

Product Description

ROMA is a smart low-power wireless signage monitoring device that provides owners and operators with a complete vision of post-based signage position, status and temperature.

It simplifies management and maintenance of big numbers of remote, hard-to-reach signage posts.



Smart signal · Active maintenance

Product Details

Highly sensitive accelerometer

Automatic alerts for signage falling, stealing, vandalizing and others

Long wireless range

Low-power, battery lasts 3+ years

LoRaWAN 1.0.2 compatible

Technical specifications

Hardware

| Specification | Value |
|--------------------|--|
| Model | Waterproof box with 4 screws. Batteries not included |
| Protection | IP67 |
| CPU | Low-power 8MHz |
| Sensitivity | -139dBm @ LoRa & 62,5 kHz & SF = 12 y 146bps - -136dBm @ LoRa & 125 KHz & SF = 12 y 293bps- -118dBm @ LoRa & 125 KHz & SF = 6 y 9380bps- -123dBm @ FSK & 5 kHz & 1,2 Kbps |
| RF Power | 14 dBm (LoRa), 20 dBm (WiFi) |
| LoRaWAN | Class A only. OTAA support. |
| Flash memory | 32 k |
| Consumption (Typ.) | 8uA @ 3,3V |
| Power Supply | 3x LR04 alkaline batteries |
| Temperature Range | -20°C to +70°C |
| Installation | Preconfigured plug-and-play, wall or floor mounting |
| Configuration | Remotely, via LoRaWAN downlink frames |

Methodology

ROMA is a plug-and-play IoT device. As it comes preconfigured, it only needs a power connection in a location with LoRaWAN coverage.

The device will automatically join the available network and will start monitoring the correct positioning of the mast or post where it is installed. It continuously monitors the orientation of the assembly and checks whether it falls inside a configurable threshold. An alert is sent via LoRaWAN only if the orientation is outside the allowed range or if the battery needs to be replaced.

The device also sends periodic (heartbeat) messages when not any other alert has been sent in the last 24 hours, which enables maintainers or system operators to rest assured all the signage items are in places and correctly monitored. It also enables small drifting in orientation to be captured, via this heartbeat messages, helping to diagnose terrain related problems, such as sliding or subsidence.

The low power nature of the LoRaWAN communications, paired with the ultra-low power design of the product, enables a lifetime expectancy of the batteries longer than 3 years, reducing the maintenance costs and truly unlocking a powerful value-add to users and system operators.

Device runtime settings can be adjusted via LoRaWAN downlink frames, which get sent by the network whenever the device reports to it.

The following parameter can be adjusted by a LoRaWAN-compatible platform:

- Orientation alert threshold
- Battery level threshold
- Periodic heartbeat timer
- LoRaWAN Join Spread Factor

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