Smart Wristband User Manual

CONTENTS

1. PRODUCT DESCRIPTION

Congratulations! You are now a proud owner of the *Healthsign™ Smart Wristband.*

The *Healthsign™ Smart Wristband* is a compact, single-piece, non-invasive, unobtrusive, and reusable wrist-worn multiparameter health monitor. The device is made from industrial-grade plastic, is fully sealed and splashproof, incorporates a Bluetooth microcontroller, integrates multiple sensors, runs on a nonreplaceable 3.7 V rechargeable Li-Ion battery, and utilizes the Qi protocol for wireless charging of the battery.

The *Healthsign™ Smart Wristband* is equipped with light emitting diodes (LEDs), photodiodes, and an infrared (IR) thermopile sensor on its backplate (Fig. 1). When the device is worn around the wrist, these sensors contact the skin to measure various physiological phenomena. The device also incorporates an accelerometer sensor for monitoring user activity.

Fig. 1: Backplate of the *Healthsign™ Smart Wristband*

Users can wear the *Healthsign™ Smart Wristband* around the wrist and connect the device via Bluetooth to their smartphone and/or tablet running the *Healthsign™ SM* app to record and display arterial pulse waveform signals, body temperature, activity level, and location (detected utilizing the mobile device GPS system). The *Healthsign™ SM* app provides instant analysis of the recorded data to accurately evaluate heart rate (HR), respiration rate (RR), blood oxygen saturation (SpO$_2$), non-invasive blood pressure (NIBP), body temperature, activity level, user location, and generate pertinent health alerts (Fig. 2).

The *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system supports both manual and automatic continuous monitoring.

In the manual mode, the default monitoring duration is 2 minutes in which users can analyze data an unlimited number of times and email each analysis result and the data to themselves, their family members, and their healthcare providers.

In the automatic continuous mode, the system initiates a 30 second monitoring session every 15 minutes and pushes the results and the data to a cloud database. Moreover, in this mode, users can access their entire historical data, results, and trends from the cloud database via the *Healthsign™ SM* app. Additionally, the automatic continuous mode enables users to share all historical information with their family member and/or healthcare provider.

The *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system generates and transmits pertinent health alerts based on the values of the various measured parameters. These alerts are displayed to the user as well as automatically transmitted (via email and/or text message) to the user's family member and/or healthcare provider.

Fig. 2: The *Healthsign™ Smart Wristband* and the *Healthsign™ SM* App system monitoring data

Individuals with known or suspected conditions (for example, hypertension, heart failure, old age, etc.) as well as general health enthusiasts can use the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system to conveniently monitor their health and wellbeing. Family members and/or healthcare professionals can access all data and results, and remotely engage with the monitored individual to provide treatment and care.

The *Healthsign™ Smart Wristband* is a reusable device and as such can be used an unlimited number of times within its expected service life. The device can be easily disinfected and cleaned by wiping with a 70% ethanol solution. Moreover, it can be placed on any Qi protocol complaint charging plate for wirelessly recharging its battery.

2. DESIGN PHILOSOPHY

From a user perspective, the wrist is one of the most convenient sites for attaching a wristwatch type wearable device and accomplishing vital sign monitoring. However, due to its complex physiological structure, the wrist is also a particularly difficult site for accurately measuring arterial pulse waveform signals with a wristband type device that would allow evaluation of various vital signs like HR, RR, NIBP, and SpO_2.

In the *Healthsign™ Smart Wristband*, the above limitation has been mitigated by developing patent-pending technology that incorporates three clusters of custom-designed optical pulse sensors (LEDs + photodiodes) separated by a distance of 1.5-3.0 inches on the backplate of the device (Fig. 1). This innovative technology facilitates the measurement of arterial pulse wave signals at three distinct locations along the wrist thus reducing positional dependency of pulse measurement on the wrist, minimizing overall noise, and enhancing accuracy of HR, RR, and SpO_2, measurements.

Even more importantly, the above-described arrangement of the optical pulse sensors enables the measurement of two extremely important BP-related parameters called pulse transit time (PTT) and pulse wave velocity (PWV) for the very first time inside a single-piece smart wristband. The *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system combines the PTT/PWV parameters with other arterial pulse wave features like amplitude to provide highly accurate cuff-less NIBP measurements. The ability of the system to provide accurate cuff-less NIBP evaluation is indeed poised to be a gamechanger in the rapidly growing multi-billion-dollar NIBP monitoring market.

