EDGE Series

IoT LPWA Solution / Ready To Cloud

EDGE 1 Industrial LoRa Edge Node
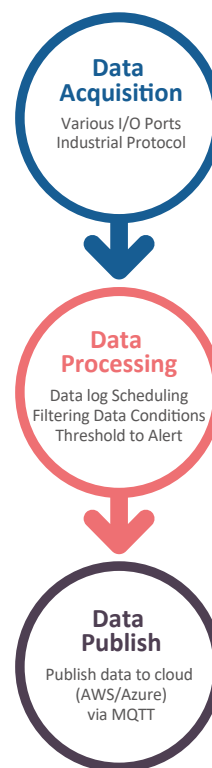EDGE 2 Industrial LTE-M/NB-IoT Edge Node

Overview

EDGE series products are Internet of Things devices which speed up IoT project deployment on field sites in an easy and scalable way. There are two major wireless LPWA solutions: LoRaWAN™ and LTE NB-IoT/Cat-M1 are deployed on the Edge nodes products respectively, fulfilling wireless monitoring and controlling needs under an IoT framework.

The EDGE 1 deploys LoRaWAN™ wireless technology to provide field asset connectivity to AiR PACE Smart LoRa IoT Edge Computing Gateway with 4G LTE Backhaul & Network Server in low data rates over long distances. The EDGE 2 conveniently and transparently connects the existing field site sensors/serial devices with only basic configuration to NB-IoT/Cat-M1 Internet network.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- Various Wireless LPWA Solutions

  –LoRaWAN™ and LTE NB-IoT/Cat-M1 Dual Mode

- MQTT Protocol for Cloud Connectivity

- Ready to Cloud for AWS and Azure

- Multiple I/O to connect to a Wide Variety of Field Equipment

- Over thousands data storage (16MB Log storage); Scheduled Uplink (EDGE 2 Only)

- Integrated 10 bit A/D Converter to convert Analog Signal to Digital Data

- Serial port supports Modbus RTU Interoperability

- Remote Control when VDC powered (DO output and Modbus Control)

- Wake up trigger with sensor data continuing uplink

- Smart alert with over threshold trigger DO and MQTT event activate

- Battery or DC Power Input

- -30 to 70°C Temperature Range

- IP65 Enclosure Design

Data Acquisition
Various I/O Ports
Industrial Protocol

Data Processing
Data log Scheduling
Filtering Data Conditions
Threshold to Alert

Data Publish
Publish data to cloud
(AWS/Azure)
via MQTT

3 Steps for Field Site IoT Deployment

Connector Type

2 types connector for your selection.

Included Accessories
- Device x 1
- Cable tie for fixing battery x 2
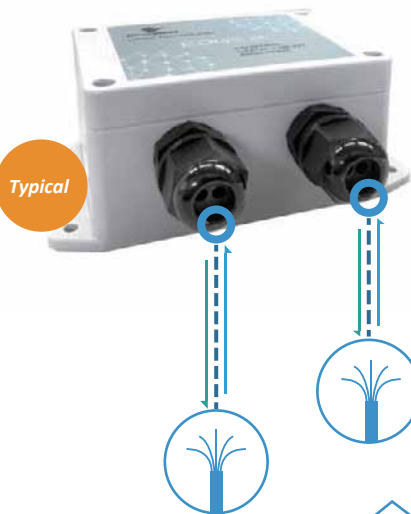- Jumper for AI current mode setting x 3
- Water & dust-proof stopper x 3

EDGE 2

2 x M16 waterproof connectors with 2-hole cable gland for wiring the required ports to external sensors/meters

EDGE 2-F

2 x M16 connectors with RJ45 8P8C for
Quickly wiring the required ports to external sensors/meters

Typical

*Easy
Plug & Play*

● *Both EDGE 1 and EDGE 2 offer new type connector*

2 x M12 connectors with Wires for cost efficiency. Knowledgeable engineers can easily handle them for field site installations.

● *Both EDGE 1 and EDGE 2 offer new type connector*

2 x M16 connectors with RJ45 8P8C for quickly wiring the required ports to external sensors/meters. Quick and easy installation on field site.

