TABLE TOP PULSE OXIMETER

Model No. : MN 1014-C1

USER MANUAL

MANN ELECTRONICS INDIA PVT. LTD.

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Contents

Product Description

Dear customer, thanks for purchasing Table Top Pulse Oximeter MN 1014 C2.
Careful reading is needed for proper use of this product.
This user manual should be properly preserved for instant consultation

Table of Product Information:

Product	Table Top Pulse Oximeter
Model Code	MN 1014C2 (SpO2, PR)
Production Date	Refer to product label
Expiration Date	20 years
Product performance, structure and composition	Table Top Pulse Oximeter, also with the batteries, display, parameters sensor/probe and other accessories composition.
Scope of product	Table Top Pulse Oximeter for medical institutions is used for the purpose of monitoring a single adult and pediatric and neonate patients through the collection of information, processing information on patients with pulse oxygen saturation (SpO2), pulse rate (PR) , and breathing of carbon dioxide and other physiological parameters, to monitor and to issue an alarm for highlighting specifics and other physiological parameters. The Monitor is also programmed to issue an alarm for highlighting specifics.
Manufacturer Name	Mann Electronics India Pvt. Ltd.
ProductionAddress	E-55, Road No. 3, Indraprastha Industrial Area, Kota 324005

Statement

This user manual serves as a reference for the operation, maintenance of Table Top Pulse Oximeter of Mann Electronics India Pvt. Ltd. No modification is allowed without the permission of Mann
All rights are reserved by Mann in improvement of technology, components, software and hardware and Mann reserved the right of final interpretation of this user manual.

Mann owns the copyright and intends to maintain the contents of this manual as confidential information. Disclosure of the information in this manual is strictly forbidden.

Mann does not guarantee this user manual in any forms, including (but not limited to) the impliedwarranty merchantability or fitness for any particular purpose.

Maintenance Service

The warranty of this monitor and related accessories is mainly based on the sales agreement, but consumables are not included.
Consumables: refers to disposable consumable material needing replacement after each use and fragile materials which needs replacing term.
The warranty period starts from the "Delivery Date" filled in the product warranty card. The product warranty card is the only proof for calculating the warranty period. In order to protect your interests, please fill in the product warranty within 30 days after receiving and installation, and then return the second copy to Mann. The warranty period will start with the date after 45 days from the "delivery date" on the packing box if the warranty fails to return to Mann on time.
Mann is responsible for the effects on safety, reliability and performance of this product, only if:

The product is used in accordance with the instructions for use.

All installation operations, maintenance and upgrading of this product are conducted by Mann authorized or approved personnel;

The environment for storage, working and electrical environment of the product conform to the product specifications.

The label of serial number or manufacturing logo is clear and can be identified as product of Mann.

Damage caused by non-artificial factors (e.g. Accidental falls, unintentional damages, etc.).

Scope of Free Services:

All products that meet the warranty provisions of Mann can enjoy free services.

Scope of Paid Services:

All products that a out of the range of warranty ordinance, the service is chargeable.

Even during the warranty period, the product needs to be repaired due to the following reasons: man-made damage, improper use, the grid voltage exceeds the specified range of products; irresistible natural disasters; replace components, accessories and consumables or repair monitor by personnel without authorization of Mann.

Customer should bear the freight if the product is transported to our company to repair, the user will have to bear the freight (including customs fees).Apart from the reasons above, and the maintenance service is chargeable. Extra fees on maintenance and accessories should be paid.

Mann can continue to provide chargeable maintenance services after the expiry of warranty. If the fee for maintenance is delayed or unpaid, Mann will suspend the maintenance service unless it is paid.

Return Process

The below steps should be followed in goods return.

1. Obtaining the rights to return goods. Contact the after-sales service department of Mann and inform serial number which is marked on the packing box and the nameplate. Returns would be rejected if the serial number is not legible. Please indicate the instrument number， serial number and state the reason for return.
2. Freight: Customer should bear the freight if the product is transported to our company for repair

After-sales service locations:

Mann Electronics India Pvt. Ltd.
E-55, Road No. 3, Indraprasth Industrial Area,
Kota 324005
Tel: 0744 – 2425779/2980779
Fax: 0744 - 2980779

1 Safety Guide

Safety Information

Indications

The following information is used to indicate potential hazards or relevant information concerning patients and monitor, which should be pay attention.

⚠Danger	Indicates a potential hazard or unsafe practice that, if not avoided, could result in death or serious injury.
⚠Warning	Indicates a potential hazard or important message that, if not avoided, could result in death or serious injury.
⚠Caution	Indicates potential hazard or unsafe operation that, if not avoided, could cause slight or moderate injury or damage to monitor.
⚠Note	Emphasize important precautions and provide application tips or other useful information to ensure that you get the most from your product.

Danger

This device does not contain information about the danger level.

Warnings

⚠ Warning

This monitor is used for single patient at a time.

This monitor is used for clinical monitoring and allowed to be used by professional clinicians or fully trained nurses only on assigned occasion.

Before connecting the monitor to the power line, check that the voltage and frequency ratings of the power line are the same as those indicated on the monitor's label or in this manual.

Ensure that the monitor is supplied with continuous electric power during work. Sudden power failure may cause data loss and failure of the corresponding Settings.

To ensure accurate performance, users must check the monitor and accessories before using this monitor.

To avoid explosion hazard, do not use the monitor in the presence of oxygen-mixed atmospheres or combustible anesthetics with NOx.

During the use of the product, the product cannot be inspected and maintained.

Install the device in a location that is easy to observe, operate and maintain.

The monitor uses a mains plug as isolation means to the mains power. Do not locate the monitor in a place difficult to operate the mains plug.

Alarm settings should be customized according to patient's physical condition and environment, and ensure that the monitor can issue sound when being triggered.

Do not come into contact with the patient, bed and other medical electrical monitor during defibrillation. Otherwise serious injury or death could result.

When the monitor is shared with the electrosurgical monitor, the safety of monitored patient should be ensured.

To avoid risk of electric shock, the monitor must only be connected to mains power with protective earth. If a protective earth conductor is not provided, operate it on battery power, if possible.

This device is not a therapeutic device, not use the monitor at homes.

This equipment may not be used in applications where magnetic resonance imaging (MRI) equipment is available. Otherwise, induced currents may cause the patient to burn.

All servicing must be carried out by the service personnel trained and authorized by Mann. Authorized servicing personnel can ask for corresponding information from the company, including circuit diagrams, component lists, etc.

To avoid electric shock, do not open the housing of monitor under any circumstances. Product maintenance and replacement of parts (such as batteries、mechanical) can be only carried out by the service personnel trained and authorized by Mann，Otherwise, it may cause problems in monitor safety.

The physiological parameters and alarm information monitored by this monitor are for reference only and cannot be used as the basis for clinical diagnosis.

