

Software GSVTerm

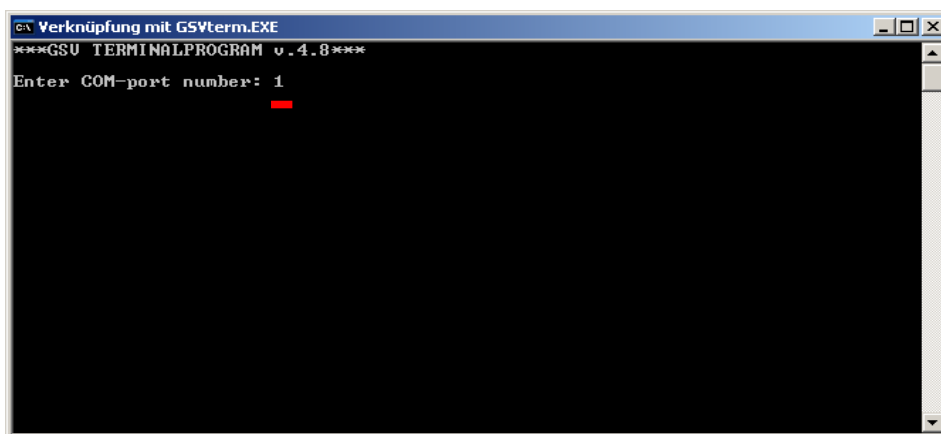
Description

The software GSVterm can be used to view and change special settings.

These are settings like the communication baud rate, the data rate, special digital filters and others.

Please take into account, that the measuring amplifiers are configured to a baud rate of 38400 Bits/s by default.

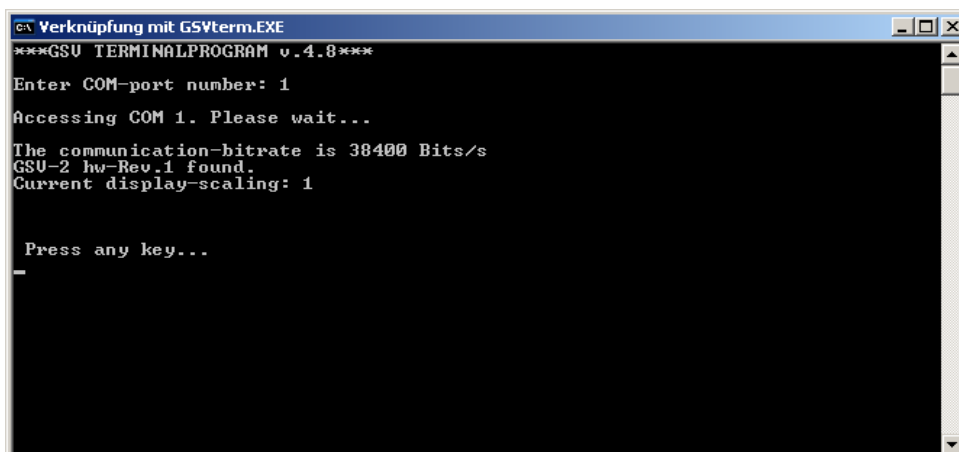
After starting the software, please first enter the number of the serial port, to which the GSV-2 or GSV-3 is connected to:



```

c:\ Verknüpfung mit GSVterm.EXE
***GSU TERMINALPROGRAM v.4.8***
Enter COM-port number: 1
  
```

If started without call parameters, the program tries to connect to the device with different baud rates. If the program was started by using the short cutt created by the setup-installer in the program directory, theprogramm will use 38400 Bits/s as the default baud rate.



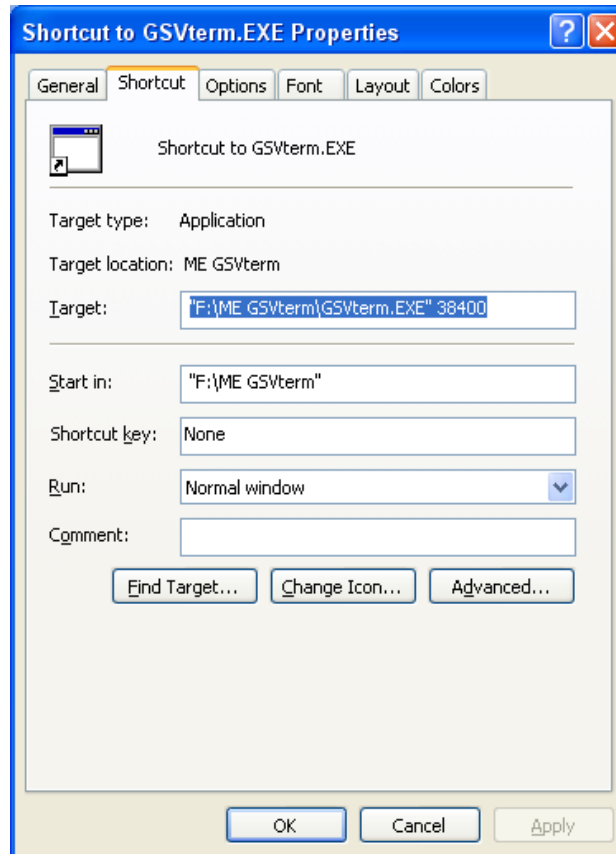
```

c:\ Verknüpfung mit GSVterm.EXE
***GSU TERMINALPROGRAM v.4.8***
Enter COM-port number: 1
Accessing COM 1. Please wait...
The communication-bitrate is 38400 Bits/s
GSU-2 hw-Rev.1 found.
Current display-scaling: 1

Press any key...
  
