

#### **EnOcean Equipment Profiles**

#### **REVISION HISTORY**

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## **System Specification**

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**EnOcean Equipment Profiles** 



#### 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: -

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#### 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	
Massage ID	MSGID	8	Massage ID	0 255			
Message ID	MSGID	0	Message ID	0 255			
Temperature	TMP8	8	Temperature	0 250	Linear, range sensor (TYPE) dependent	°C	
remperature	THEO		Status of Temperature Sensor	Enum: 251 254: R 255: Error	251 254: Reserved		
				255. 21101			
Temperature	TMP9	9	Temperature	0 500	Linear, range sensor (TYPE) dependent	°c	
remperature	Thiry	9		Enum:			
			Status of Temperature Sensor	501 510: R	eserved		
			remperature sensor	511: Error			
			rel. Humidity (linear)	0 200	0 100	%	
Humidity	HUM	8	Status of Humidity Sensor	Enum:			
				201 254: Reserved			
			Scrisor	255: Error			
			Illumination (linear)	0 100,000   0 100,000   lx			
Illumination	ILL	17	Status of	Enum:			
			Illumination Sensor	100,001 131,070: Reserved			
				131,071: Error			
				1-			
				Enum:			
Francis Characa	FC	_	Energy Storage	0: High			
Energy Storage	ES	2	Status	1: Medium			
				2: Low 3: Critical			
				J. Citical			
			VOC in CO2				
			equivalents (linear)	0 250	0 2,000	ppm/e	
voc	voc	8	TVOC (linear)	0 250	0 1,150	ppb	
VOC	1000	0		Enum:			
			Status of VOC Sensor	251 254: R	eserved		
			Jelisoi	255: Error			
CO2	CO3	9	CO2 (linear)	0 250	Sensor dependent, e.g. 0 2,000	ppm	
CO2	CO2	8		Enum:			
			Status of CO2 Sensor	251 254: R	eserved		
				255: Error			

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со	со	8	CO (linear)	0 200 Sensor dependent, e.g. 0 1,000 ppm		
CO	100	8		Enum:		
			Status of CO Sensor	201 254: Reserved		
				255: Error		
			Barometer (linear)	0 500 600 1,000 hPa		
				Enum:		
Barometer	BAR	9	Status of Barometer Sensor	501 510: Reserved		
			Daronieter Sensor	511: Error		
	<u>'</u>		•			
				Enum:		
				0: Present		
Presence	PR	2	Presence Detector	1: Not present		
				2: Not detectable		
				3: Presence Detector error		
	_					
				Enum:		
				0: Button A released		
Button A	BA	2	Button A	1: Button A pressed		
				2: Reserved		
				3: Button A error (state not detectable)		
				Enum:		
			Button B	0: Button B released		
Button B	BB	2		1: Button B pressed		
Dutton D		_		2: Reserved		
				3: Button B error (state not detectable)		
				Enum:		
		1	Smoke Alarm status	0: Smoke Alarm non-activated		
		-	Sillotto Atlantii Status	1: Smoke Alarm activated		
				Enum:		
		1	Sensor fault mode	0: Sensor Fault mode non-activated		
		-	status	1: Sensor Fault mode activated		
			Smoke Alarm	Enum:		
		1	Condition analysis:	0: Maintenance OK		
		-	Maintenance	1: Maintenance not done		
Smoke Alarm	SMA		Smoke Alarm	Enum:		
		1	Condition analysis:	0: Humidity range OK		
			Humidity	1: Humidity range NOK		
			Smoke Alarm	Enum:		
		1	Condition analysis:	0: Temperature range OK		
		1	Temperature	1: Temperature range NOK		
				0 250 0 250 Week		
			Time since last	Enum:		
		8	maintenance	251 254: Reserved		
				255: Error		



