

# GM-VIB-LoRa



## LoRaWAN

## Vibration Sensor

### Features

- LoRaWAN wireless connectivity
- Built-in 3-axis accelerometer and temperature sensor
- On-board computing. Directly sends VRMS, Peak, Displacement, Kurtosis, Crest factor, Skewness and Standard Deviation values to applications
- Support battery power supply, no wiring installation needing
- Easy settings with user friendly interfaces
- ISO 10816-3 compliant
- Support wide temperature -20 ~ 80 degrees (battery-powered)
- IP66 enclosure design



### Introduction

GM-VIB-LoRa is a LoRaWAN wireless condition monitoring sensor integrated with an ARM Cortex-M4 processor, LoRa transceiver, 3-axis accelerometer and temperature sensor. It balances the wireless bandwidth between GM-VIB-LoRa and the gateway, so it also mitigates the data transmission fail rates between edge-devices and gateways

### Star Topology

GM-VIB-LoRa is a LoRaWAN uses a star network topology and features a gateway data relay function between sensors and the application server. The communication between the sensors and gateway goes over the wireless channel, utilizing the LoRa physical layer, whilst the connection between the gateways and the central server are handled over a backbone IP-based network or over Modbus protocol to the application server

### Computing on Board

With an ARM. Cortex-M4 Processor, GM-VIB-LoRa enables users to implement more features inside. GM-VIB-LoRa is able to calculate more complex eigenvalues itself, such as VRMS, ARMS, Peak, Displacement, Kurtosis, Crest Factor, Skewness and Standard Deviation values. With its edge computing capability, GM-VIB-LoRa, gateway and cloud service.

### Plug & Play with 2-year Battery life cycle

GM-VIB-LoRa includes two 3.6V AA battery holders. The battery life on GM-VIB-LoRa can be up to 2 years with once per hour data update interval time. With IP66 protection design, GM-VIB-LoRa is ideal for Low-power Wide-Area network (LPWAN) applications, such as pumps, HVAC system, motors, facility monitoring and more.

### Compatible with the GoMonitor Cloud Platform



## Common Specification

### Wireless Communication

• Frequency Band	EU 863-870 (MHZ) / RU 864-870 (MHz) US 902-928 (MHz) / AU 915-928 (MHZ) AS 919-924 / (MHZ) / TH 920-925 (MHZ) UP 920-928 (MH-)
• Spreading Factor	7-12
• Transmit Power	Up to 20dBm
• Topology	Star (LoRa/LoRaWAN)
• Sensitivity	-148dB
• Data Rate	50 kbps at FSK mode EU 21.9 kbps at SF7 mode US/TW 5.47 kbps at SF7 mode tor JP

### General

• Power Input	3.6V A Battery *2pcs (Not included)
• Battery Life	2 years (once per hour data update interval time)
• LED Indicator	Power Tx
Configuration Interlace	Micro-B USB
• IP Class	IP66
• Mounting	Stud mount. Mounting pad and Adhesives
• Dimension (H x D)	84.7 × 48.3 mm
• Certification	CE (RED)I. FCC IC. NCC. TELEC. VCCI BSMI RCM, ANATEL, SIRIM, NBTC. KC. GOST

### Environment

• Operating Temperature	-20°C - 80 C (Battery powered)
• Operating Humidity	10% - 95% RH
• Storage Temperature	-25°C - 90°C
• Storage Humidity	5% - 95% RH

### 3-Axis Accelerometer Sensor

• Axis	X-Y-Z
• Frequency Range	10-1000H2
• Amplitude Range	+2/4/6/160
• Statistical Time-Domain	Velocity RMS, Acceleration (RMS & peak), Displacement, Kurtosis, Crest factor, Skewness, Standard deviation
• Output Data Rate	6600Hz
• Resolution	10 bit (all g range)
• Sensitivity (TYP.)	31.2mp/LSB
• Noise (MAX. TA = 25°C. 0g) =40mg	+40mg
• Nonlinearity	+0.5 %
• Cross-Axis Sensitivity	+1 %
• Sensitivity Change Due Temperature	+0.02 %/degrees

### Temperature Sensor

• Measurement Range	-20°C - 120°C
• Accuracy	-2°C with 85°C -5°C with 120°C
(TA = 27°C, Directly contact -5°C with 120°C with heat source	

### Compatible with the GoMonitor Cloud Platform