```

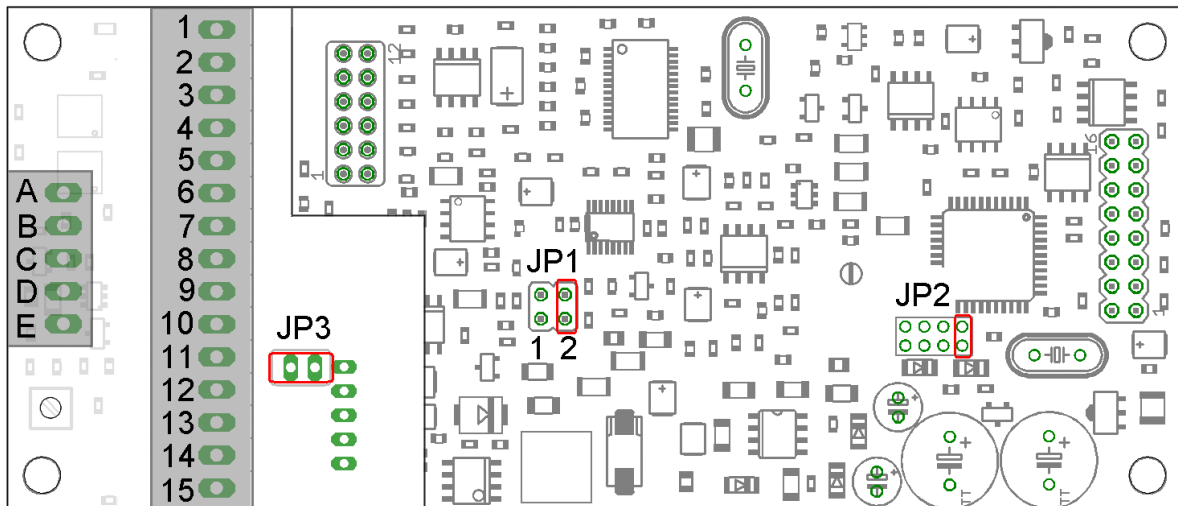
Sometimes the automatic baud rate recognition doesn't work.

In this case, please edit the program short cut by typing the correct baud rate as the first program parameter:



Changing the baud rate

To change the baud rate setting of the measuring amplifier, you first have to set a jumper (contact spacing 2.0mm) to position JP2 on the main board of the GSV-2 device, while it is switched off. This is also possible with the GSV-3, please have a look at its user manual.



After switching on the power supply, the measuring amplifier is then in the "configuration mode".

In this mode, changing the baud rate is allowed. This changing will be applied after the next bootup cycle with removed jumper.

With the jumper set the baud rate is fixed to 38400 Bits/s.

With higher baud rates, like e.g. 115200 Bits/s, it's possible to increase the measuring data rate (frequency) to higher values, like 2000 values per second.

