Bar Chart

- Entry "Data History", press the ▲/▼ button to highlight "Bar Chart" option for viewing statistics of SpO2, and then press the SET button to select the option.
- Entry "SpO2 Memory Data", press the SET button to go back to the monitoring screen.

Memory Transfer to ROSSMAX App

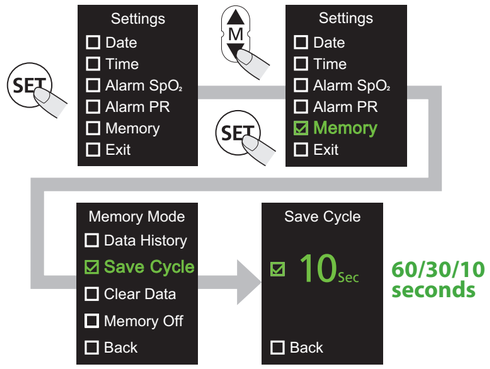
- Entry into "Data History", press the ▲/▼ button to highlight "Memory Transfer" option, and then press the SET button to start data transmission for a few seconds.

Note: Before entering the data history mode, the M icon should collect more than 1 data.

Memories mode- Save Cycle

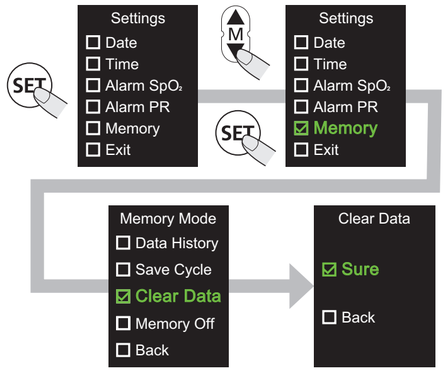
Optional of memory interval: 60 / 30 / 10 seconds

- Press the SET button and ▲/▼ button to highlight "Memory" option, and then press the SET button to select the option.
- Entry "Memory Mode", press the ▲/▼ button to highlight "Save Cycle" option, and then press the SET button to select the option.
- Entry "Save Cycle", press the ▲/▼ button to highlight option, and then press the SET button to select the option.
- Press the ▲/▼ button to change the value; press the SET button to save the desired value.
- Press the ▲/▼ button and the SET button to select "Back/Exit" to return.



Memories mode- Clear Data

- Press the SET button and ▲/▼ button to highlight "Clear Data" option, and then press the SET button to select the option.
- Entry "Clear Data", press the ▲/▼ button to highlight "Sure" option, and then press the SET button to select the option.
- Press the ▲/▼ button and the SET button to select "Back/Exit" to return.



Note: After clearing data, the M icon will show 0 data.
Caution: The deleted data could not be restored.

Audio Signals

No.	Name	LCD Display	Sound	Control
1	Power on	rossmax V0.00 → 09/14/2018 15:36 SpO2 0 % PR 0 BPM Software version → start measure	Beep for 2 seconds	Press ⏻ button
2	Pulse search	♥ The icon ♥ flickers	X	X
3	Max./ Min SpO2 and Pulse rate warning	Show High or Low in red icon. Reflects upper or lower alarm limits.	Beep-beep sounded repeatedly	Default
			Mute for temporary, will Beep-beep sounded after two minutes.	mode
			Mute before power off	mode
4	Probe failure alarm	09/14/2018 15:36	The icon shows on the screen	Beep-beep sounded repeatedly	X
5	Probe connect failure alarm	09/14/2018 15:36	The icon shows on the screen	Beep-beep sounded repeatedly	x
6	Low battery alarm	09/14/2018 15:36	The icon shows on the screen	Beep-beep sounded repeatedly for 1 minute and power off	x
7	Automatic Off	X		Beep-beep sounded and then power off	After pulse is undetectable for around 1 minute.
8	Unable measure	09/14/2018 15:36 – – – –	Blood saturation & pulse rate appears " - - "	Beep-beep sounded repeatedly.	x
9	AC Power	icon		X	X

