

# Wireless M-BUS Gateway5 configuration manual for LTE-M1 or CAT1/4G

using optional LansenConfigurator 1.8.0.0



Lansen configuration manual for Lansen wM-Bus GW5 (MQTT) Rev: C

Introduction	4
MQTT traffic	4
Packet sent by gateway with wM-Bus container	5
Sending configuration packets to a gateway	7
Alternative 1: M-BUS header for encrypted and non-encrypted configuration packets	7
Alternative 2: M-BUS header only for non-encrypted configuration data.	8
The response from the gateway	9
Short Status packet	
Status packet	12
Ready-for-conf packet	
Indications of a gateway	19
Visual and sound indications during startup sequence of a gateway	19
Visual Indications	19
Connection sequence to MQTT for uploading data (battery gateway)	20
Connection sequence to MQTT for uploading data (mains gateway)	20
Notes regarding SIM-card and PIN	21
Notes regarding gateway antennas	21
Power consumption	21
Battery lifetime (battery gateway)	22
Using program Lansen Configurator for configuration of the gateway	24
Connect to the gateway over wM-Bus interface using Lansen USB-dongle	24
Connect to the gateway over MQTT interface using Lansen Configurator	26
Connect to the gateway using a USB to USB-C cable (wired)	28
Configuration settings for a gateway	
Settings in the gateway	31
Basic-tab	31
AES key	31
MBUS mode	
Min install RSSI	32
Antenna gain	32
Timers-tab	
Suppression timer	
Start time	
Listen/pause timers	
Magnet reed timer	34
Route messages	34
Meters-tab	35
Automatic meter installation	

Number of meters	35
Add meter(s) manually to internal routing list	35
Add meter(s) from file to internal routing list	
Delete meter(s)	
Clock-tab	
Bridge-tab	
LTE-M1 and CAT1/4G gateway specific settings	
NTP	
Extra screenshots from the Meters tab with details	
Connecting and working with Lansen Configurator (battery gateway)	
Upgrade firmware	45
LTE gateway	45

## Introduction

- This device from Lansen is a lightweight gateway that is made for receiving wM-Bus data and transmit the data using LTE M1 or CAT1/4G, depending on variant, to an MQTT server.
- The data received is timestamped and once connection to the MQTT service is active the data is transmitted to the specified MQTT server.
- To maintain full data integrity, the dataflow through the gateway is NOT decrypted. No encryption keys for the dataflow are stored in the gateway, however, the configuration of the gateway can be protected using a unique AES128 encryption key which is preprogrammed into the gateway during production. This ONLY protects the configuration data.
- Packets are sent with Quality of Service (QoS) set to 0, i.e., the MQTT server should not reply on messages. TCP/IP is handling transmission, ACK, and quality of service automatically.
- The gateway can be configured over the wM-Bus interface using, for example, a Lansen USB-dongle (LAN-WMBUS-D1/D2-TC), through a USB-C cable, a wM-Bus compatible transceiver, or via the MQTT interface.
- The gateway can run either on mains power or battery.
- The gateway support in-field upgrade of the firmware. The upgrade can be requested by the MQTT or wM-Bus interface.

## **MQTT** traffic

This document describes how to interpret data packages from a gateway which support Message Queueing Telemetry Transport (MQTT).

#### Note: The number 01234567 below is an example of a serial number for a gateway.

Data is posted from the gateway on topic LAS/W/D/01234567.

Configuration to the gateway should be posted on topic LAS/W/C/01234567.

Response of configuration from the gateway are posted on topic LAS/W/R/01234567.

Gateway ready to accept configuration data is posted on topic LAS/W/I/01234567.

Packets are sent with Quality of Service (QoS) set to 0, i.e., the MQTT server should not reply on message. TCP/IP is handling transmission, ACK, and QoS, automatically.

If connection is lost, data is stored on the gateway in its flash memory. This is also the case for battery driven devices.

If connection is lost during a transmission the gateway will resend the not yet delivered telegram to the server once connection is active again.

Below is an example packet as sent from the gateway where wM-Bus data is in blue and the MQTT header is in red. The received WMBUS packet in yellow.

**30** A0 01 00 10 4C 41 53 2F 57 2F 44 2F 30 30 30 34 36 31 35 33 68 88 88 68 08 FD 72 97 42 04 00 33 30 0B 32 58 00 00 00 0C 78 53 61 04 00 06 6D 58 84 95 DE 26 5B 01 FD 71 A3 8C 40 78 97 42 04 00 81 40 FD F1 94 74 00 0D FD 3B 55 54 44 33 30 97 42 04 00 0B 32 7A C4 00 00 40 2F 2F 04 FD 3A D3 C4 00 00 82 40 FD 3A 1E 01 02 FD 0F 95 00 81 80 40 FD 3A 00 84 C0 40 FD 3A A6 99 00 00 42 FD 3A 19 00 82 01 FD 3A 87 05 C1 01 FD 3A 7F 82 02 FD 3A E0 01 06 6D 1A 04 95 DE 26 00 02 FD 46 0B 0D B2 16

## Packet sent by gateway with wM-Bus container

The data is packed into a wM-Bus container data record which is represented by the table below. Example packet complete MQTT packet:

Informatio	n						
DR1	Represents the time when package was received						
DR2	Represents the signal strength for the reception of the received package						
	Note: Interpret the value using two's complement.						
DR3	If packet was from a repeater the repeater serial number is written here, otherwise this value is 0xFFFFFFFF						
DR4	RSSI value that the repeater received the packet. Relative RSSI 0-100, 0 is the best and 100 is the worst. 0xFF means the value is not used.						
DR5	Wireless M-Bus data received.						
		_		Byte data	Laver		
Byte No.	Field Name	Content	Info	(example)			
1	Start	Start-byte		0x68			
2	L-Field	Telegram length	If packet is longer than 255 then both	0x45	ink		
3	L-field	Telegram length	the L-fields are the same.	0x45	ata Li		
4	Start	Start-byte		0x68	Ď		
5	C-Field	ACC-DMD		0x08			
6	A-Field	Primary addressing	0xFD = Use secondary addressing	0xFD			
7	CI-Field	Long header (0x72)		0x72			
8	ID-Field	Identification number (LSB)		0x00			
9	ID-Field	Identification number	<b>Example:</b> 33221100	0x11			
10	ID-Field	Identification number	<b>Example.</b> 35221100	0x22			
11	ID-Field	Identification number (MSB)		0x33	t		
12	Manufacturer	Manufacturer code (LSB)	LAS	0x33	bc		
13	Manufacturer	Manufacturer code (MSB)		0x30	sur		
14	Version	Version		0x07	Lr:		
15	Туре	Device type		0x1B			
16	Acc.	Access number		0x01			
17	Status	Errors and alerts		0x00			
18	Config.	Configuration field	<b>Example:</b> Encryption off	0x00			
19	Config.	Configuration field	F	0x00			
20	ID-Field	DIF	8-digit BCD	0x0C			
21	ID-Field	VIF	Fabrication number	0x78			
22	ID-Field	Gateway serial number (LSB)		0x08			
23	ID-Field	Gateway serial number	Example: 0000008	0x00			
24	ID-Field	Gateway serial number		0x00			
25	ID-Field	Gateway serial number (MSB)	49 hit integer	0x00			
26	DR1		40-bit integer	0x06	Application		
27	DR1	VIF Descrived time (LCD)	Time Type I format	0x6D			
28	DR1	Received time (LSB)		0x02			
29	DR1	Received time		0x01			
30	DR1	Received time	Example: 2000-01-01 00:01:02	0xC0			
32	DR1	Received time		0x01			
32	DR1	Received time (MSP)		0x01			
	DKI	Received time (WISD)		0x00			
34	DR2	DIF	8-bit integer	0x01			
35	DR2	VIF	Extension	0xFD			

## Lansen configuration manual for Lansen wM-Bus GW5 (MQTT) Rev: C

36	DR2	VIF	RSSI	0x71	
37	DR2	Value	Example: 118	0x76	
38	DR3	DIF	8 digit BCD	0x8C	
39	DR3	DIFE	Subunit 1	0x40	
40	DR3	VIF	Fabrication number	0x78	
41	DR3	Repeater serial number (LSB)		0x09	
42	DR3	Repeater serial number	Examples 0000000	0x00	
43	DR3	Repeater serial number	Example: 0000009	0x00	
44	DR3	Repeater serial number (MSB)		0x00	
45	DR4	DIF	8-bit integer	0x81	
46	DR4	DIFE	Subunit 1	0x40	
47	DR4	VIF	Extension	0xFD	
48	DR4	VIFE	RSSI	0xF1	_
49	DR4	VIFE	Relative deviation	0x94	loc
50	DR4	VIFE	Multiplier (0.01)	0x74	ati
51	DR4	Value	RSSI of repeater (0-100%) Note: 0xFF = Not used Example: 70	0x46	Applic
52	DR5	DIF	Variable length	0x0D	
53	DR5	VIF	Extension	0xFD	
54	DR5	VIFE	Data container for wireless M-Bus protocol	0x3B	
55	DR5	LVAR	Example: 50	0x32	
56	DR5	Telegram content starting with the L-field in the contained wireless MBUS packet		0x8C	
57					
58	DR5	Last byte of the telegram	0x06		
59	Checksum			0x	Data Link
60	Stop-byte			0x16	

## Sending configuration packets to a gateway

This chapter describes how to send configuration packets to a gateway. The packet is always sent to the topic LAS/W/C/12345678 where 12345678 is the serial number of the gateway.

**Note:** Alternative 1 needs to be used if a gateway has been enabled to only accept encrypted configuration packets.

#### Alternative 1: M-BUS header for encrypted and non-encrypted configuration packets

The following header is supported by the gateway and can be used for sending both AES128 encrypted and nonencrypted configuration packets.

The serial number in bytes 12-15 must be the serial number of the gateway that should be configured, i.e., the same serial number that is in the MQTT configuration header.

The access number, byte 20, should be incremented by 1 for each packet sent to the gateway for optimal security. However, it will still work even if the same access number is always used.

**Note:** After the header, the configuration data is added – The configuration data is also referred to as ENAPI Data. Configuration of the gateway is sent in the same way both on the MQTT as with the dongle. An NDA is required to receive the commands and the structure.

Byte No.	Field Name	Content	Info	Byte data	Layer
1	L Eald	Langth of data		(example)	
1	L-Field			0.42	
2	C-Field	SND-UD2		0x43	
3	M-Field	Meter Manufacturer Code	LAS	0x33	<u>~</u>
4	M-Field	Meter Manufacturer Code		0x68	inl
5	A-Field	Serial number BCD (LSB)		0x0A	
6	A-Field	Serial number BCD		0x0A	ata
7	A-Field	Serial number BCD	Example: OAOAOAOA	0x0A	Ď
8	A-Field	Serial number BCD (MSB)		0x0A	
9	A-Field	Version	Example: 00	0x00	
10	A-Field	Device type	Example: 00	0x00	
11	CI-Field	Long network header		0x5B	
12	Ident Nr.	Gateway serial number BCD (LSB)		0x78	
13	Ident Nr.	Gateway serial number BCD	Example: 12245679	0x56	
14	Ident Nr.	Gateway serial number BCD	<b>Example:</b> 12343078	0x34	
15	Ident Nr.	Gateway serial number BCD (MSB)		0x12	
16	Manufacturer	Manufacturer code (LSB)	TAC	0x33	L.
17	Manufacturer	Manufacturer code (MSB)	LAS	0x30	Or
18	Version	Version (Ignored by gateway)	This can be set to any value	0xFF	dsu
19	Device type	Device type (Ignored by gateway)	This can be set to any value	0xFF	rar
20	Access number.	Access Number to gateway		0x75	T,
21	Status	Errors and alerts		0x00	
22	Config.	Configuration field	Energy las Energy tion off	0x00	
23	Config.	Configuration field	Example: Encryption off	0x00	
24	AES-verify	Encryption verification		0x2F	
25	AES-verify	Encryption verification		0x2F	

#### Alternative 2: M-BUS header only for non-encrypted configuration data.

This format is easier, compared to previous alternative, but only supports non-encrypted configuration data. The Access number, byte 12, should be incremented by 1 for each packet sent to the gateway for best security. However, it will still work even if the same access number is always used.

**Note:** After the header, the configuration data is added – The configuration data is also referred to as ENAPI Data. Refer document **Bridge\_ENAPI\_Commands\_B4** for detailed instruction about each ENAPI command. Configuration of the gateway is sent in the same way both on the MQTT as with the dongle. An NDA is required to receive the commands and the structure.

Byte No	Field Name	Content	Info	Byte data (example)	Layer
1	L-Field	Length of data			
2	C-Field	SND-NR		0x44	
3	M-Field	Meter Manufacturer Code	LAC	0x33	×
4	M-Field	Meter Manufacturer Code	LAS	0x30	l .t
5	A-Field	Serial number BCD (LSB)		0x0A	aI
6	A-Field	Serial number BCD	Example:	0x0A	at
7	A-Field	Serial number BCD	0A0A0A0A	0x0A	Д
8	A-Field	Serial number BCD (MSB)		0x0A	
9	A-Field	Version		0x00	
10	A-Field	Device type		0x00	
11	CI-Field	Short network header		0x7A	
12	Access no.	Access Number	0xA	.1	L L
13	Status	Errors and alerts		0x00	OI
14	Configuration		Example: Encryption	0x00	dsu
15	Configuration		off	0x00	car
16	AES-verify	Encryption verification		0x2F	Ĥ
17	AES-verify	Encryption verification		0x2F	

## The response from the gateway

The packet is always sent to the topic LAS/W/R/12345678 where 12345678 is the serial number of the gateway.

**Note:** After the header, the configuration data is added – The configuration data is also referred to as ENAPI Data. Refer document **Bridge\_ENAPI\_Commands\_B4** for detailed instruction about each ENAPI command.

Byte No	Field Name	Content		Byte data	
1	L-Field	Length of data		0x	
2	C-Field	RSP-UD		0x08	
3	M-Field	Meter Manufacturer code (LAS)		0x33	
4	M-Field	Meter Manufacturer code (LAS)		0x30	link
5	A-Field	Serial NO LSB (BCD)		0x78	Γ.
6	A-Field	Serial NO (BCD)		0x56	ita
7	A-Field	Serial NO (BCD)		0x34	Ŭ
8	A-Field	Serial NO MSB (BCD) of GW		0x12	
9	A-Field	Version		0x0A	
10	A-Field	Device type		0x31	
11	CI-Field	Short transport header		0x7A	
12	Access No.	Access number of gateway		0x75	
13	Status	Meter state (Low battery)	Example: Low battery	0x04	Ū.
14	Config Field			0x00	ds
15	Config Field			0x00	ar.
16	AES-Verify	Encryption verification		0x2F	E .
17	AES-Verify	Encryption verification		0x2F	

## Short Status packet

The packet is always sent to the topic LAS/W/S/12345678 where 12345678 is the serial number of the gateway.

A short status packet contains information and settings about the gateway and the packet is sent at regular intervals.

In other words, a short status packet is sent:

- Every 12 hours over the MQTT interface.
- On every new connection to the MQTT server.

