CO_2 industrial transmitters with 4–20 mA or 0-10 V output
QUICK START MANUAL

T5140 • T5240 • T5141 • T5241 • T5145 • T5245

PRODUCT DESCRIPTION

Programmable transmitters with 4 – 20mA or 0 - 10V output are designed for measurement of CO_2 concentration in air. Devices can only be used in a chemical non-aggressive environment.

The CO_2 concentration is measured using the dual wavelength NDIR sensor with the multipoint calibration. This principle compensates aging of the sensing elements and offers maintenance free operation and outstanding long term stability.

Measured values are displayed on a two-line LCD display. The device is also equipped with three-color LED for visual indication of the CO_2 concentration. Using *TSensor* software (see www.cometsystem.com) you can set up measuring range of device output, measurement mode of CO_2 concentration and limits of CO_2 LED indication. For device connection to PC is used USB adapter SP003 (optional accessories).

Durable plastic case of the devices contains electronics and connection terminals. For easy connection/disconnection of the output cable use the transmitter in version TxxxxL with plug connector Lumberg instead of the cable gland.

type *	output	measured value	construction	mounting
T5140	4 - 20 mA	CO_2	ambient air	wall
T5240	0 - 10 V	CO_2	ambient air	wall
T5141	4 - 20 mA	CO_2	probe on cable	wall
T5241	0 - 10 V	CO_2	probe on cable	wall
T5145	4 - 20 mA	CO_2	duct mount	fix by means of the cable gland
T5245	0 - 10 V	CO_2	duct mount	fix by means of the cable gland

* models marked Txxxx**Z** are custom - specified devices

INSTALLATION AND OPERATION

The transmitters T5140 (T5240) and T5141 (T5241) fasten on a flat surface with two screws or bolts. The external CO_2 probe unpack and connect to the T5141 (T5241) device. Then place the probe into the measured environment. The T5145 (T5245) transmitter install by inserting the metal stem into the Pg21 cable gland so that the measured air was fed into the head of device (see *Technical specification*). To fasten the stem it is also possible to use the flange PP4 or PP9 (optional accessory). Pay attention to the mount of the device, because incorrect choice of working position or measuring point could adversely affect accuracy and long-term stability of measured values.

The connecting terminal is accessible after unscrewing the four screws in the corners of the case and removing the lid. Pass the connecting cable through released gland and connect the wires according to diagram. Tighten gland and screw the lid.

For device connection it is recommended to use shielded cable (external diameter 4 to 8mm) with wire cross-section 0.14 to 1.5 mm^2. Maximum cable length of the current loop is 1200m, maximum voltage output cable length is 15m. For TxxxxL devices it is recommended to use shielded cable (external diameter 3 to 6.5 mm) with wire cross-section max. 0.75 mm^2. All cables should be located as far as possible from potential interference sources.

The internal test starts after switching the device. During this time (about 20 s) LCD display shows **----** instead of CO_2 concentration value.

Devices don't require special operation and maintenance. We recommend you periodic calibration for measurement accuracy validation.

ERROR STATES

Device continuously checks its state during operation and if an error appears, it is displayed relevant code:
Err 2 - CO_2 concentration measurement error occurred, not connected external probe CO2G-10 is indicated as **Err4**
Err 0, Err 3 and **Err 4** - it is a serious error, please contact distributor of the device.

SAFETY INSTRUCTIONS

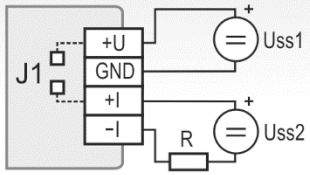
- Don't connect or disconnect transmitter while power supply voltage is on.
- Installation, electrical connection and commissioning should be performed by qualified personnel only.
- Devices contain electronic components, it needs to liquidate them according to legal requirements.
- **To complement the information in this data sheet read the manuals and other documentations that are available in the Download section for a particular device at** www.cometsystem.com

