LOB-GW-HYB-WMBUS Wireless M-Bus Gateway V3 Quick Start Guide (EN)





Manufacturer

Lobaro GmbH | Stadtdeich 7 | D-20097 Hamburg | Germany support@lobaro.de | www.lobaro.de

Important notes



This document is a quick reference guide. A supplementary product description is available online at https://doc.lobaro.com.

The device is powered by an internal, replaceable 3.6V lithium battery (Li-SOCI2), which is subject to transport restrictions. Hazardous material class: 9A. The applicable transport regulations must be met when transporting the device incl. inserted battery. The battery must not be connected during transport! The test certificates for the approved batteries are available on request.



This product must be installed professionally and in accordance with the specified installation guidelines and may therefore only be installed by trained and qualified personnel. For installation in structures with increased fire protection requirements, e.g. staircases, escape routes, the installation company or the qualified personnel must ensure that the specific requirements according to local building regulations are fulfilled!

These instructions must be read carefully before initial operation, followed and kept for the entire service life of the device.

Intended use



The Lobaro Wireless M-Bus Gateway V3 receives data telegrams from up to 500 utility meters with standardized 868 MHz wireless M-Bus interface and forwards them downstream via NB-IoT cellular radio or alternatively LoRaWAN to the Internet for further processing or evaluation.

In addition to the unidirectional wireless M-Bus modes C1, T1 and S1, the proprietary Sensus RF radio protocol is also supported by the radio receiver in the gateway.

The previously received meter data is transferred to the Lobaro IoT platform, optionally encrypted via DTLS, and can be viewed there or downloaded as a CSV file. Alternatively, the connection of other downstream third-party systems via standardized APIs from the Lobaro platform is easily possible.



The device is intended exclusively for the aforementioned purpose. An application other than previously described or a modification of the gateway are considered as non-intended use and must be requested in writing in advance as well as specifically approved.

Mode of operation

- 1. The gateway is in energy-saving mode for the majority of its operating time.
- 2. The device wakes up at freely configurable intervals ('CRON parameters').
- Encrypted or unencrypted Wireless M-Bus (868 MHz) telegrams are received for the configured time duration (among others 'cmodeDurSec parameter') and buffered unchanged in the internal memory.
- 4. Meter reception can be restricted with filters to specific device IDs, types or 'CI fields'.
- 5. After the configured period of time, the collection of meter data by radio is stopped again.
- The data is sent via NB-IoT cellular radio or LoRaWAN to the downstream IoT platform or LoRaWAN network server on the Internet.
- 7. The platform decrypts (on demand) the consumption data with stored keys.
- 8. The consumption values or meter telegrams are available in table view, as CSV download or via standardized APIs.

Device components



Figure 1: Device components

- 1. Battery connector (JST-XH 2Pin)
- 2. SIM card socket
- 3. Reset button
- 4. Status LED (RGB)
- 5. Connector for USB configuration adapter (Art.: #8000005)
- 6. MicroSD card socket
- 7. Connector for internal PCB antenna
- 8. Battery (3.6V | 13Ah) incl. velcro fluff (Art.: #3000581)
- 9. Pressure compensation element

Initial operation

To commission the gateway, a suitable SIM card must be inserted in the socket at position (2) if mobile radio is to be used for data upload instead of LoRaWAN. To do this, first slide the cover lock of the socket to the right and then open it upwards. During insertion, it is essential to ensure that the battery (1) is not connected. After inserting the SIM card, the cover must be folded down and the lock must be closed again by sliding it to the left.

The associated battery is equipped with velcro fluff, which is to be attached to the velcro hooks of the device at position (8) when inserting it. Make sure that the connecting cable of the battery is routed around the battery body as shown in Fig.1. Then connect the plug connector of the battery to the reverse polarity protected socket at position (1).

The device starts with the pre-configured parameters and begins an initial collection of metering data, followed by an upload of the data via Lo-RaWAN or cellular radio. The initial device configuration can be viewed via the Lobaro platform or was transmitted in advance in the form of a digital delivery bill.

