

Waterproof Hand-held Infrared Thermometer

IRT-500-TE

Instruction Manual

Read this manual before using the instrument.

SHINKO TECHNOS CO., LTD.

Specifications

Type	IRT-500-TE
Measuring Range	-40 to 300 °C
Display Resolution	0.5°C, 1°C for below -20°C and over 100°C.
Measuring Accuracy	When the ambient temperature is 25±2°C and the emissivity (ε) is 1, 0 to 300°C: ±1% of the measured value ± 1digit or ±2°C±1digit, whichever is greater -30 to 0 °C: ±3°C ± 1digit Below -30°C: ±5°C + 1digit
Repeatability	Within 1°C±1digit
Response	1sec (90% response)
Measuring Diameter	φ45mm/500mm (Optical sensitivity: 90%)
Emissivity Settings	Default: 0.95. The value can be altered between 0.8 and 1.0 with the slide switch at the lower part of the battery compartment (at intervals of 0.05).
Collimation	Laser beam (650nm 1mW JIS class2) specifies the center.
Waterproof Property	IP67
Auto Power Off	If no key is pressed for 30 seconds, the power is shut off automatically.
Shock-proof Property	This instrument or its function/performance will not be damaged even if it is dropped to a vinyl tile floor from heights of up to one meter.
Operating Temperature	0 to 50°C
Operating Humidity	90%RH or less (no condensation)
Storage Temperature	-20 to 55°C (no condensation) (Note): In the case of long-term storage, the batteries should be removed.
Battery	2 AAA alkaline cell batteries
Battery Life	Approximately 10 hours of continuous use
Housing material	ABS (antibacterial)
Dimension	120 × 60 × 54mm (Maximum value for each direction)
Weight	Approx. 123g
Accessories	2 AAA alkaline cell batteries, instruction manual, strap
Approved Standard	CE marking: EMI EN61326 ClassB, EMS EN61326 Annex C Stability: ±5.0°C under EMC test environment at 25°C

Caution

IRT-500-TE is one of the portable laser applied instruments which are regulated by the consumer product safety law.

- Do not stare into the laser beam.
- Do not aim the laser beam at people.
- Keep the instrument out of the reach of children.

Water-proof IP-67

CAUTION

LASER RADIATION

• Do not stare into the beam.

• Do not aim the beam at any person.

• Do not permit any use by children.

CLASS 2 LASER PRODUCT IEC 60825-1:1993

Max 1.0mW 650nm

JQA ●●●レーザー光●●●

・レーザー光をのぞきこまないこと

・レーザー光を人に向けないこと

・子供に使わせないこと

クラス2 レーザー製品

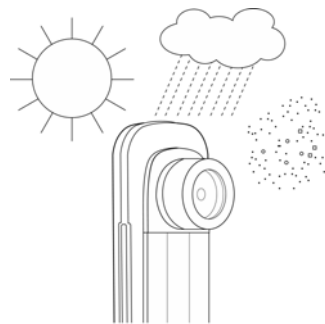
Please follow the precautions below for use to keep the instrument's functions proper and to enable accurate measurement.

Safety Precautions

- Do not allow this product to come into contact with the object being measured. This is a contactless thermometer. Contact with a hot section may cause irreparable damages or inaccurate readings.
- Do not damage the measuring window (plastic lens). Do not allow a hard object to come into contact with the measuring window. Do not let a foreign object penetrate the measuring window, or drop a hard object on the measuring window.
- Although this instrument applies a shockproof structure, do not allow the instrument to be exposed to excessive shocks.
- Do not bring the instrument close to an electrostatic object.
- Emissivity of this instrument can be selected (0.8 to 1.0). When the emissivity setting is different from that of a measured object, an inaccurate reading will occur.
- Sudden changes in ambient temperature will cause inaccurate readings. Wait a while to let the temperature of the instrument stabilize, and then measure it.
- Remove batteries from the instrument if the instrument is not in use for a long period or is put in storage.

Environmental Precautions

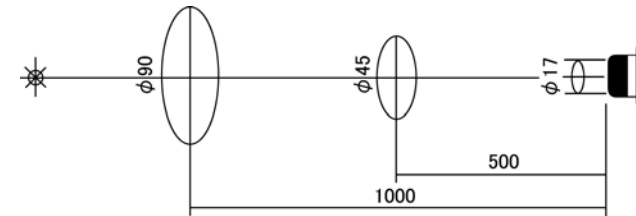
- Do not use or store the instrument in a location where it is exposed to direct sunlight, dust, lampblack and corrosive gas, or where temperature and/or humidity is high. Otherwise the measuring window will become soiled or deteriorated, which can cause inaccurate readings.
- As this instrument has a waterproof structure (IP67), a slight amount of water will not damage the instrument. When the plastic lens is wet, however, wipe the lens carefully so as not to scratch it as being wet will cause inaccurate readings.
- Keep the instrument away from an object which radiates strong electromagnetic waves.



