



## PRODUCT SPECIFICATIONS

### LoRaWAN™ Sensor Device MODEL: LS-113P (PM2.5)

Version: V1.1



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## Introduction:

LS-113P is designed to measure Particle, Temperature and Humidity by LoRa<sup>®</sup> long-range and low-power wireless connectivity. It is integrated LoRa<sup>®</sup> wireless technology, Laser dust (PM<sub>2.5</sub>) sensor knowhow and high-performance MCU solution for various IoT markets usage. With calibrated dust (PM<sub>2.5</sub>) sensor module and compensated Temperature/ Humidity sensor integration, the data is ready for use. It is perfect to detect the dust in the air, like air purifier, air conditioner and air monitor.

## Product Features:

- LoRaWAN<sup>™</sup> compliant
- High Receiver Sensitivity and Long Range Solution
- Integrated with calibrated Dust Particles Sensor
  - Range: 0 ~ 500 µg/m<sup>3</sup>
- Integrated with Compensated Temp/ RH Sensor
- Wide range DC power-in, 8 ~ 12 V /or Micro-USB DC power-in, 5V
- Display PM<sub>2.5</sub> concentration, Temp/ RH
- Alarm LED indicator

## Specifications

<b>Wireless</b>	
LoRa® Module	LoRa Alliance™ certified module LM-130H
Sensitivity	-132 dBm @ 980 bps
Tx Power	Up to 100 mW
Standard/ Protocol	Comply with LoRaWAN™ protocol
LoRa® Antenna	External Omni Antenna 824 ~ 960 MHz, 2dBi, SMA Male connector
Frequency	863 ~ 870 MHz (EU) 902 ~ 928 MHz (US) 920 ~ 928 MHz (ROA)
<b>Sensor Operation</b>	
Sensing Element	Dust: Laser light scattering principle Temperature & humidity: CMOS sensor
The unit of measurement	µg/m <sup>3</sup>
Response Time	Dust: < 10 sec. Temperature: min. 3 sec. ; max. 30sec. at τ 63% Humidity: < 8 sec. at τ 63%
Accuracy (at 25°C)	Dust: 1 µg/m <sup>3</sup> Temperature: ± 0.5 °C Humidity: ± 5 %RH
Repeatability	Dust: ± 10% @ 100 ~ 500 µg/m <sup>3</sup> , ± 10 µg/m <sup>3</sup> @ 0 ~ 100 µg/m <sup>3</sup> Temperature: ± 0.3 °C Humidity: ± 0.3 %RH
Zero Drift	Temperature: < 0.04 °C/yr. Humidity: < 0.5 %RH/yr.
Measurement Range*	Dust: 0 ~ 500 µg/m <sup>3</sup> Temperature: -10 ~ +60 °C Humidity: 0 ~ 95 %RH
<b>System Operation</b>	
Temperature	-10 ~ + 60 °C
Humidity	0 ~ 95%RH, Non-condensing
Storage Temperature	-10 ~ +60 °C
Warm-up Time	≤ 1 min. (at full specs ≤ 15 mins.)

## Specifications

LED Indicator	Orange LED x 1 (by threshold setting, default is 35 $\mu\text{g}/\text{m}^3$ ) Red LED x 1 (by threshold setting, default is 55 $\mu\text{g}/\text{m}^3$ )
Power Supply	DC 8 ~ 12 V or Micro-USB DC 5 V
Power Consumption	TBD
Installation	Wall-mount
Dimension (mm)	Wall-mount: 113.57(H) x 80(W) x 28.79(D) mm
Weight	129 $\pm$ 2 g
Case Material	ABS
<b>Accessory</b>	
Standard	LoRa <sup>®</sup> Antenna (External Omni Antenna) x 1
Optional	Sensor Programmable Cable (Micro USB to UART)