				Enum:				
		1	CO Alarm status	0: CO Alarm non-activated				
				1: CO Alarm activated				
				Enum:				
		1	Sensor fault mode	0: Sensor Fault mode non-activated				
			status	1: Sensor Fault	mode activated	ı		
			CO Al-	Enum:				
		1	CO Alarm Condition analysis:	0: Maintenance	OK			
		1	Maintenance	1: Maintenance				
CO Alesen	604				not done			
CO Alarm	COA	١.	CO Alarm	Enum:	01/			
		1	Condition analysis: Humidity	0: Humidity rar				
			nullialty	1: Humidity rar	nge NOK			
			CO Alarm	Enum:				
		1	Condition analysis:	0: Temperature				
			Temperature	1: Temperature	e range NOK			
				0 250	0 250	Week		
		_	Time since last	Enum:				
		8	maintenance	251 254: Res	served			
				255: Error				
				2001 2.101				
	RPLT	8			Product	Month		
Remaining			Countdown time until product end of life		dependent, e.g. 0 250	Month		
Product Life					e.g. 0 250			
Time				Enum:				
				251 254: Reserved				
					sei veu			
				255: Error	serveu			
					serveu			
					served			
			Comfort Index	255: Error	Scived			
Hygrothermal	нсі	2	based on	255: Error Enum:	Serveu			
Hygrothermal Comfort Index	нсі	2	based on temperature and	255: Error Enum: 0: Good	Served			
	нсі	2	based on	255: Error  Enum: 0: Good 1: Medium 2: Bad	Scived			
	нсі	2	based on temperature and	255: Error  Enum: 0: Good 1: Medium	Scrived			
	нсі	2	based on temperature and	255: Error  Enum: 0: Good 1: Medium 2: Bad 3: Error	Scrived			
	HCI	2	based on temperature and	Enum: 0: Good 1: Medium 2: Bad 3: Error				
	HCI	2	based on temperature and	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r	ange			
	нсі	2	based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range	range e			
Comfort Index			based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit	ange e ey range			
Comfort Index  T/Hum. Indoor	HCI	2	based on temperature and humidity  Indoor Air quality analysis based on	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit	range e	lity range		
Comfort Index			based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temper: 4: Temperature	ange e ey range			
Comfort Index  T/Hum. Indoor			Indoor Air quality analysis based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temper.	range e cy range ature and humic			
Comfort Index  T/Hum. Indoor			Indoor Air quality analysis based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temper: 4: Temperature	ange e cy range ature and humic e or Humidity ou			
Comfort Index  T/Hum. Indoor			Indoor Air quality analysis based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temperature analysis range	ange e cy range ature and humic e or Humidity ou			
Comfort Index  T/Hum. Indoor			Indoor Air quality analysis based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temper: 4: Temperature analysis range 5 6: Reserve	ange e cy range ature and humic e or Humidity ou			
Comfort Index  T/Hum. Indoor			Indoor Air quality analysis based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temperature analysis range 5 6: Reserver 7: Error	ange e cy range ature and humic e or Humidity ou			
Comfort Index  T/Hum. Indoor			Indoor Air quality analysis based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temper: 4: Temperature analysis range 5 6: Reserver 7: Error	ange e cy range ature and humic e or Humidity ou			
T/Hum. Indoor Air Analysis	IAQTH	3	Indoor Air quality analysis based on temperature and humidity  Indoor Air quality analysis based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temperature analysis range 5 6: Reserver 7: Error  Enum: 0: Good	ange e cy range ature and humic e or Humidity ou			
T/Hum. Indoor Air Analysis			Indoor Air quality analysis based on temperature and humidity  Indoor Air quality analysis based on temperature and humidity  Indoor Air quality analysis based on	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temperature analysis range 5 6: Reserver 7: Error  Enum: 0: Good 1: Medium	ange e cy range ature and humic e or Humidity ou			
T/Hum. Indoor Air Analysis	IAQTH	3	Indoor Air quality analysis based on temperature and humidity  Indoor Air quality analysis based on temperature and humidity	Enum: 0: Good 1: Medium 2: Bad 3: Error  Enum: 0: Optimal air r 1: Dry Air range 2: High humidit 3: High temperature analysis range 5 6: Reserver 7: Error  Enum: 0: Good	ange e cy range ature and humic e or Humidity ou			

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# **System Specification**

#### **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:

Туре	0x00	0x01	0x02	0x03	0x04	0x05
Temperature Sensor, TMP9	050	050		050	050	050
Humidity Sensor, HUM	Χ	Χ		X	X	X
Illumination Sensor, ILL					Х	Х
VOC Sensor [CO2-equiv.], VOC			02000	02000		02000
Freely Programmable Button A, BA		X				
Freely Programmable Button B, BB		X				

Туре	0x06	0x07	0x08	0x09	0x0A
Temperature Sensor, TMP9		050	050	050	050
Humidity Sensor, HUM		X	Χ	X	Χ
Illumination Sensor, ILL			Х		Х
VOC Sensor [CO2-equiv.], VOC				02000	02000
CO2 Sensor, CO2	02000	02000	02000	02000	02000

