ProTool DriveLine

Software

User manual

375/16

Table of contents

1 General Information

1.1 Documentation

The following documents are associated with this product:

- Data sheet describes the technical data, the dimensions, the pin assignment, the accessories and the order key.
- User manual for commissioning.

These documents can also be found at http://www.siko-global.com/de-de/service-downloads.

1.2 Disclaimer

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Windows®, Windows® XP are trademarks of Microsoft® Corporation in the USA and other countries. In this manual, the operating system is called “Windows” in simplified terms.

1.4 System requirements

The software requires no installation and can be run on systems with Microsoft® Windows® XP or better and with screen resolution of 800x600 and higher.
Furthermore, the PC must be connected to the SIKO device via a suitable COM interface.

2 About ProTool DriveLine

2.1 About the software

The ProTool DriveLine application can be operated intuitively and safely for the control of SIKO DriveLine positioning drives which have a corresponding service protocol. Basic operation of your DriveLine positioning drive as well as of additional applications (including Web Server) is described in the User manual enclosed with the device. The present manual addresses the following issues:

- Getting started
- Adjusting the settings
- Operation

The firmware of your DriveLine positioning drive is subject to a continuous development process and can be updated via free or chargeable updates.

2.2 About this manual

The information printed in this manual relates exclusively to the functionality of the device at the time of delivery. The information printed here can deviate from the actual operational steps if the software and/or hardware was changed and/or updated later. In this case you can find the current version, which documents the changes made to operation in the Service & Downloads area of the SIKO web site (http://www.siko-global.com/de-de/service-downloads/download-produkte).

2.2.1 Conventions in this manual

Operation is guided directly by the application software of a PC. This means that entries in the software are displayed on-screen and can be executed there. The following applies to the below descriptions:

- For entries made with the mouse on your PC we use the term “Click (on)”.

  Various passages of this manual refer to entries within the software application or to a path on your PC. These references are documented as follows:

- Entries (such as menu entries or texts for marking boxes) are in **bold** print.
- Entries from the software (including buttons or menu items) are in [**bold**] print.
- Specific functions and programs of your application software or PC (including Windows Explorer) are *italicized*.
- Information on directories and file paths are *italicized*.

  The information in this manual documents the operation of the application software, explains the on-screen graphical presentation and lists the available options for individual functions. The following applies to the below descriptions:

- Descriptions of how to execute a function are listed numerically and define the sequence of individual operations.
- Descriptions referring to equivalent options (as in the present case) are marked by bullets.

3 Getting started

3.1 Starting ProTool DriveLine

To ensure faultless running of the application software we recommend copying or saving the file “ProTool_DL.exe” (approx. 1.3 MB) on your local hard drive. Afterwards you can start the application software by double-clicking.

By clicking on [**OK**] you accept the disclaimer and enter the main menu.

3.1.1 Basic version

In the basic version of ProTool DriveLine (PTDL you can choose between two menu items or tabs:

- [Positioning / Status]
- [Settings]

After selecting your **Language** and corresponding COM **Interface** the application software tries to establish a connection to the SIKO DriveLive positioning drive (displayed by “Searching ...” in the status bar). When a connection has been established, the subscriber is identified and the respective type data displayed in the status bar.

The default language is **German** and the default COM interface is **COM 1**. Changes are saved automatically and considered at program restart.

3.1.2 Licensed version

In the licensed PTDL version you can choose between the following additional menu items or tabs:

- [Motor parameters]
- [Diagrams]
- [Diagnosis / Errors]
- [Cycle parameters]

3.1.2.1 Basic version and Licensing

You can use the respective PTDL application software version without time restriction. For licensing and activation of additional functions send us an e-mail to: *info@siko.de* with the **Subject**: "**Activation code for PTDL**" with the minimum information of your name and given name, company and phone number.

We recommend highlighting the activation code in the response mail by double-clicking and copying it into the *clipboard* with the keystroke combination [**Ctrl**] + [**C**]. Then click into the **Activation code** box and enter the activation code with the keystroke combination [**Ctrl**] + [**V**]. The activation code is verified by clicking on [**SET]**, saved if applicable and considered at program restart.

4 Adjusting the settings

4.1 COM interface

⚠WARNUNG	Destruction of plant components and loss of control. ➢ Perform wiring work in the de-energized state. ➢ Do not connect or disconnect interfaces under voltage.

