# User's Manual

## Checkme Pro Health Monitor
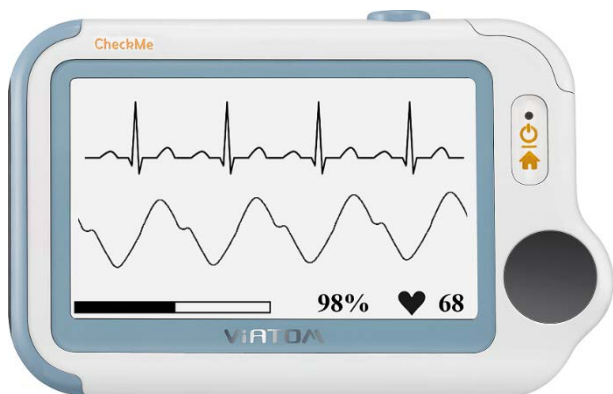
## Knowing and Tracking Your Health

# 1.    The Basics

This manual contains the instructions necessary to operate the product safely and in accordance with its function and intended use. Observance of this manual is a prerequisite for proper product performance and correct operation and ensures patient and operator safety.

## 1.1  Safety

⚠ **Warnings and Cautionary Advices**

- Before using the device, please ensure that you have read this manual thoroughly and fully understand corresponding precautions and risks.

- This device has been designed for practical use, but is not a substitute for a visit to the doctor.

- The data and results displayed on the device are for reference only and cannot be directly used for diagnostic interpretation or treatment.

- We recommend not to use this device if you have a pacemaker or other implanted devices. Follow the advice given by your doctor, if applicable.

- Do not use this device with a defibrillator.

- Do not use this device during MRI examination.

- Do not use the device in a combustible environment (i.e., oxygen-enriched environment).

- Never submerge the device in water or other liquids. Do not clean the device with acetone or other volatile solutions.

- Do not drop this device or subject it to strong impact.

- Do not place this device in pressure vessels or gas sterilization device.

- Do not dismantle the device, as this could cause damage or malfunctions or impede the operation of the device.

- 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.

- Do not allow the electrodes of the device to come into contact with other conductive parts (including earth).
- Do not use the device with persons with sensitive skin or allergies.
- Do not store the device in the following locations: locations in which the device is exposed to direct sunlight, high temperatures or levels of moisture, or heavy contamination; locations near to sources of water or fire; or locations that are subject to strong electromagnetic influences.
- Do not swing the device with the strip, which may result in injury.
- This device displays changes in the heart rhythm and blood oxygenation etc. which may have various different causes. These may be harmless, but may also be triggered by illnesses or diseases of differing degree of severity. Please consult a medical specialist if you believe you may have an illness or disease.
- Vital signs measurements, such as those taken with this device, cannot identify all diseases. Regardless of the measurement taken using this device, you should consult your doctor immediately if you experience symptoms that could indicate acute disease.
- Do not self-diagnose or self-medicate on the basis of this device 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.
- This device is not a substitute for a medical examination or your heart or other organ function, or for medical electrocardiogram recordings, which require more complex measurements.
- It is not possible to use this device to diagnose illness or diseases. This is exclusively the responsibility of your doctor.
- We recommend that you record the ECG curves and other measurements and provide them to your doctor if required.

# 2. Introduction

## 2.1 Intended Use

The Checkme Pro health monitor is intended to be used for measuring,

displaying, reviewing and storing of multiple physiological parameters including ECG, pulse oxygen saturation ($SpO_2$), pulse rate, temperature and blood pressure variation in home or healthcare facilities environment. ECG and Blood pressure variation is intended for use with adult.

The data and results provided by this device are for pre-check screening purpose only and cannot be directly used for diagnostic or treatment.

## 2.2 About Checkme
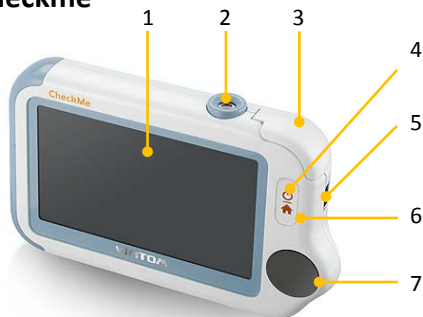


1. Touch Screen
   Use the pad of your finger to tap or slip on the touch screen. Do not use your fingernail or any other object to tap the screen.



2. Infrared temperature sensor
3. Internal $SpO_2$ sensor
4. LED indicator
   - Off: the monitor is turned off or working in Standby Mode;
   - Green: the monitor is turned on, and working normally; or when the battery is fully charged;
   - Blue: the battery is being charged;
   - Red and flash: the battery is low;
5. Multi-functional connector
   It connects with external $SpO_2$ cable, ECG cable, or charging cable.
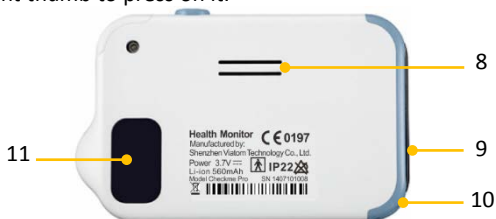6. Home, Power On/Off
   - When the monitor is off, press this button to power it on.
   - When the monitor is on, press and hold it for 2 seconds to turn

it off.
- During operation, press this button will switch to Main Screen, or Calendar Screen, or return to upper menu.
7. ECG right electrode
Use right thumb to press on it.



8. Speaker
9. ECG left electrode
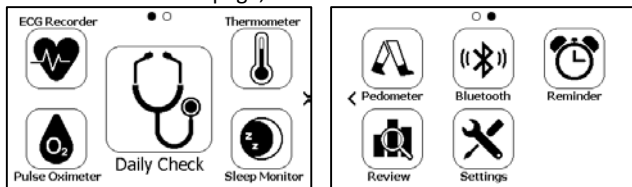Put it to your left palm, left abdomen or left knee.
10. Neck stripe hole
11. ECG back electrode
Use right forefinger or middle finger to press on it.

## 2.3 Main Screen

The Main Screen is shown as below. Slipping your finger from right to left can switch to the second page, and vice versa.



Press a button in the Main Screen will start a measurement, activate a function, or open corresponding menu.

## 2.4 Calendar Screen / Standby Mode

The device will enter Calendar Screen / Standby Mode when:
- No operation is detected for 120 seconds in other screen interface, the device will automatically switch to the Calendar Screen.
- Pressing the Home button in the Main Screen.
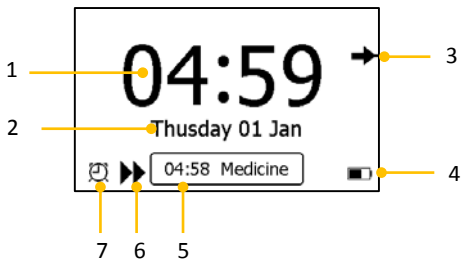
1. Current time
2. Current date

   When a reminder event happens, this area displays the event name, e.g. "Daily Check".

You are allowed to change the current time and date when the device is powered on at the first time. Or you can also go to the Setting menu to change it. Please refer to **Section 5.3** for details.

3. This arrow indicates users to press the Home button to exit the Calendar Screen / Standby Mode.
4. Battery indicator

   Please refer to **Section 7.2** for details.
5. If you failed to respond to the previous reminder event, then that event will be shown in this area.
6. This icon appears when <**Quick ECG**> is enabled. Please refer to **Section 5.9** for details.
7. This icon appears if you have set reminder event.

When the device enters Calendar Screen, it also begins to work in Standby Mode, which is an ultra-low power consumption mode. In Standby Mode, the touch screen operation is invalid.

## 2.5 Result Screen

This device provides powerful measurement functionalities, including Express Record, Health Check, ECG Record, Oximeter, BP Tracker, Thermometer, Sleep Monitor and Pedometer. For each measurement, a Result report will be provided after the measurement is finished. An example is shown as below.
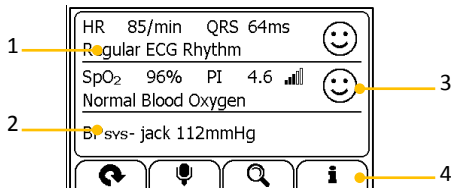
1. Measured parameters and readings
2. A summary of this measurement
3. A graphic indicator about the health status

   ☺: All measured parameters are within the reference range;

   ☹: One or more than one measured parameter(s) is (are) out of reference range. When the ☹ icon appears, it is suggested to test again, and consult your doctor for help.

