



# HOTSPOT IR NON-CONTACT THERMOMETER USER MANUAL



PLEASE READ THIS MANUAL BEFORE SWITCHING THE UNIT ON.  
IMPORTANT SAFETY INFORMATION INSIDE.

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**THESE SYSTEMS ARE INTENDED TO BE USED ADJUNCTIVELY  
NOT AS STANDALONE DEVICES.**

## 1. General Description

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The HotSpot IR Non-Contact Thermometer is specially designed to take the body temperature of a person regardless of room temperature. Depending on various skin types and thickness, there may be temperature difference.

## 2. Safety Information

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- Only use the device for the purposes described in this instruction manual.
- Only use the device in an ambient temperature range between 10 °C and 40 °C.
- Do not expose this thermometer to electric shocks.
- Do not expose the thermometer to extreme temperature conditions of > 50 °C or < 0 °C.
- Do not use the device in relative humidity higher than 85%.
- Do not use the device near large electromagnetic fields such as found with cordless or cell phones.
- Keep the device away from water and heat, including direct sunlight.
- Do not drop or throw the device.
- Do not use the device if it is damaged.
- The accuracy of measurements may be affected when the face is covered by hair, perspiration, a cap, or a scarf (See Part 10-4).
- Keep the measuring distance between 5 cm - 15 cm (2"-5.9")(See Part 10-4).
- The infrared thermometer should be left in a room 15 to 20 minutes before using.

- Clean the glass with a cotton swab lightly moistened with 70% alcohol.

**Important:**

- Before taking a temperature measurement make sure to remove hair and perspiration from the forehead.
- Selecting “Body” mode to measure the body temperature; Selecting “Surface” mode to measure the surface temperature of an object.
- This device is not intended as a substitute for a physician's consultation.
- Should a problem occur with your device, contact your retailer. Do not attempt to repair the device yourself.
- According to EMC standard, the electronic products should be maintained.

### 3. Features

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- Precise non-contact measurements
- User selectable °C or °F
- Selectable Body and Surface temp
- Set Alarm value
- Memorization of the last 32 measurements
- Automatic Data Hold & Auto power off
- Display Resolution 0.1 °C (0.1 °F).
- Back-light LCD display

## 4. Intended Use

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Non-Contact IR Thermometer is designed for body surface and temperature measurement for infants and adults without coming into contact with the human body.

Non-Contact IR Thermometer can also be used to measure the temperature of a baby-bottle or bath, or room temperature (by using the Surface Temp function).

### 4-1. Normal Temperatures According to Measurement Method

Measurement Method	Normal Temp °C	Normal Temp °F
Rectal	36.6 to 38	97.8 to 100.4
Oral	35.5 to 37.5	95.9 to 99.5
Axillary	34.7 to 37.3	94.4 to 99.1
Ear	35.8 to 38	96.4 to 100.4

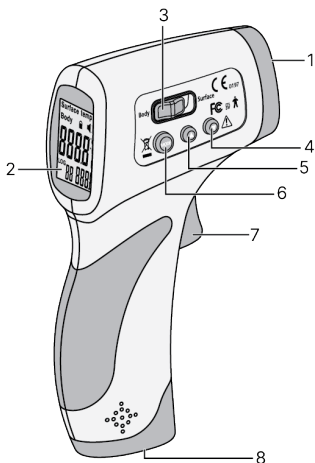
The temperature of the human body varies throughout the day. It can also be influenced by numerous external factors: age, sex, and thickness of skin.

### 4-2. Normal Temperatures According to Age

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

## 5. Configuration

1. IR Sensor
2. LCD Display
3. Mode Selection
4. Down Button
5. Up Button
6. Mode Button
7. Measurement Trigger
8. Battery Cover









## 6. Indicator

1. Surface mode Symbol
2. Body mode Symbol
3. Digital readout
4. Battery Symbol
5. The order number
6. Save data readout
7. Temperature Scale: °C(Celsius)/°F(Fahrenheit)
8. Buzzer symbol



## 7. Description of Symbols

	The device is in accordance with Directive 93/42/EEC
	The device is in accordance with FCC Part 15 Subpart B:2007/Radio Frequency Devices IC Regulation ICEC-00 2004 Interference-causing Equipment Standard-Digital Apparatus
<b>3V</b> 	3V DC power supply
	Type B equipment
	In order to protect the environment, recycle the battery according to the local regulations
Body Surface	Indication of Mode
	Attention, consult accompanying documents



## 8. Technical Specifications

### 8-1. Normal Conditions of Use

Display Resolution	0.1 °C (0.1 °F)
Operating Temperature	10 °C to 40 °C (50 °F to 104 °F)
Storage Temperature	0 °C to 50°C (32 °F to 122 °F)
Humidity Rate	< 85%
Power	DC 3V (2 x "AA" batteries)
Size	149 mm x 77 mm x 43 mm / 5.9" x 3" x 1.7" (L x W x H ± .5 mm or .1")
Weight	Gross 400 g / Net 172 g

