
Installation- and operating manual

GDUSB 1000



Universal interface adapter for GMSD/GMxD-sensors

1 General

The GDUSB1000-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 GDUSB1000 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 GDUSB1000 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)



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2 Safety regulations

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 users 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 "Specification".
2. By faulty handling of the interface adapter a damage of the device can not 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 (e.g. VDE 0100).
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 prescribed 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.

3 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, mHzO can be selected corresponding the used sensor |
| Accuracy: (typ.) | ±0,2 % FS (at nominal temperature) |
| Measuring cycle: | 1 ms |
| Connection: | |
| PC: | standard USB-plug connector (type A) |
| GMSD, GMxD: | 6-pin screened lockable Mini-DIN-socket. <i>Automatic sensor detection and setting of measuring range upon plugging in of the sensor.</i> |
| 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 61326:1997 + A1 :1998 + A2 :2001 (app. B, class B) |

4 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.

5 Operating modes

After restart the adapter is in the standard-mode.

5.1 Standard - Mode

In this mode the GDUSB1000 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; unfiltered, with highest sample rate |
| 4 | Maximal peak: | highest measurand for the last request; unfiltered, 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 GDUSB1000 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: | 1ms ... 10sec.; 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 GSOFTE-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:

$$\text{shown value} = \text{measured value} - \text{offset}$$

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 %):

$$\text{shown value} = \text{measured value} * (1 + \text{scale} / 100)$$

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...2.500mbar 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.

6.6 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

7 Driver Installation

7.1 Windows Vista™

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

- Insert driver disk into the drive of your PC
- Plug in the USB-plug connector of the GDUSB3100 into the USB-connection of your PC
- The window "Found new hardware " appears, there click "Locate and install driver software"
- Click "Continue" in the "User Account Control" dialog box.
- Select the option "Don't search online" in the next window.
- Then click "Browse my computer for driver software".
- State there the path of the driver and click the button "next"
(path-example: E:\GDUSB3100-Treiber V5.0\Windows_2K_XP_S2K3_Vista - E: means the letter of your drive)
- Now the installation will be finished. You must acknowledge with button „close“.

Now the GDUSB3100 is installed on your system and available for all users.

For application with our software a new additional COM-Port is available. (quod vide chapter 6)

7.2 Windows XP

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

- Insert driver disk into the drive of your PC
- Plug in the USB-plug connector of the GDUSB1000 into the USB-connection of your PC
- The „Found New Hardware Wizard“ appears.
If the query to the privacy policy will appear choose „no.“ and click button „Next“
- Choose "install from a list or specific location" and verify this selection by clicking the "next" button.
- Choose "Include this location in the search" and state there the driver path on the disk. Then click the button "next".
(path-example: E:\GDUSB3100-Treiber V5.0\Windows_2K_XP_S2K3_Vista - E: means the letter of your drive)
- Now the installation will be finished. You must acknowledge with button „Finish“ again

Now the GDUSB1000 is installed on your system and available for all users.

For application with our software a new additional COM-Port is available. (quod vide chapter 8)

7.3 Windows 2000

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

- Insert driver disk into the drive of your PC
- Plug in the USB-plug connector of the GDUSB1000 into the USB-connection of your PC
- The „Found New Hardware Wizard“ appears. Click button „Next“
- Chose „Search for a suitable driver“ and click button „Next“
- In the selection window for an appropriate driver choose „Specify a location“ and click button „Next“
- In window „locate file“ select the path of your disk driver and push button „open“
(*path-example: E:\GDUSB3100-Treiber V5.0\Windows_2K_XP_S2K3_Vista - E: means the letter of your drive*)
- Accept the suggested driver by pushing button „Next“
- Now the installation will be finished. You must acknowledge with button „Finish“ again

Now the GDUSB1000 is installed on your system and available for all users.

For application with our software a new additional COM-Port is available. (quod vide chapter 8)

7.4 Windows NT 4.0

The operating system Windows NT4.0 does not support application of USB-devices. Therefore installation and usage of the GDUSB1000 for this operating system is not possible.

