

LANSEN

LAN-WMBUS-GW5-SERIES

OMS LTE-M1 gateway battery/mains M-Bus

DEVICE

The battery or mains powered wireless M-Bus gateway is a highly configurable plug-and-play device used for collecting data from Wireless M-Bus meters and transmitting the data using LTE-M1. The enclosure is designed to make the gateway as discrete as possible.

PERFORMANCE

Long range and high sensitivity is achieved by using the latest technology in radio transceivers with sharp filtering and lowest noise amplifier. The performance in an urban environment with lots of radio disturbances from mobile phones, TV etc., is guaranteed with a high performance front end filter. This gives super blocking even when placed close to RF-transmitters.

ANTENNA

The device have many options regarding antennas. Both internal and external antenna interface is selectable to have maximum performance in each given installation. The internal antennas are mounted at 90 degrees from each other to take advantage of both horizontal and vertical polarizations for maximum range while minimizing multipath problems. The antenna diversity prevents losses due to different polarization, especially indoors since meters and gateways can be mounted both to the sides and above/below the repeater.

The external SMA-interfaces are suitable for antennas to cover larger areas or long distances, both for collecting wireless M-Bus data or to transmit the data using LTE-M1.

LISTEN TIME (MAXIMIZE BATTERY LIFETIME)

To maximize the battery lifetime and still get the data when needed, a number of possible configuration parameters can be used, such as:

- Number of minutes to be active / not active
- Specific time during the day to start listen for meter data (e.g., at 12:30)
- Specific days to be active (e.g., Mondays and Wednesdays)
- Suppression timer (limit number of packets stored per meter/week/day/hour)

FIRMWARE UPPGRADE

The gateway firmware can be upgraded remotely using MQTT.

FILTERING AND MINIMIZE DATA

The list below displays a couple of parameters that can be used as filtering to minimize data transfer and memory usage.

- Only receive data from specific manufacturer, i.e., "LAS"
- Only receive data from specific meter (White List)
- Only receive one message per week/day/hour per device

GATEWAY WITH LANSEN REPEATER

If the gateway is used together with a Lansen repeater, the gateway can optionally extract and append the extra routing information added by the Lansen repeater, such as:

- How good the repeater received the message from a sensor
- Which repeater transmitted each message to the gateway
- Number of hops for the message before reaching the gateway

GATEWAY WITH REPEATERS IN BATTERY NETWORK

Sometimes there are radio shadows between meters and gateway and then a Lansen repeater can be used. In the case of using a battery powered repeater, it is important that the repeater and gateway are synchronized so they are active at the same time.

The Lansen gateway makes sure that this synchronization is maintained during the entire service life to ensure the system can operate optimally at any given time.

CONFIGURATION

Configuration can be done in different ways and is easiest with a Lansen Wireless M-BUS programming dongle together with our program, Lansen Configurator. However, configuration can also be done with other wireless M-BUS transmitters or by doing remote configuration using the MQTT protocol.

It is possible to activate the 128 bit AES-key so all configuration data is encrypted and the gateway only accepts encrypted data.

CLOUD

The gateway connects using MQTT client to an MQTT server to deliver the raw M-Bus packets. This gives a 2-way connection between the gateway and the cloud. If the server is down, packets are buffered in the gateway for later delivery. All packets are stored and will survive a power loss if desirable depending on configuration. The gateway can work in two ways:

Constant connected (only for mains powered)

MQTT Connection to the server is always on. This means it is always possible to change parameters and transmit data to the gateway. Data is transmitted immediately to the cloud when data is received. If the connection to the MQTT server is down the messages are stored in the flash memory and transmitted when the MQTT connection is back again.

