

nemi G+ ultra

Small, wireless sensor for measuring highly dynamic accelerations, vibrations and rotations, suitable for monitoring bearings, gearboxes, pumps and much more

Description

nemi G+ ultra not only measures vibrations & accelerations, but also rotation rates, rotation angles and magnetic fields in and around all three axes. **Compared to our nemi G+, nemi G+ ultra offers higher sampling rates and higher signal bandwidths for measurements in highly dynamic applications. Hence it can be used for condition monitoring, predictive maintenance and measurements of bearings, gearboxes, pumps and in many more applications.** With its integrated rechargeable battery, radio connection nemi Link 2400 and i4M's highly efficient technology, nemi G+ can be operated completely wirelessly for many hours. It is also suitable for permanent installations using its wide-range voltage input.

Key Features

- **High Bandwidth MEMS Accelerometer with flat frequency-response up to 6.7 kHz**
- **Compact & lightweight design** (32 x 32 x 23) mm, 30 grams
- **Completely wireless and maximized battery life** due to our radio technology nemi Link 2400
- Transmission of **live raw data** or **smart data** pre-evaluated by edge computing
- **Weather resistant box** on request
- **Permanent installation** possible with wide range voltage input



High-resolution, high-speed, triaxial, capacitive **MEMS accelerometer**; frequency range 6.7 kHz, measuring range up to 16 g



IMU sensor module for measuring accelerations and rotation rates in and around all 3 axes; ACC up to 16 g; GYR up to 4000 °/s



Triaxial **magnetometer**; measuring range up to 16 Gauss



Internal **temperature sensor**; measuring range- 20 - 60 °C



nemi Link 2400 - i4M's own robust **high-speed radio technology** in the 2.4 GHz frequency band; range up to 20 m



Internal rechargeable battery with more than 10 hours runtime at a sampling rate of 4 kHz (all three axes active)



Power supply/ battery charging and cabled data transfer via **micro USB**



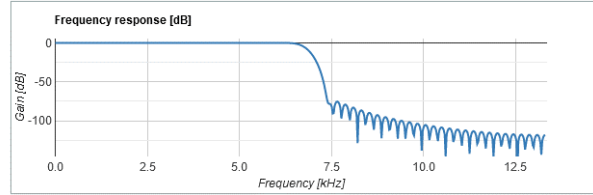
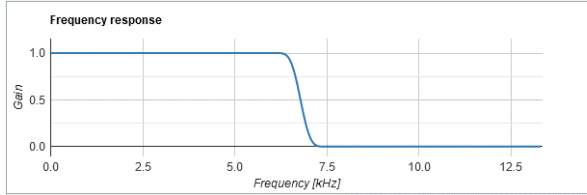
Continuous operation with **wide range voltage input** 8.5 - 28 V DC

Specifications

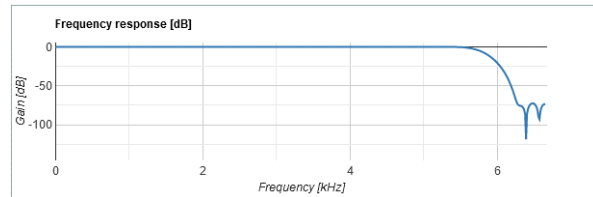
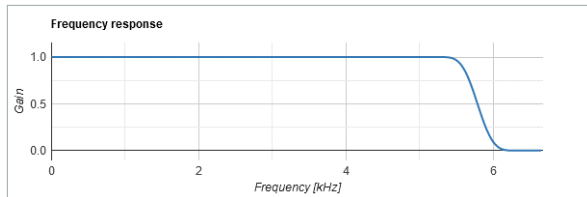
General information		
Dimensions	31.6 x 31.6 x 22.3	mm
Weight	approx. 30	gram
Internal power supply	Lithium-ion battery, 1 cell	-
Runtime with full battery at 3333 Hz (all three axes active)	> 10 Possible for several weeks depending on configuration	hours
Charging time (0 - 100 %)	approx. 3	hours
External power supply	5 (Micro USB) 8.5 - 28 (wide range voltage input)	V
Temperature range permitted during operation	-20 to 60	°C
Onboard MCU, usable for edge computing	64 MHz ARM Cortex M4F, 1 MB Flash, 256 KB RAM; various hardware crypto features	-
Housing protection class	IP 41	-
Main sensor device (MEMS accelerometer)		
Selectable sampling rates	26.666 / 13.333 / 6.666 / 3.333	kHz
Realizable signal bandwidths (-3 dB)	6.7 / 5.6 / 2.7 / 1.3	kHz
Selectable measuring ranges	± 16 / 8 / 4 / 2	g
Sensor resonance frequency	6.9	kHz
Signal resolution	16	bit
Inaccuracy (related to measuring range)	< 2	%
Additional integrated 9-DoF IMU per 3-axis MEMS accelerometer (ACC) / gyrometer (GYR) / magnetometer (MAG)		
Sampling rate	208 / 104 / 52	Hz
Selectable measuring ranges ACC	± 16 / 8 / 4 / 2	g
Selectable measuring ranges GYR	± 4,000 / 2,000 / 1,000 / 500 / 250 / 125	°/s
Selectable measuring ranges MAG	± 16 / 12 / 8 / 4	Gauss
Signal resolution	16	bit
Internal temperature sensor		
Sampling rate	1	Hz
Measuring range	-20 to 60	°C
Signal resolution	0.1	°C

