

AccuMed

Infrared Non-Contact Thermometer



Model: AT2102

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I. SAFETY PRECAUTIONS

- Follow the maintenance advice specified in this instruction manual.
- This device may be used for professional purposes and personal home use.
- Do not use this device for any other purposes than described by this user manual.
- This device must only be used in an ambient temperature range between 10°C and 40°C.
- This device must always be kept in a clean, dry area.
- Do not expose this thermometer to electric shocks.
- Do not expose this thermometer to extreme temperature conditions of $>55^{\circ}\text{C}$ or $<-20^{\circ}\text{C}$.
- Do not use this device in relative humidity higher than 85%.
- The protective glass over the lens is the most fragile part of the thermometer.
- Do not touch the glass of the infrared lens with your fingers.
- Clean the glass with a cotton ball lightly moistened with 95° alcohol.
- Do not expose the thermometer to direct sunlight or water.
- Never drop the device.
- **Should a problem occur with your device, please contact your retailer. Do not attempt to repair this device yourself.**

THE MANUFACTURER RESERVES THE RIGHT TO ALTER
THE SPECIFICATIONS OF
THE PRODUCT WITHOUT PRIOR NOTIFICATION

II. INTRODUCTION

The AT2102 Infrared Non-Contact Thermometer has been developed using the latest infrared technology. This technology allows temporal artery (TA) temperature to be taken at a distance of about 3cm~5cm away from the forehead. Precise, instantaneous, and without contact, the AT2102 is, up to now, the most suitable thermometer for temperature measurement. It has been demonstrated that this method of TA temperature measurement is more precise than the tympanic thermometry and better tolerated than rectal thermometry (1).

However, as with other types of thermometers, it is essential to use the AT2102 properly in order to obtain reliable and stable results. You are therefore advised to read this instruction manual and the safety precautions carefully before use.

(1)Greenes D, Fleisher G. Accuracy of a Noninvasive Temporal Artery Thermometer for Use in Infants. Arch Pediatr Adolesc Med 2001;155:376.

III. PRECAUTIONS BEFORE USE

The AT2102 is pre-set at the factory.
It is not necessary to calibrate the device when starting it up.

In order to obtain reliable and stable results, you are advised each time there is a significant change in the ambient temperature due to a change in environment, to allow the AT2102 to acclimatize to the new ambient temperature for 15 to 20 minutes before using it.

It is important to allow a 1 minute interval between each measurement.

IV. OPERATING PRINCIPLE

All objects, solid, liquid, or gas, emit energy by radiation. The intensity of this energy depends on the temperature of the object. The AT2102 infrared thermometer is therefore able to measure the temperature of a person by the energy the person

emits. This measurement can be taken thanks to an external temperature probe on the device which analyses and registers the ambient temperature. Therefore, as soon as the operator holds the thermometer near the body and activates the infrared sensor, the measurement is taken instantly by detection of the infrared heat generated by the arterial blood flow. Body heat can therefore be measured without any interference from the heat of the surrounding environment.

THE DIFFERENT METHODS OF TEMPERATURE MEASUREMENT

Core temperature

Core temperature is the most precise measurement and involves measuring the temperature in the pulmonary artery by means of a catheter equipped with a thermal probe which can read the temperature in situ. The same method is employed for probes measuring the esophageal temperature. However, such invasive temperature measurement methods require specific equipment and expertise.

Rectal thermometry

Rectal temperature adjusts slowly in comparison to the evolution of the body's internal temperature. It has been demonstrated that rectal temperature remains raised long after the internal temperature of the patient has started to drop and vice versa. Furthermore, rectal perforations have been known to occur as a result of this method and without appropriate sterilization techniques, rectal thermometry can spread germs often found in feces.

Oral thermometry

Oral temperature is easily influenced by recent ingestion of food or drinks and by breathing through the mouth. To measure oral temperature, the mouth must remain closed and the tongue lowered for three to four minutes which is a difficult task for young children to accomplish.

Axillary (armpit) temperature

Although it may be easy to measure axillary temperature, it has been proven that it does not provide an accurate measurement of the child's internal temperature. To take this type of temperature, the thermometer must be wedged tightly over the axillary artery. Despite the low sensitivity and relative inaccuracy of axillary temperature in detecting fever, this method is recommended by The American Academy of Pediatrics as a screening test for fever in newborns.

Tympanic Thermometry

In order to obtain a precise temperature reading, good command of the

measurement technique is required. The thermometer probe must be placed as close as possible to the warmest part of the external ear canal. An incorrectly placed probe could lead to a false temperature reading.

