Remote Monitoring for Business

ALTA® Wireless Water Detection Puck Sensors

General Description

ALTA® Wireless Water Detection Puck Sensors report the presence or absence of water. The convenient water tight puck design allows the sensor to be placed anywhere it's dry or wet. Note: water levels must be ~ 1.6mm high to trigger detection.

Key Features

▸ Immediately detects water presence
▸ Waterproof and fully submersible

Principles of Operation

The ALTA Wireless Water Detection Puck Sensors detect when water is present by completing a circuit between the two probe points (exposed stainless steel metal screw heads) on the bottom of the sensor. When the detection state of the sensor changes (water present or absent), a wireless communication is immediately sent to the gateway. The communications can be configured to be sent urgent or "aware" when:

▸ Water is present
▸ Water is absent
▸ Water present or absent

If the communication is not marked urgent, the data will be stored and scheduled to be forwarded by the gateway at a later time. If the communication is marked urgent, the gateway will immediately attempt to securely send the message to iMonnit, or other approved data services.

Applications

▸ Water heater monitoring
▸ Plumbing leak detection
▸ Data center subfloor water detection
▸ Sump pump monitoring
▸ Water intrusion / flood detection
▸ Reservoir / tank level monitoring
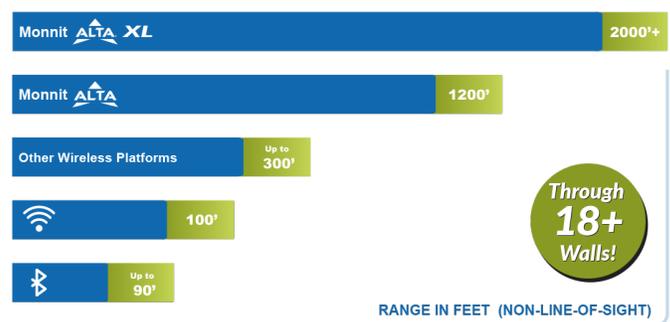▸ Crawl space water intrusion monitoring
▸ Additional applications

Features of Monnit ALTA Sensors

• Wireless range of 2,000+ feet through 18+ walls[1]
• Frequency-Hopping Spread Spectrum (FHSS)
• Best-in-class interference immunity
• Best-in-class power management for longer battery life[2]
• Encrypt-RF® Security (Diffie-Hellman Key Exchange + Advanced Encryption Standard (AES)-128 Cipher Block Chaining (CBC) for sensor data messages)
• Sensor logs 2000 to 4000 readings if the gateway connection is lost (non-volatile flash, persists through power cycling):
    - 10-minute Heartbeats = ~ 22 days
    - 2-hour Heartbeats = ~ 266 days
• Automatic over-the-air updates to sensor firmware (future-proof)
• Free iMonnit Basic Online Wireless Sensor Monitoring and Notification System to configure sensors, view data, and send alerts via SMS text, email, and voice call
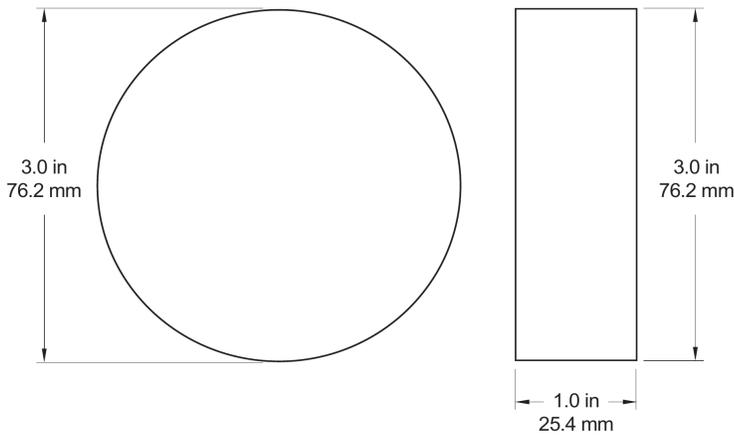
1 Actual range may vary depending on the environment and gateway.

2 Battery life is determined by the sensor reporting frequency and other variables. Other power options are also available.

Wireless Range Comparison

Monnit ALTA XL	2000'+
Monnit ALTA	1200'
Other Wireless Platforms	Up to 300'
(WiFi)	100'
(Bluetooth)	Up to 90'

Through 18+ Walls!

RANGE IN FEET (NON-LINE-OF-SIGHT)

The sensor reports Water Present or
No Water Present.

