



SafeZone - User Manual



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THE KINEXON SafeZone Tag



1 KINEXON SafeZone

The smart wearable to ensure physical distancing

The KINEXON SafeTag is the heart of the KINEXON SafeZone solution.

KINEXON SafeZone is a data protection-compliant solution for companies to ensure physical distancing of employees in times of COVID-19 and trace contact chains in case of an infection.

The sensors measure the distance and contact duration between the workers with the highest precision (10 cm) at a rate of approx. once per second. The measurement takes place in real time. If the minimum distance between two employees is compromised for an extended period of time (customizable) the sensors will emit a light signal and an audible warning tone.

Wearing options for employees:

- Wristband
- ID card cover with clip
- Identity card cover with lanyard

Use Cases

Distance control and tracing of contact chains:

- Ensuring the minimum distance in real time
- Integrated visual and acoustic warning function for the employee
- Data protection compliant tracing of contact chains (software extension required)

KINEXON SafeZone can be used both indoors and outdoors.

2 KEYFACTS

RF Specifications	
Distance measuring	Time-of-flight measurement (peer-to-peer), Radio-based, Ultra-wideband
Frequency range	UWB (IEEE 802.15.4): 6.25 – 6.75 GHz
Update rate	Default 1 Hz (depending on battery lifetime requirements)
Measuring precision	10 cm (depending on environment)

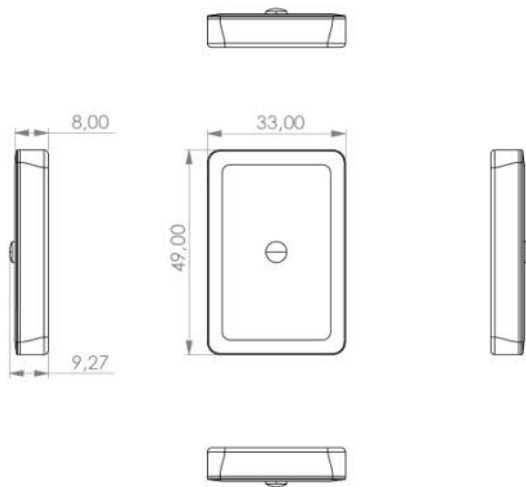
Physical Specifications	
Indicators	Bright status LED (RGB) - free color selection
Inertial Measurement	9-axis, +/- 16 g, +/- 2000 °/s, up to 200 Hz and Magnetometer
Sound Volume	up to 70 dBa (1m) - freely configurable
Storage Capacity	128 MB
Battery	Internal rechargeable Li battery
Battery Lifetime	12 hours (typical usage)
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

Environmental Specifications	
Operating Temperature	Charging: 0 °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!

Environmental Specifications	
Water repellent	Tag can be wiped wet with water (no immersing!)
Protection class	IP65
Regulatory compliance	US: FCC Part 15 Subpart C (15.250); European Union: ETSI EN 302 065-1, ETSI EN 303 883, ETSI EN 301489-1, ETSI EN 301489-17, ETSI EN 301489-33, EN 62311, 1999/519/EC, EN 62368-1 FCC ID: 2ALC5-KNX-STAG1 IC: 25557-KNXSTAG1

3 SPECIFICATIONS

3.1 Mechanical Drawing



3.2 Label

3.2.1 Label back plate

Company logo EUI Device part-no. Certification logos/signs	KINEXON EUI: 67138 Model: KNX-T1.8-5.1-1 FCC ID: 2ALC5-KNX-STAG1 CE	 QR code
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Size: (13.8x 28.8) mm

3.3 External interfaces

3.3.1 Wireless connection

For wireless connection a Ultra-Wideband (UWB) interface according to IEEE 802.15.4 is implemented.

