

Atomsenses LoRaWAN Soil Moisture Sensor

Product Specification

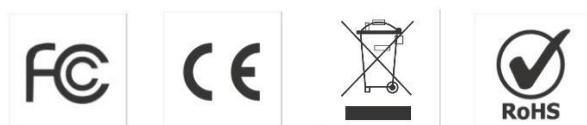
Applicability

This guide applies to the following Atomsenses products, unless otherwise specified:

Model	Description
AEM-302	- LoRaWAN Soil Moisture Sensor

Declaration of Conformity

Atomsenses sensors and other products comply with the essential requirements and relevant provisions of FCC, CE/EMC, and RoHS standards.



Product Overview

The AEM-302 is a rugged, industrial-grade sensor engineered for precision monitoring of soil moisture, temperature, and electrical conductivity (EC) in extreme environmental conditions. Leveraging LoRaWAN® technology, it ensures reliable, long-range data transmission with minimal power consumption, achieving an industry-leading operational lifespan of up to 10 years powered by a high-capacity 12,000 mAh battery.

Device Appearance



Dimensions(mm)



Features

- **Multi-Parameter Monitoring:** Simultaneously captures critical soil metrics (moisture, temperature, EC) to optimize agricultural and environmental decision-making.
- **Robust Design:** Built to withstand harsh outdoor environments, including prolonged exposure to moisture, temperature fluctuations, and corrosive elements.
- **LoRaWAN® Efficiency:** Utilizes the ultra-low-power, long-range protocol to enable seamless integration with the Atomsenses IoT ecosystem, including LoRaWAN® gateways and the Atomsenses IoT Cloud Platform.
- **Remote Data Management:** Streamline operations via centralized cloud-based dashboards for real-time data visualization, historical trend analysis, and automated alerts.

Technical specifications and standards

Specifications	Parameters
Technology	LoRaWAN®
Frequency	CN470/IN865/RU864/EU868/US915/AU915/KR920/AS923-1&2&3&4
Tx Power	16dBm(868MHz)/20dBm(915MHz)/19dBm(470MHz)
Sensitivity	-137dBm @300bps
Mode	OTAA/ABP Class A
Measurement	
Moisture	
Range	0% RH~ 100% RH
Accuracy	±2%(0~50%),±3%(50%~100%)
Resolution	0.0001
Temperature	
Range	-40°C ~ 80°C
Accuracy	±0.5°C
Resolution	0.1°C
Conductivity	
Range	0~20000µs/cm
Accuracy	±3%(0~10000µs/cm),±5%(10000~20000µs/cm)
Resolution	10µs/cm (0~10000µs/cm), 50µs/cm (10000~20000µs/cm)
Power On & Off	power button (Internal)
Configuration	PC software(via USB Type-C)
Advanced Feature	Data Storage, Data Retransmission, Data Retrievability, Threshold Alarm, Change Alarm, D2D Controller
Power Supply	1 × 19000 mAh ER34615 Li-SOCL ₂ Battery
Battery Life*	10 years (15 min interval, 25 °C)
Operating Temperature	-30°C~70°C

Relative Humidity	0% to 100% (non-condensing)
Ingress Protection	IP67
Dimension	Transceiver: 90 × 56 × 150 mm
	Soil Sensor: 88 × 68 × 26 mm (Probe length: 50mm)
Installation	Pole, wall or DIN Rail Mounting
Cable Length	2 m
Cable Material	Teflon
Cable Operating	-200 °C~290 °C