The *Healthsign™ Smart Wristband* is additionally equipped with an accelerometer and an IR thermopile sensor that allows for detection of adverse events like falls and fever. Moreover, the *Healthsign™ SM* app utilizes the mobile device GPS system to provide user location that can be very useful for tracking and tracing dementia patients.

Taking user safety, splash-proofing, device cleaning and reusability, and ease of use into account, the *Healthsign™ Smart Wristband* is made out of industrial-grade plastic and has been equipped with Qi standard wireless charging functionality. This has enabled us to manufacture the device as a fully sealed, splashproof, and electrically insulated unit that contains no open/exposed ports.

Therefore, the design of the *Healthsign™ Smart Wristband* ensures that the device can be easily disinfected and cleaned by wiping with a 70% ethanol solution, thus facilitating reusability.

Moreover, the design enhances user safety and ease of use since the device is never directly plugged into an electrical wall outlet for charging – it just needs to be placed on a Qi protocol compliant wireless charging plate. Additionally, the device contains a safety interlock feature whereby if the device is placed on a Qi charging plate while it is on, the device automatically switches off.

The *Healthsign™ Smart Wristband* has been developed using a minimalistic design approach whereby it is strictly a clinical-grade wrist-worn health monitor rather than a consumer type multimedia watch like the Apple watch. For example, the *Healthsign™ Smart Wristband* does not have a display of its own but rather leverages the rich display of the mobile device that it tethers with. Moreover, the *Healthsign™ SM* app accomplishes complex analyses like digital signal processing (DSP) on the mobile device itself, thus enabling us to equip the *Healthsign™ Smart Wristband* with a low-cost microcontroller with modest computational abilities. This design philosophy has allowed us to keep the cost of the *Healthsign™ Smart Wristband* low (under $200) and yet maintain high quality standards whereby clinical-grade physiological data and measurements are recorded and reported.

Therefore, the design, features, functionality, and cost of the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system makes it one of the most convenient, versatile, accurate, safe, and affordable devices in the remote health monitoring market.

3. INDICATIONS FOR USE

The *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system is intended to record, store, transfer, and retrieve three-channel arterial pulse wave rhythms, body temperature, activity level, and user location. The system displays and analyzes the pulse rhythms and accompanying data to monitor HR, RR, SpO_2, NIBP, body temperature, activity level, and user location. Based on an analysis of the monitored parameters, the system generates pertinent health alerts, for example, fever alerts, hypertension alerts, and tachycardia alerts. The system is intended for use by individuals with known or suspected health conditions, health-conscious individuals, and healthcare providers. Please note that the system is intended for use by adults (age ≥ 18 years) only.

4. CONTRAINDICATIONS

There are no known contraindications for the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system. However, when using the system, care must be taken according to the warnings laid out under the *Precautions* section (Section 5).

5. PRECAUTIONS

General precautions include the following:

- DO NOT use the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system with a cardiac pacemaker or other implanted electronic devices.

- DO NOT use to self-diagnose any health conditions. Consult with your doctor before making any medical decision, including initiating and/or altering the use of a drug or treatment.

- DO NOT store in extremely hot, cold, humid, wet, or bright conditions.

- DO NOT expose to strong electromagnetic radiations.

- DO NOT use the system in manual mode while driving.

- DO NOT use the system during physical activity.

- DO keep the system out of reach of children.

- DO NOT use and DO seek medical help if your skin gets irritated, inflamed, or develops a rash around the *Healthsign™ Smart Wristband*.

- *Healthsign™* provides no warranty for any data or information that is erroneously collected, analyzed, or reported by the system. Results provided and health alerts generated are potential findings only and not a diagnosis of any condition. All data, results and alerts should be reviewed by a medical professional for clinical decision making.

- DO NOT drop, bump, or crush the *Healthsign™ Smart Wristband*.

- The system DOES NOT guarantee that you are not experiencing any health issues when no health alerts are generated, or results appear to be within normal range. You should notify your doctor if you feel unwell or have concerns about your health.