⚠WARNUNG	Unexpected device actions of the actuator. ➢ Do not quit the application software as long as the drive is connected to the COM interface. This could result in loss of control or unexpected actions of the actuator (e.g. destruction of the actuator; actuator starts moving; loss of position value).

The application software has no automated COM interface search. Therefore, setting the correct or suitable COM **interface** is one of the most important settings for the function. You can choose between **COM 1** to **COM 9** interfaces.

If you use multiple COM interfaces or if they are in a "higher" area you can find the connection used by means of the Windows *Device Manager* under ***Ports (COM & LPT)*** or put the Com interface into the range between COM 1 until COM 9 under ***Properties*** and ***[Change settings]*** (Administrator rights may be required)**.** For further information please refer to the documentation of your computer's operating system.

ACHTUNG	Interface change Toggling between different COM interfaces (e.g. COM 8 connected to drive 1 and COM 9 connected to drive 2) during active interface connection is only possible with restart of PTDL!

5 Operation

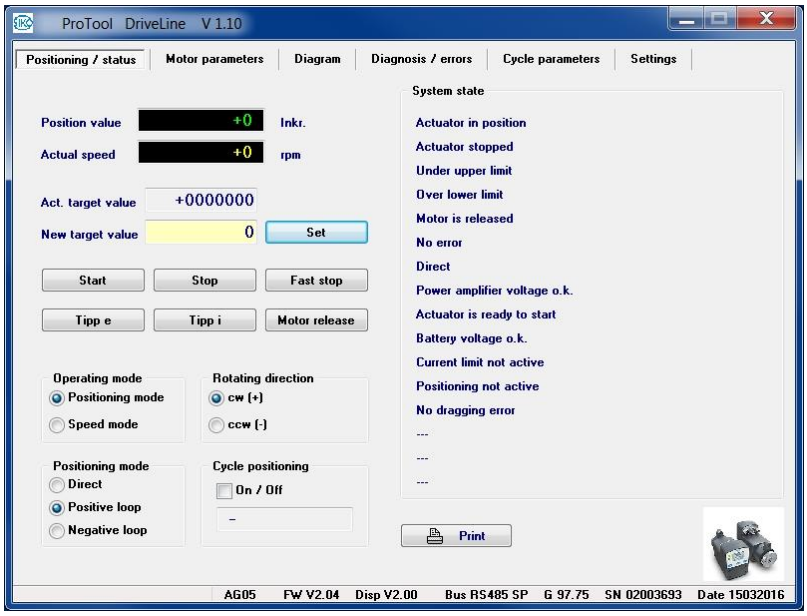
Below, the function and operation of a licensed version of the ProTool DriveLine application software with an AG06 DriveLine positioning drive is described. Parts hereof apply also to the basic version. Distinctions are not marked.

Furthermore, an active interface connection between the computer and the SIKO DriveLine positioning drive is assumed to exist.

For a detailed operating information and definition of terms used with your SIKO DriveLine positioning drive please refer to the documentation enclosed with the drive.

5.1 Main menu

5.1.1 [Positioning / Status]



5.1.1.1 Position value

The current position value is output in this box. The relevant unit is displayed depending on the parameters entered under [**Motor parameter**] / [**Positioning**] / **Spindle pitch**, **ü-numerator** and/or **ü-denominator**.

5.1.1.2 Actual rotational speed

The actual speed is output here while the drive is moving.

5.1.1.3 Current setpoint

The setpoint transmitted last is output here.

5.1.1.4 New setpoint

You can enter a new setpoint into this box; it will be interpreted in accordance with the unit display. Click into the box next to the right and enter a value on the computer keyboard (use the corresponding arithmetical sign for negative values). Complete the entry by clicking on [**SET**] and transfer the value to the drive. If admissible, this value is output as **current setpoint** while the drive stands still.

5.1.1.5 System status info area

The drive's status word is output in this area.

5.1.1.6 Enable Start, Stop, Fast stop, Inching i and Inching e as well as M.

[**Start**] = start drive movement to programmed setpoint

[**Stop**] = motor decelerates with programmed delay. Motor remains in control state!

[**Fast stop**] = motor decelerates with maximum delay. Motor remains in control state!

