AccuMed

Non-Contact Infrared Thermometer
Instruction Manual

Model: AC-TR121

Version: 1.0.0
July 12th, 2021

Thank you for purchasing an AccuMed Non-Contact Infrared Thermometer!

This device is used to measure an object's temperature based on the relationship between temperature and measurable infrared radiation.

This device is designed to provide a non-contact means of measuring an object's temperature based on the relationship between temperature and measurable infrared radiation.

Please read the information provided in this manual throughly before use.

Basic Principles

All objects with an overall temperature of above absolute zero emit a certain percentage of infrared radiation. The amount of radiation energy and the distribution of the wavelengths are closely related to each other. For instance, when the body temperature of a person is between 96.8°F (36-37°C) it emits a wavelength of 9-13um of infrared radiation in which the device will detect and display a temperature reading.

Safety Precautions

- The use of this device is not intended as a substitute for consultation with a physician. It is dangerous for users to perform a self-evaluation or self-treatment based solely on the results provided by this device.
- For adult use only. Keep the thermometer out of reach of children.
- Dispose of dead batteries properly. Do not expose the batteries to high levels of heat, such as a fire.
- This is a precision instrument, do not drop, or use in areas of extreme vibration.
- Do not touch the lens of the probe with your fingers. Do not attempt to disassemble or repair the device.

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- Do not touch the lens of the probe with your fingers. Do not attempt to disassemble or repair the device.

- Ensure the body temperature is within normal range before use. Wait at least 30 minutes after eating, bathing, or exercising before measurement.

- If taking continuous measurements, ensure increments of one minute in between each reading.

- Do not take temperature measurements over areas of scar tissue or in other areas such as skin disorders.

- Do not use the device on people undergoing drug therapies as the body temperature may be slightly inaccurate.

- Do not use a mobile or cordless phone near the thermometer when taking measurements.

- Do not immerse the device in water or any other liquid.

- Do not expose the device to direct sunlight or areas of extreme light.

Temperature Measurement Mode

This device has 2 measurement modes, forehead temperature mode, which measures the skin surface of a human forehead, and object temperature measurement mode, which measures the surface temperature of an object such as, ambient bathwater, milk, etc.

Range Descriptions

Normal ranges for different measuring positions.

Position	Normal Temperature
Forehead	96.4-100.4°F (35.8-38.0°C)
Ear Canal	95.9-100°F (35.5°-37.8°C)
Object	32.0-212.0°F (0-100°C)

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Note: Do not take temperatures via the ear canal on children under three months old.

Normal body temperature ranges may vary slightly with age and gender. Generally, newborns and children have higher body temperatures than adults. For more information, please refer to the chart provided below.

Normal ranges for different measuring positions.

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

Practical Considerations

Typically, temperatures increase by 0.5°C (32.9°F) between 6am and 3pm. Women have a temperature that is typically higher on average, around 0.2°C (32.3°F). Their temperature also varies in accordance with their ovarian cycle which can raise their temperature by 0.5°C (32.9°F) during the second half of the cycle or during early stages of pregnancy.
° When sitting, the body temperature may lower about 0.3°C (32.5°F) to 0.4°C (32.7°F) than when standing.

Features

This device has passed an internal reliability and life test of ≥1000 hours.

Body measurement mode: the measurement range is 89.6-109.4°F (32.0-43°C).
Object measurement mode: 32.0°-212.0°F (0.0-100°C)

When the temperature being read exceeds the temperature range threshold, the LCD will display a Lo or hi prompt.

If the environmental temperature exceeds the temperature range threshold, the LCD will display a Err prompt.

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When the battery level is low, the device will display a low voltage icon on the LCD screen.

When the battery level is low, the device will display a low voltage icon on the LCD screen.

When the device is placed in a self-test function or is malfunctioning, the LCD screen will display an ErH or ErE prompt.

Built in power saving function which will automatically shut off the device after 60 seconds of idle time.

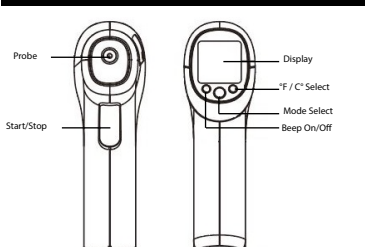
Tri-color backlight function to indicate the status of the temperature being read. Refer to the chart below for temperature range thresholds.

Color	Temperature Range	Beep
Green	T<99.5°F (T<37.5°C)	1 long beep
Orange	99.5°F≤T<100.4°F 37.5°C≤T<38.0°C	3 short beeps
Red	T≤100.4°F (T<38.0°C) T≤109.4°F (T<43.0°C)	3 short beeps

Memory Mode

The thermometer stores the last 32 temperature measurements. The last temperature will be automatically displayed once the device is turned on again after initial use. A "M" icon will be displayed on the LCD screen.

