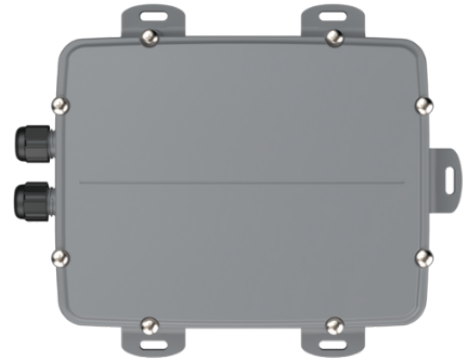


HAWK PRO NTN

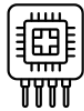
Cellular LTE-M (Cat-M1) / NB-IoT, **NTN Ready**



- Robust IoT data logger and sensor hub
- Flexible I/O card architecture offers near-limitless sensor integrations
- Integrates with Bluetooth®, SDI-12, 1-Wire, 4-20mA, RS-485, RS-232, Analog Inputs, Digital Inputs, Pulse Counting, Switched Power and more
- Available in several power and housing variations
- Robust OTA device management and configuration
- External magnetic activation, with buzzer feedback, for in-field installation



Remote Monitoring



Sensor Hub



Configurable Sampling



Ultra-Low Power



Future Proof Connectivity,
NTN Ready



White-Label & Integration Ready

I/O Card Architecture

Caters to plug-in cards that define the 9 inputs/outputs, offering near-limitless options for interfacing to sensors.

Housing Options

Select from our ultra-rugged and waterproof housing options or use your own.

OTA Device Management

Remotely configure sensor sampling rates, position updates, upload intervals, and more.

Unmatched Flexibility

Select only the hardware components you need to build your specific solution.

Task Management

Onboard data processing eliminates network delays and triggers tasks or events when needed.

Integration Ready

Securely send data to any end platform via TCP Direct or HTTPS Webhook.

Power Options

Support for multiple input-power options including solar, primary cell battery, and external power.

Onboard Smarts

Onboard GPS Location and Data Storage.

NTN Ready Hardware

Easily upgrade the device to transmit data via satellites once NTN modem FW is released.

ENVIRONMENTAL MONITORING | AGTECH | TEMP/HUMIDITY | SOIL MOISTURE | WATER MANAGEMENT | TANK LEVEL & QUALITY | STORM & FLOODWATER MONITORING | UTILITIES | WEATHER STATIONS | EQUIPMENT MANAGEMENT | & MORE

Hawk Pro NTN PCB

Onboard Connectivity

Cellular Module	<p>Nordic nRF9151 operates on all major global LTE-M and NB-IoT bands.</p> <p>Supported LTE bands:</p> <p>LTE-M (Cat-M1): B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B25, B26, B28, B66, B85, B106</p> <p>NB-IoT (Cat-NB1/NB2): B1, B2, B3, B4, B5, B8, B12, B13, B17, B19, B20, B25, B26, B28, B65, B66, B85, B106</p> <p>IoT NTN: B23, B249, B252, B255, B256</p>
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SIM Size and Access	Internal Micro 3FF SIM
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Onboard Mechanics / Design

Temperature Range	<p>Operating: -30°C to +60°C</p> <p>Recommended Storage: 10°C to 30°C, Humidity 30%. Store in a cool, dry place.</p> <p>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.</p>
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Self-Resetting Fuse	Built-in self-resetting fuse makes installation simple and safe.
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Cellular Antenna	Internal. Option to add high-gain external antenna.
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GPS Antenna	Internal
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LiPo Battery Charger	Onboard LiPo battery charger with selectable charge rate.
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Diagnostic LED	2 Diagnostic LEDs and Push Button for testing and operational status.
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Magnetic Activation	Use a magnet to force an upload, without opening the housing.
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Diagnostic Buzzer	Buzzer on the PCB to provide audio feedback to the user upon magnetic activation, and upon a successful "first time" upload.
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Flash Memory	Store records if device is out of cellular coverage. View storage capacity here.
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 nRF9151 internal GPS
Constellation	GPS
Location Accuracy*	~3m CEP
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.

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

Onboard Interfaces

Digital Input	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 40 Hz)
Plug-in 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

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 Pro NTN 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).
Battery selection is very important. [Follow this link to learn more.](#)
Please dispose of Lithium batteries in a safe and responsible manner.

Hawk Pro Housing Options

Hawk LiPo Housing (Hawk LiPo)

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 in)
Housing	Non-branded nylon glass housing is suitable for white labeling.
IP/IK Rating	Ultra-rugged and waterproof IP68 and IK08-rated housing to ensure the device 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 (Hawk 2D) - Available with or without GORE® Vent

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 in)
Housing	Non-branded nylon glass housing is suitable for white labeling.
IP/IK Rating	Ultra-rugged and waterproof IP68 and IK07-rated housing to ensure the device can withstand impact, fine dust, and brief submersion.
Optional 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	Remotely configure sensor sampling rates, position updates, upload intervals, and more.
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Device Management Platform	Manage, monitor, configure, debug, update, and restart devices remotely from our cloud-based device management system .
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Configuration App	Configurable with DM-Link provisioning tool.
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Integration

Third-Party Integration	TCP Direct or HTTPS Webhook
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API	Command and configure the device via rich API functionality.
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Security

Data Security	Military-grade AES-256 Encryption from device to Device Manager to protect the integrity and confidentiality of your data. Data forwarded to third-party systems is sent via HTTPS for end-to-end security.
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Warranty

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

Please view our knowledge base for [regulatory and network certifications](#).

I/O Cards

Agtech1

Digital Input	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 Output	1 x Switched Ground (1A current limit)
I ² C SDA/SCL	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 [®]	Yes
4-20mA	Yes

Agtech2

Analog Inputs	4 x Analog Inputs (0-30V range)
Digital Output	1 x Switched Ground (1A current limit)
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

Bluetooth+ Card

Bluetooth Module	BGM240PA22VNA3
Analog Input	1 x Analog Input (0-30V range)
Digital Input	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 Output	1 x Switched Ground (1A current limit)
Power Out	3.3V Power Out for Sensors
Switched Power Out	5V or 12V Selectable Power Out for Sensors
SDI-12	Yes
I ² C SDA/SCL	Yes
4-20mA	Yes

Digital Card

Analog Inputs	2 x Analog 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 Output	1 x Switched Ground
Switched Power Out	5V or 12V Selectable Power Out for Sensors

RS-1 Card

Analog Input	1 x Analog Input (0-30V range)
Digital Input	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 Output	1 x Switched Ground
RS485 TX/RX	Yes
Power Out	3.3V Power Out for Sensors
Switched Power Out	5V or 12V Selectable Power Out for Sensors
1-Wire®	Yes
4-20mA	1 x 4-20mA input

Serial Card

Analog Input	1 x Analog Input (0-30V range)
Digital Inputs	2 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 Output	1 x Switched Ground (1A current limit)
Switched Power Out	5V or 12V Selectable Power Out for Sensors
RS232 TX/RX	Yes
TTL TX/RX	Yes