Specification

SpO2	
Measuring range	35% – 100% (the resolution is 1%)
Accuracy	70% – 100% (No Motion. ±2%, Motion. ±3%, Low Perfusion. ±2%)
Pulse Rate	
Measuring range	30 – 250 bpm (the resolution is 1 bpm)
Accuracy	30 – 250 ± 3 digits
Probe Type	
Probe model	Rossmax PA100, PB100, PC100, PD100(Single Use), PF100
Extension cord	Rossmax PE100
Electrical Specification	
Battery	AA * 4 (Alkaline)
Battery Life	Continually for 15 hours with 4 alkaline batteries
AC Adaptor	Model: HK-X205-A06, HK-XW05-A06, (W=1,2,3,4), HKKS-13116, HKKS-13117 Input: AC100-240V, 50/60Hz, 0.2A max; Output: DC 6V, 0.8A
Environmental conditions	
Operation Condition	Temperature: 5°C – 40°C (41°F – 104°F), Relative Humidity:15% – 95%(non condensing), Atmospheric pressure: 700hPa ~ 1013hPa
Storage /Transport Condition	Temperature: -20°C – 70°C (-4°F – 158°F), Relative Humidity:15% – 95%(non condensing), Atmospheric pressure: 700hPa ~ 1013hPa Note: The condition of -20°C or 70°C back to use should stand for 3 hours at room temperature.
Dimension	Size: 14.5(L) x 7.25(W) x 2.25cm(H)
Weight	About 150g (without the batteries)
Standard	IEC/EN60601-1, IEC/EN60601-1-2, IEC/EN60601-1-11, ISO80601-2-61
Symbol Descriptors	
	Manufacturer
SN	Serial number
EC REP	EU representative
	Type BF (Body Floating
IP Classification	IP22: Protected against foreign objects and moisture
CE	CE Mark
	Warning: the symbol on this product means that it's an electronic product and following the European directive 2012/19/EU the electronic products have to be dispose on your local recycling centre for safe treatment.
LATEX	Contains of natural rubber latex

Troubleshooting

Symptoms	Check points		Corrections
SpO2 or Pulse rate cannot displayed	– – – –	The icon "- -" shows on the screen	Place the finger properly and try again.
		This icon means probe connect failure.	Be sure "Rossmax" probe is connected to the device correctly.
		This icon means probe dysfunction	Replace with new probe.
	Applied finger improperly		Place the finger properly and try again
SpO2 or Pulse rate are not displayed stably	Finger is shaking or body is moving		Keep body steady
	Applied finger improperly		Place the finger properly and try again
No display when the ⏻ bottom is pressed	Batteries run down		Replace with new batteries
	Batteries inserted incorrectly		Re-insert batteries
The display disappears suddenly	The device will auto power off when it gets no signal		Normal
	Low battery		Replace with new batteries

Note: If the unit does not work, return it to your dealer. Under no circumstance should you disassemble and repair the unit by yourself.

