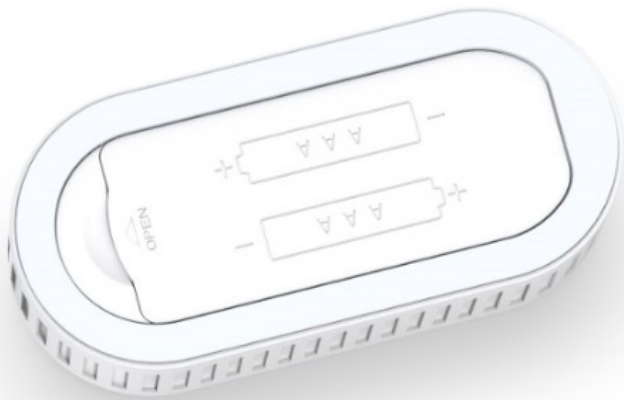


# H4 Series Beacon

## (H4)

## Datasheet



**MOKO TECHNOLOGY LIMITED**

[www.mokosmart.com](http://www.mokosmart.com)

## 1. Description

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H4 is a portable tag with **temperature & humidity sensor**<sup>①</sup> and **3-axis accelerometer sensor**<sup>②</sup>. It can advertise **iBeacon, Eddystone and Sensor** datas and also can transfer and store temperature & humidity sensor datas.

H4 has a **portable case shape, waterproof structure, accurate hardware, robust firmware and external push button**. It has a long lifetime with 2 high quality replaceable AAA lithium batteries.

All the parameters of H4 can be modified and all the sensor datas can be checked. Please check out our **BeaconX Pro** app, available for iOS and Android.

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① *Temperature & Humidity Sensor: Sensirion® SHT30-DIS* ② *3-axis accelerometer Sensor: STMicroelectronics® LIS3DH*

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## 2. Features

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### Firmware and chipset

- Programmed MOKO standard MkBeaconX firmware;
  - Ultra-low power consumption chipset NORDIC® nRF52 series with 32 bit ARM® Cortex-M4 CPU.
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### Compatibility

- Compatible with **Apple iBeacon** and **Google Eddystone**; Compatible with
  - standard Eddystone Configuration GATT Service;
  - Compatible with all Bluetooth® 5.2 devices.
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### Replaceable Battery and long lifetime

- High quality replaceable AAA lithium battery (1.5V/1100mAh) ;
  - More than 3 years battery lifetime (At default settings);
  - Easy to get the real-time battery level notification.
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### Configurable SLOTS and parameters

- Up to 6 configurable SLOTS;
  - Each SLOT can be set to iBeacon, UID, URL, TLM, Device Info and Sensor data;
  - Device Name, Password, Connection Mode, Advertising Interval, Tx Power and Sensor Parameters all are configurable;
  - Special Configuration APP ( **BeaconX Pro**), available for iOS and Android.
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### Flexible sensor function

- 3-axis accelerometer has dynamically user-selectable full scales of  $\pm 2g/\pm 4g/\pm 8g/\pm 16g$  and the parameter is configurable ;
  - 3-axis accelerometer is capable of measuring accelerations with output data rates from 1 Hz to 100 Hz and the parameter is configurable;
  - User can get the raw data of the 3-axis sensor sampling data from the device in real time;
  - Temperature and humidity sampling frequency is configurable;
  - User can get the temperature and humidity from the device in real time;
  - User can set the conditions for storing temperature and humidity data, and the device can store up to 4000 data.
- 

### Trigger function

- Support button trigger, temperature trigger, humidity trigger and motion trigger;

- Control the device to start advertising all the time, stop advertising, or advertise for a while.

