URSALINK

We Connect Things to Cloud

At Ursalink we are passionate about the connectivity of "things" to the cloud. We leverage the value of the top trending technologies that transform the world we live in and are committed to our partners who share the same passion. We believe that the complexity of data collection, storage and retrieval can be simplified into the Cloud-intelligence. Our development and distribution of these appliances and services demonstrates our commitment to the digital transformation and continues to deliver compelling connectivity for IoT world.

Contents

UG87   UG85   UG65   AM100 series   EM500 series   EM300 series   UC11-N1   Remote I/O   UR32   UR35   UR75

Indoor Ambience Monitoring Sensors

LoRaWAN CERTIFIED

- Temperature & Humidity
- Motion (PIR)
- Light
- Barometric Pressure
- TVOC
- CO₂

Ursalink AM100 Series consists of multiple smart sensors that are built specifically for indoor ambience measurements. It has a clean and modern design that makes it discrete in indoor ambience.

Clean and Modern Design
Bring "less is more" concept to indoor or HVAC environment

Multiple Sensors in One
Temperature, humidity, motion (PIR), CO₂, TVOC, barometric pressure

Configure with One Touch
NFC technology enables easy configuration and on/off operation

Better Readability than LCD Monitor
E-ink technology offers high display clarity and sunlight visibility

Low Power Consumption
AA alkaline batteries can last for 1 year and ensure low maintenance cost

Smart Screen Mode
Screen will stop updating data if no motion is detected continuously for 20 minutes, which will save more power and prolong the use life of batteries.

Compliant with Toolbox & Ursalink Cloud
Manage and configure your sensor easily

Model			AM102	AM100
Hardware	Frequency		EU433/CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923	
	Tx Power		17dBm (470) / 16dBm (868) / 20dBm (915)	
	Sensitivity		-147dBm @300bps	
	Mode		OTAA/ABP	
	Power Supply		2 × AA alkaline batteries/Powered by Type C port	
	Battery Lifetime		1 year (SF7), 0.9 year (SF10)	1.5 year (SF7), 1.2 year (SF10)
Sensors	Temperature	Range	-20°C to + 70°C	
		Accuracy	±0.3°C (0 ~ 70°C), ±0.6°C (-20 ~ 0°C)	
	Humidity	Range	0% to 100% RH	
		Accuracy	±3% RH (10 ~ 90%), ±5% RH (0 ~ 10%, 90 ~ 100%)	
	PIR	Detection Area	94° Horizontal, 82° Vertical	
		Detection Distance	5 m	
	Light	Range	60000 lux (Visible + IR, IR)	
		Accuracy	±30%	
	CO₂	Range	400 ~ 5000 ppm	
		Accuracy	±30 ppm or ±3% of reading	N/A
	TVOC	Range	0 ~ 60000 ppb (total VOC)	
		Accuracy	±15% of reading	
		Long-term Stability	1.3% accuracy drift per year	
	Barometric Pressure	Range	300 ~ 1100 hPa (-40 ~ 85°C)	
		Accuracy	±1 hPa	

Environmental monitoring sensors

EM300-TH

Featuring a simple yet modern design, compact size and waterproof capability, EM300 series are ideal to fit into the indoor or outdoor environment.

Configure with One Touch
NFC technology enables easy configuration and on/off operation

Low Power Consumption
Dual batteries (one battery by default) can last up to 10 years

Compliant with Toolbox & Ursalink Cloud
Manage and configure your sensor easily

Compact & Waterproof
Small size with an IP67 rating enclosure

100% Wire-Free
Up to 15 km wireless communication range

EM300-TH Temperature & humidity sensor is a sensor suitable for indoor and outdoor temperature and humidity monitoring. It can be widely used in office areas, in greenhouses, houses and other environments.

