EnOcean Equipment Profiles

REVISION HISTORY

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D2-14: Multi Function Sensors

TYPE 00 ... 24 *Submitter: Perfactory*

TYPE 30 ... 31 *Submitter: Nexelec*

Description:

Indoor Smarthome Multisensor

These EEPs describe a family of smarthome multi-functional sensors with optional Touch Button devices. Each device/member of the family is equipped with a different set of sensors to measure ambient environmental parameters, e.g. temperature, humidity, light level etc.
Some family-members are equipped with buttons in addition to the sensors. The response to pressing a button can be defined freely.

Sensor fault mode status (COA / SMA):
A smoke sensor failure prevents operation of a smoke / CO alarm signal. The smoke / CO sensor is supervised and a failure activates this flag.

Smoke Alarm Condition analysis:
The smoke alarm might be activated by improper environmental conditions like dust, humidity, etc. The product will activate flags if some of these conditions are observed at the moment of alarm activation.

- Maintenance: the flag is set if there is a lack of maintenance
- Temperature: the flag is set if the temperature may cause the alarm
- Humidity: the flag is set if the relative humidity may cause the alarm

!!! An activated flag doesn't mean that there is no smoke. It is dangerous to suspect a false alarm as the smoke preceding the onset of the flames are toxic and may cause you to lose consciousness: despite the absence of flames, a fire may blaze up in a few minutes. Nexelec recommends to analyse the environmental condition of a smoke alarm after the disappearance of the smoke alarm signal.

CO Alarm Condition analysis:
The CO alarm might be activated by improper environmental conditions like dust, humidity, etc. The product will activate flags if some of these conditions are observed at the moment of alarm activation.

- Maintenance: the flag is set if there is a lack of maintenance
- Temperature: the flag is set if the temperature may cause the alarm
- Humidity: the flag is set if the relative humidity may cause the alarm

!!! An activated flag doesn't mean that there is no CO. It is dangerous to suspect a false alarm. Nexelec recommends to analyse the environmental condition of a CO alarm after the disappearance of the CO alarm signal.

EEP Properties defined by the submitter:

Data exchange
Direction: unidirectional
Addressing: broadcast
Communication trigger: event- & time-triggered
Communication interval: According to configuration ((non-)autonomous operation, battery status, etc.)
Trigger event: change of value (configuration-dependent) over threshold
Tx delay: -
Rx timeout: -

Teach-in
Teach-in method: Universal teach-in (UTE)

Security
Encryption supported: no
Security level format: -

Parameters applied by EEP family members:

Each member of the family transports at least one or more parameters it its messages as defined later. The parameters are defined in the following table; these are the "building blocks" of the telegrams.

Name	ShortCut	Size	Description	Valid Range	Scale	Unit
Message ID	MSGID	8	Message ID	0 ... 255		
Temperature	TMP8	8	Temperature	0 ... 250	Linear, range sensor (TYPE) dependent	°C
			Status of Temperature Sensor	Enum: 251 ... 254: Reserved 255: Error		
Temperature	TMP9	9	Temperature	0 ... 500	Linear, range sensor (TYPE) dependent	°C
			Status of Temperature Sensor	Enum: 501 ... 510: Reserved 511: Error		
Humidity	HUM	8	rel. Humidity (linear)	0 ... 200	0 ... 100	%
			Status of Humidity Sensor	Enum: 201 ... 254: Reserved 255: Error		
Illumination	ILL	17	Illumination (linear)	0 ... 100,000	0 ... 100,000	lx
			Status of Illumination Sensor	Enum: 100,001 ... 131,070: Reserved 131,071: Error		
Energy Storage	ES	2	Energy Storage Status	Enum: 0: High 1: Medium 2: Low 3: Critical		
VOC	VOC	8	VOC in CO2 equivalents (linear)	0 ... 250	0 ... 2,000	ppm/e
			TVOC (linear)	0 ... 250	0 ... 1,150	ppb
			Status of VOC Sensor	Enum: 251 ... 254: Reserved 255: Error		
CO2	CO2	8	CO2 (linear)	0 ... 250	Sensor dependent, e.g. 0 ... 2,000	ppm
			Status of CO2 Sensor	Enum: 251 ... 254: Reserved 255: Error		

CO	CO	8	CO (linear)	0 ... 200	Sensor dependent, e.g. 0 ... 1,000	ppm
			Status of CO Sensor	Enum:		
				201 ... 254: Reserved		
				255: Error		

