INSTRUCTION MANUAL

MT693

INFRARED THERMOMETER

1. SAFETY INFORMATION

1.1. Warning

To prevent potential harm or damage, please adhere to the following precautions:

- Do not direct the laser beam directly at the eyes or indirectly towards the eyes via reflective surfaces.
- The MT693 cannot measure through transparent surfaces like glass or plastic, or other materials that block infrared radiation; it will measure the surface temperature of these materials instead.
- Steam, dust, smoke, or other particles can obstruct the MT693's optics, potentially affecting the accuracy of measurements.

1.2. Cautions

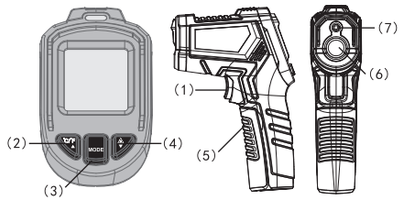
To ensure the optimal performance and longevity of this infrared thermometer, observe the following precautions:

- Protect the unit from electromagnetic fields (EMF) emitted by arc welders, induction heaters, etc.
- Allow the thermometer to stabilize for 30 minutes after being exposed to significant thermal shock caused by abrupt ambient temperature changes.
- Avoid leaving the unit on or near objects with high temperatures.

2. INTRODUCTION

The Major Tech MT693 Infrared Thermometer provides precise non-contact temperature measurements of surface objects, making it ideal for assessing hot, hazardous, or hard-to-reach items quickly and safely. Suitable for industrial and commercial use, it ensures accurate readings without direct contact, enhancing safety and efficiency. The MT693 features optics that capture infrared energy, a signal amplifier, processing circuitry, and a dual-color backlight LCD display for clear, reliable temperature readings.

3. INSTRUMENT LAYOUT



1 - **Trigger:** Press to display temperature value with "SCAN" appearing simultaneously. Release to enter HOLD mode and automatically save data. Unit turns off automatically after 7 seconds of no further operation.

2 - **Switch key:** Switch between Celsius and Fahrenheit. Also used for increasing setting value. In EMS, CAL, and temperature alarm settings, press and hold to quickly increase values.

3 - **Mode switch key:**
Press Mode key to cycle through modes:
- **MAX:** Measures maximum temperature.
- **MIN:** Measures minimum temperature.
Hold Mode key during measurement to toggle between Max & Min
- **AT:** Displays current ambient temperature.
- **EMS:** Adjust emissivity (0.10 to 1.00) using the °C/°F key (down) and laser locating key (up).
- **CAL:** Self-calibration mode, calibrates unit between -5.0°C and +5.0°C
- **HI and LOW:** Sets high and low temperature alarms. Switch HI or LOW mode and adjust alarm points using °C/°F key and positioning laser key. Displays "HI" or "LOW" symbols and emits a short double beep when the measured temperature exceeds set thresholds

4 - **Positioning laser switch:** Press to toggle positioning laser (On/Off). Also used for decreasing setting value. In EMS, CAL, and temperature HI/LOW alarm settings, press and hold to quickly decrease values.

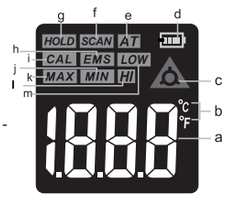
5 - Battery compartment door

6 - Infrared temperature sensor and Fresnel lens

7 - Laser (assisted positioning and spot size)

3. LCD Display and Buttons

a - Temperature reading
b - Temperature units
c - Positioning Laser (On/Off)
d - Battery level indicator
e - Ambient temperature (AT)
f - Live reading indicator (SCAN - on display)
g - HOLD reading indicator (HOLD - on display)
h - Emissivity setting
i - Self-calibration setting
j - Displaying Minimum reading
k - Displaying Maximum reading
l - High temperature alarm
m - Low temperature alarm



4. OPERATION INSTRUCTIONS

4.1. Operating the unit:

a. Open the battery compartment and insert two 1.5V AAA batteries.
b. Pull the trigger to power on the unit.
c. Aim at the target surface, pull the trigger to measure the temperature, and view the reading on the LCD screen. The laser is for aiming only.

4.2. Locating a Hot Spot

To identify a hot spot, direct the thermometer away from the target area, then scan horizontally and vertically in a zig-zag pattern over

the target area until you locate the hot spot (refer to **Figure 1**.).

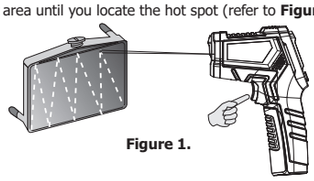


Figure 1.