[**Enable M.**] = cancellation of actuator travel (motor enabled).

[**Inching i**] = positive travel in inching mode at [**i (+) sense of rotation**]

[**Inching e**] = negative travel in inching mode at [**i (+) sense of rotation**]

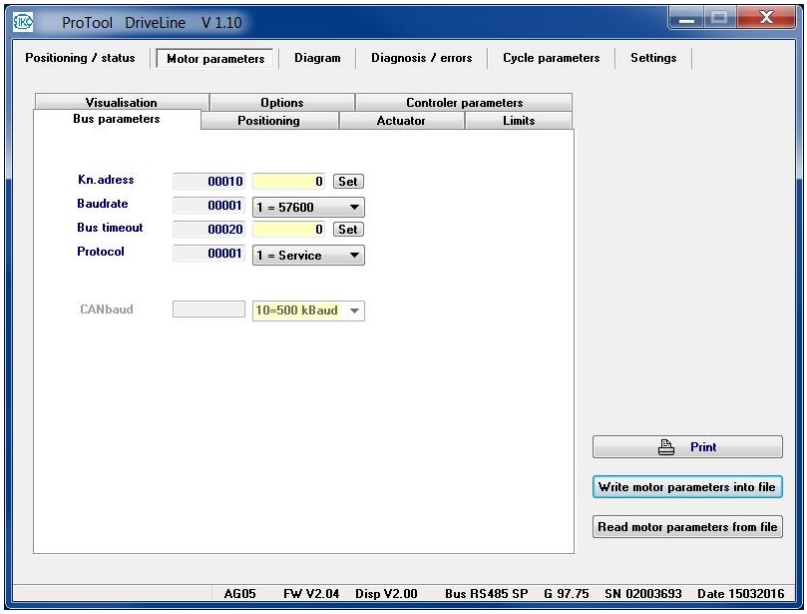
5.1.1.7 Other options

Either of the two variants of drive control are selected via **Operating mode**.

In the [**Positioning mode**] there are the following options:

- Activation of so-called loop positioning via **Positioning type**.
- Change of the reference direction via **Sense of rotation**.
- Initiation of a sequence of movements via **Cycle positioning**. For additional information refer to the description of the [**Cycle parameter**] menu item.

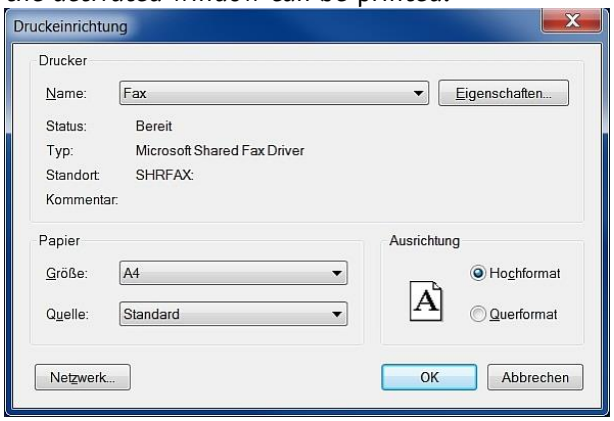
5.1.2 Motor parameters



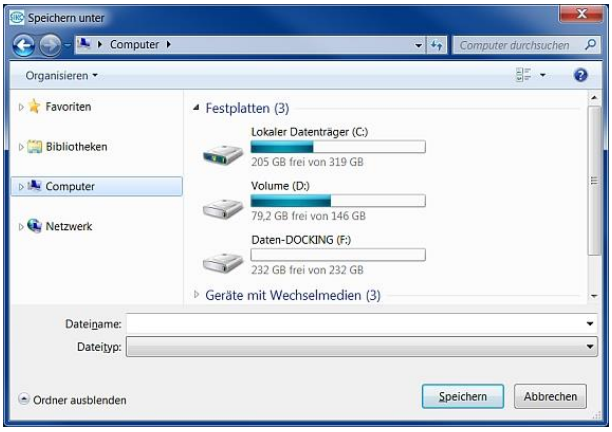
The [Motor parameter] menu item has corresponding sub-menu items if supported by the type of drive.

After the field name, the value currently stored in EEPROM is displayed if supported by the type of drive (otherwise “grayed out”) followed by an entry box or list field. Finish the entry via [**SET**] or selection of a list field. A changed value will be transmitted to the drive. If admissible, this value is output as current value while the drive stands still.

