Handheld Tag (Model-no.: T010002) - User Manual (US)

Product Management

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1 KINEXON Handheld Tag

Facts / Factsheet

The KINEXON Handheld-Tag is the perfect tracking solution for athletes both indoor and outdoor.

This lightweight tag is able to provide the centimeter accurate real-time position and motion data of the athlete it is attached to. Besides a positioning chip, the sensor incorporates further inertial sensors, such as accelerometer and gyroscope, enabling them to track not only the position but also the motion, in particular the acceleration, rotation and inclination.

Moreover, it is able to connect to heart rate monitors of various manufactures such as *Polar* and *Suunto*.

Possible Use Cases

Tracking in sports environments for following use cases:

- Load monitoring and control
- Injury prevention
- Tactical analysis of both, team and individual player

2 Keyfacts

2.1 RF specification

RF Specification	
Positioning Principle	Real Time Location System (RTLS), Radio-based, Ultra-wideband (UWB)
Positioning Update rate	1 Hz, depending on requirements; update rates between 0.001 and 20 Hz are feasible

Frequency range	• UWB (IEEE 802.15.4a):
	  • Channel 3: 4.25 GHz – 4.75 GHz
	  • Channel 5: 6.25 GHz - 6.75 GHz
	• Bluetooth low energy (BLE5, IEEE 802.15): 2.4 GHz

2.2 Physical specification

Physical Specification	
Indicators	Bright status LED
Inertial Measurement	6-axis, +/-16g, +/- 2000 °/s 3-axis magnetometer
Internal Memory	1 G Bit
Battery	Internal rechargeable Li-Ion battery (LiPo - Lithium Polymer)
Battery Lifetime	12 hours (typical usage, depending on update rate and usage)

Physical Specification	
Battery Charging	1.5 hours (to 100%) in KINEXON charging cradle
External Power Supply	3.3 V - 5.5 V (optional)
Material	ABS
Weight	15.4 g
Dimensions	49 x 33 x 8 mm

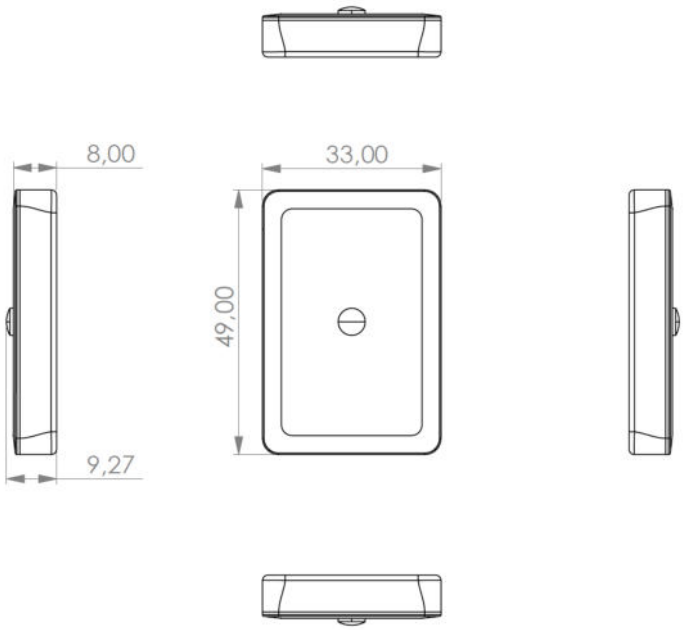
2.3 Environmental specification

Environmental Specifications	
Operating Temperature	Charging: +10°C to +45°C Discharging: -20°C to 60°C
Storage Temperature	(+10 °C to)+ 25 °C (battery)
Cleaning	Possible to disinfect with Ethanol-containing disinfecting solutions from 40-96% of Ethanol (only surface cleaning – no immersing!) Do not use methanol, isopropanol or isopropyl alcohols for cleaning!
Water Repelent	Tag can be wiped wet with water (no immersing!)
Protection Class	IP65

Environmental Specifications	
Regulatory Compliance	**EU:** ETSI EN 301489-33 ETSI EN 301489-17 ETSI EN 301489-1 ETSI EN 302 065-1 ETSI EN 303 883 TS 103 361 EN 62479 1999/519/EC EN 61000-4-2 EN 61000-4-3 **US:** Part 1, Subpart I, Section 1.1310 Part 1, Subpart 2, Section 2.1091 Part 1, Subpart 2, Section 2.1093 Part 15, Subpart A, Section 15.31 Part 15, Subpart A, Section 15.33 Part 15, Subpart A, Section 15.35 Part 15, Subpart C, Section 15.203 Part 15, Subpart C, Section 15.204 Part 15, Subpart C, Section 15.205 Part 15, Subpart C, Section 15.207 Part 15, Subpart C, Section 15.209 Part 15, Subpart C, Section 15.247 Part 15, Subpart C, Section 15.250 15,503 15,505 FCC Part 15 Subpart F (15.519) Part 15, Subpart F, Section 15.521 ANSI C63.10:2013 ANSI C95.1:2005 ETSI TR 100 028 V1.3.1: 2001-03 KDB 447498 (January 2023) KDB 865664 D01 v01r04 **Safety:** EN 62368-1 **FCC-IDs:** FCC ID: 2ALC5-KNX-HTAG2 Contains FCC ID: O7P-14585

3 Specification

3.1 Mechanical drawing



3.2 Label

3.2.1 Label size

13.8 mmx 28.8 mm

3.2.2 Label content

Example:

- Trademark / Brand
- KINEXON-No.
- Model-No.
- QR-code
- EUI (Enhanced Unified Idientifier)
- Certification logos / marks

3.3 External interfaces

3.3.1 Wired interfaces

The KINEXON Handheld-Tag has 6 contact-pads that provide an interface for KINEXON Charging Stations. They are used for power supply (incl. battery charging) and data transfer (USB-protocol).