4. Buttons
   - Select ↻ button to start a measurement again.
   - Press and hold the 🎤 button to add voice memo. Voice memo is only available for Daily Check and ECG Recorder measurements.
   - Select 🔍 button to review previous results.
   - Press ℹ button to open the help information.

In the Result Screen, if there is no operation for 2 minutes, the device will automatically returns to Standby Screen.

## 2.6  Symbols

| Symbol | Meaning |
|---|---|
| 🧍 | Application part type BF |
| ▲▲▲ | Manufacturer |
| CE0197 | In conformity with Directive 93/42/EEC |
| EC REP | European Representative |
| ♺ | Symbol for "ENVIRONMENT PROTECTION – Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice". |

6

| IP22 | Against ingress of solid foreign objects ≥12.5mm diameter, Against dripping(15° tilted) |
| :---: | :--- |
|  | Follow operating instructions |
|  | No alarm system. |

# 3. Getting Started

## 3.1 Unpacking

Before unpacking, examine the packing case carefully for signs of damage. If any damage is detected, contact the carrier or us. If the packing case is intact, open the package and remove the equipment and accessories carefully. Check all materials against the packing list and check for any mechanical damage. Contact us in case of any problem.

⚠ **Warnings and Cautionary Advices**

- Save the packing case and packaging material as they can be used if the device must be reshipped.
- Keep the warranty card, which is useful within the period of warranty.
- When disposing of the packaging material, be sure to observe the applicable waste control regulations and keep it out of children's reach.
- The equipment might be contaminated during storage and transport. Before use, please verify whether the packages are intact, especially the packages of single use accessories. In case of any damage, do not apply it to patients.

## 3.2 Power On/Off

Press the Power On/Off button to power on the device. Press and hold Power On/Off button for 2 seconds to power off the device.

## 3.3 Initial Settings

The first time when the Checkme is powered on, you can set up your Checkme monitor step by step. You can also changing the settings in the

7

<Settings> menu. Please refer to **Section 5** for details.

# 4.   Using Checkme

## 4.1   Prior to Use

### ⚠ **Warnings and Cautionary Advices**

- Use only cables, electrodes, sensors and other accessories specified in this manual.

- The device has no alarms and will not sound if the measurement reading is too low or too high.

### **Before using ECG**

Before using Daily Check or ECG Recorder function, pay attention to the following points in order to obtain precise measurements.

- The ECG electrode must be positioned directly against the skin.
- If your skin or hands are dry, moisten them using a damp cloth before taking the measurement.
- If the ECG electrodes are dirty, remove the dirt using a soft cloth or cotton bud dampened with disinfectant alcohol.
- During the measurement, do not touch your body with the hand with which you are taking the measurement.
- Please note that there must be no skin contact between your right and left hand. Otherwise, the measurement cannot be taken correctly.
- Stay still during the measurement, do not speak and hold the device still. Movements of any kind will falsify the measurements.
- If possible, take the measurement when sitting and not when standing.

### ⚠ **Warnings and Cautionary Advices**

- When connecting external electrodes and/or patient cables, make sure that the connectors never come into contact with other conductive parts, or with earth. In particular, make sure that all of the ECG electrodes are attached to the patient, to prevent them from contacting conductive parts or earth.

- If using the ECG for long-term monitoring, periodically inspect the electrode application site to ensure skin quality. If the skin quality changes, replace the electrodes or change the application site.

- Do not use this device during defibrillation.

- Interference from a non-grounded instrument near the patient and electro surgery interference can causes problems with the waveform.

- The ST algorithm has been tested for accuracy of the ST segment data. The significance of the ST segment changes need to be determined by a clinician.

## Before using Oximeter

Before using Daily Check, Oximeter or Sleep Monitor function, pay attention to the following points in order to obtain precise measurements.

- The finger inserted in $SpO_2$ sensor must be clean to ensure proper reading.
- Any of the following conditions may cause inaccurate measurements, including but not limited to:
  - Flickering or very bright light;
  - Poor blood circulation;
  - Low hemoglobin;
  - Hypotension, severe vasoconstriction, severe anemia or hypothermia;
  - Nail polish, and/or artificial nails;
  - Any tests recently performed on you that required an injection of intravascular dyes.
- The Oximeter may not work if you have poor circulation. Rub your finger to increase circulation, or place the $SpO_2$ sensor on another finger.
- The Oximeter measures oxygen saturation of functional hemoglobin. High levels of dysfunctional hemoglobin (caused by sickle cell anemia, carbon monoxide, etc.) could affect the accuracy of the measurements.
- 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 towers, and TV broadcast towers may affect accuracy.
- The pleth waveform displayed on the device is normalized.

## ⚠ Warnings and Cautionary Advices

- Limit finger movement as much as possible when using the Daily Check or Oximeter, which might result in incorrect reading or analysis.

- Do not use the Oximeter on the same hand/arm when using a blood pressure cuff or monitor.
- Do not use the Oximeter outside the specified operating and storage temperature ranges.
- Do not use this device during MRI (magnetic resonance imaging). Induced current could potentially cause burns. The $SpO_2$ sensor may affect the MRI image, and the MRI unit may affect the accuracy of the oximetry measurements.
- Prolonged continuous $SpO_2$ monitoring or sleep monitoring may increase the risk of undesirable changes in skin characteristics, such as irritation, reddening, blistering or burns.
- Check the $SpO_2$ sensor application site every 6-8 hours to determine the positioning of the sensor and the circulation and skin sensitivity of the patient. Patient sensitivity varies depending on medical status or skin condition. For patients with poor peripheral blood circulation or sensitive skin, inspect the sensor site more frequently.

## 4.2 Daily Check

### About Daily Check

### ⚠ Warnings and Cautionary Advices

- Before using this function, please read the **Section 4.1**.
- When using Daily Check, please ensure you select the right user. Wrong user will result in incorrect blood pressure readings.
- To ensure better tracking of your health status, it is strongly suggested that every Daily Check measurement is made at the same time period when your body is in the relative same situation. E.g., every morning when get up, or every night before go to bed.

Before using the Daily Check function, you need to set the <**Application**> to <**Home**> mode. Please refer to **Section 5.6**.

Daily Check measurement is a function that combines the measuring of ECG (Electrocardiograph) waveform, HR (heart rate), Pleth waveform, $SpO_2$ (blood oxygenation), PI (Pulse Index) and systolic blood pressure. It takes only 20 seconds to collect your vital signs before giving you vital signs readings and your health evaluation.

For each individual, the correlation among those parameters measured by

Daily Check is different, so when Daily Check function is used by more than one user, you need to create the user profile for each user. Before using Daily Check measurement or reviewing the Daily Check data, ensure that the correct user is selected. Please refer to **Section 5.13** to know how to manage users.

## Setting Daily Check Reminder

To better manage your health status, it is recommended to take Daily Check measurement at a regular interval, like once every day or once a week. To ensure that you never forget to take a Daily Check measurement, you can set a Daily Check reminder. When this Daily Check reminder event is triggered, the device gives audio alarm prompt, which will last for one minute if you don't cancel it manually.

To set the Daily Check reminder event, please refer to **Section 4.8**.

## Using Daily Check

To start a Daily Check, follow the steps as below.
1. If you have not created user, then please follow the instruction in **Section 5.13** to add your user account.
2. Press the Home button to enter the Main Screen.
3. Tap the <**Daily Check**> icon in the middle of the screen.