6. HARDWARE AND SOFTWARE COMPATIBILITY

The *Healthsign™ Smart Wristband* is compatible with the following smartphones, tablets, and operating systems:

iPhone

- iPhone 11 (iOS 14.1)

- iPhone 11 Pro (iOS 14.1)

- iPhone 11 Pro Max (iOS 14.1)

- iPhone XS (iOS 14.1)

- iPhone XS Max (iOS 14.1)

- iPhone XR (iOS 14.1)

- iPhone X (iOS 14.1)

- iPhone 8 (iOS 14.1)

- iPhone 8 Plus (iOS 14.1)

- iPhone 7 (iOS 14.1)

- iPhone 7 Plus (iOS 14.1)

- iPhone 6S (iOS 14.1)

- iPhone 6S Plus (iOS 14.1)

- 2020 iPhone SE (iOS 14.1)

- 2016 iPhone SE (iOS 14.1)

- 7th Gen iPod Touch (iOS 14.1)

iPad

- 12.9-inch iPad Pro (iOS 14.1)

- 11-inch iPad Pro (iOS 14.1)

- 10.5-inch iPad Pro (iOS 14.1)

- 9.7-inch iPad Pro (iOS 14.1)

- 6th Gen iPad (iOS 14.1)

- 5th Gen iPad (iOS 14.1)

- 5th Gen iPad Mini (iOS 14.1)

- iPad Mini 4 (iOS 14.1)

- 3rd Gen iPad Air (iOS 14.1)

- iPad Air 2 (iOS 14.1)

Android

- Google Pixel 4 (Android 11.0.0)

- Google Pixel 4 XL (Android 11.0.0)

- Google Pixel 3a (Android 11.0.0)

- Google Pixel 3a XL (Android 11.0.0)

- Google Pixel 3 (Android 11.0.0)

- Google Pixel 3 XL (Android 11.0.0)

- Google Pixel 2 (Android 11.0.0)

- Google Pixel 2 XL (Android 11.0.0)

- Google Pixel (Android 10.0.0)

- Google Pixel XL (Android 10.0.0)

- Samsung Galaxy S10 (Android 9.0.0)

- Samsung Galaxy S10+ (Android 9.0.0)

- Samsung Galaxy S9+ (Android 9.0.0)

- Samsung Note10 (Android 10.0.0)

- Samsung Note10+ (Android 10.0.0)

- Motorola Moto G8 Plus (Android 9.0.0)

7. DOWNLOAD THE HEALTHSIGN™ SM APP

Please go to the Apple App Store or the Google Play App Store, search for the app *"Healthsign™ SM"*, download the app, and follow the onscreen instructions to install the app.

8. SIGN UP FOR SERVICE

Open the *Healthsign™ SM* app and follow the on-screen instructions to sign up and create a user account. You will need to provide your email information to sign up. Alternatively, you can also sign up via Facebook, Google, or your cell number (Fig. 3).
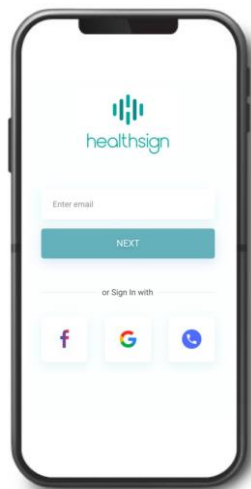

