

# Frozen food temperature and location monitoring

**Maintaining the right temperature and location monitoring for frozen food products can greatly reduce waste, protect consumer health, and ensure high-quality products on the shelf.**

## CHALLENGE

Ensuring the proper storage temperature and location tracking of frozen food products is a critical task in the supply chain. Inaccurate temperature monitoring and location tracking can lead to spoilage, foodborne illnesses, and loss of consumer trust. A real-world challenge involves maintaining the appropriate temperature and location monitoring of frozen food products during transportation, distribution, and storage.

## SOLUTION

Ellenex's battery-operated temperature sensor with GPS, leveraging NB-IoT technology, can effectively address the frozen food temperature and location monitoring challenge. The IoT sensor used in this solution is the Ellenex battery-operated temperature sensor with GPS.

This approach offers several benefits:

- Ruggedized design: Ellenex sensors are built to withstand harsh industrial applications, ensuring reliable performance in cold storage and transportation environments.
- Near real-time monitoring: Ellenex sensors transmit data every few hours, enabling close monitoring of temperature and location.

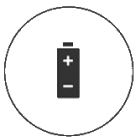
# TM-F-F-N

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- GPS tracking: With integrated GPS, the sensors provide accurate location tracking, allowing for better management of the supply chain.
- Enhanced efficiency: The NB-IoT technology offers low power consumption, ensuring longer battery life and reducing maintenance costs.
- Improved product quality: By maintaining optimal storage temperatures and tracking the location of frozen food products, the risk of spoilage and foodborne illnesses is reduced.

The use of Ellenex's IoT sensor for frozen food temperature and location monitoring provides a reliable and efficient solution to maintain optimal storage conditions, ensuring high-quality and safe products reach consumers.



Battery Operated



Ruggedised  
Design



Easy Install



Pre-Configured



Secure



Quick ROI

## TECHNOLOGY

Ellenex employs cutting-edge communication technology by utilizing the LTE Cat M1 protocol, which operates on 4G and 5G cellular networks, making it suitable for mobile and stationary monitoring applications. However, its remarkably low power consumption and superior penetration rate, specifically designed for industrial solutions, sets it apart. Narrowband Internet of Things (NB-IoT) and LTE Cat M1 are advanced communication technologies that offer significant advantages for monitoring applications. These technologies provide efficient and reliable connectivity for IoT devices, allowing for seamless communication between our sensor and remote monitoring systems. NB-IoT and LTE Cat M1 are known for their low power consumption, enabling prolonged battery life for the devices, which is crucial for remote or hard-to-reach areas. Moreover, these technologies offer excellent penetration capabilities, allowing for reliable



communication even in challenging environments, such as underground or remote locations where devices are often deployed. NB-IoT and LTE Cat M1 also provide secure and scalable connectivity, enabling robust and cost-effective solutions for monitoring applications in various industrial sectors, including agriculture, utilities, logistics, and more.

### SENSOR TECHNICAL SPECIFICATIONS

• Range	-50°C to +250°C (or other ranges up to 200) -10 ~ +70 (electronic housing)	°C
• Accuracy	IEC 60751 • Class A ( $\pm 0.15^\circ\text{C}$ at $0^\circ\text{C}$ ) other accuracies available on request	°C
• Sensing Element	Pt100	
• Long Term Stability (1 year)	$\leq 0.2$	%Span
• Power Supply	Built-in Replaceable Lithium Battery	
• Rated Voltage	3.6	V
• Battery Lifetime	10,000+ transmissions	
• Materials	Sheath: Stainless Steel (3mm or 6mm OD), Silicone Rubber Cable	
• Weight	~450	g
• Protection Rate	IP66, UV Protected	
• Geo-Location	GPS, GLONASS, BeiDou / Compass, Galileo, QZSS	
• Geo-Location Sensitivity	• Cold start: -146 • Reacquisition: -157 • Tracking: -157	dBm
• Time to First Fix (TTFF)	• Cold start at open sky: 31 • Warm start: 21 • Hot start: 2.7	s
• GNSS Accuracy	<5 (typ.)	m
• SIM Card Type	4FF Nano-SIM, from any Network Provider	
• Firmware Update	Over The Air, Locally via Wireless Connectivity	
• Sampling Period	Configurable via downlink (default 4 hours)	
• Communication Bands	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 and B39	
• Antenna	Internal (Default)/ External (customised options available)	