Relation of Distance and Measuring Diameter

The relation between the distance and measuring diameter is as follows. The more the distance increases, the required area becomes large. For an accurate reading, a sufficient measuring area should be ensured.

(Unit: mm)



The above measuring diameter is defined as an area which allows the capture of more than 90% of energy.

Maintenance

Measuring Window

The measuring window applies a waterproof structure (IP67). If water-soluble stains adhere to the window, wash the measuring window with the tap water. Dry the measuring window well after washing. Please note that measurement while the measuring window is wet will cause inaccurate readings. If oil-soluble stains adhere to the measuring window, wipe it with a cloth dipped in the diluted neutral detergent and rinse it.

Note

Do not use chemical agents such as thinner, benzene or alcohol since these may cause a crack or fog on the surface of the measuring window, and consequently it may change the infrared radiation transmittance of the plastic lens.

Plastic Lens

Dust, stains and scratches on the measuring window cause inaccurate readings. Wipe such stains off with a soft cloth or cotton bud for camera or glasses. To get rid of tough stains, remove the top hood (rubber) by drawing it, and wipe the lens with a cloth dipped in the diluted neutral detergent and rinse it. After getting rid of the stains, put the top hood back to the previous place by aligning the slots and projections along the edge of the hood and on the device together. After this, ensure that the hood is fastened and will not come apart.



Troubleshooting

Symptoms	Cause	Countermeasures
No display appears	Batteries have been exhausted or they are not placed correctly.	Replace or place them correctly.
Laser beam is not emitted or is weak.	Battery voltage is low.	Measurement is possible. Replace batteries when the laser marker is necessary.
Abnormal reading	Plastic lens is dirty.	Clean the plastic lens referring to the "Maintenance" section.
	A heat source nearby is affecting measurement.	Shield the heat source by a shielding plate.
	Emissivity is not selected properly.	If emissivity is unknown, refer to "Reference" section. Also, measure the temperature by a contact type thermometer and select adequate emissivity so that temperature of this instrument becomes equivalent to that of the contact type thermometer.
	The measuring target area is too small.	Check the target area and keep a sufficient area for measurement.
Unstable reading	The unit is affected by a rapid temperature change.	Leave the unit to stabilize its temperature, then measure.
No reading appears but display is 'OL.'	Out of measuring temperature range	Check the target to be measured.

SHINKO TECHNOS CO.,LTD. OVERSEAS DIVISION

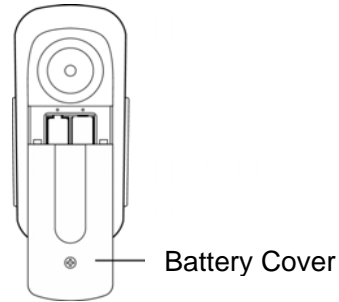
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Usage and Part Names

Battery

(1) Installing Batteries


Loose the screw at the lower part of the battery cover, pressing the battery compartment cover as shown and removing it. Install batteries positioning the negative and positive poles properly as shown inside the compartment. Then fasten the screw and put the cover back.



Note:

If the battery cover is not screwed in tightly, the waterproof property will be deteriorated, and performance may be deteriorated due to water penetration in the unit. However, do not fasten the screw too tightly when replacing the battery cover.

(2) Replacing Batteries

Residual quantity of the batteries is displayed on the low battery symbol in the display. When the low battery symbol becomes , the batteries have run out. Replace the batteries with new batteries.

Note:

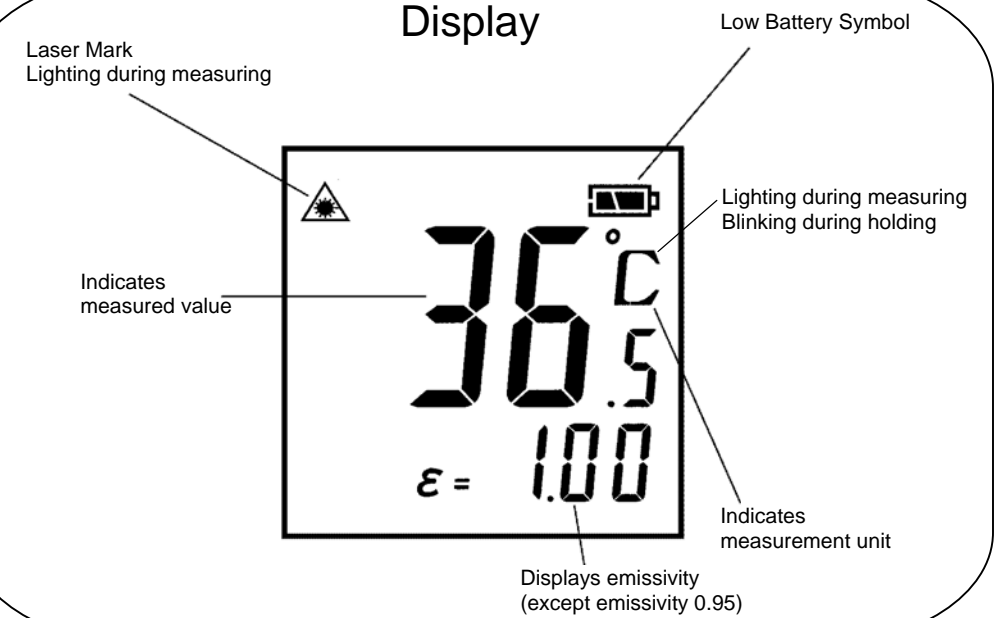
When replacing batteries, replace both batteries at the same time.

