

# Infrared Thermometer USER MANUAL



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## 1. Summary of infrared thermometer

Thanks for choosing our Infrared Thermometer. The YS-TWA-1 (FT-100B) Infrared Thermometer is used to measure human body temperature based on the relationship between temperature and measurable infrared radiation.

Simply aim the unit's probe toward the surface to be measured to obtain a quick and accurate temperature. To ensure proper use, please be sure to read this user manual carefully, paying close attention to the safety precautions.

- In order to use this product correctly, please read the user manual before use
- In order to properly use this product, please carefully read the full text of this manual before using, in particular the safety precautions' section
- Please keep the instructions on the side for easy checking

### Basic principles:

All objects above absolute zero temperature emit certain percentage of infrared radiation energy based on its temperature. The amount of the radiation energy and the distribution of the wavelength have very closely relationship. When human body temperature is between 36-37°C, it emits wavelength 9-13um of infrared radiation. Based on this principle, according to the relationship between surface forehead temperature and eardrum of ear temperature, we are able to measure the human body actual temperature.

## 2. Safety precautions

- Use of this thermometer is not intended to be a substitute for consultation with your physician. It is dangerous for user to perform a self-evaluation and self-treatment based on the measuring result. Be sure to follow doctor's instruction
- Keep the thermometer out of reach of children. For accidental swallow of battery or other component, please consult the doctor at once.
- Don't throw the battery into fire.

### Notice

- The device is precision instrument don't drop, tramp or impose any vibration or impact on the thermometer.
- Do not touch the lens of the probe with your fingers, and do not disassemble the device by yourself.
- Before measuring forehead temperature, make sure the hair re-moved, sweat dried.
- After doing some exercise, eating and bathing, you should stay still for about 30 minutes indoor before measurement.
- When ambient temperature varies a lot, to make sure the measurement data reliable and stable the thermometer should be placed indoors for about 30 minutes before using.
- There is no absolute standard for temperature of human, so please try to collect the recording of individual temperature in the usual, as a reference for having a fever or not.

- Do not measure the sites of scarred tissue or tissue compromised by skin disorders, because sensing body temperature from sites of scarred tissue or tissue compromised by skin disorders.
- Do not measure the site of forehead temperature if that patients has trauma on forehead.
- Do not measure if that patient is treated with certain drug therapies.
- Do not immerse the device into water or any other liquid, and not directly sunlight exposure.
- Do not use a mobile or cordless phone near the thermometer when measuring.
- In order to ensure the accuracy of measurement data, please don't take measurement of body temperature in strong electromagnetic interference environment (such as microwave, high frequency equipment operation environment).
- Do not disassemble, repair, or modify the unit.
- This thermometer only a personal device, please do not user for others.
- Don't touch the battery output when measuring.
- The thermometer must be stored according to the technical specifications.
- The materials (ABS) had passed the ISO 10993-5 and ISO 10993-10 standard test, no toxicity, allergy and irritation reaction. They are compliance with the MDD requirements. Based on the current science and technology, other potential allergic reactions are unknown.
- The patent is an intended operator. The patient can measure, read data and replace battery under normal circumstances and maintain the device and its accessories according to the user manual.
- The device is not intended for PATIENT transport outside a healthcare facility.

### Recommendations

1. Don't use this thermometer for other purposes.
2. It is forbidden to leave the product exposed to any chemical solvent, direct sunshine or high temperature.
3. Don't expose the thermometer under direct sunlight long time so as not to damage the battery.
4. Do not measure while talking on the phone.
5. Please report to MANUFACTURER if any unexpected operation or events occur.

## 3. Intended use

This thermometer is intended to measure forehead temperature at home or hospital, including infants, children and adults. For the safety reason, children or the baby's temperature must be measured by parent or adults.

## 4. Temperature measurement mode and range description

The infrared thermometer has the following measurement mode:

- 1) Forehead temperature measurement mode--measures the skin surface of human forehead's temperature accurately, taking place of traditional mercury thermometer and electrical thermometer.

