

Operating Manual for CO₂-transmitter

EBG-CO2-1R



Specification:

Measuring range: standard 0 ... 2000 ppm CO₂
 option: / 5000 0 ... 5000 ppm CO₂

Accuracy: (at 20°C, 1013mbar)

Display: standard ± 50 ppm ± 2 % of meas. value
 option: / 5000 ± 50 ppm ± 3 % of meas. value

Add. output signal: ± 0,2 % FS

Temperature dependence: typ. 2 ppm CO₂ / °C (at 0-50°C)

Response time: t₆₃ < 180 s

Sampling rate: ca. 15 s

Output signal: **EASYbus**-protocol

Connection: 2-wire **EASYbus**, polarity free

Busload: 1 **EASYbus**-devices

Auxiliary energy: (supply voltage) U_v = 12 - 30 V DC, max. 600 mA
 or refer to type plate

Reverse voltage protection: 50V permanent

Warm up time: < 5 min. (time to reach specification values)

Adjusting: via keypress by editing offset and scale

Display: approx. 10 mm high, 4-digit LC-display

Min-/Max-Value Memory: min and max measured values are stored

Ambient conditions for electronics:

Nominal temperature: 25°C

Operating condition: -10 to 50°C 5 to 95 %RH (non-condensing) 850 ... 1100 hPa

Storage condition: -25 to 60°C 5 to 95 %RH (non-condensing) 700 ... 1100 hPa

Housing: ABS (IP20)

Dimensions: 82 x 80 x 55 mm (without elbow-type plug and tube)

Mounting: With holes for wall mounting (in housing - accessible after cover has been removed)).

Mounting distance: 50 x 70mm, max. shaft diameter of mounting screws is 4 mm.

Electrical connection: elbow-type plug conforming to DIN 43650 (IP65),
 max. wire cross section: 1.5 mm², wire/cable diameter from 4.5 to 7 mm

EMC: The devices corresponds to the essential protection ratings established in the regulations of the council for the approximation of legislation for the member countries regarding electromagnetic compatibility (89/336/EWG).

In accordance with EN61326 +A1 +(appendix A, class B), additional errors: < 1% FS
 When connecting long leads adequate measures against voltage surges have to be taken.



Operating advice

CO₂ gas is outweigh than air (rel. density = 1.52). The suggested mounting level is near the ground floor.



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Safety Requirements:

This device has been designed and tested in accordance with the safety regulations for electronic devices. However, its trouble-free operation and reliability cannot be guaranteed unless the standard safety measures and special safety advises given in this manual will be adhered to when using the device.

1. Trouble-free operation and reliability of the device can only be guaranteed if the device is not subjected to any other climatic conditions than those stated under "Specification". If the device is transported from a cold to a warm environment condensation may cause in a failure of the function. In such a case make sure the device temperature has adjusted to the ambient temperature before trying a new start-up.
2. General instructions and safety regulations for electric, light and heavy current plants, including domestic safety regulations (e.g. VDE), have to be observed.
3. If device is to be connected to other devices (e.g. via PC) the circuitry has to be designed most carefully. Internal connection in third party devices (e.g. connection GND and earth) may result in not-permissible voltages impairing or destroying the device or another device connected.
4. If there is a risk whatsoever involved in running it, the device has to be switched off immediately and to be marked accordingly to avoid re-starting.

Operator safety may be a risk if:

- there is visible damage to the device
- the device is not working as specified
- the device has been stored under unsuitable conditions for a longer time

In case of doubt, please return device to manufacturer for repair or maintenance.

5. **Warning:**

Do not use these products as safety or emergency stop devices, or in any other application where failure of the product could result in personal injury or material damage. Failure to comply with these instructions could result in death or serious injury and material damage.

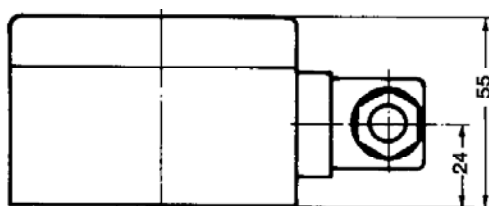
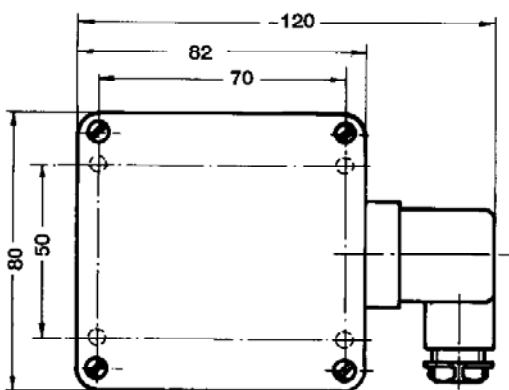
Disposal instructions

The device must not be disposed in the regular domestic waste.

Send the device directly to us (sufficiently stamped), if it should be disposed. We will dispose the device appropriate and environmentally sound.