### PLATFORM FEATURES

Ellenex's software platform is a comprehensive and user-friendly solution specifically designed for diesel delivery management. The platform offers a wide range of features tailored for diesel delivery operations, including real-time data visualization, customizable alerts and notifications, historical data analysis, and predictive analytics. It provides users with a holistic view of their diesel delivery assets, allowing them to make data-driven decisions for optimal fuel management. The platform is accessible via web browsers and mobile devices, providing convenient remote access to critical information anytime, anywhere. Ellenex's software platform is designed with a user-centric approach, offering intuitive navigation and a user-friendly interface for easy setup and configuration. With its advanced features and ease of use, Ellenex's software platform empowers users to effectively monitor and manage their diesel delivery operations in remote areas, ensuring efficient and sustainable fuel resource management.

- Encrypted ultra-low power communication protocol
- Advanced device inventory
- Integration APIs for enterprise systems
- Multi-tenant role-based access control
- Data export and import
- White-label platform for enterprise runs on private account
- Variable alarm setting for high and low thresholds and multi-channel alerting
- Sampling and transmission interval configuration
- Transmission condition configuration
- Other configurations and customisation available on request



Encrypted & ultra-low power



Integratable



Dynamic alerting



Multi-tenant



Scalable



Composable & API first



Low cost



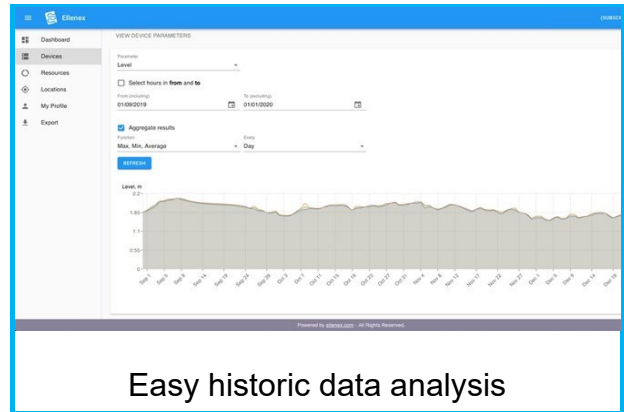
Action management



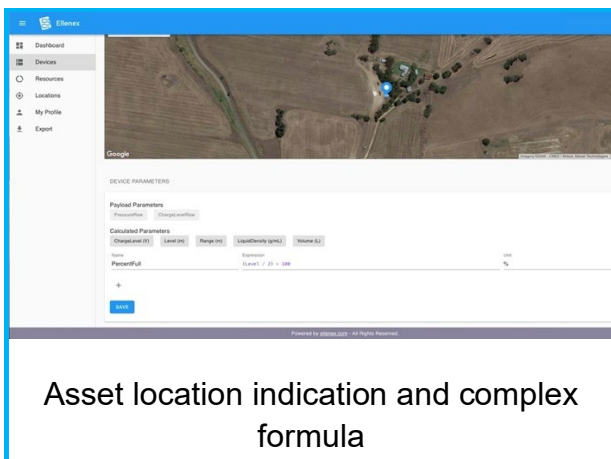
Resource monitoring



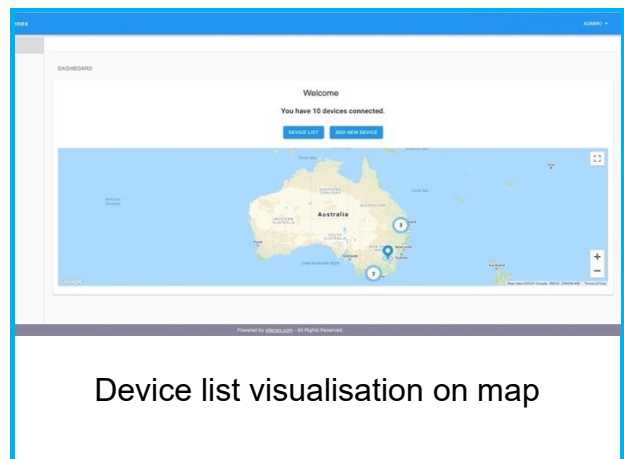
Single shot data visualisation of devices



