mOrr care Instruction for Use

V1

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1. Revise History

Version	Change Log	Update Date	Note
V0.1	Initial Version	2024/08	
V1.0	First Release	2025/06	

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2. Purpose

This instruction manual serves as a user guide for the mOrr care Smart Application and the mOrring Smart Ring for physiological signal measurement. Users are advised to carefully read the instructions to ensure proper usage.

3. Product Overview

3.1 Basic Product Information

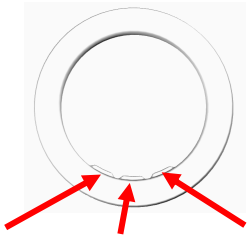
1. Product Names and Corresponding Translations:

English Name	Chinese Name
mOrr health	沐爾 健康生理系統
mOrr care App	沐爾 智能應用程式
mOrring	沐爾 智能指環
FluRa waves	福康 二維影像流體動力學血壓演算法

2. Package Contents:
mOrring Smart Ring、Charging Cable、Charging Case、Quick Start Guide and Warranty Card

充電線　　**mOrring** 指環　　簡易說明書　　保固卡

3. Product Model: TY – mOrr - R01



PPG sensor　　Light source　　2DImage sensor

4. Software Version: **mOrr care** v1.0 or later
5. Warranty: 1 Year

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3.2 Structure and Components

The product includes:

(a) **mOrring** (ring device): Contains modules for signal acquisition, calibration, and data synchronization.

(b) **mOrr care** App (mobile application): Includes modules for user registration, guidance, data visualization, and cloud upload to the mOrr health system.

3.3 Working Principle

By collecting photoplethysmography (PPG) signals from the fingertip, 2D image-based fluid dynamics signals (fluRa waves), and processing them through a data analysis algorithm workflow, physiological information of adults is obtained, including: heart rate, blood pressure, blood oxygen level, and respiratory rate. The blood pressure includes predicted values of systolic and diastolic pressure. In addition, a 3-axis accelerometer and temperature sensor are integrated to record step count and fingertip skin temperature.

Input Data:

This software processes data from four main types of sensors: photoplethysmography (PPG) signal sensor, 2D image-based fluid dynamics signal sensor, 3-axis accelerometer sensor, and contact temperature sensor.

Output Information:

The software outputs physiological information of adults, including: heart rate, blood pressure, blood oxygen level, step count, skin temperature, and respiratory rate. The blood pressure includes predicted values of systolic and diastolic pressure.

3.4 Scope of Application

Used with the mOrr care App to measure, record, and display adult physiological data including: Blood pressure, Heart rate, Blood oxygen, Steps, Skin temperature, Respiratory rate

* Note: mOrring and the mOrr care App are not medical devices. Data is for reference only. Consult a licensed healthcare provider for medical concerns.

3.5 Target Users

Designed for adults aged 18–65 without contraindications. Users must follow the instructions for proper use.

3.6 Contraindications

Do not use this product (**mOrr care** App) under the following conditions:

1. Pregnancy
2. Significant arrhythmia (e.g., atrial fibrillation, bradycardia ≤50 BPM, or tachycardia ≥100 BPM)

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3. Post-pacemaker implantation
4. Severe heart diseases (e.g., acute coronary syndrome, heart failure, valve diseases, myocarditis, congenital heart defects)
5. Severe systemic diseases (e.g., liver/kidney failure, respiratory failure, cancer)
6. Peripheral vascular/circulatory disorders (e.g., anemia, infection, shock, Raynaud's)
7. Skin conditions, tattoos, or scars on the ring-wearing finger
8. Other serious cardiovascular diseases not listed above

3.7 Clinical Functions and Performance Indicators

Measurements Include: Blood pressure, Heart rate, Blood oxygen, Steps, Skin temperature, Respiratory rate

1. Measurement Conditions:
   (a) Quiet indoor environment
   (b) Proper ring placement (sensor facing fingertip pad, adjusted for fit through **mOrr check** App)
2. Under blood pressure measurement functionality, pulse rate can be displayed simultaneously. Measurement Ranges:
   (a) Heart Rate: 45–180 bpm
   (b) Systolic BP: 70–180 mmHg
   (c) Diastolic BP: 45–120 mmHg
   (d) Blood Oxygen: 90–100%
   (e) Skin Temperature: 15–38˚C