Note: Inform	Note: Information in DR1 – DR8 below are the same as for the repeater.			
DR1	Software version of gateway			
DR2	Revision of the gateway modem			
DR3	Hardware model			
DR4	Hardware version			
DR5	Current battery level. Battery level is always 3600 for battery version and 5000 for mains version			
DR6	Number of seconds for which the modem has been active			
DR7	Timestamp for last change done on the gateway configuration			
DR8	Timestamp for last change done on the gateway meter list			

Byte No.	Field Name	Content	Info	Byte data (example)	Layer
1	Start	Start-byte		0x68	
2	L-Field	Telegram length	If packet is longer than 255 then	0x45	nk
3	L-field	Telegram length	both L-fields should be added, otherwise the L-fields are the same.	0x45	a Li
4	Start	Start-byte		0x68	Dat
5	C-Field	SND_NR		0x44	Д
6	A-Field	Primary addressing	0xFD = Use secondary addressing	0xFD	
7	CI-Field	Long header (0x72)		0x72	
8	ID-Field	Identification number (LSB)		0x00	
9	ID-Field	Identification number	<b>Example:</b> 33221100	0x11	
10	ID-Field	Identification number	Example: 55221100	0x22	
11	ID-Field	Identification number (MSB)		0x33	ц.
12	Manufacturer	Manufacturer code (LSB)	LAS	0x33	JOI
13	Manufacturer	Manufacturer code (MSB)		0x30	dsu
14	Version	Version		0x07	rar
15	Туре	Device type		0x1B	Ĥ
16	Acc.	Access number		0x01	
17	Status	Errors and alerts	Example: Low battery	0x04	
18	Config.	Configuration field	Example: Encryption off	0x00	
19	Config.	Configuration field	Example. Encryption on	0x00	
20	DR1	DIF	16-bit integer	0x02	
21	DR1	VIF	Extension table	0xFD	Version of the
22	DR1	VIFE	Version	0x0F	gateway
23	DR1	Value (LSB)	<b>Example:</b> 120 (0x0078)	0x78	
24	DR1	Value (MSB)		0x00	
25	DR2	DIF	Variable Length	0xCD	
26	DR2	DIFE	Storage 11	0x05	Revision of the
27	DR2	VIF	Extension table	0xFD	Modem
28	DR2	VIFE	Dimensionless	0x3A	
29	DR2	LVAR	Modem revision string length (10- 35 bytes)	0x11	
30	DR2	Revision Ascii string (LSB)		0x32	

31	DR2	Revision Ascii string		0x33	
32	DR2	Revision Ascii string		0x37	
33	DR2	Revision Ascii string		0x34	
34	DR2	Revision Ascii string		0x42	
35	DR2	Revision Ascii string		0x30	
36	DR2	Revision Ascii string		0x31	
37	DR2	Revision Ascii string	Example: 2374B01SIM767XM5A	0x53	
38	DR2	Revision Ascii string		0x49	
39	DR2	Revision Ascii string		0x4D	
40	DR2	Revision Ascii string		0x37	
41	DR2	Revision Ascii string		0x36	
42	DR2	Revision Ascii string		0x37	
43	DR2	Revision Ascii string		0x58	
44	DR2	Revision Ascii string		0x4D	
45	DR2	Revision Ascii string		0x35	
46	DR2	Revision Ascii string MSB		0x41	
47	DR3	DIF	8-bit integer	0x01	
48	DR3	VIF	Extension table	0xFD	Hardware model
49	DR3	VIFE	Model version	0x0C	
50	DR3	Value	Example: 0x01	0x01	
51	DR4	DIF	8-bit integer	0x01	
52	DR4	VIF	Extension table	0xFD	Hardware version
53	DR4	VIFE	Hardware version	0x0D	
54	DR4	Value	Example: 0x01	0x01	
55	DR5	DIF	16-bit integer	0x02	
56	DR5	DIFE	Extension table	0xFD	Current battery
57	DR5	VIF	Voltage (mV)	0x46	level
58	DR5	Value (LSB)	<b>Example:</b> 3600 (0x0E10)	0x10	
59	DR5	Value (MSB)		0x0E	
60	DR6	DIF	32-bit integer	0x04	
61	DR6	VIF	Operating time seconds	0x24	
62	DR6	Value (LSB)	<b>Example:</b> 9173511 seconds	0x07	Number of seconds for
63	DR6	Value	•	0xFA	which the modem has
64	DR6	Value		0x8B	been active
65	DR6	Value (MSB)		0x00	
66	DR7	DIF	32-bit integer		
	DR7	VIF	Timestamps in seconds for last		
67			change of the configuration		
68	DR7	Value (LSB)	Example: 1737368574 seconds		_
69	DR/	Value			Timestamp
70	DR/	Value			for configuration
71	DR/	Value (MSB)	22.1		
72	DR8	DIF	32-bit integer		
73	DR8	VIF	change of the meter list		
74	DR8	Value (LSB)	Example: 1737368575 seconds		
75					
	DR8	Value			
76	DR8 DR8	Value Value			
76 77	DR8 DR8 DR8	Value Value Value (MSB)			

## Status packet

#### A status packet contains information and settings about the gateway and the packet is sent at regular intervals.

In other words, a status packet is sent:

- Every 12 hours over the MQTT interface.
- On every new connection to the MQTT server.
- Every minute over the wM-Bus interface (default in C mode, frame format A).

Note: Inform	ation in DR1 – DR24 below are the same as for the repeater.
DR1	Total number of packets transmitted over MQTT since power up
DR2	Used routing slots (maximum 2000) used (whitelist devices).
DR3	Software version of gateway
DR4	Is the bridge listening now? (1=Yes, 0=NO)
DR5	Seconds to mode change (Listen→Sleep or Sleep→Listen). Maximum 32767 seconds
DR6	Value on parameter "Listen timer"
DR7	Value on parameter "Pause timer" (0=The gateway will always listen)
DR8	Shows which weekday(s) the gateway is listening. See <b>Table 1</b> for more information
DR9	Value on parameter "Start time", shown as minutes after midnight (-1=Not used)
DR10	Current time
DR11	Current battery level. Battery level is always 3600 for battery version and 5000 for mains version
DR12	IMEI number
DR13	ICCID number of SIM-card number
DR14	RSSI in the LTE M1 network (connection between the gateway and the base station)
DR15	Hardware model
DR16	Hardware version
DR17	On time (days) since powerup
DR18	Number of seconds for which the modem has been active
DR19	Number of seconds for which the wM-Bus radio has been in listen mode
DB30	Shows which weekday(s) the gateway will upload data. See <b>Table 1</b> for more information
DK20	Note: Has no function if parameter MQTT Always Online is enabled.
DR21	The time for which the modem will upload stored data, shown as minutes after midnight (-1=Not used)
DK21	Note: Has no function if parameter MQTT Always Online is enabled.
DR22	The interval for which the modem will upload data. Maximum 1440 minutes (24 hours).
	Can be combined with days to upload data (see DR20).
DR23	Number of NTP server connection retries since last successful NTP connection.
DR24	Modem revision

Byte No.	Field Name	Content	Info	Byte data (example)	Layer
1	Start	Start-byte		0x68	
2	L-Field	Telegram length	If packet is longer than 255 then	0x45	nk
3	L-field	Telegram length	both L-fields should be added, otherwise the L-fields are the same.	0x45	a Li
4	Start	Start-byte		0x68	Jat
5	C-Field	SND_NR		0x44	
6	A-Field	Primary addressing	0xFD = Use secondary addressing	0xFD	
7	CI-Field	Long header (0x72)		0x72	
8	ID-Field	Identification number (LSB)		0x00	
9	ID-Field	Identification number	Energy 22021100	0x11	t
10	ID-Field	Identification number	<b>Example:</b> 33221100	0x22	b d
11	ID-Field	Identification number (MSB)		0x33	u Su
12	Manufacturer	Manufacturer code (LSB)		0x33	lra
13	Manufacturer	Manufacturer code (MSB)	LAS	0x30	
14	Version	Version		0x07	

## Lansen configuration manual for Lansen wM-Bus GW5 (MQTT) Rev: C

15	Туре	Device type		0x1B		
16	Acc.	Access number		0x01		
17	Status	Errors and alerts	Example: Low battery	0x04		
18	Config.	Configuration field	Example: Ensuration off	0x00		
19	Config.	Configuration field	Example: Encryption on	0x00		
20	ID-Field	DIF	8-digit BCD	0x0C		
21	ID-Field	VIF	Fabrication number	0x78		
22	ID-Field	Gateway serial number (LSB)		0x08		
23	ID-Field	Gateway serial number	Example: 0000008	0x00		
24	ID-Field	Gateway serial number	Example: 0000008	0x00		
25	ID-Field	Gateway serial number (MSB)		0x00		
26	DR1	DIF	32-bit integer	0x04		
27	DR1	VIF	Extension table	0xFD	Number of total	
28	DR1	VIFE	Dimensionless	0x3A	packets	
29	DR1	Value (LSB)		0x01	transmitted over	
31	DR1	Value	$\mathbf{E}_{10} = \mathbf{E}_{10} + \mathbf{E}$	0x01	MQTT since	
32	DR1	Value	<b>Example:</b> 05793 (0x010101)	0x01	power up	
33	DR1	Value (MSB)		0x00		
34	DR2	DIF	16-bit integer + Extension	0x82		
35	DR2	DIFE	Subunit 1	0x40		
36	DR2	VIF	Extension table	0xFD	Used routing	
37	DR2	VIFE	Dimensionless	0x3A	slots	
38	DR2	Value (LSB)	E	0x09		
39	DR2	Value (MSB)	<b>Example:</b> 521 (0x0209)	0x02		
40	DR3	DIF	16-bit integer	0x02		q
41	DR3	VIF	Extension table	0xFD		tio
42	DR3	VIFE	Version	0x0F	Software version	ca
43	DR3	Value (LSB)	E	0x78	of galeway	pli
44	DR3	Value (MSB)	Example: 120 (0x0078)	0x00		d L
45	DR4	DIF	8-bit integer + Extension	0x81		7
46	DR4	DIFE	Subunit 2	0x80		
47	DR4	DIFE	Subunit 2	0x40	Is the bridge	
48	DR4	VIF	Extension table	0xFD	$(1 - V_{es}, 0 - NO)$	
49	DR4	VIFE	Dimensionless	0x3A	(1-105, 0-100)	
50	DR4	Value	Example: Yes (0x01)	0x01		
51	DR5	DIF	32-bit integer + Extension	0x84		
52	DR5	DIFE	Subunit 3	0xC0		
53	DR5	DIFE	Subunit 3	0x40		
54	DR5	VIF	Extension table	0xFD	Seconds to mode	
55	DR5	VIFE	Dimensionless	0x3A	change	
56	DR5	Value (LSB)		0xAB	change	
57	DR5	Value	<b>Example:</b> 5803 ( $0x0000164P$ )	0x16		
58	DR5	Value	<b>Example:</b> 5805 (0x000010AB)	0x00		
59	DR5	Value (MSB)		0x00		
60	DR6	DIF	16-bit integer + Storage 1	0x42		
61	DR6	VIF	Extension table	0xFD	Value on	
62	DR6	VIFE	Dimensionless	0x3A	parameter	
63	DR6	Value (LSB)	<b>Example:</b> 20 $(0x0014)$	0x14	"Listen timer"	
64	DR6	Value (MSB)	<b>Example:</b> 20 (0x0014)	0x00		

65	DR7	DIF	16-bit integer + Extension	0x82		
66	DR7	DIFE	Storage 2	0x01	XI.1	
67	DR7	VIF	Extension table	0xFD	value on	
68	DR7	VIFE	Dimensionless	0x3A	"Pause timer"	
69	DR7	Value (LSB)	<b>Example:</b> $1420 (0x058C)$	0x8C	1 cuise timer	
70	DR7	Value (MSB)	Example: 1420 (0x056C)	0x05		
71	DR8	DIF	8-bit integer + Storage + Extension	0xC1	4	
72	DR8	DIFE	Storage 3	0x01	4	
73	DR8	VIF	Extension table	0xFD	Which weekdays	
74	DR8	VIFE	Dimensionless	0x3A	the gateway is	
75	DR8	Value	Example: Mondays Note: See Table 1 for more info.	0x02	listening	
76	DR9	DIF	16-bit integer + Extension	0x82		
77	DR9	DIFE	Storage 4	0x02	Value on	
78	DR9	VIF	Extension table	0xFD	parameter "Start	
79	DR9	VIFE	Dimensionless	0x3A	ninutes after	
80	DR9	Value (LSB)	<b>Example:</b> $10:01(0x0250)$	0x59	midnight	
81	DR9	Value (MSB)	<b>Example:</b> 10:01 (0x0259)	0x02	indingit	
82	DR10	DIF	48-bit integer	0x06		
83	DR10	VIF	Time Type I format	0x6D		
84	DR10	Current Time		0x02		
85	DR10	Current Time		0x01	Cumont time	
86	DR10	Current Time	<b>Example:</b> 2001.0101.00:01:02	0xC0	Current time	п
87	DR10	Current Time	<b>Example</b> : 2001-0101 00:01:02	0x01		10
88	DR10	Current Time		0x01		cat
89	DR10	Current Time		0x00		lic
90	DR11	DIF	16-bit integer	0x02		Idv
91	DR11	DIFE	Extension table	0xFD	Cumont hottom	A.
92	DR11	VIF	Voltage (mV)	0x46	lovel	
93	DR11	Value (LSB)	<b>Example:</b> $3600 (0x0E10)$	0x10	lever	
94	DR11	Value (MSB)	Example: 5000 (0x0E10)	0x0E		
95	DR12	DIF	Variable Length	0xCD		
96	DR12	DIFE	Storage 5	0x02		
97	DR12	VIFE	Extension table	0xFD		
98	DR12	VIF	Dimensionless	0x3A		
99	DR12	LVAR	EMEI string length (15 bytes)	0x0F		
100	DR12	EMEI Ascii string (LSB)		0x34		
101	DR12	EMEI Ascii string		0x33		
102	DR12	EMEI Ascii string		0x32		
103	DR12	EMEI Ascii string		0x31		
104	DR12	EMEI Ascii string		0x30	MEI number	
105	DR12	EMEI Ascii string		0x39		
106	DR12	EMEI Ascii string		0x38		
107	DR12	EMEI Ascii string	Example: 012345678901234	0x37		
108	DR12	EMEI Ascii string		0x36		
109	DR12	EMEI Ascii string		0x35		
110	DR12	EMEI Ascii string		0x34		
111	DR12	EMEI Ascii string		0x33		
112	DR12	EMEI Ascii string		0x32		
113	DR12	EMEI Ascii string		0x31		
114	DR12	EMEI Ascii string (MSB)		0x30		

115	DR13	DIF	Variable Length	0x8D		
116	DR13	DIFE	Storage 6	0x03		
117	DR13	VIF	Extension table	0xFD		
118	DR13	VIFE	Dimensionless	0x3A		
119	DR13	LVAR	ICCID string length (19-20 bytes)	0x14		
120	DR13	ICCID Ascii string (LSB)		0x39		
121	DR13	ICCID Ascii string		0x38		
122	DR13	ICCID Ascii string		0x37		
123	DR13	ICCID Ascii string	-	0x36		
124	DR13	ICCID Ascii string		0x35		
125	DR13	ICCID Ascii string	-	0x34		
126	DR13	ICCID Ascii string	-	0x33	ICCID number	
127	DR13	ICCID Ascii string	4	0x32	of SIM-card	
128	DR13	ICCID Ascii string	-	0x31	number	
129	DR13	ICCID Ascii string	<b>Example:</b> 01234567890123456789	0x30		
130	DR13	ICCID Ascii string	· · · · · · · · · · · · · · · · · · ·	0x39		
131	DR13	ICCID Ascii string	-	0x38		
132	DR13	ICCID Ascii string	-	0x37		
133	DR13	ICCID Ascii string	-	0x36		
134	DR13	ICCID Ascii string	-	0x35		
135	DR13	ICCID Ascii string	-	0x34		
136	DR13	ICCID Ascii string	-	0x33		
137	DR13	ICCID Ascii string	-	0x32		E
138	DR13	ICCID Ascii string	-	0x31		fi
139	DR13	ICCID Ascii string (MSB)		0x30		<u>ن</u>
140	DR14	DIF	8-bit integer	0x01		
141	DR14	VIF	Extension table	0xFD		A T
142	DR14	VIFE	RSSI	0x71	RSSI in the LTE	
143	DR14	Value	<b>Example:</b> -/1 <b>Note:</b> Calculate this value as two's (2's) complement	0xB9	M1 network	
144	DR15	DIF	8-bit integer	0x01		
145	DR15	VIF	Extension table	0xFD	Hardware model	
146	DR15	VIFE	Model version	0x0C		
147	DR15	Value	Example: 0x01	0x01		
148	DR16	DIF	8-bit integer	0x01		
149	DR16	VIF	Extension table	0xFD	Hardware	
150	DR16	VIFE	Hardware version	0x0D	version	
151	DR16	Value	Example: 0x01	0x01		
152	DR17	DIF	16-bit integer	0x02		
153	DR17	VIF	On time days	0x23	On time (days)	
154	DR17	Value (LSB)	Example: 2051	0x03	since powerup	
155	DR17	Value (MSB)		0x08		
156	DR18	DIF	32-bit integer	0x04	Number of	
157	DR18	VIF	Operating time seconds	0x24	seconds for	
158	DR18	Value (LSB)	-	0x07	which the	
159	DR18	Value	Example: 9173511 seconds	0xFA	modem has been	
160	DR18	Value	(0x008BFA07)	0x8B	active	
161	DR18	Value (MSB)		0x00		

