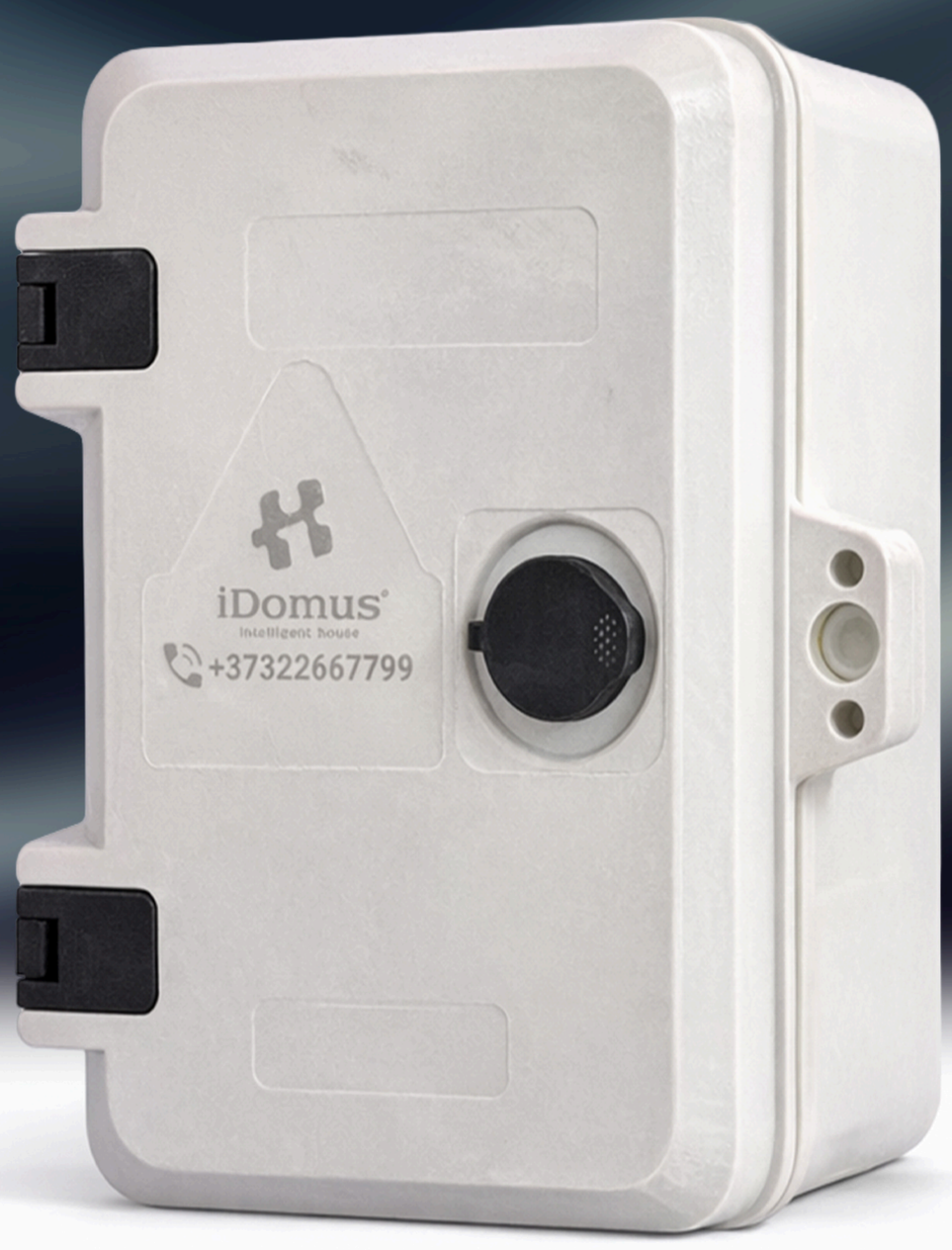
WUM-LRG

LoRaWAN / LoRa Mesh Gateway



WUM-LRG-O is a convergent industrial IoT/IIoT gateway, designed for indoor use in deployment of wireless and hybrid Smart City, BMS and Industrial IoT systems, as well as in energy and infrastructure automation systems. Designed for outdoor installation and features a high degree of protection against external influence.

