

Hand-held Infrared Radiation Thermometer

IRT-100-TF

Instruction Manual

Read this manual before using the instrument.

SHINKO TECHNOS CO., LTD.

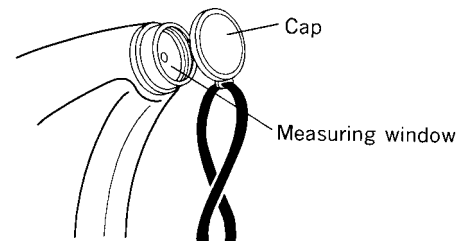
CE Marking: Conforms to EMC directive(89/336/EEC, 92/31/EEC amendment,93/68/EEC amendment)
EN55011 Group 1, Class B, EN50082-1

Specifications

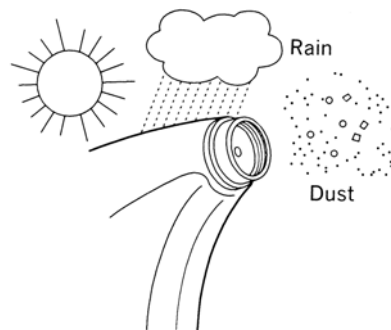
Measuring range	-30 to 350°C
Detecting element	Thermopile
Measuring wavelength	6.5 μm
Measuring diameter	φ45/500mm (Optical sensitivity: 90%)
Measuring accuracy	Within ±1% of measured value or within ±2°C, whichever is greater. However, -30 to 0°C: Within ±3°C (at 25°C ambient temperature)
Repeatability	Within ±1°C
Response time	0.8 seconds (90% response)
Display indications	Current reading, Maximum reading, Minimum reading, Reading hold, Emissivity, Low battery
Auto power off	Automatically shuts power off in 30 seconds after Reading hold
Emissivity correction	Selectable from DARK (0.95), BRIGHT (0.80), STD (1.00)
Display illumination	Automatic back-light
Operating temperature	0 to 50°C
Storage temperature	-20 to 55°C
Ambient humidity	90%RH or less (No condensation)
Power source	Alkaline battery, AA (UM-3) type, 2 pieces
Battery life	Approx. 70 hours for continuous measurement
Dimension	81 (W) x 142 (H) x 32 (D) mm
Weight	Approx. 160g
Accessories	Alkaline battery AA (UM-3) type, 2 pieces Instruction manual, 1 copy Vinyl case, 1 piece

Safety Precautions

- Do not touch the instrument on an object being tested. A contact with an object at a high temperature can cause irreparable damage to the instrument or inaccurate readings.
- Do not touch the measuring window of the instrument with hard objects. Do not let foreign objects penetrate the measuring window or a hard object drop on the window.
- Be sure not to use the thermometer when the measuring window has been broken or cracked, as the user may be injured by shards.
- Always put the cap back on the measuring window after measurement to prevent foreign objects from penetrating the window.



- In order to protect the optical system of the instrument, do not subject the instrument to extreme shocks and vibration
- Keep the instrument away from objects with built up static charges.
- Select the proper emissivity value for accurate readings.
- When there is a rapid change to the ambient temperature, wait a while to let the temperature of instrument stabilize for accurate readings.
- When the instrument is put in storage or not in use for a long period of time, remove the batteries from the instrument.
- Do not use or store the instrument at a location where; temperature and/or humidity are high, the instrument is exposed to the direct sunlight, there is a lot of dust, there are greasy fumes or corrosive gasses, as the measuring window may become deteriorated or soiled, causing inaccurate readings.



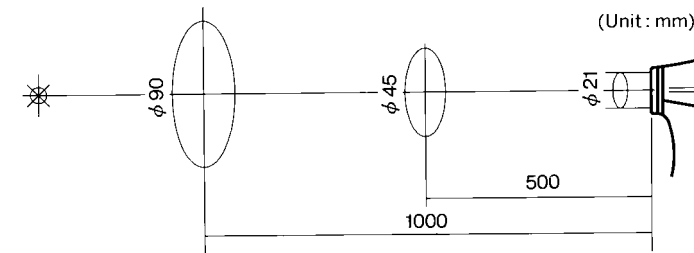
- Do not use the instrument in water or other fluids. Do not store the instrument where it can come into contact with water.
- Keep the instrument away from objects which produce a strong magnetic field.

Relation of Distance and Measuring Diameter

The figure below shows the required minimum area (optical sensitivity: 90%) on an object under test at a distance of 500mm and 1000mm.

The measured area increases with distance.

When measuring, the distance should be as short as possible.



Maintenance

Measuring Window

Dust, stains and flaws on the measuring window cause inaccurate readings. Wipe stains off with a soft cloth used for lenses of camera. Use absorbent cotton dipped into neutral detergent diluted with water to remove tough stains.

