USER'S MANUAL

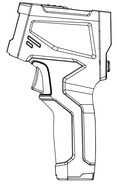
Made in China

M101040112
A1

⚠ Please read this manual carefully before using this product,and keep it properly for future use!

USER'S MANUAL

infrared thermometer



120*90mm

⚠ Please read this manual carefully before using this product,and keep it properly for future use!

1.Safety instructions

- Please read the instruction manual carefully before using the instrument.
- Safety symbol:

⚠	Important information that is dangerous
CE	Compliant with European CE safety specifications, this instrument meets the following standards: EN60825-2014

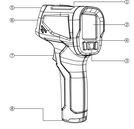
Warning!

⚠	Do not aim the laser at human eyes or reflective surfaces.

2. Notes

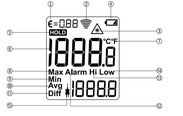
- When there is a temperature difference impact (caused by large or sudden changes in ambient temperature), wait about 20 minutes before use to allow the instrument to reach a stable temperature.
- Avoid electromagnetic fields caused by electric welding and induction heating.
- Avoid placing the instrument near or on hot objects.
- Keep the instrument clean and prevent dust from entering the lens barrel.
- Clean the lens, use clean compressed air to clean the dust on the surface of the lens, and then wipe the surface with a moist cotton swab.
- Do not use solvent to clean the instrument.

3. The appearance



Serial number	Description
1	Type K Thermocouple Socket
2	LCD screen
3	Long press to enter mode; Short press to control laser
4	▲/▼Key: In Mode: short press to increase/decrease value In normal use: short press to convert Max/Min/Avg/Diff
5	Laser emitter
6	Infrared emitter
7	Measurement trigger
8	Battery cover

4. LCD display



Serial number	Description		
1	Emissivity	9	Maximum lock
2	Measurement indication	10	Minimum lock
3	Laser indication	11	Average lock
4	Battery undervoltage indication	12	Temperature difference lock
5	Data locking	13	Alarm
6	Irradiation measurement temperature value	14	High value alarm
7	Temperature unit	15	Low value alarm
			K-type thermocouple temperature

5. Measuring methods

Press the measurement trigger to light up the screen, press and hold the MODE key to enter the setting MODE, and press the MODE key shortly to select Alarm Hi → Alarm Low → (ε) Emissivity setting → ($^{\circ}C/^{\circ}F$) Temperature unit setting.
In setting mode: long press ▲/▼Key, which can quickly increase or decrease the set value.
1. High Alarm setting:
Long press the MODE key to enter the high alarm setting (Alarm Hi) by default. When the value flashes, you can press ▲▼Key to set the required alarm value, press the trigger to save the setting, and when the measured temperature exceeds the set value, the buzzer will sound an alarm.
2. Low Alarm setting:
Long press the MODE key to enter the settings, short press the MODE key to switch to the low alarm setting (Alarm Low) when the value flashes, you can press ▲/▼ Key to set the required alarm value, press the trigger to save the setting, and when the measured temperature exceeds the set value, the buzzer will sound an alarm.
3. Emissivity setting:
Long press the MODE key to enter the setting, short press the MODE key to switch to (ε) emissivity setting, at this time, the instrument emissivity (ε) flashes, refer to (emissivity parameter table) and short press ▲/▼ Keys to set the required emissivity value, and press the trigger to save the setting.
4. Temperature unit setting:
Long press the MODE key to enter settings, short press the MODE key to convert to ($^{\circ}C/^{\circ}F$) units, the unit symbol of ($^{\circ}C/^{\circ}F$) on the display screen

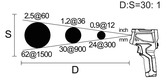
flashes, press ▲/▼Key to set the required temperature unit, and press the trigger to save the setting.
5. Laser settings:
The instrument screen lights up and press ( ) shortly to activate or turn off the laser aiming function.
6.Maximum Measurement:
When the instrument screen is lit, short press ▲/▼The key screen displays the Max symbol, at which time the instrument locks the maximum measurement value.
7. Minimum measurement:
When the instrument screen is lit, short press ▲/▼Press the key to the screen to display the Min symbol, at which time the instrument locks the minimum measurement value.
8. Average Measurement:
When the instrument screen is lit, short press ▲/▼The key to the screen displays the Avg symbol, at which point the instrument locks the average measurement value.
9. Temperature difference measurement:
When the instrument screen is lit, short press ▲/▼Press the key to the screen to display the Diff symbol, at which time the instrument locks the measured value of the temperature difference value.
10. K-type thermocouple temperature measurement
Insert the K-type thermocouple plug into the thermocouple socket of the instrument according to the positive and negative pole signs, pull the trigger and display the ( ) symbol on the instrument screen. During measurement, the thermocouple probe contacts the measured object, and the screen displays the K-type thermocouple temperature and irradiation temperature.