The GSVterm program has two menu pages, which can be toggled by typing 1 or 2. In these main menus, always confirm inputs by typing <enter>. To change the devices baud rate, go to the second page and type b <enter>, b again and input the desired baud rate as prompted by the program.

```

c:\ Verknüpfung mit GSVterm.EXE
GSU TERMINALPROGRAM v4.8 Firmware-Version: 13.12 SerNo: testRev2
Manual second page:
q: Quit
u: Unit
d: Decimal places
b: Baudrate / CAN
h: Analogue filter
k: Calibrate AD-converter
v: Input sensitivity / Amplification
l: Linearization
x: Scale AD-converter
n: Threshold-dependent zero-assignment
z: Automatic tare
Ctrl+b: Protect settings
s: Special settings

0.5592 mV/V    b

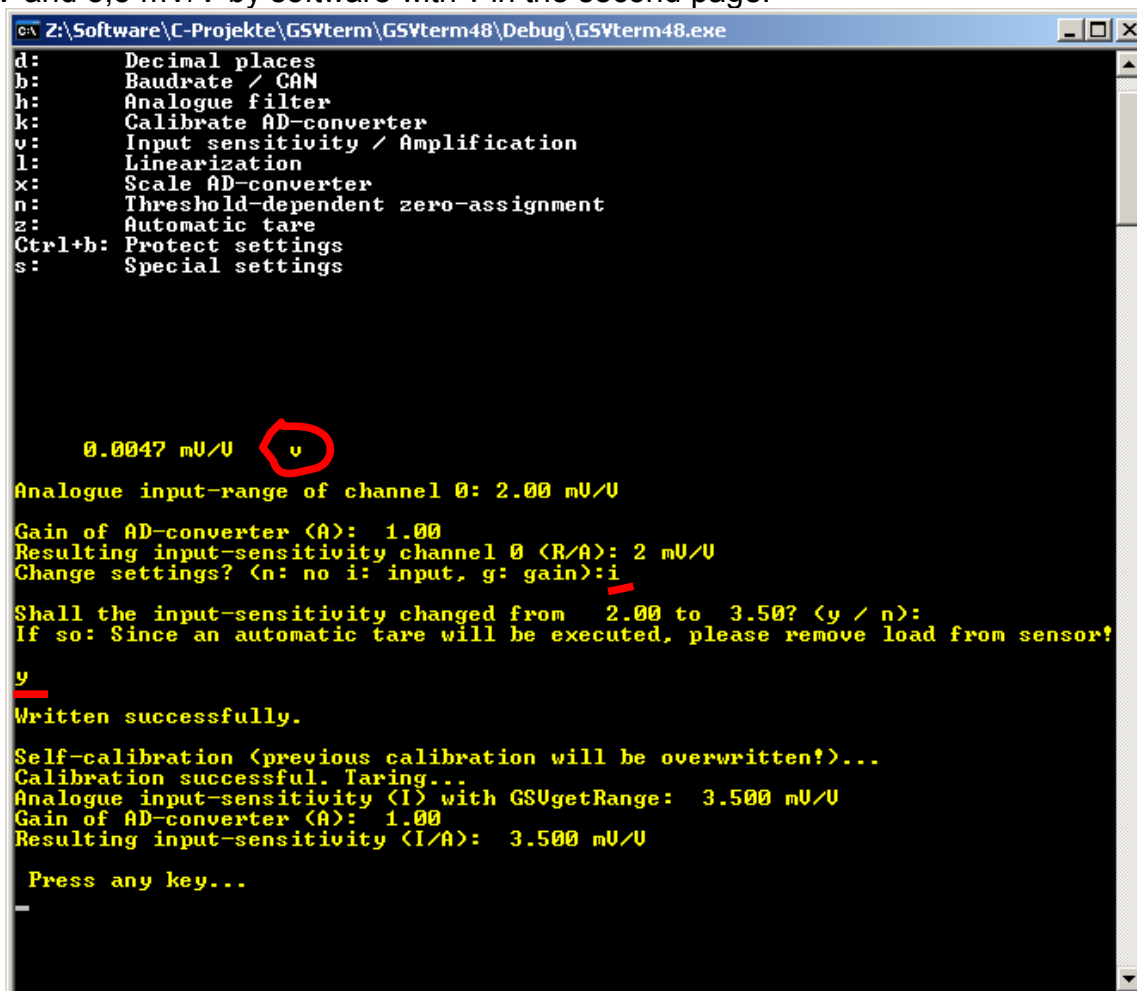
Baudrate currently set: 38400 bits/s
5-byte-protocol active. Prefix: ',' =0x2C
Change baudrate <b> or change protocol settings <p> or no change <n>:

```

In the baud rate sub-menu other settings regarding the serial protocol can be altered, too, if the configuration jumper is set, by typing p instead of b. Here you may change the protocol frame (with GSV-2: 3-byte or 5-byte frame, with GSV-3: 3-byte or 4-byte frame) or, if your devices firmware supports that, enable hardware-handshaking (RTC/CTS).

