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 desing simply allows for customer-specific extentions and interfaces, such as Bluetoot, ZigBee and WiFi. **miro Edge** is also extendable via USB2.0, mPCIe (USB2.0), I²C, 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 andshell-access. For customer-specifc 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 extentions 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
2023/01/24	1.4	Corrected part numbers

Table of content

Functional Description

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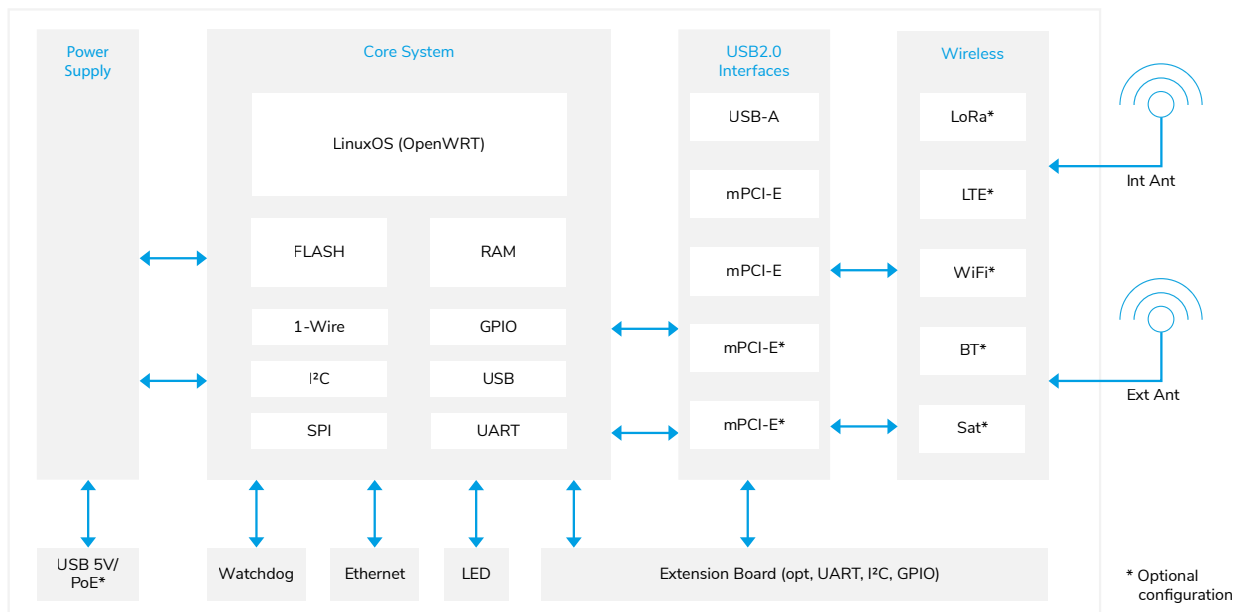

Figure 1: Block diagram miro Edge

Connectors and Interfaces

Connectors and Interfaces (Indoor Version)

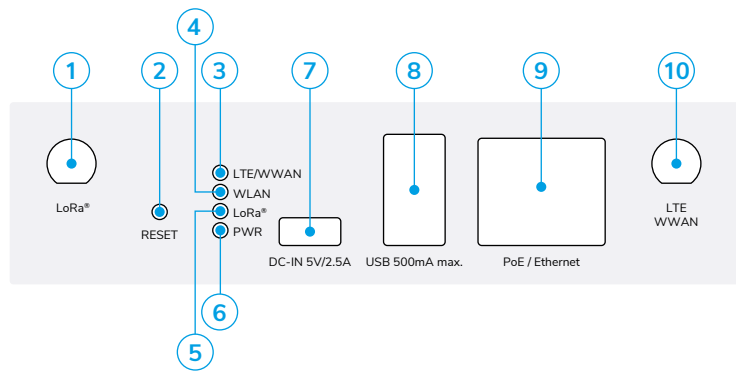|			
1	External LoRa® antenna	6	Power Indicator
2	Reset button	7	Power input, USB micro
3	WWAN/LTE LED	8	USB device connector
4	WLAN LED	9	Ethernet / PoE
5	LoRa® LED	10	External LTE antenna

Figure 2: Interfaces (indoor version)

Connectors and Interfaces (Outdoor Version)

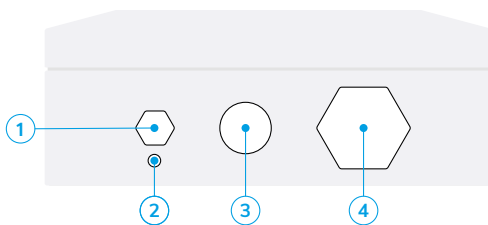|			
1	Air pressure compensation	5	LTE antenna (optional)
2	Power Indicator	6	LoRa® antenna
3	Power Connector (optional)		
4	Ethernet/PoE (optional)		

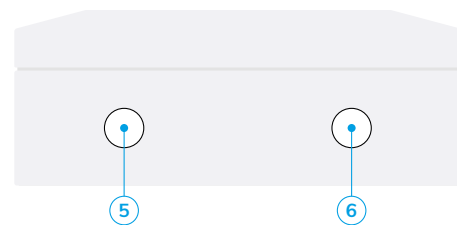*Figure 3: Interfaces Bottom (Outdoor version)* *Figure 4: Interfaces Top (Outdoor version)*

⚠ 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.
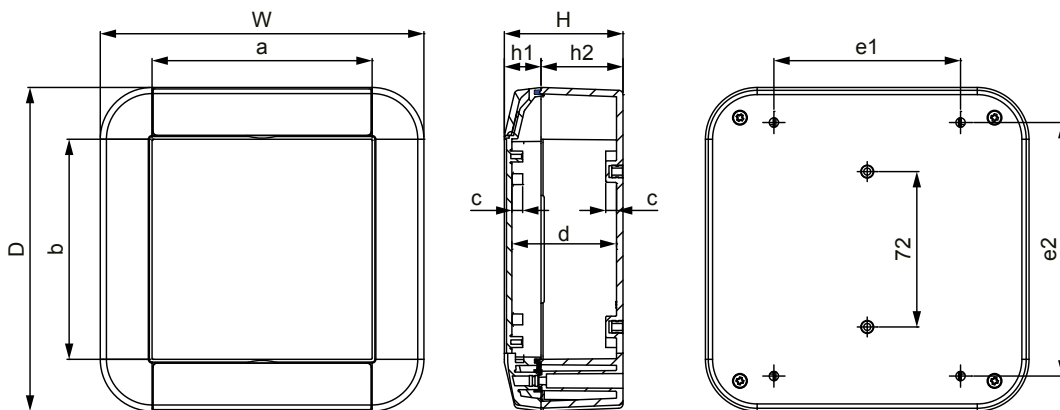
Mechanical Dimensions
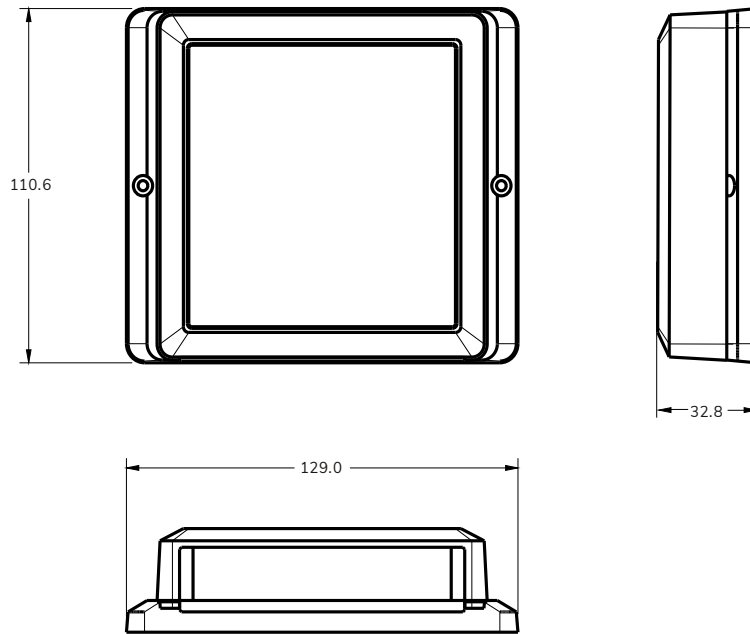
Figure 5: Mechanical Dimensions in mm (indoor versions)

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 Ressources

Product Information Page **Indoor**	miromico.ch/miro-edge-indoor
Product Information Page **Outdoor**	miromico.ch/miro-edge-outdoor
Technical Documentation, quick start	docs.miromico.ch/datasheets/gateways

Device Options

Product ID	ISM BAND			Options§	
	EU868	US915	2G4†	LTE	Outdoor
GW-EDGE-LW/*-POE	✓	✓	✓		
GW-EDGE-LW/*-POE-LTE-ANT‡	✓	✓	✓	✓	
GW-EDGE-LW/*-POE-ANT-IP65	✓	✓	✓		✓
GW-EDGE-LW/*-POE-LTE-ANT-IP65‡	✓	✓	✓	✓	✓

*   ISM band (e.g. EU868)

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

‡   default SIM is BICS, other SIM providers on request

Keep in touch

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