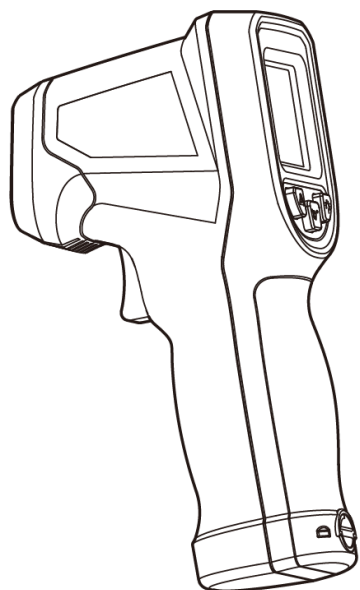


# Pro'sKit®

## MT-4602

### INFRARED THERMOMETER



#### User's Manual 1<sup>st</sup> Edition,

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#### I. Overview

Infrared thermometers use non-contact infrared sensing technology to measure the temperature of targets safely, accurately, quickly, and reliably. They are widely applicable for measuring the surface temperature of high-temperature, hazardous, or hard-to-reach objects in food, maintenance, etc.

#### II. Working principle

Any object with a temperature greater than absolute zero will radiate infrared energy, which is transmitted at the speed of light in all directions. The lens of an infrared thermometer collects and focuses the infrared energy onto the sensor, which produces a low voltage output proportional to the temperature of the target object. This voltage output is processed and displayed as a temperature reading.

#### III. Specifications

Temperature Range	-50~600°C (-58~1112°F)
Accuracy	-50-0°C: ±3°C or ±3% (take the maximum) 0-600°C: ±2°C or ±2% (take the maximum) -58-32°F: ±5.4°F or ±3% (take the maximum) 32-1112°F: ±3.6°F or ±2% (take the maximum)
Unit	°C / °F
Resolution	0.1°C (0.1°F)
Response Time	≤0.5s (95% Response)
Emissivity	Adjustable (0.1 to 1.0)

Distance to Spot Ratio	8 : 1
Response wavelength	8~14um
Laser class	Class II <1mW
Laser wavelength	630~670nm
Storage Temperature	-20 to 50°C (-4~122°F)
Operating Temperature	0 to 50°C (32~122°F)
Operating Humidity	10~95%RH (Non-condensing)
Battery	1.5V AAA x2 (not included)

#### IV. Safety Operation Guidelines

##### Warning!

To avoid harm caused by users, please follow these instructions.

- Do not aim the laser directly at eyes or allow reflection into eyes.
- This instrument cannot measure through transparent surfaces like glass/plastic; values measured will be surface temperature of the transparent object.
- Steam/dust/smoke or other particles may obstruct the instrument lens, affecting measurement accuracy.

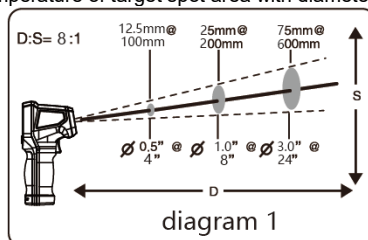
##### Notice:

To prevent damage to the thermometer or tested equipment, protect them from the following:

- EMF (electromagnetic field) is generated by welding machines and induction heaters.
- Thermal shock (wait 30 minutes before use after significant or sudden changes in ambient temperature for the thermometer to stabilize).
- Never place the thermometer near or on high-temperature objects.

#### V. Distance Spot Ratio

The farther the target, the larger the testing spot area, it means: As the distance from thermometer to the object increases, the spot size of measuring area becomes larger, (as in diagram 1) it is named as "D:S" (Distance Spot Ratio). The diameter of the target spot area is 1cm when you test from a distance of 8cm, and the thermometers will show the average temperature of target spot area with diameter 1cm.



Observation Range: Ensure that the target being observed is larger than the measuring area of the instrument. When observing smaller targets, move closer but ensure the target is at least 1.5 times larger than the measuring area for accurate measurements.

#### VI. Detailed function

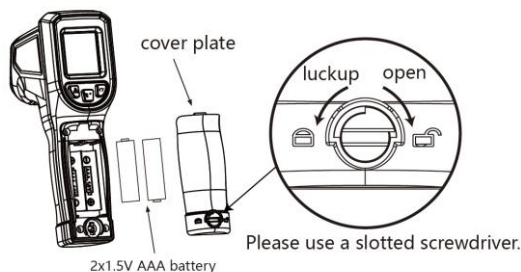


Diagram 2

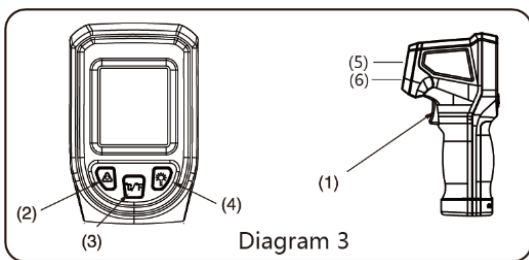


Diagram 3

1: Measurement trigger. 2: Laser button 3: °C/°F Function

button.4: Backlight button. 5: Infrared Sensor 6: Laser

**Button function:**

After power on

- 1) Short press button 3 (°C/°F button), switch the °C/°F.
- 2) Long press button 3 (°C/°F button) to get into the emissivity adjust, and then press button 2 or 4 to adjust emissivity.
- 3) Press button 2 (laser button), test with laser.
- 4) Press button 4 (backlight button) to turn on/off backlight.

