



V25-2



INTRODUCTION

NEMOSENSE is a cutting-edge, all-in-one vibration data logger and IoT device designed for long-term structural and environmental monitoring. Equipped with a high-precision triaxial MEMS accelerometer and full data acquisition capabilities, NEMOSENSE provides an ideal solution for the unattended monitoring of critical infrastructure such as bridges, buildings, wind turbines, and industrial facilities.

With ultra-low noise performance, rugged IP67 rated housing, and multiple connectivity options (Ethernet, 4G/LTE, LoRA and LoRaWAN), GNSS, and battery power, NEMOSENSE is engineered to perform reliably in the most demanding conditions. It streamlines vibration monitoring by integrating sensing, processing, logging, communication and power into a single compact unit.

FUNCTIONALITY

NEMOSENSE functions as a standalone data logger with onboard signal processing and storage. It digitizes vibration signals and logs data directly to internal storage with a capacity of 32 GB, capable of storing more than a month of continuous recordings at 125 samples per second.

Data synchronization is handled via NTP or optionally through GNSS, providing microsecond-level timing accuracy. The system allows onboard computation of key metrics including FFT, RMS, peak to peak, velocity, and displacement. Both processed and raw data can be transmitted via Ethernet or LTE and seamlessly integrated with the Dewesoft Historian time series database or visualized in real time using Grafana dashboards. The device offers multiple power options,

including PoE, external DC supply, internal rechargeable battery and solar panel option. This ensures flexible deployment and uninterrupted operation even in the event of a power outage.

APPLICATIONS

NEMOSENSE is purpose built for a wide range of structural and industrial monitoring applications:

- **Structural health monitoring:** ideal for monitoring bridges, buildings, stadiums, and towers. It provides continuous insight into structural integrity and dynamic behavior.
- **Wind turbine monitoring:** tracks vibration signatures in nacelles, blades, and foundations to detect imbalance, fatigue, or structural degradation over time.

- **Seismic and geophysical studies:** with a low noise floor of approximately 25 micrograms per square root hertz, NEMOSENSE is suitable for detecting weak ground motion in seismic and geological surveys.
- **Smart city and infrastructure monitoring:** deployed across critical infrastructure to monitor environmental vibrations caused by traffic, construction, or natural events.
- **Monitoring during construction:** monitoring vibration limits (accelerations and velocities) in accordance with DIN 4150 and other standards has never been easier.
- **Other applications:** Cranes monitoring, Freight monitoring

With its scalable architecture and versatile configuration options, NEMOSENSE is the ideal tool for professionals who need accurate, reliable, and automated monitoring in a robust and maintenance free package.



BENEFITS

FLEXIBLE REMOTE CONNECTIVITY

NEMOSENSE enables remote data transmission via Ethernet or 4G LTE to the Dewesoft Historian database. Engineers can access and analyze data in real time or during post-processing using DewesoftX, ensuring fast and reliable insights from anywhere.

POWER SUPPLY OPTIONS

PoE external power supply, battery and solar panel, NEMOSENSE supports both fixed and mobile installations. It automatically switches to battery power during outages to ensure uninterrupted data logging.

ACCURATE TIME SYNCHRONIZATION

NEMOSENSE provides precise time alignment across devices using NTP or optional GNSS synchronization. This ensures micro-second-level accuracy for reliable correlation of measurements, even in remote locations.

LOW NOISE FOR SEISMIC PRECISION

Equipped with ultra-low spectral and residual noise and up to 140+ dB dynamic range accelerometer, NEMOSENSE delivers high-quality seismic data ideal for detecting weak ground motion with clarity.

FIELD-PROVEN RELIABILITY

NEMOSENSE is tested against vibration and temperature extremes to ensure consistent performance. This minimizes the risk of failure in critical infrastructure where repairs are costly and complex.

OUTDOOR-READY DESIGN

Housed in a rugged IP67-rated aluminum enclosure, NEMOSENSE is built for long-term outdoor use. Its waterproof and pressure-equalizing design protects internal components and extends the lifespan of the seal for maintenance-free operation.

