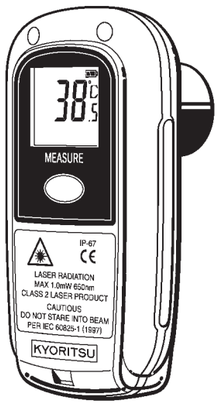
INSTRUCTION MANUAL



Water-proof Handheld Infrared Thermometer

MODEL 5510

KYORITSU ELECTRICAL INSTRUMENTS WORKS, LTD.

⚠ Caution

5510 is one of the portable laser applied instruments which are regulated by the consumer product safety law.

- Do not look into the laser beam.
- Do not aim the laser beam at human beings.
- Keep the instrument out of children's reach.

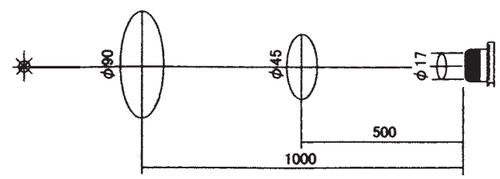
⚠ **Please follow the precautions below for use to keep the instrument's functions proper and to enable accurate measurement.**

Safety Precautions

- Do not contact this product with a measuring object.
  This is a contactless thermometer. Contact with a hot section may cause unrepairable damages or inaccurate readings.
- Do not damage the measuring window (plastic lens).
  Do not contact a hard object 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 give an excessive shock to the instrument.
- Do not bring the instrument closer 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 measuring object, an inaccurate reading will occur.
- The sudden changes of the ambient temperature will cause inaccurate readings. Wait a while to let the temperature of the instrument stabilize, and then measure.
- Remove batteries from the instrument, if the instrument is not in use for a long period or is put in storage.

■ Relation of Distance and Measuring Diameter

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



The above measuring diameter is defined as an area which allows 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 with the measuring window 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, benzin 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

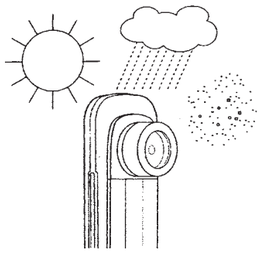
Dust, stains and scratches on the measuring window cause inaccurate readings. Wipe such stains off with a soft cloth or cotton bud for camera or glasses. To get rid of tough stains, remove the top hood(rubber) by drawing it, wipe the lens with a cloth dipped in the diluted neutral detergent and rinse it. After getting rid of the stains, put the top hood back to the previous place by putting the projection along its edge and the ones on the case together. After putting it, make sure of fitting it to the correct position.

■ Specifications

Type	5510
Measuring Range	−40 to 300℃
Display Resolution	0.5℃. 1℃ for below−20℃ and over 100℃ .
Measuring Accuracy	When the ambient temperature is 25±2℃ and the emissivity (ε) is 1, 0 to 300℃ : bigger value of either of ±1% of the measured value ±1dg't or ±2℃ ±1dg't. 0 to−30℃ : ±3℃±1dg't below −30℃ : ±5℃±1dg't
Repeatability	within 1℃±1dg't
Response	1sec (90% response)
Measuring Diameter	φ45mm/500mm (Optical sensitivity:90%)
Collimation	Before shipment: 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 (by 0.05 steps).
Water -Proof Property	Laser beam (650nm 1mW JIS class2) specifies the center.
Auto Power Off	IP67
Shock Proof Property	If no key is pressed for 30 seconds, the power is shut off automatically.
Operating Temperature	This instrument or its function/performance will not be damaged even if it is dropped on the vinyl tile floor from 1 meter high.
Operating Humidity	0 to 50℃
Storage Temperature	90% rH and below (no condensation)
Battery	−20 to 55℃ (no condensation) (Note): In the case of long-term storage, the batteries should be removed.
Battery Life	2 AAA alkaline cell batteries
Housing material	Approximately 10 hours for continuous use
Dimension	ABS (antibacterial)
Weight	120×60×54mm (Maximum value for each direction)
Accessories	Approx. 123g
Approved Standard	2 AAA alkaline cell batteries, instruction manual, strap
	CE marking:EMI EN61326 ClassB ,EMS EN61326 Annex C Stability:±5.0℃ under EMC test environment at 25℃

Environmental Precautions

- Do not use or store the instrument in a location where the instrument is exposed to the direct sunlight, dust, lampblack and corrosive gas, or where the temperature and/or humidity is high. Otherwise the measuring window gets soiled or deteriorated, which causes inaccurate readings.