Fig. 3: Sign up screen of the *Healthsign™ SM* app

9. DESIGNATE HEALTHCARE PROVIDER / FAMILY MEMBER

The *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system generates alerts for various health conditions. Users have the option of designating their healthcare provider and/or family member to receive alerts pertaining to their health. Please click on the *Settings* tab in the *Healthsign™ SM* app, then click on the *Set Up Alert Recipients* button and follow the on-screen instructions to designate a healthcare provider and/or family member who will receive all generated health alerts (Fig. 4).
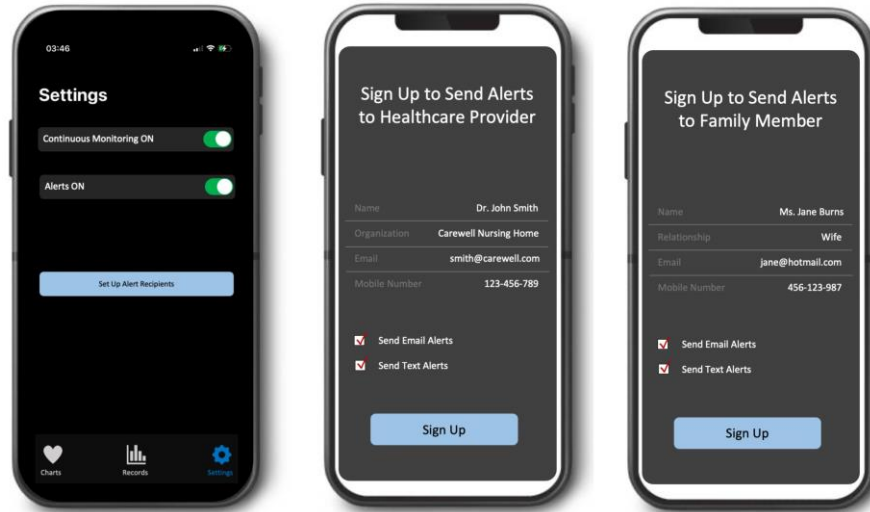

Fig. 4: Designating alert receipts, enabling/disabling continuous monitoring and alerts

10. SET MONITORING MODE

The *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system allows for both manual and automatic continuous health monitoring. Use the *Settings* tab and set the system to manual or continuous monitoring (left illustration, Fig. 4). During manual monitoring, the user can take physiological measurements on demand. On the other hand, during automatic continuous monitoring, a 30 second measurement is initiated by the device every 15 minutes. Please see sections on manual and continuous monitoring (Sections 13, 14) to learn more about these monitoring modes.

11. ENABLE OR DISABLE ALERTS

The system generates and transmits various health alerts based on the measured physiological parameters. Use the *Settings* tab to enable or disable alerts (Fig. 4). Please see sections on alerts (Sections 15, 16) to learn more about various alerts and how they are generated and reported.

12. PAIR THE HEALTHSIGN™ SMART WRISTBAND

The *Healthsign™ Smart Wristband* tethers via Bluetooth to a smartphone and/or tablet to monitor various physiological parameters. To pair the *Healthsign™ Smart Wristband*, wear it on the wrist snugly, then press the *ON/OFF* button once to turn it on. Once the device is switched on, the *LED Indicator* on the top lights up. Bring a compatible mobile device running the *Healthsign™ SM* app near the *Healthsign™ Smart Wristband* and then follow the onscreen instructions (Fig. 5).

Fig. 5: Pairing the *Healthsign™ Smart Wristband*

13. MANUAL MONITORING

Wear and switch on the *Healthsign™ Smart Wristband*. Open the *Healthsign™ SM* app, click on the *Settings* tab and disable the *Continuous Monitoring ON* switch to put the system into manual monitoring mode. Then click on the *Charts* tab to begin manual monitoring (left illustration, Fig. 4).

As soon as manual monitoring begins, three arterial pulse waveform signals appear and start updating in real-time on the mobile screen (top illustration, Fig 6). After 10 seconds of monitoring, an *Analyze* button appears at the bottom lhttps://www.mycomputercareer.edu/eft corner of the mobile screen (top illustration, Fig 6). Click on the *Analyze* button to view *Analysis Results* that appear instantly (bottom illustration, Fig 6). Click on the *Done* button at the top right corner of the *Analysis Results* window to go back to the real-time charting of the arterial pulse waveforms.

A manual monitoring session lasts for 2 minutes. Users can click on the *Analyze* button as many times as they wish during a manual monitoring session to instantly display results of the analysis on the incoming data. Please note that each time the *Analyze* button is clicked, last 30 seconds of incoming data is analyzed and the associated results are presented to the user.

