

**GREISINGER electronic GmbH**

CO<sub>2</sub> - transmitter  
Operating Manual

# EBG - CO<sub>2</sub> - 1R



**GREISINGER electronic GmbH**

**D - 93128 Regenstauf, Hans-Sachs-Straße 26**

Tel.: +49 9402 / 9383-0, Fax: +49 9402 / 9383-33, eMail: [info@greisinger.de](mailto:info@greisinger.de)

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## 1. Intended use

CO<sub>2</sub> gas is outweight than air (rel. density = 1.52).  
The suggested mounting level is near the floor.

Range of application:

- Air conditioning
  - Ambient air
  - Carbon dioxide in green house
- etc.

## 2. General advice

Read through this document attentively and make yourself familiar to the operation of the device before you use it. Keep this document in a ready-to-hand way in order to be able to look up in the case of doubt.

## 3. Safety instructions

This device was designed and tested considering the safety regulations for electronic measuring devices. Faultless operation and reliability in operation of the measuring device can only be assured if the General Safety Measures and the devices specific safety regulation mentioned in this user's manual are considered.

1. Faultless operation and reliability in operation of the measuring device can only be assured if the device is used within the climatic conditions specified in the chapter "Specifications".
2. By faulty handling of the interface adapter a damage of the device cannot be excluded. Likewise a damage of your attached device is possible.  
**In such case we cannot assume any warranty.**  
The manufacturer will not assume any warranty for damages to other devices resulting by use of the interface adapter.
3. Standard regulations for operation and safety for electrical, light and heavy current equipment have to be observed, with particular attention paid to the national safety regulations.
4. When connecting the device to other devices (e.g. the PC) the interconnection has to be designed most thoroughly, as internal connections in third-party devices (e.g. connection of ground with protective earth) may lead to undesired voltage potentials.
5. The device must be switched off and must be marked against using again, in case of obvious malfunctions of the device which are e.g.:
  - visible damage
  - no pre-scripted working of the device
  - storing the device under inappropriate conditions for longer time

When not sure, the device should be sent to the manufacturer for repairing or servicing.

6. **Attention:** Do not use this product as safety or emergency stopping device 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 serious injury and material damage.

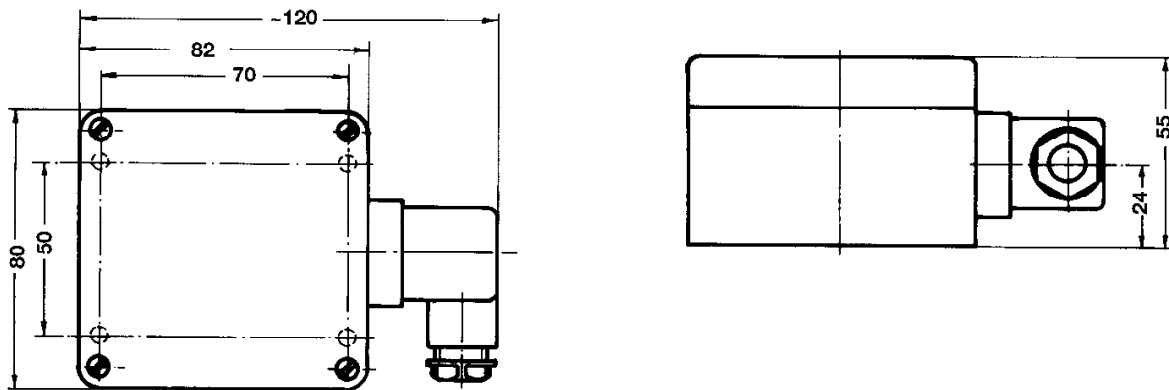
## 4. Disposal notes



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.

## 5. Installation

### 5.1 Dimensions



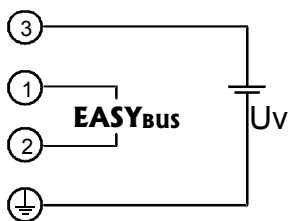
### 5.2 Elbow-type plug installation instruction

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 fitting 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 fitting in the direction desired till it snaps on (4 different starting positions at 90° intervals).

Re-tighten the screw at the angle plug.

### 5.3 Assignment of elbow-type plug



#### 4-wire-connection

- 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.**

## 6. Operation

### 6.1 Display functions

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



Min- / Max-value memory:

Watch min values (Lo):	press ▼ shortly once	display changes between Lo- und Min-values
Watch max values (Hi):	press ▲ shortly once	display changes between Hi- und Max-values
Restore current values:	press ▲ or ▼ once again	current values are displayed
Clear min values:	press ▼ for 2 seconds	Min values are cleared. The display shows shortly „CLr“ (Clear).
Clear max values:	press ▲ for 2 seconds	Max values are cleared. The display shows shortly „CLr“ (Clear).