162	DR19	DIF	32-bit integer + Extension	0x84		
163	DR19	DIFE	Subunit 1	0x40	Number of	
164	DR19	VIF	Operating time seconds	0x24	seconds for which the wM	
165	DR19	Value (LSB)		0x07	Bus radio has	
166	DR19	Value	Example: 9173511 seconds	0xFA	been in listen	
167	DR19	Value	(0x008BFA07)	0x8B	mode	
168	DR19	Value (MSB)		0x00		
169	DR20	DIF	8-bit integer + Storage + Extension	0xC1		
170	DR20	DIFE	Storage /	0x03	Shows which	
1/1	DR20		Extension table	OxFD	weekday(s)	
172	DK20	VIFE	Dimensionless	0X3A	gateway will	
173	DR20	Value	Note: Refer to Table 1	0x0A	upload data	
174	רפת	DIE	16 hit integer   Extension	0.282	The time for	g
174	DR21	DIFE	Storage 8	0x02	which the	ltic
175	DR21	VIF	Extension table	0xFD	modem will	ica
170	DR21	VIFE	Dimensionless	0x3A	upload stored	lac
178	DR21	Value (LSB)		0x1E	data, shown as	Ar
1.0	DR21	Value (MSB)	<b>Example</b> : 00:30	0x00	minutes after	
179	DDaa			0.62	midnight	
180	DR22	DIF	16-bit integer + Extension + storage	0xC2		
181	DR22	DIFE	Storage 9	0x04	The interval for	
182	DR22	VIF	Dimensionlass	OxFD	which the	
105	DR22	VIFE Value (LSB)	Dimensioness	0x3A 0x1E	upload data	
185	DR22	Value (MSB)	<b>Example:</b> 30 minutes	0x00	aproud data	
186	DR22	DIF	16-bit integer + Extension	0x82		
187	DR23	DIFE	Storage 10	0x05	Number of NTP	
188	DR23	VIF	Extension table	0xFD	server connection	
189	DR23	VIFE	Dimensionless	0x3A	retries since last	
190	DR23	Value (LSB)	Ensurely 5	0x05	successiul NTP	
191	DR23	Value (MSB)	Example: 5	0x00	connection	
192	DR24	DIF	Variable Length	0xCD		
193	DR24	DIFE	Storage 11	0x05	Revision of the	
194	DR24	VIF	Extension table	0xFD	modem	
195	DR24	VIFE	Dimensionless	0x3A		
196	DR24	LVAR	Modem revision string length (10-	0x11		
107	DR24	Revision Ascii string (LSR)		0x32		
197	DR24	Revision Asoii string	-	0x33		
198	DR24	Devision Asself string		0x33		
199	DR24	Revision Asch string		024		
200	DR24	Revision Ascii string	-	0x34		
201	DR24	Revision Ascii string	4	0x42		
202	DR24	Revision Ascii string		0x30		
203	DR24	Revision Ascii string		0x31		
204	DR24	Revision Ascii string	Example: 2374B01SIM767XM5A	0x53		
205	DR24	Revision Ascii string		0x49		
206	DR24	Revision Ascii string		0x4D		
207	DR24	Revision Ascii string		0x37		
208		8	4			
	DR24	Revision Ascii string		0x36		
200	DR24 DR24	Revision Ascii string		0x36		
200	DR24 DR24	Revision Ascii string Revision Ascii string		0x36 0x37		

#### Lansen configuration manual for Lansen wM-Bus GW5 (MQTT) Rev: C

211	DR24	Revision Ascii string	0x4D		
212	DR24	Revision Ascii string	0x35		
213	DR24	Revision Ascii string MSB	0x41		

Table 1: Bit representation for days when gateway is listening

Bit	Info
0 (0x01)	Sunday
1 (0x02)	Monday
2 (0x04)	Tuesday
3 (0x08)	Wednesday
4 (0x10)	Thursday
5 (0x20)	Friday
6 (0x40)	Saturday
7 (0x80)	NOT USED

## Ready-for-conf packet

The *Ready-for-conf* packet is sent from the device every time upload of data from gateway is finished to MQTT. This indicates that the gateway is ready for configuration via MQTT.

The packet is always sent to the topic LAS/W/I/12345678 where 12345678 is the serial number of the gateway.

Byte No.	Field Name	Content	Info	Byte data (example)	Layer
1	Start	Start-byte		0x68	
2	L-Field	Telegram length	If packet is longer than 255 then both L-fields should be added.	0x45	
3	L-field	Telegram length	otherwise the L-fields are the same.	0x45	Data Link
4	Start	Start-byte		0x68	
5	C-Field	SND_NR		0x44	
6	A-Field	Primary addressing	0xFD = Use secondary addressing	0xFD	
7	CI-Field	Long header (0x72)		0x72	
8	ID-Field	Identification number (LSB)		0x00	
9	ID-Field	Identification number	<b>E</b> veryplay 22221100	0x11	
10	ID-Field	Identification number	<b>Example:</b> 35221100	0x22	
11	ID-Field	Identification number (MSB)		0x33	
12	Manufacturer	Manufacturer code (LSB)	TAS	0x33	
13	Manufacturer	Manufacturer code (MSB)	LAS	0x30	Transport
14	Version	Version		0x07	
15	Туре	Device type		0x1B	
16	Acc.	Access number		0x01	
17	Status	Errors and alerts	Example: Low battery	0x04	
18	Config.	Configuration field	<b>Example:</b> Encryption off	0x00	
19	Config.	Configuration field	Example: Encryption on	0x00	

## Indications of a gateway

The device can use both visual indications (LED) and sound indications to show what is currently happening, e.g., how the startup sequence is going or if there are any errors after startup.

Visual and sound indications during startup sequence of a gateway

Start by powering on the device. The following will occur during startup:

- 1 The LED strip (all 4 LED's) will light up, accompanied by a beep.
- 2 When the internal flash memory is cleared, the device beeps a second time, the IP-COM LED turns off and the wM-Bus LED will start flashing, indicating it is listening for incoming wM-Bus data. This also indicates that the startup sequence is completed. During the first 3-4 minutes after the startup sequence is complete, the device accepts configuration data, for example, by using a Lansen configuration dongle (LAN-WMBUS-D1/D2-TC).
- 3 1-2 minutes after the starting sequence is finished the modem tries to connect to the MQTT server using the settings in the device, this is indicated by the IP-COM LED beginning to blink.

#### Visual Indications

A gateway use LEDs to indicate different things, see table below.

			LED Strip (red circle)
POWER	Green	Steady on	The device has power.
		Blinking 2	Low battery
		times/second	
POWER	Green	All steady on	Startup sequence active.
INFO	Red		
wM-Bus	Red		
IP-COM	Red		
INFO	Red	Steady on	wM-Bus radio on/listen for radio packets.
wM-Bus	Red	Quick flash	New packet received by the wM-Bus radio.
IP-COM	Red	Steady on	Active connection to the MQTT server.
		Blinking	Modem active but not connected to the MQTT Server.
			Cellular network LED (red arrow)
Red	Flash ev	ery 300 ms (0.3 s)	The device is sending data.
Red	Steady o	on/Off	Not registered to a network, rebooting, attempting to connect to a
	+		network.
	Flash ev	very 300 ms (0.3 s)	
	in interv	vals.	

**Note:** For battery version the LED indication will be turned off after 30 minutes to save power. The indication will be active again for 30 minutes if waking the device using a magnet.

## Connection sequence to MQTT for uploading data (battery gateway)

This chapter describes the connection sequence for a battery-operated gateway.

Note: The setting 'Always connected to MQTT' must not be set on a battery-operated gateway!

- 1 Modem is started and immediately searches for an LTE M1 or CAT1/4G network, this can be seen on the IP-COM LED which will start to flash.
- 2 When an LTE-M1 or CAT1/4G network is found, the APN server is retrieved from the network and stored in a temporary memory.
- 3 The modem then connects to the NTP server as specified by the customer. The default NTP server is pool.ntp.org unless it has been changed.
- 4 The modem then tries to connect to the MQTT server.
- 5 If connection is successful, then the red IP-COM LED will turn on fully, the NET LED starts blinking every 0.3s and the gateway starts uploading all stored meter data in its internal flash memory to the MQTT server.
- 6 When the upload is complete, the gateway register itself to receive configuration data from the MQTT server using address LAN/W/C/01234567, where 01234567 is the ID number of the gateway.
- Once ready to receive configuration data, the gateway will listen to incoming MQTT configuration data by default for 30 seconds.
   It's possible to extend this time by sending a command to the gateway. Refer to the section Connecting and working with Lansen Configurator (Battery Gateway) to change configuration time.
- 8 Once configuration time is up, the gateway turns off the modem completely and waits until it is time to upload data again.

## Connection sequence to MQTT for uploading data (mains gateway)

This chapter describes the connection sequence for a mains-operated gateway. In this example, the setting 'Always connected to MQTT' is set to be active.

- 1 Modem is started and immediately searches for an LTE M1 or CAT1/4G network, this can be seen on the IP-COM LED which will start to flash.
- 2 When an LTE-M1 or CAT1/4G network is found, the APN server is retrieved from the network and stored in a temporary memory.
- 3 The modem then connects to the NTP server as specified by the customer. The default NTP server is pool.ntp.org unless it has been changed.
- 4 The modem then tries to connect to the MQTT server.
- 5 If connection is successful, then the red IP-COM LED will turn on fully, the gateway starts uploading all stored meter data in its internal flash memory to the MQTT server and you can see the NET LED blinking every 0.3s.
- 6 When upload is complete, the gateway register itself to receive configuration data from the MQTT server using address LAN/W/C/01234567, where 01234567 is the ID number of the gateway.
- 7 Since the setting 'Always connected to MQTT' is active, the gateway will keep the connection to the MQTT server active and transmit data immediately when it is picked up on the wM-Bus radio interface. The configuration interface will also be active all the time so that configuration can be made using the MQTT interface.

## Notes regarding SIM-card and PIN

The device support nano SIM-cards and eSIM. If eSIM is required then the SIM must be mounted during production, thus must be ordered in advance.

The SIM card must not have any PIN code, thus the PIN must be inactivated.

For improved security, the SIM-card should be locked to the specific modem using the network provider webservice or similar. There is usually also an option to lock the SIM-card to the first device it is powered up in.

## Notes regarding gateway antennas

Different variants of the device come with different setups of the antennas, where it uses either internal or external antennas on either the wM-Bus or MQTT interface. Typical device name is as below where X1 and X2 is present if the external antenna interface is used. If not present, then the internal antenna is used instead.

LAN	- WMBUS	- GW5	- BE/M	- LR	- A1/A2 -	(X1)	- CATM1	- (X2)
							CAT1/4G	
Manufacturer	Input	Device	BE: Battery	LR: Long Range	A1: IP40	<u>Optional</u>	Output	<u>Optional</u>
			M: Mains		A2: IP65	External		External
						antenna for		antenna for
						input		output
						(WMBUS)		(CATM1)

Additional information regarding antennas on the gateway:

- The gateway uses one broadband antenna to cover all LTE-M1 or CAT1/4G bands, either with internal or external antenna.
- If the internal input (wM-Bus) is used, then two internal antennas are used for maximum range in all direction. The wM-Bus radio listens using one antenna at a time and change antenna every 25-35 seconds.

## **Power consumption**

The device has four main power consumption modes with a typical consumption as seen in the table below.

Mode	Current consumption
Sleeping, only the time clock is running.	20 uA
Radio for wM-Bus active and receiving data.	12 mA
Modem is active and transmitting data.	150 mA
Modem is on idle, waiting for configuration data.	24 mA
Battery leakage	760 mAh

**Note:** The status packet contains some information about how much time a device has spent in different modes. Note that all timers reset to 0 on power cycle.

- 1) Total on time since powerup
- 2) Total active time for the radio (wM-BUS)
- 3) Total Time modem has been on.

## Battery lifetime (battery gateway)

Since the battery driven gateway has a large super capacitor to assist the battery, it is hard to measure the true battery voltage to determine the service life left on the device. One method to determine the lifetime to get an early warning is by using calculations based on how long the device has spent in the different modes as defined in chapter **Power consumption**.

**Note:** The total battery capacity of the battery is 38000 mAh.

#### **EXAMPLE**

The device has been running for 1 year and we want to know the remaining lifetime with the same usage as the first year. The settings and the total time in different modes of the device has been as follows:

Setting:

- Modem uploads data every day.
- Radio (wM-Bus) active 15 minutes/day.
- Total on time since powerup 365 days.
- Radio (wM-Bus) active 328500 seconds (15 minutes per day for 365 days).
- Modem active 21900 seconds (one minutes per day for 365 days).

To get the power consumption for each mode, the equation below is used.  $powerConsumption = timeInSeconds \cdot currentConsumption$ 

#### Sleeping mode power consumption:

Total on time since powerup is 365 days. Convert this to seconds as below.

 $timeInSeconds = 365 \, days \cdot 24 \, h/day \cdot 60 \, min/h \cdot 60 \, sec/m = 31 \, 536 \, 000s$ 

The current consumption, according to chapter **Power consumption**, when the device is sleeping, is 20 uA. Inserting the time calculated above with the power consumption in the first equation gives:

 $totalPowerConsumption = 31\,536\,000\,s \cdot 20\,\mu A = 630\,720\,000\,\mu As = 630720\,m As$ 

Convert this value to mAh by dividing the result by 3600.

 $consumptionSleeping = \frac{630720 \text{ mAs}}{3600} = 175.2 \text{ mAh}$ 

Radio (wM-Bus) active power consumption:

Total time is already in seconds so we can calculate the total power consumption immediately since the power consumption when radio is active is 12 mA, according to chapter **Power consumption**.

 $totalPowerConsumption = 328500 s \cdot 12 mA = 3942000 mAs$ 

Convert this value to mAh by dividing the result by 3600.

 $consumptionRadio = \frac{3942000 \text{ mAs}}{3600} = 1095 \text{ mAh}$ 

#### Modem active power consumption

Total time is already in seconds so we can calculate the total power consumption immediately since the power consumption when radio is active is 160 mA, according to chapter **Power consumption**.  $totalPowerConsumption = 21900 \text{ s} \cdot 160 \text{ mA} = 3504000 \text{ mAs}$ 

Convert this value to mAh by dividing the result by 3600.

 $consumptionModem = \frac{3\ 504\ 000\ mAs}{3600} = 973.3\ mAh$ 

<u>Battery leakage:</u> The battery leakage is given as 760 mAh, according to chapter **Power consumption.** 

Total consumption year 1:

total Power Consumption

= consumptionSleeping + consumptionRadio + consumptionModem + batteryLeakage = 175 + 1095 + 973 + 760 = 3 003 mAh

Therefore, the device has used 3003 mAh in one year. This means that the currently available capacity left is: availableCapacity = 38000 mAh - 3003 mAh = 34997 mAh

To get expected lifetime left, we take the above calculation and divide by the *totalPowerConsumption* after a year. expectedLifetime = availableCapacity/totalPowerConsumption = 34997 mAh/3003mAh = 11.65 years

## Using program Lansen Configurator for configuration of the gateway

The Lansen Configurator can be used to configure the gateway via the 868 MHz wM-Bus interface with a Lansen configuration dongle (LAN-WMBUS-D1/D2-TC), directly via the MQTT server, or using a USB-C wire directly inserted into the gateway.

**Note**: To configure the device via the MQTT server, the device must first be connected to the MQTT server which requires all MQTT settings to be set correctly.

#### Connect to the gateway over wM-Bus interface using Lansen USB-dongle

To connect to the gateway using a Lansen configuration dongle (LAN-WMBUS-D1/D2-TC), perform the steps below.

Select the Type 'Dongle' and click Connect.

If the program fails to connect to the dongle, try to select the com-port manually by changing the field from 'Auto' to the com-port of the dongle.

If the program still fails, it might be that the computer has failed to download the correct driver. In this case, visit our webpage (http://www.lansen.io/download/) and download the corresponding driver for the dongle you have.



The below window is shown once the connection to the dongle is successful.