Specifications	
Protocol	LoRaWAN
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923
Temperature	±0.3°C (0 ~ 70°C), ±0.6°C (-30 ~ 0°C)
Humidity	±3% RH (10 ~ 90%), ±5% RH (0 ~ 10%, 90 ~ 100%)
Power Supply	ER18505 Li-SOCl2 Battery (4000 mAh/8000 mAh)
Operating temperature	-30 ~ 70°C
Ingress Protection	IP67
Dimensions	88 x 87 x 27 mm (3.46 × 3.42 × 1.06 in)

Office   Greenhouse   Residence

Outdoor Environment Monitoring Sensor

The EM500 series are LoRaWAN sensors designed for different professional applications. These sensors adopt a high ingress protection rating enclosure for use in the most challenging outdoor environmental conditions, and are powered by built-in battery for years-long use life.

High IP Rating Enclosure
IP rated as "dust tight" and protected against heavy fog or powerful jets of water

Rich Installations Available
Pole mounting, wall mounting, DIN rail

Configure with One Touch
NFC technology enables easy configuration and on/off operation

Multiple Applications in Vertical Markets
Soil monitoring, water management, temperature & humidity measurement, etc

Long Battery Use Life
19000 mAh replaceable battery ensures low maintenance cost

Compliant with Toolbox & Ursalink Cloud
Manage and configure your sensor easily

Soil Moisture, Temperature and Electrical Conductivity Sensor
EM500-SMT

Industrial Temperature Sensor
EM500-PT100

Light Sensor
EM500-LGT

Ultrasonic Distance/Level Sensor
EM500-UDL

Pipe Pressure Sensor
EM500-PP

CO_2 Sensor (4 in 1)
EM500-CO₂

Submersible Water Level Sensor
EM500-SWL

Soil Moisture, Temperature and Electrical Conductivity Sensor

- Research-grade accuracy in multiple soil media
- Easy installation into undisturbed soil
- Rapid monitoring of growing conditions

Light Sensor ☼

- Measuring ranges from 0 to 100,000 lux
- Fast Response 1 second
- 10-year battery life with low maintenance cost
- Accurately detect any light changes

EM500-SMT provides an external probe for receiving accurate and instantaneous information on soil moisture content, temperature, and salinity. It is an important tool for soil condition monitoring.

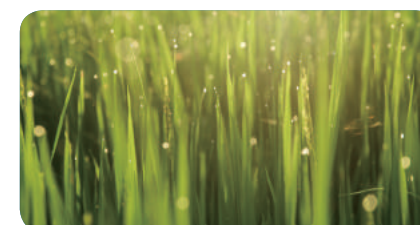| Model		Moisture	Temperature	Electrical Conductivity
SMT-EC5	Range	0 ~ 100% RH	/	/
	Accuracy	±2%RH		
	Resolution	0.25%RH		
SMT-MEC20	Range	0 ~100% RH	-40 ~ 80°C	0 ~ 20000 μS/cm
	Accuracy	2%RH (0 ~ 50%), 3% RH(50 ~ 100%)	±0.5°C	±3% (0 ~ 10000 μS/cm), ±5% (10000 ~ 20000 μS/cm)
	Resolution	0.03% RH(0 ~ 50%), 1%RH(50 ~ 100%)	0.1°C	10 μS/cm (0 ~ 10000 μS/cm), 50 μS/cm (10000 ~ 20000 μS/cm)

Grassland

Farmland

Greenhouse

EM500-LGT light sensor can accurately monitor the changes in the surrounding light intensity. It is suitable for light measurement and research in agriculture, forestry, greenhouse, horticulture, breeding, industrial workshops, warehouses, urban lighting, and buildings.

Model	LGT
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923
Measuring Range	0 ~ 100000lux
Accuracy	±3%(Acquired Value)
Resolution	1lux
Operating Temperature	-30 ~ 60°C
Operating Humidity	0 ~ 100%
Cable length	3m
Power Supply	Built-in 19000 mAh Li-SOCL2 Battery, working hours up to 10 years
IP Rating	IP65

Agriculture

Forestry

Greenhouse Cultivation

Pipe Pressure Sensor

- No leakage danger
- Shock-resistant and vibration-resistant
- Measuring accuracy is less than ±0.5%FS
- Temperature compensation for correction of temperature changes

Submersible Water Level Sensor

- Customizable measuring range up to 200 m
- Submersible pressure sensor not affected by foam, wind, or rain
- IP67 full sealed plastic waterproof design
  (Transceiver is not included)
- Measuring medium: water
  (Customizable for oil and other non-corrosive media)

EM500-PP sensor is designed for the pressure monitoring of tank level or leakage in pipes.

