

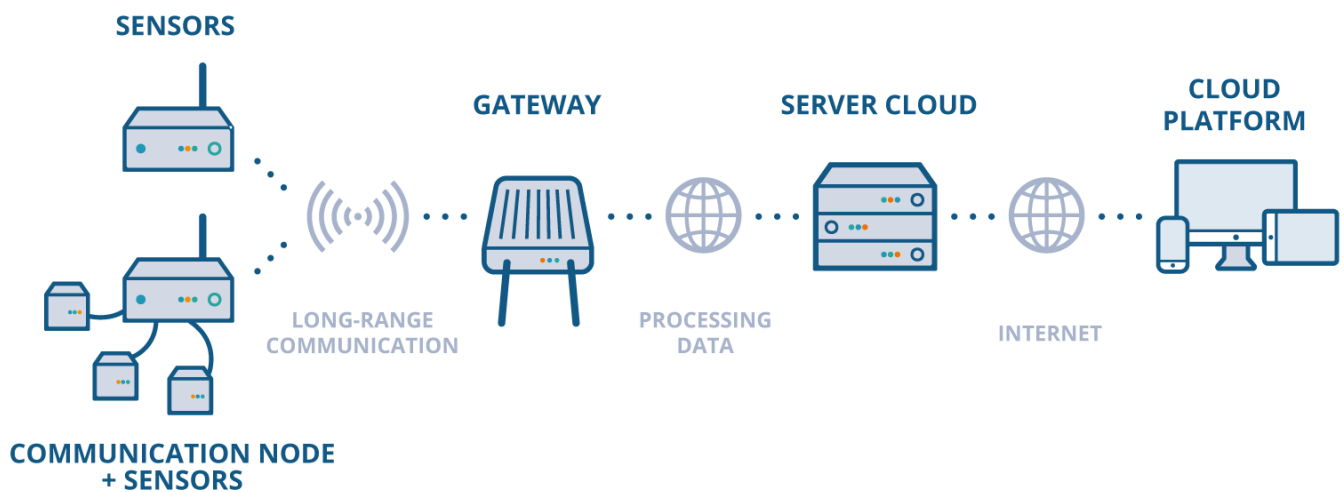
## GATEWAY PRO DATASHEET

### THE SYSTEM: SMART SHM

Move Solutions is a trusted leader in **Smart Structural Health Monitoring (Smart SHM)**. Our wireless system offers a remote, continuous and comprehensive analysis of the health of the structures. By integrating cutting-edge **Internet of Things (IoT)** technology with Structural Health Monitoring practices we promote more sustainable and resilient infrastructure.

#### KEY PARAMETERS

- Easy installation on the structure
- Minimum maintenance required
- Long-range communication
- Fully remote management and customization
- Data analysis with advanced algorithms
- Modular system
- High precision
- Waterproof rating IP67
- Powered by PoE, battery or solar panel
- Integrated temperature sensor



## HOW IT WORKS

Move Solutions offers a wireless monitoring system for *static, dynamic, geotechnical and environmental analysis* of all civil infrastructures: bridges, construction sites, rails, and more. Small **battery-powered sensors** combined with an **IoT Platform** and highly **advanced algorithms** provide a comprehensive monitoring solution aimed at simplifying asset management. The data recorded by the sensors can be viewed on Move Solutions IoT Platform, which allows users to remotely monitor and manage structures in real time. They can set different operating parameters of each sensor, such as sampling rates, resolution and full scale, alarm and activation thresholds, and much more. That allows users to detect structural damage in time to implement preventive maintenance and reduce costs. Move Solutions system empowers infrastructure owners with insights to promote a proactive monitoring approach for safer, more sustainable, and resilient infrastructures.

## ADVANTAGES

- Reduction of manual and on-site measurements
- Reduced downtime and disruptions to regular operations
- Real-time, remote and continuous data visualization
- Short-term and long-term data analysis
- Easy addition of sensors to extend the monitored area
- Cost reduction thanks to easy installation and maintenance
- Risk reduction and high reliability
- Preventive maintenance

## THE DEVICE: GATEWAY PRO

The Gateway Pro acts as an intermediary, using LoRaWAN communication to collect data measured by the sensors and transmitting them to the IoT Platform where it can be processed, analyzed, and acted upon. The Gateway Pro simplifies the whole monitoring process, supporting remote SHM monitoring for an early detection of structural damage or deterioration, allowing for timely maintenance and repair, and improving the safety and longevity of the structure.



