InSight™ Pulse Oximeter

Monitor

Operator's Manual

Table of Contents

Chapter I Overview

1.1 Introduction

The monitor is used to measure SpO2 (blood oxygen saturation).

WARNING	This equipment must be operated by veterinary professionals. Personnel who are not authorised or trained should not attempt to operate this device.

NOTE	The illustrations in this manual may be slightly different than actual device due to manufacturer updates.

Safety

Do not use the monitor while charging.

Degree of protection against electric shock: Type BF Applied

The monitor is suitable for small animal vital signs monitoring. With the spot measurement mode, it stores up to 100 patients' data (200 records for each patient). With the monitoring mode, it stores 48 hours of measurement data with a friendly interface, 3.5" colour TFT screen and data review functions.

When using audio and visual alarm mode, the red light flashes when power is low. When measuring results are outside the specified limits, the font of the result becomes red and an audio alarm sounds. The user can turn alarms on or off as required.

NOTE	The device will shut off automatically in spot measurement mode with 1 minute of no activity. Auto shut off can be disabled if needed. See Section 3.3.1.

Chapter II Main Parts & Accessories

2.1   Button and Indicator Light

Alarm Light →   ← Power Light

Function 1 →   ← Function 2

Power →   ← Mute

↑ Select

Fig 2.1.1 Buttons and Indicator Light

- **Power –** Switch on/off
- **Mute –** Press this key to suspend or resume the alarm loudspeaker
- **Function 1 –** Carry out functions as indicated by text showing on the lower left corner of screen
- **Function 2 –** Carry out functions as indicated by text showing on lower right corner of screen
- **Select –** Choose different options on setting menu
- **Alarm Light –** Red light flashes when alarm is triggered or when battery is low
- **Power light –** Solid red light indicates monitor is charging. Solid green light indicates full charge

2.2 Power Socket
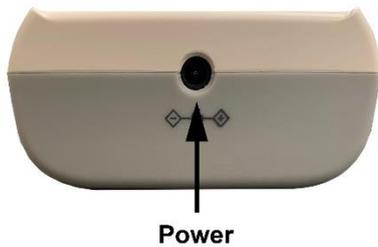
Fig 2.2.1 Power Socket

Power

NOTE   Please only use the power adapter supplied. Do not use device while charging.

2.3 Reset Micro USB

Fig 2.3.1 Reset Micro USB

Open the protecting shell and insert a needle into the reset hole. Press hard, the device will be reset.

2.4 Ports

Fig 2.4.1 Ports

SpO2

Pull Hole

NOTE   Not all ports available on all models.

2.5 Cage Clip

Cage Clip →

Fig 2.5.1 Cage Clip

NOTE   Device is supplied with cage clip in situ.

2.6 Accessories
A. SpO2 Sensor, 1pc
B. SpO2 Clips, 1 small, 1 large
C. USB Cable, 1pc
D. Power Adapter, 1pc
E. Charging Dock, 1pc
F. User Manual, 1pc

Chapter III Interface

3.1   Main Interface
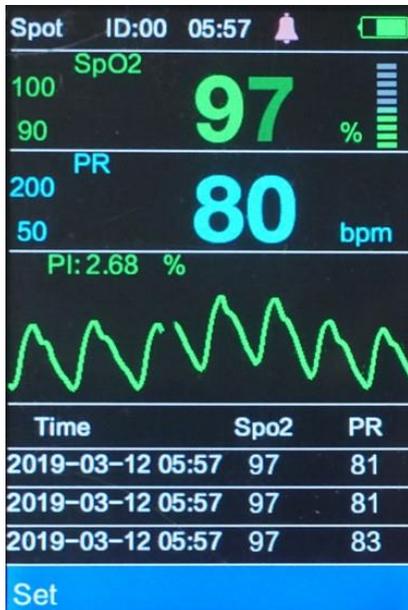
Fig 3.1 Main Interface

3.2   SpO2 Measurement Interface

3.3   System Menu

Turn on the device, press "Set" button to enter the system setup menu.
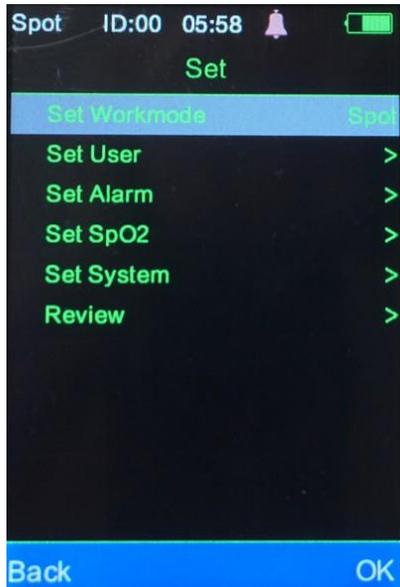
Fig 3.3 System Menu

3.3.1 Work Mode Setup:

SPOT & Monitoring Mode

SPOT mode is best used to obtain a single reading or series of readings. Monitoring mode is best used when needing to continuously monitor a patient undergoing sedation, anaesthesia, critical events etc.