Model	EM500 - PP
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923
Range	0 ~ 1600 kPa
Accuracy	±0.5% FS
Power Supply	Built-in 19000 mAh Li-SOCL2 Battery, working hours up to 10 years
IP Rating	IP66（IP67 as required）

EM500-SWL is designed to measure the tank level or open water applications while fully submersed in liquid. It is robust and sealed to prevent corrosion and failure.

Model	Range	Accuracy
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923	
SWL-L003	0 ~ 3 m	±0.5%FS
SWL-L005	0 ~ 5 m	±0.5%FS
SWL-L010	0 ~ 10 m	±0.5%FS
Power Supply	Built-in 19000 mAh Li-SOCL2 Battery, working hours up to 10 years	
IP Rating	IP66（IP67 as required）	

Constant Water Supply   **Hydraulic Equipment**   **Barometric Pressure Detection**

Reservoir   **Tank**   **Lake**

Industrial Temperature Sensor

- Vibration-resistant construction
- Three-wire circuit
- Customizable temperature (-200 ~ 800°C)
- Terminal heads available in straight tube, armoured, SMT, threaded, magnet

CO₂ Sensor (4 in 1)

- Measuring ranges from 400ppm to 5000ppm
- Easy installation in any enclosed creas or outdoor
- 4 in 1 (CO_2, barometric pressure, humidity, temperature)

EM500-PT100 equips a highly accurate temperature sensor PT100, the platinum resistance temperature detector offers the most stable and precise temperature measurement from -200 to 800°C.

Model	Range	Accuracy	Length
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923		
PT100-T50	-200 ~ 50°C	±0.5°C	1.5 m
PT100-T200	-50 ~ 200°C	±0.5°C	1.5 m
PT100-T500	-50 ~ 500°C	±0.5°C	1.5 m
PT100-T800	-50 ~ 800°C	±0.5°C	1.5 m
Power Supply	Built-in 19000 mAh Li-SOCL2 Battery, working hours up to 10 years		
IP Rating	IP66　(IP67 as required)		

EM500-CO₂ is designed for measuring gaseous carbon dioxide (CO_2) concentration in harsh environments. It is useful in the application where knowing CO_2 level is important like greenhouse, building ventilation, fruit and vegetable storage. Besides, it also supports temperature, humidity and barometric pressure measurement.

Model	Range	Accuracy	Resolution
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923		
CO_2	400 ~ 5000 ppm	±30 ppm or ±3% of reading	1 ppm
Barometric Pressure	300 ~ 1100 hPa (-40 ~ 85°C)	±1 hPa	0.1 hPa
Temperature	-30°C ~ 70°C	±0.6°C (-40 ~ 0°C) ±0.3°C (0 ~ 70°C)	0.1°C
Humidity	0 ~ 100% RH	±3%RH (10 ~ 90%) ±5%RH (0 ~ 10%, 90 ~ 100%)	0.5%RH
Power Supply	Built-in 19000 mAh Li-SOCL2 Battery, working hours up to 10 years		
IP Rating	IP66		

Industrial Process

Cold Chain

Laboratory

Smart City

Hatchery

Forest Fire Monitoring

Ultrasonic Distance/Level Sensor

- Measuring ranges from 0.3m to 10m
- Measurements in very small containers or openings
- Suitable for measuring benign and chemical mediums
- Non-contact detection for any corrosive liquid chemicals or combustibles

LoRaWAN Sensor Node LoRaWAN®

Multi-interface Platform for Connecting Sensors

EM500-UDL provides highly accurate distance measurement for a variety of applications in harsh environments like flood monitoring, waster water management, fill level monitoring in grains or fertilizer. The measurement is based on ultrasonic waves transmitted and reflected back from nearby objects.

