

I. Product introduction

This product is a professional medical infrared forehead thermometer that is dedicated for measuring human body temperature. It has been widely applied in schools, customs, hospitals, and families. The thermometer is simple to use and is provided with functions such as mode selection, LCD display, buzzer reminder, memory read, backlight reminding, temperature offset setting, alarm threshold setting, auto power-off, etc.

[Product performance, main structure]

(1) Product performance:

Temperature range: 0-80°C (object mode), 32-42.9°C (human body mode)
Measuring duration: about 1 second
Measuring distance: 1-5cm
Display mode: LCD display
External dimension: 154*96*42mm
Weight: 53g
The electronic thermometer is provided with auto power-off and self-detection functions; current consumption: static state OFF ≤ 10μA, dynamic state ON ≤ 100mA;
Power supply: 2 × AA battery (3.0V)

(2) Main structure:

It is mainly composed of ABS plastic casing, copper head structure, lens, PCB circuit board, IC, resistor, capacitor, infrared sensor, LCD, buzzer, and battery cable.
[Range of application]
It is applicable to measure temperature of object and human's forehead.

II. Basic operation principle

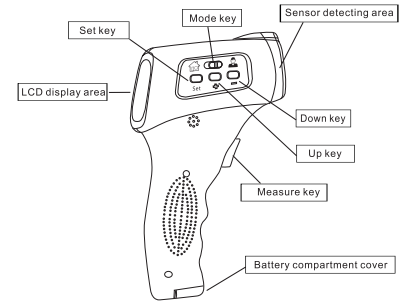
Aware of infrared temperature measurement principle will help you properly use this product and make data measured more accurate.

- All objects radiate and release energy into surroundings.
- Object's temperature is in direct proportion to the strength of radiated energy, i.e., the temperature will increase along with the radiated energy.
- Infrared radiation is the main energy radiated by human body, therefore, temperature of human body can be measured through measuring strength of infrared energy radiated by human body.
- Medical infrared forehead thermometer can accurately measure human body's temperature through F2 during weak infrared radiation energy radiated by human body and through complicated calculations, processing,

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and compensations. This product is in-built with infrared detector as well as relevant hardware and software to receive, analyze, and record the measured object and ambient temperature. Thus, once user places this product close to human's special part (forehead) and presses measure key, the infrared sensor will be immediately activated which will detect the thermal energy produced by blood flow in the artery, so as to accurately measure human body's temperature.

III. External structure

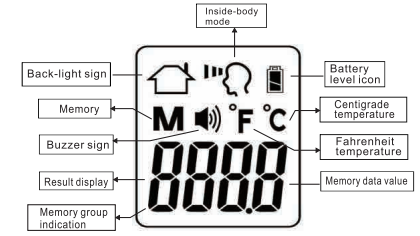


External diagram of the complete thermometer is as shown in [Fig 3-1]. The thermometer consists of:

- Sensor detecting area
- Measure key
- LCD display area
- Battery compartment cover
- Up key
- Down key
- Set key

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IV. Definition of display icon



Display icon interface is as shown in Fig 4-1

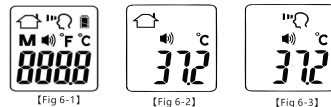
V. Technical parameters

Measure mode	Non-contact	
Measurement range	Human Body Mode	32.0°C ~ 42.9°C
	Object Mode	0~80°C
Accuracy of display	0.1°C	
	0°C ~ 31.9°C	±2°C
	32.0°C ~ 34.9°C	±0.3°C
	35.0°C ~ 41.9°C	±0.2°C
	42.0°C ~ 42.9°C	±0.3°C
	43°C ~ 80°C	±4%

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Applied ambient temperature	10-40°C/50~104°F
Battery size	DC 3V (2 pcs AA battery)
Display unit	Centigrade (°C) / Fahrenheit (°F)
Auto power-off	8 seconds
Battery level reminder	2.5V±0.2V
Back-light	Three-colour backlight
Memory capacity	32 sets of memory for measuring human body and object temperature each
Weight	±53g

VI. Operation instruction



[Fig 6-1]

[Fig 6-2]

[Fig 6-3]



[Fig 6-4]