7.5 Windows 98SE (driver version V4.28a)

- Insert driver disk into the drive of your PC
- Plug in the USB-plug connector of the GDUSB1000 into the USB-connection of your PC
- The „Add New Hardware Wizard“ for installation of „CP2102 USB to UART Bridge Controller“ appears. Click button „Next“
- Confirm the selection window for an appropriate driver with button „Next“
- In the following selection window choose „Specify a location“. In window „browse directory“ select the path of your driver and push button „ok“
(*path-example: E:\GDUSB3100-Treiber V4.28a\WIN - E: means the letter of your drive*)
- Accept the suggested driver „CP210x USB Composite Device“ by pushing button „Next“
- Now the installation will be partly finished. You must acknowledge with button „Finish“

Now then the first part of the installation is completed, the hardware-assistant for installation of „CP2102 USB to UART Bridge Controller“ appears again

- Click on button „Next“ and confirm the selection window for an appropriate driver with button „Next“
- Choose the directory for your driver again, then click button „Next“
- Accept the suggested driver „CP210x USB to UART Bridge Controller“ by pushing button „Next“
- Now the installation will be finished. You must acknowledge with button „Finish“ again

Now the GDUSB1000 is installed on your system and available for all users.

For application with our software a new additional COM-Port is available. (quod vide chapter 8)

8 Frequently asked questions (FAQ)

8.1 How to check, whether the adapter has been installed correctly and via which COM-port can I approach the installed adapter?

Start the Device-Manager (Win XP: click 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 (COM x)**", in which the x after the Com indicates the available COM-port (i.e. COM 4).

Note: The adapter 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.

8.2 How to change the COM-port of the adapter?

Make sure that the adapter is connected, start the Device-Manager (Win XP: click 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 (COM x)**", in which the x after the Com indicates the available COM-port (i.e. COM 4).

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.

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

The driver is not updated automatically.

If there is already a suitable (for the operating system) driver during the installation, this driver will be used automatically.

If the usage of the adapter cause problems, please make sure that the latest version of the driver for the adapter is used and install the latest version manually (see 6.5) if necessary.

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

Two device drivers are needed to use the adapter. Firstly the "USB-Composite Device" (for the USB-device) and the "USB to UART Bridge Controller" (for the supply of the COM-port).

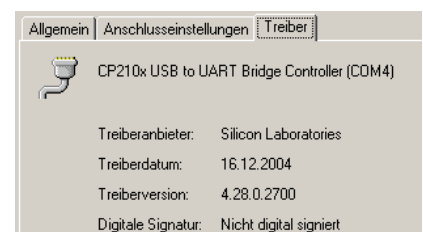
Make sure that the adapter is connected and start the Device-Manager (Win XP: click start \ (settings) \ control panel \ performance and maintenance \ system \ hardware).

For the USB-device driver open the submenu "USB-controller" at the Device-Manager, open the features for this connection "**CP210X USB Composite Device** " by a double-click and change then to "driver".

For the COM-driver open the submenu "Ports (COM & LPT)", open the features for this connection "**CP210X USB to UART Bridge Controller (COM x)**" by a double-click and change then to "driver".

There you can see the currently used driver version.
The provided driver version is at present:

4.28.0.2700 (Win9x)
5.0.0.0 (Win2000, XP, Vista)



8.5 How to update a driver of an older version or how to uninstall the driver?

In order to update the driver, you have to uninstall the “old” driver firstly and install the latest driver afterwards.

1) Uninstallation of the driver

- Make sure that the USB-adapter is not connected.
- Go to start \ (settings) \ control panel and then double-click “software“.
- Search for the entry “**CP210X USB to UART Bridge Controller**“ and click then “change / remove”.
- Click “yes” at the pop-up window.
- The driver will now be uninstalled.

Thus the driver is uninstalled for all corresponding USB-adapters.

2) Reinstallation of the driver:

The reinstallation is just the same as a installation the first time. Please read “5. Software installation” to install the new driver.

