SPECIFICATIONS
HTC-V-L, HTC-VV-L, HTC-VP-L

CO2 concentration and temperature transmitter with 0-10V outputs

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Introduction

The subject of this document is the functionality characteristics of the CO2 concentration and temperature transmitter based on the MH-Z14 sensor with 2 analogue outputs in 0-10V standard.

CAUTION: Before starting the unit, please read the content of this document.

1.1. Functions

- CO2 concentration measurement
- analogue voltage output 0-10 [V] (proportional to CO2 concentration)
- temperature measurement
- analogue voltage output 0-10 [V] (proportional to T in the range 0-50C)
- RTD type temperature sensor leads available on the connector
- LED unit status indication
- LED indication of CO2 concentration level / CO2 sensor status

1.2. Characteristics

Main function of the HTC-V-L transmitter is to measure the CO2 content in the air. The CO2 concentration values measured via the integrated MH-Z14 sensor are then converted and averaged in the microcontroller. The temperature is measured in parallel. Both values are presented in analogue form on two independent voltage outputs in 0-10 [V] standard.

As an option, it is also possible to solder a thermoresistive sensor with the outputs available on the connector (without a conditioning system).

Technical data

1.3. General parameters

Power	
- DC	DC 24V (20...30V)
- AC	AC 24V (20...27.6V)
Current consumption	
- typical [1]	<40 mA
- maximum [2]	<67 mA
LED signaling	see section "LED signaling"
Installation connector	screwed in 5.00mm raster ($\leq 2.5mm^2$)
Dimensions	120 x 80 x 25 (L x H x W)
Weight	ca. 110 g
Mount [3]	wall mounted
Operating environment	dust-free, air, neutral gases
Operating temperature	0°C ÷ 50°C

1) Average current consumption of the device under conditions: 24V DC power supply, each voltage output with 10k resistance;

2) Maximum instantaneous current consumption of the device under conditions as in point 1) + voltage outputs with 1k resistance;

3) Installation of the unit should be carried out by qualified personnel; Vertical orientation according to markings UP, DOWN;

1.4. CO2 measurement parameters

Sensor type	MH-Z14
Measuring range	0 ÷ 2000 ppm
Accuracy:	± 5 % ± 50 ppm
Sampling rate	2 Hz
Response time [1]	< 2 min

1) Specified response time is equal to one time constant corresponding to 90% of the fixed value;

1.5. Temperature measurement parameters

Sensor type	DS18B20
Measuring range	0°C ÷ 50°C
Resolution	12 bits (0,05°C)
Accuracy	± 0.5C
Sampling rate	0.5 Hz
Response time [1]	750ms

1) The condition for obtaining the given response times is an airflow > 1m/s; specified response time is equal to one time constant corresponding to 63% of the set value;

1.6. Analogue output parameters

Output type	voltage
Output range	10 V
Resolution	12 bits (5 mV)
Load capacity	R_L > 1 kΩ (recommended 10kΩ)
Frequency of refreshment	2 Hz

1.7. Thermoelement parameters

Sensor type	e.g. Pt100, Pt1000
Measuring range	0°C ÷ 50°C

2. Installation

2.1. Safety

- The unit must be installed by qualified personnel!
- All connections must be made according to the wiring diagrams shown in this specification!
- Check all electrical connections before starting up!

2.2. Unit design

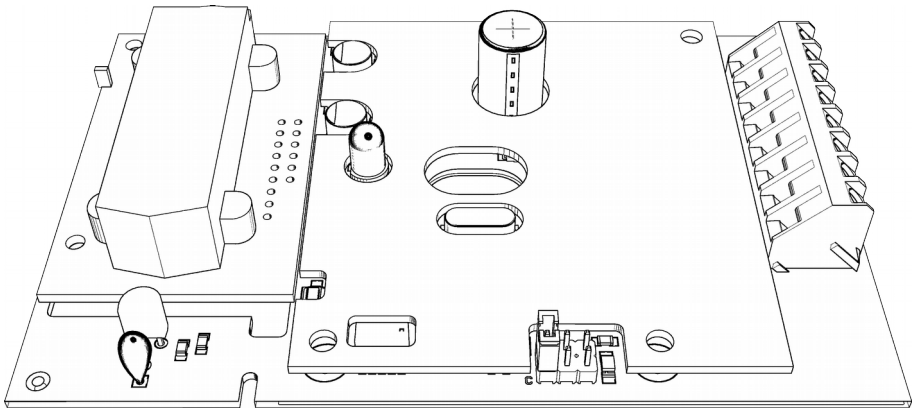

Figure 1. View of printed circuit in the wall-mounted version of the transmitter.

