

## 1. BATTERY POWERED GPS ASSET TRACKING ON LORAWAN

The Oyster is a compact, rugged GPS tracking device that has been designed for tracking containers, trailers, skip bins, and other assets where super-long battery life is required without sacrificing the frequency of updates and performance.

The IP-67 rated housing is rugged and UV stable, so the Oyster can be mounted on assets that are exposed to rain, dust and marine conditions.

By utilising the latest technology, the Oyster can operate in ultra-low power modes, and with an incredible battery life of up to 5 years the Oyster can be attached to assets and tracked without needing to change batteries. The Oyster has built-in antennas for GPS reception and for LoRaWAN communication, a 3D accelerometer, a high-performance GPS that can track both GPS and GLONASS satellites simultaneously and flash memory for storing non-volatile information.

The Oyster LoRaWAN uses LoRaWAN technology to give you coverage of your assets at a low data cost. The Oyster LoRaWAN is available in 868MHz and 915MHz versions to cater for the various LoRaWAN regions around the world.

Unsure what LoRaWAN is? [Click here for info on LoRaWAN.](#)

The option of using extended temperature range AA batteries allows the Oyster to be used in extreme climates that other tracking devices simply cannot operate in.



### 1.1. Hardware Features

#### Hardware Features

##### Low-profile IP67 rugged housing

The IP67 rated housing is made of sturdy ABS/Polycarbonate plastic to survive bumps and knocks and to survive many years in the sun and weather.

It is low-profile making it easier to mount in the corrugation on containers or concealed on the underside of a trailer, for example.

	<p>The housing screws together for easy assembly, and has 2 convenient mounting tabs. It also has ‘strap slots’ allowing the Oyster to be cable tied or metal strapped to an asset.</p> <p>Dimensions: 100 mm x 65 mm x 19 mm Weight: 160 grams with batteries</p>
<b>Batteries</b>	<p><b>AA size</b>                      The Oyster uses standard “AA” size batteries which provide a balance between size and capacity</p>
	<p><b>Alkaline</b>                        Low cost off-the-shelf alkaline batteries can be used in the Oyster</p>
	<p><b>Off-the-shelf Lithium</b>        For applications that require extreme temperature or extra long-life we recommend that off-the-shelf 1.5V lithium batteries are used. These are readily available from retail outlets, for example Duracell and Energizer</p>
	<p><b>Sleep Current</b>                10uA (micro amps)</p>
<b>Battery Life with Adaptive-Tracking</b>	<p>The Oyster can be set to use Adaptive-Tracking technology where the accelerometer and GPS data are used to intelligently work out if it is moving and to send frequent updates, and to scale the update rate down to once per day if the asset is stationary - to preserve battery life.</p> <p>5 years @ one position per day</p>
<b>Operating Temperature</b>	<p>-20°C to +65°C <sup>1</sup></p> <p>For operation in extreme temperatures, the Oyster must be fitted with lithium batteries.</p>
<b>High sensitivity GPS</b>	<p>UBLOX MAX-M8Q GPS module</p> <p>Supports concurrent GPS and GLONASS</p> <p>72 channel high sensitivity receiver</p> <p>-167dBm industry leading tracking performance</p> <p>Optimal hot-start performance</p> <p>AssistNow Autonomous Offline aiding data for fast time-to-first-fix and performance in urban canyon environments</p>
<b>GLONASS</b>	<p>The Oyster uses both the GPS and GLONASS positioning systems simultaneously.</p> <p>This allows the device to use <b>twice the number of satellites</b> to get a position fix – making it faster and more accurate.</p>
<b>Low noise GPS amplifier</b>	<p>GPS signals are boosted by a special low-noise amplifier (LNA)</p> <p>This allows the Oyster to operate where normal units will fail to receive GPS signal – like in a container stack!</p>
<b>LoRaWAN Communications</b>	<p>The Oyster uses a high-power radio transmitter / receiver that operates on LoRaWAN networks, and is available in variants for the various LoRaWAN frequencies around the world.</p>
<b>Certifications</b>	<p>In progress</p>

<b>Internal Antennas</b>	Internal GPS and LoRaWAN RF antennas tuned by the RF laboratories to ensure optimal performance
<b>3 axis accelerometer</b>	The 3-axis accelerometer allows the Oyster to 'sleep' in an ultra-low power state yet still wakeup when movement occurs.  Future firmware versions will allow for harsh G-force detection (like objects being dropped)
<b>Configuration Cable</b>	The Oyster LoRaWAN caters for a USB configuration adapter and cable, which is used to program firmware updates and configuration information on the device. The most common configuration parameters are also able to be updated OTA via LoRaWAN downlink messages.



## 1.2. Firmware Features

Firmware Smarts	
<b>LoRaWAN Data Management</b>	The Oyster LoRaWAN device manages the data plan that is configured for to maximize the use of the allocated LoRaWAN data messages
<b>OTA Configuration</b>	The Oyster can be remotely configured and some of the key operational parameters updated via the LoRaWAN downlink messages (your data plan needs to support downlink messages).

### 1.3. Software and Data Management

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Data from the Oyster LoRaWAN device is sent to LoRaWAN gateways, which in turn will report the data via their LoRaWAN cloud infrastructure to the back-end server platform for processing and reporting. The LoRaWAN network server is not provided by Digital Matter.

There are several LoRaWAN network service providers for customers to choose from. Each of them have their own management interface and formats for providing data to a software platform.

Please contact Digital Matter if you require information on the integration of the Oyster LoRaWAN data payloads.

### 1.4. Committed to Quality

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We take pride in designing each of our products with the goal of providing the best performance and reliability possible in the price range of that product. "Engineered to outperform".

Not all GPS tracking devices operate with the same level of performance or reliability, especially when exposed to extreme conditions in the field. In addition, we only use the highest quality parts and the latest assembly and quality control techniques to ensure the reliability and long life of our products.

Every device is individually tested at production.

All Digital Matter devices are covered by a one-year manufacturer's warranty.

### 1.5. Contact Information

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<http://www.digitalmatter.com/contact>

Sign up for our product news and updates: <http://eepurl.com/buyjvb>