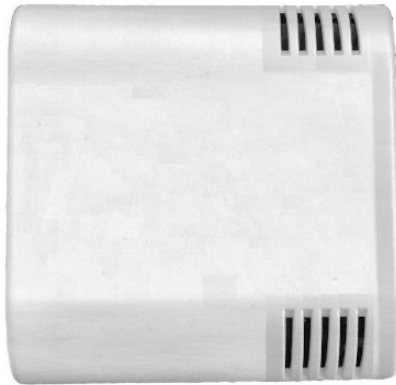

WMBUS DATA FORMAT

TEMP/HUMIDITY/VOC DEVICE (FX-WMBUS-E2-VOC)



Verify correct device and version

This document applies to the device FX-WMBUS-E2-VOC with protocol version 10. 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 on the label. An example of the label is shown in the figure below and the relevant information is described by LAS.00030827.2B.0A, where

- **Manufacturer code:** LAS
- **Serial number:** 00030827
- **Device type:** 0x2B (43)
- **Protocol version:** 0x0A (10)



FX-WMBUS-E2-VOC

LAS.00030827.2B.0A



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WMBUS-data format

| | |
|-------------|---|
| Art nr. | LAN-WMBUS-E2-VOC |
| Version | 10 (0x0A) |
| Information | Packet is sent every 120 seconds in T-mode. |
| DR1 | Temperature: Last measured value |
| DR2 | Temperature: Average last hour |
| DR3 | Temperature: Average last 24 hours |
| DR4 | Humidity: Last measured value |
| DR5 | Humidity: Average last hour |
| DR6 | Humidity: Average last 24 hours |
| DR7 | VOC: Last measured value |
| DR8 | VOC: Average last hour |
| DR9 | VOC: Average last 24 hours |
| DR10 | On Time in days (Since power up) |
| DR11 | Operating time in days (Total) |
| DR12 | Version |

| 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 | | 0x0A | |
| 10 | A-Field | Meter type | VOC-sensor device | 0x2B | |
| 11 | CI-Field | Short header | | 0x7A | |
| 12 | Access no. | Transmission counter | Example: 7 | 0x07 | Networklayer |
| 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 | 0x82 = Value OK 0xB2 = Not enough values | |
| 27 | DR3 | DIFE | Storage 2 | 0x01 | |
| 28 | DR3 | VIF | External temperature 0.01°C | 0x65 | |
| 29 | DR3 | Value (LSB) | Example: 0x1122 | 0x22 | |
| 30 | DR3 | Value (MSB) | | 0x11 | |
| 31 | DR4 | DIF | 16-bit integer | 0x02 | |
| 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 + Storage 1 | 0x42 = Value OK 0x72 = Not enough values | |
| 37 | DR5 | VIF | Extension table | 0xFB | |
| 38 | DR5 | VIF | Relative humidity 0.1%RH | 0x1A | |
| 39 | DR5 | Value (LSB) | Example: 0x1122 | 0x22 | |
| 40 | DR5 | Value (MSB) | | 0x11 | |
| 41 | DR6 | DIF | 16-bit integer | 0x82 = Value OK 0xB2 = Not enough values | |
| 42 | DR6 | DIFE | Storage 2 | 0x01 | |
| 43 | DR6 | VIF | Extension table | 0xFB | |
| 44 | DR6 | VIF | Relative humidity 0.1%RH | 0x1A | |
| 45 | DR6 | Value (LSB) | Example: 0x1122 | 0x22 | |
| 46 | DR6 | Value (MSB) | | 0x11 | |
| 47 | DR7 | DIF | 16-bit integer | 0x02 | |
| 48 | DR7 | VIF | Extension table | 0xFD | |
| 49 | DR7 | VIF | Dimensionless | 0x3A | |

| | | | | |
|----|------|-------------|----------------------------|---|
| 50 | DR7 | Value (LSB) | Example: 0x1122 | 0x22 |
| 51 | DR7 | Value (MSB) | | 0x11 |
| 52 | DR8 | DIF | 16-bit integer + Storage 1 | 0x42 = Value OK 0x72 = Not enough values |
| 53 | DR8 | VIF | Extension table | 0xFD |
| 54 | DR8 | VIF | Dimensionless | 0x3A |
| 55 | DR8 | Value (LSB) | Example: 0x2233 | 0x33 |
| 56 | DR8 | Value (MSB) | | 0x22 |
| 57 | DR9 | DIF | 16-bit integer | 0x82 = Value OK 0xB2 = Not enough values |
| 58 | DR9 | DIFE | Storage 2 | 0x01 |
| 59 | DR9 | VIF | Extension table | 0xFD |
| 60 | DR9 | VIF | Dimensionless | 0x3A |
| 61 | DR9 | Value (LSB) | Example: 0x0102 | 0x02 |
| 62 | DR9 | Value (MSB) | | 0x01 |
| 63 | DR10 | DIF | 16-bit integer | 0x02 |
| 64 | DR10 | VIF | On Time Days | 0x23 |
| 65 | DR10 | Value (LSB) | Example: 0x0000 | 0x00 |
| 66 | DR10 | Value (MSB) | | 0x00 |
| 67 | DR11 | DIF | 16-bit integer | 0x02 |
| 68 | DR11 | VIF | Total Operating Time Days | 0x27 |
| 69 | DR11 | Value (LSB) | Example: 0x0000 | 0x00 |
| 70 | DR11 | Value (MSB) | | 0x00 |
| 71 | DR12 | DIF | 16-bit integer | 0x02 |
| 72 | DR12 | VIF | Extension table | 0xFD |
| 73 | DR12 | VIF | Version | 0x0F |
| 74 | DR12 | Value (LSB) | Example: 0x0004 | 0x04 |
| 75 | DR12 | Value (MSB) | | 0x00 |

Table 1: Status byte with errors and alerts

| Bit | Info |
|----------|--|
| 0 (0x01) | Device not activated |
| 1 (0x02) | Device not activated |
| 2 (0x04) | Low battery (Note: Low battery will be issued after 14 years since power up) |
| 3 (0x08) | X |
| 4 (0x10) | X |
| 5 (0x20) | X |
| 6 (0x40) | X |
| 7 (0x80) | X |

Version history

| Version | Date | Name | Info |
|---------|------------|--------------|--------------------------------|
| 10.1 | 11.11.2022 | Juha Rajanen | First version of the document. |