3.8 General Features

1. View physiological signal data:
   Data includes blood pressure, heart rate, blood oxygen, step count, skin temperature, and respiratory rate. Results can only be viewed via the **mOrr care** App.
2. Blood pressure calibration:
   The **mOrr check** App provides blood pressure calibration and expiry reminders
   (a) Use a certified upper-arm blood pressure monitor approved by local authorities as the calibration reference.
   (b) Avoid exercise, smoking, alcohol, or coffee before calibration.
   (c) Rest for at least 5 minutes before calibration.
   (d) Wear the **mOrring** ring on the index, middle, or ring finger ensuring the sensor is at the fingertip.
   (e) During calibration, sit still with your hand on a flat surface, breathe normally, and avoid talking.
3. Auto blood pressure measurement and alerts:
   In quiet states (excluding sleep), users can define measurement intervals and get alerts when:
   (a) BP < 90/60 mmHg
   (b) BP > 140/90 mmHg
4. Additional functions:
   mOrr care App on mobile devices should include functionality as follows:
   (a) Record personal info (gender, age, height, weight)
   (b) Modify/view user info, access instructions, and app info

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3.9 Software Performance

Blood pressure measurement time per instance: ≤ 50 seconds

3.10 Precautions

1. The **mOrr care** app uses user data via **mOrr health** and is authorized for current device users only.
2. Data is stored locally and synced via Bluetooth to the **mOrr care** app and uploaded to the **mOrr health** cloud when online. The **mOrr health** cloud provides data saving, backup and restore services.
3. Data transmission is secured using HTTPS and BLE.
4. **mOrr health** Cloud storage uses AWS with encryption for data protection.
5. Read the manual carefully before use and follow instructions strictly.
6. The **mOrring** and **mOrr care** app are designated for use by individuals aged 18–65 only.
7. The **mOrring** and **mOrr care** app are for reference only; not for clinical or diagnostic decisions.
8. Calibration and measurement must be done in quiet environments with correct posture.
9. Only use certified upper-arm BP monitors for calibration.
10. Do not use others' calibrated values.
11. Do not use for purposes other than physiological signal monitoring.
12. Do not measure during surgery.
13. Ensure **mOrring** devices are charged and avoid electromagnetic environments like MRI rooms.

3.11 Warning Messages

1. Blood pressure results are for reference only and not for diagnosis or treatment decisions.
2. System failure may cause unsynced data loss. Sync regularly.
3. Unsynced mobile data may be overwritten. Backup your data.
4. Deleted data cannot be recovered. Proceed with caution.

3.12 Terminology and Abbreviations

Bio-signal	Signals from the human body, commonly acquired via optical, electrode, or chemical methods.
Systolic blood pressure, SBP	Pressure in arteries when the heart contracts.
Diastolic blood pressure, DBP	Pressure when the heart is relaxed.
Photoplethysmography, PPG	Photoplethysmography, optical method to detect blood volume changes.
Android OS	Mobile operating system for Android.
iOS	Mobile operating system for Apple.
MCU	Microcontroller unit in the smart ring.
RAM	Random access memory of the smart ring.
mOrr health	Health monitor system.
mOrr care App	Service app provided with mOrring.
mOrring	Smart ring for healthcare monitor.

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fluRa waves	2D fluid dynamics blood pressure algorithm.
ACC	Accelerometer data.

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4. Operating Instructions

The **mOrr** system consists of the **mOrr care** App (mobile) and **mOrring** (ring). Download the app and bind the device before use:

1. **mOrring** must be a certified product from Tyrafos.
2. The smartphone must have SRRC approval in China.

4.1 Definition of Terms

This product can measure physiological signal data including: blood pressure, heart rate, blood oxygen level, step count, skin temperature, and respiratory rate, as explained below.

1. Blood Pressure:
   Blood pressure refers to the force exerted by blood against the walls of the arteries as it flows from the heart (mmHg). This pressure mainly results from the heart's pumping action and the elastic recoil of the arteries. Blood pressure is a continuously changing parameter and can fluctuate with physiological conditions and emotional states.

2. Heart Rate: Number of heartbeats per minute (bpm).
   Also known as heart rate, it refers to the number of heartbeats within a unit of time; typically, it indicates the number of heartbeats per minute, measured in bpm (beats per minute).

