DISPLAY MESSAGES

🔋 appears when the battery power is at the optimum level.

🔋 appears when the battery power is low. Measurements are possible; however, the batteries should be replaced (see the "Battery Replacement" section).

🔅 appears when the battery power is insufficient. Measurements are not possible and the batteries must be replaced (see the "Battery Replacement" section).

" *HI*" appears when the temperature measured exceeds the maximum temperature measurement range.

" *LO*" appears when the temperature measured exceeds the minimum temperature measurement range.

" *ER 2*" appears when the unit is exposed to rapid changes in ambient temperature.

" *ER 3*" 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.

To replace the batteries:
1. Remove the rubber plug from the battery cover.

2. Remove the battery cover screw.

3. Remove the battery cover.

4. Remove the exhausted batteries and replace them with two (2) new AAA alkaline batteries. Make certain to install the new batteries in the directions indicated in the battery compartment.

5. Replace the battery cover.

6. Replace the battery cover screw and tighten securely.

7. Replace the rubber plug. *This plug is required in order to achieve a water resistant seal.*

WARRANTY, SERVICE, OR RECALIBRATION

For warranty, service, or recalibration, contact:

CONTROL COMPANY
4455 Rex Road
Friendswood, Texas 77546 USA
Ph. 281 482-1714 • Fax 281 482-9448
E-mail sales@control3.com • www.control3.com

Control Company is ISO 9001 Quality-Certified by DNV and ISO 17025 accredited as a Calibration Laboratory by A2LA.

TRACEABLE® WATERPROOF FOOD HACCP THERMOMETER INSTRUCTIONS

EMISSIVITY TABLE

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

SPECIFICATIONS

Range--

      Infrared: -67 to 482 °F / -55 to 250 °C

      Probe: -67 to 626 °F / -55 to 330 °C

Resolution: 0.5 °F / 0.2 °C

Emissivity: 0.95 - default

                 (adjustable from 0.10 to 1)

Distance/Spot Ratio: 2.5:1

OPERATION - INFRARED MEASUREMENT

Infrared temperature is displayed at the top of the display. Press and continue to hold down the SCAN button to take temperature measurements. The unit will take temperature measurements and update the display while the SCAN button is pressed and held. While the SCAN button is held, the white spotlight will illuminate the general area being measured.

After the SCAN button is released, the last temperature measured will be displayed for approximately 15 seconds, the display will then turn off automatically. HOLD will appear on the display when the SCAN button has been released to indicate that the unit is no longer taking temperature measurements.

OPERATION - PROBE MEASUREMENT

Probe temperature is displayed at the bottom portion of the display. Rotate the temperature probe to the desired position. Place the probe in contact with the material to be measured then press and release the PROBE button to take temperature measurements. When the PROBE button is pressed and released, the unit will take temperature measurements continuously for 4 minutes, and will automatically shut off.

To manually turn the unit off while displaying the probe temperature, press and hold the PROBE button for 2 seconds, HOLD will appear on the display and the last temperature measured will be displayed for approximately 15 seconds, the display will then turn off automatically.

SELECTING °F OR °C

To change the display mode from °F to °C or from °C to °F, press and release the SCAN button, press the MODE button four (4) times, then press and release the SCAN button.

HACCP CHECK FEATURE

Hazard Analysis and Critical Control Points (HACCP) is a systematic preventive approach to food safety and pharmaceutical safety that addresses physical, chemical, and biological hazards as a means of prevention rather than finished product inspection. HACCP is used in the food industry to identify potential food safety hazards, so that key actions, known as Critical Control Points (CCPs) can be taken to reduce or eliminate the risk of the hazards being realized.

The HACCP check feature incorporated into this thermometer are the following critical temperature zones:

Safe Cool/Frozen condition - Indicated by a green light when the temperature measured is below 40°F/4°C.

Safe Holding condition - Indicated by a green light when the temperature measured is above 140°F/60°C.

Danger Zone condition - Indicated by a red light when the temperature measured is between 40 to 140°F/4 to 60°C. This is the temperature range in which microorganisms (such as bacteria) live and grow.

MINIMUM TEMPERATURE DISPLAY MODE

This mode is only available for infrared temperature measurement.
In MIN mode, the lowest temperature measurement taken while pressing the SCAN button is displayed. This value will update each time a new lower temperature is measured.

To enter MIN mode, press and release the SCAN button, press the MODE button (MIN will appear on the display), then press and hold the SCAN button to take temperature measurements.

After the SCAN button is released, the last minimum temperature measured will be displayed for approximately 15 seconds, the display will then turn off automatically. HOLD will appear on the display when the SCAN button has been released to indicate that the unit is no longer taking temperature measurements.

MAXIMUM TEMPERATURE DISPLAY MODE

This mode is only available for infrared temperature measurement.
In MAX mode, the highest temperature measurement taken while pressing the SCAN button is displayed. This value will update each time a new higher temperature is measured.

To enter MAX mode, press and release the SCAN button, press the MODE button twice (MAX will appear on the display), then press and hold the SCAN button to take temperature measurements.

After the SCAN button is released, the last maximum temperature measured will be displayed for approximately 15 seconds, the display will then turn off automatically. HOLD will appear on the display when the SCAN button has been released to indicate that the unit is no longer taking temperature measurements.

LOCK FUNCTION

This mode is only available for infrared temperature measurement.
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 infrared temperature measurements for 60 minutes and will then turn off automatically to preserve battery life.

To activate the lock mode, press and release the SCAN button, press the MODE button three (3) times, then press and release the SCAN button. LOCK will appear on the display and the °F/°C indicator will flash to indicate that the unit is in the lock mode and is taking measurements.

To manually de-activate the lock mode, press and hold the SCAN button for 2 seconds. LOCK will no longer appear on the display to indicate that the unit is no longer using the lock function.

After the SCAN button is released, the last temperature measured will be displayed for approximately 15 seconds, the display will then turn off automatically.

DISTANCE SPOT/RATIO

There are other factors that may affect infrared 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 2.5:1. For example, an object's diameter of 100mm can be measured from 250mm.

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 approximate 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, press the MODE button five (5) times. The emissivity value (# # E) will appear on the display.

2. To adjust the emissivity value, press the SCAN button. Press and hold to advance the display rapidly.

The emissivity can be set from 0.10 to 1.00 in 0.01 increments.
Note: The emissivity value is expressed by a factor of 100, meaning that an emissivity value of 0.95 will appear as 9 5 E on the display. More examples: Emissivity value of 1.00 will appear as 1 0 0 E, emissivity value of 0.15 will appear as 1 5 E on the display, etc.

3. Once the desired emissivity value appears on the display, press the MODE button to confirm the value. (HOLD will appear on the display and the unit will turn off after 15 seconds.)

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