

**3M**

# Diagnostic and Detection Products

Infrared Thermometers

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When your job calls for leading-edge temperature-measurement technology, 3M provides the solution with the family of 3M Infrared Thermometers and Data Communications and Coax Cable Detection Instruments.

## Infrared Thermometers

These units provide a fast, easy and accurate way to measure a wide range of temperatures at a safe distance. Plant engineers and technicians can now monitor equipment more closely, more accurately and more often – helping to spot trouble before it leads to costly malfunction and repair.

For general, commercial and professional use, 3M offers a wide range of models to meet your preventative maintenance requirements.



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# Infrared Thermometers

3M™ Infrared Thermometer is a rugged, highly accurate and easy-to-use, portable non-contact (infrared) thermometer. It is an invaluable tool for monitoring operating temperatures of mechanical and electrical, plant and production equipment without removing the equipment, from service.

The infrared thermometer allows the electrician and/or technician to locate and identify overheating conditions in electrical wiring connections, panels, switchgear, motors and mechanical equipment, and to perform preventive maintenance before catastrophic failure occurs.

## General Use

### 3M™ IR-500

- Temperature range of 0°F (18°C) to 500°F (260°C)
- 6:1 distance to spot ratio
- Single-point laser sighting
- Best used at a distance of less than 4' away
- Pocket sized with easy to use one-button operations

### 3M™ IR-750

- Temperature range of -25°F (-32°C) to 750°F (400°C)
- 12:1 distance to spot ratio
- Single-point laser sighting
- Dual display shows the actual and maximum temperature
- User friendly with a back-lit LCD display and point-and-shoot operation
- Covers the basics of temperature measurement

### 3M™ IR-950

All features of the IR-750 plus:

- Increased temperature range of -25°F (-32°C) to 950°F (545°C)
- 8 point circular laser sighting

## Commercial Use

### 3M™ IR-1100

- Temperature range of -25°F (-32°C) to 1100°F (600°C)
- 30:1 distance to spot ratio
- 8 point circular laser sighting
- Hi and low alarm
- Stores 12 data points in memory
- Recalls maximum, minimum, differential, average, and last temperature readings
- Adjustable emissivity

### 3M™ IR-1400

All features of IR-1100 plus:

- 50:1 distance to spot ratio
- Increased temperature range of -25°F (-32°C) to 1400°F (760°C)

### 3M™ IR Probe

An optional accessory for the IR-1100 and the IR-1400 is the IR Probe, a Resistance Temperature Detector which plugs into the standard jack on these units and provides contact temperature simultaneously with noncontact temperature. Accuracy +/- 2°F Temperature Range: -13°F to 500°F.



3M™ Model IR-60EXPL2 Infrared Thermometer

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### 3M™ IR-1400IS

All the benefits of the IR-1400 plus:

- Factory Mutual Approved for usability in potentially hazardous (explosive or flammable) locations.
- Rated Intrinsically Safe for Class I, Division I, Groups A, B, C, D, Class 1, Zone 0, AEX is IIC, T4 at 50C when used with 9v alkaline battery and it includes an approved external contact probe

### 3M™ IR-60L2 and IR-60CFO

- 17 point circular laser sighting provides increased accuracy
- High alarm for scanning
- 60:1 distance to spot ratio
- Temperature range of -25°F (-32°C) to 1600°F (870°C)
- Adjustable emissivity
- The IR-60L2 is also available in a close focus model, the IR-60CFO, with a 50:1 distance to spot ratio that allows for the precise reading of small objects at a distance

## Professional Use

### 3M™ IR-60EXPL2 and IR-60EXCFO

All features of the IR-60L2 and IR-60CFO plus:

- Connects directly to a PC or printer for data download
- Stores 100 data points in memory
- Standard pack-out includes an RS232 cable, Windows® operating system-based software, power supply, contact probe, wrist strap and hard plastic case