Product Structure



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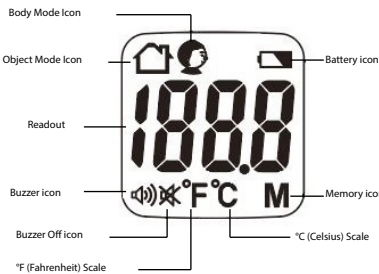
Display Description

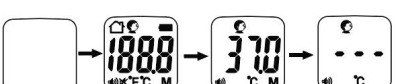


Operation Instructions

Insert the batteries based on the correct polarity of the unit. Before use, ensure the device has been turned on and calibrated in the measurement environment for 30 minutes. Ensure the probe if free from debris or obstructions.

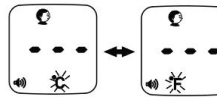
1) Operation before measurements

Press the SCAN button. The device will show all segments on the LCD screen for about 2 seconds. The last temperature reported by the device will be displayed along with a "M" icon with a short beep sound indicating the thermometer is ready for operation.

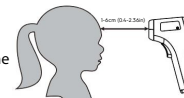


2) Measurement Unit Selection

The thermometer can switch between °C and °F using the °F or °C. To switch between different degree scales.
1. Press the SCAN button to ensure the device is on.
2) Press the C/F button to switch between C or F.



3) Measuring Body Temperature



Aim the thermometer towards the forehead from a distance of 1-6cm (0.4-2.36 inches). Press the SCAN button directly to measure the temperature of the forehead. The temperature will be displayed on the LCD screen along with a short beep sound.

Temperature Taking Hints

- Before taking a temperature, remove any hair to prevent any deviation.
- Ensure any sweat or cosmetics are not impeding the detection area.
- It is normal to have a temperature difference depending on various skin types and color since different skin types will reflect different infrared radiation.
- Do not use the thermometer outdoors.

4) Measuring Object Temperature

To measure the surface temperature of an object such as ambient bathwater, milk, etc. Aim the thermometer towards the object, press the SCAN button to directly measure the surface temperature of the object.

5) Automatic Shutdown

If the thermometer remains idle for 60 seconds the device will automatically be placed in standby mode. The LCD screen will remain off until the device is activated again.

6) Memory Function

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 a "M" icon.

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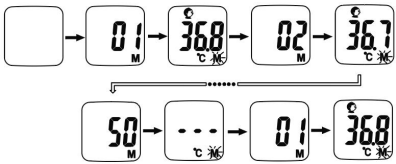
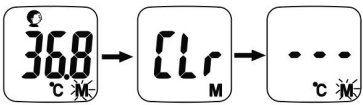
1) While the device is off, press the M button. The LCD screen will display, "01" along with the last measurement taken.
2) Press the "M" button to display additional memory numbers. The device can hold up to 32 memory channels. The device will revert to MEM01 after the last channel is displayed.



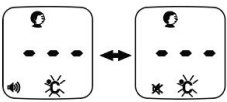
Clearing Memory Records

1) While the device is off, press the M button. The LCD screen will display, "01" along with the last measurement taken, followed by a short beep.
2) Press and hold the M button for 3 seconds, the LCD screen will display "CLrM" for 2 seconds and clear all the records.



Mute/Turn Off the Beep Sound

1) Press the SCAN button to power on the device.
2) Press the buzzer button to mute or turn off the beep sound.



Battery Life Indicator

Once the thermometer is turned on it will automatically detect the battery voltage. When the voltage detected is too low, the low battery icon will appear on the LCD screen.

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Note: Always replace the batteries once the low battery icon appears on the LCD screen.

Replacing the Batteries

The thermometer comes with two AAA (LR 03) batteries. To install or replace the batteries, open the battery compartment on the bottom of the device. Remove the used batteries and insert new batteries into the compartment based on its polarity. Once they are inserted, slide the battery door back until it snaps securely into place.

Note: Please dispose of batteries accordingly. Do not liter, dispose of in the trash, or throw them into a fire. Please consult your local laws in regard to battery disposal.

Cleaning and Disinfecting

The probe tip and lens are the most sensitive parts of the thermometer. It is highly recommended to keep the device clean and intact for the most accurate readings..

° Gently wipe the surface of the probe tip with a cotton swab or soft cloth lightly damped with alcohol. Only use the device after the alcohol has been completely dried.
° Do not continue use if the lens is damaged.
° To clean the body of the thermometer, use a soft, dry cloth. If the device is extremely dirty, the soft cloth can be damped with alcohol.

Note: Do not use abrasive cleaners. The device is not waterproof, do not submerge the device in water or other liquid.

Maintenance

Do not attempt to maintain or repair this device. If the product is damaged or defective, please contact AccuMed directly. Please visit: https://accumed.com/contacts/

Opening or attempting to repair the device will void the warranty. Please do not attempt to repair or modify the device.

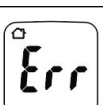
Calibration

The thermometer is calibrated by default. If the thermometer is regularly used as instructed, periodic readjustment is not required. If at any time you have questions regarding the accuracy of measurements being taken, please contact AccuMed directly.