KEY FEATURES



SEAMLESS INTEGRATION WITH HISTORIAN

NEMOSENSE devices are designed for long-term and permanent monitoring, with built-in connectivity via Ethernet or mobile 4G LTE for effortless data transmission to the Historian service. Historian is a powerful time series database built on InfluxDB and MQTT protocol, capable of collecting and storing high-resolution data from NEMOSENSE,

Dewesoft Measurement Units, and third-party MQTT clients. This architecture allows for scalable deployment across remote or distributed locations. Data stored in Historian can be accessed in real time through Grafana web dashboards or analyzed in depth using the DewesoftX software. Engineers can visualize live measurements, import historical

data for reporting, or retrieve CSV files directly from NEMOSENSE devices via the configuration app. Historian is available as a self-hosted or fully managed cloud solution, providing a robust, centralized platform for monitoring vibration and other structural or environmental parameters over extended periods.

SYSTEM SPECS

NEMOSENSE-3xMEMS-ACC general specifications

Physical interface	Ethernet
Connector	RJ45 Harting push-pull
Internal storage	32 GB memory
Data file formats - internal storage	CSV
Data transfer protocols	MQTT, FTP
Device management protocols	MQTT, HTTPS
Synchronization	NTP
Synchronization delay	10 ms (LAN)
Power supply	12 - 48 V passive PoE (+/- 10%)
Power consumption	typ. <2 W, max. 3 W
Operating temperature	-20..50 °C
Storage temperature	-20..50 °C
IP rating	IP67
Dimensions	130 x 130 x 50 mm
Weight	750 g

NEMOSENSE-3xMEMS-ACC accelerometer specifications

	Min.	Typ.	Max.
Measurement ranges		+/- 2 g	
-3 dB bandwidth		6 Hz	
Sample rate	31.25 Hz		250 Hz
Dynamic range		96 dB	
Noise density (lowest range)		25 µg/√Hz	
Residual noise (+/- 2 g range, 6 Hz bandwidth)		50 µg RMS	
Calibrated offset error		+/- 4 mg	
Calibrated gain error		+/- 0.2 %	
Offset temperature drift (-20 .. 60 degC)	-0.15 mg / degC	+/- 0.02 mg / degC	0.15 mg / degC
Sensitivity temperature drift (-20 .. 60 degC)		+/- 0.01 % / degC	
Linearity error (smallest range)		0.1 % FS	
Crossaxis sensitivity		1 %	

DEVICE OPTIONS

- **NEMOSENSE-3xMEMS-ACC:** Ethernet connectivity and triaxial MEMS accelerometer with 25 µg/√Hz and 8g range.
- **NEMOSENSE-3xMEMS-ACC:** EEthernet connectivity and triaxial MEMS accelerometer with 25 µg/√Hz and 40g range
- **NEMOSENSE-3xMEMS-ACC-S:** Ethernet connectivity and triaxial MEMS accelerometer with 0,7 µg/√Hz

UPGRADES

- B - battery powered
- M- LTE/4G connectivity
- G - GNSS/GPS for synchronization purposes
- P - Powered over Ethernet
- INC - static inclinometer* (not available on NEMOSENSE-3xMEMS-ACC-S)



LEARN MORE:

<https://dewesoft.com/products/nemosense>

HEADQUARTERS

Gabrsko 11A, 1420 Trbovlje, Slovenia
+386 356 25 300
www.dewesoft.com
support@dewesoft.com
or sales@dewesoft.com

DEWESOFT WORLDWIDE:

Austria, Belgium, Brazil, China, Denmark, France, Germany, Hong Kong, India, Italy, Mexico, Singapore, Slovenia, Sweden, UK, USA and partners in more than 50 countries.

FIND YOUR SALES OFFICE AT:

dewesoft.com/support/distributors



SCAN TO ACCESS ALL
DIGITAL PUBLICATIONS