1. Key instruction

Measure key: short press for measuring and starting up; up key: upward query of memory data, alarm value setting, fine tuning setting, buzzer setting, measure mode setting, deletion of current mode memory; down key: downward query of memory data, alarm value setting, fine tuning setting, buzzer setting, measure mode setting; mode toggle switch: mode switch; set key: set the mode

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2. Human body measurement

- Press measure key to run forehead temperature gun, after that, full screen will be displayed, as shown in [Fig 6-1], and then the current measured temperature will be displayed about 1s later;
- Switch the forehead temperature gun into human body temperature mode status, as shown in [Fig 6-3];
- Align and keep perpendicular the thermometer probe with the middle of forehead with a distance between 1-5CM, press measure key. "Your body temperature is 37.2°C" sound will be given out, and the measured value will be displayed to complete the measurement; if the body temperature exceeds temperature alarm point, "Error, please measure again" sounds will be given out;
- After completion of measurement, if there is no any other operation(s), it will be automatically powered off after 8 seconds.
- 3. Object temperature measurement
 - Press measure key to run forehead temperature gun, after that, full screen will be displayed, as shown in [Fig 6-1], and then the current measured temperature will be displayed about 1s later;
 - Switch the forehead temperature gun into object temperature mode status, as shown in [Fig 6-2];
 - Align and keep perpendicular the thermometer probe with the object to be measured with a distance between 1-5CM, press measure key. "37.2°C" sound will be given out, and then measured value will be displayed to complete the measurement;
 - After completion of measurement, if there is no any other operation(s), it will be automatically powered off after 8 seconds.



Fig 7-1 (green)



Fig 7-2 (red)



Fig 7-3 (yellow)

VII. Measure result description

• Body mode: green back-light will be shown if the measured value falls below 37.5°C, as shown in [Fig 7-1]; yellow back-light will be shown if the measured value is higher than or equal to 37.5°C but below 38.5°C, as shown in [Fig 7-3]; red back-light will be shown if the measured value is higher than or equal to 38.5°C but

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below 43.0°C, as shown in [Fig 7-2]

• Object mode: green back-light will be shown if the measured value falls between 0°C and 80°C

- Over-temperature mode:
 1. In case that the human body temperature is lower than 32°C, Lo will be displayed on the display screen, "Error, please measure again" sounds will be given out, and red back-light will be displayed.
 2. In case that human body temperature exceeds 42.9°C, Hi will be displayed on the display screen, "Error, please measure again" sounds will be given out, and red back-light will be displayed.
 3. In case that the object temperature is lower than 0°C, Lo will be displayed on the display screen, "Error, please measure again" sounds will be given out, and red back-light will be displayed.
 4. In case that object temperature exceeds 80°C, Hi will be displayed on the display screen, "Error, please measure again" sounds will be given out, and red back-light will be displayed.
 5. In case that object temperature is lower than 0°C or human body temperature is lower than 10°C, Lo will be displayed on the display screen, "Error, please measure again" sounds will be given out, and red back-light will be displayed.
 6. In case that environment temperature exceeds 40°C, Hi will be displayed on the display screen, "Error, please measure again" sounds will be given out, and red back-light will be displayed.

VIII. Operation setting

• Measure mode setting

Short press mode key to switch between human body mode and object mode

Menu	Function	Down key	Up key	Initial value	Remark
F-1	Temperature unit setting	Switch of temperature unit	Switch of temperature unit	Centigrade temperature	Optional with memory
F-2	Alarm point setting	To decrease 0.1 degree.	To increase 0.1 degree.	38 degrees	Invalid for object mode, effective scope: ±2 degrees
F-3	Temperature offset setting	To decrease 0.1 degree.	To increase 0.1 degree.	0.0 degree	Invalid for object mode, effective scope: ±1.6 degrees
F-4	Buzzer setting	On/Off switch	On/Off switch	On	Optional with memory

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• Temperature unit setting

Long press set key for 2 seconds in power on state; F1 will be displayed on screen which the current initial value will be centigrade; press up or down key to switch temperature unit; press set key to confirm and directly enter into F2 alarm point setting.

