VAUGHAN®

Model no 050082S

DIGITAL THERMOMETER WITH TRICOLOR LCD & CIRCULAR LASER

INSTRUCTION MANUAL

THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING SAFETY, OPERATION, MAINTENANCE AND STORAGE OF THIS PRODUCT. BEFORE USE, READ CAREFULLY AND UNDERSTAND ALL CAUTIONS, WARNINGS, INSTRUCTIONS AND PRODUCT LABELS. FAILURE TO DO SO COULD RESULT IN SERIOUS PERSONAL INJURY AND/OR PROPERTY DAMAGE.

IF YOU SHOULD HAVE ANY QUESTIONS OR EXPERIENCE A PROBLEM WITH YOUR ALLTRADE PRODUCT, DO NOT RETURN THIS PRODUCT TO THE STORE. PLEASE CALL OUR CUSTOMER SERVICE DEPARTMENT AT **1-800-423-3598**. BEFORE YOU CALL, HAVE THE FOLLOWING INFORMATION AVAILABLE: MODEL No., DATE PURCHASED AND STORE LOCATION. AN ALLTRADE REPRESENTATIVE CAN RESOLVE YOUR PROBLEM OVER THE PHONE. IF YOU WOULD LIKE TO MAKE A SUGGESTION OR COMMENT, GIVE US A CALL OR EMAIL US AT: INFO@ALLTRADETOOLS.COM. YOUR FEEDBACK IS VITAL TO US.

TABLE OF CONTENTS

INTENDED USE

This product is intended for consumer use only. It is designed to be used for non-contact temperature measurement by measuring the amount of infrared energy radiated from the object's surface.

GENERAL SAFETY RULES

⚠ WARNING **READ AND UNDERSTAND ALL INSTRUCTIONS.** Failure to follow all instructions in this manual may result in severe personal injury or death. Keep this manual and refer to it for Safety Instructions, Operating Procedures and Warranty.

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

RECOGNIZE SAFETY SYMBOLS, WORDS AND LABELS

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠ **WARNING:** Cancer and reproductive harm - www.P65Warnings.ca.gov

LASER SAFETY

⚠ WARNING

Pointing a laser and interfering with the operation of an aircraft is a felony punishable by fine and imprisonment.

The laser guide used in the tool is Class IIIa.

The laser shall be used and maintained in accordance with the manufacturer's instructions.

IR Thermometer Label

The use of optical instruments with this product will increase eye hazard.

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Do not stare into the laser beam.

Never aim the beam at any person or an object other than the work piece.

Avoid indirect exposure via reflective surfaces, such as glass and mirrors.

Store out of reach of children. Equipment should be in a high location or locked up to keep out of reach of children. It is not a toy.

Do not tamper with the laser output. Changing the performance of the laser to increase its output is prohibited. Any claim for damages or injuries resulting from not following these instructions will be refused.

Never operate laser if the unit is defective or the cover or seal is damaged.

There are no user-serviceable parts in the laser device. The laser unit must be returned to the factory for any service or repair. Service or repair must be handled by authorized factory trained technicians.

Be careful with this tool. Striking or jarring it, especially on the laser housing can affect its accuracy.

TOOL USE AND CARE

⚠ WARNING

Use the product only as specified in this manual.

Avoid exposing this device to EMF (electro-magnetic fields) from arc welders, induction heaters, etc. OR exposing to static electricity.

To prevent sensor damage, do not point the sensor lens directly at the sun or any other source of strong infrared light.

⚠ CAUTION

Do not leave the thermometer on or near objects of high temperature exceeding 158°F.

Be certain there is no condensation on the lens prior to taking measurements. Allow 10 minutes for condensation to dissipate as needed.

Shiny surfaces result in lower than actual temperature measurements.

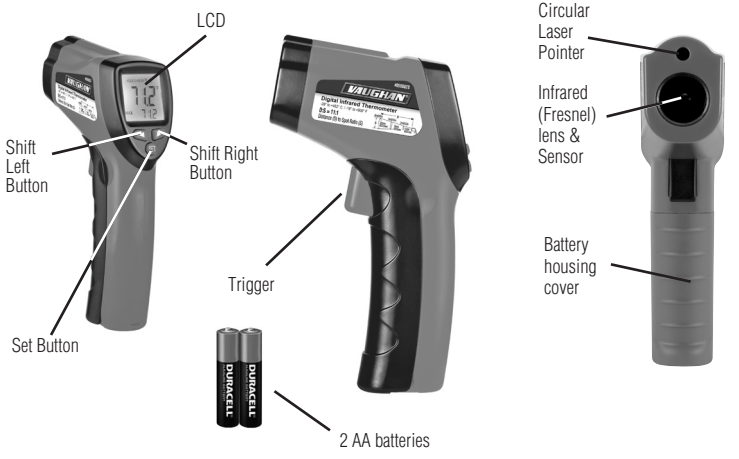
For the most accurate temperature measurements, aim the infrared thermometer perpendicular to the target.

