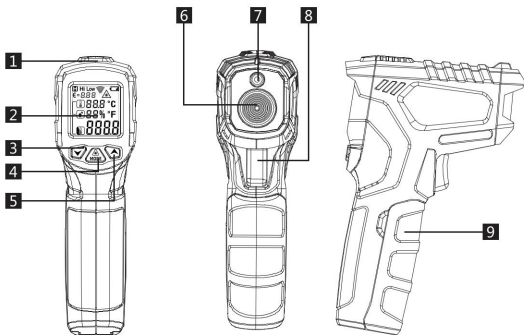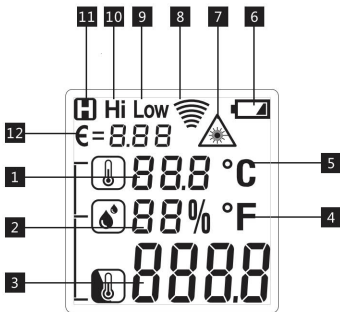# MESTEK®

3. Appearance description

1. Alarm indicator
2. Liquid crystal display
3. Laser control key/digital turn down key ▼
4. Mode key
5. Back-light/digital turn up key ▲
6. Infrared sensor induction zone
7. Laser indicator
8. Measurement trigger
9. Battery cover

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4. Liquid crystal display description

1: Ambient temperature
2: Relative humidity
3: Surface temperature
4: Fahrenheit degree
5: Centigrade degree
6: Low voltage indication
7: Laser indication
8: Measurement indication
9: Low alarming
10: High alarming
11: Data hold
12: Radiance indication

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5. Measurement methods

1. Set the upper limit of the instrument alarm:

Press and hold the Mode key for 2 seconds, to enter instrument setting, and press MODE key to shift to alarm upper limit setting, in this case, Hi is displayed in the instrument function indication zone, and the alarm upper limit value is displayed in the zone, the value blink. Press ▲/▼ key to increase or decrease the alarm value, and long press ▲/▼ key to accelerate the increase or decrease of the set value.

2: Set the low alarm value of the instrument

Press and hold the Mode key for 2 seconds, to enter instrument setting, and press MODE key to shift to alarm lower limit setting, in this case, Low is displayed in the instrument function indication zone, and the alarm lower limit value is displayed in the zone, the value blink. Press ▲/▼ key to increase or decrease the alarm value, and long press ▲/▼ key to accelerate the increase or decrease of the set value.

3: Set the instrument radiance

Press and hold the Mode key for 2 seconds, to enter the instrument setting, and press the MODE key to shift to the instrument radiance setting, in this case, the instrument radiance indication zone flashes. Press the ▲/▼ key to increase or decrease the radiation value, and long press the ▲/▼ key to accelerate the increase or decrease of the set value.

4: Set the instrument temperature unit

Press and hold the MODE key for 2 seconds, to enter the

instrument setting, and press the MODE key to shift to the instrument temperature measurement unit, the unit symbol on the display flashes, and press the ▲/▼ key to change the unit symbol.

5: Exit the setting

Press the trigger or long press the MODE key, to exit the instrument setting.

6: Turn on/off laser

Press the Mode Button to turn on or off the Laser, and the instrument will display the laser symbol ☀

8: Non-contact temperature measurement

Aim the thermodetector at the object, and hold the trigger, to conduct continuous measurement of temperature. After displaying stably, release the trigger, and the measurement result will be maintained.
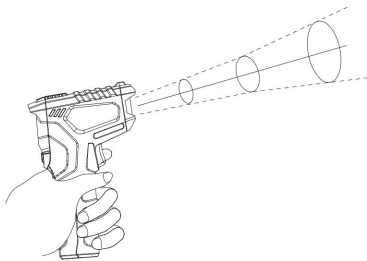
When holding the trigger, the secondary display of the instrument will display the maximum value of the measured temperature.

When the measured value is greater than the upper limit of high alarm or the measured value is less than the lower limit of low alarm, the red alarm indicator will turn on to alarm.