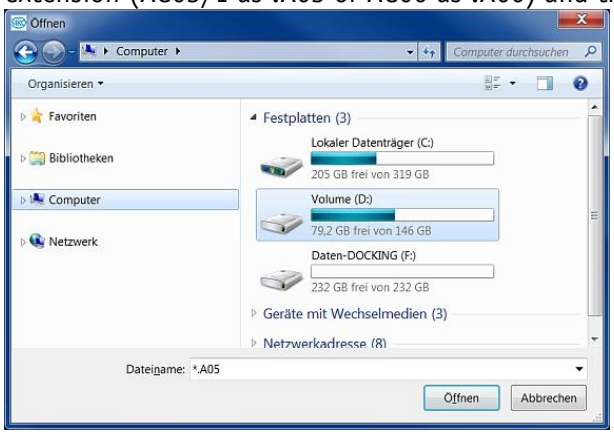
- [**Print**]
  By clicking on [**Print**], the *printer setup* of the computer’s operating system is called and the activated window can be printed.



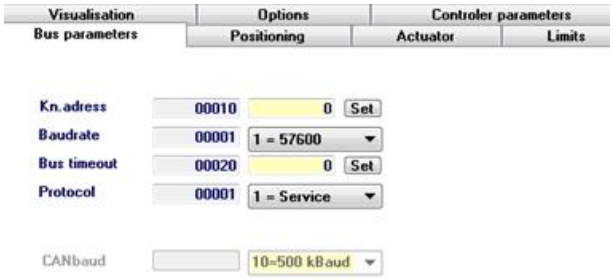
- [**Write motor params. into file**]
  By clicking on [**Write motor params. into file**] the *Save as* dialog of the computer's operating system is called and all motor parameters are saved in a file with the relevant file extension (AG03/1 as .A03 or AG06 as .A06). The file extension is .Axx if no drive connection has been established.



- [**Load motor params. from file**]
  By clicking on [**Load motor params. from file**] the *Open* dialog of the computer's operating system is called and all parameters are read from a file with the relevant file extension (AG03/1 as .A03 or AG06 as .A06) and transmitted to the connected drive.



5.1.2.1 Bus parameters



The Node address, Baud rate, and Bus timeout parameters are irrelevant to the service protocol and the connection with PTDL. Parameter changes are applied only after cold start or software reset.

Nd.address = Setting of the node address.

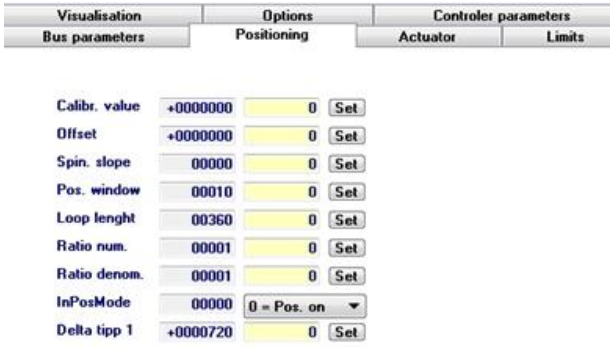
Baud rate = Setting of the baud rate.

Bus Timeout = Time monitoring in the standard protocol for cable break detection.

Protocol = Setting of the protocol. Parameter changes become active only after cold start or software reset.

CANbaud = Setting of the CAN baud rate.

5.1.2.2 Positioning



Calibration value = Changes to the calibration value are adopted for calculation of the position value only after calibration (see [Settings], [Calibrate drive].

Offset = Changes to the offset value.

Spindle pitch = Setting of the spindle pitch

Pos.window = Setting of the positioning window.

Loop length = Setting of the loop length.

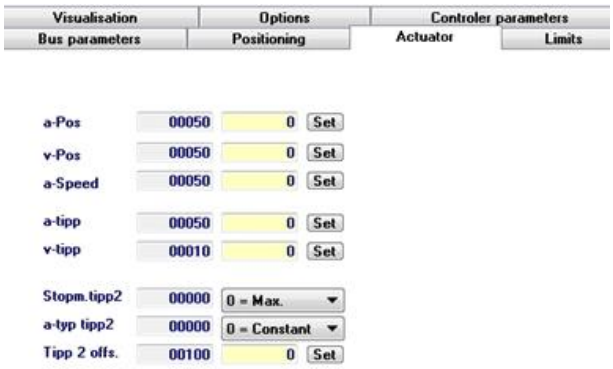
tr-numerator= Setting of the numerator transmission ratio.

tr-denominator= Setting of the denominator transmission ratio.