Warning

- This device is not intended for use by people (including children) with restricted physical, sensory or mental skills or a lack of experience and/or a lack of knowledge, unless they are supervised by a person who has responsibility for their safety or they receive instructions from this person on how to use the device. Children should be supervised around the device to ensure they do not play with it.
- This device only for spot-checking, but not medical result evaluation.
- This device is designed to determine the percentage of arterial oxygen saturation of functional hemoglobin. Factors that may degrade pulse oximeter performance or affect the accuracy of the measurement include the following:
  - Do not apply the pulse oximeter on the same arm as a blood pressure cuff, arterial catheter or infusion line (s)
  - Excessive light, such as sunlight or direct home lighting.
  - Not steady at the site of application (e.g. term-bling)
  - Moisture in the device
  - Improperly applied device
  - Finger is too large or too small to fit into the device
  - Poor pulse quality
  - Venous pulsations
  - Anemia or low hemoglobin concentrations
  - Cardio green and other intravascular dyes
  - Carboxyhemoglobin
  - Methemoglobin
  - Dysfunctional hemoglobin
  - Artificial nail or fingernail polish
  - On fingers with anatomical changes, oedemas, scars or burns.
  - The conditional of probe. Use only the Rossmax approved pulse oximeter sensor, cable and accessories. Use of other sensors, cable and accessories can result in inaccurate readings.
- Using the device for long periods may cause pain for people with circulatory disorders. Reposition the device (probe) at least once every 4 hours to allow the patient's skin to breath and to check patient's condition regularly.
- Do not use the device near flammable or explosive gas mixtures.
- Do not use the device during an MRI or CT scan, be used no closer than 30 cm (12 inches) to any part of the [ME EQUIPMENT or ME SYSTEM], including cables specified by the manufacturer.
- The device will be affected by electromagnetic interference during operation.
- A warning that other cables and accessories may negatively affect EMC performance.
- The device may not work when circulation is reduced. Warm or rub the finger, or re-position the device.
- This device is a precision electronic instrument and must be repaired by qualified technical professionals. Field repair of the device is not possible. Do not attempt to open the case or repair the electronics. Opening the case may damage the device and void the warranty.
- Do not overextend the device's spring.
- A functional tester cannot be used to access the accuracy of a pulse oximeter monitor.
- Do not self-diagonse or self-medicate on the basis of the measurements without consulting your doctor. In particular, do not start taking any new medication or change the type and/or dosage of any existing medication without prior approval.
- Do not look directly inside the housing during the measurement. The red light and the invisible infra-red light in the probe are harmful to your eyes.
- Please be aware that user with susceptible skin.
- As with all medical equipment, carefully route patient cabling to reduce the possibility of patient entanglement or strangulation.

Cleaning

1. Please clean the surface of the device before using. Wipe the device with medical alcohol (70% isopropyl alcohol) first, and then let it dry in air or clean it by dry clean fabric.
2. Using the medical alcohol to clean the product after use, prevent from cross infection for next time use.
3. The best storage environment of the device is -20°C ~ 70°C ambient temperature and not higher than 95% relative humidity.

Note: 1. Do not sterilize, autoclave or immerse this device in liquid. Do not pour or spray any liquids onto the device.
2. Do not use caustic or abrasive cleaning agents, or any cleaning agent containing ammonium chloride or isopropyl alcohol.

Electromagnetic Compatibility Information

1. This device needs to be installed and put into service in accordance with the information provided in the user manual.
2. WARNING: Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the SA310, including cables specified by the manufacturer. Otherwise, degradation of the performance of this device could result.

If higher IMMUNITY TEST LEVELS than those specified in Table 9 are used, the minimum separation distance may be lowered. Lower minimum separation distances shall be calculated using the equation specified in 8.10.

Manufacturer's declaration-electromagnetic immunity			
The SA310 is intended for use in the electromagnetic environment specified below. The customer or the user of the SA310 should assure that is used in such and environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance
Conducted RF IEC 61000-4-6	3 Vrms: 0,15 MHz – 80 MHz 6 Vrms: in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	3 Vrms: 0,15 MHz – 80 MHz 6 Vrms: in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	Portable and mobile RF communications equipment should be used no closer to any part of the SA310 including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: d = 1,2 √P, d = 1,2 √P 80MHz to 800 MHz, d = 2,3 √P 800MHz to 2,7 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Interference may occur in the vicinity of equipment marked with the following symbol:
Radiated RF IEC 61000-4-3	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	
NOTE1: At 80 MHz and 800 MHz, the higher frequency range applies. NOTE2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

More information on EMC compliance of the device may be obtained from Rossmax using the contacts shown in this manual.

rossmax

Model: **SA310**

2 YEAR WARRANTY

EN Handheld Pulse Oximeter

www.rossmax.com

Warranty Card

This instrument is covered by a 2 years guarantee from the date of purchase, batteries and accessories are not included. The guarantee is valid only on presentation of the guarantee card completed by the dealer confirming date of purchase or the receipt. Opening or altering the instrument invalidates the guarantee. The guarantee does not cover damage, accidents or non-compliance with the instruction manual. Please contact your local seller/dealer or www.rossmax.com.

