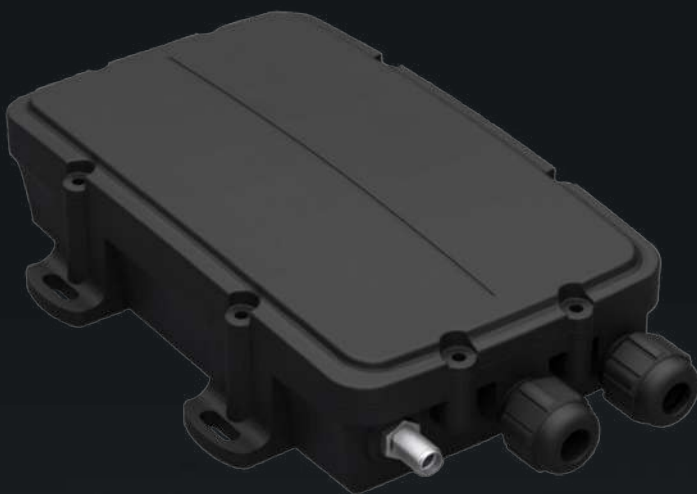# Hawk

Cellular LTE-M / NB-IoT
Satellite Version Also Planned

Status: *New Product Introduction*

The Hawk is a rugged and robust IoT datalogger for a wide range of sensor and condition monitoring applications

### Plug-in I/O Interface

Plug-in cards define the 9 inputs/ outputs, offering limitless options for interfacing to sensors such as SDI-12, I²C, 1-Wire, iButton, 4-20mA, RS-485, RS-232, Analog Inputs, Digital Inputs, Pulse Counting, Digital Outputs, Switched Power, and more

### GPS Location

On-board GPS for location plus optional *cell tower positioning (*planned)

### Task Management

Powerful task management allows you to schedule tasks or run tasks based on sensor thresholds and events

### Rechargeable LiPo Battery

Large 3500mAh rechargeable LiPo battery pack to support full-season deployments

### Multiple Power Options

Charge and operate the Hawk with 6-28V DC, including support for solar panels. The Hawk can also supply power to external sensors.

### Ultra-Rugged

Ultra-rugged and waterproof IP68 and IK08-rated housing with GORE® vent ensures device can withstand impact, fine dust, and brief submersion

# Connectivity

| | |
|---|---|
| LTE-M / NB-IoT | Nordic nRF9160 Modem operates on all major global LTE-M and NB-IoT bands |
| | Supported LTE bands: |
| | LTE-M (Cat-M1): B1, B2, B3, B4, B5, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B66 |
| | NB-IoT (Cat-NB1/NB2): B1, B2, B3, B4, B5, B8, B12, B13, B17, B19, B20, B25, B26, B28, B66 |
| SIM Size & Access | Internal Micro 3FF SIM |

# Location

| | |
|---|---|
| Module | Nordic nRF9160 internal GPS |
| Constellation | GPS |
| Tracking Sensitivity | -155dBM |
| *Location Accuracy | ~3m CEP, 50%, GOS, Open sky |
| GNSS Assistance | GPS predicted ephemeris data for greater sensitivity and position accuracy |
| Low Noise Amplifier | GPS signals are boosted by a unique low-noise amplifier (LNA) allowing operation in low signal |
| Cell Tower Location | Optional cell tower positioning (planned) |

# Power

| | |
|---|---|
| Rechargeable Battery | 3500mAh LiPo rechargeable battery |
| Input Voltage | 6-28V DC (max)<br>For continuous operation at high temperatures and high output load currents we recommend an input voltage of 12V or higher |
| Self-Resetting Fuse | Built-in self-resetting fuse makes installation simple and safe |
| Solar Power | Designed to optionally use an external 12V solar panel, 5W or higher |
| Maximum Power Requirement | 4W excluding external sensor power draw |

