



Indoor Air Quality

LoRa® APPLICATION BRIEF

DESCRIPTION

Frequent exposure to poor indoor air quality can lead to eye, nose and throat irritations and a number of other immediate symptoms. Over time this exposure could lead to even more serious health condition. Furthermore, research indicates that indoor air pollutants may be two to five times higher than outdoor levels, making the monitoring of indoor air quality more important than ever.

By implementing an indoor air quality monitoring solution comprised of sensors and gateways embedded with LoRa Technology and an intelligent low power wide area network based on the LoRaWAN™ protocol, office buildings and other facilities can analyze indoor air quality, monitor air flow and test levels of carbon monoxide and other air pollutants to ensure proper and safe indoor air quality.

HOW A LoRaWAN-BASED INDOOR AIR QUALITY SYSTEM WORKS

Semtech LoRa Technology enables connectivity, real-time analytics, reporting, and additional functions such as geolocation.

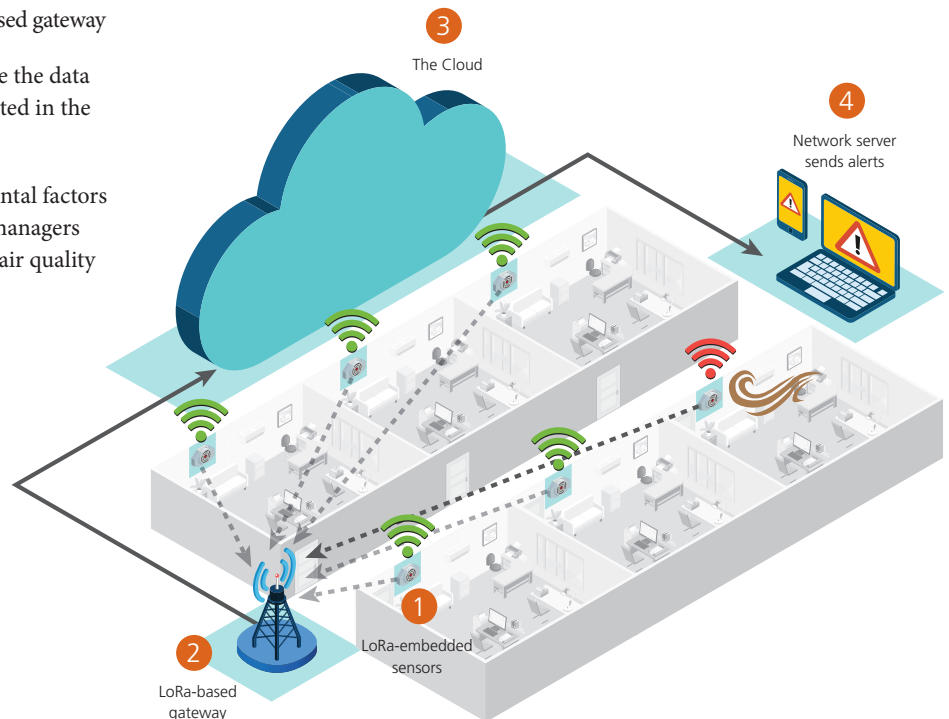
- 1 Indoor air quality data is collected by sensors embedded with LoRa Technology
- 2 Data from the sensor is periodically sent to a LoRa-based gateway
- 3 Gateway sends information to network server where the data is analyzed by an application server that can be located in the building or in the Cloud
- 4 Application server sends alerts based on environmental factors threshold as of CO² levels to consumers or facility managers via mobile device or computer to guarantee indoor air quality

BENEFITS

- Analyzes indoor air quality
- Measures air flow
- Test levels of carbon monoxide and other air pollutants
- Contributes to reduction in heat
- Guarantees oxygen recycling inside building based on CO² threshold
- Easy to set up and low power operation ensures sensor batteries can last up to 20 years
- Provides reliable RF communication link between sensing infrastructure and LoRaWAN-based network

APPLICATIONS

Sensors placed indoors can analyze indoor air quality, monitor air flow and test levels of carbon monoxide and other air pollutants to ensure proper and safe air quality.



Semtech products used in this application:

Sensors	Gateway
• SX1272/3	• SX1301
• SX1276/7/8/9	

All application elements (sensing modules, gateways, servers, software) are available through LoRa Alliance™ partners.



FIND YOUR IoT SOLUTION FROM SEMTECH'S LoRa ECOSYSTEM

MODULES & MODEMS

SENSORS

BASE STATIONS

NETWORK SERVERS

SYSTEM INTEGRATORS

For a full list of LoRa Ecosystem partners and services, visit our LoRa Community www.semtech.com/LoRaCommunity

KEY FEATURES OF SEMTECH'S LoRa WIRELESS RF TECHNOLOGY

LONG RANGE Penetrates in dense urban and deep indoor environments, connecting to sensors 15-30 miles away in rural areas

LOW POWER Enables multi-year battery lifetime of up to 20 years or more

HIGH CAPACITY Supports millions of messages per base station

GEOLOCATION Enables tracking applications without GPS or additional power consumption

STANDARDIZED LoRaWAN specification ensures interoperability among applications, IoT solution providers and telecom operators

SECURE Embedded end-to-end AES-128 encryption of data ensuring optimal privacy and protection

LOW COST Reduces upfront infrastructure investments, as well as operating and end-node costs

JUMP-START YOUR IoT DEVELOPMENT TODAY

Semtech offers several training options to help you get started:



Learn about Semtech's LoRa Technology platform: visit www.semtech.com/IoT



Join the LoRa Community: www.semtech.com/LoRaCommunity



Become a member of the LoRa Alliance™: visit www.lora-alliance.org



Attend a LoRa Boot Camp for a full-day of training featuring LoRa Technology and real world applications: www.semtech.com/IoT



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