



# 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 mounting



## 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 Milesight IoT Cloud

Manage and configure your sensor easily



**Soil Moisture, Temperature and Electrical Conductivity Sensor**  
EM500-SMTC/SMT



**Industrial Temperature Sensor**  
EM500-PT100



**Light Sensor**  
EM500-LGT



**Ultrasonic Distance/Level Sensor**  
EM500-UDL



**Pipe Pressure Sensor**  
EM500-PP



**Carbon Dioxide Sensor (4 in 1)**  
EM500-CO<sub>2</sub>



**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



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

Model		EM500-SMTC	EM500-SMT
Moisture	Range	0 ~ 100% RH	0 ~ 100% RH
	Accuracy	±2% (0 ~ 50%), ±3% (50 ~ 100%)	±2% RH
	Resolution	0.01% RH	0.01% RH
Temperature	Range	-40 ~ 80°C	/
	Accuracy	±0.5°C	
	Resolution	0.1°C	
Electrical Conductivity	Range	0 ~ 20000 µS/cm	/
	Accuracy	±3% (0 ~ 10000 µS/cm), ±5% (10000 ~ 20000 µS/cm)	
	Resolution	1 µS/cm	
Frequency		CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923	
Power Supply		Built-in 19000 mAh high-capacity battery can be used for 10 years	
Ingress Protection		Transceiver: IP67 Sensor: IP67	
Operating Temperature		-30 ~ 70°C (Transceiver), -40 ~ 85°C (Sensor)	-30 ~ 70°C (Transceiver), -40 ~ 60°C (Sensor)



Grassland



Farmland



Greenhouse



## Light Sensor

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

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

Specifications	
Range	0 ~ 100000 lux
Accuracy	±3% (Acquired Value)
Resolution	1 lux
Cable length	3 m
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	Transceiver: IP67 Sensor: IP65
Operating Temperature	-30 ~ 70°C (Transceiver), -30 ~ 60°C (Sensor)



**Agriculture Land**



**Forestry**



**Greenhouse Cultivation**



## Pipe Pressure Sensor



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

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

Specifications	
Range	0 - 1600 kPa (16 Bar)
Accuracy	$\pm 0.5\%$ FS
Resolution	1 kPa (0.01 Bar)
Pressure Type	Gauge Pressure
Overload	150% FS
Long-term Stability	$\pm 0.3\%$ FS/year
Process Connection	G 1/2" Male
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	Transceiver: IP67 Sensor: IP65
Operating Temperature	-30 ~ 70°C (Transceiver), -10 ~ 60°C (Sensor)



Constant Water Supply



Hydraulic Equipment



Barometric Pressure Detection



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

Specifications	
Range	0 ~ 3m/5m/10m (H <sub>2</sub> O), Customizable up to 200 m and for other liquids
Accuracy	±0.5% FS
Resolution	0.01 m
Pressure Type	Gauge Pressure
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	Transceiver: IP67 Sensor: IP68
Operating Temperature	-30 ~ 70°C (Transceiver), -10 ~ 60 (Sensor)



**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



**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.

Specifications	
Range	T050: -200 °C to +50 °C T200: -50 °C to +200 °C T500: -50 °C to +500 °C T800: -50 °C to +800 °C (Customizable from -200 °C to +800 °C)
Accuracy	±0.5°C
Resolution	0.1°C
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	Transceiver: IP67 Sensor: IP68 (T200) / IP30 (T050) / IP30 (T500) / IP30 (T800)
Operating Temperature	-30 ~ 70°C (Transceiver)



Industrial Process



Cold Chain



Laboratory



## CO<sub>2</sub> Sensor (4 in 1)



- Measuring ranges from 400 ppm to 5000 ppm
- Easy installation in any enclosed areas or outdoor environment
- 4 in 1 (CO<sub>2</sub>, barometric pressure, humidity, temperature)

EM500-CO<sub>2</sub> is designed for the application where knowing CO<sub>2</sub> level is important like greenhouse, building ventilation, fruit and vegetable storage. It also supports temperature, humidity and barometric pressure measurement.

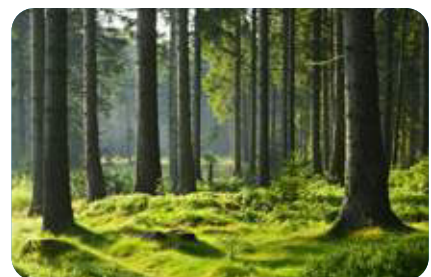
Specifications			
Sensor Specs	Range	Accuracy (0°C-50 °C)	Resolution
CO <sub>2</sub>	400 ~ 5000 ppm	± (30 ppm + 3% of reading)	1 ppm
Barometric Pressure	300 ~ 1100 hPa (-40 ~ 85°C)	±1 hPa	0.1 hPa
Temperature	-30°C ~ 70°C	±0.6°C (-40 ~ 0°C), ±0.3°C (0 ~ 70°C)	0.1°C
Humidity	0 ~ 100% RH	±3% RH (10 ~ 90%), ±5% RH (0 ~ 10%, 90 ~ 100%)	0.5% RH
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923		
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years		
Ingress Protection	IP65		
Operating Temperature	-30 ~ 70°C		



Smart City



Livestock Farming



Forest Fire Monitoring



## Ultrasonic Distance/Level Sensor



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

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

Specifications	
Range	W050: 0.3 ~ 5 m W100: 0.5 ~ 10 m
Accuracy	±1% FS
Resolution	1 mm
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	IP67
Operating Temperature	-30 ~ 65°C



Water Treatment



Snow Depth



Grain Silo