A Lansen configurator rev 1.2.0.0	LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters date 20220616		>
Connected to Dongle with config COM4	3 @ 115200 baud, version: 11.5.0.1544	Log to file: Browse	StartLogging
Config Repeater Config Pulse Meter	Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control		
Configure Repeater ID AES key:	Connect Disconnect Restart Leave empty if no encryption is used	det 20220616	
	Expected total battery lifetime years:		
Basic Timers Routing Meter	s   Clock   Bridge		
		Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.	
MBUS input mode:	Advanced setting: Support S mode	Note: The repeater accepts C and T mode simultaneous.	
MBUS output mode:	~	the dongle needs to be reconfigured after this change. OMS compatible modes are monte transformed A and C mode Frameformat A	
MBUS output frame format:	~	Kanstrup system use C mode Francommat B Min initial DSCI is the minimum nimmal strends a narket must be recieved by a repeatence be added to the multipolist	
Min install RSSI:	Value: [0 100], Empty or 0 = not used	The value is a converted value between 0-100 where 100 is the repeater RSSI limit and 0 is not used. For example if you only wart matter close by to be accented write the value or 70 in this field.	
Arterna gan		Iveranos Gain: When using an external arterna with Gain there might be needed to lower the output from the power to tax below the CE explainton. If you are using a anterna with 3db gain you should set the gain to 3 to compensate for the gain in the anterna	
Apply Changes			

#### In the sniffer tab, Packet Sniffer V2, you can see all the device in the area as picked up by the dongle.

nect fig l	ed to Dongle with config COM4 Repeater Config Pulse Meter	3 @ 11520 Config Pu	00 baud, versio Ilse Counter	on: 11.5.0.154 Config Modbu	4 s Master Packet	Sniffer V2 (	Custom control		Log to file:					Brow	vse Start
ld	Time	RSSI	Length	Man (LLA)	Serial (LLA)	Ver (LLA)	Type (LLA)	Last routed by (RP)	Hop (RP)	RX state (RP)	Time to change (RP)	Relative RSSI (RP)	Autos	croll 🗌 Onl	y Latest Data
4	2023-02-06 13:50:48:468	-46	47	AAA	00000257	07h	Room sensor							Sus Sus	pend shiner
5	2023-02-06 13:50:49:291	-57	79	LAS	04002246	03h	Carbon dioxide						riter	Houted by	Clear all
6	2023-02-06 13:50:49:724	-39	47	AAA	00000258	07h	Room sensor						Meters	Routed By Colum	ins Keys
7	2023-02-06 13:50:50:022	-53	90	LAS	00000007	0Ah	Smoke detector						Filtered	Identity	Туре и
8	2023-02-06 13:50:50:289	-42	19	KAM	73003360	04h	Unidirect repeater							AAA 00000214	Room sensor
9	2023-02-06 13:50:50:346	-42	63	DME	53732003	41h	Heat outlet							LAS 00000002	Room sensor
0	2023-02-06 13:50:50:729	-46	47	AAA	00000259	07h	Room sensor							AAA 00000215	Room sensor
1	2023-02-06 13:50:50:941	-82	47	LAS	00079871	09h	Room sensor							QDS 90540897	Heat Cost Al.
2	2023-02-06 13:50:51:729	-39	47	AAA	00000260	07h	Room sensor							AAA 00000216	Room sensor
3	2023-02-06 13:50:51:772	-38	107	LAS	00070194	1Eh	Com controller	00070194	0	True	0			EGA00000017	Room sensor
4	2023-02-06 13:50:51:973	-79	47	LAS	00079877	09h	Room sensor							AAA 00000217	Room sensor
5	2023-02-06 13:50:52:053	-84	47	LAS	00079874	09h	Room sensor							AAA 00000218	Room sensor
6	2023-02-06 13:50:52:482	-58	90	LAS	00000006	0Ah	Smoke detector							LAS 21212121	Door/window
7	2023-02-06 13:50:52:718	-46	47	AAA	00000261	07h	Room sensor							HYD 48198072	Cold water
8	2023-02-06 13:50:53:729	-39	47	AAA	00000262	07h	Room sensor							AAA 00000220	Room sensor
9	2023-02-06 13:50:54:718	-46	47	AAA	00000263	07h	Room sensor							LAS 00000007	Smoke detecto
00	2023-02-06 13:50:55:630	-66	31	EGA	00000018	05h	Room sensor							AAA 00000221	Room sensor
01	2023-02-06 13:50:55:729	-39	47	AAA	00000264	07h	Room sensor							LAS 00069198	Com controller
02	2023-02-06 13:50:56:727	-46	47	AAA	00000265	07h	Room sensor							AAA 00000222	Room sensor
03	2023-02-06 13:50:57:177	-50	31	LAS	03007384	07h	Leakage detector							KAM 73003360	Unidirect repe:
04	2023-02-06 13:50:57:735	-39	47	AAA	00000266	07h	Room sensor							AAA 00000224	Room sensor
05	2023-02-06 13:50:58:379	-90	31	SEN	30390952	68h	Water							LAS 00000001	Unidirect repe:
106	2023-02-06 13:50:58:805	-57	46	LAS	02001964	07h	Room sensor							LAS 02001964	Room sensor
07	2023-02-06 13:50:58:971	-46	47	AAA	00000267	07h	Room sensor							AAA 00000225	Room sensor
08	2023-02-06 13:50:58:989	-80	47	LAS	00079872	09h	Room sensor							EGA00000022	Room sensor
09	2023-02-06 13:50:59:782	-53	90	LAS	00000007	0Ah	Smoke detector							AAA 00000226	Room sensor
10	2023-02-06 13:50:59:977	-39	47	AAA	00000268	07h	Room sensor							AAA 00000227	Room sensor
11	2023-02-06 13:51:00:425	-44	37	BMT	15176158	05h	Water							LAS 02001861	Room sensor
12	2023-02-06 13:51:00:608	-34	79	HYD	48198072	24h	Cold water							AAA 00000228	Room sensor

- To configure a gateway, go to the tab called "Config Repeater / Bridge" and enter the eight serial numbers, visible on the label of the gateway, either on the poke protection or on the front of the device.
- Click 'Connect'. The program will start connecting to the gateway and read out all its data. The process takes 20-60 seconds.
- If the program is unable to connect, make sure that the gateway is not sleeping and that the gateway and dongle are at least 1 meter apart, so the radio signal is not too strong. If the gateway is sleeping, then you can wake the gateway using a magnet to the left of the front label. Then click 'Connect' again.

A Lansen configurator rev 1.2.0.0 LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters date 20220616							×
Connected to Dongle with config COM	143 @ 115200 baud, version: 11.5.0.1544	er V2 Oustom control	Log to file:	Browse		StartLoggin	ng
Configure Repeater ID AES key:	00069198 Connect Disconnect Expected total battery lifetime years:	Restart Leave empty if no encryption is used	Note: Enter repeater ID example: "01234567" and press Connect. Make sure that the repeater is litering. A magnet can be used for "waking" the repeater.				
Basic Timers Routing Mete	ers   Clock   Bridge		Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.				

If encryption is enabled on the gateway, then a valid AES-key must be entered in the field marked below, when connecting, to change settings. Note that it is always possible to read out all settings without the AES-key except for MQTT settings that will only show the first letter of each setting.

A Lansen Configurator rev 1.6.1.0 LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220 -								
Connected to MQTT with config 00143451@friendly-lifeguard.cloudingtt.com.3883, At least once (QoS 1), TLS 1.2 Log to file:								
Config Repeater / Bridge Config Rulse Meter Config Rulse Counter Config Modbus Master Packet Sniffer V2 Custom control								
Configure Repeater/Brdge ID 00143451 Extend uptme: 15 min Disconnect AES key: Leave empty if no encryption is use	Note: Enter repeater/bridge (D example: "01234567" and press Connect. Make sure that the repeater is latering. Provide the sure of the state of th							

#### Connect to the gateway over MQTT interface using Lansen Configurator

Start the Lansen Configurator and select the tab MQTT, as seen below, and enter the settings to the MQTT server to connect via the MQTT server. Example settings can be seen in the picture below.

**Host**: MQTT server address, for example, my.mqtt.server.

Port: Port number to MQTT server. Typical 8883 for non-encrypted connection.

**TLS**: Enter if TLS should be used in the connection between Lansen Configurator and the MQTT server.

**QoS**: Typically set to 'At least once (QoS 1)', depending on your MQTT server the value might need to be changed.

Serial: The serial number of the gateway, for example, 01234567.

**Username**: The username to connect to the MQTT server.

**Password**: The password to connect to the MQTT server.

When everything is filled in, click 'Connect'.

🖳 Lansen 🤇	Configurator / Connect to us	ing dongle or MQTT	_		×
UART MQ		SE	Ν		
Host:	my.mqtt.server	Connect using MQ	TT		
Port:	8883		Custom topics		
TLS:	TLS 1.2 ~	Data topic;	LAS/W/D/123456	7	
QoS:	At least once (QoS 1) $\sim$	Indication topic;	LAS/W/I/1234567		
Serial:	1234567	Config topic:	LAS/W/C/123456	7	
Usemame	MYUSERNAME	Response topic:	LAS/W/R/123456	7	
Password:	MYPASSWWORD				
Connect				English	~

If everything works, then you are now connected to the MQTT server. In the example below, connection has been made with serial number 0000012 to the MQTT server friendly-lifeguard.cloudmqtt.com.

ed to MQTT with config 00000	012@friendly-lifeguard.cloudmo	tt.com:1883, At least once (QoS 1)		Log to file: Browse	S	startLog
Hepeater / Bridge    Config Put figure Repeater/Bridge ID ; key:	e Meter Config Pulse Counte 00000012  Expected total battery lifetime	r Config Modbus Master Packet Sniffer connect uptime: 15 min Leav years:	V2 Custom control Disconnect re empty if no encryption is used	Note: Enter repeater/bridge ID example: "012345677" and press Connect. Make sure that the repeater is latering. A magnet can be used for "waking" the repeater/bridge. Note: If the bridge is batterfliven the configurator will wait for an incomming connect from the bridge and when that is received read out the settings and Lesge the connection active for x multices. Supported by bridge rev 113 and never.		
isic Timers Routing Mete	rs Clock Bridge					
MBUS input mode:	~	Advanced setting: Support S mode		Eriter AES key here if encrystion have been enabled on the repeater. (AES key is also needed to enable/disable encryption. Note: The repeater/bridge accepts C and T mode situationeous. Don't eS mode 'would'niter in Divance including and including and including and including and		
MBUS output mode: MBUS output frame format:	× ×			the dongle needs to be reconfigured after this change. OMS compatible modes are T mode Frameformat A and C mode Frameformat A Karnstrup system use C mode Frameformat B Min Install RSSI is the minimum signal sterngh a packet must be received by a repeater to be added to the routing b	22	
Min install RSSI:	Restart	Value: [0 100], Empty or 0 = not used Changes to min RSSI requires a res	tart to take effect	The value is a converted value between 0-100 where 100 is the repeater RSSI limit and 0 is not used. For example if you only want meters close by to be accepted write the value 70 in this field.		
Antenna gain:				Antenna Gain: When using an external antenna with Gain there might be needed to lower the output from the power to stay below the CC regulation. Fyou are using a retrema with Stag pair you should set the gain to 3 to compensate for the gain in the antenna.		

## In the sniffer tab, Packet Sniffer V2, one will see all data that are transmitted by the gateway over the MQTT interface.

necto nfig F	ed to MQTT with config 000000 Repeater / Bridge Config Pulse	12@friendl Meter C	ly-lifeguard.clo Config Pulse Co	udmqtt.com:18 ounter Config	83, At least once ( Modbus Master	QoS 1) Packet Sniff	er V2 Custom control		Log to file:					Brow	vse StartLo
ł	Time	RSSI	Length	Man (LLA)	Serial (LLA)	Ver (LLA)	Type (LLA)	Last routed by (RP)	Hop (RP)	RX state (RP)	Time to change (RP)	Relative RSSI (RP)	Autos	croll Only	y Latest Data
	2024-03-21 08:08:01:000	-66	30	LAS	00159185	07h	Leakage detector	20202020	0	False	0			Just Just	pend shiller
	2024-03-21 08:08:01:000	-84	30	LAS	00159219	07h	Leakage detector		0	False	0	<0		houted by (	Jear all
	2024-03-21 08:08:02:000	-52	75	LAS	00000007	0Ah	Smoke detector		0	False	0	<0	Meters	Routed By Column	ns Keys
	2024-03-21 08:08:02:000	-77	30	LAS	00159189	07h	Leakage detector		0	False	0	<0	Filtered	Identity	Type ^
7	2024-03-21 08:08:02:000	-47	75	LAS	00000006	0Ah	Smoke detector		0	False	0	<0		LAS 00163189	Electricity
3	2024-03-21 08:08:03:000	-63	62	DME	53732003	41h	Heat outlet		0	False	0	<0		IST 84080118	Water
9	2024-03-21 08:08:04:000	-77	30	LAS	00159218	07h	Leakage detector		0	False	0	<0		LAS 00159230	Leakage detec
)	2024-03-21 08:08:05:000	-83	30	LAS	00159163	07h	Leakage detector		0	False	0	<0		LAS 0000007	Smoke detecto
1	2024-03-21 08:08:05:000	-79	30	LAS	00163119	0Bh	Electricity		0	False	0	<0		EGD 60004325	Room sensor
2	2024-03-21 08:08:06:000	-68	87	BMT	15701507	10h	Room sensor		0	False	0	<0		LAS 00159195	Leakage detec
3	2024-03-21 08:08:09:000	-83	30	LAS	00159226	07h	Leakage detector		0	False	0	<0		LAS 00163208	Electricity
4	2024-03-21 08:08:10:000	-77	46	LAS	00160664	09h	Room sensor		0	False	0	<0		LAS 00159202	Leakage detec
5	2024-03-21 08:08:10:000	-80	30	LAS	00159200	07h	Leakage detector		0	False	0	<0		LAS 00159197	Leakage detec
6	2024-03-21 08:08:11:000	-93	30	LAS	00159188	07h	Leakage detector		0	False	0	<0		LAS 02001479	Room sensor
7	2024-03-21 08:08:11:000	-74	30	LAS	00163206	0Bh	Electricity		0	False	0	<0		LAS 11111111	Carbon dioxide
8	2024-03-21 08:08:13:000	-84	30	LAS	00159171	07h	Leakage detector		0	False	0	<0		LAS 00163038	Carbon dioxide
9	2024-03-21 08:08:13:000	-98	30	LAS	00159160	07h	Leakage detector		0	False	0	<0		LAS 00000014	Room sensor
0	2024-03-21 08:08:14:000	-65	30	LAS	00159160	07h	Leakage detector	20202020	0	False	0			LAS 20202020	Unidirect repe:
1	2024-03-21 08:08:15:000	-91	30	LAS	00159228	07h	Leakage detector		0	False	0	<0		LAS 00159147	Leakage detec
2	2024-03-21 08:08:16:000	-72	78	LAS	00042582	0Ah	VOC sensor		0	False	0	<0		LAS 00159149	Leakage detec
3	2024-03-21 08:08:17:000	-81	30	LAS	00159212	07h	Leakage detector		0	False	0	<0		LAS 00159194	Leakage detec
4	2024-03-21 08:08:17:000	-54	30	LAS	00000090	00h	Door/window		0	False	0	<0		LAS 00159229	Leakage detec
5	2024-03-21 08:08:17:000	-87	30	LAS	00159208	07h	Leakage detector		0	False	0	<0		LAS 00163192	Electricity
6	2024-03-21 08:08:19:000	-91	78	LAS	00162413	0Ah	VOC sensor		0	False	0	<0		LAS 00000002	Room sensor
7	2024-03-21 08:08:20:000	-50	30	LAS	00000091	00h	Door/window		0	False	0	<0		LAS 00116517	Room sensor
B	2024-03-21 08:08:20:000	-66	181	LAS	00128923	1Eh	Com controller	20202020	0	False	0			LAS 00000012	Com controller
9	2024-03-21 08:08:20:000	-66	30	LAS	00163098	0Bh	Electricity		0	False	0	<0		LAS 00159206	Leakage detec
0	2024-03-21 08:08:21:000	-86	30	LAS	00163185	0Bh	Electricity		0	False	0	<0		LAS 00163110	Electricity
1	2024-03-21 08:08:21:000	-80	30	LAS	00163186	0Bh	Electricity		0	False	0	<0		LAS 02000480	Room sensor

To change the settings to the gateway one must first connect to the gateway. This is done by clicking 'Connect' and then all settings will be retrieved from the gateway and displayed in the program.

A Lansen Configurator rev 1.6.1.0 LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220 -					
Connected to MQTT with config 00000	0012@friendly-lifeguard.cloudmqtt.com:1883, At least once (QoS 1)	Log to file: Browse	StartLogging		
Config Repeater / Bridge Config Pul	se Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control				
Configure Repeater/Bridge ID AES key:	Image: Connect         connect         total         Disconnect           Leave empty if no encryption is used         Expected total battery lifetime years:         Expected total battery lifetime years:	Note: Enter repeater/bridge ID example: "101234567" and press Connect. Make sure that the repeater is latering: both the second of the repeater is latering: Note: If the bridge is batteritiver the configuration will wait for an incomming connect from the bridge and when that is received read out the settings and keep the connection addre for x multices. Supported by Unidar ever 113 and never.			
Basic Timers Routing Mete	ers   Clock   Bridge				
		Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.			
MBUS input mode: MBUS output mode:	Advanced setting: Support S mode	Note: The repeater holicity accepts ( and T mode simulaneous. Dent test 6 mode foundant en 100% van accental Laneon, the dongle needs to be reconfigured after this change OMS compatible modes are T mode Frankford and A and C mode Frankford A			
MBUS output frame format: Min install RSSI:	Value: [0 100], Empty or 0 = not used	Kenatus system use Cmode Frameformat 8 Min initial FRSIs the minimum inpaint strengh a packet must be received by a repeater to be added to the routing lie The value is a converted value between 0-100 where 100 is the repeater RSS limit and 0 is not used. For example 7 you only ward meters close by to be accepted write the value. Thin the field.	t		
	Restart Changes to min RSSI requires a restart to take effect				
Artenna gain:		Potenna Gain: When using an external antenna with Gain there might be needed to lower the output from the power to stay below the CE regulation. If you are using a arterna with 3db gain you should set the gain to 3 to compensate for the gain in the antenna.			
Apply Changes					

#### Connect to the gateway using a USB to USB-C cable (wired)

IMPORTANT: When using a wired cable, the cable itself will supply the gateway with power.

