

LANSEN

WMBUS Data format *LAN-WMBUS-HAN-P1*

Lansen Systems AB

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Table of Contents

Verify correct device and version.....	1
Protocol version in data packets	1
Protocol version in device label.....	1
WMBUS-data format.....	2
OBIS to WMBUS data record translation.....	4
Example packets.....	6

Verify correct device and version

This document applies to HAN-P1 devices with *protocol version 15 (0x0F)*. Find the protocol version by looking at the label on the device or by inspecting the data packets sent by the device.

Protocol version in data packets

The *protocol version* is included in the data field *A-Field Protocol version*. For more information, see [WMBUS-data format](#).

Protocol version in device label

Scan the 2D barcode on the device label to view the unique device identifier.



Example 1. The protocol version is the last segment of the unique identifier.

LAN.00123456.31.1E

WMBUS-data format

Art nr.	LAN-WMBUS-HAN-P1
Version	15 (0x0F)
Information	Sent on every meter transmission or every 2 minutes if no meter transmission is received.
DR1	Software version
DR1+n	OBIS data record

Data Link layer

Byte No.	Field Name	Content	Info	Byte data
1	L-Field	Length	Example: 0xDF	0xDF
2	C-Field	SND-NR		0x44
3	M-Field	Meter manufacturer code	LAS	0x33
4	M-Field	Meter manufacturer code		0x30
5	A-Field	Meter serial number (LSB)	Example: 00232659	0x59
6	A-Field	Meter serial number		0x26
7	A-Field	Meter serial number		0x23
8	A-Field	Meter serial number (MSB)		0x00
9	A-Field	Protocol version		0x0F
10	A-Field	Meter type	Electricity	0x02

Network layer

Byte No.	Field Name	Content	Info	Byte data
11	CI-Field	Short header		0x7A
12	Access no.	Transmission counter		
13	Status	Device status	Error/alarms. See Table 1 .	
14	Configuration	Number of encrypted blocks	Example: 13	
15	Configuration	Encryption	Encryption mode 5	
16	AES-Verify	Encryption verification		0x2F
17	AES-Verify	Encryption verification		0x2F

Data record 1: Software version

Byte No.	Field Name	Content	Info	Byte data
18	DR1	DIF	16-bit integer	0x02
19	DR1	VIF	Extended VIF table	0xFD
20	DR1	VIFE	Software version	0x0F
21	DR1	Value (LSB)	Example: 0x08	0x08
22	DR1	Value (MSB)	Example: 0x00	0x00

Data record 1+n: OBIS data record. The number of data records depends on the number of OBIS codes sent from the meter. The OBIS data records are sent in the order they are sent from the meter.

Byte No.	Field Name	Content	Info	Byte data
22+n	DR1+n	DIF/VIF/VIFE	OBIS data record. See OBIS to WMBUS data record translation .	

Table 1. Status byte with error and alerts.

Bit	Info
1 (0x01)	X
2 (0x02)	X
3 (0x04)	X
4 (0x08)	CRC error / No HAN
5 (0x10)	X
6 (0x20)	X
7 (0x40)	X
8 (0x80)	No HAN

OBIS to WMBUS data record translation

The HAN-P1 device translates OBIS codes from the HAN-P1 interface to WMBUS data records. The following tables show supported OBIS codes that are translated to WMBUS data records.

Active and reactive energy

OBIS	Definition	Source unit	DIF	VIF / VIFE bytes	Encoded unit / qualifier	Data size	Notes
1-0:1.8.0	Total active energy import	kWh	0x07	03	Wh, ×1 Wh	64-bit	Import active energy
1-0:2.8.0	Total active energy export	kWh	0x07	83 3C	Wh, export	64-bit	0x80 sets extension, 3C = export qualifier
1-0:3.8.0	Total reactive energy import	kVARh	0x07	FB 02	Reactive energy, ×1 kVARh	64-bit	Alternate extended VIF table
1-0:4.8.0	Total reactive energy export	kVARh	0x07	FB 82 3C	Reactive energy, export	64-bit	82 continues extension to export qualifier