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#### Transmission Power Levels

- 9 adjustable grades;
  - Transmission power range: -40dBm to +0.59dBm.
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#### Long Range

- The max. Range 120 meters in the open space;
  - The range depends on the environment where the H4 series Beacon is placed.
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#### Security

- Configurable password (1-16 characters);
  - With or without password (Lock/Unlock parameters);
  - AES-128-ECB. encrypt.
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#### LED reminder

- Green LED means power on and red LED means power off;
  - LED flashes every 10 seconds if the battery capacity is under 5%;
  - LED lights up indicate successful button trigger;
  - LED flashes when the device is connected;
  - LED flashes when the device is upgraded.
- 

#### Connection Mode

- Advertising mode, non-connectable;
- Configuration mode, connectable.

#### Custom made mounting

- Color customizable;
- Easy to print a customization logo/branding on the case.
- Provided with your own configuration;
- Customizable software, hardware and structure.
- 

*Tips: If NFC function is added, only NFC tag is supported(The signalling type is NFC-A). You can wake up the Beacon from NFC(The Beacon will be turned on after touching NFC reader).*

#### OTA and DFU

- Supported upgrade via Over-The-Air;
- Nordic® official Device Firmware Upgrade(DFU);
- Reserved J-Link port on the board for programming.

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## 3. Physical Characteristics

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Item	Value	Remarks
Case Color	White	Other colors can be customized
Main Material	ABS	-

Battery Model	2xAAA Battery	Lithium battery, 1.5V, 1100mAh
Battery Lifetime	About 36 mouths	At default settings <sup>③</sup> and without selfdischarge factor
Operation Voltage	1.8~3.6V	DC
Waterproof Level	IP66	-
Static Current	11.7 uA	Device is power off
Average Current	41.2 uA	At default settings <sup>④</sup>
Transmission Range	120m	Maximum, in the open space
Antenna	50ohm	On board/PCB Antenna
Size	69.90mmx32.15mmx18.15mm	Refer to <b>mechanical draws</b> for details
Net Weight	33.8g	With battery
Operating Temperature	-20 ~ +60°C	-
Storage Temperature	20 ~ +30°C	-

③④ Default setting: 1 Active SLOT(Device Info), 0dBm TX power and 1000ms Advertising Interval.

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## 4. Configurable Parameters

Item	Value	Default Setting	Range and Remarks
iBeacon	UUID	-	16bytes
	Major	-	0~65535
	Minor	-	0~65535
UID	Namespace	-	10bytes
	Instance ID	-	6bytes
URL	Encoded Scheme Prefix	-	4types: http://www. https://www. http:// https://
	Encoded URL	-	2-17 bytes
TLM	-	-	TLM shows only one in the broadcast.
Device Name	-	BeaconX Pro	Up to 20 characters
Advertising Interval	-	1000ms	100~10000ms, Unit:100ms
Tx Power	-	0dBm	-40dBm to 0.59dBm, 9 adjustable grades
Password	-	Moko4321	1-16 characters or NO password
Connection Mode	-	Connectable	Connectable/Unconnectable
Trigger	1.Button double tap	-	Always advertise
			Start advertising for a while (1~65535s)

			Stop advertising for a while (1~65535s)
	2.Button triple tap	-	Always advertise
			Start advertising for a while (1~65535s)
			Stop advertising for a while (1~65535s)
	3.Temperature above	-	Start advertising
			Stop advertising
	4.Temperature below	-	Start advertising
			Stop advertising
	5.Humidity above	-	Start advertising
			Stop advertising
	6.Humidity below	-	Start advertising
			Stop advertising
	7.Device moves	-	Always advertise
			Start advertising after a static period time (1~65535s)
			Stop advertising after a static period time (1~65535s)
3-axis accelerometer Sensor	Scale	±2g	±2g, ±4g, ±8g, ±16g
	Output data rate	10 Hz	1 Hz, 10 Hz, 25 Hz, 50 Hz, 100 Hz
	Sensitivity	7	7 to 255
Temperature & Humidity Sensor	Sampling period <sup>⑤</sup>	1 second	1s~65535s
	T&H storage condition <sup>⑥</sup>	Temperature 1℃ and humidity 5%	Only temperature0~100℃Interval: 0.5℃
			Only humidity 0~100%Interval: 1%
			Temperature and humidityRefer to above
			Time1~255minutesInterval: 1min

<sup>⑤</sup> Sampling period: Time interval for sampling temperature and humidity. <sup>⑥</sup> T&H storage condition: The condition for storing a temperature and humidity data. The maximum number of data is 4000.