To connect to the gateway using a USB to USB-C cable, perform the steps below. Select the dropdown menu where it says "Dongle" and change the setting to "Wired Connection".

If the program fails to connect to the device, try to select the com-port manually by changing the field from 'Auto' to the com-port of the wire. Also make sure that the startup sequence is finished before connecting by wire.



To change the settings to the gateway one must first connect to the gateway. This is done by putting in the serial number which can be found on the poke protection or the front label on the device, then clicking 'Connect'. Once you have connected to the device you can change all the settings and parameters. The packet sniffer will not be operating when connected through wire.

to Wired with configuration CC	M7 @ 115200 baud	Log to file:	]	Browse Sta
eater / Bridge Config Pulse	Meter Config Pulse Counter Config Modbus Master Pac	ket Sniffer V2 Custom control Extended debug		
re Repeater/Bridge ID [ y: [	Connect	Disconnect Leave empty if no encryption is used Leave empty if no encryption is used Note: if the bridge is connect from the br keep the connecto	r/bridge ID example: "01234567" and press Connect. epeaters is latening. editor "waking" the repeater/bridge. b batterdriven the configurator will wait for an incomming dge and when that is received read out the settings and a cative for x minutes. Supported by bridge rev 113 and newer.	
Timers Routing Meters	Clock Bridge			
1BUS input mode:	Advanced setting: Support S	Enter AES key here AES key is also nee mode Note: The repeater Don't set S mode if	If encryption have been enabled on the repeater. deal to enable./disable encryption. bridge accepts C and T mode simultaneous. wou dont are 100% sure consult Lansen.	
IBUS output mode: IBUS output frame format:	<ul><li>✓</li><li>✓</li></ul>	the dongle needs to OMS compatible mo Kamstrup system us Ministral RSS in #	be reconfigured after this change. des are T mode Frameformat A and C mode Frameformat A e C mode Frameformat B e minimum signal strength a nacket must be recieved by a repeater to b	he added to the muting list
fin install RSSI:	Value: [0 100], Empty or 0 = no Restart Changes to min RSSI requi	t used . The value is a con For example if you o	er imminun signal sterigin a packet must be received by a repeater to t werted value between 0-100 where 100 is the repeater RSSI limit and nly want meters close by to be accepted write the value 70 in this field	) is not used.
ntenna gain:		Antenna Gain: Whe from the power to st if you are using a an	n using an external anterna with Gain there might be needed to lower t w below the CE regulation. terna with 3dbi gain you should set the gain to 3 to compensate for the	he output a gain in the antenna,

#### When connected through wire you can now also go into a new feature called the "Extended Debug".

A Lansen Configurator rev 1.7.0.0	LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecoun	ters Date 202401015 Beta			- 0	×
Connected to Wired with configuration	COM7 @ 115200 baud		Log to file:	Browse		
Config Repeater / Bridge Config Pul:	e Meter Config Pulse Counter Config Modbus Master Pa	cket Sniffer V2 Custom control Extended de	bug			
Configure Repeater/Bridge ID AES key: Version.: 30.1003, HW model: 1	99999541 Connect Expected total battery lifetime years	Disconnect Leave empty if no encryption is used	Note: Enter repeater/bridge ID example: "01234567" and press Connect. Make sure that the repeater is latering. A magnet can be used for "waking" the repeater/bridge. Note: If the bridge is batterdriven the configurator will wait for an incomming connect from the bridge and when that is receivered read out the settings and ender the bridge and when that is receivered read out the settings and ender the bridge and when that is receivered read out the settings and ender the bridge and when that is receivered read out the settings and ender the bridge and when that is receivered read out the settings and ender the bridge and when the settings are the bridge and the settings and ender the bridge and when the setting and the settings are the bridge and the settings are the bridge and when the bridge a			
Basic Timers Routing Mete	N/A (Bridge) rs   Clock   Bridge		Incepting commector reciver or Annihitics, Supported by bruge rev. 115 and newer.			
Encryption:	No encryption enabled	×	Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.			
MBUS input mode: MBUS output mode: MBUS output frame format:	TC  C C A Valid for output S		Note: The repeater/bridge accepts C and T mode simultaneous. Don't set S mode f you dont are 100% sure consult Lansen, the dongie needs to be reconfluyed after this change. OMS compatible modes are T mode Frameformat A and C mode Frameformat A Kamatrup avenue use C mode Frameformat B			
Min install RSSI:	Value: [0 100]. Empty or 0 =           Restart         Changes to min RSSI req	not used uires a restart to take effect	Min install RSSI is the minimum signal strengh a packet must be recieved by a repeat . The value is a converted value between 0-100 where 100 is the repeater RSSI limit For example if you only want meters close by to be accepted write the value 70 in this	er to be added to the routing list and 0 is not used. field.		
Artenna gain:	Not supported		Antenna Gain: When using an external antenna with Gain there might be needed to lo from the power to stay below the CE regulation. If you are using a antenna with 3dbi gain you should set the gain to 3 to compensate	ower the output		
Apply Changes						

This area of the configurator allows you to see the AT commands to further debug and see what is going on with the gateway if needed, simply select "Enabled" in the top right corner and it will start as long as the MQTT is active on the gateway. Make sure to disable the extended debugger when you are done looking at the AT commands.

A Lansen Configurator rev 1.7.0.0 LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 202401015 Beta -						- 0	Х
Connected	to Wired with configuration CON	17 @ 115200 baud		Log to file:	Browse		
Config Re	peater / Bridge Config Pulse M	eter Config Pulse Counter Cor	nfig Modbus Master Packet Sniffer V2 Custom control Extended debug				
	-				Debues Disabled	~ .	_
Index	Ime 2004 41 04 41:25:45:257		ASCII data		Debug. Disabled V	Clear all	
224	2024-11-04 11:35:45:357	ENAPI_MODEM_TX_INFO	AI+CCHSEND?		Commands		
220	2024-11-04 11:35:45:357	ENAPI_MODEM_TA_INFO	+COHSEND: 0.0.10		ENAPI_MODEM_TX_INFO		
220	2024-11-04 11:35:45:357	ENAPL MODEM BY INFO	OK		ENAPI_MODEM_RX_INFO		
221	2024-11-04 11:35:45:357	ENARI MODEM TV INFO			ENAPI_DATA_FROM_WMBUS		
220	2024-11-04 11:35:45:305	ENAPL MODEM TX INFO	02111 ASAM/D/99999541hzzbr2r2 302/ *x42221mn##1: 12022@x	2@222#22:CED302_272_@/#2:#C#_2@2:2# 2#N 22@2: 22/	ENAPI_DATA_TO_WMBUS		
230	2024-11-04 11:35:45:395	ENAPL MODEM BX INFO	>				
230	2024-11-04 11:35:45:395	ENAPL MODEM BX INFO	0K				
¢				×			

#### Configuration settings for a gateway

This chapter is the same regardless if the connection has been made using the wM-Bus interface (see chapter **Connect to the gateway over wM-Bus interface using Lansen USB-dongle**, the wired connection (see chapter **Connect to the gateway using a USB to USB-C cable (wired)**, or the MQTT interface (see chapter **Connect to the gateway over MQTT interface** 

Once connected to a gateway, the different settings can be seen in the different tabs called *Basic*, *Timers*, *Routing*, *Meters*, *Clock*, and *Bridge*.

A Lansen Konfigurator rev 1.2.1.2	LAN-MBUS-R2/R3/R4 V10 und V11/Bridges/Pulsecounters Datum 20230131	122		×
Connected to Dongle with config COM4	3 @ 115200 baud, version: 11.5.0.1544 Log to file:		StartLoggi	ng
Config Repeater Config Pulse Meter	Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control			
Configure Repeater ID AES key:	Disconnect         Descented         Restart         Nutler: Enter repeater ID example: "0122456" and press Connect. Male sawe that the repeater ID example: "0122456" and press Connect.           Leave empty if no encryption is used         Leave empty if no encryption is used         Amagnet can be used for "waking" the repeater.			
Version .: 30.110	Expected total battery lifetime years N/A (Bridge)			
Basic Timers Routing Meter	s   Clock   Bridge			
Encryption:	No encryption enabled   Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.			
MBUS input mode: MBUS output mode: MBUS output frame format:	TC         v           Note: The repeater accepts C and T mode simultaneous. Don't set S mode 7 you drive that rear 100% save consult Lanken, the dougle needs to be reconfigured after this change.           C         v           A: Valid for output S         v			
Min install RSSI:	What is the convectory of the poster of the address of the control of the co	st		
Atterna gan.	Not suppoted Pretering said. Yong Under Set of the space of the set of			
Apply Changes				

When a setting is changed, it changes color from green to red. To send the setting to the gateway, click *Apply Changes*.

When a setting is successfully received by the gateway, it responds either with the new setting, if the setting was accepted, or the old setting, if the setting was not acceptable. The changed setting will then change back to green.

cted to Dongle with config COM	13 @ 115200 baud, version: 1	.5.0.1544		Log to file:	Browse	St.	artLogging	
g Repeater Config Pulse Meter	Config Pulse Counter Confi	g Modbus Master Packet Sniffe	r V2 Custom control					
onfigure Repeater ID	00069198	Connect Disconnect	Restart	Note: Enter repeater ID example: "01234567" and press Connect. Make sure that the repeater is listening. A magnet can be used for "waking" the repeater.				
rsion.: 30.110	Expected total battery lifetime N/A (Bridge)	years	course empty and energy of the case					
Basic Timers Routing Meter	rs   Clock   Bridge							
Encryption:	No encryption enabled		~	Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.				
MBUS input mode:	TC v			Note: The repeater accepts C and T mode simultaneous. Don't set S mode if you don't are 100% sure consult Lansen,				
MBUS output mode: MBUS output frame format:	A - Valid for output S,			the dongle needs to be reconfigured after this change. OMS compatible modes are T mode Frameformat A and C mode Frameformat A Kamstrup system use C mode Frameformat B	1. 1. 1			
Min install RSSI:	0	Value: [0 100], Empty or 0 = not	l used	The value is a converter value by each of 10 particles index do it coursed of a type and the value of the val				
Antenna gain:	Not supported			Antenna Gain: When using an external antenna with Gain there might be needed to lower the from the power to stay below the CE regulation. If you are using a antenna with 3dib gain you should set the gain to 3 to compensate for the g	output			

## Settings in the gateway

The following chapter will explain in detail what all the settings that are available mean. Note that all settings are supported by the Gateway.

#### Basic-tab

This tab contains the so called "basic" parameters of the gateway.

AES key

Note: This option does not affect the encryption of incoming packets from sensors/meters.

This parameter is used to enable/disable the encryption options for a gateway. By default, the gateway is configured to not use encryption. This encryption is NOT used for encrypting incoming data packets from sensors/meters, it is only used for packets sent to the gateway for configuration from for example a LAN-WMBUS-D1/D2-TC configuration device.

Note: The AES key is not needed when configuring the device using an active MQTT connection.

AES key:		Leave empty if no encryption is used
Encryption:	No encryption enabled	· · ·

The different encryption options can be seen by clicking on the arrow marked by a box in the picture above. There are four options available, see table below. To change from one option to another, the correct AES key must be written in the field *AES key*.

Option	Meaning
No encryption enabled	Encryption is not enabled (default). When this option is enabled, the user does not need to write a key in the field <i>AES key</i> to change the other parameters for the GW.
Enabled for configuration	Encryption is enabled. When this option is enabled, the field <i>AES key</i> must contain the correct key for the GW to apply any parameter changes.
Enabled: OMS time sync	This option enables the OMS time sync. This option needs to be enabled if time synchronization should only be allowed if the time synchronization packet is sent encrypted. This packet is sent from the gateway using the OMS time synchronization format.
Enabled: OMS time sync and configuration	This option combines the two options above, i.e., <i>Enabled for configuration</i> and <i>Enabled: OMS time sync.</i>

#### MBUS mode

These settings are used to set the input and output communication format for the gateway.

MBUS input mode:	TC v	Advanced setting: Support S mode
MBUS output mode:	C ~	
MBUS output frame format:	A - Valid for output S. $\sim$	

By default, the gateway always accepts incoming data in C- and T-mode but the output mode can be changed to S-, C-, or T-mode with frame format A or B. Recommended use is:

- Input = TC
- Output = C
- Frame format = A

The gateway can listen for sensors in S-mode by first enabling "Advanced setting" and then setting the input mode to S-mode. Make sure all other configurations of the gateway are done before setting it to S-mode as it will not be able to configure it afterwards (if using the LAN-WMBUS-D1/D2 to configure the device).

Note: If input mode is set to S, it will not be possible to configure the gateway further until the USB-dongle has been configured to send in S-mode. Contact Lansen for more information on how to proceed with this.

Note: If input mode is set to S-mode, then the gateway will not receive C- and T-mode data.

#### Min install RSSI

This parameter is used to ensure only meters with good signal strength is retransmitted by the gateway.

Min install RSSI:	0	Value: [0 110], Empty or 0 = not used

By using this parameter, one can control the minimum signal strength a meter must be received by the gateway to be added to the internal routing list of the gateway. This can be used in an environment where multiple gateways are deployed. By using this setting, only meters with a good connection to the gateway is handled, thus decreasing the risk for data collision in the air due to less retransmissions by fewer gateways.

Note: A gateway must be restarted after this parameter is changed, otherwise the internal routing list will not be changed. A restart can be performed by disconnecting and connecting the power/battery again or by clicking on *Restart* in Lansen Configurator.

#### Antenna gain

This setting is used if a gateway has a connected external antenna with a gain.

Antenna gain:

+0 dBi 🗸 🗸 🗸

Having a large external antenna, especially with a gain, is advantageous since it allows a gateway to have a better reception. However, our gateways are built to send on the maximum allowed output power and using an antenna with gain causes the gateway to transmit with an output power greater than the legal limit.

To counteract this, set this setting to the specified gain on the external antenna and the gateway will lower its output power to match the gain, thus transmitting at the legal limit. This allows the gateway to use the full potential of the antenna when receiving while staying at the legal limit when transmitting.

**NOTE**: This parameter is only applicable to models which have external antenna on the w-MBus interface (ending with an -X on the label).

#### Timers-tab

This tab contains parameters for the gateway which are timer-based, such as listen and pause timer. It is also possible to configure if the gateway should wakeup on specific days, e.g., Mondays.

#### Suppression timer

This setting is used to reduce how often packets from each meter is stored by the gateway and the time can be set in either minutes or hours.



#### Start time

This setting is used to control at what time and how often a gateway should start listening on selected weekdays.



Every time the gateway wakes up, it listens for data for the duration configured on the setting *Listen/pause timer* and then goes to sleep until it is time to wake up again.

To setup this properly, four options are available. From left to right in the picture above, they mean:

- Checkbox: Activate/deactivate this parameter
- Time field: Define which time (UTC) the gateway should start listening
- Period interval: How often the gateway should start listening
- Active days: The gateway will start listening for each checkbox marked

#### **Checkbox**

When this checkbox is marked, the parameter *Start time* is active. The gateway will start listening at the time, intervals, and days specified by the next options.

#### Time field:

The time set in this field indicates what time (UTC) each day the gateway will wake up and store packets. The time defined in this field must be equal or less than the chosen period interval. Furthermore, the gateway will be listening for the time defined in the parameter *Listen/pause timers*.

#### Period interval:

This option defines how often the gateway will start listening from the time set in the option *Time field*.

#### Active days:

This option controls which days the gateway is listening on. Simply mark the checkboxes for the days the gateway should be listening and uncheck the others.

#### Listen/pause timers

This parameter sets how many minutes a gateway should listen for incoming wM-Bus packets and pause (not retransmit). The gateway alternates between these states.



The ratio between these two settings will affect the expected lifetime of the battery in the gateway and should be set according to the need for data from meters.

Note: For mains-operated gateway (LAN-WMBUS-GW5-M), this parameter can be set to 1/0 (always listening).

Note: This parameter should be the same for all battery-operated repeaters and gateways in the same setup.

#### Magnet reed timer

This parameter sets how many minutes the gateway is in forced listening mode when a magnet has been used against it. This can be used, for example, when configuration of a gateway is needed or during installation.

This mode is activated by using a permanent magnet to the left of the label, on the enclosure. This will cause the gateway to beep and wake up.

During the first minute after using a magnet, a gateway will only listen for configuration packets. This can be used if the gateway is being configured in an area with a lot of sensors. For the rest of the time defined by this parameter, the gateway will retransmit incoming packets as normal with the suppression timer. Once this timer is out, the gateway will go to sleep according to the pause time set on the parameter *Listen/pause timer*.

#### Monthly reading start time

This setting is a separate timer which is used to wake the gateway at a specific date and time once a month and is useful in systems where meter data is also needed at a specific date and time every month.



