LoRaWAN Sensors

LS100/LS200 Series

User's Manual

Table of Contents

1.	Proc	roduct Introduction			
	1.1	Packa	ge Contents7		
	1.2	Overv	iew7		
	1.3	Featur	res		
	1.4	Produ	ct Specifications13		
2.	Haro	dware 1	Introduction		
	2.1	Physic	al Descriptions		
	2.2	Hardw	vare Installation		
		2.2.1	Battery Installation		
		2.2.2	Magnetic Mounting or Wall Mounting		
		2.3.2	Precautions		
3.	Prep	aratior	٥ 39		
	3.1	Requir	ements		
	3.2	LoRaV	/AN Gateway Setup		
		3.2.1	LoRa Frequency Setting		
		3.2.2	LoRaWAN Setting		
		3.2.3	Setting Up of LoRa Connection via ABP Decryption		
	3.3	Conne	cting to PLANET NMS-AIoT42		
4.	Cust	tomer s	Support		

Copyright

Copyright (C) 2025 PLANET Technology Corp. All rights reserved.

The products and programs described in this User's Manual are licensed products of PLANET Technology, This User's Manual contains proprietary information protected by copyright, and this User's Manual and all accompanying hardware, software, and documentation are copyrighted.

No part of this User's Manual may be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form by any means, electronic or mechanical including photocopying, recording, or information storage and retrieval systems, for any purpose other than the purchaser's personal use, and without the prior express written permission of PLANET Technology.

Disclaimer

PLANET Technology does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose.

PLANET has made every effort to ensure that this User's Manual is accurate; PLANET disclaims liability for any inaccuracies or omissions that may have occurred. Information in this User's Manual is subject to change without notice and does not represent a commitment on the part of PLANET. PLANET assumes no responsibility for any inaccuracies that may be contained in this User's Manual. PLANET makes no commitment to update or keep current the information in this User's Manual, and reserves the right to make improvements and/or changes to this User's Manual at any time without notice.

If you find information in this manual that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.

FCC Compliance Statement

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user

is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CE mark Warning

CE This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

WEEE

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Trademarks

The PLANET logo is a trademark of PLANET Technology. This documentation may refer to numerous hardware and software products by their trade names. In most, if not all cases, these designations are claimed as trademarks or registered trademarks by their respective companies.

Revision

User's Manual of PLANET LoRaWAN Sensors

Model: **LS100 series** (LS100-WL, LS100-PIR, LS100-DW, LS100-CO, and LS100-SMK) and **LS200 series** (LS200-TH, LS200-PT, LS200-TC, LS200-RF, LS200-LG, LS200-CM3, LS200-CM, LS200-PM25, LS200-VOC, LS200-MF8 and LS250-PLUG)

Rev.: 1.1 (January 2025)

Part No. EM-LS100 Series_ LS200 Series v1.1

1. Product Introduction

Thank you for purchasing PLANET LoRaWAN Sensor, LS series. The descriptions of these models are as follows:

EU868

LS100-WL-EU868	IP65 LoRaWAN Water Leak Sensor (EU868 Sub 1G)
LS100-PIR-EU868	IP30 LoRaWAN Indoor Occupancy Sensor (Occupancy/Light/ Temperature -20~55 degrees C, EU868 Sub 1G)
LS100-DW-EU868	IP30 LoRaWAN Door and Window Sensor (EU868 Sub 1G)
LS100-CO-EU868	IP20 LoRaWAN CO Detector (High-Temperature Alarm, EU868 Sub 1G)
LS100-SMK-EU868	IP20 LoRaWAN Smoke Detector (High-Temperature Alarm, EU868 Sub 1G)
LS200-TH-EU868	IP65 LoRaWAN Indoor Temperature and Humidity Sensor (-20 \sim 55 degrees C, EU868 Sub 1G)
LS200-PT-EU868	IP65 LoRaWAN Product Temperature Sensor (PT1000 Needle Probe -70~200 degrees C, EU868 Sub 1G)
LS200-TC-EU868	IP65 LoRaWAN Machine Temperature Sensor (Thermocouple -40~125 degrees C, EU868 Sub 1G)
LS200-RF-EU868	IP65 LoRaWAN Refrigerator Temperature and Humidity Sensor (-40 \sim 55 degrees C, EU868 Sub 1G)
LS200-LG-EU868	IP65 LoRaWAN Light Level Sensor (EU868 Sub 1G)
LS200-CM3-EU868	IP53 LoRaWAN 3-phase Current Meter (3 x 75A Clamp-On CT, EU868 Sub 1G)
LS200-CM-EU868	IP53 LoRaWAN 1-phase Current Meter (150A Clamp-On CT, EU868 Sub 1G)
LS200-PM25-EU868	IP30 LoRaWAN PM2.5 Sensor (PM2.5/Temperature/Humidity -20~55 degrees C, EU868 Sub 1G)
LS200-VOC-EU868	IP65 LoRaWAN TVOC Sensor (TVOC/Temperature/Humidity -20~55 degrees C, EU868 Sub 1G)
LS200-MK8-EU868	LoRaWAN Temperature/Humidity/PIR/Tilt/Vibration/Reed Switch/ Light/Glass Break Sensor (-20~55 degrees C, US915 Sub 1G)
LS250-PLUG-EU868	IP20 LoRaWAN Power Plug with Power Meter (EU868 Sub 1G)

■ US915

LS100-WL-US915	IP65 LoRaWAN Water Leak Sensor (US915 Sub 1G)
LS100-PIR-US915	IP30 LoRaWAN Indoor Occupancy Sensor (Occupancy/Light/ Temperature -20~55 degrees C, US915 Sub 1G)
LS100-DW-US915	IP30 LoRaWAN Door and Window Sensor (US915 Sub 1G)
LS100-CO-US915	IP20 LoRaWAN CO Detector (High-Temperature Alarm, US915 Sub 1G)
LS100-SMK-US915	IP20 LoRaWAN Smoke Detector (High-Temperature Alarm, US915 Sub 1G)
LS200-TH-US915	IP65 LoRaWAN Indoor Temperature and Humidity Sensor (-20 \sim 55 degrees C, US915 Sub 1G)
LS200-PT-US915	IP65 LoRaWAN Product Temperature Sensor (PT1000 Needle Probe -70~200 degrees C, US915 Sub 1G)
LS200-TC-US915	IP65 LoRaWAN Machine Temperature Sensor (Thermocouple -40~125 degrees C, US915 Sub 1G)
LS200-RF-US915	IP65 LoRaWAN Refrigerator Temperature and Humidity Sensor (-40~55 degrees C, US915 Sub 1G)
LS200-LG-US915	IP65 LoRaWAN Light Level Sensor (US915 Sub 1G)
LS200-CM3-US915	IP53 LoRaWAN 3-phase Current Meter (3 x 75A Clamp-On CT, US915 Sub 1G)
LS200-CM-US915	IP53 LoRaWAN 1-phase Current Meter (150A Clamp-On CT, US915 Sub 1G)
LS200-PM25-US915	IP30 LoRaWAN PM2.5 Sensor (PM2.5/Temperature/Humidity -20~55 degrees C, US915 Sub 1G)
LS200-VOC-US915	IP65 LoRaWAN TVOC Sensor (TVOC/Temperature/Humidity -20~55 degrees C, US915 Sub 1G)
LS200-MK8-US915	LoRaWAN Temperature/Humidity/PIR/Tilt/Vibration/Reed Switch/ Light/Glass Break Sensor (-20~55 degrees C, US915 Sub 1G)
LS250-PLUG-US915	IP20 LoRaWAN Power Plug with Power Meter (US915 Sub 1G)

"LoRaWAN Sensor" mentioned in the manual refers to the above models.

