



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[®] long-range and low-power wireless connectivity. It is integrated LoRa[®] wireless technology, Laser dust (PM_{2.5}) sensor knowhow and high-performance MCU solution for various IoT markets usage. With calibrated dust (PM_{2.5}) 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[™] compliant
- High Receiver Sensitivity and Long Range Solution
- Integrated with calibrated Dust Particles Sensor
 - Range: 0-500 µg/m³
- Integrated with Compensated Temp/ RH Sensor
- Wide range DC power-in, 8 ~ 24V /or Micro-USB DC power-in, 5V
- Display PM_{2.5} 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 τ 63% Humidity: < 8 sec. at τ 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 ~ 500 $\mu\text{g}/\text{m}^3$, $\pm 10 \mu\text{g}/\text{m}^3$ @ 0 ~ 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 $^\circ\text{C}/\text{yr.}$ Humidity: < 0.5 $\text{ \%RH}/\text{yr.}$
Measurement Range*	Dust: 0 ~ 500 $\mu\text{g}/\text{m}^3$ Temperature: -40 ~ +125 $^\circ\text{C}$ Humidity: 0 ~ 95 \%RH
System Operation	
Temperature	-10 ~ + 60 $^\circ\text{C}$
Humidity	0 ~ 95 \%RH , Non-condensing
Storage Temperature	-10 ~ +60 $^\circ\text{C.}$
Warm-up Time	≤ 1 min. (at full specs ≤ 15 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
Accessory	
Standard	LoRa [®] Antenna (External Omni Antenna) x 1
Optional	USB Adaptor Cable (USB to UART)