#### Accept Manufacturer ID

This parameter is used if the gateway should only store packets from meters with a specific manufacturer code. In other words, this is manufacturer code filtering. This is useful in areas where different companies and manufacturers are active. If all fields are empty, no filtering is done by the gateway and packets from all meters will be stored.

Accepted Manufactur IDs:				Example: LAS

#### Route messages

This parameter has two options:

- Route only OMS messages: The gateway will only store OMS compatible packets
- Route all messages: The gateway stores both OMS and non-OMS compatible packets



#### Meters-tab

The settings and options in this tab have to do with the internal routing list of a gateway. In this tab, meters can be viewed, added, and removed as explained in each chapter below.

#### Automatic meter installation



When this checkbox is marked, a gateway will automatically add received meters to its internal routing list of maximum 2000 unique meters. If it is not desired to add any more meters or to have full control of which meters are stored by a gateway, uncheck the checkbox.

NOTE: If this setting is disabled and no meters are stored in the internal routing list, then no meters will be stored by the gateway. In this case, meters must be added manually.

Number of meters

Number of meters:	926	1074 free slots
	Load all me	ters

This field displays how many meters there currently are in the internal routing list of the gateway. On the right-hand side of the field is the currently available number of slots available. To view all the meters in the internal routing list, click on the button **Load all meters**. This will fill up the list on the right-hand side of the program.

#### Add meter(s) manually to internal routing list

This is where a user can manually add a meter to the internal routing list of a gateway.

	Manufacturer Ex: LAS	Serial number Ex: 01234567
Add meter data:		
	Add	meter(s)

To add a meter to the internal routing list, fill in the manufacturer ID (left field) and the serial number (right field) and click on the button **Add meter(s)**. The meter(s) will then be added to the gateway.

**NOTE**: Adding meters manually can only be done if the parameter Automatic meter installation is disabled.

#### Add meter(s) from file to internal routing list

Instead of adding a meter one by one, a user can instead import a csv-file with many meters.

Import meter data:			Example CSV file: MapufacturerCode:IdentificationNumber
	Browse	Import .csv-file	LAS;11111111 LAS;22222222

To add a whole file, click on "Browse" and select the csv-file with the meters to be added to the gateway. Once a file has been selected, click "Import csv-file" to start uploading the meters in the file.

Note: The csv-file **MUST** on the first row start with the text **ManufacturerCode;IdentificationNumber** otherwise the file will not be uploaded to the gateway.

Note: Adding meters manually can only be done if the parameter Automatic meter installation is disabled.

#### Delete meter(s)

This is done if one, or several, meters should not be retransmitted by a gateway. To see this list, first click on 'Load all meters' to the left of the view below.

To remove all meters, click on the button **Delete all**. This is only possible if *Automatic meter installation* is enabled.

Use the button **Delete selected** if only selected meters should be deleted. Simply mark the meters in the list which are unwanted and click on the button **Delete selected** – the gateway will then remove the selected meters from its internal routing list.

#### Note: The button **Delete selected** is only enabled when the parameter *Automatic meter installation* is disabled.

Selected	Index 🔺	Identity	^	
$\checkmark$	0	BMT 15176158		
$\checkmark$	1	LAS 12345678		This is the list of all meters currently in the repeater.
	2	LAS 00021194		
$\checkmark$	3	BMT 15701507		
	4	QDS 90540897		
	5	BMT 16058030		
	6	KAM 71008065		
	7	LAS 00016796		
	8	LAS 02000480		
	9	LAS 02001270		
	10	LAS 00016683		
	11	LAS 00023491		
	12	LAS 02001479		
	13	EGA00000018		
	14	LAS 03002052		
	15	KAM 76720988		
	16	LAS 02001445		
	17	EGA00000017		Remove selected or all meters from the routing list.
	18	HYD 58504884		
	19	LAS 02001420		Delete selected
	20	EGA00000019		
	21	KAM 76720989	¥	Delete all

#### Clock-tab

This tab shows information about the internal clock of the gateway.

Repeater clock (UTC)	2020-07-03 08:11:55
Clock diff (s):	0
	Sync clock with PC

The upper field, *Repeater clock (UTC)*, displays the internal clock of the gateway as UTC-time while the lower field, *Clock diff (s)*, shows how many seconds the internal clock of the gateway differs from the current clock on the PC.

The gateway keeps synchronization using the configured NTP server so no synchronization with PC is needed. To synchronize the gateway clock to the PC, simply click on the button **Sync clock with PC**.

**NOTE**: The time synchronization is performed each time the device connects to the internet or every 12 hours. The gateway LAN-WMBUS-GW5 has a highly accurate onboard temperature compensated clock for minimum drift and the expected drift is less than 0.5 seconds/day.

#### Bridge-tab

This tab contains settings on how the gateway should connect and communicate with MQTT. Some of these settings are only applicable for the LTE-M1 and CAT1/4G gateway while others are for the ethernet gateway (Example: B4-M-LR-A1-ETH).

In this tab it is possible to configure the MQTT server addresses. The new setting will come into effect on the next connection to internet or by forcing a new connection to internet by doing a restart. To do a restart, click on the button **Restart** in the *Basic* tab.

**Note:** When connecting via the LAN-WMBUS-D1/D2-TC dongle and not entering an AES key only the first letter of the MQTT settings will be retrieved.

**Important:** Make sure that all settings are valid when changes are made on a device in a remote location. If the settings are incorrect then it will not be possible to do any more configurations using the MQTT interface. Make sure that all 4 settings are set correctly; MQTT host, username, password, and port since they are sent in the same configuration packet to the gateway. Meaning if only 1 parameter is changed the 3 other parameters are also changed to the current value in the GUI.

#### LTE-M1 and CAT1/4G gateway specific settings

#### These settings are only applicable for the LTE-M1 and CAT1/4G gateway.

A Lansen Configurator rev 1.7.0.	0 LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 202401015 Bet	ta					-		×
Connected to Wired with configuration	COM7 @ 115200 baud			Log to file:		Browse	S	tart Logging	9
Config Repeater / Bridge Config Pul	se Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom	control E	xtended debug	g					
Configure Repeater/Bridge ID AES key: Version.: 30.1003, HW model: 1 Basic Timers Routing Mete	99999541 Connect Expected total battery lifetime years N/A (Bridge) rs   Clock Bridge	Discor encryption i	is used N N co ke	lote: Enter repeater/brid fake sure that the repeat magnet can be used for lote: If the bridge is batt onnect from the bridge eep the connection act	dge ID example: "101234567" and press Connect. ater is listening. or "waking" the repeater/bridge. terdriven the configurator will wait for an incomming and when that is received read out the settings and tive for x minutes. Supported by bridge rev 113 and newer.				
MQTT host: MQTT usemame:	firendly¥feguard.cloudmgtt.com on port: 1883	The MC	QTT server add	dress IP or DNS addres	ss. (recomended to never use fixed IP use DNS Alias instead)				
MQTT password: MQTT custom prefix:		Note: V	nt: ir any chan Vhen reading o	ge is done to any of the out the MQTT settings of	e 4 m/ci i settings all 4 settings must be set again at the same time. only the first letter will be shown, for security reason.				
Internet security: APN:	TLS off Vine SNI	APN is t	typical not nee	eded for LTE-M1 since t	the APN is recieved from the network.				
NTP: Modem upload time:	pool ntp.org         Image: state	Use DN	IS address and	d not fixed IP for best re	slability				
MQTT always online:	VES	MQTT a Data is MQTT a manual	always online v sent as soon a always online o for more detail	will override modem upp as the data is recieved I can also be used tempo Is. should be the default or	oload time and keep connection always active. by the bridge (transparent mode). orary recieve transparent data as a sniff mode, refer the efficiency and a profile a profile and and a single and a single and a single active.				
Network mask: Network status:	Not supported	should	not be the long	g term setting when run	ning on battery, since this will drain the battery fast.				
MAC address:	Not supported	MCU 1	HW model: HW version:	1 2	New FW URL:				
DNS address:	Not supported		FW version:	1003					
Standard gateway:	Not supported	MCU 2	HW model:	N/A	New FW URL:				
DHCP enabled:	Not supported		FW version:	N/A N/A	New FW version:				
GPRS enabled:	Not supported		Upgrade	e bridge firmware(s)	]				
Apply Changes									

#### **Internet Security**

- It is possible to turn on communication using TLS for the gateway when communicating with the MQTT broker.
- Server and client authentication requires preloaded certificates.
- SNI checkbox: You can enable or disable the gateway to use SNI when contacting the MQTT broker.

#### APN

It's possible to enter a specific APN, if needed. For LTE, the APN will be retrieved from the network if left empty in the configurator.

#### NTP

It is possible to setup specific NTP server if desirable.

#### Modem upload time

This is the time that the modem will connect to the MQTT server and upload the stored data. If the setting *MQTT always online* is set to yes, this setting has no effect.

#### Note: Do not set the setting Modem upload time to the same value as the listen time under Listen/pause timer.

The best solution on battery driven gateway is to first listen for incoming wM-Bus data then setup the gateway to upload the data later the same day.

#### Example:

Listen start time = 05:20 Listen time: 30 minutes Modem Upload time: 06:00

#### MQTT always online

This means that the gateway will always be connected to the MQTT server. If connection drops it will automatically try to connect again.

Note: NEVER use this option for battery driven gateways since this will drain power really fast.

#### Extra screenshots from the Meters tab with details

		<form></form>	ansen Configurator rev 1.6.1.0 l	AN-MBUS-R2/R3/R4 V10 and V11/Bridge	/Pulsecounters Date 20231220		- 0
	<pre>stard / But bis log has been low for the low for</pre>	<form></form>	ected to MQTT with config 000000	12@friendly-lifeguard.cloudmqtt.com:1883, At I	east once (QoS 1)	Log to file:	Browse StartLogg
par loga control of the second	par Angeler An	<form></form>	ig Repeater / Bridge Config Pulse	Meter Config Pulse Counter Config Modbu	s Master Packet Sniffer V2 Custom control		
	<pre>inf control information i</pre>	<form></form>	nfigure Repeater/Bridge ID	00000012 Extend upt	ime: 15 min Disconnect	Note: Enter repeater/bridge ID example: "01234567" and press C Make sure that the repeater is listening.	onnect.
		<form></form>	ES key:		Leave empty if no encryption is used	A magnet can be used for "waking" the repeater/bridge. Note: If the bridge is batterdriven the configurator will wait for an in	comming
	<form></form>	<form></form>	sion.: 31.6, HW: 0001h	Expected total battery lifetime years N/A (Bridge)		connect from the bridge and when that is received read out the s keep the connection active for x minutes. Supported by bridge rev	ettings and r 113 and newer.
Abord red red red red red red red red red r		<form></form>	asic   Timers   Routing Meters	Clock Bridge			
All and all all and	<form></form>	<form><form></form></form>	Automatic meter installation:	V YES		Selected Index Identity	This is the list of all meters currently in the repeater.
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Name of order 10   In direct order	Nater of ref milling        Nater of ref milling   <	<form>  Later of mer 0   Or charger 0   A of mers 0&lt;</form>	routing slots will survive restart	and when woken up by using the magnet		3 LAS 00162633 Information	×
Let al ander       Image and the field of an exciption exciption of an	Image: image	Image:	Number of	meters: 925 1075 free slot	Load all meters: Will read all meters	□ 4 LAS 00175541 □ 5 LAS 00175440	
Add wared all     Add wared	<form>  A direction        A direction        A direction              A direction                                   A direction   <td><form>  A definition        A definition        A definition           A definition                       A definition                    A definition  <td></td><td>Load all meters</td><td>that are in the routinglist of the repeater</td><td>6 LAS 00175642 Successfu</td><td>ully fetched all manual meters.</td></form></td></form>	<form>  A definition        A definition        A definition           A definition                       A definition                    A definition  <td></td><td>Load all meters</td><td>that are in the routinglist of the repeater</td><td>6 LAS 00175642 Successfu</td><td>ully fetched all manual meters.</td></form>		Load all meters	that are in the routinglist of the repeater	6 LAS 00175642 Successfu	ully fetched all manual meters.
Hondow date	All were were     Bit were were were were were were were wer	Al ware reg     But ware reg        But ware reg              But ware reg				7 LAS 0000002	
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Add metrics     Import met data:        Import met data:  <	Additionality       Additionality<	Advances   in discretion   in ordination   in discretion   in discretion   in ordination   in discretion   in ordination   in discretion   in ordination				18 LAS 96943033	Delete selected
hyper neter date:		<form>         by our word with:       image:       i</form>		Add meter(s)		19 LAS 00175543	Damassa all analam form the analam list and all data
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Inport meter data:         Example CSV file           Browne         Inport .cev file           Browne         Inport .cev file           Browne         Inport .cev file           Browne         Inport .cev file	Import meter data:         Example CSV file:           Brownee         Import .cev file           Brownee         Import .cev file           Add meter(s)         22           LAS 001757643           22         LAS 001757643           22         LAS 001757640           22         LAS 001757640           22         LAS 001757641           23         LAS 00175741           23         LAS 1111111	Import meter data:       Import cov/fie         Browne       Import cov/fie         Add meter(s)       Import cov/fie         Add meter(s)       Import cov/fie         Browne       Import cov/fie         Browne       Import cov/fie         Add meter(s)       Import cov/fie         Browne       Import cov/fie         Browne       Import cov/fie         Browne       Import cov/fie         Adply Changes       Add meter(s)	, and they		serialnumber of the meter that you want to add to the routing list.	11 LAS 00175441	
Import meter data:         Example CSV file:           Brownee         Import .cev/fie           Brownee         Import .cev/fie           Brownee         Import .cev/fie	Add meteris)         Example CSV file           Import meter data:         Example CSV file           Browee         Import .cev file           Add meteris)         22           LAS 00175644           220         LAS 00175644           221         LAS 00175644           223         LAS 00175741           23         LAS 1111111	Add meter(s)       13       L-S 00 175 H32         Import meter data:				L 12 LAS 00175643	
Inport meter data:     Example CSV file.       Brownee     Import .cev file       Brownee     Import .cev file       Add meter(s)     21       LAS 00175741       Brownee     Import .cev file       LAS 22222222	Add meter(s)         17         LAS 00175543         Please note that max 5 meters can be removed at a time.           Import meter data.         5comple CSV file:         18         LAS 00175543         Detete selected           Browse         Import .csv file         Max_facture(code selected/cationNumber)         22         LAS 001755442         Detete selected	Add meter(s)       17       LAS 00163126       Please note that max 5 meters can be removed at a time.         Import meter data:       18       LAS 00175442       Delete selected         Browse       Import .csv file       22       LAS 00175640       Please note that max 5 meters can be removed at a time.         Browse       Import .csv file       23       LAS 11111111       Delete all				□ 16 LAS 0000001	Removes elected meters from the routing list.
Import meter data:       Import me	Add meter(s)         18         LAS 96943033         Delete selected           Import meter data:         19         LAS 00175543         Delete selected           Browse         Import .cev/fie         Man_factureCode bitraficationNumber         21         LAS 00175640         Delete selected           21         LAS 00175640         22         LAS 00175640         Delete selected         Delete selected           22         LAS 00175741         23         LAS 11111111         Delete selected         Delete selected	Add meter(s)       18       LAS 90433033       Delete selected         Import meter data:       Delete selected       20       LAS 00175640       Persone all data.         Browse       Import .csv-file       22       LAS 00175640       Delete selected       Persone all data.         Apply Changes       Apply Changes       Apply Changes       Add meter(s)       Delete selected       Delete selected				17 LAS 00163126	Please note that max 5 meters can be removed at a time.
Import meter data:           Brownee         Import .csv/file         LAS 1017544         Remove all meters from the routing list and all data.           Note:         1         2.1         LAS 00175741         Remove all meters from the routing list and all data.           Brownee         Import.csv/file         LAS 1111111         2.2         LAS 00175741           2.3         LAS 1111111         2.3         LAS 1111111         Delete all	Import meter data: <ul> <li>December CSV file:</li> <li>Manufacture@cole identificationNumber</li> <li>LAS 0017544</li> <li>LAS 0017544</li> <li>LAS 00175741</li> <li>Z2</li> <li>LAS 00175741</li> <li>Z3</li> <li>LAS 1111111</li> <li>LAS 1111111</li> <li>LAS 1111111</li> <li>Z3</li> <li>LAS 1111111</li> <li>Delete all</li> </ul> Period     Pe	Import meter data:     Example CSV file: ManufactureCode:dertificationNumber US:1111111 LAS;2222222     20     LAS:00175442     Person all meters from the routing lat and all data. Ible. The complete Call of memory takes about 60-120 second poster:       Apply Changes     Import .csv file     S2     LAS:01111111     Delete: all		Add meter(s)		□ 18 LAS 96943033 □ 19 LAS 00175543	Délete selected
Import meter data:           Browse         Import.csv/file         LAS:1111111         21         LAS:00175640         Be patient.         Be patient.<	Import meter data:     Example CSV/lie       Browse     Import .csv/lie       Browse     Import .csv/lie       Apply Changes	Import meter data:           Import meter data:         Example CSV/lie         21         LAS 00175640         Detect all           Browse         Import.csv/fie         LAS 20222222         LAS 00175741         Detect all		/ sut incloi(5)		20 LAS 00175442	Remove all meters from the routing list and all data.
Browse         Import .cov/file         LAS;1111111          223         LAS 001/07/41          Delete all	Browse         Import .cev/file         LAS.11111111 LAS.22222222         CAS 00 (75/4)         Delete all           Apply Changes         Apply Changes         -         23         LAS.11111111	Browse         Import .csv4ie         LAS.1111111 LAS.22222222         CAS 00 (17574)         Delete all           Apply Changes         Apply Changes <td>Import met</td> <td>er data:</td> <td>Example CSV file: ManufacturerCode:IdentificationNumber</td> <td>21 LAS 00175640</td> <td>Note. The complete clear of memory takes about 60-120 second Be patient.</td>	Import met	er data:	Example CSV file: ManufacturerCode:IdentificationNumber	21 LAS 00175640	Note. The complete clear of memory takes about 60-120 second Be patient.
	Apply Changes	Apply Changes		Browse Import .csv-file	LAS:1111111 LAS:22222222	22 LAS 00 1/5/41	Delete all
	Apply Changes	Apply Changes				· · · · · · · · · · · · · · · · · · ·	