3. Blood Oxygen:
   The blood oxygen function refers to blood oxygen concentration (also known as oxygen saturation), which indicates the ratio of oxygenated hemoglobin to total hemoglobin in the blood. It is expressed as a percentage (%)

4. Steps:
   Evaluates walking or activity status while wearing the **mOrring** smart ring.

5. Skin temperature:
   Measures the skin temperature of the finger wearing the **mOrring** smart ring (˚C).

6. Respiratory Rate:
   Evaluates the human respiratory rate, which is typically measured as the number of breaths per minute

4.2 Installation

1. Download **mOrr care** App
   Download the **mOrr care** App from App Store, Google Play, or App Market.

4.3 Usage Workflow

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1. Install and launch the app **mOrr care** App, which can be found at the homepage on smartphone shown with icon

2. Click on **mOrr care** App icon and start **mOrr care** app

   Register via the "My" tab or log in if already having an account.

   Click on the registration button to sign up an account by inputting personal information with guide.

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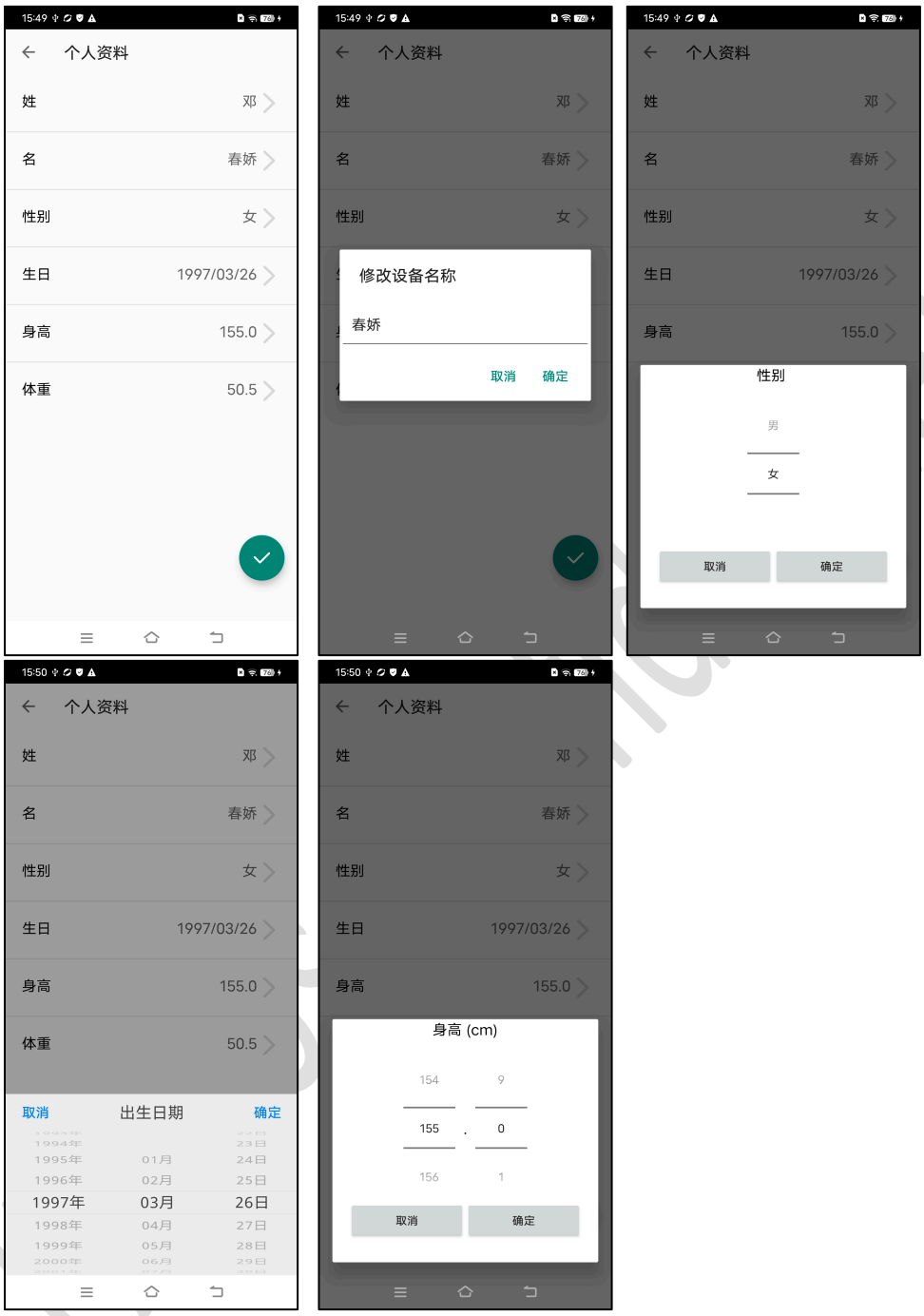

3. Connect the mOrring device via Bluetooth.
   Click on “device” at the bottom of **mOrr care** App and open the bluetooth
   Click on “Add device” to enter the search page to start searching the near device.
   After receiving device name of **mOrring** via bluetooth，click on the tag and wait for device connect.
   After successful connection will redirect to the device page, where the device name, connection status and battery are shown to user.