Hold electrode, insert finger, relax
Keep device at HEART LEVEL
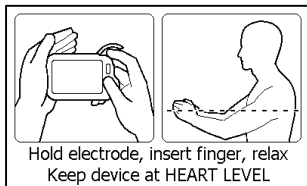
4. Choose the right user.
5. Hold the device according to the instruction, keep the device at the same level as your heart, and keep stable posture and stay calm. Don't exert too much pressure on the ECG electrode, which may result in EMG (electromyograph) interference. Just hold gently and ensure good contact with the ECG electrode. Do not exert pressure on the finger that put in the $SpO_2$ sensor. Just fit it inside but gently to ensure good blood perfusion.
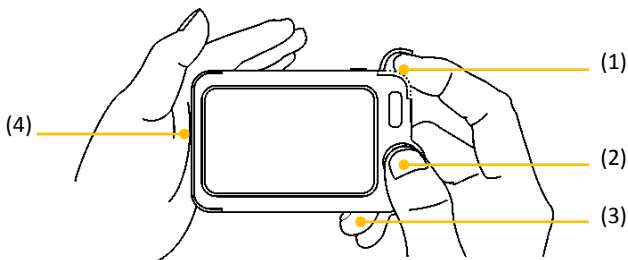
(1) Put the right forefinger into the built-in SpO$_2$ sensor. Use the finger nail to squeeze the edge of the SpO$_2$ sensor cover, then move in upward to the left to raise it up as shown below.
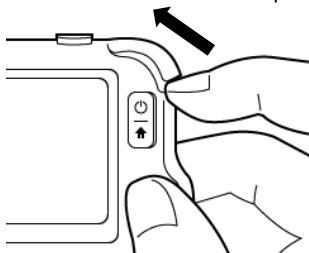


(2) Press the right thumb on the right electrode.
(3) Press the right middle finger on the back electrode.
(4) Press the left electrode to the left palm.
6. Once the device detects stable waveform, it will automatically start the measurement. The countdown bar moves from left to right.
7. When the bar is fully filled, the device will analysis your data, and then show the measurement result.
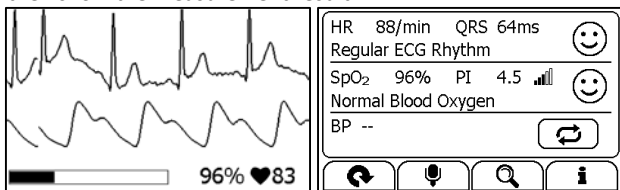


Please refer to **Section 2.4** to understand the result screen. Daily Check provides the trending graph of heart rate, SpO$_2$ and blood pressure or change in percentage of blood pressure. To view the trend, tap the 🔍 button, then select one record, and then tap the 📊 button. For details,

please refer to **Section 6.1**.

## Set reference

To track the blood pressure change, you need to set one measurement as the reference. For a given user, if the reference has not been set, then when finishing the Daily Check, tap the 🔁 icon to set current measurement as the reference. If the reference has already been set, tap the 🔁 icon again will set the current measurement as a new reference.

⚠ **Warnings and Cautionary Advices**

● For a given user, it is suggested to set a new reference every three months.

## BP Calibration

To get blood pressure readings, this device should be calibrated by a doctor with a traditional cuff blood pressure (BP) meter. Because of individual differences, each user must make his/her own calibration before using Daily Check to measure or track the blood pressure. The calibration should be performed when the user is under calm status.

To calibrate with a cuff BP meter, follow the steps as below.
1. Find a traditional cuff BP meter.
2. Sit down and stay calm.
3. Place the cuff on you left arm according to instructions.
4. Pick up the Checkme monitor, press Home button to enter Main Screen.
5. Slip your finger from right to left to enter the second page.
6. Select the <**Settings**> icon, and then select <**General**>.
7. Select <**BP Calibration**>, and then choose the right user.
8. Ensure that the cuff and the Checkme monitor are at the same level as your heart. Then start the blood pressure measurement from the cuff BP meter.
9. Press the ▶ button on the Checkme screen, and follow the steps as described in **Section 4.2** to start the Daily Check measurement.
10. When the blood pressure measurement is finished, manually input the readings of systolic pressure reading in the Checkme.
11. Repeat the calibration once again by following the above steps.

If the readings of two blood pressure measurements are very close to each other, then the calibration is valid and finished. If the readings are not close to each other, please wait for a few minutes, and then start the calibration again.

13

## ⚠ **Warnings and Cautionary Advices**

- For a given user, it is suggested to make BP calibration every three months.

- The BP calibration should be made at the same time period with the Daily Check measurements you are going to make afterwards. Ensure that your body is in the relative same situation when making BP calibration and every time making Daily Check.
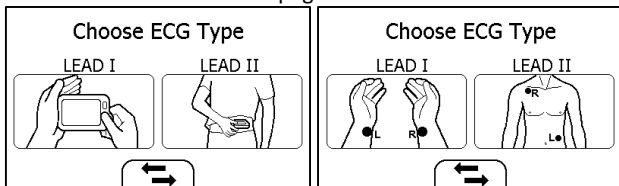
## 4.3  ECG Recorder

### About ECG Recorder

### ⚠ **Warnings and Cautionary Advices**

- Before using this function, please read the **Section 4.1**.

Different methods of taking the ECG measurement are available on Checkme.

The ECG recorder offers four different methods to measuring ECG. Tap the ⬅➡ icon to switch between two pages.



As shown above, from left to right, there are:

- Method A: Lead I, right hand to left hand
- Method B: Lead II, right hand to left abdomen
- Method C: Lead I, left wrist to right wrist
- Method D: Lead II, right wrist to left lower abdomen

ST segment analysis is performed on selected LEAD.
Method A and B offer maximum comfort, than method C and D, but no ST segment value. Method C and D require using external ECG cable and electrode, which is a bit more complicated, but offers ST segment value and better measurement. No matter which method you choose to measure ECG, please keep stable posture and stay calm during the measurement. Movements may result in interference and incorrect

14

readings or analysis result.

The most suitable method or procedure depends on each individual user. Generally it is recommended to use method A in most situations. If the ECG waveform amplitude is too small, then use method B. Choosing method C or D when ST segment reading is needed, or for doctor to better interpret.

## Measuring without Cable

To start an ECG Recorder measurement without cable,
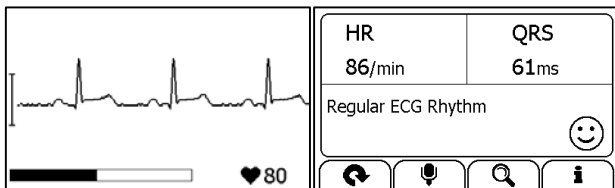1.  If the device is in Calendar Screen, press the Home button.
2.  In the Main Screen, tap the <**ECG Recorder**> icon.
3.  Choose the method A or B.
4.  Follow the instruction according to the mode you selected.



Choose ECG Type

LEAD I          LEAD II
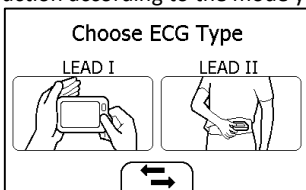
■ Press the right thumb on the right electrode;
■ Press the right forefinger on the back electrode;
■ For method A, press the left electrode to the left palm;
■ For method B, press the left electrode to the left lower abdomen;
Do not press the device too firmly against your skin, which may result in EMG (electromyograph) interference. After you finish the above steps, hold the device stably and stay calm.
5.  Once the device detects stable waveform, it will automatically start the measurement. The countdown bar moves from left to right.
6.  When the bar if fully filled, the device will analysis your data, and then show the measurement result.



| HR | QRS |
|---|---|
| 86/min | 61ms |
| Regular ECG Rhythm | ☺ |

♥80

Please refer to **Section 2.5** to understand the result screen.

15

## Measuring with Cable

To start an ECG Recorder measurement with cable,
1. If the device is in Calendar Screen, press the Home button.
2. In the Main Screen, select <**ECG Recorder**>.
3. Choose the method C or D.
4. Follow the instructions to connect the ECG cable and place the ECG electrodes.
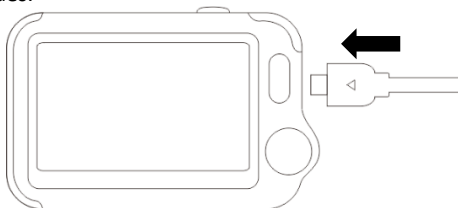


- Sit down or stand, stay calm;
- Palms facing up, place an electrode in the middle of right wrist;
- For method C, place another electrode in the middle of left wrist;
- For method D, place another electrode in the left lower abdomen;



5. The display will then show your ECG waveform.



The device will monitor your ECG continuously, however no data will be saved until you press the ▶ button.
6. Press the ▶ button to start collecting your ECG data. The countdown bar moves from left to right.
7. When the bar is fully filled, the device will analysis your data, and
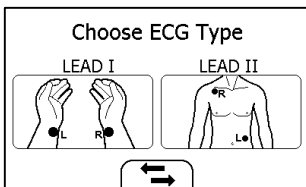
then show the measurement result.

| HR | ST | QRS |
|---|---|---|
| 79/min | +0.00mV | 74ms |
| Regular ECG Rhythm | | ☺ |

| ↻ | 🎤 | 🔍 | i |
|---|---|---|---|

Please refer to **Section 2.5** to understand the result screen.

