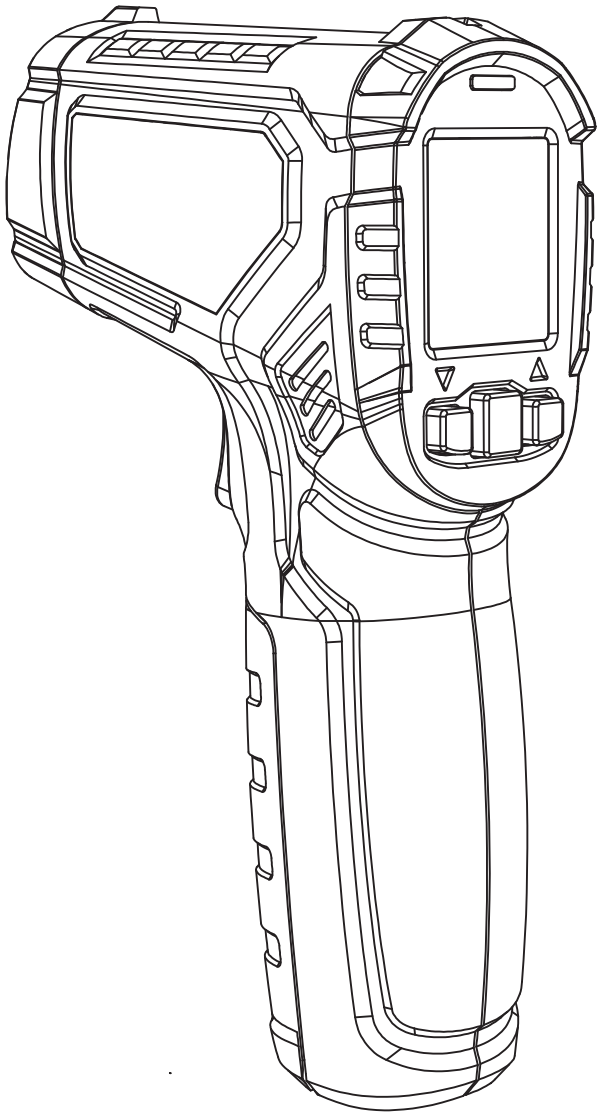
USERS MANUAL

INFRARED THERMOMETERS



⚠ Before using the instrument,please read this manual carefully,and save it well for future using.

Statement

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Safety Statement

 "**Caution**" mark refers to the condition and operation which may cause damage to the instrument or equipment.

It requires that you must be careful during the execution of the operation. If

incorrectly perform the operation or do not follow the procedure, it may damage the instrument or equipment. In the circumstances that such conditions are not met or not fully understood, please do not continue to perform any operation indicated by the caution mark.

 “**Warning**” mark indicates the condition and operation which may cause danger to users.

It requires that you must pay attention during the execution of this operation. If incorrectly perform the operation or do not follow the procedure, it may result in personal injury or casualties. In the circumstances that such conditions are not

met or not fully understood, please do not continue to perform any operation indicated by the warning mark.

Introduction

The infrared thermometer is suitable for non-contact temperature measurement. The thermometer determines the surface temperature of the object by measuring the infrared energy of the radiation from the surface of the object.

Safety Operation Specifications

⚠WARNING

To prevent eye injury or personal injury :

- Please read the manual carefully before using the product.
- Please do not look at the laser directly. Do not direct laser direct to humans or animals or indirectly from the reflecting surface.
- If the instrument works abnormally, do not use.
- Do not use optical tools (such as binocular, telescope, microscope, etc.) to look directly at the laser. Optical tools may focus on lasers, thereby damaging the eyes.
- Replace battery when indication of battery power is insufficient, so as to prevent measurement error.