To reduce the hazard of burns during high-frequency surgical procedure, ensure that the monitor's cables and transducers never come into contact with the electro surgery unit (ESU).

Cautions

⚠ Caution ⚠

To ensure the safety of operators and users, please use the accessories specified in this user manual.

Before using, ensure there is no obvious damage in monitor and cable that may influence security or monitor performance. Inspection once a day is recommended. Replace the component in case of damage.

Be careful about the biological incompatibility and toxicity caused by consumables.

Disposable accessories can be used once only or it may lead to poor performance or cross infection.

When this monitor and the accessory are about to expire, they must be disposed in accordance with relevant local regulations or hospital policies. Contact our company if any questions exist.

Before turning on the monitor, make sure the voltage and frequency of the power supply conform to the label of the monitor or the requirements specified in this user manual.

Install or carry the monitor with caution to prevent the monitor from falling, colliding, being damaged by strong vibration or other mechanical external force.

Electromagnetic interference - make sure that installation and operation of this monitor is free from high electromagnetic interference, such as Mobile phone and wireless transmitters.

Note

⚠ **Note** ⚠

Packages must be disposed of in accordance with the currently implemented waste control regulations and placed in places that children do not have access to.

To ensure accurate performance, user must check if the monitor and accessories work properly before use.

Put the monitor in a location where you can easily view and operate the monitor.

Keep this manual in the vicinity of the monitor so that it can be obtained conveniently when needed.

This user manual introduces this product according to the most complete configuration. The product you purchased may not have some configurations or functions claimed.

To ensure a normal performance, operate this monitor in assigned condition. Otherwise unexpected consequences, e.g. damage to the equipment, could result.. The condition is limited as follows:

Temperature for working: 0～ +40 ℃;

Relative humidity: 15 % - 95 % (noncondensing);

Barometric: 70.0kPa ～ 106.0kPa;

Line voltage: AC 100 v - 240 v,

Frequency: 50 / 60 Hz;

Input Power: 60V A.

All figures provided in this user manual are for reference only, and may not be consistent with the picture of real product.

Monitor Symbols

Safety Symbols

	Power on / off		Note, please refer to the related files (this user manual).
DC15V ⎓3A	DC Power Adapter		Audible alarm tones are paused.
	NIBP		Alarms are acknowledged and the alarm system is reset

SN	Serial number		Auxiliary output interface
	Date of manufacture		Network Interface
IPX2	Protected against vertically falling water drops per IEC 60529		USB interface
	Manufacturer		Dispose of in accordance to your country's requirements
	Nurse Call Port	EC REP	Authorized representative in the European Community
CE xxxx	The product bears CE mark indicating its conformity with the provisions of the Council Directive 93/42/EEC concerning medical devices and fulfils the essential requirements of Annex I of this directive. Note: The product complies with the Council Directive 2011/65/EU.		
	Description of the application components are BF type, F-type isolated (floating) application part.		

Transportation symbols

	Fragile: handle with caution	40°C -20°C	Temperature Limit: do not expose the monitor to extreme temperature which beyond the limit of display.
	Avoid rain		Location: With this side up.
95% 100% 10%	Moisture condition: do not expose the monitor to extreme moisture which beyond the limit of display.	3	Stacking limit: maximum to 3
106KPa 57.3KPa	Indicates the atmospheric pressure during transportation shall not be higher than 106 kpa or lower than 57.3 kpa		

2 Introduction

Overview

Scope of Application

The Table Top Pulse Oximeter is intended to provide continuous monitoring for medical institutions. It is used to collect and process information from patients and provides them with monitoring of pulse oxygen saturation (SpO_2) and pulse rate (PR) and Perfusion Index , PVI. All the parameters can be monitored on single adult, pediatric, neonates patients.

Product components

The Table Top Pulse Oximeter consists of the main unit, battery, primary display, parameter modules and accessories SpO_2 probe, Power Cable, Manual.

Basic Components

Front View of Monitor

（1） Front View of MN 1014 C2

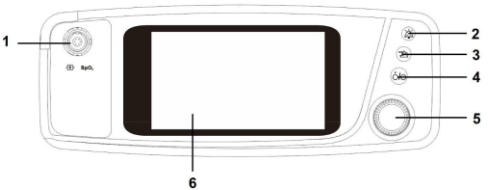


Figure 2-1 Front View of MN1014-C3

Number	Name	Operation
1	Sensor Sort of SpO2	Connect SpO2 probe. Refer to chapter 7 for details.
2	Audible alarm tones are paused	Light touch button make the alarm sound paused
3	Alarm Reset	Long press the button to Reset the monitor alarm.
4	Monitor power ON/OFF	Pressing this switch turns on the monitor when the monitor connects to AC power or has built-in battery. When the monitor is on, pressing and holding this switch for 5s turns off the monitor

5	Knob	Rotate for focus selection, press to confirm.
6	Display Area	Area of display screen shows waveform parameters and other information.

Back View of Monitor

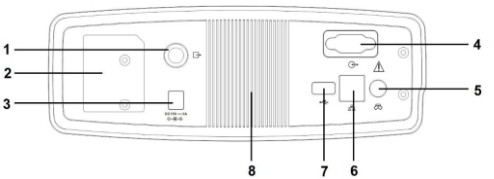


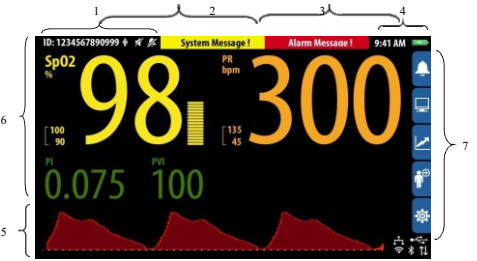
Figure 2-2 Back View

Number	Name	Operation
1	Exhaust port	For Gas exhaust.
2	label	Indicate relevant information of the product.
3	DC Power Input	Connect with DC power Adapter.
4	Serial Interface	Standard DB9 port, by which, data can be transmitted.
5	Nurse Call	Connect to the hospital nurse call system
6	Network Port	Standard RJ45 port can connect to network via standard network cable.
7	USB Port	Connect USB.
8	Heat sink	Used for machine cooling

Display

This monitor uses a colorful high-resolution TFT LCD screen, which can clearly show various physiological parameters, waveforms and other information of the patient. The following figure shows the standard interface while monitoring.

