



INFRARED THERMOMETER INSTRUCTION MANUAL



MODEL: HO-T2028

CONTENTS

- Scope of Application1
- Product Feature1
- Product Characteristics1
- Contraindications1
- Special Storage Conditions, Methods1
- Technical Parameters1
- Key Components2
- Accessories2
- Method of Use3
- Troubleshooting6
- Electromagnetic Compatibility7

Thank you for purchasing the Hsiao Medical Infrared Thermometer.

In order to use this product safely, please read the Instruction Manual before use.

After reading, please properly keep, in order to look up, reference at any time.

This product is powered by 3V, please use AAA alkaline batteries.

This product is only for the use of measuring body temperature, can not be used in disease diagnosis. Consult your doctor at treatment.

Use correctly:
The correct use is the key to measurement accuracy, otherwise it may cause measurement errors. Because infrared temperature measurement has higher requirements on the surrounding environment, please follow the instructions below.

- In standby mode, press the "Switch/Memory" button to turn on the device. After the LCD screen is fully displayed for 1 second, displays "—" or "—" indicates that the device enters the standby state. In the standby time about 30 seconds there is no button operation, the product will automatically shut down. In standby mode, press the "Switch/Memory" button to measure. The measurement is completed when the LCD screen displays the temperature or after the beep sounds, and the time is about 1 second.
- The product cannot move out of the measurement field when the measurement is not completed.
- When measuring body temperature, point the product display above the center of the forehead and above the center of the eyebrow and keep it vertical. The measurement site must not be covered by hair. The recommended distance between the product and the forehead is about 3cm-5cm. (As shown below)

Tip: If the measured part (forehead) cannot be guaranteed in a constant environment, it is recommended to measure with a body surface that is not exposed (such as the chest or abdomen).

- Do not discard the product will. Please dispose of this product's waste or residue in accordance with local laws and regulations.
- When the measured person comes from a place where there is a big difference with the measured ambient temperature, please wait for 5 minutes, and do not measure until the temperature is consistent with the ambient temperature, otherwise the measured result will be affected.
- Five fingers palms with forehead sweating, use of cold compresses and other cooling measures will make the measurement results low, should be avoided in this case.
- When the product is taken out from a place with a large difference in temperature from the environment to be measured, the product should be placed in the environment for 20 minutes before use.
- The surrounding environment of the tested person should be stable, and it should not be measured in places with large airflow such as fans and air vents of air conditioners.
- Do not use the product in direct sunlight.
- It is recommended to measure about 3 times during the measurement, and the interval between each measurement is 3-5 seconds, which is based on the most displayed data.

Setting adjustment:
The product can modify the default setting parameters. Before leaving the factory, factory settings have been made for different sales markets. It is recommended not to modify the factory default values. If there is a need to modify, please follow the steps below.

- Press the "SWITCH" to turn on the device, press the "SWITCH" to measure the temperature at a distance of 30cm to the human body or object. The response time is about 1 second. The temperature mode is Surface temperature / Body temperature; press the "MODE" button to switch the Body temperature / Surface temperature.
- Temperature unit: Celsius unit: C; Fahrenheit unit: F. Press the "SET" button to switch the unit between Celsius / C or Fahrenheit / F. When the device is turned on, the default is the unit from the last shutdown.

4

5

6

7

8

9

10

Scope of Application
The clinical temperature of the patient was measured by infrared method. It is used to measure the temperature of the forehead. It is suitable for people of all ages to show the body temperature of the patients by measuring the thermal radiation on the forehead.

Product Feature
Measurement error: $\pm 0.3^{\circ}\text{C}$.
Fast: Measurement time is less than 1 second.
Ease of Use: One-button measurement and easy operation.
Non-contact: To measure the forehead, don't contact with human skin, avoid cross infection.
Overtemperature: Freely set over-temperature prompt temperature.
Usage Counter: Button 100,000 times.
Large Screen Display: Large screen LCD backlight display, can clear reading at night.
Data storage: Store 32 groups of measuring data, easy analysis and comparison.
Modify settings: Can change the setting parameters.

Product Characteristics
1. According to prevent electric shock type: Internal power device.
2. According to the degree of shock protection: II-type application part.
3. According to the protection of harmful liquid level: Ordinary equipment.
4. Classified by safety level for use with flammable anesthetic gas mixed with air or with flammable anesthetic gas mixed with oxygen or nitrous oxide. Devices that cannot be used with flammable anesthetics.
5. Thermometer classified by operating mode: Continuous operation mode.
6. Thermometer does not have application parts for protection against defibrillation discharge effects.
7. The thermometer no signal input, signal output.
8. Rated voltage of the device: 3V.
9. Non-permanent installation equipment.
10. Electromagnetic compatibility GB 4824 classification: Group 1 of class B equipment.

