



# ZenduSensor MS H4/H4P

## Product Specification

Version 1.0

# About document

## Scope

This document is applicable to H4 Beacon, and mainly introduced product brief, electronic specifications, quick guidance, and function descriptions based on firmware BXP-CTHC V1.0 series.

## Revision history

Version	Date	Change log	Author
1.0	2022/03/31	Initial version	Daniel/Sara

## H4/H4P Temperature Sensor Beacon

The H4/H4P, also called temperature sensor Beacon, is an high-precision and wide-range temperature and humidity sensor designed Bluetooth LE beacon ideal for environmental monitoring and analysis.

Based on Nordic nRF52 series SoC, it is compatible with bluetooth 5.0 and it supports multiple technologies: iBeacon, Eddystone (UID, URL, TLM), MOKO BeaconX Pro sensor data.

H4P has the higher accuracy than H4. H4P has an external probe.



- Rugged IPX4 Waterproof
- Temp range -20°C to +60°C



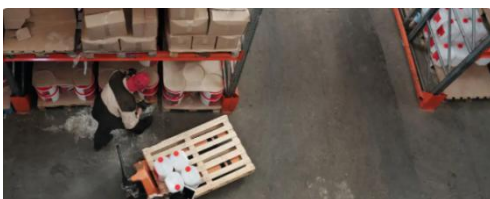
- Replaceable lithium and iron disulfide battery
- Up to 2.5 years lifetime



- Over-the-air updates (firmware)
- Versatile installation options
- Various configurable parameters



- Up to 120 meters
- Multiple advertising format
- Customized services provided



### For What

- |          |           |
|----------|-----------|
| Asset    | Machinery |
| Material | Equipment |
| Vehicle  | Animals   |



### For Whom

- |               |             |
|---------------|-------------|
| Construction  | Healthcare  |
| Manufacturing | Exhibition  |
| Warehousing   | Agriculture |

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### 1. Product Brief

The H4/H4P Temperature Sensor Beacon has a high-precision and wide-range temperature and humidity sensor, making it useful for applications such as museums or stock control. H4/H4P collects data quickly and accurately and reports it to the gateway and other hosts via Bluetooth broadcast for remote monitoring. H4/H4P can also trigger the advertising when it exceeds the preset temperature and humidity range, making it ideal as an alarm reminder. H4/H4P is the most reliable Bluetooth intelligent assistant for environmental monitoring!

As well, thanks to its ultra-low power consumption, the beacon guarantees un-surpassed battery life time up to 2.5 years.