LoRa Communication Frequency Band

Models	Band Options	Regions
EDGE 1-EA	923-924MHz (AS923)*Japan, Vietnam Excluded	APAC (*Japan, Vietnam Excluded)
EDGE 1-EU	863-870MHz (EU868)*Europe, Vietnam	Europe, Vietnam
EDGE 1-FEA	923-924MHz (AS923)*Japan, Vietnam Excluded	APAC (*Japan, Vietnam Excluded)
EDGE 1-FEU	863-870MHz (EU868)*Europe, Vietnam	Europe, Vietnam

LTE Cat. NB1/M1 Frequency Band

Model	Band / Channel	Regions
EDGE 2	LTE Cat. NB1/M1 FDD LTE: B1/B2/B3/B4/B5/B8/B12(B17)/B13/B18/B19/B20/B26/B28	**All Regions (*Worldwide)**
EDGE 2-F	TDD LTE: B39 (*For Cat. M1 only)	

Software Features

WAN & Uplink

- EDGE 1
  - Uplink: Support LoRa wireless data transmission capability, with standard LoRaWAN™ Protocol and Class A/C and self-organizing network capabilities
  - Data Security: Supports LoRaWAN™ standard Encryption
- EDGE 2
  - Protocol: TCP, UDP, MQTT
  - Cloud: AWS, Azure and MQTT based cloud
  - Data Security: SSL
  - Connection: By schedule plan (per Yearly/Monthly/Weekly/Daily/Hourly or per designated Minutes)
  - Data Upload: Multiple servers supported for redundancy, re-trial plan for interrupted connection

Field Communication

- Modbus
  - Master for accessing attached Modbus RTU Slaves (Up to 8 Modbus devices supported)
- Data Logging (EDGE 2)
  - By schedule plan (per Yearly/Monthly/Weekly/Daily/Hourly or per designated Minutes)

Administration

- Configuration
  - Windows Utility, Console CLI, USB-to-Serial console cable
- System
  - Backup & Restore, Reboot & Reset, Syslog, Upgrade

Hardware Specifications

Wireless Interfaces

EDGE 1
• 1 x LoRa Module

Frequency Band
• 863-870MHz (EU/EU868), 923-924MHz (APAC/AS923)* Japan Excluded

Specification
• Max. Output Power: 20dBm (EU868), 20dBm (AS923)
• Sensitivity: -132dBm@980bps

EDGE 2
• 1 x LTE Cat. M1/NB1 Module
• 3GPP, Cat. M1/NB1 with PSM (*Power save mode) supported

Data Transmission
• Cat. M1: Max. 375Kbps (DL); Max. 375Kbps (UL)
  Cat. NB1: Max. 32Kbps (DL); Max. 70Kbps (UL)

Specification
• Max. Output Power: 23dBm
• Sensitivity:
  -107dBm@Cat M1, 1.4MHz Bandwidth, CE Mode A
  -113dBm@Cat NB1, CE Level 0

I/O Interfaces

Analog Input
• 3 x AI ports (supports 0-10V/4-20mA)
• Conversion: 10bit ADC
• Input Range: 0-10V, or 4-20mA (Dual mode)
• Resolution: 10mV, or 20uA (with 2-bit hard-wired divider involved)

Digital Input
• 2 x DI ports (Isolated, supports Pulse Counter, Dry Contact)

Digital Output
• 1 x DO port (Isolated, Non-Relayed Output, Maximum 24V/300mA)

Wake-up Port
• 1 x Internal Reed Switch (EDGE 2) and dedicated wake-up port reserved for device wake-up triggering

RS-485
• Support 8 sets Modbus RTU devices
• Modbus/RTU read command FC 1,2,3,4 and write command FC 5,6 from MQTT or LoRaWAN

I/O Connectors
• 2 x M16 waterproof connectors with 2-hole cable gland for wiring the required ports to external sensors/meters
• 2 x M16 waterproof connectors with 2-RJ45 for wiring the required ports to external sensors/meters

Embedded Antennas

EDGE 1 Series
• 1 x Internal LoRa Antenna

EDGE 2 Series
• 1 x Internal 2dBi Antenna

Log Storage

Data logging (EDGE 2)
• 16MB Internal Storage

Power
• 4000mAh 3.6V Li-SOCL2 battery (Optional), or external 5-12VDC Power Input predefined by Jumper

Mechanical

Casing
• Plastic (PC, UL-94V2)
• IP65

Dimension
• 105 x 55 x 76.47mm (W x D x H); Enclosure only
• 131.97 x 81 x 76.47mm (W x D x H); Including Cable Gland, Brackets

Weight
• 0.3Kg (0.66lbs)

Installation
• Bracket mounting

Environment Limits

Operating Temperature
• -30 to 70°C (-22 to 158°F)

Storage Temperature
• -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity
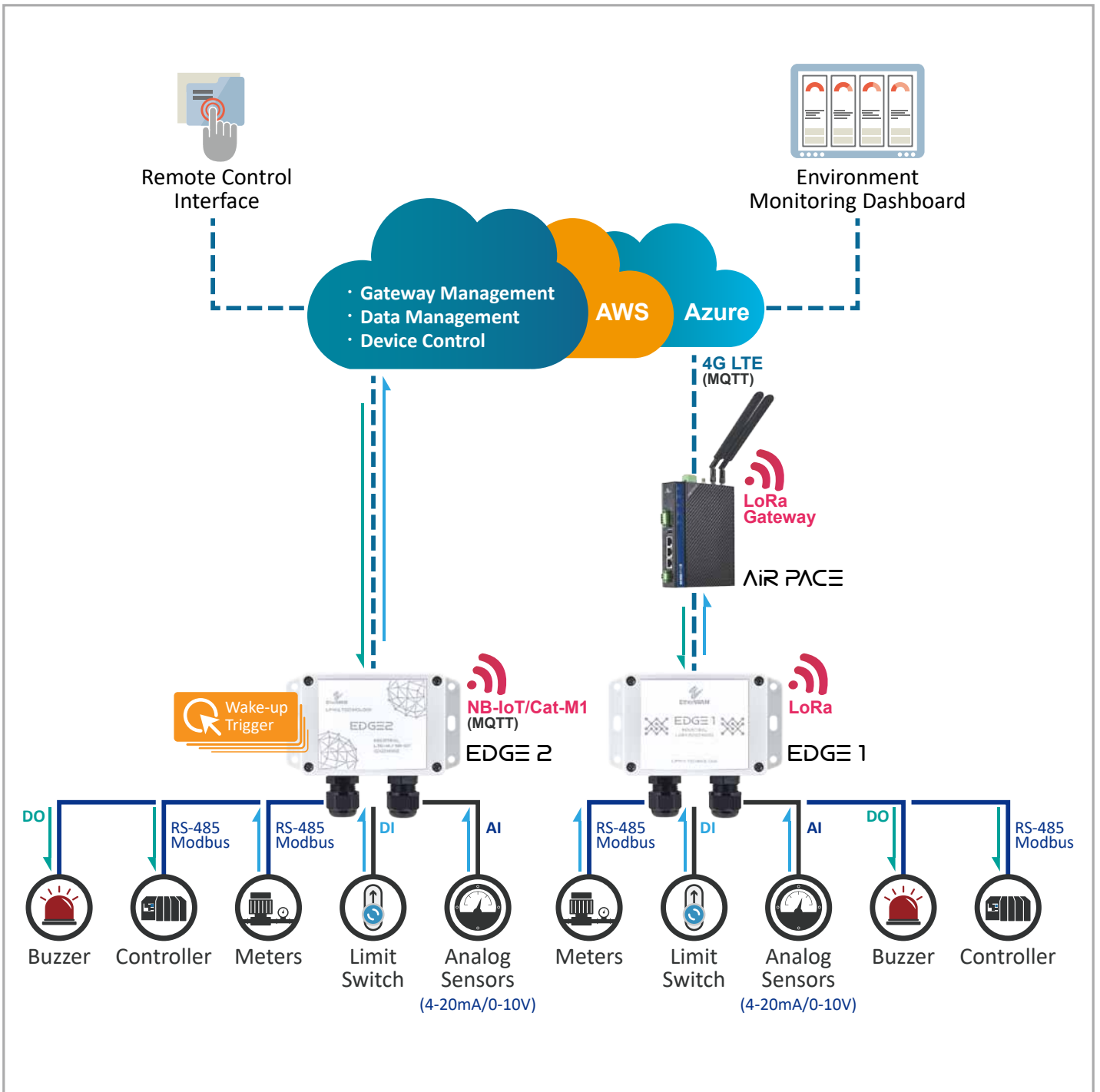• 5% to 95% (non-condensing)

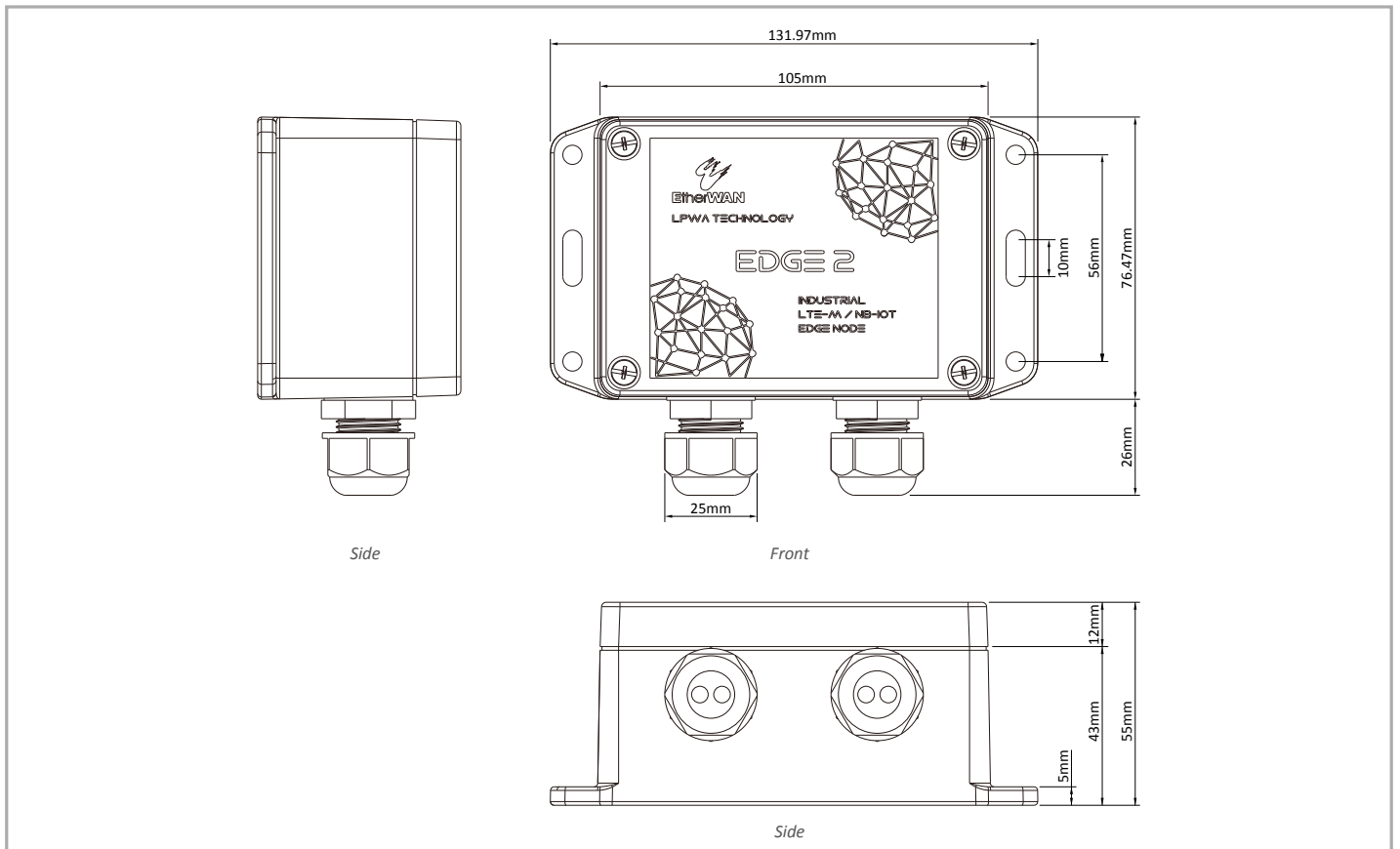## Regulatory Approvals
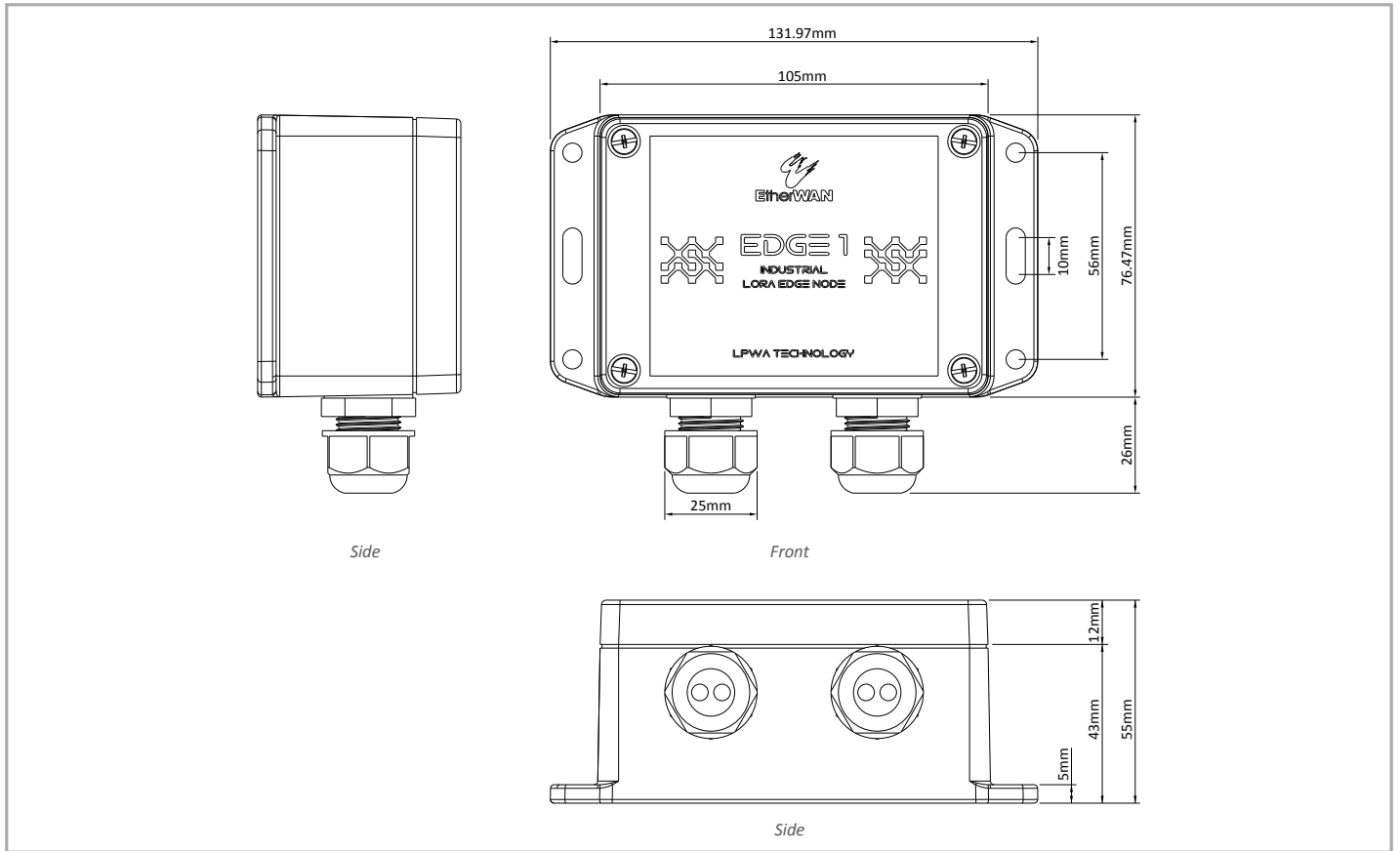