MicRadar

Multi-Function Radar-Wi-Fi MQTT Communication Interface Document (Ver. 1.7) Reference

Yunfan Ruida Technology (Shenzhen) Co.Ltd

Content

1. Overview 1
2. Device Function Properties 2
2.1 Basic Functions 2
Online/Offline Status(online) 2
Heartbeat Packet(heartBeat) 2
Radar Algorithm Firmware Version(firmwareVersion) 2
Coordinator Firmware Version(firmwareVersionCP) 3
Device Software Version(firmwareVersionProduct) 3
Device MAC Address(moduleMAC) 4
Wi-Fi Signal Strength (WiFiRSSI) 4
Scene Mode(sceneMode) 5
Installation Mode(installMode) 6
Installation Angle(installAngle) N/A 7
Installation Height(installHeight) 8
Human Function Switch(humanSwitch) 8
Human Presence Status(someoneExists) 9
Motion Status(motionStatus) 10
Movement Signs(movementSigns) 10
Server Information(serverInfo) 11
2.2 Specific Functions 12
2.2.1 People Tracking 12
Parameter Adjustment 12
Set Detection Range(configFileDetectionRange) 12
Label Setting and Query(configFileLabel) 13
Clear Labels(clearLabel) 14
Trajectory Generation Distance(trajectoryGeneratesMeters) 14
Trajectory Existence Time(trajectoryExistenceTime) 15
False Positive Point Elimination Duration(timeForEliminatingFalsePositives) 16
Clear Number of People Information(clearNumberOfPeopleInfor) 17
Real-time People Reporting Time(realTimeNumberReportingTime) 17
Tracking Switch(trackSwitch) 18
Actively Reporting Information 19
Tracking Information(trackingInfo) 19
Real Time Head Count(realTimeHeadCount) 19
Label Attribute Status Reporting(labelAttribute) 20
2.2.2 Fall Down Detection 20
Parameter Adjustment 20
Fall Down Switch(fallSwitch) 20
Fall Duration(fallDuration) 21
Stationary Presence Function Switch(residentWarningDurationSwitch) 22
Stationary Presence Duration(residentWarningDuration) 23
Fall Height Threshold Setting(fallHeightThreshold) 23

Fall Height Threshold Setting(lowPostureSwitch) 24
Low Posture Alert Duration(lowPostureDuration) 25
Actively Reporting Information 26
Fall Status(fallStatus) 26
Stationary Presence Status(residentStatus) 26
Low Posture Alert Status(lowPostureStatus) 27
2.2.3 Breath & Sleep 27
Parameter Adjustment 27
Human Breath Function Switch(breathSwitch) 27
Heart Rate Function Switch(heartRateSwitch) 28
Sleep Function Switch(sleepSwitch) 29
Sleep Report Mode(sleepReportMode) 29
Sleep Start Time Setting(bedTimeSet) 30
Sleep End Time Setting(getUpTimeSet) 31
Generate Sleep Report(sleepReportCut) 32
Sleep Report End Time Setting(sleepEndTimeSet) 32
Abnormal Struggling Switch(agoniseSwitch) 33
Abnormally Long No-Person Timer Switch(longtimeNobodySwitch) 34
No-Person Timer Duration(nobodyTimeSet) 35
Weak Vital Signs Alert Threshold（weakVitalSignsDuration） 35
Weak Vital Signs Alert Sensitivity（weakVitalSignsSensitivity） 36
Actively Reporting Information 37
Respiration and Heart Rate Information(respirationHeartRateInform) 37
Sleep Information(sleepInform) 38
3. Restricted Function Attribute Reporting N/A 39
4. QoS Service Quality Setting N/A 41
5. OTA Update 41
Module Upgrade(otaModule) 41
Upgrade Information(otaInform) 42
Upgrade Progress(downloadProgress) 42
6. Updated History 42

MQTT Communication Data Format Specification (V1.7)

1. Overview

This document describes the MQTT communication data format for Micradar's mmWave radar products for whole-home safety and protection applications.

The products are designed to support various scenarios for end users, including people management, sleep health monitoring, fall detection, and abnormal event detection. This document provides detailed descriptions of the device's basic functions, specific functions, and extended functions, helping developers understand how to obtain and configure radar data.

The radar device connects directly to the server using the MQTT protocol. This document provides the required MQTT topics, message formats, and data definitions to facilitate system integration and development.

All data is transmitted in JSON format.

The device uses two MQTT topics, as described below:

(1)Topic：/Radar60SMF/Device ID/sys/property/post

Report Topic: The radar device uses this topic to report data and send responses to configuration commands.

(2)Topic：/Radar60SMF/Device ID/sys/property/set

Issue Topic: The server uses this topic to issue commands and configuration messages to the radar device.

2. Device Function Properties

2.1 Basic Functions

Online/Offline Status(online)

Active reporting: The property status is categorized as follows:

0 — Offline

1 — Online

The status is reported automatically when it changes.

```
{
        "version":    "1.0",
        "method":    "post",
        "params":    {
                    "online":      "0" //Device Offline
        }
}
```

Heartbeat Packet(heartBeat)

Active reporting: The property status is categorized as follows:

0 — Abnormal

1 — Normal

The status is reported automatically when it changes.

```
{
        "version":    "1.0",
        "method":    "post",
        "params":    {
                    "heartBeat": "0"
        }
}
```

Radar Algorithm Firmware Version(firmwareVersion)

Active reporting. Reported when the device connects to the server. The specific format is as follows:

```
{
        "version":    "1.0",
        "method":    "post",
        "params":    {
                    "firmwareVersion":        "xxxx"
        }
}
```

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {
                    "firmwareVersion":        "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":        "get",
        "res":        "success",
        "params":     {
                      "firmwareVersion":       "XXXX"
        }
}
```

Coordinator Firmware Version(firmwareVersionCP)

Active reporting. Reported when the device connects to the server. The specific format is as follows:

The specific format is as follows:

```
{
        "version":    "1.0",
        "method":     "post",
        "params":     {
                      "firmwareVersionCP":    "xxxxxxx"
        }
}
```

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":     "get",
        "params":     {
                      "firmwareVersionCP":    "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":        "get",
        "res":        "success",
        "params":     {
                      "firmwareVersionCP":    "XXXX"
        }
}
```

Device Software Version(firmwareVersionProduct)

