C to < 0 °C: ± 2.0 °C (≥ 14 °F to < 32 °F: ± 4.0 °F) < -10 °C: ± 3 °C (< 14 °F: ± 6.0 °F)
Response Time (95 %)	<500 ms (95 % of reading)	<500 ms (95 % of reading)
Spectral Response	8 μ m to 14 μ m	
Emissivity	0.10 to 1.00	

Optical Resolution	8:1 (calculated at 90 % energy)	10:1 (calculated at 90 % energy)
Display Resolution	0.1 °C (0.2 °F)	
Repeatability (% of reading)	±1.0 % of reading or ±1.0 °C (±2.0 °F), whichever is greater	±0.8 % of reading or ±1.0 °C (±2.0 °F), whichever is greater
Power	1 AA IEC LR06 Battery	
Battery Life	12 hours with laser and backlight on	
Weight	220 g (7.76 oz)	
Size	(156 x 80 x 50) mm (6.14 x 3.15 x 2) inches	
Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)	
Storage Temperature	-20 °C to +60 °C (-4 °F to 140 °F), (without battery)	
Operating Humidity	10 % to 90 % RH non-condensing @ 30 °C (86 °F)	
Operating Altitude	2000 meters above mean sea level	
Storage Altitude	12,000 meters above mean sea level	
Drop Test	1 m	

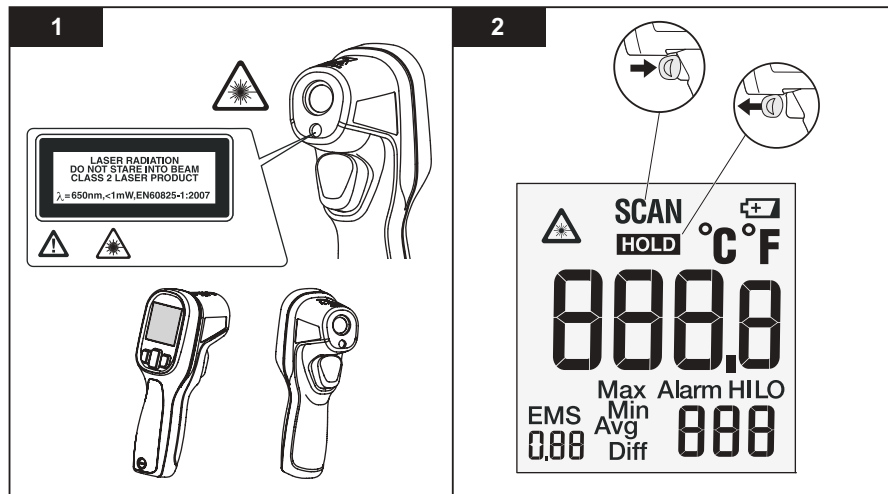
Standards and Agency Approval

Ingress Protection Rating.....	IP40 per IEC 60529
Vibration and Shock.....	IEC 68-2-6 2.5 g, 10 to 200 Hz, IEC 68-2-27, 50 g, 11 ms
Compliance	EN/IEC 61010-1
Laser Safety	FDA and EN 60825-1 Class II
Electromagnetic Compatibility.....	61326-1 EN 61326-2

Nominal Surface Emissivity

Material	Value		Material	Value
Default****	0.95		Glass (plate)	0.85
Aluminum*	0.30		Iron*	0.70
Asbestos	0.95		Lead*	0.50
Asphalt	0.95		Oil	0.94
Brass*	0.50		Paint	0.93
Ceramic	0.95		Plastic**	0.95
Concrete	0.95		Rubber	0.95
Copper*	0.60		Sand	0.90
Food - Frozen	0.90		Steel*	0.80
Food - Hot	0.93		Water	0.93
			Wood ***	0.94
* Oxidized ** Opaque, over 20 mils *** Natural **** Factory Setting Highlighted items may also be found in the emissivity table built into the Thermometer.				

The Product



hdi01.eps

3

4

°F/°C

5

EMS

5

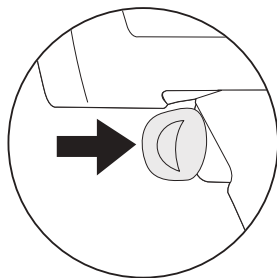
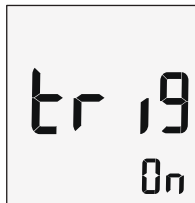
6

Max/Min/Avg/Diff

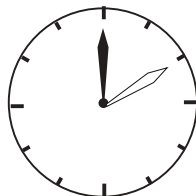
SCAN	°F	EMS	Max/Min/Avg/Diff
68.0	90	0.95	Max
68.0	68	0.95	Min
68.0	76	0.95	Avg
68.0	22	0.95	Diff