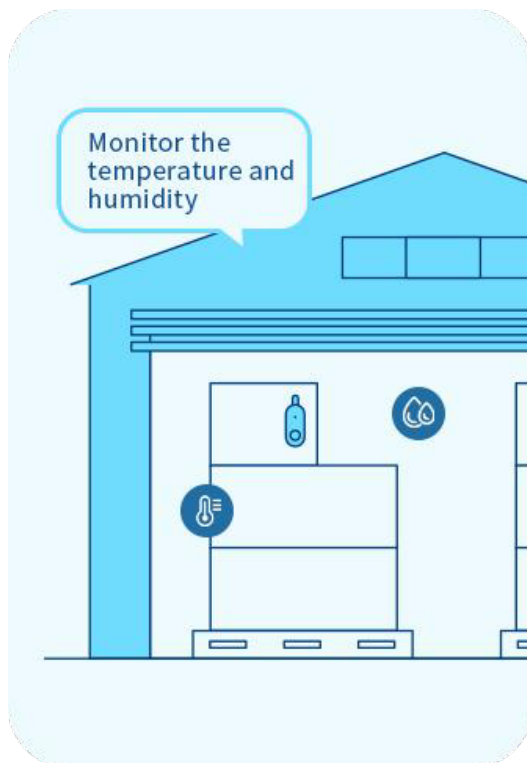


Figure 1: Top view of H4 Beacon



Figure 2: Back view of H4 Beacon

## 2. Application Scenarios



### **Scenario 1: Monitor the temperature and humidity of the surrounding**

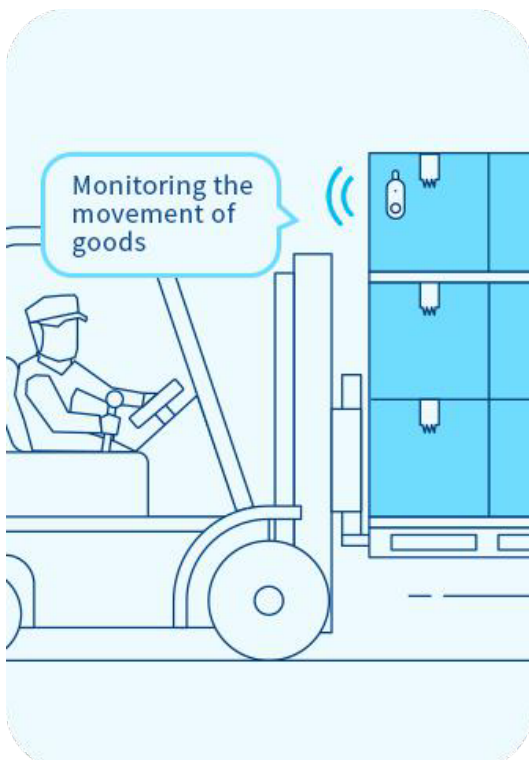
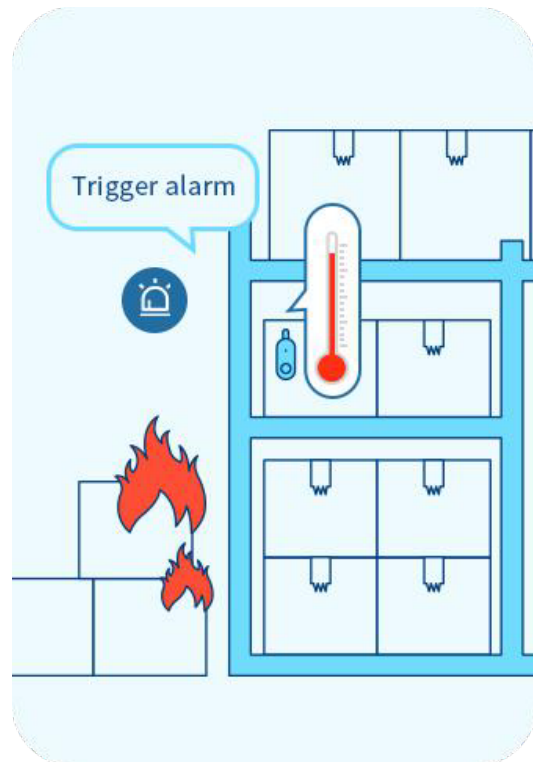
The H4 Temperature Sensor Beacon can monitor and record temperature and humidity changes in the surrounding environment (such as offices, museums, factories, etc.) in real time.

In addition to broadcasting temperature and humidity data, H4 can customize the preset storage data rules. It can store up to 4000 datas with timestamps, which can be used for environmental analysis applications.

## **Scenario 2: Temperature & Humidity**

### **trigger alarm**

Through the preset settings, the H4 Temperature Sensor Beacon triggers an alarm advertising information by intelligently judging that the temperature and humidity sensor data is higher or lower than the pre-set value.



### **Scenario 3: Monitoring the movement of goods**

The H4 Temperature Sensor Beacon can monitor and record temperature and humidity changes in the surrounding environment (such as offices, museums, factories, etc.) in real time.

In addition to broadcasting temperature and humidity data, H4 can customize the preset storage data rules. It can store up to 4000 datas with timestamps, which can be used for environmental analysis applications.