## Lansen configuration manual for Lansen wM-Bus GW5 (MQTT) Rev: C

		ansen Configurator rev 1.6.1.0 l	LAN-MBUS-R2/R3/R4 V1	10 and V11/Bridges/Puls	counters Date 20231220						- 0
	<form></form>	cted to MQTT with config 000000	12@friendly-lifeguard.cloud	dmqtt.com:1883, At least or	ice (QoS 1)	Log to file:				Browse	StartLog
	<form></form>	Repeater / Bridge Config Pulse	e Meter Config Pulse Cou	inter Config Modbus Mast	er Packet Sniffer V2 Custom control						
	<form></form>	figure Repeater/Bridge ID	00000012	Extend uptime:	5 min Disconnect	Note: Enter repeater/b Make sure that the rep	oridge ID example: "0123- peater is listening.	4567" and press Co	onnect.		
		key:			Leave empty if no encryption is used	A magnet can be used Note: If the bridge is b	I for "waking" the repeate atterdriven the configurat	r/bridge. or will wait for an in	comming		
	<form></form>	on.: 31.6, HW: 0001h	Expected total battery lifeti N/A (Bridge)	ime years		keep the connection a	e and when that is receive active for x minutes. Supp	orted by bridge rev	113 and newer.		
Numeric     And only that are heard of the breaches are statically and the material of the breaches are statically and the breaches are statically and the material of the breaches are statically and the breaches are		sic   Timers   Routing Meters	Clock Bridge								
<form></form>	The defendence for one barryer of the property one state state state in the first one state is a state state at the state state is a state state at the state state is a state stat	Automatic meter installation:	YES			Selected Index	Identity	^	This is the list of all meters	s currently in the repeat	ter.
new configurator rev 16.10.LMAMBUS-R2R3/R4 V10 and V11/R/dge/Pulsecounters D4203220	see Configurater ore 1.6.1.0.LAN-HAUBUS-RURSING V10 and V11/Bridges/Pulcecounter Ded 2021220	Automatic: Means all meters th The fit is cleared when applyin routing data will survive restart. Number of Add meter Import meter Apply Changes	at are heared by the repeat on the repeat och when it and when woken up by us meters: 225 Lead all er data: Ex.LS Add m Add m Browse	ter are automaticily initialied in respeater is instantical ing the magnet. 1075 free alctos inneters Serial number Ex: 01234567 def(s) tetr(s) mpont_casville	In the routing lat In the Instance of the read all maters that are in the routinglist of the repeater Exter the manufacture code and sensitivuities of the meter that you want to add to the routing lat. Example CSV file: Manufacture:Code;IdentificationNamber LAS:1211111 LAS:2222222	0           1           2           3           4           5           6           7           8           9           11           12           15           16           17           18           19           221           22           23	Les 00189787 LAS 00189787 LAS 00189724 LAS 0000003 LAS 00175541 LAS 00175642 LAS 00175642 LAS 00175642 LAS 00175643 LAS 00175640 LAS 00175640 LAS 00175640 LAS 00175640	Information Char	Renoves elected meters Pesse note that max 5m Delete selected Renoves al meters from Note. The complete cleas Be patient. Delete all	from the routing list, eters can be removed .	<u>at a time.</u> ata. ut 60-120 second
iker:	iter:	sen Configurator rev 1.6.1.0 ed to MQTT with config 000001 Repeater / Bridge Config Puls figure Repeater/Bridge ID	LAN-MBUS-R2/R3/R4 V 012@friendly-lifeguard.clou e Meter Config Pulse Cou 00000012	10 and V11/Bridges/Puls admqtt.com:1883, At least o unter Config Modbus Mas Extend uptime:	ecounters Date 20231220 nce (QoS 1) ter Packet Sniffer V2 Custom control 15 min Disconnect	Log to file:	/bridge ID example: "012;	34567" and press C	onnect.	Browse	- C
n: 316. HW: 001 Expected total battery lifetime years MA (Bidge) ac Timen Routing : Metrin Control used and wents has in societation when the is noncoming and when has in societation and when has in socitation and when has i	n. 316. HW: 001h Ended and battery lifetime years MA (Bridge) aic Timen Roung Meter Ock Bridge aic Timen Roung Meter Ock Bridge Atomatic meter installation:YE Atomatic meter installation:YE Atomatic meter installation:YE Atomatic meter installation:YE Atomatic meter installation:YE Meter Ock Bridge Difference are adomaticly installed in the noting lat The lat is cheered when applying the magnet of the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in the noting lat The difference on the addit meters in the installed in intermediate in the noting lat The lat is cheered when applying the magnet on the installed in the noting lat The difference on the addit meters in the installed in the noting lat The lat is cheered when applying the magnet on the installed in the installed in the noting lat The lat is cheered when applying the magnet on the installed in the noting lat The lat is cheered when applying the magnet on the installed in the noting lat The lat is cheered when applying the magnet on the installed in the noting lat The lat is cheered when applying the magnet on the installed in the noting lat The lat is cheered when applying the magnet on the installed in the noting lat The lat is cheered when applying the magnet on the installed in the noting lat The lat is cheered when applying the magnet on the installed in the noting lat The lat is	key:			Leave empty if no encryption is used	Make sure that the re A magnet can be use	peater is listening. d for "waking" the repeat	er/bridge.	accomplex.		
International materies in the couple for the couple for the source of an addition of the repeater of the material addition.       These is the lat of all meters councedly in the repeater.         Advance:       YES         Advance:       YES         Advance:       Number of meters:         Import meter data:       Import meters data         Main data with the repeater is extrated.       Selected         In data data       In data with the repeater is extrated.         In data data       Selected         In data data       In data with the repeater is extrated.         In data data       In data with the repeater is extrated.         In data data       In data with the repeater is extrated.         In data data       In data with the repeater is extrated.         In data data       In the repeater         Main data with the repeater is the main facture code and is the routing list.       In data with the routing list.         In data with the routing list.       In data with the routing list.         In data with the routing list.       In data with the routing list.         In data with the routing list.       In data with the routing list.         In data with routing list.       In data with routing list.         In port meter data.       LAS         In port meter data.       Extrate for the routing list. <td>Internet internet internet</td> <td>ion.: 31.6, HW: 0001h</td> <td>Expected total battery life</td> <td>time years</td> <td></td> <td>connect from the bridge</td> <td>ge and when that is recei</td> <td>or will wait for an in eved read out the s</td> <td>settings and</td> <td></td> <td></td>	Internet	ion.: 31.6, HW: 0001h	Expected total battery life	time years		connect from the bridge	ge and when that is recei	or will wait for an in eved read out the s	settings and		
Adomatic meter installation:       YES         Adomatic: Means all meters that are heared by the negester are automaticly installed in the routing list.         In the list of early meters and meters in the routing list.         In the list of early meters and meters in the routing list.         In our domatic: installation:         In our domatic installation in or use: meters can be added manually and the meters in the routing list of the repeater         In our domatic installation:         In	Adomatic meter installation:       VES         Adomatic: Means all meters in the reheard by the repeater are automatic/ installed in the routing list.         In the list of all meters automatic installation in the repeater is retarded.         Provide all meters in the routing list.         Number of meters:         22       LAS 001169187         1       LAS 001169187         2       LAS 001169187         2       LAS 001169187         2       LAS 001169187         3       LAS 001169187         2       LAS 001169187         3       LAS 001169187         2       LAS 001169187         3       LAS 001169187         5       LAS 001176440         6       LAS 001176540         6       LAS 001176540         6       LAS 001176540         6       LAS 001176540         7       LAS 000176541         10       LAS 000176543         11       LAS 000176543         12       LAS 000176543         13       LAS 000176543         14       LAS 000176543         15       LAS 000176543         16       LAS 000176543         17       LAS 000176543 <tr< td=""><td>sic   Timers   Routing Meter</td><td>N/A (Bridge) S Clock Bridge</td><td></td><td></td><td>Reep the connection</td><td>detive for x minutes, supp</td><td>inted by bridge ret</td><td></td><td></td><td></td></tr<>	sic   Timers   Routing Meter	N/A (Bridge) S Clock Bridge			Reep the connection	detive for x minutes, supp	inted by bridge ret			
Adomatic: Means all meters that are heared by the repeater are automaticly intalled in the routing list The list is clear any text and when applying the magnet chy when the repeater in stated. Find atomatic intallation in or use, neters can be added manually and the meters in the routing side will away to react and when noden up by using the magnet Number of meters: 22 LAS 000102023 2 LAS 00175541 2 LAS 00175541 2 LAS 00175541 2 LAS 00175542 2 LAS 00175542 2 LAS 00175543 4 LAS 00175543 2 LAS 00175543 2 LAS 00175544 2 LAS 00175543 2 LAS 00175544 2 LAS 00175543 2 LAS 00175543 2 LAS 00175543 2 LAS 00175543 2 LAS 00175544 2 LAS 00175543 2 LAS 00175544 2 LAS	Advance:       Number of meters       0       Advance:       0       0       Advance:       0 <t< td=""><td>A tomatic meter installation:</td><td></td><td></td><td></td><td></td><td></td><td></td><td>This is the list of all motor</td><td>a compativia the same</td><td>ter</td></t<>	A tomatic meter installation:							This is the list of all motor	a compativia the same	ter
Delate all		Automatic: Means all meters th The lat is cleaned when apply in ort automatic intraliation in routing alots will survive restart Number of Automatic	nd are heared by the repect ing the magnet och when go the magnet och when and when woken up by u indexer. Sp5 Load at Manufacturer Ec LAS Ec LAS Load at Manufacturer and and when woken up by u indexer. Ec LAS Load at Manufacturer Ec LAS Load at Load at Loa	ter en eutomatick) installe the rope ter in reducted de manualy and the metern ang the magnet. 1075 free slots I meters Setal number Ex. 01228577 72554413 1000 100	In the routing list in the Laad all meters: Will read all meters that are in the routinglist of the repeater Enter the manufacture code and sensity of the meter that you want to add to the routing list. Example CSV file: ManufactureCode IdentificationNumber LAS:1111111	0           1           2           3           4           5           6           7           8           9           10           11           12           15           16           17           18           19           20           21           22	LAS 00155137 LAS 00155137 LAS 0010003 LAS 00162633 LAS 00175641 LAS 00175641 LAS 00175642 LAS 00175642 LAS 00175643 LAS 00175643		Removes elected meters Please note that max 5 m Delete selected Remove all meters from Note. The complete ce Be pater.	from the routing lat. Letters can be removed the routing list and all d ar of memory takes abo	at a time. ista. ut 60-120 second

## Lansen configuration manual for Lansen wM-Bus GW5 (MQTT) Rev: C

A Lansen Configurator rev 1.6.1.0	LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220		- 🗆 ×
Connected to MQTT with config 00000	012@friendly-lifeguard.cloudmqtt.com:1883, At least once (QoS 1)	Log to file:	Browse StartLogging
Config Repeater / Bridge Config Puls	e Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control		
Configure Repeater/Bridge ID AES key: Version.: 31.6, HW: 0001h	00000012 Estend uptime: 15 min Disconnec Experted total battery lfetime years N/A (Ridore).	Note: Enter repeater/indge ID example: "01234567" and press Connect.     Make sure that the repeater is latering.     A magnet can be used for "watering" interpretation folge     ef     ad an approximation of the set of the se	
Basic Timers Routing Meter	s Clock   Bridge		
Automatic meter installation: Automatic: Means all meters ti The list is cleared when apply If not automatic installation is n	YES at are heared by the repeater are automaticly installed in the routing list ing the magnet och when the repeater is restated. to use meters can be added manually and the meters in the	Selected         Identity         This is the list of all meters curre           0         LAS 00159187         1           1         LAS 00163124         2           2         LAS 00000003	antly in the repeater.
Apply Changes	imders:       925       1075 free slots       Load all meters: Will read all meters: that are in the routingist of the repeater         Manufacture:       Scial number       Ex 01234567         Ex 0432       Ex 01234567       Extend number         Ex 03234567       Extend number       Extend number         Image: Scial number       Extend number       Image: Scial number         Image: Scial number       Extend number       Extend number         Image: Scial number       Extend number	3       LAS 00175541         5       LAS 0017541         6       LAS 0017542         7       LAS 00175441         9       LAS 00159486         10       LAS 00159486         11       LAS 00175441         12       LAS 00175443         14       LAS 00175443         15       LAS 00175443         16       LAS 00159186         17       LAS 00159186         18       LAS 00159126         18       LAS 00159126         19       LAS 00175543         20       LAS 00175544         21       LAS 00175540         22       LAS 00175741         23       LAS 1111111	he routing list. can be removed at a time_ ating list and all data. emory takes about 60-120 seconds.
A Lansen Configurator rev 1.6.1.0 Connected to MQTT with config 00000 Config Repeater / Brdge Config Pult Configure Repeater/Brdge ID	LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220 012@finendy-lfeguard cloudingtt.com:1883, At least once (QoS 1) e Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control 00000012 Estend uptime: 15 min Disconnec	Log to file:	- C X
AES key: Version.: 31.6, HW: 0001h	Leave empty if no encryption is us Expected total battery lifetime years	ed A magnet can be used for "waking" the repeater/bridge. Note: If the bridge is batterdriven the configurator will wait for an incomming connect from the bridge and when that is received read out the settings and keep the connections active for writing the Supported builder are 1133 and neuver	
Basic Timers Routing Meter	N/A (Bridge) <sup>1</sup> Clock   Bridge	reep the connector adare to x minutes, supported by billing rev 113 and newer.	
Automatic meter installation: Automatic: Means all meters ti The lait a cleared when apply if not automatic matallation is including allots will survive reader Number o Add me	VES     Intervention of the result of the routing list     and are heared by the repeater are automaticly installed in the routing list     out one, mitters can be added manually and the intervention     to use, mitters can be added manually and the intervention     meters:	Selected         Index         Kernty         This is the lat of all meters currer           1777         LAS 00175298         This is the lat of all meters currer           1777         LAS 00175299         This is the lat of all meters currer           1778         LAS 00175299         This is the lat of all meters currer           1781         LAS 00175399         This is the lat of all meters currer           1782         LAS 00175399         This is the lat of all meters currer           1784         LAS 00175399         This is the lat of all meters currer           1786         LAS 00175399         This is the lat of all meters currer           1780         LAS 00175399         The last currer           1804         LAS 00159163         The last currer           1828         LAS 00159161         The last currer           1837         LAS 00159161         The last currer           1904         LAS 00159176         Pease note that mux 5 meters c           1924         LAS 00159176         Pease recent that mux 5 meters c	thy in the repeater.
Import me	Add meter(s) Ecample CSV file: ManufactureCode.identificationNumber United States Browse Import.csv-file United States	1956         LAS 00159172           1964         LAS 00159171           1965         EC6 60004325           2012         LAS 8285200           1469         LAS 7885412	ting list and all data. Imory takes about 60-120 seconds.
Apply Changes			

## Connecting and working with Lansen Configurator (battery gateway)

A battery driven gateway is not always online (sleeping), to save battery, and this must be taken into consideration when using Lansen Configurator when trying to connect to a gateway since the connection might not happen right away as it would with a main powered gateway.

