

# GLOBALSAT WORLD COM CORPORATION

## PRODUCT SPECIFICATIONS

**LoRaWAN™ Sensor Device**  
**MODEL: LS-111 (CO<sub>2</sub>)**

**Document Version: V1.0**



**GlobalSat WorldCom Corporation**  
16F., No. 186, Jian 1<sup>st</sup> Rd, Zhonghe Dist.,  
New Taipei City 23553, Taiwan  
Tel: 886.2.8226.3799/ Fax: 886.2.8226.3899  
[lora@globalsat.com.tw](mailto:lora@globalsat.com.tw)  
[www.globalsat.com.tw](http://www.globalsat.com.tw)

**USGlobalSat Incorporated**  
14740 Yorba Court Chino, CA 91710  
Tel: 888.323.8720 / Fax: 909.597.8532  
[sales@usglobalsat.com](mailto:sales@usglobalsat.com)  
[www.usglobalsat.com](http://www.usglobalsat.com)

## Introduction:

LS-111 is designed to measure Carbon Dioxide (CO<sub>2</sub>), Temperature and Humidity by LoRa<sup>®</sup> long-range and low-power wireless connectivity. It is integrated LoRa<sup>®</sup> wireless technology, CO<sub>2</sub> sensor knowhow and high-performance MCU solution for various IoT markets usage. With calibrated CO<sub>2</sub> sensor module and compensated Temperature/ Humidity sensor integration, the data is ready for use. It is perfect for monitoring air quality in schools, office buildings, greenhouses, factories, hotels, hospitals, transportation lines and anywhere high levels of carbon dioxide are generated.

## Product Features:

- LoRaWAN<sup>™</sup> compliant
- High Receiver Sensitivity, long range solution
- Integrated with calibrated CO<sub>2</sub> sensor
  - Accuracy:  $\pm 30$  ppm,  $\pm 3\%$  of reading
  - Range: 0 ~ 10,000 ppm
- Integrated with Compensated Temp/ RH sensor
- Wide range DC power-in, 8~24V /or Micro-USB DC power-in, 5V
- Display CO<sub>2</sub> concentration, Temp/ RH

## Specifications

<b>Wireless</b>	
LoRa <sup>®</sup> Module	LoRa Alliance <sup>™</sup> certified module
Sensitivity	-132 dBm @ 980bps
Tx Power	Up to 100mW
Standard/ Protocol	Comply with LoRaWAN <sup>™</sup> protocol
LoRa <sup>®</sup> Antenna	External Omni Antenna 824~960 MHz 2dBi SMA Male connector
Frequency	865~868MHz (Model : LS-111E) 902~928MHz (Model : LS-111H)
<b>Sensor Operation</b>	
Sensing Element	CO <sub>2</sub> : Gold-plated infrared (NDIR) wave-guide technology with Automatic Baseline Correction (ABC) and passive gas diffusion (no moving parts) Temperature & Humidity: CMOS sensor
Response Time	CO <sub>2</sub> : < 10 sec. @ 30 cc/min. flow rate < 3 min. diffusion time Temperature: min. 3 sec. ; max. 30sec. at 63% Humidity: < 8 sec. at 63%
Accuracy (at 25°C)	CO <sub>2</sub> : ±30ppm + (± reading *3%) Temperature: ±0.3°C Humidity: ±3 %RH
Repeatability	CO <sub>2</sub> : ± 20ppm + (±reading * 1%) Temperature: ±0.1°C Humidity: ±0.1 %RH
Zero Drift	CO <sub>2</sub> : < ± 10ppm/yr. with Automatic Baseline Correction (ABC) Temperature: < 0.04 °C/yr Humidity: < 0.5 %RH/yr
Measurement Range*	CO <sub>2</sub> : 0 ~ 10,000ppm Temperature: -40 ~ +125°C Humidity: 0 ~ 95 %RH
Pressure Dependence	CO <sub>2</sub> : 1.6% reading per kPa
<b>System Operation</b>	
Temperature	-10 ~ +60 °C
Humidity	0 ~ 95%RH, Non-condensing
Storage Temperature	-20 ~ +70 °C.
Warm-up Time	≤ 1 min. (at full specs ≤ 15 minutes)

## Specifications

Signal Output	NA
Alarm Output	NA
Power Supply	DC 8~24V or Micro-USB DC 5V
Power Consumption	TBD
Installation	Wall-mount
Dimension (mm)	Wall-mount: 113.57(H) x 80(W) x 28.79(D) mm
Weight	101 ± 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)