### Quick ECG

If the <**Quick ECG**> function is enabled, then you can start an ECG measurement very quickly by picking up the device and hold it according to method A. This saves time and is much easier for use. Especially for some people whose sight is not good, or when you feel a bit abnormal during sleep and don't want to turn on the lights. To enable this function, please refer to **Section 5.9**.

## 4.4 Oximeter

### About Oximeter

### ⚠ Warnings and Cautionary Advices
● Before using this function, please read the **Section 4.1**.

The Checkme Health Monitor measures the amount of oxygen in your blood, your pulse rate and pulse index. The Checkme works by shining two light beams into the small blood vessels or capillaries of the finger, reflecting the amount of oxygen in the blood and displaying the measurement on the screen. The oxygen saturation ($SpO_2$) is measured and displayed as a percentage of full capacity. Your pulse rate (PR) and pulse index (PI) will also be measured and displayed.

### Measuring without Cable

To start a Oximeter measurement without cable,
1. If the device is in Calendar Screen, press the Home button.
2. In the Main Screen, tap the "Pulse Oximeter" icon.
3. Insert the forefinger into the built-in $SpO_2$ sensor as shown below.
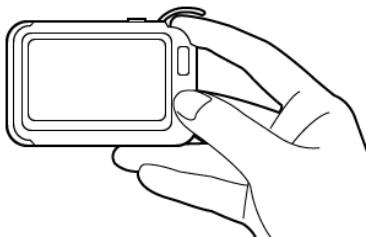
Relax your forefinger and do exert pressure.

4. When the device detects stable waveform, it will automatically start the measurement. The countdown bar moves from left to right.
5. When the bar is fully filled, the device will analysis your data, and then show the measurement result.



| SpO$_2$ | PR | PI |
|---------|-----|-----|
| 96% | 84/min | 3.7 |

Normal Blood Oxygen ☺

96% ♥84
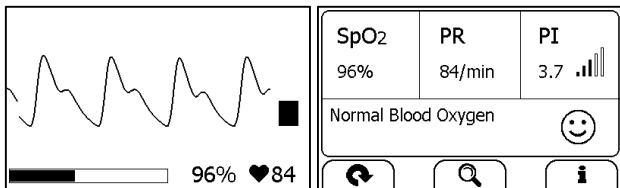
Please refer to **Section 2.5** to understand the result screen.

## Measuring with Cable

1. Connect the external SpO$_2$ sensor to the multi-functional connector.
2. Put your index finger or middle finger into the external SpO$_2$ sensor. Make sure the cable is positioned along the top of the hand, and the finger nail is in the position as shown below.
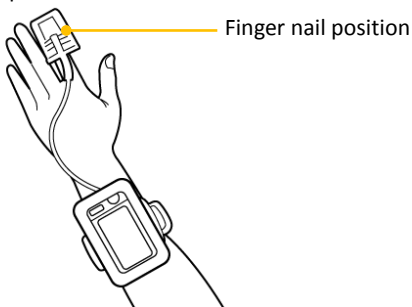


Finger nail position

18

3. If the device is in Calendar Screen, press the Home button.
4. Tap the <**Pulse Oximeter**> icon.
5. The display will then show your PLETH waveform, SpO$_2$ and pulse rate.



The device will monitor continuously, however no data will be saved until you press the ▶ button.

6. Press the ▶ button to start collecting your SpO$_2$ data. The countdown bar moves from left to right.
7. When the bar is fully filled, the device will analysis your data, and then show the measurement result.

| SpO$_2$ | PR | PI     |
|---------|--------|--------|
| 96%     | 84/min | 3.7 ∎∎∎|

Normal Blood Oxygen  ☺
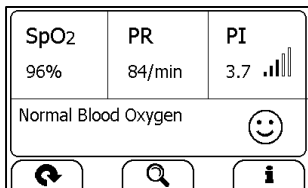
Please refer to **Section 2.4** to understand the result screen.

## 4.5  Temperature

### About thermometer

### ⚠ **Warnings and Cautionary Advices**

- The thermometer is only designed for the measuring area on the human body stated in this manual.
- Check before each use that the lens is intact. If it is damaged, please contact your retailer or the service address.
- The device needs to be in the room which the measurement is taken for at least 30 minutes before use.
- Holding the device for too long in the hand or within your cloth can cause the device to warm up, which may result in incorrect readings.

19

- Physical activity, increased perspiration on the forehead, taking vasoconstictive medication and skin irritations can distort the result.

- The forehead (temples) must be free from perspiration and cosmetics.

- Taking the forehead temperature provides a current measurement of a person's temperature. If you are uncertain about interpreting the results or if the values are abnormal (e.g. fever), please consult your doctor. This also applies in the case of slight temperature changes if there are other symptoms of illness such as agitation, severe sweating, flushed skin, fast pulse rate, tendency to collapse, etc.

The temperature varies depending on the part of the body where the measurement is taken. In a healthy person, the variance can be between 0.2 °C to 1.0 °C (0.4 °F to 1.8°F) in different parts of the body. This device use infrared thermometer to measure forehead temperature.

Influences on forehead temperature include but not limited to
- A person's individual metabolism;
- Age; Forehead temperature is higher in babies and infants than in adults. Greater temperature fluctuations occur faster and more often in children. Normal forehead temperature decreases with age.
- Environmental temperature;
- Time of day; Forehead temperature is lower in the morning and increases throughout the day towards evening.
- Activities; Physical and, to the lesser extent, mental activities increases forehead temperature.

## Taking Temperature Measurement

To start a temperature measurement,
1. If the device is in Calendar Screen, press the Home button.
2. In the Main Screen, select <**Thermometer**>.
3. Put the thermometer sensor on your temple.



Press sensor against TEMPLE
Press Home Button once to start scan
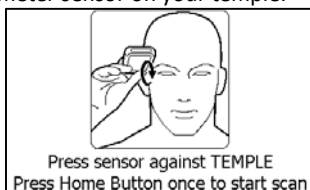
4. Press the Home button once, you will hear "Bi-Bi" beep, which indicates the measurement starts. Then move the thermometer around the temple for around 3 seconds until you hear a long "Bi" beep, which indicates the measurement is finished.
5. Take down the device, and the screen shows the measurement result.
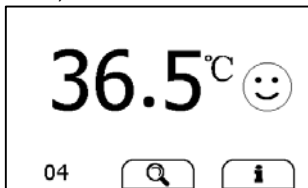
$$36.5°C \ \odot$$

04    🔍    ℹ️

Please refer to **Section 2.5** to understand the result screen.

## 4.6  Sleep Monitor

Obstructive sleep apnea syndrome (OSAS) is a common and widely underdiagnosed condition, and is considered a major public health problem. The prevalence of the syndrome is estimated at 2% to 5% in the adult population. Due to intermittent blockage of the upper airway, reduction or cessation of airflow occurs during sleep, resulting in recurrent oxygen desaturation and sympathetic neural activation. Common symptoms of OSAS include snoring, restless sleep, daytime fatigue, and morning headaches.

Checkme offers a non-invasive method to monitor sleep status for adult users who have sleep problem, sleep related breathing disorders and obstructive sleep apnea.

### ⚠ **Warnings and Cautionary Advices**
- Before using this function, please read the **Section 4.1**.
- Do not use Sleep Monitor function on babies and children.
- The $SpO_2$ sensor may cause skin sensitivity to the patient. Changing another finger if you feel uncomfortable.
- Before using as a sleep monitor, please ensure the battery is fully charged.