Customer Name: _____

Address: _____

Telephone: _____

E-mail address: _____

Product Information:

Date of purchase: _____

Store where purchased:

_____

Rossmax InnoTek Corp.
12F., No. 189, Kang Chien Rd., Taipei, 114, Taiwan.
EC REP CMC Medical Devices & Drugs S.L.
C/ Horacio Lengo N° 18, CP 29006, Málaga, Spain

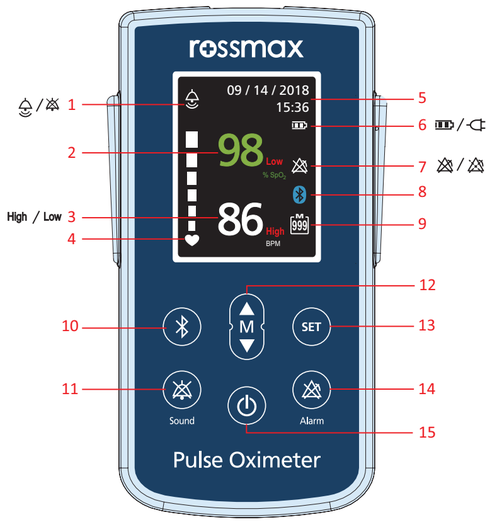
ISO CE 13485 2460
RL_IB_SA310_EN_2N_
IP_ver1828
IN05A31100000030

Introduction

Rossmax Handheld Pulse Oximeter is used to measure oxygen saturation in blood (SpO2) and pulse rate, also to issue warnings immediately. It is a non-invasive device intended for spot-check of adults, child, and infants with corresponding probe applied at home, hospital and clinics.

Attention: Consult the accompanying documents. Please read this manual carefully before use. Please be sure to keep this manual.

Name/ Functions of each part



No.	Item	Purpose	
1	Sound icon	loud volume / silence	
2	SpO2 icon	99 % SpO2	SpO2 real-time value
		Low	Reflects lower SpO2 warning.
3	Pulse Rate	75 BPM	Pulse rate real-time value
		High / Low	Reflects upper and lower pulse rate warning.
4	Pulse strength		
5	Date/Time	Show the Date (MM/DD/YYYY) / Time	
6	Power status icon	Battery: Full batteries / Critically Low-Battery	
		AC Power: AC power on	
7	Alarm icon	Alarm off / Alarm pause for 2 minutes	
8	Bluetooth icon	For Bluetooth on / off for real-time data transmission	
9	Memory icon	Collection of Memories Up to 999 memories	
10	Bluetooth button	Press to turn on / off the Bluetooth function	
11	Sound button	Press to turn on / off the heartbeat sound	
12	UP/DOWN button	Press to scroll options and change value	
13	SET button	Press to adjust default setting / Press to select the option	
14	Alarm button	Press to pause alarm. To turn off alarm permanently, please entry "Settings" mode to set up.	
15	Power button	Press to power on/off	
16		it's for AC Adaptor.	

Power installation

Power can be supplied either by batteries or AC power cable.

AC power cable:

Plug AC power cable into AC power source and printout socket. Icon as " " show on the display.

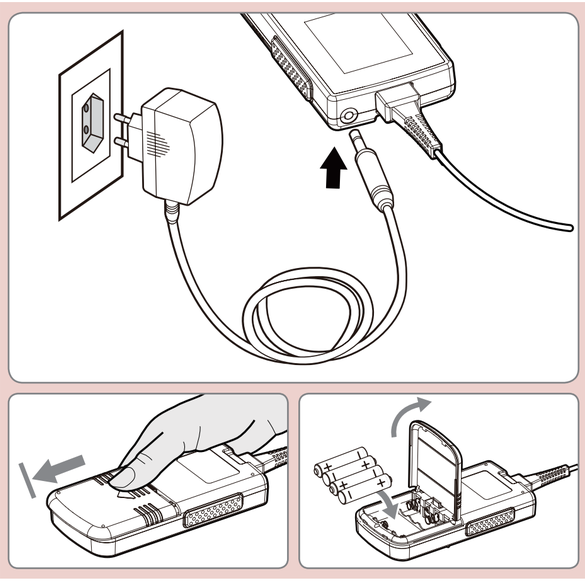
Note: Once AC power is on, the power supply of the device is switched to AC power. Once AC power is off, the power supply of the device is switched to battery power.