6.The target distance ratio (D:S)

The instrument has a certain angle of view and field of view, as shown in the figure below



It is necessary to ensure that the measured object fills the field of view of the instrument, that is, the thermometer only "sees" the measured object and "cannot see" other objects. The larger the measured object, the farther the measurement distance, the smaller the measured object and the doser the measurement distance. The ratio of the measuring distance to the measured target size is D:S/30: 1.
As shown in the figure below:



7. Emissivity

Emissivity is the ability of an object's surface to radiate infrared rays. The greater the emissivity, the stronger the radiation ability of the object's surface.
The emissivity of most organic or metal oxidized surfaces is between 0.85 and 0.98. The emissivity of this thermometer is 0.95 by default. When measuring, the emissivity of the thermometer should be set to be consistent with the emissivity of the measured object. Please pay attention to the influence of emissivity on the measurement results when measuring.
Emissivity reference table

Measured surface		Emissivity
Metallic aluminium	Oxidate	0.2~0.4
	A3003 alloy (oxidation)	0.3
	A3003 alloy (rough)	0.1~0.3
Brass	Polish	0.3
	Oxidate	0.5
Copper	Oxidate	0.4~0.8
	Electrical terminal board	0.6
Hastelloy B-2		0.3~0.8
Nickalloy	Oxidate	0.7~0.95
	Sand blast	0.3~0.6
	Electropolishing	0.15

Iron	Oxidate	0.5~0.9
	Get rusty	0.5~0.7
Iron (casting)	Oxidate	0.6~0.95
	Uncoxidized	0.2
	Fuse and cast	0.2~0.3
Passivation of iron (forging)ate		0.9
Lead	Coarse	0.4
	Oxidate	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
	Polished steel plate	0.4~0.6
	Polished steel plate	0.1
Zinc (Zn)	Oxidate	0.1
Asbestos		0.95
Asphalt		0.95
Basalt		0.7

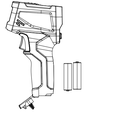
Carbon (unoxidized)	0.8~0.9
Graphite	0.7~0.8
Carborundum	0.9
Pottery and porcelain	0.95
Clay	0.95
Concrete	0.95
Cloth	0.95
Glass plate	0.85
Gravel	0.95
Plaster	0.8~0.95
Ice	0.98
Limestone	0.98
Paper	0.95
Plastic	0.95
Soil	0.9~0.98
Water	0.93
Wood	0.9~0.95

8. Technical parameters

Display	VA reverse color screen		
D: S	30 : 1		
Spectral Response	8 ~ 14um		
Resolution	0.1℃/0.2℉		
Emissivity	0.10 ~ 1.00		
Laser	< 1mW/620 ~ 690nm Level 2		
Response time	< 0.5 S		
Automatic shutdown	About 35 seconds		
	☐	☐	☐
Temperature range	-40℃ ~ 1050℃	-40℃ ~ 1350℃	-40℃ ~ 1650℃
	-40℉ ~ 1922℉	-40℉ ~ 2462℉	-40℉ ~ 3002℉
Irradiation accuracy	-40℃ ~ 0℃ ± (3℃/8℉)		
	1 ~ 800℃ ±(1.5%+2℃)		
	801℃ ~ 1200℃±(3%℃)		
	1201℃ ~ 1650℃±(5%℃)		
K type thermocouple temperature range	-40℃ ~ 600℃ (-40℉ ~ 1112℉)		
K type thermocouple temperature accuracy	±(1.5%+2℃/4℉)		
operating environment	0 ~ 50 ℃/10%-90% RH		
Storage temperature	-20℃ ~ 60℃		
Dimensions	173 × 102 × 54 mm		
Power supply	2x1. 5V AA battery		
Weight	Approximately 210g (battery not included)		

9. Battery replacement

When the battery power is insufficient, the screen displays the ( ) undervoltage symbol, at which time the battery must be replaced. Open the battery cover and replace it with two new 1.5V AA batteries. See the image below:



10. Accessories

1、Infrared Thermometer	×1
2、Instruction Manual	×1
3、Type K thermocouple	×1
4、Two 1.5V AA batteries	×2
5、Instrument storage bag	×1