• Alarm point setting

Long press set key for 2 seconds; short press set key once after F2 has been displayed on the screen; enter F2 alarm point setting after F2 has been displayed on the screen with the initial value of 38.0 degrees; press down key to offset 0.1 degree downward while up key to offset 0.1 degree upward; set the alarm point setting; press mode key to confirm and directly enter into F3 temperature offset setting.

• Temperature offset setting

Long press set key for 2 seconds; press the set key twice to enter into F3 setting temperature offset interface with the initial value of 0.0 degree; press down key to decrease 0.1 degree while up key to increase 0.1 degree; set temperature offset value; press set key to confirm and directly enter into F4 buzzer setting.

• Buzzer setting

Long press set key for 2 seconds; short press set key three times to enter into F4 buzzer setting with current initial value of buzzer ON; press down/up key to switch buzzer's ON/OFF mode which will be correspondingly displayed on screen as "on" and "off"; press set key to confirm and memorize the configured setting and exit from setting mode; if the setting is not necessarily to be stored, set key is not required to be pressed and the thermometer will come into sleep mode after 8 seconds and exit.

• Memory query

After completion of each measure, the thermometer will automatically record the measured data and display such data at the lower right corner. You can press up/down key to check the stored data. 32 groups of body-inside and surface measured data can be stored, beyond that, measured data will automatically overwrite the first one.

Key Wake-up

1. After pressing measure key, press this key to wake up the thermometer, and the full screen will be displayed (500ms) for temperature measurement; after long pressing the key, it will execute the above short press action once until it is released.

Memory Deletion

1. Long press the up key for 3s, a word "CLR" will be displayed, indicating that the memory of the mode has been deleted.

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IX. Battery replacement

- In case that the battery voltage is lower than 2.51V, power shortage icon will flash as shown in [Fig 6-4], the thermometer will only respond key wake-up action while measurement cannot proceed. Battery shall be replaced immediately.

X. Troubleshooting

Error	Cause	Treatment
HI	Body-inside measure mode: > 42.9°C or environment temperature exceeds the maximum temperature range	Apply this thermometer within measurement range; if the issue continues, please call for after-sales service
LO	Body-inside measure mode: > 32.0°C or Body surface mode: > 0°C or environment temperature exceeds the minimum temperature range	Apply this thermometer within measurement range; if the issue continues, please call for after-sales service
Err	Data error	Please call for after-sales service
Battery icon flash	Low battery electric quantity	Please replace battery

XI. Transportation and storage

1. Transportation and storage of the thermometer: temperature ranges between -20°C ~ 60°C, relative humidity ≤85%
2. Packed product shall be subject to package transportation stimulation test. Common transportation means are allowed but rain, damp, squeeze, and mechanical collision shall be avoided.
3. The product shall be stored in a dry room with sound ventilation condition. The package box shall be placed 500mm above the ground. The store room shall be free of intense sunlight and other corrosive air.

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XII. Notes

1. Do not drop on the ground and twist the thermometer body.
2. Do not disassemble the thermometer body.
3. Since the infrared thermometer is without water-proof function, the thermometer can only be cleaned with dry cloth.
4. Do not place the thermometer close to place with high temperature or direct sunlight as well as contact any chemical solvent to prevent the product's functions been affected by chemical reaction of the thermometer component.
5. Please take out the battery if the thermometer will not be used for long term.
6. The waste batteries replaced shall be handled properly. Do not throw away carelessly, which may pollute the environment and water source.
7. In order to get stable and reliable measurement data, make sure to measure at an environment with a temperature higher than 10°C, preferably at room temperature.
8. If the environment temperature is lower than test temperature, it is recommended to put the thermometer in the place with a temperature higher than 10°C before using.
9. When measuring forehead temperature, make sure the forehead is clean and with no sweat, hair or fat, or otherwise the measured temperature will be lower.
10. When measuring body surface temperature, please note that the emissivity of object to be measured will influence the measurement results. See the following for the emissivity of common objects: glass: 0.94; plastic: 0.85; ceramic: 0.93; water: 0.95; rubber: 0.91; oxidized stainless steel: 0.85; polished stainless steel: 0.25.

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Medical Infrared Forehead Thermometer

Instruction Manual

Model: JZK-601