2.3. Description of Connections

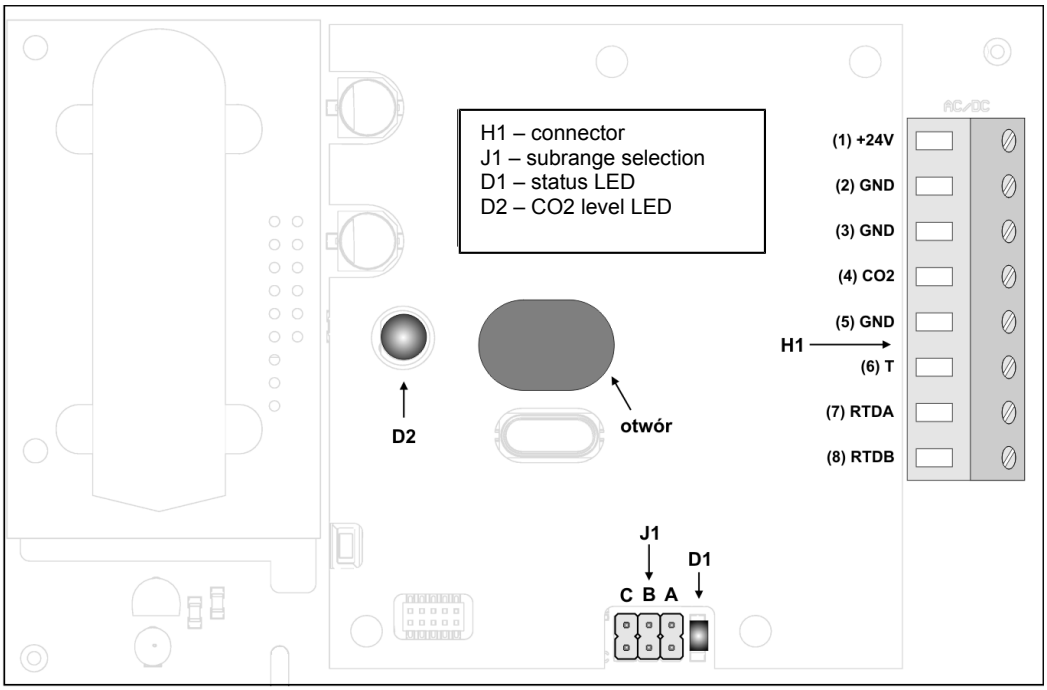

Figure 2. Description of leads in the wall-mounted version of the transmitter.

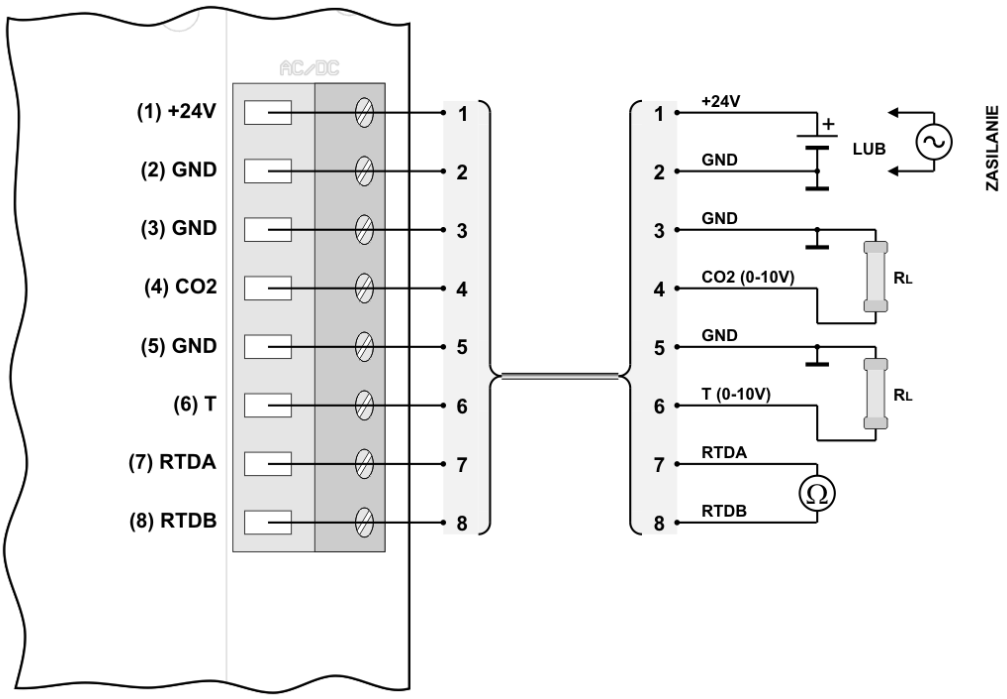

Figure 3. Wiring diagram for the wall-mounted version of the transmitter.

2.4. Unit configuration

The unit is equipped with 3 jumpers for hardware setup of the measurement subrange (according to the table below).

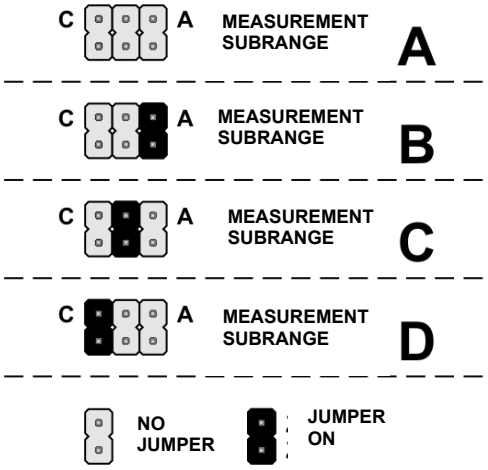

Figure 4. Configuration of the transmitter measuring subrange.

Table of the transmitter measuring subranges:

Subrange	Carbon dioxide concentration range
A	0 ÷ 2000 ppm
B	0 ÷ 1600 ppm
C	0 ÷ 1200 ppm
D	0 ÷ 800 ppm

2.5. LED signaling

Table of levels/statuses indicated by LED D2:

Status	Description	LED color	Behavior
1	CO2 module preheating	green	flashing (250ms / 250ms**)
2	0– 800 [ppm]*	green	steady lit
3	800– 1200 [ppm]*	yellow	steady lit
4	1200– 2000 [ppm]*	red	steady lit
5	> 2000 [ppm]	read	flashing (250ms / 250ms**)
6	no CO2 sensor or other error	red	flashing (250ms / 250ms**)

(*) LED status switching hysteresis is ± 50 ppm.

(**) Flashing (XXX ms / YYYY ms) means XXX - activation time, YYYY - deactivation time