**Precautions**
- Do not attempt to repair the Pulse Oximeter by yourself. Only certified engineers should maintain and repair it.
- Change the contact position between the Oximeter probe and the finger periodically if you are monitoring your SpO2 levels and pulse rate for more than 2 hours.
- This product is not designed to be used by newborn babies.
- Seek medical care if the measured value goes beyond the normal range and you are sure that the instrument is not malfunctioning.
- The pulse oximeter uses infrared light (invisible to your eyes) to measure your SpO2 levels. Hence, please do not stare at the light-emitting components of the Oximeter, as that could cause permanent damage to your eye's retinas.
- For details about clinical limitations and contraindications, please carefully consult relevant medical literatures.

The following factors may affect the accuracy of measurement:
- The Oximeter is used in an environment involving high-frequency devices, such as high-frequency electric knives and CT apparatuses.
- The probe of the Oximeter is placed on the same arm that a blood pressure cuff is applied, at ambient light from the tissues. The Pulse Oximeter feature herein is small, portable, non-invasive and easy to use. The user only needs to insert a finger into the chamber to measure his/her SpO2 and pulse rate.

**Working Principles, Expected Usage, and Applicable Scope**
Oxygenated blood absorbs light at 660nm (red light), whereas deoxygenated blood absorbs light preferentially at 905nm (infra-red). A pulse oximeter works by passing a beam of red and infrared light through a pulsating capillary bed and then measure the amount of red and infrared light emerging from the tissues via a sensor. To improve accuracy, the INV-430J/PE uses a proprietary algorithm to collect data from pulsatile arterial blood and ignores local noise from the tissues. The relative absorption of light by oxyhemoglobin (HbO2) and deoxyhemoglobin is then processed according to the Beer-Lambert's law and a qualitative measurement of the users' oxyhemoglobin status i.e. Oxygen saturation level (SpO2) derived.

**Symbol Conventions**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF-type application part</td>
<td></td>
</tr>
<tr>
<td>Caution: Please see this manual.</td>
<td></td>
</tr>
<tr>
<td>Symbol of oxygen saturation</td>
<td></td>
</tr>
<tr>
<td>Symbol of pulse rate</td>
<td></td>
</tr>
<tr>
<td>Temperature limitation</td>
<td></td>
</tr>
<tr>
<td>When end users abandon this product, they must send the product to the collection place for recycling.</td>
<td></td>
</tr>
<tr>
<td>Manufacturer information</td>
<td></td>
</tr>
</tbody>
</table>

**Overview**
SpO2 stands for peripheral capillary oxygen saturation. Oxygen saturation is defined as the ratio of oxyhemoglobin (HbO2) to the total concentration of hemoglobin (i.e. Oxyhemoglobin + reduced hemoglobin) present in the blood. It is an important physiological parameter involved in respiration and circulation. The Pulse Oximeter feature herein is small, portable, non-invasive and easy to use. The user only needs to insert a finger into the chamber to measure his/her SpO2 and pulse rate.

This device is intended for non-medical use in healthy people to monitor their pulse and blood oxygen levels for sports and/or aviation only. Do not use for continuous monitoring.

**Limitations**
Spot check pulse oximeter takes 1-2 reading every second and takes an average of 3-6 readings before displaying the result. Hence, you will have to wait at least 3-6 seconds before a result will be displayed on the monitor. If the pulse oximeter fails to detect blood flow for the first few seconds, then the results will be delayed accordingly.

The pulse oximeter does not work for people with naturally small fingers or low peripheral blood flow. This is because the pulse oximeter would not have enough blood to take a measurement. Please note that prolong use of a pulse oximeter, hypotension, vasoconstriction, hypothermia and certain medications can lead to low blood flow. Nail polish can also impede the pulse oximeter from taking a reading.

Finally, it is generally accepted that the saturation percentage is unreliable on the steepest part (around 60 mmHg) of the oxyhemoglobin dissociation curve.

