



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 | $\leq 1 \text{ min.}$ (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 |
| Accessory | |
| Standard | LoRa [®] Antenna (External Omni Antenna) x 1 |
| Optional | USB Adaptor Cable (USB to UART) |