



## PRODUCT SPECIFICATIONS

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

**Version: V1.0**



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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 ~ 24V /or Micro-USB DC power-in, 5V
- Display PM<sub>2.5</sub> concentration, Temp/ RH
- Alarm LED indicator

## Specifications

Wireless	
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)
Sensor Operation	
Sensing Element	Dust: Laser light scattering principle Temperature & humidity: CMOS sensor
The unit of measurement	$\mu\text{g}/\text{m}^3$
Response Time	Dust: < 10 sec. Temperature: min. 3 sec. ; max. 30sec. at $\tau$ 63% Humidity: < 8 sec. at $\tau$ 63%
Accuracy (at 25°C)	Dust: $1 \mu\text{g}/\text{m}^3$ Temperature: $\pm 0.5 \text{ }^\circ\text{C}$ Humidity: $\pm 5 \text{ \%RH}$
Repeatability	Dust: $\pm 10\%$ @ $100 \sim 500 \mu\text{g}/\text{m}^3$ , $\pm 10 \mu\text{g}/\text{m}^3$ @ $0 \sim 100 \mu\text{g}/\text{m}^3$ Temperature: $\pm 0.3 \text{ }^\circ\text{C}$ Humidity: $\pm 0.3 \text{ \%RH}$
Zero Drift	Temperature: < $0.04 \text{ }^\circ\text{C}/\text{yr.}$ Humidity: < $0.5 \text{ \%RH}/\text{yr.}$
Measurement Range*	Dust: $0 \sim 500 \mu\text{g}/\text{m}^3$ Temperature: $-40 \sim +125 \text{ }^\circ\text{C}$ Humidity: $0 \sim 95 \text{ \%RH}$
System Operation	
Temperature	$-10 \sim +60 \text{ }^\circ\text{C}$
Humidity	$0 \sim 95\text{ \%RH}$ , Non-condensing
Storage Temperature	$-10 \sim +60 \text{ }^\circ\text{C.}$
Warm-up Time	$\leq 1 \text{ min.}$ (at full specs $\leq 15 \text{ min.}$ )
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 $55 \mu\text{g}/\text{m}^3$ )

## Specifications

Signal Output	NA
Alarm Output	NA
Power Supply	DC 8 ~ 24 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 ± 2 g
Case Material	ABS
<b>Accessory</b>	
Standard	LoRa <sup>®</sup> Antenna (External Omni Antenna) x 1
Optional	USB Adaptor Cable (USB to UART)