MOVE SOLUTIONS

DATASHEET OF GATEWAY PRO

SMART MONITORING SYSTEM

Move Solutions™ is a leading company in **Smart Structural Health Monitoring** thanks to our world-class service in both dynamic and static structural analysis. We offer unique **wireless SHM systems** for all civil infrastructures. Our sensors are wireless, cost-effective, non-destructive, robust and small. Easy to install and to configure, they are also perfect for structures with difficult access, where wired systems would involve complex and expensive installations, or for historic buildings that require special attention and non-invasive technology. By combining the latest **IoT technology** with deep industry knowledge, Move Solutions™ is disrupting the world on Structural Health Monitoring.

FEATURES	MEASUREMENTS
• High precision	• Dynamic displacement amplitude monitoring
• Data analysis with advanced algorithms	• Modal analysis of the structure
• No wiring	• Vibrational study of the structure
• Long-range communication	• Static monitoring of the inclination of the structure
• Modular system	• Analysis of the amplitude of the dynamic deformation
• High autonomy	• Monitoring of cracks and openings
• Complete management and customization	• Real-time water pressure monitoring
• Minimum maintenance required	• Highlighting of seismic vibrations
• Strong design	

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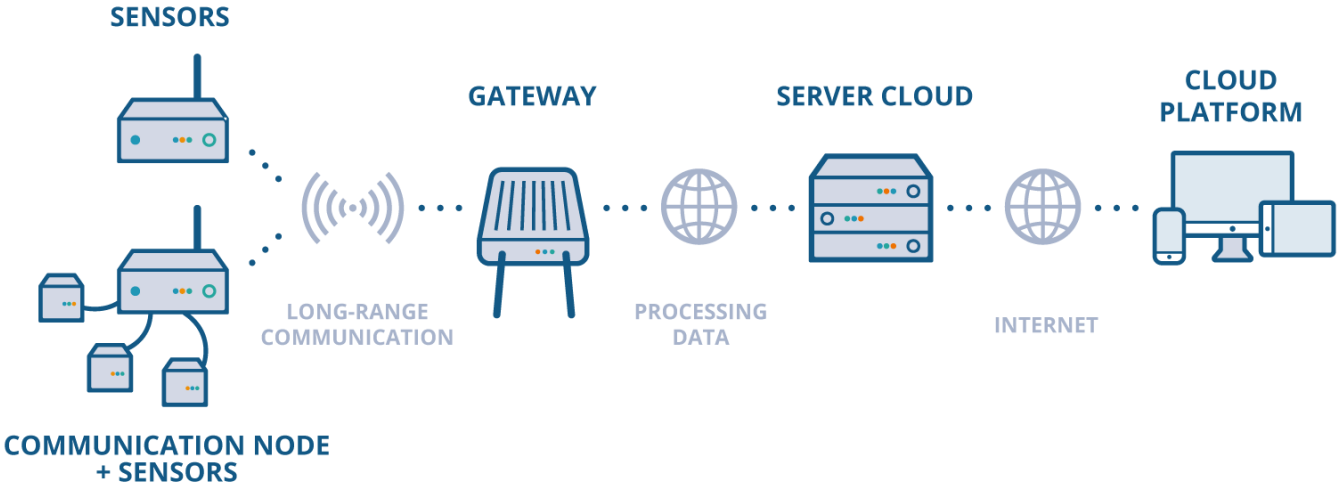
HOW IT WORKS

Move Solutions™ offers a complete package of dynamic and static wireless monitoring devices and a **Cloud 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



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GATEWAY DEVICE

The Gateway Pro 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 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 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 to download further documentation relating to technical specifications and/or information on the Move Solutions™ structural monitoring system.

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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 the Cloud Move™ 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.

GATEWAY PRO

The Gateway Pro 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 or LAN connectivity, it forwards this data to online servers.

TECHNICAL SPECIFICATIONS

GENERAL DATA

Computing	MT7628, DDR2RAM 128 MB
Wi-Fi Feature	• Frequency: 2.4 GHz (802.11 b/g/b/) • 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 802.3 af), 37~57 VDC; 12V connector for external supply.
Power Consumption	3 W (typical)

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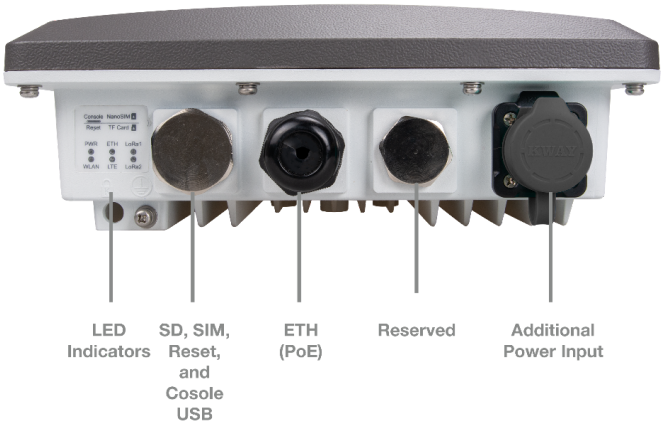
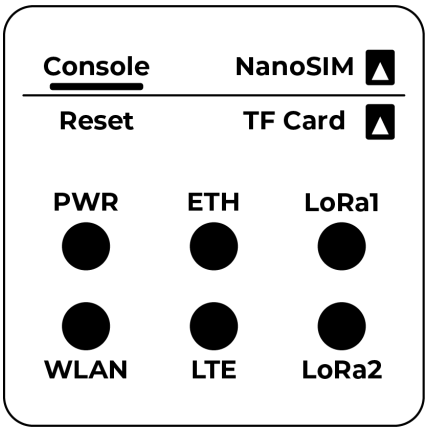
ETH	RJ45 (10/100Mbps)
Antenna	1 (2 for 16 ch. version) N-Type Connectors
Ingress Protection	IP67
Enclosure Material	Aluminum and plastic
Weight	3.15kg
Dimension	240 mm x 240 mm x 80 mm
Operating Temperature	da -30 C a +55 ˚C
Operating Humidity	Da 0% a 95% (non-condensing)
Installation method	pole or wall mount
Certification	CE, UKCA, FCC, KC, RCM, RoHS
LoRa	
Operating Frequency	• EU433, CN470, EU868, US915, AS923, AU915, KR920, IN865
Transmit Power	27dBm (max)
Receiver Sensitivity	-139dBm (Min)
WIFI	
Wireless standard	IEEE 802.11b/g/n
Operation Channels	2.4 GHz: 1-13
Transmit Power (The max. power may be different depending on local regulations) -per chain	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

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

Bottom view





LEDs Description

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

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

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