FloodAlert

Cost-effective, realtime, early flood warning system

FloodAlert provides continuous, local water level monitoring and sends email and SMS alert notifications to users when pre-set alarm levels are breached.

FloodAlert sensors can monitor water levels in surface water, groundwater and watercourses.

FloodAlert posts are fitted with robust, ultrasonic LoRaWAN® water level sensor units which can be strategically positioned to give maximum warning to users, allowing time for evasive action. Posts can be installed up to 15 kilometres from a gateway and each gateway can connect to an unlimited number of sensor units.

A cloud-based portal, accessible from any internet-enabled device, sends SMS and email flood alert notifications to an unlimited number of users, as well as providing realtime water level data in a clear graphic format.

FloodAlert provides a cost-effective, low-carbon impact, flood risk monitoring and early flood warning solution.

Benefits at a glance:

- Cost-effective, local flood alert system
- Easy to install and set up
- Sustainable, robust and reliable
- Sends SMS and email alerts to allow time to take evasive action to protect properties
- Realtime monitoring on a cloud-based portal
- Monitors water levels for up to 15 kilometres from a gateway
- Communicates with unlimited number of users 3alert levels, tailored to each installation
- Communication via a low-energy, low-impact LoRaWAN® network
- Multiple FloodAlert sensor units can connect to form a network for flood warnings and flood risk modelling data in flood risk hotspots.

Actions triggered over LoRaWAN®

From sensor data, automated flood defence equipment can be activated via the LoRaWAN® network. Examples can include flood pumps, floodgates, traffic signals, sluice gates and cameras, providing automatic warnings and equipment activation to flood risk areas.

FloodAlert posts

Rising water enters a FloodAlert post through rows of holes, allowing the top-mounted water level sensor to monitor rising levels within the post. The system sends alert notifications if water breaches each of the three pre-set alarm levels.

For surface water monitoring, posts are buried in 0.5m deep post holes and stand at least 1m above ground level. For groundwater monitoring, posts can be buried up to 5m deep into the ground, groundwater levels deeper than 5m can be monitored using a pressure sensor. For watercourse monitoring, posts are secured to the wall of a watercourse.





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Monitoring water levels in drains, gullies and attenuation tanks

Sensor units can be fitted near to the top of a drain, gully or attenuation tank allowing the sensor to monitor and send alert notifications if water breaches pre-set alarm levels.



Alarm levels, email and SMS warnings

Depending on ground conditions and following a flood risk survey, three alarm levels will be programmed into the system. Each time an alarm level threshold is breached, users will receive email and SMS warnings of rising water levels.



Gateway

Users are supplied with a LoRaWAN[®] gateway, receiving data from FloodAlert units and sending to the cloud-based portal.

Web portal

The web portal is available via any web browser, providing realtime water level data, historical water level data and data for signal strength, temperature and battery life – all displayed in a clear graphic format.



Smart FloodAlert network

Andel's FloodAlert network collects water level data from groundwater, surface water and watercourses. The system can merge the data with other flood risk variables such as rainfall forecast data, rain gauge data, soil moisture data and Environment Agency river level data.

A FloodAlert network can create a detailed dataset to help develop future flood risk modelling and flood defence measures for local authorities and flood action groups.



FloodAlert sensor and post



_ Removable cap for replacing sensor batteries, no routine maintenance is required.

The sensor monitors water levels above and below ground, continually monitoring and sending data to the cloud-based portal. Andel FloodAlert® ultrasonic LoRaWAN® sensor is a battery operated water level sensor with integrated LoRaWAN® radio providing 24/7 monitoring with up to 15km range. Battery power typically lasts for up to 10 years. CE Conformance and RoHS Compliant.

Three alert levels are set, based on the individual installation requirements. When a pre-set alarm threshold is breached, the system will send email and/or SMS notifications to users.

The sensor can be housed in a variety of posts and fixings. A standard post is constructed from robust, 100% recycled post-industrial plastic waste. Rows of holes allow water to enter the post for the sensor to monitor rising water levels.

For surface water monitoring, the bottom third of the post is buried below ground level in gravel filled post holes, allowing water to enter the post. Depths may vary depending on installation requirements.

TECHNICAL INFORMATION – LoRaWAN® SENSOR

Operating temperature -20°C to +50°C (-4°F to +122°F)

Humidity range 15% - 95%

Altitude range <2Km (<6,000') above sea level

Radio standard Supports LoRaWAN $^{\odot}$ 1.0.2 compliant 125/250 KHz bands

Frequency 868MHz nominal

Output power Up to +14dBm (25mW) (as measured into the internalantenna on the PCB; internal antenna gain = -3dB typ)

Gauge type Ultrasonic

Ultrasonic range >12cm to <400cm (>5" to <155")

Ultrasonic signal diversion 30°

Ultrasonic resolution ±1cm (±0.5")

Accuracy Typically ±2cm (±1")

Battery type 3.6V Li-SOCl2 Size 2/3AA

Expected battery life Typically 12 years from activation

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