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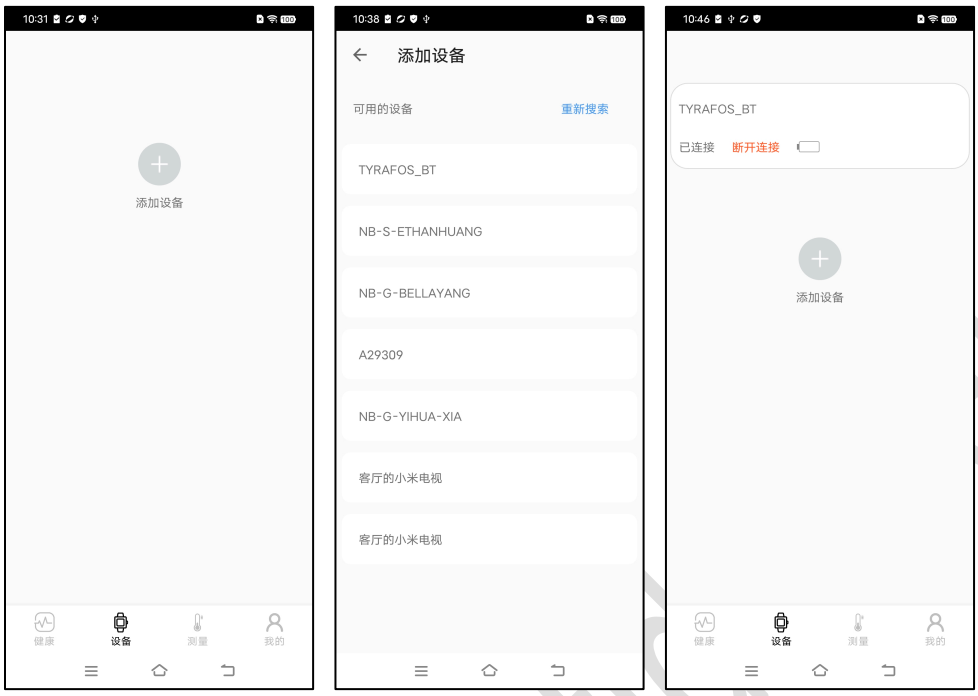
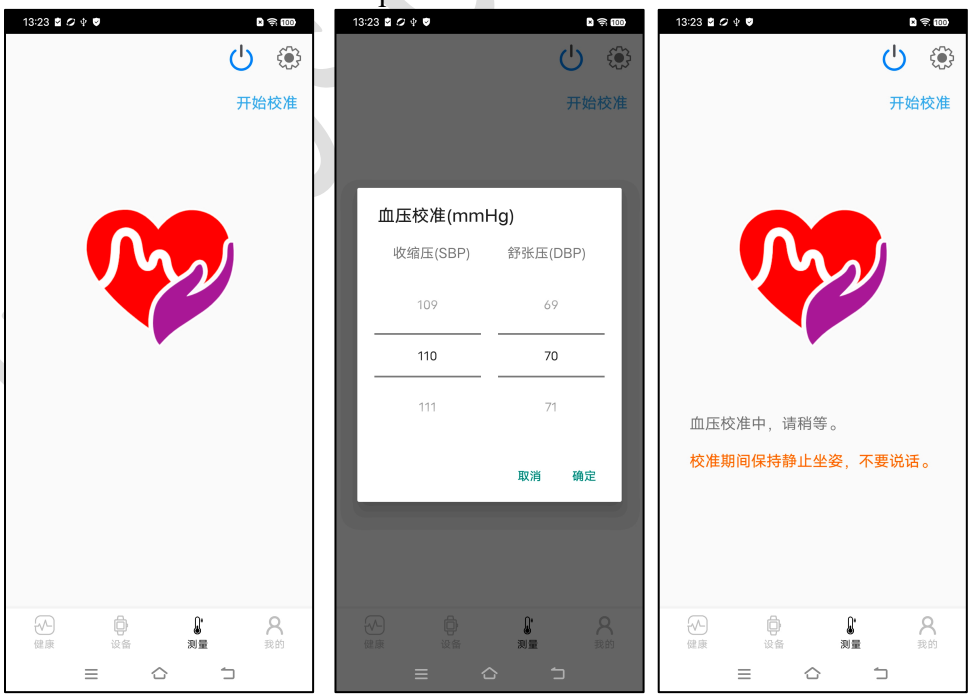