To start a sleep monitor measurement,
1. Tie the wristband on one of your left hand.
2. Insert the $SpO_2$ cable into the multi-functional connector.
3. Put one of your finger into the sensor. Forefinger or middle finger is

21

suggested. If needed, remove the colored nail polish from the finger. Make sure that the sensor is correctly placed so that the cable goes above your hand back.
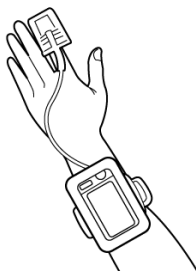


4. Press the Home button to enter the Main Screen. Then Tap the Sleep Monitor icon to enter the screen as below.
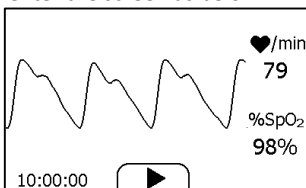


5. Tap the ▶ button to start the sleep monitoring. During monitoring, a countdown timer is always displayed at the lower left part.
6. You can press Home button to lock the screen, as shown below. The device will work in a very low power consumption mode.
7. Insert the device into the wrist band cover, and then begin to sleep.
8. When you get up, or when you want to stop monitoring, you can press the Home button again to unlock the screen, and then tap ■ icon to stop sleep monitoring.
9. You can tap 🔍 button to view the $SpO_2$ trending during your sleep, or tap "Close" button and return to the Main Screen.
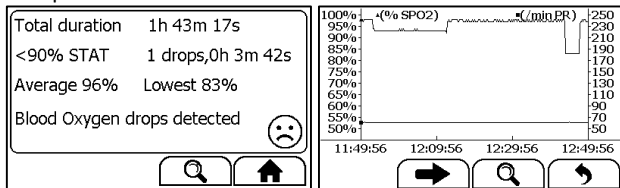
## 4.7 Pedometer

To start a Pedometer measurement,
1. If the device is in Calendar Screen, press the Home button.
2. In the Main Screen, select <**Pedometer**> to enter <**Choose User**> screen. If you have not created user, then please follow the instruction in **Section 5.13** to add your user account.
3. Select a user to enter the screen as below.
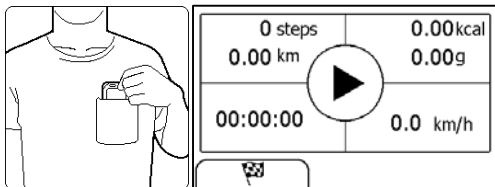


4. Tap the 🏁 button to set your target, if needed.
5. Tap the ▶ button to start calculating steps.
6. Place the device into your pocket.
7. When you finished calculating steps, press the Home button to stop the pedometer.



8. Press Home button again to exit pedometer function.

## 4.8 Reminder

Up to 6 reminder events can be set by user. You can add, edit and delete reminder events. To track your health every day, it is suggested to set a reminder for Daily Check.

To add a reminder:
1. In the Main Screen, tap <**Reminder**> icon.
2. In the <**Reminder**> menu, tap 📅 icon to add a reminder.

23

| Reminder | | Reminder | ☒ |
|---|---|---|---|
| 11:12 Check Me | 11:13 Wake up | ⟳ Monday | ∨ |
| 📋 | 📋 | 📝 CheckMe | ∨ |
| 📋 | 📋 | ⏰ 12:30 (24H) | ∨ |
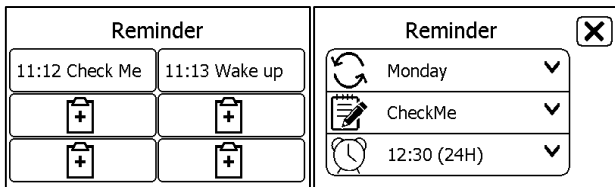
3. Tap the first row to set the repeat interval. Tap the ◀ or ▶ button to change the setting.
4. Tap the second row to set the event. You can define the event by selecting "Self-define".

| Reminder ☒ | Reminder ☒ |
|---|---|
| **Only Once** | **CheckMe** |
| ◀ Each Day        Monday ▶ | ◀ Self-define        Wake up ▶ |
| OK        Cancel | OK        Cancel |
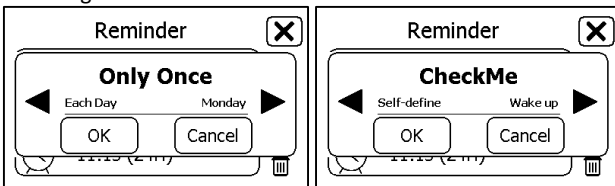
5. Tap the third row, set the time when the reminder is triggered, then tap ➡.
6. Tap ☒ to save this reminder.

To edit or delete a reminder, in the <**Reminder**> menu, choose the reminder which you want to edit or delete.
• Change the repeat interval, event, and/or time, then save the change by following the same procedure as adding a reminder.
• Tap the 🗑 button, and then "Yes" to delete a reminder.

## 4.9  Spot Check

Before using the Spot Check function, you need to set the <**Application**> to <**Hospital**> mode. Please refer to **Section 5.6**.

To check a patient, follow the steps as below.
1. Press the Home button to enter the Main Screen.
2. Tap the <Spot Check> icon in the middle of the screen.
3. Tap the "+" button.
4. Input the patient information. <**Patient ID**> must be inputted. Then tap ➡.
5. Choose which measurement(s) you want to perform by taping the icon(s) of ECG, SpO2 and Temperature.

24

6. Perform measurement(s) according to the instructions. Please refer to corresponding sections for the operation of each measurement.
7. When the measurement(s) is(are) finished, you will see the results.
8. Tap the ➡ button to add another patient for checking.

You can also select the patient(s) which you already added to take a Spot Check measurement.

# 5. Settings

## 5.1 Opening Settings Menu

To open the Settings menu,
1. Press the Home button to enter the Main Screen.
2. Tap the <**Settings**> icon to open the menu as below.

```
┌──────────────────────┐ ┌───┐
│ ▦  General           │ │ ✖ │
├──────────────────────┤ └───┘
│ ▶▶ Quick ECG    ⬤───○ │
├──────────────────────┤
│ ▶)) Voice Guide  ⬤───○ │
├──────────────────────┤ ┌───┐
│ ◀  Volume      ◀▄▄◀ │ │ ▼ │
└──────────────────────┘ └───┘
```
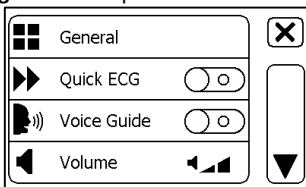
In the Settings menu, you can
• Tap ▲ and ▼ button to page up or down
• Tap ✖ to close the Settings menu

## 5.2 Choosing Language

1. In the Settings menu, choose <**General**>.
2. Choose <**Language**>.
3. Choose the language from the list.

## 5.3 Setting Date & Time

1. In the Settings menu, choose <**General**>.
2. Choose <**Date & Time**>.
3. Tap "+" or "-" button to change the date, then tap ➡.
4. Tap "+" or "-" button to change the time.

| Date | Time |
|------|------|
| + + + <br> 05 - Sep - 2014 <br> - - - | + + <br> 11 : 41 <br> - - |
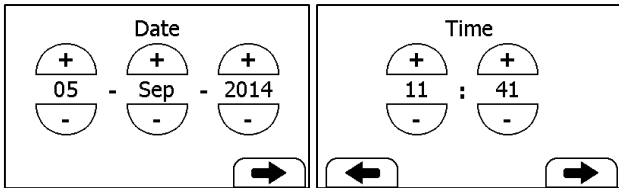
5. Tap ➡ to finish the setting.

## 5.4 Changing ECG waveform length

To change the length of ECG waveform saved for each ECG Recorder measurement:
1. In the Settings menu, choose <**General**>.
2. Tap <**ECG Length**>, then choose among <**30s**>, <**60s**> and <**90s**>.
3. Tap <**OK**> to enable the change.

## 5.5 Setting ECG Bandwidth

1. In the Setting menu, choose <**General**>.
2. Tap the <**ECG bandwidth**> to change between <**Normal**> and <**Wide**>.