Туре	0x0B	0x0C	0x0D	0x0E	0x0F	0x10
Temperature Sensor, TMP9	050		050	050	050	050
Humidity Sensor, HUM	X		X	X	X	X
VOC Sensor [CO2-equiv.], VOC			02000	02000		02000
VOC Sensor, TVOC	01150					
CO2 Sensor, CO2				02000		
CO2 Sensor, CO2		05000				
Barometer Sensor, BAR					X	
Room Occupancy Sensor, PR						X
Freely Programmable Button A, BA			X	Х		

#### Autonomous devices (indoor):

Туре	0x1A	0x1B	0x1C	0x1D
Temperature Sensor, TMP9	050	050	050	050
Humidity Sensor, HUM	Χ	X	X	X
Illumination Sensor, ILL		X		X
Energy Storage Status, ES	Χ	X	X	X
Barometer Sensor, BAR			X	X

Туре	0x30	0x31
Temperature Sensor, TMP8	050	050
Humidity Sensor, HUM	X	X
Smoke Alarm, SMA	X	
CO Alarm, COA		X
CO Sensor, CO		01000
Energy Storage Status, ES	Х	X
Remaining Product Life Time, RPLF	120	120
Hygrothermal Comfort Index, HCI	Х	X
T/Hum. Indoor Air Analysis, IAQTH	X	X
CO Indoor Air Analysis, IAQCO		X

#### Autonomous devices (outdoor):

Туре	0x20	0x21	0x22	0x23	0x24
Temperature Sensor, TMP9	-4060	-4060	-4060	-4060	
Humidity Sensor, HUM	Х		Х		
Illumination Sensor, ILL	X			Х	X
Energy Storage Status, ES	X	X	Х	Х	X

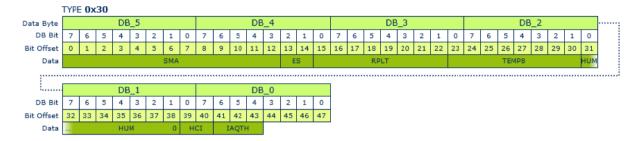
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RORG	D2	VLD Telegram
FUNC	14	Multi Function Sensors
TYPE	30	Sensor for Smoke, Air quality, Hygrothermal comfort, Temperature and Humidity

#### 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.



Offset	Size	Data	ShortCut	Description	Valid Range	Scale	Unit	
0	1	Smoke Alarm status	SMA	Smoke Alarm status	Enum:			
					0: Smoke Alarm non-activated		ed	
					1: Smoke Alarm ac	tivated		
1	1	Sensor fault mode	SMA	Sensor fault mode status	Enum:			
		status			0: Sensor Fault mo	de		
					non-activated			
					1: Sensor Fault mo	de activat	tea	
2	1	Smoke Alarm Condition	SMA	Smoke Alarm Condition	Enum:			
		analysis: Maintenance		analysis: Maintenance	0: Maintenance OK			
					1: Maintenance not	done		
3	1	Smoke Alarm Condition	SMA	Smoke Alarm Condition	Enum:			
		analysis: Humidity		analysis: Humidity 0: Humidity ran	idity 0: Humidity range OK	OK		
					1: Humidity range	NOK		
4	1 Smoke Alarm Condition		SMA	Smoke Alarm Condition	Enum:		_	
		analysis: Temperature	analysis: Temperature		0: Temperature range OK			
					1: Temperature ran	ige NOK		
5	8	Time since last	SMA	Time since last	Enum:			
		maintenance		maintenance	0250:		Week	
						0250		
					251254: Reserved			
4.0	_			5 0 0 1	255: Error			
13	2	Energy Storage	ES	Energy Storage Status	Enum:			
					0: High			
					1: Medium 2: Low			
					3: Critical			
15	8	Remaining Product Life	DDLT	Countdown time until				
15	3	Time	RPLI	product end of life	Enum: 0120:		Month	
			product cha or me			0120	Pioliui	
					121254: Reserved			
					255: Error			
					2			

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23	8	Temperature	TMP8	Temperature (linear)	Enum:
				Status of Temperature Sensor	0250: °C 050
					251254: Reserved
					255: Error
31	8	Humidity	HUM	Rel. Humidity (linear)	Enum:
				Status of Humidity Sensor	0200: %RH 0100
					201254: Reserved
					255: Error
39	2	Hygrothermal Comfort Index	HCI	Comfort Index based on temperature and humidity	Enum:
					0: Good
					1: Medium
					2: Bad
	<u> </u>				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
					Reserved 56:
					7: Error
44	4	Not Used (= 0)			

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