## Choose the Thermometer That's Right for Your Job

Product	Laser Sighting	Distance-to-Spot Ratio	Alarms	Data Logs	Emissivity	Maximum Temperature
IR-500	Single spot	6:1	-	-	Fixed	500°F (260°C)
IR-750	Single spot	12:1	-	-	Fixed	750°F (400°C)
IR-950	8 point circle	12:1	-	-	Fixed	950°F (545°C)
IR-1100	8 point circle	30:1	HI-LO	12	Adjustable	1100°F (600°C)
IR-1400	8 point circle	50:1	HI-LO	12	Adjustable	1400°F (760°C)
IR-1400IS	8 point circle	50:1	HI-LO	12	Adjustable	1400°F (760°C)
IR-60L2	17 point circle	60:1	HI Only	-	Adjustable	1600°F (870°C)
IR-60CFO Close focus	17 point circle,	50:1	HI Only	-	Adjustable	1600°F (870°C)
IR-60EXPL2	17 point circle	60:1	HI-LO	100, Software	Adjustable	1600°F (870°C)
IR-60EXCFO Close focus	17 point circle,	50:1	HI-LO	100, Software	Adjustable	1600°F (870°C)

Does your job require NIST or DKD compliance? Be sure to order your IR-750, IR-950, IR-1100, IR-1400, IR-60L2, or IR-60EXPL2 with certification (NIST or DKD).

8 Point Circle



17 Point Circle



The 8 Point and 17 Point lasers form circles to show the appropriate area being measured; a single laser spot shows the center of the measurement area.



### Features — Advantages — Benefits

#### 3M Infrared Thermometers

Contains built-in laser sighting	User can literally "spot" and scan the object from a safe distance	Easy to use
Constructed of light, yet rugged plastics	Lightweight, withstands use in industrial environments	Easy to use
Non-contact temperature measurement	Provide accurate measurement and personal safety	Improves quality and safety
Back-lit LCD display	Readable in dark areas	Easy to use

