

Firmware & Changelog (wMBUS LoRaWAN)

Wireless mBUS over LoRaWAN Bridge

The latest firmware version is **v2.6.1** (*released 2021-02-25*)



Which firmware version am I using right now?

You can see the firmware version of your device by inspecting the USB log output in our PC maintenance tool. Or use the information send in the daily status uplink message send on LoRaWAN port 1 (see [Status Packet](#)).



How do I update the firmware?

Please refer to [Updating Firmware](#) on the page about our Lobar Maintenance Tool.

Firmware Downloads



Select the correct Hardware revision

Due to continuous development there exist two main hardware revisions of the Lobar wMBUS over LoRaWAN bridge hardware. **Please use the images below to select the correct firmware file for your given hardware.**

The (dedicated) revision 2.x has a simpler production process which helped us to optimize bigger deployments.

Hardware Revision 2.x (active since 2020)

[blocked URL](#)

Download:

app-wMbusLoraBridge-2.9.2+hw2.hex	hardware v2.x	current release
app-wMbusLoraBridge-2.7.0+hw2.hex	hardware v2.x	

Hardware Revision 1.x (active since 2017)

[blocked URL](#)



Please note revisions 1.x are no longer the default variant since 02/2020

The v1 hardware revisions are still active but only on special sales inquiry!

Please [contact Lobar](#) if you are interested in revisions 1.x hardware.

Download (HW1):

app-wMbusLoraBridge-2.7.0+hw1.hex	hardware v1.x	current release
app-wMbusLoraBridge-2.6.1+hw1.hex	hardware v1.x	

Old v1.x firmware



Old v1.x firmware version

The v1.x firmware branch is no longer recommended for use.

If you rely on these older version you can find it at the end of the [v1 documentation](#).

Release changelog

2.9.2 - 2023-03-27

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 - [2.4.0 - 2020-02-25](#)

Added

- Config Parameter `TimeSync` now supports values `-1` to `-1440` for setting minutes instead of days (e.g. value `-180` for sync every 3 hours).
- Telegram filters now support blacklisting. Add a single `!` in front of a filter's list to change the list to be a blacklist. E.g.: `typFilter=!07,04` will exclude any water meters and heat meters.

Fixed

- Use correct prescaler for RTC when using LSI.
- Fix UART Parity for logging to work with recent versions of Lobar Tool under Linux.

2.9.1 - not released

Fixed

- Reactivate Sensus-RF.

2.9.0 - 2023-02-13 (not released)

Changed

- Use LSI instead of LSE for RTC
- LSE could stop in high humidity conditions, LSI not.

2.8.0 - 2023-02-13

Fixed

- Fix Log-Uart-parity to work with newer Lobar-Tools under Linux for dedicated board.

Changed

- Use Hash-Store instead of wMBus-Store.
- Disable LoRaWAN testing mode.

2.7.0 - 2021-08-24

Added

- Introduce CI-Field Filter to wMBus telegram filters
- Add new Config Parameter `ciFilter` for new feature.

2.6.1 - 2021-02-25

Fixed

- Filter list for Sensus-RF now supports IDs with prefixes other than `10`.

Changed

- Sensus-RF IDs for Filter list must now be given full as 11 digits (without dashes `-`).

2.6.0 - 2021-02-16

Added

- Support for Xylem Sensus RF Bubbel Up Telegrams (X-Mode)
- New Config Parameter: `xmodeDurSec`

2.5.18 - 2021-01-11

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Fixed

- Fix issue when sending multiple FOpts in one Uplink (LoRaWAN).

2.5.17 - 2020-12-17

Fixed

- Fix filtering of telegrams by manufacturer ID for telegrams that use a non globally unique address (highest bit in M-Field set to 1).

2.5.16 - 2020-10-26

Fixed

- Fix an issue triggered by certain unusual bytes in the air that could lead to temporary problems on wMBus reception (that could result in receivable telegrams not being received).

2.5.15 - 2020-10-19

Fixed

- Fix a bug that prevented the reception of certain wMBus-Telegrams C-Mode Class-A (valid telegrams of a certain length where falsely rejected as having an invalid CRC).

2.5.14 - 2020-09-28

- This release is functionally identical to 2.5.13. There is no benefit in upgrading from 2.5.13 to 2.5.14 if you are using HW2.

