Falcon Cellular

4G LTE CAT-M1 NB-IoT Remote Sensor in a Rugged Housing
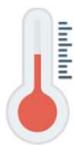

Home of IoT

*Temp probe sold separately

APPLICATIONS

Run Hour Monitoring

Temperature / cold-chain

Tank levels

Door open/close

Meter pulse counting

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The Falcon Cellular is a super smart, battery powered monitoring device in a rugged housing.

Super long battery life is possible with Lithium Thionyl Chloride (LTC) batteries, or connect to a power source for a permanent solution.

Multiple input interfaces and a digital output allow for monitoring and control for many years. Uses a combination of GPS and Wi-Fi to track assets both outdoors and inside buildings, warehouses, etc.

FEATURES
- 3 x AA user replaceable batteries or line power
- Rugged waterproof housing
- 2 x Digital Inputs
- 1 x Analog Input
- I^2C interface for a wide range of sensors including: Temperature, Humidity, Vibration, CO_2 gas and many others
- 1 x Switched Ground Digital Output
- On-board GPS for location
- Wi-Fi sniffing for low power location updates and indoor localization
- Battery Meter (Coulomb Counter)

Rev 1.2 – 21 May 2019

MECHANICAL SPECIFICATIONS

Compact 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 and caters for a number of cable glands to allow for waterproof cable entry to the housing. The housing screws together for easy assembly, and has convenient mounting tabs.
Dimensions	L 135 x W 90 x H 35mm
Operating Temperature	-20°C to +60°C[1] 1) Batteries are affected by temperature extremes and typical performance is dependent on temperature

POWER

Line Power	5-16 V line power option
Batteries	Multiple Power Options: 3 x AA Lithium Iron Disulphide Batteries. Low-cost and readily available off the shelf. User replaceable. 3 x AA Lithium Thionyl Chloride (LTC) batteries for extended temperature tolerance. User replaceable. The device can be wired into power and also have batteries installed. Then if there is a cut to external power, operation will continue on battery power.

OTHER

3-axis accelerometer	The 3-axis accelerometer allows the Falcon to 'sleep' in an ultra-low power state yet still wakeup when movement occurs.
Flash Memory	Internal memory can store up to 20,000 records, Normally data is sent to the server immediately but if the device is out of range there is space to ensure no data is lost.
Battery Meter	A coulomb counter acts as a battery meter, tracking the energy consumption of the device. This enables an accurate battery percentage to be reported. The battery meter also allows accurate battery life predictions. Simply deploy the Falcon in your application with the desired settings. The energy usage will be reported, enabling you to extrapolate to determine the battery life time.

CONNECTIVITY

SIM Size	Micro SIM (3FF) form factor
4G Modem	uBlox SARA-R410M Modem operates on all major global LTE-Cat-M1 and NB-IoT bands. These new low-power networks are specifically designed for IoT applications, providing great battery life Supported LTE bands: 1-5, 6, 8, 12, 13, 17, 19, 20, 25, 26, 28

TRACKING	
GPS and Cellular Antenna	Internal GPS and cellular antennas tuned by RF laboratories for optimal performance.
GPS/GLONASS tracking	Concurrent GPS and GLONASS tracking. uBlox EVA-M8 Module. 72 channel high sensitivity receiver. -167dBM industry leading tracking performance.
AssistNow Offline	AssistNow Offline aiding data for extremely fast time-to-first-fix and performance in urban canyon environments.
Low Noise GPS Amplifier (LNA)	GPS signals are boosted by a special low-noise amplifier (LNA). This allows operation where normal units will fail to receive GPS signal.
Wi-Fi Positioning System (WPS)	The Falcon uses a Wi-Fi 'sniffer' to scan for Wi-Fi access points and the signal strength from each one. This information is then used to triangulate a position which is typically accurate to 100 ft / 30m in metropolitan areas. And this can all be done in typically less than 3 seconds, using a lot less power than a typical GPS fix. Even the best GPS will not perform well indoors (such as in a warehouse), whereas Wi-Fi access points can be detected.

INPUTS AND OUTPUTS	
I²C Interface	I²C (inter-IC communications) is an interface commonly used in sensor modules. This allows the device to talk to a wide range of sensors including: temperature, humidity, vibration, CO_2 gas and many others. Contact Digital Matter about sensor support.
2 x Digital Inputs	2 x Digital Inputs with configurable pull-up/down Optimised for low power pulse counting.
1 x Digital Output	1 x switched ground digital output, easily wired up to switch external lights, relays, buzzers etc.
1 x Analogue Input	0-30 V Analogue input with auto-ranging.

FIRMWARE SMARTS	
OTA Configuration	The Falcon can be remotely configured and updated OTA (over the air). Device management is performed from Digital Matter's OEM Server device management platform.
AES-256 Security	The Falcon uses bank-level AES-256 device authentication and data encryption to ensure that your data is kept private and secure.
Adaptive Tracking	Adaptive-Tracking technology enables the accelerometer and GPS data to be used intelligently to work out if it is moving and to send frequent updates, as well as to scale the update rate down to once per day if the asset is stationary to preserve battery life.