

PRÄZISION IN BEWEGUNG

User Manual

MotorMonitor

Software for parameter
setting, control and
monitoring

Imprint

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Important information

Please read this manual carefully before start-up of the software.

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1. Introduction

The company GEFEG-NECKAR Antriebssysteme GmbH based in Gosheim emerged in 2004 from the merger of the motor manufacturer GEFEG established in 1948 in Augsburg and of the motor manufacturer NECKAR Kleinstmotoren established in 1967 in Deißlingen. As a pioneer in its sector, NECKAR Kleinstmotoren started in 1995, as part of a customer project, with the development of the integrated electronics used in brushless small motors. Only one year later, the complete MH series of brushless DC motors was established. Today the company uses a modern electronic platform for universal use in many electronically controlled drives and in external electronic units. It is based on powerful hardware components, has a CAN interface and guarantees a high degree of flexibility, functionality and user comfort.

The same electronic platform is used in the brushless motors of the MC series, brushed motors of the PC series and in the external electronic units of the MCE, UCE and PCE series. This allows the users to control the different drives always in the same way.

The parameter setting of the electronic platform is done via a CAN interface (CANopen® protocol with Drive Profile DSP-402). Users who do not yet use a CAN bus system can also operate the drive by means of analog and/or digital signals. The integrated CAN interface offers the advantage of simple parameter setting, start-up and monitoring.

The powerful commissioning software "MotorMonitor", together with a suitable CAN/USB adapter and a PC allow the user to communicate with the drive at any time. This software not only recognizes the electronic platform, but also adjusts it such that only the parameters implemented in the concrete product are displayed. The software allows the user to change parameters, control the drive or monitor important data such as temperature, velocity and power consumption.

2. Installation

2.1. Versions / revisions overview

Version:	Available from:	Revision:
1.1	01.12.2010	Search function for determining the baud rate and node address implemented
2.0	01.03.2011	Compatibility with firmware version 2.0

2.2. System requirements

- MS-Windows 2000 / XP / Vista / Windows 7
- Microsoft .NET Framework 3.5 or higher
- Unused USB port on your PC or notebook
- CAN USB adapter (GEFEG-NECKAR Art. No.: 819000003)
- 120Ω terminating resistor

2.3. Installation sequence

Step:	Description:
1	Start the installation procedure by double-click on the "Setup_MotorMonitor.msi" file
2	Follow the installation instructions of the setup program.
3	If the driver for the CAN USB adapter was not yet installed, a note is displayed when loading the "MotorMonitor", and the drive will be installed.

3. User interface

3.1. "CAN bus" tab



Figure 1: "CAN bus" tab

1 CAN interface

The software will detect the internal and external electronics only if the required communication parameters (baud rate and node address) were set correctly. The "CAN interface" gives the user the option to set the node address (Node ID) and the baud rate of the desired CAN user. If this data is unknown, the user can have it determined by means of the search function ("Search" button). The window opening upon a successful search (Figure 2) shows the values determined by the search function. These values are copied automatically to the system.

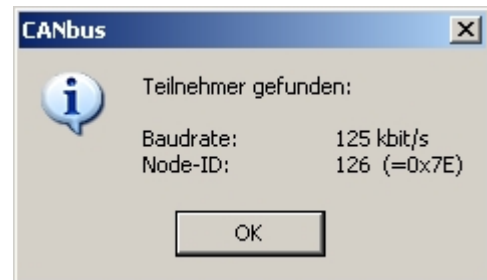


Figure 2: Determination of the CAN user

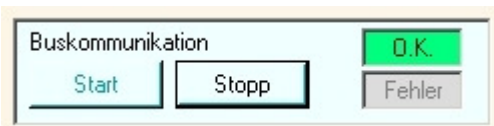


Figure 3: Communication started



Figure 4: Start failed

2 Bus communication

Communication between the PC and the drive can be started or stopped at any time. If communication has been established successfully, the green "OK" display will light up (see Figure 3), and, if it has not been established, the red "Error" display will light up (see Figure 4).

Possible causes of error for not establishing communication include:

- wrong communication parameters
- drive not connected or not switched on
- missing terminating resistor

3 Error display

All errors (excluding communication errors) are displayed in a separate display window that is only visible when an error occurs (see Figure 5). This panel also allows the error to be deleted (deleted by pressing Reset).



Figure 3: Error display

4 Info window

The Info window (see Figure 6) is used to display important device information. As standard, the article number, test number, test date and firmware version are displayed here.