- Do not use products in the environment of explosive gas, water vapor or dust.
- For actual temperature, please refer to the emissivity information. Reflective objects will cause the measured temperature to be lower than the actual temperature. These objects are dangerous to burn.
- Do not put the thermometer near or put it on a high temperature object
- Please be sure to use the meter according to the regulations, otherwise the protection function provided by the product may be weakened.
- Do not use a solvent cleaning thermometer

⚠Caution

To avoid damaging the thermometer or the tested equipment, please protect it from the following effects :

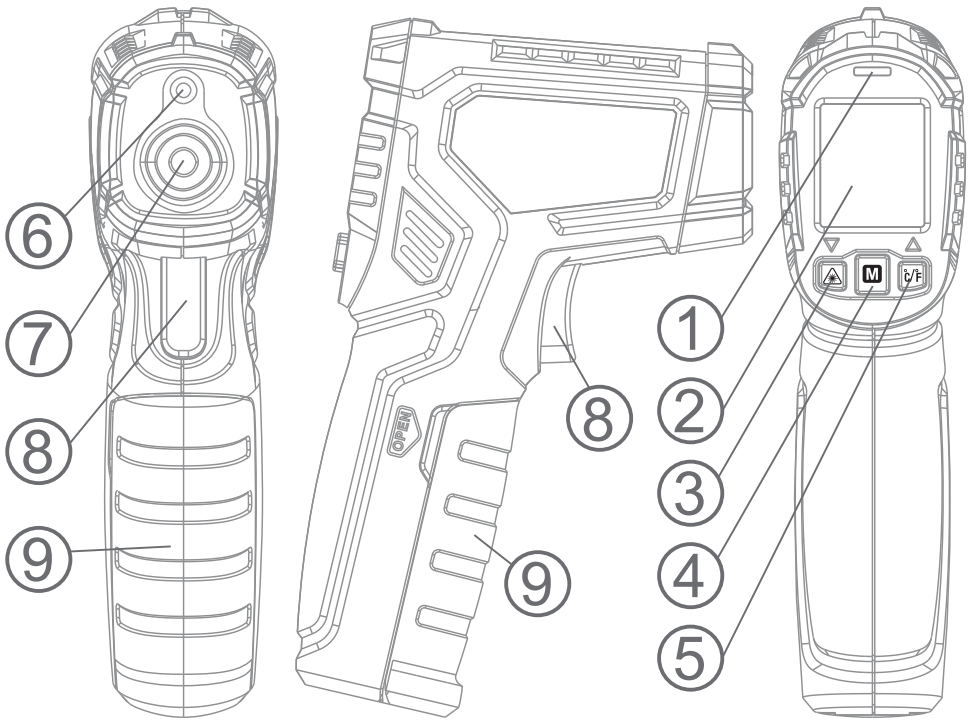
- Electromagnetic field and static electricity of arc welding machine, induction heater and other equipment.
- Thermal shock (when a sudden change in ambient temperature occurs, the thermometer must be placed in the environment for 30 minutes to stabilize the thermometer).
- Do not put the thermometer near or put it on a high temperature object.

- Keep the thermometer clean and avoid dust entering the barrel.

Symbolic description

	Laser, warning
	Warning, important safety mark
°C	Centigrade
°F	Fahrenheit degree
MAX	Maximum indicator
	Low battery
CE	Product complies with all relevant European laws
	The additional product label shows that do not discard this electrical/electronic product into household garbage.