The IR thermometer cannot measure through transparent surfaces such as glass and plastic. It will measure the surface temperature instead.

Steam, dust, smoke and/or vapours can prevent accurate measurement by obstructing the unit's optics. For better accuracy, keep the sensor perfectly clean.

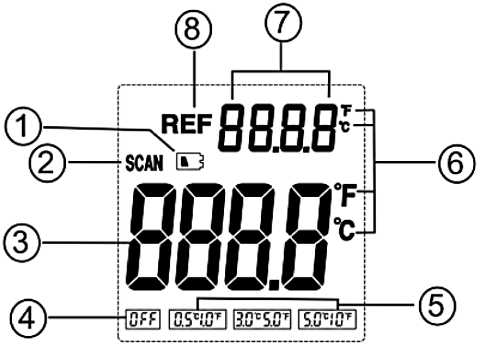
Refer to the spot size information on the instrument (and in the manual) for the target spot size being measured at a given distance.

FUNCTIONAL DESCRIPTION



LCD INDICATIONS AND SYMBOLS

1. Low Battery Indication
2. Measurement Icon
3. Current Reading
4. Switch Off "REF" function
5. Temperature Range Selection
6. Temperature Unit (°C/°F)
7. Reference Temperature
8. Reference Temperature Icon



BUTTON FUNCTIONS

- SET button: Sets Reference Temperature, °C or °F unit and Emissivity adjustment mode.
- Shift Left/Right Buttons: Sets temperature range {0.5° C (1° F), 3° C (5° F) , 5° C(10° F), OFF} and Emissivity (0.1 to 1.0).

BATTERY INSTALLATION/REPLACEMENT

To maintain reading accuracy, when the low battery icon appears, replace thermometer's battery.

1. Place fingers behind the battery housing cover tabs ar gently pull open the cover.
2. Pull the plastic ribbon under the batteries to pull the batteries out.
3. Insert two fresh AA Alkaline batteries (with correct polarity as shown by the marking on the side of batter housing) over the plastic ribbon inside the housing. Close the cover.

- Always purchase the correct size and grade of battery mos suitable for the intended use. Always replace both batteries and install with correct polarity inside thermometer.

- Clean the battery contacts and also those of the device prior to battery installation.
- Remove batteries from equipment which is not to be used for an extended period of time.
- Remove batteries if consumed or if product is to be left unused for a long time.

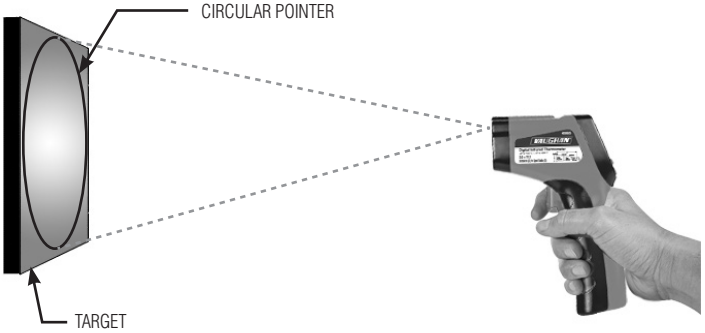
OPERATING INSTRUCTIONS

⚠ WARNING **Never aim the laser beam pointer at the eyes of a person or animal or an object other than the work piece.**

Follow these steps to measure surface temperature of an object in most applications. See next section for additional measurement features.

1. Aim the thermometer at the object and squeeze the trigger for at least 3 seconds, "SCAN" icon will appear on the display during measurement.
2. Make sure that the circular laser is inside the target as shown in the illustration below. For more accurate temperature measurement, you can move the thermometer closer to the target.
3. Release the trigger to display the "Most Recent" temperature reading. The display will "Remain" and automatically will shut off after Approximately 15 seconds.

NOTE: Temperature measurement will not be accurate off shiny objects (such as stainless steel, gold, aluminum wrapping) or through glass or windows.



°C / °F TEMPERATURE UNIT SETTING

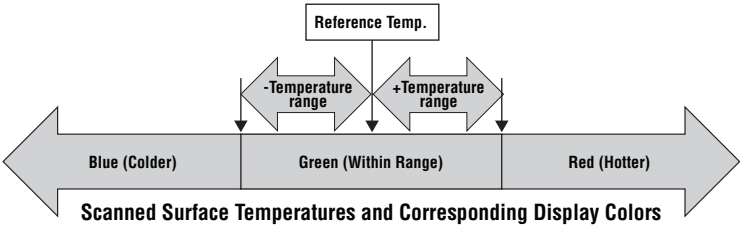
1. Briefly press the trigger to turn on the display.