Under SPOT mode, the device will shut off automatically after 1 minute of no monitoring activity. The results will be saved/stored at intervals ranging from 4-120 seconds, as set by the user (see Sections 3.4.3 and 3.4.4). ID management can only occur under SPOT mode (see Section 3.4.5)

Under Monitoring mode, auto-shut off is disabled and the device works continuously. The results are recorded at intervals ranging from 4-120 seconds, as set by the user (see Sections 3.4.3 and 3.4.4). User ID's can be selected under Monitoring mode but ID creation and management can only occur in SPOT mode (see Section 3.4.5).

NOTE   After the internal memory is full, the earliest records will be overwritten.

3.3.2 Alarm Setup: Set the Alarm Limit
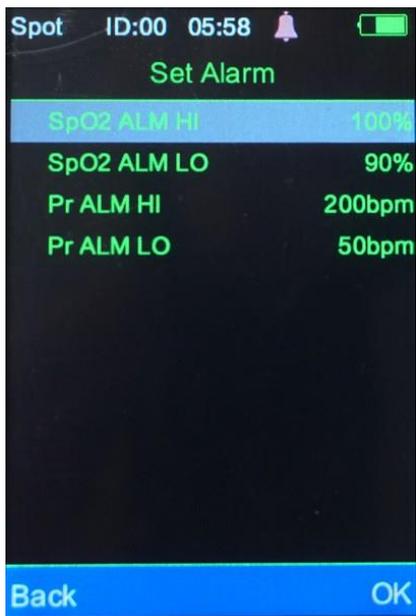
SpO2 Alarm Range: 100%~0%

Pulse Rate Alarm Range: 0~501 BPM

Fig 3.3.2 Alarm

3.3.3 SpO2 Setup

Beep: Turn beep per heartbeat on/off
Mean Time: Select the timer interval for recording data

3.3.4 System Setup: User Preferences Setup
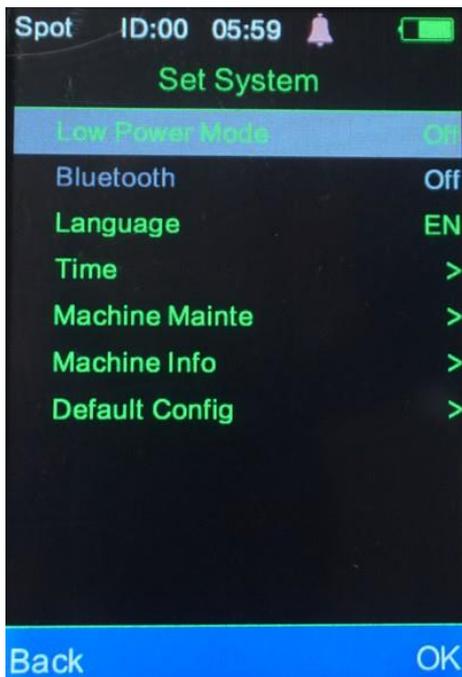
Fig 3.3.4 System Setup

Low Power Mode

Under SPOT mode, the device will shut off automatically with no measurement taken within 1 minute. To disable auto shut off, set Low Power Mode to "Off".
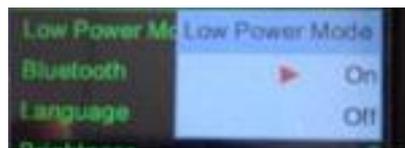
NOTE   Under monitoring mode, Low Power Mode (auto shut off) is unavailable.

Bluetooth: On/Off

NOTE   The Bluetooth function is not available in the current version of the device.

Language: English, Chinese
Brightness: Level 1, Level 2
Time: Adjustable
Set ID (Under SPOT Mode): Select ID, New ID, Delete ID. ID's can only be created and selected in SPOT mode. Once the ID is created and selected, the user can switch to Monitoring mode to begin monitoring and recording data for that ID
Default Configuration: To restore the default factory settings
Machine Maintenance: For service technicians only
Machine Information: Version No.

