CO2 and VOC sensor

USER MANUAL

Translation of the original instructions

Version: **1.0**

Date: **20/12/2022**

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VERSION	DATE	CHANGES
1.0	20/12/2022	-

Any information inside this manual can be changed without advice.

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www.eelectron.com

Exclusion of liability:
Despite checking that the contents of this document match the hardware and software, deviations cannot be completely excluded. We therefore cannot accept any liability for this.
Any necessary corrections will be incorporated into newer versions of this manual.

Symbol for relevant information 

Symbol for warning 

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1. CO2/VOC Sensor

The functionalities associated to CO2 sensor or VOC sensor are the same; unit of measure is [ppm] for CO2 values and [ppb] for VOC values.

External sensors:

SM03E01ACC: this accessory includes a temperature sensor (range from -5 ° C to + 50 ° C) and a CO_2 sensor (range from 0 ppm to 1000 ppm).

SM03E02ACC: this accessory includes a temperature sensor (range from -5 ° C to + 50 ° C) and a VOC sensor for Indoor Air Quality (IAQ) and equivalent CO_2 (eCO_2) measurement.

Communication objects involved:

<CO2/VOC Sensor> Actual Measure	2 bytes	CRT
<CO2/VOC Sensor> KNX Measure	2 bytes	CW
<CO2/VOC Sensor> Alarm	1 bit	CRT
<CO2/VOC Sensor> Enable	1 bit	CW
<CO2/VOC Sensor> Threshold 1	2 bytes	CW
<CO2/VOC Sensor> Threshold 1 Value	1 bit	CRT
<CO2/VOC Sensor> Threshold 2	2 bytes	CW
<CO2/VOC Sensor> Threshold 2 Value	1 bit	CRT
<CO2/VOC Sensor> Threshold 3	2 bytes	CW
<CO2/VOC Sensor> Threshold 3 Value	1 byte	CRT

ETS page "Reference"

KNX PARAMETER	SETTINGS
Source	internal sensor external sensor mix of internal and external sensor KNX sensor mix of internal and KNX sensor mix of external and KNX sensor
This parameter defines the source of the CO2/VOC measure. Internal sensor is the embedded sensor in the device. External sensor is the sensor that can be connected to the 2 poles terminal present in the device. KNX probe is a remote sensor that sends its value via BUS; if set, object "<CO2 Sensor> KNX Measure" is shown.	
CO2 / VOC object	disabled enabled
Set this parameter to "enabled" to activate object "<CO2/VOC Sensor> Actual Measure" that shows the value measured.	
Sending interval	no cyclic sending 1, 2, 5, 10, 15, 30, 45 minutes 1, 2, 3, 4, 5, 6, 8, 12 hours
This parameter defines the time interval to send cyclically on the BUS the object "<CO2/VOC Sensor> Actual Measure".	
Sending on variation [ppm/ppb]	never 5, 10, 20, 30, 40, 50, 75, 100, 200, 300, 400, 500
This parameter defines the value to send on the BUS the object "<CO2/VOC Sensor> Actual Measure" when its value differs from previous one.	
Weight external sensor	10%, 20% .. 90%
This parameter defines the weight of the measure of external sensor in case of mixed source.	
Weight internal sensor	10%, 20% .. 90%
This parameter defines the weight of the measure of internal sensor in case of mixed source.	
Internal sensor calibration [ppm/ppb]	-1000 .. 1000
This parameter defines the offset to the value measured by internal sensor; the offset is applied to object "<CO2/VOC Sensor> Actual Measure".	
External sensor calibration [ppm/ppb]	-1000 .. 1000
This parameter defines the offset to the value measured by external sensor; the offset is applied to object "<CO2/VOC Sensor> Actual Measure".	
KNX sensor calibration [ppm/ppb]	-1000 .. 1000
This parameter defines the offset to the value measured by KNX sensor; the offset is applied to object "<CO2/VOC Sensor> Actual Measure".	
Surveillance time for KNX probe (0=disabled) [min]	0 .. 255
This parameter defines the interval time (in minutes) in which a valid value must be written on the object "<CO2/VOC Sensor> KNX Measure"; if no valid value is written, alarm is activated.	
Enable alarm object	disabled enabled
Set this parameter to "enabled" to activate object "<CO2/VOC Sensor> Alarm"; if value of this object is "1", a problem is detected.	

ETS page "CO2/VOC Control"

KNX PARAMETER	SETTINGS
Sensor type	disabled threshold events
This parameter defines the CO2/VOC control function.	
Activation telegram	telegram "0" telegram "1"
This parameter defines the telegram that must be written in the object "<CO2/VOC Sensor> Enable" to activate the CO2/VOC control.	
State after download	disabled enabled
This parameter defines if, after a download of the application, the CO2/VOC control is enabled.	
Hysteresis type	symmetric asymmetric
This parameter defines wether the absolute limit values of hysteresis are the same for both thresholds (symmetric) or they can be set indipendently (asymmetric).	
Hysteresis [ppm/ppb]	1, 5, 10, 20, 30, 40, 50, 75, 100, 200, 300, 400, 500
In symmetric mode, this parameter defines the value of the hysteresis which is added to the value of the thresholds (only for on/off type).	
Threshold value [ppm/ppb]	0 .. 5000
This parameter defines the value of the threshold.	

Hysteresis upper limit [ppm/ppb]	0 .. 500
In asymmetric mode, this parameter defines the value of the hysteresis which is added to the value of the thresholds.	
Hysteresis lower limit [ppm/ppb]	0 .. 500
In asymmetric mode, this parameter defines the value of the hysteresis which is subtracted to the value of the thresholds.	
Telegram when value is above threshold	nothing off on
This parameter defines the telegram which is sent on the BUS if the value of object “<CO2/VOC Sensor> Actual Measure” is higher than the sum of threshold and hysteresis.	
Telegram when value is below threshold	nothing off on
This parameter defines the telegram which is sent on the BUS if the value of object “<CO2/VOC Sensor> Actual Measure” is lower than the difference between threshold and hysteresis.	
Telegram when sensor is disabled	nothing off on
This parameter defines the telegram which is sent on the BUS if the CO2/VOC control is disabled.	
Bandgap [ppm/ppb]	-1000 .. 1000
This parameter defines the offset added to the threshold value.	
Proportional band [Bp] [ppm/ppb]	0 .. 1000
This parameter defines the value of the proportional band. The limits of the band are: • sum of threshold and bandgap • sum of threshold, bandgap and proportional band. If the value of the object “<CO2/VOC Sensor> Actual Measure” is included between the limits, a percentage control from 0% to 100% is set on object “<CO2/VOC Sensor> Threshold 3 Value”.	
Inverted control	no yes
This parameter allows to invert the limit values of the proportional band (0%-100% or 100%-0%).	
Cyclic sending time of telegram	no cyclic sending 1, 2, 5, 10, 15, 30, 45 minutes 1, 2, 3, 4, 5, 6, 8, 12 hours
This parameter defines the time interval to send cyclically on the BUS the object “<CO2/VOC Sensor> Threshold 3 Value”.	
Send on variation	minimal 1%, 2%, 3%, 4%, 5%, 6%, 7%
This parameter defines the value to send on the BUS the object “<CO2/VOC Sensor> Threshold 3 Value” when its value differs from previous one more than the percentage set.	