

nemi EdgeBase

4G-Gateway with Linux operating system and edge computing capabilities

Description

nemi EdgeBase forms the bridge between the sensors / telemetry modules in the wireless network nemi Link 2400 and worldwide networks. As a gateway, it receives the data from up to three wireless sensors or collects sensor data itself through integrated MEMS & GPS technology. All sensor data can be stored on an internal SSD drive. For data reduction, edge analytics based on Python scripts can be performed on nemi EdgeBase before data is transmitted over a secure 4G cellular connection or a wired network connection.

Key Features

- Receiver for up to 3 sensors / telemetry modules in the radio network nemi Link 2400
- Integrated **IMU sensor module** (ACC, GYR, MAG 3 axes each), temperature sensor and GPS
- **64 bit Linux edge computing power** with 4 x 1.2 GHz CPU and 1 GB RAM
- Data transfer via secure 4G **cellular connection** or **wired network**
- Transmission of time raw data as compressed binary files or pre-evaluated data as MQTT streams using **edge computing with Python scripts** (smart data)
- Robust, weatherproof **IP 65 housing** with passive cooling



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



GPS module for localization with an accuracy of 2 m CEP



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



nemi Link 2400 XR - i4M's robust high-speed radio technology in the 2.4 GHz frequency band; range up to 300 m



4G modem with SIM slot
LTE Cat. 4: max. 150 Mbit/s
downstream, max. 50 Mbit/s
upstream



SSD hard disk with 240 / 480 GB



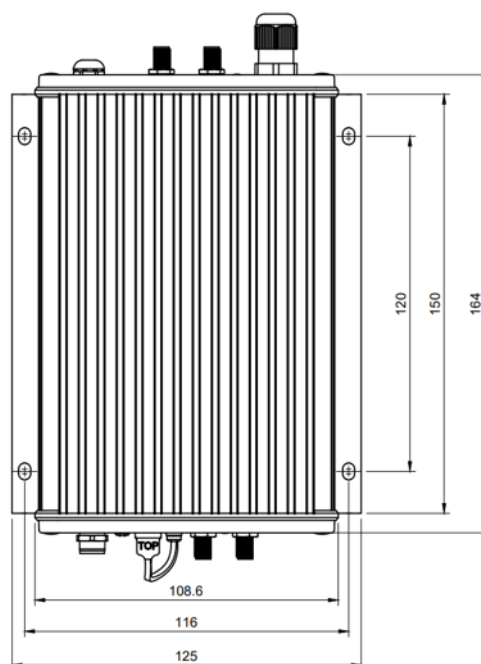
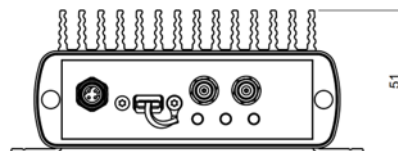
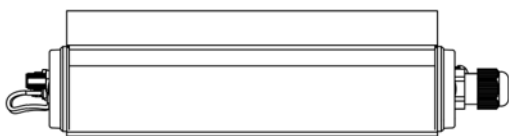
Continuous operation with **voltage**
input **24 V DC**

Specifications

General information		
Dimensions (without antenna and connectors)	164 x 125 x 51	mm
Weight	approx. 800	grams
CPU	ARM, 4 core, 1.2	GHz
RAM	1024	MB
Custom scripting	Python	-
Data transmission	FTP server via VPN, MQTT data streams	-
SSD hard disk S240 S480	240 480	GB
Cellular connection	4G modem with SIM slot LTE Cat. 4: for worldwide networks, max. 150 Mbit/s downstream, max. 50 Mbit/s upstream	
External power supply	24 DC 230 AC via external power supply	V
Temperature range permitted during operation	-20 to 60	°C
Housing protection class	IP 65	-
Additional integrated 9-DoF IMU per 3-axis MEMS accelerometer (ACC) / gyrometer (GYR) / magnetometer (MAG)		
Sampling rate	416 / 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
Temperature sensor		
Sampling rate	= 1/12 of the sampling rate of the IMU e.g. = 35 Hz at 416 Hz	Hz
Measuring range	-20 to 60	°C
Signal resolution	0.1	°C
Satellite navigation		
GPS module	GPS/GLONASS/BeiDou/Galileo	-
Sampling rate	max. 10	Hz
Accuracy	2	m CEP