Contraindications
Not Applicable.

Special Storage Conditions, Methods
Product must be kept clean and in a dry place.
Do not place the product in a place subject to electric shock.
Do not place the product in above 55°C or above -20°C, humidity higher than 95% of the storage in extreme temperature environment.

Technical Parameters
1. Normal working environment: Temperature: 10°C to 40°C, Relative Humidity: 85%.
2. Power supply voltage: DC 3V (2 pieces AAA alkaline batteries)
3. Dimensions: 146mm x 100mm x 30mm (length x width x height)

Contraindications
Not Applicable.

Special Storage Conditions, Methods
Product must be kept clean and in a dry place.
Do not place the product in a place subject to electric shock.
Do not place the product in above 55°C or above -20°C, humidity higher than 95% of the storage in extreme temperature environment.

Technical Parameters
1. Normal working environment: Temperature: 10°C to 40°C, Relative Humidity: 85%.
2. Power supply voltage: DC 3V (2 pieces AAA alkaline batteries)
3. Dimensions: 146mm x 100mm x 30mm (length x width x height)

Troubleshooting

FAQ 1: The temperature cannot be displayed, and all of them are displayed after power on (4 "F" shapes). Where is the problem?
Answer: Non-contact infrared thermometer can be basically judged to be caused by insufficient battery power. You can try to replace the battery with a new one.

FAQ 2: When the body temperature of some human bodies is measured in the same environment, "Lo" appears. What is the reason?
Answer: The reason is to be excluded as follows:
1. The measurement distance is too far. At this time, the temperature of the air may be measured. The Instruction Manual requires a distance of 3cm-5cm.
2. "Lo" may appear when the forehead of measured human body is covered with hair, sweat is on the forehead, has been paired with airtight plastic seals and synthetic drugs, the forehead is pointed at the air conditioner, and strong wind is blown across the surface. Heat for 5-10 minutes in a stable environment before measuring.

A. There are very few people whose surface temperature is lower than that of ordinary people. For individual shows "Lo" every time, the forehead temperature can be compared with others by induction with the forehead, and then by others for a comparison.
B. When the body temperature of an individual (not all human bodies) appears "Lo", it can be determined when the body temperature is normal, and the main concern is the overtemperature prompt (the "H" appears in the overtemperature prompt). The appearance of "Lo" indicates that the surface temperature of the forehead of the human body is very low at this time, exceeding the display range of the product.

The main reasons why the screen shows "Lo"

Reason for displaying "Lo" information	Suggestion
Overpowering or overcharging measurement	Make sure you are not overcharging on the forehead.
Cold air blows on forehead	Make sure you are not blowing directly on the forehead.
Forehead not completely dried	Wait for 10 minutes after cold compress.
The measurement distance is too far	Recommended measurement distance is 3cm-5cm.

FAQ 3: Does the product harm the human body and does it have radiation to the human body?
Answer: The product of the product is to calculate the body temperature by collecting the infrared radiation of the human body. The product does not directly contact the human body and does not cause cross infection of different human bodies. The infrared thermometer produced by our company receives infrared energy released by the human body. No harm to human body, hope that the majority of consumers can use it with confidence.

FAQ 4: What is the difference between a non-contact infrared thermometer and a mercury thermometer?
Answer: The contact electronic thermometer or mercury thermometer needs to directly contact the human body, which is likely to cause cross infection between different human bodies. The mercury thermometer has a long measurement time, is not easy to read and is not safe, especially when measuring the temperature of children, because of its toxicity and not easy to clamp, to bring great inconvenience to the patients.

4. Weight: 130g (Excluding battery)
5. Measuring range: 32.0°C-34.0°C $\pm 0.2^{\circ}\text{C}$; 35.0°C-42.0°C $\pm 0.2^{\circ}\text{C}$;
6. Accuracy: 42.1°C-42.9°C $\pm 0.3^{\circ}\text{C}$
7. Resolution: 0.1°C
8. Power consumption: $\leq 450\text{mW}$
9. Measuring distance: 3cm-8cm
10. Auto Power-off: $< 30\text{s}$

Product Description
This product consists of infrared temperature sensor, probe cover, display unit, power supply circuit, and measurement circuit. The temperature is measured and displayed using infrared temperature sensing.

Key Components

Name	Model	Supplier
Infrared sensor	HL-5001	为芯
Shell	ABS	东莞市康柏
IC	HT66F0185	HOLTEK

Accessories
Instruction Manual 1pc; Certification 1pc;

Electromagnetic compatibility

Attention:
- HO-T2028 meets the requirements of electromagnetic compatibility of IEC60529 standard.
- Users should read and use according to the electromagnetic compatibility information provided in the accompanying documents.
- Portable and mobile RF communication equipment may affect the performance of the HO-T2028. Avoid strong electromagnetic interference when using it, such as near mobile phones, microwave ovens, etc.
- Guidance and manufacturer's declaration are detailed in the Annex.