Fixed

- Shorten logging message to make firmware for HW1 fit into device's flash.

2.5.13 - 2020-09-24

Fixed

- Fix handling of Type B wMBus Telegrams

2.5.12 - 2020-09-09

Fixed

- Fix possible OOM failure on complicated Cron Expressions.

2.5.11 - 2020-08-18

Added

- Add config parameter `TxPower` to change maximal TX Power, with default of 13dBm to specialised FW.

2.5.10 - 2020-08-14

Added

- Check config parameters `DevEUI`, `JoinEUI`, and `AppKey` after boot.

Changed

- Invalid values for config parameter `NwkKey` are now treated like value `00000000000000000000` (that is, running device in LoRaWAN 1.0, instead of 1.1 with potential fallback to 1.0).
- Remove `OpMode` from config parameters.

2.5.9 - 2020-08-10

Added

- Adjust HW1 specific code to implement recent features originally developed on HW2.

2.5.8 - 2020-08-07

Fixed

- `NewChannelReq` can remove channels by setting the Frequency to 0 instead of just disable them
- Fix bug where `NBTrans > 1` leads to multiple responses from LoRaWAN stack

2.5.7 - 2020-08-07

Added

- Add `PowerOn SelfTests` for SRAM, EEPROM, `VoltageMeasuring`
- Lobawan 2.0.1, request ACKs to check network connection for `lostReboot`
- Skip random timeout on first upload

2.5.6 - 2020-08-06

Fixed

- LoRaWAN Test support command `0x05` (`LinkCheckReq`)

2.5.5 - 2020-08-04

Added

- Brown-out protection for HW2 (below 2.5V, recovery at 2.6V).

Changed

- Send ACK for remote reboot request before rebooting.

2.5.4 - 2020-07-31

Fixed

- LED was on after wakeup from deep sleep
- Latest version of LoRaWAN stack that passes all LCTT tests

Added

- Allow to enter testmode for LCTT by setting the `DevEUI` to `0001020304050607`

2.5.3 - 2020-07-21

Changed

- use Lobawan v1.3.0
- use single heap allocator for freeRTOS and newlib

2.5.2 - 2020-06-17

Changed

- Time Sync only one attempt at bootup
- use Lobawan v1.2.2, fixes issues with OTAA Join under certain conditions

2.5.1 - 2020-05-15

Changed

- Adjust to Lobawan v1.2.0

2.5.0 - 2020-04-02

Added

- Remove learning mode.
- Also send status message when not collecting telegrams.
- Add second cron expression for status message.
- Add remote command for triggering collection of telegrams outside of cron.
- Add `listenOnBoot` config parameter allowing to disable collection on boot.
- Send Status message before listening on boot.

Removed

- Remove learning mode.

Changed

- Status message has an additional byte "flags"

2.4.0 - 2020-02-25

- Add new Payload Format 2 with Timestamp and RSSI.

2.3.10 -2020-02-21

- Add version number of LoRaWAN-Stack to log.
- Fix crash on append function of remote config.

2.3.9 - 2020-01-21

- Fix minor memory Leak in wMBus parser

2.3.8 - 2020-01-09

- Enhance wMBus reception.

2.3.7 - 2020-01-08

- Internal use only

2.3.6 -2020-01-07

- Increase wireless MBUS C1/T1 mode receive bandwidth
- Change detection method for incoming C1/T1 mode telegrams

2.3.5 - 2019-12-23

- Improve wireless M-BUS C1/T1 mode receive sensitivity

2.3.4 - 2019-12-13

- Improve reset line usage (dedicated pcb version)
- Fix issue with bad measurement timing for status message battery voltage (std. pcb version)

2.3.3 - 2019-12-10

- Optimize LoRaWAN RX1/RX2 window timing + add more precise downlink logs

2.3.2 - 2019-11-18

- Fix crash on receiving certain long non-standard telegrams.

2.3.1 - 2019-11-13

- Improve Filtering of non-standard wMBus-telegrams

2.3.0 - 2019-11-12

- Migrate to alternative dedicated board
- Fix Deep Sleep settings on dedicated board
- Fix rx/handling of S1-mode CRCs of unencrypted telegrams in wMBUS driver

2.2.0 - 2019-09-13

- Integrated with new LoRaWAN stack, now supporting v1.1, Class C, downlinks, ...