Frequency responses of the main sensor module

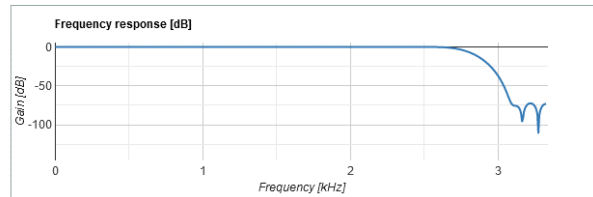
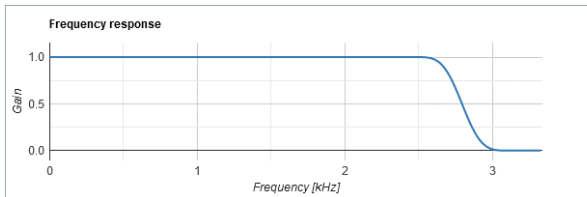
Frequency Response at 26.666 kHz Samplingrate



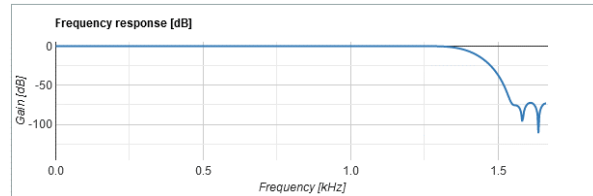
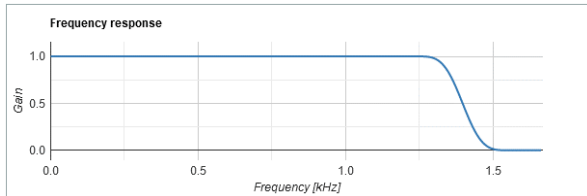
Frequency Response at 13.333 kHz Samplingrate



