1. IP67 LOW-PROFILE BATTERY POWERED TRACKING

The Remora is a low-profile, rugged 2G or 3G (NextG) 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 Remora is able to roam onto cellular networks across the globe giving you global coverage of your assets movements at a low SIM card data cost. Communications with the device are two-way, allowing the Remora's behaviour and update rates to be changed Over-The-Air (OTA) including being able to be switched into "Recovery Mode".

By utilising the latest technology the Remora is able to operate in ultra-low power modes. With an incredible battery life of up to 5 years the Remora can be attached to assets and tracked without needing to change batteries.

The option of using extended temperature range batteries allows the Remora 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. The housing screws together for easy assembly, and has 2 convenient mounting tabs. It also has 'strap slots' allowing the Remora to be cable tied or metal strapped to an asset.

	Dimensions: 225mm x 65mm x 30mm Weight: 500 grams with batteries	
Batteries	**C-Cell size**	The Remora uses standard "C-Cell" size batteries which provide a perfect balance between size and capacity
	Alkaline	Low cost off-the-shelf alkaline batteries can be used in the Remora
	Extended LTC	For applications that require extreme temperature or extra long-life Lithium-Thionyl-Chloride (LTC) batteries can be used
	Sleep Current	5uA (yes, that is ***micro-amps***)
Battery Life with Adaptive-Tracking	The Remora 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 / live updates, and to scale the update rate down to once per day if the asset is stationary - in order to preserve battery life. 5 years @ one position per day Typically 2 to 5 years with Adaptive-Tracking	
Operating Temperature	-40°C to +85°C [1] For extreme low temperatures the Remora must be fitted with LTC batteries.	
High sensitivity GPS	UBLOX MAX8 GPS module Supports concurrent GPS and GLONASS 72 channel high sensitivity receiver -167dBm industry leading tracking performance Optimal hot-start performance AssistNow Offline aiding data for extremely fast time-to-first-fix and performance in urban canyon environments	
GLONASS	The Remora uses both the GPS and GLONASS positioning systems simultaneously. This allows the device to use **twice the number of satellites** to get a position fix – making it faster and more accurate.	
Low noise GPS amplifier	GPS signals are boosted by a special low-noise amplifier (LNA) This allows the Remora to operate where normal units will fail to receive GPS signal – like in a container stack!	
2G or 3G (NextG) with roaming	The Remora can be manufactured for specific markets around the world with cellular modem modules approved by all the major networks, and can roam across networks	
	2G Modem	Quad Band GSM/GPRS Class 10 850 / 900 / 1800 / 1900 MHz
	3G Modem – EU	850 / 900 / 2100 EMEA / APAC / Latin America

	3G Modem - NA	850 / 1900 / AWS North America
	3G Modem (Global Option)	800 / 850 / 900 / AWS / 1900 / 2100 Global coverage at a higher cost
	*enquire for other bands and LTE / 4G options	
Certifications	In progress	
Internal Antennae	Internal GPS and cellular antennae tuned by the RF laboratories to ensure optimal performance.	
3 axis accelerometer	The 3 axis accelerometer allows the Remora to 'sleep' in an ultra-low power state yet still wakeup when movement occurs. The accelerometer can also be used to detect extreme G-Force events such as an accident or abuse of the asset, for example dropping a container.	
Magnetic Tamper Detect		
Flash memory	The Remora has sufficient memory to store over 50,000 records in its flash memory. Normally the data will be sent to the server immediately but if the device is out of range then there is sufficient space to ensure that no data is lost – for many months! The flash memory is also used to store parameters, GPS aiding data, geo-fences and other important information that needs to be securely stored.	

1.2. Firmware Features

Firmware Smarts	
Recovery Mode	The Remora can be remotely switched into Recovery Mode which switches the device to do live tracking and reporting – so that you can get your asset back!
Auto-APN	Auto-APN allows the Remora to analyse the SIM card and select the correct APN details from a list that is pre-loaded in the device's firmware. This means that the Remora can be shipped world-wide without requiring specialist setup for SIMs.
Text Message Setup	The Remora can also be sent text messages to setup the APN, server and other details
Multi-APN for Roaming	The Remora can be configured to roam across multiple networks and to automatically use the different APN details for the roaming networks.
AssistNow Offline	The Remora will track successfully where other devices just give up. This fantastic technology allows the GPS to predict which satellites are in orbit above it and to dramatically reduce the time-to-first-fix of the GPS, and the overall performance of the GPS, especially in 'urban canyon' or forested environments.
G-Force Events	The Remora uses the built-in accelerometer to detect high G impacts such as accidents and drops and reports these events to the server for emergency alerting.
Geo-Fences	The Remora has the capacity to hold hundreds of geo-fences that can be downloaded to it from the server and updated Over-The-Air. The Remora can use this geo-fence information to: • Implement arrival and departure alerts • Implement "No-go" and "Keep-out" areas • Disable data communications within intrinsically safe areas • Reduce power by not trying to communicate when out of range, for example on a ship at sea where there is no cellular communications

1.3. Device Management – OEM Server

All Digital Matter devices are fully managed Over-The-Air (OTA) via our OEM Server web interface. The OEM Server seamlessly manages:

- Device firmware – firmware updates can be done remotely
- Network (administrator) parameters relating to critical communications
- System parameters, including GPS parameters, IO configuration, logging options and general device behaviour settings
- GPS and GLONASS AssistNow Offline aiding data files

- Remote debugging of devices, including being able to trace data, view detailed debug message logs, and view a live trace of the server debug messages
- Remote disconnect and reboot of devices
- Driver list downloads to devices – this allows for the Driver Identification on the device to check if the RFID tag / username / PIN is valid, and for specific drivers to be allowed to drive / operate particular vehicles, for example based on licences or permits.
- Geo-fence syncing with the devices – this allows the device to do advanced in-cab alerting and monitoring such as geo-fence arrival and departure, speed limit alerting, dangerous intersection warnings, turn on warning lights inside a geo-fence, and disable communications inside intrinsically safe zones such as gas plants.
- Provides a command and message queueing platform to the devices and is incorporated into the remote management and debugging applications

Data Connectors

The OEM Server provides Data Connectors that forward data records on to the software platform of your choice, including Digital Matter's own Telematics Guru and GPS Log Book platforms.

More information on the OEM Server can be found at http://www.digitalmatter.com

If you would like to integrate the Remora into a software system then please contact Digital Matter for more information on our integration protocols.

1.4. Committed to Quality

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, and our batteries are individually tested with full charge / discharge cycle tests before being fitted into our devices.

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

1.5. Contact Information

For the latest version of this document plus other product information please visit our website at www.digitalmatter.com/support