

Instructions for Use

NoninConnect™ Pulse Oximeter with Bluetooth® Smart Technology

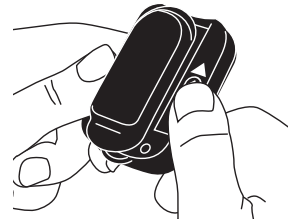
Installing AAA Batteries

WARNING: Before changing batteries, make sure the NoninConnect is off and is not applied to a finger.

1. Hold the NoninConnect so you see the back of the product and the arrows on the battery door point away from you.



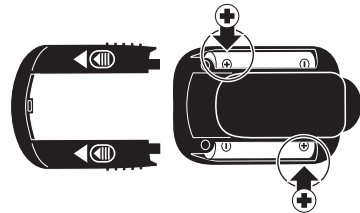
2. Place your thumbs on the ovals.



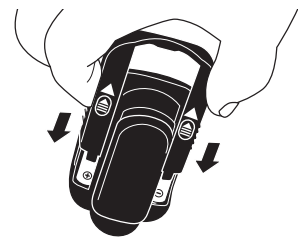
3. Slide the battery door away from you and off the NoninConnect.



4. If applicable, remove the old batteries from the NoninConnect. Properly dispose of the batteries.
5. Insert two new 1.5 volt AAA-size batteries. Carefully match the polarity markings (+ and -). The NoninConnect will not work if the batteries are inserted the wrong way.

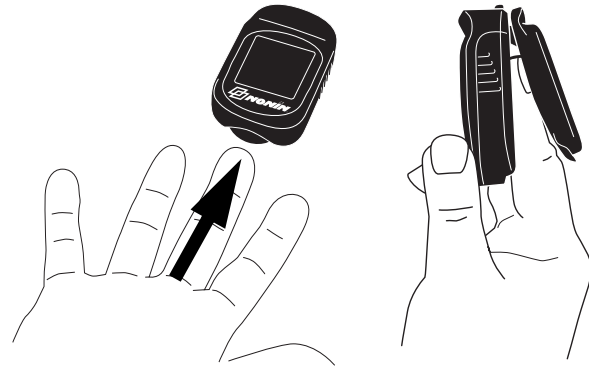


6. Carefully slide the battery door back onto the NoninConnect.



Turning On the NoninConnect

1. Insert a finger into the NoninConnect until it touches the built-in stop.



NOTE: Make sure the finger is lying flat (not on its side) and is centered within the NoninConnect. For best results, keep the NoninConnect at heart or chest level.

2. If the CorrectCheck screen (see Display Symbols table) displays, slide finger further into the NoninConnect. Correct positioning of the finger is critical for accurate measurements.
3. The NoninConnect begins sensing the pulse and displaying readings.



4. View about 4 seconds of readings before relying on the displayed values. It is common for the displayed values to vary slightly over a period of several seconds.

NOTE: While on the finger, do not press the NoninConnect against any surface and do not squeeze or hold it together. The internal spring provides the correct pressure; additional pressure may cause inaccurate readings.

The NoninConnect Finger Pulse Oximeter measures and displays blood oxygen saturation (%SpO₂) and pulse rate. It is used for spot-checking on fingers that are between 0.8 – 2.5 cm (0.3 – 1.0 inch) thick.

The NoninConnect is intended for sports fitness enthusiasts interested in managing intensity level while exercising or training. It may also be used by pilots to check for the onset of in-flight hypoxia during air travel, by mountain climbers or during other activities at elevation.

The NoninConnect is not a medical device and therefore does not require a prescription from a doctor.

Warnings

- Do not use the NoninConnect in an MR environment, in an explosive atmosphere, or on neonates.
- The NoninConnect must be able to measure the pulse properly to obtain an accurate SpO₂ measurement. Verify that nothing is hindering the pulse measurement before relying on the SpO₂ measurement.
- Keep the oximeter away from young children. Small items such as the battery door and battery are choking hazards.