- As this instrument applies a waterproof structure (IP67), a slight wetting will not damage the instrument. When the plastic lens is wet, however, wipe the lens carefully so as not to scratch it as the wetting condition will cause inaccurate readings.
- Keep the instrument away from an object which radiates a strong electromagnetic wave.

■ 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 affects.	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.
	Measuring target area is too small.	Check the target area and keep a sufficient area for measurement.
Unstable reading	Unit is affected by a rapid temperature change.	Leave the unit for stabilizing its temperature and measure.
No reading appears but display is 'OL.'	Out of measuring temperature range.	Check the target to be measured.

DISTRIBUTOR

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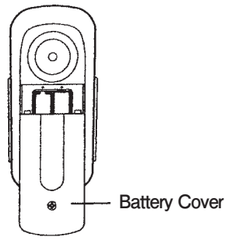
92–1513B

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 remove it. Install batteries positioning the negative and positive poles properly as shown inside the compartment, and bolt up the screw, put the cover back.

Note:

If the battery cover does not fit tightly, water-proof property will be deteriorated, or the performance will be deteriorated due to water penetration in the unit.

Don't bolt up the screw too tightly, as putting the battery compartment cover.

(2) Replacing Batteries

Residual quantity of the batteries is displayed on the low battery symbol in the display part. When the low battery symbol becomes  the batteries have been exhausted. Replace the batteries with new batteries.

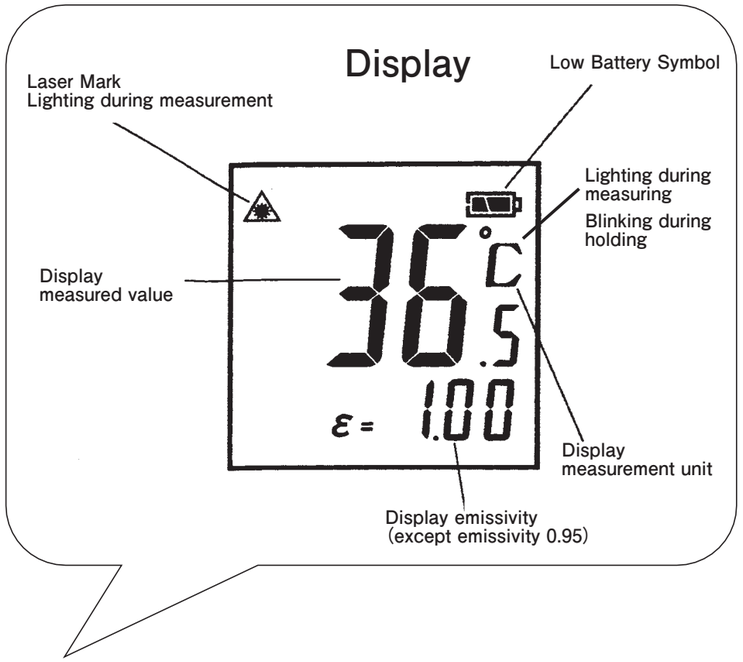
Note:

When replacing batteries, do replace 2 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. During holding down the MEASURE key, measuring continues. When the MEASURE key is released, the measured value is hold 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 hold, the temperature of the new target will be measured. When the MEASURE key is released, the newly measured temperature will be hold.

