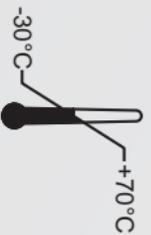




# GO<sub>2</sub> Achieve

## User Guide



**Warning:** Keep away from small children; this device contains small parts that may pose a choking hazard.



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## Introduction

Thank you for buying the **GO<sub>2</sub> Achieve** Fingertip Pulse Oximeter. This small, portable device will give you important information about your oxygen saturation (the amount of oxygen in your blood) and pulse rate *at your fingertip!* The **GO<sub>2</sub> Achieve** is easy to use and needs no routine maintenance except battery replacement. This User Guide explains how to use and care for your **GO<sub>2</sub> Achieve**.

### Contents of Package

- **GO<sub>2</sub> Achieve**
- One AAA Alkaline Battery
- User Guide
- Quick Guide

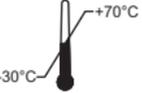


## Symbols

*The following symbols are associated with your **GO<sub>2</sub> Achieve**.*

Symbol	Definition of Symbol
	Consult Instructions for Use
	<b>Caution!</b>
	CE Marking: conformance to EC Directive No. 93/42/EEC for medical devices
	Type BF Applied Part (patient isolation from electrical shock).
	Not for Continuous Monitoring (no alarm for <b>SpO<sub>2</sub></b> )
	UL Mark for Canada and the United States with respect to electric shock, fire, and mechanical hazards only in accordance with UL 60601-1 30EM and CAN/CSA C22.2 No. 601.1.



	Battery
	Indicates separate collection for electrical and electronic equipment (WEEE).
<b>IP33</b>	Protected against spraying water and against access to hazardous parts with a tool, per IEC 60529.
<b>SN</b>	Serial Number
	Sensor disconnect; the pulse signal is not detected or there is excessive motion.
<b>EC REP</b>	Authorized Representative in the European Community
	Temperature Limitation for storage/shipping

### Intended Use

**GO<sub>2</sub> Achieve** is intended to measure blood oxygen saturation (%**SpO<sub>2</sub>**) (the amount of oxygen in your blood) and pulse rate ♥ of both adults and children. It is designed for fingers (not the thumb) between 0.3 and 1.0 inch (0.8 – 2.5cm) thick. The index finger (pointer finger) is most recommended.

### Warnings

- Keep the oximeter away from young children. Small items such as the battery door, battery, and lanyard are choking hazards.
- Certain activities may pose a risk of injury, including strangulation, if the lanyard should become wrapped around your neck. Use the lanyard with caution.





### **⚠ Cautions**

- The **GO<sub>2</sub> Achieve** might misinterpret excessive movement as good pulse strength. Limit finger movement as much as possible when using the device.
- The **GO<sub>2</sub> Achieve** must be able to measure your pulse properly to give you an accurate reading. Do not put the device on the same hand/arm when using a blood pressure cuff or monitor.
- The **GO<sub>2</sub> Achieve** has no alarms. It will not sound if the amount of oxygen in your blood is low or if your pulse rate is too high or too low.
- Do not place the **GO<sub>2</sub> Achieve** in liquid or clean it with agents containing ammonium chloride, isopropyl alcohol, or products that are not listed in this User's Guide.
- Any of the following conditions may reduce the performance of the **GO<sub>2</sub> Achieve**:
  - flickering or very bright light;
  - weak pulse quality (low perfusion);
  - low hemoglobin;
  - arterial catheters;
  - nail polish, and/or artificial nails; and
  - any tests recently performed on you that required an injection of intravascular dyes.



- The **GO<sub>2</sub> Achieve** may not work if you have poor circulation. Rub your finger to increase circulation, or place the device on another finger.
- The **GO<sub>2</sub> Achieve** measures oxygen saturation of functional hemoglobin. High levels of dysfunctional hemoglobin (caused by sickle cell anemia, carbon monoxide, etc.) could affect the accuracy of the measurements.
- Batteries can leak or explode if used or disposed of improperly. Remove the battery if the **GO<sub>2</sub> Achieve** will be stored for more than 30 days.
- Do not use the **GO<sub>2</sub> Achieve** in a combustible environment (oxygen enriched environment).
- Do not use the **GO<sub>2</sub> Achieve** outside the specified operating and storage temperature ranges.
- Do not use the **GO<sub>2</sub> Achieve** for more than 30 minutes without relocating the device to another finger.
- The **GO<sub>2</sub> Achieve** needs to be used according to information provided in the User Guide.
- Do not tamper with, or hang lanyard from the flexible circuit.



