



OLED display modes

OLED display



start / mode key

★ **Key function:** start machine in power off status;
change display direction in working status.

Brief Description of Front Panel / Features

Features

OLED display

- ◆ Two color OLED display, more display modes
- ◆ Low-power consumption, continuously four direction adjustable
- ◆ Low voltage indicator
- ◆ Automatically power off in 8 seconds when there is no signal
- ◆ Small in volume, light in weight, and convenient to carry

Product Operation Scope

The fingertip Oximeter can be used to measure human haemoglobin saturation and heart rate through finger. The product applies to using in family, hospital (including clinical use in internist/surgery, anaesthesia, paediatrics, intensive care, etc.), oxygen club, social medical organizations, physical care in sports (It can be used before or after sports. Operation in sport procedure is not recommended). It is also applicable to enthusiasts on mountaineering, patients (convalescents at home or those need first aid treatment), elders over 60, those work more than 12 hours, sports and those work in the hermetic circumstance, etc. The product is not suitable to monitor patient continuously.

Product Operation Scope

/ Detailed descriptions of product functions

Detailed descriptions of product functions

01. Display Type: LCD display or OLED display
02. SpO2: Measurement range: 70% ~ 99%
Accuracy: $\pm 2\%$ on the stage of 70% ~ 99%, Unspecified ($\leq 70\%$) for SPO2
Resolution: $\pm 1\%$
03. PR: Measurement range: 30BPM ~ 240BPM
Accuracy: $\pm 1\text{BPM}$ or $\pm 1\%$ (the larger one)
04. Power: two AAA 1.5V alkaline batteries
05. Power consumption: below 30mA
06. Automatic power-off: the product shuts off by itself when no finger is in the product in 8 seconds
07. Dimension: 62mm×32mm×33mm
08. Operation Environment: Operation Temperature: 5℃ ~ 40℃
Storage Temperature: -10℃ ~ 40℃
Ambient Humidity: 15% ~ 80% on operation
10% ~ 80% in storage
Air Pressure: 70kPa ~ 106kPa
09. Declaration: EMC of this product comply with IEC60601-1-2 standard.
10. Measurement Performance in Low Perfusion Condition: required test equipment (BIO-TEK INDEX Pulse Oximeter tester) could measure the available pulse wave with the amplitude of 6% of the simulation pulse wave amplitude.
11. Interference Resistance Capacity against Ambient Light: Device works normally when BIO-TEK INDEX Pulse Oximeter tester exerts interfering signal test.

Operation Instructions / Symbols and Definitions

01. Install two AAA batteries into battery cassette before covering its cover.
02. Plug one finger into rubber hole of the Oximeter (it is best to plug the finger thoroughly) before releasing the clamp with the nail upwards.
03. Press button on the front panel;
04. Don't tremble your finger when the Oximeter is working. Your body is not recommended on moving status.
05. Press the button on the front panel, if we want change display direction;
06. Read relevant datum from display screen.
07. If there is no signal input, oximeter can shut off automatically;
08. Please replace new batteries when OLED indicates the batteries are in low power.



When plugging your finger into the Oximeter, your nail surface must be upward.

Declaration: Please use the medical alcohol to clean the rubber before each test and clean the tested finger with alcohol before and after the test. (The rubber inside of the Oximeter adopts medical rubber, which has no toxin, no harm, and brings no side effect such as allergy to the our skin).



The equipment type is BF



Refer to user manual before application

%SpO2

Hemoglobin Saturation

PR BPM

Heart Rate(BPM)



Low power indication

SN

Serial No.

Finger tip Pulse Oximeter

Fingertip Pulse Oximeter **User Manual** Ver.1.0

This Fingertip Pulse Oximeter is a kind of innovated medical device with non-invasive and continuous features for artery SPO2 and PR detection. Being portable, it is able to measure SPO2 and PR values quickly and precisely.



Diagram of Operation Principle

1. Infrared-ray receiving tube
2. Infrared-ray transmitting tube

Measurement principle

The principle of the oximeter is as follows: An experience formula of data process is established by exerting Lambert Beer Law according to Spectrum Absorption Characteristics of Reductive hemoglobin(R Hb) and oxyhemoglobin (O2 Hb) in glow and near-infrared zones. Operation principle of the instrument is to combine Photoelectric Oxyhemoglobin Inspection Technology with Capacity Pulse Scanning and Recording Technology, so that two lights with different wavelength (660nm glow and 940nm near infrared light) can be focused onto human nail through perspective clamp finger-type sensor. Then measured signal can be obtained by a photosensitive element, information acquired through which will be shown on two groups of LEDs through process in electronic circuits and microprocessor.