NORMAL TEMPERATURES ACCORDING TO MEASUREMENT METHOD

MEASUREMENT METHOD	NORMAL TEMP°
RECTAL	36.6°C ~ 38°C
ORAL	35.5°C ~ 37.5°C
AXILLARY	34.7°C ~ 37.3°C
AURICULAR	35.8°C ~ 38°C
TEMPORAL	35.8°C ~ 37.8°C

The temperature of the human body varies throughout the day. It can also be influenced by numerous external factors: age, sex, type, thickness of skin, etc.

ADVANTAGES OF TEMPORAL ARTERY (TA) TEMPERATURE

Infrared arterial temperature can be measured using a device placed on the forehead, in the temporal artery region. It has been demonstrated that this relatively new method of measuring temperature is more precise than tympanic thermometry and better tolerated than rectal thermometry.

The AT2102 thermometer has been designed to produce an instant forehead temperature reading without any contact with the temporal artery. As this artery is quite close to the surface of this skin and therefore accessible and given the blood flow is permanent and regular, it allows precise measurement of the temperature. This artery is linked to the heart by the carotid artery which is directly linked to the aorta. It forms part of the main trunk of the arterial system. The efficiency, speed, and comfort of taking a temperature from this area makes it ideal compared with other temperature measurement methods.

NORMAL TEMPERATURES ACCORDING TO AGE

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

PRACTICAL CONSIDERATIONS WHEN TAKING A TEMPERATURE

- In order to ensure that precise and accurate temperature measurements are obtained, it is essential that each user receive adequate information on and training in the temperature measurement technique when using this device.
- It is essential to remember that although procedures such as taking a temperature

may be simple they must not be trivialized.

- Temperature should be taken in a neutral context. The patient must not have undertaken vigorous physical activity prior to taking his/her temperature and the room temperature must be moderate.
- Be aware of physiological variations in temperature which must be taken into consideration when evaluating the results: temperature increases by 0.5°C between 6 am and 3 pm. Women have a temperature that is higher, on average, by around 0.2°C . Their temperature also varies in accordance with their ovarian cycle. It rises by 0.5°C in the second half of the cycle and at the early stages of pregnancy.
- When sitting, temperature is lower by about 0.3°C to 0.4°C than when standing.

HOW TO TAKE A TEMPERATURE

Aim at the FOREHEAD over the right temporal region from a distance of about 3cm~5cm, press the thermometer's measurement button, and the temperature is instantly displayed.



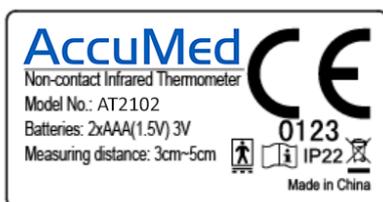
The reliability of the measurement cannot be guaranteed if the temperature is measured over another part of the body (e.g. arm, torso, etc.)

CONSTRAINTS

Please observe the following before any temperature measurements to ensure a stable and reliable result:

- Push back hair from the forehead
- Wipe away any perspiration from the forehead
- Avoid any drafts (e.g. from nasal cannulas, air conditioning, etc.)
- Allow a 1 minute interval between each measurement.
- Each time there is a significant change in the ambient temperature due to a change in the environment, allow the AT2102 to acclimatize to this ambient temperature for at least 15 minutes before using it.

V. BASIC INSTRUMENT



Symbol	Reference
AccuMed	Trade mark
	IEC 60417-5333, Type BF applied part
	IEC 60417-5031 Direct current
IP22	IEC 60529 Ingress protection
	WEEE Directive (2002/96/EC)
	Consult operating instructions

VI. FEATURES

1. Special design to take the Human Body Temperature with a 3cm~5cm (1.2~2 in) distance from forehead.
2. Reliable and stable measurement, thanks to the advantage Infrared Detection

System.

3. Audible alarm if temperature is more than 38°C (100.4°F).
4. Internal storage can hold up to 32 temperature measurements.
5. Backlit LCD digital display screen.
6. Temperature unit can be displayed in either Celsius or Fahrenheit.
7. Automatic power-off (30 sec) to conserve energy.
8. Longevity use (40,000 readings).
9. Practical, easy to use.

