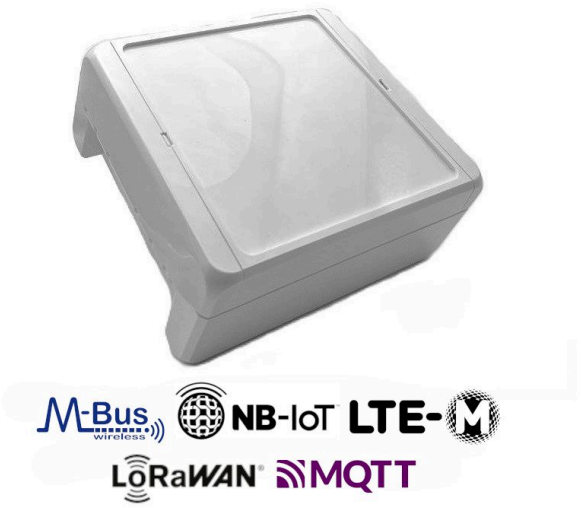
Wireless M-Bus Gateway V4 with One-Wire-Addon



Description

Gateway for remote reading of temperature values and wireless and wired MBus values via NB-IoT, LTE-M mobile radio or LoRaWAN to the Internet. Suitable for indoor and weather-protected outdoor installation.

Features

- Reading multiple DS18x20-Type 1-wire temperature sensors
- wM-Bus meter data upload via NB-IoT or LTE-M mobile radio (2FF / Mini SIM card)
- Secure DTLS data transmission (client + server certificates) via mobile radio
- Connection via CoAP and DTLS (NB-IoT, LTE-M) or MQTT (LTE-M) to the Lobaro platform
- Direct connection via MQTT (LTE-M) to third-party systems possible.
- Alternative upload via LoRaWAN 1.0.2 (EU-868)
- Compatible with wireless M-BUS S1, C1/T1 modes (868 MHz) meters
- Compatible with Xylem Sensus RF Bubble Up (868 MHz)

- Compatible with Müller Funk (ME protocol, Walk-By) for µon and µflow skyW-2 and skyE-2
- Wired M-BUS 6T/10 mA (6 standard loads)
- Internal memory, for over 64.000 telegrams
- Whitlist for up to 2.000 individual meters
- Remote configuration
- Signed firmware updates (FOTA) via mobile radio

Product Components

> **COMPONENT INFO**
>
> This product is manufactured by Lobaro using the components listed below. Detailed information about the firmware and other components can be found in their respective descriptions. Please use the links provided to access comprehensive product details.

Component	Manual / Description	Additional note
Firmware	app-nrf91-origin	See here for available firmware updates
Housing	LoCube	122 mm (l) x 82mm (w) x 55mm (h)

Product Identification

- Name: **Wireless M-Bus Gateway V4 OneWire**
- Type: **LOB-GW4-1W**
- MPN / Ordering code: `1200592`

Datasheet & Quickstart

> **INFO**
>
> Please contact our sales team.

Product specific details

> **INFO**
>
> Information provided in this chapter is only valid for the above product unless otherwise noted. In case of doubt, the information in this section takes precedence over the general description of any component.

LED signal patterns

The device has 3 three LEDs (B, G, R = Blue, Green, Red), labeled `Status` on the PCB: 🔵 🟢 🔴.

Patterns during booting/restart

- 🔵 ⚪ 🔴 B and R on: Device is in Bootloader Mode (not actively running, remove config adapter press reset to leave Bootloader Mode).
- 🔵 -> 🟢 -> 🔴 Quick cycle B, G, R for ~0.5s: Device just booted, either after power on, reset b button or software, or after a hard failure.
- ⚪ ⚪ 🔴 R flashes repeatedly on and off in 1s interval: critical failure during boot (failed to start application).

Patterns during normal operation

- 🔵 ⚪ ⚪ B flashes 1s on and 1s off in loop: building LTE connection to mobile provider. Followed by:
  - ⚪ 🟢 ⚪ Short G flash on success.
  - ⚪ ⚪ 🔴 Short R flash after connection failed.
- ⚪ 🟢 ⚪ G flash during installation mode while collecting wireless M-Bus telegrams.

Exceptional patterns

- 🔵 ⚪ 🔴 / 🔵 🟢 ⚪ Quickly changing between R & B and G & B every 5s in a loop: Modem is in connection restriction mode - keep device on power, will fix itself after 30min.

Battery Lifetime Calculator

> **INFO**
>
> Please contact our sales team.

Firmware Updates

The latest firmware can be found here:

- Download latest firmware

> **NOTE**
>
> A remote firmware update over LoRaWAN is currently not possible.

Configuration

The device is shipped with default configuration parameters. The configuration can be changed via the 6-pin config port using the Lobaro USB Configuration Adapter.

More information about the usage of the configuration tools can be found in our documentation.

> **INFO**
>
> **Remote Configuration** is also supported after initial network connection.

> **WARNING**
>
> **Default Values** are the firmware defaults. Depending on the application the device may be delivered with different settings, see chapter below.