Users can at any time click on the *Share* button at the top left corner of the *Analysis Results* window to email and/or text raw waveform recordings and all associated results to themselves, their family members, or their healthcare providers (bottom illustration, Fig 6). All exported information is in comma-separated values (CSV) format with self-explanatory headers inside text files.
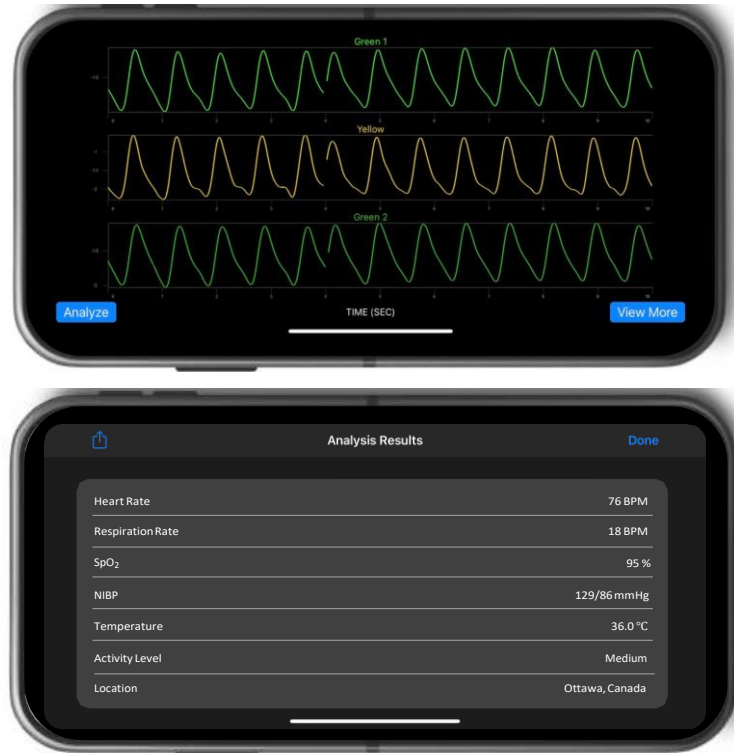

Fig. 6: Manual Monitoring: Real-time arterial pulse wave signals and analysis results

During manual monitoring, whenever certain physiological parameters are out of predefined normal resting ranges, a relevant health alert is generated and displayed to the user and also transmitted to the user's designated family member and/or healthcare professional, provided alerts have been properly enabled (Fig. 4). Please see Sections 15 and 16 for more details about various health alerts that the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system generates. A health alert generated during manual monitoring is shown in Fig. 7.
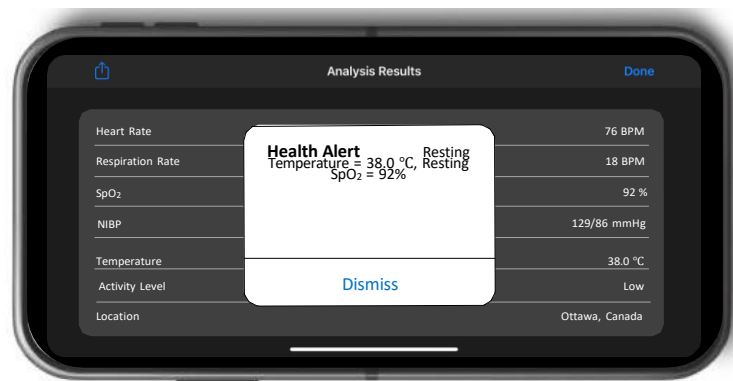

Fig. 7: A health alert generated during manual monitoring

14. CONTINUOUS MONITORING

Wear and switch on the *Healthsign™ Smart Wristband*. Open the *Healthsign™ SM* app, click on the *Settings* tab and enable the *Continuous Monitoring ON* switch to put the system into automatic continuous monitoring mode (left illustration, Fig. 4).

In the automatic continuous monitoring mode, the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system records and analyzes 30 seconds of data every 15 minutes. A maximum of up to 10 recordings and associated analysis results are stored locally on the mobile device. If the mobile device is connected to the Internet, all recordings and results are instantly pushed to the cloud database. In case the mobile device is not connected to the internet for a long time, the 11th recording and associated analysis results are stored locally in place of the 1st recording and associated analysis results (overwriting them), and so on. Therefore, for optimum automatic continuous monitoring, please ensure that your mobile device is actively connected to the Internet.

