



Open Metering System Specification

Sensors

Annex C to Volume 2 Primary Communication Issue 4.4.2

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C.1 General

C.1.1 Scope

This annex specifies the device types and value definitions that shall be used by OMS sensors. The corresponding data points for sensors are specified in [OMS-S2], Annex B.

C.1.2 Introduction

This annex describes the Open Metering System requirements for sensors.

The specifications and standardisations in this annex should contribute to enhance the interoperability of sensors.

C.2 Device types

C.2.1 Applicable device types

The device types listed in Table C.1 are applicable to OMS sensors.

Table C.1 – List of device types

Device type	Code	Remarks
Pressure device	18 _h	Already existent in EN13757-7:2018 as “Pressure meter”; renaming requested
Smoke alarm device	1A _h	Already existent in EN13757-7:2018 as “Smoke detector”; renaming requested
Sensor device	00 _h	Already existent in EN13757-7:2018 as “Other”

NOTE: The device types listed here are an excerpt from the complete device type list. See [OMS-S2], 2.3 for all device types.

C.2.2 Sub device types

The sub-device types in Table C.2 apply in connection with the device type 00h and thus represent a large number of possible sensors. The sub-device types are mapped in the application layer via their own M-Bus data points by "ID9!". The data point is mandatory for all OMS sensors with the device type 00h. The data point shall be transmitted with every datagram.

The number of sensors shall be limited to 255. Each sensor uses exactly one byte for its definition. All sensors will be concatenated in the data point "ID9!".

Example: 0Dh FDh 09h E3h 05h 03h 01h for a combined humidity, temperature and light sensor.

Table C.2 – List of sub device types

Value	Description	Remarks
01 _h	Humidity Sensor	Provides information about the concentration of water vapor present in the air (see also "Moisture sensor").
02 _h	Moisture Sensor	Provides information about the moisture in or on a material or substance in its solid state like moisture in a wall.
03 _h	Temperature Sensor	
04 _h	Conductivity Sensor	
05 _h	Light Sensor	
06 _h	Rainfall Sensor	
07 _h	pH Sensor	
08 _h	Anemometer	
09 _h	Glass Break Detector	
0A _h	Door/Window Contact Sensor	Provides information whether a window/door is opened or closed.
0B _h	Locked Window/Door Detector	Provides information whether a window/door is locked or unlocked.
0C _h	Water Leakage Detector	
0D _h	Air Quality Sensor	
0E _h	CO2 Sensor	
0F _h	Turbidity Sensor	
10 _h	Heart Beat Sensor	
11 _h	Impedance Sensor	
12 _h	CO Alarm Device	
13 _h ... FF _h	Reserved	

C.2.3 Data Points

C.2.3.1 Description

The [OMS-S2], Annex B defines the coding of the data points. All required additions for sensors are defined in [OMS-S2], Annex B.

C.2.3.2 VIB-Types, MB-Tags, security requirements

The data points are applicable to the different OMS sensors, their VIB types and security requirements are specified in [OMS-S2], Annex B.

C.2.3.3 Device Specific Data Point “Device Status”

C.2.3.3.1 General

All sub device types which are not referenced in the following clauses shall use MB-Data-Tag MM3! as defined in [OMS-S2], Annex B.

C.2.3.3.2 Device Status, Smoke Alarm Device

The following Table C.3 shows the definition of the device status for smoke alarm devices. This is based on the normative principles of [DIN 14676-1] in combination with [DIN SPEC 91388]. This means that type B and type C smoke alarm devices can be mapped.

The definition for the status field for the device type 1A_n (smoke alarm device) shall be transported with the MB-Data-Tag MM15! as defined in [OMS-S2], Annex B.

If manufacturer-specific information is to be added, it can be appended to the following bytes of the MM15!

Table C.3 – Device Status, Smoke Alarm Device (MM15!)