3.3.5 Review: Measurement Results Review

Choose "OK", system will display saved IDs. Select ID and press "OK" to display the results.
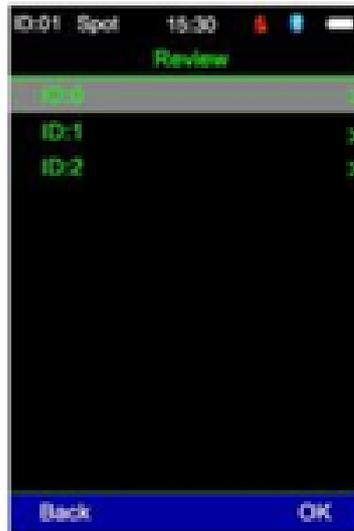
3.3.5.1 Table
SpO2 Table: Time, SpO2, PR

3.3.5.2 Trend Chart
SpO2 Trend Chart

Fig 3.3.5.2 SpO2 Trend Chart

The SpO2 trend chart displays SPO2 and Pulse Rate. The left vertical axis is oxygen saturation in percent, the right vertical axis is pulse rate in BPM and the horizontal axis is time in seconds.

Chapter IV SpO2 Measurement

4.1   Measurement Parameters
Arterial Oxygen Saturation (SpO2): Oxyhaemoglobin percentage of total haemoglobin
Pleth Waveform (Pleth): Patient pulse signal in Pleth waveform
Pulse Rate: Pulse per minute
Index Bar: In proportion to the pulse strength
Blood Flow Perfusion Index: PI values reflect the pulse strength. The stronger the pulse, the higher the PI value

4.2   Measurement Instruction
SPO2 Sensor:
1. Connect the SpO2 sensor to the monitor appropriately
2. Press the power button to turn on the monitor
3. Place the SpO2 sensor on the patient appropriately. Lingual surface is preferred but sensor can also be placed on lip, ear, prepuce/vulva or any other non-haired, minimally pigmented surface

4.3   Cautions
1. You must use the SpO2 sensor supplied with the monitor
2. Keep the SpO2 sensor stable to get accurate measurement results
3. When the SpO2 sensor or the patient is moving, the measurement results may not be accurate
4. Do not put the SpO2 sensor on the same limb as a blood pressure cuff, bandage or peripheral catheter
5. Check all the cables and make sure the SpO2 sensor is in good condition before use
6. Do not use the monitor when the patients pulse rate is lower than 25 BPM as this can cause incorrect results
7. During long term monitoring, the user should verify the SpO2 sensor is still correctly placed. Re-position as needed every 2-4 hours
8. Keep the SpO2 probe placement location clean. Blood, dirt or other fluids may cause inaccurate results

4.4   SpO2 Errors and Possible Causes of Errors

Error	Cause
SysErr3	SpO2 module self-test error
SysErr4	SpO2 module communication
No Pulse	Can't find pulse
No Sensor	SpO2 sensor not connected
Sensor Off	Sensor is no longer placed on patient
Searching	Searching for pulse

Chapter V Specifications

5.1   Equipment Classification (IEC 60601-1)
IEC Class II, Type BF applied

Display: 3.5" Colour TFT
Dimensions: 65 x 30 x 145 mm (2.5 x 1.2 x 5.7")
Weight: 250g (8.8 oz) with rechargeable battery

Working Environment
    Operating Temperature: 5~40°C (41~104°F)
    Storage/Transportation Temperature: -20~55°C (-4~131°F)

Humidity
    Operating: 15~80%
    Storage/Transportation: ≤95%

Power: 4V, DC, P≤3.2VA
Power Source: AC power or battery

Fuse (Self-Recovery)
    Input Fuse: 2A/250V
    Fuse (Battery): 60Vdc/3A (max)

Battery
    Lithium Ion Rechargeable Battery: 3.6V/4.2Ah
    Work Time: 8 hours
    Charge Time: 6 hours

Measurement Range
    SpO2: 0~100%
    PR: 0-500 BPM
    Perfusion Index: 0.05-20%

5.2   Accuracy Range
SpO2: 70-100%
PR: 30-500 BPM
Perfusion Index: 0.05-20%

5.3 Measurement Accuracy

SpO2: +/- 2 digits (70-100%)

Undefined (<70%)

On Motion Condition

Pulse Rate: +/- 3 digits

SpO2: +/- 3 digits

Chapter VI Instruction of USB Data Upload

6.1   Instruction of USB Data Upload

1. Open 'HandleVitalSignsMonitorSoftwareSetup'

2. Select 'Run anyway'

3. Select 'Next'

4. Select 'Install'

5. Select 'Next'

6. Select 'Finish'

7. Select 'Close'

8. The icon below will appear on your desktop

HandleVital...

9. Open the software and connect the InSight Pulse Oximeter via USB to the computer, select Import to transfer data to the PC