Please also ensure that your mobile device is always within 4-5 feet range of you to maintain an interruption-free Bluetooth connection between the *Healthsign™ Smart Wristband* and the mobile device. In case your mobile device is out of range of the Bluetooth signal produced by the *Healthsign™ Smart Wristband*, automatic data acquisition and analysis will be interrupted. Automatic data acquisition and analysis will resume as soon as your mobile device is in range of the Bluetooth signal produced by the *Healthsign™ Smart Wristband*.

Please note that in the automatic continuous monitoring mode, the *Healthsign™ SM* app is capable of running in the background and even when the mobile device is locked. This allows users to undertake other tasks like browsing the Internet, etc. while the *Healthsign™ SM* app keeps running in the background for automatic data acquisition and analysis as long as the *Healthsign™ Smart Wristband* and the mobile device are within the Bluetooth signal range (4-5 feet).

During automatic continuous monitoring, each time physiological parameters are out of predefined normal ranges, a relevant health alert is generated and displayed to the user and also transmitted to the user's designated family member and/or healthcare professional, provided alerts have been properly enabled (Fig. 4). Please see Sections 15 and 16 for more details about various health alerts that the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system generates.

15. HEALTH ALERTS

The *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system generates health alerts based on predefined normal resting ranges of physiological parameters described in Table 1.

The rule for a health alert generation is straightforward. A health alert is generated whenever one or more physiological parameters are out of their predefined normal resting ranges as defined in Table 1. For example, if only temperature is out of its predefined normal resting range while all

remaining parameters are within their predefined normal resting ranges, a health alert is generated. On the other hand, if all parameters are with their predefined normal resting ranges, a health alert is not generated.

Table 1: Predefined normal resting ranges of physiological parameters

Physiological Parameter	Predefined Normal Resting Range	Remarks / Implications
Heart Rate (HR)	60–100 BPM	BPM = Beats Per Minute. Resting HR < 60 BPM is *Bradycardia*, Resting HR > 100 BPM is *Tachycardia*.
Respiration Rate (RR)	8–20 BPM	BPM = Breaths Per Minute. Resting RR < 8 BPM is *Hypoventilation*, Resting RR > 20 BPM is *Hyperventilation*.
Non-Invasive Blood Pressure (NIBP)	≤ 140/90 mmHg	Resting NIBP > 140/90 mmHg is *Hypertension*.
Blood Oxygen Saturation (SpO$_2$)	≥ 94 %	Resting SpO$_2$ < 94 % is *Hypoxemia*.
Temperature	≤ 37.5 ℃	Resting Temperature > 37.5 ℃ is *Fever*.

A health alert generated during automatic continuous monitoring is shown in Fig. 8. As discussed above, this health alert has been generated because NIBP is 155/95 mmHg (out of its predefined normal range as per Table 1) plus HR is 120 BPM (out of its predefined normal resting range as per Table 1).
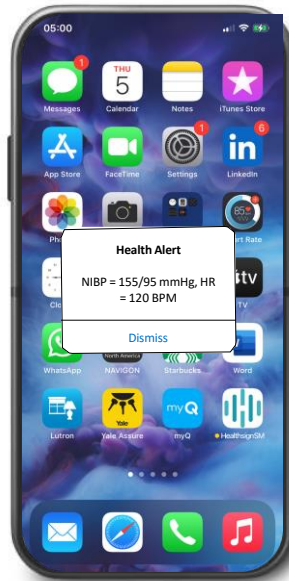

Fig. 8: A health alert generated during automatic continuous monitoring

All health alerts are displayed to the user and also transmitted to the designated family member and/or healthcare professional, provided alerts have been properly enabled (Fig. 4).

16. HISTORICAL DATA AND TRENDS

Each time the *Healthsign^{TM} Smart Wristband* and the *Healthsign^{TM} SM* app system acquires and analyzes data in the automatic continuous monitoring mode, all related information is instantly pushed to the cloud database. Users can access and view their historical data and trends from the cloud through the *Healthsign^{TM} SM* app, provided the cloud database has at least one or more records for them.

Fig. 9: Historical data and trends

Click on the *Records* tab at the bottom of the *Healthsign^{TM} SM* app (left illustration, Fig. 4) to visualize historical data and trends pertaining to your temperature, SpO_2, NIBP, HR and RR (Fig. 9). You can pinch/spread the charts horizontally to temporally zoom in and out of them. Moreover, you can also scroll each chart horizontally to the left and to the right to visualize all historical data.