### 8-2. Measuring Range

In Body Mode	32.0 °C to 42.5 °C (90 °F to 108 °F)
In Surface Temp Mod	0 °C to 60°C (32 °F to 140 °F)
Accuracy	±0.3 °C (0.54 °F)
Measuring Distance	5 cm – 15 cm (2" – 5.9")
Automatic Stop	7 seconds

### 8-3. HotSpot IR Non-Contact Thermometer Precision

32 °C to 35.9 °C / 93.2 °F to 96.6 °F	±0.3 °C / 0.5 °F	According to ASTM Standard E1965-1998 (2003)
36 °C to 39 °C / 96.8 °F to 102.2 °F	±0.2 °C / 0.4 °F	
39 °C to 42.5 °C / 102.2 °F to 108.5 °F	±0.3 °C / 0.5 °F	

## 9. Calibration Instructions

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For stable and reliable results, the thermometer provides a user-correction function.

### 9-1. Check the Device Calibration

Verify calibration as follows:

1. Take the temperature of a person using a conventional thermometer; example: you get 37 °C (98.6 °F).
2. Take the temperature of the same person using the HotSpot IR Non-Contact Thermometer keeping 5 to 15 cm (2" to 5.9") distance between the thermometer and the person. If you get 37 °C (98.6 °F), the HotSpot IR Non-Contact Thermometer is properly set and ready for use.

If you get a lower or higher temperature, 38.1 °C (100.6 °F) for example, you should re-calibrate the HotSpot IR Non-Contact Thermometer.

### 9-2. Calibrate the Device

To calibrate the device:

1. Press the **MODE** button for 2 seconds. The screen will display F1.
2. Press **MODE** button again until you get F3.
3. Press **▲** button in order to add the difference (in our example, 1.1 °C – 2.2 °F).
4. Repeat steps 1 - 3 until readings from conventional thermometer and HotSpot IR Non-Contact Thermometer are the same.

**TAKE CARE TO REMOVE ANY OBSTACLE WHICH COULD ALTER THE MEASUREMENT (HAIR, PERSPIRATION, ETC.)**

## 10. Use

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1. Install battery.
2. For first use or when inserting new batteries, wait 10 minutes for the device to warm-up.
3. If the device is not used for a long time, the device will delay turning on for one or two seconds in order to first test the room temperature.
4. Aim toward a person's inner canthus keeping 5 to 15 cm (2" to 5.9") distance between the thermometer and the person, press the measuring key, and the temperature will display immediately (see the Figure 1 below for the positioning).
5. When the room temperature is significant difference, or there is perspiration on the forehead, you can take the temperature behind the ear lobe (see the Figure 2 below for the positioning).

Figure 1

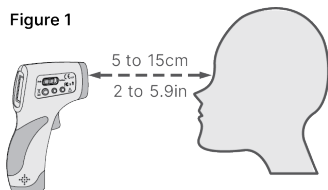
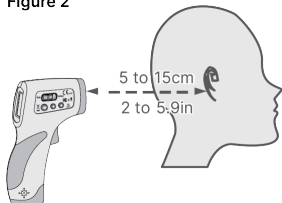


Figure 2



## 11. Measuring Operations

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### 11-1. Choosing the Temperature Unit – F1 Function

1. Press **MODE** button for 2 seconds, screen will display: F1.
2. Press ▼ for degrees Celsius, ▲ for degrees Fahrenheit.

### 11-2. Alarm Setup – F2 Function

1. Press **MODE** button for 2 seconds, screen will display: F1.
2. Press **MODE** again to get to F2.
3. Press ▲ to increase the threshold by 0.1 °C (0.1 °F).
4. Press ▼ to reduce it by 0.1 °C (0.1 °F).

THE ALARM THRESHOLD DEFAULT VALUE IS 38°C (100.4°F).

### 11-3. Calibration – F3 Function

To adjust the calibration of your thermometer:

1. Press **MODE** button for 2 seconds, screen will display: F1.
2. Press **MODE** twice to get F3.
3. Press ▲ to increase the difference by 0.1 °C (0.1 °F).
4. Press ▼ to reduce the difference by 0.1 °C (0.1 °F).

IN THE CASES OF SEASONAL OR ENVIRONMENTAL CHANGES A VERIFICATION AND ADJUSTMENT SHOULD BE CARRIED OUT. THIS FUNCTION IS ONLY EFFECTIVE IN BODY MODE.

### 11-4. Buzzer ON/OFF – F4 (F3) Function

1. Press **MODE** button for 2 seconds, screen will display: F1.
2. Press three (two) times **MODE** button to get F4 (F3).
3. Press ▲ to open the buzzer. An 🔔 icon is displayed.
4. Press ▼ to turn off the buzzer (icon will disappear).

### 11-5. Exiting The Setting Mode

1. Press **MODE** button until the screen turns off.

**11-6.** The HotSpot IR Non-Contact Thermometer is specially designed to take the body temperature of a human being. For this, use the Body mode. Measurement range for Body mode: 32 to 42.5 °C (86°F to 108 °F).

You can also use the thermometer to measure the temperature of an object, a food, a liquid or a room. For this, use the Surface mode. Measurement range for Surface mode: 0 to 60 °C (32 °F to 140 °F)

**MAKE SURE TO SELECT THE BODY MODE FOR AN SKIN TEMPERATURE READING AND THE SURFACE MODE FOR AN AMBIENT OR OBJECT READING.**

### **11-7. Data Collection**

Data collection happens automatically after taking temperature measurements and will display at the right corner of LCD. Press ▲ or ▼ button to display the last temperature measurement. When the device is powered off, press ▲ and ▼ button together for two seconds to display the last temperature measurement. Change the order number to 0 and press **MODE** button to delete all collection data.

### **11-8. Changing The Batteries**

When the LCD screen displays “”, the battery needs to be replaced. To replace batter open the lid and change the batteries, taking great care with the correct positioning.

Placing the batteries into the device backwards can cause damage to the device and compromise the accuracy of your HotSpot IR Non-Contact Thermometer. Never use rechargeable batteries. Remove the battery from the instrument when not in use for extended periods of time to avoid damage to the thermometer.

### **11-9. Device Life**

The HotSpot IR Non-Contact Thermometer was conceived for professional use. Its longevity is guaranteed for 40000 measurements.

## 12. Advice

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- The protective glass over the lens is the most fragile part of the thermometer. Be careful with it.
- Do not attempt to recharge non-rechargeable batteries.
- Do not throw the device in a fire.
- Do not expose the thermometer to extreme sunlight or water.

## 13. Maintenance and Cleaning

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- The infrared sensor is the fragile. Be careful with it.
- Clean the device with a cotton swab lightly moistened with 70% alcohol.
- Do not clean the device with a corrosive detergent.
- Keep the device away from water or other liquids.
- Store the device in a dry environment.
- Keep the device away from dust and direct sunlight.

## 14. Troubleshooting

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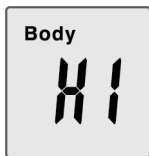
If you happen to have problems while using your the non-contact IR thermometer refer to guide below to help resolve the issue. Contact customer service at [support@infraredcameras.com](mailto:support@infraredcameras.com) if problems persist.

### Strange Readings when taking Skin Surface Temperatures

If you are using Surface mode, the temperature displayed is showing the ambient temperature and not the surface skin temperature measurement.

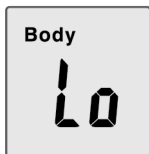
### Message "HI"

The analysis is above the measurement range selected, either above 42.5 °C (108 °F) in Body mode or below 60 °C (140 °F) in Surface mode.



### Message "LO"

The temperature analyzed is under the measuring range selected, either the measurement is less than 32 °C (90 °F) in Body mode or less than 0 °C (32 °F) in Surface mode.



**Message Warnings**

Reasons for "LO" or "HI" message	See <b>Troubleshooting</b>
Temperature reading hampered by hair, perspiration...	Make sure that there is no obstruction prior to taking temperature measurements
Temperature hampered by an air flux.	Make sure there is no air flux as this could interfere with the infrared system.
The measuring distance is too far.	Be mindful the measuring distance is 5 cm - 15 cm (2" - 5.9").
From high/low temperature condition to room temperature	Wait for 10 minutes after being in a room before taking body temperature measurements



## 15. Conformity Standards

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- EN12470-5 and ASTM E1965-1998
- EN 980: Graphical symbols for the labeling of devices
- EN 1041: Information supplied by the manufacturer
- EN 60601-1: Electrical equipment Part 1: General requirements for safety (IEC:60601-1:1998)
- EN 60601-1-2: Electrical equipment Part 1-2: General requirements for safety Collateral standard Electromagnetic compatibility Requirements and test (IEC 60601-1-2:2001)

### **EMC Statement**

This device has been tested and homologated in accordance with EN60601-1-2:2007 for EMC. This does not guarantee in any way that the device will not be affected by electromagnetic interference. Avoid using the device in high electromagnetic environment.

The ELECTRICAL EQUIPMENT needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the ACCOMPANYING DOCUMENTS.

## 16. About ICI

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In addition to providing custom germanium, silica, and sapphire optics, we also build windows for enclosures, as well as custom pan and tilt units. We can even provide customizable explosion proof systems.

Our knowledge and experience stems from years of using infrared imaging and temperature measurement instruments to provide solutions to: managers, engineers, scientists, inspectors and operators in space, power companies, medical, pulp and paper, food industry, research and development, and various process industries. You can see our products and services used in industrial, commercial, and government applications worldwide. Additionally, our ICI 7320 was awarded "Product of the Month" by NASA\*. Originally named Texas Infrared (still DBA), Infrared Cameras Inc. has been in business since March, 1995.

Thank you for your dedicated and continued support.

\*Volume 33 No. 2, February 2009 edition of NASA Tech Briefs