Frequency Response at 6.666 kHz Samplingrate

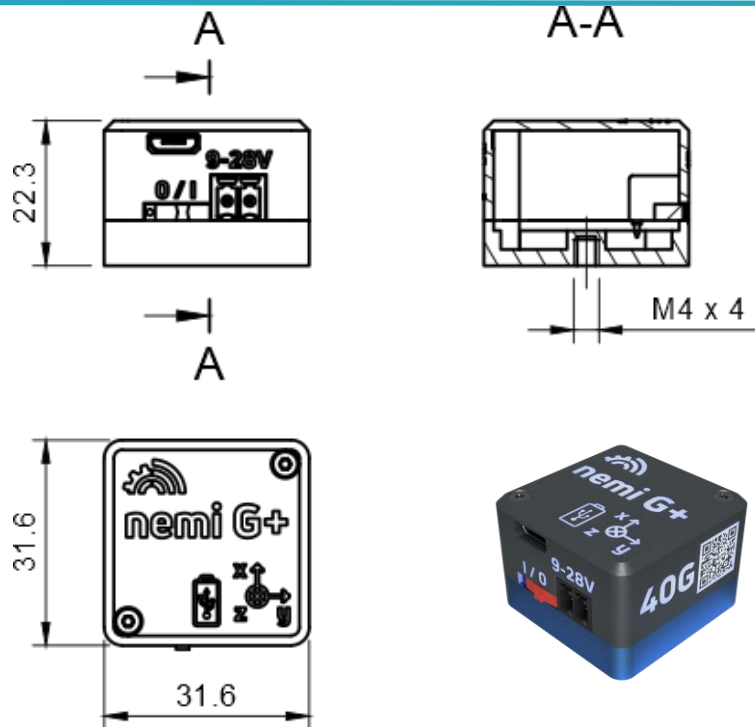


Frequency Response at 3.333 kHz Samplingrate



Dimensions

(All dimensions in mm)



Radio technology nemi Link 2400

nemi Link 2400 HS (High-speed wireless network)

Our own radio technology nemi Link 2400 is a **wireless, battery-powered sensor network** in the 2.4 GHz frequency band with star topology and one receiver module. The **high efficiency** of our robust radio technology **enables very long battery runtimes** of our products. Our wireless sensors synchronize their internal clocks to the clock of the receiver module with extremely small deviations.

Radio technology nemi Link 2400		
Radio channel	between 2,402 – 2,478 (adjustable in 1 MHz steps)	MHz
Time synchronization deviation	< 100	µs
Radio range	up to 20 (indoor) up to 300 (outside line of sight)	m
Max. sum sampling rate at 24 bits per sample	approx. 36,000	Hz
Sensor nodes per receiver module	3	-

Compatible receiver modules in the nemi Link 2400 wireless network

nemi G+ is compatible with all receiver modules in i4M's nemi Link 2400 network. The following products are available under the nemione® trademark:



nemi EdgeBase



nemi Connect

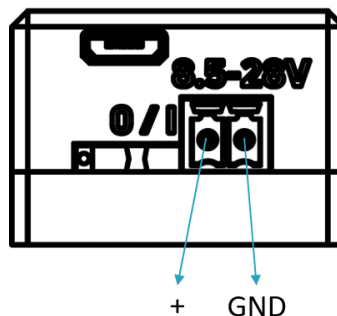


nemi Log

Alternatively, nemi G+ can be connected directly to a computer via USB cable without a wireless connection.

Wide range voltage input

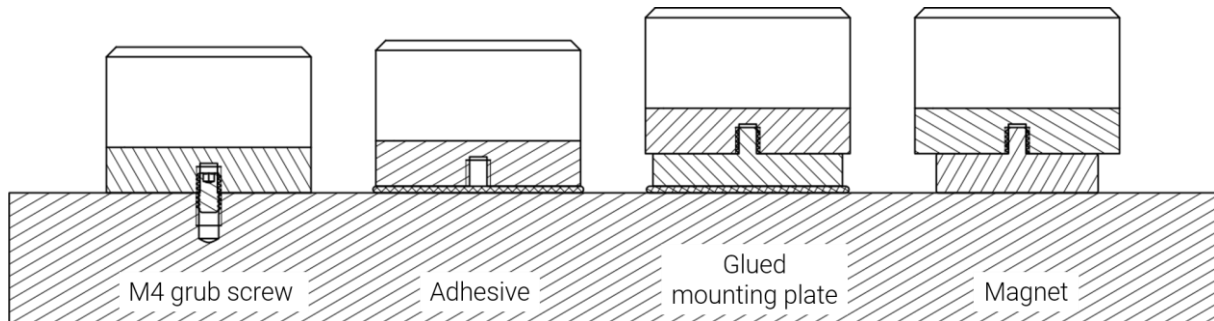
The following picture shows the ports of the wide range voltage input:



GND ≙ Ground

Mounting options

The compact, lightweight and completely wireless nemi G+ ultra is very easy to mount. It is manufactured with an M4 thread in the base. This means that it can not only be glued on, but also screwed on or magnetically fastened. The best vibration transmission is realized with a grub screw connection.



Adhesive, mounting plate and magnet are not included.

For magnetic mounting we recommend the following magnets:
<https://www.supermagnete.de/topfmagnete-mit-gewindezapfen>

Attention: When fastening with a magnet, the measurements of the magnetometer installed in the nemi G+ ultra are affected.

Contact

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