

Handheld Infrared Thermometer

IR-TA

Instruction Manual

Read this manual before using the instrument.



CE Marking : Conforms to EMC directive (89/336/EEC, 92/31/EEC amendment, 93/68/EEC amendment)
EN5011 Group 1, Class B, EN50082-1

Specifications

Measuring Range	(-)40 to 500 °C
Detecting Element	Thermopile
Spectral Range	8-14μm
Measuring Diameter	φ45mm/500mm (Optical sensitivity: 90%)
Measuring Accuracy	±1% of measured value or 2°C, whichever is the larger. ±3°C below 0°C (±5°C lower than -30°C)
Repeatability	within ±1°C
Stability	±5°C (at 25°C radiance temperature) under EMC test environment
Response Time	0.8 second (90% response)
Collimation	Laser beam marks the center of the area measured.
Beam Diameter	Approx. 5mm (at a distance of 1m)
Beam Output	Less than 1mW, 650nm (IEC, FDA class II)
Display Indications	Current reading, Maximum reading, Minimum reading, Reading hold, Emissivity, Alarm value, Low battery
Auto Power Off	Automatically shuts power off if no key is pressed for 30 seconds
Alarm	Upper limit alarm with a beeper Lower limit alarm, optional
Emissivity Correction	Selectable from DARK(0.95), BRIGHT(0.8) and FREE(variable between 0.30 and 1.90, Initial value:1.00)
Display Illumination	LED back-light
Operating Temperature	0 - 50°C
Storage Temperature	(-)20 - 55°C
Power Source	Alkaline battery, type R-6 or equivalent, 2pcs
Battery Life	Approx. 50 hours for continuous use
Dimension	81(W) × 142(H) × 32(D)mm
Weight	Approx. 180g
Accessories	2 Alkaline R-6 batteries Carrying case Instruction manual

CAUTION – Laser Light

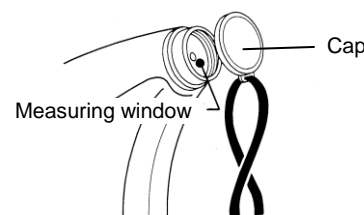
Do not aim laser beam toward faces.
Do not stare into beam or into reflections from mirror – like surfaces.



Do not attempt to open the housing, other than to change batteries. There are no other user – serviceable parts inside.

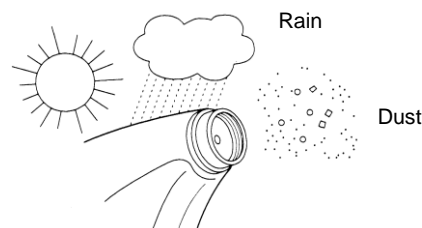
Safety Precautions

- Do not touch the instrument on an object under test. 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 a hard object.
Do not let foreign objects penetrate inside the measuring window or a hard object drop on the window.
- Always put the cap back on the measuring window after measurement to prevent foreign objects from penetrating inside the window.



- Do not subject the instrument to extreme shocks and vibration to protect the optical system of the instrument.
- Keep the instrument away from an object which has built up static charges.
- Select proper emissivity value for accurate readings.
- When there is a rapid change to the ambient temperature, wait a while to let the temperature of the instrument stabilize for accurate readings.
- When the instrument is a rapid change to the ambient temperature, wait a while to let the temperature of the instrument stabilize for accurate readings.
- When the instrument is put in a storage or not in use for a long period of time, remove the batteries from the instrument.

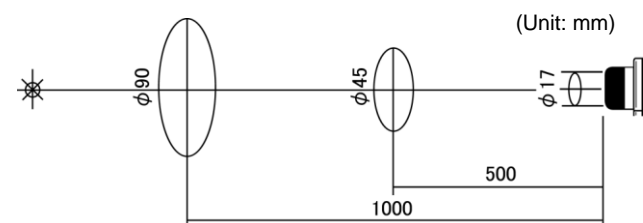
- Do not use or store the instrument at a location where; temperature and/or humidity are high; the instrument is exposed to direct sunlight; there is much dust; there is greasy fumes or corrosive gasses. Otherwise a deteriorated or soiled measuring window causes inaccurate readings.