## 5.6 Setting the Application



▶▶ ECG bandwidth: Normal  ✕
❓ Noise will increase in wide mode, Continue?
Yes    No

1. In the Setting menu, choose <**General**>.
2. Choose <**Application**>, then choose between <**Hospital**> and <**Home**> mode.
3. Tap <**Yes**> to delete all data saved in another mode.
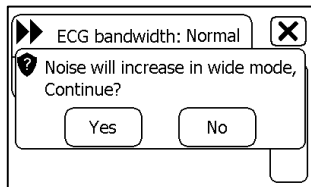
## 5.7 Erasing Data

1. In the Setting menu, choose <**General**>.
2. Tap <**Erase All Data**>, and then <**Yes**>.

All measurements saved in the device will be deleted.

## 5.8 Factory Reset

1. In the Setting menu, choose <General>.
2. Choose <Factory Reset>, then tap <Yes>.

All measurements, user information and other settings saved in the device will be deleted, and the device will be restored to the factory default

settings.

## 5.9   Enabling/Disabling Quick ECG

1.   In the Settings menu, choose <**General**>.
2.   Tap <**Quick ECG**> to enable or disable this function.

## 5.10 Enabling/Disabling Voice Guide

1.   In the Settings menu, choose <**General**>.
2.   Tap <**Voice Guide**> to enable or disable this function.

## 5.11 Changing Sound Volume

In the Settings menu, tap the <**Volume**> area to change volume directly.
"X" means the volume is turned off.

## 5.12 Changing Temperature Unit

In the Settings menu, tap the <**Thermometer**> area to change between
Celsius degree (°C) and Fahrenheit degree (°F).

## 5.13 User Management

To use the Daily Check measurement, you must create your account. If the
Daily Check measurement is used by more than one user, then each user
must create his/her own account.

To create a user account:
1.   In the Settings menu, choose <**User Management**>.
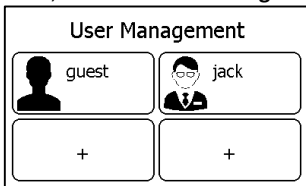


2.   Tap a "+" button to open the menu below.
3.   Tap each button to edit corresponding information. Make sure you
     input the correct information, especially your height, which may
     affect the accuracy of your blood pressure readings.
4.   Tap ⊠ to return the < **User Management** > menu.

To edit the information of a user:
1. In the Settings menu, choose <**User Management**>.
2. Choose the user that you want to edit.
3. Tap the information that you want to edit, and then modify.
4. Tap <OK> and ☒ to return the < **User Management** > menu.

To delete a user:
1. In the Settings menu, choose <**User Management**>.
2. Choose the user that you want to delete.
3. Tap the 🗑 button.

| | | |
|---|---|---|
| jack | 😎 | ✖ |
| Male | | |
| 168 cm | 65 kg | |
| 01-Jan-1970 | 🗑 Delete | |

4. Choose <**Yes**> to confirm.

The <**Guest**> user cannot be edited or deleted.

## 5.14 Identify Software Version

Choose <**About**> in the <**Settings**> menu to identify the software version of your device. Telling the version information when reporting a problem may help to identify and solve your problem.

## 5.15 Turning On/Off Bluetooth

Checkme has built-in Bluetooth wireless connectivity, which enables exporting measured records to mobile phones and pads running iOS or Android platform.

To turn on the Bluetooth:
1. Press the Home button to enter Main Screen.
2. Slip your finger from right to left to switch to the second page.
3. Tap the <**Bluetooth**> icon, then the device will enter Bluetooth mode, and the screen will show the Bluetooth icon in the middle of screen.

Data can only be exported in Bluetooth mode. Pressing the Home button will exit Bluetooth mode.

## ⚠ **Warnings and Cautionary Advices**
● Do not press Home button when data is being exported.

When Checkme is in Bluetooth mode, you can turn on the Bluetooth of your phone and pad, and build the connection with Checkme. Regarding how to export data and the use of Checkme Mobile APP, please refer to the help information after installation of the application. The Checkme Mobile, compatible with iOS and Android platform, is available on the Apple App store and Android App store.

# 6. Review

To open the <**Data Review**> menu,
1. If the device is in Calendar Screen, press the Home button.
2. In the Main Screen, tap the <**Review**> icon.

| Data Review | |
|---|---|
| DailyCheck | ECGRecorder |
| Oximeter | SleepMonitor |
| Thermometer | Pedometer |
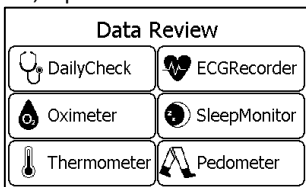
## 6.1 Reviewing Daily Check

To review Daily Check records,
1. In the <**Data Review**> menu, select <**DailyCheck**>.
2. Choose the right user to open the list as below, then select one record to review more information as below.

| 16:42:02 05-Jun-2014 ☺ | ✕ |
|---|---|
| 16:41:23 05-Jun-2014 ☺ | |
| 16:40:24 05-Jun-2014 ☺ | |
| 16:05:08 05-Jun-2014 ☺ | ▼ |

HR 85/min    QRS 64ms    ☺
Regular ECG Rhythm

SpO₂   96%   PI 4.6  ☺
Normal Blood Oxygen

BPsys- jack 112mmHg

🗑   ▶   📊   ↩
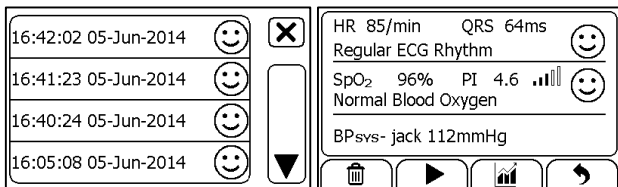
In this menu, you can:
■ Select 🗑 to delete this measurement
■ Select ▶ to replay the ECG waveform as shown below.
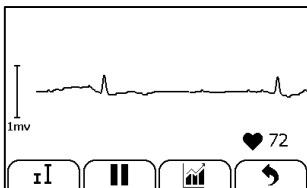
When the ECG waveform is being replayed, you can
- Select ɪI to change the waveform amplitude.
- Select II to pause it.
- Select � to return Daily Check list.

After the ECG waveform is replayed, it will automatically return to the previous interface. Before that, you will hear the voice memo if you added the voice memo for this measurement.

■ Select 📊 to view the trend of heart rate, SpO₂ and blood pressure or change in percentage of blood pressure.
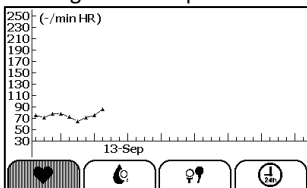


■ Select ↑ to return to the Daily Check list.

## 6.2 Reviewing ECG Recorder

To review ECG Recorder records, in the <**Data Review**> menu, select <**ECG Recorder**>. The operations you can perform is almost the same with Daily Check. However there is no trending graph.

## 6.3 Reviewing Oximeter

To review Oximeter records, in the <**Data Review**> menu, select <**Oximeter**>. The operations you can perform is almost the same with ECG Recorder. However there is no voice memo.

## 6.4 Reviewing Thermometer

To review Thermometer records, in the <**Data Review**> menu, select <**Thermometer**>. The operations you can perform is almost the same with ECG Recorder. However there is no voice memo.

## 6.5  Review Sleep Monitor

To review Sleep Monitor records, in the <**Data Review**> menu, select <**SleepMonitor**>.
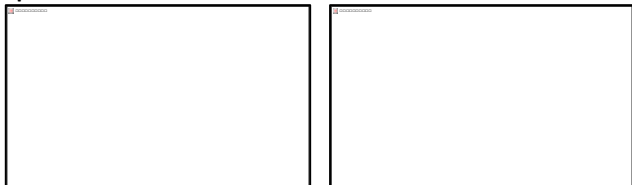
The operations you can perform is the same with Daily Check. However there is no waveform and audio memo to replay. To better review the $SpO_2$ trend during sleep, it is suggested to use the Checkme Mobile application.

## 6.6  Review Pedometer

To review Pedometer records, in the <**Data Review**> menu, select <**Pedometer**>. The operations you can perform is almost the same with Pedometer Recorder. However there is no voice memo.