Finally, you can scroll down vertically to the last historical chart and click on the *Share* button to share your historical data and trends with your family members and/or healthcare providers.

17. BATTERY LIFE

The *Healthsign^{TM} Smart Wristband* is provided with an integrated nonreplaceable 3.3 V, 1000 mAh rechargeable Li-Ion battery. If the device is used in the manual mode for intermittent health monitoring, the battery lasts for about one week. If the device is used in the automatic continuous monitoring mode whereby a 30 second recording is initiated every 15 minutes, the battery lasts for about 24 hours.

18. SWITCHING OFF THE DEVICE

The *Healthsign™ Smart Wristband* can be switched off by pressing and holding the *ON/OFF* button for 3-5 seconds. Once the device is switched off, the LED indicator on the top will no longer be lighted up (Fig. 5).

19. CHARGING THE DEVICE

The *Healthsign™ Smart Wristband* is provided with Qi wireless charging functionality and therefore has no ports for connecting cables or wires. A standard Qi charging plate ships with the device that can be used to charge it. Alternatively, the device can also be charged using any other Qi protocol compliant charging plate. Plug in the Qi charging plate into an electrical wall outlet or your computer and place the device upside down on the charging plate to start charging. A blue LED at the base of the *Healthsign™ Smart Wristband* lights up to indicate that the charging plate has recognized the device. Additionally, a red LED at the base of the *Healthsign™ Smart Wristband* lights up to indicate that the battery has started charging. Once the battery is fully charged, the red LED turns green while the blue LED remains on (Fig. 10). A fully discharged battery takes about 3 hours to charge fully.

Please note that the *Healthsign™ Smart Wristband* is provided with an inbuilt safety feature such that if the device is placed on the charging plate without switching it off, the device automatically switches off.

Fig. 10: Charging the *Healthsign™ Smart Wristband*

20. SYSTEM SPECIFICATIONS

Detailed system specifications are presented below.

HR Accuracy	± 3.0 Beats Per Minute
RR Accuracy	± 3.0 Breaths Per Minute
NIBP Accuracy	± 5.0 mmHg
SpO$_2$ Accuracy	± 2.0 %
Temperature Accuracy	± 0.5 ℃
Microcontroller	Nordic nRF52832, 64 MHz Arm® Cortex™-M4
Number of A/D Pulse Wave Channels	3
A/D Sampling Resolution	12 Bits
A/D Sampling Rate	100 Hz
Temperature Sensor	IR Thermopile
Motion Sensor	Accelerometer X, Y, Z Axis
Arterial Pulse Wave Sensors	Custom-Designed Using LEDs, Photodiodes
GPS	Utilizes Mobile Device GPS
Display	Utilizes Mobile Device Display
Communication	Bluetooth 5.2, 2.4 GHz
Battery	Rechargeable 3.7V, 1000 mAh Li-Ion
Charging	Wireless Qi Standard
Enclosure Material	Industrial-Grade Plastic
Dimensions	87 x 41 x 15 Millimeters
Weight	60 Grams
Ingress Protection	IP64: Splashproof But Not Liquid-Immersible
Operational Temperature	+10 ℃ To +45 ℃
Operational Humidity	10 % To 95 % (Non-Condensing)
Storage Temperature	–20 ℃ To +60 ℃

Storage Humidity	10 % To 95 % (Non-Condensing)

Expected Service Life	2 Years

FCC and Industry Canada Compliance Statements

FCC statements:

"This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

"Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment."

IC Statements:

"This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device."

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

21. DISCLAIMER

If you are in North America and are experiencing a medical emergency, dial 911 or call for emergency medical assistance. The data and results produced by the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system should not be construed as medical advice. Any information that the system reports does not constitute professional advice for medical diagnosis or treatment. You should not rely on any data and results obtained from the system for medical, legal, or financial decisions. Always consult with an appropriate medical professional for specific advice related to your health and situation. Only a medical professional may use the information collected by the *Healthsign™ Smart Wristband* and the *Healthsign™ SM* app system for clinical decision-making.

22. CONTACT US

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