Measurement Display

Aim the measuring window at the measuring target, and press the MEASURE key. Holding down the MEASURE key, confirm if the laser beam irradiates the measuring position properly. Adjust the position, if the laser beam does not irradiate the measuring position properly. Measuring continues while the MEASURE key is being held down. When the MEASURE key is released, the measured value is held for about 30 seconds, and then the power is shut off with the Auto Power Off function.

If the measuring window is aimed at a new target and the MEASURE key is pressed while the measured value is being held, the temperature of the new target will be measured. When the MEASURE key is released, the newly measured temperature will be held.

Display

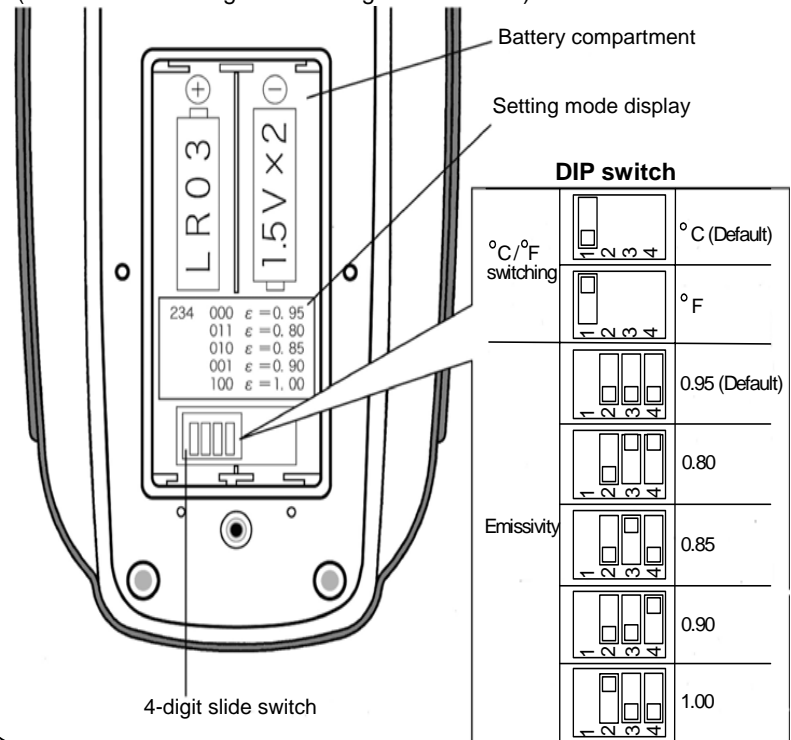


Settings

Normally only the object emissivity is selectable. The emissivity is set at 0.95 at the factory. The emissivity is displayed during measurement (except for emissivity 0.95. When nothing appears on the display, it means that the emissivity is 0.95.) Five variations of emissivity ranging from 0.8 to 1.0 can be set at every 0.05 step.

The emissivity can be altered by setting the 3 digits (2nd, 3rd and 4th digits from left) of the 4-digit slide switch in the lower part of the battery compartment. The setting mode of the slide switch is displayed below the battery part. Remove the batteries, and set as required according to the displayed setting mode.

If necessary, the measurement unit can be switched to Fahrenheit (°F) (with the leftmost digit of the 4-digit slide switch.)



Setting Emissivity (Reference)

Quantity of infrared radiation emitted from objects depends on variables such as the objects' material, surface conditions and measuring temperatures. The table below shows emissivity of some objects. Please note that these values are just for reference. Please also refer to the estimated emissivity using the separately sold black body tape.

Emissivity of Objects

Material	Emissivity	Material	Emissivity
Water, Ice	0.98	Cloth, Fabric (colored)	0.95
Soil	0.92 to 0.96	Leather, Fur	0.96
Concrete (wet)	0.96 to 0.98	Human skin	0.99
Concrete (dry)	0.91 to 0.95	Vegetables, Fruit	0.98
Ceramics	0.85 to 0.95	Dough	0.98
Stone, Asbestos	0.92	Meat	0.98
Plastics	0.90 to 0.95	Copper oxide	0.5 to 0.6
Rubber (black)	0.95	Ferric oxide	0.7 to 0.8
Wood	0.98	Painted surfaces	0.8
Paper	0.92	Tiles	0.8

Estimated Emissivity Using the Black Body Tape

If a measuring object accepts sticking of adhesive tapes, stick a piece of the black body tape (emissivity: 0.94) to the object, and measure the temperature after setting the emissivity to 0.95.

