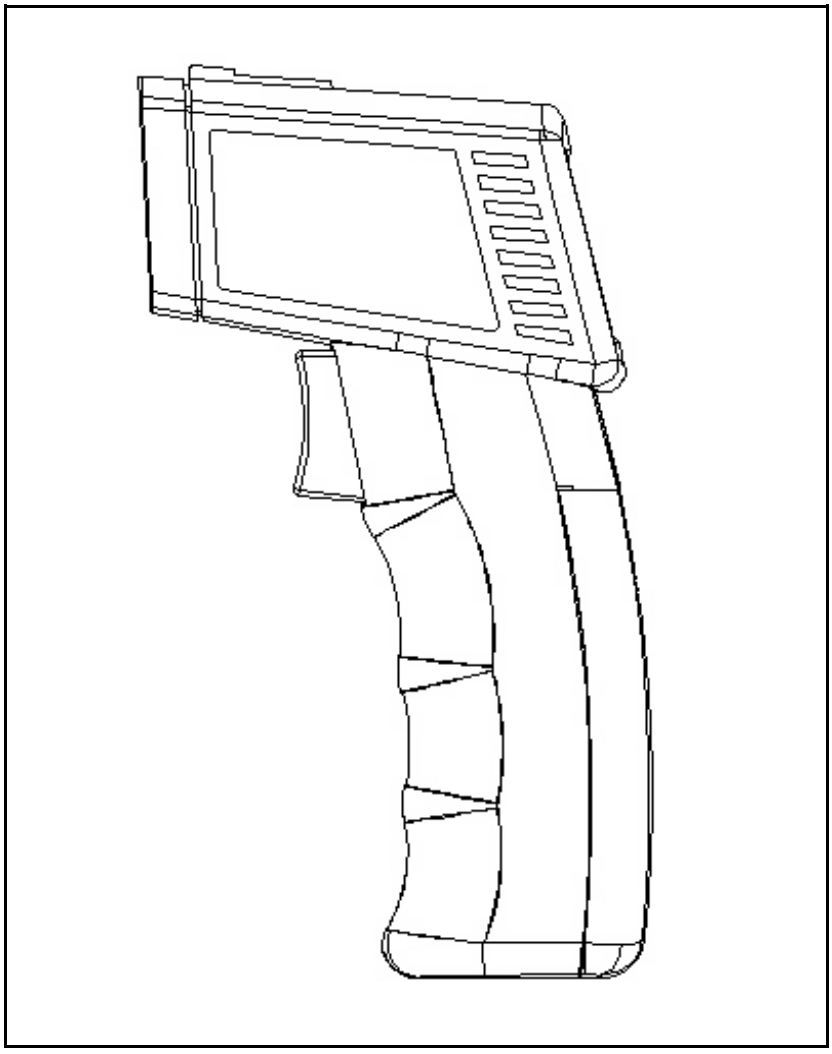
LED Target Light

INFRARED THERMOMETER

Model：TM-956



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1. FEATURES

* Infrared thermometer, non-contact temperature measurement, -30 to 305 ℃ (-22 to 581 ℉), precision for non-contact temperature measurement.
* Microcomputer circuit with high performance.
* Wide temperature measuring range.
* Measurement via one operation button, easy to operate.
* Built-in ℃ & ℉ select switch.
* Automatic data hold.
* 0.95 default emissivity value.
* Back light LCD display.
* LCD show the temperature and the emissivity value at the same time.
* Safety red LED target guide.
* 0.5 degree display resolution.
* Auto power shut off saves battery life.
* Built-in low battery indicator.
* Compact housing case with stand.
* Operates from 006P DC 9V battery.