1.1 Package Contents

The package should contain the following:

Model	Package Contents		
LS100-WL	LoRaWAN Water Leak Sensor x 1		
LS100-PIR	LoRaWAN Indoor Occupancy Sensor x 1		
LS100-DW	LoRaWAN Door and Window Sensor x 1		
LS100-CO	LoRaWAN CO Detector x 1		
LS100-SMK	LoRaWAN Smoke Detector x 1		
LS200-TH	LoRaWAN Indoor Temperature and Humidity Sensor x 1		
LS200-PT	LoRaWAN Product Temperature Sensor x 1		
LS200-TC	LoRaWAN Machine Temperature Sensor x 1		
LS200-RF	LoRaWAN Refrigerator Temperature and Humidity Sensor x 1		
LS200-LG	LoRaWAN Light Level Sensor x 1		
LS200-CM3	LoRaWAN 3-phase Current Meter x 1		
LS200-CM	LoRaWAN 1-Phase Current Meter x 1		
LS200-PM25	LoRaWAN PM2.5 Sensor x 1		
LS200-VOC	LoRaWAN TVOC Sensor x 1		
LS200-MK8	LoRaWAN Temperature/Humidity/PIR/Tilt/Vibration/Reed Switch/ Light/ Glass Break Sensor x 1		
LS250-PLUG	LoRaWAN Power Plug with Power Meter x 1		



If any of the above items are missing, please contact your dealer immediately.

1.2 Overview

Build a Smart IoT Environment with Fabulous LoRaWAN Sensors

PLANET LS100 and LS 200 LoRaWAN sensors are intended for environmental monitoring and data collection. Data such as temperature, humidity, illumination,

and ingress/egress all impact the status of a facility or a device, whether it is a motor, a refrigeration unit, or even the networking gear itself. Sensors in the LS series mostly have IP65 and IP67 ratings, allowing them to be deployed in outdoor and industrial indoor environments. The number of sensors deployed depends on network requirements. The sensor(s) cam monitor a wide variety of conditions, including humidity, leak detection, room temperature, machine temperature, product temperature, ingress and egress, lighting, occupancy and asset location. These battery-operated sensors with no wiring required are easy to install in any place.





LoRa and LoRaWAN Wireless Technology

LoRa is a low-power wide-area network (LPWAN) technology designed for longrange data transmission. The LoRaWAN protocol standardizes device communication, making IoT applications more efficient and easy to deploy. LoRa can achieve a range of up to 3 miles (5 kilometers) in urban areas and over 6 miles (10 kilometers) in rural areas with a clear line of sight. The range varies based on factors like frequency, environment, antenna design, and power. Its low power consumption enables battery-powered devices to run for years, depending on usage.

LoRaWAN uses a star topology, ideal for gathering small data from many low-powered devices. Its open protocol supports various applications, transmitting data efficiently via gateways. The LS series is optimized for LoRa IoT, offering low power use, high reliability, and long-range communication, perfect for efficient data collection.

Expanding Capabilities with PLANET Industrial LoRa Node Controllers

The integration of PLANET LS100/LS200 Sensor series into the NMS-AIoT platform enhances the system's capabilities by enabling seamless connectivity via LoRa, HaLow, and wireless, or wired options. This allows the LS100/LS200 Sensor series to contribute to real-time data collection and AI-driven insights for applications in smart cities, agriculture, and industrial environments, strengthening the platform's overall ecosystem.

The NMS-AIoT platform enables comprehensive integration of diverse devices, such as sensors, RS485/Modbus systems, and PDUs, through flexible connectivity options. This unified architecture supports environmental data collection and AI processing, empowering applications like smart cities, precision agriculture, and intelligent manufacturing.



LoRaWAN-based Sensor

PLANET LoRaWAN LS100/LS200 Sensor series is fully compatible with standard LoRaWAN gateways like PLANET LCG-300 series, supporting the LoRaWAN class A. It is ideal for large-scale IoT applications, including building automation, smart metering, HVAC systems, agriculture, and more. The sensor facilitates the seamless integration of multiple sensors, making it a perfect choice for retrofitting legacy assets into IoT-enabled systems.

Environmental Sensors:

- Temperature and Humidity
 LS200-TH IP65 LoRaWAN Indoor Temperature and Humidity Sensor
- Water Leakage
 LS100-WL IP65 LoRaWAN Water Leak Sensor
- Light Detection
 LS200-LG IP65 LoRaWAN Light Level Sensor
- Gas
 LS200-VOC IP65 LoRaWAN TVOC Sensor
 LS200-PM25 IP30 LoRaWAN PM2.5 Sensor
 LS100-CO IP20 LoRaWAN CO Detector
- Smoke
 LS100-SMK IP20 LoRaWAN Smoke Detector

Device Sensors:

- Temperature and Humidity Sensing
 LS200-PT IP65 LoRaWAN Product Temperature Sensor
 LS200-TC IP65 LoRaWAN Machine Temperature Sensor
 LS200-RF IP65 LoRaWAN Refrigerator Temperature and Humidity Sensor
- Security Monitoring LS100-PIR IP30 LoRaWAN Indoor Occupancy Sensor LS100-DW IP30 LoRaWAN Door and Window Sensor
- Power and Current Monitoring
 LS200-CM3 IP53 LoRaWAN 3-phase Current Meter
 LS200-CM IP53 LoRaWAN 1-phase Current Meter
 LS250-PLUG IP20 LoRaWAN Power Plug with Power Meter
- Multi-function
 LS200-MF8 IP30 LoRaWAN Temperature/Humidity/PIR/Tilt/Vibration/Reed Switch/ Light/Glass Break Sensor

1.3 Features

Key Features

- LS100-WL
 - Water Leak Sensor
 - IP65 rating
 - LoRaWAN[™] Class A compatible
- LS100-PIR
 - Indoor Occupancy Sensor (Occupancy/Light/Temperature)
 - IP30 rating
 - LoRaWAN[™] Class A compatible
- LS100-DW
 - Door and Window contact Sensor
 - IP30 rating
 - LoRaWAN[™] Class A compatible
- LS100-CO
 - Indoor CO Detector
 - High Temperature Alarm (> 60 °C)
 - Alarming Bell
 - LoRaWAN[™] Class A compatible
- LS100-SMK
 - Smoke Detection
 - High Temperature Alarm (> 60 °C)
 - Alarming Bell
 - LoRaWAN[™] Class A compatible
- LS200-TH
 - Indoor Temperature and Humidity Sensor (-20 °C to 55 °C)
 - IP65 rating
 - LoRaWAN[™] Class A compatible
- LS200-PT
 - Product Temperature Sensor with PT1000 Needle Probe (-70 °C to 200 °C)
 - IP65 rating
 - LoRaWAN[™] Class A compatible