The device is Outdoor IP67 and is powered by PoE; optionally it can be powered by battery, with solar panel. The Gateway Pro is equipped with LoRa, LTE, GPS and Wi-Fi antennas. Thanks to the dual LTE antennas, increased cellular coverage is possible. The device also implements a Wi-Fi hotspot and a builtin GPS for very precise synchronization and geolocation of the product. It is very easy to set up thanks to the automatic APN and the included PoE adapter.

The internal antennas make the setup process even simpler, and the external status LEDs allow the user to quickly check the functionality of the device.

### DOWNLOAD DOCUMENTATION

Visit the website at [www.movesolutions.it](http://www.movesolutions.it) to download further documentation relating to technical specifications and/or information on the Move Solutions™ structural monitoring system.

## QUICK GUIDE TO USE

Before being able to receive and transmit data, the Gateway device must first of all be configured, powered and installed correctly.

The steps to be taken for correct operation of the Gateway device are:

### 1. CONFIGURATION:

- Choose the type of configuration between Cellular LTE or LAN and follow the procedure described in "Gateway Pro Configuration" in the Instruction Manual.

### 2. SCREWING THE ANTENNA:

- Securely screw the LoRa antennas on the gateway.

### 3. INSTALLATION ON THE STRUCTURE:

- Firmly install the device on a wall or pole using the provided installation kit, see "Gateway Pro Installation Guide" in the Instruction Manual.

### 4. SUPPLY:

- Connect the Gateway Pro to the power supply according to the previously chosen configuration. The power supply procedure may vary according to the chosen configuration, see "Gateway Pro Installation Guide" and "Gateway Pro Configuration" in the Instruction Manual.

Power on the Gateway Pro device only when all LoRa antennas are correctly connected. Once these configuration, installation and power supply steps have been completed, the Gateway Pro will be able to continuously receive and forward data to the online servers. Check, through Move Solutions IoT visualization and management platform, the correct functioning of the monitoring system you have just installed. From the moment the Gateway Pro is powered up a maximum of approximately 30 minutes is required before all sensors can be viewed online.

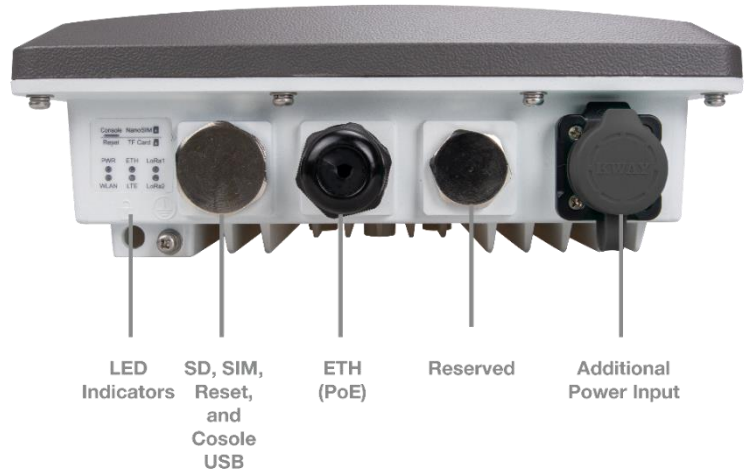
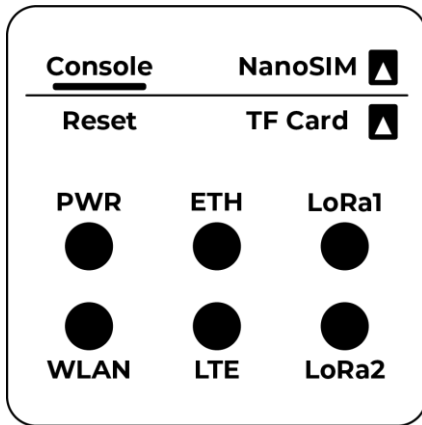
## TECHNICAL SPECIFICATIONS

