Hawk

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

The Hawk is a robust plug-and-play IoT data logger and sensor hub designed to support an extensive range of sensor integrations.

The Hawk is available in multiple connectivity, power, and housing variations. PCB, I/O Card, and Housing sold separately, giving you the flexibility to purchase only what you need to build your remote monitoring solution.

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, Bluetooth and more

Multiple Power Options

Power the Hawk with a large internal rechargeable LiPo battery, external power including solar, or 2 x D Cell LTC batteries

Multiple Housing Options

Select from our ultra-rugged housing options or build your own

Task Management

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

Remote Device Management

Over-the-air (OTA) remote device configuration, management and firmware updates

HAWK PCB

Onboard Connectivity

The Hawk PCB is currently available with LTE-M/NB-IoT connectivity. IoT Satellite version planned.

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

Onboard Design and Mechanics

Operating Temperature	-30°C to +60°C LiPo Charger - 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
Self-Resetting Fuse	Built-in self-resetting fuse makes installation simple and safe
Cellular Antenna	Internal. Supports optional external antenna for maximum range.
GPS Antenna	Internal
LiPo Battery Charger	Onboard LiPo battery charger with selectable charge rate
3-Axis Accelerometer	3-Axis Accelerometer to detect tampering (*planned in future firmware release*)
Diagnostic LED	2 Diagnostic LEDs and Push Button for testing and operational status
Flash Memory	Store months of records if device is out of cellular coverage
Onboard Temperature	The device reports internal temperature and prevents the internal battery from charging in extreme temperatures. Internal temperature provides an indication of ambient temperature but may not always be precise. Use an external sensor for precise temperature monitoring.

Onboard Location

Module	Nordic nRF9160 internal GPS
Constellation	GPS
*Location Accuracy	~3m CEP, 50%, GPS, Open sky
GNSS Assistance	GPS predicted ephemeris data for greater sensitivity and position accuracy
Low Noise Amplifier	GPS signals are boosted by a low-noise amplifier (LNA) allowing operation in low signal

*Results vary based on real world conditions. Device configuration, installation, environmental conditions, augmentation services, and many other factors may lead to variations in positioning accuracy.

Onboard Interfaces

Digital Inputs	1 x Digital input with configurable pull up/pull down 0-40V DC input range On/Off thresholds: ON > 2V, Off < 1V Can be used for pulse counting (max 40MHz)
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. Flexible onboard output power to power your sensors. See the current card list below or contact us to discuss your requirements.

Onboard 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
Voltage Monitoring	LiPo battery and external voltage readings for 'Battery Low' and 'Power Loss' alerts
Task Management	Powerful onboard task management allows you to schedule tasks or run tasks based on sensor thresholds and events, even when out of cellular coverage

HAWK POWER OPTIONS

Large Rechargeable LiPo - Optional Support for External Power

Powered by 3500mAh rechargeable LiPo battery to support full season deployments. Optionally connect the Hawk to an external power source (6-28V) such as a solar panel or grid power.

Large Rechargeable Battery	3500mAh LiPo rechargeable battery
Input Voltage	6-28V DC (max) 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 Support	Designed to optionally use a variety of solar panels

D Cell Battery Pack

Powered by 2 x D Cell LTC batteries for a completely self-powered solution.

User-Replaceable Batteries	2 x D Cell (3.6V per cell). *Batteries not included.*
Supported Battery Types	*Lithium Thionyl Chloride (LTC) **Please dispose of Lithium batteries in a safe and responsible manner*

HAWK HOUSING OPTIONS

Hawk LiPo Housing (HawkLipo)

Designed to accommodate the PCB, I/O Card, and pre-installed 3500mAh rechargeable LiPo battery.

Dimensions	180 x 119 x 39 mm (7.1 x 4.7 x 1.5”)
Housing	Non-branded housing for optional white labeling
IP/IK Rating	Ultra-rugged and waterproof IP68 and IK08-rated housing to ensure the Hawk can withstand impact, fine dust, and brief submersion
GORE® Vent	Allows for pressure equalization while protecting against water and dust ingress
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.

Hawk D Cell Housing (Hawk2D)

Designed to accommodate the PCB, I/O Card, and 2 x D Cell LTC batteries.

Dimensions	185 x 150 x 30 mm (7.3 x 5.9 x 1.2”)
Housing	Non-branded housing for optional white labeling
IP/IK Rating	Ultra-rugged and waterproof IP68 and IK08-rated housing to ensure the Hawk can withstand impact, fine dust, and brief submersion
GORE® Vent	Allows for pressure equalization while protecting against water and dust ingress
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.

Device Management

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

Integration

Third-Party Integration	TCP Direct or HTTPS Webhook

Security

Data Security	Military-level AES-256 Encryption from device to Device Manager 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

Certifications are not valid if using the Hawk without a Digital Matter housing or with an external antenna. Please check our knowledge base for regulatory and network certifications.

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 Card

Digital Inputs	1 x Digital Input with configurable pull up/pull down 0-40V DC input range On/Off thresholds: On >2V, Off <1V Can be used for pulse counting (max 40Hz)
Digital Outputs	1 x Switched Ground
I^2C	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

I/O CARD OPTIONS continued

AgTech2 Card

Analogue Inputs	4 x Analogue Inputs (0-30V range)
Digital Outputs	1 x Switched Ground
SDI-12	Yes
Switched Power Out	3.3V switched power for sensors
Switched Sensor Power	5V or 12V selectable power for sensors
1-Wire®	Yes

RS-1 Card

Analogue Inputs	1 x Analogue Input (0-30V range)
Digital Inputs	1 x Digital Input with configurable pull up/pull down 0-40V DC input range On/Off thresholds: On >2V, Off <1V Can be used for pulse counting (max 40Hz)
Digital Outputs	1 x Switched Ground
RS485	Yes
Switched Power Out	3.3V switched power for sensors
Switched Sensor Power	5V or 12V selectable power for sensors
1-Wire®	Yes
4-20mA	1 x 4-20mA input

Serial Card

Analogue Inputs	1 x Analogue Input (0-30V range)
Digital Inputs	2 x Digital Inputs with configurable pull up/pull down 0-40V DC input range On/Off thresholds: On >2V, Off <1V Can be used for pulse counting (max 40Hz)
Digital Outputs	1 x switched ground (1A current limit)
Switched Sensor Power	5V or 12V selectable power for sensors
RS232 TX	Yes
RS232 RX	Yes
TTL TX	Yes
TTL RX	Yes

Bluetooth+ Card

Analogue Inputs	1 x Analogue Input (0-30V range)
Digital Inputs	1 x Digital Input with configurable pull up/pull down 0-40V DC input range On/Off thresholds: On >2V, Off <1V Can be used for pulse counting (max 40Hz)
Digital Outputs	1 x switched ground (1A current limit)
Switched Power Out	3.3V switched power for sensors
Switched Sensor Power	5V or 12V selectable power for sensors
SDI-12	Yes
I^2C	Yes
4-20mA	Yes
*Bluetooth Module	BGM240PA22VNA3

* The Bluetooth+ Card has a Bluetooth module on the card, in addition to the above I/Os.

Digital Card

Analogue Inputs	2 x Analogue Inputs (0-30V range)
Digital Inputs	5 x Digital Inputs with configurable pull up/pull down 0-40V DC input range On/Off thresholds: On >2V, Off <1V Can be used for pulse counting (max 40Hz)
Digital Outputs	1 x Switched Ground
Switched Sensor Power	5V or 12V selectable power for sensors