2. SPECIFICATIONS

2-1 General Specifications

Display	LCD, 29 mm x 33 mm. * Main display show temp. value. * Lower display show emissivity value. * Back Light.
Functions	℃, ℉, Auto data hold, Auto power off, Auto LCD back light,
Measurement Range	-30 to 305 ℃ (-22 to 581 ℉),
Resolution	0.5 ℃/0.5 ℉.
Circuit	Exclusive microcomputer circuit.
Emissivity	0.95 default emissivity value.
Target Guide	Safety red LED Light.
Sampling Time	Approx. 0.6 second.
Hold and Auto Power Off function	After release the operation switch, display will hold the last measuring value for 5 seconds continuously.
Over Indication	≧ 305 ℃, display will show 305 ℃ and flashing. ≦-30 ℃, display will show -30 ℃ and flashing.
Power Supply	DC 9V battery, 006P, MN1604 (PP3) or equivalent, heavy duty or Alkaline.
Power Consumption	with out LED target light out : *Approx. DC 12 mA.*
	with LED target light out : *Approx. DC 24 mA.*

Operating Temp. and Humidity	0 to 50 ℃ (32 to 122 ℉). Less than 80% RH.
Weight	140 g/0.3 LB (without battery).
Dimension	160 x 92 x 45 mm. (6.3 x 3.6 x 1.8 inch).
Standard Accessory	Operational manual..... 1 PC.

2-2 Electrical Specifications

Measurement Range	-30 to 305 ℃ (-22 to 581 ℉),
Resolution	0.5 ℃/0.5 ℉.
Accuracy	± 3 % of reading or ± 3 ℃(5 ℉), which ever is greater. * Meter operating temp. is within 23 ± 5 ℃ and the emissivity value of measurement target is set to 0.95. * Spec. is tested under the 20 cm dia. black body, the measuring distance between the probe sensing head and the target is 30 cm.
Temp. Sensor	Thermocouple pie.
Measurement Wave length Region	6 to 12 micro meter.
Distance Factor	D/S : Approx. 7:1. D - Distance, S - Spot.

