

MOVE SOLUTIONS

DATASHEET OF GATEWAY SHM

SYSTEM FOR MONITORING

Move Solutions for monitoring the stability of a structure recommends **DECK** sensors, devices capable of capturing the amplitude of dynamic oscillation. Thanks to the use of this sensor it is possible to continuously monitor the modal parameters of the structure and verify its stability over time. It is also possible to understand the amplitude of the dynamic deformation, or even any seismic vibrations and monitor the risk.

The Move monitoring system also includes **Accelerometers** for modal study, **Tiltmeters** for static monitoring and **Strain gauges** for monitoring cracks and openings. Using the **Communication Node** with multiple inputs (analog or digital) it is possible to monitor the water pressure and many other parameters of the surrounding areas.

FEATURES

- High precision
- Data analysis with advanced algorithms
- No wiring
- Long-range communication
- Modular system
- High autonomy
- Complete management and customization
- Minimum maintenance required
- Strong design

MEASUREMENTS

- Dynamic displacement amplitude monitoring
- Modal analysis of the structure
- Vibrational study of the structure
- Static monitoring of the inclination of the structure
- Analysis of the amplitude of the dynamic deformation
- Monitoring of cracks and openings
- Real-time water pressure monitoring
- Highlighting of seismic vibrations

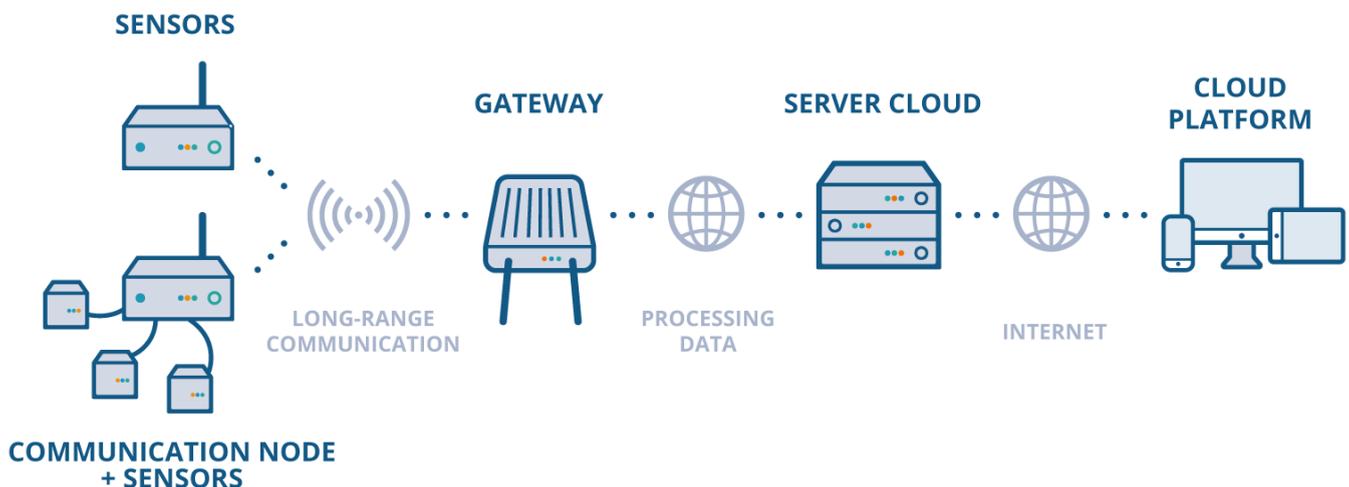
HOW IT WORKS

Move Solutions includes a complete package of wireless devices and a **Web Platform** for data visualization and sensor management. Once the sensors and system gateways are properly installed on site, they are ready to receive, store and send data.

You can view all this data in real time through a Web interface that allows users to remotely monitor the site or infrastructure. The user can set different parameters for each individual sensor, including sampling rates, resolution, alarm thresholds, activation and much more. The Move Solutions monitoring system guarantees accuracy, safety and reliability and a significant reduction in overall monitoring costs.