**Innovative features of the INV-430J/PE**
The INV-430J/PE attempts to ameliorate some of the above problems by
1) Increasing the sensitivity of the sensor so that it can measure the user’s SpO2 and Pulse Rate (PR) at a blood perfusion Index (PI) as low as 0.2%.
2) Comes with anti-motion technology so that the pulse oximeters can still function even when the finger moves.
3) Using a self-adjusting smart smart foot pedal to fit the finger snugly but not so tight as to impede blood flow that might lead to a low PI.
4) Using soft, hypoallergenic medical grade silicon in the finger chamber so that the pulse oximeter will not cause discomfort.
5) Using solid ABS plastic to block ambient light from reaching the sensor so that the signal to background ratio and the accuracy of the measurement is dramatically increased.
6) Having a plethysmograph that allows the user to see and gauge the amount of blood detected by the pulse oximeter. This will allow the user to know if the finger is properly inserted into the finger chamber and if the pulse oximeter is taking the measurements properly. (See below for details)

**Operation Guide**
**Switch on the power supply of the pulse Oximeter**
Stick one finger completely into the finger chamber of the Oximeter. The fingernail should be facing upward. Release the clip and press the power key to power on the Pulse Oximeter.

The INV-430J/PE pulse oximeter
comes with anti-motion technology so that the pulse oximeter can function even if there is finger movement. However, for best results, try to keep your finger still during measurement. It is also not advisable to use this instrument during sports activities as movement may lead to inaccuracies. Once the reading stabilizes, read the measured values of oxygen saturation and pulse rate on the OLED screen. The Oximeter will automatically shut down 10 seconds after you remove your finger.

⚠️ If you do not insert your finger completely into the chamber the measurement will be inaccurate.

⚠️ Replace the batteries when the batteries are low and the symbol (•) flickers on the screen.

### Schematic Diagram of Display

The following figure shows the information display on the OLED screen of the Oximeter in normal detection state:

1. Symbol of oxygen saturation
2. Measured value of oxygen saturation
3. Bar graph
4. Plethysmograph
5. Measured value of pulse rate
6. PI
7. Symbol of pulse rate
8. Battery power indication

### Power-On Key/Function Key Operations

**PRESS** (<0.5 sec) the power-on/function key to turn on the pulse oximeter. Once it is turned on, **HOLD** (>0.5 sec) the power-on/function key to enter into the menu interface. **PRESSING** (>0.5 sec) on the power-on/function key will allow you to to scroll through options while **HOLDING** (>0.5 sec) it will select an item. "***" indicates the option you are currently at (Please see figure below).

#### Alarm Sound Setting

To turn the alarm on/off, **PRESS** the power-on/functional key to move "***" to Alm. **HOLD** the power-on/functional key to switch the option from on to off or vice versa. When Alm is set to on and the measured values of the blood oxygen saturation (SpO2) and/or pulse rate (PR) go beyond the stated upper or lower limit (See Alarm Range Setting to set parameters for Alarm), the alarm will go off. When Alm is set to off, the alarm is deactivated. The alarm will not go off regardless of your SpO2 and/or PR values.

#### Brightness Setting

To change brightness, **PRESS** the power-on/functional key to move "***" to brightness. **HOLD** the power-on/functional key to set the brightness. There are 5 brightness settings. 5 is the brightest. The factory default setting is 4. Please note that a brighter setting will drain the battery faster.

![Image](image.png)

### Cleaning

To clean the instrument, power off and remove the batteries first. Then clean the outer surface of the instrument (including the LED screen) using a piece of dry soft cloth dipped with 75% medical alcohol. **Do not immerse the unit in alcohol.**

**Caution:** Do not use any strong dissolving agent such as acetone.

**Caution:** Do not rub the body of the instrument using materials such as steel wire balls or polished metal objects.

**Caution:** Ensure that there is no washing liquid on the surface of the instrument.

**Caution:** Do not allow liquid to flow into the instrument during cleaning.

**Caution:** Do not immerse any part of the instrument into any liquid.

### Disinfection

Before measurement with the instrument, wipe the rubber finger pad inside the chamber using a piece of dry soft cloth dipped with 75% medical alcohol. Clean the finger to be measured using the medical alcohol for disinfection purposes before and after use.