3.3.2 Tag Button

Description	Duration	Effect
Short (normal) press	150ms	Depends on configuration: 1) Nothing 2) Switches to "No alarm mode" for a configurable time (default = 5 minutes)

Description	Duration	Effect
Long press	3s	
Very long press	>7.5s	Hard reset / HW reset

3.3.3 Tag 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	SafeTags restart after charging pad is connected to power.
USB Interaction		
Color	Duration	Explanation
Cyan	depends	During usb data read-out or usb configuration.
When connected to power		
Color	Duration	Explanation
Green	Cont.	Fully charged.
Red	Cont.	Charging
LED during operation (without being in alarm mode)		
Color	Duration	Explanation
Blue	500ms	Every 10 sec in order to show user, that SafeTag is still working.
Red	Cont.	Error (e.g. RTC not set)
LED in alarm mode		

LED behavior during proximity events (= "alarm mode") can be configured within the Exposure Management Software:

The configuration interface includes the following settings:

- Distance threshold:** 1.8m
- Alarm time range:** 0s to 6s
- Sound profile:** Profile 1
- Sound volume:** 0%
- LED color:** Red
- LED pulse frequency:** Fast
- LED pulse count:** Unlimited

Buttons: Cancel, Save

Options for field "LED color":

Options for field "LED color":

- None
- Blue
- Green
- Yellow
- Red
- Magenta
- Cyan
- White
- None

3.3.4 Tag Sound

Sound Trigger	Sound Profile	Explanation
Button Press	4 different consecutive tones (approx. 1-2 sec)	Switches to "No alarm mode" for a configurable time (default = 5 minutes). Button press functionality can also be disabled within the software.

Sound Trigger	Sound Profile	Explanation
Alarm Mode	Sound behavior during proximity events (= "alarm mode") can be configured within the Exposure Management Software: 3 different sound profiles available: Alarm time range 0s Unlimited Sound profile Profile 1 Profile 1 Profile 2 Profile 3 Sound volume	

3.4 Electrical Parameters

Interface	Parameter [Unit]	Min	Typical	Max	Comment
Power supply	Input Voltage [V]		5 V		
	Input Current [mA]			200 mA	Charging

3.5 Battery

A Lithium Polymer re-chargeable battery is used	
Type	LP502028
Nominal Voltage	3.7V
Capacity	250mAh
Max continous discharge current	500mA
Max charge current	250mA
Max. charge voltage	4.2V
Operating temperature charge	0°C to +45°C
Operating temperature discharge	-20°C to +60°C
Size	30.5mm x 20.5mm x 5.5mm

3.6 Variants

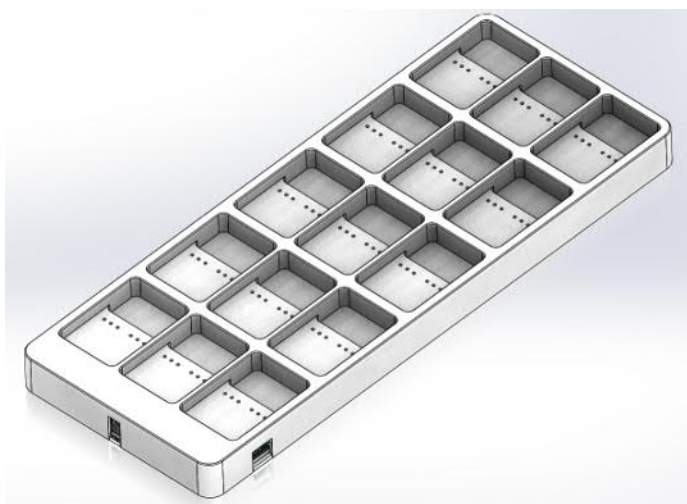
Variant	Description
KNX-T1.8-5.1-1	Safework-Tag

