SPECIFICATIONS

Range: -67 to 482 °F / -55 to 250 °C
Resolution: 0.1° (-9.9 to 199.9)
               1° (otherwise)

OPERATION

Press and continue to hold down the SCAN button to take temperature readings. The unit will take temperature readings while the SCAN button is pressed and held.

After the SCAN button is released, the last temperature measured will be displayed for approximately 20 seconds, the display will then turn off automatically.

SELECTING UNITS OF MEASURE

Press and release the SCAN button to turn on the display. Once the display is on (and the SCAN button has been released), press the MODE button four (4) times (°F or °C will flash on the display). Press the SCAN button to switch the unit of measure.

LASER TARGETING

The thermometer will take temperature measurements without activating the laser targeting by partially pressing and holding the SCAN button. To take temperature measurements and activate the laser targeting, completely press and hold the SCAN button.
CAUTION: Eye damage may result from direct exposure to laser light.

DISTANCE SPOT/RATIO

There are other factors that may affect measurement accuracy. The target must completely fill the spot diameter seen by the infrared sensor; otherwise readings will be influenced by the surface surrounding the target. The ratio of the distance to the size of the spot being measured is 6:1. For example, an object's diameter of 100mm can be measured from 600mm.

MIN/MAX MODES

MIN Mode-- While in the MIN mode, the unit will display only the minimum temperature that has been measured while the SCAN button is being pressed. The display is updated as new minimum temperatures are measured.

To activate MIN mode:
1. Press and release the SCAN button to turn on the display.
2. Press the MODE button until MIN appears on the display.
3. Press and hold the SCAN button to begin taking measurements.

MAX Mode-- While in the MAX mode, the unit will display only the maximum temperature that has been measured while the SCAN button is being pressed. The display is updated as new maximum temperatures are measured.

To activate MAX mode:
1. Press and release the SCAN button to turn on the display.
2. Press the MODE button until MAX appears on the display.
3. Press and hold the SCAN button to begin taking measurements.

LOCK FUNCTION

The lock function allows the thermometer to take measurements without having to press and hold the SCAN button. When the lock function is activated, the unit will take continuous temperature measurements for 60 minutes and will then turn off automatically to preserve battery life.

To activate the lock mode:
1. Press the SCAN button to turn on the display.
2. Press the MODE button until LOCK flashes on the display.
3. Press and release the SCAN button to begin taking temperature measurements (LOCK will appear solid {not flashing}, to indicate that the unit is in the lock mode and is taking measurements).

Laser Targeting is not available while in the LOCK mode.

To exit the lock mode, press and release the SCAN button (LOCK will no longer appear on the display).

EMISSIVITY

Emissivity adjustment is optional. Emissivity adjustments are used to provide a truer temperature reading. Different materials radiate infrared energy at slightly different temperatures. The emissivity adjustment is used to compensate for different types of materials. The default emissivity of 0.95 will cover 90% of typical applications.

The emissivity table provides a guide of different emissivity values for different materials.

When the emissivity of an object is unknown use a non-infrared thermometer, such as a thermometer with a surface probe to measure the object's surface temperature. Adjust the emissivity until the temperature of the Infrared Thermometer matches the temperature of the surface probe. The emissivity value arrived at by this method may be used to measure similar materials.

To adjust the emissivity (optional):
1. Press and release the SCAN button to turn on the display.
2. Press the MODE button five (5) times (95E {or whatever emissivity value has been set} will appear on the display).
3. To adjust the emissivity value, partially press the SCAN button to advance the value. *(Completely pressing the SCAN button while adjusting the emissivity will activate the laser targeting)*. Once the maximum value of 100 is reached, the display will roll over to the minimum value of 5.

The emissivity can be set from 0.05 to 1.00 (5 to 100 on the display)

3. Once the desired emissivity value appears on the display, press the MODE button to confirm the value.

This emissivity value will be used for all temperature measurements until the value is re-set.