Barometer	BAR	9	Barometer (linear)	0 ... 500	600 ... 1,000	hPa
			Status of Barometer Sensor	Enum:		
				501 ... 510: Reserved		
				511: Error		

Presence	PR	2	Presence Detector	Enum:
				0: Present
				1: Not present
				2: Not detectable
				3: Presence Detector error

Button A	BA	2	Button A	Enum:
				0: Button A released
				1: Button A pressed
				2: Reserved
				3: Button A error (state not detectable)

Button B	BB	2	Button B	Enum:
				0: Button B released
				1: Button B pressed
				2: Reserved
				3: Button B error (state not detectable)

Smoke Alarm	SMA	1	Smoke Alarm status	Enum:		
				0: Smoke Alarm non-activated		
				1: Smoke Alarm activated		
		1	Sensor fault mode status	Enum:		
				0: Sensor Fault mode non-activated		
				1: Sensor Fault mode activated		
		1	Smoke Alarm Condition analysis: Maintenance	Enum:		
				0: Maintenance OK		
				1: Maintenance not done		
		1	Smoke Alarm Condition analysis: Humidity	Enum:		
				0: Humidity range OK		
				1: Humidity range NOK		
		1	Smoke Alarm Condition analysis: Temperature	Enum:		
				0: Temperature range OK		
				1: Temperature range NOK		
		8	Time since last maintenance	0 ... 250	0 ... 250	Week
				Enum:		
				251 ... 254: Reserved		
				255: Error		

CO Alarm	COA	1	CO Alarm status	Enum:		
				0: CO Alarm non-activated		
				1: CO Alarm activated		
		1	Sensor fault mode status	Enum:		
				0: Sensor Fault mode non-activated		
				1: Sensor Fault mode activated		
		1	CO Alarm Condition analysis: Maintenance	Enum:		
				0: Maintenance OK		
				1: Maintenance not done		
		1	CO Alarm Condition analysis: Humidity	Enum:		
				0: Humidity range OK		
				1: Humidity range NOK		
		1	CO Alarm Condition analysis: Temperature	Enum:		
				0: Temperature range OK		
				1: Temperature range NOK		
		8	Time since last maintenance	0 … 250	0 … 250	Week
				Enum:		
				251 … 254: Reserved		
				255: Error		
Remaining Product Life Time	RPLT	8	Countdown time until product end of life	0 … 250	Product dependent, e.g. 0 … 250	Month
				Enum:		
				251 … 254: Reserved		
				255: Error		
Hygrothermal Comfort Index	HCI	2	Comfort Index based on temperature and humidity	Enum:		
				0: Good		
				1: Medium		
				2: Bad		
				3: Error		
T/Hum. Indoor Air Analysis	IAQTH	3	Indoor Air quality analysis based on temperature and humidity	Enum:		
				0: Optimal air range		
				1: Dry Air range		
				2: High humidity range		
				3: High temperature and humidity range		
				4: Temperature or Humidity out of analysis range		
				5 … 6: Reserved		
				7: Error		
CO Indoor Air Analysis	IAQCO	2	Indoor Air quality analysis based on CO	Enum:		
				0: Good		
				1: Medium		
				2: Bad		
				3: Error		

EEP Family Tables:

Each line in the Family Table describes a parameter which is part of the message(s) of the marked Family Members (= column in the table / TYPE).

Line Powered devices:

Type	0x00	0x01	0x02	0x03	0x04	0x05
Temperature Sensor, TMP9	0...50	0...50		0...50	0...50	0...50
Humidity Sensor, HUM	X	X		X	X	X
Illumination Sensor, ILL					X	X
VOC Sensor [CO2-equiv.], VOC			0...2000	0...2000		0...2000
Freely Programmable Button A, BA		X				
Freely Programmable Button B, BB		X				

Type	0x06	0x07	0x08	0x09	0x0A
Temperature Sensor, TMP9		0...50	0...50	0...50	0...50
Humidity Sensor, HUM		X	X	X	X
Illumination Sensor, ILL			X		X
VOC Sensor [CO2-equiv.], VOC				0...2000	0...2000
CO2 Sensor, CO2	0...2000	0...2000	0...2000	0...2000	0...2000