The screen display of MN 1014-C2 is as follows:



Number	Name	Operation
1	Area of patient information	Display information of patient.
2	Area of technical alarm	Display technical alarm information.
3	Area of physiological alarm	Display information of physiological alarm
4	Time	Display current time.
5	Waveform area	Display the information concerning parameter of measurement.
6	Parameter area	Display the parameter of measurement.
7	Menu	Enter Menu

Peripherals

Icon	Name	Operation
	Bluetooth	Bluetooth is turned on
	Wi-Fi	Wi-Fi is connected
	Wi-Fi	Wi-Fi turned on, but no connect
	Network	Network is connected
	Network	Network is not connect
	USB	USB Device is connected.
	Nurse Call	Show nurse call (-)
	Nurse Call	Show nurse call (+)

Basic Operation

Unpacking Inspection

Careful inspection is required before opening the packing box and instantly contact the transportation company or Mann in case of any damages on packages. After unpacking, take out the monitor, corresponding accessories and other accessories with caution and check by list one by one. Check the monitor for any mechanical damages and whether the components remain intact. Contact Mann if any questions exist.

⚠Warning

Place the packaging material out the range of Children for future transportation or storage. At the end of its application, the packaging material must be disposed of in compliance with the guidelines regulating the disposal of such materials.

The monitor may be contaminated by microorganisms during storage, transportation and application. Before use, please confirm the intactness of the package, especially for disposable accessories. Do not apply it to patients, in case of any damage.

Monitor Installation

Please use relevant accessories and components assigned by Mann.

Please use the holder assigned by Mann.

Turn On and Off the Monitor

Turn on the monitor

Turn on the monitor by following procedures.

Before turn on the monitor, make sure the monitor is installed in a right way and all external cables and accessories are properly connected.

Connect the power cord to the AC power source or be powered by battery.

Press the power switch in the lower right corner of front panel. Press the power switch button in the lower right corner of front panel and the lamp on the left side and the corresponding power supply mode indicator will lights up.

Startup interface appears, displaying the brand of our company. After it disappears, enter the main interface

Turn off the monitor

Turn off the monitor by following procedures.

Verify patient data has been saved or cleared and disconnect the accessory from the patient.

Pressing and holding the power off switch for 5s turns off the monitor, and then the screen will display the countdown to turn off.

When the indicator of Power Switch and Power change from light to dark, disconnect the power cord from AC Power input.

3. User interface and key operation

Control Buttons

Buttons

There are three different buttons.

Soft key: Where the focus can stay, for quick access to certain menus or complete some operations.

Hard key: the tangible buttons, such as **Power On/Off** button on the front panel.

Pop-up button: Menu key related to the task, informing wrong operation or verify changes.

3.1.4 Knob

There is a knob on the monitor right side. It can be used to focus item and determine.

3.1.3 Touch Screen

There is a Touch Screen Cover on the LCD. Can be used to open or close the menu.

3.1.3 Keyboard

The monitor's software provides a soft keyboard, mainly for inputting data.


Used to delete the previous character.

Used to switch character case.

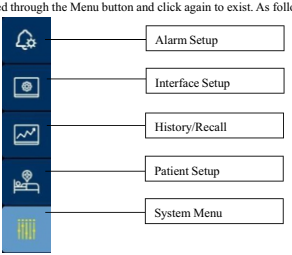
Used to switch punctuation and numbers.


Used to confirm the input and close the soft keyboard.

Menu

Introduction

Enter corresponding menu focused through the Menu button and click again to exist. As follows:



The other sub-menu style and the main menu interface is basically similar, generally have the following components:

S/N	Icon name	Corresponding operation
1	Menu title	Description of the current menu
2	Main display area	Display options, buttons or prompts, means to enter the appropriate submenu.
3	Close the menu	In the corresponding submenu, re-focus to the main menu of the corresponding button, than Press Knob, You can close the menu. Or you can using the Touch Screen to Close or open the menu.

General Setup

(1) Language Setup

Select the **System Menu** → **System**
Select the language needed in **System**

(2) Screen Brightness

Select the **System Menu**→ **System**
Select the **Brightness in System**: 1-5, 1 means the darkest and 5 means the brightest. When the monitor is powered by battery, the brightness can be lowered to save power.

(3) Date and Time Setup

Select the **System Menu**→ **System**
Select **Date** and **Time**.

(4) Adjusting Volume

Alarm Volume

Select **Alarms Setup** and input the password (5678), then enter the menu of alarm setup.
Select **Alarms Vol**: 1 ~ 10, 1 is the minimum volume; 6 is the maximum volume.

Volumeof QRS

QRS comes from SpO_2.
Select **System Menu**→ **SpO_2**→ **Pulse Volume**
Select **Pulse Volume**: Audio Off ~ 9, Audio Off means the volume of QRS is turned off; 9 is the maximum.

Measurement Setup

Select **System** to enter corresponding menu of each parameter. Or focus on corresponding parameter display area in main interface and then enter corresponding menu of each parameter via menu button.

Setting Drawing Mode of Waveforms

Select **System Menu**→ **SpO_2**
Select different parameters needed, **Wave Mode**: **Filled** or **Wireframe**.
Filled: The lower part of the waveform is displayed by filling.
Wireframe: Waveform line is displayed.

4. Battery

General Information

This monitor is equipped with a non-removable and rechargeable Li-Poly battery, to ensure the normal use in case of emergency such as power cut or no power supply. This type of rechargeable Li-Poly battery cannot be charged by external rechargeable device. When the device is plugged into the AC mains, the Li-Poly battery will begin to recharge. If power is lost when the monitor is operating from AC power, it automatically switches to the internal battery pack for power and monitoring continues 7 Hrs. working. (Brightness can be lowered to save power)

The following four icons are used to express corresponding working status:

Number	Icon	Charge status
1		Indicates that the battery works correctly and the solid part indicates battery level.
2		Indicate that the battery power is low and needs to be charged.
3		Indicate that the battery is being charged.
4		Indicate that no battery is installed.
5		Indicate thar System is plug in AC power.

⚠Caution

The capacity of the battery is limited. When technical alarms are triggered by exceeding the voltage limit, the advisory message Battery Low appears on the display screen. To ensure the monitor operates normally, make sure that the monitor is plugged into the AC mains to recharge the battery.

Checking Battery Performance

The performance of equipped battery may degrade with time for the long-term application. Test the battery periodically by the following steps:

1. Stop all monitoring and measuring procedures and disconnect all accessories from the monitor.
2. Allow the battery to be charged by AC mains power uninterruptedly for more than 7 hours till it is fully charged.
3. Allow the monitor to run on the battery until the battery is completely depleted and the monitor automatically shuts down.
4. When the monitor shuts down, check the operating time of the batteries which reflects their performance directly.

Conditioning the Battery

To maintain the life expectancy of a battery, the battery performance should be conditioned regularly. Conditioning the monitor by following procedures:

1. Stop all monitoring and measuring procedures and disconnect all accessories from the monitor.
2. Allow the battery to be charged by AC mains power uninterruptedly for 7 hours till it is fully charged.
3. Allow the monitor to run on the battery until the battery is completely depleted and the monitor automatically shuts down.
4. Connect the battery with AC mains power again and recharge the battery for 7 hours. Then, the conditioning of battery finished.