support for hybrid network infrastructures

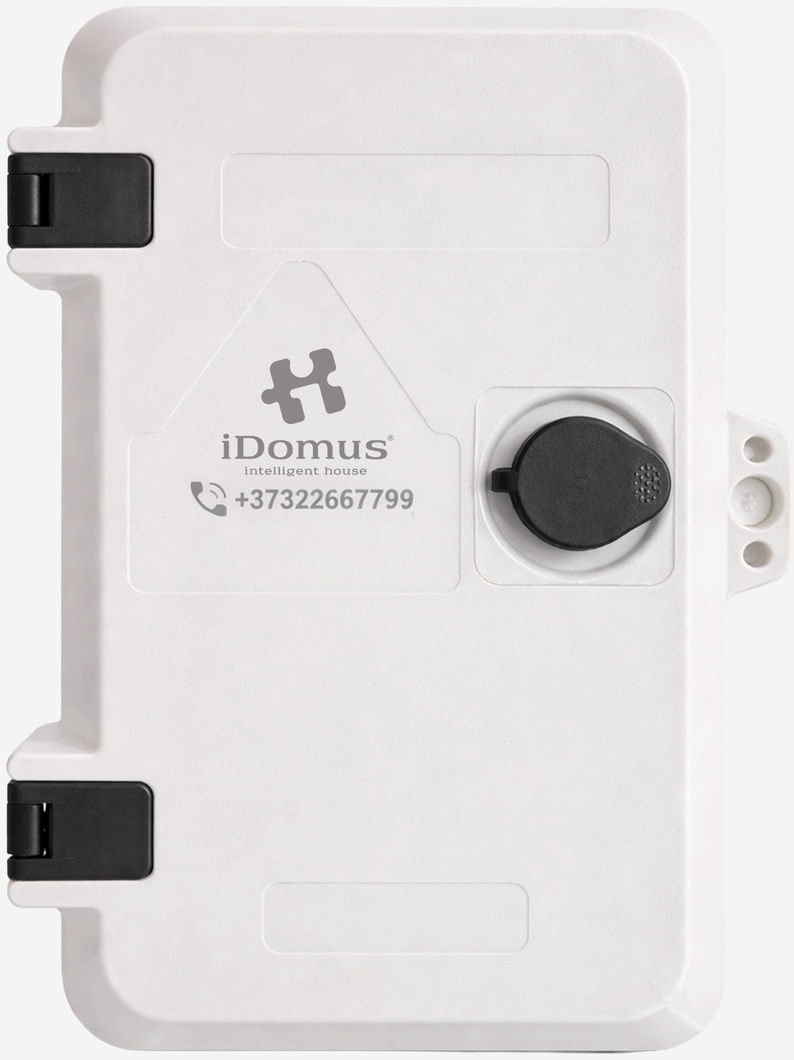
complete LoRaWAN stack implementation

integration with LoRa, Wi-Fi, and Zigbee mesh networks

multisite support

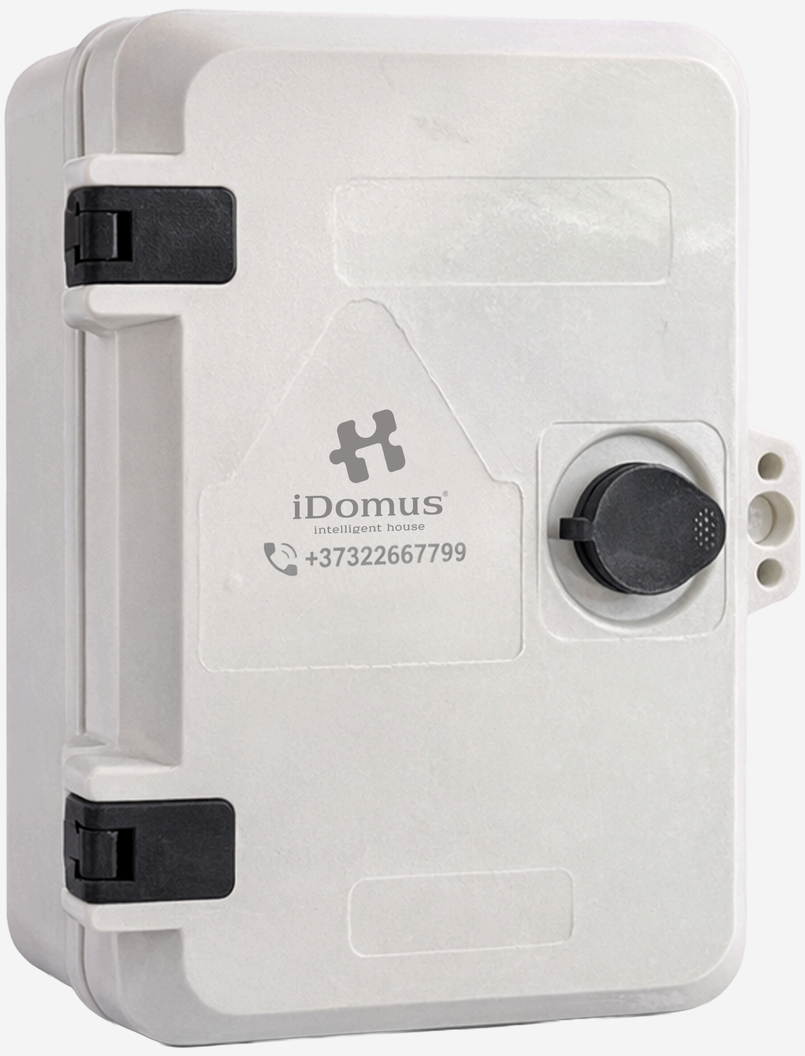
automatic GPS location

centralized diagnostics and software updates



The device simultaneously operates as a full-featured LoRaWAN concentrator and as the root node in proprietary LoRa Mesh networks, at both hardware and software levels. It enables hybrid network deployments with extended radio coverage, high scalability, and robust fault tolerance in demanding RF environments.