Active reporting. Reported when the device connects to the server. The specific format is as follows:

```
{
        "version":    "1.0",
        "method":     "post",
        "params":     {
                      "firmwareVersionProduct":              "xxxxxx"
        }
}
```

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":     "get",
```

```
    "params":   {
                "firmwareVersionProduct":           "?"
    }
}
```

The query result format is as follows:

```
{
    "version":  "1.0",
    "opt":      "get",
    "res":      "success"
    "params":   {           "firmwareVersionProduct": "xxxxxx"
    }
}
```

Device MAC Address(moduleMAC)

This property supports querying.

The query format is as follows:

```
{
    "version":  "1.0",
    "method":   "get",
    "params":   {
                "moduleMAC":            "?"
    }
}
```

The query result format is as follows:

```
{
    "version":  "1.0",
    "opt":      "get",
    "res":      "success"
    "params":   {           "moduleMAC": "xxxxxx"
    }
}
```

Wi-Fi Signal Strength (WiFiRSSI)

Active reporting. Reported when the device connects to the server.

Unit: dBm

The specific format is as follows:

```
{
    "version":  "1.0",
    "method":   "post",
    "params":   {
                "WiFiRSSI":             "-50"
    }
}
```

This property supports querying.

The query format is as follows:

```
{
    "version":  "1.0",
    "method":   "get",
    "params":   {
                "WiFiRSSI":             "?"
```

```
        }
}
```

查询结果格式如下：

```
{
        "version":   "1.0",
        "opt":       "get",
        "res":       "success"
        "params":    {           "WiFiRSSI": "-40"
        }
}
```

Scene Mode(sceneMode)

Active reporting is not supported.

The available attribute values are as follows:

1 — People Tracking

2 — Fall Detection

3 — Respiration & Sleep Monitoring

4 — Bed Occupancy Monitoring

This property supports querying.

The query format is as follows:

```
{
        "version":   "1.0",
        "method":    "get",
        "params":    {
                     "sceneMode":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":       "get",
         "res":      "success"
        "params":    {
                     "sceneMode":          "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
        {
        "version":   "1.0",
        "method":    "set",
        "params":    {
                     "sceneMode":          "2"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
        "res":          "success",
        "params":       {
                        "sceneMode":            "2"
        }
}
```

Installation Mode(installMode)

Active reporting is not supported.

The available values are as follows:

1 — Wall-Mounted / Side-Mounted

2 — Ceiling-Mounted / Top-Mounted

This property supports querying.

The query format is as follows:

```
{
        "version":      "1.0",
        "method":       "get",
        "params":       {
                        "installMode":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":      "1.0",
        "opt":          "get",
         "res":         "success"
        "params":       {
                        "installMode":          "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
        {
        "version":      "1.0",
        "method":       "set",
        "params":       {
                        " installMode":         "2"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
        "res":          "success",
        "params":       {
                        "installMode":          "2"
        }
}
```

Installation Angle(installAngle) **N/A**

Active reporting is not supported.

The data length is 2 bytes.

This property supports querying.

Currently, only simultaneous querying of the X, Y, and Z axes is supported. The installation angle is associated only with the Z-axis angle. The angle value is multiplied by 100 before transmission. The default values of X and Y are both 0. The query format is as follows:

```
{
    "version":  "1.0",
    "method":  "get",
    "params":  {
        "installAngle": {"x":"?", "y":"?", "z":"?"}
    }
}
```

The query result format is as follows:

```
{
    "version":  "1.0",
    "opt":  "get",
     "res":  "success",
    "params":  {
        "installAngle":  {
            "x":  "0",
            "y":  "0",
            "z":  "9000"
        }
    }
}
```

This property can be configured. The Z-axis angle is multiplied by 100 before transmission. The default Z-axis angle is 30° for wall-mounted installation and 90° for ceiling-mounted installation.

The default values of X and Y are both 0. For example, to set the installation angle to 90° , issue the following values:

X: 0, Y: 0, Z: 9000

The format is as follows:

```
{
    "version":  "1.0",
    "method":  "set",
    "params":  {
        "installAngle": {
            "x":  "0",
            "y":  "0",
            "z":  "9000"
        }
    }
}
```

The configuration result format is as follows:

```
{
    "version":  "1.0",
    "opt":  "set",
    "res":  "success",
    "params":  {
        "installAngle": {
            "x": "0",
            "y": "0",
            "z": "9000"
```

```
                }
        }
}
```

Installation Height(installHeight)

Active reporting is not supported.

The attribute range is: 200 - 300, unit: cm.

This property supports querying.

The query result format is as follows

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {"installHeight":            "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":          "get",
         "res":          "success",
        "params":    {"installHeight":            "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":    "set",
        "params":    {"installHeight":            "2"
        }
}
```

The configuration result format is as follows:

```
{
        "version":         "1.0",
        "opt":                 "set",
         "res":          "success",
        "params":    {"installHeight":            "2"
        }
}
```

Human Function Switch(humanSwitch)

Active reporting is not supported.

The property status is categorized as follows:

1 (Function On), 0 (Function Off)

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {"humanSwitch":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
```

```
        "opt":      "get",
        "res":      "success",
        "params":   {"humanSwitch":      "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":  "1.0",
        "method":   "set",
        "params":   {
                    "humanSwitch":      "1"
        }
}
```

The configuration result format is as follows:

```
{
        "version":          "1.0",
        "opt":          "set",
        "res":      "success",
        "params":   {
                    "humanSwitch":      "1"
        }
}
```

Human Presence Status(someoneExists)

Active reporting: The property status is categorized as follows:

0 (No Person), 1 (Person Present).

The status is reported when it changes.