## 6.7  Review Spot Check

To review Spot Check records, please make sure that the device is in "Hospital" mode.
1.   In the <**Data Review**> menu, select <**Spot Check**>.
2.   Choose the right user to enter the user information confirm screen
3.   After you confirm the information, tap ➡ and then select one record to review more information.

```
HR 85/min      QRS 64ms      ☺
Regular ECG Rhythm

SpO₂  96%    PI  4.6  ▁▃▅   ☺
Normal Blood Oxygen

Temp.  36.5℃                 ☺

   🗑         ▶          ↩
```
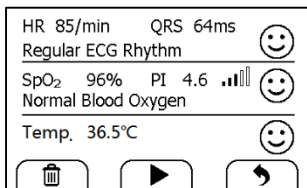
In this screen, you can:
■   Select 🗑 to delete this measurement.
■   Select ► to replay ECG waveform.
■   Select ↩ to return to Spot Check list.

# 7.  Maintenance

### ⚠ **Warnings and Cautionary Advices**
• Have the device repaired by authorized service centers only, otherwise its warranty is invalid.

## 7.1  Warranty

The product is warranted to be free from defects in materials and workmanship within warranty period when used in accordance with the provided instructions.

## 7.2  Battery

This monitor is designed to operate on rechargeable Lithium-ion battery. The battery is charged automatically when the monitor is connected to AC power or devices which can output electronic power through USB connector, such as personal computer and mobile battery bank etc.

On-screen battery symbols indicate the battery status as follow:
- 🔋 The battery is fully charged.
- 🔋 The solid portion represents the remained battery energy. If the solid portion moves from left to right, then it means that the battery is being charged.
- 🔋 Indicates that the battery is almost depleted and need to be charged immediately. Otherwise the device will shut down automatically.

To charge the battery,
1. Connect the smaller end of the USB charging cable to the multi-functional connector, as shown below.
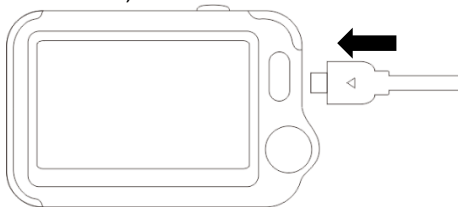


2. Connect the other end of the USB charging cable to the USB charging port.

3. Please make sure that the LED is blue, and press the Home button to enter the Main Screen, if needed.
4. When the LED turns to green, it means the battery is fully charged. Then you can unplug the USB cable.

## ⚠ Warnings and Cautionary Advices
- The device cannot be used for any measurement during charging.
- Use charging adapter provided by manufacturer, or USB charging devices which comply with the standard of IEC 60950.

## 7.3 Care and Cleaning

## ⚠ Warnings and Cautionary Advices
- Have the device repaired by authorized service centers only, otherwise its warranty is invalid.

Clean the device per week, carefully swabbing the device surface with a soft cloth or cotton swab with rubbing alcohol. Do not pour alcohol directly on or into the device.

## 7.4 Trouble Shooting

| Problem | Possible Cause | Solution |
|---------|----------------|----------|
| The device does not turn on. | 1. The battery may be low.<br>2. The device might be damaged | 1. Charge the battery and try again.<br>2. Please contact with your local distributor. |
| Low battery indicator is blinking | The battery is low. | Charge the battery and try again. |
| The ECG waveform amplitude is small | The lead you choose is not suitable for you. | Change another lead and try again. |
| ECG waveform drifts | 1. The pressure exerted on the electrode is not stable or too much.<br>2. Hand or body may be moving. | 1. Hold the device stably and gently.<br>2. Try to keep perfectly still and test again. |
| SpO$_2$ or pulse rate | 1. Finger may not be | 1. Remove finger |

| shows no value, or the number fluctuates | inserted correctly. 2. Finger or hand may be moving. | and reinsert, as directed. 2. Try to keep perfectly still and test again. |
|---|---|---|
| The app cannot find the device. | The Bluetooth may not be turned on. | Turn on the Bluetooth on the second page of Main Screen. |
| "SpO$_2$ cable failed" after inserting SpO$_2$ cable. | The SpO$_2$ cable might be damaged. | Please contact with your local distributor |
| "System Error" occurred. | Software or hardware failure. | Restart the device and measure again.If the error persists, mark down the error number and contact with your local distributor. |
| BP calibration failed. | 1. Wrong height. 2. The difference between two calibration is too large. | 1. Reconfirm your height. 2. Try to keep perfectly still and calibrate again. |
| No voice during ECG and SpO$_2$ measurement. | The speaker is muted. | Unmuted the speaker in the Settings menu. |
| SpO$_2$ value is too low when measured using integrated sensor. | 1. Finger pressed too hard. 2. Finger may not be inserted correctly. | 1. Reinsert your finger gently and stably. 2. Make sure your finger is in right position. |
| Temperature value is too low. | 1. The measurement area is covered by hair. 2. The thermometer sensor is too far away from your skin. | 1. Remove hair from the measurement area. 2. Keep the sensor contact with your |

| | 3. The thermometer sensor is dirty. | skin. 3. Clean the sensor with a soft cloth or cotton. |
|---|---|---|

# 8. Accessories

### ⚠ Warnings and Cautionary Advices

- Use accessories specified in this chapter. Using other accessories may cause damage to the device or not meet the claimed specifications.

| Part Number | Description |
|---|---|
| 540-00192-00 | ECG cable with 2 leadwires, snap |
| 540-00193-00 | SpO$_2$ finger sensor, 25 cm, FP-10 |
| 540-00194-00 | USB charging cable, micro D |
| 560-00198-00 | ECG electrode, 10 pcs |
| 560-00209-00 | Wristband |
| 620-00347-00 | Charging adapter, EU standard |
| 620-00348-00 | Charging adapter, USA standard |
| 620-00349-00 | Charging adapter, UK standard |
| 620-00350-00 | Charging adapter, AU standard |

# 9. Specifications

| Classifications | | | |
|---|---|---|---|
| EC Directive | | MDD, 93/42/EEC | |
| | | R&TTE, 1999/5/EC | |
| | | ROHS 2.0, 2011/65/EU | |
| Degree protection against electrical shock | | Type BF | |
| **Environmental** | | | |
| Item | | Operating | Storage |
| Temperature | | 5 to 45°C | -25 to 70°C |
| Relative humidity (noncondensing) | | 10% to 95% | 10% to 95% |
| Barometric | | 700 to 1060 hPa | 700 to 1060 hPa |
| Degree of dust & water resistance | | IP22 | |
| Drop test | | 1.0 m | |
| **Physical** | | | |
| Size | 88×56×13 mm | | |
| Packing size | 178*123*75 mm | | |
| Weight | Less than 80 g (main unit) | | |
| Display | Checkme Pro/Plus/Pod: 2.7″ touch screen, HD | | |
| Connector | Micro D connector | | |
| Wireless connectivity | Built-in Bluetooth dual mode, support 4.0 BLE | | |
| **Power Supply** | | | |
| Charge adapter input | AC100-240V 50/60Hz | | |
| Charge adapter output | DC5V 1.0A | | |
| Battery type | Rechargeable lithium-polymer battery 560 mAh | | |
| Battery run time | Only daily check: > 1000 times<br>Continuous sleep monitoring: > 12 hours<br>Pure standby calendar mode: > 3 months | | |
| Charge time | Less than 2 hours to 90% | | |
| **ECG** | | | |
| Lead type | Integrated ECG electrodes<br>External ECG cable and electrodes | | |
| Lead set | Lead I, lead II | | |
| Measurement mode | Episode, continuous | | |
| Sampling rate | 500 Hz | | |
| Sampling accuracy | 16 bit | | |
| Display Gain | 1.25 mm/mV, 2.5 mm/mV, 5 mm/mV<br>10 mm/mV, 20 mm/mV | | |

| Sweep speed | 25 mm/s |
|---|---|
| Bandwidth* | 0.05 to 40 Hz |
| Electrode offset potential tolerance | ±300 mV |
| HR measurement range | 30 to 250 bpm |
| Accuracy | ±2 bpm or ±2%, whichever is greater |
| ST measurement range | -0.5 to +0.5 mV |
| Measurement summary | Heart rate**, QRS duration, ST segment***, Rhythm analysis (Regular ECG Rhythm, High Heart Rate, Low Heart Rate, High QRS Value, High ST Value***, Low ST Value***, Irregular ECG Rhythm, Unable to analyze) |