Other Parts of the Instrument

Clean the instrument with a dry cloth. To remove tough stains, use a damp cloth from which water-diluted neutral detergent has been rinsed out. Use of paint thinner, benzene, alcohol and other chemicals may blur the display window, erase markings or cause the enclosures to crack. It is preferable to keep the instrument in the carrying case.

Troubleshooting

Symptoms	Causes	Countermeasures
No display appears.	Batteries have been used up or they have not been inserted correctly.	Replace or insert them correctly.
Abnormal reading.	Cap is not removed.	Check if the cap has been removed.
	Measuring window is dirty.	Clean the measuring window, referring to the "Maintenance" section.
	Measurement was done with maximum or minimum reading.	Check the measuring condition. Switch it to current reading.
	Heat source nearby affects the measurement.	Shield the heat source with a shielding plate.
	Emissivity is not selected properly.	If emissivity is unknown, refer to "Reference" section.
Unstable reading	Target area is too small.	Check the target area and keep a sufficient area for measurement.
	Unit is affected by rapid temperature change.	Leave unit alone to stabilize its temperature, then measure.
No reading appears but display is [---].	Out of measuring temperature range.	Check target to be measured.
	Emissivity selection setting is not matched.	Same as above countermeasure.
Reading is blinking.	Ambient temperature is out of specified range.	Check operation environment.

SHINKO TECHNOS CO.,LTD. OVERSEAS DIVISION

Reg. Office : 2-48, 1-Chome, Ina, Minoo, Osaka, Japan
Mail Address : P.O.Box 17, Minoo, Osaka, Japan
URL : <http://www.shinko-technos.co.jp>
E-mail : overseas@shinko-technos.co.jp

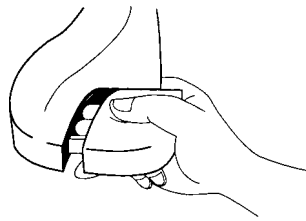
Tel : 81-727-21-2781
Fax : 81-727-24-1760

No.IRTTF11E1 2001.12

Battery

(1) Installing Batteries

Press the battery compartment cover on its top and bottom as shown below to remove it. Install batteries in correct polarity as shown inside the battery compartment.



(2) Replacing Batteries

Replace the batteries when the low battery symbol appears on the display or the display blinks.

Note Always replace both batteries.

Settings

Emissivity

Emissivity of an object under test can be selected from DARK (0.95), BRIGHT (0.80) or STD (1.00).

When the instrument is turned on, emissivity is set to DARK (0.95). A bar appears under DARK, BRIGHT or STD on the display to indicate which one is selected. Press ϵ key to change selection.

Measurement Display

While pressing **MEASURE** key, measurement is done continuously. MEAS is shown on the display to indicate that the instrument is in measuring mode. Release **MEASURE** key to stop measurement. The display reading is automatically frozen, with HOLD shown on the display.

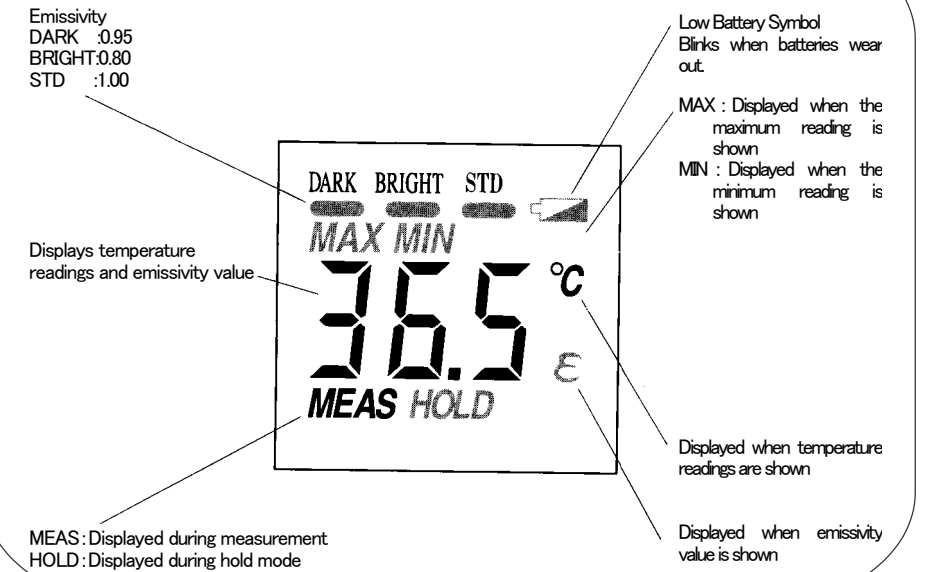
To display maximum or minimum reading:

In the HOLD mode, press **MODE** key to display the maximum reading. MAX is shown on the display. Press **MODE** key again to display the minimum reading. MIN is shown on the display.

