

The GZD Pulse Oximeter User Manual

0. Front Matter

*List of abbreviations (marked with *):*

LED: Light-emitting diode; MetHb: Methaemoglobin; COHb: Carboxyhaemoglobin;

SpO₂: Peripheral capillary oxygen saturation; PPG: Photoplethysmogram;

LCD: Liquid crystal display

Warnings! 

- DO NOT use the pulse oximeter in heated, explosive or magnetic environment.
- DO NOT disassemble the oximeter without assistance from technicians.
- Stop using the oximeter if the screen or LEDs* is broken.

Cautions! 

- Severe hypoxemia, anemia, hypotension, hypertension or hypothermia may lead to inaccurate measurements.
- High level of MetHb* or COHb* in pathologic conditions gives inaccurate readings.
- Remove finger decorations before conducting any assessment.

1. Introduction

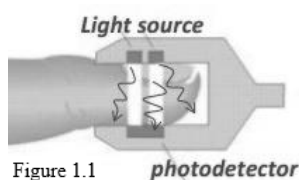


Figure 1.1

According to the wavelength-dependent optical absorption spectra of hemoglobin, an experience formula derived from Beer's Law is utilized. With 660nm red and 890nm near-infrared LEDs* acting as the light source, signals collected by a photodetector are further processed by electronic circuits and microcontroller.

Product features

- ✓ LCD* screen displays real-time SpO₂ *, heart rate readings and PPG* waveform.
- ✓ Automatic calibration with efficient digital processing.
- ✓ Changeable lithium-ion battery.

2. Product Identification



Figure 2.1 Product Components

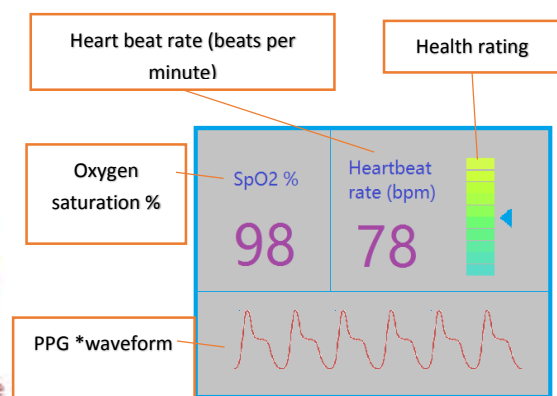


Figure 2.2 Screen Display

	Functions	Parts
1	Receives PPG* signals after inserting finger	Red and IR LEDs*, photodetector and insulating cover
2	User control and analog signal processing	Analog parts, light intensity knobs (each for Red and IR) and master switch
3	Heartbeat rate, SpO ₂ * and PPG* waveform display	LCD* screen, Arduino digital processing unit
4	Power supply	PP3 battery, connecting wire

Table 2.3 Identification of components

3. Implementation and Operations

Steps of measurement:

1. Place the pulse oximeter on a table.
 - Components are fragile, transport with care.
2. Plug a PP3 9V lithium-ion battery in the battery pack.
 - The correct direction is indicated on the battery pack.
3. Insert patient's index finger into the finger probe as shown (Fig. 3.1).
4. Flip the switch (marked with 2) to "ON" to turn on the pulse oximeter (Fig. 3.2). After a few seconds, the instantaneous heart rate, SpO₂ * reading and PPG* waveform will be displayed on the screen (Fig. 2.2).
 - Limit the movement of patient in order to obtain optimal readings.
 - Change the battery if LEDs* or display does not work properly.
5. Flip the switch back to the side marked with 2 and Remove the batteries after each measurement. This is to avoid battery leak and prolong device life (Fig. 3.2)



Figure 3.1 Finger Probe

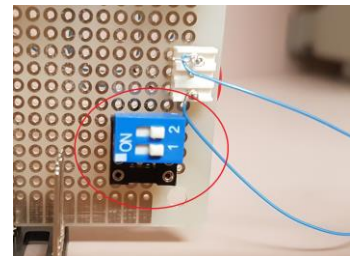


Figure 3.2 Power Switch

Data storage:

1. The measurement results are automatically stored in the SD card placed under the screen as an Excel file. This is for future assessment of the patient.
 - The SD card can only store 30-minute data. The initial data will be overwritten after 30 minutes.
2. Plug the SD card into a computer via a card reader to access the data recorded (Fig. 3.3).



Figure 3.3 SD Card Reader

4. Disclaimer

The GZD pulse oximeter is provided as is without any warranty, neither expressed nor implied. Use of the product is at user's risk. The design of the device is subject to copyright and cannot be reproduced in any form, without the consent of our company.