Changing the input sensitivity

With the GSV-2 measuring amplifiers the input sensitivity can be changed between 2 mV/V and 3,5 mV/V by software with v in the second page:



```

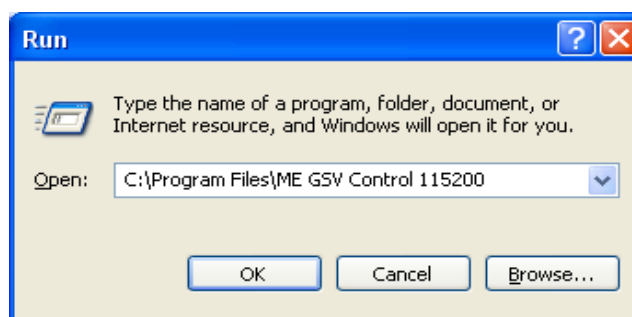
C:\Z:\Software\C-Projekte\GSVterm\GSVterm48\Debug\GSVterm48.exe
d:   Decimal places
h:   Baudrate / CAN
h:   Analogue filter
k:   Calibrate AD-converter
v:   Input sensitivity / Amplification
l:   Linearization
x:   Scale AD-converter
n:   Threshold-dependent zero-assignment
z:   Automatic tare
Ctrl+h: Protect settings
s:   Special settings

0.0047 mU/U v
Analogue input-range of channel 0: 2.00 mU/U
Gain of AD-converter (A): 1.00
Resulting input-sensitivity channel 0 (R/A): 2 mU/U
Change settings? (n: no i: input, g: gain):i
Shall the input-sensitivity changed from 2.00 to 3.50? (y / n):
If so: Since an automatic tare will be executed, please remove load from sensor!
y
Written successfully.
Self-calibration (previous calibration will be overwritten!)...
Calibration successful. Taring...
Analogue input-sensitivity (I) with GSUgetRange: 3.500 mU/U
Gain of AD-converter (A): 1.00
Resulting input-sensitivity (I/A): 3.500 mU/U

Press any key...
  
```

Starting the software „GSV Control“

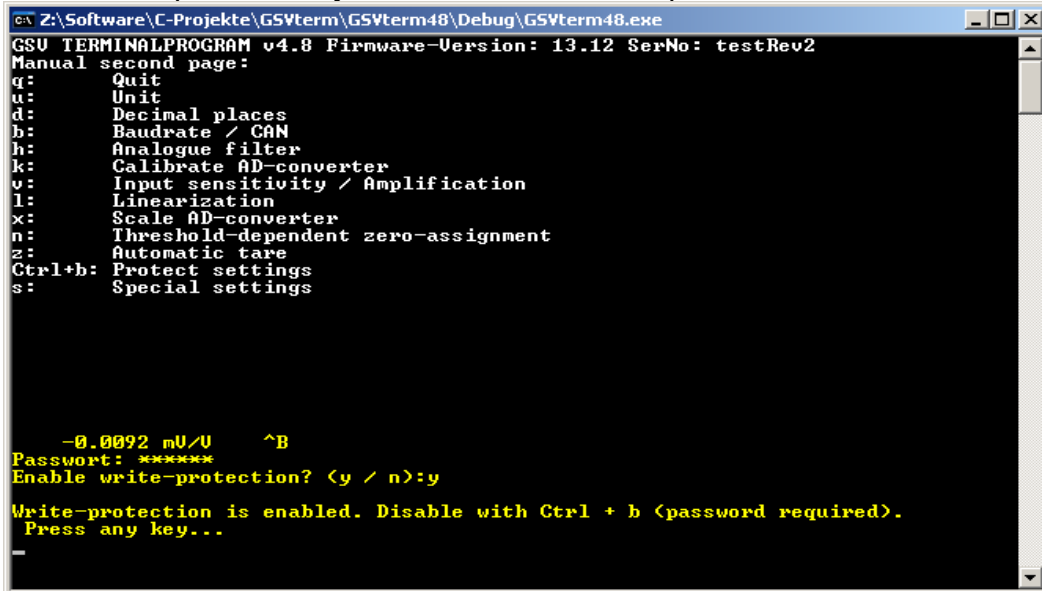
Changing the baud rate may lead to the necessity of changing the configuration of the application software. As with GSVterm, the baud rate can be added to the short cut of GSVcontrol as a call parameter, which is useful, if it differs from the standard of 38400 Bits/s.



Locking the measuring amplifier

In the second page, by typing <Strg> (or <Ctrl>) and b simultaneously, you'll get to a dialogue, where you can lock the device from unwanted changing. Once locked, every attempt to change settings won't be executed.