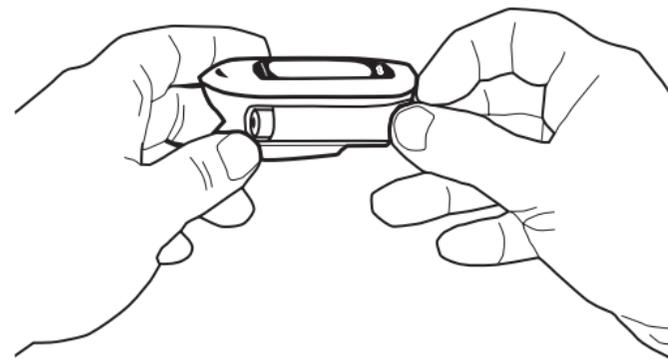
- Radios and cell phones or similar devices may affect the **GO<sub>2</sub>Achieve** and should be kept at least 7 feet away from the device.
- Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast towers and TV broadcast towers may affect accuracy.
- Use in emergency vehicles with communication systems may affect accuracy.
- Functional tester cannot be used to assess the accuracy of this pulse oximeter.
- Follow local disposal and recycling laws for the **GO<sub>2</sub>Achieve** and its components, including the battery.
- The **GO<sub>2</sub>Achieve** is a precision electronic instrument and must be repaired by Nonin Technical Service.



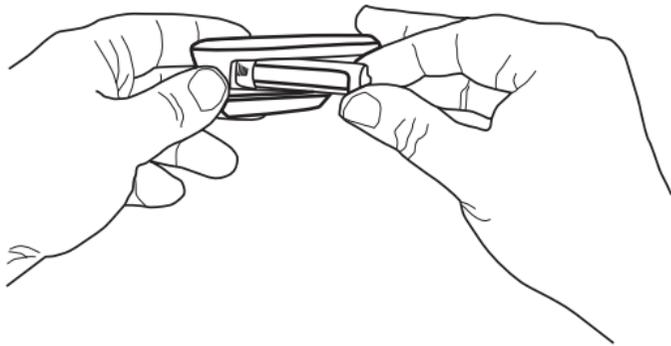
## Installing the Battery

One 1.5 volt AAA-size (LR03) battery powers the **GO<sub>2</sub>Achieve** for approximately 2400 measurements. Nonin recommends using alkaline batteries (one is included with each new **GO<sub>2</sub>Achieve**). **NOTE:** You may use rechargeable batteries; however, they may require more frequent replacement.

1. Remove the battery door located on the left side of the **GO<sub>2</sub>Achieve** by sliding it towards you.
2. Insert one new 1.5 volt AAA-size battery. Follow the plus (+) and minus (-) markings for battery direction (as shown inside of the battery compartment).



3. Carefully reposition the battery door. **NOTE:** Do not force it into place; it fits only when positioned correctly.

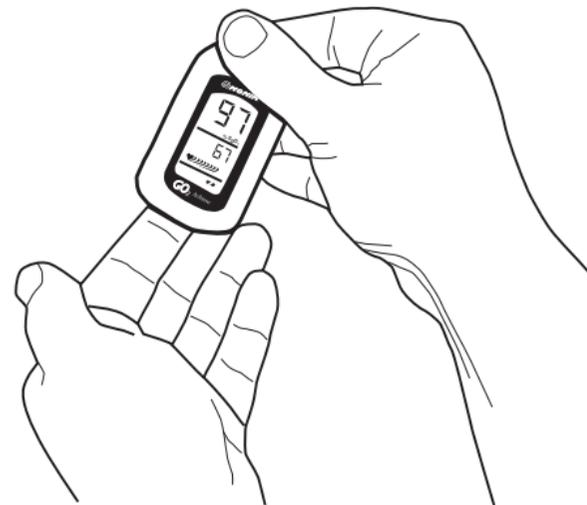


When battery is low, the battery indicator symbol on the display will flash. Remove battery if the device will be stored for more than 30 days. Replace low battery as soon as possible.

### Applying the **GO<sub>2</sub>Achieve** to Your Finger

Hold the **GO<sub>2</sub>Achieve** with the display facing toward you; slide your finger into the opening at the bottom of the device, as shown below, until the fingertip touches the built-in stop guide.

For best results, make sure the finger is centered within the finger guide; keep the **GO<sub>2</sub>Achieve** at heart or chest level. The index (pointer) finger is recommended.