5. Managing Patients

General Information

Enter **Patient Setup** to input and edit corresponding personal information.

Admitting a patient

Follow this procedure to edit patient information when a patient has been admitted, patient information is incomplete, or you want to change patient information.

Select **Patient Setup**, or click the area of patient information.

Edit patient information in **Patient Setup** menu.

Querying patient information

This monitor obtains patient information via **Patient** menu.

Select **Patient Setup**, or click the area of patient information.

After entering the **Patient Setup** menu, the current patient information is presented.

6. Alarm

General Information

The monitor has two different types of alarms: physiological alarms and technical alarms. Technical alarms are triggered by monitor failure or wrong operation. Physiological alarms are triggered by patient measurement exceeding the parameter limits, or by an abnormal patient condition.

Both the technical alarm and physiological alarm of this monitor indicates paramedics through visual or audible alarm indications.

Apart from the physiological and technical alarms, the monitor can also prompt some messages telling the system status or patient status.

Alarm Priorities

The monitor has three alarm levels. By severity, the alarms are classified into high

Alarm priority	Physiological alarm	Technical alarm	Maximum alarm status delay	Maximum alarm signal delay time
High priority alarm	Patients with cardiac arrest, ventricular fibrillation and other crisis phenomena, there is a need for immediate rescue.		<2s	immediately
Medium priority alarm	Patients with abnormal physical signs, that should take immediate measures or treatment.		<2s	immediately
Low priority alarm	The patient's physiological parameter monitoring shows small abnormality and measures should be taken to improve it.	Some machine failures and module failures may not threaten the safety of patients, but will affect the use of equipment, and may require corresponding measures to be taken.	<2s	immediately

priority alarms，medium priority alarms, low priority alarm.

Alarm reason	Alarm priority	Visual signal		Audio Signal	Latching Alarm	Physiological or technical alarm condition	adjustable priority	Verify and Solution
		Indicator light	LCD display					
SpO2 Too High	H	Red	SpO2 Too High	Y	N	Physiological	Y	Please Check the patient situation or change the alarm limit to avoid.
SpO2 Too Low	H	Red	SpO2 Too Low	Y	N	Physiological	Y	
PR Too High	H	Red	PR Too High	Y	N	Physiological	Y	
PR Too Low	H	Red	PR Too Low	Y	N	Physiological	Y	
Weak infusion	L	Yellow	SpO2 Weak infusion	Y	N	Technical	N	Please Check the patient situation.or check the spO2 sensor.
Sport interference	L	Yellow	SpO2 Sport interference	Y	N	Technical	N	Please Check the SpO2 sensor
Excessive motion	L	Yellow	SpO2 Excessive motion	Y	N	Technical	N	Stop moveing the testing finger.
Search pulse wave	L	Yellow	SpO2 Searching pulse	Y	N	Technical	N	SpO2 module is searching pluse, keep sensor on.

Search pulse wave timeout	L	Yellow	SpO2 Searching pulse timeout					
Sensor Off	L	Yellow	SpO2 Sensor Off	Y	N	Technical	N	Please check the SpO2 Sensor connect status.
Finger Off	L	Yellow	SpO2 Finger Off	Y	N	Technical	N	Please check the SpO2 Sensor connect status.
Sensor Error	L	Yellow	SpO2 Sensor Error	Y	N	Technical	N	Please check the sensor or switch another sensor.
Backlight too strong	L	Yellow	SpO2 Backlight too strong	Y	N	Technical	N	Please Check the SpO2 Sensor
Sensor don't match	L	Yellow	SpO2 Sensor don't match	Y	N	Technical	N	Please check the sensor or switch another sensor.
Communicate Error	L	Yellow	SpO2 Communicate Error	Y	N	Technical	N	Please contact the maintenance service
Low Battery	L	Yellow	Low Battery	Y	N	Technical	N	Please plug the AC power to charging

The remaining alarm priority status and alarm messages table is as follows:

Note

High priority alarm, the alarm occurs in the physiological signal, the alarm occurs immediately, the alarm signals at an interval of 4s.

Medium priority alarm, the alarm occurs immediately after the physiological signal, the alarm signals at an interval of 10s.

Alarm Indicators

There are three auditory or visual alarm modes: light alarm, audible alarm and alarm message.
When a technical alarm or a physiological alarm is trigged, the visual alarm indicates multiple alarms with different colors and flashing frequencies, while the audible alarm indicates multiple alarms with different sound characteristics. Alarm Information is the indication of corresponding information in relevant alarm area.

Alarm priority	Light alarm	Sound pressure level range
High priority alarm	Red, flashing fast.	50dB-75dB
Medium priority alarm	Yellow, flashing slowly.	45dB-70dB
Low priority alarm	yelow, always bright.	/
Technical alarm	yelow, always bright.	/

⚠Caution

When different priority alarms occur at the same time, the monitor gives priority to the highest priority light and sound alarm.

At the same time, if more than one alarm with the same priority is generated, the alarm sound will still alarm according to the current highest priority light and sound, but there is still an alarm message of this parameter in the display interface (the parameter value is highlighted and the alarm Information bar message).

Cannot change the alarm signal delay time.

Through the menu settings, you can adjust the alarm volume.

Alarm Status Symbols

The display area of monitor uses the following symbols to indicate the alarm status:

S/N	icon	information
1		Indicates that a parameter alarm is Paused or that the alarm sound is Paused.
2		Indicates that the alarm is Reset.

Setting Audible Alarm.

1. Select **Alarm Setup**
2. Select **Alarm Vol**: 1 is the minimum and 10 is the maximum.

⚠Warning

When the device is in use, and the alarm sound of the monitoring parameter is turned off, the monitor will not sound a warning when a new alarm is triggered.

When adjusting high-priority alarms, the alarm sound must not be adjusted less than the ambient background sound, otherwise the alarm sound will not be heard.

Users cannot rely solely on sound alarm system of the monitor on the patient. During the use of the monitor, users should be concerned about real-time monitoring of the patient.

Alarm Setup

Parameter Alarm Setup

Select **Alarm Setup** and set the switch status, alarm level, and alarm limit of all parameters during the current measurement in alarm setup menu.

While occur a parameter alarm, only when the **Alarm Switch** of that parameter is set as **ON**, the audible and visual alarm can be triggered.

All alarm information is recorded every 1min. When the patient removes the parameter measurement sensor signal, the alarm message is still recorded and the parameter is prompted to measure the abnormal condition.

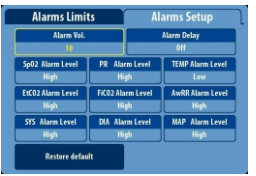
Warning

To avoid the failure of alarm system, do not set the maximum value of a parameter as the alarm limit.

