nexa™
by WATTS

Product Specification

Leak Sensor - Rope
WNS2-9-W2-WS-WR

Nexa™ Leak Sensor - Rope detects the presence of water anywhere along the surface of the rope.

- 10 ft (3 m) of lead and water detection rope
- Expandable up to 100 ft (30 m) of detection rope

Principle of Operation

The sensor detects conductive liquids anywhere along the length of the detection rope by using two wires covered with conducting polymer. When water or conductive liquid contacts the rope, a wireless communication is immediately sent to the gateway. The sensor rope quickly dries so it can reset.

You can expand the detection rope up to 100 ft (30 m) by simply connecting additional 10 ft (3 m) sections.

Primary Applications

- Domestic hot water pipes, risers, and branches
- Cold water lines
- Boiler and chiller supply and return
- Ambient temperature

Features

- 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 logging of 2,000 to 4,000 readings if the gateway connection is lost (nonvolatile flash, persists through power cycling):

  10-minute heartbeats = ~22 days

  2-hour heartbeats = ~266 days

- Over-the-air (OTA) firmware updates (future-proof)
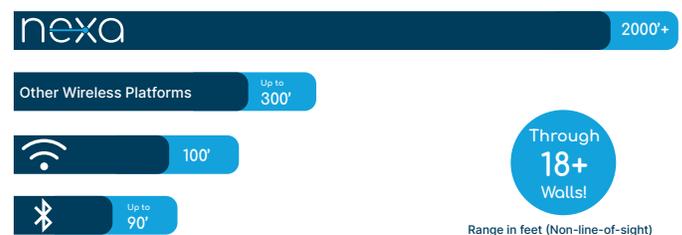
Battery-powered wireless leak sensor with conductive rope monitors when water is present

Wireless Range Comparison

nexa   2000'+

Other Wireless Platforms   Up to 300'

📶   100'

Through **18+** Walls!

Range in feet (Non-line-of-sight)

🅑   Up to 90'

NOTICE

Watts is not responsible for the failure of alerts due to connectivity issues, expired batteries, or improper installation.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

Inquire with governing authorities for local installation requirements.

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[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.

Technical Specification

Call customer service if you need assistance with technical details.

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]
Water Rope	Cable length	10 ft (3 m) included and expandable to 100 ft (30 m)
	Material	PE + alloy lead
	Cable diameter	5.5 mm
	Water rope weight	30 g/m
	Water rope pull force limit	60 kg
	Water rope maximum exposed temperature	75°C (167°F)
	Water rope core resistance[2]	3 Ω/100 m
	Water rope fire resistance	Second pressure plenum cable
Wireless Sensor	Data logging	Sensor logs 2,000 to 4,000 readings if gateway connection is lost (nonvolatile flash, persists through power cycling): 10-minute heartbeats = ~22 days 2-hour heartbeats = ~266 days
	Wireless protocol	Nexa Proprietary Frequency-hopping Spread Spectrum (FHSS)
	Wireless transmission power (EIRP)	50 mW 900 MHz, 25 mW (868 MHz), 10 mW (433 MHz)
	Wireless range	2,000+ ft through 18+ walls with Nexa 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)[3]	-50 ft to 6,500 ft (-15.2 m to 1,982 m)
	Storage altitude (non-pressurized environments)[3]	-50 ft to 10,000 ft (-15.2 m to 3,048 m)
	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] The input of this sensor is passive. Never apply any voltage to the water detection lead.
[3] Operating and storage altitude without DC power supply is -100 ft to 30,000 ft (-30.48 m to 9,144 m).

Technical Specification, cont.

Battery[1]	2× 1.5V AA alkaline, 1500 mAh
Battery Life	10+ years expected
Operating temperature range (board circuitry and battery)[2]	0°F to 130°F (-18°C to 55°C)
Optimal battery temperature range[2]	50°F to 122°F (10°C to 50°C)
Wireless antenna type	1/4-wave, 20 gauge wire whip, 3.5 in. (900/868 MHz)
Weight	3.7 oz (104.8 g) - No water rope │ 6.9 oz (195.6 g) - with 10 ft water rope

[1] Hardware cannot withstand negative voltage. Take care when inserting and removing batteries.

[2] Operating below 32°F (0°C) reduces battery life.

Dimensions

Measurements expressed in inches.
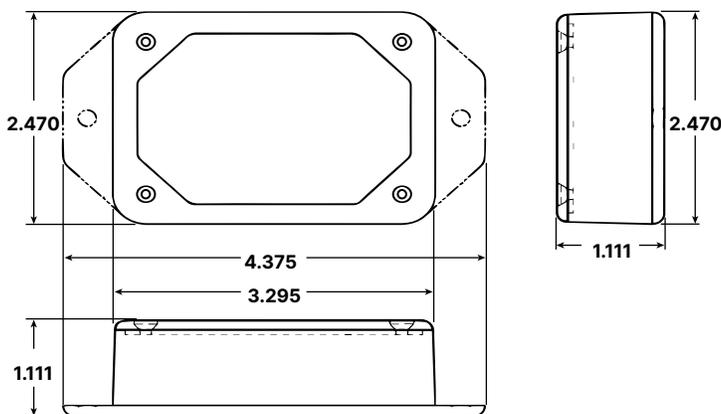
Operating Conditions

Nexa 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 such as chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, nitric oxide gas
- 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 Nexa specified temperature range. Higher temperatures may cause deterioration of the characteristics or the material quality.

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