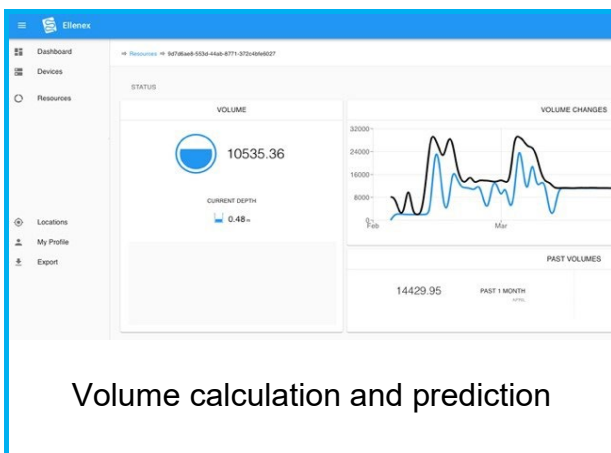
Easy historic data analysis



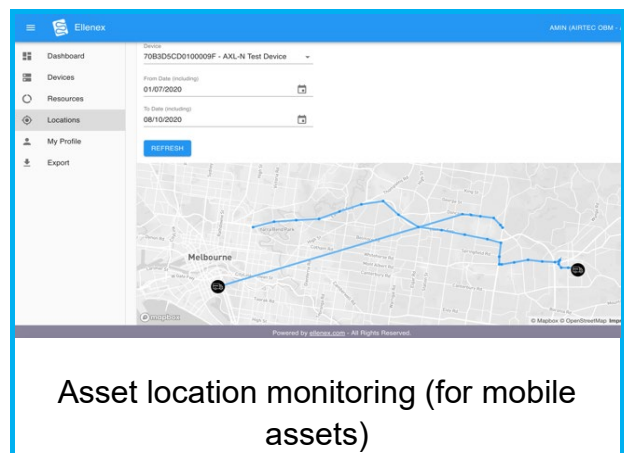
Asset location indication and complex formula



Device list visualisation on map



Volume calculation and prediction



Asset location monitoring (for mobile assets)

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## INDUSTRIES SERVED



Agriculture &  
Farming



City & Councils



Food &  
Beverage

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## INTEGRATION OPTIONS

Ellenex's solution sets itself apart with its pre-configured and plug-and-play design, eliminating the complexities of configuration, programming, and connection to the platform. This unique approach ensures that users can start monitoring their diesel tanks quickly and easily without any technical hassles. Additionally, Ellenex offers seamless integratability at both the network and platform levels, allowing for easy integration with any network or visualization/analysis platform. This competitive advantage makes Ellenex's solution highly adaptable and compatible with existing systems, providing users with flexibility and convenience in managing their diesel resources effectively.

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## ORDERING PROCESS

Ellenex offers simple and easy way to order the solution from any location on earth with narrow band cellular coverage. Please visit our sales portal ([www.ellenex.shop](http://www.ellenex.shop)) or contact us to discuss your application. This is the first step to experience a reliable IoT solution at scale.

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Purchase the solution online



Learn more about our Software Platform



View the Included Sensor Datasheet



Browse our other solutions

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## Integrated IoT Solutions

Email: [sales@ellenex.com](mailto:sales@ellenex.com)  
Web: [www.ellenex.com](http://www.ellenex.com)  
Platform: [ellenex.net](http://ellenex.net)  
Sales Portal: [www.ellenex.shop](http://www.ellenex.shop)