Component description



① Alarm indicator

② LCD display

③ Laser key / digital adjusting control key decreases▼

④ Mode key

⑤ ℃/℉ key / digital regulation increase

key▲

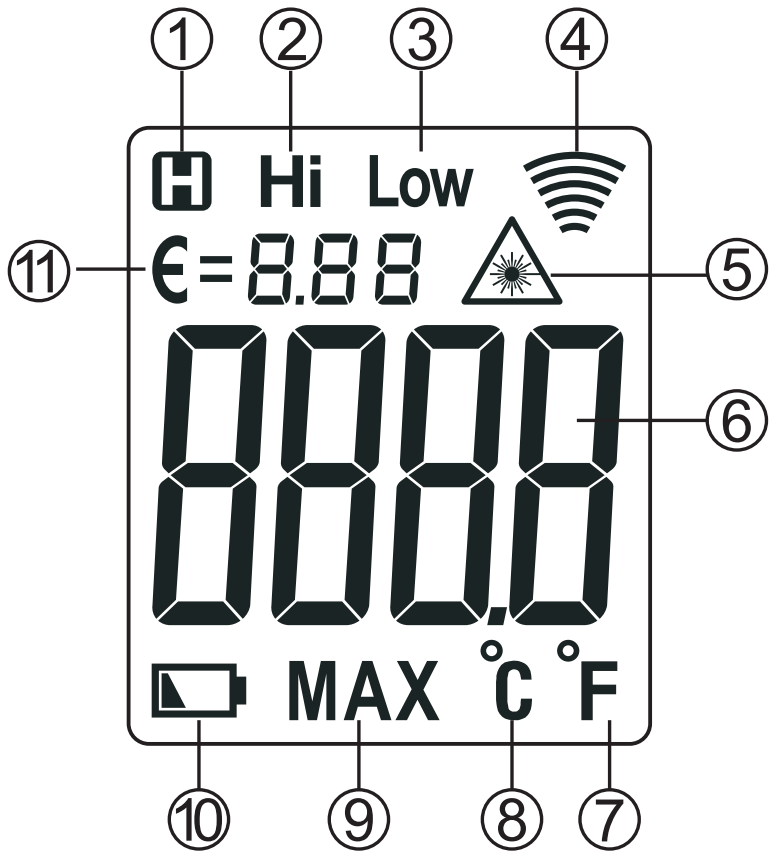
⑥ Laser

⑦ Infrared sensor induction zone

⑧ Measure Trigger Switch

⑨ Battery cover

LCD description



① Data hold indicator

② Temperature upper limit alarm indicator

③ Temperature lower limit alarm indicator

④ Measuring indicator

⑤ Laser on indicator

⑥ Temperature display

⑦ Fahrenheit degree unit

⑧ Centigrade unit

⑨ Maximum indicator

⑩ Low battery indicator

⑪ Emissivity display

Operating thermometer

Alarm upper limit setting：

① Press M key and hold for more than 2 seconds. The meter enters the set state.

② Press M key (≤1Sec) switch to alarm upper limit set state. The meter displays the "Hi" and flashes the current alarm upper limit value.

③ Press “▲/▼” key increase or decrease the set value, press and hold key to increase or decrease the set value quickly.

④ Press the trigger switch, or press M key and hold for more than 2 seconds to exit settings. You can also press M key (⩽1 Sec) to toggle setting parameters.

Alarm low limit setting：

① Press M key and hold for more than 2 seconds. The meter enters the set state.

② Press M key (⩽1Sec) switch to alarm low limit set state. The meter displays the "Low" and flashes the current alarm low limit value.

③ Press “▲/▼” key increase or decrease

the set value, press and hold key to increase or decrease the set value quickly.

⑤ Press the trigger switch, or press M key and hold for more than 2 seconds to exit settings. You can also press M key (⩽1 Sec) to toggle setting parameters.

Emissivity setting：

① Press M key and hold for more than 2 seconds. The meter enters the set state.

② Press M key (⩽ 1Sec) switch to emissivity set state. The meter

emissivity display area scintillation display.

③ Press “▲/▼” key increase or decrease the set value, press and hold key to increase or decrease the set value quickly.

④ Press the trigger switch, or press M key and hold for more than 2 seconds to exit settings. You can also press M key (⩽1 Sec) to toggle setting parameters.

Temperature unit conversion：

In the measurement mode, press and hold the ℃/℉ key (⩽ 1 Sec.) to convert

the temperature units.

