NEXOTRACK STARLIGHT

QUICK START GUIDE

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1.0 Introduction

Before use, please read this manual carefully and keep it for later reference.

- Do not disassemble the product and do not try to carry out repairs on this product. The product is not repairable.
- Do not attempt to replace the batteries and do not dispose of the device and batteries in fire or in a hot oven.
- Do not crush or crumple the device.
- Any use that does not conform to this manual will void the warranty and manufacturer's liability.
- Only parts manufactured by Sourceman International and its subsidiaries are deemed to be genuine.
- Do not leave any electronic equipment or parts or any other objects directly on top of the NexoTrack Unit.
- Do not submerge the product in liquids.

Nexotrack Starlight device is an LPWAN enabled environmental monitoring and WiFi geolocation tracking device used for tracking of stainless-steel Keg assets throughout the Keg's lifecycle.

This user manual provides a detailed breakdown of all features and functions of the Starlight unit and is intended to be used by professional personnel with training in the respective fields of operation. This product and its manual are not intended for general public consumption.

To achieve desired operational state the Starlight unit needs to be mounted onto the steel Kegs using a specially designed custom stainless-steel bracket which is spot welded on to Keg's internal surface of the Keg's top chime using approved bracket installation method and jigs.

The device monitors and reports temperature, WiFi AP MAC address data as well as Keg life cycle event state by utilising a proprietary motion engine algorithm.

The frequency of reporting and sensitivity of the device to various physical states can be configured through 8 fully customisable user configuration profiles which are loaded onto the device using WiFi over-the-air (OTA) feature and selected via Sigfox downlink functionality also OTA.

Starlight LPWAN communication protocol uses Sigfox's global network. The device is a multizone device and provides seamless roaming access across different geographical territories and Radio Communication Zones (RCZ). Active/desired RCZ can be selected remotely using Sigfox downlink functionality or via Nexotech's proprietary WiFi Monarch feature.

Bluetooth Low Energy (BLE) beacon functionality is enabled on all devices reporting device battery voltage and temperature using Eddystone standard.

In addition to the above Starlight is also equipped with a UHF RFID tag for passive scanning.

The Wifi module is the only independent device on board. When not in use, the power to the module is switched off so there is no possibility of uncontrolled or unwanted transmissions. The power to Sigfox transceiver is turned off when Sigofox is not being used, so there is no chance of any Sigfox or BLE transmission when MCU communicated directly with the WiFi Module.

Onboard logging provides the capability for detailed historical logging of events for up to 90 days.

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1.1 Technical Specs

- Dimensions (W x H x D): 122 x 42 x 43 mm (Excluding Bracket)
- Compatible Kegs Types: 50L, 30L, 20L, 9G & 1/6 Barrel Cask
- Weight: 122g
- RGB LED
- Water Ingress: IP69K
- Vibration Rating: IEC 60068-2-6:2007
- Shock Rating: IEC 60068-2-27:2008
- Operating Temperature: -20°C to +80°C
- Storage Temperature: -30°C to +80°C
- Maximum relative humidity: 100%
- 1 x Battery A-size, 3.6V, 3.5Ah, Primary Lithium Thionyl chloride (SOCl2), Non-Rechargeable
- Device Life Expectancy: Battery Saver Profile: >8 Years, Max Performance Profile: >5 Years
- Sigfox Ready Certification: P_01B0_EB7A_01
- FCC ID: 2AW3N-NXTRKV3 – Contains: 2AHMR-ESP12F

- Sigfox Frequency band: 866.300-923.300MHz
    - RCZ: 1,2,4
    - Class: 0b (high power, for all zones)
    - Max radiated power +16, +24 dBm EIRP
    - Receiver sensitivity -135 dBm

- WiFi: 2.4GHz (802.11b/g/n)
    - Max radiated power +16 dBm EIRP
    - Receiver sensitivity -95 dBm

- BLE Eddystone Beacon
    - Radio beacon: Eddystone TLM, ULM
    - Class: 2 (medium power)
    - Max radiated power +8 dBm EIRP

- RFID: 860-960MHz

- Onboard Sensors
    - Temperature: -40 … +85 deg C, resolution 0.125 deg C, precision +/- 0.5 deg C
    - 3D Accelerometer: -2 … +2 g, resolution 0.001 g, precision +/- 0.010 g
    - Voltage: 0… 4V, resolution 1mV, precision +/- 5 mV

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1.2 Declaration

As of the date of manufacture, NexoTrack Starlight has been tested and found to comply with specifications for CE & FCC marking and standards per EMC and Radiocommunications Compliance Labelling.

Federal Communications Commission (FCC) Compliance Statement

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.

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

- The radiated output power of the device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.

FCC CAUTION

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IMPORTANT NOTE

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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

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2.0 Operation

2.1 QuickStart Guide

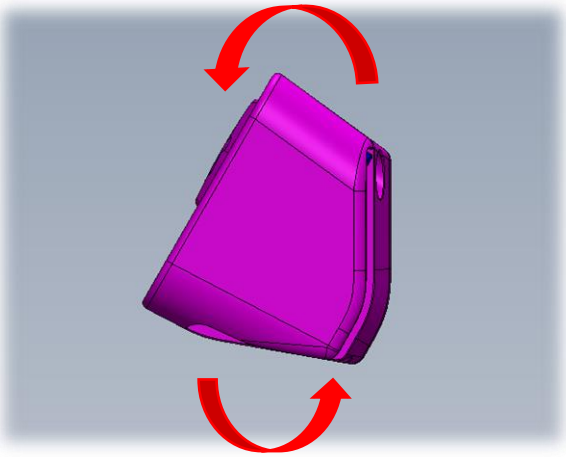
2.1.1 Activation

***NOTE**: The new device can be installed only on the Keg which has correctly welded special bracket. If a bracket is not correctly installed the device will not function as intended. The device can be damaged when incorrectly installed. Please view bracket installation guide for details.*

***READ INSTRUCTIONS**: If you are a person who will spot weld the bracket on the Keg, please read the bracket instruction instructions provided in the user manual*

New devices supplied from the factory are in 'factory suspended mode'. Before installing the device on a Keg, it needs to be awakened (turned on).

To awaken a device, it needs to be put through a specific motion: Device needs to be slowly rotated at a speed of at least once per 3 seconds for at least 30 seconds along its X-axis. (i.e. 10 full rotations in 30 seconds)



Once awakened, the LED on the device will start flashing Green for 60 seconds to confirm the device has been awakened.