**Display:**

1. Data hold.
2. Scan Mode: Shows on LCD when testing.
3. Low Battery.
4. Laser Sign: test with laser aim.
5. Backlight sign.
6. °C/°F Symbol.
7. Temperature reading.
8. Max temperature or Emissivity reading.
9. Adjustable emissivity sign.
10. Max: Max temperature.

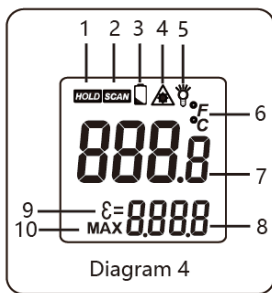


Diagram 4

**VII. Operation**

1. Power-on measurement: Aim the probe at the object to be measured, press the "measure" trigger (press time > 0.5 seconds) for a single measurement, or hold the "measure" trigger for continuous measurement. The instrument will perform a self-check upon power-on and automatically display the temperature value. During measurement, "SCAN" is displayed; release the trigger, "HOLD" is displayed; the latest temperature data and the highest temperature data (MAX) are shown after measurement.
2. After power-on, if there is no operation of the infrared thermometer for more than 12 seconds, the instrument will automatically shut down.
3. Laser indication: Turn on the laser when measuring, the instrument emits a laser point, which serves as the reference center point for the measurement location. When measuring, you can move up and down or left and right slowly to find the position with the highest temperature on the surface of the object being measured.
4. Backlight on/off: Press the backlight button (4) to turn on or off the LCD backlight.
5. Emissivity adjustment: To ensure accurate temperature measurement, adjust the emissivity parameter according to different objects being measured. Long press the middle (°C/°F) button, the display shows  $\epsilon = 0.95$  with the number flashing, entering the emissivity adjustment mode. Adjust the emissivity by pressing the left (+) and right (-) buttons respectively.

**Emissivity**

Most organic materials painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit). Inaccurate readings will occur if the surface to be measured is shiny or polished

such as stainless steel or aluminum. To obtain better accuracy, please cover the surface with masking tape or flat black paint before measuring. Measure the tape or painted surface when the tape or painted reaches the same temperature as the material underneath. Please kindly note: thermometer cannot measure the temperature of target objects through the surface of glass. And steam, dust, smog will lower the accuracy.

**Emissivity of Articles**

Material	Feature	Emissivity	Material	Feature	Emissivity
Aluminum	Oxidized	0.3	Limestone		0.98
	Polished	0.02-0.04		Paint	0.93
Brass	Oxidized	0.5	Human skin		0.98
	Polished	0.02-0.05		Graphite	Oxidized
Gold		0.01-0.10	Rubber		0.95
Iron	Oxidized	0.7	Plastic cement		0.85-0.95
Steel	Oxidized	0.70-0.90	Concrete		0.95
Asbestos		0.95	Cement		0.96
Plaster		0.80-0.90	Soil		0.90-0.98
Asphalt		0.95	Mortar		0.89-0.91
Rock		0.7	Brick		0.90-0.96
Wood		0.90-0.95	Marble		0.94
Charcoal	Powdered	0.96	Textile		0.95
Carbon		0.85	Paper		0.95
Lacquer work	lackluster	0.97	Sand		0.90
Carbon Cement		0.90	Clay		0.92-0.96
Soap Bubble		0.75-0.80	Glass		0.85-0.92
Water		0.93	Heated food		0.95
Snow		0.83-0.90	Oil		0.94
Ice		0.96-0.98	Steel and iron		0.80
Frozen Foods		0.95	Wool	Natural	0.94
Ceramics		0.95	Lead	Oxidized	0.5

**VIII. Battery:**

If the LCD shows "⚡", replace the battery in time.

If not used for a long time, take out the battery to prevent damage to the product due to battery leakage

**IX. Maintenance**

1. Lens cleaning: use clean compressed air to blow off loose particles, use a soft brush to remove debris, finally clean it with damp cotton cloth.
2. Case cleaning: clean the case with a damp sponge/cloth and mild soap.

**NOTE:**

1. Do not use solvent to clean lens.
2. Do not submerge the unit in water