2. Briefly press the SET button to toggle between °C or °F. The selected unit is saved in the thermometer memory.

REFERENCE TEMPERATURE SETTING & MEASUREMENT

Use this feature to compare the surface temperature of an object with a saved reference temperature in thermometer memory. The comparison is visually indicated by 3 backlight colors (Blue, Green, Red) on the LCD display.

- If the scanned surface temperature is hotter than the reference temperature by more than the temperature range, the LCD color will turn from green to red along with the fast repeating beeper sound to warn users.
- If the scanned surface temperature is colder than the reference temperature by more than the temperature range, the LCD color will turn from green to blue along with the slow beeper sound to warn users.
- If the scanned surface temperature is within the temperature range, the LCD color will be in green,
- If Reference Temperature mode is turned off, the default LCD color is yellow.



Scanned Surface Temperatures and Corresponding Display Colors

1. Aim the thermometer at the surface spot to be used as reference temperature and press the trigger.

2. While pressing the trigger, briefly press the SET button. After appearance of the reference temperature value at the top right corner of the LCD display and a short beep, the reference value is saved in thermometer memory.

3. Set temperature range by pressing the shift left button " ◀ " or shift right button " ▶ " to select the suitable temperature range from choices of 0.5°C (1°F), 3°C (5°F) , 5°C (10°F) or OFF to turn off the Reference Temperature function.

4. While pressing the trigger, aim and scan various surfaces and observe the change in color of LCD display.

5. To change the reference temperature, aim at a new reference spot, press the SET button to save the new reference temperature.

If you allow the thermometer to turn off, the saved temperature range in the memory will be erased. Repeat steps 1-4.

EMISSIVITY ADJUSTMENT

Emissivity is the measure of an object's ability to emit infrared energy. Emitted energy indicates the temperature of the object. Emissivity can have a value from 0 (shiny mirror) to 1.0 (blackbody). An emissivity of 1.0 implies that the material is 100% efficient at radiating energy. An emissivity of 0.1 implies that the material radiates only 10% of that which it is capable of radiating. To compensate for deficiency of radiated energy and improve the accuracy of temperature readings, use the Emissivity chart below to set the Emissivity of the surface which is to be scanned. To set the desired emissivity:

1. Briefly press the trigger to turn on the display.

2. Press and hold the SET button for around 3 seconds to enter into the emissivity adjustment mode.

3. Select the emissivity value of the scanned material from the chart below.

4. Set the emissivity value by repeatedly pressing " ◀ " button to increase the value, or by repeatedly pressing " ▶ " button to decrease the value of emissivity.

5. After setting the emissivity value, press the SET button for a few seconds to save the value in the thermometer memory and exit the emissivity adjustment mode.

Notes:

- **Most organic, painted, or oxidized surfaces have emissivity values close to 0.95. The default emissivity value of the thermometer is set at 0.95 which is suitable for most applications.**

- **Since the thermometer retains the emissivity setting in its memory, always check for emissivity to ensure that it is either set to default (0.95) or an emissivity value corresponding to the surface to be scanned (from Emissivity chart).**

Emissivity Of Some Common Materials

Surface Material	Emissivity	Surface Material	Emissivity	Surface Material	Emissivity
Aluminum Foil	0.04	Gold not polished	0.47	Paint	0.96
Aluminum Sheet	0.09	Gold polished	0.025	Paper	0.93
Aluminum Oxidized	0.2 - 0.31	Granite	0.45	Plaster, rough	0.91
Aluminum Polished	0.039 - 0.057	Gravel	0.28	Plastics	0.90 - 0.97
Aluminum Anodized	0.77	Gypsum	0.85	Polypropylene	0.97
Aluminum Rough	0.07	Ice smooth	0.966	Porcelain glazed	0.93
Asbestos board	0.96	Ice rough	0.985	PVC	0.91 - 0.93
Asbestos paper	0.93 - 0.945	Iron polished	0.14 - 0.38	Quartz glass	0.93
Asphalt	0.93	Iron, rusted red	0.61	Roofing paper	0.91
Black Body Matt	1	Iron, dark gray	0.31	Rubber, foam	0.9