```
{
        "version":  "1.0",
        "method":   "post",
        "params":   {
                    "someoneExists":      "1"      // Person Exists
        }
}
```

This property supports querying.

The query format is as follows:

```
{
        "version":  "1.0",
        "method":   "get",
        "params":   {
                    "someoneExists":      "?"
        }
}
```

The query result format is as follows:

```
{
        "version":  "1.0",
        "opt":      "get",
        "res":      "success",
        "params":   {
                    "someoneExists":      "1"
        }
}
```

Motion Status(motionStatus)

Active reporting: The property status is categorized as follows:
0 (None), 1 (Stationary), 2 (Active)
The status is reported when it changes

```
{
        "version":    "1.0",
        "method":     "post",
        "params":     {
                      "motionStatus":            "1"        // Stationary State
        }
}
```

This property supports **querying**.
The query format is as follows:

```
{
        "version":    "1.0",
        "method":     "get",
        "params":     {
                      "motionStatus":            "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":        "get",
         "res":       "success",
        "params":     {
                      "motionStatus":            "1"
        }
}
```

Movement Signs(movementSigns)

Active reporting: The property status is categorized as follows: 0-100.The data is reported periodically.
0 → no person
1 → a person who is stationary
2 – 30 → Minor body movements
31 – 60 → Relatively slow body movement
61 – 100 → Rapid body movement

```
{
        "version":    "1.0",
        "method":     "post",
        "params":     {
                      "movementSigns":        "100"
```

```
        }
    }
```

Server Information(serverInfo)

Active reporting is not supported.

The maximum length of a single property is 64 bytes.

After the setting is issued and the response is returned, the device will immediately restart and connect to the new address.

This property supports querying.

The query format is as follows:

```
{
    "version":   "1.0",
    "method":   "get",
    "params":   {"serverInfo":              "?"
    }
}
```

The query result format is as follows:

```
{
    "version": "1.0",
    "opt": "get",
    "res": "success",
    "params": {
            "serverInfo": {
                    "addr":"broker.emqx.io",
                    "port":"1883",
                    "username":"xxx",
                    "password":"xxx"
            }
    }
}
```

This property can be configured. The configuration format is as follows:

```
{
    "version": "1.0",
    "method":   "set",
    "params": {
            "serverInfo": {
                    "addr":"broker.emqx.io",
                    "port":"1883",
                    "username":"12345",
                    "password":"12345"
            }
    }
}
```

The configuration result format is as follows:

```
{
    "version": "1.0",
    "opt": "set",
    "res": "success",
    "params": {
            "serverInfo": {
                    "addr":"broker.emqx.io",
                    "port":"1883",
                    "username":"12345",
```

```
                "password":"12345"
            }
        }
    }
```

2.2 Specific Functions

2.2.1 People Tracking

Parameter Adjustment

Set Detection Range(configFileDetectionRange)

This property supports **querying**. The data is described as follows:

Detection Range Setting: (1B setting mode type + specific setting data)

Mode 6:

Issue: 6 (Configuration File Setting Mode) + 2B number of points (n) + n*(2B X + 2B Y)

Report: 6 (Configuration File Setting Mode) + 2B number of points (n) + n* (2B X + 2B Y)

Example: Mode 6 (using four points to form a rectangular detection area):

1B (6: mode type) + 2B (number of detection range coordinate points) + [2B X + 2B Y (coordinates of the first point)] + [2B X + 2B Y (coordinates of the second point)] + [2B X + 2B Y (coordinates of the third point)] + [2B X + 2B Y (coordinates of the fourth point)]

The format is as follows:

```
{
    "version":  "1.0",
    "method":  "get",
    "params":  {
            "configFileDetectionRange":        "?"
    }
}
```

The query result format is as follows:

```
{
    "version":  "1.0",
    "opt":      "get",
     "res":     "success",
    "params":  {
            "configFileDetectionRange":        [6,0,4,1,29,0,45,1,29,129,44,128,150,129,44,128,150,0,45]
    }
}
```

This property can be configured. The data range is:

2B X + 2B Y (coordinates of the door center point) + 2B X + 2B Y (door width and height) + 1B (range type) + [n*(2B X-axis + 2B Y-axis)]

The format is as follows:

```
{
    "version":  "1.0",
    "method":  "set",
    "params":  {
```

```
                "configFileDetectionRange":     [6,0,4,1,29,0,45,1,29,129,44,128,150,129,44,128,150,0,45]
        }
}
```

The configuration result format is as follows:

```
{
        "version":          "1.0",
        "opt":              "set",
        "res":      "success",
        "params":    {
                "configFileDetectionRange":     [6,0,4,1,29,0,45,1,29,129,44,128,150,129,44,128,150,0,45]    }
}
```

Label Setting and Query(configFileLabel)

This function is issued through coordinate points and supports setting multiple labels at one time. The data is described as follows:

(When setting, the issued data consists of 2B number of labels + 11B for each label)

2B number of labels + number of labels × (1B label index + 1B label type + 1B range type + Center Coordinates: 2B X + 2B Y + Width and Height: 2B X + 2B Y+ 1B label name length + nB label name content)

Note: The newly added label name content is disabled by default. No changes are required to the issued data/commend data.

Note:

1B Label Type Data

- 0: No Attribute
- 1: Enter | Exit
- 2: Approach | Leave
- 3: Movement/Stationary Statistics
- 4: Noise Point
- 5: Bed

1B Range Type Data

- 0: Circle
- 1: Rectangle

When the label type is Circle, X represents the circle radius, and Y is not used. When the range type is Rectangle, X and Y correspond to the width and height of the rectangle.

When querying, the reported data consists of the following: The following is the content of the report for one label. If multiple labels are set, the label contents are concatenated.

2B number of labels + number of labels × (1B label index + 1B label type + 1B range type + Center Coordinates: 2B X + 2B Y + Width and Height: 2B X + 2B Y+ 1B label name length + nB label name content)

Note: The newly added label name content is set to 0 by default. That is, a 0 is appended after the width and height by default.

Example: Setting a label with a rectangular width and height of 200*200 cm

This property can be configured. The data passthrough format is as follows:

```
{
        "version":  "1.0",
        "method":   "set",
        "params":   {"configFileLabel":[0,1,1,1,1,128,100,128,200,0,100,0,100]
        }
}
```

The configuration result format is as follows:

```
{
```

```
        "version":   "1.0",
        "opt":       "set",
        "res":       "success",
        "params":{"configFileLabel":[0,1,1,1,1,1,128,100,128,200,0,100,0,100]
        }
}
```

This property supports **querying**.This property can be configured.

The data passthrough format is as follows:

```
{
        "version":   "1.0",
        "method":   "get",
        "params":    {"configFileLabel":"?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":       "get",
        "res":       "success",
        "params":{"configFileLabel":[0,1,1,1,1,1,128,100,128,200,0,100,0,100,0]
        }
}
```

Clear Labels(clearLabel)

Active reporting is not supported.

This property can be configured.

Clear all labels: The fixed parameter is 255.

Clear by index: 1B label index: clears the label corresponding to the specified index.

This property can be configured. The configuration format is as follows:

```
{
        "version":   "1.0",
        "method":   "set",
        "params":    {"clearLabel":              "255"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":              "set",
        "res":       "success",
        "params":     {"clearLabel":              "255"
        }
}
```

Trajectory Generation Distance(trajectoryGeneratesMeters)

Definition: Adjust the judgment conditions for the real-time people counting interface. The marking starts from the position where the trajectory is generated. When the trajectory point movement meets the configured distance and the trajectory generation time conditions, the person is successfully determined as part of the real-time people count.

Active reporting is not supported.

The data length is 4 bytes. The unit is cm.

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {
                        "trajectoryGeneratesMeters":            "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":          "get",
         "res":          "success",
        "params":    {
                        "trajectoryGeneratesMeters":            "100"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":    "set",
        "params":    {
                        "trajectoryGeneratesMeters":            "150"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                "set",
        "res":          "success",
        "params":     {
                        "trajectoryGeneratesMeters":            "150"
        }
}
```

Trajectory Existence Time(trajectoryExistenceTime)

Definition: Adjust the judgment conditions for the real-time people counting interface. The marking starts from the position where the trajectory is generated. When the trajectory point existence time meets the configured time and the trajectory generation distance condition is met, the person is successfully determined as part of the real-time people count.

Active reporting is not supported.

Data range: 4 bytes, unit: s.

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {
                        "trajectoryExistenceTime": "?"
        }
```

```
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":       "get",
        "res":       "success",
        "params":    {
                     "trajectoryExistenceTime": "5"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":   "1.0",
        "method":    "set",
        "params":    {
                     "trajectoryExistenceTime": "10"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":              "set",
        "res":          "success",
        "params":     {
                     "trajectoryExistenceTime": "10"
        }
}
```

False Positive Point Elimination Duration(timeForEliminatingFalsePositives)

Phase 2 Implementation

Active reporting is not supported.

Data range: 4 bytes

This property supports querying.

The format is as follows:

```
{
        "version":   "1.0",
        "method":    "get",
        "params":    {"timeForEliminatingFalsePositives":              "?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":       "get",
         "res":      "success",
        "params":    {"timeForEliminatingFalsePositives":"255"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
```

```
        "version":   "1.0",
        "method":   "set",
        "params":    {"timeForEliminatingFalsePositives":"255"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":              "set",
        "res":          "success",
        "params":     {"timeForEliminatingFalsePositives":              "255"
        }
}
```

Clear Number of People Information(clearNumberOfPeopleInfor)

Active reporting is not supported.

Fix parameter: 1

This property can be configured. The configuration format is as follows:

```
{
        "version":   "1.0",
        "method":   "set",
        "params":    {"clearNumberOfPeopleInfor":        "1"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":              "set",
        "res":          "success",
        "params":     {"clearNumberOfPeopleInfor":        "1"
        }
}
```

Real-time People Reporting Time(realTimeNumberReportingTime)

Active reporting is not supported.

Data range: 4 bytes，0-65535

Unit: S

This property supports querying.

The query format is as follows:

```
{
        "version":   "1.0",
        "method":   "get",
        "params":    {"realTimeNumberReportingTime":   "?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":        "get",
         "res":        "success",
```

```
        "params":   {"realTimeNumberReportingTime":  "65535"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":  "1.0",
        "method":   "set",
        "params":   {"realTimeNumberReportingTime":  "65535"
        }
}
```

The configuration result format is as follows:

```
{
        "version":          "1.0",
        "opt":              "set",
        "res":          "success",
        "params":    {"realTimeNumberReportingTime": "65535"
        }
}
```

Tracking Switch(trackSwitch)

Active reporting is not supported.

Value Range:

0: 0ff

1: On

Controls trajectory information reporting. The default status is enabled.

This property supports querying.

The query format is as follows:

```
{
        "version":  "1.0",
        "method":   "get",
        "params":   {"trackSwitch":         "?"
        }
}
```

The query result format is as follows:

```
{
        "version":  "1.0",
        "opt":      "get",
        "res":      "success",
        "params":   {"trackSwitch":         "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":  "1.0",
        "method":   "set",
        "params":   {"trackSwitch":         "0"
        }
}
```

The configuration result format is as follows:

```
{
        "version":          "1.0",
        "opt":              "set",
        "res":          "success",
        "params":    {"trackSwitch":         "0"
```

```
        }
    }
```

Actively Reporting Information

Tracking Information(trackingInfo)

Active reporting: The status is reported automatically when it changes.

Data description:

Multiple target points are reported. Each target point contains 1B index, 1B target size, 1B target characteristics, 2B X-axis position, 2B Y-axis position, 2B height, 2B speed, 1B posture, and 4B projection radius (2B X + 2B Y).

Posture information:

1: Fall

2: Squatting

3: Sitting on a Chair

4: Standing

5: Low Posture

6: Stationary Presence

7: Lying in bed

8: Sitting up in bed

```
{
        "version":    "1.0",
        "method":    "post",
        "params":    {
                    "trackingInfo":              [2,1,0,0,37,0,25,0,218,0,0,0,0,7,0,4]
        }
}
```

Real Time Head Count(realTimeHeadCount)

Active reporting: Data Range: 0-255

The status is reported automatically when it changes.

```
{
        "version":    "1.0",
        "method":    "post",
        "params":    {
                    "realTimeHeadCount":    "2"
        }
}
```

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {
                    "realTimeHeadCount":    "?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":       "get",
        "res":       "success",
        "params":    {
                     "realTimeHeadCount":   "1"
        }
}
```

Label Attribute Status Reporting(labelAttribute)

Active reporting: The status is reported automatically when it changes.

Data description: (using a single label as an example)

{ 1B label index (enumeration type, representing the label sequence number or name) +

1B label attribute (enumeration type, representing the label function: 0 – No Function, 1 – Enter/Exit, 2 – Approach/Leave, 3 – Movement/Stationary, 4 – Noise Point, …) +

4B [4B center coordinates (2B X + 2B Y)] +

1B attribute status}

Attribute status:

Enter/Exit type: 1B — 0: Enter, 1: Exit

Approach/Leave type: 1B — 0: Approach, 1: Leave

Movement/Stationary statistics type: 1B — the upper 4 bits represent the number of moving people, and the lower 4 bits represent the number of stationary people.

```
{
        "version":   "1.0",
        "method":    "post",
        "params":    {
                     "labelAttribute":          [1, 1,128,100,128,200, 0]
        }
}
```

2.2.2 Fall Down Detection

Parameter Adjustment

Fall Down Switch(fallSwitch)

Active reporting is not supported.

