

WIRELESS MONITORING SOLUTION (RF)

DATASHEET



OVERVIEW

Encardio Rite's comprehensive wireless LoRa RF sensor solution provides a reliable and efficient means of monitoring geotechnical and infrastructure health. Easy setup, real-time data transfer, and advanced features enable effective project management and decision-making. The system consists of various nodes and a gateway that operates in a MESH (presently only STAR) configuration. The nodes include tilt meter sensor nodes, tilt & laser sensor nodes for distance measurement, vibrating wire nodes, analog nodes, SDI-12 nodes, and a relay node. These nodes are designed to be plug-and-play with our sensors. Site setup and configuration are intuitive and easy using an Android device.

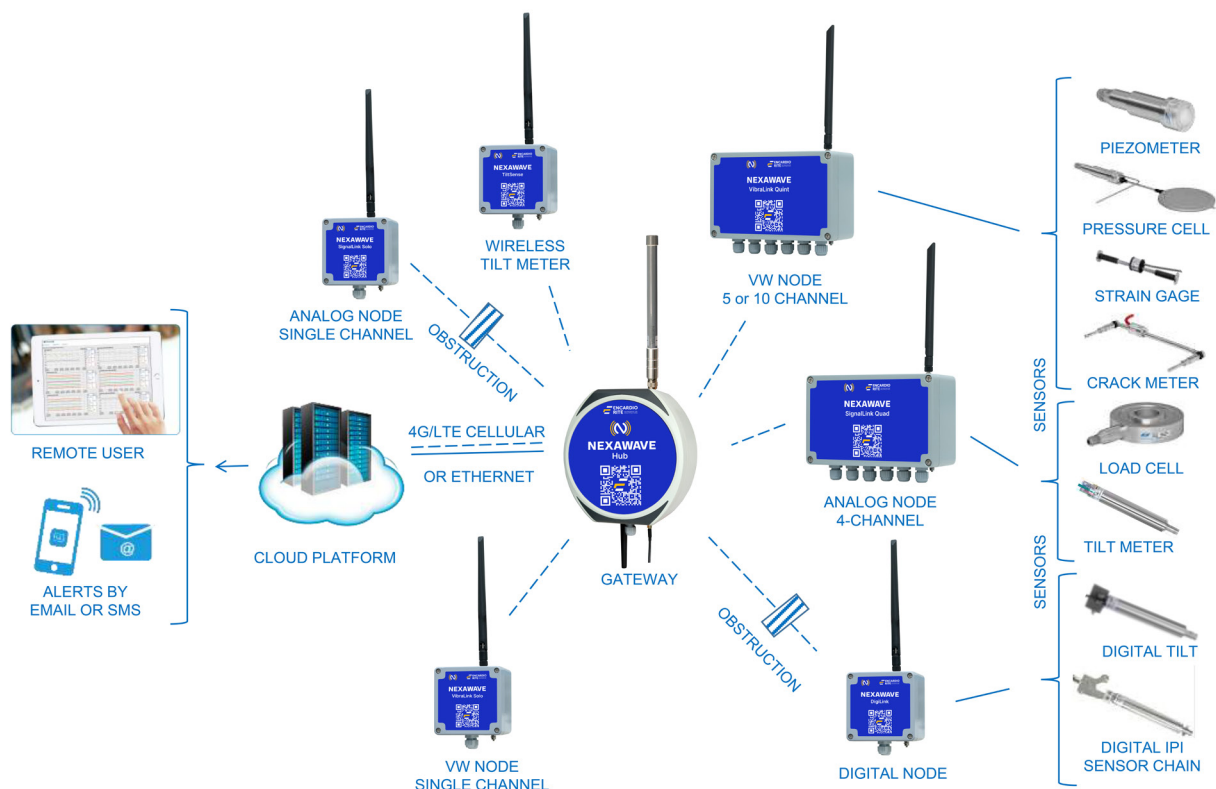
The wireless sensor network provided by Encardio Rite is crucial for monitoring construction sites, infrastructure projects such as dams and railways, and landslide areas. By utilizing the wireless system, project owners, consultants, and contractors can stay informed about their site via an early warning system and make timely decisions to increase safety, reduce project delays and improve cost-effectiveness

FEATURES

- **Reliable Data Transmission:** High-resolution readings with long-term stability and uninterrupted data transmission.
- **Seamless connectivity:** 200 nodes to 1 Gateway over large distances in MESH (presently only STAR) configuration.
- **Easy Configuration:** Plug and Play sensor installation. Intuitive set up and configuration on your mobile.
- **Remote Gateway Configuration:** Configure an inaccessible Gateway remotely using any node in network.
- **Wide Range of Sensor Compatibility:** The range of sensors include digital sensors, vibrating wire sensors, analog sensors, and more.
- **Node Scan rate:** The nodes can be configured to scan and transmit data at customizable frequencies, ranging from 3 minutes to 24 hours.
- **Cost-Effective Solution:** It eliminates the need for lengthy cables and reduces installation and maintenance costs.
- **Automatic Alerts and Reports:** Real-time alerts via SMS or email for data that crosses pre-defined alert levels allowing timely response to critical events or changes in the monitored parameters.
- **Cloud-Hosted Data Management:** The collected sensor data is uploaded to a central/cloud server to be processed to provide 24/7 access to the data allowing advanced data analysis and visualization on our platform Proqio.
- **Privacy:** AES-128 encryption, maximizing the security of the sensor data collected.
- **High Battery life:** 6 – 60 months for nodes, depending upon the application and data transmission rate.