**Through use of a special production activation jig multiple devices can be awakened from factory sleep simultaneously.

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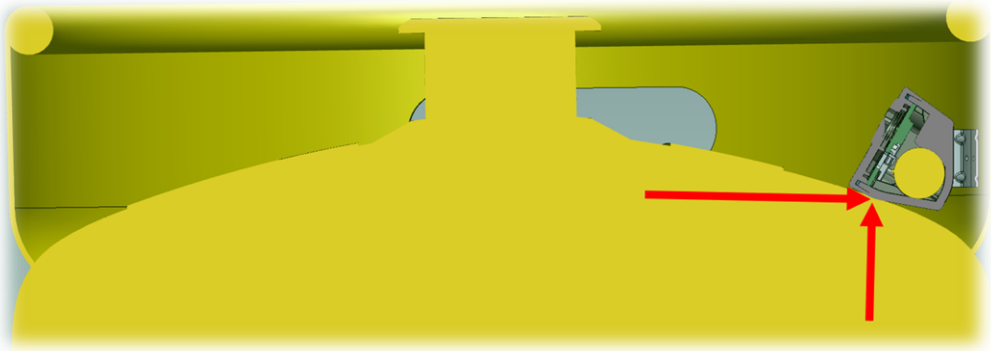
2.1.2 Bracket Installation

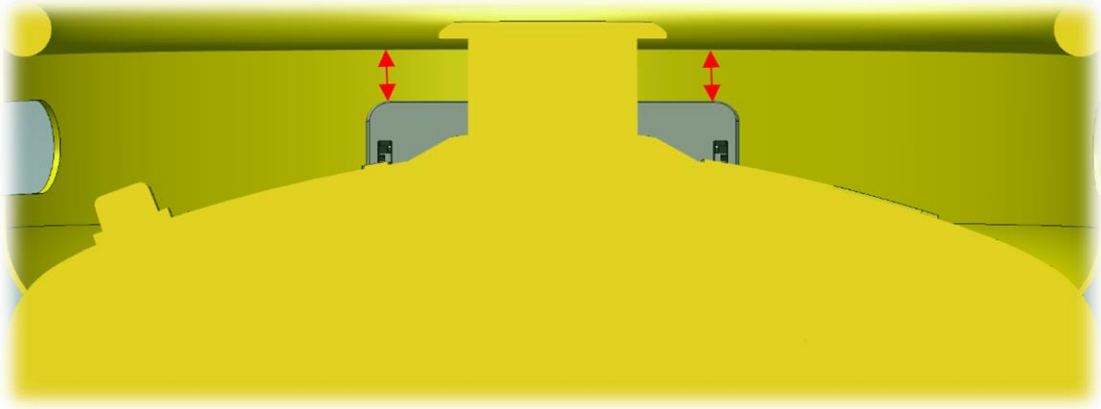
The Starlight unit is mounted onto the Kegs using a permanently welded 1.7mm SS304 bracket.

Below are requirements for bracket installation which must be followed to enable the correct function of the Starlight unit. If the bracket is not welded per below instructions, any warranty on the Starlight unit will be void.

1) Bottom of Starlight unit casing is lightly touching the Keg dome surface for sufficient heat transfer (tolerance is 0.0-0.5mm). This tolerance is critical to the correct thermal sensing operation of the device.



2) The Starlight unit should be level with the horizon with a +/-2 Degree tolerance. This tolerance is critical to the correct motion engine operation of the device.



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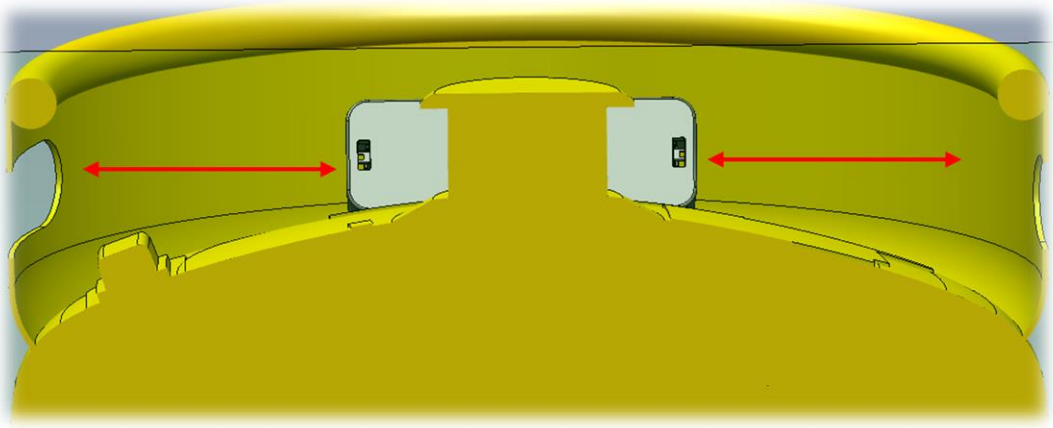
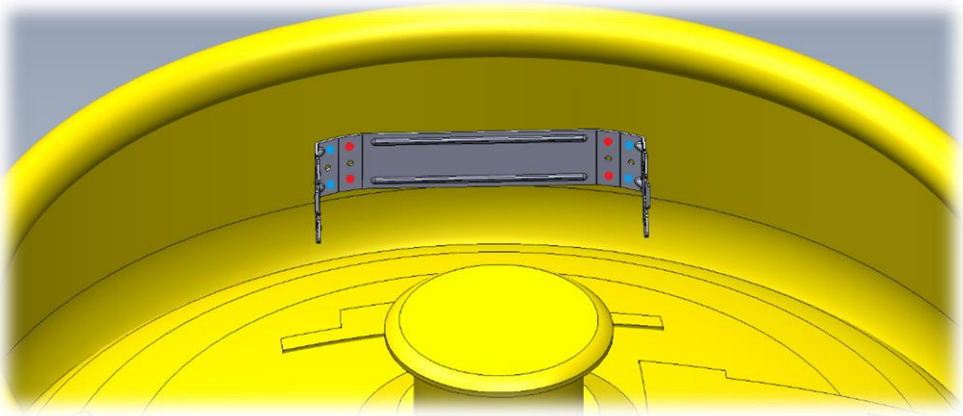
3) Starlight bracket should be positioned approximately middle point between the two handle openings of the Keg.



4) Bracket should be welded on at least 2 weld joints (total 4) using spot welding process on each side of the bracket or at least 1 plug weld joint (total 2) on each side of the bracket. The exact points used to carry out the welding are up to the welding professional service provider and the type of Keg being used. The Starlight device is cross-compatible across different Keg types being 9G, 1/6 Barrel, 20L, 30L & 50L Kegs and Casks.

   The designated/suggested spot weld points are marked in red and blue in the image below. The designated/suggested plug weld points are marked with holes on the bracket.