The property status is categorized as follows:

1 (Function On), 0 (Function Off).

This property supports querying.

The query format is as follows:

```
{
        "version":"1.0",
        "method":"get",
        "params": {
                     "fallSwitch":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":"1.0",
        "opt":      "get",
          "res":    "success",
        "params": {
                    "fallSwitch":          "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
        {
        "version":"1.0",
        "method":"set",
        "params": {
                    "fallSwitch":          "1" // Function On
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
          "res":    "success",
                    "params": {
                    "fallSwitch":          "1"
        }
}
```

Fall Duration(fallDuration)

Active reporting is not supported.

Value Range:0-65535

Unit:s

This property supports querying.

The query format is as follows:

```
{
        "version":"1.0",
        "method":"get",
        "params": {
                    "fallDuration":        "?"
        }
}
```

The query result format is as follows:

```
{
        "version":"1.0",
        "opt":      "get",
         "res":     "success",
        "params": {
                    "fallDuration":        "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":"1.0",
        "method":"set",
        "params": {
                "fallDuration":         "2"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
          "res":     "success",
                "params": {
                "fallDuration":         "2"
        }
}
```

Stationary Presence Function Switch(residentWarningDurationSwitch)

Active reporting is not supported.

The property status is categorized as follows:

1 (Function On), 0 (Function Off).

This property supports querying.

The query format is as follows:

```
{
        "version":"1.0",
        "method":"get",
        "params": {
                "residentWarningDurationSwitch":         "?"
        }
}
```

The query result format is as follows:

```
{
        "version":"1.0",
        "opt":      "get",
        "res":      "success",
        "params": {
                "residentWarningDurationSwitch":         "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
        {
        "version":"1.0",
        "method":"set",
        "params": {
                "residentWarningDurationSwitch":         "1" //Function On
        }
}
```

The configuration response format is as follows:

```
{
```

```
        "version":              "1.0",
        "opt":              "set",
        "res":      "success",
                    "params": {
                    "residentWarningDurationSwitch":        "1"
        }
}
```

Stationary Presence Duration(residentWarningDuration)

Active reporting is not supported.

Value Range: 0-65535, unit: S

This property supports querying.

The query format is as follows:

```
{
        "version":"1.0",
        "method":"get",
        "params": {
                    "residentWarningDuration":    "?"
        }
}
```

The query result format is as follows:

```
{
        "version":"1.0",
        "opt":      "get",
         "res":     "success",
        "params": {
                    "residentWarningDuration":    "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
        {
        "version":"1.0",
        "method":"set",
        "params": {
                    "residentWarningDuration":    "2"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":              "set",
          "res":    "success" ,
                    "params": {
                    "residentWarningDuration":    "2"
        }
}
```

Fall Height Threshold Setting(fallHeightThreshold)

Active reporting is not supported.

The attribute range is: 40 – 70 cm, with a default value of 40 cm.

Setting this parameter will increase the fall reporting rate, but may also increase false positives.

This property supports querying.

The query format is as follows:

```
{
        "version":   "1.0",
        "method":   "get",
        "params":    {"fallHeightThreshold":  "?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":         "get",
       "res":          "success",
        "params":    {"fallHeightThreshold":  "40"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":   "1.0",
        "method":   "set",
        "params":    {"fallHeightThreshold":  "60"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
         "res":         "success",
        "params":    {"fallHeightThreshold":  "60"
        }
}
```

Fall Height Threshold Setting(lowPostureSwitch)

Active reporting is not supported.

The property status is categorized as follows:

1 (Function On), 0 (Function Off).

This property supports querying.

The query format is as follows:

```
{
        "version":"1.0",
        "method":"get",
        "params": {
                    "lowPostureSwitch":              "?"
        }
}
```

The query result format is as follows:

```
{
        "version":"1.0",
        "opt":      "get",
        "res":      "success",
```

```
        "params": {
                "lowPostureSwitch":             "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
        {
        "version":"1.0",
        "method":"set",
        "params": {
                "lowPostureSwitch":             "1" //Function On
        }
}
```

The configuration response format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
        "res":      "success",
                "params": {
                "lowPostureSwitch":             "1"
        }
}
```

Low Posture Alert Duration(lowPostureDuration)

Active reporting is not supported.

Value Range: 0-65535, Unit: S

This property supports querying.

The query format is as follows:

```
{
        "version":"1.0",
        "method":"get",
        "params": {
                "lowPostureDuration":           "?"
        }
}
```

The query result format is as follows:

```
{
        "version":"1.0",
        "opt":      "get",
         "res":     "success",
        "params": {
                "lowPostureDuration":           "10"
        }
}
```

This property can be configured. The configuration format is as follows:

```
        {
        "version":"1.0",
        "method":"set",
        "params": {
                "lowPostureDuration":           "20"
        }
```

```
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
          "res":    "success" ,
                    "params": {
                    "lowPostureDuration":          "20"
        }
}
```

Actively Reporting Information

Fall Status(fallStatus)

Active reporting: Property value, with a range of 0 (No Fall), 1 (Fall).

The status is reported when it changes.

```
{
        "version":"1.0",
        "method":"post",
        "params": {
                    "fallStatus":          "1"
        }
}
```

This property supports querying.

The query format is as follows:

```
{
        "version":"1.0",
        "method":"get",
        "params": {
                    "fallStatus":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":"1.0",
        "opt":      "get",
          "res":    "success",
        "params": {
                    "fallStatus":          "1"          //Fall
        }
}
```

Stationary Presence Status(residentStatus)

Active reporting: Property value, with a range of 0 (No Stationary Presence), 1 (Stationary Presence). The status is reported when it changes.