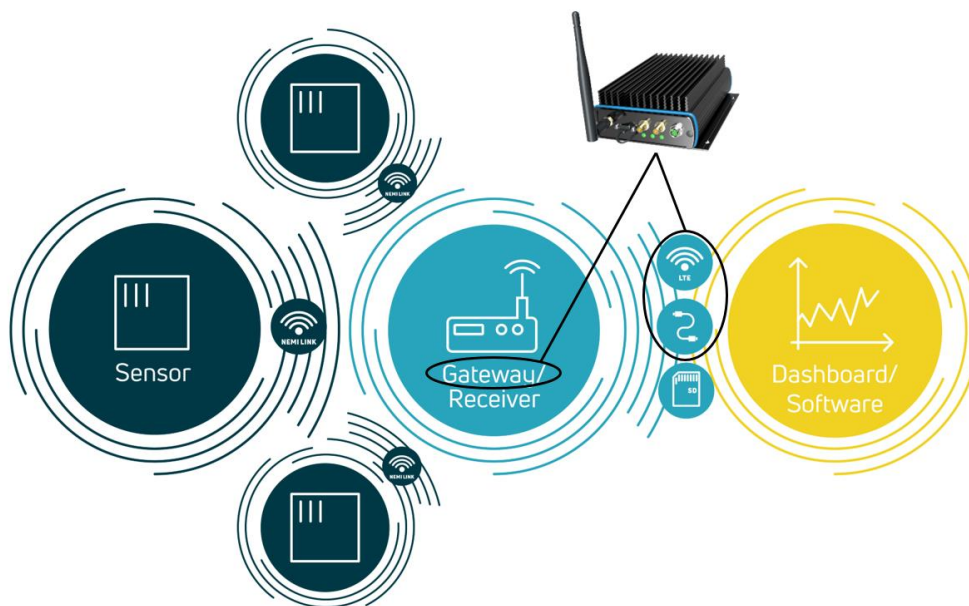
Dimensions

(All dimensions in mm)



Data storage & transmission

nemi EdgeBase is a gateway for receiving and forwarding data. It can receive data from up to three wireless sensors / telemetry modules in the nemi Link 2400 radio network. This data can be stored locally on an internal SSD and transferred via a 4G cellular or Ethernet network connection.



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	-

nemi Link 2400 XR (Extended Range wireless network)

To provide a compromise between our high-speed network nemi Link 2400 and our long- range network nemi Link 868 we developed our new network nemi Link 2400 XR. In comparison to nemi Link 2400 it has an extended range, lower data rates and still enables long battery life. It is using the 2.4 GHz frequency band and is available as firmware upgrade. nemi Link 2400 XR can be used with our standard nemione® products.

Radio technology nemi Link 2400 XR		
Radio channel	between 2,402 – 2,478 (adjustable in 1 MHz steps)	MHz
Time synchronization deviation	< 100	µs
Radio range	up to 300 urban environment up to 1.800 theoretical	m
Max. sum sampling rate at 24 bits per sample	500 - 1500	Hz
Sensor nodes per receiver module	8	-

In addition, **other modes** are available with sampling rates and ranges between the high-speed mode and the extended range mode. Please get in contact for further information:

info@nemi.one

Compatible sensor and telemetry modules in the nemi Link 2400 wireless network

nemi EdgeBase is compatible with all sensor and telemetry modules in i4M's nemi Link 2400 network. The following products are available under the nemione® trademark:



[nemi G+](#)



[nemi DAQ](#)