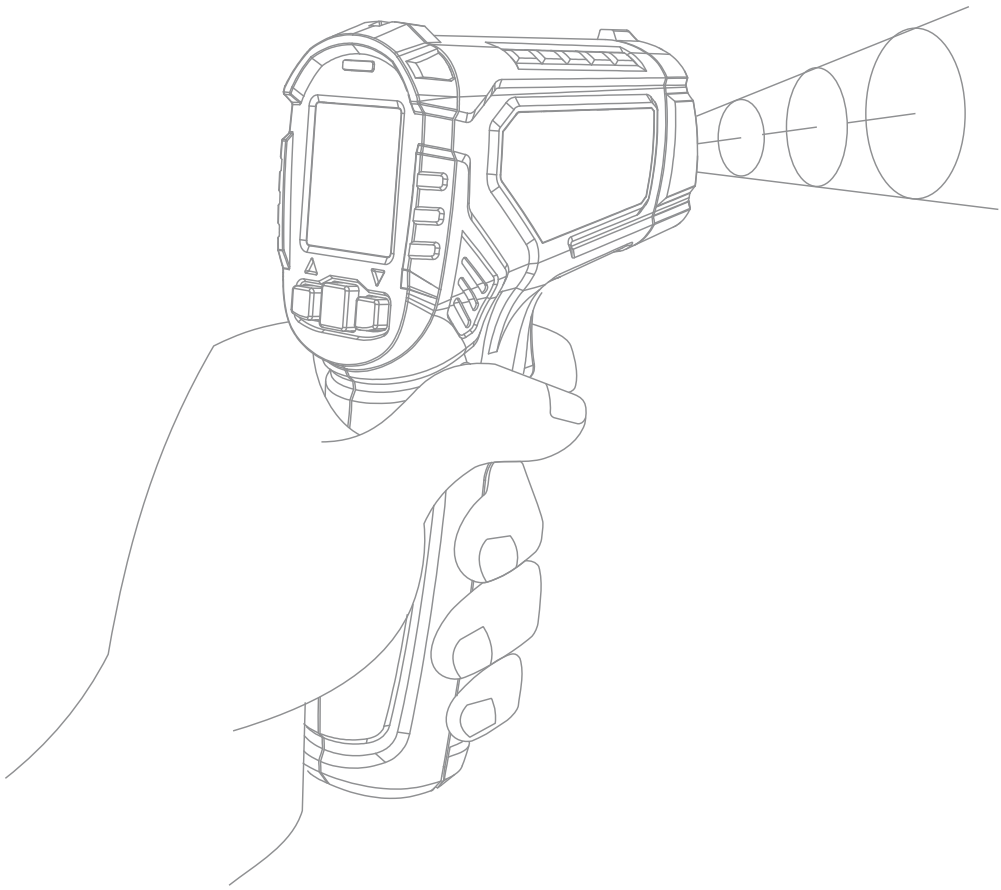
Laser on or off:

In measurement mode, press  key ($\leqslant$1Sec) to turn on laser, press again to turn off laser. When laser turn on, the LCD display "  ".

Non-contact temperature measurement:

Aim at the measured object with the thermometer and pull the trigger to keep the temperature continuously measured. Loosen the trigger and keep the result of the measurement. When measuring, a laser

pointer can be used to help the thermometer aim.



Non-contact temperature measurement includes two measurement modes, normal measurement and maximum measurement,

as well as upper and lower limit alarm functions. Press the mode key (<1 Sec.) to switch the measurement mode.

Upper and lower limit alarm functions:

When the temperature displayed in the temperature display exceeds the set temperature range during continuous measurement with the trigger held down, an alarm is generated. The alarm mode is a red light and the alarm symbol "Hi" or "Low" is displayed.

a. Normal measurement mode

There is no "MAX" display in this mode.

Press and hold the trigger for continuous temperature measurement, and the temperature display shows the real-time measured temperature. Release the trigger to keep the measurement result.

b. Maximum measurement mode

MAX" is displayed in this mode. Press and hold the trigger for continuous temperature measurement and the temperature display shows the maximum temperature value during the continuous measurement. Release the trigger to keep the measurement result.