1 Installation

1.1 Dimensions

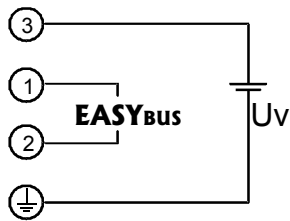


1.2 Elbow-type plug installation instruction

To mount the connection cable (3-, or 4-wire depending on type of device) the elbow-type plug screw has to be loosened and the coupling insert has to be removed by means of a screw driver at the position indicated (arrow). Pull out connection cable through PG glanding and connect to the loose coupling insert as described in the wiring diagram. Replace loose coupling insert onto the pins at the transducer housing and turn cover cap with PG glanding in the direction desired till it snaps on (4 different starting positions at 90° intervals). Re-tighten the screw at the angle plug.

1.3 Assignment of elbow-type plug:

4-wire-connection (power supply, **EASYBUS**)



- 1 = EASYBUS
- 2 = EASYBUS
- 3 = supply voltage +Uv
- ⊥ (4) = supply voltage -Uv

The type current or voltage output is set by works and cannot be changed.

2 Operation

2.1 Display functions

2.1.1 Currently measured values: During normal operation the CO2 display value is displayed in ppm.



2.1.2 Min/Max Value Memory

- | | | |
|--------------------------------|---------------------------------------|--|
| watch min values (Lo): | press 'down'(2) shortly once | display changes between 'Lo' and Min values |
| watch max values (Hi): | press 'up'(3) shortly once | display changes between 'Hi' and Max values |
| restore current values: | press 'down'(2) or 'up'(3) once again | current values are displayed |
| clear min values: | press 'down'(2) for 2 seconds | Min values are cleared. The display shows shortly 'CLr'. |
| clear max values: | press 'up'(3) for 2 seconds | Max values are cleared. The display shows shortly 'CLr'. |

After 10 seconds the currently measured values will be displayed again.

2.1.3 Min/Max Alarm

Whenever the measured value is exceeding or undershooting the alarm-values that have been set, the alarm-value and the meas. value will be displayed alternating.

- AL.Lo** the lower alarm boundary is been reached or is undershot
- AL.Hi** the upper alarm boundary is been reached or is exceeded

2.2 Error and system messages

Display	Description	Possible fault cause	Remedy
Err.1	measuring range exceeded	Wrong signal	Take care for fresh air
Err.7	System fault	Error in device	Disconnect from supply and reconnect. If error remains: return to manufacturer
Err.9	Sensor error	Sensor defective	
Er.11	Calculation not possible	Calculation variable missing or invalid	Check temperature
8.8.8.8	Segment test	The transducer performs a display test for 8 seconds after power up. After that it will change to the display of the measuring.	

3 Configuration

In the configuration the devices parameters can be changed.

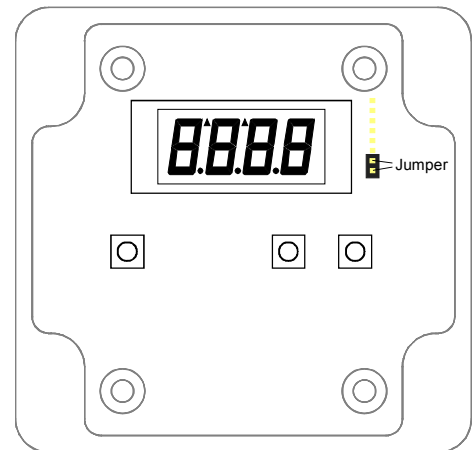
The jumper has to be set, p.r.t. figure right-hand side. To set or remove jumper, the housing cover has to be removed. Ex works the jumper is set.

To change parameters press "SET" (key 1) four seconds, then the parameter selection is started with the first parameter (display shows "dA.Lo").

By pressing "SET" the desired parameter is selected, the editing of the parameter values happens via keys \blacktriangle (key 3) or \blacktriangledown (key 2).

Pressing "SET" again (after editing the parameter values) returns to the parameter selection.

Pressing "SET" again after the last parameter finishes the configuration, stores the changes and the instrument returns to the normal mode.



If the jumper is removed from the shown contacts, the configuration is inaccessible, values are protected.

3.1 Description of configuration parameter:

a) 'AL.Hi': Upper boundary of alarm

At Al.Hi the boundary is set from which max. alarm will be given.
Selectable range: 'AL.Lo' ... 2001

b) 'AL.Lo': Lower boundary of alarm

At Al.Lo the boundary is set from which min. alarm will be given.
Selectable range: -1 ... 'AL.Hi'

c) 'A.dEL': Alarm delay

The value at A.dEL declares the alarm delay in minutes.

e) 'OFFS': Offset of CO₂-measuring

The offset of the measuring will be shifted by this value, the input is in ppm. (*calculation: see by scale*)
Selectable range: -200...+200 ppm or 'oFF': offset is deactivated (=0, ex works)

e) 'SCAL': Scale correction of CO₂-measuring

The scale of the measuring is changed by this value.
Selectable range: -10,00...+10,00 or 'oFF': scale is deactivated (=0, ex works)

The adjusting by offset and scale is intended to be used to compensate deviations of the CO₂-measuring. It is recommended to keep the scale correction deactivated ("oFF"). The display value is given by following formula:

$$CO_2\text{-display} = \text{measured value} - \text{offset}$$

With a scale correction the formula changes:

$$CO_2\text{ display} = (\text{meas. value} - \text{offset}) * (1 + \text{scale correction}/100)$$