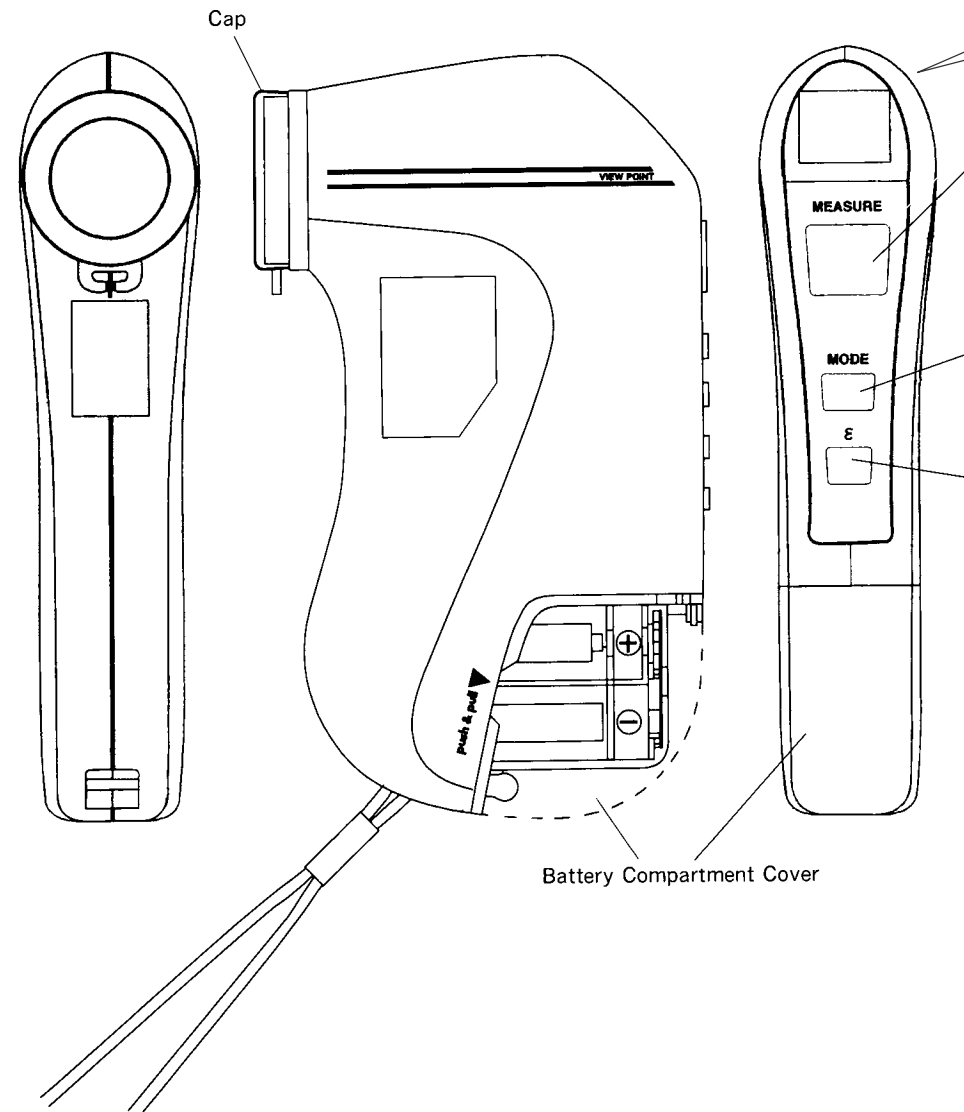
To display only the maximum or minimum reading during measurement:

With MAX or MIN shown on the display, press **MEASURE** key. Updated maximum or minimum reading is shown on the display.

If no key is pressed for 30 seconds after the reading is frozen, the instrument automatically turns itself off. Pressing **MEASURE** key to turn on the instrument cancels stored maximum or minimum reading. When the batteries wear out, stored maximum or minimum reading is canceled as well.



Display



Measure Key

Measurements are taken while this key is pressed. Releasing this key freezes the last reading and automatically turns the instrument off in 30 seconds, if no key is pressed.

Mode Key

Display the current, the maximum or the minimum reading, and selects setting mode.

ϵ Key

Selects DARK, BRIGHT or STD

Setting Emissivity (reference)

The table below shows emissivity for some materials. Please note that these values are just for reference and only apply to IRT-100-TF. Infrared radiation depends on materials, condition of the surface and ambient temperature.

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	Vegetable, Fruit	0.98
Ceramic	0.85 to 0.95	Dough	0.98
Plaster, asbestos	0.92	Meat	0.98
Plastic	0.90 to 0.95	Copper oxide	0.5 to 0.6
Rubber (black)	0.95	Ferro-oxide	0.7 to 0.8
Wood	0.98	Painted surface	0.8
Paper	0.92	Tile	0.8