Please confirm whether the alarm limit is suitable for the patient before setup.

Check all alarm settings and auditory alarm before use of the monitor.

This interface is for reference, different configurations have different menus (for Highest model)



Alarm Limit

The limit of parameter alarm provides **Default**, which is flexible according to the type of patient.

Before use, Check if those default limits are suitable for the current patient and manually set the alarm limit if not. These limits will remain unchanged until you set the default again and manually modify those limits or the **Patient Type**.

The rule of alarm limit setup is shown in the following table.

Module	Parameter	Default lower limit		Default upper limit		Range
		Adult	Pediatric	Adult	Pediatric	
SpO2	SpO2	90	90	100	100	0～100
	PR	50	75	120	160	15～300

Warning

The monitors in your care area may each have different alarm settings to suit different patients. Always check that the alarm settings are appropriate for your patient before starting monitoring. Always make sure that necessary alarm limits are active and set according to the patient's clinical condition.

Make sure that the alarm limit settings are appropriate for your patient before monitoring a patient.

Audio alarm tones are paused and Alarm Reset

Silent feature for audio alarm.

Alarm Reset

The user can use the monitor panel"  "Long Press to Reset the alarm.

sound alarm will be turned off.

Alarm message will cycle display.

Note

In alarm reset status, the alarm voice will stop until a new alarm occur that include physiological alarms and technical alarm. In alarm reset status, in the alarm information Bar will display on alarm reset mark.

Audio alarm tones are paused

The user can use the monitor panel"  "Light touch make the alarm sound paused.

Switching off the Parameter Alarm

Select **Alarm Setup→ Alarm Switch→ OFF** to switch off the corresponding parameter alarm. And then, the icon of would display in numerical area of main interface.

Warning

Pausing or switching off alarms may result in a hazard to the patient. Be careful about those operations.

Checking Alarm

The monitor will automatically check the parameter alarm after powering on. If the physiological parameters of patients are not monitored, the technical alarm only issues visual alarm and prompt message but audible alarm.

Alarm volume

Select **Alarms Setup → Alarm Vol.** You can then adjust the alarm volume.

Warning

Avoid distractions in the process of arbitrarily changing the alarm limit settings, resulting in false alarm conditions, the device needs to use password protection to access the alarm settings menu.

5. SpO_2

General Information

Principle of SpO_2 measurement is primarily based on the fact that oxyhemoglobin and hemoglobin can absorb spectral at 660nm and 905nm and by means of light modulation to monitor pulse oximeter at these two wavelengths.

Red light is in 905nm wavelength and infrared light is in 660 nm. The optical signal with SpO_2 is first inducted by sensor and obtained by microprocessor through analog-to-digital converter. Finally, after a series of calculations and calibrated by blood gas analysis, parameter information are obtained, such as Pulse Oxygen Saturation (SpO_2), pulse rate (PR), pulse wave waveform, and arterial pulsation.

One of the maximum infrared radiation power ≤ 0.1W, red maximum radiation power ≤ 0.11W.

SpO2 value for low perfusion patient.

Cautions

⚠Warning

Use SpO2 sensors specified in this manual only. Follow the SpO2 sensor's instructions for use and adhere to all warnings and cautions.

Prolonged and continuous monitoring may increase jeopardy of unexpected change of dermal condition such as abnormal sensitivity, rubescence, vesicle, repressive putrescence, and so on. It is especially important to check the body parts placing the SpO2 probe. It is recommended to change the measurement site every 2 hours.

Avoid measuring SpO2 by this monitor and monitor such as MRI simultaneously because the induced current of SpO2 probe may result in severe burns for patient.

A functional tester or SpO2 simulator can be used to determine the pulse rate accuracy.

A functional tester or SpO2 simulator cannot be used to assess the accuracy of a SpO2 module or a SpO2 sensor.

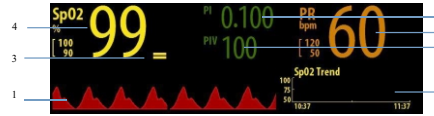
Patient Preparation

The accuracy of SpO_2 measurement mainly depends on the quality and intensity of SpO_2 signals.

1. Finger is the monitoring site to measure SpO_2, so clear the fingers before measurement and avoid painted or long nail.
2. Select the appropriate SpO_2 sensor according to the patient type.
3. Connect the terminal of SpO_2 sensor with the extension cable of blood oxygen.
4. Place the terminal of SpO_2 sensor on the patient's finger.
5. Use only SpO_2 sensors specified in this manual. Follow the SpO_2 sensor's instructions for use and adhere to all warnings and cautions.

SpO_2 Display

Measurement readings are displayed in the SpO_2 numerical area, the pleth waveform and perfusion indicators are displayed in the waveform display area. As shown below



S/N	Icon name	Corresponding operation
1	Pleth waveform	Pleth waveform (Pleth/Plethb): visual indication of patient’s pulse and the update frequency is 62.5Hz
2	SpO_2 Short Trend	Can Store 1 hour Short Trend to display.
3	Pour stick figure	Proportional to pulse rate and the update frequency is 62.5Hz
4	Arterial oxygen saturation（SpO_2）	Percentage of oxygenated hemoglobin in relation to the sum of oxyhemoglobin and deoxyhemoglobin and the update frequency is 1Hz.
5	Pulse rate（PR）	The number of pulses per minute detected (from the plethysmography waveform) and the update frequency is 1Hz.
6	Perfusion index(PI)	Reflected the limbs were tested for the status of perfusion and the update frequency is 1Hz.
7	Pulse intensity index of variation(PIV)	Reflect the balance between chest pressure and back to the amount of blood and the update frequency is 1Hz.

Note

The update frequency can cause less than 1s delay of the SpO2 and PR readings , alarm conditions and alarm generation.

SpO_2 Setup

Entering SpO_2 Menu

Follow this procedure to set the SpO_2 alarm parameter:

Select the SpO_2 numerical area or waveform area to enter the **SpO_2 Menu**

Select **Menu →SpO_2** to enter SpO_2 menu.

Changing Sensitivity

Enter SpO2 Menu

Select Sensitivity, and then toggle between **High, Med** and **Low**

2s = Highest, 4s = High, 8s = Medium, 16s = Low

Note

- **Select Sensitivity APOD, Normal and Max and then toggle between High, Med and Low, which respectively correspond to 2, 4, 8, 10, 12, 14 or 16 sec. average of SpO2**

Caution

If the result is suspected as inaccurate when using this monitor for SpO2 measurement, the patient's vital signs can be checked first, the monitor and SpO2 sensor follows.

Note

If the SpO_2 sensor is not properly connected, pulse oximetry would be affected by ambient light, leading to inaccurate measurements.