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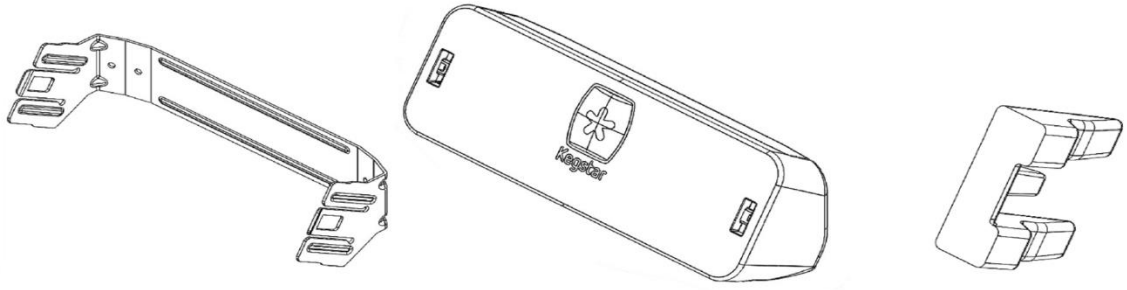
2.1.3 Unit Assembly

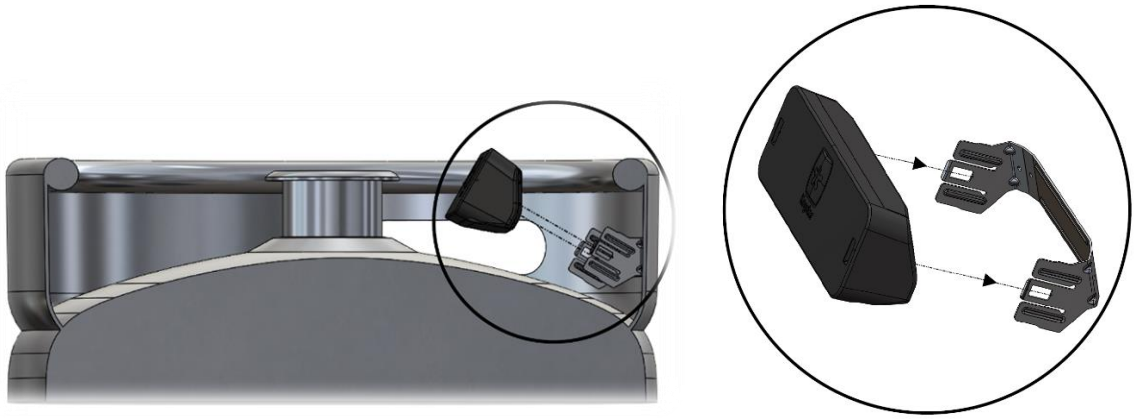
Following items will be required



1x Pre-Installed Bracket 1x Starlight Unit 2x Retention Clips

Attaching the device to the metal bracket

Slide-in device onto the metal bracket. If the bracket is misaligned, wider or narrower than the device housing slots, insert one side first by 5mm and then push or pull the device to align the other side and push the device in.



Push device firmly until you hear click on both sides

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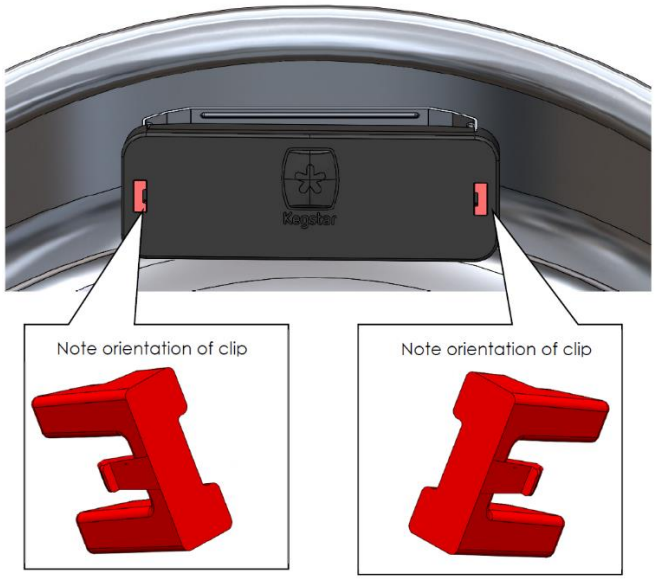
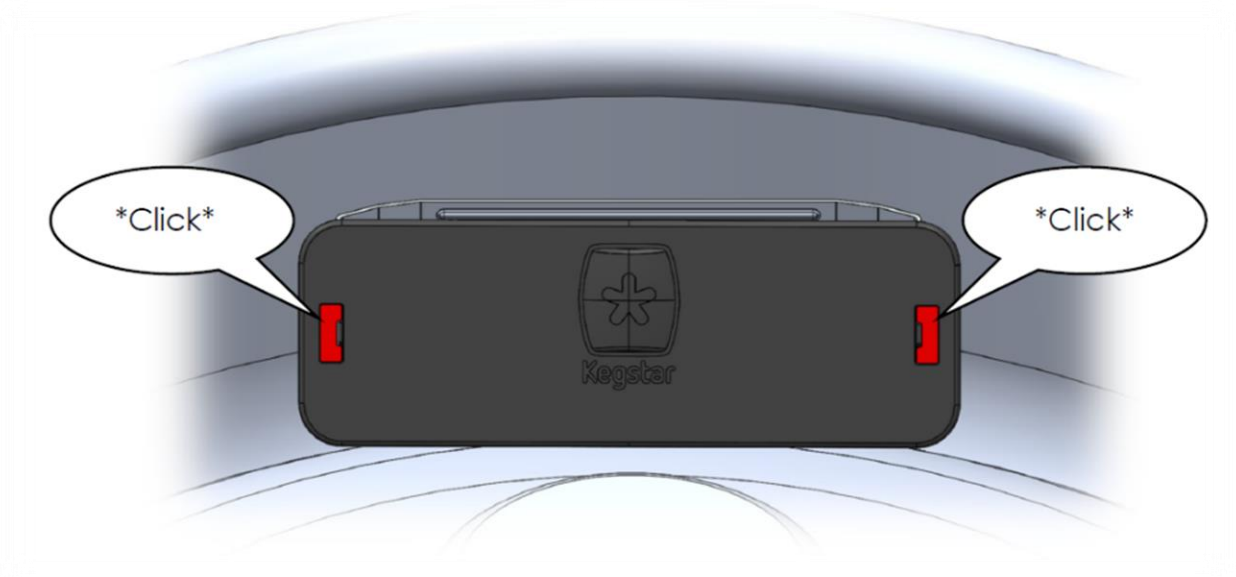
Insert Retention Clips

To ensure device attachment even during most extreme conditions, please insert the locking clips into the slots. Failing to install retention clips may lead to dislodgement of the unit in case of extreme shock/vibration conditions.



Push clips firmly into the slots until you hear “click”. Make sure that the clip surface is aligned (flush) with the device surface.



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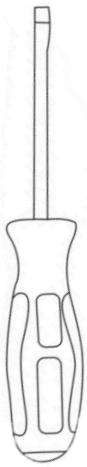
2.1.4 Unit Removal

The Starlight unit has been designed to be vandal resistant and is non-serviceable and is therefore not meant to be removed from the Keg once it is assembled. However, under special circumstances whereby removal of a unit is required the following steps can be followed to remove an assembled device from the bracket.