The reset button (3) can be used at any time to reproduce the same behavior as when the battery was first connected, e.g. to start an initial readout during installation.

By means of the status LEDs (4) different operating modes of the firmware can be read. The different blinking patterns are described in the online manual, available at https://doc.lobaro.com.

The socket for an SD card (6) is suitable for holding a corresponding memory card. The locking mechanism works analogously to the SIM card



Only 3.6V batteries approved by Lobaro may be used with the gateway. The use of other batteries, especially without velcro fluff, is not permitted, as there would be no sufficient protection of the battery in the housing.



Only antennas approved by Lobaro may be connected to the MMCX antenna connector (7)!



The storage functionality for SD cards (6) may not be supported by all firmware versions.



The SIM card used must be activated for NB-IoT or LTE-M1 networks. The gateway configuration of the LTE connection (operator, APN, band) must match the SIM card used!

Gateway configuration

Reading and adjusting the gateway configuration is possible via the 6-pin configuration connector (5) and the separately available Lobaro USB configuration adapter in combination with the free PC-based 'Lobaro Main-tenance Tool' for Windows, Linux and MacOS.

Alternatively, if the network parameters are configured correctly, the con-figuration changes can also be made 'over-the-air' via the Lobaro IoT platform.



Details of the gateway configuration and available parameters can be found in the online manual at https://doc.lobaro.com.

Proper mounting and housing dimensions

The cover of the gateway is secured via four quick-release screws. These screws are loosened or tightened via a 90° turn. In addition, the housing has a lid loss protection.

The gateway is securely fastened to a wall or ceiling with the cover open using the four fastening points marked in red in Figure 3 and M4 screws of suitable length. After successful wall mounting, the cover must be closed again.



When opening the housing lid, the quick release screws must not be turned more than a 1/4 turn. Otherwise the screws may break off!

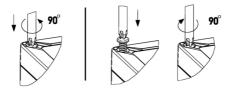


Figure 2: Quick-release screws lid (open | close)

The gateway must be securely screwed to a wall/ceiling using four suitable M4 screws and wall anchor, cf. red marking in figure 3.

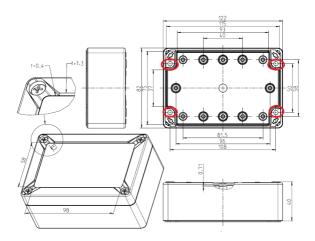


Figure 3: Housing measurements [mm]

When selecting the installation site, it is essential to ensure that the specified ambient conditions (see Technical data) can be maintained at all times.

The pressure compensation element (9) and the IP66 housing protection class allow the gateway to be operated outdoors.

Simplified CE declaration

i

Lobaro GmbH hereby declares that the LOB-GW-HYB-WMBUS is in compliance with Directives 2014/53/EU and 2011/65/EU. The full text of the EU Declaration of Conformity is available at the following Internet address:

https://doc.lobaro.com

Technical specifications

General		
	Туре	LOB-GW-HYB-WMBUS
	Purchase name Item number	Wireless M-Bus Gateway V3 8000162
Metering		0000102
Wittering	Wireless M-Bus	S1, C1/T1 Mode
	RX frequencies	S1, C1/T1 Mode 868.3 MHz, 868.95 MHz DIN EN 13757-4
	Standard Proprietary mode	Xylem SensusRF (BubbleUP)
	Typ. range	30 m (Indoor), 2-3 floors
	Typ. range	100 m (Outdoor), open space
	Memory capacity Whitelist filter	100 m (Outdoor), open space 500 telegrams, each 100 bytes ID, M-Field, CI-Field, Type
	Configuration	collection duration and intervals
Cellular		
	LTE networks LTE bands	Cat-NB1, Cat-NB2, Cat-M1 B3, B8, B20
	TX power	≤ 23 dBm
	Typ. range SIM card	network-dependent
	Data transfer	4FF (Nano-SIM) CoAP via UDP
	Encryption	DTLS (optional)
	Data format	CBOR bzw. JSOŃ
LoRaWAN	Protocol	Class A LoRaWAN 1.0.2 EU868
	TX power	\leq 14 dBm
	Activation Typ. range	Over-the-air activation (OTAA) up to 2 km, urban
	Typ. range	up to 10 km, open space
Antenna		
	Internal type	multiband PCB monopoles
Pattan	Ext. connector	on request
Battery	Approved type	SAFT LSH20
	Other types	on request
	Chemistry Voltage	Li-SOCl2 3.6 V
	Capacity	< 13 Ah
	Cont. current Weight	\leq 1.8 A \leq 120 g
	Connector	JST-XH 2-Pin
	Mounting	3M industrial velcro zip ties
Power	Normal / Idle	< 11
depends	RX Metering	$\leq 11 \text{ mW}$ $\leq 33 \text{ mW}$
on	RX LoRa	< 33 mW
operating mode	TX LoRa RX NB-loT	≤ 110 mW < 162 mW
	TX NB-IoT	1550 mW
	Sleep	\leq 36 μ W
Housing	Measurements	130 mm x 82 mm x 55 mm
	Material	Polycarbonate
	Screws	stainless steel V2A
	Weight Flammability class	220 g (incl. electronics) 960 °C V-2 (as per UL94)
	Protection class	IP66 (0.3 bar / 30 seconds)
	Color Resistance to	white IK08
	impact	1100
Environment	Rel. humidity	20, 70% (non-condensing)
Must be	Operating temp.	2070 % (non-condensing) -20 °C to 55 °C
followed!	Storage temp.	0 °C to 30 °C
	Installation height Installation height	\leq 2 m (above ground) \leq 2000 m (above sea level)



Radio frequencies and bands used

Harmonized radio bands used by the gateway, max. occupied bandwidths (BW) and transmission powers (TX power, EIRP). Unless otherwise indicated, the specified frequencies are used for both the transmit (TX, UL) and receive (RX, DL) directions.

Band	Modulation	BW kHz	Frequencies MHz	TX power dBm
L	LoRa	125	867.1, 867.3, 867.5, 867.7, 867.9	14
M	LoRa	125	868.1, 868.3, 868.5	14
M	LoRa	250	868.3	14
P	LoRa	125	869.525	14
M	FSK	200	868.3	Only RX
M	FSK	200	868.42	Only RX
N	FSK	200	868.95	Only RX
B8	Cat-NB1 2	200	UL:880915, DL:925960	23
B20	Cat-NB1 2	200	UL:832862, DL:791821	23
B3	Cat-NB1 2	200	UL:17101785, DL:18051880	23
B8	Cat-M1	1800	UL:880915, DL:925960	23
B20	Cat-M1	1800	UL:832862, DL:791821	23
B3	Cat-M1	1800	UL:17101785, DL:18051880	23

Proper disposal of this product

In Germany and for products delivered directly from Germany:

Due to the applicable regulations, the electrical and electronic devices of Lobaro GmbH may not be disposed of via the public collection points for electrical devices!

In order to create possibilities for the return of old devices, we cooperate with several qualified recycling companies. If a device manufactured by us has become an old device and you would like to return it, please contact:



https://www.take-e-way.de/leistungen/ elektrogesetz-weee-elektrog/b2b-altgeraete-ruecknahme-entsorgung

and fill out the questionnaire.

In countries of the European Union outside Germany:

Information on correct disposal can be obtained from your dealer or the responsible distributor.

Safety instructions Lithium batteries

- Store protected from moisture
- Keep out of reach of children
- Do not heat above 85 °C
- Do not short circuit
- Do not open or damage
- Do not recharge



Batteries may only be replaced by qualified personnel. The connector plug only fits in one position to ensure correct polarity installation. Therefore, do not apply excessive force when plugging in.



The battery may only be connected during regular operation. Deep discharge due to persistent error conditions, e.g. if the device cannot establish a connection or send data for long periods, must be avoided.