General Description

◆ Haemoglobin Sat uration is the percentage between the capacity of Oxyhemoglobin (HbO2) that compounded with oxygen and that of all combinativable haemoglobin (Hb) obin (HbO2) in blood. In other words, it is the saturation of Oxyhemoglobin in blood. It is a very important physiological parameter for Respiratory and Circulation Systems. Many respiratory diseases could reduce haemoglobin saturation in human blood. Moreover, factors such as Automatic Organic Regulation Malfunction caused by anaesthesia, trauma resulted from major operation and some medical examination can also cause problems in oxygen supply, which might reduce human haemoglobin saturation. As a result, such symptoms as megrim, vomiting and asthenia might appear to patients. Hence, it is very important to know hemoglobin saturation of patient timely in clinical medical aspects.

◆ The fingertip pulse oximeter features in small volume, low power consumption, convenient operation and portability. It is only necessary for patient to put one finger into fingertip photoelectric sensor for diagnosis, and the display screen will directly show measured value of hemoglobin saturation. It has been proved in clinical experiments that it possesses rather high precision and repeatability.

Possible Problems and Resolutions

Problem	Possible reason	Solution
SpO2 or PR can not be shown 3normally	1. Finger is not plugged correctly 2. Patient's Oxyhemoglobin value is too low to be measured	1. Retry by plugging the finger 2. Try more times. If you can make sure there is no problem in the product, please go to hospital timely for exact diagnosis
SpO2 or PR is shown unsteady	1. The finger might not be plugged deep enough 2. Finger is trembling or the patient is on movement status	1. Retry by plugging the finger 2. Please remain at rest
The Oximeter can not be turned on	1. Inadequate power or power off 2. Batteries might be installed incorrectly 3. The Oximeter might be damaged	1. Please replace the batteries 2. Please reinstall the batteries 3. Please contact with local customer service centre
Indication lamps are suddenly off	1. The product automatically shuts off when no signal is detected in 8 seconds 2. Inadequate power	1. Normal 2. Replace the batteries

Precautions for use

01. Do not use the pulse oximeter together with MRI or CT equipment.
02. Explosion hazard: Do not use the pulse oximeter in an explosive atmosphere.
03. The pulse oximeter is intended only as an adjunct in patient assessment. Doctors should make diagnosis in conjunction with clinical manifestation and symptoms.
04. Check the pulse oximeter sensor application site frequently to make sure that the circulation and skin integrity of patient are under good condition.
05. Do not stretch the adhesive tape while applying the pulse oximeter sensor. This may cause inaccurate reading or skin blisters.
06. Please read the manual carefully before your operation.
07. The pulse oximeter has no SpO2 alarms, it is not for continuous monitoring.
08. Prolonged use or the patient's condition may require changing the sensor site periodically. Change sensor site and check skin integrity, circulatory status, and correct alignment at least every 4 hours.
09. Inaccurate measurements may be caused by autoclaving, ethylene oxide sterilizing, or immersing the sensors in liquid.
10. Significant levels of dysfunctional hemoglobins (such as carboxyl- hemoglobin or methemoglobin) may cause inaccurate reading.
11. Intravascular dyes such as indocyanine green or methylene blue may cause inaccurate reading.
12. SpO2 measurements may be adversely affected in the presence of high ambient light. Please shield the sensor area (with a surgical towel or direct sunlight, for example) if it is necessary.
13. Unexpected action may cause inaccurate reading.
14. Medical signal with high frequency or interference caused by defibrillator may lead to inaccurate reading.

16. It may cause inaccurate reading when the positions of sensor and blood pressure cuff are on the same arterial catheter or intravascular line.
17. Hypotension, severe vasoconstriction, severe anemia, or hypothermia may cause inaccurate reading.
18. It may cause inaccurate reading by giving use of cardiotonic to patient after his cardiac arrest or when he is in quiver.
19. Bright nail or painted nail may cause inaccurate SpO2 reading.

★ Follow local ordinances and recycling instructions regarding to disposal or recycling of the device and device components, including batteries.

Classification / Accessories / Guidance / Maintenance and Preservation

Classification

01. Management Class for Medical Devices:

II equipment

02. Anti-electric Shock Type:

Internally powered equipment

03. Anti-electric Shock Degree:

Type BF equipment

Product Accessories

One hang lace

Two batteries

One user manual

Guidance and manufacture's declaration-electromagnetic radiation-for other EQUIPMENTS and SYSTEMS

The Pulse Oximeter is designed to be used in specified electromagnetic environment .
Users of the Pulse Oximeter must use it in the following environments.

Radiation Test	Compliance	Electromagnetic environment-guidance
RF interference CISPR 11	Group 1	RF signal of Pulse Oximeter is simply created by its internal function. Therefore, its RF interference is very low and is not likely to cause any interference to nearby electronic equipment.
RF interference CISPR 11	Class B	The Pulse Oximeter applies to all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.

Maintenance and Preservation

01. Replace the batteries timely when low voltage lamp is on.
02. Clean the surface of fingertip oximeter before it is used to diagnose patients.
03. Remove the batteries inside if you will not operate the Oximeter for a long time.
04. It would be better to preserve the product in -10~40℃ (-14~104 ℉) and humidity is 10%-80%.
05. It is recommended that the product should be kept dry anytime. A wet ambience might affect its lifetime and even damage the product.
06. Please follow the law of the local government to deal with used batteries.