### 3. Specification

#### 3.1 General specifications

General specifications	
Main Chip	Nordic nRF52 series
Bluetooth	Bluetooth 4.2(Hardware compatible with Bluetooth 5.0)
Dimension	70mm x 32.2mm x 18.2mm (H4) 88mm x 32.2mm x 18.2mm (H4 Pro)
Range	Up to 120 meters (in the open area and no obstacles)
Weight	32.2g (H4, with battery) 35.1g (H4 Pro, with battery)
Material	ABS+PC & PMMA
Waterproof	IPX4
Color	White and black
Installation	Sticker, Laid
Button	Mechanical button
LED	1 Green Led and 1 Red LED
Sensor	3-axis accelerometer sensor (optional)
Operating temperature	General -20°C / + 60°C -40°C / + 85°C can be customized
Storage temperature	-20°C / + 70°C (without battery) -20°C / + 40°C (with battery)
Humidity	0% ~ 95% (non-condensing)
Antenna Type	PCB onboard
Power supply	Replaceable 2 x 1.5V 1200mAh lithium and iron disulfide battery

Table 1: General specifications

#### 3.2 Electronic specifications

##### 3.2.1 Battery consumption

Here described battery consumption in various situations which refer to different use cases. You can refer to below table to create the use case and estimate battery life time.

3-axis Acc sensor sampling rate	SLOT1			Consumption (uA)	Life time*
	Advertising format	Tx power	Advertising interval		
/	Device Info	0dBm	100ms	149.93	8.9 months
/	Device Info	0dBm	500ms	36.83	36.2 months
/	Device Info	0dBm	1000ms	25.6	52 months
/	Device Info	4dBm	100ms	177.12	7.5 months
/	Device Info	4dBm	500ms	44.66	29.85 months
/	Device Info	4dBm	1000ms	23.99	55.5 months
/	Device Info	-12dBm	100ms	132.04	10 months
/	Device Info	-12dBm	500ms	31.95	41.75 months
/	Device Info	-12dBm	1000ms	54.66	24.35 months

Table 2: Battery consumption in various situations

\* Above battery life time are estimated under continuous single advertising slot with 0dBm Tx power.

## 4. User guidance

### 4.1 How to wear/install H4?

Double-sided sticker or just lay it where you need it.



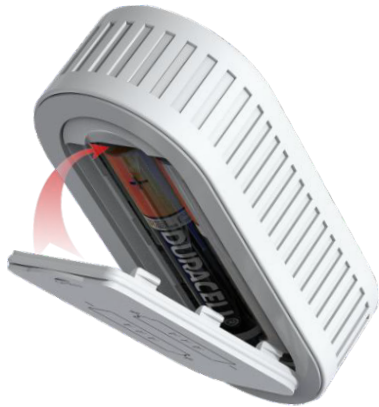
Option 1: Double-sided sticker.





## 4.2 How to replace battery on H4?

Operation flow:



Open the back cover and take out the batteries.

## 4.3 How to Power ON/OFF H4?

There has a mechanical button on H4. You can refer to below operation flow to power on/off device.

- Power ON: Long press mechanical button for more than 3 seconds, and LED will keep green blinking for 3 seconds to power on.
- Power OFF: Long press mechanical button for more than 3 seconds, and LED will keep solid red for 3 seconds.

## 4.4 How to restore factory settings?

There have two ways to restore factory settings.

- Independent mechanical button (Hardware reset): In power-off mode, long press inner mechanical button for 10s or more, then release button and

single press button within 2s, device will proceed on factory reset.

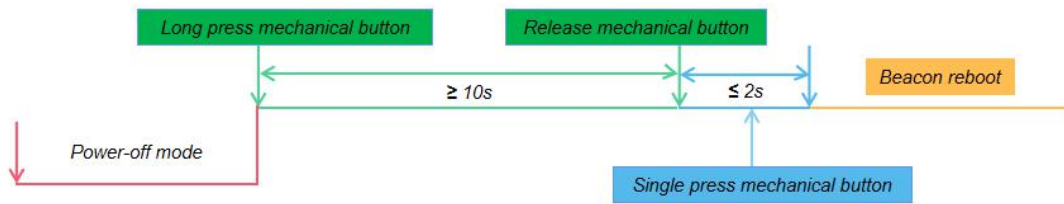


Figure 5: H4 Beacon Factory reset flow

- APP (Software reset\*): Remote factory reset through APP if H4 connected with phone APP.

\* Software reset will not reset connection password.

## 4.5 How to connect to APP and issue configurations?

Please download “BeaconX Pro” APP from play store directly. For more configuration details, please refer to document - “BeaconX Pro series Beacon User Manual”.

## 5. Certifications

### 5.1 FCC certification

#### FCC Certification

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.