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## 5. Sensor Performance

Item	Range	Typical Accuracy Tolerance
Temperature	0°C~65°C	±0.3°C
	-40°C~0°C or 65°C~120°C	±0.7°C
Humidity	10%~90%	±3%
	0%~10% or 90%~100%	±4.5%

Temperature & Humidity Sensor Performance Graphs

Humidity Sensor Performance Graphs  
SHT30

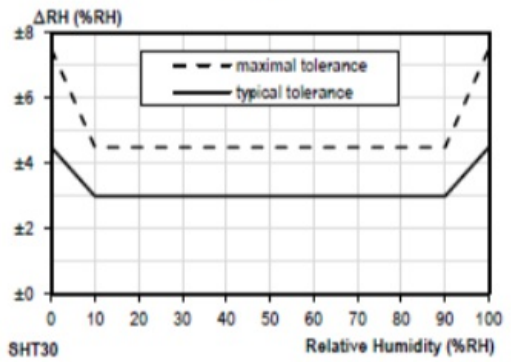


Figure 1 Tolerance of RH at 25°C for SHT30

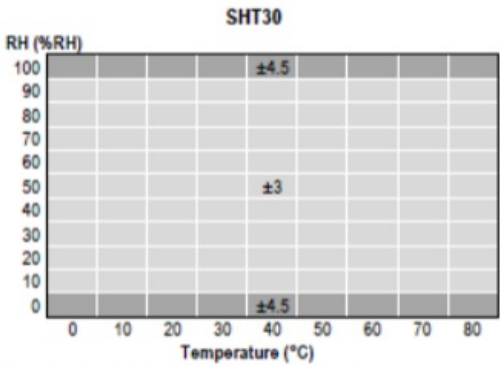


Figure 2 Typical tolerance of RH over T for SHT30

## Temperature Sensor Performance Graphs

### SHT30

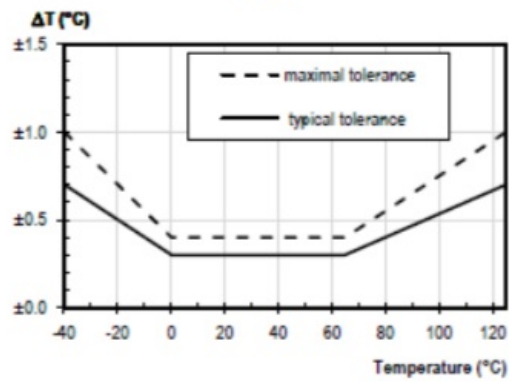
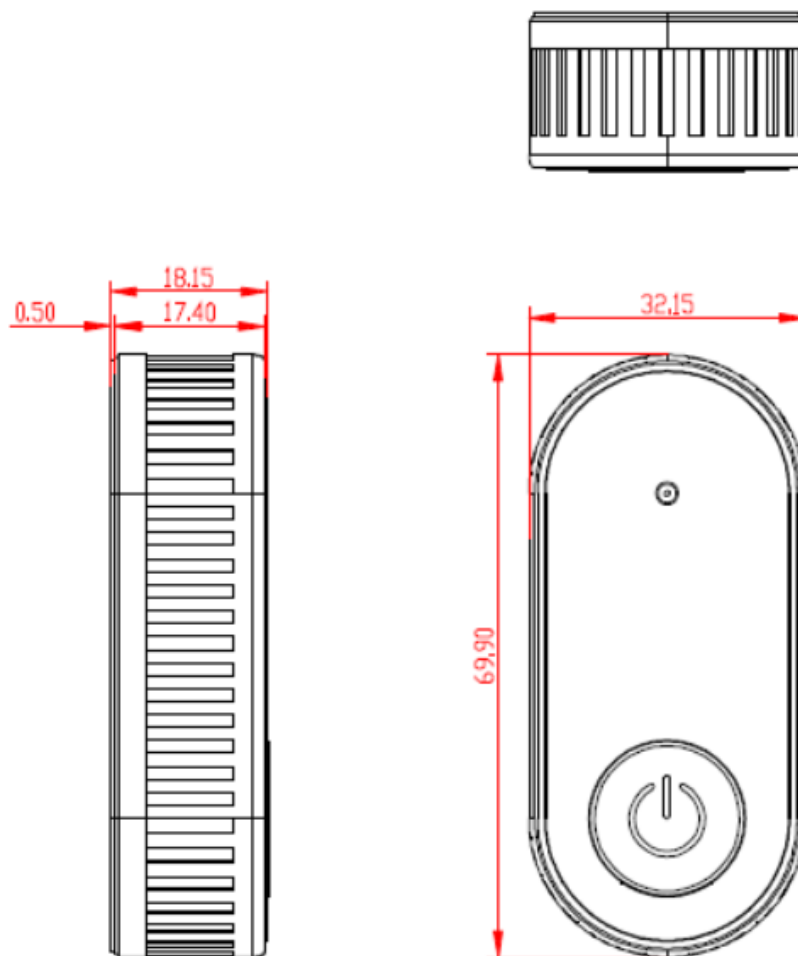