### Normal temperature range for different measuring position Normal forehead temperature range for different ages

Measuring position	Normal temperature(°C)	Normal temperature(°F)
Anus	36.6-38.0	97.9-100.4
Oral	35.5-37.5	95.9-99.5
Armpit	34.7-37.3	94.5-99.1
Forehead	35.8-38.0	96.4-100.4

Ages	Normal temperature(°C)	Normal temperature(°F)
0-2 years old	36.4-38.0	97.5-100.4
3-10 years old	36.1-37.8	97.0-100.0
11-65 years old	35.9-37.6	96.6-99.7
>65 years old	35.8-37.5	96.4-99.5

**NOTE:** The normal temperature and difference between the different body parts is different. To define yours, measure your temperature for at least 2 weeks at the same forehead position and at the regular time.

**NOTE:** Because the forehead temperature is affected obviously by the external environment (eg: environment, air convection and skin, etc), we advise that you take the forehead temperature only as reference.

## 5. Feature

### High reliability

This product has passed the manufacturer's internal life and reliability test, its life is  $\geq 10000h$ .

### A wide range of temperature

The measurement range:  
28.0°C-42.9°C (82.4°F-109.2°F).

## High accuracy

This product has passed the infrared thermometer performance standards of the European Union and China for measuring clinical requirements, measuring clinical Precision is no more than  $\pm 0.2^{\circ}C$  ( $0.4^{\circ}F$ ).

## Humanization design

When the temperature exceeds the range, LCD will display the Lo or Hi prompt. When operating environment exceeds the designed specifications, LCD will display the Err prompt. When the thermometer battery power is insufficient, it has low voltage icon. Has the hardware self-test function, when hardware malfunction is detected, LCD will display the ErrH or ErrE prompt.

## Power saving function

Start the thermometer without any operation, or no any operation after temperature measurement, the thermometer will shut off and LCD go out with one short beep in 60s  $\pm$  20s.

## Three-color backlight indication function

Designed with three-color backlight function to indicate the temperature rang. When the correct result is measured, the backlight from LCD will light different color to indicate the temperature range as below:

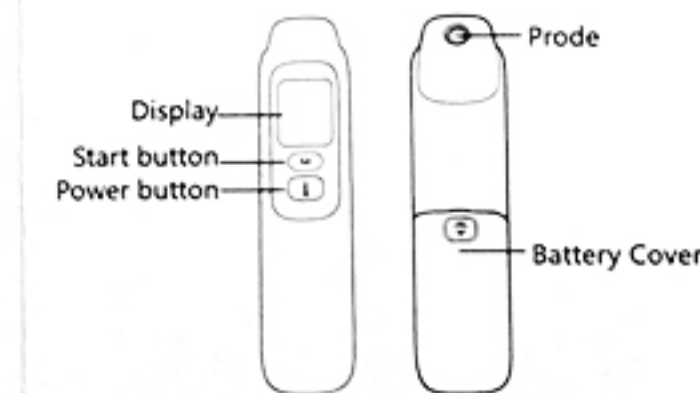
Temperature Range °C	Temperature Range °F	Indicator Color	Duration of light	Way of Beep
T < 37.5°C	T < 99.5°F	Green	4 seconds	1 long beep
37.5°C < T < 38.0°C	99.5°F < T < 100.4°F	Orange	4 seconds	3 short beep
38.0°C < T	100.4°F < T	Red	4 seconds	3 short beep

## Memory mode

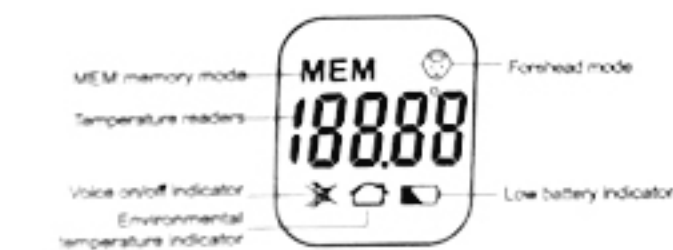
The thermometer stores the last 32 temperature measurements. The last temperature will be automatically displayed when it is turned on again. The display will show "MEM" icon.