Batteries:

1. Use thumb to slide battery cover out.
2. Insert or replace 4 "AA" batteries according to the (+/-) polarity.

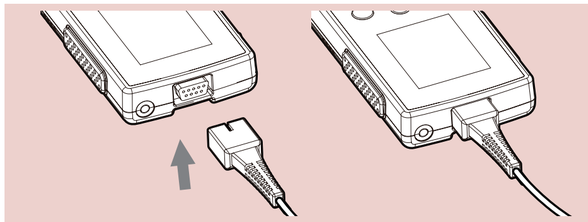
Caution: Need to replace when the batteries icon " " is blinking on display/ while pressed the function button and nothing appears on display.

Caution: Batteries may leak or explode if used or disposed of improperly. Remove batteries if the device will be stored for long time. Do not use different types or brand of batteries at the same time.



Probe connection

Rossmax PA100/PB100/PC100/PD100/PF1000 or compatible probe is used. (Please install carefully.)
Caution: It may damage the efficiency of the device if not apply with a Rossmax compatible probe.



How to measure

1. Press the (SET) Power On button for 1 second, when the device activates, the beep sound will last for 2 second.

Note: After the device activates, the software version will pop up directly. For first time activates, please refer to setting instruction.

2. Information of software version appears; insert one finger to probe, nail side up, for self-test.

Note: The device will turn itself off automatically after 1-minutes idling with two beep sounded.

3. The pulse strength shows " ", pulse oximeter begins its measurement.

Note: The heartbeat is sounded though the buzzer. If need to become silence mode, press the sound button and the LCD screen will have the sound icon shown. If need the heartbeat sound, press the sound button to exit.

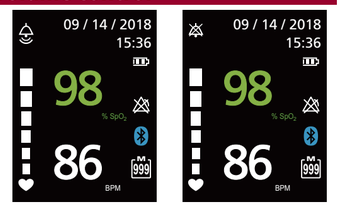
Notes: 1. Don't remove your finger until the measurement is completed.
2. Any other problems or unrecognized icon, please refer to trouble shooting.

Sound volume control

- Press the button to control the sound volume.

for loud volume.

for silence.

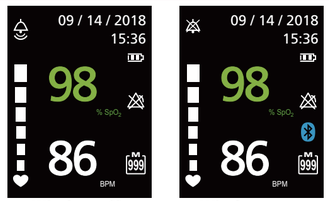


Loud volume

Silence

Bluetooth Setup

- Adjust the bluetooth setting by press the (BT) button



Wireless off

Wireless on

Default Setting

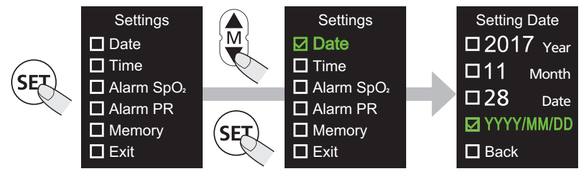
Date: 2018/01/01 Alarm PR: 100 High / 60 Low Alarm SpO2: 86%
Time: 00:00:00 Memory: OFF

How to Change Default Setting

- Press the (SET) button to enter the "Settings" mode and press (▲)/(▼) to scroll through option.
- Press (SET) button to select desired option.
- To exit setting, select " Back/Exit" or wait for 30 second.

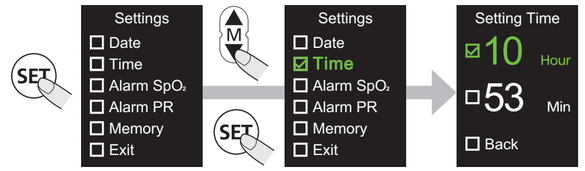
Date Setup

- Press the (SET) button and (▲)/(▼) button to highlight "Date" option, and then press the (SET) button to select the option.
- Entry "Settings Date" mode, press the (▲)/(▼) button to highlight the desired option and press the button to select the option.
- Press the (▲)/(▼) button to change the value; press the (SET) button to save the desired value.
- Press the (▲)/(▼) button to highlight another option or select "Back/Exit" to return.



