

# PRODUCT User Manual

## Confidex Viking™ Solar



Energy efficient and maintenance free Bluetooth® LE beacon for industrial asset tracking applications and people flow management. Built-in solar panel and power management IC (PMIC) absorbs energy from the surrounding light sources enabling battery free operation and extremely long lifetime. Omnidirectional antenna is designed especially for accurate positioning in both indoor and outdoor applications.

### MECHANICAL SPECIFICATION

#### Enclosure

IP67, high quality PC/ASA

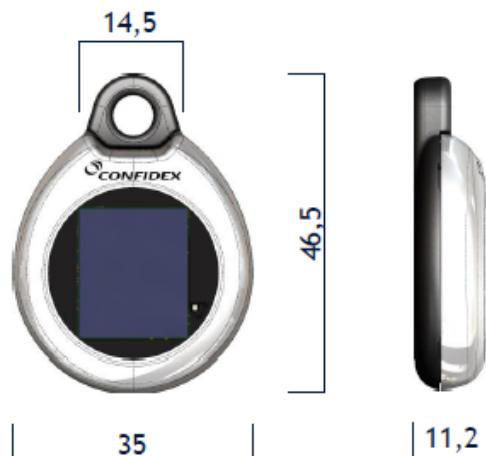
#### Weight

15 g

#### Tag dimensions

46,5 x 35 x 11,2 mm / 1.83 x 1.38 x 0.44 in

Hole diameter 6mm



### ELECTRICAL SPECIFICATION

#### Device type

Bluetooth® LE beacon

#### Wireless interface protocol

Bluetooth® 5.0 supported

NFC: ISO/IEC 15693

#### Compliance (Declaration of Conformity)

Europe (CE), USA (FCC), Canada (IC)

#### Operational frequency

ISM: 2402 - 2480 MHz

NFC: 13,56 MHz

#### Configuration interface

NFC interface with USB reader and PC software tool

#### Sensors\*

Built-in temperature sensor

Light level sensor

#### Receive Sensitivity

-97 dBm sensitivity (Bluetooth® Low Energy)

#### Max range\*\*

Up to 100 m / 328 ft. Measured on and off metal.

#### Battery type (optional)

CR2032 (220 mAh), rechargeable

#### Applicable surface materials

Can be attached to any surface

### ENVIRONMENTAL RESISTANCE

#### Operating temperature

-20°C to +60°C / -4°F to +140°F

EN 60068-2-14: 2009, Test N: Change of temperature

#### Vibration resistance

EN 60068-2-6: 2008, Test Fc: Vibration, 10G

EN 60068-2-27: 2009, Test Ea: Shock, 20G

#### ESD immunity

±8 kV according to EN 61000-4-2 (air discharge)

±4 kV according to EN 61000-4-2 (contact discharge)

#### Chemical resistance

No physical or performance changes in:

- 168h Motor oil exposure
- 48h Salt water (salinity 10%) exposure
- 48h Sulfuric acid (10%, pH 2) exposure
- 48h NaOH (10%, pH 13) exposure

Generally good resistance with moderate concentrations of acids, alcohols, alkalies, detergents, and cleaners.

Acetone should be avoided.

#### Expected lifetime\*\*\*

>10 years in typical indoor environment

\* Temperature sensor is located inside the plastic housing, which limits real time measurement of the ambient temperature.

\*\* Range is measured in laboratory environment and there can be some variation in real application.

\*\*\* Beacon lifetime is not limited by the battery capacity due to power harvesting technology but is mainly limited by the typical component aging and environmental factors. Confidex offers 12 months warranty as standard for the product and its components.

## SUPPORTED FRAMES

Confidex Viking™ Solar beacon can be configured to broadcast Eddystone™ (trademark of Google) or iBeacon (trademark of Apple) open standard frame formats ensuring straightforward implementation to existing Bluetooth LE systems and infrastructures. In addition, a proprietary frame with sensor data can be sent.

Beacons can be delivered as fully pre-configured with the defined settings or customer can easily configure them with an NFC reader and PC application provided by Confidex.

Following frame types are supported:

- **Eddystone™-UID** frame broadcasts 16-byte Beacon ID composed of a 10-byte namespace and a 6-byte instance.
- **Eddystone™-URL** frame broadcasts a URL using a compressed encoding format.
- **Eddystone™-TLM** frame broadcasts telemetry information, like battery voltage and temperature.
- **iBeacon** open frame format advertising 16 bytes UUID, 2 bytes Major, and 2 bytes Minor.
- **Confidex frame** broadcasting sensor data

## INSTALLATION INSTRUCTIONS

Confidex Viking™ Solar can be attached with several fixing methods:

### 1. Mechanical fixing – Screw

Mechanical fixing is recommended to be used in every application that includes risk for high mechanical stress or low temperature during tag fixing. Screw size M6 is to be used for fixing.

### 2. Mechanical fixing – Cable tie

Plastic or metallic cable ties can also be used for fixing Confidex Viking™. Maximum width of cable tie is 5 mm. Or it can be hang up like key chains.

### 3. High performance acrylic adhesive

When mounting the tag with adhesive, clean and dry the surface for obtaining the maximum bond strength.

## APPLICATION NOTES

Confidex Viking™ Solar is completely battery-free BLE beacon device, powered by the solar panel which can harvest energy from indoor and outdoor light. It can also have an optional rechargeable battery as an energy storage to allow tag to work more frequently.

The device needs certain time to charge itself for first time use which is called cold start. The cold start time is depending on the light intensity – the higher the light intensity, the faster the beacon starts advertising. As an example, it can take around 10 minutes to cold start in

typical room light (~200lux). Placed on the window (>2000 lux), it needs about 30 seconds to cold start.

Once the device has received enough energy to cold start, it starts advertising with the configured interval. To maintain certain advertising interval the beacon requires certain amount of light. If the configured interval is shorter than what is possible by the power harvested from the environment, it will advertise until all energy is consumed. See below chart for more detail information.

Light intensity	Environment	Cold start time	Advertise interval
1 ~ 99	Moonlight	Not work	Not work
100 ~ 199	Street light	10 min	50s ~ 80s
200 ~ 399	Museum	5min	30s ~ 50s
400 ~ 499	Office light	4~5 min	15s ~ 30s
1000 lux	Window	2~4 min	3s ~ 15s

The configuration of the Confidex Viking™ Solar is done with an NFC reader and PC desktop software tool provided by Confidex. Confidex can also offer pre-configuration and customized label design as a personalization service.

## ORDER INFORMATION

Availability: Please contact Confidex Smart Industries Sales at [www.confidex.com/contact-us](http://www.confidex.com/contact-us)

For additional information and technical support, please contact us in [contact.BLE@confidex.com](mailto:contact.BLE@confidex.com)

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### FCC Statement

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

### IC Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radioexempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

