

## TFT display

Ver 1.0 revision date:4-2020

### 1 General Description

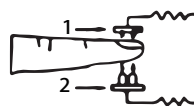
Haemoglobin Saturation is the percentage between the capacity of Oxyhemoglobin (HbO<sub>2</sub>) that compounded with oxygen and that of all combinative haemoglobin (Hb) in blood. In other words, it is the saturation of Oxyhemoglobin in blood. It is a very important physiological parameter for Respiratory 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 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 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.

### Hang rope installation

1. Put the rope thin end through the hole.
2. Put the rope coarser end through its already wearing thin end part and tighten.

### Diagram of Operation Principle



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

### 4 Features

- TFT display
- Product adopts double color TFT display, can show the six different display mode
- If the hand movements, under the effect of accelerometer, the interface can have four different kinds of display mode (suitable for matching accelerometer function instrument)
- Low-power consumption, continuously work for more than six hours with two AAA batteries
- Low voltage indicator
- APP intelligent management data
- In the absence of signals, the product will be in after 4 seconds to enter standby state
- Small in volume, light in weight, and convenient to carry

### 5 Brief Description of Front Panel

### Color display screen mode:

Keys function description: in standby mode, start the key instrument into the working state, push down this button under working state, can change the display mode.



### 6 Detailed descriptions of product functions:

Parameter	Specification
SpO <sub>2</sub> measurement range	50%-99%
SpO <sub>2</sub> accuracy 1	± 2% in the range of 70%-99% Other scope is not defined
Pulse Infusion (PI%)	0.3%-30%
Pulse cate range	25 bpm-240 bpm
Pulse rate accuracy	± 1bpm
Pulse rate Alarm range	Consistent with the display range , the set step length is 5bpm
Data update cycle	0 . 25s-2s
SpO <sub>2</sub> PR average	8s
Display Color	4 Color Display Screen
Peak Wavelength range	500 nm-100nm
Maximum optical output power	150 mW
Pulse rate display	Numeric
Power dissipation	in normal measurement , less than 10 mA , in power off state , less than 50uA;

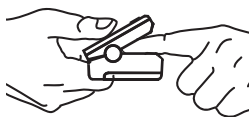
This Fingertip Pulse Oximeter is a kind of innovated device with non-invasive and continuous features for artery SpO<sub>2</sub> and PR detection. Being portable, it is able to measure SpO<sub>2</sub> and PR values quickly and precisely.

### 2 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 (O<sub>2</sub> 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 TFT through process in electronic circuits and microprocessor.

### 3 Operation Instructions

1. Install two AAA batteries into battery cassette before covering its cover.
2. 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.
3. Press button on the front panel: (Note: if equipped with automatic startup function refers to clamp oximeter, need not press the button, the instrument has 5 s automatic signal detection function, directly inserted into the finger, instrument is automatically switched on timely)
4. Don't tremble your finger when the Oximeter is working. Your body is not recommended on moving status
5. Press the button on the front panel, if we want change display direction;  
(Note: if equipped with accelerometer function of instrument then don't press the button, hand movements, the instrument with the accelerometer has four corresponding interface switch)
6. Read relevant datum from display screen.
7. The instrument has the function of sleep, no signal will enter standby state of sleep;
8. Please replace new batteries when TFT indicates the batteries are in low power.



When plugging your finger into the Oximeter, your nail surface must be upward  
Declaration: Please use the 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 rubber, which has no toxin, no harm, and brings no side effect such as allergy to the our skin).

### Battery installation

1. According to the positive and negative identity right will be two AAA batteries into the battery
2. In the direction of the arrow at the bottom of the level of battery back cover.  
Please note: pay attention to the battery positive and negative polarity, must be installed correctly, otherwise it may cause damage to instrument.

### 9 Precautions for use

1. Do not use the Fingertip Pulse Oximeter together with MRI or CT equipment.
  2. Explosion hazard: Do not use the Fingertip Pulse Oximeter in an explosive atmosphere.
  3. The Fingertip Pulse Oximeter is intended only as an adjunct in patient assessment. Doctors should make diagnosis in conjunction with clinical manifestation and symptoms.
  4. Check the Fingertip Pulse Oximeter sensor application site frequently to make sure that the circulation and skin integrity of patient are under good condition.
  5. Do not stretch the adhesive tape while applying the Fingertip Pulse Oximeter sensor. This may cause inaccurate reading or skin blisters.
  6. Please read the manual carefully before your operation.
  7. The Fingertip Pulse Oximeter has no SpO<sub>2</sub> prompt, it is not for continuous monitoring.
  8. 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 2 hours.
  9. Inaccurate measurements may be caused by autoclaving, ethylene oxide sterilizing, or 9.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. SpO<sub>2</sub> 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. Signal with high frequency or interference caused by defibrillator may lead to inaccurate reading.
  15. Venous pulsations may cause 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 cardiotoxic to patient after his cardiac arrest or when he is in quiver.
  19. Bright nail or painted nail may cause inaccurate SpO<sub>2</sub> reading.
- Follow local ordinances and recycling instructions regarding to disposal or recycling of the device and device components, including batteries.

### Scope of application / Intended use

The fingertip pulse oximeter can be used to measure human haemoglobin saturation and pulse rate through finger; it can be used in hospitals, families and schools.  
contraindication: not found

### ! note !

1. The image in the instruction may have slight differences with the actual instruments.
2. Technical parameters and appearance change, without prior notice.

**Product include:** main machine and SpO<sub>2</sub> sensor.

### 10 Maintenance and Preservation

1. Replace the batteries timely when low voltage lamp is on.
2. Clean the surface of fingertip pulse oximeter before it is used to diagnose patients.
3. Remove the batteries inside if you will not operate the Oximeter for a long time.
4. It would be better to preserve the product in -10~40°C (14-104°F) and humidity is 10%-80%.
5. It is recommended that the product should be kept dry anytime. A wet ambience might affect its lifetime and even damage the product.

### 11 Product Accessories

1. One hang lace
2. One user manual

### Symbols and Definitions

	BF type application part		IP degree		Serial number		Lot number
	Separate collection		Humidity range		Date of manufacture		Temperature range
	Reference manual		Keep dry		Manufacturer		Avoid sunlight
	Cautions		Up toward		Standby		

### Possible Problems and Resolutions

Problem	Possible reason	Solution
SpO <sub>2</sub> or PR can not be shown normally	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
SpO <sub>2</sub> 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
The screen suddenly goes off	1. The product automatically shuts off when no signal is detected in 4 seconds 2. Inadequate power	1. Normal 2. Replace the batteries

Reserves the right to technical change appearance, our products are subject to change without prior notice, please forgive me!

### 12 Statement:

1. Maintenance with data such as circuit diagram, components list, figure and the detailed rules of correction, injection, available only to the repair factory training qualified personnel and units.
2. The company can be in the form of email or other electronic files provide users with random files.
3. The instrument is not used for evaluation of blood oxygen probe pulse and pulse blood oxygen monitor accuracy.

### 13 Warranty

This product come with one year warranty and please fill up the following details for warranty purpose

Product Model Number :  
Purchase Store:  
Purchase Date: Invoice Number:  
Customer Name: Customer Phone:  
Customer Address: Customer Address:  
Post Codes: E-mail:

Thank you very much for using our products.  
Please keep this instruction for warranty service.