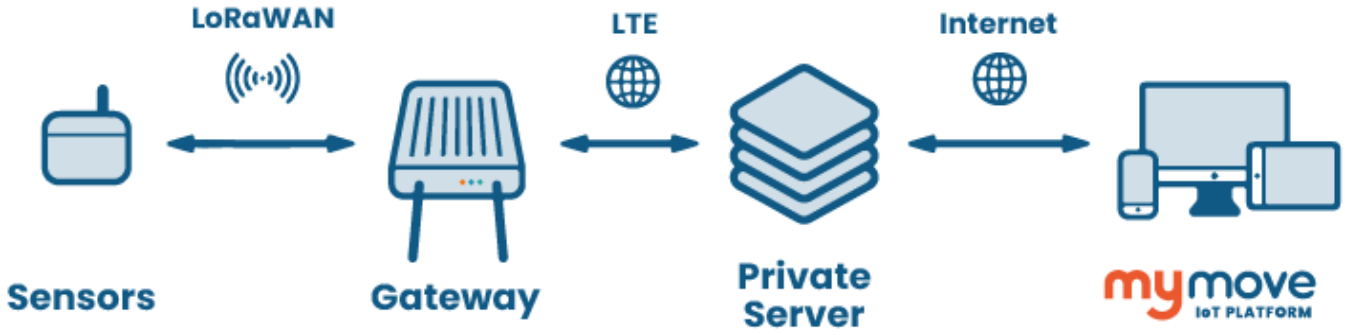
GATEWAY SHM DATASHEET

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



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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 **MyMove 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 MyMove 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

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THE DEVICE: GATEWAY SHM

The Gateway SHM is a control unit for receiving and sending data with which, thanks to the LoRaWAN wide area communication protocol, it is possible to manage and communicate simultaneously with dozens of devices and sensors.
This device receives the information transmitted by the multiple sensors installed via LoRaWAN. Then, using cellular connectivity, it forwards this data to online servers.
The device is Outdoor IP67 and is powered by PoE; optionally it can be powered by battery, with solar panel. The SHM Gateway is equipped with LoRa, LTE, GPS and high gain Wi-Fi antennas. Thanks to the dual LTE antennas, increased cellular coverage is possible. The device also implements a Wi-Fi hotspot and a built in 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.

DOWNLOAD DOCUMENTATION

Visit the website at 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 SHM Configuration" in the Instruction Manual.

2. **SCREWING THE ANTENNA:**

- Follow the layout of the labels placed on the device to screw the LTE and LoRa antennas correctly.

3. **INSTALLATION ON THE STRUCTURE:**

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

4. **SUPPLY:**

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

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

TECHNICAL SPECIFICATIONS	
OPERATION	
Computing	MT7628, DDR2RAM 128 MB
Wi-Fi feature	▪ Frequency: 2.400-2.4835 GHz (802.11b/g/n) ▪ RX Sensitivity: -95 dBm (Min) ▪ TX Power: 20 dBm (Max) ▪ Operation Channels: 2.4GHz: 1-13
LoRa feature	▪ Card: SX1303 Mini PCIe Card (connects maximum of two) ▪ Channels: 8 Channels (Optional: 16 channels) ▪ RX Sensitivity: -139 dBm (Min) ▪ TX Power: 27 dBm (Max) ▪ Frequency: EU433, CN470, EU868, US915 , AS923, AU915, KR920, IN865
Cellular feature	▪ Supports Quectel EG95-E / EG95-NA (IoT/M2M-optimized LTE Cat 4 Module) EG95 -E for EMEA Region: ▪ LTE FDD: B1/B3/B7/B8/B20/B28A ▪ WCDMA: B1/B8 ▪ GSM/EDGE: B3/B8 EG95 -NA for North America Region: ▪ TE FDD: B2/B4/B5/B12/B13 ▪ WCDMA: B2/B4/B5
Power supply	PoE(IEEE 802.3af/at-Compliant) - 42~57 VDC; Power Jack – 12 VDC
Power consumption	5W (typical)
ETH	RJ45 (10/100Mbps)
Antenna	5 N-Type Connectors
Ingress protection	IP67
Enclosure material	Aluminum
Weight	3.15 kg
Dimensions	220 mm x 220 mm x 104 mm
Operating temperature	-30 °C / +55 ˚C
Operating humidity	From 0% to 95% (non-condensing)
Storage humidity	From 0% to 95% (non-condensing)

Installation method	pole or wall mount
Certification	CE, FCC, IC, RCM, RoHS
	LoRa
Operating Frequency	EU433, CN470, EU868, US915, AS923, AU915, KR920, IN865
Transmit Power	27 dBm (max)
Receiver Sensitivity	-139 dBm (min)
	Wi-Fi
Wireless standard	IEEE 802.11b/g/n
Operating frequency	ISM band: 2.412~2.472 GHz
Operation channels	2.4 GHz: 1-13
Transmit power per chain*1	802.11b ▪ 1 Mbps: 19 dBm ▪ 11 Mbps: 19 dBm 802.11g ▪ 6 Mbps: 18 dBm ▪ 54 Mbps: 16 dBm 802.11n (2.4G) ▪ MCS0 (HT20): 18 dBm ▪ MCS7 (HT20): 16 dBm ▪ MCS0 (HT40): 17 dBm ▪ MCS7 (HT40) : 15 dBm

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

REVISION HISTORY

Version v3.

Version	Changelog
v1	First revision
v2	Document template update
v3	MyMove update (June 24)

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