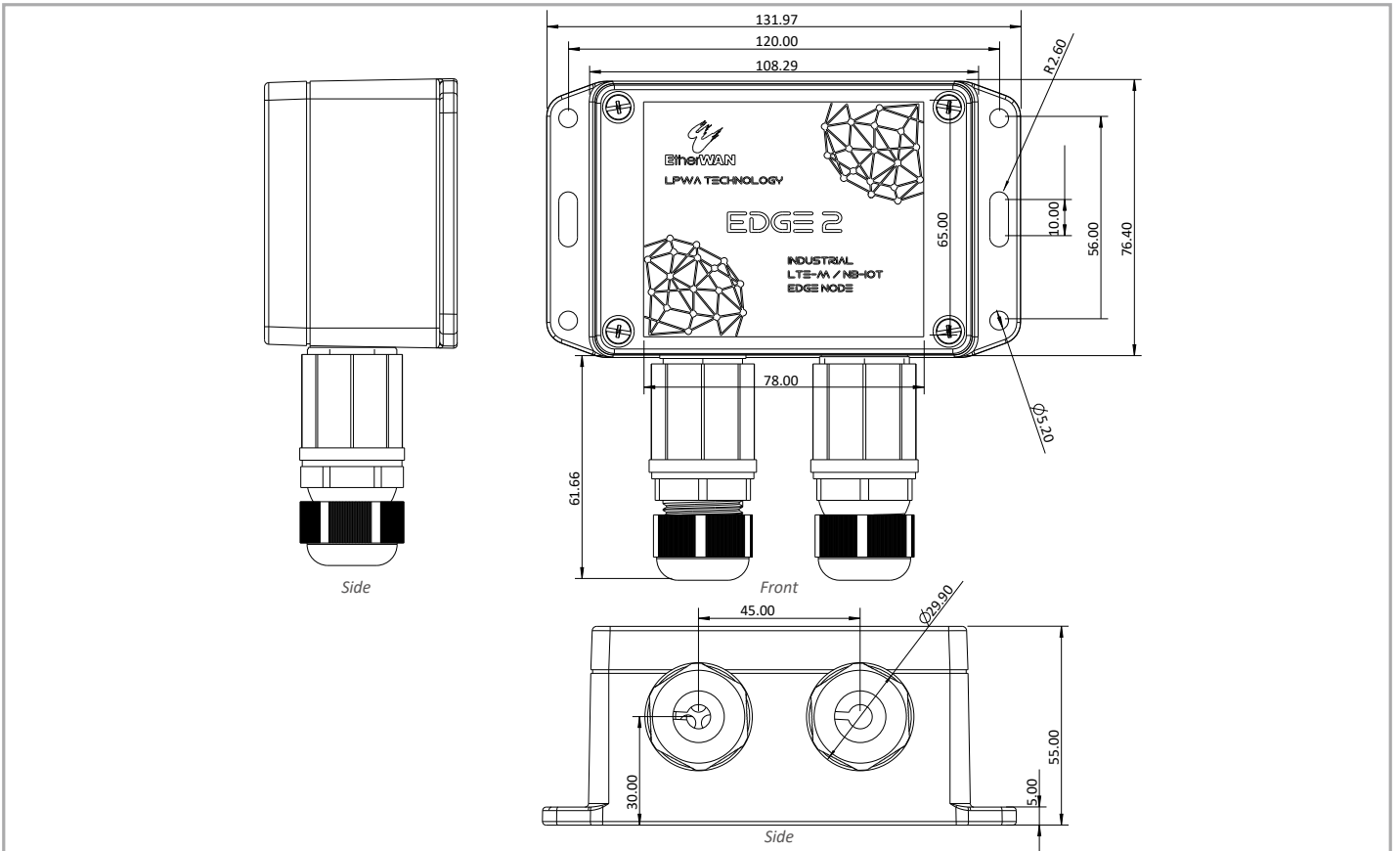
Safety