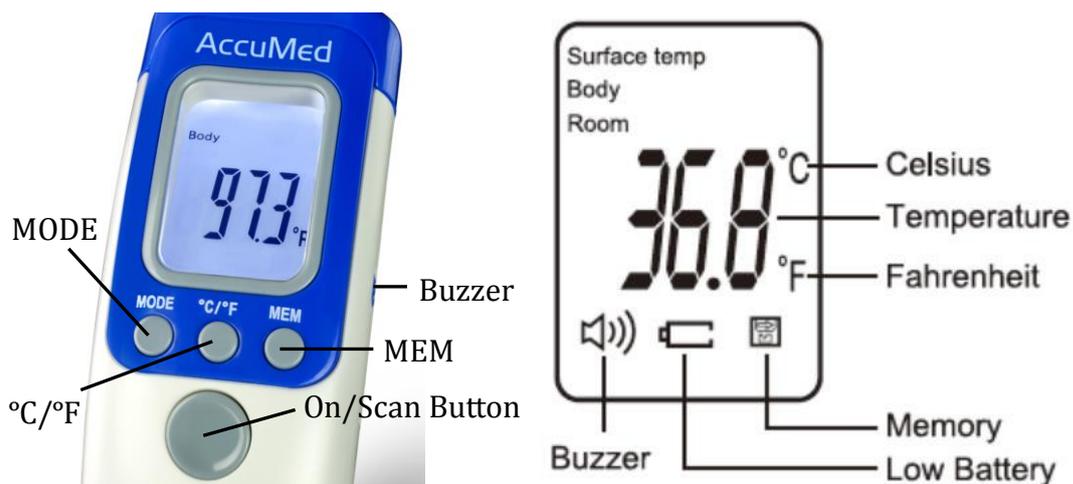
ADDITIONAL USAGE:

The AT2102 can also be used to measure the temperature of a baby-bottle or bath (by using the Surface Temp Mode), or room temperature (by using the Room Mode).

VII. INSTRUCTIONS

1. Install batteries (2-AAA Alkaline).
2. For the first use, or when inserting new batteries, wait from 10~15 minutes for the warm-up of the unit. This will allow the unit to become acclimated to the temperature of the room.
3. Press the "On/Scan" button, aim towards the forehead from a distance of 3cm~5cm, and press the "On/Scan" button again to begin the scanning process; the temperature is displayed in 1 second.
4. Before taking the temperature, make sure to remove hair and perspiration from the forehead.

VIII. SETTING AND FUNCTION OF MENU



1. Switch on the device

To power-on the device, press the "On/Scan" button for one second. The device will enter the standby mode showing "----°C" or "----°F" on the screen.

By pressing the "On/Scan" button again, you will get the measuring result in 1 second.

If inactivity exceeds 30 seconds, the device will automatically shut down.

2. Toggle Sound On/Off

On the right side, press the “” buzzer button to toggle the sound on/off.

3. Changing the Mode

a. Press “MODE” button, and the screen will display: “Body...°C”

b. Press “MODE” again and the screen will display: “Room...°C”

c. Press “MODE” again and the screen will display: “Surface Temp...°C”

Note: The thermometer default is set to “BODY” mode.

4. Toggle Between °C/°F

When the device is on, press the “°C/ °F” button to change between Celsius and Fahrenheit.

5. To view recent readings

Press the “MEM” (Memory) button, which will then display the last temperature, and allows for a view of the last 32 measurements.

To delete all memory on device, press and hold the “MEM” button for 5 seconds. Then press "MEM" button again, and the display will show "CLr."

Important!

The surface temperature differs from the internal body temperature. To obtain the internal temperature, always use the “BODY” mode. Please make sure to select “SURFACE TEMP” mode for an external area reading.

6. Recalibration of device via the F4 MENU

When there is a difference between AT2102 and a mercury thermometer, you can use the recalibration function to adjust the AT2102 to match with the mercury thermometer.

Instructions for recalibration:

In the On state, press the “MODE” and “°C/ °F” buttons, at the same time, for 3 seconds.

The screen will then display “F4”

Press “MODE” to increase by 0.1°C, and press “°C/ °F” to reduce by 0.1°C.

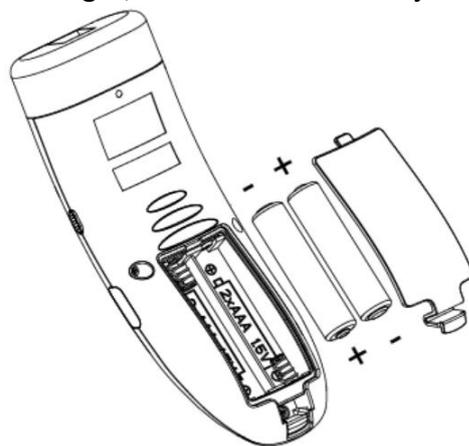
Press “MEM” button to save the setting.

In the cases of seasonal or environmental changes, a verification and adjustment should be carried out.

7. Changing the batteries

Display: When the LCD screen displays the flashing symbol , the batteries are in need of replacement.

Operation: Open the cover and replace the batteries, taking great care with the correct positioning. A mistake with this could cause damage to the apparatus and compromise the guarantee of your



AT2102. Never use rechargeable batteries. Use only batteries for single usage.