- LS200-TC
 - Machine Temperature Sensor with Thermocouple (-40 °C to 125 °C)
 - IP65 rating
 - LoRaWAN[™] Class A compatible
- LS200-RF
 - Refrigerator Temperature and Humidity Sensor (-40 °C to 55 °C)
 - IP65 rating
 - LoRaWAN[™] Class A compatible
- LS200-LG
 - Light Level Sensor
 - IP65 rating
 - LoRaWAN[™] Class A compatible
- LS200-CM3
 - 3-phase Current Meter with Clamp-On CT
 - Measure 75 A current maximum
 - IP53 rating
 - LoRaWAN[™] Class A compatible
- LS200-CM
 - 1-phase Current Meter with Clamp-On CT
 - Measure 150 A current maximum
 - IP53 rating
 - LoRaWAN[™] Class A compatible
- LS200-PM25
 - PM2.5 Sensor
 - Temperature and Humidity (-20 °C to 55 °C)
 - IP30 rating
 - LoRaWAN[™] Class A compatible
- LS200-VOC
 - TVOC Sensor
 - Temperature and Humidity (-20 °C to 55 °C)
 - IP65 rating
 - LoRaWAN[™] Class A compatible

■ LS200-MF8

- Indoor Temperature and Humidity Sensor (-20 °C to 55 °C)
- PIR Sensor (3 m to 5 m)
- Light Sensor (1 Lux to 3000 Lux)
- Tilt Sensor (Conversion Angle: 45° ±5° degrees)
- Vibration Sensor
- Reed Switch Sensor
- Glass Break Sensor (Detection Mode: Piezoelectric buzzer)
- LoRaWAN[™] Class A compatible
- LS250-PLUG
 - Power Plug with Power Meter
 - Maximum 16 A current measurement
 - IP20 rating
 - LoRaWAN[™] Class C compatible

1.4 Product Specifications

LS100 series (WL/PIR/DW)

Product	LS100-WL	LS100-PIR	LS100-DW			
Wireless Transmission						
Technology	LoRaWAN					
Frequency	EU868: 863 to 870 MHz US915: 902 to 928 MHz					
US915: 20 dBm EU868: 16 dBm TX Power AS923: 16 dBm (optional) KR920: 14 dBm (optional) AU915: 20 dBm (optional) IN865: 20 dBm (optional)						
Rx Sensitivity -136 dBm (LoRa, Spreading Factor = 12, Bitrate = 293 bps) -121 dBm (FSK, Frequency Deviation = 5 kHz, Bitrate = 1.2 kbps)						
Work Mode	OTAA/ABP Class A					
Data Interfaces						
Power Supply2 x 3.6 V ER14505 AA battery in parallel (Battery not included)2 x 3.0 V CR2 button battery (Battery not included)			2 x 3.0 V CR2450 button battery (Battery not included)			
Operating Voltage	e DC 3.1 V to 3.65 V DC 3.1 V to 3.65 V DC 2.4 V to 3 V					

Battery Life Time	5 years (25 °C, 15-minute reports, TxPower=20 dBm, SF10)		3 years (25 °C, 15-minute reports, TxPower=20 dBm, SF10)		
Standby Current	22 µA	110 µA	12 µA		
Wake-up Current (Typical value)	7.12 mA	9.78 mA	120 mA/11 mA		
Low Battery Threshold	3.2 V	3.2 V	2.4 V		
Physical Characteris	stics				
Dimensions (L x W x H)	112 mm x 88.2 mm x 32 mm	78 mm x 78.8 mm x 82.2 mm	57 mm x 38.05 mm x 15.2 mm 42.5 mm x 13 mm x 12 mm (Magnet)		
Weight	141 g	125.8 g	43.8 g		
Sensor Dimensions (L x W x H)	38.5 mm x 11.89 mm x 13.7 mm	-	-		
Sensor Measurement Info	Water Leak Detection	 Occupancy Sensor Sensing Angle: 110° horizontally/ 60° vertically Sensing Distance: 2 m to 12 m Object Moving Speed to Send Alarm: ≥ 0.2 m/s Temperature Sensor Measurement Range: -20 °C to 55 °C Measurement Accuracy: ±2 °C Light Sensor Illuminance Range: 1 lux to 65535 lux 	Contact Detection		
Ingress Protection	IP65	IP30	IP30		
Operating Temperature	-20 °C to 55 °C				
Relative Humidity	< 90 % RH (non-conde	nsing)			
Storage Temperature	-40 °C to 85 °C				
Standards Conform	Standards Conformance				
Regulatory Compliance	CE RED, FCC PART 15B				

LS100 series (CO/SMK)

Product	LS100-CO	LS100-SMK				
Wireless Transmission						
Technology	LoRaWAN					
Frequency	EU868: 863 to 870 MHz US915: 902 to 928 MHz					
TX Power	US915: 20 dBm AS923: 16 dBm (optional) AU915: 20 dBm (optional)	EU868: 16 dBm KR920: 14 dBm (optional) IN865: 20 dBm (optional)				
Rx Sensitivity	-136 dBm (LoRa, Spreading Factor = 12, Bitrate = 293 bps) -121 dBm (FSK, Frequency Deviation = 5 kHz, Bitrate = 1.2 kbps)					
Work Mode	OTAA/ABP Class A					
Data Interfaces						
Power Supply	2 x 1.5 V AAA alkaline batteries	(Battery not included)				
Operating Voltage	DC 2.3 V to 3.3 V					
Battery Life Time	4.7 years (25 °C, 60-minute reports, TX power = 20 dBm, SF10)					
Standby Current	18 µA	12 µA				
Wake-up Current (Typical value)	-	580 mA				
Low Battery Threshold	2.4 V	2.4 V				
Physical Characteristics						
Dimensions (L x W x H)	Ø106 mm x 36 mm	Ø106 mm x 40.6 mm				
Weight	112 g	120 g				
Sensor Measurement Info	 CO Detection Detection Concentration Range: 0 to 1000ppm High Temperature Alarm (> 60 °C) Alarming 85 dBm @ 3 meter 	Smoke Detection High Temperature Alarm (> 60 °C) Alarming - 85 dBm @ 3 meter				
Ingress Protection	IP20 IP20					
Operating Temperature	-20 °C to 55 °C					
Relative Humidity	< 90 % RH (non-acondensing)					
Storage Temperature	-40 °C to 85 °C					
Standards Conformance	Standards Conformance					
Regulatory Compliance	CE RED, FCC PART 15B					

LS200 series (TH/PT/TC)

