



Fire Detection

LoRa® APPLICATION BRIEF

DESCRIPTION

Every year in the U.S., fires cause roughly \$10 billion in property damage and injure or kill thousands of people. Commercial building fires can spread in a matter of minutes, so early detection is key to maintaining the safety of tenants and reducing the amount of property damage caused by fires. With a network of fire and smoke detecting sensors, firefighters can have a better sense of the magnitude of a fire and the direction it is headed.

By implementing a fire detection solution comprised of sensors and gateways embedded with LoRa Technology and an intelligent low power wide area network based on the LoRaWAN™ protocol, firefighters can detect heat, smoke, gas, or flames associated with fires earlier and implement firefighting tactics or personnel more quickly to either prevent or reduce the impact of the fire.

HOW A LoRaWAN-BASED FIRE DETECTION SYSTEM WORKS

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

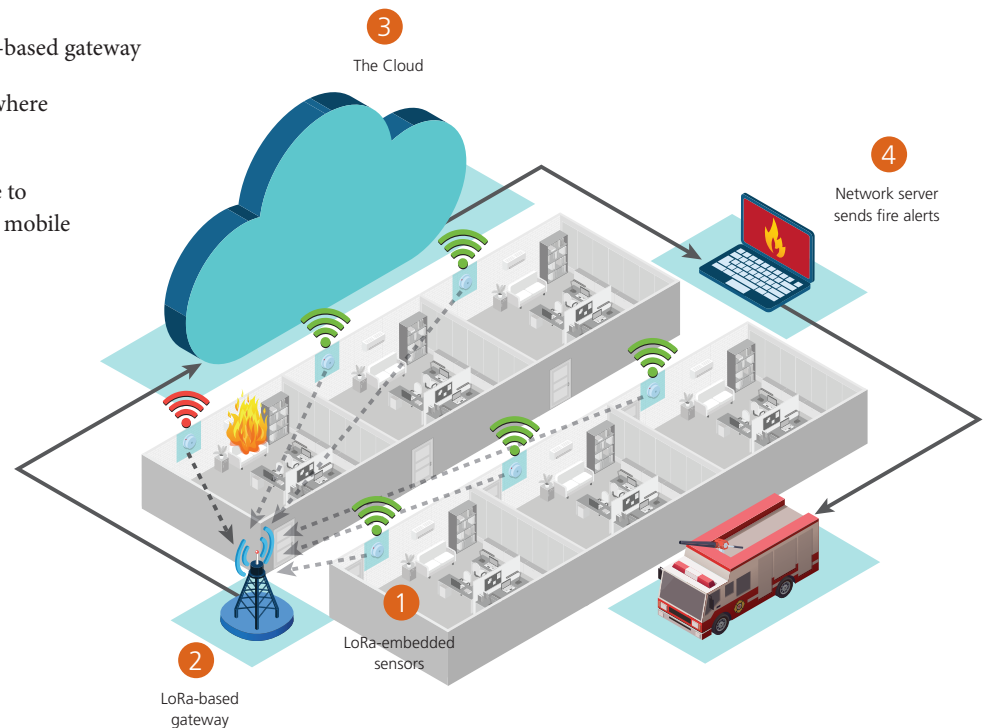
- 1 Signs of fire (heat, smoke, gas, or flames) data collected by sensor embedded with LoRa Technology
- 2 Data from sensor is periodically sent to a LoRa-based gateway
- 3 Gateway sends information to network server where the data is analyzed by an application server
- 4 Application server sends alerts on fire or smoke to property managers or emergency personnel via mobile device or computer

BENEFITS

- Sensors detect the presence of smoke or flames
- Sensors detect thermal changes to identify high temperatures associated with fires
- Sensors can send property status to property manager or emergency personnel to enable faster response time
- 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 throughout a commercial building can detect signs of a fire including heat, smoke, gas, or flames, enabling quicker response for the safety of the tenants and reducing damage to the property.



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



Follow Semtech on [LinkedIn](#) and our [LoRa Showcase page](#)



To contact one of our global offices in North America, Europe and Asia, visit www.semtech.com/contact



200 Flynn Road, Camarillo, California 93012 • phone: (805) 498-2111 • fax: (805) 498-3804 • www.semtech.com