
WMBUS DATA FORMAT

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



Verify correct device and version

This document applies to the device LAN-WMBUS-Q-RC with protocol version 3.

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.03, where

- **Manufacturer code:** LAS
- **Serial number:** 00014163
- **Device type:** 2C
- **Protocol version:** 03

WMBUS-data format

Art nr.	LAN-WMBUS-Q-RC: Combined radon and carbon dioxide
Version	3
Information	Packet is sent every 60 seconds in T-mode. Temperature, humidity, CO2, pressure is sampled every 60 seconds. Radon value is updated every 10 minutes.
DR1	Temperature: Last measured value. Unit: °C
DR2	Temperature: Average last hour. Unit: °C
DR3	Humidity: Last measured value. Unit: %RH
DR4	Humidity: Average last hour. Unit: %RH
DR5	CO2: Last measured value (Dimensionless) Unit: ppm.
DR6	CO2: Average last hour (Dimensionless storage 1) Unit: ppm.
DR7	Radon: Last calculated value (Dimensionless subunit 2) Unit: Bq/m3
DR8	Radon: Average last hour (Dimensionless subunit 2 storage 1) Unit: Bq/m3
DR9	Pressure: Last measured value Unit: mbar
DR10	Pressure: Average last hour Unit: mbar
DR11	Last used CO2 calibration value (Dimensionless storage 3) Unit: ppm.
DR12	Minutes to next CO2 calibration (Dimensionless subunit 1) Unit: Minutes
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	DATA blocks
16	AES-Verify	Encryption Verification		0x2F	
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	0x82
47	DR7	DIFE	Subunit 2	0x80
48	DR7	DIFE	Subunit 2	0x40
49	DR7	VIF	Extension table	0xFD
50	DR7	VIF	Dimensionless Radon value	0x3A
51	DR7	Value (LSB)	Example: 0x1122	0x22
52	DR7	Value (MSB)		0x11
53	DR8	DIF	16-bit integer + Storage 1	0xC2 = Value OK 0x72 = Not enough values
54	DR8	DIFE	Subunit 2	0x80
55	DR8	DIFE	Subunit 2	0x40
56	DR8	VIF	Extension table	0xFD
57	DR8	VIF	Dimensionless Radon value avg	0x3A
58	DR8	Value (LSB)	Example: 0x2233	0x33
59	DR8	Value (MSB)		0x22
60	DR9	DIF	16-bit integer	0x02
61	DR9	VIF	Pressure mbar	0x68
62	DR9	Value (LSB)	Example: 0x1122	0x22
63	DR9	Value (MSB)		0x11
64	DR10	DIF	16-bit integer + Storage 1	0x42 = Value OK 0x72 = Not enough values
65	DR10	VIF	Pressure mbar	0x68
66	DR10	Value (LSB)	Example: 0x1122	0x22
67	DR10	Value (MSB)		0x11
68	DR11	DIF	16-bit integer + Extension	0xC2
69	DR11	DIFE	Storage 3	0x01
70	DR11	VIF	Extension table	0xFD
71	DR11	VIF	Dimensionless	0x3A
72	DR11	Value (LSB)	Example: 0x2324	0x24
73	DR11	Value (MSB)		0x23
74	DR12	DIF	16-bit integer	0x82
75	DR12	DIFE	Subunit 1	0x40
76	DR12	VIF	Extension table	0xFD
77	DR12	VIF	Dimensionless	0x3A
78	DR12	Value (LSB)	Example: 0x0002	0x02
79	DR12	Value (MSB)		0x00
80	DR13	DIF	16-bit integer	0x02
81	DR13	VIF	Extension table	0xFD
82	DR13	VIF	Version	0x0F
83	DR13	Value (LSB)	Example: 0x0025	0x25
84	DR13	Value (MSB)		0x00
85	DR14	DIF	16-bit integer	0x02
86	DR14	VIF	Total Operating Time Days	0x27
87	DR14	Value (LSB)	Example: 10 days (0x000A)	0x0A
88	DR14	Value (MSB)		0x00
89	DR15	DIF	8-bit integer	0x01
90	DR15	VIF	Extension table	0xFD
91	DR15	VIF	Model/Version	0x0C
92	DR15	Value	Example: 3	0x03
93	DR16	DIF	32-bit integer	0x04
94	DR16	VIF	Serial	0x78
95	DR16	Value (LSB)	Example: 484395 (0x0007642B)	0x2B
96	DR16	Value		0x64
97	DR16	Value		0x07
98	DR16	Value (MSB)		0x00
99	DR17	DIF	16-bit integer	0x02
100	DR17	VIF	Extension table	0xFD
101	DR17	VIFE	Digital input	0x1B
102	DR17	Value (LSB)	Example: 0x0447	0x47
103	DR17	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)	Radon: External sensor error
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)	Radon: Normal operation
9 (0x0200)	Radon: Not initialized
10 (0x0400)	Radon: Ready Note: This bit is also set at startup before first valid value is sampled (15 minutes)
11 (0x0800)	Radon error: Replacement needed
12 (0x1000)	Radon error: Value overflow
13 (0x2000)	Radon: Unit set OK
14 (0x4000)	Radon: No response
15 (0x8000)	X