Surface Material	Emissivity	Surface Material	Emissivity	Surface Material	Emissivity
Black lacquer on iron	0.875	Iron, rough ingot	0.87 - 0.95	Rubber, glossy	0.94
Black Silicone Paint	0.93	Lead un-oxidized	0.057 - 0.075	Rubber, natural hard	0.91
Black Epoxy Paint	0.89	Lead Oxidized	0.43	Salt	0.34
Black Enamel Paint	0.8	Limestone	0.90 - 0.93	Sand	0.76
Brass Dull Plate	0.22	Magnesite	0.38	Sandstone	0.59
Brass Polished	0.03	Magnesium Polished	0.07 - 0.13	Silica	0.79
Brick, red rough	0.93	Marble White	0.95	Silicon Carbide	0.83 - 0.96
Brick, fireclay	0.75	Masonry Plastered	0.93	Silver Polished	0.02 - 0.03
Carbon, not oxidized	0.81	Mercury liquid	0.1	Soil	0.90 - 0.95
Cast Iron	0.44	Mild Steel	0.20 - 0.32	Steel Oxidized	0.79
Cement	0.54	Mortar	0.87	Steel Polished	0.07
Clay	0.91	Nickel, electroplated	0.03	Stainless Steel(SS)	0.85
Coal	0.8	Nickel, polished	0.072	SS, polished	0.075
Concrete	0.85	Nickel, oxidized	0.59 - 0.86	Steel Galvanized old	0.88
Concrete, rough	0.94	Oak, planed	0.89	Steel Galvanized New	0.23
Concrete tiles	0.63	Oil paints, all colors	0.92 - 0.96	Tile	0.97
Cotton cloth	0.77	Paper offset	0.55	Tin un-oxidized	0.04
Copper Polished	0.023 - 0.052	Plaster	0.98	Water	0.95 - 0.963
Copper Nickel Alloy	0.059	Pine	0.84	Wood Beech, planned	0.935
Glass smooth	0.92 - 0.94	Plaster board	0.91	Wood Oak, planned	0.885
Glass, Pyrex	0.85 - 0.95	Porcelain, glazed	0.92	Wood, Pine	0.95

CLEANING AND STORAGE

Clean the thermometer housing and the lens using only a soft cloth or cotton swab with water or medical alcohol. Do not let any liquid enter the case or sensor area. Allow the lens to fully dry before using the thermometer.

Avoid storing the unit in extreme temperature conditions. Do not store below -20°(-4°), or where the radiant temperature may exceed 60°(140°).

SPECIFICATIONS

Range	-28°C~482°C/-18°F~900°F
Accuracy	+/-2°C or +/- 2% (0°C to 482°C), which is greater +/-4°C (-28°C to 0°C) +/-4°F or +/-2%(32° F to 900°F), which is greater +/-7°F (-18°F to 32° F)
Resolution	0.1°C (0.1°F)
Response Time	<500ms
Emissivity	Adjustable 0.1~1.0
Distance To Spot(D:S)	11:1
Spectral Response	8~14um
Diode Laser	Class IIIa,Total Power<1mW, Wavelength 630~670nm
Auto Power Off	After 15 seconds of inactivity
Operating Temp.	0°C to 50°C / 32°F to 122°F
Storage Temp.	-20°C to 60°C / -4°F to 140°F
Relative Humidity(RH)	10~95%(Operating),<80%(Storage)
Power Supply	2 pc. AA battery
Battery Life	Typical 65 hours continuous use
Dimensions (L*W*H)	163*96*43mm
Weight	185g ± 5g (With Battery)

*** IMPORTANT: Under adverse conditions (such as bright solar light outdoors or in the surrounding environment, weak reflection of the surface to be measured, and rough surface) measurement error can occur.**

1 YEAR LIMITED WARRANTY

Express and Exclusive Limited Warranty to Original Retail Buyer

Every ALLTRADE® product is inspected before leaving the factory. This product is warranted to be free of defects in material and workmanship for a period of one year from the date of original purchase. If a defect appears within one year after the date of purchase, the purchaser may return the item, together with a purchase receipt or other appropriate proof of purchase to the place of purchase. Upon receipt of the item(s), the place of purchase will, at its option, replace the defective item or refund your money. This warranty shall not apply when the product has been used for commercial or rental purposes, has been tampered with, when repairs or attempted repairs have been made by unauthorized persons, or where the item has been subjected to misuse, abuse, accident or damage in transit. No charges will be accepted for unauthorized parts, repairs or services.

IN NO EVENT SHALL ALLTRADE BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Some provinces do not allow limitations on how long an implied warranty lasts and some states do not allow the exclusion or limitation of the incidental or consequential damages, so part or all of the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from province to province.

FCC INFORMATION

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

Distribution & Returns

Reno, NV 89508

www.vaughangear.com
MADE IN CHINA

FOR CUSTOMER SERVICE

1-800-423-3598

Printed in China