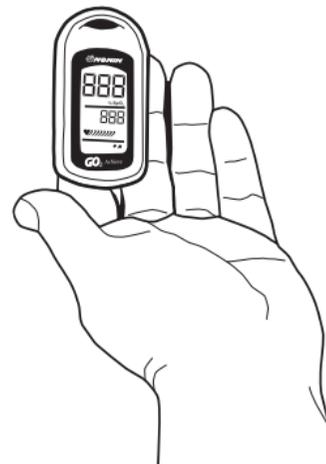


**NOTE:** Correct positioning of the device on your finger is critical for accurate measurements. While on the finger, do not press the **GO<sub>2</sub>Achieve** against any surface and do not squeeze or hold it together. The internal spring provides the correct pressure; additional pressure may cause inaccurate readings.



## Activating the Device and Verifying Operation

The **GO<sub>2</sub>Achieve** automatically turns on when a finger is inserted. When a finger is inserted, the **GO<sub>2</sub>Achieve** performs a brief self test, as shown below. Verify that all segments of the LCD (Liquid Crystal Display) appear during the startup sequence.



The **GO<sub>2</sub>Achieve** LCD has an integrated backlight that turns on automatically in low light conditions. This allows the display to be visible in dark spaces.



## Reading Your Results

When you put your finger in the **GO<sub>2</sub>Achieve**, you'll notice an LCD display come on. The numbers you see show:

- the amount of oxygen in your blood, displayed as %**SpO<sub>2</sub>**; and
- your Pulse Rate, displayed as a 2 or 3 digit number, measuring the number of times your heart beats per minute.

The Pulse Quality indicator (♥) displays the strength of the pulse rate signal. Bars will display after the ♥, indicating pulse signal strength (♥▄▄▄▄▄); the greater the number of bars indicates a greater pulse quality signal strength.

If you are not getting a pulse rate reading and your pulse quality indicator is weak, warm the finger or reposition to another finger.

While the **GO<sub>2</sub>Achieve** is calculating its reading immediately after activating the device, the sensor disconnect indicator (⊘) will appear. The sensor disconnect indicator also appears when you remove your finger to indicate the pulse signal is not detected or when there is

excessive motion. If this symbol does not turn off while your finger is in the device, reposition your finger or switch to a different finger.



The Battery indicator symbol  shows the battery strength (the less the symbol is filled – the less battery capacity is available – see chart below). Replace the battery when this symbol begins to flash.

	= full capacity
	= half capacity
	= near empty, replace
	(flashing) = empty, replace





## Care and Maintenance

The **GO<sub>2</sub>Achieve** requires no calibration or periodic maintenance other than battery replacement. Wipe the device with a soft cloth dampened with a mild detergent or 10% bleach solution. Do not use undiluted bleach or any cleaning solution other than those recommended here, as permanent damage could result. Dry with a soft cloth, or allow to air dry. Clean once per week or more frequently if handled by multiple users.

**⚠ Caution:** Do not place the **GO<sub>2</sub>Achieve** in liquid or clean it with agents containing ammonium chloride, isopropyl alcohol, or products that are not listed in this User's Guide.

## Troubleshooting

Problems	Possible Cause	Possible Solutions
<b>Display Lockup</b>	Display does not appear to change (you should see a change to the pulse indicator if the device is on the finger).	<b>Reposition finger or change fingers.</b>  <b>Remove and replace battery.</b>  <b>If the problem persists contact Nonin Technical Service.</b>





## Troubleshooting

Problems	Possible Cause	Possible Solutions
<b>Display blank</b>	Nothing appears on the display.	<p><b>Reposition</b> finger to activate the device.</p> <p><b>Verify</b> battery is correctly inserted. <b>Note:</b> If battery is installed backwards, the unit will not function.</p> <p><b>Dead battery.</b> Replace battery.</p> <p><b>May be too cold.</b> Allow device to sit at room temperature for at least 30 minutes.</p> <p>If the problem persists <b>contact Nonin Technical Service.</b></p>



## Troubleshooting

Problems	Possible Cause	Possible Solutions
Missing segments on LCD display.	Faulty display.	<b>Contact Nonin Technical Service.</b>
No readings	Low pulse quality (no reading).	<p>If the  indicator is visible and the pulse quality bar graph does not show more than 2 bars, try the following:</p> <ol style="list-style-type: none"> <li>1. <b>Reposition</b> finger.</li> <li>2. <b>Warm</b> finger by rubbing.</li> <li>3. <b>Select a different</b> finger.</li> </ol> <p>For more information, please see <i>Reading Your Results</i>.</p>



## Parts and Accessories



**GO2CC** *Black neoprene carrying case with belt loop*



**GO2L** *Black 20" lanyard*



**GO2R** *Clip on retractable holder*

**WARNING:** Certain activities may pose a risk of injury, including strangulation, if the lanyard should become wrapped around your neck. Use the lanyard with caution.

