GREISINGER

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**Universal interface adapter
for GMSD / GMxD - sensor**

Installation and operating manual **GDUSB 1000**

CE

Made in Germany

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Content

1. Intended use

The GDUSB 1000-adaptor makes it possible to connect a standard pressure sensor of the type GMSD/GMXD directly to the USB-port of a personal computer. Two operation modes are available:

Standard-mode: (Master-Slave)
In this mode the GDUSB 1000 acts like a portable measuring instrument of the GMH3xxx-series and gives back the wanted measurement on request (measurand, maximum or minimum data).
The communication can occur with the standard GMH/EASYBUS-software (e.g. EBS9M) and offers the possibility to monitor long-run measurements of pressure for example.

Fast-mode: (autom. sending)
In this operating mode after a fulfilled trigger condition the GDUSB 1000 sends the measuring data automatically in the adjusted cycle time.
This mode is especially adapted for the analysis of pressure curves and the survey of pressure peaks (with pre-trigger)

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 converter 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 converter.

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. Operating modes

After restart the adapter is in the standard-mode.

5.1 Standard - Mode

In this mode the GDUSB 1000 acts like a portable measuring instrument of the GMH3xxx-series.
It gives back the wanted measurement on request.

For this purpose 4 measuring channels are allocated at the addresses 1 – 4:

  1 Measurand: with adjustable low-pass filter (0.00 ... 10.00)
  2 Average: the average between two measuring-points
  3 Minimal peak: lowest measurand for the last request; unfiltrated, with highest sample rate
  4 Maximal peak: highest measurand for the last request; unfiltrated, with highest sample rate

The communication can occur with every standard software for the GMH3xxx or EASYBus (e.g.
EBS9M, ...) and offers the possibility to monitor long-run measurements of pressure for example.

For the integration in your own programs, we offer you the function-library EASYBUS.DLL.
This operating mode is especially adapted for the measuring of 1 measurand per second.
For example: long-run measurements of pressure, leakage test, ...

Note: for use the GDUSB 1000 you must select in the software the interface USB3100.

5.2 Fast - Mode

The device can be set to the mode "fast measurand display" via command. In this mode the
measurement is started by a trigger condition.
Then the device automatically gives back the measurands in the adjusted cycle time without any
request, until the stop condition is fulfilled.

Adjustable parameters are among other ones:

Cycle time: 1 ms ... 10 sec., programmable in steps of ms
Measuring channel: cycle < 5 ms   it is possible to choose the recording channel
                                   (measurand, min. peak, max. peak).
                    cycle ≥ 5 ms   all four measuring channels are recorded automatically
Trigger conditions: 5 for the measuring start
                           6 for the measuring stop
Pre-trigger :   50 data sets (at a cycle time of ≥ 5ms) respectively
                           200 measurands (cycle time < 5 ms)

For the communication and configuration of the device in this mode the software GSOFT-USB is
necessary.

This mode is especially adapted for measuring very fast pressure changes (1000 per second).
For example: detecting pressure peaks at switching operations, ...

6. General handling instructions

6.1 To connect/change sensors

Only sensors of the GMSD or GMXD-serial are allowed to be used! If other sensors are used the adapter and the sensor may be destroyed.

To change the sensor you have to disconnect the adapter. Sensors have to be connected before activating the adapter. Otherwise they are not found by the adapter correctly.

During the connecting it is possible that the connector does not snap in the jack correctly. In this case you have to hold the connector at the anti-kink device not at the casing. Don`t plug the connector wedged. An accurate attached jack can be easily plugged in without great effort. To disconnect the sensors it is not allowed to pull at the cable. In this case you have to hold the connector at its casing.

6.2 Altitude correction of the absolute pressure sensor

The device measures the absolute pressure of the ambient air. But this pressure is not to be confused with the "pressure at sea level", which is quoted by meteorological stations!

At this indication the decrease of the air pressure which is dependent on the level will be calculated. The device has the ability to do this air pressure height adjustment.

Activate for this the "sea level function" via the configuration software (GSOFT_USB) and specify the height beyond the sea level of your habitation.

6.3 Zero correction of the pressure sensor ('OFFS')

For the measurement a zero offset can be conducted:

shown vale = measured value - offset

The zero correction in combination with the slope correction (see below) are mainly used to adjust the deviation of sensors. The entry has to be made in the configuration software. The offset information will be stored in the sensor. So you can set it individually for each sensor.

6.4 Slope correction of the pressure sensor ('SCAL')

The measurement`s slope can be affected by this factor (factor in %):

shown value = measured value * (1 + scale / 100)

The slope correction in combination with the zero correction (see above) are mainly used to adjust the deviation of sensors. The entry has to be made in the configuration software. The scale information will be stored in the sensor. So you can set it individually for each sensor.

6.5 Pressure connection to the pressure sensor

The measuring adapter is conceived that way that all sensors of the GMSD/GMXD...-series can be connected without new calibration. Therefore a multiplicity of fully exchangeable sensors for metering ranges of 1.999...2.500 mbar relative to 0...400.0 bar absolute for example are available.