Model			
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923		
UDL-W050	0.3 ~ 5 m	±1%	1 mm
UDL-W100	0.5 ~ 10 m	±1%	1 mm
Power Supply	Built-in 19000 mAh Li-SOCL2 Battery, working hours up to 10 years		
IP Rating	IP66（IP67 as required）		

Water Treatment　　　**Snow Depth**　　　**Grain Silo**

The UC11-N1 is a fully integrated and battery-powered LoRaWAN node with solar panel and multiple communication interfaces for connecting to a wide range of external sensors. With quick installation and easy maintenance, the UC11-N1 is designed to work in harsh environments for remote monitoring and collecting data from sensors.

Specification	
Protocol	LoRaWAN
Frequency	CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923
Interface 1	2 × GPIO, 1 × RS232/RS485 switchable 1 × 3.3 V output, 1 × 5/9/12 V output switchable
Interface 2	2 × analog input, 1 × 3.3 V output, 1 × 5/9/12 V output switchable
Power Supply	1. Battery powered version (19000 mAh Li-SOCL2 battery) 2. DC powered version (4900 mAh rechargeable battery with solar panel)
Dimension	120 × 120 × 55.4 mm (4.73 × 4.73 × 2.18 in)

LoRaWAN Gateway

UG87 Outdoor Gateway
UG65/UG85 Indoor Gateway

Embedded Network Server

➤ Real-time data collection & processing
➤ Save investment of external network service

Powerful LoRa Capabilities

➤ 8/16 channels
➤ Up to 11 kilometers range
➤ High capacity of up to 2000 nodes
➤ Support CN470/EU868/US915/AS923 and more

Industrial Design

➤ IP67 waterproof (UG87)
➤ PoE powered device
➤ -40°C to 70°C operating temperature

Optimized Packet Forwarder

➤ Support forwarding data to multiple network servers simultaneously
➤ Strengthened security and efficiency of data delivery to TTN, Loriot, ChirpStack, Orbiwise and more

Specifications

Model		UG65	UG85	UG87
Product				
LoRaWAN	Channel	8		8 / 16
	Frequency	CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923		
	Sensitivity	-140dBm Sensitivity @292bps		
	Output Power	27 dBm Max		
	Protocol	V1.0 /V1.0.2/V1.1.0, Class A and Class C		
Hardware	Processor	Quad-core 1.5GHz, 64-bit ARM Cortex-A53	800 MHz, 64-bit ARM Cortex-A53	
	Memory	512 MB DDR4	512 MB DDR3	
	Flash	8 GB eMMC (pSLC mode)		
	Power Supply	9 ~ 48 VDC PoE PD (Optional)		PoE PD
Connectivity	Cellular	2 x SIM Slot, Support Global GSM/3G/4G LTE Frequency Bands		
	Wi-Fi	IEEE 802.11b/g/n(Optional)	IEEE 802.11b/g/n/ac(Optional)	
	Ethernet	1 x 10/100/1000 Mbps		
	GPS	Optional		

Remote I/O Series

The compact Ursalink Remote I/O Series is designed for monitoring and controlling field devices, and collecting data to cloud.

Specifications

Model	Analog Input	Digital Input	Relay Output	RS232	RS485	Network
UC1114	—	2	2	—	—	LoRaWAN
UC1122	2	1	1	—	—	
UC1152	—	1	1	1	1	
UC3x14	—	2	2	—	—	2G/3G/4G NB-IoT LTE-M *
UC3x22	2	1	1	—	—	
UC3x52	—	1	1	1	1	

* On the roadmap

Ursalink Cloud

The Ursalink Cloud provides unparalleled levels of vertical integration with Ursalink LoRaWAN nodes (sensors, sensor nodes and remote I/Os). It visualizes field data and enables user to monitor and control remote assets on an intuitive dashboard.