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

Min- / Max- Alarm:

Whenever the measured value is exceeding or undershooting the alarm-values that have set, the alarm-value and the measuring 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.

### 6.2 Error an 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 device 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.	

## 7. Configuration

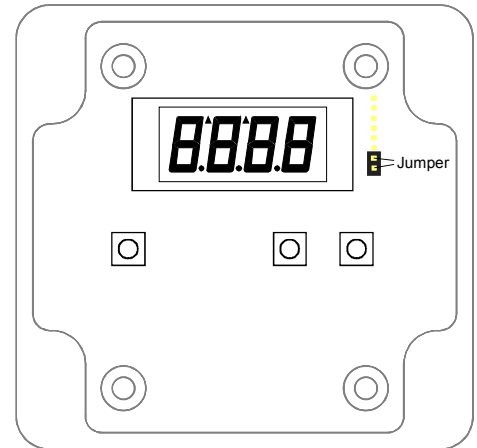
In the configuration the device parameters can be changed. The jumper has to be set, p.r.t. figure right-hand side. To set or remove jumper, the housing cover has to be removed. Ex works the jumper is set.

To change parameters press "SET" (Taste 1) four seconds, then the parameters 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 key ▲ (key 3) or ▼ (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.

### 7.1 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.Lo'

#### c) 'A.dEL': Alarm delay

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

#### d) 'OFFS': Offset of CO<sub>2</sub>-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 CO<sub>2</sub>-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 measuring. It is recommended to keep the scale correction deactivated ("oFF"). The display value is given by following formula:

$$\text{CO}_2\text{-display} = \text{measured value} - \text{offset}$$

With a scale correction the formula changes:

$$\text{CO}_2 \text{ display} = (\text{meas. value} - \text{offset}) * (1 + \text{scale correction}/100)$$

## 8. Specification

<b>Mesuring range:</b>	
standard	0 ... 2000 ppm CO <sub>2</sub>
option: / 5000	0 ... 5000 ppm CO <sub>2</sub>
<b>Accuracy:</b>	(at 20 °C, 1013 mbar)
<b>Display:</b>	
standard	± 50 ppm ± 2 % of measuring value
option: / 5000	± 50 ppm ± 3 % of measuring value
<b>Add. Output signal:</b>	± 0.2 % FS
<b>Temperature dependence:</b>	typ. 2 ppm CO <sub>2</sub> / °C (0 - 50 °C)
<b>Response time:</b>	t <sub>63</sub> < 180 s
<b>Sampling rate:</b>	ca. 15 s
<b>Output signal:</b>	EASYBus-protocol
<b>Connection:</b>	2-wire EASYBus, polarity free
<b>Busload:</b>	1 EASYBus-device
<b>Auxiliary energy:</b> (supply voltage)	U <sub>v</sub> = 12 - 30 V DC, max. 600 mA or refer to type plate
<b>Reverse voltage protection:</b>	50 V permanent
<b>Warm up time:</b>	< 5 min. (time to reach specification values)
<b>Permissible burden: R<sub>A</sub></b>	< 200 Ohm (at 4 - 20 mA)
<b>Permissible load: R<sub>L</sub></b>	> 3000 Ohm (at 0 - 1 V or 0 - 10 V)
<b>Adjusting:</b>	via keypress by editing offset and scale
<b>Display:</b>	10 mm high, 4-digit LC-display
<b>Min-/Max- Value Memory:</b>	min and max measured values are stored
<b>Ambient conditions of electronics:</b>	
<b>Nominal temperature:</b>	25 °C
<b>Operating condition:</b>	-10 to 50 °C 5 to 95 %RH. (non-condensing) 850 - 1100 hPa
<b>Storage condition:</b>	-25 to 60 °C 5 to 95 %RH. (non-condensing) 700 - 1100 hPa
<b>Housing:</b>	ABS (IP20)
<b>Dimensions:</b>	82 x 80 x 55 mm (H x W x D) without elbow-type plug.
<b>Mounting:</b>	With holes for wall mounting (in housing - accessible after cover has been removed).
<b>Mounting distance:</b>	50 x 70 mm, max shaft diameter of mounting screws are 4 mm.
<b>Electrical connection:</b>	Elbow-type plug (P65), max wire cross section: 1,5 mm <sup>2</sup> , wire/cable diameter from 4,5 to 7 mm.
<b>EMC:</b>	
The devices correspond to the essential protection ratings established in the regulations of the council for the approximation of legislation for the member countries regarding electromagnetic compatibility (2004/108/EG). In accordance with EN61326 +A1 +(appendix A, class B), additional errors: < 1% FS.	

### Note:

When connecting long leads adequate measures against voltage surges have to be taken.