Factors such as patients' physical movement, magnetic field, electrical enclosure, improper placement of pulse oximeter sensor can cause inaccurate measurements.

Shock, anemia, hypothermia or the use of vasoconstrictors would have reduced the arterial blood flow to an undetectable level.

The accuracy of SpO2 cannot be guaranteed in a state of low perfusion and movement.

6. PR

Introduction

The mechanical activity of the heart causes the pulse of artery and PR can be measured by that. The PR can be measured by SpO_2.

Number	Name
1	Pulse Rate (PR): detected pulsations per minute.

QRS Volume

Change QRS volume by adjusting **Pulse Volume** in **SpO2 Menu**. According to the setup of **Pulse Volume**, the system would issue QRS sound when there is a valid measurement value.

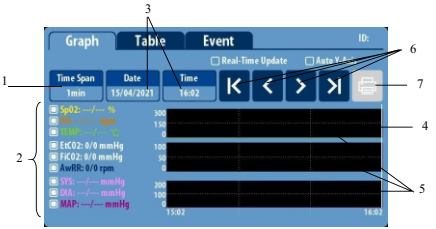
7. Trend

Trend and Recall Setups

1. Select **History / Recall**
2. Select **Graph** or **Table** or **Event** to open the corresponding window.

Graph

Select **History / Review→ Graph** to enter the window as follows.



Number	Name	Operation
1	Time Span	Adjust the temporal resolution of graph.
2	Selection of Trend Data	Select the parameters that is needed to display the trend curve
3	Time	Display the time where the current cursor is located.
4	Cursor	To indicate the trend line moves from the starting point to the ending point of the trend curve at a certain point in time. The time span is the fixed time resolution.
5.	Graph	Display the trend graph of the selected time period.
6	Cursor Control Button	Control the cursor to move back and forth along the trend curve.
7	Print	If you connected the Bluetooth Printer than you can Print the Trend.

Table

Select the **History / Recall** Menu→ **Table** to enter the window as follows.

Select **Time Span**, and select **2 sec., 1 min, 5 min, 10 min, 30 min** or **60 min** according to needs: You can use the **Cursor Control Button** up or down the parameter measurement of different moment.

Event

Select the **History / Recall** menu → **Event** to enter the window as follows:

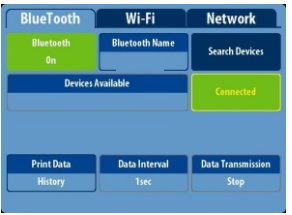
Use the **Cursor Control Button** up or down the events of different moment.

8. Peripherals

Bluetooth

You can connect to a printer via Bluetooth to print trends or real-time waveforms.

The Menu as follows:



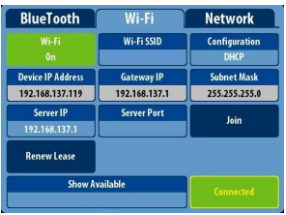
Item	Operation
	Turn On or Turn Off the Bluetooth.
	You can change the Bluetooth Name when Bluetooth is Power On.

	Used to search for Bluetooth devices
	Used to display the searched Bluetooth devices
	Used to connect to Bluetooth devices
	You can choose to print historical data or real-time data
	You can select the data interval for printing
	Real-time printing can be turned on or off

9. Wi-Fi

You can connect via Wi-Fi and transfer the parameter measurement results.

The Menu as follows:

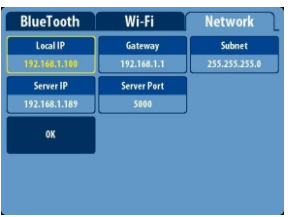


Item	Operation
	Used to turn Wi-Fi on or off.
	Used to change the device Wi-Fi name.
	It can be changed to manually change the IP address or obtain it automatically (DHCP)
	Device IP address
	Gateway IP
	Subnet Mask

	Server IP
	Server Port
	Connect to server
	Search again
	Display available Wi-Fi
	Used to connect to Wi-Fi or disconnect

Network

You can connect via a wired network to transmit the parameter measurement results.



The Menu as follows:

Users need to set up their own network configuration.

After changing the network configuration, click OK to apply to the system.

Cleaning and Disinfection

Safety Information

Warning

Must turn off the monitor and disconnect the power cord from socket before clean the monitor.

Caution

Please make an instant contact with Mann if you pour any liquid on the monitor or accessory by accident.

Note

Please use the materials and methods recommended by Mann to clean or disinfect the monitor.

Please refer to relevant accessories manual for cleaning and disinfection for reusable accessories.

Do not partially immerse the machine in liquid during cleaning.

Do not allow cleaning liquid to enter inside the machine.

Do not press the display screen hard during cleaning, otherwise the display screen glass would be damaged.

Cleaning

Please clean the monitor regularly according to the relevant regulations of the hospital, which can be performed according to following steps:

1. Turn of the monitor and disconnect the power cord
2. Use a clean lint-free cloth to wipe dusts off the monitor and cable.
4. Use gauze dampened with proper amounts of detergent to wipe the surface and cable of the monitor.
5. Use a clean lint-free cloth to dry the monitor and cable.
6. Keep the monitor dry in a ventilated environment.

Note

The following cleaning options are available:

Sodium hypochlorite (Bleaching powder for washing)
Hydrogen Peroxide (3 %)
Ethanol (70 %)
Isopropanol (70%)

Disinfection

Since the disinfectant used would cause some damages to the surface of the housing and cables, such as spots on the plastic housing, it is recommended that disinfect the monitor when necessary.

Note

Disinfectant recommended by this user manual:

Ethanol (70 %)
Ethanol (70 %)
Perform sterile concentrate OXY(Class C/D)

10. Maintenance

Inspection of the Monitor

⚠Warning

All the work involving checks of the monitor should be performed by professional service personnel. Otherwise, undue monitor failure and possible health hazards could result.

Before using the monitor and after continuous application for 6 to 12 months or an upgrade, an overall inspection should be performed by professional service personnel to ensure the normal performance and function of the monitor. Stop using this monitor and contact professional service personnel immediately in case of any damages or abnormal phenomena. The maintenance items mainly include the following aspects:

1. Verify if there are any damages in monitor and in related accessories, and if the insulation of the power cords in a good condition.
2. Verify if the monitor power on normally and the battery supply power normally.
3. Verify if the alarm operates properly.
4. Verify if the operating environment and power supply meet the requirements.
5. Verify if the other functions operate properly.
7. Verify if the measurement function operates properly.
8. Verify if the test of electrical safety operate properly, including the test on enclosure leakage current, earth leakage current, and patient leakage current and patient auxiliary current.