Figure 3 Temperature accuracy of the SHT30 sensor.

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## 6. Mechanical Draws

All dimensions is mm.



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## 7.FCC STATEMENT

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1. 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. (2) This device must accept any interference received, including interference that may cause undesired operation.
2. 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.

**FCC Radiation Exposure Statement** This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 5mm between the radiator & your body

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## 8. Technical support

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Item	File Name	Link
Configure APP for IOS&Android	BeaconX Pro	--
User Manual	BeaconX Pro User Manual	<a href="http://doc.mokotechnology.com/index.php?s=/page/56">http://doc.mokotechnology.com/index.php?s=/page/56</a>
SDK for Android APP	--	<a href="https://github.com/BeaconX-Pro/Android-SDK">https://github.com/BeaconX-Pro/Android-SDK</a>
SDK for iOS APP	--	<a href="https://github.com/BeaconX-Pro/iOS-SDK">https://github.com/BeaconX-Pro/iOS-SDK</a>
Power Consumption Test	--	<a href="http://doc.mokotechnology.com/index.php?s=/page/85">http://doc.mokotechnology.com/index.php?s=/page/85</a>
Datasheet	H4 Series Beacon Datasheet	<a href="http://doc.mokotechnology.com/index.php?s=/page/84">http://doc.mokotechnology.com/index.php?s=/page/84</a>
	H4-P5202D3 Datasheet	<a href="http://doc.mokotechnology.com/index.php?s=/page/87">http://doc.mokotechnology.com/index.php?s=/page/87</a>
	H4-P5202DH2 Datasheet	<a href="http://doc.mokotechnology.com/index.php?s=/page/90">http://doc.mokotechnology.com/index.php?s=/page/90</a>
	H4-P5202NN Datasheet	<a href="http://doc.mokotechnology.com/index.php?s=/page/99">http://doc.mokotechnology.com/index.php?s=/page/99</a>

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## 9. Declaration

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The contents of this datasheet are subject to change without prior notice for further improvement. MOKO team reserves all the rights for the final explanation. Please contact MOKO sales team or visit <https://www.mokosmart.com> to get more related information if needed.

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## 10. Contact Information

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MOKO TECHNOLOGY LTD. Address: 4F,Buidling2, Guanghui Technology Park, MinQing Rd, Longhua, Shenzhen, Guangdong, China E-mail: Support\_BLE@mokotechnology.com Website: <https://www.mokosmart.com>

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# Revision History

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Revision	Description	Approved	Date
V1.0	Initial Release	Kevin	2019.07.17