Type	0x0B	0x0C	0x0D	0x0E	0x0F	0x10
Temperature Sensor, TMP9	0...50		0...50	0...50	0...50	0...50
Humidity Sensor, HUM	X		X	X	X	X
VOC Sensor [CO2-equiv.], VOC			0...2000	0...2000		0...2000
VOC Sensor, TVOC	0...1150					
CO2 Sensor, CO2				0...2000		
CO2 Sensor, CO2		0...5000				
Barometer Sensor, BAR					X	
Room Occupancy Sensor, PR						X
Freely Programmable Button A, BA			X	X		

Autonomous devices (indoor):

Type	0x1A	0x1B	0x1C	0x1D
Temperature Sensor, TMP9	0...50	0...50	0...50	0...50
Humidity Sensor, HUM	X	X	X	X
Illumination Sensor, ILL		X		X
Energy Storage Status, ES	X	X	X	X
Barometer Sensor, BAR			X	X

Type	0x30	0x31
Temperature Sensor, TMP8	0...50	0...50
Humidity Sensor, HUM	X	X
Smoke Alarm, SMA	X	
CO Alarm, COA		X
CO Sensor, CO		0...1000
Energy Storage Status, ES	X	X
Remaining Product Life Time, RPLF	120	120
Hygrothermal Comfort Index, HCI	X	X
T/Hum. Indoor Air Analysis, IAQTH	X	X
CO Indoor Air Analysis, IAQCO		X

Autonomous devices (outdoor):

Type	0x20	0x21	0x22	0x23	0x24
Temperature Sensor, TMP9	-40...60	-40...60	-40...60	-40...60	
Humidity Sensor, HUM	X		X		
Illumination Sensor, ILL	X			X	X
Energy Storage Status, ES	X	X	X	X	X

RORG	D2	VLD Telegram
FUNC	14	Multi Function Sensors
TYPE	30	Sensor for Smoke, Air quality, Hygrothermal comfort, Temperature and Humidity

Submitter: Nexelec

For the parameter ES (energy storage) applies: manufacturers / devices which would like to indicate a percentage value it is recommended to handle this in the user manual of the device, respectively an application note.

TYPE **0x30**

Data Byte	DB_5								DB_4								DB_3								DB_2							
DB Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Bit Offset	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Data	SMA													ES			RPLT								TEMP8							HUM

Data Byte	DB_1								DB_0							
DB Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Bit Offset	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Data	...							0	HCI			IAQTH				

Offset	Size	Data	ShortCut	Description	Valid Range	Scale	Unit
0	1	Smoke Alarm status	SMA	Smoke Alarm status	Enum: 0: Smoke Alarm non-activated 1: Smoke Alarm activated		
1	1	Sensor fault mode status	SMA	Sensor fault mode status	Enum: 0: Sensor Fault mode non-activated 1: Sensor Fault mode activated		
2	1	Smoke Alarm Condition analysis: Maintenance	SMA	Smoke Alarm Condition analysis: Maintenance	Enum: 0: Maintenance OK 1: Maintenance not done		
3	1	Smoke Alarm Condition analysis: Humidity	SMA	Smoke Alarm Condition analysis: Humidity	Enum: 0: Humidity range OK 1: Humidity range NOK		
4	1	Smoke Alarm Condition analysis: Temperature	SMA	Smoke Alarm Condition analysis: Temperature	Enum: 0: Temperature range OK 1: Temperature range NOK		
5	8	Time since last maintenance	SMA	Time since last maintenance	Enum: 0...250: Week 0...250 251...254: Reserved 255: Error		
13	2	Energy Storage	ES	Energy Storage Status	Enum: 0: High 1: Medium 2: Low 3: Critical		
15	8	Remaining Product Life Time	RPLT	Countdown time until product end of life	Enum: 0...120: Month 0...120 121...254: Reserved 255: Error		

23	8	Temperature	TMP8	Temperature (linear) --- Status of Temperature Sensor	Enum: 0...250: °C 0...50 251...254: Reserved 255: Error
31	8	Humidity	HUM	Rel. Humidity (linear) --- Status of Humidity Sensor	Enum: 0...200: %RH 0...100 201...254: Reserved 255: Error
39	2	Hygrothermal Comfort Index	HCI	Comfort Index based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error
41	3	T/Hum. Indoor Air Analysis	IAQTH	Indoor Air quality analysis based on temperature and humidity	Enum: 0: Optimal air range 1: Dry Air range 2: High humidity range 3: High temperature and humidity range 4: Temperature or Humidity out of analysis range 5...6: Reserved 7: Error
44	4	Not Used (= 0)			