Tools Required

Removal Tool



4mm - Flat Head Screwdriver

Step 1: Pry open retention clips with 4mm flat head screwdriver

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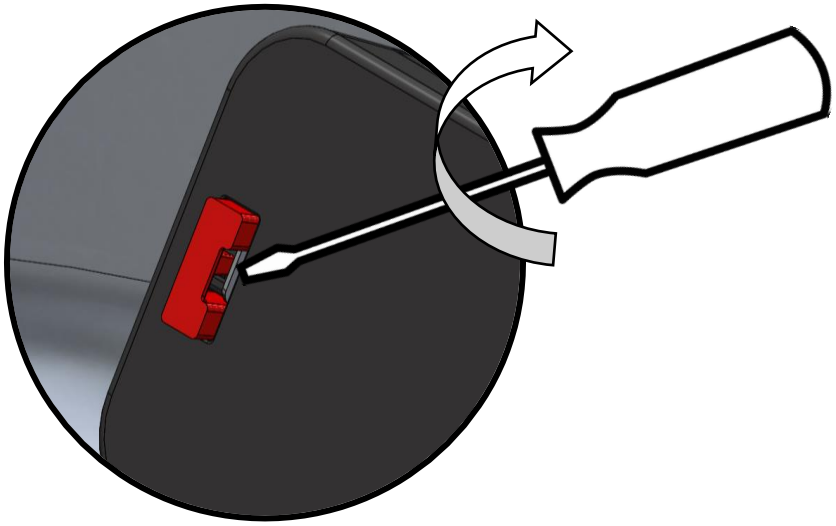
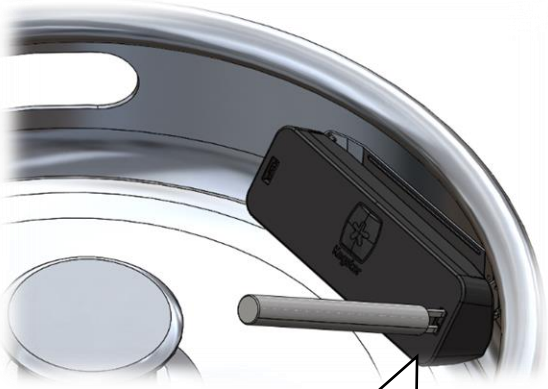
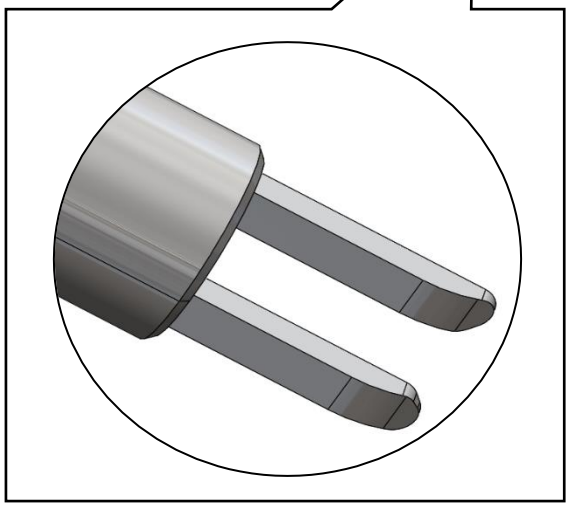


Step 2: Push removal tool fully into the first slot all the way into the retention clip slot as far as it can go. The chamfered edge of the removal tool should always be facing outwards when being used



NOTE: Orientation of removal tool



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Step 3: Gently pull unit back (halfway)

Step 4: Push removal tool fully into the second slot

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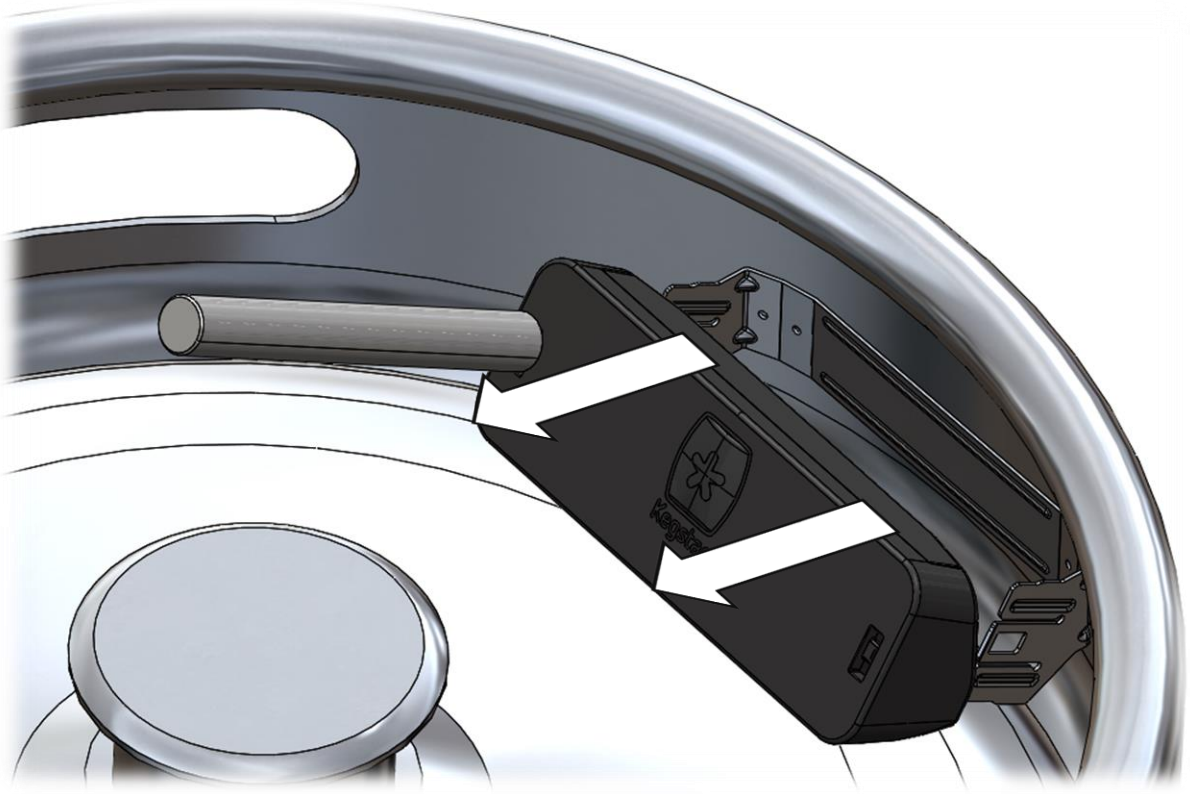
Step 5: Gently pull the unit away from the bracket



Step 6: Manually readjust bracket to the original position

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2.1.5 Sigfox Enrolment

Sigfox backend account

For a device to be able to communicate across the Sigfox network, it must be enrolled into your account which you must have with your respective Sigfox operator.

