



PRODUCT SPECIFICATIONS

LoRaWAN™ Sensor Device

MODEL: LS-112P (CO)

Version: V1.0



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Introduction:

LS-112P is designed to measure Carbon Monoxide, Temperature and Humidity by LoRa[®] long-range and low-power wireless connectivity. It is integrated LoRa[®] wireless technology, CO sensor knowhow and high-performance MCU solution for various IoT markets usage. With calibrated CO sensor module and compensated Temperature/ Humidity sensor integration, the data is ready for use. It is perfect for monitoring air quality in basement parking, garage, Gas ranges/ ovens and Furnaces.

Product Features:

- LoRaWAN[™] compliant
- High Receiver Sensitivity and Long Range Solution
- Integrated with calibrated CO Sensor
 - Accuracy: $\pm 5\%$ or $\pm 20\text{ppm}$
 - Range: 0 ~ 500ppm
- Integrated with Compensated Temp/ RH Sensor
- Wide range DC power-in, 8~24V /or Micro-USB DC power-in, 5V
- Display CO 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	CO: Electrochemical Temperature & Humidity: CMOS sensor
Response Time	CO: < 30 sec. (90%) Temperature: min. 3 sec. ; max. 30sec. at τ 63% Humidity: < 8 sec. at τ 63%
Accuracy (at 25 °C)	CO: ± 5% or ± 20 ppm Temperature: ± 0.5 °C Humidity: ± 5 %RH
Repeatability	CO: < ± 5% Temperature: ± 0.3 °C Humidity: ± 0.3 %RH
Zero Drift	CO: < 5 % /yr. Temperature: < 0.04 °C/yr. Humidity: < 0.5 %RH/yr.
Expected Life	> 6 years in normal use
Measurement Range*	CO: 0 ~ 500 ppm Temperature: -40 ~ +125 °C Humidity: 0 ~ 95 %RH
Pressure Dependence	CO: 800 ~ 1200 mbar
System operation	
Temperature	-10 ~ +50 °C
Humidity	0 ~ 95 %RH, Non-condensing
Storage Temperature	Recommended Storage Temp : 0 ~ +50 °C

Specifications

Warm-up Time	≤ 1 min. (at full specs ≤ 15 min.)
Signal Output	NA
Alarm Output	NA
LED Indicator	Orange LED x 1 (by threshold setting, default is 9 ppm) Red LED x 1 (by threshold setting, default is 12 ppm)
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	103 ± 2 g
Case Material	ABS
Accessory	
Standard	LoRa [®] Antenna (External Omni Antenna) x 1
Optional	USB Adaptor Cable (USB to UART)