3.0 in
76.2 mm

3.0 in
76.2 mm

1.0 in
25.4 mm

Technical Specification | ALTA® Wireless Water Detection Puck Sensors

Detection Requirements	Input impedance	2.5 MΩ
	Maximum medium impedance	900.0 kΩ (Clean water has a typical impedance of 50 to 200 kΩ)[1]
Puck	Dimensions	75mm (diameter), 25mm (height), 30mm (height with rubber feet)
	Enclosure material	Vulcanized rubber
	Water protection	Completely sealed, waterproof, fully submersible
	Water detection minimum height	1.6mm (1/16")
	Weight	7.6 ounces
	Battery	3.6V 750 mAh Lithium (non-replaceable)
	Expected battery life	10 years at a 10-minute Heartbeat[2]
	Operating temperature range	-40°C to 85°C (-40°F to 185°F)[3]
ALTA Wireless	Data logging	Sensor logs 2000 to 4000 readings if gateway connection is lost (non-volatile flash, persists through power cycling): 10-minute Heartbeats = ~22 days - 2-hour Heartbeats = ~266 days
	Wireless protocol	ALTA Proprietary Frequency-Hopping Spread Spectrum (FHSS)
	Wireless transmission power (EIRP)	50 mW (900MHz), 25 mW (868 MHz), 10 mW (433 MHz)
	Wireless range	2,000+ ft. through 18+ walls with the ALTA XL® Gateway
	Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
General	Battery voltage range	2.0 to 3.8 VDC
	Operating altitude (non-pressurized	-15.2 to 1,982 m (-50 to 6,500 ft)[4]
	Storage altitude (non-pressurized environments)	-15.2 to 3,048 m (-50 to 10,000 ft)[4]
	Operating humidity	5 to 85% RH (non-condensing)
	Certifications	900 MHz sensors: **FCC ID: ZTL-G2SC1** and **IC: 9794A-G2SC1**. 868 and 433 MHz sensors tested and comply with: **EN 55032**: 2015/A11:2020; **EN 55035**:2017/A11:2020; **ETSI EN 300 220** V3.2.1 (2018-06); **ETSI EN 301 489-3** V2.2.0. (2021-11); and **ETSI EN 303 645**. All sensors tested and comply with: **EN 61010-1** and **EN 60950** and meet **RoHS 2015/863** and **REACH 224** (June 2022), according to **IEC 63000**:2016/AMD1:2022.

1. The resistance between the conductive probe ends must be less than this to ensure water detection.
2. Battery life is determined by the sensor reporting frequency and other variables.
3. At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory. Effective capacity of the battery can be reduced by up tp 50% when operating below 0°C.
4. Operating and storage altitude without DC power supply is -30.48 to 9144 m (-100 to 30000 ft).

Magnetic Reed Switch and LED Behavior

When your Water Puck Sensor is shipped to you, it comes with a small but powerful magnet. This is used to control the power state of the puck.

Using the magnet will trigger the following reactions from the embedded LED, visible from the underside of the puck (B).

The area marked by the label on the top of the water puck indicates the hot spot location for effective use of the magnetic power control (A).

• Bring the magnet in range of (A) and the LED will illuminate indicating the power state.

    • Solid Green: Powered ON, connected to the gateway

    • Flash Red, then Solid Green: Powered ON, not connected to the gateway

    • Solid Red: Powered OFF, not connected to the gateway

• If the magnet is still held in place for two seconds after the LED illuminates, then the LED will flash rapidly.

    • Flash Green: Will turn ON after the magnet is removed

    • Flash Red: Will turn OFF after the magnet is removed

• If the magnet is removed after holding it on the hot spot location for over two seconds, then the sensor will change its power state.

    • Single, Slow Green Flash: Turning ON or powered ON

    • Single, Slow Red Flash: Turning OFF

Magnet

MAGNETIC TOUCH POINT

Top of Water Puck

Bottom of Water Puck
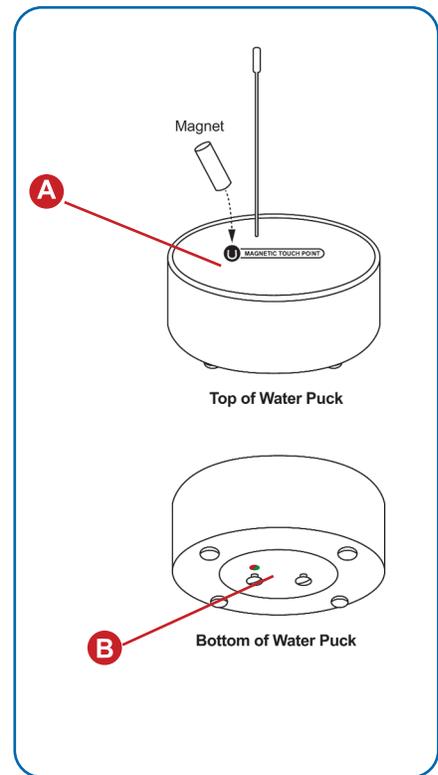
Commercial-Grade Sensors

Monnit commercial-grade sensors are designed for applications in ordinary environments (normal room temperature, humidity, and atmospheric pressure). Do not use these sensors under the following conditions, as these factors can deteriorate the product characteristics and cause failures and burnout.

• Corrosive gas or deoxidizing gas: chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, nitric oxide gas, etc.
• Volatile or flammable gas
• Dusty conditions
• Low-pressure or high-pressure environments
• Wet or excessively humid locations
• Places with salt water, oils, chemical liquids, or organic solvents
• Where there are excessively strong vibrations
• Other places where similar hazardous conditions exist

Use these products within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality.