

# miro Nomad L4

ULTRA LIGHTWEIGHT LORAWAN® GPS  
TRACKER WITH SOLAR ENERGY HARVESTER

Ultra-small and light-weight solar-powered LoRaWAN® GPS tracker for wildlife- and asset tracking applications

**miro Nomad** is a powerful, ultra-small and lightweight multi-standard GNSS tracking device integrating an accelerometer and many other sensors. Our flagship device weighs only 4 grams and offers unlimited autonomy thanks to the integrated solar harvester. It is ideally suited for wildlife tracking of birds and other small animals. Different mounting options make this device interesting for other applications where small size and low weight are crucial.

The device is powered by a solar-based energy harvester which performs well across all levels of light conditions. A backup battery secures uninterrupted operation during night and periods of poor weather conditions.

**miro Nomad**



## KEY BENEFITS

- LoRaWAN® class A compliant device
- Supports EU868, US915, AU915, AS923
- Low power GNSS module with integrated antenna
- Ultra-small and lightweight (4 grams)
- Stores 100'000 locations and transmits them when in range of a network
- Solar harvester for autarkic operation
- Lacuna-enabled device – supports international satellite communication

## APPLICATIONS

- Wildlife tracking
- Pet and livestock tracking
- Logistics and fleet management

## ABOUT

File name	miro Nomad datasheet
Document type	Datasheet
Revision	1.0.5

## REVISION HISTORY

Date	Release	Changes
2021/05/17	1.0	Initial Release

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## Functional Description

**miro Nomad** is a universal LoRaWAN® class A compliant GPS tracking device. Its small size and ultra-low weight make it ideal for wildlife and livestock tracking and monitoring applications. All LoRaWAN® bands are supported which allows international use, be it in the Amazon the Alps or the Himalaya.

The built-in accelerometer and gyroscope allow to detect movement and trigger the acquisition of a GPS fixes when in motion, resulting in lower current consumption and extended battery lifetime. Additionally, it can also obtain fixes on regular intervals. The device can be configured with profiles for various applications even after deployment in the field using, thanks to LoRaWAN® downlink messages. With its additional sensing capabilities, such as temperature, barometric pressure, it is suitable for a large variety of use cases.

**miro Nomad** is compatible with all network providers and can detect when there is no network coverage. If no LoRaWAN® network is available, the tracker will store up to 100.000 locations in the internal flash memory and send it to the gateway along with original timestamp information once it gets back in reach of a LoRaWAN® network.

The tracker can be set up and configured to suit your application's needs using an USB to serial cable or using LoRaWAN® down-links, thanks to an extensive set of AT-commands

## MECHANICAL SPECIFICATIONS

Weight	12 g / 4g with optimized housing & battery
Dimensions	28 x 21 x 18 mm
Enclosure	Plastic, ABS

## OPERATING CONDITIONS

Temperature	-20 – 80 °C
Humidity	0 – 95% RH, non-condensing

## DEVICE POWER SUPPLY

Battery type	Solar cell-based energy harvester and LiPo battery
Expected battery lifetime	10+ years depending on device configuration

## RADIO / WIRELESS

Wireless technology	LoRaWAN® 1.0.3
LoRaWAN® Device type	Class A
Supported LoRaWAN® features	OTAA, ADR, Adaptive Channel Setup
Link budget	137 dB (SF7) to 151 dB (SF12)
RF transmission power	14 dBm / 20 dBm (depending on region)
LoRaWAN® bands	EU868, US915, AU915, AS923

## Sensor Specifications

### GPS

Receiver	u-blox ZOE-M8
Sensitivity	-167 dBm @ Tracking, -160 dBm @ Acquisition
GNSS	GPS/GLONASS/BeiDou/Balileo L1 band
Horizontal Position Accuracy	2.5m CEP
Internal storage	Up to 100'000 GPS locations

### ACCELEROMETER

Range	$\pm 2, \pm 4, \pm 8, \pm 16$
Resolution	12 bit, 4 mG
Accuracy (typ.)	$\pm 40$ mG

### AMBIENT PRESSURE

Range	300 – 1100 hPa
Resolution	0.01 hPa
Accuracy (typ.)	$\pm 1$ hPa



## Additional Resources

### ADDITIONAL RESOURCES

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Product Information Page

[Product Website](#)

Developer Resources

[docs.miromico.ch](https://docs.miromico.ch)

Technical Documentation

[Datasheet](#)

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## Device Options

PRODUCT ID	LoRaWAN® REGION					OPTIONS	
	EU868	US915	AS923	AU915	IN865	OEM	
TRACK-NOMAD-LW/□	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	



Keep  
in touch

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