

# miro Edge

## Modular indoor & outdoor gateway

Indoor/outdoor flexible, modular gateways with support for subG & 2.4 GHz LoRa®, LoRaWAN® with Ethernet, LTE or satellite connectivity



### Description

**miro Edge** is an OEM and white label product family of modular, affordable, indoor/outdoor gateways and edge devices. The product family supports 868/915 MHz and 2.4 GHz LoRa®/LoRaWAN® with Ethernet, LTE and satellite back-haul.

The flexible, modular design simply allows for customer-specific extensions and interfaces, such as Bluetooth, ZigBee and WiFi. **miro Edge** is also extendable via USB2.0, mPCIe (USB2.0), I<sup>2</sup>C, UART, and GPIO to support customer-specific requirements.

The platform provides multiple power supply options like 5VDC (USB), Power-over-Ethernet (PoE), power fail, battery backup and more. Its underlying highly flexible and extensible OpenWRT based LinuxOS provides an intuitive web-interface and shell-access. For customer-specific extensions additional software packages can be installed on the gateway.

### Features and Options

- ▶ Flexible, modular design
- ▶ 2 standard mPCIe Slots (USB2.0)
- ▶ Long range & deep indoor LoRaWAN® coverage
- ▶ 868/915 MHz, 2.4 GHz LoRaWAN® gateway
- ▶ Multi-band options (e.g. 868/915+2.4 GHz)
- ▶ ETSI Listen Before Talk (LBT) option
- ▶ Ethernet, LTE, or satellite back-haul
- ▶ Extensible via USB2.0, mPCIe, I2C, UART, GPIO
- ▶ Customer-specific extensions and interfaces
- ▶ Cellular SIM/eSIM support

### Applications

- ▶ Internet of Things (IoT)
- ▶ Smart metering, smart building, smart factory
- ▶ Infrastructure, raw materials, Oil and Gas
- ▶ Industrial and home automation

## Document Information

### About

File name	Document type	Date	Revision
DS miro Edge	Datasheet	2022/11/03	1.3

### Revision history

Date	Release	Changes
2021/04/06	1.0	Initial revision
2022/02/16	1.1	Added Outdoor versions
2022/05/24	1.2	Added new pictures and UKCA and FCC certifications
2022/11/18	1.3	Feature updates

## Table of content

Functional Description	3
Connectors and Interfaces	4
Technical Specifications	5
Mechanical Dimensions	7
Additional Documentation	8
Device Options	8
Keep in touch	9

# Functional Description

**miro Edge** is an OEM and white label product family of modular, affordable, indoor/outdoor gateways and edge devices. The product family supports 868/915 MHz and 2.4 GHz LoRa®/LoRaWAN® with Ethernet, LTE and satellite back-haul.

The flexible, modular design simply allows for customer-specific extensions and interfaces, such as Bluetooth, ZigBee and WiFi. **miro Edge** is also extendable via USB2.0, mPCIe (USB2.0), I<sup>2</sup>C, UART, and GPIO to support customer-specific requirements.

The platform provides multiple power supply options like 5VDC (USB), Power-over-Ethernet (PoE), power fail, battery backup and more. Its underlying highly flexible and extensible OpenWRT based LinuxOS provides an intuitive web-interface and shell-access. For customer-specific extensions additional software packages can be installed on the gateway.

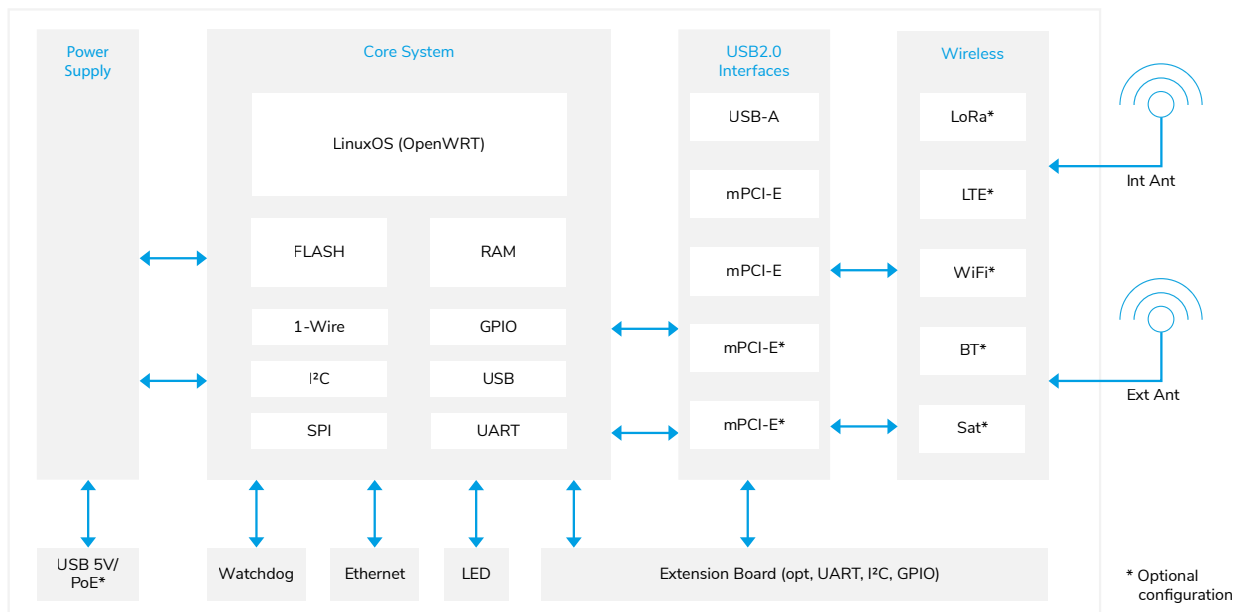


Figure 1: Block diagram miro Edge

# Connectors and Interfaces

## Connectors and Interfaces (Indoor Version)

1 External LoRa® antenna	6 Power Indicator
2 Reset button	7 Power input, USB micro
3 WWAN LED	8 USB device connector
4 WLAN LED	9 Ethernet / PoE
5 LoRa® LED	10 External LTE antenna

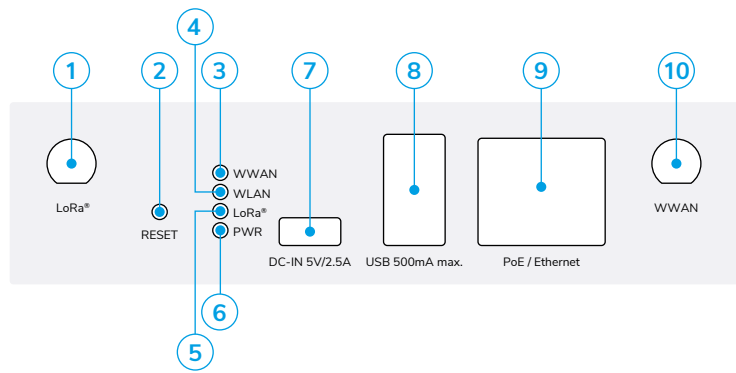


Figure 2: Interfaces (indoor version)

## Connectors and Interfaces (Outdoor Version)

1 Air pressure compensation	5 LTE antenna (optional)
2 Power Indicator	6 LoRa® antenna
3 Power Connector (optional)	
4 Ethernet/PoE (optional)	

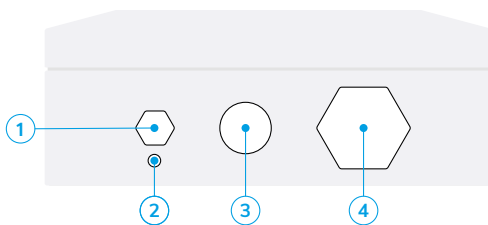


Figure 3: Interfaces Bottom (Outdoor version)

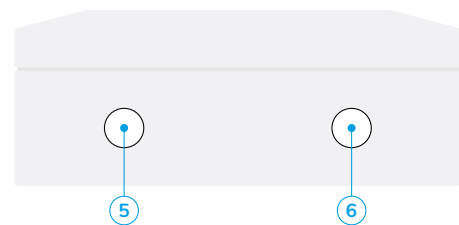


Figure 4: Interfaces Top (Outdoor version)

**Warning:**

All antennas are permanently installed and secured. Please return devices with loose antennas to the responsible service center for inspection and repair. Any unauthorized attempts to (un)screw, twist, replacement with other antennas or cables, or other modifications might be prohibited by local radio regulations, may cause permanent damage to the device and will void the warranty.

## Technical Specifications

Mechanical specifications	Indoor	Outdoor
Weight	~175 g	~220 g
Dimensions (internal antennas)	110 × 129 × 33 mm	150 × 150 × 55 mm
Enclosure	Plastic, ABS	Plastic, ASA, UV resistant
Ingress protection	IP41	IP65

Operating conditions	Indoor	Outdoor
Temperature range	0 – 40 °C	-25 – 60 °C
Humidity	0 – 95 % RH, non-condensing	0 – 95 % RH, non-condensing

Device power supply	Indoor	Outdoor
Standard	MicroUSB (5 VDC, 12 W)	PoE 802.3af (12 W)
Optional	PoE 802.3af (12 W)	5...24VDC (12 W)
		Super-Cap power fail

LoRa® Radio / Wireless	868 MHz / 915 MHz	2.4 GHz
Rx sensitivity	-141 dBm (SF12)	-130 dBm (SF12)
RF transmission power	up to 27 dBm	up to 20 dBm
Data rates	0.6 – 300 Kbps (FSK) SF7-SF12, 125/250/500 kHz	0.6 – 253 Kbps (LoRa) Up to 1.3 Mbps (FLRC) Up to 2 Mbps (FSK)

Antenna options	
IoT/LoRa®	Multiple internal and external antenna options, Software selectable antenna diversity
LTE	Multi-Band MIMO (dual antenna, internal or external)
WiFi	Single antenna (internal or external)
GNSS/GPS	Active antenna (internal or external)
SWARM Satellite back-haul	External whip antenna

# Technical Specifications

## Certifications

CE

UKCA

FCC

LoRa® US915 FCC ID: 2AUQE30REJ  
LoRa® 2.4 GHz FCC ID: 2AUQEBQN90  
LTE: FCC ID 2AJYU-8PYA007  
LTE: FCC ID XMR201708EC21E  
SpaceX/Swarm FCC ID: 2AVE9-M138

**⚠ FCC Caution:**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

# Mechanical Dimensions

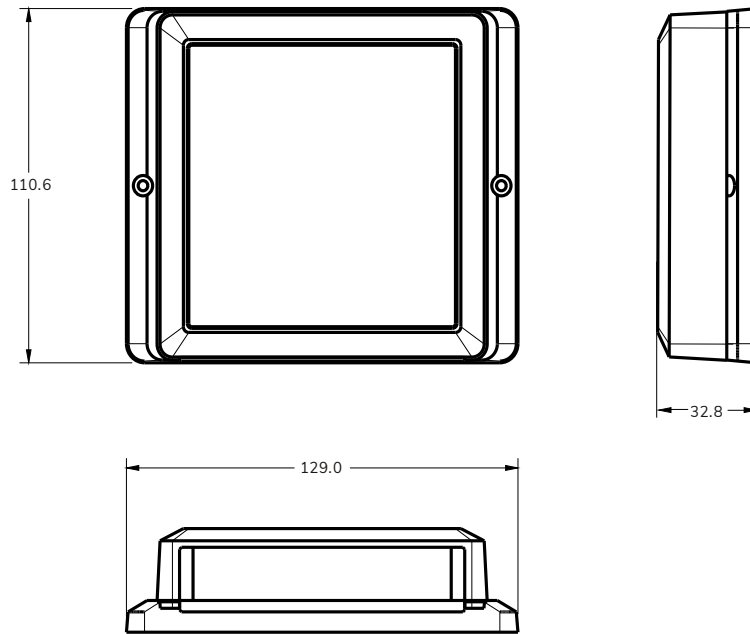
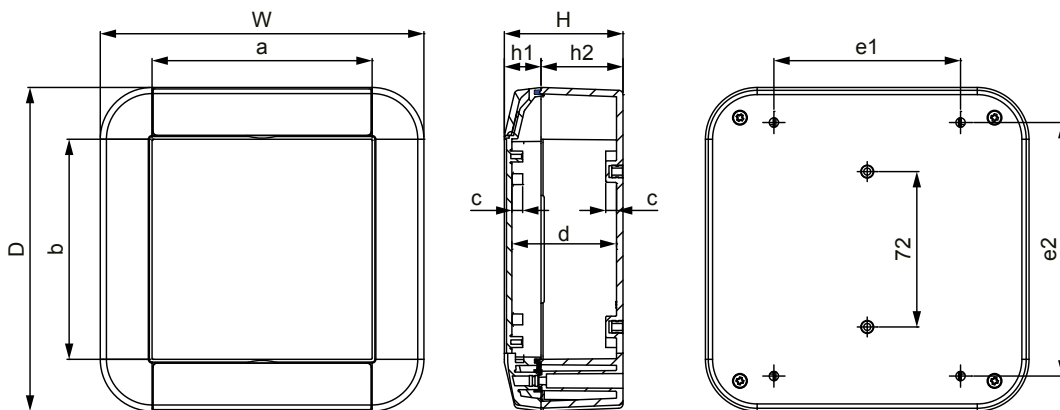


Figure 5: Mechanical Dimensions in mm (indoor versions)



W	D	H	h1	h2	a	b	c	d	e1	e2
150	150	55	17	38	102	102	5	48.5	86.5	117.5

Figure 6: Mechanical Dimensions in mm (outdoor versions)

## Additional Documentation

### Additional Resources

Product Information Page <b>Indoor</b>	<a href="https://miromico.ch/miro-edge-indoor">miromico.ch/miro-edge-indoor</a>
Product Information Page <b>Outdoor</b>	<a href="https://miromico.ch/miro-edge-outdoor">miromico.ch/miro-edge-outdoor</a>
Technical Documentation, quick start	<a href="https://docs.miromico.ch/datasheets/gateways">docs.miromico.ch/datasheets/gateways</a>

## Device Options

Product ID	ISM BAND			Options <sup>§</sup>				
	EU868	US915	2G4 <sup>†</sup>	LTE	SWARM Sat	Ext. Antenna	BICS SIM <sup>‡</sup>	Outdoor
GW-EDGE-LW/*-POE	✓	✓	✓			✓		
GW-EDGE-LW/*-POE-LTEBICS-ANT	✓	✓	✓	✓		✓	✓	
GW-EDGE-LW/*-POE-ANT-WP6	✓	✓	✓			✓		✓
GW-EDGE-LW/*-POE-LTEBICS-ANT-IP65	✓	✓	✓	✓		✓	✓	✓
GW-EDGE-LW/*-POE-SWARM-ANT-IP65	✓	✓	✓		✓	✓		✓

\* ISM band (e.g. EU868)

† 2G4-PRO with 20 dBm power amplifier and hardware ranging support, 2G4-PRO-DIV with antenna diversity

‡ other SIM providers on request

§ more options on request



## Keep in touch

Miromico AG  
Gallusstrasse 4  
CH-8006 Zürich  
Switzerland

[info@miromico.ch](mailto:info@miromico.ch)  
[www.miromico.ch](http://www.miromico.ch)

### DISCLAIMER

We reserve the right to make technical changes, which serve to improve the product, without prior notification.

LoRa®, Semtech®, the Semtech logo, LoRa®, and LoRaWAN® are registered trademarks or service marks of Semtech Corporation, the LoRaAlliance® or its affiliates.

SAFETY-CRITICAL, MILITARY, AND AUTOMOTIVE APPLICATIONS DISCLAIMER: Miromico products are not designed for and will not be used in connection with any applications where the failure of such products would reasonably be expected to result in significant personal injury or death ("Safety-Critical Applications") without an Miromico officer's specific written consent. Safety-Critical applications include, without limitation, life support devices and systems, equipment, or systems for the operation of nuclear facilities and weapons systems. Miromico products are not designed nor intended for use in military or aerospace applications or environments. Miromico products are not designed nor intended for use in automotive applications unless specifically designated by Miromico as automotive grade.

© 2022 Miromico AG. All rights reserved.