By combining LoRaWAN star topology with LoRa Mesh distributed topology, the WUM-LRG overcomes the limitations of each of the networks when used alone.



SPECIFICATIONS

KEY FUNCTIONS

WUM-LRG simultaneously fulfills two core functional roles:

1. **LoRaWAN Gateway**
   Collecting data from end devices (sensors, meters, actuators) operating under the LoRaWAN protocol and forwarding this data over an IP network (Ethernet or LTE) to a LoRaWAN network server.
2. **Root Node in LoRa Mesh Network**
   Forms or operates as part of a decentralized LoRa-based Mesh network, where devices are able to transmit data either directly to the gateway or via neighboring relay nodes.

This architecture enables:

- substantial expansion of radio coverage;
- improved network resilience against individual node failures;
- reliable operation in dense urban environments, industrial sites, and hard-to-access areas.

MAIN TECHNICAL FEATURE

Both **LoRaWAN** and **LoRa Mesh network** stacks operate **concurrently**, each using dedicated RF channels and modulation schemes within separate communication chipsets:

- WUM LoRaWAN Gateway Module E106-868G27P2 (SX1302 inside)
- SoC SMD LoRa Module WUM IML-64-256

This design allows one gateway to simultaneously support two logically and physically independent network infrastructures:

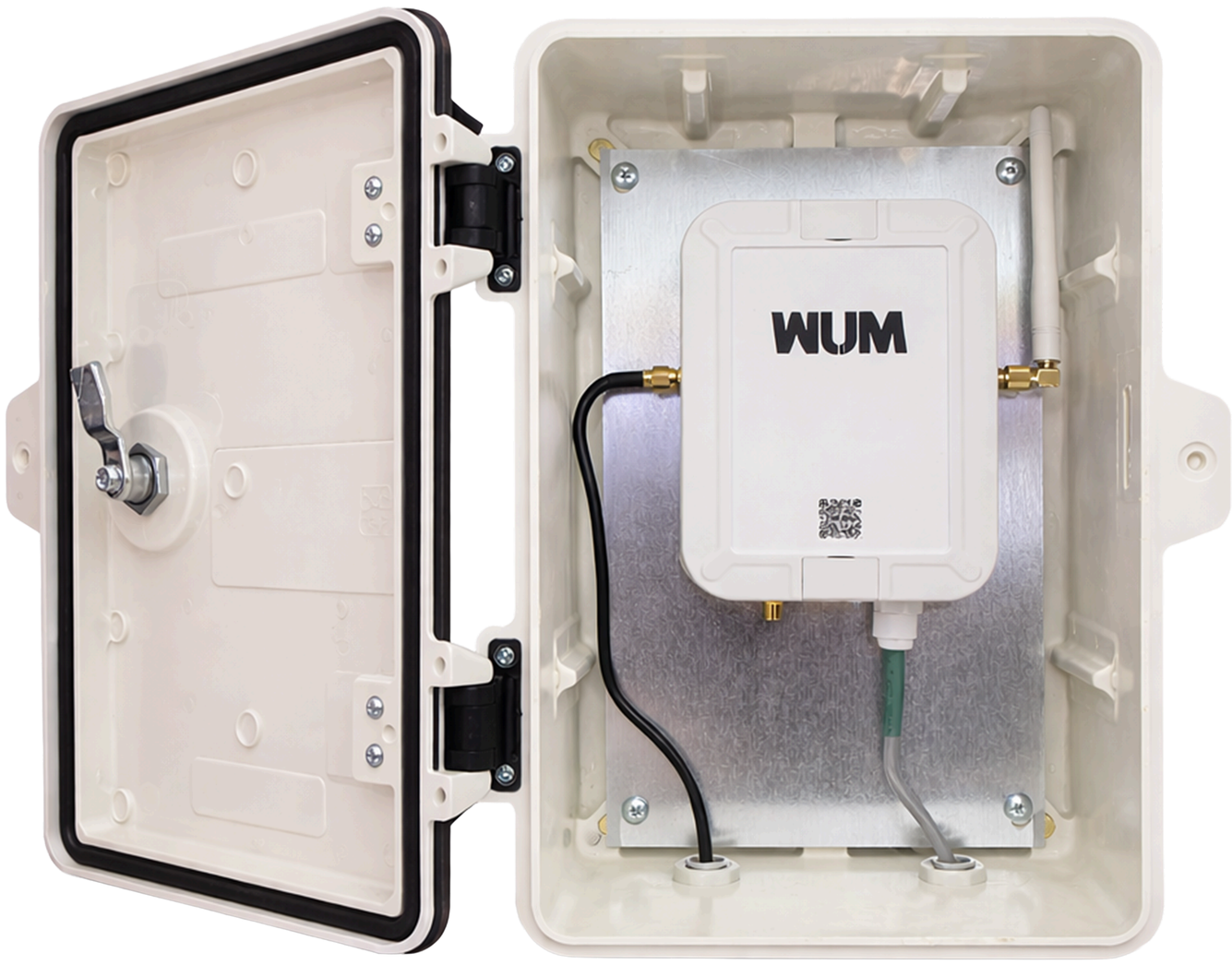
- a conventional star-topology LoRaWAN network;
- a multi-hop, relay-based LoRa Mesh network.