To enable this write-protection, you must first enter the password "berlin".



```

Z:\Software\C-Projekte\GSVterm\GSVterm48\Debug\GSVterm48.exe
GSU TERMINALPROGRAM v4.8 Firmware-Version: 13.12 SerNo: testRev2
Manual second page:
q: Quit
u: Unit
d: Decimal places
b: Baudrate / CAN
h: Analogue filter
k: Calibrate AD-converter
v: Input sensitivity / Amplification
l: Linearization
x: Scale AD-converter
n: Threshold-dependent zero-assignment
z: Automatic tare
Ctrl+b: Protect settings
s: Special settings

-0.0092 mU/U ^B
Password: *****
Enable write-protection? (y / n):y
Write-protection is enabled. Disable with Ctrl + b (password required).
Press any key...
  
```

Locking with GSVblock

To enable write-protection, the program „GSVBlock.exe“ can also be used.

In the Run...open window the baud rate and the number of the COM port can also be entered as call parameters, e.g.:

GSVblock 38400 1

To disable write-protection:

GSVunlock 38400 1

Without call parameters, the port will be opened with 38400 Bits/s and the port number will then be asked by a dialogue

User-defined offset summand (GSV-2 only)

With this a summand can be passed, that the device will add to every measuring value. This value can also be negative. The tare-zero routine has no influence on it, so that after zeroing you'll see this value in the measuring value display. Input first z and then o in the first manual page:

```

C:\Z:\Software\C-Projekte\GSVterm\GSVterm48\Debug\GSVterm48.exe
GSU TERMINALPROGRAM v4.8 Firmware-Version: 13.12 SerNo: testRev2
Manual first page:
q: Quit
z: Tare
n: Change display-scaling
p: Bipolar / Unipolar
f: Datarate / frequency
d: Digital-filter
m: Transmission modes
v: Thresholds
l: Load settings
s: Save settings
a: Record values to file / End recording
k: Change channel
2: Second page

      0.0271 mU/U      z
Tare to zero with <enter> or change tare-offset-value with <o>: o
Enter tare-offset-value, range -0.524 to 0.524
0.5

Written successfully.
Press any key...

```

If the text displayed isn't the same as shown here, your device doesn't support that function.

Digital filter

In the first menu page you get with d into the digital filter sub-menu. With a GSV-3 device here you can enable or disable a 2nd order FIR low pass filter. With a GSV-2 device you can enable or disable a FIR low pass filter of either 2nd or 5th order or an adaptive averaging filter, whose automatic adaptation to the actual noise level can be done here, too. You can also see with the program GSVcontrol in the Experts-Tab, which of these filters are enabled.

This averaging filter combines a moving average filter over up to 32 values with a quick step response of the measuring signal. „Moving average filter“ means that the filter is non-decimating, so the output data rate is equal to the input data rate. To realize a quick step-response, every measuring value is compared with the previous measuring value, and if this difference is bigger than a certain comparison value, the averaging is reset and an unfiltered value will be transmitted first. This comparison value can be determined automatically in the following way:

Answer the question for changing filter settings with y:

```

C:\Z:\Software\C-Projekte\GSVterm\GSVterm48\Debug\GSVterm48.exe
w: Thresholds
l: Load settings
s: Save settings
a: Record values to file / End recording
k: Change channel
2: Second page

      0.5210 mU/U      d
Adaptive averaging filter is on. Change filter settings? (y / n): y
a: Digitalfilter off
f: FIR-filter on
o: FIR-filter order
m: Adaptive averaging filter
Selection: m
Averaging filter is on. Switch off? (y / n): or activate learning mode (L)? l
Please enter time in second, during which the learning-mode shall be active: 10
  
```

Enter m and then l. Input the time in seconds, during which the self-learning phase should be active. During this time, the **wanted signal should not change**, because only the peak-to-peak noise shall be determined.

You'll then see actual measuring values and the remaining time:

```

C:\Z:\Software\C-Projekte\GSVterm\GSVterm48\Debug\GSVterm48.exe
Measuring value: 0.4999928 mU/U
Time: 8.5 s
  
```

A typical application of this functionality is the so-called „cattle balance“. Let's assume you have one or more load cells with cattle on top of it, connected to our GSV-2 and now you want to attenuate the stamping of the cattle on the balance (that's the noise signal) with the adaptive averaging filter. Then you would follow these steps:

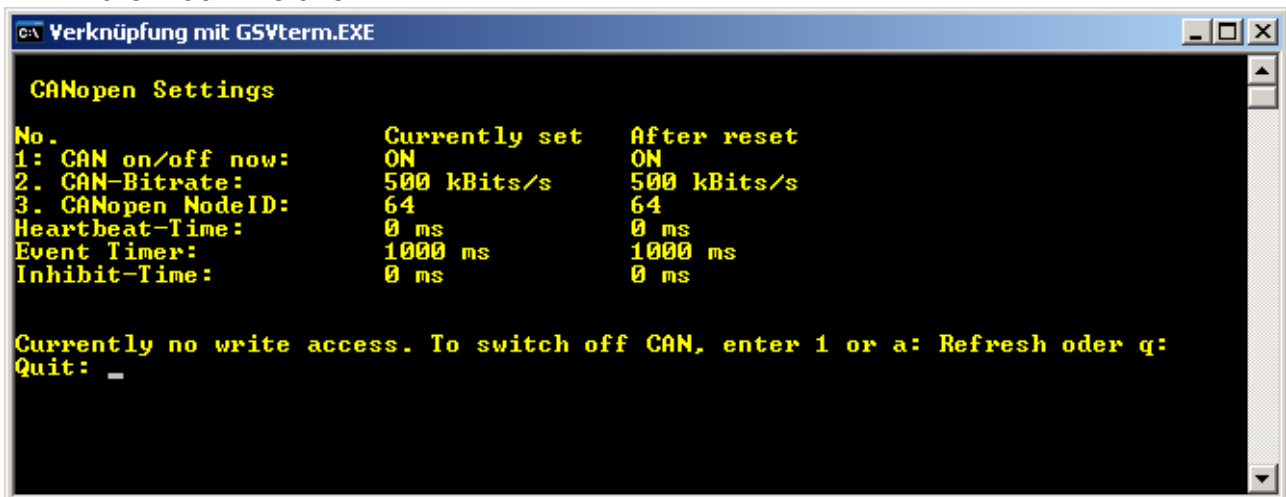
The adaptive averaging filter must be enabled. Now let some animals go onto the balance and execute the procedure as described above e.g. with time =20s. Then the self-learning period lasts 20 seconds. After these 20 seconds the animals may leave the balance; the „stamping“, that is the noise signal should now be attenuated, so theoretically reduced by the factor $1/\sqrt{32}$, which is about 1/5.

With the adaptive averaging filter any noise signal, e.g. present in an environment with harsh electromagnetic interference can be filtered, that means attenuated. Start the self-learning phase as described, while the noise signal is strong, but the wanted signal doesn't change significantly.

If the text displayed isn't the same as shown here, your device doesn't support that function.

Changing settings of the GSV-2AS-CANopen

1. Please connect the GSV-2AS-CANopen via the RS232 COMport to a Windows-PC, as described in the manual (<http://www.me-systeme.de/en/manuals/a5/ba-gsv2.pdf>)
2. Start GSVterm as described above.
3. Then press b in the second manual page and then c for CAN settings. It should then look like this:



```

c:\ Verknüpfung mit GSVterm.EXE

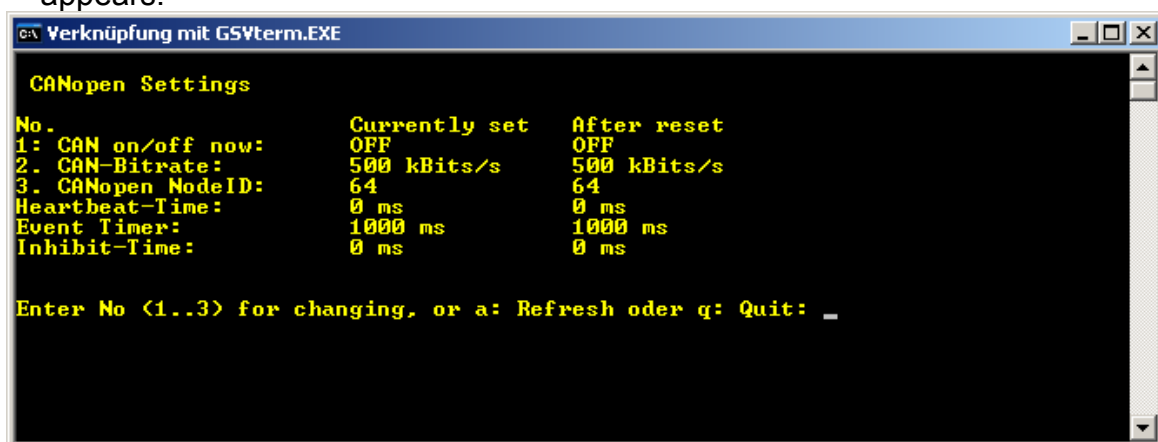
CANopen Settings

No.          Currently set  After reset
1: CAN on/off now:    ON            ON
2. CAN-Bitrate:      500 kBits/s  500 kBits/s
3. CANopen NodeID:   64           64
Heartbeat-Time:      0 ms         0 ms
Event Timer:         1000 ms      1000 ms
Inhibit-Time:        0 ms         0 ms

Currently no write access. To switch off CAN, enter 1 or a: Refresh oder q:
Quit: _
  