## 6. Overall description

### Main component including



## LCD display description



## 7. Operation instruction Preparation

In the standby mode, press the [ ] key, the LCD will be fully displayed for about 2 seconds, and the backlight is turned on. Then, the LCD will display the previous measurement record value and the backlight of the corresponding color. After displaying the record value for about 2 seconds, turn off the backlight, the buzzer beeps briefly, and the instrument enters the temperature mode.

1. In the temperature measurement mode, press the [M] key to switch between human and object modes.
2. In the human measurement mode, press the [ ] key and then release it. The instrument will start measuring the target temperature. After about 1 second, the buzzer emits the corresponding alert sound, the measurement result is displayed on the LCD, and the backlight of the corresponding color is turned on. After about 3 seconds, the backlight is turned off, the unit symbol flashes, and the buzzer beeps shortly. Wait until the [ ] key is pressed to measure the temperature again.

3. In the measurement mode, long press the [ ] key for more than 3 seconds. The buzzer will beep shortly, the LCD display will turn off, and the instrument will enter standby mode.

**Note:** In the measurement mode, if the sound is on, it will be displayed on the LCD during use; if the sound is off, it will be displayed on the LCD.

When the instrument is in standby mode, there is no display on the LCD.

1. Press the [M] key in standby mode, the buzzer will beep shortly, and the instrument enters the record query mode. The LCD will display the first recorded value and the backlight of the corresponding color. There are 32 recorded values in total. Press the [M] button to cycle through them.

2. In the standby mode, press and hold the [M] key for more than 3 seconds, the buzzer will beep shortly. The LCD displays "F-1" and the instrument enters the function setting mode (Sound setting, temperature alarm point 1 setting, temperature alarm point 2 setting).
3. After entering the function setting mode, the first setting is the temperature unit setting. The LCD displays "F-1" firstly, and then the flashing temperature unit symbol is displayed. Each time the [M] key is pressed, the temperature unit on the instrument's LCD is switched once.

4. In the function setting mode, each time the **[F]** key is pressed, the setting functions are converted once, in turn F-1 (temperature unit setting), F-2 (sound on and off setting), F-3 (temperature Fever alarm point 1 (the minimum temperature with orange backlight on) setting), F-4 (temperature fever alarm point 2 (the minimum temperature with red backlight on), turn off.

5. In the temperature unit setting of the function setting mode, press the **[F]** key, the instrument enters the sound setting. In the sound setting state, the LCD displays the current sound on or off. Each time press the **[M]** key to switch the sound on or off function of the instrument once.

6. In the sound setting of the function setting mode, press the **[F]** key, the instrument enters the temperature alarm point 1 setting. In the temperature alarm point 1 setting state, the LCD displays the current alarm point temperature. Each time press the **[M]** key, the temperature alarm point increases by 0.1°C.

Note: Temperature setting range (37.0°C - 39.0°C)

7. In the temperature alarm point 1 setting of the function setting mode, press the **[F]** key, the instrument enters the temperature alarm point 2 setting. In the temperature alarm point 2 setting state, the LCD displays the current alarm point temperature. Each time press the **[M]** key, the temperature alarm point increases by 0.1°C.

8. In the temperature alarm point 2 setting of the function setting mode, press the **[F]** key. The LCD display turns off and the instrument enters standby mode.

9. In any setting state, no operation is performed on the instrument for about 60 seconds, and the buzzer beeps shortly, the LCD display is turned off and the instrument enters standby mode.