5. DISTANCE TO SPOT SIZE RATIO

When taking measurements, it is important to consider the Distance to Spot Size ratio. As the Distance (D) from the target surface increases, the spot size (S) of the area measured by the unit also becomes larger. The Distance to Spot Size ratio of the unit is 12:1 (**Figure 2**.).

5.1. Field of view

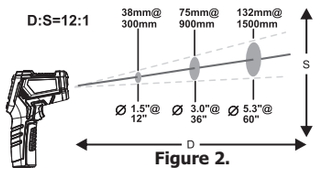


Figure 2.

Ensure that the target object is larger than the unit's spot size. The smaller the target, the closer the measurement distance should be. When measurement accuracy is critical, ensure the target object is at least twice as large as the spot size of the thermometer.

6. EMISSIVITY

Most organic materials and painted or oxidized surfaces have an emissivity of 0.95 (preset in the unit). As a result of this setting, inaccurate readings may occur when measuring shiny or polished metal surfaces.

To compensate for this, adjust the unit's emissivity setting or apply masking tape or flat (matt) black paint to the surface to be measured. Measure the temperature of the tape or painted surface once it has reached the same temperature as the material underneath. Refer to **TABLE 1.** for the approximate emissivity of materials you will most likely encounter.

7. MAINTENANCE

7.1. Lens Cleaning: Use clean compressed air to blow off loose particles. Gently brush away remaining debris with a moistened cotton swab. The swab may only be moistened with water.

7.2. Case cleaning: Clean the case with a damp sponge/ cloth and mild soap.

Note: 1) Do not use solvent to clean plastic lens.
2) Do not submerge the unit in water.

TABLE 1.

Material	Emissivity	Material	Emissivity
Aluminum	0.30	Iron	0.70
Asbestos	0.95	Lead	0.50
Asphalt	0.95	Limestone	0.98
Basalt	0.70	Oil	0.94
Brass	0.50	Paint	0.93
Brick	0.90	Paper	0.95
Carbon	0.85	Plastic	0.95
Ceramic	0.95	Rubber	0.95
Concrete	0.95	Sand	0.90
Copper	0.95	Skin	0.98
Dirt	0.94	Snow	0.90
Frozen food	0.90	Steel	0.80
Hot food	0.93	Textiles	0.94
Glass(plate)	0.85	Water	0.93
Ice	0.98	Wood	0.94

8. SPECIFICATIONS

Function	Range
Temperature Range	-50°C to 400°C (-58°F to 752°F)
Temperature Accuracy	<0°C (32°F): ±3°C (±5°F) >0°C (32°F): ±1.5°C (±2.7°F) or ±1.5% whichever is greater
Repeatability	1% rdg or 1°C whichever is greater
Response Time	0.5sec / 95% accuracy
Emissivity	0.10 to 1.00 Adjustable (preset to 0.95)
D:S	12:1
Wavelength Response	5µm - 14µm
Auto Power Off	About 7 seconds
Batteries	1 x 1.5V AAA
Low Battery	When battery level drops below 2.5V, the indicator displays an empty battery icon
Temperature Alarm Indicator	HI/LOW displayed on LCD
Exceed upper/lower limits of working temperature	HI/LOW displayed on LCD
Working Temperature	0°C to 60°C (14°F to 140°F)
Storage Temperature	-10°C to 60°C (14°F to 140°F)
Dimensions	158 x 103 x 41mm
Weight	238g

5. WARRANTY

Warranty Coverage

Major Tech warrants its test instruments to be free from defects in materials or workmanship under normal use and service for a period of two (2) years from the date of shipment. This warranty is extended exclusively to the original purchaser, provided the online Product Registration has been completed on either www.major-tech.com or www.majortech.com.au, depending on which country the product was purchased. This warranty is non-transferable.

Exclusions

This warranty does not cover:
- Disposable batteries and fuses
- Damage caused by leaking batteries (damaging the meter and components)
- Normal wear and tear of mechanical components
- Failures caused by use outside the product's specifications
- Any product which, in the opinion of Major Tech, has been misused, contaminated, or damaged due to neglect

Check Procedure

Prior to contacting Major Tech or a distributor regarding a warranty claim, please check the following:
- Batteries are installed correctly
- Battery condition – either replace disposable batteries or ensure rechargeable batteries are charged where applicable
- Test leads are inserted in the correct terminals and are fully inserted, no damage to test leads

Contact Information

For any warranty claims or inquiries, please contact either Major Tech or the distributor from whom the product was purchased.

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