Warranty and guarantee

Warranty and guarantee claims can only be asserted if the device has been used as intended and the technical specifications and applicable technical rules have been observed.

Technical specifications

General		
	Туре	LOB-GW-HYB-WMBUS
	Purchase name	Wireless M-Bus Gateway V3
	ltem number	8000162
Metering		
	Wireless M-Bus	S1, C1/T1 Mode
	RX frequencies	868.3 MHz. 868.95 MHz
	Standard	868.3 MHz, 868.95 MHz DIN EN 13757-4
	Proprietary mode	Xylem SensusRF (BubbleUP)
	Typ. range	30 m (Indoor), 2-3 floors
	Typ. range	100 m (Outdoor), open space
	Memory capacity	500 telegrams, each 100 bytes ID, M-Field, CI-Field, Type
	Whitelist filter	ID, M-Field, CI-Field, Type
	Configuration	collection duration and intervals
Cellular		
Condita	LTE networks	Cat-NB1, Cat-NB2, Cat-M1
	LTE networks LTE bands	Cat-NB1, Cat-NB2, Cat-M1 B3, B8, B20
	TX power	≤ 23 dBm
	Typ. range	network-dependent
	SÍM card	4FF (Nano-SIM)
	Data transfer	CoAP via UDP
	Encryption	DTLS (optional)
	Data format	CBOR bzw. JSOŃ
LoRaWAN		
	Protocol	Class A LoRaWAN 1.0.2 EU868
	TX power	≤ 14 dBm
	Activation	Over-the-air activation (OTAA)
	Typ. range	up to 2 km, urban
	Typ. range	up to 10 km, open space
Antenna		
	Internal type	multiband PCB monopoles
	Ext. connector	on request
Battery		
	A second second second second	
	Approved type	SAFT LSH20
	Approved type Other types	
	Other types	SAFT LSH20 on request Li-SOCI2
	Approved type Other types Chemistry Voltage	on request Li-SOCl2 3.6 V
	Other types Chemistry Voltage Capacity	on request Li-SOCl2 3.6 V < 13 Ab
	Other types Chemistry Voltage Capacity Cont. current	on request Li-SOCl2 3.6 V < 13 Ab
	Other types Chemistry Voltage Capacity Cont. current Weight	on request Li-SOCI2 $3.6 V \le 13 Ah \le 1.8 A \le 1.20 g$
	Other types Chemistry Voltage Capacity Cont. current Weight Connector	on request Li-SOCI2 3.6 V ≤ 13 Ah ≤ 1.8 A ≤ 120 g JST-XH 2-Pin
	Other types Chemistry Voltage Capacity Cont. current Weight	on request Li-SOCI2 $3.6 V \le 13 Ah \le 1.8 A \le 1.20 g$
Power	Other types Chemistry Voltage Capacity Cont. current Weight Connector	on request Li-SOCl2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties
	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle	on request Li-SOCl2 3.6 V ≤ 13 Ah ≤ 1.8 A ≤ 120 g JST-XH 2-Pin 3M industrial velcro zip ties < 11 mW
depends	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering	on request Li-SOCI2 3.6 V $\leq 13 \text{ Ah}$ $\leq 1.8 \text{ A}$ $\leq 120 \text{ g}$ JST-XH 2-Pin 3M industrial velcro zip ties $\leq 11 \text{ mW}$ < 33 mW
depends on	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa	on request Li-SOCI2 $3.6 \text{ V} \leq 13 \text{ Ah} \leq 1.8 \text{ A} \leq 120 \text{ g}$ JST-XH 2-Pin 3M industrial velcro zip ties $\leq 11 \text{ mW} \leq 33 \text{ mW} \leq 33 \text{ mW}$
depends on operating	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 110 mW
depends on	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa TX LoRa RX NB-IoT	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 310 mW \leq 100 mW
depends on operating	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa RX NB-IoT TX NB-IoT	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 1550 mW
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa TX LoRa RX NB-IoT	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 310 mW \leq 100 mW
depends on operating	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa RX NB-IoT TX NB-IoT TX NB-IoT Sleep	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 36 μ W
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa RX LoRa RX NB-IoT TX NB-IoT Sleep Measurements	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm × 82 mm × 55 mm
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa TX LoRa TX LoRa TX NB-IoT TX NB-IoT Sleep Measurements Material	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa RX NB-IoT TX NB-IoT TX NB-IoT TX NB-IoT Sleep Measurements Material Screws	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 162 mW \leq 1550 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa RX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 162 mW \leq 1550 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa TX LoRa TX LoRa TX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 162 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94)
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa RX NB-IoT TX NB-IoT TX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm x 82 mm x 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds)
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa RX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class Color	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds) white
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa TX LoRa TX LoRa TX LoRa TX B-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class Color Resistance to	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm x 82 mm x 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds)
depends on operating mode	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa RX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class Color	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds) white
depends on operating mode Housing	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa RX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class Color Resistance to impact	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 162 mW \leq 1550 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds) white IK08
depends on operating mode Housing	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa TX LoRa TX LoRa TX LoRa TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class Color Resistance to impact Rel. humidity	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 10 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds) white IK08 2070 % (non-condensing)
depends on operating mode Housing Environment	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa RX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class Color Resistance to impact	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 162 mW \leq 162 mW \leq 1550 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds) white IK08
depends on operating mode Housing Environment Must be	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa RX LoRa RX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class Color Resistance to impact Rel. humidity Operating temp. Storage temp. Installation height	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 10 mW \leq 162 mW \leq 162 mW \leq 36 μ W 130 mm x 82 mm x 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds) white IK08 2070 % (non-condensing) -20 °C to 55 °C 0 °C to 30 °C \leq 2 m (above ground)
depends on operating mode Housing Environment Must be	Other types Chemistry Voltage Capacity Cont. current Weight Connector Mounting Normal / Idle RX Metering RX LoRa TX LoRa RX NB-IoT TX NB-IoT Sleep Measurements Material Screws Weight Flammability class Protection class Color Resistance to impact Rel. humidity Operating temp.	on request Li-SOCI2 3.6 V \leq 13 Ah \leq 1.8 A \leq 120 g JST-XH 2-Pin 3M industrial velcro zip ties \leq 11 mW \leq 33 mW \leq 33 mW \leq 33 mW \leq 110 mW \leq 33 mW \leq 110 mW \leq 36 μ W 130 mm × 82 mm × 55 mm Polycarbonate stainless steel V2A 220 g (incl. electronics) 960 °C V-2 (as per UL94) IP66 (0.3 bar / 30 seconds) white IK08 2070 % (non-condensing) -20 °C to 55 °C 0 °C to 30 °C