### Three-color backlight function

The backlight form LCD will light different color to indicate the temperature range as below table:

Temperature Range °C	Temperature Range °F	Indicator Color	Duration of light	Way of Beep
T < 37.5°C	T < 99.5°F	Green	4 seconds	1 long beep
37.5°C < T < 38.0°C	99.5°C < T < 100.4°F	Orange	4 seconds	3 short beep
38.0°C < T	100.4°F < T	Red	4 seconds	3 short beep

### 8. Care and cleaning

The probe tip and lens are the most delicate part of the thermometer. It has to be clean and intact to ensure accurate readings. If the thermometer is ever accidentally used, please clean the probe and lens as follows:

- Very gently wipe the surface with a cotton swab or soft cloth moistened with alcohol. Only use the thermometer after the alcohol has completely dried out.
- If the lens is damaged, contact the distributor.

### Clean the unit body:

- Use a soft, dry cloth to clean the thermometer display and unit body.
- If very dirty, use a soft with alcohol to cleaning.

### NOTES:

- Don't use abrasive cleaners.
- Don't use other non-recommended methods to perform disinfect.
- Non-waterproof, don't use the abrasive cleaner to clean the product, don't drop the thermometer in the water or the other liquid.

### 9. Maintenance

1) We do not authorize any institution or individual to maintain and repair of the product. If you suspect that the products have any questions, please contact the manufacturer or distributor to handle the case.

2) The user must not attempt any repairs to the device or any of its accessories. Please contact the retailer for repair.

3) Opening of the equipment by unauthorized agencies is not allowed and will terminate any claim to warranty.

**WARNING: No modification of this equipment is allowed!**

### 10. Calibration

The thermometer is initially calibrated at the time of manufacture. If this thermometer is used according to the user instruction, periodic re-adjustment is not required. If you doubt the accuracy of measurement, please contact distributor or manufacturer, the contact information see last page.

### 11. Storage

1) Don't put the thermometer under the sunshine, high temperature and moist environment or someplace which maybe get in touch with fire or is vulnerable to vibration.

2) Take out the battery if don't use the device in a long time.

### 12. Accessories

Quantity	Parts
1pc	YS-TWA-1(FT-100B) device
2pc	AAA batteries (optional)
1pc	User manual

### 13. Trouble-shooting

Troubles or error message	Checklists or situation	Countermeasures or solution
No response/ Automatically reset	The batteries are used up? Battery in wrong polarity or type? Poor battery contact	Replace new batteries. Take out the batteries and replace new ones. Take out batteries and reinsert it correct.
The thermometer show the symbol "Hi"	Temperature hampered by an air flux. In the forehead measurement mode: -- Temperature readings too close together. -- Measured the other object, such as the sunlight, the air from the fireplace. Hi: Higher than 42.9°C(109.2°F).	Please leave the status and wait for 30 minutes to measure. Re-measure according to the manual.
The thermometer show the symbol "Lo"	The hair and sweat prevent the temperature achievement. Temperature hampered by an air flux. In the forehead measurement mode: -- The measuring distance is too far. -- Measured the other object, such as the air from the air conditioner. Lo: Less than 28.0°C(84.0°F)	
Err	The ambient temperature is beyond of range of measurement (16°C-32°C/60.8°F-89.6°F)	Keep the thermometer in the room where temperature is (16°C-32°C/60.8°F-89.6°F) for 30 minutes
36.9°C	The hardware is damaged.	Excluding the possibility of temperature allowance first, then send the device to your dealer for repair
Err Err	Low battery, however you can use	Attention if the battery is too low
	Lower battery, however you can't use it	Replace the new battery.