# Mechanics / Design

| | |
|---|---|
| Dimensions | 183 x 119 x 39 mm (7.20 x 4.68 x 1.54) |
| Weight | TBD |
| Housing | Non-branded housing for optional white-labeling |
| IP/IK Rating | Ultra-rugged and waterproof IP68 and IK07-rated housing ensures the Hawk can withstand impact, fine dust, and brief submersion |
| Installation | Multiple installation options for securing the device with screws, bolts, cable ties, rivets, and more. Includes 2 cable glands to allow for waterproof cable entry to the housing. |
| Operating Temperature | -20°C to +60°C (connected to external power)<br><br>At < -10°C and > +45°C the internal backup battery will not be charged as a safety precaution due to the dangers associated with charging batteries at extreme temperatures. |

# Mechanics / Design *(continued)*

| | |
|---|---|
| Cellular Antenna | Internal or External |
| GPS Antenna | Internal |
| 3-Axis Accelerometer | 3-Axis Accelerometer to detect tampering (planned) |
| Diagnostic LEDs and Button | 2 Diagnostic LEDs and Push Button for testing and operational status |
| Flash Memory | Store months of records if device is out of cellular coverage |
| On-Board Temperature | The device reports internal temperature and prevents the internal battery from charging in extreme temperatures.<br><br>Internal temperature provides an indication of ambient temperature but may not always be precise. |

# Interfaces

| | |
|---|---|
| Digital Inputs | 1 x Digital Input with configurable pull up/pull down<br>0-40V DC input range<br>On/Off thresholds: On >2V, Off <1V<br>Can be used for pulse counting (max 40Hz) |
| Plugin Board | The versatile and flexible Hawk architecture caters for plug-in cards that define the 9 inputs/outputs, offering limitless options for interfacing to sensors. See the current card list below or contact us to discuss your requirements. |

# Smarts

| | |
|---|---|
| Auto-APN | Auto-APN allows the device to analyze the SIM card and select the correct APN details from a list that is pre-loaded in the device's firmware |
| Battery Life and Voltage Monitoring | LiPo battery and external voltage readings for "Battery Low" and "Power Loss" alerts |
| Task Management | Powerful task management allows you to schedule tasks or run tasks based on sensor thresholds and events |

# Device Management

| | |
|---|---|
| Flexible Configuration | Configure sensor and position update rates |
| Device Management Platform | Manage, monitor, configure, debug, update, and restart devices remotely from our cloud-based device management system |
| Configuration App | Configurable with DMLink provisioning tool |

# Integration

| | |
|---|---|
| Third-Party Integration | TCP Direct or HTTPS Webhook |

# Security

| | |
|---|---|
| Data Security | Military-level AES-256 Encryption from device to Device Management Platform to protect the integrity and confidentiality of telematics data. Data forwarded to third-party systems is sent via HTTPS for end-to-end security. |

# Warranty

| | |
|---|---|
| Manufacturer's Warranty | Two-year manufacturer's warranty. Exclusions apply. |

# Certifications

Pending

# I/O Card Options

The Hawk's sensor interfaces and protocol are managed by "I/O Cards" - a range of plug-in Input/Output cards standardized for common applications. See the current card list below or contact us to discuss your requirements.

### AgTech1

| | |
|---|---|
| Digital Inputs | 1 x Digital Input with configurable pull up/pull down<br>0-40V DC input range<br>On/Off thresholds: On >2V, Off <1V<br>Can be used for pulse counting (max 40Hz) |
| Digital Outputs | 1 x switched ground |
| I²C | Yes |
| SDI-12 | Yes |
| Switched Power Out | 3.3V switched power for sensors |
| Switched Sensor Power | 5V or 12V selectable power for sensors |
| 1-Wire® or iButton® | Yes |
| 4-20mA | 1 x 4-20mA input |

* Positioning accuracy specifications are provided by the GNSS supplier and reflect ideal conditions. Device configuration, installation, environmental conditions, augmentation services, and many other factors may lead to variations in positioning accuracy.

### New Product Introduction

All new product statements contained herein that are not statements of historical fact, including statements that use the words "to become," "will," "designed to" or other similar words or expressions, that describe Digital Matter's hardware, software or its management's future plans, including hardware features, components, housing and stock availabilities, are "forward-looking statements."

Such forward-looking statements involve known and unknown risks, uncertainties and other factors. Please use caution when making purchase decisions at this stage.