Device credentials

You will need a document with your device credentials:

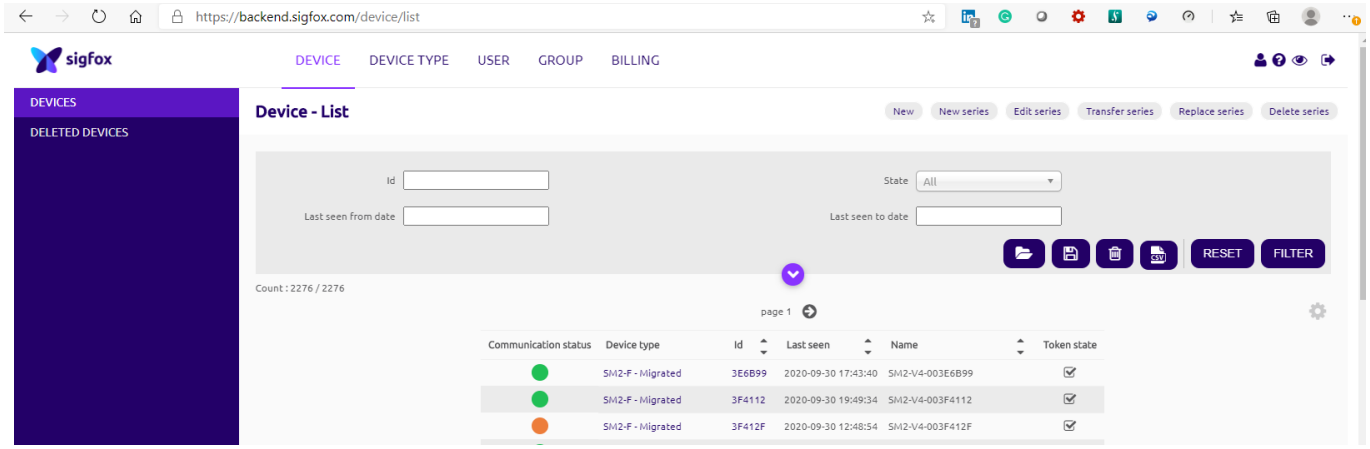
- Device ID (Sigfox ID)
- Device PAC (Porting Authorization Code)

Device label provides a barcode with the Device ID. Use the ID number to find correlating PAC number in the factory provided product list.

***NOTE**: PAC is used only once for initial device enrolment into the Sigfox Backend. Once used it will be no longer be valid. Contact your Sigfox network operator for assistance on how to re-enrol a device if it is not brand new.*

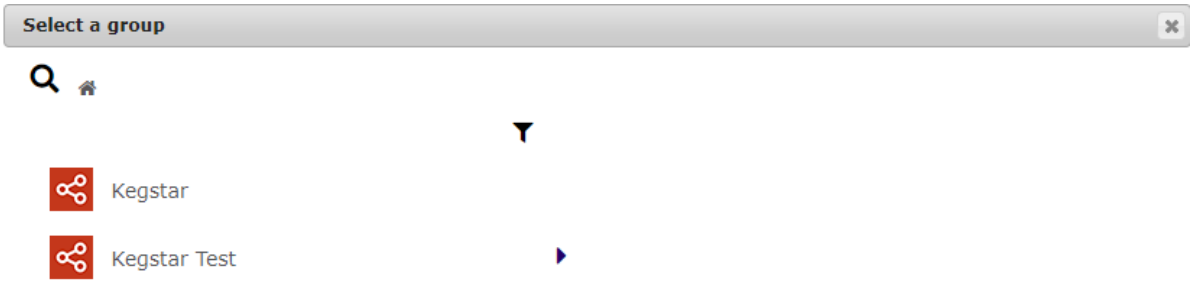
Add Device to Backend

Login to the Sigfox Backend and select 'DEVICE'



Click on New

Select the group which you want to add a device to and fill in the new device information



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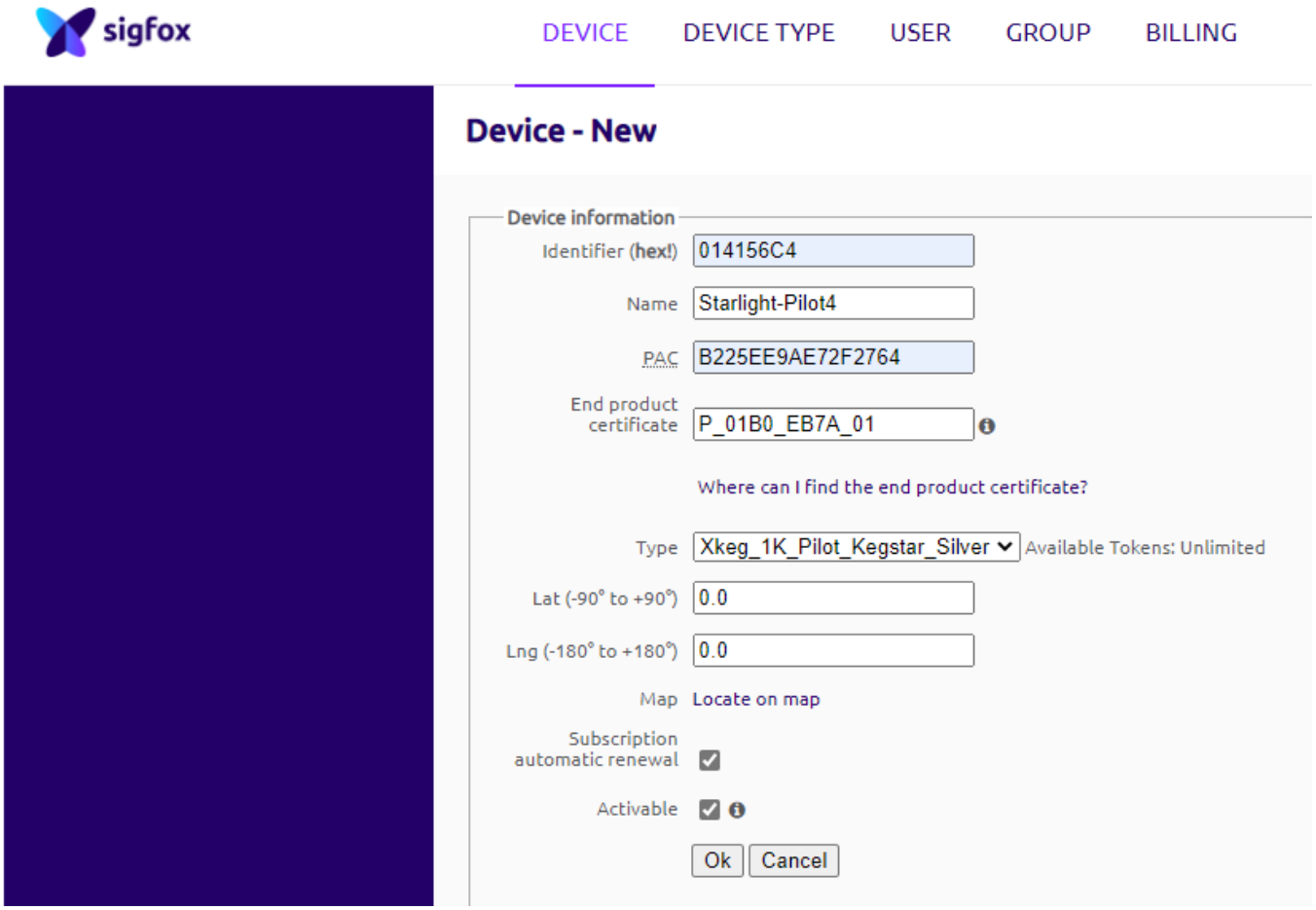
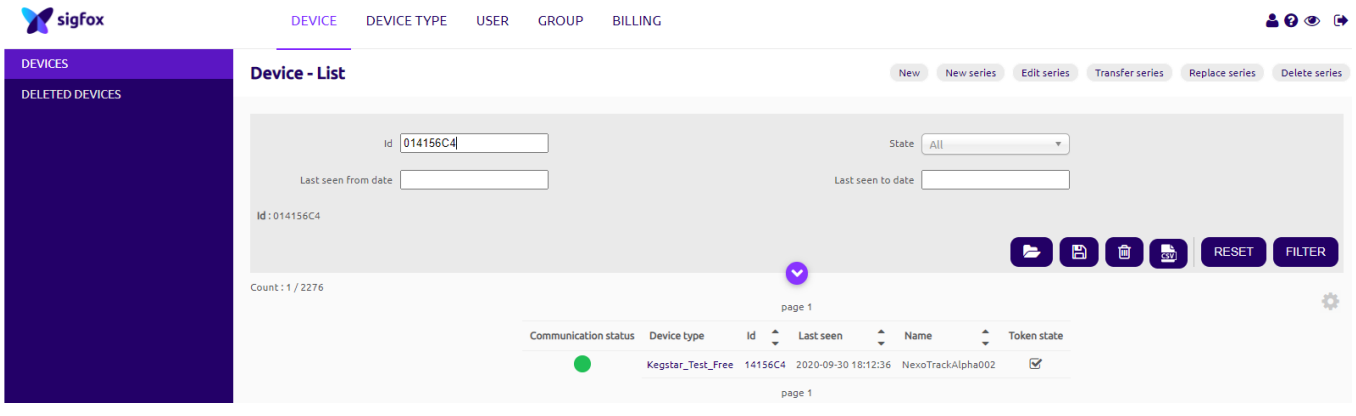


