

SPECIFICATION

HTC-K-VR



***Duct CO2 sensor with 0...10 V analogue
output and relay threshold***

2016-02-22

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Introduction

The subject of this manual is the characteristic of functionality of the CO₂ (carbon dioxide) converter based on the TELAIRE 6613 sensor with 0-10V analogue output and potential-free relay output.

CAUTION: Before starting the module, please read the text included in this manual.

Device functions

- CO₂ measurement
- 0-10 [V] analogue output (proportional to CO₂)
- potential-free relay output
- configuration of the CO₂ value causing the start-up of converter
- LED signalling of device operation

Device characteristic

The basic function of the CO₂ v1b converter is measurement of the CO₂ content in the air. Measured by means of an integrated TELAIRE 6613 sensor CO₂ values are converted and averaged in a microcontroller. The values are presented in an analogue form on the 0-10 [V] voltage output. The converter has also been equipped with potential-free relay output, activated after crossing the threshold values of CO₂. The threshold values are set using configuration jumpers – the detailed description can be found in the section **Device configuration**.

Technical data

General converter parameters

Power	
- DC voltage	DC 24V (20...30V)
- AC voltage	AC 24V (20...27,6V)
Current consumption	
- minimal ¹⁾	23,0 mA
- typical ²⁾	64,0 mA
- maximum ³⁾	76,0 mA
LED signalling	Description in the section: "LED signalling"
Installation connector	screw 5.00mm increments ($\leq 2,5\text{mm}^2$)
Dimensions	115 x 65 x 15 (L x H x W)
Weight	220 g
Installation ⁴⁾	IP 54
Working environment	Dust-free, air, neutral gases
Working temperature	0°C ÷ 50°C

1) Minimum momentary power consumption in the conditions: 24V DC, voltage output loaded with 1k resistance, converter on;

2) Medium power consumption of the device under conditions as in section 1);

3) Maximum momentary power consumption of the device under conditions as in section 1);

4) The installation of the device should be carried out by qualified personnel;

CO2 measurement parameters

Type of sensor	TELAIRE 6613
Measurement range	0 ÷ 2000 ppm
Accuracy:	
- within the range of 400 ÷ 1250 ppm	± 3 %
- within the range of 1250 ÷ 2000 ppm	± 5 % ± 30 ppm
Sampling frequency	2 Hz
Response time ¹⁾	< 2 min

1) The specified response time is equal to one time constant corresponding to 90% of set value;

Analogue outputs parameters

Type of output	voltage
Output range	10 V
Resolution	12 bit (5 mV)
Load	R _L > 1 kΩ
Refresh rate	
- CO2 (carbon dioxide) output	2 Hz

Relay output parameters

Type of output	NO ¹⁾
Nominal / max. AC contact voltage	125 V / 250 V
Minimal contact voltage	10 mV
Nominal load current	
- in AC1 category	0,5 A / 125 V AC
- in DC1 category	2A / 30 V DC
Minimal contact current	0,01 mA
Permanent contact ampacity	2 A
Maximum switching capacity in AC1 category	62,5 VA
Contact resistance	≤ 50 mΩ
Response/return time	3 ms / 3ms

1) Output normally open;

Installation

Safety

- The installation of the device should be carried out by qualified personnel!
- All connections must be made in accordance with wiring diagrams shown in this specification!
- Before starting the device all electrical connections must be checked!

Device construction

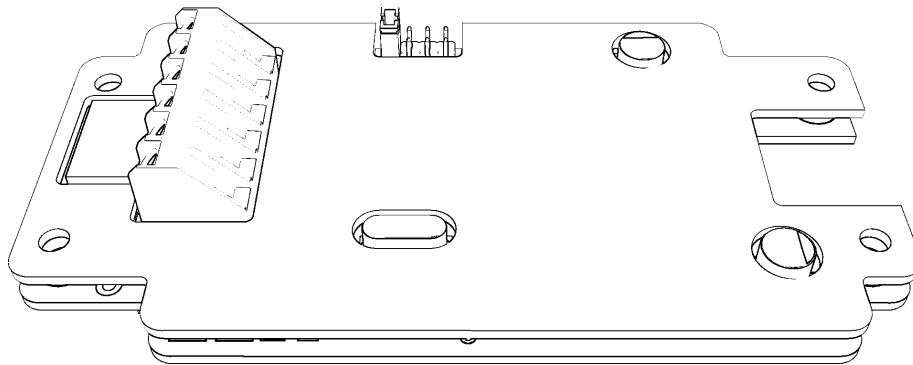


Figure 1. View of the printed circuit board of the duct version of the converter.

