



## KINEXON RTLS INTEGRATED TOOL TAG

Precise localization integrated into third-party equipment

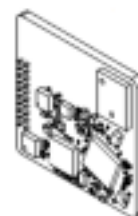
The KINEXON RTLS Integrated Tool Tags provides precise real-time position and motion data for any industrial device. It can be integrated easily into battery-powered assembly tools, barcode scanners, or other industrial equipment.

The extremely small and lightweight sensor enables IoT-readiness of physical equipment. The actual working status of the sensor will be indicated by the built-in 3-color LED. Also, controlling an external LED is supported.

### USE CASES

- **Real-time Tool Tracing:** Automated documentation of manual assembly tool operations in real-time.
- **Reliable Tool Approval:** Prevention of unintended tool operations based on their relative position to vehicles.
- **Seamless Tool Tracking:** Precise localization of (cordless) worker tools by attaching a virtual cable.
- **Vendor-agnostic Tool Localization:** Applicability to industrial grade tool portfolio of various tool providers.

### DIMENSION [mm]



# KEY FACTS

## RF SPECIFICATIONS

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<b>Positioning Technology</b>	Real Time Location System (RTLS), radio-based, ultra-wideband (UWB)
<b>Frequency Range</b>	UWB (IEEE 802.15.4a): 3 - 5 GHz, 6 - 7 GHz
<b>Positioning Update Rate</b>	Configurable, typically 1 Hz in motion, 0.1 Hz in standstill
<b>Positioning Data</b>	3D (x, y, z)
<b>Positioning Accuracy</b>	< 10 cm (depending on environment)

## PHYSICAL SPECIFICATIONS

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<b>Indicators</b>	LED (3-color)
<b>Inertial Measurement Unit (IMU)</b>	Accelerometer: 3-axis, +/- 2 g to +/- 16 g Gyroscope: 3-axis, 125 °/s to 2000 °/s Magnetic sensor: 3-axis, +/- 1300 µT to +/- 2500 µT Data rate: up to 1600 Hz
<b>Weight</b>	appr. 3.5 g
<b>Dimensions</b>	25 x 25 x 2.55 mm (without pin header / connector)

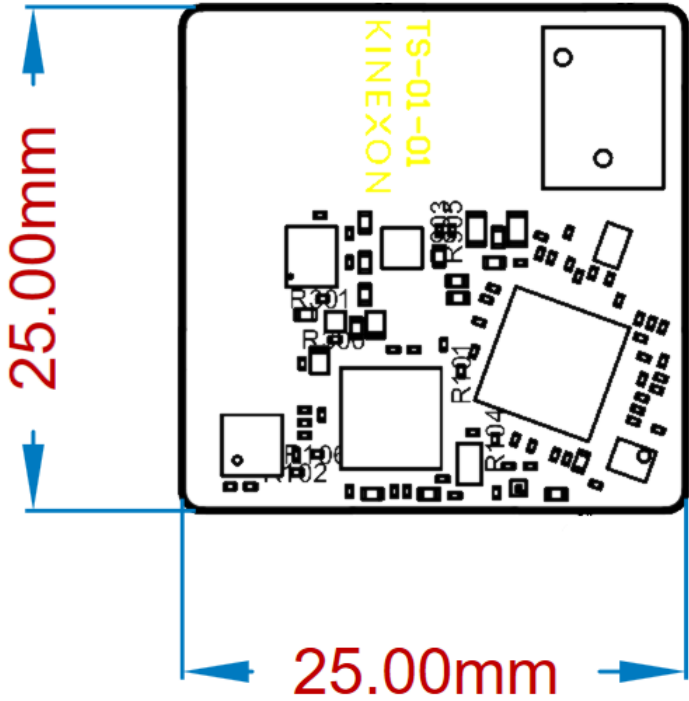
## ENVIRONMENT SPECIFICATIONS

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<b>Operating Temperature</b>	-40 °C to + 85 °C
<b>Storage Temperature</b>	-40 °C to + 85 °C
<b>Regulatory Compliance</b>	Once integrated into a third-party device (e.g. an assembly tool), the device vendor (tool manufacturer) takes the responsibility for certifying the device including the attached sensor.

# SPECIFICATION

## Mechanical drawing



## Label

<b>Label Size</b>	18mm x 8mm
<b>Label Content</b>	QR Code, Extended Unique Identifier (EUI)
<b>Label Position</b>	(1) On the PCBA and (2) outside of the device which contains the sensor.

Example:



# External interfaces

## WIRELESS CONNECTION

For wireless connection an ultra-wideband (UWB) interface according to IEEE 802.15.4 is implemented.

## LEDS

One LED (3-color) is available for indicating the system status, e.g.,

- UWB connection
- alarm
- status

It is also possible to connect an external LED to the sensor.

## CONNECTORS

### KNX-T9.1-1.1-x; 2x10 pin header

Signal	Pin-no.	Pin-no.	Signal	Comment
	1	2		
	3	4	+ V <sub>in</sub>	
GND	5	6	GND	
	7	8		
GND	9	10	GND	
	11	12		
GND	13	14		
	15	16	External LED 1	
GND	17	18	External LED 2	
	19	20	GND	

# Electrical Parameters

Interface	Parameter [unit]	Min	Nominal	Max	Comment
Power supply	Input voltage [V]	3.0	3.3	4.5	For generating 2.8 V board voltage (min. voltage DW1000) min. 2.8 V + 0.12 V = 2.92 V is needed
	Input current [mA]	30 (idle)		300	when UWB antenna is in receiving mode
	Input current [ $\mu$ A] in sleep mode			25	