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# WMBUS DATA FORMAT

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TEMP/HUMIDITY/PRESSURE/CO2 DEVICE (LAN-WMBUS-Q-C)



## Verify correct device and version

This document applies to the device LAN-WMBUS-Q-C with protocol version 1.

There are two ways of finding out the protocol version of the device; Either by looking at the label on the device or by looking at the data packets sent out by the device. See chapters **Protocol version in data packets** and **Protocol version in label** for more information.

### Protocol version in data packets

If it is possible to check the information in the data packets sent out by the device, then the protocol version is included in the data field called *A-Field Protocol version*. For more information, see chapter **WMBUS-data format**.

### Protocol version in label

The protocol version can be found by scanning the label. An example of the label is shown in the figure below and the relevant information is described by LAS.00014000.2C.01, where

- **Manufacturer code:** LAS
- **Serial number:** 00014163
- **Device type:** 2C
- **Protocol version:** 01

## WMBUS-data format

Art nr.	LAN-WMBUS-Q-C: Carbon dioxide
Version	1
Information	Packet is sent every 60 seconds in T-mode. Temperature, humidity, CO2, pressure is sampled every 60 seconds.
DR1	Temperature: Last measured value. <b>Unit: °C</b>
DR2	Temperature: Average last hour. <b>Unit: °C</b>
DR3	Humidity: Last measured value. <b>Unit: %RH</b>
DR4	Humidity: Average last hour. <b>Unit: %RH</b>
DR5	CO2: Last measured value (Dimensionless) <b>Unit: ppm.</b>
DR6	CO2: Average last hour (Dimensionless storage 1) <b>Unit: ppm.</b>
DR9	Pressure: Last measured value <b>Unit: mbar</b>
DR10	Pressure: Average last hour <b>Unit: mbar</b>
DR11	Last used CO2 calibration value (Dimensionless storage 3) <b>Unit: ppm.</b>
DR12	Minutes to next CO2 calibration (Dimensionless subunit 1) <b>Unit: Minutes</b>
DR13	Software revision
DR14	Sensor total operating time in days.
DR15	Protocol version
DR16	CO2 serial number
DR17	Indications and status bits

Byte No	Field Name	Content	Info	Byte data	
1	L-Field	Length			Linklayer
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: 0001067	0x67	
6	A-Field	Meter serial number		0x00	
7	A-Field	Meter serial number		0x01	
8	A-Field	Meter serial number (MSB)		0x00	
9	A-Field	Protocol version		0x03	
10	A-Field	Meter type	Environment Sensor.	0x2C	
11	CI-Field	Short header		0x7A	Networklayer
12	Access no.	Transmission counter	Example: 7	0x07	
13	Status	Device status (error/alarms)	Refer to Table 1 for possible values	0x00	
14	Configuration	Number of encrypted blocks	Example: 3	0x03	
15	Configuration	Encryption		No encryption: 0x00 Encryption mode 5: 0x05	
16	AES-Verify	Encryption Verification		0x2F	DATA blocks
17	AES-Verify	Encryption Verification		0x2F	
18	DR1	DIF	16-bit integer	0x02	
19	DR1	VIF	External temperature 0.01°C	0x65	
20	DR1	Value (LSB)	Example: 0x1122	0x22	
21	DR1	Value (MSB)		0x11	
22	DR2	DIF	16-bit integer + Storage 1	0x42 = Value OK 0x72 = Not enough values	
23	DR2	VIF	External temperature 0.01°C	0x65	
24	DR2	Value (LSB)	Example: 0x4365	0x65	
25	DR2	Value (MSB)		0x43	
26	DR3	DIF	16-bit integer	0x02	
27	DR3	VIF	Extension table	0xFB	
28	DR3	VIF	Relative humidity 0.1%RH	0x1A	
29	DR3	Value (LSB)	Example: 0x1122	0x22	
30	DR3	Value (MSB)		0x11	
31	DR4	DIF	16-bit integer + Storage 1	0x42 = Value OK 0x72 = Not enough values	
32	DR4	VIF	Extension table	0xFB	
33	DR4	VIF	Relative humidity 0.1%RH	0x1A	
34	DR4	Value (LSB)	Example: 0x1122	0x22	
35	DR4	Value (MSB)		0x11	
36	DR5	DIF	16-bit integer	0x02	
37	DR5	VIF	Extension table	0xFD	
38	DR5	VIF	Dimensionless CO2 value	0x3A	
39	DR5	Value (LSB)	Example: 0x1122	0x22	
40	DR5	Value (MSB)		0x11	
41	DR6	DIF	16-bit integer + Storage 1	0x42 = Value OK 0x72 = Not enough values	
42	DR6	VIF	Extension table	0xFD	
43	DR6	VIF	Dimensionless CO2 value avg	0x3A	
44	DR6	Value (LSB)	Example: 0x2233	0x33	
45	DR6	Value (MSB)		0x22	
46	DR7	DIF	16-bit integer	0x02	

