

Battery Operated IoT Sensor System with Bluetooth Low Energy, LoRaWAN™ and Sensors.

Variants

Variant	Wireless	Freq. / Power	Processor, Memory	Sensor Systems
HybridTAG L500 - BASE	Bluetooth LE 4.2	2.4GHz TX: +8dBm RX: +92dBm	32-bit ARM® Cortex®-M4, 40MHz, 32kB RAM, 256kB Flash	- GPS/GNSS - Reed Switch - Acceleration/Motion
HybridTAG L500 - FULL	LoRaWAN™	868MHz TX: +14dBm RX: -137dBm		- GPS/GNSS - Reed Switch - Acceleration/Motion - Temperature - Humidity - Ambient Light - Magnetic Field

Overview

The conbee BLE/LoRa® **HybridTAG L500** is ideally suited for IoT and M2M applications. It combines Bluetooth Low Energy and Long Range Wireless with a set of sensors.

The configurable TAG provides authentication features, is fraud-resistant and comes with a 3D-acceleration sensor, which can detect motion and orientation.

Regular advertisement packets are transmitted at a configurable interval and provide device status and sensor data. The data contains device identification, temperature, acceleration and battery status as well as GPS/GNSS position data and optionally humidity, ambient light and magnetic field.

The BLE/LoRa® **HybridTAG L500** operates in the LoRa® Low Power Wide Area Network and hence does not require any SIM card and is compatible with various application and cloud software.

On customer request various sensor systems can be activated in the **HybridTAG L500**: environmental parameters like ambient light, temperature, humidity as well as acceleration, motion, inclination and positioning (magnetometer).

Wireless

Bluetooth Low Energy (LE) 4.2 is a powerful radio interface. Live sensor data can be visualized through smartphone/tablet app or can be forwarded to an IoT cloud platform. The **HybridTAG L500** can also be parameterized through BLE and firmware updates can be performed over-the-air.

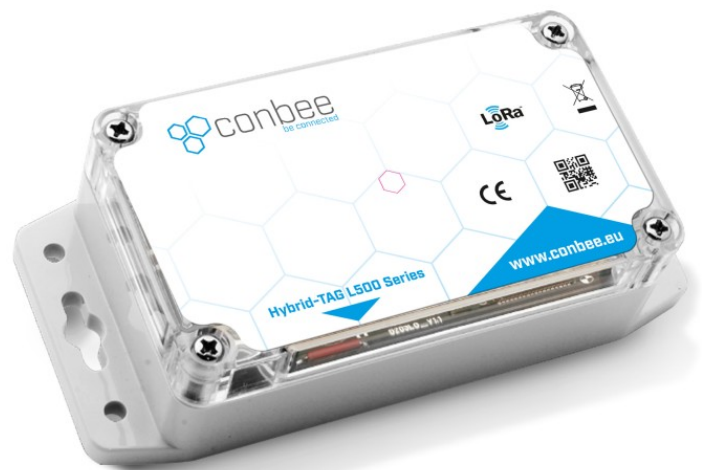
To connect wirelessly to Low Power Wide Area Networks (LPWAN) the **HybridTAG L500** provides an additional LoRaWAN™ radio interface. Depending on thresholds and programmable rules, sensor values can be transmitted over long distances to a LoRaWAN gateway and further to IoT cloud platforms.

The **HybridTAG L500** is fully LoRaWAN™ certified.

Operation

The **HybridTAG L500** can be activated with an external magnet without the need to open the enclosure.

A multi-color LED signals the different operating states.



Technical Data

Electrical Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Vcc	Battery Voltage	3xAA Alkaline	2.2	4.5	5.5	V
V33	Interne Versorgungsspannung			3.3		V
Icc	Power Consumption (The power consumption strongly depends on CPU activity, as well as on active sensor systems, measurement and radio transmission intervals, etc. The values given are for reference only and can differ from practical application values.)	Active Mode	0.05		5	mA
		Sleep Mode		15		µA
T	Temperature Range	Standard Batteries	-20		+60	°C
		Extended or industrial temperaturer range on request.				

Sensor Parameters

GPS	GPS/GNSS/Glonass, 210 PRN /33 tracking/ 99 acquisition-channels Accuracy: 3m (50% CEP)	
Accelerometer	Range: Interval: Sensitivity:	+/-2g bis +/-16g 1Hz bis 5,3kHz up to 1mg
Temperatur	Range: - Accuracy:	40°C bis +125°C +/-0,4°C
Luftfeuchte	Range: Accuracy:	0% bis 100% RH +/-2% RH (0%-80% RH)
Helligkeit/Umgebungslicht	Range: Resolution:	0 lux bis 120000 lux 0,0036 lux
Magnetfeld	Range: Sensitivity:	+/-4 gauss bis +/-16 gauss bis zu 0,1 mgauss

Block Diagram

The picture right shows the **HybridTAG L500 - FULL** with the most relevant components indicated.