**Do not disinfect the instrument by using high-temperature/high-pressure disinfecting gas.**

### Maintenance

- Remove the batteries from the battery slot and properly store them if you do not plan to use the Oximeter for a long period of time.
- Replace the batteries if they are low on power.
- Clean the Oximeter and the fingertip before use to ensure accurate reading.
- Store the Oximeter between 14 and 122°F (−10 to +50°C) and at humidity levels no greater than 93%.
- Periodically check the Oximeter for damage.
- Avoid using the Oximeter in an environment with flammable gases or using it in an environment where the temperature or humidity is too high or too low.
excessively high or low.

- Check the accuracy of the oxygen saturation and pulse rate readings by using an appropriate calibration apparatus.

**Technical Specifications**

1. **Dimensions:** 62.0 mm (Width) × 37.0 mm (Depth) × 32.0 mm (Height)
   - Weight: 42.5 g (including the height of the two AAA dry batteries)
2. Peak wavelength range of the light emitted from the probe: red light 660 nm ± 3; infrared light 905 nm ± 5.
3. Maximum optical output power of the probe: 1.2 mW for infrared light (905 nm).
4. Normal working condition

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Temperature</td>
<td>5°C to 40°C (41°F to 104°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>15% to 80%, non-condensing</td>
</tr>
<tr>
<td>Atmospheric Pressure</td>
<td>70 kPa to 106 kPa</td>
</tr>
<tr>
<td>Rated Voltage</td>
<td>DC 3.0 V</td>
</tr>
</tbody>
</table>

5. Default values and conditions of alert

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen saturation</td>
<td>Upper limit: 100  Lower limit: 94</td>
</tr>
<tr>
<td>Pulse rate</td>
<td>Upper limit: 130  Lower limit: 50</td>
</tr>
<tr>
<td>Alert condition</td>
<td>When the alert switch is on and the actual measured value goes beyond the preset alert parameter range, the Oximeter gives an alert sound.</td>
</tr>
</tbody>
</table>

6. Technical parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display range</td>
<td>Oxygen saturation: 35% to 100%</td>
</tr>
<tr>
<td></td>
<td>Pulse rate: 25 bpm to 250 bpm</td>
</tr>
<tr>
<td>Resolution</td>
<td>Oxygen saturation: 1%</td>
</tr>
<tr>
<td></td>
<td>Pulse rate: 1 bpm</td>
</tr>
<tr>
<td>Measurement precision</td>
<td>Oxygen saturation: ±2% (70% to 100%)</td>
</tr>
<tr>
<td></td>
<td>No requirement (≤ 69%)</td>
</tr>
<tr>
<td></td>
<td>Pulse rate: ±2 bpm</td>
</tr>
<tr>
<td>Alert range</td>
<td>Oxygen saturation: Upper limit: 50% to 100%</td>
</tr>
<tr>
<td></td>
<td>Lower limit: 50% to 100%</td>
</tr>
<tr>
<td></td>
<td>Pulse rate: Upper limit: 25 bpm to 250 bpm</td>
</tr>
<tr>
<td></td>
<td>Lower limit: 25 bpm to 250 bpm</td>
</tr>
<tr>
<td>Alert error</td>
<td>Oxygen saturation: ± 1% of the preset value</td>
</tr>
<tr>
<td></td>
<td>Pulse rate: The greater of ±10% of the preset value and ±5 bpm</td>
</tr>
</tbody>
</table>

**Safety Type**

- Anti-electric-shock type: internal power supply device
- Anti-electric-shock degree: BF-type application part
- Running mode: continuous working

Waterproof grade: IP22

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