Cautions

- The NoninConnect has no audible alarms and is intended only for spot-checking.
- Factors that may degrade performance or affect the accuracy of the measurement include the following:
 - excessive light, such as sunlight or direct home lighting
 - excessive motion
 - moisture in the device
 - improperly applied device
 - poor pulse quality
 - anemia or low hemoglobin concentrations
 - artificial nails or fingernail polish
- The NoninConnect may not work when circulation is reduced. Warm or rub the finger, or re-position the NoninConnect.
- The NoninConnect is designed to be applied only to a finger.
- The NoninConnect's display will shut off after 30 seconds of no readings or poor readings.
- Portable and mobile RF communications equipment including electronic article security systems can affect this product.
- Batteries may leak or explode if used or disposed of improperly. Remove batteries if the NoninConnect will be stored for more than 30 days. Do not use different types of batteries at the same time. Do not mix fully charged and partially charged batteries at the same time. These actions may cause the batteries to leak.
- Follow local governing ordinances and recycling instructions regarding disposal or recycling of the NoninConnect and product components, including batteries.

Symbols

Symbol	Definition
	Battery orientation
SN	Serial Number
BDA	Bluetooth Device Address

Display Symbols

Symbol	Description
	Nonin's CorrectCheck™ senses that the finger has not been correctly inserted. If you see this symbol, slide finger further into the NoninConnect.
	The number next to this symbol is the amount of oxygen in your blood.
	The number next to this animated symbol is your pulse rate. Pulse rate is the number of times your heart beats per minute.
	Dashes replace the readings when the NoninConnect is unable to detect a usable signal.
	White symbol – Radio is on. Green symbol – NoninConnect is connected. Flashing white symbol – Connection error. The radio will reset.
	Poor signal. Steady your hand, reposition finger, warm finger by rubbing, or select a different finger.
	Low battery. Replace batteries.
	Critical battery. Flashing indicator on full screen. The NoninConnect will not work until the batteries are replaced.

Using the NoninConnect

Installing AAA Batteries

Use only alkaline batteries. When batteries are low, displays. Replace low batteries as soon as possible.

See the “Installing AAA Batteries” instructions and figures at left.

Turning On the NoninConnect

See the “Turning on the NoninConnect” instructions and figures at left.

Turning Off the NoninConnect

The NoninConnect will automatically turn off approximately 10 seconds after the finger is removed, or after a 2-minute period of poor signals.

Connection via Bluetooth Wireless Technology

When the NoninConnect is placed on the finger and turns on, it is ready for a Bluetooth wireless connection. The NoninConnect stays in this mode until it is shut off. The symbol is white when the Bluetooth radio is on, green when the NoninConnect is connected, and flashes white when there is a communication error.

Download the NoninConnect mobile app from the iTunes® store.



Cleaning the NoninConnect

⚠ CAUTIONS:

- Clean the NoninConnect before applying it to a new user.
- Do not sterilize, autoclave, or immerse this product in liquid. Do not pour or spray any liquids into the NoninConnect.
- Do not use caustic or abrasive cleaning agents, or any cleaning products containing ammonium chloride or isopropyl alcohol.
- Do not use cleaning solutions other than those recommended here, as permanent damage could result.

1. To clean, wipe the NoninConnect's surfaces with a soft cloth dampened with one of the following:
 - A 10% bleach solution (household bleach [5.25% sodium hypochlorite]).
 - Warm, soapy water (hand dishwashing detergent – see note below), and then rinse the cleaned surfaces with a soft cloth dampened with water.
2. Dry with a soft cloth, or allow to air dry. Ensure that all surfaces are completely dry.

NOTE: The hand dishwashing detergent that was tested includes these ingredients: Sodium Lauryl Sulfate, Sodium Laureth Sulfate, Lauramine Oxide, Sodium Chloride, PPG-26, PEG-8 Propylheptyl Ether, and Phenoxyethanol.