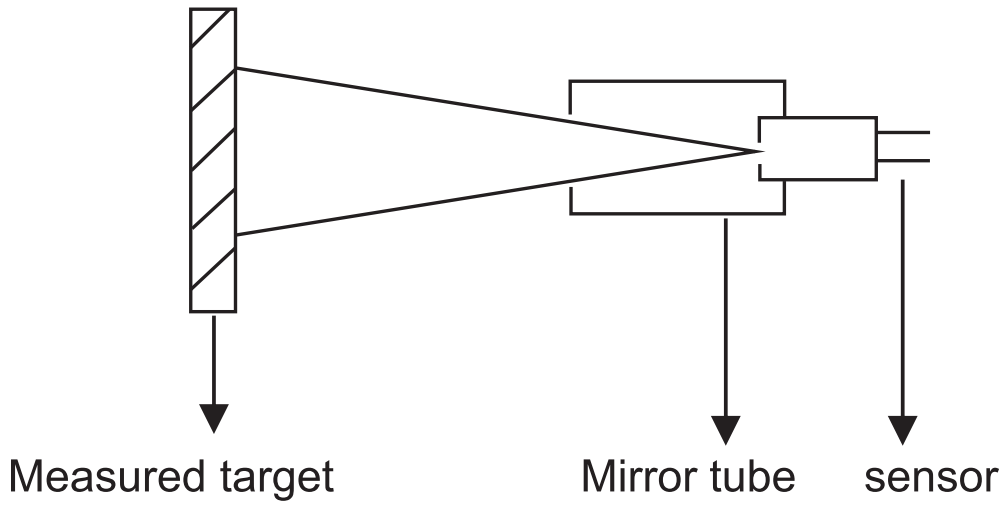
Note：

- Attention should be paid to distance and spot diameter ratio and field of view (see target distance ratio).
- Laser is used only for aim and is independent of temperature measurement.
- After 30 seconds without any operation, the thermometer will be turned off automatically. If you need to start a thermometer, pull the trigger

Target distance ratio (D:S ratio)

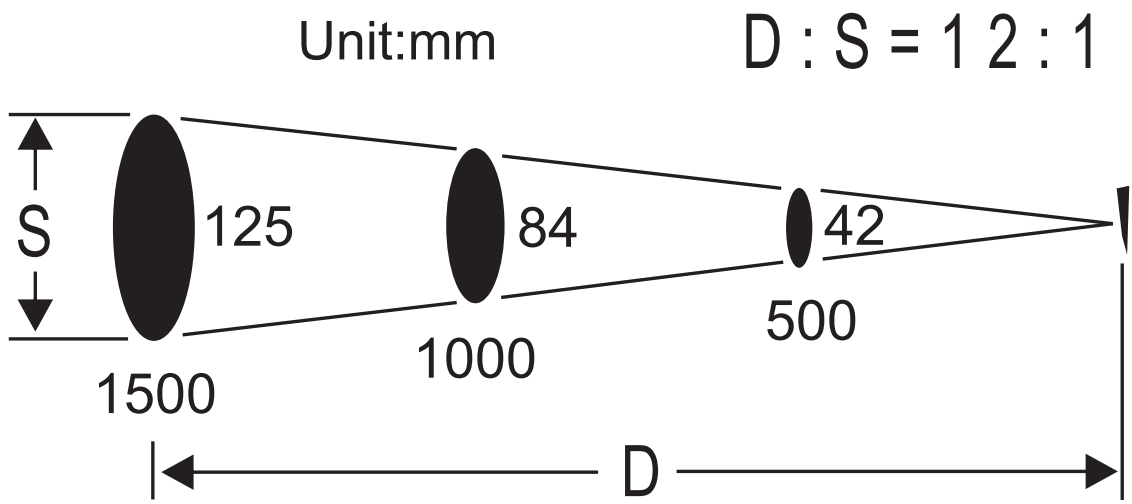
The thermometer has a certain angle of view and field of view, as shown in the

following figure.



Make sure the object under test is full of the field of view of the thermometer, that is, let the thermometer "see" only the object under test and "not see" other objects. The larger the object is, the farther the distance can be measured; the smaller the object, the closer the distance must be. The ratio of

the measured distance to the measured target size is D:S ratio of 12: 1, as shown in the following figure：



Infrared radiation rate of object

The radiant rate represents the ability of an object to radiate infrared radiation. The greater the radiation rate, the stronger the radiation ability of the object surface. The

emissivity of most organic or metal oxide surfaces is between **0.85~0.98**. The default emissivity of the thermometer is **0.95**. The emissivity of the instrument should be consistent with the emissivity of the measured object when measuring. Attention should be paid to the effect of radiation on measurement results.

Reference table of Infrared radiation

Measured surface		**radiation**
Aluminum	Oxidized	0.2~0.4
	A3003 alloy (oxidized)	0.3

	A3003 alloy (coarse)	0.1~0.3
Brass	Polishing	0.3
	Oxidized	0.5
Copper	Oxidized	0.4~0.8
	Electrical terminal board	0.6
Hastelloy		0.3~0.8
Ferro-nickel	Oxidized	0.7~0.95
	Abrasive blasting	0.3~0.6
	Electropolishing	0.15
Iron	Oxidized	0.5~0.9
	Rust	0.5~0.7
Iron	Oxidized	0.6~0.95

