



LoRaWAN Agricultural Monitoring Node-to-App Starter Kit



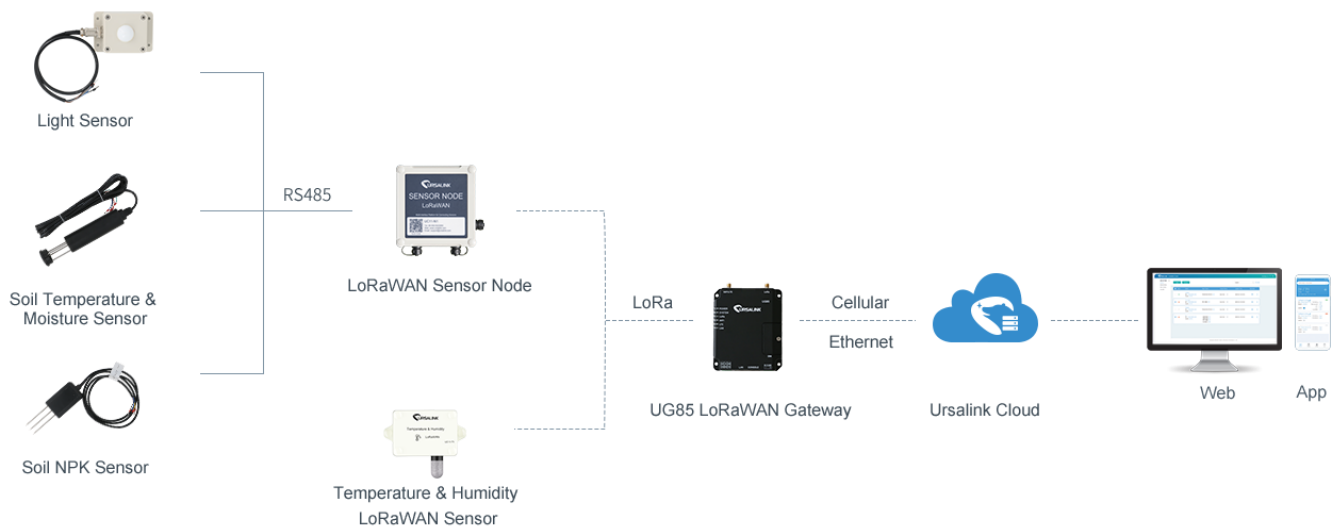
► Introduction

Ursalink LoRaWAN Agricultural Monitoring Node-to-App Starter Kit is designed for simplifying the process of PoC about LoRaWAN network establishment and remote monitoring for the agricultural environment.

► Checklist

- 1 × UG85 LoRaWAN Gateway
- 1 × UC11-T1 LoRaWAN Temperature and Humidity Sensor
- 1 × UC11-N1 LoRaWAN Sensor Node
- 1 × Light Sensor
- 1 × Soil Temperature and Moisture Sensor
- 1 × Soil NPK (Nitrogen, Phosphorus, and Potassium) Sensor
- 1 -Year Free Ursalink Cloud Service (For new cloud user only)

► Topology



► 6 Steps to Start the Online Monitoring

1. Register an Ursalink Cloud account at cloud.ursalink.com;
2. Connect Light, Soil Temp & Moisture Sensor and Soil NPK Sensor to UC11-N1 Sensor Node;
3. Add UG85 to Ursalink Cloud;
4. Add UC11-T1 and UC11-N1 to Ursalink Cloud;
5. Customize your devices;
6. Download Ursalink Cloud app from Google Play or Apple Store.

Start to monitor the status of your agricultural application!