Byte	Bit	Description	Bit = 0	Bit = 1
Byte 1	Bit0:	Device dismounted	no	yes
	Bit1:	Battery low	no	yes
	Bit2:	Hardware or software error	no	yes
	Bit3:	Smoke sensor fault (e.g. smoke chamber)	no	yes
	Bit4:	Sounder (audible) fault disabled ^a	no	yes
	Bit5:	Obstacle detection disabled ^a	no	yes
	Bit6:	Smoke entries blocked detection disabled ^a	no	yes
	Bit7:	Smoke alarm Condition now enabled	no	yes
Byte 2	Bit8:	Sounder (audible) fault	no	yes
	Bit9:	Obstacle detected	no	yes
	Bit10:	Smoke entries blocked	no	yes
	Bit11:	Smoke alarm (Alarm condition now)	no	yes
	Bit12:	Active / Storage state	active	storage
	Bit13:	Reserved ^b	-	-
	Bit14:	Reserved ^b	-	-
	Bit15:	Manufacturer specific bytes following	no	yes
^a	shall always be 0 in case of Type C smoke alarm devices due to compliance to normative principles of [DIN 14676-1] in combination with [DIN SPEC 91388]			
^b	always 0			

C.2.3.3.3 Device Status, CO Alarm Device

The following Table C.4 shows the definition of the device status for carbon monoxide alarm devices. This is based on the normative principles of [EN 50292]. This means that type A and type B carbon monoxide alarm devices can be mapped.

The definition for the status field for the device type 00_h and sub device type 12_h (CO alarm device) shall be transported with the MB-Data-Tag MM14! as defined in [OMS-S2], Annex B.

If manufacturer-specific information is to be added, it can be appended to the following bytes of the MM14!

Table C.4 – Device Status, CO Alarm Device (MM14!)

Byte	Bit	Description	Bit = 0	Bit = 1																
Byte 1	Bit0:	Device dismounted	no	yes																
	Bit1:	Battery low	no	yes																
	Bit2:	Hardware or software error	no	yes																
	Bit3:	CO sensor fault	no	yes																
	Bit4:	Sounder (audible) fault disabled ^a	no	yes																
	Bit5:	CO alarm Condition now enabled	no	yes																
	Bit6 + Bit7:	CO level in ppm	<table border="1"> <thead> <tr> <th colspan="2">Bit</th> <th rowspan="2">Meaning</th> </tr> <tr> <th>7</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>< 50ppm</td> </tr> <tr> <td>0</td> <td>1</td> <td>>= 50ppm but < 100ppm</td> </tr> <tr> <td>1</td> <td>0</td> <td>>= 100ppm but < 300ppm</td> </tr> <tr> <td>1</td> <td>1</td> <td>>= 300ppm</td> </tr> </tbody> </table>		Bit		Meaning	7	6	0	0	< 50ppm	0	1	>= 50ppm but < 100ppm	1	0	>= 100ppm but < 300ppm	1	1
Bit		Meaning																		
7	6																			
0	0	< 50ppm																		
0	1	>= 50ppm but < 100ppm																		
1	0	>= 100ppm but < 300ppm																		
1	1	>= 300ppm																		
Byte 2	Bit8:	Sounder (audible) fault	no	yes																
	Bit9:	CO alarm (Alarm condition now)	no	yes																
	Bit10:	Active / Storage state	active	storage																
	Bit11:	Reserved ^b	-	-																
	Bit12:	Reserved ^b	-	-																
	Bit13:	Reserved ^b	-	-																
	Bit14:	Reserved ^b	-	-																
	Bit15:	Manufacturer specific bytes following	no	yes																
^a	shall be always 0 to be compliant to normative principles of [EN 50292]																			
^b	always 0																			

C.2.3.3.4 Device Status, Pressure Device

The following Table C.5 shows the definition of the device status for pressure devices. The definition for the status field for the device type 18_n (pressure device) shall be transported with the MB-Data-Tag MM13! as defined [OMS-S2], Annex B.

If manufacturer-specific information is to be added, it can be appended to the following bytes of the MM13!

Table C.5 – Device Status, Pressure Device (MM13!)