Warranty

NONIN MEDICAL, INCORPORATED, (Nonin) warrants to the purchaser, for a period of 2 years from the date of purchase, each NoninConnect exclusive of the batteries and spring.

Nonin shall repair or replace any NoninConnect 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. If unable to repair, Nonin shall replace with a NoninConnect or a comparable product. This warranty shall be the sole and exclusive remedy by the purchaser hereunder for any NoninConnect delivered to the purchaser which is found to be defective in any manner whether such remedies be in contract, tort or by law.

This warranty excludes cost of delivery to and from Nonin. All repaired units shall be received by the purchaser at Nonin's place of business. Nonin reserves the right to charge a fee for a warranty repair request on any NoninConnect found to be within specifications.

NoninConnect is a precision electronic instrument and must be repaired by trained Nonin personnel only. Any sign or evidence of opening the NoninConnect, field service by non-Nonin personnel, tampering, or any kind of misuse of the NoninConnect, shall void the warranty. All non-warranty work shall be done at Nonin's standard rates and charges in effect at the time of delivery to Nonin.

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Specifications

Oxygen Saturation Display Range: 0% to 100% SpO₂

Pulse Rate Display Range: 18 to 321 beats per minute (BPM)

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 @ 0.8 mW max. average

Infrared: 910 nanometers @ 1.2 mW max. average

Temperature:

Operating: -5 °C to 40 °C / 23 °F to 104 °F

Storage/Transportation: -40 °C to 70 °C / -40 °F to 158 °F

Humidity:

Operating: 10% to 95% non-condensing

Storage/Transportation: 10% to 95% non-condensing

Altitude:

Operating: Up to 10,000 meters / 32,808 feet

Hyperbaric Pressure: Up to 4 atmospheres

Battery Life:

Operating: Approximately 2,200 spot checks (25 sec. per spot-check), within 10 meters/32 feet of collector with streaming data
 1 month, with batteries installed.

CAUTION: Remove batteries if the NoninConnect will be stored for more than 30 days.

Bluetooth Wireless Technology Information

Bluetooth Compliance: Version 4.0 single mode low energy

Operating Frequency: 2.4 to 2.4835 GHz

Output Power: TX: +3 dBm

Operating Range: 10 meter radius (line of sight)

Network Topology: Star - bus

Operation: Slave

NoninConnect

Antenna Type: Integrated chip type antenna

Modulation Type: Frequency Hopping Spread Spectrum

Data Rate: 1 Mbit/second

Data Latency: 6 ms

Data Integrity: Adaptive Frequency Hopping

24-bit CRC (cyclic redundancy check)

32-bit message integrity check

Data Format: Sends data packets once per second.

Includes a second counter that allows the host to detect if packets are missing and the NoninConnect to retransmit.

Quality of Service:

The NoninConnect uses *Bluetooth* Smart technology for wireless communications, which allows for reliable communications in electrically noisy environments, and transmits physiological data once per second. If data is lost, the NoninConnect will transmit data again one second later. If the connection is lost, the NoninConnect will change the *Bluetooth* symbol from green to white and become available for a connection in a few seconds.

Bluetooth Profiles Supported: GATT-based proprietary Nonin profile

Authentication and Encryption: Supported

Encryption Key Size: 128 bits AES (advanced encryption standard)

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Bluetooth Security

The *Bluetooth* radio contained in the NoninConnect is a *Bluetooth* Smart single-mode, low-energy radio. It supports a GATT-based, proprietary Nonin profile to transmit current readings from the user. Data is not stored by the NoninConnect to be transferred at a later time. The NoninConnect supports an encryption key size of 128 bits. While the NoninConnect is in a *Bluetooth* connection, it will be unavailable for other connections. Apart from the standard *Bluetooth* security measures, Nonin has implemented a non-standard security measure to the NoninConnect that, if used, will restrict the transfer of data to only devices with a specified organizationally unique identifier (OUI).