CO_2 room sensor

KSIC

Description

The KSIC CO_2 room sensor measures air quality through the presence of carbon dioxide in the range between 0 and 10k ppm. The measurement of CO_2 concentration happens through a maintenance free NDIR sensor that operates on an infrared basis and which compensates the presence of any impurity. The product is provided different outputs.

Technical specifications

Measurement range CO_2	400...2000, 0...2k, 0...5k, 0...10k ppm selectable
Accuracy CO_2	± 70 ppm +3% reading
Accuracy temperature (*)	±0,3°C (5...60°C) + 1% FS
Accuracy humidity (*)	±2% RH (20...80%RH) + 2% FS
Power supply	24 VAC (±5%), 15...35 VDC
Consumption	< 2,5 W
Sensible element	NDIR self adjusting
Output	0...5 VDC, 0...10 VDC, 4...20 mA, Modbus 485
Electrical connection	Pluggable screw terminal for cables 1,5 mm^2
Protection type	IP41
Working range RH	10...95% RH in contaminant-free, non-condensing air
Working temperature °C	-30...+70°C
Storage temperature	-20...+50°C
Standards	CE conformity, RoHS

Order matrix

Model	Output 1 CO_2		Output 2 Temperature		Output 3 Humidity		Option	
KSIC	**0**	no output	**0**	no output	**0**	no output	**M**	Modbus
	1	0...10 V	**1**	0...10 V	**1**	0...10 V	**D**	Display
	2	2...10 V	**2**	2...10 V	**2**	2...10 V	**R**	Relay*
	3	0...5 V	**3**	0...5 V	**3**	0...5 V		
	4	1...5 V	**4**	1...5 V	**4**	1...5 V		
	5	4...20 mA	**5**	4...20 mA	**5**	4...20 mA		

*It is recommandable to order the relay version with display option.

DIP Switch

DIP 1-2	CO2 Ranges
	400-2.000 ppm
	0-2.000 ppm
	0-5.000 ppm
	0-10.000 ppm

DIP 4	Response
	60 sec.
	20 sec.

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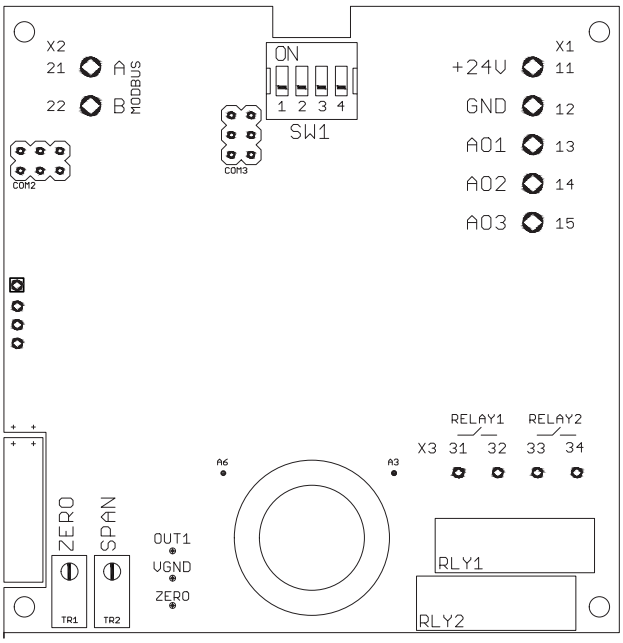
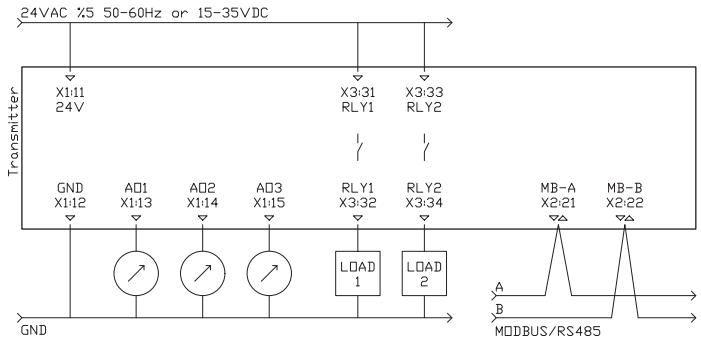
Transmitter hardware



SW1	DIP Switch for configuration range and response time	
X1 TERMINAL		
11	24V	15...35 VDC or 24 VAC (± %5, 50-60 Hz)
12	GND	ground for power and reference for outputs
13	AO1	analog output 1
14	AO2	analog output 2
15	AO3	analog output 3
X2 TERMINAL		
21	A / RS485	modbus communication positive pair
22	B / RS485	modbus communication negative pair
RLY1 & RLY2	relay 1 and relay 2	
X3 TERMINAL		
31	NO - RL1	relay 1 dry contact max. rating 1A @ 230 VAC
32	NO - RL1	relay 1 dry contact max. rating 1A @ 230 VAC

Electrical wirings

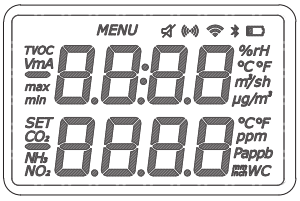


Relay contact rating is max. 1A at 230 VAC
We kindly advise using 24V for avoiding high voltage harmonics and external power relay for bigger loads
Please use shielded and twisted paired cables for Modbus connections