47	DR7	VIF	Pressure mbar	0x68
48	DR7	Value (LSB)	<b>Example:</b> 0x1122	0x22
49	DR7	Value (MSB)		0x11
50	DR8	DIF	16-bit integer + Storage 1	0x42 = Value OK 0x72 = Not enough values
51	DR8	VIF	Pressure mbar	0x68
52	DR8	Value (LSB)	<b>Example:</b> 0x1122	0x22
53	DR8	Value (MSB)		0x11
54	DR9	DIF	16-bit integer + Extension	0xC2
55	DR9	DIFE	Storage 3	0x01
56	DR9	VIF	Extension table	0xFD
57	DR9	VIF	Dimensionless	0x3A
58	DR9	Value (LSB)	<b>Example:</b> 0x2324	0x24
59	DR9	Value (MSB)		0x23
60	DR10	DIF	16-bit integer	0x82
61	DR10	DIFE	Subunit 1	0x40
62	DR10	VIF	Extension table	0xFD
63	DR10	VIF	Dimensionless	0x3A
64	DR10	Value (LSB)	<b>Example:</b> 0x0002	0x02
65	DR10	Value (MSB)		0x00
66	DR11	DIF	16-bit integer	0x02
67	DR11	VIF	Extension table	0xFD
68	DR11	VIF	Version	0x0F
69	DR11	Value (LSB)	<b>Example:</b> 0x0025	0x25
70	DR11	Value (MSB)		0x00
71	DR12	DIF	16-bit integer	0x02
72	DR12	VIF	Total Operating Time Days	0x27
73	DR12	Value (LSB)	<b>Example:</b> 10 days (0x000A)	0x0A
74	DR12	Value (MSB)		0x00
75	DR13	DIF	8-bit integer	0x01
76	DR13	VIF	Extension table	0xFD
77	DR13	VIF	Model/Version	0x0C
78	DR13	Value	<b>Example:</b> 1	0x01
79	DR14	DIF	32-bit integer	0x04
80	DR14	VIF	Serial	0x78
81	DR14	Value (LSB)	<b>Example:</b> 484395 (0x0007642B)	0x2B
82	DR14	Value		0x64
83	DR14	Value		0x07
84	DR14	Value (MSB)		0x00
85	DR15	DIF	16-bit integer	0x02
86	DR15	VIF	Extension table	0xFD
87	DR15	VIFE	Digital input	0x1B
88	DR15	Value (LSB)	<b>Example:</b> 0x0447	0x47
89	DR15	Value (MSB)		0x04

Table 1: Status byte with errors and alerts

Bit	Info
0 (0x01)	X
1 (0x02)	X
2 (0x04)	X
3 (0x08)	X
4 (0x10)	CO2: Calibration not yet done
5 (0x20)	X
6 (0x40)	X
7 (0x80)	CO2: External sensor error

Table 2: Indications and status bits

Bit	Info
0 (0x0001)	Always 1
1 (0x0002)	LED indication enabled
2 (0x0004)	Sound indication enabled
3 (0x0008)	CO2: External error
4 (0x0010)	X
5 (0x0020)	X
6 (0x0040)	CO2: Calibration not done
7 (0x0080)	X
8 (0x0100)	X
9 (0x0200)	X
10 (0x0400)	X
11 (0x0800)	X
12 (0x1000)	X
13 (0x2000)	X
14 (0x4000)	X
15 (0x8000)	X