- Do not use the instrument in water or other fluid. Do not store the instrument at a location where there are splashes of water.
- Keep the instrument away from an object which produces 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.



Troubleshooting

Symptoms	Cause	Countermeasures
No display appears.	Batteries have been consumed or they are not mounted correctly.	Replace or mount 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	Cap is not removed.	Check if the cap has been removed.
	Measuring window is dirty.	Clean the measuring window, referring to the "Maintenance"
	Measurement was done with maximum or minimum reading.	Check the measuring condition. Switch it to current reading.
	Heat source nearby effects.	Shield the heat source by a shielding plate.
Emissivity is not selected properly.	Emissivity is not selected properly.	If emissivity is unknown, refer to "Reference". Or measure temperature by a contact type thermometer and obtain adequate emissivity by changing it to have some temperature as measured on condition of emissivity selection at FREE.
		Target area is too small.
Unstable reading.	Unit is effected by rapid temperature change.	Leave unit for stabilizing its temperature and 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.

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.

Note

Use of other substance other neutral detergent can damage the window to cause the laser beam to scatter.

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 was ringed out. Use of thinner, benzene, alcohol and other chemicals may blur the display window, erase markings or cause the enclosure crack. It is preferable to put the instrument in the carrying case.

CHINO CORPORATION

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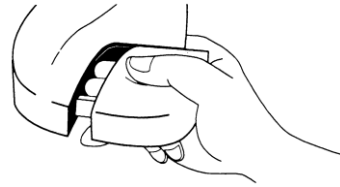
Manufactured by:

YAMAGATA CHINO CORPORATION
YAMAGATA, JAPAN

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 blanks.

Note Always replace both batteries.

Settings

(1) Emissivity

Emissivity of an object under test can be selected from DARK(0.95), BRIGHT(0.8) or FREE(variable between 0.3-1.90).

When the instrument is turned on, emissivity is set to DARK. A bar appears under DARK, BRIGHT or FREE on the display to indicate which one is selected. Press \blacktriangle key to change selection. When FREE is selected, emissivity is set to 1.00. To change this value;

- ① Press **MEASURE** key to turn on the instrument.
- ② With **ENT** key pressed, push **MODE** key. ALARM is shown on the display.
- ③ Press **MODE** key. 1.00 or the value set previously is shown on the display, with the lowest digit blinking.



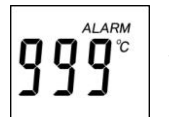
Press \blacktriangle or \blacktriangledown key to change the blinking number and press **ENT** key. Repeat the same step on the other digits.

- ④ Press **MODE** key to switch the instrument to measuring mode.

(2) Alarm

If readings exceed a certain value, the beeper sounds and ALARM blinks on the display. To set the alarm value;

- ① Press **MEASURE** key to turn on the instrument.
- ② With **ENT** key pressed, push **MODE** key.



999 or the value set previously is shown on the display, with the lowest digit blinking.

- ③ Press \blacktriangle and \blacktriangledown key to change the blinking number and press **ENT** key. Repeat the same step on the other digits.

To set negative value, display - on the highest digit.

- ④ In case of lower limit alarm(option), the initial value is -99.

Measurement Display

With **MEASURE** key pressed, aim the laser beam at an object under test. 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;

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.

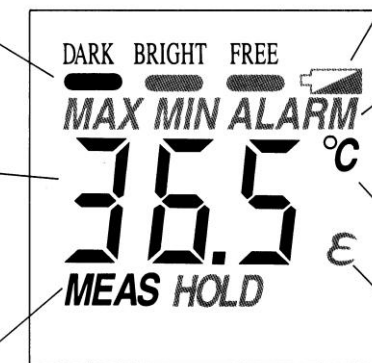
If no key is pressed for 30 seconds after the reading is frozen, the instrument automatically turn itself off. Pressing **MEASURE** key to turn on the instrument cancels stored maximum or minimum reading.

When the batteries wear out, stored maximum or minimum reading is canceled as well.