```
{
        "version":"1.0",
        "method":"post",
        "params": {
                    "residentStatus":      "1" //Stationary Presence
```

```
        }
    }
```

This property supports querying.

The query format is as follows:

```
{
        "version":"1.0",
        "method":"get",
        "params": {
                "residentStatus":      "?"
        }
}
```

The query result format is as follows:

```
{
        "version":"1.0",
        "opt":      "get",
          "res":    "success",
        "params": {
                "residentStatus":      "1"
        }
}
```

Low Posture Alert Status(lowPostureStatus)

Active reporting: Property value, with a range of 0 (No Fall), 1 (Fall).

The status is reported when it changes

```
{
        "version":"1.0",
        "method":"post",
        "params": {
                "lowPostureStatus": "1"
        }
}
```

2.2.3 Breath & Sleep

Parameter Adjustment

Human Breath Function Switch(breathSwitch)

Active reporting is not supported.The property status is categorized as follows: 1 (Function On), 0 (Function Off).

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {
                "breathSwitch":            "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":        "get",
         "res":       "success" //fail for failure and success for success.
```

```
        "params":   {
                    "breathSwitch":         "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
 {
        "version":  "1.0",
        "method":   "set",
        "params":   {
                    "breathSwitch":         "1" //Set to On
        }
}
```

The configuration result format is as follows:

```
{
        "version":          "1.0",
        "opt":              "set",
        "res":      "success" //fail for failure and success for success.
        "params":   {
                    "breathSwitch":         "1"
        }
}
```

Heart Rate Function Switch(heartRateSwitch)

Active reporting is not supported.The property status is categorized as follows: 1 (Function On), 0 (Function Off).

This property supports querying.

The query format is as follows:

```
{
        "version":  "1.0",
        "method":   "get",
        "params":   {"heartRateSwitch":     "?"
        }
}
```

The query result format is as follows:

```
{
        "version":  "1.0",
        "opt":      "get",
        "res":      "success",
        "params":   {"heartRateSwitch":     "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":  "1.0",
        "method":   "set",
        "params":   {"heartRateSwitch":     "1" //Set to On
        }
}
```

The configuration result format is as follows:

```
{
        "version":          "1.0",
        "opt":              "set",
        "res":      "success",
```

```
        "params":   {"heartRateSwitch":      "1"
        }
}
```

Sleep Function Switch(sleepSwitch)

Active reporting is not supported.The property status is categorized as follows: 1 (Function On), 0 (Function Off).

This property supports querying.

The query format is as follows:

```
{
        "version":  "1.0",
        "method":   "get",
        "params":   {"sleepSwitch":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":  "1.0",
        "opt":      "get",
         "res":     "success",
        "params":   {"sleepSwitch":          "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":  "1.0",
        "method":   "set",
        "params":   {
                    "sleepSwitch":          "1" //Set to On
        }
}
```

The configuration result format is as follows:

```
{
        "version":          "1.0",
        "opt":          "set",
         "res":     "success",
        "params":   {
                    "sleepSwitch":          "1"
        }
}
```

Sleep Report Mode(sleepReportMode)

Active reporting is not supported.

0 indicates the radar's default sleep detection mode, and 1 indicates the user-defined sleep mode, in which the sleep start time and end time can be customized.

The property status is categorized as follows:

0 (Radar Default Sleep Detection Mode), 1 (User-Defined Sleep Time Mode).

This property supports querying.

The query format is as follows:

```
{
```

```
        "version":   "1.0",
        "method":    "get",
        "params":    {"sleepReportMode":     "?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":       "get",
         "res":      "success",
        "params":    {"sleepReportMode":     "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":   "1.0",
        "method":    "set",
        "params":    {
                     "sleepReportMode":      "1" //Set to On
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
         "res":      "success",
        "params":    {
                     "sleepReportMode":      "1"
        }
}
```

Sleep Start Time Setting(bedTimeSet)

Active reporting is not supported.

This property takes effect only when the sleep report mode is enabled. The default value is 20:00 (8:00 PM).

The range is: 0 – 24 (hours), corresponding to the 24 hours of a day. The start time and end time cannot be the same.

This property supports querying.

The query format is as follows:

```
{
        "version":   "1.0",
        "method":    "get",
        "params":    {"bedTimeSet":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":       "get",
         "res":      "success",
        "params":    {"bedTimeSet":          "20"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":    "set",
        "params":    {
                        "bedTimeSet":                "20"
        }
}
```

The configuration result format is as follows:

```
{
        "version":                "1.0",
        "opt":                "set",
         "res":          "success",
        "params":    {
                        "bedTimeSet":                "20"
        }
}
```

Sleep End Time Setting(getUpTimeSet)

Active reporting is not supported. This property takes effect only when the sleep report mode is enabled. The default value is 8:00 (8:00 AM).

The range is: 0 – 24 (hours), corresponding to the 24 hours of a day. The start time and end time cannot be the same.This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {"getUpTimeSet":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":          "get",
         "res":          "success",
        "params":    {"getUpTimeSet":          "8"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":    "set",
        "params":    {
                        "getUpTimeSet":          "8"
        }
}
```

The configuration result format is as follows:

```
{
        "version":                "1.0",
        "opt":                "set",
         "res":          "success",
        "params":    {
                        "getUpTimeSet":          "8"
```

```
        }
}
```

Generate Sleep Report(sleepReportCut)

Active reporting is not supported. This property takes effect only when the sleep control mode is enabled. It immediately ends the current sleep session and generates a sleep report.

The range is:

0: None

1: Start

2: End

This property supports querying.

The query format is as follows:

```
{
        "version":   "1.0",
        "method":    "get",
        "params":    {"sleepReportCut":        "?"
        }
}
```

The query result format is as follows:

```
{
        "version":   "1.0",
        "opt":       "get",
         "res":      "success",
        "params":    {"sleepReportCut":        "1"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":   "1.0",
        "method":    "set",
        "params":    {
                     "sleepReportCut":         "2"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                "set",
         "res":       "success",
        "params":    {
                     "sleepReportCut":         "2"
        }
}
```

Sleep Report End Time Setting(sleepEndTimeSet)

Active reporting is not supported.

This property takes effect only when the sleep control mode is disabled.

Function description: The amount of time after getting out of bed before the sleep report is reported.

The range is: 5 – 120 minutes.

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {"sleepEndTimeSet":      "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":        "get",
         "res":       "success",
        "params":    {"sleepEndTimeSet":      "5"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":    "set",
        "params":    {
                     "sleepEndTimeSet":       "5"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                "set",
         "res":       "success",
        "params":    {
                     "sleepEndTimeSet":       "5"
        }
}
```

Abnormal Struggling Switch(agoniseSwitch)

Active reporting is not supported.