Visualization
Transform real-time and historical data into drag-and-drop widgets on dashboard

Monitoring & Control
Control access and monitor your projects from anywhere

Alerts
Enable email and mobile push notifications based on triggered events

Security & Reliability
Built on AWS to provide the most confidential and reliable infrastructure for your data

Industrial Cellular Router

Rugged & Programmable 4G Router

UR32

UR35

High Performance

➤ NXP Industrial Grade Processor

➤ -40°C to 70°C Operating Temperature

➤ Support Wi-Fi, GPS, Serial, I/Os and Voice

Low Maintenance & Easy Operation

➤ User-friendly GUI

➤ UrsalinkVPN for Remote Access

➤ DeviceHub Central Management

Intelligent & Programmable

➤ Python Programming

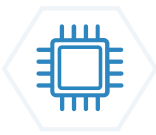➤ Support Modbus RTU/TCP

Lower Investment

➤ Affordable Price

➤ PoE-PSE for Less Wire Connection

➤ Reduce Time Cost by Remote Management

UR75 High-Performance Industrial Router

Featuring the latest and fastest cellular technology - 5G, UR75 is not only an intelligent industrial IoT router, but also an unrivaled wireless networking solution.

UR75

Outstanding Performance

➤ 5G NSA & NA Modes

➤ Qualcomm Quad-Core Processor

➤ CAT4/6/12/20 Cellular Modem (Optional)