4. Calibration page

Click on “measurement” at the bottom of **mOrr care** App and ensure a successful Bluetooth connection with device.

The first measurement requires calibration beforehand. Click on “Start calibration” and input the blood pressure value obtained from other blood pressure measurement device, wait until the calibration complete.



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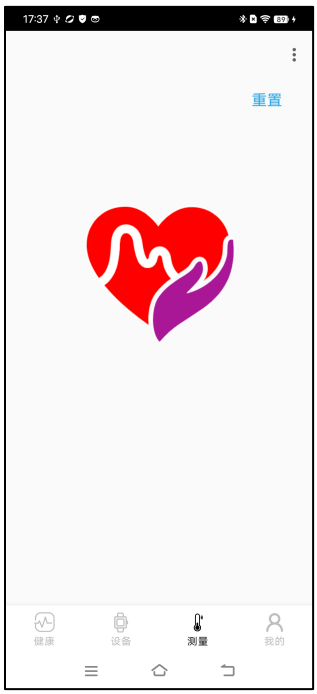
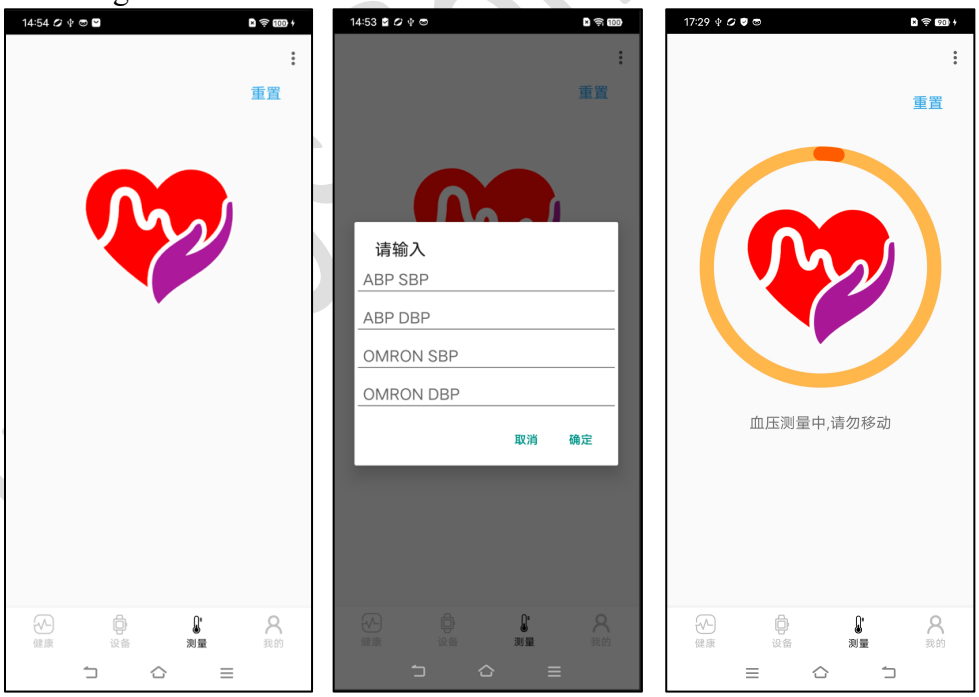


5. Biometric signal measurements page
After calibration has successfully completed, click on measurement icon to collect biometric signal.



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6. Health page

Click on “Health” at the bottom of mOrr care App to enter the health page，where user can track the latest biometric data such as heart rate, blood pressure and other biometric data.

Click on each block to show more information of specific biometric data, displayed by days, weeks, months, and years.