3. FRONT PANEL & LAYOUT DESCRIPTION

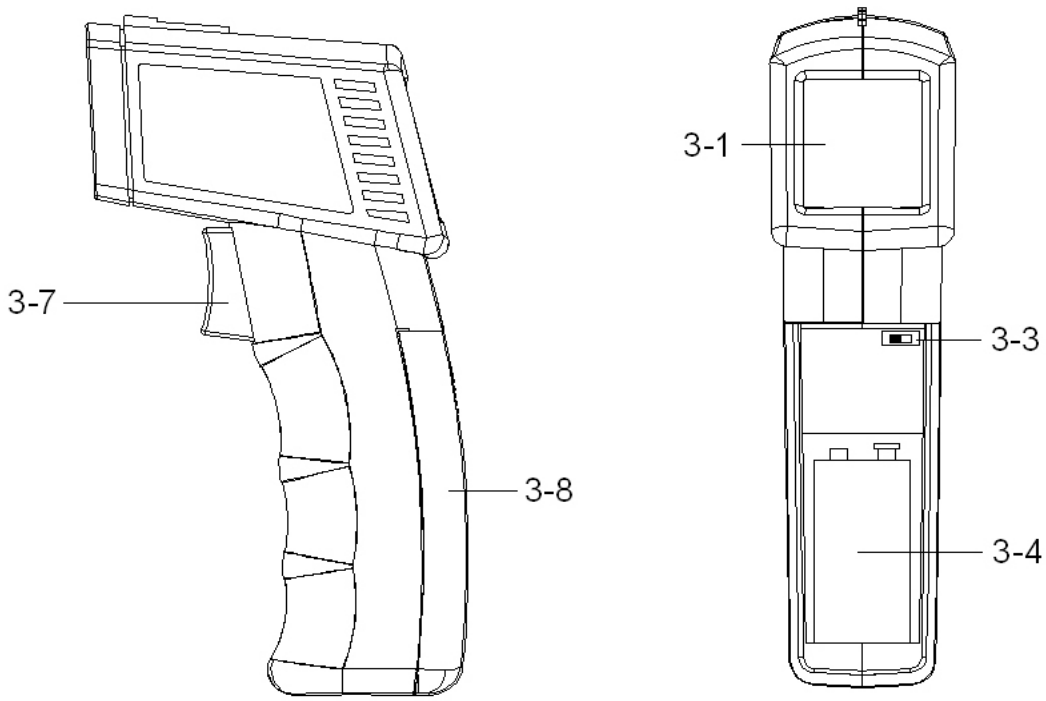


Fig. 1

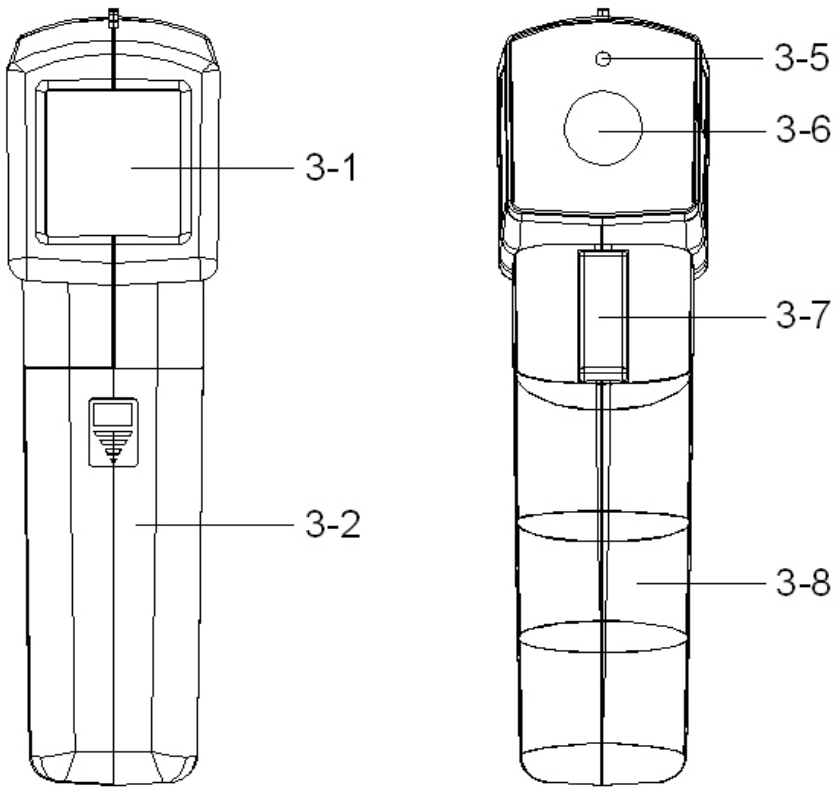


Fig. 1

3-1 Display
3-2 Battery Cover
3-3 ℃/℉ Select Switch
3-4 Battery Compartment
3-5 LED Target Light Guide
3-6 IR Sensing Head
3-7 Operation Switch
3-8 Handle

4. MEASURING PROCEDURE

1) One hand hold the " Handle " (3-8, Fig. 1), use finger to press the " Operation Switch " (3-7, Fig. 1) continuously.
2) Point the " IR Sensing Head " (3-6, Fig. 1) to the measuring object until meter show the stable temperature values (approx. 1 to 2 seconds), release the " Operation Switch ". The Display will hold the measuring value for 10 seconds, then power off automatically.
3) Over Indication : When measurement temperature
   ≧ 305 ℃, display will show 305 ℃ and flashing.
   ≦-30 ℃, display will show -30 ℃ and flashing.

4) **LED Target Light Guide**
   a. When press the " Operation Switch " (3-7, Fig. 1) to make the temperature measurement, at the same time the meter's head will generate the red " LED Target Light " (3-5, Fig. 1) to guide the target.
   b. During generating the " LED Target Light " the LCD will show the "  " indicator.

5. MEASURING CONSIDERATION

5-1 Emissivity

The IR THERMOMETER senses energy and calculates the temperature based on the amount of IR energy it receives. The default emissivity value is 0.95, which will cover 90% of the typical applications.