SEL

7



+



10 min



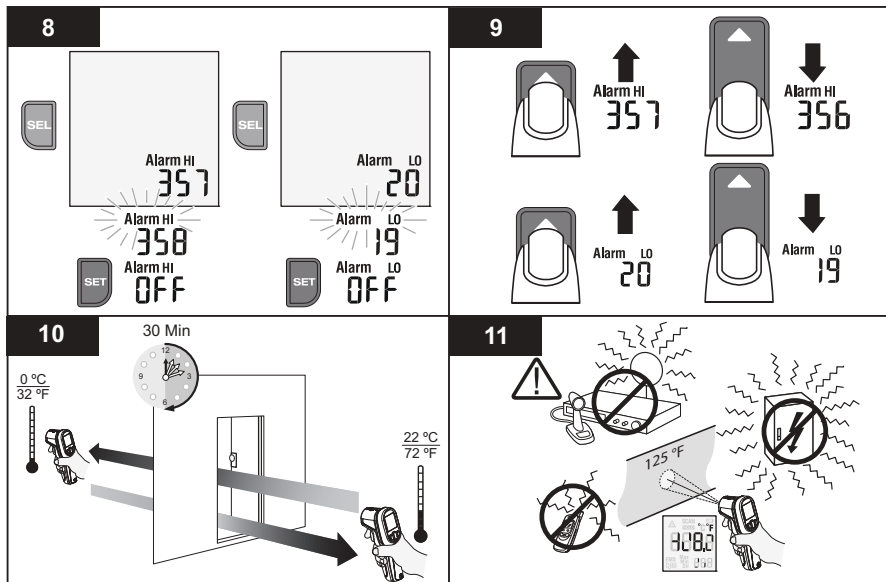
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OFF

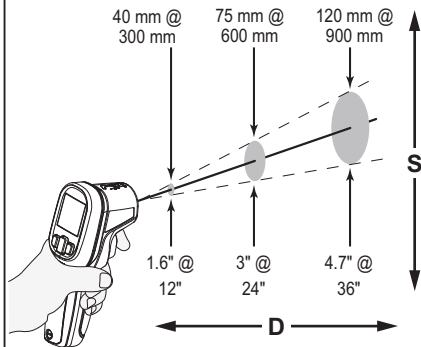
hdi16.eps

Infrared Thermometer The Product



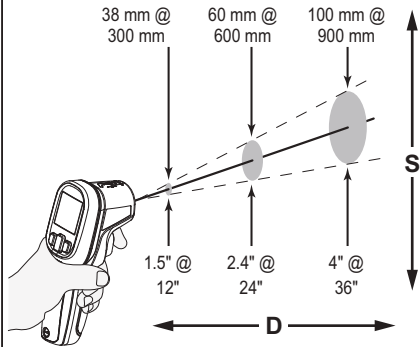
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12



59 MAX
D:S = 8:1

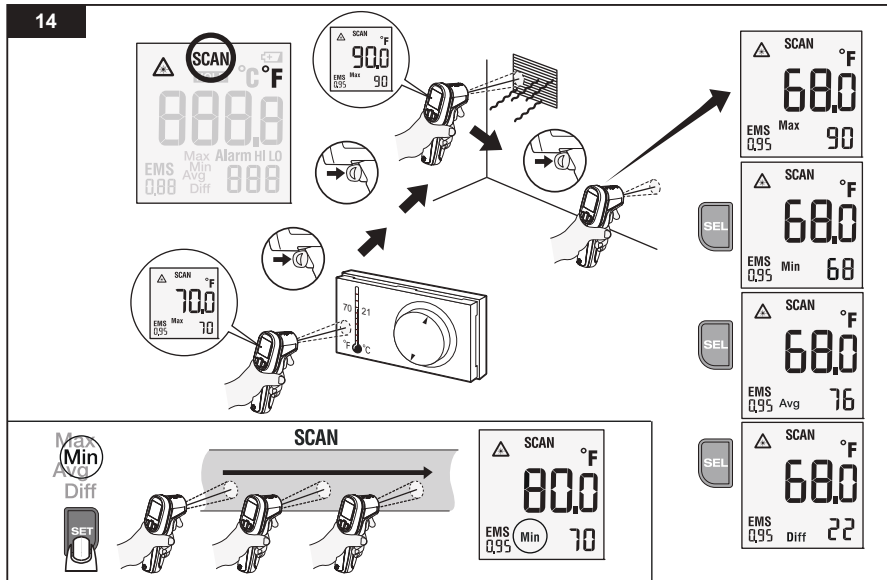
13



59 MAX +
D:S = 10:1

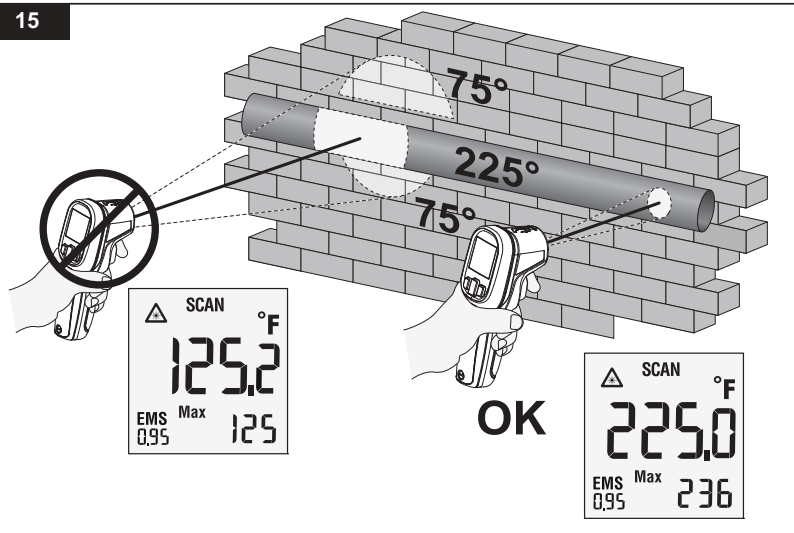
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14



hdi03.eps

15



hdi04.eps