Display & Buttons

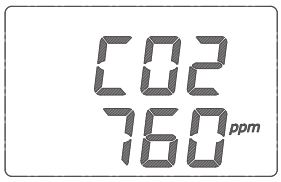
keep pressing until entering MENU, click for next parameter

press for EXIT

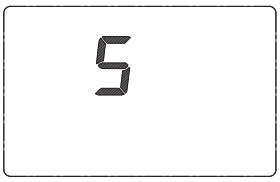


press for increasing the value or choosing the next parameter

press for decreasing the value or choosing the previous parameter



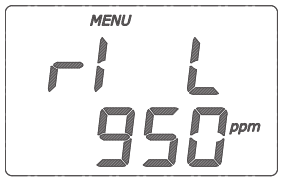
main screen
transmitter is working



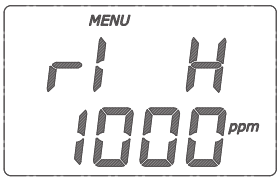
keep pressing MENU button until seeing 0
transmitter is not working in MENU mode

Parameters for Relay & Buzzer

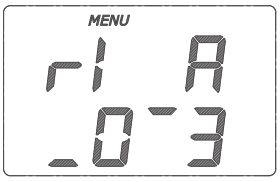
Main Screen >>>>> r1 L > r1 H > r1 A > Main Screen



LOW set point for Relay 1



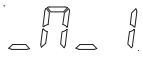
HIGH set point for Relay 1



ACTION selection for Relay 1

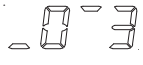
Actions for Relay & Buzzer

action 0,
relay contact is always OPEN

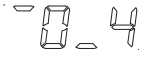


action 1,
relay contact is CLOSED between points, OPEN under LOWpoint and OPEN over HIGHpoint

action 2,
relay contact is OPEN between points, CLOSED under LOWpoint and OPEN over HIGHpoint



action 3,
relay contact is CLOSED over HIGHpoint, OPEN under LOWpoint, hysterisis between points



action 4,
relay contact is OPEN over HIGHpoint, CLOSED under LOWpoint, hysterisis between points

ACTIONS	under LOW	between LOW & HIGH	over HIGH
0 : 0.0.0	Open	Open	Open
1 : 0.I.0	Open	Closed	Open
2 : I.0.I	Closed	Open	Closed
3 : 0.X.I	Open	Hysteresis	Closed
4 : I.X.0	Closed	Hysteresis	Open

0 : Relay Contact is OPEN, Buzzer is in Silent mode
I : Relay Contact is CLOSED, Buzzer is in Warning mode
X : Relay Contact is at HYSTERESIS position, OPEN if previous position open, CLOSED if previous position closed

Modbus RS485 protocol

Default Settings: Modbus ID:1, 9600, 8bit, None, 1. Register Table starts from Base 1.
Use Function 3 for Reading and Function 6 for Writing Holding Registers. Whenever writing to any Modbus Parameter, new parameter is activated instantly and you should have to configure master device according to new parameters. For every reboot/initializing, Modbus is activated with default parameters for 3 seconds. After 3 seconds, Modbus is reconfigured according your parameter settings.
Unlisted registers are for analog output calibrations and some system parameters. Please do not change unlisted registers.

Register	R/W	Range	Description
1	R & W	1…254	Modbus Address
2	R & W	0…4	Baudrate, 0: 9.600, 1: 19.200, 2: 38.400, 3: 57.600, 4: 115.200
3	R & W	0…3	Bit_Parity_Stop, 0: 8bit_None_1, 1: 8bit_None_2, 2: 8bit_Even_1, 3: 8bit_Odd_1
4	R		CO2 level as ppm
5	R		Temperature as C x100, divide by 100 for exact value
6	R	0 or 1	Relay 1, contact position, 0: OFF - Contact is Open, 1: ON - Contact is Closed
7	R	0…1.000	Relay 1, LOW point
8	R	0…1.000	Relay 1, HIGH point
9	R	0…4	Relay 1, ACTION
10	R	0 or 1	Relay 2, contact position, 0: OFF - Contact is Open, 1: ON - Contact is Closed
11	R	0…1.000	Relay 2, LOW point
12	R	0…1.000	Relay 2, HIGH point
13	R	0…4	Relay 2, ACTION
14	R	0 or 1	Buzzer, 0: OK-Silence, 1: PreAlarm - warning intermittently, 2: WARNING continuously
15	R	0…1.000	Buzzer, LOW point
16	R	0…1.000	Buzzer, HIGH point
17	R	0…4	Buzzer, ACTION
18-29	R		Only for service needs
30	R		CO2 level as ppm
31	R		Temperature as C x100, divide by 100 for exact value
32	R		Temperature as C
33	R		Temperature as F x100, divide by 100 for exact value
34	R		Temperature as F
35	R		Humidity as %rH x100, divide by 100 for exact value
36	R		Humidity as %rH

Dimensions (mm)