

SPECIFICATIONS

HTC-K-V-L, HTC-K-VV-L, HTC-K-VP-L



***CO2 concentration and temperature
transmitter with 0-10V outputs***

Prepared by:
HOTCOLD s.c.

2019-07-01

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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 (option)
- LED unit status indication
- LED indication of CO2 concentration level / CO2 sensor status (option)

1.2. Characteristics

Main function of the HTC-K-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 thermosensitive sensor with the outputs available on the connector (without a conditioning system).

2. Technical data

2.1. 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 (option)	see section "LED signaling"
Installation connector	screwed in 5.00mm raster ($\leq 2.5\text{mm}^2$)
Dimensions	115 x 65 x 55 (L x H x W)
Weight	approx. 160 g.
Mount ³⁾	in duct
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) The unit must be installed by qualified personnel;

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;

2.2. Temperature measurement parameters

Sensor type	TMP101
Measuring range	0°C ÷ 50°C
Resolution	12 bits (... °C)
Accuracy	±0.5 °C
Sampling rate	2 Hz
Response time ¹⁾	900ms

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;

2.3. 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

2.4. 2.4. Thermoelement parameters (please specify)

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

3. Installation

3.1. Security

- 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!

3.2. Unit design

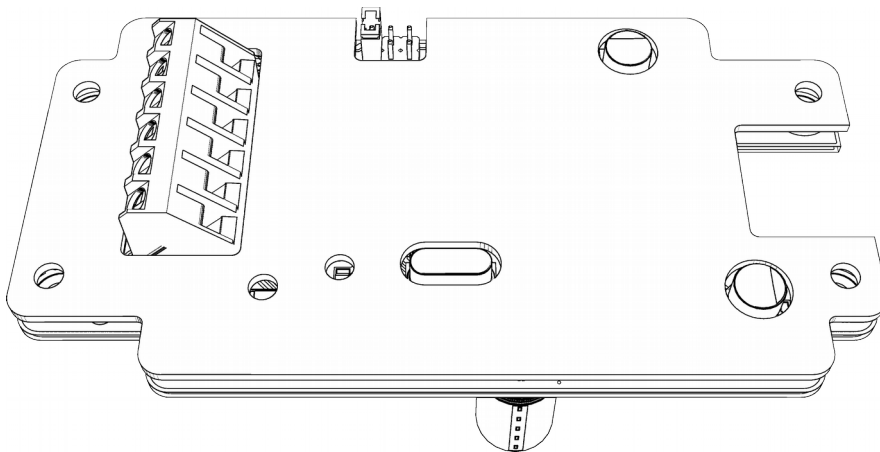


Figure 1. View of printed circuit in the duct-mounted version of the transmitter.

3.3. Description of Connections

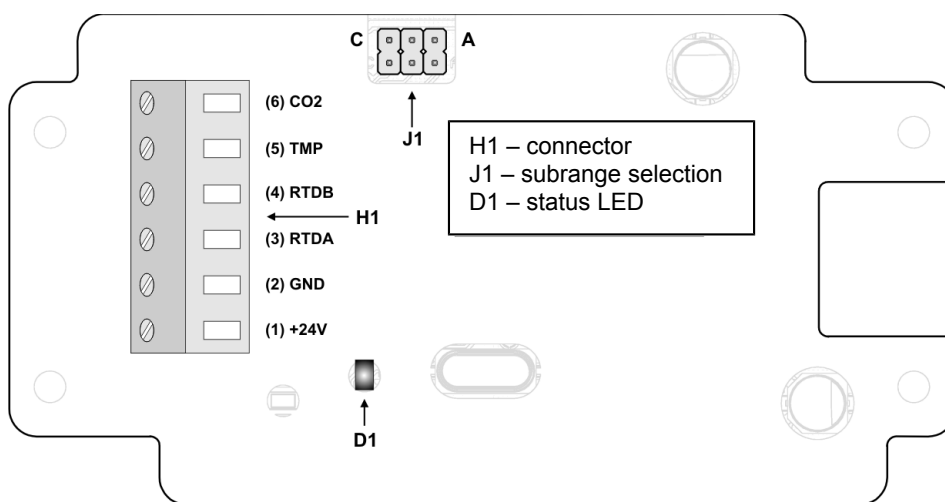


Figure 2. Description of leads in the duct-mounted version of the transmitter.

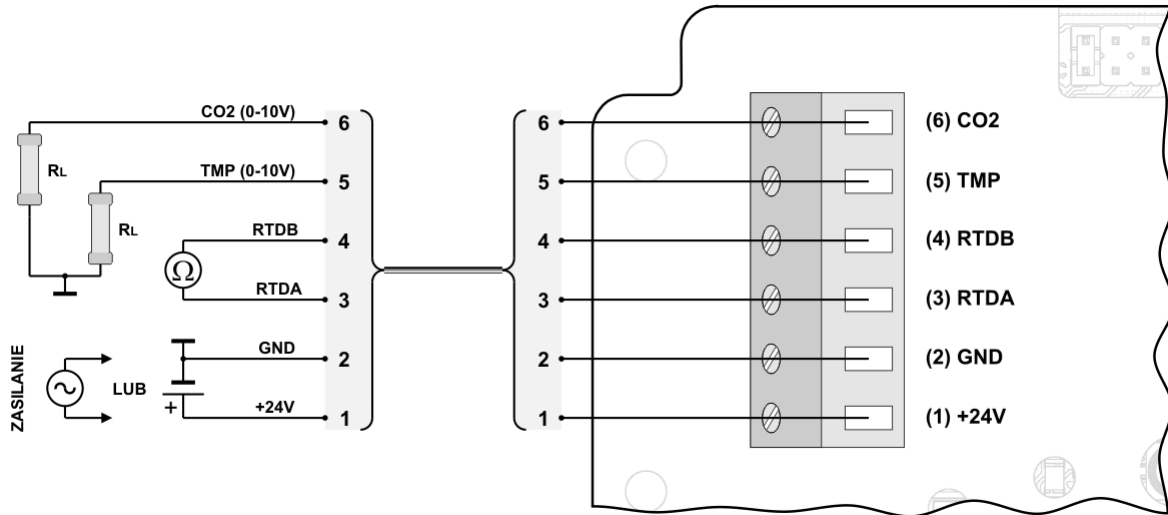


Figure 3. Wiring diagram for the duct-mounted version of the transmitter.

3.4. Unit configuration

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

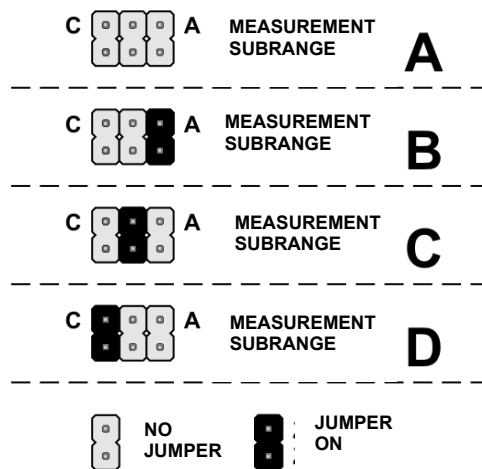


Figure 4. Configuration of the transmitter measuring subrange.

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

3.5. LED signaling (option)

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]	red	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