

ALFX

A network leak detection system with integrated mobile GIS and asset management

Technical Specifications

ALFX Sensor

Physical Characteristics and Environmental Conditions

- IP67 (splash-proof / weatherproof)
- Operating Temperature: -4° to +185° F (-20° to +85° C)
- Dimensions: Height = 4.25 in (108 mm), diameter = 2.00 in (51 mm)
- Weight: 0.6 lb. (275 g)
- Wake-up function: sealed magnetic sensing
- Housing: Nickel-plated steel and polycarbonate shell
- Integrated hydrant flange post with matching nut:
 - Stainless steel 303
 - Diameter = 5/8"-11 or 1/2"-13, length = 3 in or 3.75 in

Power

- Battery: Lithium thionyl chloride C cell
- Up to 8 years of continuous operation
- Factory replaceable

Vibration Sensing

- Sensing Element: Piezo-ceramic accelerometer
- Material: PZT-5H with silver chloride electrodes
- Resolution: < 100 nano g / $\sqrt{\text{Hz}}$
- Sensitivity: 200V/g with integrated low-noise amplifier
- Shock resistance: 2,000 g, equivalent to a 3-foot drop onto concrete
- Calibration: Automatic and internal, performed every 24 hours

ALFX Controller

Physical Characteristics and Environmental Conditions

- IP54 (weatherproof)
- Operating Temperature: -4° to +185° F (-20° to +85° C)
- Dimensions: 3.82 in (97 mm) x 2.52 in (64 mm) x 0.84 in (21 mm)
- Weight: 0.25 lb. (114 g)
- Housing: Polycarbonate enclosure

Power

- Battery: Lithium polymer ion prismatic cell
- Up to 80 hours of continuous operation on a single charge
- Rechargeable with a full charge in 4 hours and a useable charge in 1 hour
- 18-week shelf life from a full charge
- Factory replaceable

Accessories

- Rugged, waterproof carry case
- Controller windshield holder
- Recharging AC power supply: USB-C 5V / 2A
- Recharging Auto-adapter: Dual USB-A, with USB-A to C cable

WPN2 Mobile GIS, Asset Management and Leak Detection iOS App

WaterPoint Network / ALFX Account Services

- Unlimited users, devices and cloud data syncing & storage
- Secure sign-in to ALFX Web Dashboard and WPN2 iOS app
- In-app messaging, email and phone support
- In-app photos, address look-up (reverse-geocoding) and voice-to-text, hands-free data entry
- Apple maps and satellite imagery
- Support for drinking water, waste water, storm water, gas, electric and streets infrastructures

GIS Asset Management

- Create map assets in the field, recording GPS coordinates:
 - In the field or in the office
 - Optionally with an Apple Pencil for precision
 - Define pipe layouts in “follow me” mode by walking or driving
- Record asset installation date, condition, life expectancy and other management parameters
- Associate an asset with a manufacturer’s model from 64seconds built-in model database

Issues, Work Orders and Activities

- Create issues, like a report of low water pressure, a suspected leak and other issues
- Create work orders, track work progress, record job costs, materials and time commitments
- Create activities, like hydrant flushing, meter replacement, leak repairs and other activities

Import, Export and Reports

- GIS data annual Import: Performed by 64seconds
- Import sources:
 - JSON documents
 - Shape & CSV files
 - ESRI Geodatabase file set
 - AutoCAD Map files
- Export by email or Web Dashboard at any time:
 - JSON documents
 - Shape files
 - CSV files
- PDF Reports:
 - Assets
 - Activities (like leak repairs and hydrant flushing)
 - Work orders and issues
 - Leak detection

Leak Detection and Pinpointing

- Support for:
 - ALFX sensors
 - PLD2 pipeline leak detector
 - LNC2 leak noise correlator
- Real-time listening to pipe sounds
- Automatic intelligent filtering to isolate leak sounds
- Frequency boosting of otherwise inaudible sounds
- Intelligent background noise cancellation, including traffic and wind
- Scheduled correlation recordings from 1 minute to 24 hours from now
- Up to 3 sequential correlation recordings at intervals of 30 seconds to 1 hour
- Automatic correlation peak / leak location pinpointing based on GIS information

ALFX Web Dashboard and Cloud Service

Web App

- Unlimited users, app usage and cloud service
- Tested browser support for Chrome, Edge, Safari and mobile Safari
- Secure sign-in to ALFX Web Dashboard and WPN2 iOS app
- In-app messaging, email and phone support
- Syncing of user feedback, such as actual type of leak, flow rate, photos and notes
- GIS integration: View assets, sensors and other records in the WaterPoint Network / ALFX Account

Cloud Analysis

- Leak survey results are updated whenever new sensor or GIS data is synced
- Leak pinpointing from correlation recordings
- Detection and tracking of new and emerging leaks
- Distinguishing leaks from flow disturbances, like usage, irrigation and other noise
- Evolving analysis capabilities

Web Dashboard Display

- A list of locations of interest, including sensors and suspected leaks
- A configurable GIS map overlay, with distribution and service pipes and other assets
- A heat map of sound patterns of interest
- Actionable information, like “cast iron joint crack” and “estimated leak flow of 5 gpm”

Miscellaneous

Radios

- Bluetooth Low Energy 5.2 (FCC ID: SH6MDBT50Q)
- 64seconds Coriandolo Radio protocol (FCC ID: 2ACIHRE1)
- Variable transmission power: 0 to +8 dBm
- Variable symbol rate: 125 kbps, 512kbps, 1 Mbps or 2 Mbps

Standards Compliance

- Manufactured by 64seconds in our ISO 9001-2015 certified facilities
- RoHS compliant (for electronic materials)
- Modular radio approval under FCC rule part 15.247
- 64seconds is a certified Apple MFi (Made for iPhone) developer and manufacturer
- Bluetooth 5.2 (Bluetooth SIG compliant)

Time Synchronization

- Sensor - Controller deviation: 64 μ s maximum, real-time sync (US patent #: US-10948132-B2)
- Sensor / Controller clock drift: \pm 3 parts per million typical

Other Equipment (available separately, configurable by 64seconds)

- WPN2 is compatible with:
 - iPhone 8 or later
 - iPad mini 5th generation or later,
 - iPad 10th generation or later
 - iPad Air with M1 chip or later
 - iPad Pro 2019 or later
 - iOS 15 or higher
- Protective case for an iOS device: Ruggedized, rubber