In gateway, batteries are only for emergency (as a short time back-up in case of power failure).

- **Versatile power options:** Choose from battery, mains, or optional solar power (model ESP-12V1A). For remote sites, mains or solar power is advised.



PRODUCT OFFERINGS

- **NexaWave Hub:** Gateway, to collect data from wireless sensors and nodes within the RF network and transmit it to the cloud/local server.
- **NexaWave TiltSense:** Wireless tilt meter. It is a complete unit, including the tilt sensor and the node.
- **NexaWave TiltRange:** Wireless tilt meter with distance meter. Includes tilt sensor, laser and the node.
- **NexaWave VibraLink:** Vibrating wire node. To be used with vibrating wire sensor(s). Variants available:
 - VibraLink Solo** - 1 channel,
 - VibraLink Quint** - 5 channel, and
 - VibraLink Deca** - 10 channel.
- **Nexawave SignalLink:** Analog node. Suitable for sensors with millivolt, voltage, 4-20 mA, Wheatstone bridge outputs. Variants available:
 - SignalLink Solo** - 1 channel and
 - SignalLink Quad** - 4 channel.
- **NexaWave DigiLink:** Digital node. Single channel, to be used with SDI-12 interface sensors.
- **NexaWave Relay:** Relay node. To enhance the range of any node (in mesh network).

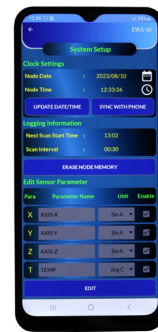
NODE COMPATIBILITIES

The complete range of vibrating wire sensors can be connected to NexaWave VibraLink include:

- Piezometer, water level sensor
- Strain gage
- Pressure cell
- Displacement sensor, crack/joint meter
- Extensometer
- Temperature meter
- Settlement monitoring sensor

The complete range of analog sensors can be connected to wireless node include:

- Resistive strain gage type load cell
- MEMS tilt meter
- Electrolytic level (EL) tilt meter
- Thermistor
- Sensor with millivolt output
- Sensor with 4-20 mA output



User friendly mobile application



ESP-12V1A Solar power supply, 12 VDC, 1 A



VibraLink Solo VW node connected to piezometer



SPECIFICATIONS

TiltSense (EAN-95MW) Tilt meter	
Standard range	± 30°
Sensitivity	± 10 arc second
Accuracy ¹	± 0.1% fs
Internal non-rechargeable batteries	2 D-Cell Lithium Thionyl Chloride (Li-SOCl ₂) 3.6 V Nominal Voltage, 14 Ah batteries
Operating Temp.	-40°C to +70°C
¹ As tested under laboratory conditions.	
TiltRange (EWN-01ML) Tilt meter with Distance meter	
Tilt	Specifications as above
Laser range	0.05 to 33 m; 0.05 to 100 m
Repeatability (1 Sigma)	± 0.15 mm
Resolution	0.1 mm
Internal non-rechargeable batteries	2 D-Cell Lithium Thionyl Chloride (Li-SOCl ₂) 3.6 V Nominal Voltage, 14 Ah batteries
Operating Temperature	-40°C to +70°C

VibraLink Solo/Qunit/Deca (EWN-01V/05V/10V) VW node	
SignalLink Solo/Quad(EWN-01A/04A) Analog Node	
DigiLink (EWN-01D) Digital node	
Operating Temp.	-40°C to +70°C
Storage	3 million data points
Hub (EWG-01) Gateway	
Nodes per Gateway	Up to 200
Storage	SD card 16 GB expandable up to 32 GB
Typical current drain	200 mA typical operating current
Internet connectivity	In-built 4G modem
Radio Frequency	EU: 863-870 MHz; US& ROA: 902-928 MHz
Antenna (Cellular)	Stub Antenna (3 dBi) External Whip Antenna (5 dBi)
Antenna (LoRa)	Fiber Glass Antenna Omni directional (3 dBi)
Power supply for nodes and gateway	
Internal non-rechargeable batteries	2 D-Cell Lithium Thionyl Chloride 3.6 V Nominal Voltage, 14 Ah batteries Provision for extra 2 batteries provided in EWN-05V/10V VW node for extended battery life.
Power supply	9-30 VDC @ 1 A nominal
Solar power supply	Model ESP-12V1A solar power supply 12 VDC @ 1A, available on order

*All specifications are subject to change without prior notice

DATASHEET | 1913-23 R06



TUNNELS



HYDROELECTRIC



CONSTRUCTION



STRUCTURAL



METRO & RAIL



BRIDGES



MINING