EN 60950-1

Emissions/Immunity

EDGE 1 CE

EDGE 2 CE/NCC

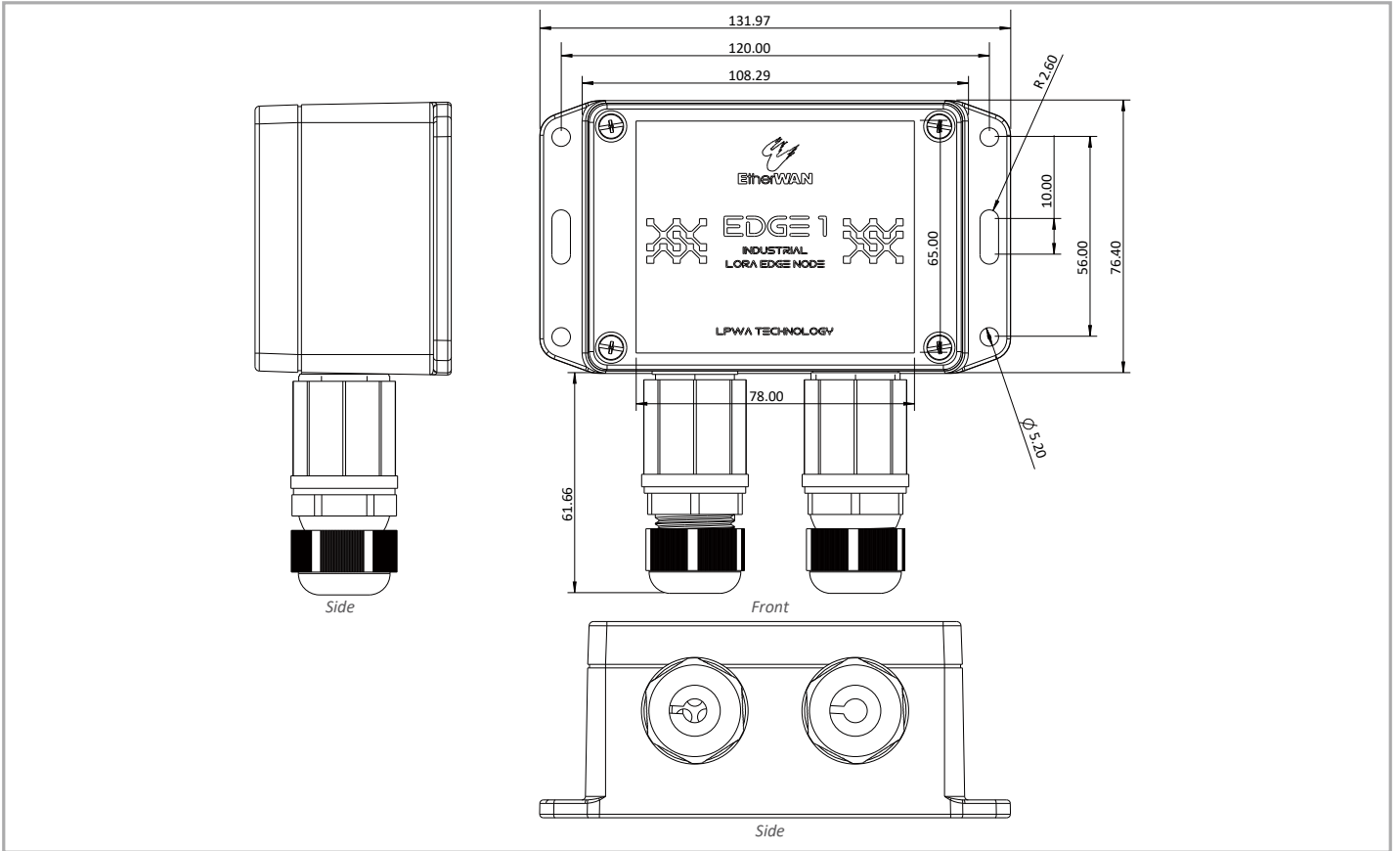# Application Diagram

Dimensions

Side

Front

Side

Side

Front

Side

Dimensions

Side

131.97
120.00
108.29
R 2.60
10.00
56.00
76.40
65.00
78.00
61.66
Ø 5.20

EtherWAN

EDGE 1
INDUSTRIAL
LORA EDGE NODE

LPWA TECHNOLOGY

Front

Side

Side

131.97
120.00
108.29
R 2.60
10.00
56.00
76.40
65.00
78.00
61.66
Ø 5.20

EtherWAN
LPWA TECHNOLOGY

EDGE 2
INDUSTRIAL
LTE-M / NB-IOT
EDGE NODE

Front

45.00
Ø 9.90
30.00
55.00
5.00

Side

Ordering Information

Model	Band/Channel	Regions
EDGE 1-EA	923-924MHz (AS923)	APAC (*Japan, Vietnam Excluded)
EDGE 1-EU	863-870MHz (EU868)	Europe, Vietnam
EDGE 1-FEA	923-924MHz (AS923)	APAC (*Japan, Vietnam Excluded)
EDGE 1-FEU	863-870MHz (EU868)	Europe, Vietnam
EDGE 2	LTE Cat. NB1/M1 FDD LTE: B1/B2/B3/B4/B5/B8/B12(B17)/B13/B18/B19/B20/B26/B28 TDD LTE: B39 (*For Cat. M1 only)	All Regions (*Worldwide)
EDGE 2-F		

Included Accessories

- Device x 1
- Cable Tie for fixing battery x 2
- Jumper for AI current mode setting x 3
- Water & Dust-proof stopper x 3

Optional Accessory

USB-to-Serial Console Cable	Note	Note
	W96G-1140Y1126	USB-to-Serial console cable is an optional accessory purchased separately for utility configuration for EDGE 2 setting and configuration.
	W96G-11330Y100	ER18505-3.6V-4000mAh battery for EDGE 1 & EDGE 2 series.