



## DOCUMENT TYPE

# STD004 User Manual

Version Number 1.0

Specifications, device installation and compliance information

Date:01/10/2024

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## Introduction

Descartes IoT Bluetooth Low Energy (BLE) tags are active advertising tags, able to transmit to Descartes IoT Readers that are within BLE range (approximately 60 to 100m depending on environmental conditions).

The STD004 logs sensor measurements periodically and stores these internally until they can be offloaded to a reader. The schedule is configurable, but by default each sensor is sampled every 5 minutes. When the tag comes into range of a reader, the reader will connect to the tag via BLE and offload any stored measurements which are then passed on to the Descartes cloud database.

The on-board sensors measure temperature and humidity, atmospheric pressure, ambient light and acceleration. The acceleration measurement can be used to determine when the tag is moved/rotated and if it is dropped or receives an impact. Unlike the STD003 tag which has a maximum of 16g, the STD004 is capable of measuring up to 64g in any axis.



Figure 1- STD004 Images are indicative only; actual product may vary.

## Specifications

Name of the Product: Descartes IoT Standard Tag

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Model: STD004

**Description:** Bluetooth Low Energy (BLE) tag used to monitor movement of goods and equipment. Each tag is made up of an Ublox NINA-B112 module and sensors encased in a housing with one lithium thionyl chloride metal battery.

Battery: One ER14505 battery rated at 3.6V and 2700mAh.

Size: 4.9" x 2" x 1" (124mm x 51mm x 26mm)

Weight: < 3.5 oz (100 Grams)

Temperature Range: -40°C to +80°C

Power Consumption - Max: TBA

Power Consumption - Sleep: ~3.8 uA

Operational Life Running: Theoretical lifetime of >3 years. Managing various parameters via the Descartes IoT network can extend the life significantly.

### Bluetooth Module

Bluetooth Module: Ublox NINA-B112

Bluetooth Type: Bluetooth Low Energy 5.0

Bluetooth Sensitivity: -95dBm

Bluetooth Max Power Output: +4dBm (2.51mW)

Bluetooth Antenna: +2dBi (1.58mW) SMD on Module ProAnt Antenna, Omni Directional

Total Bluetooth EIMR: +6dBm (3.98mW)

Frequency Supported: 2.4GHz ISM, 40 BLE Channels & Adv. Ch. No. 37, 38, 39

NFC: NFC Type4 - Used to read Tag ID for identification.

### Tag Sensors

**Light Sensor:** TI OPT3004 Ambient Light Sensor with IR Rejection

**Movement Sensor:** Kionix KX134 is a tri-axis  $\pm 8g$ ,  $\pm 16g$ ,  $\pm 32g$ ,  $\pm 64g$  accelerometer with digital output, selectable range motion detection, freefall detection, embedded engines for orientation and high-resolution threshold capability configurable down to 15.6mg.

**Temperature/Humidity Sensor:** TI HDC2080 capacitive-based relative humidity and temperature digital sensor

Parameter	Test Condition	Accura	Unit
Humidity accuracy	10 to 80% rH	$\pm 2$	% rH
	0 to 100% rH	$\pm 5$	
Temperature accuracy	-10 to 95 °C	$\pm 0.5$	°C
	-40 to 125 °C	$\pm 1$	

**Pressure Sensor:** STMicroelectronics LPS22HBTR is a piezoresistive absolute pressure sensor which functions as a digital output barometer with a 260 to 1260 hPa absolute pressure range and an accuracy of  $\pm 1$  hPa

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**Transportation:** Meets IATA Dangerous Goods Regulations 2015-2016 57th Edition (UN3091) Less than 4 lithium metal cells encased in equipment. No declaration required

Battery passed UN38.3 tests.

**Transport:** Descartes IoT BLE Tags transmit periodic Bluetooth advertisements. This is permissible whilst in transport in most situations including air freight.

## Compliance

If you have any queries regarding certification and compliance, feel free to contact us or go to:

<https://www.descartes.com/iot-device-certifications#STD001>

## Manufacturer

Descartes Systems Group Inc.

Address: 105 Trafalgar Street, Floor 2, 7011, Nelson, New Zealand

Telephone number: +64 (3) 547-8205 (New Zealand)

E-Mail address: [ServiceDesk@descartes.com](mailto:ServiceDesk@descartes.com)

Website: [www.descartes.com](http://www.descartes.com)

### Module: NINA-B112

FCC ID: XPNINAB1

IC: 8595A-NINAB1

CE / RoHS [See NINA-B1 Declaration of Conformity](#)

Japan Radio EC: Complies

NCC Taiwan: CCAJ16LP6460T0

KCC South Korea: MSIP-CRM-ULX-NINA-B112

Anatel Brazil: MSIP-CRM-ULX-NINA-B112

AS/NZS: Complies with AS/NZS 4268:2012/AMDT 1:2013

ICASA: TA-2016/2760 APPROVED

Bluetooth: D032220 (85618)

## FCC

### FCC Compliance Statement

#### Contains FCC ID: XPNINAB1

CAUTION: The manufacturer is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications 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

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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.

