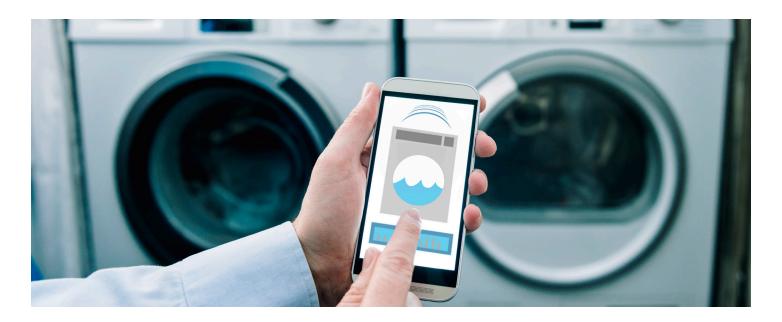# Water Management & Protection

LoRa® APPLICATION BRIEF



## Semtech's LoRa Technology Enables Robust, Long-Lived Remote Monitoring

### DESCRIPTION

LoRa® devices and wireless RF technology (LoRa Technology) is making it easy and affordable for smart homes and buildings to monitor and manage their water usage and guard against water or moisture damage. LoRa-enabled wireless sensors share their real-time measurements with a Cloud-based application that looks for patterns indicating a leak, broken pipe or other water-related problem. If a problem is detected, the application can shut off the water supply and alert the homeowner or property manager through their smartphone or personal computer before any additional damage occurs.

LoRa-enabled water monitoring can also provide homeowners and property managers with important insights into their property's water usage. Property managers can use the information to analyze their consumption, identify trends and better conserve. The water monitoring solution can alert the homeowner with a message to their computer or smartphone if a faucet or lawn sprinkler appears to have been open longer than usual. Insurance companies offer lower premiums to property owners if LoRa-enabled water management and protection systems are installed. Insurance companies spend billions each year covering water-related damages.

### BENEFITS

LoRa Technology's many applications or use cases can be used to deliver extraordinary performance, reliability and service life. In this case, it enables a Cloud-based water management and protection system to communicate with tens of thousands of homes and buildings equipped with wireless sensors through LoRa-based home gateways or a public LoRaWAN™ network.

LoRa Technology's robust transmission characteristics allow wireless sensors located in basements and other out of the way locations to reach through multiple walls, floors and other structural elements that other wireless technologies cannot.

In addition to its superior range and performance, its power conserving features make it possible for a LoRa-enabled wireless sensor to operate for 10+ years on a single consumer-grade battery. This allows utility companies to enjoy low deployment costs and greatly reduce field support requirements.

### APPLICATION

When used in apartments or other multiple-tenant structures, LoRa-enabled remote water monitoring can help landlords manage their utility bills and identify unnecessary water usage by sending alerts to building managers and maintenance personnel.

## SEMTECH'S LoRa TECHNOLOGY FOR PROPERTY WATER MANAGEMENT AND PROTECTION SYSTEM

### HOW IT WORKS

Semtech's LoRa Technology enables remote monitoring of a property's water use and detection of water-related problems.

1. A property is equipped with a LoRa-enabled wireless smart sensor that monitors the flow of water coming through the dwelling's main supply line.

2. Wireless moisture sensors equipped with LoRa transceivers can be in the home's basement, attic or any other place that is susceptible to seepage or high-humidity conditions that could cause property or structural damage or unhealthy conditions such as mold.

3. The sensors' long-range, low-power LoRa transceivers connect to IoT via either a LoRa-based gateway or a public LoRaWAN network. It transmits the data they collect to a Cloud-based water monitoring application.

4. Upon installation, the application monitors the property's water usage patterns. This provides analysis algorithms to the sensors' for real-time measurements, looking for irregularities that would indicate slow leaks, burst pipes or other potential problems.

5. If the water management application detects a potentially home-threatening situation, it alerts the homeowner via mobile app, text message and email.

### REAL USE-CASE SOLUTION

Eddy Smart Home Solutions Inc. (Eddy Home), a leading North American manufacturer of residential and commercial water technologies, evaluated several wireless technologies for use in its new family of water monitoring and management products. In the end, they chose LoRa Technology as the basis for their platform because it offered a unique combination of advantages that competing solutions could not match. These include:
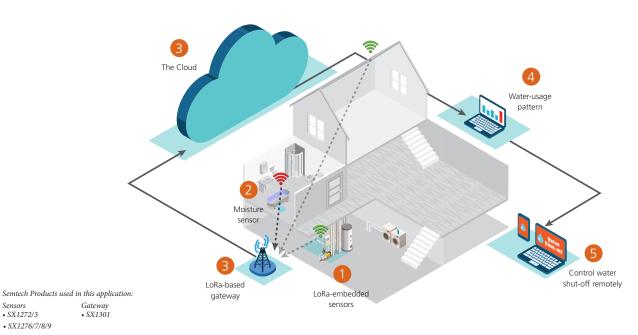
#### ROBUST PERFORMANCE

The LoRaWAN protocol includes many innovative features that ensure reliable communication under the unpredictable and often-challenging conditions present in many homes and apartments. In addition, the unlicensed sub-GHz ISM band used by LoRa Technology's low-power radios can reach much deeper into buildings and communicate much further than Wi-Fi, ZigBee or other wireless technologies that operate at 2.4GHz and 5GHz.

#### LONG RANGE

The same characteristics that enable LoRa Technology to deliver excellent indoor performance and deep penetration in dense urban environments give it a long reach in more open terrain.

#### LOW PER-UNIT COST

Adding LoRa Technology to an end-node sensor module requires a single low-cost IC, helping Eddy Home to offer products that can compete in the price-sensitive consumer market.



*Semtech Products used in this application:*

*Sensors*
- *SX1272/3*
- *SX1276/7/8/9*

*Gateway*
- *SX1301*

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

## REAL USE-CASE SOLUTION CONTINUED

### LOW DEPLOYMENT COST

A LoRa-based application can operate over public infrastructures when they are available. This enables Eddy Home to enjoy greatly reduced CAPEX requirements when it can deploy its water management solution over commercial LoRaWAN networks. For applications that require a dedicated infrastructure, LoRa Technology's robust long-range, low-power capabilities can connect to sensors more than 15-30 miles away, thereby minimizing the number of gateways needed to serve an area.

### LOW POWER

Despite its superior range and performance, LoRa Technology's power conserving features make it possible for a LoRa-enabled wireless sensor to operate for 10+ years on a single battery. This reduces, or even eliminates, one of the biggest causes of costly field support visits.

### STANDARDS-BASED

Because the LoRaWAN protocol is a globally approved standard, Eddy Home can offer products and services that have assured global interoperability. LoRa-based products also benefit from the economies of scale that reduce unit costs and further accelerate its adoption.

### SECURE

LoRa Technology secures all communications using end-to-end AES128 encryption, making Eddy Home's systems highly resistant to cyber attacks and data theft.

### HIGH CAPACITY

A single LoRa base station can handle millions of messages, ensuring Eddy Home's water management applications will be able to reliably extend its services to a growing customer base.

## JUMP-START YOUR IOT DEVELOPMENT TODAY

### TRAINING OPTIONS TO GET STARTED

Learn about Semtech's LoRa Technology platform
www.semtech.com/iot

Join the LoRa Community
www.semtech.com/LoRaCommunity

Become a member of the LoRa Alliance™
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

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