When the button *Connect* is clicked, marked by red circle below, the program Lansen Configurator will try to connect with the specified gateway and continuously checks if the gateway connects to the MQTT server. Once the gateway is connected to the MQTT server, the Configurator will automatically retrieve all settings from the gateway and force the gateway to be online the number of minutes as set in the field *Uptime*. This setting is only available if connecting through MQTT.

The following images shows the process in detail.

Enter a value for *Uptime*, e.g., 15 minutes, and click *Connect* to retrieve information from the gateway once the gateway is connected to the MQTT server.

Lansen Configurator rev 1.6.1.0	LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220	>
nnected to MQTT with config 00128	23@friendly-lifeguard.cloudmqtt.com:1883, At least once (QoS 1)	Log to file: Browse StartLogging
nfig Repeater / Bridge Config Puls	Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control	
Configure Repeater/Bridge ID AES key:	00128923 Connect ptime: 15 min Disconnect Expected total battery lifetime years:	Note, Enter repeater fording ID example "10/224557" and press Connect. Make a such that the repeater is interioring. A magnet can be used for "waking" the repeater/indige. Note: "If the bridge is batteritive the configuration will wait for an incomming connect from the bridge and when that is received read out the settings and keep the connection active for xminutes. Supported by bridge rev 113 and never.
Basic Timers Routing Meter	Clock Bridge	
MBUS input mode:	Advanced settina: Support S mode	Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.
MBUS output mode: MBUS output frame format:		Don't set 5 model / you dont are 100% sure consult Lansen, the dongle needs to be reconfigured after this charge OMS compatible modes are T mode Frameformat A and C mode Frameformat A Kendron previous use C mode Frameformat B.
Min install RSSI:	Value: [0 100], Empty or 0 = not used	Min natal RSSI is the minimum signal strength a packet must be received by a repeater to be added to the routing list . The value is a converted value between 0-100 where 000 bits the repeater RSSI link and 0 is not used. For example you only wart meters does by to be accepted write the value 170 in the field.
	Restart Changes to min RSSI requires a restart to take effect	
Antenna gain:		Arterna Gain: When using an external arterna with Gain there might be needed to lower the output from the power to stay below the CE regulation. If you are using a anterna with 3dbi gain you should set the gain to 3 to compensate for the gain in the arterna

#### Lansen Configurator tries to connect to the gateway

A Lansen Configurator rev 1.6.1.0	) LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220			- C	x נ
Connected to MQTT with config 00128	8923@friendly-lifeguard.cloudmqtt.com:1883, At least once (QoS 1)	Log to file:	Browse	Start	.ogging
Config Repeater / Bridge Config Pul	se Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control				
Configure Repeater/Bridge ID AES key:	00128923 Abort uptime: 15 min Connecting Disconnect Expected total battery lifetime years:	Note: Enter-repeater/holdys ID example: "01234567" and press Connect. Marks use that the repeater is laterater/holds. A magnet can be used for "waking" the repeater/holds. Note: If the holds a blaterdriven the configurator will wall for an incomming connect from the bidge and when that is necesived read out, the settings and keep the connection active for x multitles. Supported by thigh erv 113 and nexer.			
Basic Timers Routing Mete	rrs   Clock   Bridge				
MBUS input mode:	Advanced setting: Support S mode	Enter AES key here if encryption have been enabled on the repeater: AES key is also needed to enable/disable encryption. Note: The repeater/bridge accepts C and T mode simultaneous. Don't set 5 mode four don't are 100% sure consult Lameen.			
MBUS output mode: MBUS output frame format:		the dongle needs to be recorrigured after this change. OMS compatible modes are T mode Frameformat A and C mode Frameformat A Kanstrup system use C mode Frameformat B Microsoft B 2011 bits anisotic modes a packet much a period bits a specific the packet bits and bits	the muting list	I	
Min install RSSI:	Value: [0 100]. Empty or 0 = not used  Restart  Changes to min BSSI requires a restart to take effect	Inter value i room en the final region arenging to polycer induction bereceved of a region of the object of the . The value is a converted value between 0-100 where 100 is the repeater RSS limit and 0 is not used For example if you only want meters close by to be accepted write the value 70 in this field.			
Antenna gain:	Changes to min hoss negures a restant to take enect	Artema Gan: When using an external anterna with Gain there might be needed to lower the output from the power to stay below the CE regulation. If you are using a anterna with 35b gan you should set the gan to 3 to compensate for the gain in the	antenna		
Apply Changes					

#### The gateway was offline so the program waits for a connection from the gateway.

A Lansen Configurator rev 1.6.1.0	LAN-MBUS-R2/R3/R4 V10 an	d V11/Bridges/Pulsecounters	Date 20231220			-		×
Connected to MQTT with config 00128	923@friendly-lifeguard.cloudmqtt	.com:1883, At least once (QoS 1		Log to file:	Browse	Sta	art Logging	
Config Repeater / Bridge Config Puls	se Meter Config Pulse Counter	Config Modbus Master Packe	t Sniffer V2 Custom control					
Configure Repeater/Bridge ID	00128923 A	bort uptime: 15 min	Waiting for bridge Disconnect	Note: Enter repeater/bridge ID example: "01234567" and press Connect. Make sure that the repeater is listening. A mannet can be used for "waiking" the repeater/bridge				
AES key:	Expected total battery lifetime ye	ears:	Leave empty if no encryption is used	Note: If the bridge is batterdriven the configurator will wait for an incomming connect from the bridge and when that is received read out the settings and keep the connection active for x minutes. Supported by bridge rev 113 and newer.				
Basic Timers Routing Mete	rs Clock Bridge							
				Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.				
MBUS input mode:	~	Advanced setting: Support S m	ode	Note: The repeater/bridge accepts C and T mode simultaneous. Don't set S mode if you dont are 100% aure consult Lansen				
MBUS output mode:	~			the dongle needs to be reconfigured after this change. OMS compatible modes are T mode Frameformat A and C mode Frameformat A				
MBUS output frame format:	~			Kamstrup system use C mode Frameformat B Min install RSSI is the minimum signal strengh a packet must be recieved by a repeater to be added to the	routing list			
Min install RSSI:	Va	alue: [0 100], Empty or 0 = not u	ised	. The value is a converted value between 0-100 where 100 is the repeater RSSI limit and 0 is not used. For example if you only want meters close by to be accepted write the value 70 in this field.				
	Restart CI	hanges to min RSSI require	s a restart to take effect					
Antenna gain:				Antenna Gain: When using an external antenna with Gain there might be needed to lower the output from the power to stay below the CE regulation.				
				If you are using a antenna with 3dbi gain you should set the gain to 3 to compensate for the gain in the ant	enna.			
Apply Changes								

Once the gateway is connected to the MQTT server and connection is established by Lansen Configurator, the countdown of the uptime will start. The counter shows the time left before the gateway shuts down the connection with the MQTT server.

A Lansen Configurator rev 1.6.1.0	LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220		-		×
Connected to MQTT with config 00128	923@friendly-lifeguard.cloudmqtt.com:1883, At least once (QoS 1)	Log to file: 🔲 Browse	5	StartLogging	9
Config Repeater / Bridge Config Puls	e Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control				
Configure Repeater/Bridge ID AES key: Version.: 30.127, HW: 0001h	00128923 Extend uptime: 15 min 02:49 Disconnect Leave empty if no encryption is used VA (Bridge)	Note: Enter repeater/bridge ID example: "01234557" and press Connect. Make aure that the repeater is latening. A magnet can be used for "winding" the repeater/bridge. Note: If the bridge is batterdriven the configurator will wat for an incomming connect from the bridge and when that is necesived and out the settings and keep the connection active for x minutes. Supported by bridge rev 113 and newer.			
Basic Timers Routing Mete	rs Clock Bridge				
Encryption:	No encryption enabled	Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.			
MBUS input mode: MBUS output mode: MBUS output frame format: Min install RSSI:	IC        C        A: Valid for output S        0     Value: [0100], Empty or 0 = not used       Restart     Changes to min RSSI requires a restart to take effect	Note: The repeater/bridge accepts C and T mode simultaneous. Don't set 5 mode if you oddr are 100°s pure comult Lansen, the dongle needs to be reconfigured after this charge. A set of the set of the Manufacture patient use C mode Frameformat B Min nitial RSI the minimum grand strong has packed that the received by a repeater to be added to the routing I The value is a converted value between 0-100 when 100 as the nepeater RSSI limit and 0 is not used. For example if you only want meters close by to be accepted write the value 70 in this field.	ist		
Artenna gain:	Not supported	Arterna Gain. When using an external arterna with Gain there might be needed to lower the output from the power to star below the CE regulation. If you are using a anterna with 3dbr gan you should set the gain to 3 to compensate for the gain in the anterna.			
Apply Changes					-

#### It is possible to extend the uptime by clicking 'Extend'.

A Lansen Configurator rev 1.6.1.0	LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220		- 0	×
Connected to MQTT with config 00128	923@friendly-lifeguard.cloudmqtt.com:1883, At least once (QoS 1)	Log to file:	StartLoggin	b
Config Repeater / Bridge Config Puls	e Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control			
Configure Repeater/Bridge ID AES key: Version.: 30.127, HW: 0001h	00128923 Extend uptime: 15 mr 14.57 Disconnect Expected total battery lifetime years N/A (Bridge)	Note: Enter-inspective/holgs ID example: "01234557" and press Connect. Make pass that the inspective Ib biscond to the inspective Ib biscond the inspective Ib biscond to the biscond to the inspective Ib biscond to the inspective Ib bisc		
Basic Timers Routing Mete	rs   Clock   Bridge			
Encryption:	No encryption enabled	Enter AES key here if encryption have been enabled on the repeater. AES key is also needed to enable/disable encryption.		
MBUS input mode: MBUS output mode: MBUS output frame format: Min install RSSI:	IC     ~       C     ~       A - Valid for output S     ~       D     Value: [0 100], Empty or 0 = not used       Bestat     Changes to min BSSI crossings a metat to take effect	Note: The repeater/bridge accepts C and T mode ainultaneous. Don't set S mode if you dont are 100%, sure consult Lansen, the dongie needs to be reconfigured after this change. OMS compatible modes are T mode Frameformat A and C mode Frameformat A Armstrup, system use C mode Frameformat B Mm initial RSSI is the minimum signal stemph a packet must be recieved by a repeater to be added to the routing list . The value is a converted value between 0-100 where 100 the trepeater RSSI limit and 0 is not used. For example if you only wart meters close by to be accepted write the value 70 in this field.		
Artenna gain:	Changes to min KSSI requires a restart to take effect Not supported	Artenna Gain: When using an external artenna wth Gain there might be needed to lower the output from the power to stay below the CE regulation. If you are using a anterna with 3ds gain you should set the gain to 3 to compensate for the gain in the anterna.		
Apply Changes				

## The gateway closes the connection when the timer reaches 00:00 or when the button *Disconnect* is clicked.

A Lansen Configurator rev 1.6.1.0	LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Date 20231220		- 🗆 ×
Connected to MQTT with config 00128	923@friendly-lifeguard.cloudmqtt.com:1883, At least once (QoS 1)	Log to file: DBrowse	StartLogging
Config Repeater / Bridge Config Puls	e Meter Config Pulse Counter Config Modbus Master Packet Sniffer V2 Custom control		
Configure Repeater/Bridge ID AES key:	00128923 Extend uptime: 15 min 00:00 Disconnect Leave empty if no encryption is used	Note: Enter repeater holding: ID example: "D1234567" and press Connect. Marko sure that the reparker is latering: A magnet can be used for "waking" the repeater/bridge. Note: "The hold is latterfathyme the configurator will wait for an incomming	
Version .: 30.127, HW: 0001h	Expected total battery lifetime years N/A (Bridge)	connect from the bridge and when that is received read out the settings and keep the connection active for x minutes. Supported by bridge rev 113 and newer.	
Basic Timers Routing Meter	rs   Clock   Bridge		
Supression timer: Start time:	4 Minutes V 1408 0 24h V on V Mo V Tu V We V Th V Fr V Sa V Su	Note: The supression timer sets the minum delay before a message from a specific meter is retransmitted again. Use this for minimizing traffic in the network. So if you need data every 50 minutes set this to 14. The respect can handle about 1-2 message 7 second to the supression timer must take this into account For example. You have 500 meters the supression timer must be set to 500 / 60 - 10 minutes The setting of should only be used when testim prevent in real deployment.	
Listen/pause timens:	Auto-disconnected	Note: Enable absolute time for the repeater to start listent/he listen timer shall start). If empty it is not used Then the listen and no listen time is only used. Make sure to spin clock before using the Start Time Note: In an within on system version. Start Time hall only be set for the repeater closest to the GW This starting can in version 11 be combined with weekdays to specify specific listen days The listen time in the time in minusche the respective is listenting for incoming data before going to sleep. (Pause Time) Note for Nams powered repeater set Pause Time to 0 and Listen timer to 1 Fast time is used and daily reading in waretd set: Pause Timer to 1440 - Listen Timer. For example fastent time is 30 minusche set Pause timer to 1410 This starts mis using make be used for all repeaters exage the microRepeater List times in using make be used for all repeaters exage the microRepeater	
Magnet/reed timer:	ОК	Read Time: Is the number of minutes the repeater is latening for data after a magnet was used to wake the device. During this period the supression timer is ignored for the first 4 minutes.	
Monthly reading start time: Monthly reading laten time:	☐ 14.08 ③ on the 1st	Using this setting a extra reading once per month can be added Using setting is not propagated between all reprotens and must therefore be set for all reprotens in a multihop system.	
Apply Changes			

## Upgrade firmware

To upgrade the firmware, a specific command must be sent to the gateway via MQTT, the LAN-WMBUS-D1/D2-TC configuration dongle, or by USB to USB-C wired cable.

#### LTE gateway

#### Below is an example setting.

- In the field called *Firmware URL*, enter the HTTP-server where the firmware is located.
- In Firmware version, enter the firmware version.
- Click Upgrade bridge firmware The upgrade typical takes less than 1 minute.

A Lansen Configurator rev 1.6.2.	0 LAN-MBUS-R2/R3/R4 V10 and V11/Bridges/Pulsecounters Dat	e 20240410						- 🗆	×
Connected to Dongle with config CON	130 @ 115200 baud, version: 11.5.0.1544			Log to file: 🔲			Browse	StartLo	
Config Repeater / Bridge Config Pu	Ise Meter Config Pulse Counter Config Modbus Master Packet Sr	iffer V2 Custom control							
Configure Repeater/Bridge ID	00143463 Connect	Disco	nnect N	lote: Enter repeater/brid lake sure that the repea	lge ID example: "012 ater is listening.	34567" and press Connect.			
AES key:		eave empty if no encryption	is used A	magnet can be used for lote: If the bridge is batt	or "waking" the repea erdriven the configur	ater/bridge. ator will wait for an incomming			
Version.: 30.129, HW model: 1	Expected total battery lifetime years N/A (Bridge)		ci ki	onnect from the bridge eep the connection act	and when that is rece ive for x minutes. Sup	eleved read out the settings and aported by bridge rev 113 and newer.			
Basic   Timers   Routing   Mete	ers Clock Bridge								
MQTT host:	f on port: 1	The M	QTT server add	dress IP or DNS addres	s. (recomended to ne	ever use fixed IP use DNS Alias instead)			
MQTT usemame:	L	linest	at Kanahar	in dans to see of the	A MOTT antices all	A setting of the set set is stated and the			
MQTT password:	2	Note:	When reading o	out the MQTT settings of	only the first letter will	e shown, for security reason.			
MQTT custom prefix:									
TLS:	TLS off ~								
APN:		APN is	typical not nee	eded for LTE-M1 since t	he APN is recieved f	rom the network.			
NTP:	pool.ntp.org	Use DI	NS address and	d not fixed IP for best re	lability				
Modem upload time:	□ 10:36 🗘 24h 🗸 on 🗹 Mo 🗹 Tu 🗹 We	e 🗹 Th 🗹 Fr 🗹 Sa	🗹 Su						
MQTT always online:	V YES	MQTT	always online v	will override modern upp	load time and keep o	connection always active.			
IP address:	Not supported	MQTT	always online of always and a source of a	can also be used tempo ls	rary recieve transpar	ent data as a sniff mode, refer the			
Network mask:	Not supported	MQTT should	always online s not be the long	should be the default se g term setting when runr	tting when running o ning on battery, since	n mains power, MQTT always online this will drain the battery fast.			
Network status:	Not supported					· · · ·			
MAC address:	Not supported	MCU 1	HW model:	1	New FW URL:	http://myserver.com/156.bin			
DNS address:	Not supported		FW version:	129					
Standard gateway:	Not supported	MCU 2	HW model:	N/A	New FW URL:				
DHCP enabled:	Not supported		HW version: FW version:	N/A N/A	New FW version:				
GPRS enabled:			Upgrade	e bridge firmware(s)	1				
					1				
Apply Changes									