Warning:
- The equipment or system should not be used close to or stacked with other equipment. If it must be used close to or stacked, it should be observed to verify that it can operate normally in its use configuration.
- Use of accessories and cables other than those specified by the manufacturer of the equipment or system as spare parts for internal components may result in increased emissions of the equipment or system or reduced immunity.
- Equipment and systems operating below the minimum amplitudes or minimum value described in the manual may cause inaccurate results.

Annex

Guidance and manufacturer's declaration - electromagnetic emissions

The HO-T2028 equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the HO-T2028 should ensure that it is used in such an environment.

Launch test	Compliance	A Guide to the Electromagnetic Environment
GB4824 RF emission	Group 1	The HO-T2028 infrared Thermometer uses RF energy only for its internal functions. Therefore, its RF emissions are very low and may not cause any interference to nearby electronic equipment.
GB4824 RF emission	Class B	The HO-T2028 infrared Thermometer is suitable for use in all buildings in the home and directly connected to the public low-voltage power supply network for the home.

Guidance and manufacturer's declaration - electromagnetic immunity

The HO-T2028 is intended for use in the electromagnetic environment specified below. The customer or the user of the HO-T2028 should ensure that it is used in such an environment.

Immunity test	GB6100 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) GB/T 17626.2	±1kV Contact ±2kV Air	±1kV Contact ±1kV Air	Floors should be wood, concrete, or ceramic tile. Floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient GB/T 17626.4	±2kV power lines ±1kV I/O lines	Not Applicable	The grid power supply should be of the quality used in a typical commercial or hospital environment.

Method of Use

Precautions:
- The Instruction Manual and Technical Instruction of this product are combined.
- This product has no parts for users to repair or debug, so the technical data of circuit diagram, component list and etc. are not provided in this manual. If there are qualified technical personnel can request from the production enterprises, the production enterprises will provide.
- Follow the maintenance recommendations in this manual.
- This product is suitable for professional use or home use.
- Keep the product out of the reach of children.
- The ambient temperature used this product must be between 10°C - 40°C.
- This product must be kept clean and stored in a dry place.
- Do not place the product in a place subject to electric shock.
- Do not place the product in an extreme temperature environment above 55°C or below -20°C.
- Do not place the product in an environment with a humidity higher than 95%.
- The infrared scanner on the front of this product is a single part.
- Do not touch the infrared scanner with your fingers.
- Do not expose the infrared scanner to sunlight or immersion in water.
- Do not drop the product.
- If you find any problems, you should contact the seller, you cannot repair the product yourself. Note: If the original parts are supplied with parts not provided by the manufacturer, measurement errors may result.
- The product is a measuring product. It is recommended to check the accuracy of the product with the manufacturer or a qualified third party agency at one-year intervals.
- Do not use in an environment with electromagnetic interference.
- Dispose of waste and residues at the end of the product use life in accordance with local laws and regulations.
- Temperature below 32°C display "Lo", 32°C-42°C normal display, above 42°C display "H". Working voltage: 2.7-3.5V. The screen cannot display when below -2.7V, and the IC can work normally between 2.2-5.5V.

Battery installation:
Use 2pcs AAA alkaline batteries, please pay attention that the positive and negative electrodes of the batteries cannot be reversed. (As shown on the right)

Surge GB/T 17626.5	+1kV differential ±2kV common	Not Applicable	The grid power supply should be of the quality used in a typical commercial or hospital environment.
Voltage dips, short interrupts and voltage variations on power supply input lines GB/T 17626.11	+5% UT for 0.5 cycle (at UT > 50% dip) 40% UT for 5 cycles (at UT > 25% dip) 70% UT for 25 cycles (at UT > 10% dip) 85% UT for 50 (at UT > 5% dip)	Not Applicable	The grid power supply should be of the quality used in a typical commercial or hospital environment. If the user of the HO-T2028 needs to run continuously during power interruption, it is recommended that the HO-T2028 be powered by an uninterruptible power supply or battery.
Power frequency magnetic field (50/60Hz) GB/T 17626.8	3A/m	3A/m, 50/60Hz	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Note: UT refers to the AC normal voltage below the test voltage is applied

Guidance and manufacturer's declaration - electromagnetic immunity

The HO-T2028 is intended for use in the electromagnetic environment specified below. The customer or the user of the HO-T2028 should ensure that it is used in such an environment.