```

In the delivery state the CANopen port should be enabled. Then your device is in the so-called „Pre-Operational state“ after being switched on - as required by the CiA301 CANopen communication standard. In this state, there's no write-access via the RS232 port. There are two possibilities to change this:

- Put the device via the CANopen interface into the „Stopped state“, which is done by the NMT „Stop Remote Node“.
- Switch the CAN-Interface off via the RS232 port. This method shall be described here. To do this, please enter 1 in the submenu shown above. The following output appears:



```

c:\ Verknüpfung mit GSVterm.EXE

CANopen Settings

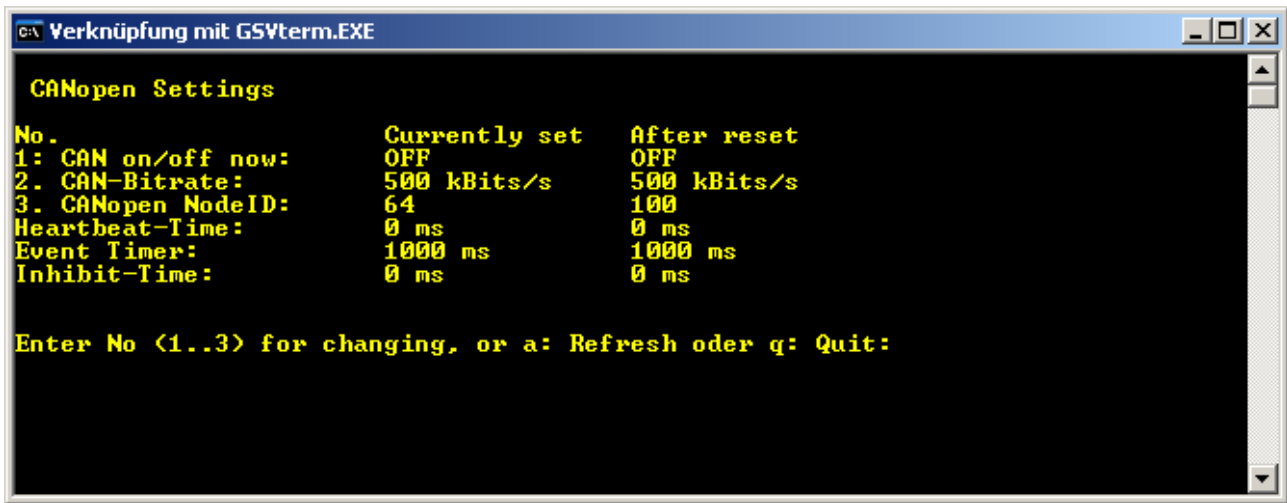
No.          Currently set  After reset
1: CAN on/off now:    OFF           OFF
2. CAN-Bitrate:      500 kBits/s  500 kBits/s
3. CANopen NodeID:   64           64
Heartbeat-Time:      0 ms         0 ms
Event Timer:         1000 ms      1000 ms
Inhibit-Time:        0 ms         0 ms

Enter No (<1..3>) for changing, or a: Refresh oder q: Quit: _
  
```

Now you may change the Node-ID. to do this, enter 3 and then the desired Node-ID in decimal notation, e.g. 100. The new Node-ID is applied by getting passed to the CANopen

engine after enabling the CANopen interface again.