METALS (Typical Emissivity Values)

SURFACE	EMISSIVITY
Iron and Steel	
Cast iron (polished)	0.2
Cast iron (turned at 100°C)	0.45
Cast iron (turned at 1000°C)	0.6 to 0.7
Steel (ground sheet)	0.6
Mild steel	0.3 to 0.5
Steel plate (oxidized)	0.9
Iron plate (rusted)	0.7 to 0.85
Cast iron (rough) rusted	0.95
Rough ingot iron	0.9
Molten cast iron	0.3
Molten mild steel	0.3 to 0.4
Stainless steel (polished)	0.1
Stainless steel (various)	0.2 to 0.6
Aluminum	
Polished aluminum	0.1*
Aluminum (heavily oxidized)	0.25
Aluminum oxide at 260°C	0.6
Aluminum oxide at 800°C	0.3
Aluminum Alloys, various	0.1 to 0.25
Brass	
Brass (polished)	0.1*
Brass (roughened surface)	0.2
Brass (oxide)	0.6
Copper	
Copper (polished)	0.05*
Copper (oxide)	0.8
Molten copper	0.15
Lead	
Lead (polished)	0.1*
Lead (oxide at 25°C)	0.3
Lead (oxide)	0.6
Nickel and Its Alloys	
Nickel (pure)	0.1*
Nickel plate (oxide)	0.4 to 0.5
Nichrome	0.7
Nichrome (oxide)	0.95
Zinc (oxidized)	0.1*
Galvanized iron	0.3
Tin-plated steel	0.1*
Gold (polished)	0.1*
Silver (polished)	0.1*
Chromium (polished)	0.1*

NON-METALS (Typical Emissivity Values)

SURFACE	EMISSIVITY
Refractory & Building Materials	
Red brick (rough)	0.75 to 0.9
Fire clay	0.75
Asbestos	0.95
Concrete	0.7
Marble	0.9
Carborundum	0.85
Plaster	0.9
Alumina (fine grain)	0.25
Alumina (coarse grain)	0.45
Silica (fine grain)	0.4
Silica (coarse grain)	0.55
Zirconium silicate up to 500°C	0.85
Zirconium silicate at 850°C	0.6
Quartz (rough)	0.9
Carbon (graphite)	0.75
Carbon (soot)	0.95
Timber (various)	0.8 to 0.9
Miscellaneous	
Enamel (any color)	0.9
Oil paint (any color)	0.95
Lacquer	0.9
Matte black paint	0.95 to 0.98
Aluminum lacquer	0.5
Water	0.98
Rubber (smooth)	0.9
Rubber (rough)	0.98
Plastics (various, solid)	0.8 to 0.95
Plastic films (0.05 mm thick)	0.5 to 0.95
Polythene film (0.03 mm thick)	0.2 to 0.3
Rubber (smooth)	0.9
Rubber (rough)	0.98
Plastics (various, solid)	0.8 to 0.95
Plastic films (0.05 mm thick)	0.5 to 0.95
Polythene film (0.03 mm thick)	0.2 to 0.3
Paper and cardboard	0.9
Silicone polish	0.7

*Emissivity varies with purity

DISPLAY MESSAGES

HI   Appears when the temperature being measured is outside the temperature range of the unit (higher limit).

LO   Appears when the temperature being measured is outside the temperature range of the unit (lower limit).

ER2   Appears when the unit is exposed to rapid changes in ambient temperature.

ER3   Appears when the ambient temperature is below 32° F (0° C) or above 122° F (50° C).

ER   Appears when the unit needs to be reset. To reset the unit, remove the batteries, wait 2 minutes and then re-install the batteries.

ALL OPERATIONAL DIFFICULTIES

If this thermometer does not function properly for any reason, replace the batteries with new high quality batteries (see Battery Replacement section). Low battery power can occasionally cause any number of "apparent" operational difficulties. Replacing the batteries with new fresh batteries will solve most difficulties.

BATTERY REPLACEMENT

Erratic readings, faint readings, no display, or ▭ appearing on the display are all indications that the batteries must be replaced. Open the battery covers by turning them 1/8 of a turn in the direction of the OPEN arrows (clockwise). *(Be careful not to turn the cover more than 1/8 of a turn as this may damage the battery cover.)* Remove the exhausted batteries and replace them with two (2) new CR2032 lithium batteries. Make certain to install the new batteries with the positive (+) side facing out. Replace the battery covers by lining up the tabs and turning the cover approximately 1/8 of a turn counter-clockwise until the cover snaps into position. *(Be careful not to turn the cover after is has snapped into position as this may damage the battery cover.)*

TRACEABLE® INFRARED THERMOMETER W/WRIST STRAP INSTRUCTIONS