Product	LS200-TH	LS200-PT	LS200-TC			
Wireless Transmissi	on					
echnology LoRaWAN						
Frequency	EU868: 863 to 870 MHz US915: 902 to 928 MHz					
TX Power	US915: 20 dBmEU868: 16 dBmAS923: 16 dBm (optional)KR920: 14 dBm (optional)AU915: 20 dBm (optional)IN865: 20 dBm (optional)					
Rx Sensitivity	-136 dBm (LoRa, Sprea -121 dBm (FSK, Freque	ding Factor = 12, Bitrate ncy Deviation = 5 kHz,	e = 293 bps) Bitrate = 1.2 kbps)			
Work Mode	OTAA/ABP Class A					
Data Interfaces						
Power Supply	2 x 3.6 V ER14505 AA	battery in parallel (Batte	ry not included)			
Operating Voltage	DC 3.1 V to 3.65 V	DC 3.1 V to 3.65 V	DC 3.1 V to 3.65 V			
Battery Life Time	5 years (25 °C, 15-minute reports, TxPower=20 dBm, SF10)		4.8 Years (25 °C, 15-minute reports, TxPower=20 dBm, SF10)			
Standby Current	24 μΑ	25 μΑ	34 μΑ			
Wake-up Current (Typical value)	6.99 mA	9.94 mA	7.33 mA			
Low Battery Threshold	3.2 V	3.2 V	3.2 V			
Physical Characteris	tics					
Dimensions (L x W x H)	112 mm x 65 mm x 28 mm	112 mm x 88.19 mm x 32 mm	112 mm x 88.19 mm x 32 mm			
Weight	141 g	141 g	186 g			
Sensor Dimensions	D: Ø 16 mm x L: 27 mm	-	-			
Probe Info	-	PT1000 Platinum Thermal	Thermocouple Characteristic			
Probe Temperature Detecting Range	-	-70 °C to 200 °C	-40 °C to 125 °C			
Probe Wire Length	-	2 m	1 m			
Probe Dimensions	-	5 mm in diameter x 150 mm in length, needle probe	-			

Sensor Measurement Info	 Temperature Sensor Measurement Range: -20 °C to 55 °C Measurement Accuracy: ±1 °C Humidity Sensor Measurement Range: 0 % to 100 % RH Measurement Accuracy: ±4 % RH 	Temperature Sensor - Measurement Range: -40° to 125 °C	Temperature Sensor - Measurement Range: -40° to 125 °C		
Ingress Protection	IP65	IP65	IP65		
Operating Temperature	-20 °C to 55 °C				
Relative Humidity	< 90 % RH (non condensing)				
Storage Temperature	-40 °C to 85 °C				
Standards Conforma	ance				
Regulatory Compliance	CE RED, FCC PART 15B				

LS200 series (RF/LG/CM3)

Product	LS200-RF	LS200-LG	LS200-CM3				
Wireless Transmission							
Technology	LoRaWAN						
Frequency	equency EU868: 863 to 870 MHz US915: 902 to 928 MHz						
US915: 20 dbm EU868: TX Power AS923: 16 dbm (optional) KR920: AU915: 20 dbm (optional) IN865: 1			(optional) (optional)				
Rx Sensitivity -136 dBm (LoRa, Spreading Factor = 12, Bitrate = 293 bps) -121 dBm (FSK, Frequency Deviation = 5 kHz, Bitrate = 1.2 kHz			e = 293 bps) Bitrate = 1.2 kbps)				
Work Mode OTAA/ABP Class A							
Data Interfaces							
Power Supply	Power Supply 2 x 3.6 V ER14505 AA battery in parallel (Battery not included)						
Operating Voltage	DC 3.1 V to 3.65 V DC 3.1 V to 3.65 V DC 3.1 V to 3		DC 3.1 V to 3.65 V				
Battery Life Time 5 years (25 °C, 15-minute reports, TxPower=20 dBm, SF10)							
Standby Current	rrent 20 μA 17 μA 25 μA						

Wake-up Current (Typical value)	7.11 mA	7.5 mA	127 mA	
Low Battery Threshold	3.2 V	3.2 V	3.2 V	
Physical Characteris	tics			
Dimensions (L x W x H)	112 mm x 65 mm x 32 mm	112 mm x 65 mm x 32 mm	112 mm x 88.19 mm x 32 mm	
Weight	141 g	150 g	141 g	
Sensor Dimensions (L x W x H)	-	-	27.5 mm x 25 mm x 42.5 mm	
Sensor Weight	-	-	3 x 49.6 g	
Sensor Measurement Info	 Temperature Sensor Measurement Range: -40 °C to 55 °C Measurement Accuracy: ±0.5 °C Humidity Sensor Measurement Range: 0 % to 100 % RH Measurement Accuracy: ±3 % RH 	Light Sensor - Illuminance Range: 0.01 lux to 157K lux	 Current Measurement Range: 100 mA to 75 A Measurement Accuracy: < ±1 % (within 300 mA to 75 A) Current Resolution: 1 mA 	
Ingress Protection	IP65	IP65	IP53	
Operating Temperature	-40 °C to 55 °C	-20 °C to 55 °C		
Relative Humidity	< 90 % RH (non condensing)			
Storage Temperature	-40 °C to 85 °C			
Standards Conformance				
Regulatory Compliance CE RED, FCC PART 15B				

LS200 series (CM/VOC/PM25)

Product	LS200-CM	LS200-VOC	LS200-PM25		
Wireless Transmission					
Technology	LoRaWAN				
Frequency	EU868: 863 to 870 MHz US915: 902 to 928 MHz	Z Z			

TX Power	US915 20 dBmEU868 16 dBmAS923 16 dBm (optional)KR920 14 dBm (AU915 20 dBm (optional)IN865 20 dBm ((optional) (optional)		
Rx Sensitivity	-136 dBm (LoRa, Sprea -121 dBm (FSK, Freque	ding Factor = 12, Bitrate ncy Deviation = 5 kHz,	e = 293 bps) Bitrate = 1.2 kbps)		
Work Mode	OTAA/ABP Class A				
Data Interfaces					
Power Supply	2 x 3.6 V ER14505 AA (Battery not included)	2 x 3.6 V ER14505 AA battery in parallel (Battery not included) 8 x 3.6 V ER14505 AA battery in parallel (Battery not included)			
Operating Voltage	DC 3.1 V to 3.65 V	DC 3.1 V to 3.65 V	DC 6.8 V to 7.3 V		
Battery Life Time	5 years (25 °C, 15-minute reports, TxPower=20 dBm, SF10)2.7 years (25 °C, 15-minute reports, TxPower=20 dBm, SF10)		1.19 years (25 °C, 60-minute reports, TxPower=20 dBm, SF10)		
Standby Current	25 μΑ	28 µA	250 µA		
Wake-up Current (Typical value)	7 mA	0.8 mA to 20 mA	6.3 mA		
Low Battery Threshold 3.2 V		3.2 V	6.8 V		
Physical Characteris	itics				
Dimensions (L x W x H)	112 mm x 88.19 mm x 32 mm	88 mm x 65 mm x 19 mm	117 mm x 114 mm x 82.6 mm		
Weight	141 g	113 g	285 g		
Sensor Dimensions (L x W x H)	33 mm x 28.5 mm x 43.5 mm	-	-		
Sensor Weight	70.1 g	-	-		