► Hardware Specifications

► UG85 LoRaWAN Gateway



LoRaWAN	
Frequency	EU433/CN470/IN865/EU868/AU915/US915 /KR920/AS923
Channel	8
Interface	
Ethernet Port	1 × 10/100/1000 Mbps
Cellular interface	2 × SIM Card (2FF)
Physical Characteristics	
Power Supply	9-48 VDC
Operating Temperature	-40°C to +70°C
Ingress Protection	IP30
Dimension	108 × 90 × 26 mm
Mounting	Desktop, Wall or DIN Rail Mounting

*Note: The LoRaWAN Gateway for this starter kit: Cellular: Support 3G/4G; WIFI: No; GPS: No; PoE: No.

More info: <https://www.ursalink.com/en/ug85-lorawan-gateway/>

► UC11-T1 Temperature and Humidity Sensor



LoRaWAN	
Frequency	EU433/CN470/IN865/EU868/AU915/US915 /KR920/AS923
Measurement	
Temperature Range	-40°C to + 70°C
Temperature Accuracy	0°C to + 70°C (±0.3°C), -40°C to 0°C(±0.6°C)
Humidity Range	0% to 100% RH
Humidity Accuracy	±3% RH from 10% to 90%, ±5% RH below 10% and above 90%
Physical Characteristics	
Ingress Protection	IP65
Dimension	111 × 92 × 33 mm
Power Supply	8000 mAh Replaceable Li-SOCL2 Battery

More info: <https://www.ursalink.com/en/t1-temperature-humidity-lorawan-sensor/>

➤ UC11-N1 LoRaWAN Sensor Node



LoRaWAN	
Frequency	EU433/CN470/IN865/EU868/AU915/US915/KR920/AS923
Interface	
Interface 1	2 × GPIO, 1 × RS485, 1 × 3.3 V output, 1 × 5/9/12 V Output Switchable
Interface 2	2 × Analog Input (4-20 mA or 0-10 V Switchable), 1 × 3.3 V Output, 1 × 5/9/12 V Output Switchable
Physical Characteristics	
Operating Temperature	-20°C to +70°C
Ingress Protection	IP67
Dimension	120.1 × 120.1 × 55.4 mm
Power Supply	1. 5-24 VDC with 5000 mAh Battery Backup 2. Solar-powered with 5000 mAh Battery (Optional)

More info: <https://www.ursalink.com/en/n1-lorawan-sensor-node/>

➤ Soil NPK (Nitrogen, Phosphorus, and Potassium) Sensor



Measurement	
NPK Range	0 to 2000 mg/kg
Accuracy	Max ±2% F.S.
Response Time	< 10s
Interface	
Interface	1 × RS485
Protocol	Modbus RTU
Physical Characteristics	
Operating Temperature	5°C to +45°C
Relative Humidity	0% to 95% (non-condensing)
Ingress Protection	IP68
Dimension	Length: 65 mm, Probe Length: 70 mm, Cable Length: 0.5 m
Power Supply	12 to 24 VDC
Power Consumption	< 0.2 W

➤ Light Sensor



Measurement	
Measurement Range	0 to 100,000 Lux (Default, Indoor) 0 to 200,000 Lux (Optional, Outdoor)
Accuracy	± 2%
Resolution	1 Lux
Wavelength Range	400 to 750 nm
Interface	
Interface	1 × RS485
Protocol	Modbus RTU
Physical Characteristics	
Operating Temperature	-40 to 80°C
Ingress Protection	IP66
Dimension	89 × 60 × 46 mm, Cable Length: 0.5 m
Power Supply	7 to 24 VDC
Power Consumption	< 0.4 W

➤ Soil Temperature and Moisture Sensor



Measurement	
Soil Temperature Range	-20°C to +80°C
Soil Temperature Accuracy	±1°C at 25°C
Soil Moisture Range	0 to 100%
Soil Moisture Accuracy	±2% at 25°C (0 to 50%)
Interface	
Interface	1 × RS485
Protocol	Modbus RTU
Physical Characteristics	
Ingress Protection	IP68
Dimension	Length: 133 mm, Diameter: 40 mm, Probe Length: 60 mm, Cable Length: 3 m
Power Supply	12 to 24 VDC
Power Consumption	< 0.6 W