Time Setup

- Press the (SET) button and (▲)/(▼) button to highlight "Time" option, and then press the (SET) button to select the option.
- Entry "Settings Time" mode, press the (▲)/(▼) button to highlight the desired option and press the button to select the (SET) option.
- Press the (▲)/(▼) button to change the value; press the (SET) button to save the desired value.
- Press the (▲)/(▼) button to highlight another option or select "Back/Exit" to return.

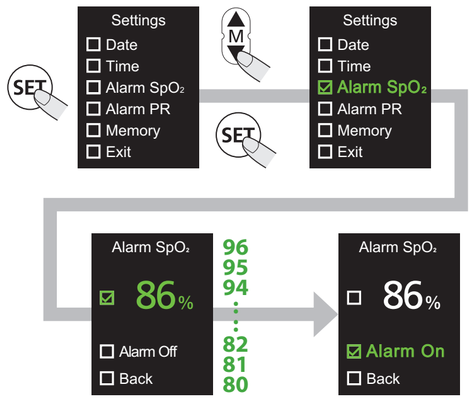


Alarm SpO2 Setup

Adjustment Range: 96, 95, 94 … 83, 82, 81, 80.

The Unit of Adjustment: 1 % / per unit.

- Press the (SET) button and (▲)/(▼) button to highlight "Alarm SpO2" option, and then press the (SET) button to select the option.
- Entry "Alarm SpO2" mode, press the (▲)/(▼) button to highlight the desired option and press the (SET) button to select the option.
- Press the (▲)/(▼) button to change the value; press the (SET) button to save the desired value.
- Press the (▲)/(▼) button to highlight another option or select "Back/Exit" to return.

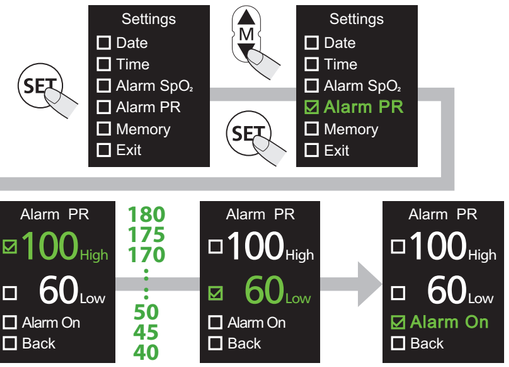


Alarm Pulse Rate Setup

Adjustment Range: 180, 175, 170 … 50, 45, 40.

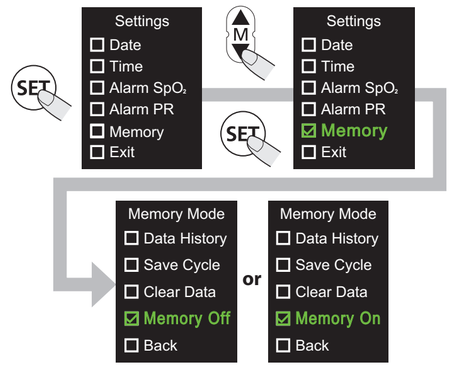
The Unit of Adjustment: 5 BPM / per unit

- Press the (SET) button and (▲)/(▼) button to highlight "Alarm PR" option, and then press the (SET) button to select the option.
- Entry "Alarm PR" mode, press the (▲)/(▼) button to highlight the desired option and press the (SET) button to select the option.
- Press the (▲)/(▼) button to change the value; press the (SET) button to save the desired value.
- Press the (▲)/(▼) button to highlight another option or select "Back/Exit" to return.



Memories mode –Memory On

- Press the (SET) button and (▲)/(▼) button to highlight "Memory" option, and then press the (SET) button to select the option.
- Entry "Memory Mode", press the (▲)/(▼) button to highlight "Memory Off" option, and then press the (SET) button to select the "Memory On" option.
- Press the (▲)/(▼) button to highlight another option or select "Back/Exit" to return.



Memories mode- Data History

- Press the (SET) button and (▲)/(▼) button to highlight "Memory" option, and then press the (SET) button to select the option.
- Entry "Memory Mode", press the (▲)/(▼) button to highlight "Date History" option, and then press the (SET) button to select the option.