### 14. Specifications


Device name	Infrared Thermometer
Model	YS-TWA-1(FT-100B)
Measurement mode	body temperature mode or Environment temperature mode
Measurement site	Forehead
Power supply	DC3V, 2* AAA batteries
Measuring range:	body temperature mode: 28.0-42.9°C Environment temperature mode: 28.0-50.0°C
Measuring accuracy: (At laboratory conditions)	±0.2°C/0.4°F during 35.5°C-42.0°C (95.0°F-107.6°F); ±0.3°C/0.5°F 34.0°C -35.4°C(93.2°F-95.7°F) and 42.1°C -42.9°C(107.8°F-109.2°F)
Clinical repeatability:	within ±0.3°C
Resolution of display	0.1°C/0.1°F
Operation condition	Temperature range 10-40°C Humidity ≤85% RH
Storage condition	Temperature: 20-50°C Humidity ≤90% RH
Size	135*36*40mm
Weight	about 67g(without batteries)
High body temperature hint	≥38.0°C(100.4°F)
Grade of waterproof	IP22
Electric shock	Internally powered ME equipment
Applied part	Type BF applied part, including the whole unit
Mode of operation	Continuous operation
Battery life	≥1000 times
Product life	2 years
Software version	V1.1
Note: Not intended to be sterilized. Not for use in an OXYGEN RICH ENVIRONMENT	

\*The above specifications are subject to change without prior notice.

15. Standard list  
Huangshan YASEE BioMedical Inc. declares that the YS-TWA-1(FT-100B) complies with following applicable standards:

EN 980	Symbols for use in the labeling of medical devices
EN 1041	Information supplied by the manufacturer with medical devices
EN 60601-1	Medical electrical equipment Part 1: General requirements for basic safety and essential performance
EN 60601-1-2	Medical electrical equipment--Part 1-2: General requirements for basic safety and essential performance-Collateral standard: Electromagnetic compatibility Requirements and tests
EN 60601-1-6	Medical electrical equipment-Part 1-6: General requirements for basic safety and essential performance-Collateral standard: Usability
ISO 80601-2-56	Medical electrical equipment part 2-56: particular requirements for basic safety and essential performance of clinical thermometers for body temperature measurement
EN 60601-1-11	Medical electrical equipment-Part 1-11: General requirements for basic safety and essential performance-Collateral standard: Requirements for medical electrical equipment and medical electrical systems used in home healthcare environment
EN 12470-5	Clinical thermometers-Part 5: Performance of infra-red ear thermometers(with maximum device)
ASTM E 1965	Standard Specification for Infrared Thermometer for Intermittent Determination of Patient Temperature
EN 62304	Medical device software-Software life-cycle processes
EN 62366	Medical devices-Application of usability engineering to medical devices
EN ISO 10993-1	Biological evaluation of medical devices-Part1: Evaluation and testing within a risk management process

### 16. Disposal


 At the end of the product lifecycle, do not throw this product into the normal household garbage, but bring it to a collection point for the recycling of electronic equipment.

Waste Electrical and Electronic Equipment can have potentially harmful effects on the environment. Incorrect disposal can cause harmful toxins to build up in the air, water and soil and can be harmful to human health.







### NOTES:

Handling of battery and wastes method, please act according to the native law to proceed to handle.

Take out the battery if you are not going to use the unit for a long time.

 To protect the environment, dispose of empty battery at your retail store or at appropriate collection sites according to national or local regulations.

### 17. Normalized symbols

	Manufacturer
	Follow operating instructions
	Caution! Consult accompanying documents.
	Type BF applied parts
	Batch code
	IP code of the device: this device's grade of ingress of solid foreign objects

	Date of manufacture
	02/96/EC (WEEE)
	Keep dry
	UP
	Fragile, handle with care
	Stacking layer limit


### 18. EMC declaration

1) The digital thermometer needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the ACCOMPANYING DOCUMENTS.  
2) Wireless communications equipment such as wireless home network devices, mobilephones, cordless telephones and their base stations, walkie-talkies can affect this equipment and should be kept at least a distance d=1.0m away from the equipment.

Note: As indicated in Table 6 of IEC 60601 1-2 for ME EQUIPMENT, a typical cellphone with a maximum output power of 2W yields d=1.0m at an IMMUNITY LEVEL of 10V/m.

### 19. Guarantee

We grant you a guarantee after the date of purchase for two year. Any damage caused by improper handling shall not be covered by the guarantee. Battery and packaging are also excluded from the guarantee. All other damage claims excluded. A guarantee claim must be submitted with the purchase receipt. Please pack your defective instrument well and send with sufficient postage to the distributor.

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