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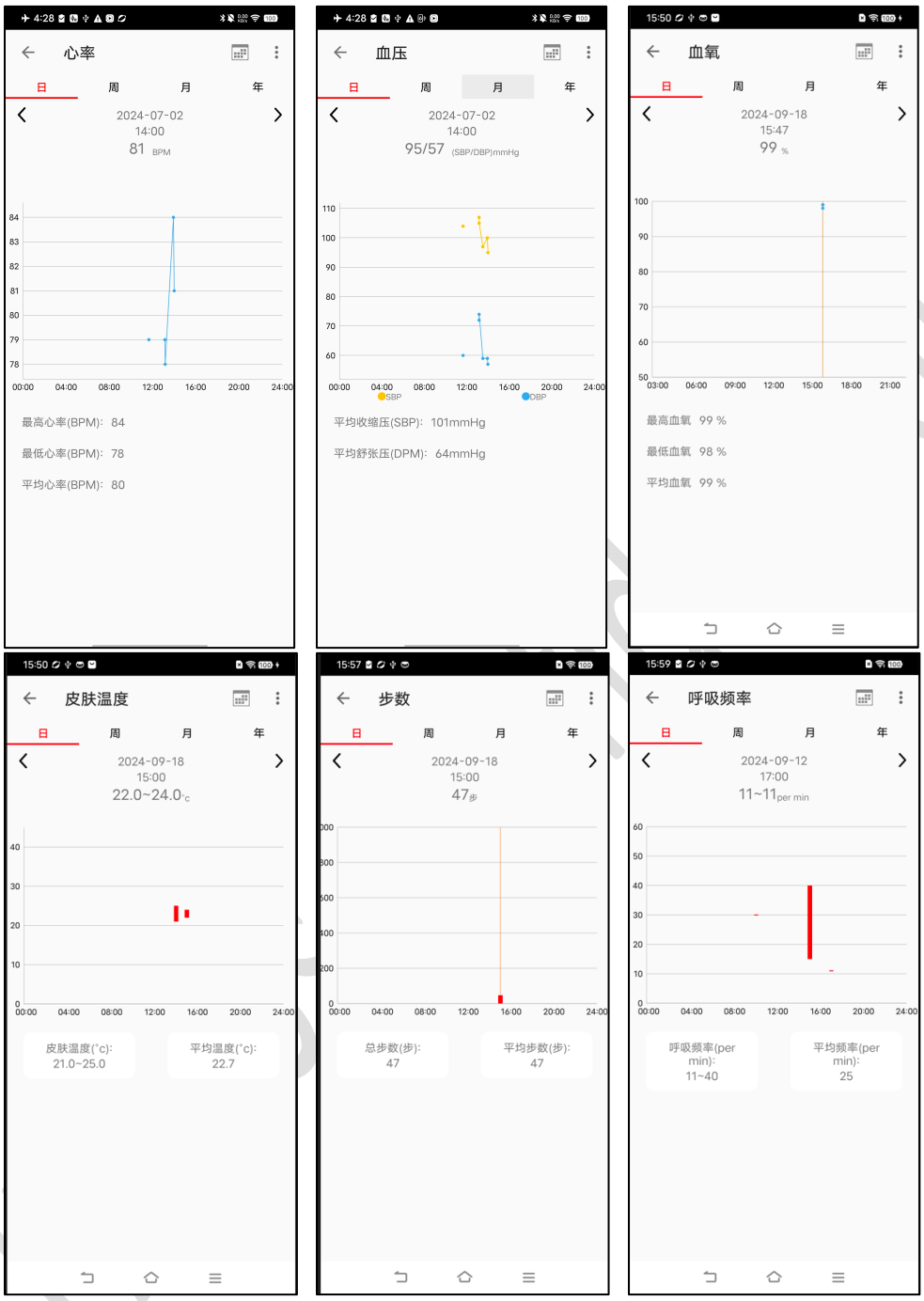

Click on the “three dot”button on each result page to review historical data of a specific biometric data such as heart rate, blood pressure, etc.

Click on “Delete” button to delete selected data.