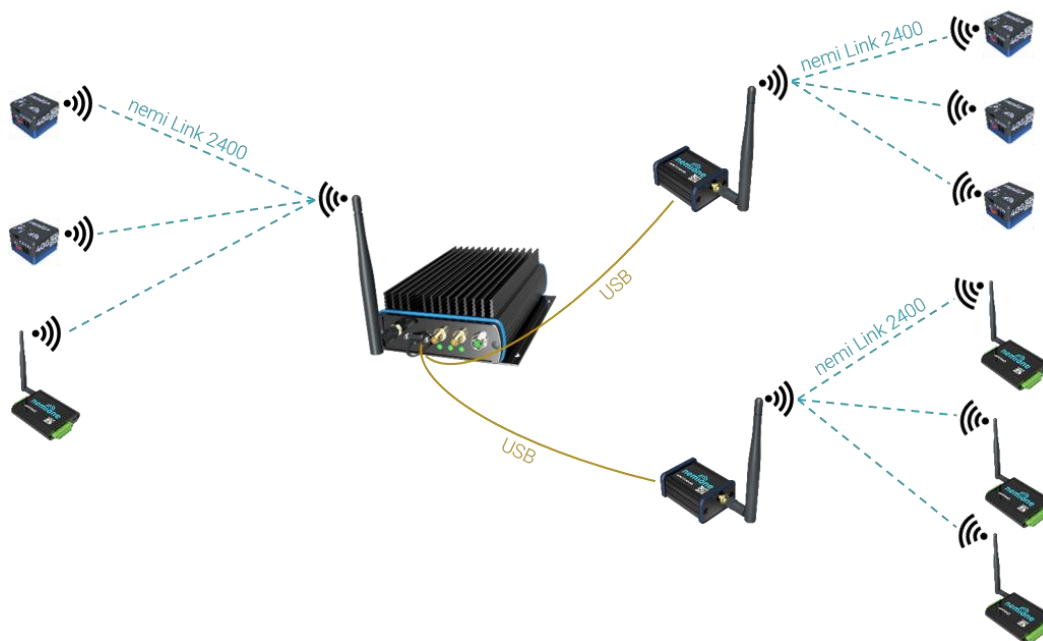
[nemi DAQ nano](#)

Connection options

In addition to the three sensors / telemetry modules that can be connected wirelessly to nemi EdgeBase, there are the following wired connection options:

USB port for

- A maximum of 2 nemi Connect for expansion by one additional nemi Link 2400 wireless network each with three wireless sensors / telemetry modules. This means that with one nemi EdgeBase and two connected nemi Connect, data from a total of 9 sensors / telemetry modules can be received.



- Ethernet network adapter (10/100 Mbit/s)
- Connection of further USB devices possible on request

Application

nemi EdgeBase is convincing in various use cases where long-term monitoring is carried out to perform predictive maintenance. This includes, for example, permanent data acquisition for load monitoring on wind turbines, condition monitoring of rolling bearings or the permanent monitoring of roller coaster ride performance.

Download use case:



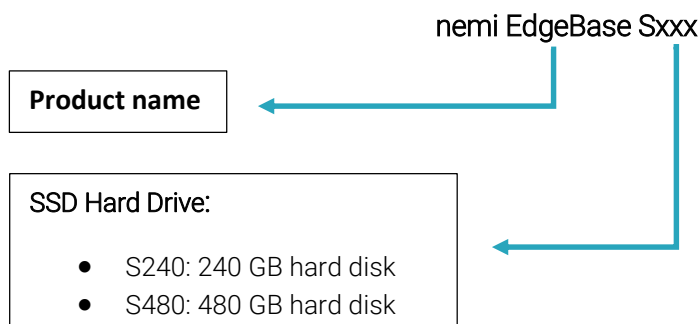
Data Analysis

Upon request, we will be happy to support you with data analysis. The data analyses can be performed directly in the sensor or in the gateway by edge analytics as well as on the server or measuring computer. A great advantage of edge analytics is the **reduction of the transmitted data to the essentials** ("smart data"). This **reduces storage space** and **increases battery runtimes**.

Based on our knowledge from a multitude of previous projects, we have developed **algorithms for data evaluation** to generate **maximum added value** for our customers. We will gladly advise you on this. In addition to our existing algorithms we create **individualized scripts** upon request.

At the same time, the **data remains your capital**: We do not rely on big cloud providers but **keep the data in your IT ecosystem**. Alternatively, you can rely on our nemione® cloud solutions - hosted in the European Union.

Order options



Contact

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