Rich Connectivities

➤ 2 × 2 MIMO 802.11ac Wi-Fi

➤ 1 × RS232 + 1 × RS485

➤ 1 × Digital Input & Output

Edge Intelligence

➤ Azure IoT Edge

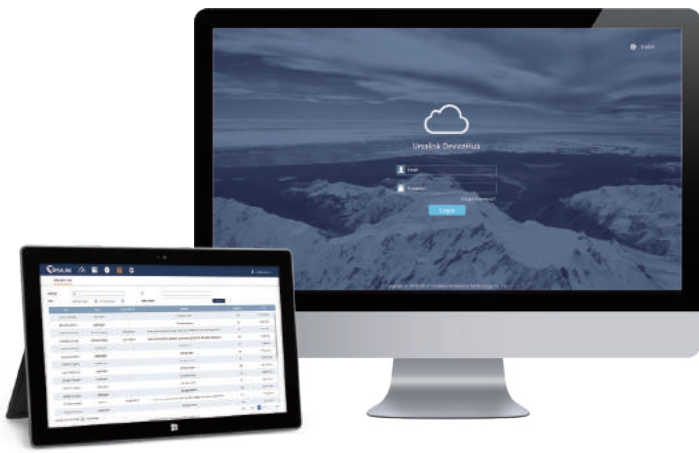➤ AWS Greengrass

➤ Python Programming

Specifications

		UR32	UR35	UR75
Interfaces	SIM Slots	2		
	Ethernet Ports	2 x 10/100 Mbps	5 x 10/100 Mbps	5 × 10/100/1000 Mbps
	Serial Ports	1 x RS232 or 1 x RS485	1 x RS232 + 1 x RS485	1 × RS232 + 1 × RS485
	DI/DO	1 × DI + 1 × DO		
	Voice	N/A	1 × FXS (RJ11)	N/A
	Antenna Connectors	2 x Cellular Connectors 1 x Wi-Fi /GPS Connector	2 x Cellular Connectors 1 x Wi-Fi Connector 1 x GPS Connector	3 x Cellular Connectors 1 x Cellular/GPS Connector 2 x Wi-Fi Connectors
Network	Cellular	4G CAT4		5G, 4G CAT4/6/9/12/20 (Optional)
	Wi-Fi (Optional)	IEEE 802.11b/g/n		IEEE 802.11a/b/g/n/ac
	Serial Port	Transparent (TCP Client/Server, UDP), Modbus Gateway (Modbus RTU to Modbus TCP), Modbus Master		
	Network Protocols	PPP, PPPoE, SNMP v1/v2c/v3, TCP, UDP, DHCP, RIP v1/v2, OSPF, DDNS, VRRP, HTTP, HTTPS, DNS, ARP, QoS, SNTP, Telnet, VLAN, SSH		
	AAA	RADIUS, TACACS+, LDAP, Local Authentication		
	Firewall	URL Filtering/ACL/DMZ/Port Mapping/MAC Binding/SPI/DoS Protection		
	Reliability	VRRP, WAN Fail-over, Dual SIM Backup		
	VPN	OpenVPN, IPsec, PPTP, L2TP, DMVPN, GRE		
Maintenance	Management	Web, CLI, SMS, Watchdog, On-demand Dial Up		
	Multilevel Authority	Multiple Levels of User Authority		
Capabilities	CPU	528 MHz, 32-bit ARM Cortex-A7		716 MHz, Quad-Core ARM Cortex-A7
	Flash	128 MB		8 GB
	Memory	128 MB DDR3		512 MB DDR3
	Built-in	Watchdog		
	GPS (Optional)	GPS + GLONASS		
	Extended Memory	1 × micro SD card slot, up to 128 GB		1 × M.2 NVMe SSD Slot
Hardware	Power Input	9 ~ 48 VDC		
	Power Output (Optional)	2 × 802.3af/at PoE PSE	4 × 802.3af/at PoE PSE	4 × 802.3af/at PoE PSE
	Ingress Protection	IP30		
	Housing & Weight	Metal, 271 g (0.60 lb)	Metal, 481 g (1.06 lb)	Metal, 525 g (1.16 lb)
	Dimensions	108 x 90 x 26 mm (4.25 x 3.54 x 1.02 in)	135 x 100 x 45 mm (5.31 x 3.94 x 1.77 in)	135 × 118 × 45 mm (5.31 × 4.65 × 1.77 in)
	Mounting	Desktop, Wall or DIN Rail Mounting		
Others	Operating Temperature	-40°C to +70°C (-40°F to +158°F) Reduced cellular performance above 60°C		
	Storage Temperature	-40°C to +85°C (-40°F to +185°F)		
	Relative Humidity	0% to 95% (non-condensing) at 25°C/77°F		
	Certifications	RoHS, CE, FCC, PTCRB, AT&T, RCM, SPDDI, NBTC	RoHS, CE, FCC	
	Frequency Band E	LTE: B1/B3/B5/B7/B8/B20/B38/B40/B41	3G: B1/B5/B8	GSM: B3/B8
	AF	LTE: B2/B4/B5/B12/B13/B14/B66/B71	3G: B2/B4/B5	/
	AU	LTE: B1/B2/B3/B4/B5/B7/B8/B28/B40	3G: B1/B2/B5/B8	GSM: B2/B3/B5/B8
	500GL	5G NR: N1/N2/N3/N5/N7/N8/N12/N20/N28/ N41/N66/N71/N77/N78/N79	LTE FDD: B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B14/ B17/B18/B19/B20/B21(TBD)/B25/B26/B28/B29/B30/ B32/B66/B71 LTE TDD: B34/B38/39/B40/B41/B42/B48	

*For UR75 5G version only

Connectivity Suite

Applicable to Industrial Cellular Router and LoRaWAN Gateway

Ursalink DeviceHub is a web-based platform that lets you manage all your Ursalink routers and gateways from a single location at anytime.

The Ursalink DeviceHub is able to monitor all critical parameters of remote routers, and gateways, perform configuration, upgrade firmware, analyze system log, create graphic reports and more. It helps to improve productivity, reduce costs, and enhance the intelligence of your network and business operations.

The Ursalink VPN is the core component of Ursalink VPN solution. Typically it's hosted on your our sener.

Software Requirements

✔ OS: Ubuntu 16.04
✔ Supports installation package
✔ Browser: Chrome, Firefox

Hardware Requirements

Your host hardware must meet the following minimum requirements:

For 500 devices
✔ RAM: 16 GB
✔ Disk: 512 GB

For 1000 devices
✔ RAM: 32 GB
✔ Disk: 1T