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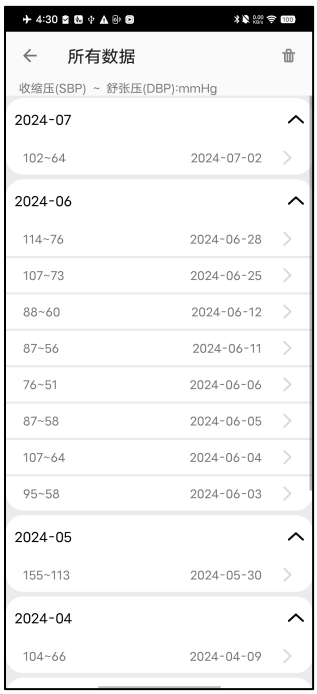

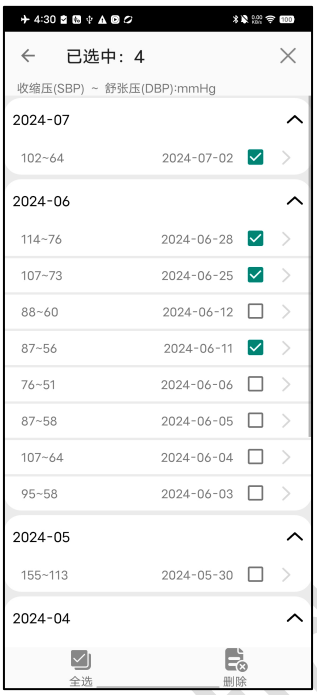

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5. Cybersecurity

5.1 Network Requirements

mOrring Ring Device Blood Pressure Operation Environment		
Software Environment	Operating System	**mOrring** FW v1 or latest
Hardware Environment	Main Controller MCU	Clock speed ≥ 64 MHz
	Memory RAM	>256 KB
mOrr care Mobile Device Blood Pressure Operation Environment		
Software Environment	App Version	**mOrr care** v3 or latest
Hardware Environment	Memory	≧ 1 Gb
	Storage	≧ 1 Gb
Network Environment	Upload Speed： ≧ 10Mbps Download Speed： ≧ 20Mbps	
mOrr health Server-Side Operation Environment		
Software Environment	Amazon EC2	
Hardware Environment	Cluster Computing	
Network Environment	Upload Speed： ≧ 5Gbps Download Speed： ≧ 5Gbps	

5.2 Data Interface

1. Data Transmission Protocol
2. **mOrring** communicate with **mOrr care** app via BLE, one of the Bluetooth communication protocol.
3. The data from **mOrr care** app on the phone backup to **mOrr health** cloud server by the HTTPS secure transmission protocol
4. **mOrr health** data Storage Format: the phone stores data in CSV format, **mOrr health** cloud stores data in JSON format.
5. User Permissions: the user permissions on the **mOrring** and **mOrr care** app's **mOrr health** cloud server are set as "general user"
6. Users can use the blood pressure measurement software after creating or logging into an account on the **mOrr care** App, binding the **mOrring**, and agreeing to synchronize blood pressure data with their account.

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6. Frequently Asked Questions and Solutions

6.1 Data Backup and Recovery

The **mOrr care** App not only stores blood pressure measurement data on the phone but also backs up the data to the **mOrr health** cloud server (Amazon Cloud) via WiFi/4G/5G. The Amazon Cloud handles permanent data storage, backup, and recovery functions.

*Data Deletion:
If you wish to delete services or your account associated with the mOrr care product, please send a data deletion request to the mOrr service support email via the app (My > About > Customer Service > Email). The mOrr care service team will delete the data within 15 days.
mOrr service support email: service@morrhealth.com

6.2 Blood Pressure Calibration Program Error

Follow the calibration instructions carefully, ensuring the body remains still and avoiding any talking or movements that could affect the measurement results during the process.

6.3 Automated Data Measurement

The automatic blood pressure measurement function triggers periodic measurements. However, the number of measurements can be affected by factors such as physical activity and how the product is worn.

6.4 Data Synchronization Error

Measurement data is stored either on the **mOrr care** App or the **mOrr health** cloud server. Ensure the **mOrring** is connected to the **mOrr care** App on phone via Bluetooth and that the phone is connected to the **mOrr health** cloud server via WiFi/4G/5G.

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7. Customer Service

7.1 Product Manufacturing Information

The product registrant, manufacturer, and after-sales service are provided by Guangzhou Tyrafos Semiconductor Technology Co., Ltd.

7.2 Address

Room 1101-1103, Building C4, Guigu Science and Technology Park, Kaitai Avenue, Guangzhou City, Guangdong, PRC

7.3 Contact Information

Tel: (+86) 020-3170-7937
E-mail: service@morrhealth.com
Website: http://www.morrhealth.com

7.4 Customer Service Hours

Weekdays from 9:00 AM to 6:00 PM.

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