Intervall mode (Battery or Mains powered)

The gateway starts up a predefined interval, for example:

- Start at 12 pm every day
- Listen for data for 20 minutes and store in the gateway
- Transmit the data to the server
- Listen for incoming configuration parameters



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FIRMWARE

INPUT MODE	T+C-mode (default) or S-mode
OUTPUT MODE	C-mode (default) or T-mode or S-mode
MAX SENSORS	2000 sensors
MAX WMBUS LENGTH	255 bytes
FILTERING	0 min to 127 hours suppression timer, RSSI, manufacturer, whitelisting, etc.
SECURITY	Supports receiving of Security Profile A and B according to OMS 4 or any W-Mbus compatible message.
STATUS TX INTERVAL	60 seconds

GENERAL INFORMATION

POWER SUPPLY	M: 100-305 VAC B: 2xER34615*, 38Ah, 3.6V + supercap
STANDARDS	2014/53/EU (RED) EN 13757-3/4:2013, OMS EN 61000-6-1 (3V/m)
TEMPERATURE	M: Max: -30°C/+85°C, rec. -30°C/+50°C BE: Max: -30°C/+85°C, rec. -30°C/+50°C

RADIO CLOUD

TYPE	LTE-M1
CLOUD PROTOCOL	MQTT 3.1 (M-Bus compatible data)
ANTENNA	Internal high bandwidth antenna. Opt. External SMA int.

STORAGE

TYPE	Flash (survive power loss)
SIZE	~128 Mbit ~270000 wM-Bus packets can be stored if size is ~50 bytes

RADIO

RECEIVER CLASS	2
TRANSMISSION	Listen before talk, polite spectrum access
HARDWARE FILTER	For LTE/GSM/GPRS and other disturbances.
RADIATED POWER	~14 dBm (< 25mW)
SENSITIVITY	Down to S/T,C -111 dBm/-108 dBm**
INPUT RF LIMIT	18 dBm

ENCLOSURE

DIMENSIONS	150x150x53 mm,
IP-CLASSIFICATION	A1: IP40 A2: IP65 & IP67
COLOR	RAL 9003 (signal white)
MATERIAL	UV-resistant PC/ABS
FLAMMABILITY RATING	UL 94 HB

ACCESSORY

LAN-WMBUS-D2-TC	Configuration dongle
LANSEN CONFIGURATOR	Configuration software
LAN-A-PMB-KIT-ID58-78	Pole mounting kit
LAN-MAG-R4	Magnet with telescopic shaft
LAN-R4-IP-KIT	Sealing kit for A2 enclosure

CURRENT CONSUMPTION

wM-Bus radio	12mA
LTE-M1	Typical 120 - 150 mA in transmission Max 600mA

*Lithium < 5g/cell, UN3091 class 9

**The sensitivity can be enhanced using the range extender LAN-WMBUS-FAMP868

***The expected battery lifetime stated is based on simulations and true measurements at the stated recommended temperatures and is valid to the best of our ability but not a guarantee. The calculations and measurements can be sent upon request for your reference.

OPTIONS FOR LAN-WMBUS-GW5 GATEWAY

LAN-WMBUS-	SERIES	POWER OPTION	RECEIVER SENSITIVITY	ENCLOSURE IP-CLASS	ANTENNA (wM-Bus)	CLOUD INTERFACE	ANTENNA (CLOUD)
	GW5 Gateway gen. 5	BE 3.6V/38Ah+supercap	LR Improved receiver sensitivity for fantastic robustness and range	A1 IP40. Suited for indoor use	(Blank) Internal antenna	CATM1	(Blank) Internal antenna
		M**** 230 VAC		A2 IP65 & IP67. Suited for indoor and outdoor use	X**** SMA connector for external antenna	CAT1/4G	X**** SMA connector for external antenna

Examples	Battery	Typical lifetime expectancy***	Dual w-Mbus Internal antenna	External w-Mbus SMA interface	LTE-M1 antenna	Enclosure
LAN-WMBUS-GW5-BE-LR-A2-CATM1	X	10 years	X		Internal	IP65 & IP67
LAN-WMBUS-GW5-M-LR-A2-CATM1-X			X		External	IP65 & IP67