Sensor Measurement Info	 Current Measurement Range: 1 A to 150 A Measurement Accuracy: < ±1 % Current Resolution: 1 mA 	 TVOC Sensor Measurement Range: 0 ppb to 60000 ppb Temperature Sensor Measurement Range: -20 °C to 55 °C Humidity Sensor Measurement Range: 0 % to 100 % RH 	 PM2.5 Particle Concentration Sensor Particle Mass Concentration Effective Range: 0 to 500 μg/m³ Particle Mass Concentration Resolution: 1 μg/m³ Particle Mass Concentration Particle Mass Concentration Resolution: 1 μg/m³ Measurement Range: -20 °C to 55 °C Measurement Accuracy: ±1 °C Humidity Sensor Measurement Range: 0 % to 100 % RH Measurement Accuracy: ±4% RH 	
Ingress Protection	IP53	IP65	IP30	
Operating Temperature	-20 °C to 55 °C	-20 °C to 55 °C	-20 °C to 55 °C	
Relative Humidity	< 90 % RH (non-conde	nsing)		
Storage Temperature	-40 °C to 85 °C			
Standards Conforma	ance			
Regulatory Compliance	CE RED, FCC PART 15B			

LS200-MF8

Product	LS200-MF8	
Wireless Transmission		
Technology	LoRaWAN	
Frequency	EU868: 863 to 870 MHz US915: 902 to 928 MHz	
TX Power	US915: 20 dBmEU868: 16 dBmAS923: 16 dBm (optional)KR920: 14 dBm (optional)AU915: 20 dBm (optional)IN865: 20 dBm (optional)	
Rx Sensitivity	-136 dBm (LoRa, Spreading Factor = 12, Bitrate = 293 bps) -121 dBm (FSK, Frequency Deviation = 5 kHz, Bitrate = 1.2 kbps)	
Work Mode	OTAA/ABP Class A	
Data Interfaces		
Power Supply	2 x 3.0 V CR2450 button battery (Battery not included)	
Operating Voltage	DC 2.3 to 3V	
Battery Life Time	2.26 years (25 °C, 60-minute reports, TX power = 20 dBm, SF10)	
Low Battery Threshold	2.4 V	
Physical Characteristics		
Dimensions (L \times W \times H)	75.5 mm x 19.4 mm x 44 mm	
Weight	120 g	
Sensor Dimensions (L x W x H)	Reed Switch: 46 mm x 16 mm x 12.9 mm Glass Break Sensor: 36 mm x 36 mm x 7.9 mm	
Sensor Weight	-	
Sensor Measurement Info	 Temperature Sensor Measurement Range: -20 °C to 55 °C Measurement Accuracy: ±1 °C Humidity Sensor Measurement Range: 0 % RH to 100 % RH Measurement Accuracy: ±7 % RH Passive Infrared Sensor Detectable Angle: 80° horizontally/55° vertically Detectable Range: 3 m to 5 m Light Sensor Illumination Measurement Range: 1 lux to 3000 lux Illumination Measurement Accuracy: < 15 % 	

Sensor Measurement Info	Tilt Sensor- Conversion Angle: $45^{\circ} \pm 5^{\circ}$ - Contact Resistance: Less than 10 Ω- The Insulation Resistance: Greater than 100 MΩ- Operating Temperature: -40 °C to 85 °C- Installation Type: Suitable for PCB at vertical stateVibration Sensor- Model: Ball type omnidirectional signal trigger switch- Voltage: < 6 V- Current: 2 µA to 10 mA- Insulation Resistance: > 10 MΩ- Trigger Rate: 100% (amplitude > 1 mm, frequency > 20 Hz)- Trigger Frequency: > 50 HzReed Switch Sensor- Minimum Insulation Resistance 10 ¹⁰ Ω- Maximum Contact Resistance 10 ¹⁰ Ω- Maximum Switching Current 0.5 AGlass Break Sensor- Detection Mode: Piezoelectric buzzer- Power Supply: Self-generated voltage chip- Impedance: Normal (NC): 7 Ω (max) Alarm (NO): 1 MΩ (min)- Sensor Sensing Range: within 2.5 M radius- Signal Sensing Time: 1 to 3 seconds- Loop Voltage: 15 V DC (max)- Loop Current: 25 mA (max)- Applicable Glass Type: In theory, as long as any glass is- Operating Temperature: -10 to 50 °C- Wire Length: 100 cm- Installation: The glass at the installation position must be wiped- Clearing Temperature: -10 to 50 °C- Wire Length: 100 cm- Installation: The glass at the installation position must be wiped- Clearing Temperature: -10 to 50 °C- Wire Length: 100 cm- Installation: The glass at the installation position must be wiped- Installation: The glass at the installation position must be wiped
	glass frame.
Ingress Protection	IP30 reed switch - IP67 glass break - IP40
Operating Temperature	-10 °C to 50 °C
Relative Humidity	< 90 % RH (non-condensing)
Storage Temperature	-40 °C to 85 °C
Standards Conformance	
Regulatory Compliance	CE RED, FCC PART 15B

LS250-PLUG

Product	LS25	50-PLUG
Wireless Transmission		
Technology	LoRaWAN	
Frequency	EU868: 863 to 870 MHz US915: 902 to 928 MHz	
TX Power	US915: 20 dBm AS923: 16 dBm (optional) AU915: 20 dBm(optional)	EU868: 16 dBm KR920: 14 dBm (optional) IN865: 20 dBm (optional)
Rx Sensitivity	-136 dBm (LoRa, Spreading Fac -121 dBm (FSK, Frequency Dev	tor = 12, Bitrate = 293 bps) iation = 5 kHz, Bitrate = 1.2 kbps)
Work Mode	OTAA/ABP Class C	
Data Interfaces		
Power Supply	100 V AC to 240 V AC, 50/60H	Z
Physical Characteristics		
Dimensions (L x W x H)	95 mm x 58 mm x 42.5 mm	
Weight	135 g	
Sensor Measurement Info	Current - Measurement Range: 100 mA Resistive load: 16 A/250 V A0 Inductive load (max.): 8 A/2 Rated Load: - EU type: 16 A/250 V AC - UK type: 13 A/250 V AC - AU type: 10 A/250 V AC - US type: 15 A/125 V AC Electric motor (max.): 1.5 H	x to 16 A C; P: 4000 VA 220 V AC; P: 1760 VA (COSφ=0.4) P/240 V AC
Ingress Protection	IP20	
Operating Temperature	-20 °C to 55 °C	
Relative Humidity	< 90 % RH (non-condensing)	
Storage Temperature	-40 °C to 85 °C	
Standards Conformance		
Regulatory Compliance	CE RED, FCC PART 15B	

2. Hardware Introduction

2.1 Physical Descriptions











LED Definition:



	Color	Function		
		Lights 1 time	Indicating the network is successfully connected after turning on LoRaWAN sensor.	
LED Green	Flashes 1 time	Indicating it is triggered to send a report after pressing the Function Button Once.		
	Flashes 3 times	Indicating the LoRaWAN sensor is not in the network after pressing the Function Button Once.		
	Flashes 20 times	Indicating it goes to Factory Reset and Restart after long- pressing the Function Button for 5 seconds.		