**Supplier's Declaration of Conformity**  
47 CFR § 2.1077 Compliance Information

**Product Name:** DESCARTES IoT BLE Standard Tag

**Product Model:** STD004

**Manufacturer:**

**NZ Address**

Descartes System Group Inc  
105 Trafalgar Street, Floor 2 Floor 2  
Nelson, 7010 New Zealand  
[sgutschlag@descartes.com](mailto:sgutschlag@descartes.com)  
[www.descartes.com](http://www.descartes.com)

**US Address:**

2571 Econ Landing Blvd,  
Orlando  
FL  
32825  
[sgutschlag@descartes.com](mailto:sgutschlag@descartes.com)  
[www.descartes.com](http://www.descartes.com)

**Modular Components Used:**

NAME: U-Blox Bluetooth Low Energy Module  
MODEL: NINA-B112  
FCC ID: XPYNINAB1

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, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

**Regulatory contact:**

STD004 User Manual  
Name: Adrian King  
Role: Network Manager  
Email: [aking@descartes.com](mailto:aking@descartes.com)

## CE: Radio Equipment Directive (RED)

### Declaration of Conformity

#### Manufacturer:

Descartes Systems Group Inc.  
105 Trafalgar Street, Floor 2  
Nelson, Tasman 7011, New Zealand

Descartes Systems Group Inc. declares under our sole responsibility that:

**Product Name:** DESCARTES IoT BLE Standard Tag

**Product Model(s):** STD004

#### Complies with the following European Directives:

2014/53/EU Radio Equipment Directive (RED)

2011/65/EU on the Restriction of Hazardous Substance (RoHS)

#### The following standards have been applied:

##### Safety & Health (Article 3.1a):

EN 62368-1:2014+A11:2017

EN IEC 62311:2020 / EN 50665:2017

##### EMC & Immunity (Article 3.1b):

EN 301 489-1 V2.2.3 / EN 301 489-17 V3.2.4 / EN 301 489-52 V1.2.1

##### RF Spectrum Efficiency (Article 3.2):

EN 300 328 V2.2.2

#### Additional Compliance:

EN IEC 63000:2018

The technical documentation required to demonstrate that the products meet the requirements of the aforementioned directives has been compiled and is available for inspection by the relevant enforcement authorities.

**Signed: Simon Gutschlag**

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Title: VP, Product Management

Date: 01/10/2024

## Operating/Installation Instructions

1. Take an STD004 and install inside a ULD or attached to cargo netting as shown in Fig2.

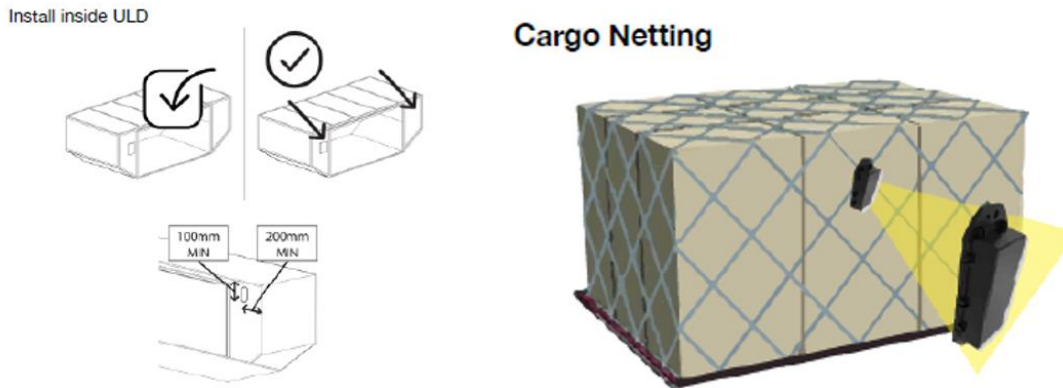


Figure 2- Installation of tags on ULD/Cargo Net

2. Tag placement In order to ensure that each STD004 BLE Tag can be read in all working conditions, follow the placement and orientation instructions below. The aerial on the standard tag is located at the top of the device. When standard tags are mounted, they should be mounted in the upright (vertical) position as shown in Fig 3.

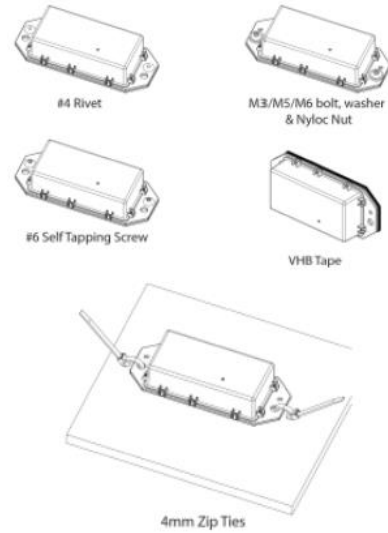


Figure 3-Tag Mounting Placement

3. When mounting the device can be mounted using rivets, bolts, self-tapping screws, very high bond (VHB) tape or zip ties.

*Please Note: BE SURE TO DOCUMENT THE SERIAL NUMBER OF THE TAG AND EQUIPMENT NUMBER PRIOR TO INSTALLATION*

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*Figure 3-Mounting Options*

4. Standard Tag Association/assignment: The STD001 tag now must be associated with the equipment on which it is installed. This is done through the assignment process Via the ULD Hub App which can be found on the Playstore or Via our Cargo website <https://cargo.core-tt.com/>.