Byte	Bit	Description	Bit = 0	Bit = 1
Byte 1	Bit0:	High pressure ^a	no	yes
	Bit1:	Low pressure ^b	no	yes
	Bit2:	Battery low ^c	no	yes
	Bit3:	Sensor communication error ^d	no	yes
	Bit4:	Controller restart ^e	no	yes
	Bit5:	Mechanical Tamper ^f	no	yes
	Bit6:	Reserved ^g	-	-
	Bit7:	Manufacturer specific bytes following	no	yes
^a	the measured pressure is above a configurable threshold value (reported via PR3!)			
^b	the measured pressure is below a configurable threshold value (reported via PR4!)			
^c	set in case of undervoltage or predicted end-of-life			
^d	communication module lost connection to sensor			
^e	restart detected, (e.g. checksum error of memory, watchdog timeout, stack overflow)			
^f	in case of critical mechanical modification			
^g	always 0			

C.2.3.3.5 Device Status for Door/Window Contact Sensor and Locked Door/Window Detector

The following Table C.6 shows the definition of the device status for Door/Window Contact Sensors and Locked Door/Window Detectors. The definition for the status field for the device type 00_h and sub device type 0A_h (Door/Window Contact Sensor) or sub device type 0B_h (Open Door/Window Detector) shall be transported with the MB-Data-Tag MM16! as defined in [OMS-S2], Annex B.

If manufacturer-specific information is to be added, it can be appended to the following bytes of the MM16!

Table C.6 – Device Status for Door/Window Contact Sensor and Locked Door/Window Detector (MM16!)

Byte	Bit	Description	Bit = 0	Bit = 1																	
Byte 1	Bit0 + Bit1:	Contact state	<table border="1"> <thead> <tr> <th colspan="2">Bit</th> <th rowspan="2">Meaning</th> </tr> <tr> <th>1</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>closed</td> </tr> <tr> <td>0</td> <td>1</td> <td>open</td> </tr> <tr> <td>1</td> <td>0</td> <td>unknown</td> </tr> <tr> <td>1</td> <td>1</td> <td>unused^a</td> </tr> </tbody> </table>		Bit		Meaning	1	0	0	0	closed	0	1	open	1	0	unknown	1	1	unused ^a
			Bit		Meaning																
	1	0																			
	0	0	closed																		
	0	1	open																		
	1	0	unknown																		
	1	1	unused ^a																		
	Bit2 + Bit3:	Locked state	<table border="1"> <thead> <tr> <th colspan="2">Bit</th> <th rowspan="2">Meaning</th> </tr> <tr> <th>3</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>locked</td> </tr> <tr> <td>0</td> <td>1</td> <td>unlocked</td> </tr> <tr> <td>1</td> <td>0</td> <td>unknown</td> </tr> <tr> <td>1</td> <td>1</td> <td>unused^b</td> </tr> </tbody> </table>		Bit		Meaning	3	2	0	0	locked	0	1	unlocked	1	0	unknown	1	1	unused ^b
Bit			Meaning																		
3	2																				
0	0	locked																			
0	1	unlocked																			
1	0	unknown																			
1	1	unused ^b																			
Bit4:	Reserved ^c	no	yes																		
Bit5:	Reserved ^c	no	yes																		
Bit6:	Reserved ^c	no	yes																		
Bit7:	Manufacturer specific bytes following	no	yes																		
^a	state not allowed for sub device type “Door/Window Contact Sensor”																				
^b	state not allowed for sub device type “Locked Door/Window Detector”																				
^c	always 0																				

C.3 References

Reference number	References
1	[DIN 14676-1]: Smoke alarm devices for use in residential buildings, apartments and rooms with similar purposes – Part 1: Planning, installation, use and maintenance (in German language)
2	[DIN SPEC 91388]: Technical requirements for smoke alarms intended for remote inspection – Requirements for technical equipment inspected remotely for the purposes of proving functionality according to DIN 14676-1 of a smoke alarm according to [EN 14604:2015+AC:2018]
3	[EN 14604:2015+AC:2018]: Smoke Alarm Devices
4	[EN 50291-1]: Gas detectors – Electrical apparatus for the detection of carbon monoxide in domestic premises – Part 1: Test methods and performance requirements
5	[EN 50292]: Electrical apparatus for the detection of carbon monoxide in domestic premises, caravans and boats - Guide on the selection, installation, use and maintenance