2.2 Hardware Installation

Refer to the illustration and follow the simple steps below to quickly install your **LoRaWAN Sensor**.

2.2.1 Battery Installation

• Product uses two CR2450 batteries:

Module: LS100-DW

Unscrew the four screws on the device's cover to remove the front cover. Insert the battery and put back the device's cover and tighten the screws.



• Product uses two ER14505 batteries:

Modules: LS100-PIR, LS100-WL, LS200-TH, LS200-PT, LS200-TC, LS200-RF, LS200-LG, and LS200-CM

Unscrew the four screws on the device's cover to remove the front cover. Insert the battery and put back the device's cover and tighten the screws.



2.2.2 Magnetic Mounting or Wall Mounting

• Magnetic mounting

Models: LS100-WL, LS200-TH, LS200-PT, LS200-TC, LS200-RF, LS200-LG, and LS200-CM

The LoRaWAN Sensor features magnetic mounting for easy attachment to the surface with iron material.



• Wall mounting by screws (optional)

Models: LS100-WL, LS200-TH, LS200-PT, LS200-TC, LS200-RF, LS200-LG, and LS200-CM

To make the installation more secure, please use screws (purchased separately) to fix the device on the wall or other objects.



• Wall mounting by the double-sided stickers Model: LS100-PIR

- 1. Clean the surface of the objects before sticking with the sticker.
- 2. Tear off the 3M300LSE side of the sticker, place it on the bottom of the product as shown in the picture, and press it.
- 3. Tear off the other side of the sticker and put the sticker to a clean surface of the wall and press the sticker firmly for around 20 seconds.



Model: LS-100-DW

Tear off the magnetic body's 3M release paper, and then adhere the body to the window or door frame by sticking it in parallel with the magnetic body.





Do not install the device in a metal shielded box or in an environment surrounded by other electrical equipment to avoid affecting the wireless transmission of the device.

2.3.2 Precautions

• LS100-WL: IP65 LoRaWAN Water Leak Sensor

The sensor probe of **LS100-WL** has to attach to the smooth ground that may accumulate leakage.



• LS100-PIR: IP30 LoRaWAN Indoor Occupancy Sensor

The correct installation of LS100-PIR is shown below.



• Detection Range



Coverage area **A-Distance**: 5 meters; sensing angle: 120° Coverage area **B-Distance**: 8 meters; sensing angle: 60° Coverage area **C-Distance**: 11 meters; sensing angle: 30°

- LS100-DW: IP30 LoRaWAN Door and Window Sensor The distance between the two objects has to be less than 2 cm.
- LS200-TH: IP65 LoRaWAN Indoor Temperature and Humidity Sensor Installation height recommendation: 1-2 m.
- LS200-PT: IP65 LoRaWAN Product Temperature Sensor

When **LS200-TC** is compared with the last reported values, the temperature change is expected to exceed **0.1 °C (by default)**. It will report values at the Min Time interval if it does not exceed 0.1 °C (by default). It will report values at the Max. Time interval.

• LS200-TC: IP65 LoRaWAN Machine Temperature Sensor

When **LS200-TC** is compared with the last reported values, the temperature change is expected to exceed **10 °C (by default)**. It will report values at the Min. Time interval. If it does not exceed 10 °C (by default), it will report values at the Max. Time interval.

• LS200-LG: IP65 LoRaWAN Refrigerator Temperature and Humidity Sensor

Compare the illumination value detected by the illumination sensor with the set illumination value. The detected value exceeds the set value (**default 50 lux**), the currently detected illumination value is sent.

• LS200-CM3/LS200-CM: IP53 LoRaWAN Current Meter

The 3-phase current meter **(LS200-CM3)** samples the current according to Min. Time. If the current value sampled this time relatively exceeds the set value **(the default is 100 mA)** more than the current value reported last time, the device will immediately report the current value sampled this time. If the current variation does not exceed the default value, the data will be reported regularly according to Max. Time.

- 1. When using it, the back of it can be adsorbed on the iron surface, or the two ends can be fixed to the wall with screws.
- 2. When installing theLS200-CM3 current transformer, please separate the live and neutral wires of the wire to be detected, and only take the live wire through current transformer and start the measurement according to the wiring below:



If the live wire and the neutral wire are connected together at the same time, they will offset each other and the measurement is 0.

"L \leftarrow K" is marked on the bottom of the CT.

- 1. Before using, user must check whether the appearance is deformed; otherwise, the test accuracy will be affected.
- 2. The operating environment should be kept away from strong magnetic fields, so as not to affect the test accuracy. It is strictly forbidden to use in humid and corrosive gas environments.
- 3. Before installation, please confirm the current value of the load. If the current value of the load is higher than the measurement range, select a model with a higher measurement range.
- 4. Children and the persons who do not have enough knowledge about electric measurements must not use this instrument.
- 5. Do not measure the electricity naked or barefooted to protect yourself from electrical shock hazard.
- 6. Be careful not to get hurt with the sharp test lead pins.
- 7. Warning for High Power Line Measurements

High Power Line (High Energy Circuits) such as Distribution Transformers, Bus Bars and Large Motors are very dangerous. High Power Line sometimes includes High Surge Voltage that could cause explosive short in the instrument and could result in shock hazard. For voltage measurement of High Power Line, do not touch Clamp Meter, its Test Leads, and any part of the circuit.

8. Warning for High Voltage Measurements

Even for Low Energy Circuits of electric/electronic appliances, such as heating elements, small motors, line cords and plugs, High Voltage Measurements are very dangerous. Do not touch Clamp Meter, Test Leads, and any part of the circuit. Generally, shock hazard could occur when the current between the circuit that involves more than 33 V rms or 46.7 V DC or peak and ground goes up to 0.5 mA or more.

• LS100-CO

Default Settings:

Max Time: 3600 s (0x0e10) Min Time: 3600 s (0x0e10) Battery Voltage Change: 0.1 V (0x01)

CO Trigger

- The device samples CO concentration **30 seconds** after power-up.
- If the CO concentration exceeds **110 ppm**, the device triggers an alarm:
 - > The **red indicator light** flashes.



- > The buzzer sounds an alarm.
- > A CO alarm report is immediately sent.
- If the CO concentration remains above **110 ppm**, the device sends an alarm report every 30 seconds.
- Once the CO concentration drops below **110 ppm**, the alarm stops, and a **restoration** report is sent.

High-Temperature Alarm

- The device samples temperature data **every minute** once it is connected to the network.
- If the temperature exceeds **60** °**C**, the device activates an alarm:
 - > The **red indicator light** flashes.
 - > The **buzzer sounds** an alarm.
 - > A high-temperature alarm report is immediately sent.
- If the high-temperature condition persists, the alarm report is sent **every minute**.
- Once the temperature drops below **60** °C, the alarm stops, and a **restoration report** is sent.