For more information about Nonin parts and accessories, contact your distributor, or contact Nonin at (877) 577-2635 (USA and Canada) or (763) 553-9968.

## Specifications

**Oxygen Saturation Display Range**

0% to 100%

**Pulse Rate Display Range**

18 to 321 beats per minute (BPM)

**Oxygen Saturation Declared Accuracy Range ( $A_{rms}^*$ )**

70% to 100% SpO<sub>2</sub> ± 2 digits

**Low Perfusion Oxygen Saturation Declared Accuracy Range ( $A_{rms}^*$ )**

70% to 100% SpO<sub>2</sub> ± 2 digits

**Pulse Rate Declared Accuracy Range ( $A_{rms}^*$ )**

20 to 250 BPM ± 3 digits

**Low Perfusion Pulse Rate Declared Accuracy Range ( $A_{rms}^*$ )**

40 to 240 BPM ± 3 digits

**Measurement Wavelengths and Output Power**

Red

660 nanometers @ 0.8mW  
Max Average

Infrared

910 nanometers @ 1.2mW  
Max Average

\*± 1  $A_{rms}$  represents approximately 68% of measurements.





### **Temperature** (Operating)

Storage/Transportation

Device temperature will not exceed 41°C as measured during a controlled environment test.

### **Humidity** (Operating)

Storage/Transportation

### **Operating Altitude**

### **Battery Life** (Continuous)

Battery Life (Storage)

+41°F to +104°F (5°C to +40°C)

-22°F to +158°F (-30°C to +70°C)

10% to 90% relative humidity, non-condensing

10% to 95% relative humidity, non-condensing

Up to 13,000 feet / 4,000 meters

Approximately 2400 spot checks based on ~21 hours of operation using one AAA-size alkaline battery, calculated at 30 seconds per use.

6 months minimum

### **Classifications per IEC 60601-1 / CSA 601.1/ UL 60601-1 30EM**

Degree of Protection

Type BF-Applied Part

Enclosure Degree of Ingress Protection

IP33

Mode of Operation

Continuous

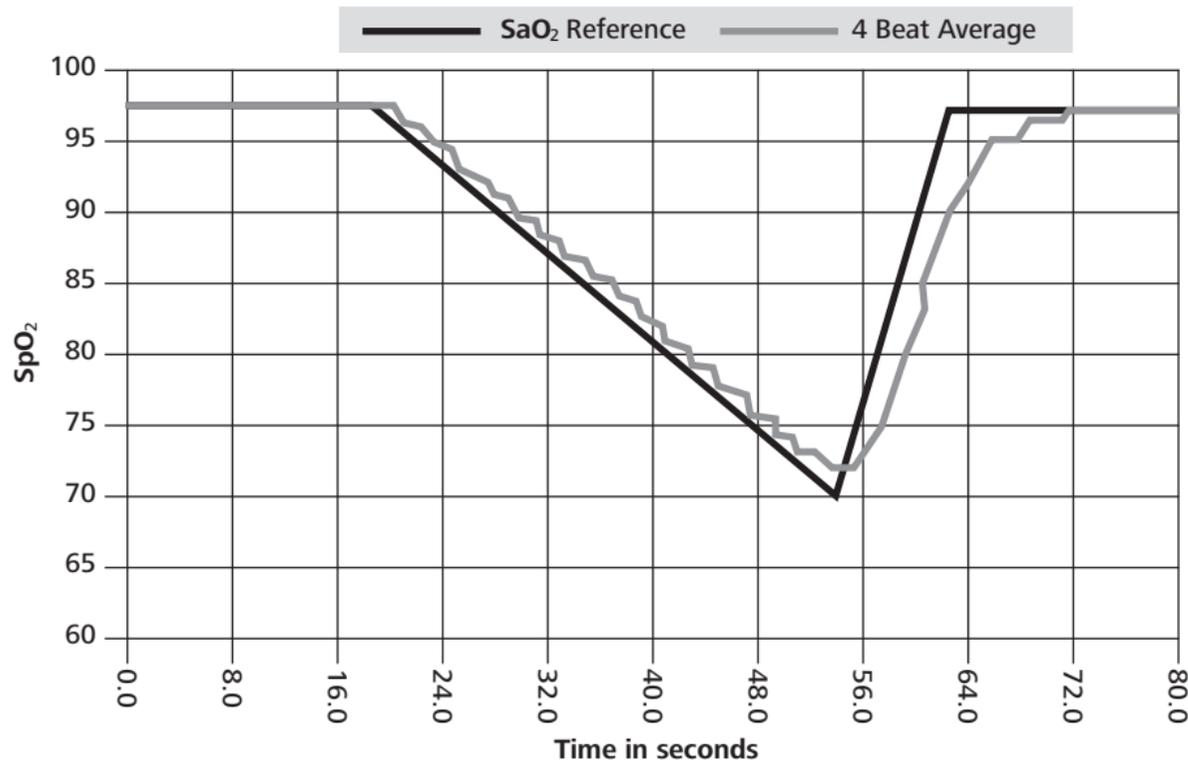
This equipment complies with International Standard IEC 60601-1-2:2004 for electromagnetic compatibility for medical electrical equipment and/or systems. This standard is designed to provide reasonable protection against harmful interference in a typical installation. However, because of the proliferation of radio-frequency transmitting equipment and other sources of electrical noise in health care, home, and many other environments, it is possible that high levels of such interference due to close proximity or strength of a source might disrupt the performance of this device.