SPO_2 Check

1. According to chapter 7 to prepare the monitor
2. Attached the sensor to an normal volunteer
3. To check if the SPO_2 monitor measurement is normal or not，and the following indication the SPO_2 monitor is abnormal：

The SPO_2 reading is obviously incorrect
The PR reading is obviously incorrect
The Pleth waveform is obviously incorrect
You can get correct SPO_2 PR and Pleth waveform from an confirmed SPO_2 monitor

Demo

To enter the demo status:

1. Select **System→ Maintenance**
2. Select **Demo→ Off** or **On**

⚠Warning

Demo is not allowed to be used in clinical practice and is mainly applied to present machine performance and train users.

11. Accessories

SpO_2 Accessories

Name	Specification	Contact Material	Description
Extension Cable of Blood Oxygen	/	Thermoplastic polyurethanes	Reusable
Pulse Oximeter Probe	Adult Clip Sensor	Silicone	The standard
Pulse Oximeter Probe	Child Clip Sensor	Silicone	optional
Neonatal/Adult Oxygen Sensor	Disposable Sponge (Bundled, L-form)	3m medical grade sticker	optional

⚠Caution

The attachments used in this product are Pulse Oximeter Probe、Neonatal/Adult Oxygen Sensor

A. CE Compliance

Manufacturer	Mann Electronics India Pvt. Ltd.
Address	E-55, Road No. 3, Indraprastha Industrial Area, Kota 324005
Product	Table Top Pulse Oximeter
Model Code	MN 1014 C2
Standard Configuration	SpO_2, PR, PI

B. Product Specifications

Safety Specifications

Product Classification

The main safety features of this monitor are as follows:

a）Anti-electroshock type: Class I monitor and internal powered monitor

b）EMC type: Class A

c）Anti-electroshock degree: BF

d）Harmful liquid proof degree: IPX1

e）Disinfection/sterilizing method: Refer to **Page No. 28** for details.

f) Working system: Continuous running monitor

g) Safety degree of operation in flammable anesthetics gases mixed with air or with nitrous oxide: Not AP, APG type.
h) Recovery time after defibrillation: Resume immediately.

Ambient Conditions

Working Environment:

a) Temperature: 0℃～ 45℃;
b) Relative Humidity: 10 % ～ 95 % (noncondensing);
c) Atmospheric Pressure: 540 ~ 1060mBar

Storage Environments:

a) Temperature: -20℃ ～ 60℃;
b) Relative Humidity: 10 % ～ 95 % (noncondensing);
c) Atmospheric Pressure: 540 ~ 1060mBar

Information of Power Supply

a) AC: (100 - 240) V ～ (±10%)
b) Input Power: 60VA;
c) Frequency: (50Hz / 60Hz) ±3 Hz;
d) Built-in rechargeable Li battery: 11.1 Vd.c.2200mAh;
h) Fuse:250V T3A.

Components Information

Components of Main Unit	Specification
Main control panel	/
AC - DC power module	SNP-G048
Rechargeable Li battery	JW-Y3S-6
Display Screen	5- inch

Parameter of Hardware

Parameter	Specification
Size	255 × 140 × 95 mm (L × W ×H)
Weight	< 2 kg (Excluding accessories)
Display Screen	
Type	Colorful TFT LCD
Size	5 inches (Diagonal)
Resolution	854×480

Audio Indicator	
Speaker	Issue alarm sounds, heartbeat / pulse sounds;
Control	
Buttons	3 keys in total, respectively are: Power Switch, Audio alarm tones are paused. Alarm Reset,.
Knob	Used to switch focus and confirm.
Touch Screen	Enter the menu or change the value
Port	
Power Supply	1 Adapter power socket.
Parameter Measurement	SpO_2,PR, PI, PVI
Network	1 Standard RJ45 network port
USB Port	1 USB Port
Equipotential Port	1 equipotential earth terminal
Nurse Call Port	1 Nurse Call Port can output high or low level.

Storage of Data

Parameter	Specification
Trend Data	Monitor : utp 96 hours at 2 sec. resolution: 2 sec. Spot : 2 hours per patient, 256 patients in total resolution: 2 sec.

Parameter Information

The following specification, unless otherwise indicated, the adjustable range of alarm limit is the same as the measuring range of signal.

Specification of SpO2

Parameter	Specification	
Requirment	ISO 13485,14001, 45001	
Range of Measurement	0 ~ 100%, SpO2 : 10 to 100% minimal graduation	
Range of Measurement on No Motion	In the range of 70% – 100%, the measurement error should be ±2%, Range of 0 to 69%: none-define. **Adult/Infants/Pediatrics: 2%, Neonates: 3%**	
Motion	**Adults/Infants/Pediatrics/Neonates : 3%**	
Low Perfusion	**Adults/Infants/Pediatrics/Neonates : 2%**	
Display Resolution	±1%	
Specification of Alarm Limit	**Range**	**Time Span (%)**
Upper Limit of SpO_2	(Lower Limit ±1%) ~ 100%	1
Lower Limit of SpO_2	0 ~ (Upper Limit-1%)	

Specification of PR

PR	Specification	
Requirement	ISO 80601-2-61:2011	
Range of Measurement	20bpm~240bpm (minimal graduation 1 bpm)	
Accuracy of Measurement on No Motion	**Adults/Infants/Pediatrics/Neonates : ±3bpm**	
Motion	**Adults/Infants/Pediatrics/Neonates : ±5bpm**	
Low Perfusion	**Adults/Infants/Pediatrics/Neonates : ±3bpm**	
Display Resolution	1bpm	
Specification of Alarm Limit	**Range**	**Time Span**
Upper Limit of PR	(Lower Limit + 1bpm) ~ 300bpm	1bpm
Perfusion Index (PI)	0.02-20%	
Respiration Rate	0-150rpm	

Warning

The device should not be used adjacent to or stacked with other monitor. If adjacent or stacked use is necessary, the device should be observed to verify normal operation in the configuration in which it will be used.

In addition to cables sold by the manufacturer of this product as spare parts for internal components, the use of accessories and cables other than those specified may result in increased emission or reduced immunity of this product.

Guidance and Declaration - Electromagnetic Emissions		
The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such environment.		
Emission Tests	**Compliance**	**Electromagnetic Environment - guidance**
Radio frequency (RF)	Group 1	The device uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic monitor.
RF emissions	ClassA	The device is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions	Not Applicable	
Voltage Fluctuations/Flicker Emissions	Not Applicable	

Guidance and Declaration - Electromagnetic Immunity

The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such environment.