Instantaneous active and reactive power

OBIS	Definition	Source unit	DIF	VIF / VIFE bytes	Encoded unit / qualifier	Data size	Notes
1-0:1.7.0	Instantaneous active power import	kW	0x04	2B	W, ×1 W	32-bit	Can be combined into signed net power
1-0:2.7.0	Instantaneous active power export	kW	0x04	AB 3C	W, export	32-bit	If not combined
1-0:3.7.0	Instantaneous reactive power import	kVAR	0x04	FB 14	VAR, ×1 VAR	32-bit	Alternate VIF table
1-0:4.7.0	Instantaneous reactive power export	kVAR	0x04	FB 94 3C	VAR, export	32-bit	Extension + export qualifier

Active power per phase

OBIS	Definition	Source unit	DIF	VIF / VIFE bytes	Encoded unit / qualifier	Data size	Notes
1-0:21.7.0	Active power import L1	kW	0x04	AB FC 01	W, L1	32-bit	AB = 2B with extension bit; FC = extension; 01 = L1
1-0:22.7.0	Active power export L1	kW	0x04	AB BC FC 01	W, export, L1	32-bit	BC = 3C with extension bit; FC = extension; 01 = L1
1-0:41.7.0	Active power import L2	kW	0x04	AB FC 02	W, L2	32-bit	02 = L2
1-0:42.7.0	Active power export L2	kW	0x04	AB BC FC 02	W, export, L2	32-bit	02 = L2
1-0:61.7.0	Active power import L3	kW	0x04	AB FC 03	W, L3	32-bit	03 = L3

OBIS	Definition	Source unit	DIF	VIF / VIFE bytes	Encoded unit / qualifier	Data size	Notes
1-0:62.7.0	Active power export L3	kW	0x04	AB BC FC 03	W, export, L3	32-bit	03 = L3

Reactive power per phase

OBIS	Definition	Source unit	DIF	VIF / VIFE bytes	Encoded unit / qualifier	Data size	Notes
1-0:23.7.0	Reactive power import L1	kVAR	0x04	FB 94 FC 01	VAR, L1	32-bit	0x14 VIFE extended with 0x80
1-0:24.7.0	Reactive power export L1	kVAR	0x04	FB 94 BC FC 01	VAR, export, L1	32-bit	BC = export qualifier
1-0:43.7.0	Reactive power import L2	kVAR	0x04	FB 94 FC 02	VAR, L2	32-bit	02 = L2
1-0:44.7.0	Reactive power export L2	kVAR	0x04	FB 94 BC FC 02	VAR, export, L2	32-bit	02 = L2
1-0:63.7.0	Reactive power import L3	kVAR	0x04	FB 94 FC 03	VAR, L3	32-bit	03 = L3
1-0:64.7.0	Reactive power export L3	kVAR	0x04	FB 94 BC FC 03	VAR, export, L3	32-bit	03 = L3

Voltage per phase

OBIS	Definition	Source unit	DIF	VIF / VIFE bytes	Encoded resolution	Data size	Notes
1-0:32.7.0	Voltage L1	V	0x02	FD C8 FC 01	0.1 V	16-bit	Phase L1
1-0:52.7.0	Voltage L2	V	0x02	FD C8 FC 02	0.1 V	16-bit	Phase L2
1-0:72.7.0	Voltage L3	V	0x02	FD C8 FC 03	0.1 V	16-bit	Phase L3

Current per phase

OBIS	Definition	Source unit	DIF	VIF / VIFE bytes	Encoded resolution	Data size	Notes
1-0:31.7.0	Current L1	A	0x02	FD DB FC 01	0.1 A	16-bit	Phase L1
1-0:51.7.0	Current L2	A	0x02	FD DB FC 02	0.1 A	16-bit	Phase L2
1-0:71.7.0	Current L3	A	0x02	FD DB FC 03	0.1 A	16-bit	Phase L3