This product complies with ISO 10993-1, Biological evaluation of medical devices – Part 1: Evaluation and testing.





## Equipment Response Time



Specific to this example: The response of the 4-beat average is 1.5 seconds.



## Testing Summary

SpO<sub>2</sub> accuracy and low perfusion testing were conducted by Nonin Medical, Inc., as described below:

### SpO<sub>2</sub> Accuracy Testing

SpO<sub>2</sub> accuracy testing is conducted during induced hypoxia studies on healthy, non-smoking, light- to dark-skinned subjects during motion and no-motion conditions in an independent research laboratory. The measured arterial hemoglobin saturation value (SpO<sub>2</sub>) of the sensors is compared to arterial hemoglobin oxygen (SaO<sub>2</sub>) value, determined from blood samples with a laboratory co-oximeter. The accuracy of the sensors in comparison to the co-oximeter samples measured over the SpO<sub>2</sub> range of 70 – 100%. Accuracy data is calculated using the root-mean-squared (Arms value) for all subjects, per ISO 9919:2005, Medical Electrical Equipment–Particular requirements for the basic safety and essential performance of pulse oximeter equipment for medical use.

### Pulse Rate Motion Testing

This test measures pulse rate oximeter accuracy with motion artifact simulation introduced by a pulse oximeter tester. This test determines whether the oximeter meets the criteria of ISO 9919:2005 for pulse rate during simulated movement, tremor, and spike motions.

### Low Perfusion Testing

This test uses a SpO<sub>2</sub> Simulator to provide a simulated pulse rate, with adjustable amplitude settings at various SpO<sub>2</sub> levels for the oximeter to read. The oximeter must maintain accuracy in accordance with ISO 9919:2005 for heart rate and SpO<sub>2</sub> at the lowest obtainable pulse amplitude (0.3% modulation).



## Warranty

Nonin warrants to the purchaser, for 2 years from the date of purchase, each **GO<sub>2</sub> Achieve** exclusive of the battery. Nonin will repair or replace any **GO<sub>2</sub> Achieve** found to be defective in accordance with this warranty, free of charge, for which Nonin has been notified by the purchaser by serial number that there is a defect, provided notification occurs within the applicable warranty period.

This warranty excludes cost of delivery to and from Nonin. Nonin reserves the right to charge a fee for a warranty repair request on any **GO<sub>2</sub> Achieve** found to be within specifications. **GO<sub>2</sub> Achieve** is a precision electronic instrument and must be repaired by Nonin Technical Service. Any sign or evidence of opening the **GO<sub>2</sub> Achieve**, field service by non-Nonin personnel, tampering, or any kind of misuse of the **GO<sub>2</sub> Achieve**, shall void the warranty. The **GO<sub>2</sub> Achieve** is warranted for consumer use only. All non-warranty work shall be done at Nonin's standard rates and charges in effect at the time of delivery to Nonin.



### Nonin Medical, Inc.

13700 1st Avenue North  
Plymouth, MN 55441-5443

(763) 553-9968

(877) 577-2635

web site: [www.nonin.com](http://www.nonin.com)

e-mail: [info@nonin.com](mailto:info@nonin.com)



Authorized EC Representative:  
MPS, Medical Product Service GmbH  
Borngasse 20  
D-35619 Braunfels, Germany

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7077-000-01



Please take a moment to find and record the 9-digit serial number found on the back of your **GO<sub>2</sub> Achieve**. You'll need this number if you have to contact Nonin with technical service issues or if you have any questions regarding the use or performance of your pulse oximeter. Nonin's technical service department can be reached at (877) 577-2635.

**My Serial Number:** \_\_\_\_\_