### SpO₂

| | |
|---|---|
| Standards | Meet standards of ISO 80601-2-61 |

Measurement accuracy verification: The SpO₂ accuracy has been verified in human experiments by comparing with arterial blood sample reference measured with a CO-oximeter. Pulse oximeter measurement are statistically distributed and about two-thirds of the measurements are expected to come within the specified accuracy range compared to CO-oximeter measurements.

| SpO₂ range | 70% to 100% |
|---|---|
| SpO₂ Accuracy (Arms) | 80-100%:±2%, 70-79%:±3% |
| PR range | 30 to 250 bpm |
| PR accuracy | ±2 bpm or ±2%, whichever is greater |
| PI range | 0.5-15 |
| Measurement summary | SpO₂, PR, PI, Summary (Normal Blood Oxygen, Low Blood Oxygen, Unable to analyze) |

### Blood Pressure Variation

| Measurement method | Cuff-free non-invasive technology |
|---|---|
| Measurement summary | Percent of change or systolic pressure based on individual calibration coefficient |

### Thermometer

| Technique | Infrared body temperature |
|---|---|
| Environment temperature | 16.0 to 40.0 °C |
| Measurement site | Temple |
| Measurement time | 3s |
| Measurement range | 34.0 to 42.2 °C (94.0 to 108.0 °F) |
| Accuracy | ±0.2°C or ±0.4°F |

### Sleep Monitor

| Monitoring time | Up to 10 hours |
|---|---|

| Data storage | Store SpO₂ and pulse rate |
|---|---|
| Measurement summary | Total duration, <90% STAT, Average saturation, Lowest saturation, Summary(No abnormal detected, blood oxygen drop detected, Unable to analyze) |

| Pedometer | |
|---|---|
| Range | 0 to 99999 steps |
| Distance | 0.00 to 999.99 km |
| Timer | 0 to 1999 minutes |
| Calories | 0.00 to 9999.99 kcal |
| Fat | 0.00 to 199.99 g |

| Reminder | |
|---|---|
| No. of reminder | 6 |
| Reminder event | Wake up, Check me, Medicine, Self-define |

| Review | |
|---|---|
| Data review | Graphic trend, list trend |
| Waveform review | Full disclosure waveform |
| Daily check | 100 pcs of records without audio memo |
| ECG recorder | 100 pcs of records without audio memo |
| Oximeter | 100 pcs of records |
| Thermometer | 100 pcs of records |
| Sleep record review | 5 pcs of records, 10 hours each record |

| Mobile APP | |
|---|---|
| Operating system | IOS 7.0 or above, Android 4.0 or above |
| IOS Capability | iPhone 4s and models launched subsequently; iPad 3 and models launched subsequently; |
| Android Capability | Mobile phone or pad with Bluetooth 2.1 or above |
| Functionality | Data export, data review, waveform replay, trend review, data sharing |

\* : External ECG cable, bandwidth mode set to wide

\*\*: Heart rate is calculated based on average of every 5 to 30 QRS complex.

\*\*\*: Only for measurement with external ECG cable, bandwidth mode set to wide

# 10.  Electromagnetic Compatibility

The device meets the requirements of EN 60601-1-2. All the accessories also meet the requirements of EN 60601-1-2 when in use with this device.

## ⚠ **Warnings and Cautionary Advices**

- Using accessories other than those specified in this manual may

result in increased electromagnetic emission or decreased electromagnetic immunity of the equipment.

- The device or its components should not be used adjacent to or stacked with other equipment.
- The device needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided below.
- Other devices may interfere with this device even though they meet the requirements of CISPR.
- When the inputted signal is below the minimum amplitude provided in technical specifications, erroneous measurements could result.
- Portable and mobile communication equipment may affect the performance of this device.
- Other devices that have RF transmitter or source may affect this device (e.g. cell phones, PDAs, and PCs with wireless function).

| Guidance and Declaration - Electromagnetic Emissions | | |
|---|---|---|
| The Health Monitor 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 an environment. | | |
| Emission tests | Compliance | Electromagnetic environment - guidance |
| RF emissions CISPR 11 | 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 equipment. |
| RF emissions CISPR 11 | Class B | The device is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions IEC61000-3-2 | Class A | |
| Voltage Fluctuations / Flicker Emissions IEC 61000-3-3 | Complies | |

| Guidance and Declaration - Electromagnetic Immunity | | | |
|---|---|---|---|
| The Health Monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the Health Monitor should assure that it is used in such an environment. | | | |
| Immunity test | IEC60601 test level | Compliance level | Electromagnetic environment - guidance |
| Electrostatic discharge (ESD) IEC 61000-4-2 | ± 6 kV contact<br>± 8 kV air | ± 6 kV contact<br>± 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/burst IEC 61000-4-4 | ± 2 kV for power supply lines<br>± 1 kV for input/output lines | ± 2 kV for power supply lines<br>± 1 kV for input/output lines | Mains power quality should be that of a typical commercial or hospital environment. |
| Surge IEC 61000-4-5 | ± 1 kV line(s) to line(s)<br>± 2 kV line(s) to earth | ± 1 kV line(s) to line(s)<br>± 2 kV line(s) to earth | |
| Voltage dips, short Interruptions and Voltage variations on power supply input lines IEC 61000-4-11 | <5 % $U_T$<br>(>95 % dip in $U_T$)<br>for 0.5 cycle<br>40 % $U_T$<br>(60 % dip in $U_T$)<br>for 5 cycles<br>70 % $U_T$<br>(30 % dip in $U_T$)<br>for 25 cycles<br><5 % $U_T$<br>(>95 % dip in $U_T$)<br>for 5 s | <5 % $U_T$<br>(>95 % dip in $U_T$)<br>for 0.5 cycle<br>40 % $U_T$<br>(60 % dip in $U_T$)<br>for 5 cycles<br>70 % $U_T$<br>(30 % dip in $U_T$)<br>for 25 cycles<br><5 % $U_T$<br>(>95 % dip in $U_T$)<br>for 5 s | 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 (50/60 HZ) magnetic field IEC 61000-4-8 | 3 A/m | 3 A/m | 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 Health Monitor is intended for use in the specified electromagnetic environment. The customer or the user of the Health Monitor should assure that it is used in such an environment as described below. | | | |
| Immunity test | IEC60601 test level | Compliance level | Electromagnetic environment - guidance |
| Conduced RF IEC61000-4-6 | 3 Vrms 150 kHz to 80 MHz outside ISM bands | 3 Vrms 150 kHz to 80 MHz outside ISM bands | Portable and mobile RF communications equipment should be used no closer to any part of the system, including cables, than the recommended separation distance calculated from the equation appropriate for the frequency of the transmitter. Recommended separation distances: $$d = 1.2\sqrt{P}$$ |
| Radiated RF IEC61000-4-3 | 3 V/m 80 MHz to 2.5 GHz | 3 V/m 80 MHz to 2.5 GHz | Recommended separation distances: 80 MHz∼800 MHz: $d = 1.2\sqrt{P}$ 800MHz-2.5GHz: $d = 2.3\sqrt{P}$ 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). 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 equipment marked with the following symbol: |
| Note 1: At 80 MHz to 800 MHz, the separation distance 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 theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the device is used exceeds the applicable RF compliance level above, the device should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the device. [b] Over frequency range 150kHz to 80MHz. For Resp field strength should be less than 1V/m. | | | |

| Recommended separation distances between portable and mobile RF communications equipment and the device | | |
|---|---|---|
| The Health Monitor is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Health Monitor can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the monitor as recommended below, according to the maximum output power of the communications equipment. | | |
| Rated max. output power of transmitter (W) | Separation distance according to frequency of the transmitter (m) | | |
| | 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 | 1.20 | 1.20 | 2.30 |
| 10 | 3.80 | 3.80 | 7.30 |
| 100 | 12.00 | 12.00 | 23.00 |
| For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. Note 1: At 80 MHz and 800 MHz, the separation distance 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. | | |

# Checkme Pro Health Monitor

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# Knowing and Tracking Your Health