Harmonized radio bands used by the gateway, max. occupied bandwidths (BW) and transmission powers (TX power, EIRP). Unless otherwise indicated, the specified frequencies are used for both the transmit (TX, UL) and receive (RX, DL) directions.

Band	Modulation	BW kHz	Frequencies MHz	TX power dBm
L	LoRa	125	867.1, 867.3, 867.5, 867.7, 867.9	14
М	LoRa	125	868.1, 868.3, 868.5	14
M	LoRa	250	868.3	14
P	LoRa	125	869.525	14
М	FSK	200	868.3	Only RX
M	FSK	200	868.42	Only RX
N	FSK	200	868.95	Only RX
B8	Cat-NB1 2	200	UL:880915, DL:925960	23
B20	Cat-NB1 2	200	UL:832862, DL:791821	23
B3	Cat-NB1 2	200	UL:17101785, DL:18051880	23
B8	Cat-M1	1800	UL:880915, DL:925960	23
B20	Cat-M1	1800	UL:832862, DL:791821	23
B3	Cat-M1	1800	UL:17101785, DL:18051880	23

Proper disposal of this product

In Germany and for products delivered directly from Germany:

Due to the applicable regulations, the electrical and electronic devices of Lobaro GmbH may not be disposed of via the public collection points for electrical devices!