Relative pressure sensors (type: GMSD/GMXD...MR, GMSD/GMXD...BR)

- For overpressure and respectively low-pressure measurements: fix the flexible hose with 4mm inner diameter at the fitting "B".
- For pressure difference measurements: fix both flexible hoses with 4mm inner diameter at the fittings "A" and "B", whereas the higher pressure has to be connected to the attachment "B".

Absolute pressure sensors (type: GMSD/GMXD...BA)

Fix the flexible hose with 4mm inner diameter to the fitting "A" ("B" is without any function).

Stainless steel sensors (type: GMSD/GMXD...MRE, GMSD/GMXD...BRE, GMSD/GMXD...BAE)

For overpressure, low-pressure or absolute pressure measurements: screw the sensor in the winding (G1/4") or connect a flexible hose with an appropriate adapter to the pressure sensor.

7. Driver installation

For installation of the device drivers a user account with an administrator-authorisation is required. If you haven't an appropriate authorisation please consult your system administrator.

The drives for the GDUSB 1000 will be installed automatically by the installation of the GDUSB FastView.

For application with our software a new additional COM-Port is available after initialisation of the GDUSB 1000 on the PC (quod vide chapter 9).

8. Specification

Measuring range:	corresponding to used pressure sensor
Max. range:	-19999 ... 19999 digit
Resolution:	corresponding to used sensor
Pressure units:	mbar, bar, kPa, MPa, mmHg, PSI, mH2O can be selected corresponding the used sensor
Accuracy: (typ.)	±0,2 % FS (at nominal temperature)
Measuring cycle:	1 ms up to 10s
Connection:	
PC:	Standard USB-plug connector (type A)
GMSD, GMxD:	6-pin screened lockable Mini-DIN-socket. *Automatic sensor detection and setting of measuring range upon plugging in of the sensor.*
Power Supply:	via USB-interface
Operating conditions:	-25 ... 50 °C, 0 ... 95 %RH (non condensing)
Nominal temperature:	25 °C
Storage temperature:	-25 ... 70 °C
Housing:	
Dimensions:	approx. 56 x 31 x 24 mm
Cable length:	approx. 30 cm
Weight:	approx. 40 g

EMC:

The device 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 (2004/108/EG).
In accordance with EN 61326-1.

8.1   System requirements:

• 1.0 GHz Dual Core Processor or higher
• Operating system: Windows XP, Windows Vista, Windows 7, Windows 8, Windows 8.1,
                 Windows Server 2003, Windows 2008, Windows 2008 R2,
                     (note: not suitable for Windows RT)
• Microsoft .NET Framework 4 *(by using the AutoInstaller)*
• free USB port.

8.2   Advice for calibration service

Factory calibration certificate – DKD-certificate – ministerial certifications:
If the measuring device shall have a calibration certificate you have to send it inclusive the sensor to the manufacturer. Just the manufacturer can check the factory settings and correct them if necessary

9.   Frequently asked questions (FAQ)

9.1   How to check whether the adaptor has been installed correctly and via which COM-port can I approach the installed adaptor?

Start the Device-Manager: start \ settings \ control panel \ performance and maintenance \ system \ hardware and open the submenu **"Ports (COM & LPT)"**
If the installation was successful, there will be the entry**"CP210x USB to UART Bridge Controller (COMx)"**, in which the x after the Com indicates the available COM-port (i.e. COM4).

Note: The adaptor will not be shown in the device manager, if it is not connected to the PC.

If the entry is occupied by an exclamation mark or the entry is not there, then the driver has not been installed correctly.

9.2   How to change the COM-port of the adaptor?

Make sure that the adaptor is connected, start the Device-Manager start \ settings \ control panel \ performance and maintenance \ system \ hardware) and open the submenu **"Ports (COM & LPT)"**
If the installation was successful, there will be the entry "**CP210x USB to UART Bridge Controller (COMx)**", in which the x after the Com indicates the available COM-port (i.e. COM4).

Open the features of this connection by a double-click, go to **"Port Settings"** and then click there the button **"Advanced..."**.
There you can choose the preferred COM-Port at the point **"COM Port Number"**. If this port is already reserved for another (even not connected) device, a error message will appear:
"In principle it is possible that 2 devices are set on the same COM-port, but then you have to take care, that not both devices are connected at the same time, because this would lead to a conflict!"

9.3   Is there an automatic update function that updates the installed driver to the latest version?

Yes, by installing the GDUSB FastView the driver will updated automatically.

9.4   How to find out the used version of the driver?

Make sure that the adaptor is connected and start the Device-Manager start \ settings \ control panel \ performance and maintenance \ system \ hardware).

For the COM-driver open the submenu **"Ports (COM & LPT)"**, open the features for this connection "**CP210x USB to UART Bridge Controller (COMx)**" by double-click and change then to **"Driver"**.

There you can see the currently used driver version.