• LS100-SMK

Default Settings:

Max Time: 3600 s (0x0e10)

Min Time: 3600 s (0x0e10)

Battery Voltage Change: 0.1 V (0x01)

Smoke Trigger

Upon power-up, the device continuously monitors smoke concentration levels. If a significant change in smoke status is detected, the buzzer will activate, and the red indicator will flash, signaling an alarm condition. Simultaneously, the device will transmit an immediate alert report. Once the smoke concentration returns to normal, a clearance report is sent, and the alarm ceases.

High-Temperature Alarm

After successfully connecting to the network, the device samples ambient temperature every minute. If the temperature exceeds **60** °C (**140** °F), the buzzer will sound, and the red indicator will flash, accompanied by an immediate alarm report. If the high-temperature condition persists, the device will continue transmitting alarm reports every minute. Once the temperature drops below **60** °C (**140** °F), the alarm ceases, and a clearance report is sent.

• LS200-VOC: IP65 LoRaWAN TVOC Sensor

LS200-VOC measurement range is **0 ppb to 60000ppb**.

Default Settings

Max Time: 900 s

Min Time: 900 s

1. The Min Time should not be less than 4 minutes.

2. The Max Time should be greater than or equal to the Min Time.

Battery Change: 0.1 V (0x01)

TVOC Change: 300 ppb (0x012C)

Excellent	0 to 65 ppb
Good	65 to 220 ppb
Moderate	220 to 660 ppb
Poor	660 to 2200 ppb
Unhealthy	2200 to 60000 ppb

Note: This range represents common reference values; the exact standards should be based on local regulations.

1. LS200-VOC requires a **13-hour** initialization period after the first power-on. During this time, the sensor undergoes automatic calibration, and the data readings may be biased. Accurate measurements will be available after the calibration process is complete.



- 2. Once the sensor is operating normally, valid data readings can be obtained **20 minutes** after the device is restarted. This 20-minute period allows the sensor to reach a stable state.
- 3. If the sensor is damaged, fails to initialize, or encounters three consecutive data reading failures after warming up, the device will report a value of **0xFFFF**. This process is automatically managed by the device upon startup, and no user intervention is required.

• LS200-PM25: IP30 LoRaWAN PM2.5 Sensor

Default setting:

Max Time: 8400 s

Min Time: 30 s (US915, AU915, KR920, AS923, IN865)

120 s (EU868)

Report Type count = 1

1. Max Time and Min Time rules, configured by formula: Max Time ≥ Report Type count * Report Min Time+10



- 2. Min Time configuration is invalid. But due to software limitations, it is required to comply with the above formula and not equal to 0.
- 3. The Min Time setting of **EU868** cannot be less than **120 s**, and the Max Time cannot be less than **370 s**.

• LS250-PLUG: IP20 LoRaWAN Power Plug with Power Meter Default Setting:

Max Time: 900 s (15 min) Min Time: 2 s Current Change: 100 mA (0x0064) Power Change: 20 W (0x14)

1. The device initially reports the ON/OFF status, energy consumption, and over-current alarm. After a 10-second interval, it transmits voltage, current, and power data.



- 2. When an over-current alarm is triggered, the device automatically disconnects the load, and the network indicator flashes rapidly approximately 25 times.
- 3. If the detected current exceeds the rated load current limit for more than 2 seconds, the device will automatically disconnect the load to prevent damage.

• LS200-MF8: IP30 LoRaWAN Multi-functional Sensor Default Setting:

Max Time: 3600 s (0x0e10) Min Time: 3600 s (0x0e10) Battery Change: 0.1 V (0x01) Temperature Change: 1 °C (0.0064), Signed 2 Bytes, unit: 0.01 °C Humidity Change: 10 % (0x14), 1 Byte, unit: 0.5 % Illuminance Change: 100 lux (0x64), 1 Byte, unit: 1 lux Internal Shock Sensor Sensitivity: 0x05 Internal Vibration Sensor, Sensitivity Range: 0x00-0x0A (The smaller the number, the more sensitive) Disable Time: 30 s (0x001e) // PIR Occupancy (Disable Time must \geq 5 s) Detection Time: 300 s (0x012c) // PIR Occupancy (Detection Time must \geq Disable Time) Restore Report Set: 0x00 (DO NOT report when sensor restore) // Vibration Sensor

3. Preparation

Before accessing the LoRaWAN Sensor controllers, user has to install utility tool for operation.

3.1 Requirements

PLANET Industrial LoRaWAN Gateway, e.g., LCG-300 series

Workstations running Windows 7/8/10/11, macOS 10.12 or later, Linux Kernel 2.6.18 or later, or other modern operating system are compatible with TCP/IP protocols and installed with web browser.



It is recommended to use Google Chrome, Microsoft Edge or Mozilla Firefox to access the LoRaWAN Gateway. If the Web interface of the LoRaWAN Gateway is not accessible, please turn off the anti-virus software or firewall and then try it again.



3.2 LoRaWAN Gateway Setup

3.2.1 LoRa Frequency Setting

- a. Open browser and log in to the Web GUI of LCG-300 series.
- b. Click **LoRa** label on main menu and **LoRa** label on function menu.

LCG-300	😥 System 🞯 Network 🏾 👸 LoRa 🕞 Security 🔎 VPN 🎤 Maintenance	Auto
LoRa		
LoRaWAN		
ABP Decryption	Keep Alive Period (sec) 30	
MQTT	Frequency Plan EU868 Europe 868Mhz (863~870)	
LoRa Log		
	Apply Settings Cancel Changes	

c. Select the Frequency Plan for your local area. Some Frequency Plan supports Frequency Sub Band. (In this test case, select "US915" for frequency plan and "US915, FSB2" for frequency sub band.)

LCG-300 series-US

• • • • •					
Frequency Plan	US915 United States 915Mhz (902~928)				
	AU915 Australia 915Mhz (915~928)				
Contraction of the second	US915 United States 915Mhz (902~928)				
	KR920 Korea 920MHz (920~923)				
	AS923 Asia (920~923,Default:923.2/923.4) AS923-1				
	AS923 Asia (923~925,Default:923.2/923.4) AS923-1				
	AS923 Asia (Default:921.4/921.6) AS923-2				
	AS923 Asia (Default:916.6/916.8) AS923-3				
Frequency Sub Band	2: US915 , FSB2 (903.9~905.3) V				
	1: US915 , FSB1 (902.3~903.7)				
	2: US915 , FSB2 (903.9~905.3)				
	3: US915 , FSB3 (905.5~906.9)				
	4: US915 , FSB4 (907.1~908.5)				
	5: US915 , FSB5 (908.7~910.1)				
	6: US915 , FSB6 (910.3~911.7)				
	7: US915 , FSB7 (911.9~913.3)				
	8: US915 , FSB8 (913.5~914.9)				
Frequency Plan	EU868 Europe 868Mhz (863~870) 🗸				
	EU868 Europe 868Mhz (863~870)				
	IN865 India 865MHz (865~867)				
	RU864 Russia 864MHz (864~870)				
	MA869 Morocco 869(869.1-870.3)MHz				

LCG-300 series-EU

3.2.2 LoRaWAN Setting

Click LoRaWAN label and input the related data.