Emissivity
DARK : 0.95
BRIGHT : 0.80
FREE : 0.3-1.90 variable

Low Battery Symbol
Blinks when batteries wear out

Displays temperature readings, emissivity value or alarm value



MAX : Displayed when the maximum reading is shown

MIN : Displayed when the minimum reading is shown

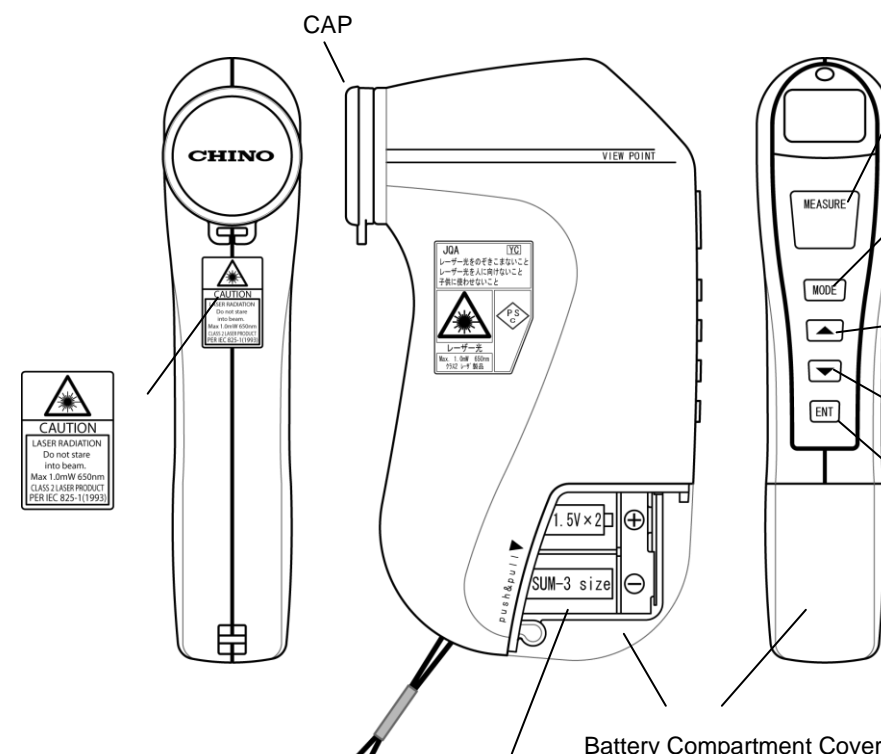
ALARM : Displayed during alarm setting and blinks during alarm

Displayed when temperature readings are shown

Displayed when emissivity value is shown

MEAS : Displayed during measurement
HOLD : Displayed during hold mode

Display



CAUTION
Laser light when open
DO NOT STARE INTO BEAM

Press-to-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.

Up Key
Selects DARK, BRIGHT or FREE, and sets emissivity and alarm value.

Down Key
Sets emissivity and alarm value.

Enter Key
Fixes set values and switches the instrument setting mode.

Setting Emissivity (reference)

The table below shows emissivities for some materials. Please note that these values are just for reference and only apply to IR-TA. 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 - 0.96	Leather, Fur	0.96
Concrete (wet)	0.96 - 0.98	Human Skin	0.99
Concrete (dry)	0.91 - 0.95	Vegetable, Fruit	0.98
Ceramics	0.85 - 0.95	Dough	0.98
Stone, Asbestos	0.92	Meat	0.98
Plastics	0.90 - 0.95	Copper Oxide	0.5 - 0.6
Rubber (black)	0.95	Ferric Oxide	0.7 - 0.8
Wood	0.98	Painted Surface	0.8
Paper	0.92	Tile	0.8

Estimating emissivity using the Black Body Tape
Place a piece of the black body tape (emissivity: 0.94) on an object. Set emissivity to 0.94 in FREE mode and measure the temperature of the object. Then remove the tape from the object. Measure its temperature of the adjust emissivity value so that readings match the temperature measured with the black body tape attached on the object. The adjusted value is the emissivity of the object. The black body tape is available as an option.