5-2 Measurement Field Distance/Spot (D/S) value

* The object should be larger than the spot size calculated by the measurement Distance/Spot ratio (Distance Factor, refer to page 4). For accurate measurements, it is recommended that the area to be measured is 1.5 times larger than the spot size.
* Careful collimating is required when
  1 The object is not large enough.
  2 The temperature of the object (or a part of it) is higher (or lower) than the ambient temperature.

  After aiming the probe, move the probe slightly, ideal collimating is obtained when the display shows a maximum (or minimum) reading.

5-3 Disturbance

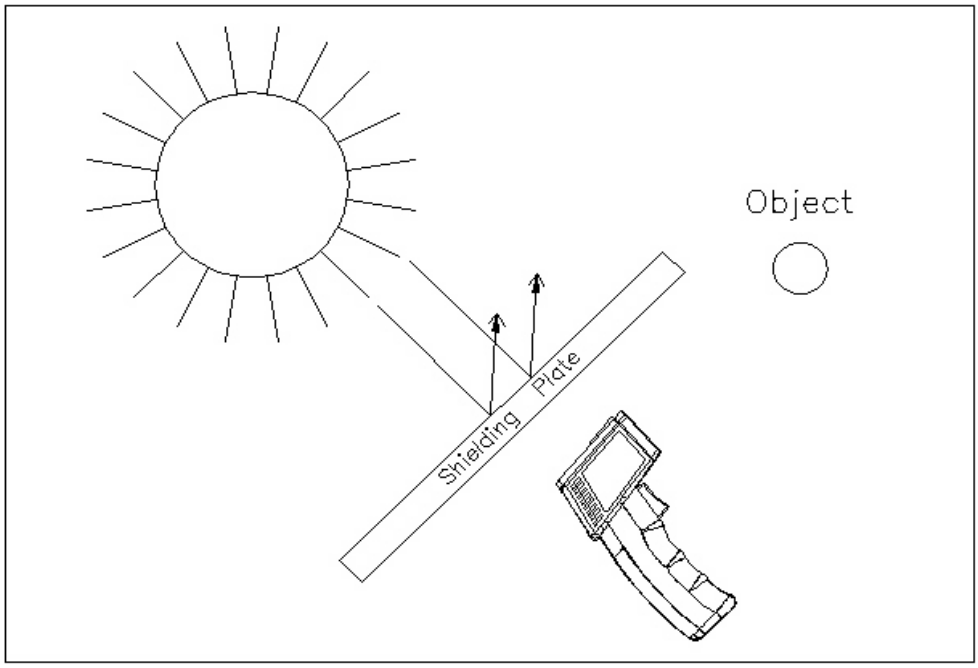


Fig. 2

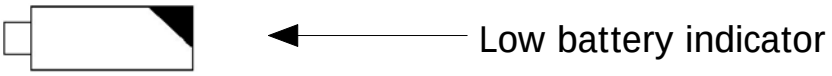
Under certain measurement case, if the object is adversely effected by powerful infrared energy radiated from nearby objects having high emissivity or high temperature. For example, when such objects are measured in sunlight, erratic measurements can result due to powerful radiated energy from the sun reflecting on the surface of the object and entering the sensor. Then in order to get the exact measuring temperature value, it should install a shielding plate as above Fig. 2.

5-5 Special Surfaces

* If the surface to be measured is covered by frost or other material, clean it to expose the surface.
* If the surface to be measured is highly reflective, apply masking tape or apply the known " black body paint " (with an emissivity of 0.95).

6. BATTERY REPLACEMENT

Battery condition indicator



1) When the LCD display show the " Low battery indicator " as above, it is necessary to replace the battery. However, in-spec measurement may still be made for several hours after low battery indicator appears before the instrument become inaccurate.
2) Slide the Battery Cover (3-2, Fig. 1) away from the instrument and remove the battery.
3) Install a 9 V battery (heavy duty) and replace the cover.