LoRa					
LoRaWAN					
ABP Decryption	LoRaWAN Server Mode	LoRaWAN UDP 🗸			
MQTT	Email				
LoRa Log	Gateway ID Server Provider	The Things of Network V3			
	Server Address	eu1.cloud.thethings.network			
	Uplink Port	1700			
	Downlink Port	1700			
	L				
		Apply Settings Cancel Changes			

Object	Description
LoRaWAN Server Mode	The service of LoRaWAN
Email	The registered email of LoRaWAN server
Gateway ID	The unique identity of the base station, which the server can distinguish a different LoRaWAN base station
Server Provider	The service provider of LoRaWAN server
Server Address	The IP address of LoRaWAN server
Uplink Port	LoRaWAN data service center program uplink port. Value range is 0-65535 and the default value is 1700.
Downlink Port	LoRaWAN data service center program downlink port. Value range is 0-65535 and the default value is 1700.

3.2.3 Setting Up of LoRa Connection via ABP Decryption

LoRa	ABP Decryption						
LoRaWAN	ABP Decryption		Disable				
ABP Decryption							
	ABP Keys	ABP Keys					
	No. Device Address	Network Session Key	Application Session Key	Decoder	RSSI(dBm)	SNR(dB)	Action
			Add ABP Key				
L			Add ADF Rey				

- a. Click Enable.
- b. Click **Add ABP Key** Button. Then input data which has to be the same as the settings of LoRa node/sensor.

LoRa							
LoRaWAN	ADP Keys						
ABP Decryption	Device Address	MSB,4 Bytes					
MQTT	Network Session Key	MSB,16 Bytes					
LoRa Log	Application Session Key	MSB,16 Bytes					
	Decoder	ASCII String 🗸					
	Downlink Frame Counter	0					
		Apply Settings Cancel Changes					

Object	Description		
Device Address*	The DevAddr of device		
Network Session Key*	The NWKSKEY of device		
Application Session Key*	The APPSKEY of device		
Decoder	The decoder way		
Downlink Frame Counter	The action status of sensor or node		

*The data of the LoRa sensor has to be provided by provider; and user also can change the setting after connecting.

When sensor connects to LoRa Gateway, the RSSI and SNR would be shown on the UI of gateway as seen below.

ABP Decryption								
	ABP Decryption		Enable Disable					
ABP Keys								
	No.	Device Address	Network Session Key	Application Session Key	Decoder	RSSI(dBm)	SNR(dB)	Action
	1	00 7B	FEB448587959138441DC/1235891395DE	C98FC8EC87F8E353EAAA655A196E51E2DE	ASCII_String			s: 💼
	2	00 7D	2DBC 117 300 100 444 305 4 30 4 400 98B8	09066066666666666666666666666666666666	ASCII_String	-88	11	惑 💼
	3	00 83	ACF(001*10050C480C157821570C851823	ED865460000A6606222348965675961F4	ASCII_String			惑 💼
	4	00 82	2521357C54E44D40*100:1540100ED13	BCBD00EDC52AUFE4180013E0C04CC588	ASCII_String			≊: ≜
	5	00 84	FB7#9096579028251185185906984187		ASCII_String			s 💼
	6	00 7E	CC153D4AAA3619D28221598004C5FA776	87F@C521811484788265680074818CD6	ASCII_String			s 💼
	7	00 7F	639/10/27120013400124703421/1F87	4466 30 ELAF 1000 3 500 300 35 E00 58 7E1	ASCII_String	-75	12	s 💼
	8	00 7C	3078867768729C8020CF39446F38650EB	E29654261A351281464655673C188662A	ASCII_String			s: 💼
	9	00 1 7A	387758407454042885745845544708155	6CF4054FC535667C53546867664585FA	ASCII_String			s 💼
	10	00 80	F187CF6C08A3458C8CC80F7464862389	5C1Euro / Score Separatice J. Co / 4BA	ASCII_String	-94	8	i≊ ≜

3.3 Connecting to PLANET NMS-AIoT

Set up the NMS-AIoT Controller with an Ethernet connection for the first-time configuration shown in the topology below.



Launch the Web browser (Google Chrome is recommended.) and enter the default IP address <u>https://192.168.1.100:8888</u> of NMS-AIOT. Then, enter the default username and password shown above to log on to the system.

The secure login with SSL (HTTPS) prefix is required.



After logging on, connect the NMS-AIoT Controller to the network to centrally control PLANET managed devices.

1. In NMS-AIOT, press the **"Menu"** icon **E**. Then click **"Devices Management"** and **"Devices List"** to go to devices list page.



2. Press the **"plus"** icon 🛨 to open the page to add a new device.



3. Add a new LoRaWAN Sensor on the NMS-AIoT

Enter the relevant data for the LoRaWAN Sensor.

Add Device					
Apply					
Category	LoRaWAN Device 🔹				
Device Type	○ LoRaWAN Gateway				
Location	Default Location -				
Group	admin 🔹				
Model Number	LS100-CO				
Frequency Plan	L\$100-C0				
Activation Mode	LS100-DW				
Additional LoRaWAN Class Capabilities	LS100-PIR				
DevEUI	LS100-SMK				
NwkSKev	LS100-WL				
	LS200-CM				
Device Address	For example: AA-BB.CC:DD				
AppSKev					
	For example: AA:BB:CO:DD:EE:FF:11:22:AA:BB:CO:DD:EE:FF:11:22				
End Device ID	eui-				

After adding sensor(s), it will be shown in the device list in Web UI of NMS-AIoT.

Device List Modbus Devices												
							+	Filter by Cor	ntent			Q.
	Status	Group	Device Type	Model Number	Alias Name	DevEUI	Device Description	Location		Acti	on	
		DEMO	LoRaWAN Sensor	LS200-TH	Temp & Humidity	00137A1000042A7D	LoRaWAN Indoor Temperature and Humidity Sensor	Default Location	6	1		命
		DEMO	LoRaWAN Sensor	LS100-PIR	Occupy sensor (PIR)	00137A1000042A84	LoRaWAN Indoor Occupancy Sensor	Default Location	6	8		畲
)	DEMO	LoRaWAN Sensor	LS200-RF	T&H for refrigerator	00137A1000042A7C	LoRaWAN Refrigerator Temperature and Humidity Sensor	Default Location	6	8		畲
		DEMO	LoRaWAN Sensor	LS200-CM3	3phase Current Meter	00137A1000042A80	LoRaWAN 3-Phase Current Meter	Default Location	6			畲
		DEMO	LoRaWAN Sensor	LS200-CM	1phase Current Meter	00137A1000043901	LoRaWAN 1-Phase Current Meter	Default Location	6	8		â

4. Customer Support

Thank you for purchasing PLANET products. You can browse our online FAQ resource and User's Manual on PLANET Web site first to check if it could solve your issue. If you need more support information, please contact PLANET switch support team.

PLANET online FAQs: https://www.planet.com.tw/en/support/faq

Switch support team mail address: support@planet.com.tw

Copyright © PLANET Technology Corp. 2025. Contents are subject to revision without prior notice.