NOTE: All information shown in the screenshot above is for information only. You will need to enter actual numbers (ID, PAC) and select name and Type. The Starlight device 'End product certificate' is P_01B0_EB7A_01

Verify device enrolment

From the 'Device' menu enter new device ID into the search. You should be able to see the status of the device:



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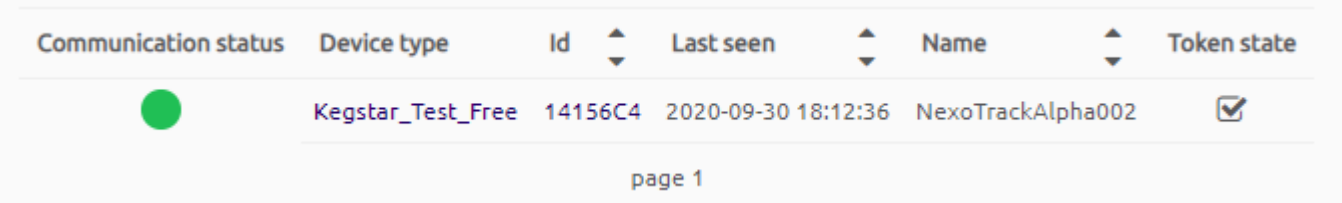
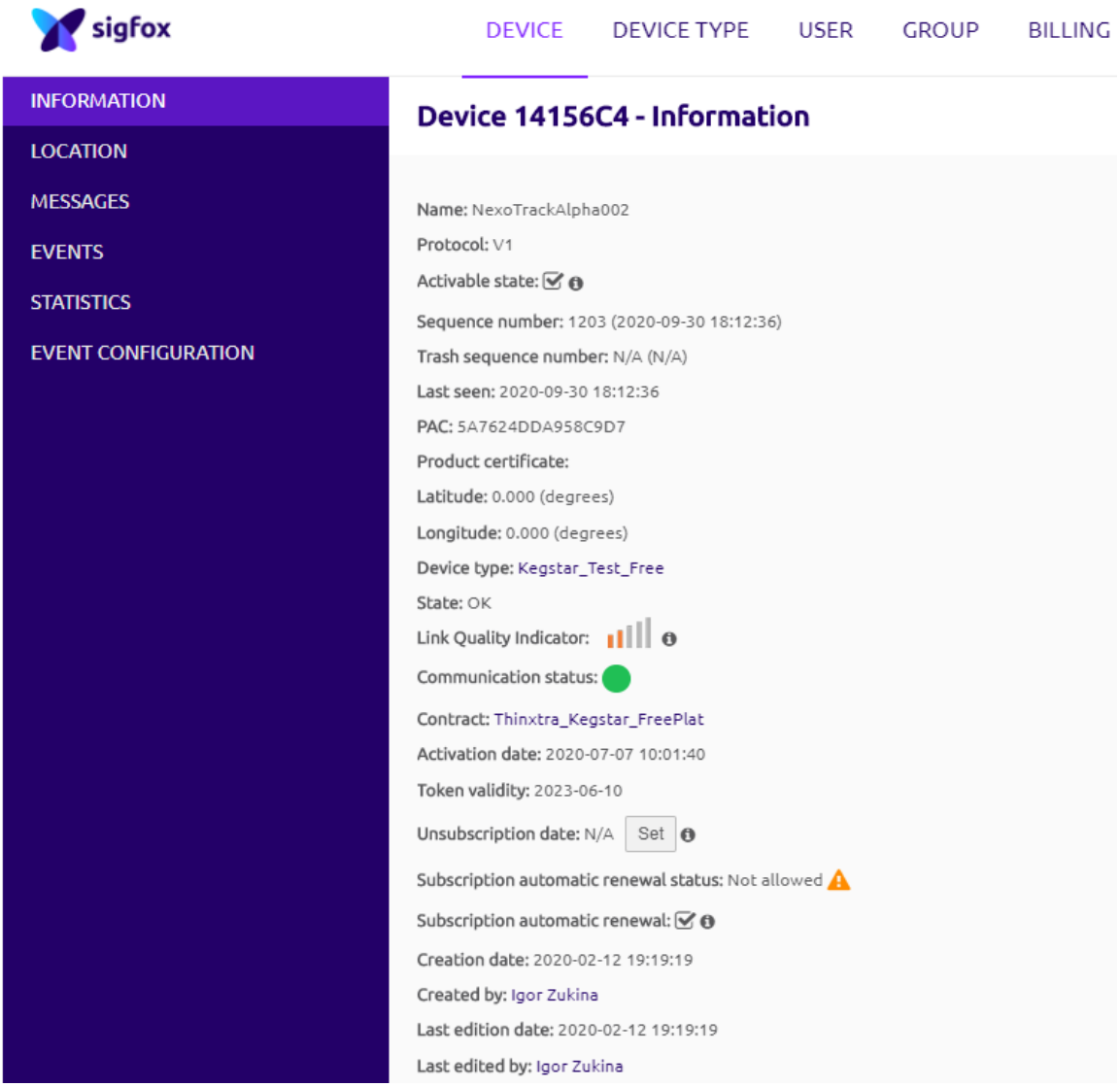
Check the event and messaging status

Click on device ID `14156C4` :