## Specification Information for 3M™ Infrared Thermometers

Specifications	Models				
	IR-500	IR-750	IR-950	IR-1100	IR-1400
Temperature Range	0 to 500°F (-18 to 260°C)	-25 to 750°F (-32 to 400°C)	-25 to 950°F (-32 to 545°C)	-25 to 1100°F (-32 to 600°C)	-25 to 1400°F (-32 to 760°C)
Accuracy of Reading	±2%	±1%	±1%	±1%	±1%
Repeatability of Reading	±2%	±0.5%	±0.5%	±0.5%	±0.5%
95% Response Time	500 msec	500 msec	500 msec	500 msec	500 msec
Spectral Response	7-18 microns	8-14 microns	8-14 microns	8-14 microns	8-14 microns
Optical System	6:1	12:1	12:1	30:1	50:1
MAX Temperature	–	X	X	X	X
MIN, DIF, AVG Temp	–	–	–	X	X
Recall Last Reading	–	–	–	X	X
Display Hold	X	X	X	X	X
HI Alarm	–	–	–	X	X
LO Alarm	–	–	–	X	X
Low Battery Indicator	X	X	X	X	X
LCD Backlight	X	X	X	X	X
Laser (Class II)	X	X	8 Point Circle	8 Point Circle	8 Point Circle
Emissivity	Pre-set 0.95	Pre-set 0.95	Pre-set 0.95	Adjustable from 0.10 to 1.0	Adjustable from 0.10 to 1.0
Temperature Display	°C or °F selectable 3.5 digit LCD	°C or °F selectable 3.5 digit LCD	°C or °F selectable 3.5 digit LCD	°C or °F selectable 3.5 digit LCD	°C or °F selectable 3.5 digit LCD
Display Resolution	–	0.5°F (0.2°C)	0.5°F (0.2°C)	0.1°F (0.1°C)	0.1°F (0.1°C)
Ambient Operating Range	32 to 120°F (0 to 50°C)	32 to 120°F (0 to 50°C)	32 to 120°F (0 to 50°C)	32 to 120°F (0 to 50°C)	32 to 120°F (0 to 50°C)
Relative Humidity, ambient	10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)
Storage Temperature	-13° to 158°F (-20° to 60°C) w/out battery	-13° to 158°F (-20° to 60°C) w/out battery	-13° to 158°F (-20° to 60°C) w/out battery	-13° to 158°F (-20° to 60°C) w/out battery	-13° to 158°F (-20° to 60°C) w/out battery
Power	9V Alkaline or NiCd battery	9V Alkaline or NiCd battery	9V Alkaline or NiCd battery	9V Alkaline or NiCd battery	9V Alkaline or NiCd battery
Battery Life (Alkaline)	12 hours	10 hours with laser and backlight on 40 hours with laser and backlight off		20 hours with laser and backlight on 50% 40 hours with laser and backlight off	
Dimensions	7.25 x 1.75 x 1.5 in (184 x 45 x 38 mm)	8 x 6 x 2 in (200 x 160 x 55 mm)	8 x 6 x 2 in (200 x 160 x 55 mm)	8 x 6 x 2 in (200 x 160 x 55 mm)	8 x 6 x 2 in (200 x 160 x 55 mm)
Weight	8 oz. (227g)	11 oz. (320g)	11 oz. (320g)	11 oz. (320g)	11 oz. (320g)
Locking Trigger	–	–	–	X	X
Tripod Mount	–	1/4"-20 UNC Threading	1/4"-20 UNC Threading	1/4"-20 UNC Threading	1/4"-20 UNC Threading
Accessories Standard With Each Unit	–	Hard plastic case Wrist strap	Hard plastic case Wrist strap	Hard plastic case Wrist strap	Hard plastic case Wrist strap
Data Logger Points	–	–	–	12 data points in memory	12 data points in memory

\* NIST and DKD certification is optional on all models except the IR-500.

\*\* The IR-60CFO has the same specifications as the IR-60L2 and IR-60EXCFO have the same specifications as the IR-60EXPL2.

\*\*\* The IR-1400IS has the same specifications as the IR-1400.



IR-60L2	IR-60EXPL2
-25 to 1600°F (-32 to 870°C)	-25 to 1600°F (-32 to 870°C)
±1%	±1%
±0.5%	±0.5%
250 msec	250 msec
8-14 microns	8-14 microns
60:1	60:1
X	X
-	X
X	X
X	X
X	X
-	X
X	X
X	X
17 Point Circle	17 Point Circle
Adjustable from 0.10 to 1.0	Adjustable from 0.10 to 1.0
°C or °F selectable 3.5 digit LCD	°C or °F selectable 3.5 digit LCD
Tenth degree reading up to 199.9 (F or C)	Tenth degree reading up to 199.9 (F or C)
32 to 120°F (0 to 50°C)	32 to 120°F (0 to 50°C)
10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)
-25° to 122°F (-30° to 50°C) w/out battery	-25° to 122°F (-30° to 50°C) w/out battery
2 x 1.5V alkaline Type AA	2 x 1.5V alkaline Type AA
25 hours measurement mode, 11 hours with laser on, 6 hours with backlight and laser on (50% backlight used)	
6.7 x 2 x 7.9 in (170 x 50 x 200 mm)	6.7 x 2 x 7.9 in (170 x 50 x 200 mm)
1 lb - 6 oz.	1 lb - 6 oz.
X	X
1/4"-20 UNC Threading	1/4"-20 UNC Threading
Hard plastic case Wrist strap	Software, RS232 cable, 7.5 V power supply, contact probe Hard plastic case, wrist strap
-	100 points in memory