The range is:

0: Off

1: On

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {"agoniseSwitch":        "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":        "get",
         "res":       "success",
        "params":    {"agoniseSwitch":        "0"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":    "set",
        "params":    {
                        "agoniseSwitch":            "0"
        }
}
```

The configuration result format is as follows:

```
{
        "version":                "1.0",
        "opt":                  "set",
         "res":          "success",
        "params":    {
                        "agoniseSwitch":            "0"
        }
}
```

Abnormally Long No-Person Timer Switch(longtimeNobodySwitch)

Active reporting is not supported.

The range is:

0: Off

1: On

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":    "get",
        "params":    {"longtimeNobodySwitch":                "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":          "get",
         "res":          "success",
        "params":    {"longtimeNobodySwitch":                "0"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":    "set",
        "params":    {
                        "longtimeNobodySwitch":                "0"
        }
}
```

The configuration result format is as follows:

```
{
        "version":                "1.0",
        "opt":                  "set",
         "res":          "success",
        "params":    {
```

```
                "longtimeNobodySwitch":         "0"
        }
}
```

No-Person Timer Duration(nobodyTimeSet)

Active reporting is not supported.

The range is: 0–65535, unit: minutes.

This property supports querying.

The query format is as follows:

```
{
        "version":  "1.0",
        "method":   "get",
        "params":   {"nobodyTimeSet":       "?"
        }
}
```

The query result format is as follows:

```
{
        "version":  "1.0",
        "opt":      "get",
         "res":     "success",
        "params":   {"nobodyTimeSet":       "30"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":  "1.0",
        "method":   "set",
        "params":   {
                "nobodyTimeSet":        "300"
        }
}
```

The configuration result format is as follows:

```
{
        "version":          "1.0",
        "opt":              "set",
         "res":     "success",
        "params":   {
                "nobodyTimeSet":        "300"
        }
}
```

Weak Vital Signs Alert Threshold（weakVitalSignsDuration）

Active reporting is not supported.

The range is:25-120, unit: minutes. Default: 30mins

This property supports querying.

The query format is as follows:

```
{
        "version":  "1.0",
        "method":   "get",
        "params":   {"weakVitalSignsDuration":          "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":        "get",
        "res":        "success",
        "params":     {"weakVitalSignsDuration":          "30"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":     "set",
        "params":     {
                      "weakVitalSignsDuration":          "100"
        }
}
```

The configuration result format is as follows:

```
{
        "version":            "1.0",
        "opt":              "set",
        "res":        "success",
        "params":     {
                      "weakVitalSignsDuration":          "100"
        }
}
```

Weak Vital Signs Alert Sensitivity（weakVitalSignsSensitivity）

Active reporting is not supported.

The range is:0-100, Default: 50

The higher the value, the more easily the alert is triggered.

This property supports querying.

The query format is as follows:

```
{
        "version":    "1.0",
        "method":     "get",
        "params":     {"weakVitalSignsSensitivity":       "?"
        }
}
```

The query result format is as follows:

```
{
        "version":    "1.0",
        "opt":        "get",
        "res":        "success",
        "params":     {"weakVitalSignsSensitivity":       "50"
        }
}
```

This property can be configured. The configuration format is as follows:

```
{
        "version":    "1.0",
        "method":     "set",
        "params":     {
                      "weakVitalSignsSensitivity":       "30"
        }
}
```

The configuration result format is as follows:

```
{
        "version":              "1.0",
        "opt":                  "set",
        "res":          "success",
        "params":       {
                        "weakVitalSignsSensitivity":            "30"
        }
}
```

Actively Reporting Information

Note: To address the excessive amount of sleep data, the protocol has been consolidated into two categories: respiration and heart rate information, and sleep information.

Respiration and Heart Rate Information(respirationHeartRateInform)

Active reporting: Data is reported whenever any status changes. Each report contains one set of data consisting of multiple integer values. The data fields are, in order:

[2B respiration distance waveform (reserved), 2B respiration waveform (reserved), 2B respiration status, 1B respiration confidence, 1B respiration value, 1B heart rate value, 1B bed entry/exit status, 1B getting-up-from-bed status, 1B abnormal struggling alert, 1B abnormally long no-person alert, 1B weak vital signs alert, 1B sleep status]

Note: The meanings of some parameters are as follows:

Respiration status:
0: No valid signal
1: Capturing
2: Stable respiration
3: Respiration changing
4: Apnea / breath holding
5: Body movement interference

Bed entry/exit status:
0: Out of bed
1: In bed

Getting-up-from-bed status:
0: None
1: Sitting up in bed
2: Lying in bed

Abnormal struggling alert:
0: None
1: Normal
2: Abnormal struggling

Abnormally long no-person alert:

0: None
1: Normal
2: Abnormal

Weak vital signs alert:
0: None
1: Normal
2: Abnormal

Sleep status:
0: Deep sleep
1: Light sleep
2: Awake
3: None (reported when out of bed)

```
{
    "version":   "1.0",
    "method":   "post",
    "params":   {"respirationHeartRateInform":        [0,200,0,100,0,1,80,15,70,1,0,0,0,0,2]
    }
}
```

This property supports querying.
The query format is as follows:

```
{
    "version":   "1.0",
    "method":   "get",
    "params":   {"respirationHeartRateInform":        "?"
    }
}
```

The query result format is as follows:

```
{
    "version":   "1.0",
    "opt":        "get",
    "res":        "success",
    "params":   {"respirationHeartRateInform":        [0,200,0,100,0,1,80,15,70,1,0,0,0,0,2]
    }
}
```

Sleep Information(sleepInform)

Active reporting: Data is reported whenever any status changes. Each report contains one set of data consisting of multiple integer values. The data fields are, in order:

[2B awake duration, 2B light sleep duration, 2B deep sleep duration, 1B sleep score, 8B comprehensive sleep status, 12B sleep quality analysis, 1B sleep anomaly (reserved), 1B sleep quality rating (reserved)]

Note: The meanings of some parameters are as follows:

Comprehensive sleep status:

1B presence, 1B sleep status, 1B average respiration rate, 1B average heart rate, 1B number of turns, 1B proportion of large body movements, 1B proportion of small body movements, 1B number of apneas

Sleep quality analysis:

1B sleep quality score, 2B total sleep duration, 1B awake duration percentage, 1B light sleep duration percentage, 1B deep sleep duration percentage, 1B time out of bed, 1B number of times out of bed, 1B

number of turns, 1B average respiration rate, 1B average heart rate, 1B number of apneas