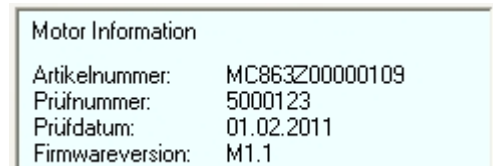


Figure 4: Info window

3.2. "Parameters" tab

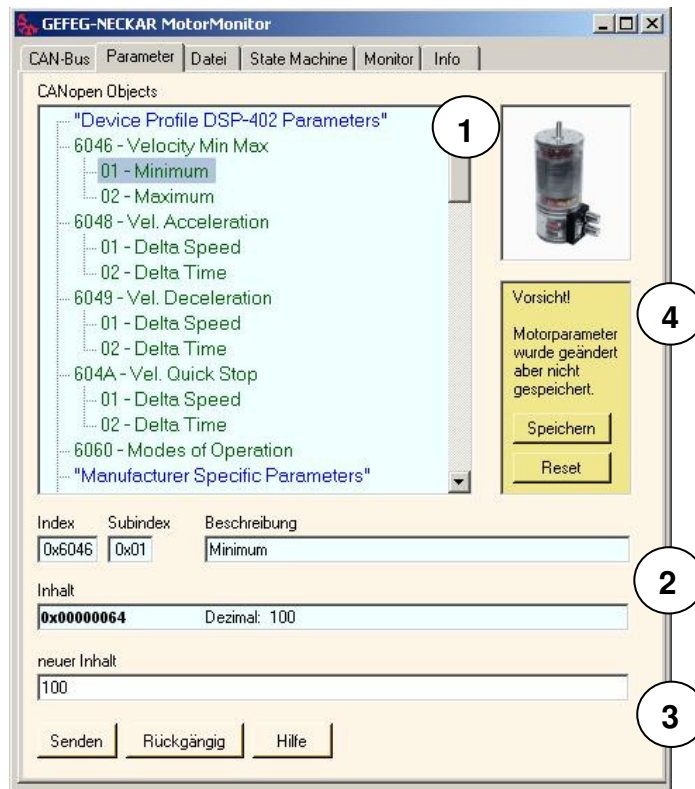


Figure 5: "Parameters" tab

1 CANopen objects

In this panel (see Figure 8), all implemented CANopen objects are displayed. An object is selected by simply clicking it. The string of numbers in front of the object name (e.g. 6046 in front of Velocity Min Max) corresponds to the object, and the one in front of the subindex name (e.g. 01 in front of Minimum) to the subindex of the object.



Figure 6: CANopen objects

2 Object data

The data of an object or of its subindex are displayed in the boxes intended for this purpose (see Figure 9) as soon as they have been selected. The "Index" box shows the index of the selected object, and the "Subindex" box shows its subindex. These values are displayed in hexadecimal form. The "Description" box shows the name, the "Contents" box the current parameter value of the object. These values are displayed in hexadecimal and decimal or text form.

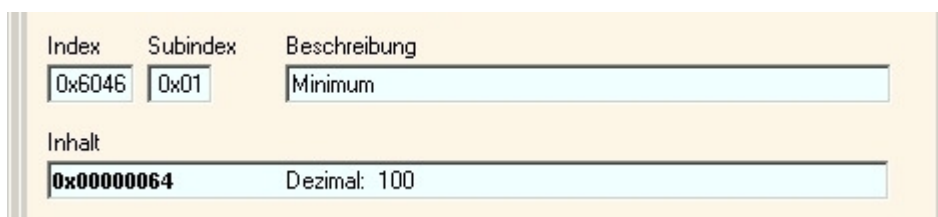


Figure 7: Parameter data



Figure 8: "New contents" text box

3 Changing, transmitting and restoring parameter values

The user can change the parameter value of an object, if he has the required access rights, by means of the "New contents" text box (see Figure 10). The desired parameter value can be entered in decimal, hexadecimal or text form. To accept the parameter value, press the "ENTER" key or the "Transmit" key. Changes can be undone by pressing the "Undo" button. However, this will only work if they were not previously saved (see function 4). A help window can be opened by pressing the "Help" button (see Figure 11), whose contents give information on the parameter values. A total of max. 5 help windows can be displayed simultaneously.