6. Target distance ratio (D:S ratio)

The thermodetector has a certain visual angle and visual field, as shown in the following figure.

The measured target   Tube Light-sensitive component
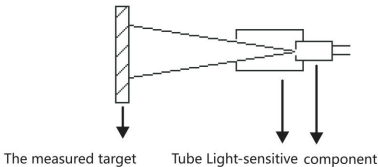
In order to guarantee the measured object fills in the visual field of the thermodetector, which means the thermodetector only "sees" the measured object rather than other objects. Larger objects may cause larger temperature measurement distances; for smaller objects, the measurement distances must be close. The ratio of measurement distance to the measured target (D:S) is 12:1, as shown in the following figure:

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Unit : mm   D : S = 12 : 1
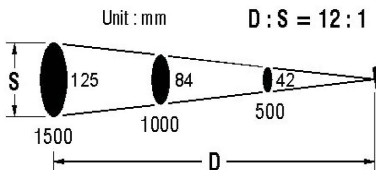
7. Radiance

The radiance characterizes the ability of an object to radiate infrared ray. Larger radiance will lead to stronger radiation ability on the object surface.

Radiance of the majority of organic matters or metal oxidized surfaces ranges between 0.85 and 0.98. The radiance of the thermodetector is 0.95 by default. During measurement, set the radiance of the instrument the same with the radiance of the measured object. During measurement, please pay attention to the impact of emissivity on measurement results. The following table is the radiance reference table.

Measured surface		Radiance
Aluminum	Oxidized	0.2~0.4
	A3003 alloy (oxidized)	0.3
	A3003 alloy (coarse)	0.1~0.3

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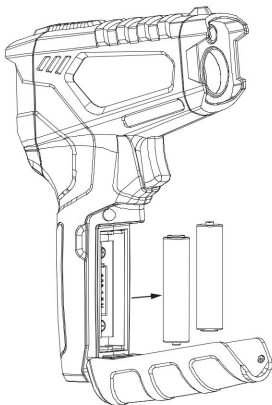|		
Brass	Polishing	0.3
	Oxidized	0.5
Copper	Oxidized	0.4~0.8
	Electrical terminal board	0.6
Hastelloy		0.3~0.8
Ferro-nickel	Oxidized	0.7~0.95
	Abrasive blasting	0.3~0.6
	Electropolishing	0.15
Iron	Oxidized	0.5~0.9
	Rust	0.5~0.7
Iron (casting)	Oxidized	0.6~0.95
	Unoxidized	0.2
	Fusion cast	0.2~0.3
Iron (casting) passivation		0.9
Lead	Coarse	0.4
	Oxidized	0.2~0.6
Molybdenum oxidation		0.2~0.6

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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

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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

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8. Replacement of battery

When battery is low, the battery symbol 🔋 will light up, in this case, it is required to replace the battery. Open the battery cover with your hands, and replace with a new 1.5V*2AAA battery. Refer to the following figure:

9. Technical indexes

LCD display	Color LCD display
D:S	12 : 1

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Response spectrum	8~14um
Radiance	0.10~1.00
Laser	<1mW /630-670nm Level 2
Response time	<0.5S
Automatic shutdown	30 seconds
Service temperature	0~40 degrees
Storage temperature	-10℃~60℃
Power supply	1.5Vx2 AAA battery
Measurement range (non-contact temperature measurement)	-50℃~550℃ (-58℉~1022℉) -50℃~0℃ ±3℃/6℉ 0~550℃ ±(1.5% reading + 2℃)

Ambient temperature	±1.0°C/2°F （from 0°C to 45°C/from 32°F to113°F ）
	±1.5°C/3°F （from -10°C to 0°C, from 45°C to 60°C/14°F~32°F, 113°F~140°F)
Ambient humidity	±4.0% RH (from 20% to 80%)
	± 5.0% RH (from 0% to 20%, from 80% to 100%)