Storage

Do not store the device in areas of direct sunlight, high temperatures, or areas with high levels of moisture or humidity.
Do not store the device in areas prone to fire or intense vibration.
Please remove the batteries from the device if it is not being used for prolonged periods of time.

Troubleshooting

Problem	Problem Cause	Solution
The thermometer does not turn on.	Low Battery	Change the batteries
	Reversed polarities of the batteries.	Properly install the batteries.
	The thermometer is damaged.	Contact AccuMed
The thermometer shows "Hi" on the LCD screen.	Temperature being read exceeds 109.2°F (42.9°C)	Leave the device idle and wait 30 minutes before next temperature reading
	Temperature readings are too close together.	
The thermometer shows "Lo" on the LCD screen.	Temperature being read is below 93.2°F (34.0°C).	Leave the device idle and wait 30 minutes before next temperature reading
	The measuring distance is too far from the measurement surface.	
	The ambient temperature is above the range of the measurement range (50°F - 104.0°F / 10°C - 40°C)	Keep the thermometer in an area between 50°F-104°F (10°C-40°C) for 30 minutes before next use.

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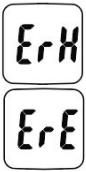
Problem	Problem Cause	Solution
	The hardware is damaged.	Do not attempt to repair or modify the device. If the hardware is damaged, please contact AccuMed directly for a replacement.
	The battery is low however it can still be used.	Replace the batteries if they are too low for unit.
	The battery is low however it cannot use the device.	

Technical Specifications

Device Name	Infrared Thermometer (Non-Contact Type)
Model	AC-TR121
Measurement Mode	Non-contact forehead measurement mode (Adjusted)
Measurement Site	Forehead
Measurement Distance	0.4 - 2.36in (1-6cm)
Power Supply	DC 3V, 2x1.5V AAA (LR03) Batteries
Body Measurement Range	89.6°F-109.4 (32.0-43°C)
Object Measurement Range	32.0°F-212.0°F (0.0°C-100.0°C)
Resolution of Display	0.1°F / 0.1°C
Measuring Accuracy (At laboratory conditions)	±0.4°F / ±0.2°C during the following ranges: 95°F-107.6°F. ±0.5°F / 0.3°C during the following ranges: 89.6°F-94.9°F (32.0°C-34.9°C) and 107.8°F-109.4°F (42.1°C-43.0°C).
Storage Conditions	-13°F-131.0°F (-25-55°C), Relative humidity ≤RH95%, 70-106kPa
Clinical Repeatability	Within ±0.5°F (±0.3°C)
Measuring Time	Up to 1 Second

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Operating Conditions	50°F-104°F (10-40°C), Relative humidity, ≤RH95%, 70-106KPa
Size (Dimensions)	5.69" x 1.45" x 1.53" (144.6mm x 37.0mm x 39.0mm)
Weight	0.19lbs (87g)
High Body Temperature	≤100.4°F (38.0°C) ≤109.4°F (43.0°C)
Waterproof Grade	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	V1.0
Note: Not intended to be sterilized. Not for use in an OXYGEN RICH ENVIRONMENT	

Standard List

EN980	Symbols for use in the labeling of medical devices.
EN1041	Information supplied by the manufacturer with medical devices.
EN60601-1	Medical electrical equipment Part 1: General requirements for basic safety and essential performance.
EN60601-1-2	Medical electrical equipment Part 1-2: General requirements for basic safety and essential performance. - Collateral standard: Electromagnetic compatibility - Requirements and tests.
EN60601-1-6	Medical electrical equipment Part 1-6: General requirements for basic safety and essential performance. - Collateral standard: Usability.
EN60601-1-11	Medical electrical equipment Part 1-6: General requirements for basic safety and essential performance. - Collateral standard: Requirements for medical electrical equipment and medical electrical systems used in home healthcare environment.
EN12470-5	Clinical thermometers - Part 5: Performance of infrared ear thermometers (with maximum device).
ASTM E1965-98	Standard Specification for Infrared Thermometers for Intermittent Determination of Patient Temperature.
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.

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EN62304	Medical device software - Software life-cycle processes.
EN62366	Medical devices - Application of usability engineering to medical devices.
EN ISO 10993-1	Biological evaluation of medical devices - Part 1: Evaluation and testing within a risk management process.

Disposal

Dispose of the device in accordance with the regulations applicable at the place of operation. Dispose of at public collection points in the EU countries - 2002/96/EC WEEE Directive.

For any questions, please refer to the local authorities responsible for waste disposal.

Note: Take out the batteries if you are not going to use the device for long periods of time.

To protect the environment, dispose of empty batteries at appropriate collection sites according to national and local regulations.

EMC Declaration

This 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.

Wireless communications equipment such as wireless home network devices, mobile phones, 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 IEC 60601-1-2 for ME Equipment, a typical cell phone with a maximum output power of 2W yields d=1.0m at an immunity level of 10V/m.

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