#### CAUTIONS

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio

frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

**FCC ID: 2A094-H4**

## 6.2 CE regulatory

### CE-RED

Manufacturer	MOKO TECHNOLOGY LTD.
Product	H4
Product Description	Bluetooth Beacon
EU Directives	2014/53/EU - Radio Equipment Directive (RED)

Reference standards used for presumption of conformity:

Article number	Requirement	Reference standard(s)
3.1(a)	Health & Safety	EN 62479:2010 EN IEC 62368-1:2020+A11:2020
3.1(b)	Protection requirements – EMC compatibility	EN 301489-1 V2.2.3 (2019-11) EN 301489-17 V3.2.4 (2020-09) EN 55032:2015+A1:2020 EN 55035:2017+A11:2020 EN IEC 61000-3-2:2019+A1:2021 EN IEC 61000-3-3:2013+A1:2019
3.2	Means of the efficient use of the radio frequency spectrum (ERM)	EN 300 328 V2.2.2 (2019-07)

## RoHS

All products that are manufactured by MOKO TECHNOLOGY LTD. follow the Directive 2011/65/EU of the European Parliament & of the Council & Commission Delegated Directive (EU) 2015/863, on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

## REACH

Two hundred and nineteen (219) substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on - (EC) No 1907/2006 concerning the REACH.

we confirm that:

1. None of our products are intended to release any hazardous chemicals.
2. We will take appropriate action in response to any to business risks arising through supplier failure to co-operate and support us in this project.
3. We will do our utmost to ensure that continuity of supply of our products will not be adversely affected by issues arising from the REACH regulations.



## 6. Ordering information

### 6.1 Beacon ordering information

The H4 Beacon is available as a finished product in a plastic housing with full FCC, RoHS, REACH and CE certifications.

The H4 Beacon ordering information is shown in Figure 10 and Table 11.

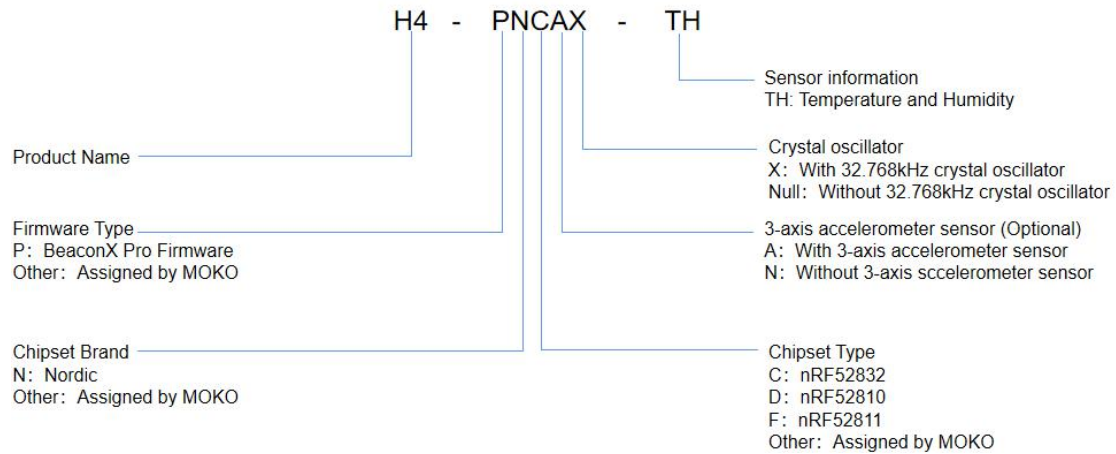


Figure 10: H4 Beacon Ordering Information

Order number	Description				
	Chipset	3-axis Acc sensor	Internal probe	External probe	Clock oscillator
H4-PNCAx-TH	nRF52832	√	√	○	√
H4-PNCNx-TH_	nRF52832	○	√	○	√
H4P-PNCNx-TH	nRF52832	○	○	√	√
H4P-PNCAx-TH	nRF52832	√	○	√	√

Table 11: H4 Beacon Ordering Information

## 7. Service and contact

**"Please contact support@zenduit.com for any further clarifications regarding setup and specifications."**