Immunity test	GB6100 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF GB/T 17626.5	3 Vrms 150 MHz to 80 MHz	Not Applicable	Portable and mobile RF communications equipment should not be used close to any part of the HO-T2028 than the recommended isolation distance, including cables. This distance should be calculated by a formula corresponding to the frequency. Recommended isolation distance: $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 1.2\sqrt{P}$ 800 MHz to 2.5 GHz Among them, P is according to the transmitter maximum output rated power provided by the transmitter manufacturer, in Watts (W), and d is the recommended separation distance in meters (m).
Radiated RF GB/T 17626.3	3 V/m 80 MHz to 2.5 GHz	3 V/m	The field strength of the tested RF transmitter is determined by surveying the electromagnetic field. In case the frequency range should be lower than the compliance level, interference may occur near the equipment marked with the following symbol.

Note 1: At 80 MHz and 800 MHz, the higher frequency band formula is used.
Note 2: These tables may not be suitable for all situations. Electromagnetic wave propagation is affected by absorption and reflection from buildings, objects, and humans.

4

5

6

7

8

9

10

Warranty

1. From the day of purchase, this product enjoys a 1-year free warranty with a shopping invoice.
2. We will not provide free warranty services for failures caused by personal reasons of the following users:
(A) Failure caused by unauthorized disassembly and modification.
(B) Failure caused by accidental drop during use and handling.
(C) Failure caused by lack of reasonable maintenance.
(D) Failure caused by not following the correct instructions in the Instruction Manual.
(E) Failure caused by improper repairs in repair shops not authorized by our company.
3. Repair services outside the warranty will be charged according to regulations.
4. When requesting warranty service, please consult the after-sales service department.
5. Ensure that repair parts will be provided within five years after the product is discontinued.
Note:
Please keep this card properly. When repair is needed, please contact our customer service center with this card and invoice. Phone: +86-663-2758666.

Warranty Registration Card

Product Model: HO-T2028 Body code: _____

Store Name: _____ Date of purchase: _____

Username: _____ User Address: _____

After sales service unit: Guangzhou Hsiao Medical Apparatus Co., Ltd.
Address: Nanyang Industrial Zone, North Luisha, Puning City, Guangdong, China
Telephone: +86-663-2758666
Fax: +86-663-2925599
Postcode: 515300
Website: www.hsiaonet.cn

After-sales service line: +86-663-2758666
Monday to Friday: 8:00-18:00
Saturday: 8:00-18:00

a. The field intensity of fixed transmitters, such as: base stations for wireless (cellular / cordless) telephones and ground mobile radios, amateur radios, AM (amplitude modulation) and FM (frequency modulation) radio broadcasts, and television broadcasts. Cannot be predicted accurately.
To assess the electromagnetic environment of fixed RF transmitters, surveys of electromagnetic sites should be considered. If the measured field strength of HO-T2028 is higher than the RF compliance level of the above application, you should observe HO-T2028 to verify its normal operation. If abnormal performance is observed, supplementary measures may be necessary, such as reorienting or repositioning the HO-T2028.
b. In the entire frequency range from 150 kHz to 80 MHz, the field strength should be lower than 3 V/m.

Recommended isolation distance between portable and mobile RF communication equipment and HO-T2028

HO-T2028 is expected to be used in an electromagnetic environment where radiated RF disturbance is controlled. According to the maximum output power of the communication equipment, the purchaser or user of HO-T2028 can prevent electromagnetic interference by maintaining the minimum distance between the portable and mobile RF communication equipment (transmitter) and HO-T2028.

Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 MHz ~ 80 MHz $d = 1.2\sqrt{P}$	800MHz ~ 800MHz $d = 1.2\sqrt{P}$	800 MHz ~ 2.5 GHz $d = 2.3\sqrt{P}$
0.01	Not Applicable	0.12	0.23
0.1	Not Applicable	0.38	0.73
1	Not Applicable	1.2	2.3
10	Not Applicable	3.8	7.3
100	Not Applicable	12	23

For the rated maximum output power of the transmitters not listed in the table above, the recommended separation distance d (meters (m)) can be determined using the formula in the corresponding transmitter frequency column. Here P is the transmitter maximum output rated power provided by the transmitter manufacturer, in Watts (W).
Note 1: At 80 MHz and 800 MHz, the higher frequency range formula is used.
Note 2: These guides may not be suitable for all situations. Electromagnetic propagation is affected by absorption and reflection from buildings, objects and people.

Registered Name/Manufacturer: Guangzhou Hsiao Medical Apparatus Co., Ltd.
Registered Name/Production Address: Nanyang Industrial Zone, North Luisha, Puning City, Guangdong, China
Phone: +86-663-2758666 Fax: +86-663-2925599 Postcode: 515300
Sales Hsiao: +86-663-2758666
Website: www.hsiaonet.cn
Manual preparation date: 2020-01-01