3.3.2 Wireless interfaces

For wireless connection a Ultra-Wideband (UWB) interface according to IEEE 802.15.4 and a Bluetooth 5 interface are implemented.

3.3.3 LED

Please mind that tag LED behavior depends on the firmware use case one has selected. Most important versions are:

Power-on Reset		
Color	**Duration**	**Explanation**

Yellow (pulsating)	6 sec	Handheld-Tags firmware restart
USB Interaction		
Color	**Duration**	**Explanation**
Cyan	continuous / flashing	Active wired data connection
When connected to power		
Color	**Duration**	**Explanation**
Green	continuous	Fully charged
Red	pulsating	Charging
LED during operation		
Color	**Duration**	**Explanation**
Blue	flashing	Connected to KINEXON RTLS
Red	continuous / flashing	Error (e.g. RTC not set)

3.3.4 Button

The KINEXON Handheld-Tag has an integrated button underneath the KINEXON-logo, that can be pressed by hand.

3.4 Electrical Parameter

Interface	Parameter [Unit]	Min	Typ	Max	Comment
Power supply	Input voltage [V]		5.0		

Interface	Parameter [Unit]	Min	Typ	Max	Comment
	Input current [mA]		200		Charging

3.5 Battery

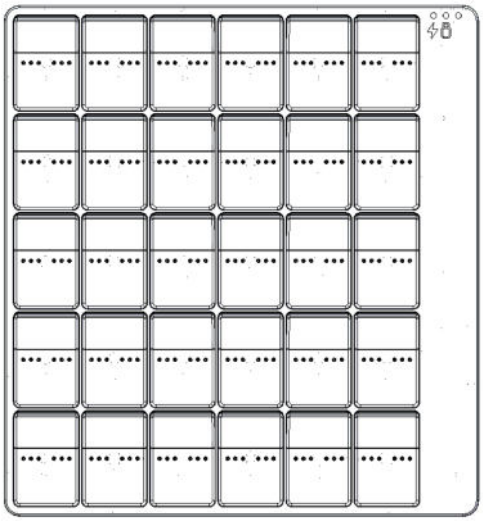
Type	LP502028
Nominal voltage	3.7V
Capacity	250 mAh
Max. cont. discharge current	500 mA
Max. charging voltage	4.2V
Max. charging current	250 mA
Operating temperature discharge	-20 °C to +60 °C
Operating temperature charging	+10 °C to +45 °C
Size	30.5 mm x 20.5 mm x 5.5 mm

3.6 Variants

Variant	Description
KNX-T1.7-1.1-15	Handheld Tag

4 Accessories

4.1 Charger 30 (KNX-C2.3-1.1-x):



5 Regulatory and legal information

The KINEXON Handheld-Tag has been designed to be in compliance with both the U.S. FCC Part 15 subpart F regulations, sections 15.519 and with the European Union ETSI EN 302 065 standards. Two different versions of the KINEXON Handheld-Tag are available, one version supports the FCC emissions mask (Region 1) and the second supports the ETSI standard mask (Region 2).

5.1 Disclaimer

The information in this document is subject to change without notice. KINEXON GmbH assumes no responsibility for inaccuracies or omissions and specifically disclaims any liabilities, losses, or risks, personal or otherwise, incurred as a consequence, directly or indirectly, of the use or application of any of the contents of this document. For the latest documentation, contact KINEXON GmbH.

5.2 Intended Use

This manual describes the setup and use of the KINEXON Handheld-Tag. Use this product only for the purpose it was designed for.

5.3 FCC compliance

This device complies with 47 CFR 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. The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device may not be employed for the operation of toys. Operation onboard an aircraft, a ship or a satellite is prohibited. The use of this device mounted on outdoor structures, e.g., on the outside of a building or on a telephone pole, or any fixed outdoors infrastructure is prohibited.

Moreover, the following statements apply:

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 to 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.

5.4 FCC caution

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device is designed not to exceed the limits for exposure to radio waves adopted by the FCC. These limits include a substantial safety margin design to assure the safety of all persons, regardless of age and health. The radio wave exposure guidelines use a unit of measurement known as the Specific Absorption Rate (SAR). SAR levels have been computed for the transmitters in this device and have been found to be below FCC limits.

5.5 Safety information

- Read and follow all instructions before using the Kinexon Handheld Tag.
- Never open the case of the Kinexon Handheld Tag. There are no user serviceable parts or replaceable parts inside the case.
- Do not use the KINEXON Handheld Tag if it has been damaged.