### OPERATION

<b>Computing</b>	MT7628, DDR2RAM 128 MB
<b>Wi-Fi feature</b>	<ul style="list-style-type: none"> <li>▪ Frequency: 2.4 GHz (802.11 b/g/b/)</li> <li>▪ RX Sensitivity: -95 dBm (Min)</li> <li>▪ TX Power: 20 dBm (Max)</li> <li>▪ Operation Channels: 2.4GHz: 1-13</li> </ul>
<b>LoRa feature</b>	<ul style="list-style-type: none"> <li>▪ Card: SX1303 Mini PCIe Card (connects maximum of two)</li> <li>▪ Channels: 8 Channels (Optional: 16 channels)</li> <li>▪ RX Sensitivity: -139 dBm (Min)</li> <li>▪ TX Power: 27 dBm (Max)</li> <li>▪ Frequency: EU433, CN470, EU868, US915 , AS923, AU915, KR920, IN865</li> </ul>
<b>Cellular feature</b>	<ul style="list-style-type: none"> <li>▪ Supports Quectel EG95-E / EG95-NA (IoT/M2M-optimized LTE Cat 4 Module)</li> </ul> <p>EG95 -E for EMEA Region:</p> <ul style="list-style-type: none"> <li>▪ LTE FDD: B1/B3/B7/B8/B20/B28A</li> <li>▪ WCDMA: B1/B8</li> <li>▪ GSM/EDGE: B3/B8</li> </ul> <p>EG95 -NA for North America Region:</p> <ul style="list-style-type: none"> <li>▪ TE FDD: B2/B4/B5/B12/B13</li> <li>▪ WCDMA: B2/B4/B5</li> </ul>
<b>Power supply</b>	PoE (IEEE 802.3 af), 37~57 VDC; 12V connector for external supply.
<b>Power consumption</b>	3 W (typical)
<b>ETH</b>	RJ45 (10/100Mbps)
<b>Antenna</b>	1 (2 for 16 ch. version) N-Type Connectors
<b>Ingress protection</b>	IP67
<b>Enclosure material</b>	Aluminum and plastic
<b>Weight</b>	3.15kg
<b>Dimensions</b>	240 mm x 240 mm x 80 mm
<b>Operating temperature</b>	-30 °C / +55 °C
<b>Operating humidity</b>	From 0% to 95% (non-condensing)
<b>Installation method</b>	pole or wall mount

<b>Certification</b>	CE, UKCA, FCC, KC, RCM, RoHS
<b>LoRa</b>	
<b>Operating Frequency</b>	EU433, CN470, EU868, US915, AS923, AU915, KR920, IN865
<b>Transmit Power</b>	27dBm (max)
<b>Receiver Sensitivity</b>	-139dBm (min)
<b>Wi-Fi</b>	
<b>Wireless standard</b>	IEEE 802.11b/g/n
<b>Operation Channels</b>	2.4 GHz: 1-13
<b>Transmit Power per chain*1</b>	802.11b <ul style="list-style-type: none"> <li>▪ 1 Mbps: 19 dBm</li> <li>▪ 11 Mbps: 19 dBm</li> </ul> 802.11g <ul style="list-style-type: none"> <li>▪ 6 Mbps: 18 dBm</li> <li>▪ 54 Mbps: 16 dBm</li> </ul> 802.11n (2.4G) <ul style="list-style-type: none"> <li>▪ MCS0 (HT20): 18 dBm</li> <li>▪ MCS7 (HT20): 16 dBm</li> <li>▪ MCS0 (HT40): 17 dBm</li> <li>▪ MCS7 (HT40) : 15 dBm</li> </ul>

\*1 The max. power may be different depending on local regulations



## LEDs Description

<b>PWR</b>	<b>ON:</b> if the device is powered up.
<b>ETH</b>	<b>ON:</b> linkup <b>OFF:</b> linkdown <b>Flicker:</b> data transmitting and receiving
<b>LoRa 1</b>	<b>ON:</b> working <b>OFF:</b> not working <b>Flicker:</b> sending and receiving
<b>LoRa 2 (for 16 channels version)</b>	<b>ON:</b> working <b>OFF:</b> not working <b>Flicker:</b> sending and receiving
<b>WLAN</b>	AP mode <b>ON:</b> AP is up <b>Flicker:</b> sending and receiving  STA mode <b>Slow flicker (1 Hz):</b> Disconnected <b>ON:</b> Connected <b>Flicker:</b> sending and receiving
<b>LTE</b>	<b>Slow flicker (1800 ms ON, 200 ms OFF):</b> Network searching <b>Slow flicker (200 ms ON, 1800 ms OFF):</b> Idle <b>Fast flicker:</b> ongoing data transfer <b>ON:</b> voice is working

## REVISION HISTORY

Version v2.

Version	Changelog
v1	First revision
V2	Document template update

Note: Specifications are subject to review and change without notice.