2.1.3 - 2019-03-11

- New Parameter: learnedListenSec to define how long to listen when meters was learned

2.1.2 - 2019-03-11

- Packet size depending on SF with payloadFormat = 1

2.1.1 - 2019-02-20

- New Parameter: timeSync - request time with status packet and upload status packets until we got a valid time
- New Parameter: payloadFormat - 0 = as in older versions, 1 = new split format including receive timestamp (see below)
- The upload is randomly delayed by 1-30 seconds to avoid collisions

New payload Format "1":

LoRaWAN Port: 101 Message: <5 byte Timestamp UTC><raw wMbus Telegramm>

Messages are split into chunks with 1 prefix byte: Prefix byte bits: <7..2 RESERVED><1 LAST><0 FIRST> The FIRST bit is set on the first packet. The LAST bit is set on the last packet. Together with the LoRaWAN framecounter, a whole message can be reconstructed in the backend.

2.0.0 - 2019-02-12

- Learning mode to learn up to 20 devices with their intervals.
- New Parameter: learningMode - set to true to allow deep sleep based on learned intervals (default: false)
- New Parameter: meterIntervalSec - predefine the sending interval of the meter, so it needs not to be learned (default: 0 = learn intervals)

Learning mode: Up to 20 devices are learned. When received the first time, the device is added to the list. When received the second time the interval is calculated. The second step is omitted when "meterIntervalSec" is set to any value but 0. When learning was completed during one listening interval the device will only wakeup 10 seconds before and after receiving the learned meters in future. When missing one device for whatever reason, the bridge will start the learning mode again and stay awake for one full listening period.

While receiving learned sensors the maximum receive interval is doubled but ends as soon as all learned devices are received.

1.6.0 - 2019-05-20

- Add additional config parameter "cmodeCompatibility" to allow wideband receive as fallback
- fix issue with crc validation of unencrypted meters

1.5.8 - 2019-02-18

- Reduce chance to miss wMbus packet when there is a lot of traffic

1.5.7 - 2019-01-07

- Fix issue with very large T1 mode telegrams

1.5.6 - 2018-11-20

- Support new FRAM memory type
- Improve random generator behaviour

1.5.5 - 2018-11-14

- internal use only

1.5.4 - 2018-10-25

- Support LoRaWAN NBTrans > 1
- Don't allow to set unsupported FSK DR during ADR

1.5.3 - 2018-10-18

- Fix bug with not working deduplication of same wMBUS messages during listen intervals

v1.5.2

- Support LoRaWAN Rx1 DataRate Offset

v1.5.1

- New parameter "resetHours" (default = 0): Hours after which the firmware will reset and rejoin the network (0 = never)

v1.5.0

- Changed duration parameters to seconds: cmodeDur -> cmodeDurSec and smodeDur -> smodeDurSec
- Status packet is 2 byte shorter, version is encoded with 3 bytes now
- Upload correct battery status in DevStatusReq

LoRaWAN Changes:

- Support ADR ChMask to disable Channels
- Restore default channels when loosing uplink connectivity
- Support LoRaWAN NewChannelReq MAC command
- Support LoRaWAN DChannelReq MAC command
- Support LoRaWAN RxParamSetupReq MAC command
- No LoRaWAN MAC Commands are dropped when unknown MAC command is received
- Fix bug with endless loop when unknown LoRaWAN MAC command was received
- Improve debug logs of LoRaWAN stack

v1.4.1

- Bugfix: Allow big wMBUS raw messages > 160 Bytes in T1 mode
- Improved cfg parameter explanation texts
- Improved wmbus telegram terminal output

v1.4.0

- New Parameters for ADR (OTAA = false): AppSKey, NetSKey, DevAdr
- New Parameter: OTAADelay to configure the delay between OTAA joins on fail + [0% ... 30%]
- Bugfix: Support LoRaWAN Status MAC command
- Bugfix: TxPower was not considered
- Requires Lobar Tool > v1.3.1 for configuration

v1.3.1

- Fix ADR Bugs

v1.3.0

- Allow to enable ADR (default: enabled)

v1.2.0

- Increase config version (Config will be reset)
- Introduce LoRaWAN default parameter

v1.1.0

- New Filter: device id (devFilter), device type (typFilter), manufacturer (mFilter)