RELIABILITY AND OPERATION

- Continuous 24/7 operation
- Industrial temperature range (depending on enclosure type)
- Protection of data transmission channels
- Resistance to interference and unstable RF conditions

FUNCTIONAL CAPABILITIES

- Fully featured LoRaWAN gateway
- LoRa Mesh support (Wireless Universal Multimesh)
- Parallel operation of two network topologies
- Multisite architecture support via GW portal
- Transparent gateway mode via Packet Forwarder
- Operation as a node or edge network element
- Remote status monitoring and diagnostics
- Centralized management and software updates
- High fault tolerance and scalability



SUPPORTED TECHNOLOGIES AND PROTOCOLS

- LoRaWAN (full stack)
- LoRa Mesh (proprietary Wireless Universal Multimesh technology)
- Modbus
- DLMS/COSEM
- IEC 62056-21
- APN for mobile data
- AES 128/256

HARDWARE PLATFORM

- Base chipset: ESP32-S3
- Industrial-grade dual-core processor, 8 MB RAM
- Communication chip #1: WUM E106-868G27P2 (SX1302 inside)
- Communication chip #2: WUM IML-64-256
- Communication chip #3: ESP32-C6
- Interfaces:
  RS-485 (x2)
  Digital input (dry contact) (x2)
  RJ45 (x1)
- Ethernet / Wi-Fi / Zigbee/ LTE (depending on configuration)
- External or internal antennas
- Enclosure: Indoor / Outdoor

INTEGRATION

WUM-LRG is easily integrated into:

- IoT / IIoT platforms (including SiMBA and C&Mon! Center)
- SCADA and BMS systems
- Edge architectures
- Urban and industrial distributed networks

Operation with external LoRaWAN network servers and proprietary management platforms is supported.

POWER SUPPLY

- Direct 220 V power supply or via a dedicated WUM 12 V power unit, with data transport over LTE/4G only
- PoE In 24–48 V, with data transport via Ethernet 100 Mbps and the option to connect an LTE/4G module to establish a redundant communication channel

MODEL DESIGNATION AND CONFIGURATIONS

The full commercial model name is formed according to the template **WUM-LRG-XYZ**, where:

- **WUM** — Wireless Universal Multimesh
- **LRG** — LoRaWAN / LoRa Mesh Gateway

X — enclosure type:

- **I** — Indoor
- **O** — Outdoor

Y — additional wireless Mesh technologies:

- W — Wi-Fi Mesh support
- Z — Zigbee Mesh support

Z — IP access channel:

- L — LTE / 2G
- E — Ethernet (including PoE)

Example model codes:

- WUM-LRG-IWE
- WUM-LRG-OWL

DIMENSIONS

Enclosure	Polyester, optical fiber
Dimensions	330 x 220 x 130 mm
Weight	2560 g

OPERATIONAL CHARACTERISTICS

Operating temperature	-20...+60 °C
Storage temperature	-40...+85 °C
Humidity	up to 92% without condensation

PACKAGE CONTENTS

Gateway with housing	IP67
Outdoor enclosure	IP67
Antenna	4G/LTE
Antenna	LoRaWAN Fiberglass N type connector
RF cable	SMA–N type 2 m
Antenna mount	LoRaWAN Fiberglass

Additional items, based on configuration:

- Outdoor enclosure for power supply unit and electricity meter
- Power supply unit
- Electricity meter

AREAS OF APPLICATION

- ✓ Smart City, Smart Lighting, Smart Parking, Smart Waste Management, as well as sensor-based and distributed monitoring systems.
- ✓ Industrial IoT (IIoT), BMS/Smart Building, Smart Metering.
- ✓ Smart Agriculture, Environmental Monitoring.
- ✓ Logistic systems and remote objects.

WUM
SMART METERING

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