Immunity Test	**IEC EN 60601-1-2:2015 test**	**Compliance Level**	**Electromagnetic Environment -**
Electrostatic Discharge	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical Fast Transient	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment
Surge	±1 kV DMV ±2 kV CMV	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment
Voltage dips, short interruptions and voltage variations on power supply input lines	<5% U_T for 0.5 cycle (> 95% dip in U_T) 40% U_T for 5 cycles (60% dip in U_T) 70% U_T for 25 cycles (30% dip in U_T) <5% U_T for 0.5s (> 95% dip in U_T)	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5s	Mains power quality should be that of a typical commercial or hospital environment. If the user of our product requires continued operation during power mains interruptions, it is recommended that our product be powered from an uninterruptible power supply or a battery.
Power frequency magnetic field (50/60 Hz)	3A/m	3A/m,50/60Hz	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Note: U_T is the AC mains voltage prior to application of the test level.

Guidance and Declaration - Electromagnetic Immunity

The device is intended for use in the electromagnetic environment specified below. The customer or user of the device should assure that it is used in such environment.

Immunity Test	EN 60601-1-2:2015 test level	Compliance Level	Electromagnetic Environment - Guidance
Conduced RF Radiated RF	3 Vrms 150 kHz~80 MHz 3 V/m 80 MHz~2.5 GHz	3 Vrms 3 V/m	Portable and mobile RF communications monitor should be used no closer to any part of the product, including cables, than the recommended separation distance calculated from the equation appropriate for the frequency of the transmitter. Recommended separation distances: $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P}$ 80 MHz~800 MHz $d = 2.3\sqrt{P}$ 800 MHz~2.5 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 meters (m)b. Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a] should be less than the compliance level in each frequency range[b]. Interference may occur in the vicinity of monitor marked with the following symbol: 

Note 1: for frequencies of 80 MHz and 800 MHz, the formula for the higher frequency range applies.
Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

a) Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted with accuracy theoretically. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength of the location where this monitor used exceeds the applicable RF compliance level above, this monitor should be observed to verify normal operation. If abnormal performance is found, additional measures is necessary, such as reorienting or repositioning the product.

b) Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

Recommended separation distances between portable and mobile RF communications monitor and the device

The device is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications monitor (transmitters) and the device as recommended below, according to the maximum output power of the communications monitor.

Rated maximum output power of transmitter (W)	**Separation distance in meters (m) according to frequency of the transmitter**		
	150 kHz～80 MHz $d = 1.2\sqrt{P}$	**80 MHz ～ 800 MHz** $d = 1.2\sqrt{P}$	**800 MHz～ 2.5 GHz** $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

As for rated maximum output power of transmitters which are not listed above, the recommended separation distance D in meters (m),which can be determined by the formula in the corresponding transmitter frequency column. Here P is the maximum output rated power of transmitters provided by the transmitter manufacturer in watts (w).

Note 1: At 80 MHz and 800 MHz, applies the formula of the higher frequency range.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

C. Default Settings

Some configuration information of this monitor is default setting by Mann and users cannot change, but relevant content can be customized as needed. The default settings are as follows:

Parameter Configuration

SpO_2

name		Defaults	Custom
Alarm switch		Open	
Alarm level		High	
SpO2 High limit	Adult	100	
	Pediatric	100	
	Neonate	95	
SpO2 Low limit	Adult	90	
	Pediatric	90	
	Neonate	90	
Waveform speed		25mm/s	
Wave Mode		Filled	
Sensitivity		Medium	

PR

name		Defaults	Custom
Alarm switch		Open	
Alarm level		High	
PR High limit	Adult	120	
	Pediatric	160	
	Neonate	160	
PR Low limit	Adult	50	
	Pediatric	75	
	Neonate	100	
Pulse volume		2	

General Configuration

Alarm

Name	Default	User Defined
Alarm Volume	3	
Alarm Delay	Off	

Trend Review

name	Defaults	Custom
Time Span	(Adjustable)	
Resolution	2 sec.	
Trend Curve	All Parameter	
Trend table		
Time Step	Adjustable	
Event list		
priority	all	

Technology

Name	
Technology	Infrared Radiation Absorption Technology Continuous monitoring of SpO2 (arterial blood oxygen saturation), pulse rate and signal strength (compatible to nellcor/masimo)

Startup Time

Name	
Startup Time (Typical)	40 sec.
Startup Time (Maximum)	60 sec.

Other

Name	Default	User Defined
Screen Brightness	4	
Language	English	
Time Mode	24H	
Measure Mode	Monitor	
Click Volume	0	
Night Mode	Off	

D. Alarm Information

Note

There are three alarm levels. H is high priority alarms, M is medium priority alarms and L is low priority alarm

XX indicates the name or physiological parameters of a module, such as NIBP, SpO_2, etc.

Information of Physiological Alarm

source	Alarm information	grade	Reasons and Countermeasures
XX	XX Too high	M*	XX value above the alarm high limit or below the alarm low limit. Check the patient's physiology to confirm that the patient type and alarm limit settings apply to the patient.
	XX Too low	M*	

Information of technical alarms

source	Alarm information	grade	Reasons and Countermeasures
XX	XX Communication stopped	L	XX module has failed, or the host communication failed. . Please reboot, or contact professional maintenance personnel for repair.
SpO2	Weak perfusion	L	Adjust the oximeter probe and start the measurement again
	Excessive motion interference	L	Adjust the oximeter probe and start the measurement again
	Search for pulse waves	L	The normal process at the beginning of the measurement is awaited to measure the result
	Search pulse wave for too long	L	Adjust the oximeter probe and start the measurement again
	The probe is not connected	L	Sensor is not connected, for measurement please access the sensor and start the measurement
	Finger is not connected	L	SpO2 sensor is not connected to the patient's measurement site, please start the measurement after normal connection

	Probe failure	L	Please re-plug the oxygen probe and check whether there is connection is not reliable place, such as still appear this alarm, please replace the probe and then start
	The background is too strong	L	Adjust the oximeter probe and start the measurement again
	Probe does not match	L	Please re-plug the oxygen probe and check whether there is connection is not reliable place, such as still appear this alarm, please replace the probe and then start

E. Symbols and Terms

Unit

Abbreviations	English
bpm	beat per minute
℃	centigrade
h	hour
Hz	hertz
kg	kilogram
kPa	kilopascal
L	litre
m	meter
min	minute
ml	milliliter
mm	millimeter
mmHg	millimeter of mercury
ms	millisecond
mV	milliwatt
s	second
V	volt
W	watt

Symbol

Symbol	English
-	minus
—	negative
%	percent
/	per; divide; or
~	to
+	plus
=	equal to

<	less than
>	greater than
≤	less than or equal to
≥	greater than or equal to
±	plus or minus
×	multiply
©	copyright

Terms

Abbreviations	English
AC	alternating current
Adu	adult
BP	blood pressure
DC	direct current
DIA	diastolic
IEEE	institute of electrical and electronic engineers
LCD	liquid crystal pressure
LED	light emitting diode
Mean	mean arterial pressure
N/A	not applied
PR	pulse rate

NOTE: Please before using Table Top Pulse Oximeter, read this manual.