LOGISTICAL-ECONOMIC ADVANTAGES

- Remote monitoring of difficult to access structures
- Ease of installation and use of the system
- Data processing to optimize operations
- Easy addition of sensors to extend the monitored area
- Cost reduction through easy maintenance
- No wiring, saving on installation materials
- Consequent labor savings
- Risk reduction and high reliability



GATEWAY DEVICE

The SHM Gateway 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, first of all, receives the information transmitted by the multiple sensors installed via LoRaWAN. Then, using cellular connectivity, it inoltra 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 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.



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 "SHM Gateway Configuration"..

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 "SHM Gateway Installation Guide".

4. SUPPLY:

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

Power on the SHM Gateway device only when all 5 antennas (LTE, GPS, Wi-Fi, LoRa) are correctly connected. Once these configuration, installation and power supply steps have been completed, the SHM Gateway will be able to continuously receive and forward data to the online servers. Check, through the Cloud Move™ visualization and management platform, the correct functioning of the monitoring system you have just installed. From the moment the SHM Gateway is powered up a maximum of approximately 30 minutes is required before all sensors can be viewed online.

GATEWAY



The SHM Gateway is a control unit for receiving and sending data with which, thanks to the LoRaWAN wide-area communication protocol, dozens of devices and sensors can be managed and communicated with simultaneously. This device, first of all, receives the information transmitted by the multiple sensors installed via LoRaWAN. Then, using cellular connectivity, it forwards this data to online servers.

TECHNICAL SPECIFICATIONS

GENERAL DATA

Computing	MT7628, DDR2RAM 128 MB
Wi-Fi Feature	<ul style="list-style-type: none"> Frequency: 2.400-2.4835GHz(802.11b/g/n) RX Sensitivity: -95dBm (Min) TX Power: 20dBm (Max) Operation Channels: 2.4GHz: 1-13
LoRa Feature	<ul style="list-style-type: none"> Card: SX1301 Mini PCIe Card (connects maximum of two) Channels: 8 Channels (Optional: 16 channels) RX Sensitivity: -139dBm (Min) TX Power: 27dBm (Max) Frequency: EU433, CN470, EU868, US915 , AS923, AU915, KR920, IN865
Cellular Feature	<ul style="list-style-type: none"> 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) - 42~57VDC; Power Jack - 12V DC
Power Consumption	5 W (typical)

ETH	RJ45 (10/100Mbps)
Antenna	5 N-Type Connectors
Ingress Protection	IP67
Enclosure Material	Aluminum
Weight	3.15kg
Dimension	220 mm x 220 mm x 104 mm
Operating Temperature	da -30 C a +55 °C
Storage Temperature	da -40 C a +85 °C
Operating Humidity	Da 0% a 95% (non-condensing)
Storage Humidity	Da 0% a 95% (non-condensing)
Installation method	Montaggio su palo o a parete
Certification	CE, FCC, IC, RCM, RoHS
LoRa	
Operating Frequency	<ul style="list-style-type: none"> • EU433, CN470, EU868, US915 • AS923, AU915, KR920, IN865
Transmit Power	27dBm (max)
Receiver Sensitivity	-139dBm (Min)
WIFI	
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 (The max. power may be different depending on local regulations) -per chain	802.11b <ul style="list-style-type: none"> • 1Mbps: 19dBm • 11Mbps: 19dBm 802.11g <ul style="list-style-type: none"> • 6Mbps: 18dBm • 4Mbps: 16dBm 802.11n (2.4G) <ul style="list-style-type: none"> • MCS0 (HT20): 18dBm • MCS7 (HT20): 16dBm • MCS0 (HT40): 17dBm • MCS7 (HT40) : 15dBm

* Wireless coverage of the device may vary depending on the scenario

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