General Parameters

Description	Key	Type	Possible Values	Default
Uplink channel selection	`WAN`	String	`lte` or `lorawan`	`lte`
Days without connectivity until device reset	`LostReboot`	Number	Any, e.g., `3`	`5`

▸ Detailed Description

Wireless M-Bus Meter Reading

Description	Key	Type	Possible Values	Default
WMBUS Listen Cron [UTC+0]	`listenCron`	String	Any CRON String	`0 0 12 * * *`
WMBUS C1/T1 Listen Duration [s]	`cmodeDurSec`	Number	Number of seconds `0` = Do not collect C1/T1 Max Value=`36000`	`300`
WMBUS S1 Listen Duration [s]	`smodeDurSec`	Number	Number of seconds `0` = Do not collect S1 Max Value=`36000`	`0`
Sensus RF Listen Duration [s]	`xmodeDurSec`	Number	Number of seconds `0` = Do not collect X-Mode Max Value=`36000`	`0`
Müller-Funk Listen Duration [s]	`umodeDurSec`	Number	Number of seconds `0` = Do not collect U-Mode Max Value=`36000`	`0`
WMBUS ID Filter List	`devFilter`	String	List, e.g. `88009035,13456035`	`[not set]`
WMBUS Type Filter List	`typFilter`	String	List, e.g. `08,07`	`[not set]`
WMBUS M-Field Filter List	`mFilter`	String	List, e.g. `DME,ITW,SEN,QDS`	`[not set]`
WMBUS CI-Field Filter List	`ciFilter`	String	List, e.g. `8a,72`	`[not set]`

Description	Key	Type	Possible Values	Default
WMBUS Telegram Upload Limit	`maxTelegrams`	Number	Any number of max. Telegrams `0` = no limit.	`0`

▸ Detailed Description

LTE Connection

Description	Key	Type	Possible Values	Default
LTE Lobaro Platform Host	`Host`	IP / URL	List of various Endpoints	`coaps://platform.lobaro.com`
LTE MCC+MNC Code	`Operator`	Number	e.g. `26201` (Dt. Telekom)	`[not set]`
LTE Band	`Band`	Number	`3` or `8,20` or `3,8,20`	`3,8,20`
LTE APN	`APN`	String	any APN	`*`
LTE SIM Pin	`PIN`	Number	4 digits pin, e.g. `1234`	`[not set]`
LTE NB-IoT on/off	`UseNbiot`	Bool	`true` or `false`	`true`
LTE M1 on/off	`UseLtem`	Bool	`true` or `false`	`true`

Description	Key	Type	Possible Values	Default
LTE DNS Servers used	`DNS`	IP	List of DNS server IPs	`9.9.9.9,1.1.1.1`
Plain UDP Host	`UdpHost`	IP	any, e.g `94.130.20.37`	`[not set]`
Plain UDP Port	`UdpPort`	Number	any, e.g `3333`	`[not set]`

▸ Detailed Description

LoRaWAN Connection

Description	Key	Type	Possible Values	Default
DevEUI	`DevEUI`	byte[8]	any	`Device EUI64`
AppEUI / JoinEUI (1.1)	`AppEUI` / `JoinEUI`	byte[8]	any	`random`
AppKey	`AppKey`	byte[16]	any	`random`
NwkKey (1.1)	`NwkKey`	byte[16]	any	`00000000000000000000000000000`
Days between Timesync	`TimeSync`	Number	any	`3`
Payload Format	`PayloadFormat`	Number	`0`, `1`, `2`	`0`

Description	Key	Type	Possible Values	Default
use OTAA	`OTAA`	Bool	`true` or `false`	`true`
Random TX Delay [s]	`RndDelay`	Number	any	`10`
Spreading Factor	`SF`	Number	7-12	`12`
Transmission Power	`TxPower`	Number	2-14	`14`
Adaptiv Data Rate	`ADR`	Bool	`true` or `false`	`true`
LoRaWAN max. Payload Length	`loraPLMax`	Number	10 to 241	`100`

▸ Detailed Description

OneWire Multi-Temperature Sensor Reading

Description	Key	Type	Possible Values	Default
Number of readouts to be uploaded together (saves energy)	`MTempAcc`	Number	1-600	1
List of sensor IDs or `*` for scanning	`MTempIDs`	String		`*`

Description	Key	Type	Possible Values	Default
Include Sensor ID in upload (LoRaWAN)	`MTempSendID`	Bool	`true` or `false`	`false`

▸ Detailed Description

Special

Description	Key	Type	Possible Values	Default
Verbose UART Log	`verbose`	Bool	`true` or `false`	`false`
Addon RAM configuration	`extRam`	String	Lobaro Internal	`[not set]`
Live Mode	`liveMode`	String		`[not set]`
Operation Mode	`opMode`	Number	Lobaro Internal	`1`

▸ Detailed Description

Application specific non-default values

The following parameters are configured in production to align with the application settings:

Name	Description	Value
cmodeDurSec	Do not collect C1/T1 mode	0
listenCron	Cron expression defining when to receive data	0 0/1 * * * *

Upload Formats LoRaWAN

LoRaWAN Port	Uplink Message
1	Status Message
30, 31	Temperature Measurement Data

MORE DETAILS

For a detailed specification of the payload formats, please refer to the LoRaWAN Communication page.

Upload Formats LTE

CoAP Protocol

The protocol details of the CoAP implementation are not publicly disclosed and are intended for use exclusively with the Lobaro IoT Platform. For integration with third-party systems, MQTT is the preferred protocol.

If you require access to this and MQTT is not an option, please contact Lobaro directly.

MQTT Protocol

INFO

Please contact our sales team.

Example JS Parser

▸ Lobaro Platform / TheThingsNetwork (TTN) / ChirpStack

Declaration of Conformity

Download CE declaration of conformity

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