Technical specifications

			T5140	T5141	T5145
4 - 20 mA analog output	Supply voltage	9 - 30 Vdc			
	Power consumption / max. power consumption (for 50 ms with 15 s period)	1W / 4W			
0 - 10 V analog output	Supply voltage	15 - 30 Vdc	**T5240**	**T5241**	**T5245**
	Power consumption / max. power consumption (for 50 ms with 15 s period)	0.5W / 3W			
CO_2 concentration measurig range *			0 to 2000 ppm	0 to 10 000 ppm	0 to 2 000 ppm
Accuracy of CO_2 concentration measurement at 25°C and 1013 hPa			± (50ppm+2% of measured value)	± (100ppm+5% of measured value)	± (50ppm+2% of measured value)
Temperature dependence of CO_2 concentration measurement at -20 to 45°C			typ. 2 ppm CO_2 /°C	± (1+CO_2[ppm]/1000) ppm/°C	typ. 2 ppm CO_2 /°C
Recomended calibration interval			5 years	5 years	5 years
Protection class of the housing with elektronics			IP30	IP65	IP65
Protection class of the CO_2 probe / protection class of the measuring end of stem			— / —	IP65 / —	— / IP20
Temperature operating range of the case with electronics			-30 to +60°C	-30 to +80°C	-30 to +60°C
Temperature operating range of the CO_2 probe			—	-25 to +60°C	—
Temperature operating range of the measuring end of stem			—	—	-30 to +60°C
Humidity operating range (environment without condensation)			5 to 95%RH	0 to 100%RH	0 to 100%RH
Atmospheric pressure operating range			850 to 1100 hPa	850 to 1100hPa	850 to 1100hPa
Mounting position			cable gland upwards	any position	any position #
Storage temperature range (5 to 95%RH, no condensation, atmospheric pressure 700 to 1100 hPa)			-40 to +60°C	-40 to +60°C	-40 to +60°C
Electromagnetic compatibility according to			EN 61326-1, EN 55011	EN 61326-1, EN 55011	EN 61326-1, EN 55011
Weight			150 g	250 (280, 340) g	260 g
Dimensions [mm]					

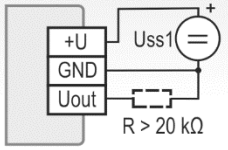
Electrical wiring

Output 4 - 20 mA galvanically isolated

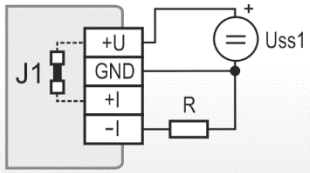


Rmax[Ω] = 50*Uss2[V] - 450

Output 0 - 10 V



Output 4 - 20 mA galvanically non-isolated

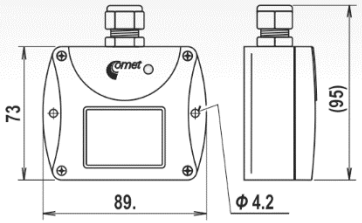


Rmax[Ω] = 50*Uss1[V] - 450

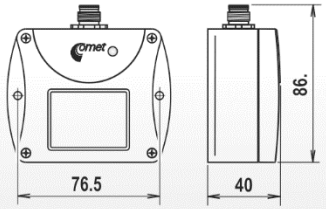
TxxxxL transmitter version - female Lumberg connection

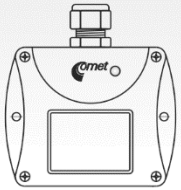
pin	4-20mA	0-10V
1	+U	+U
2	+I	Uout
3	-I	
4	GND	GND

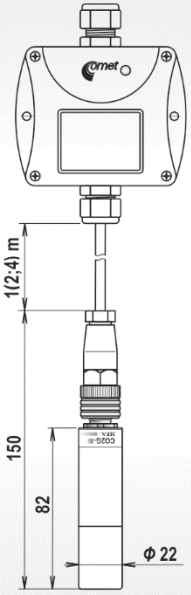
Device with cable gland

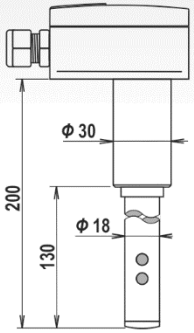


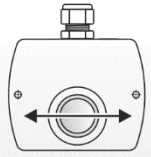
TxxxxL version of device











air flow direction

* LED indication (preset by manufacturer): **green** (0 to 1000 ppm), **yellow** (1000 to 1200 ppm), **red** (1200 to 2000/10000 ppm)