After changing the Node-ID the following output appears:



```

c:\ Verknüpfung mit GSVterm.EXE

CANopen Settings

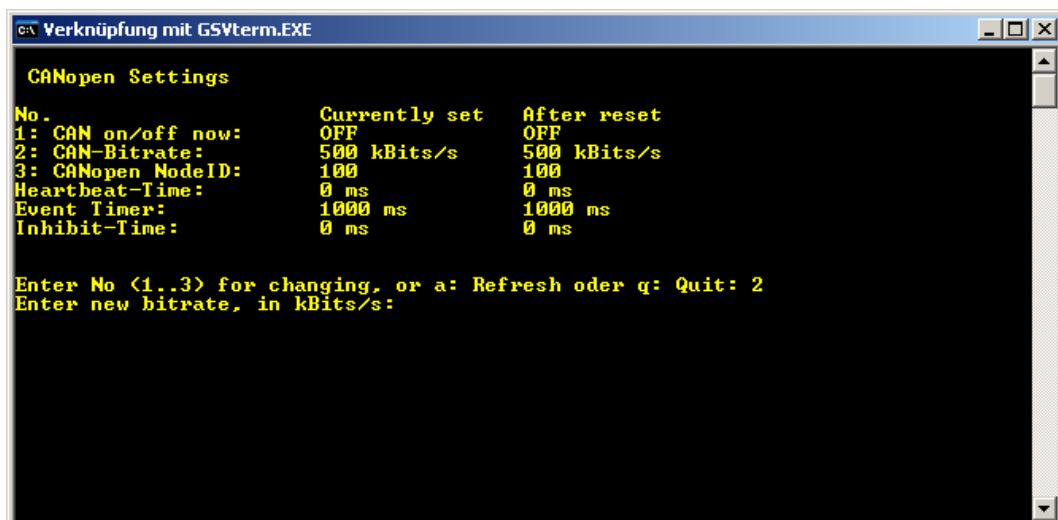
No.          Currently set  After reset
1: CAN on/off now:  OFF           OFF
2: CAN-Bitrate:   500 kBits/s  500 kBits/s
3: CANopen NodeID: 64            100
Heartbeat-Time:  0 ms         0 ms
Event Timer:     1000 ms    1000 ms
Inhibit-Time:    0 ms         0 ms

Enter No (1..3) for changing, or a: Refresh oder q: Quit:
  
```

When you switch on the CAN interface now by pressing 1 and confirming with y, the device will boot its CANopen engine with the new Node-ID and send the Bootup-frame to the CAN bus. If you don't enable the CAN interface again, it will remain disabled permanently (also after a power-on cycle) and the device won't behave as a CANopen device anymore!

Changing the CAN bitrate

In order to be able to change the CAN bitrate, the configuration jumper must be set, as described above. Switch off the device by interrupting the power supply, set the jumper JP2 and switch the device on again. Then, enter the CANopen settings submenu with GSVterm as described above. Then enter 2, if the CANopen interface is already switched off:



```

c:\ Verknüpfung mit GSVterm.EXE

CANopen Settings

No.          Currently set  After reset
1: CAN on/off now:  OFF           OFF
2: CAN-Bitrate:   500 kBits/s  500 kBits/s
3: CANopen NodeID: 100           100
Heartbeat-Time:  0 ms         0 ms
Event Timer:     1000 ms    1000 ms
Inhibit-Time:    0 ms         0 ms

Enter No (1..3) for changing, or a: Refresh oder q: Quit: 2
Enter new bitrate, in kBits/s:
  
```

Now enter one of the following Bitrates in kBits/s (number only):

50 kBits/s
 125 kBits/s
 250 kBits/s
 500 kBits/s
 1000 kBits/s = 1MBit/s

```

c:\ Verknüpfung mit GSVterm.EXE

CANopen Settings

No.          Currently set  After reset
1: CAN on/off now:  OFF           OFF
2: CAN-Bitrate:   500 kBits/s  1000 kBits/s
3: CANopen NodeID: 100           100
Heartbeat-Time:  0 ms         0 ms
Event Timer:     1000 ms    1000 ms
Inhibit-Time:    0 ms         0 ms

Enter No (<1..3>) for changing, or a: Refresh oder q: Quit:
  
```

The new bitrate will be applied after enabling the CAN interface **and a power on cycle** (disconnecting and connecting the power supply). Therefore, you may already enable the CAN interface (enter 1, then y):

```

c:\ Verknüpfung mit GSVterm.EXE

CANopen Settings

No.          Currently set  After reset
1: CAN on/off now:  ON            ON
2: CAN-Bitrate:   500 kBits/s  1000 kBits/s
3: CANopen NodeID: 100           100
Heartbeat-Time:  0 ms         0 ms
Event Timer:     1000 ms    1000 ms
Inhibit-Time:    0 ms         0 ms

Currently no write access. To switch off CAN, enter 1 or a: Refresh oder q:
Quit:
  
```

As you can see, „1000kBits/s“ is still noted under „After Reset“, which means that this bitrate isn't valid yet. Leave the submenu with q, close the program with q and switch off the GSV device. After switching it on again, the new CAN bitrate will be applied. If you like, you can verify that with GSVterm by executing the points 1 and 2 as described above:

```

CAN Verknüpfung mit GSVterm.EXE

CANopen Settings

No.          Currently set  After reset
1: CAN on/off now:  ON             ON
2: CAN-Bitrate:    1000 kBits/s  1000 kBits/s
3: CANopen NodeID: 100           100
Heartbeat-Time:   0 ms          0 ms
Event Timer:      1000 ms      1000 ms
Inhibit-Time:     0 ms          0 ms

Currently no write access. To switch off CAN, enter 1 or a: Refresh oder q:
Quit:
  
```