Click on EVENTS

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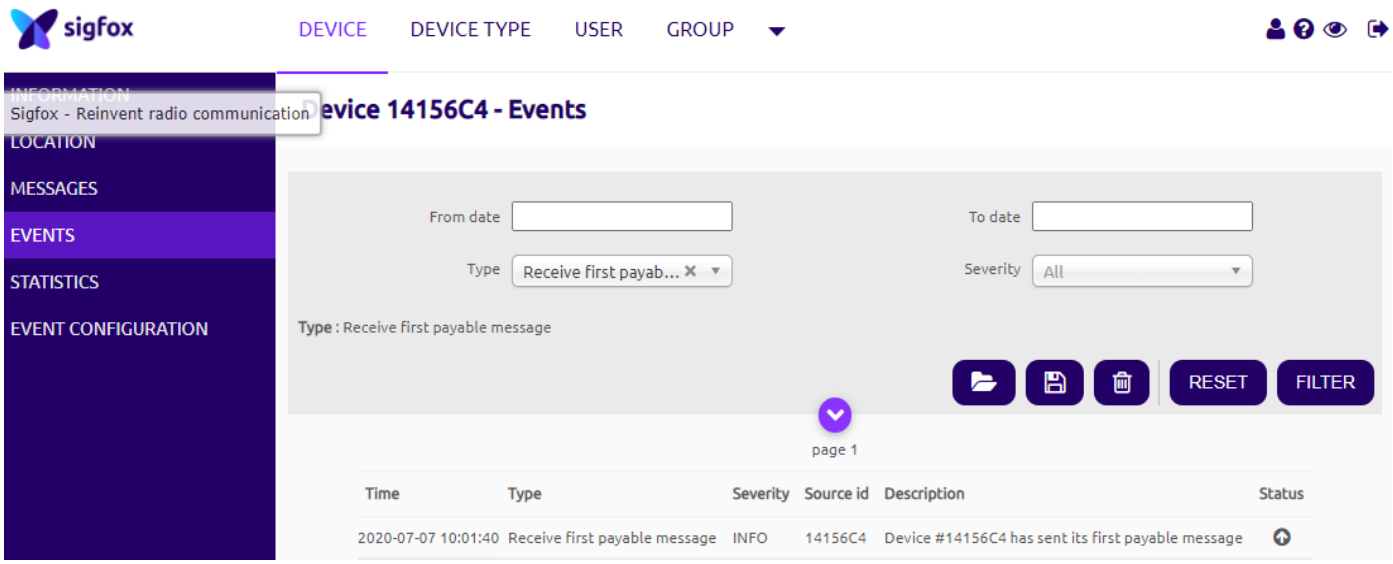
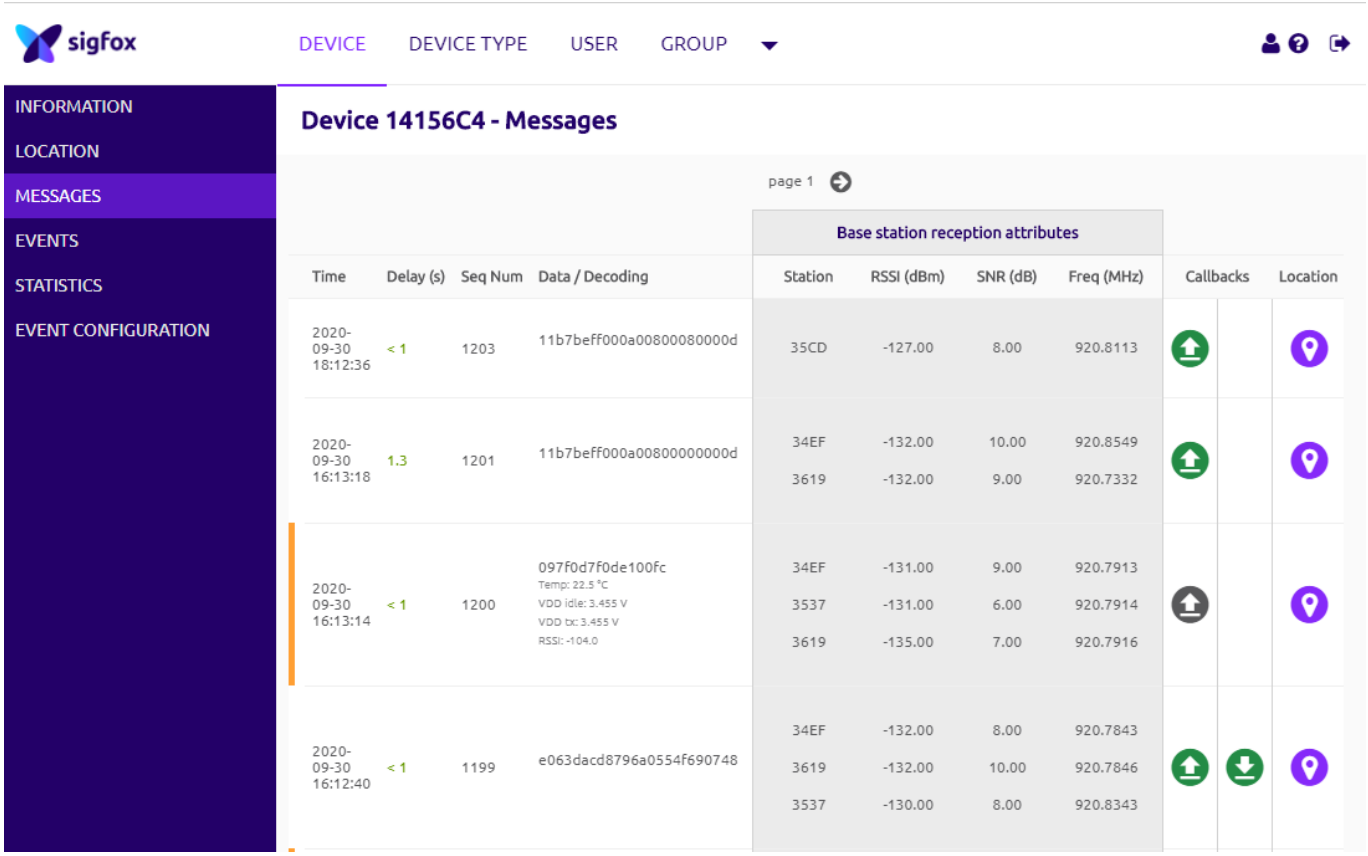


Once the device has sent its first message, you should be able to see the above message.

Congratulations, you have now successfully connected to the Sigfox network.