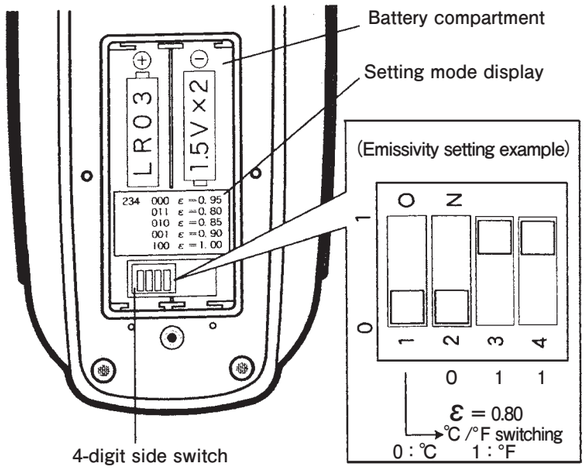


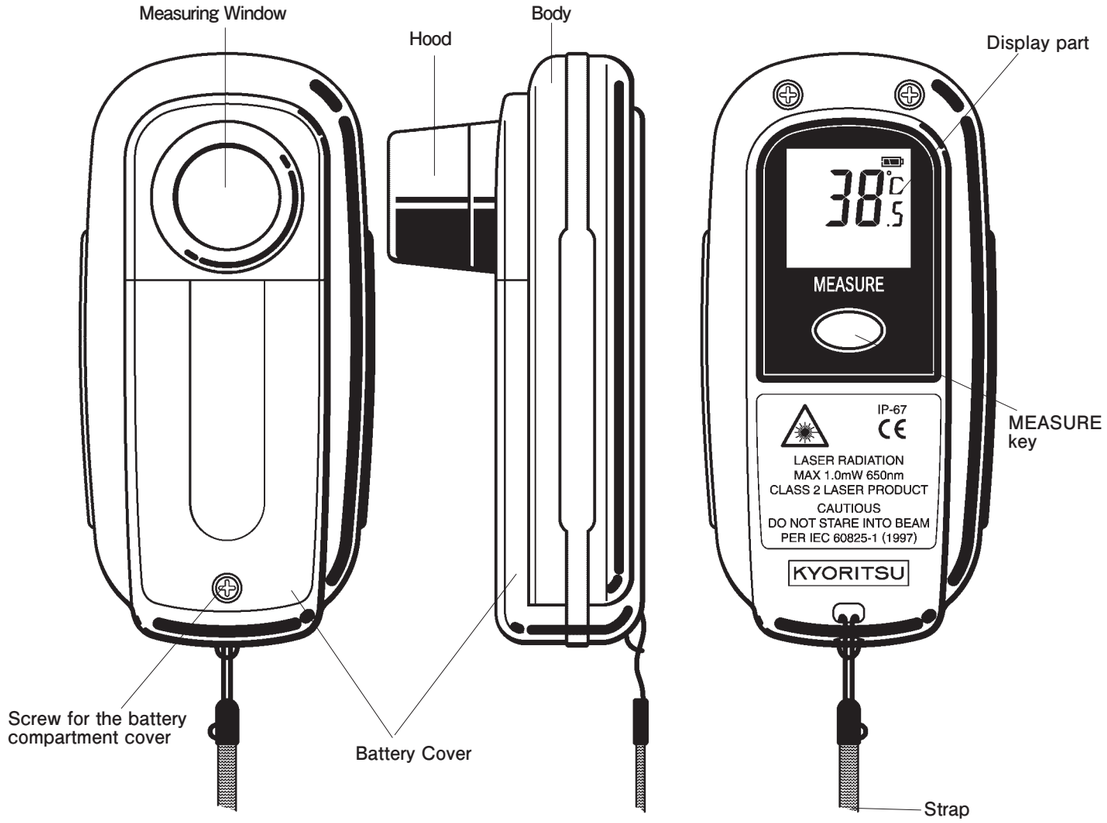
Settings

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 per 0.05 steps.

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 left most digit of the 4-digit slide switch.)





■ Setting Emissivity (Reference)

Quantity of infrared radiation emitted from objects depends on the objects' material, surface conditions, measuring temperatures and so on. 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	0.92to0.96	Leather, Fur	0.96
Concrete (wet)	0.96to0.98	Human skin	0.99
Concrete (dry)	0.91to0.95	Vegetable, Fruit	0.98
Ceramics	0.85to0.95	Dough	0.98
Stone, Asbestos	0.92	Meat	0.98
Plastics	0.90to0.95	Copper oxide	0.50to0.60
Rubber (black)	0.95	Ferric oxide	0.70to0.80
Wood	0.98	Painted surface	0.80
Paper	0.92	Tile	0.80

◆ 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.