Sleep anomaly alert:
0: Sleep duration less than 4 hours
1: Excessive sleep duration, more than 12 hours
2: No person for an extended period
3: None (reserved)

Sleep quality rating:
0: None
1: Good sleep quality
2: Fair sleep quality
3: Poor sleep quality (reserved)

```
{
    "version":   "1.0",
    "method":    "post",
    "params":    {"sleepInform":          [0, 22, 0,30,0,0,0
```

```
    "method":   "limit_get",
    "params":   {
                "workDuration":             "?",
                "locationOutOfBounds":      "?",
                "someoneExists":            "?",
                "motionStatus":             "?",
                "movementSigns":            "?",
                "humanDistance":            "?",
                "humanPosition":            "?",
                "heartBeat": "?"
    }
}
```

The query response format is as follows:

```
{
    "version":  "1.0",
    "opt":      "limit_get",
    "res":      "success" //fail for failure and success for success.
    "params":   {
                "workDuration":             "0",
                "locationOutOfBounds":      "0",
                "someoneExists":            "0",
                "motionStatus":             "0",
                "movementSigns":            "0",
                "humanDistance":            "0",
                "humanPosition":            "0"
    }
}
```

The setting format for “disabled reporting data” is as follows:

```
{
    "version":  "1.0",
    "method":   "limit_set",
    "params":   {
                "workDuration":             "0",
                "locationOutOfBounds":      "0",
                "someoneExists":            "0",
                "motionStatus":             "0",
                "movementSigns":            "0",
                "humanDistance":            "0",
                "humanPosition":            "0"
    }
}
```

The setting response format is as follows:

```
{
    "version":  "1.0",
    "opt":      "limit_set",
    "res":      "success" //fail for failure and success for success.
    "params":   {
                "workDuration":             "0",
                "locationOutOfBounds":      "0",
                "someoneExists":            "0",
                "motionStatus":             "0",
                "movementSigns":            "0",
                "humanDistance":            "0",
                "humanPosition":            "0"
```

```
        }
    }
```

4. QoS Service Quality Setting N/A

The default QoS service quality is QoS 1. The value 0 indicates QoS 0, 1 indicates QoS 1, and 2 indicates QoS 2.

The query format for the QoS service quality function is as follows:

```
{
        "version":   "1.0",
        "method":    "qos_get",
        "params":    {"Qos_post":              "?"
        }
}
```

The query response format is as follows:

```
{
        "version":   "1.0",
        "opt":       "qos_set",
        "res":       "success",
        "params":    {"Qos_post":              "0"
        }
}
```

The setting format for the QoS service quality function is as follows:

```
{
        "version":   "1.0",
        "method":    "qos_set",
        "params":    {"Qos_post":              "0"
        }
}
```

The query response format is as follows:

```
{
        "version":   "1.0",
        "opt":       "qos_set",
        "res":       "success",
        "params":    {"Qos_post":              "0"
        }
}
```

5. OTA Update

Module Upgrade(otaModule)

This property requires a command to specify the module to be upgraded. 0 indicates the main controller, 1 indicates the radar module, and 2 indicates the radar coordination processor. The default value is 0.

This control command must be sent before each OTA upgrade.

```
{
```

```
        "version":   "1.0",
        "method":   "ota_set",
        "params":   {
                    "module":   "0"
        }
}
```

Upgrade Information(otaInform)

The upgrade information sent to the device includes the firmware URL and port number. After receiving this data, the device retrieves the firmware from the specified URL and port, and then starts the upgrade process.

If the upgrade fails, the device returns a failure status. After a successful upgrade, the module restarts and reports the upgraded firmware version.

The customer is required to set up their own web server.

```
{
        "version":   "1.0",
        "method":   "ota_set",
        "params":   {
                "otaInform":   {
                        "firmwareUrl":   "http://192.168.31.88/app.rbl",
                        "port":   "8090"   // Port
                    }
        }
}
```

The response format for an upgrade failure is as follows:

```
{
        "version":   "1.0",
        "opt":       "otaInform",
        "res":     "fail",
        "msg":     "ota failed!"
}
```

Upgrade Progress(downloadProgress)

During the upgrade, the upgrade progress is actively reported. The data range is 0 - 100. When the upgrade is completed, 100% is reported.

The specific format is as follows:

```
{
        "version":   "1.0",
        "method":   "ota_post",
        "params":   {
                    "downloadProgress":     "100%"
        }
}
```

6. Updated History

Revision	Release Date	Author	Summary
V1.0	2026/03/13	Frank	First Release
V1.1	2026/03/31	TON	1. Modified the description and content of the label setting. 2. Added the device installation mode interface. 3. Adjusted the reporting and setting topic information. 4. Adjusted the descriptions of some properties.
V1.2	2026/04/21	TON	1. Added the server information interface. 2. Added a new type to the label setting interface.
V1.3	2026/04/30	TON	1. Added low posture alert status reporting. 2. Added the low posture alert switch interface. 3. Added the low posture alert duration interface.
V1.4	2026/05/18	TON	1. Modified the tracking information data content. 2. Added the sleep control mode interface. 3. Added the sleep start time interface. 4. Added the sleep end time interface. 5. Added the sleep termination interface. 6. Added the tracking switch interface. 7. Added the abnormal struggling interface. 8. Added the long-time no-person timer switch interface. 9. Added the no-person timer duration interface. 10. Added the no-person timer status interface.
V1.5	2026/06/05	TON	1. Consolidated respiration, heart rate, and sleep-related information into two integrated interfaces. 2. Adjusted sleep status reporting to the respiration and heart rate information interface.
V1.6	2026/08/03	TON, Lucia	1. Improved the OTA description. 2. Added two new postures to the tracking information protocol. 3. Added the sleep report end time setting interface. 4. Added the device MAC address interface. 5. Corrected some protocol descriptions. 6. Deleted Product ID & Product Model query
V1.7	2026/08/21	TON	1. Added the Wi-Fi signal strength interface. 2. Adjusted the label setting interface. The issued data remains unchanged, while an additional 0 value is added for each label in the response. 3. Added two new posture types to the tracking interface. 4. Added the weak vital signs alert duration interface. 5. Added the weak vital signs alert sensitivity interface. 6. Corrected some protocol descriptions in the document.