# 3M™ Infrared Thermometer Field of View Comparison

Model Number	Field of View
IR-500	<p><math>\frac{D}{S} = \frac{6}{1}</math></p> <p>25mm @ 150mm, 50mm @ 300mm, 100mm @ 600mm</p> <p>1" @ 6", 2" @ 12", 4" @ 24"</p>
IR-750 IR-950	<p><math>\frac{D}{S} = \frac{12}{1}</math></p> <p>29mm @ 150mm, 38mm @ 300mm, 57mm @ 600mm</p> <p>1.1" @ 6", 1.5" @ 12", 2.3" @ 24"</p>
IR-1100	<p><math>\frac{D}{S} = \frac{30}{1}</math></p> <p>24mm @ 300mm, 30mm @ 900mm, 62mm @ 1500mm</p> <p>0.9" @ 12", 1.2" @ 36", 2.5" @ 60"</p>
IR-1400 IR-1400IS	<p><math>\frac{D}{S} = \frac{50}{1}</math></p> <p>19mm @ 300mm, 18mm @ 900mm, 42mm @ 1500mm</p> <p>0.8" @ 12", 0.7" @ 36", 1.7" @ 60"</p>
IR-60L2 IR-60EXPL2	<p><math>\frac{D}{S} = \frac{60}{1}</math></p> <p>29mm @ 1500mm, 58mm @ 2500mm, 72mm @ 3000mm</p> <p>1.17" @ 60", 2.30" @ 100", 2.85" @ 120"</p>
IR-60CFO IR-60EXCFO	<p>DISTANCE: SENSOR TO OBJECT (IN)</p> <p>SPOT DIA. (IN)</p> <p>1 0.9 0.75 0.62 0.49 0.37</p> <p>0.24 IN @ 11.8 IN</p> <p>0.93 2.81</p> <p>Close Focus</p> <p>SPOT DIA. (mm)</p> <p>25 22 18.7 15.5 12.3 9.2</p> <p>6 mm @ 300 mm</p> <p>23 70</p> <p>DISTANCE: SENSOR TO OBJECT (mm)</p> <p>0 50 100 150 200 250 500 1000</p> <p>FOCUS POINT D:S = 50:1 FAR FIELD D:S = 12:1</p>

## Ordering Information for 3M™ Infrared Thermometers

Product Number	Description	UPC (054007-)	Billing Unit	Inner Unit Pack	Minimum Order Case Qty.
IR-500	Infrared Thermometer Sgl Laser	43556	each	1	5
IR-750	Infrared Thermometer Sgl Laser	44412	each	1	1
IR-750NI	Infrared Thermometer Sgl Laser	44433	each	1	1
IR-950	Infrared Thermometer Circ Laser	44413	each	1	1
IR-950NI	Infrared Thermometer Circ Laser certified	44434	each	1	1
IR-1100	Infrared Thermometer Circ Laser	44414	each	1	1
IR-1100NI	Infrared Thermometer Circ Laser certified	44435*	each	1	1
IR-1400	Infrared Thermometer Circ Laser	44415*	each	1	1
IR-1400NI	Infrared Thermometer Circ Laser certified	44436	each	1	1
IR-60L2	Infrared Thermometer Circ Laser	42840	each	1	1
IR-60L2NI	Infrared Thermometer Circ Laser certified	42843	each	1	1
IR-60CFO	Infrared Thermometer, Close Focus model	43961	each	1	1
IR-60EXPL2-1	Infrared Thermometer Circ Laser	42852	each	1	1
IR-60EXPL2NI-1	Infrared Thermometer Circ Laser	42855	each	1	1
IR-60EXCFO	Infrared Thermometer, Close Focus w/ software	44440	each	1	1
IR-60EXPL2-2	Infrared Thermometer Circ Laser	42856	each	1	1
IR-60EXPL2NI-2	Infrared Thermometer Circ Laser	42859	each	1	1
IR Probe	RTD Temp Probe for IR-1100 and IR-1400	53264*	each	1	1

\*UPC prefix 055128-