In order to create possibilities for the return of old devices, we cooperate with several qualified recycling companies. If a device manufactured by us has become an old device and you would like to return it, please contact:

https://www.take-e-way.de/leistungen/ elektrogesetz-weee-elektrog/b2b-altgeraete-ruecknahme-entsorgung

and fill out the questionnaire.

In countries of the European Union outside Germany:

Information on correct disposal can be obtained from your dealer or the responsible distributor.

Safety instructions Lithium batteries

- Store protected from moisture
- Keep out of reach of children
- Do not heat above 85 °C
- Do not short circuit
- Do not open or damage
- Do not recharge
- Batteries may only be replaced by qualified personnel. The connector plug only fits in one position to ensure correct polarity installation. Therefore, do not apply excessive force when plugging in.
- The battery may only be connected during regular operation. Deep discharge due to persistent error conditions, e.g. if the device cannot establish a connection or send data for long periods, must be avoided.

Warranty and guarantee

Warranty and guarantee claims can only be asserted if the device has been used as intended and the technical specifications and applicable technical rules have been observed.



S/N 4999

Type:





Manufacturer



Lobaro GmbH | Stadtdeich 7 | D-20097 Hamburg | Germany support@lobaro.de | www.lobaro.de

Important notes

- This document is a quick reference guide. A supplementary product description is available online at https://doc.lobaro.com.
- The device is powered by an internal, replaceable 3.6V lithium battery (Li-SOCI2), which is subject to transport restrictions. Hazardous material class: 9A. The applicable transport regulations must be met when transporting the device incl. inserted battery. The battery must not be connected during transport! The test certificates for the approved batteries are available on request.
- This product must be installed professionally and in accordance with the specified installation guidelines and may therefore only be installed by trained and qualified personnel. For installation in structures with increased fire protection requirements, e.g. staircases, escape routes, the installation company or the qualified personnel must ensure that the specific requirements according to local building regulations are fulfilled!
- These instructions must be read carefully before initial operation, followed and kept for the entire service life of the device.

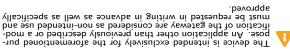
Intended use



The Lobaro Wireless M-Bus Gateway V3 receives data telegrams from up to 500 utility meters with standardized 868 MHz wireless M-Bus interface and forwards them downstream via NB-IoT cellular radio or alternatively LoRaWAN to the Internet for further processing or evaluation.

In addition to the unidirectional wireless M-Bus modes C1, T1 and S1, the proprietary Sensus RF radio protocol is also supported by the radio receiver in the gateway.

The previously received meter data is transferred to the Lobaro IoT plat-form, optionally encrypted via DTLS, and can be viewed there or downloaded as a CSV file. Alternatively, the connection of other downstream third-party systems via standardized APIs from the Lobaro platform is easily possible.



Mode of operation

- 1. The gateway is in energy-saving mode for the majority of its operating
- ·(sıələ 2. The device wakes up at freely configurable intervals ('CRON param-
- memory. 'cmodeDurSec parameter') and buffered unchanged in the internal are received for the configured time duration (among others 3. Encrypted or unencrypted Wireless M-Bus (868 MHz) telegrams
- types or 'CÌ fields' 4. Meter reception can be restricted with filters to specific device IDs,
- radio is stopped again. 5. After the configured period of time, the collection of meter data by
- stream IoT platform or LoRaWAN network server on the Internet. 6. The data is sent via NB-IoT cellular radio or LoRaWAN to the down-
- ·sλəγ The platform decrypts (on demand) the consumption data with stored
- The consumption values or meter telegrams are available in table view, as CSV download or via standardized APIs.