IX. TECHNICAL SPECIFICATIONS

1. Normal using condition
Ambient temperature: 10°C ~ 40°C (50°F ~ 104°F)
Relative humidity: ≤85%
2. Batteries: DC 3V (2 x AAA batteries)
3. Unit size: 130 x 45 x 55 mm (L x W x H)
4. Unit weight (without batteries): 75g
5. Temperature display resolution: 0.1°C (0.1°F)
6. Measuring range:
In body mode: 32°C ~ 42.9°C (89.6°F ~ 109.2°F)
In surface temp mode: 0°C ~ 60°C (32°F ~ 140°F)
In room mode: 0°C ~ 40°C (32°F ~ 104°F)
7. Precision:

32.0°C ~ 35.9°C (89.6°F ~ 96.6°F)	±0.3°C (±0.6°F)
36.0°C ~ 39.0°C (96.8°F ~ 102.2°F)	±0.2°C (±0.4°F)
39.1°C ~ 42.9°C (102.4°F ~ 109.2°F)	±0.3°C (±0.6°F)
8. Consumption: ≤150mW
9. Accuracy: ± 0.3°C (0.6°F)
10. Measuring distance: 3cm ~ 5cm (1.2in ~ 2in)
11. Automatic power-off: 30 sec
12. Memory: 32 sets

※ Note: The Infrared Non-contact Thermometer Model AT2102 can take temperature readings below 32°C or above 42.9°C (89.6°F to 109.2°F) but precision is not guaranteed outside of this range.

LONGEVITY OF THE PRODUCT

The AT2102 was developed for intense and professional use. Its longevity is guaranteed for 40,000 readings.

X. MAINTENANCE OF THE PRODUCT

- The protective glass over the lens is the most important and fragile part of the thermometer. Please take great care of it.
- Clean the glass with cotton fabric, wet with 95% alcohol.
- Do not use other batteries than mentioned batteries. Do not recharge non-

- rechargeable batteries. Do not throw in fire.
- Remove the batteries when the thermometer is not used for an extended period of time.
- Do not expose the thermometer to direct sunlight or water.
- An impact will damage the product.

XI. ACCESSORIES

User Manual in English	1 pc
AAA alkaline batteries	2 pcs
Carry bag	1 pc

XII. GUIDELINES

This device complies with the EU Directive 93/42/EEC concerning medical products, the ASTM E 1965-98 and the European Standard EN60601-1-2 and is subject to particular precautions with regard to electromagnetic compatibility.

XIII. TROUBLESHOOTING

If you have problems while using your thermometer, please refer to this guide to help resolve the problem. If the problem persists, please contact our customer service.

THE SCREEN DISPLAYS TEMPERATURE HIGHER THAN 42.9°C (109.2°F):

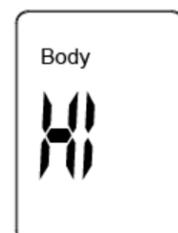
The temperature is in Fahrenheit. Change the measurement to Celsius by pressing the “°C/ °F” button.

THE SCREEN DISPLAYS TEMPERATURE LOWER THAN 32°C (89.6°F):

To take the surface temperature, press the “Mode” button until it is set to the reading called “Body”. If the device is in Surface Temp Mode, the 32°C (89.6°F) temperature displayed is showing the external temperature of your body, rather than the internal.

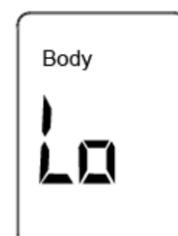
THE SCREEN DISPLAYS THE MESSAGE HI

When using the AT2102 Thermometer, the message “HI” can show on the screen. In this case, the temperature is above the measurement range selected, above 42.9 °C (109.2°F) in Body Mode.



THE SCREEN DISPLAYS THE MESSAGE LO

When using the AT2102 Thermometer, the message “LO” can show on the screen. In this case, the temperature analyzed is under the measuring range selected, less than 32°C (89.6°F) in Body Mode.



This message displays for various reasons. Please find below a list of the main issues:

Reasons for LO message display	Advice
Temperature reading hampered by hair or perspiration.	Make sure there is no obstruction or dampness prior to taking temperature.
Temperature hampered by an air draft or dramatic change in ambient temperature.	Make sure there is no air blowing in the area of use; this could affect the infrared reading.
Temperature readings are too close together, and the thermometer did not have time to reboot.	Pause for 15 seconds minimum between readings; a 1 minute pause is recommended.
The measuring distance is too far.	Take measurements at the recommended distance (app. 3~5 cm; 1.2in~2.0in).

For further information and assistance, please visit www.AccuMed.com