4 Accessories

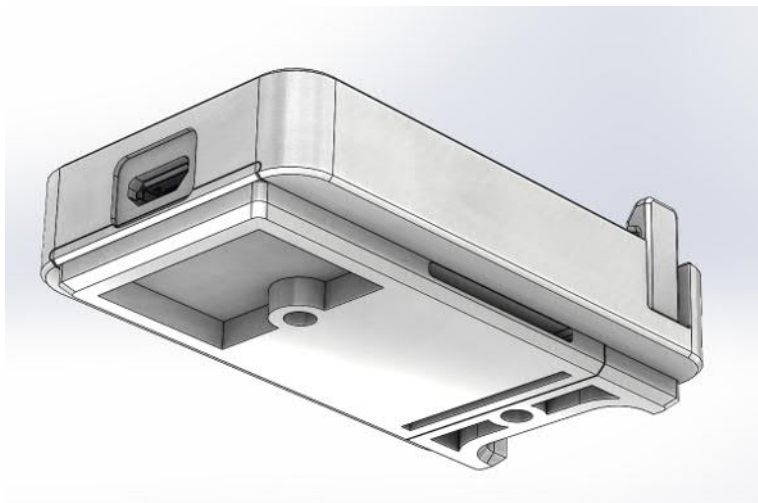
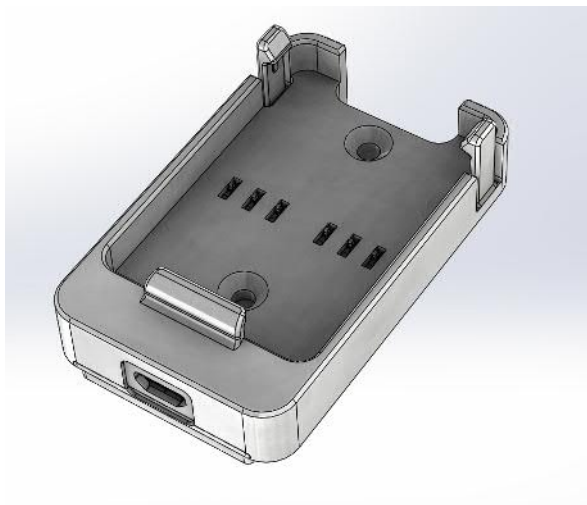
4.1 Charger 30:



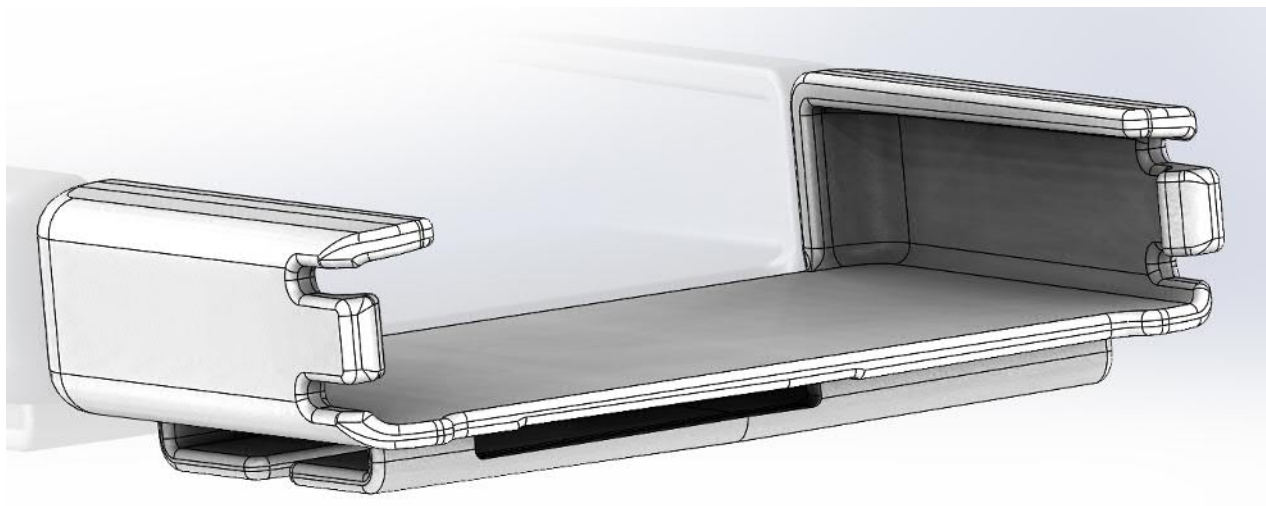
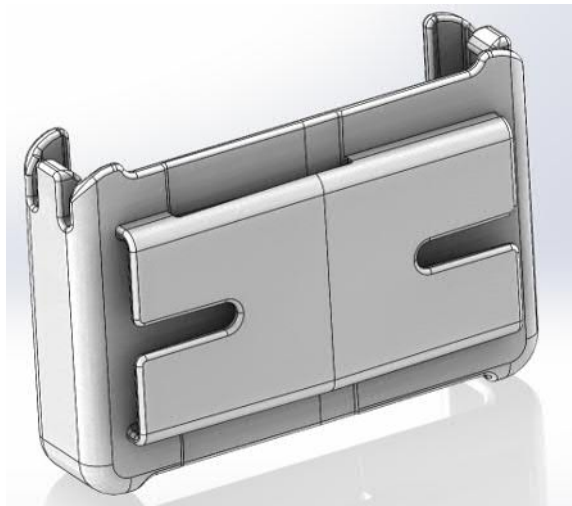
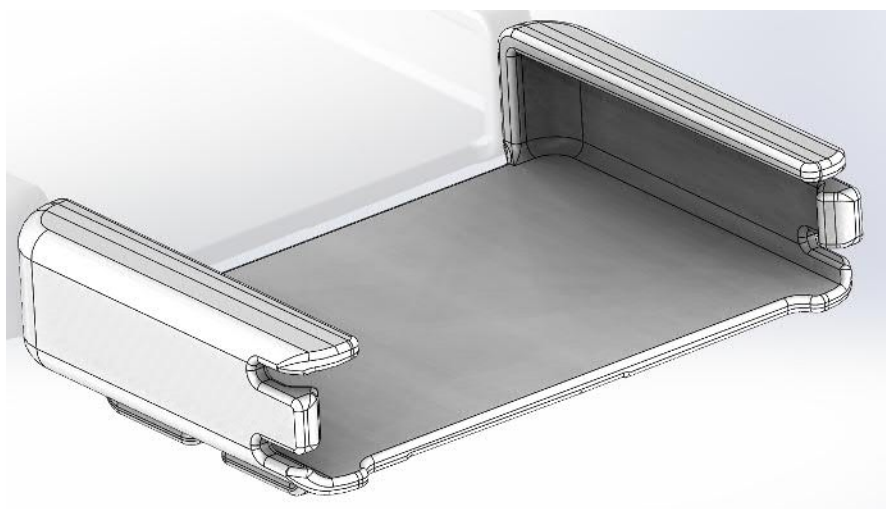
4.2 Charger 15:



4.3 Single-Slot charger:



4.4 Holder:



5 Mounting options



5.1 Regulatory and Legal Information

The Kinexon SafeTag has been designed to be in compliance with both the U.S. FCC Part 15 subpart F regulations, section 15.250 and with the European Union ETSI EN 302 065 standards. Two different versions of the Kinexon SafeTag are available, one version supports the FCC emissions mask (Region 1) and the second supports the ETSI standard mask (Region 2).

5.2 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.

5.3 Intended Use

This manual describes the setup and use of the Kinexon SafeTag. Use this product only for the purpose it was designed for.

5.4 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.

5.5 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.

5.6 ISED Caution

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

These devices are not permitted for operation on board aircraft or satellites and shall also not be used for operating toys. The use of this device mounted on a fixed outdoor infrastructure, including antennas mounted on outdoor structures such as poles or buildings, is not permitted, except for operation on board ships or land vehicles.

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. Le fonctionnement est soumis aux deux conditions suivantes:

- (1) Cet appareil ne doit pas causer d'interférences
- (2) Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil.

Les appareils ne peuvent pas être utilisés à bord d'aéronefs ou de satellites et ils ne peuvent pas être utilisés pour faire fonctionner des jouets. L'utilisation de cet appareil monté sur une infrastructure fixe d'extérieur, comprenant les antennes montées sur des structures externes telles que des poteaux ou des bâtiments, n'est pas autorisée, sauf lorsque les structures en question sont des bateaux ou des véhicules terrestres.

5.7 Safety Information

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