Example packets

Example 2. OBIS packet from meter.

```
/LGF5E360<CR><LF>
<CR><LF>
0-0:1.0.0(250927062651W)<CR><LF>
1-0:1.8.0(00000002.700*kWh)<CR><LF>
1-0:2.8.0(00000001.090*kWh)<CR><LF>
1-0:3.8.0(00000002.145*kvarh)<CR><LF>
1-0:4.8.0(00000000.321*kvarh)<CR><LF>
1-0:1.7.0(0000.000*kW)<CR><LF>
1-0:2.7.0(0000.000*kW)<CR><LF>
1-0:3.7.0(0000.000*kvar)<CR><LF>
1-0:4.7.0(0000.000*kvar)<CR><LF>
1-0:21.7.0(0000.000*kW)<CR><LF>
1-0:22.7.0(0000.000*kW)<CR><LF>
1-0:41.7.0(0000.000*kW)<CR><LF>
1-0:42.7.0(0000.000*kW)<CR><LF>
1-0:61.7.0(0000.000*kW)<CR><LF>
1-0:62.7.0(0000.000*kW)<CR><LF>
1-0:23.7.0(0000.000*kvar)<CR><LF>
1-0:24.7.0(0000.000*kvar)<CR><LF>
1-0:43.7.0(0000.000*kvar)<CR><LF>
1-0:44.7.0(0000.000*kvar)<CR><LF>
1-0:63.7.0(0000.000*kvar)<CR><LF>
1-0:64.7.0(0000.000*kvar)<CR><LF>
1-0:32.7.0(227.3*V)<CR><LF>
1-0:52.7.0(000.0*V)<CR><LF>
1-0:72.7.0(000.0*V)<CR><LF>
1-0:31.7.0(000.0*A)<CR><LF>
1-0:51.7.0(000.0*A)<CR><LF>
1-0:71.7.0(000.0*A)<CR><LF>
!392F<CR><LF>
```

Example 3. Encrypted WMBUS packet from HAN-P1 with key: 1E9CA1444BEFF4A5E21A35F0666C783F

```
DF 44 33 30 59 26 23 00 0F 02 7A 32 00 D0 05 28 E6 7A EA 10 FE 9D 1D 9E A4 5D 1E
D4 7C 1F C7 11 A4 4F 01 74 F1 EF A2 9A EC 0D 54 E7 92 A6 36 BD 49 D8 F5 54 97 68
5E 4B DD 2F AA F8 B1 0D FA C4 15 C4 50 DB 62 59 FD C4 E4 62 A5 8C A3 6E C9 58 33
03 47 DC A1 F2 74 89 FF 0D 4F 87 A1 8A 91 1F 32 1A 67 04 DC 67 7C B3 9E A4 13 80
FB FD 65 36 C3 08 E0 71 0C 20 B1 79 A0 FE 31 A5 D5 D4 E0 7D B5 C5 C5 F9 FD BF D2
47 C9 D3 87 08 0E A2 83 BE 8E E8 D0 E2 44 01 76 31 D6 21 A1 75 D8 6F B6 C6 5B 8F
F2 9E 07 B7 7C 51 30 89 23 A0 07 58 6E FE 9A 1B 03 11 3E 73 99 7D 38 4A 9B 2C BE
BA BC 41 8E 71 C4 69 74 B6 68 48 3D 4E 07 C9 21 C0 17 5A 9E DF 79 EF FA 3B 17 F9
A3 41 07 EB A3 8C AC DD 02 01 FE
```


Example 4. Decoded WMBUS packet from HAN-P1.

```

DF 44 33 30 59 26 23 00 0F 02 7A 32 00 D0 05 2F 2F 02 FD 0F 08 00 06 6D 33 1A 06
3B 39 00 07 03 8C 0A 00 00 00 00 00 00 07 83 3C 42 04 00 00 00 00 00 00 07 FB 02
02 00 00 00 00 00 00 00 07 FB 82 3C 00 00 00 00 00 00 00 04 2B 00 00 00 00 04
AB 3C 00 00 00 00 04 FB 14 00 00 00 00 04 FB 94 3C 00 00 00 00 04 AB FC 01 00 00
00 00 04 AB BC FC 01 00 00 00 00 04 AB FC 02 00 00 00 00 04 AB BC FC 02 00 00 00
00 04 AB FC 03 00 00 00 00 04 AB BC FC 03 00 00 00 00 04 FB 94 FC 01 00 00 00 00
04 FB 94 BC FC 01 00 00 00 00 04 FB 94 FC 02 00 00 00 00 04 FB 94 BC FC 02 00 00
00 00 04 FB 94 FC 03 00 00 00 00 04 FB 94 BC FC 03 00 00 00 00 02 FD C8 FC 01 E1
08 2F 2F 2F 2F 2F 2F DD 02 01 FE

```