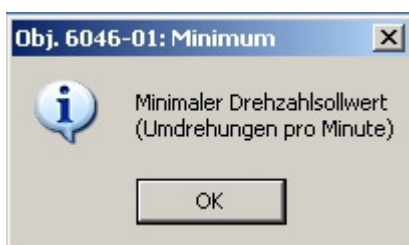


Figure 9: Help window

4 Save & Reset

This panel containing a warning (see Figure 12) appears after an object was changed. Upon pressing the "Save" button, all changes will be permanently saved in the non-volatile memory of the electronics. The saved parameter values are retained even in case of power failure. Pressing the "Reset" button undoes all changes that were not saved.



Figure 10: Save & Reset

3.3. "File" tab

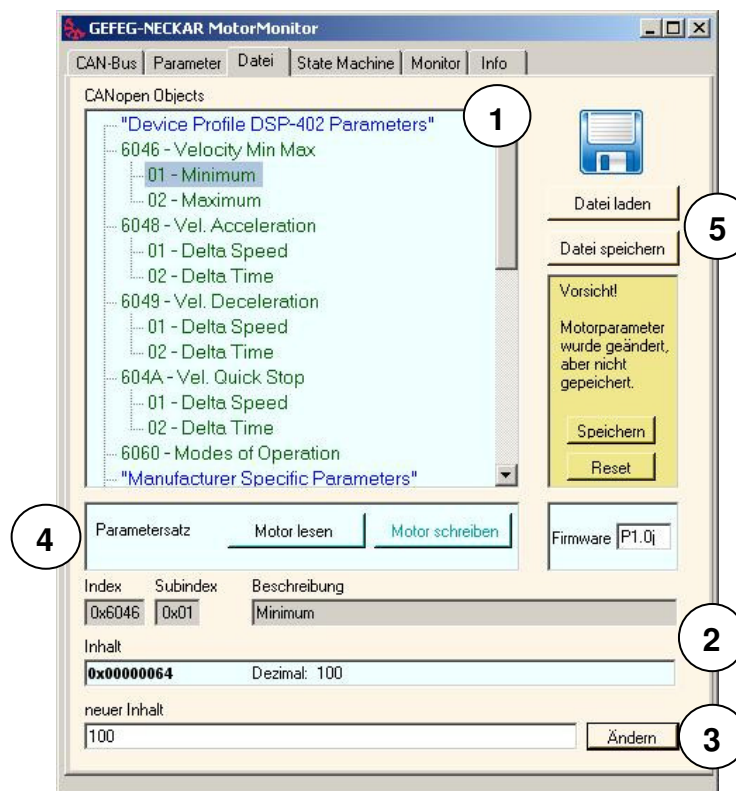


Figure 11: "File" tab

The "File" tab (Figure 13) allows parameters to be saved to a file. Likewise, previously saved parameters can be retrieved from a file. The parameters can be edited, before saving them or after retrieving them.

1 CANopen objects

CANopen objects are displayed in this tab in the same way as in the "Parameters" tab (see section 3.2). However, only parameters that can be changed with customer rights will be displayed here. If the parameters displayed in the panel are the same as those of the connected electronics, the colour of the panel is "turquoise". If they differ, either due to editing or retrieval of a different parameter, the colour of the panel is "pink". In addition, a warning appears: "Deviation from parameter set in motor" (see Figure 14).

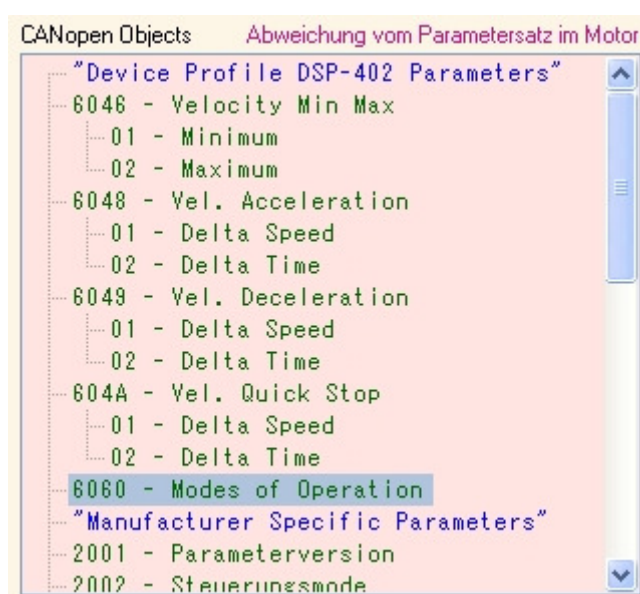


Figure 14: Edited parameter set

2 Object data

The object data is displayed in the same way as in the "Parameters" tab (see section 3.2).

Caution!!!

The displayed objects are only in the computer memory and may differ from current motor parameters. In this case, the panel is displayed reddish.