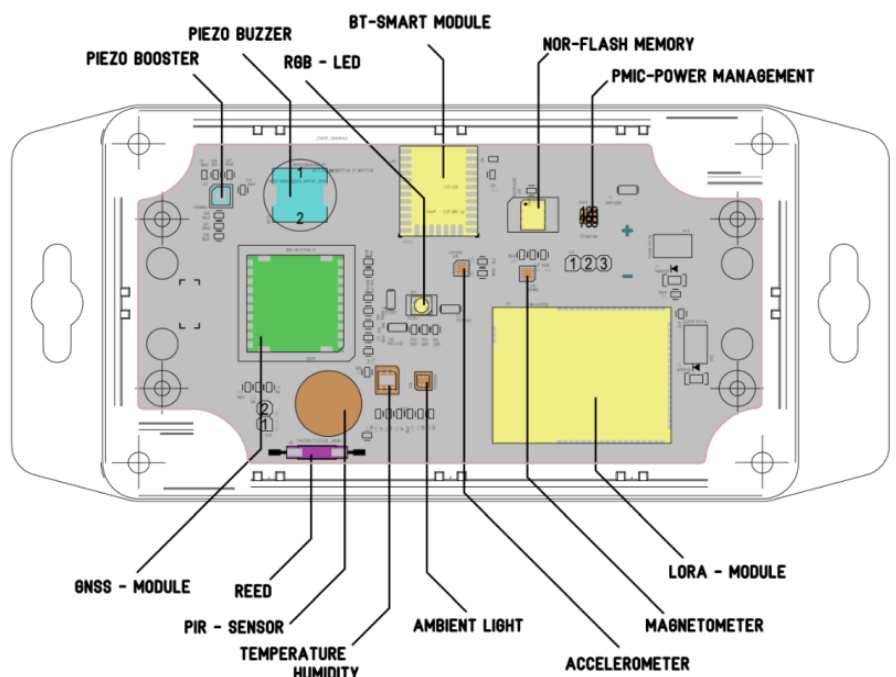
Mechanical Characteristics

Dimensions: 115mm x 65mm x 40mm

Protection Class: IP54, optionally IP65
(IP67 on request)

Further Options

- PIR motion sensor
- Data flash for long term buffering of data during absence of radio connection.



DECLARATION OF CONFORMITY

Hereby, conbee GmbH, declares that this **Conbee HybridTAG L500** is in compliance with the essential requirements and other relevant provisions of the following directives:

Directive 2014/53/EU of the European Parliament and of the Council of April, 16th 2014 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

Directive 2014/30/EU of the European Parliament and of the Council of February, 26th 2014 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

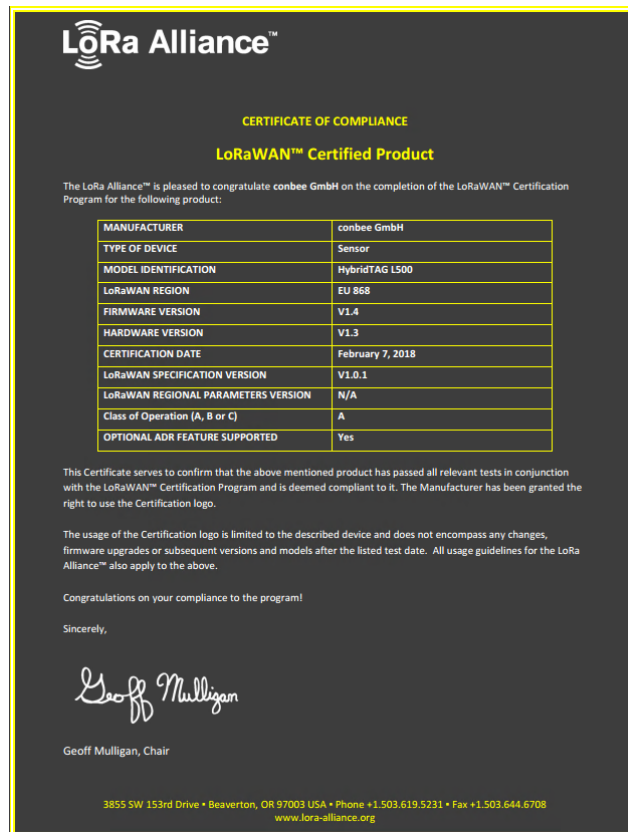
Directive 2014/35/EU of the European Parliament and of the Council of February, 26th 2014 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

Directive 2011/65/eu of the european parliament and of the council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Commission Regulation (EC) No 278/2009 of 6 April 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies.

LoRaWAN™ Certification

The **Conbee HybridTAG L500** is fully LoRaWAN™ certified.



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