(casting)	Unoxidized	0.2
	Fusion cast	0.2~0.3
Iron (casting) passivation		0.9
Lead	Coarse	0.4
	Oxidized	0.2~0.6
Molybdenum oxidation		0.2~0.6
Nickel oxidation		0.2~0.5
Platinum black		0.9
Steel	Cold rolling	0.7~0.9
	Grinding steel plate	0.4~0.6
	Polished steel plate	0.1
Zinc	Oxidized	0.1
Asbestos		0.95
Asphalt		0.95

Basalt	0.7
Carbon (unoxidized)	0.8~0.9
Graphite	0.7~0.8
Silicon carbide	0.9
Ceramics	0.95
Clay	0.95
Concrete	0.95
Cloth	0.95
Glass plate	0.85
Gravel	0.95
Plaster	0.8~0.95
Ice	0.98
Limestone	0.98
Paper	0.95

Plastics	0.95
Soil	0.9~0.98
Water	0.93
Timber	0.9~0.95

Technical Specifications

Display	Color LCD display
D:S	12：1
Emissivity	0.10~1.00
Response spectrum	8~14um
Laser	<1mW /630-670nm Level 2
Response time	<0.5S

Auto power off	30 seconds
Work temperature	0~40°C
Storage temperature	-10~60°C
Power supply	2 x 1.5VAAA batteries
Measurement range	A+: -50°C~400°C (-58°F~752°F)
	B+: -50°C~600°C (-58°F~1112°F)
Accuracy	-50°C~0°C (-58°F~32°F)：±3°C 0°C~600°C (32°F~1112°F)：±2.0% or ±2°C

Maintain

Replace the battery

WARNING

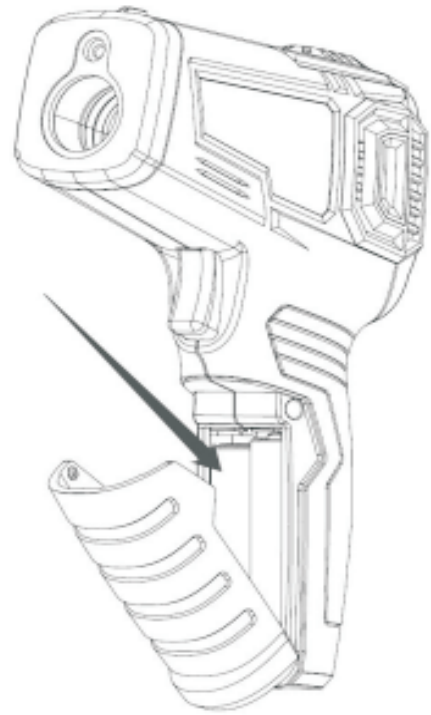
Batteries contain dangerous chemicals that may cause burns or explosions. If you are exposed to chemicals, wash or seek medical advice with water. To prevent injury and ensure safety work and maintenance.

- Do not disassemble the battery.
- If battery leakage occurs, please repair it and use it first.
- If the meter is not used for a long time, please remove the battery to prevent the

battery from leaking and damage the instrument.

- Please make sure that the battery is correct in order to prevent the battery leakage.
- Do not connect the battery terminals together. Do not disconnect or squeeze the battery.
- Do not store batteries in containers that may cause short circuit terminals.
- Do not place the battery near the heat source or the fire source. Do not shine under the sun.

When the battery power is insufficient, the meter displays the " " symbol and the battery must be replaced at this time. Open the battery cover with your hands, replace the new battery with the same specifications, and then close the battery cover tightly. As shown.



Clean lens tube

Use clean air to remove dust particles from the lens barrel. Carefully wipe the

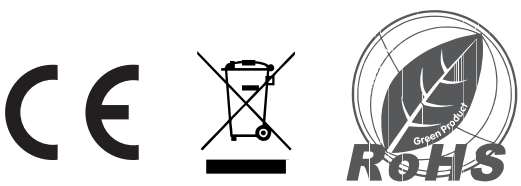
surface with a cotton swab dipped in water.

Surface Clean

Wet the sponge or soft cloth with soap and water. Do not use abrasives or solvents.

⚠CAUTION

To avoid damaging the thermometer, do not immerse it in water. Do not use corrosive cleaners, otherwise they will damage the shell.


Green Product
RoHS