3 Changing parameters

Here you can change objects in a similar way as in the "Parameters" panel (see section 3.2). However, in contrast to the latter one, here only a copy saved in the computer is edited. This copy can then be saved as a file or sent back to the motor.

4 Retrieving a parameter set from the motor / writing it to the motor

The current parameter set (all settings) of a drive can be retrieved by pressing the "Read motor" button (see Figure 15). An already open and edited or unedited parameter set can be written by pressing the "Write to motor" button.

Caution!!!

Writing a parameter set previously saved to a file may not function if the firmware version and parameter structure of the current electronics do not coincide with the parameter set saved to the file.



Figure 12: Reading /writing a parameter set

5 Loading /saving a file



The "MotorMonitor" program gives the user the option to save the current parameter set, i.e., all customer settings, to a file or loading again a saved one (see Figure 16). The current settings can be loaded by pressing the "Load file" button and saved by pressing the "Save file" button. Attention: Loaded parameter sets are not automatically copied to the motor. The parameter values can be transmitted separately. (See function 4: Write to motor).

Figure 13: Loading /saving a file

3.4. "State Machine" tab

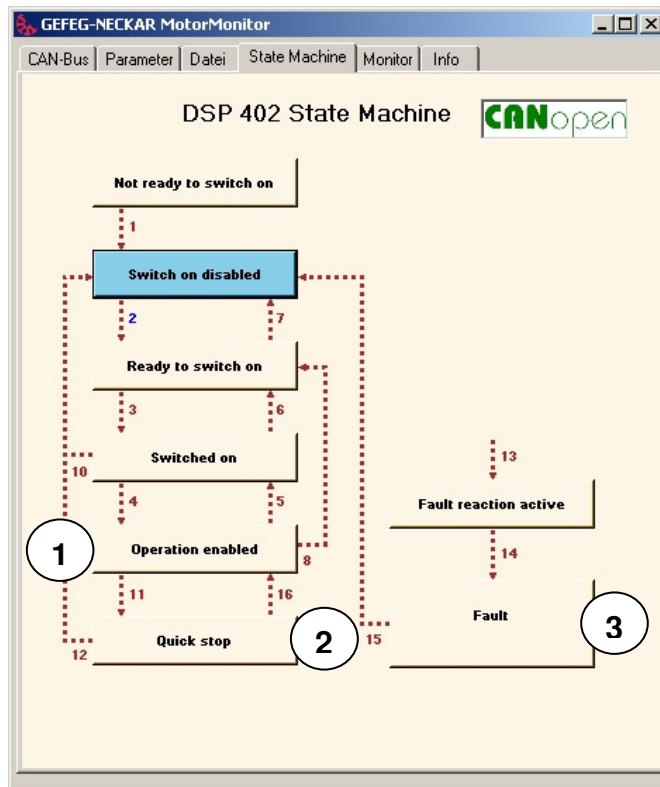


Figure 14: "State Machine" tab

1 Activating / deactivating a drive

If a drive is in the CANopen control mode, it can only be controlled by the software via the state machine (defined according to CANopen DSP 402). The drive is activated by simple clicking. This switches the drive, as shown in Figure "18", from the "Switch-on disabled" to the "Operation enabled" state. Deactivation takes place in the same way, but in reverse order.

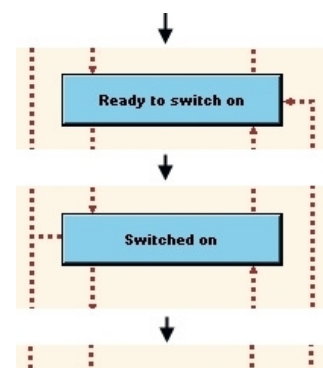


Figure 15: Activating a drive

2 Activating / deactivating the braking function



Figure 16: Braking a drive

The braking function of the device becomes active as soon as the drive is switched by a click from the "Operation enabled" to the "Quick stop" state (see Figure 19). The deactivation of the braking function takes place in the same way, but in reverse order. If necessary, the drive can also be switched directly from the "Quick stop" state to the "Switch-on disabled" state.

3 Error display

If an error occurs (excluding communication errors), the cause of the error is displayed in the "Fault" area (see Figure 20) of the state machine. To delete the error or reset the electronics, the state machine must be switched from the "Fault" to the "Switch-on disabled" state. This switch can be done by simply clicking on the "Switch-on disabled" button.