Device components



Figure 1: Device components

- 1. Battery connector (JST-XH 2Pin)
- 2. SIM card socket
- 3. Reset button
- 4. Status LED (RGB)
- 5. Connector for USB configuration adapter (Art.: #800005)
- MicroSD card socket
- 7. Connector for internal PCB antenna
- Battery (3.6V | 13Ah) incl. velcro fluff (Art.: #3000581)
- 9. Pressure compensation element

Initial operation

it to the left. cover must be folded down and the lock must be closed again by sliding that the battery (1) is not connected. After inserting the SIM card, the right and then open it upwards. During insertion, it is essential to ensure of LoRaWAN. To do this, first slide the cover lock of the socket to the socket at position (2) if mobile radio is to be used for data upload instead To commission the gateway, a suitable SIM card must be inserted in the

battery to the reverse polarity protected socket at position (1). battery body as shown in Fig.1. Then connect the plug connector of the tached to the veloro hooks of the device at position (8) when inserting it. The associated battery is equipped with veloro fluff, which is to be at-

digital delivery bill. via the Lobaro platform or was transmitted in advance in the form of a The device starts with the pre-configured parameters and begins an initial collection of metering data, followed by an upload of the data via Lo-RaWN or cellular radio. The initial device onfiguration can be viewed

readout during installation. behavior as when the battery was first connected, e.g. to start an initial The reset button (3) can be used at any time to reproduce the same

can be read. The different blinking patterns are described in the online manual, available at https://doc.lobaro.com. By means of the status LEDs (4) different operating modes of the firmware

memory card. The locking mechanism works analogously to the SIM The socket for an SD card (6) is suitable for holding a corresponding

of the battery in the housing. gateway. The use of other batteries, especially without velcro fluff, is not permitted, as there would be no sufficient protection Only 3.6V patteries approved by Lobaro may be used with the

MMCX antenna approved (7)! Only antennas approved by Lobaro may be connected to the

by all firmware versions. The storage functionality for SD cards (6) may not be supported

(operator, APN, band) must match the SIM card used! networks. The gateway configuration of the LTE connection The SIM card used must be activated for NB-IoT or LTE-M1

Gateway configuration

figuration adapter in combination with the free PC-based 'Lobaro Main-tenance Tool' for Windows, Linux and MacOS. configuration connector (5) and the separately available Lobaro USB con-Reading and adjusting the gateway configuration is possible via the 6-pin

.miottelq Alternatively, if the network parameters are configured correctly, the con-figuration changes can also be made 'over-the-air' via the Lobaro IoT

.mos.orsdof.sob//:sqttf ts leunem anilno adt ni bnuof ad nes Details of the gateway configuration and available parameters

Proper mounting and housing dimensions

has a lid loss protection. The cover of the gateway is secured via four quick-release screws. These screws are loosened or tightened via a 90° turn. In addition, the housing

.niege using the four fastening points marked in red in Figure 3 and M4 screws of suitable length. After successful wall mounting, the cover must be closed The gateway is securely fastened to a wall or ceiling with the cover open

not be turned more than a 1/4 turn. Otherwise the screws may When opening the housing lid, the quick release screws must



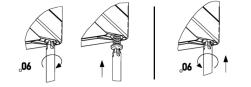


Figure 2: Quick-release screws lid (open | close)

tigure 3. four suitable M4 screws and wall anchor, cf. red marking in The gateway must be securely screwed to a wall/ceiling using

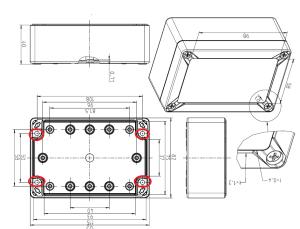


Figure 3: Housing measurements [mm]

be maintained at all times. that the specified ambient conditions (see Technical data) can When selecting the installation site, it is essential to ensure

protection class allow the gateway to be operated outdoors. The pressure compensation element (9) and the IP66 housing

Simplified CE declaration

mity is available at the following Internet address: 2011/65/EU. The full text of the EU Declaration of Confor-WMBUS is in compliance with Directives 2014/53/EU and Lobaro GmbH hereby declares that the LOB-GW-HYB-

mos.orsdof.sob/\:sqttd