Description of terminals

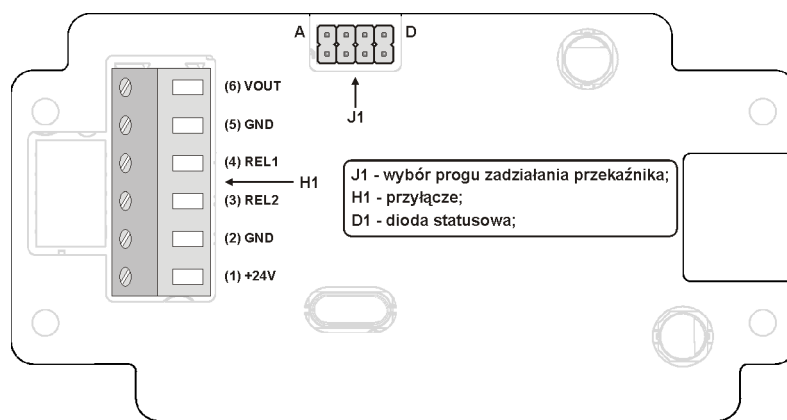


Figure 2. Description of terminals of the CO2 converter in the duct version.

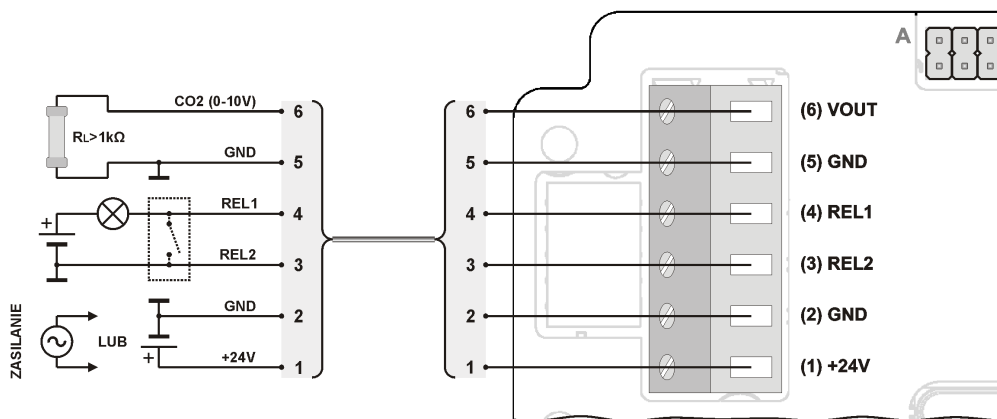


Figure 3. Wiring diagram of the CO2 converter in the duct version.

Device configuration

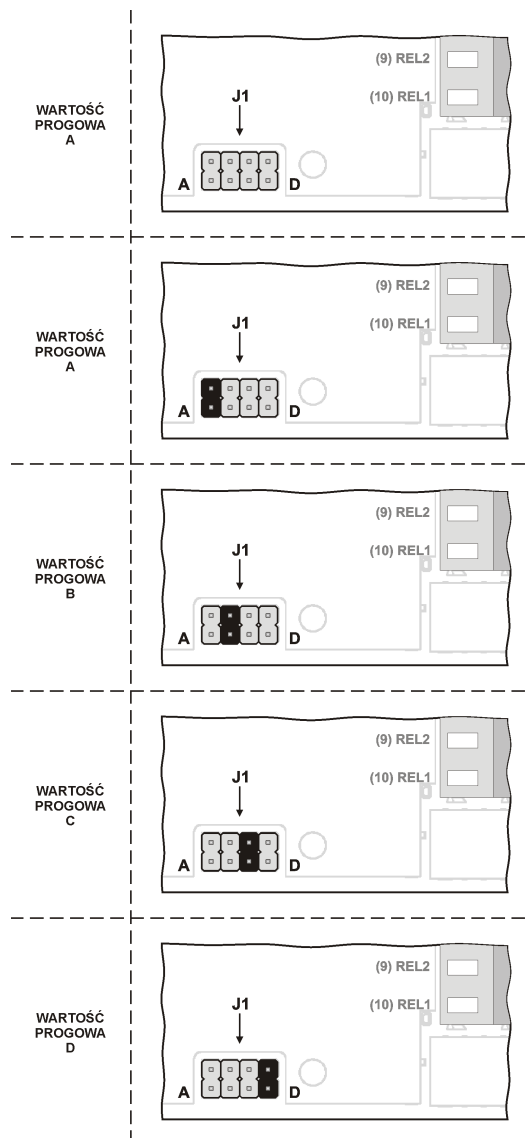


Figure 4. Configuration of threshold value switching the relay output of the CO2 converter in the duct version.

Table of threshold values switching the relay output:

Jumper position	Carbon dioxide values *
A	800 ppm
B	1200 ppm
C	1600 ppm
D	factory setting

(*) Hysteresis of the switching of relay output equals ± 50 ppm.

LED signalling

Table of statuses signalled by status LED:

Status	Description	Diode colour	Behaviour
1	Warming of CO2 module	green	blinking (250ms / 250ms ^{**})
2	0 – 800 [ppm] *	green	continuous light
3	800 – 1200 [ppm] *	yellow	continuous light
4	1200 – 2000 [ppm] *	red	continuous light
5	> 2000 [ppm]	red	blinking (250ms / 250ms ^{**})
6	no CO2 sensor or other error	red	blinking (100ms / 600ms ^{**})

(*) Hysteresis of the switching of the status of diode light equals ± 50 ppm.

(**) Blinking (XXX ms / YYY ms) means XXX – time of switching on, YYY – time of switching off

3.6. External dimensions

