

# Soil Moisture Monitoring

**Efficient soil moisture monitoring is key to sustainable agriculture and water resource management, ensuring a secure food supply for a growing global population.**

## CHALLENGE

Agricultural industries around the world face the challenge of optimizing water usage to enhance crop yield and maintain soil health. Monitoring soil moisture accurately and consistently is crucial for efficient irrigation management and preventing water wastage.

## SOLUTION

The 10Sorex battery-operated Soil Probe Sensor is an ideal solution to address this challenge. By leveraging NB-IoT technology, these rugged, IP65 rated sensors can be easily deployed in agricultural fields to monitor soil moisture levels near real-time. The IoT sensors transmit data every few hours, providing farmers with valuable information to make informed decisions about irrigation and water management.

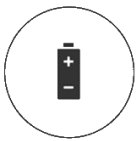
Benefits of using 10Sorex Soil Probe Sensors include:

- Improved water usage efficiency, reducing wastage and conserving valuable resources.
- Enhanced crop yields through optimal irrigation management based on accurate soil moisture data.
- Reduced labor costs and time spent manually monitoring soil moisture levels.

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- Improved soil health by preventing over-irrigation and ensuring adequate moisture for plant growth.
- Long battery life and low maintenance requirements, thanks to ruggedized design and advanced NB-IoT technology.

By implementing 10Sorex Soil Probe Sensors, agricultural industries can optimize their water management practices, improve crop yields, and contribute to sustainable agriculture and water resource conservation.



Battery Operated



Ruggedized Design



Easy Install



Pre-Configured



Secure



Quick ROI

## TECHNOLOGY

10Sorex 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.



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## Soil Moisture Monitoring

### SENSOR TECHNICAL SPECIFICATIONS

|                               |                                                                |
|-------------------------------|----------------------------------------------------------------|
| • Sensing Elements            | 4<br>One every 10cm                                            |
| • Moisture Resolution (%)     | 0.01 (typ.)                                                    |
| • Moisture Accuracy (%)       | ±2 (typ.)<br>at 0% VWC to 50% VWC                              |
| • Temperature Resolution (°C) | 0.01 (typ.)                                                    |
| • Temperature Accuracy (°C)   | ±1 (typ.)<br>at 25°C                                           |
| • Storage Temperature (°C)    | -7 to +60                                                      |
| • Operation Temperature (°C)  | -7 ~ +60                                                       |
| • Power Supply                | Built-in Replaceable Lithium Battery                           |
| • Rated Voltage (V)           | 3.6                                                            |
| • Battery Lifetime            | 10,000+ transmissions                                          |
| • Weight (g)                  | ~ 1300                                                         |
| • Protection Rate             | IP66, and UV Protected enclosure                               |
| • 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<br>(customised options available) |

## Soil Moisture Monitoring

### PLATFORM FEATURES

10Sorex'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. 10Sorex'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, 10Sorex'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 customization available on request



Encrypted &  
ultra-low power



Integratable



Dynamic alerting



Multi-tenant



Scalable



Composable &  
API first



Low cost



Action management



Resource monitoring

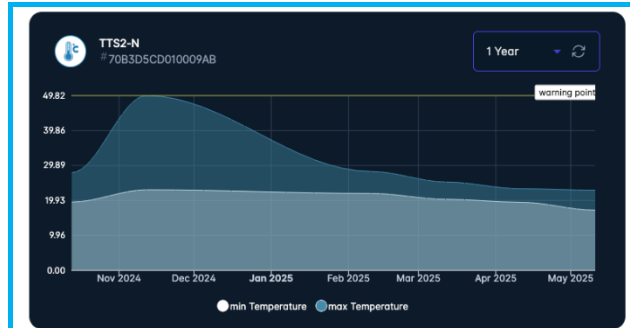
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## Soil Moisture Monitoring



| NAME                                          | LAST DATA                    | BATTERY | SIGNAL QUALITY | NOTE                                                |
|-----------------------------------------------|------------------------------|---------|----------------|-----------------------------------------------------|
| NB-107 Water Level Sensor<br>#70B3D5CD01009A9 | 847<br>55 minutes ago        | 3.58 V  | high           | Measuring Water and Range<br>(On to Sea)            |
| CS02-N<br>#70B3D5CD01009D4                    | 96.35<br>9 minutes ago       |         | high           | NB-107 - Cat-M1 Conductivity<br>and Salinity Sensor |
| TTS2-N<br>#70B3D5CD01009AB                    | 13.7 °C<br>a few seconds ago | 3.53 V  | high           | Temperature sensor with Sea wire                    |
| PTS2-N<br>#70B3D5CD01009AF                    | 20.47 °C<br>36 minutes ago   | 3.49 V  | high           | NB-107 Pressure & Temperature<br>Sensor             |
| NB-107 Temperature Sensor<br>#70B3D5CD01009F2 | 2.78 °C<br>1 hour ago        | 3.45 V  | high           | Measuring Temperature                               |

Single-screen visualization of device data



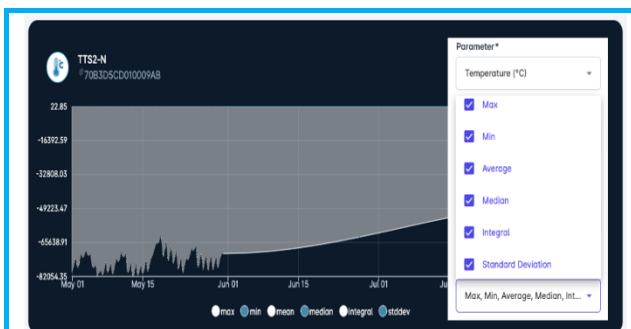
Easy analytic insight into long-term data

| VERSIONS                      | Webhook-API                                    |
|-------------------------------|------------------------------------------------|
| Webhook-API                   | GET /new/webhooks Get Webhooks                 |
| USB & SUBSCRIPTION MANAGEMENT | POST /new/webhooks Create Webhook              |
| DATA STORE                    | GET /new/webhooks/{id} Get Webhook Data        |
| DATA PROCESSING               | POST /new/webhooks/{id} Update Webhook         |
| DATA NOTIFICATIONS            | DELETE /new/webhooks/{id} Delete Webhook       |
| ALERT RULES                   | GET /new/trigger Get Trigger                   |
| DEVICE INVENTORY              | GET /new/trigger/{trigger_id} Get Trigger Data |
| SCHEMAS                       |                                                |

Integration-ready Webhook & APIs



Global visualization of device locations with address-level zoom



Customizable aggregations & stats

Multi-channel, rule-based alert management

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## Soil Moisture Monitoring

### INDUSTRIES SERVED



Agriculture &  
Farming

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### INTEGRATION OPTIONS

10Sorex'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, 10Sorex 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 10Sorex'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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## Soil Moisture Monitoring



### ORDERING PROCESS

10Sorex 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.10sorex.com](http://www.10sorex.com)) or contact us to discuss your application. This is the first step to experience a reliable IoT solution at scale.



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

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