Figure 17: Error display

3.5. "Monitor" tab

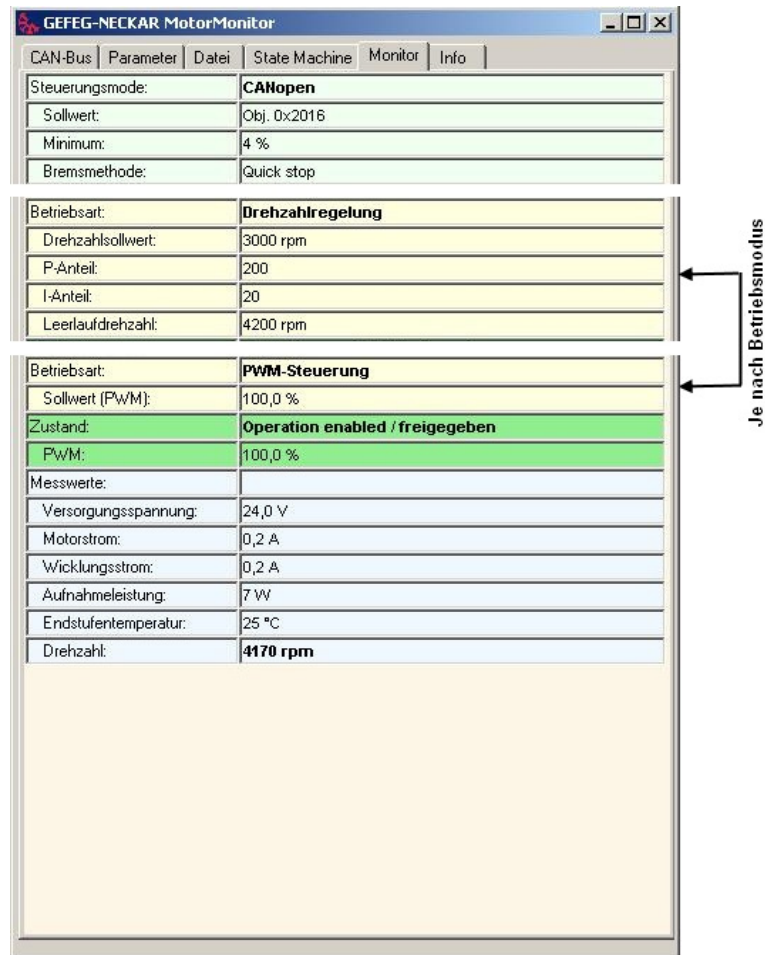


Figure 18: "Monitor" tab

The "Monitor" tab is solely used for monitoring. Primarily, it shows all important active objects. In case of a regulation, this allows, for example, the speed nominal value, the P and I components of the control and the idling speed and, in case of a control, the actual and nominal PWM factors to be displayed (see Figure 21).

4. Error messages

This section describes all errors that cannot be attributed directly.

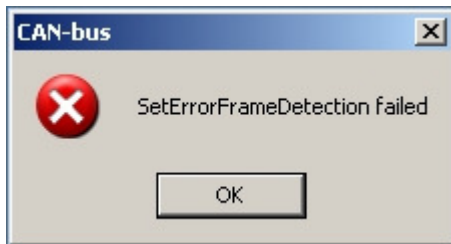


Figure 20: Communication fault, adapter not connected



Figure 19: Drive not connected or not switched on, missing terminating resistor

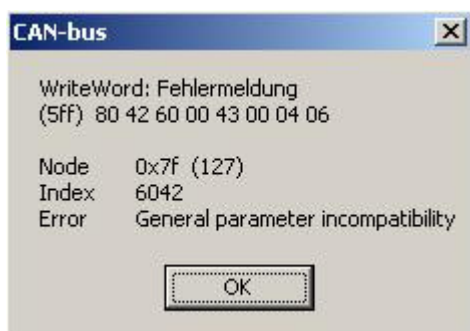


Figure 22: Invalid parameter



Figure 21: No write permission

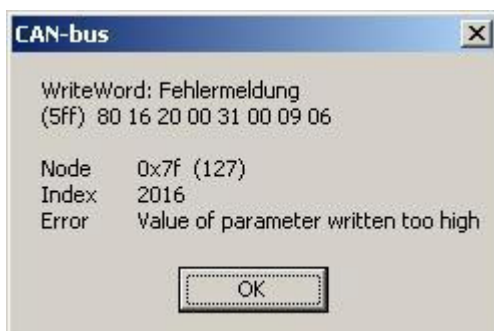


Figure 23: Range of values exceeded

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Updated: 20.01.11

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