You can also inspect the device messages by clicking on MESSAGES:



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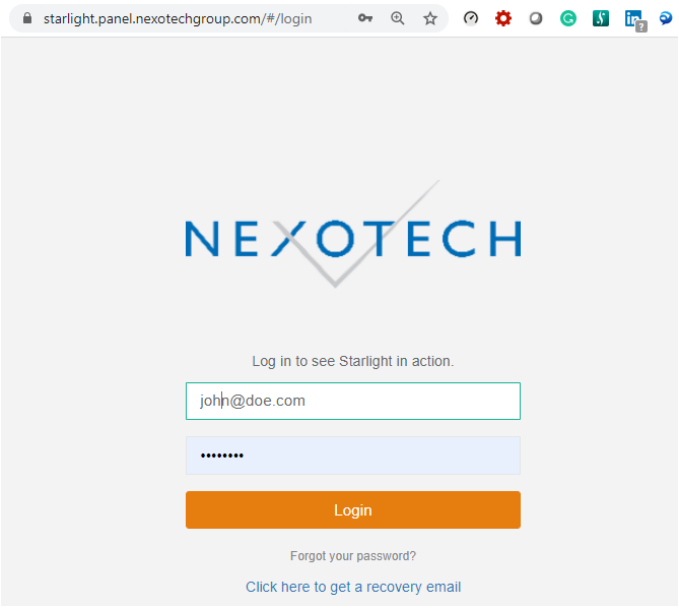
2.1.6 Nexotech Portal

The status and location of Starlight devices can be tracked and monitored through a subscription-based portal.

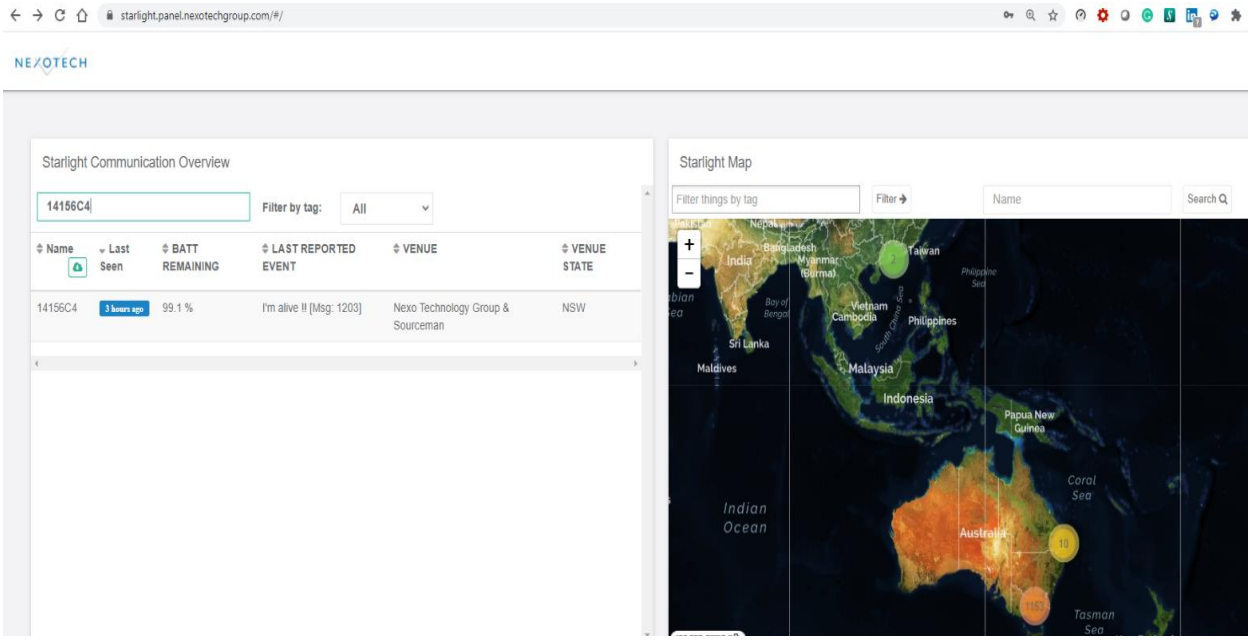
https://Starlight.panel.nexotechgroup.com

Logon to the Starlight UI with allocated credentials:



Enter device ID or device name (if known) into the search box.

***NB: This can be a wildcard search.**



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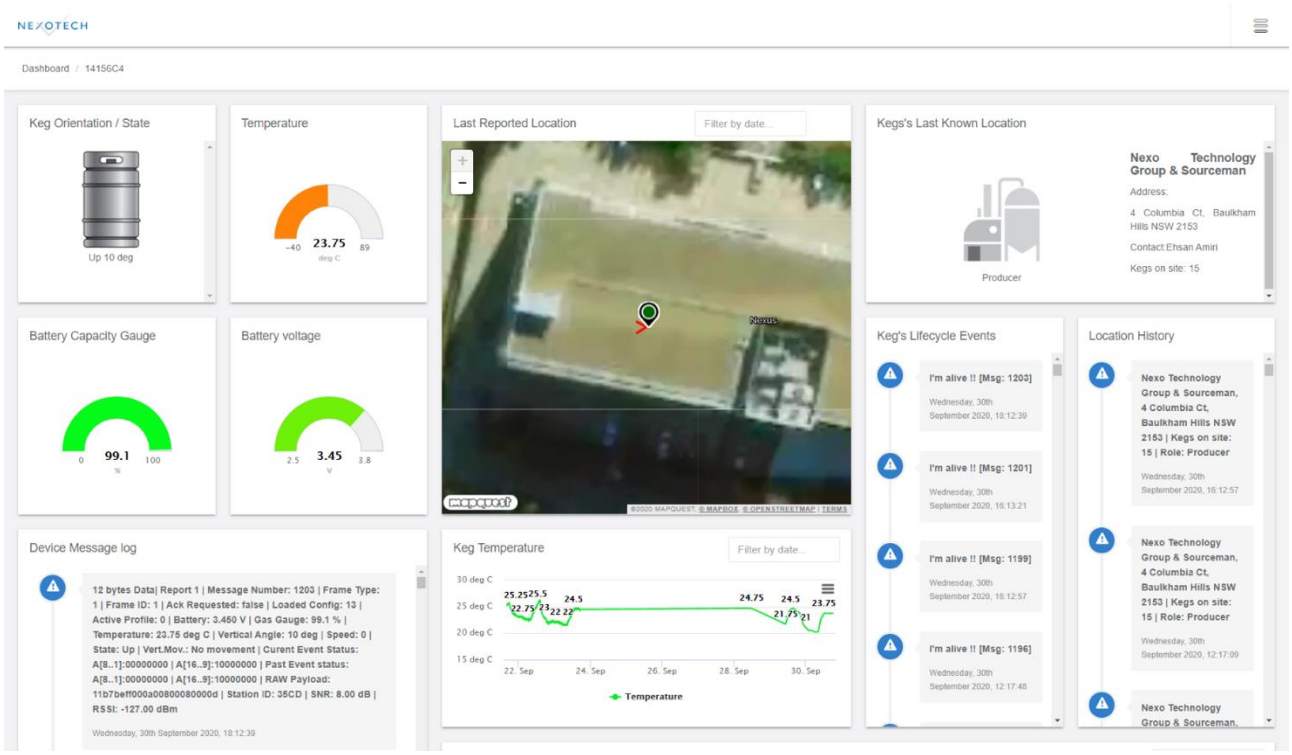
Click on any unit to see the insights for that particular unit which includes complete log and device history.



Now you can locate and monitor your Keg asset globally.

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