InPosMode = Setting of the drive behavior upon reaching the positioning window.

Delta Inch 1 = Setting of the relative traveling distance in Inching mode 1.

5.1.2.3 Actuator



a-Pos = acceleration in positioning mode: per cent values.

v-Pos = maximum velocity in positioning mode.

a-Speed = acceleration in speed mode: per cent values.

a-Inch = acceleration in inching mode 1/2: per cent values.

v-Inch = maximum velocity in inching mode 1/2.

Stopm. Inch2 = the stop behavior of inching mode 2

a-Inch Inch2 = acceleration in inching mode 2.

Inch 2 Offs = influence on inching speed in inching mode 2. Values in percentage of v-Inch parameter.

5.1.2.4 Limiting values

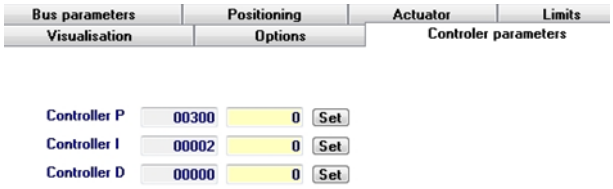
Limit 1 = Positioning mode: Limit 1

Limit 2 = Positioning mode: Limit 2

Cont.err.lim. = setting of the contouring error limit.

I max. (%) = Limitation of peak current. The values are indicated in per cent of nominal current.

5.1.2.5 Controller parameters

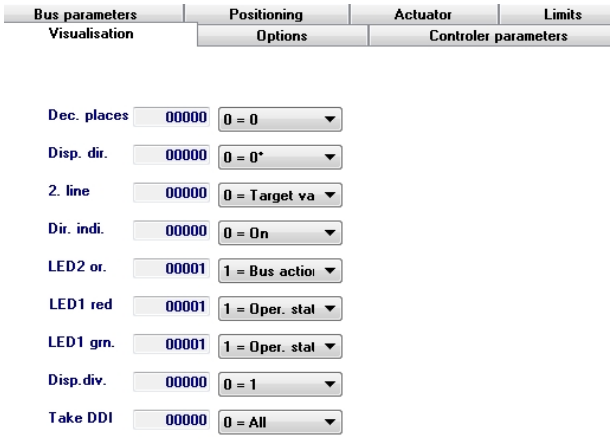


Controller P = P gain of controller

Controller I = I gain of controller

Controller D = D gain of controller

5.1.2.6 Visualization



Dec.places = Input of decimal places

Displ.or. = Display orientation

2nd line = parameter to be displayed in the 2nd line of the display.

Dir.ind. = setting of the direction indicators

LED2 or. = setting of the LED 2 orange function

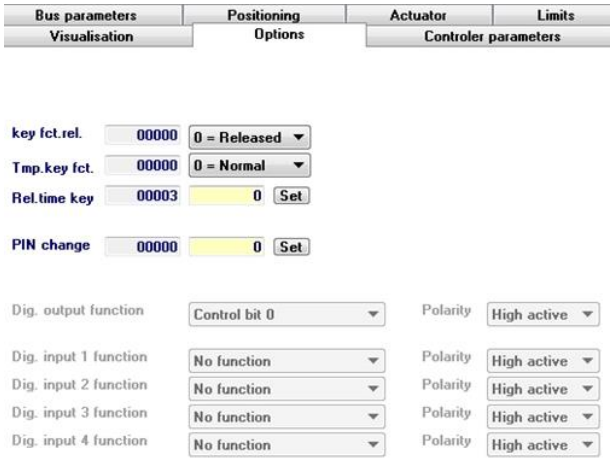
LED1 red = setting of the LED 1 red function

LED1 grn. = setting of the LED 1 green function

Displ.divisor = setting of the display divisor

DDI appl. = setting of the display divisor application

5.1.2.7 Options



Keyfct.en. = setting of access on inching mode 2 functions via keys

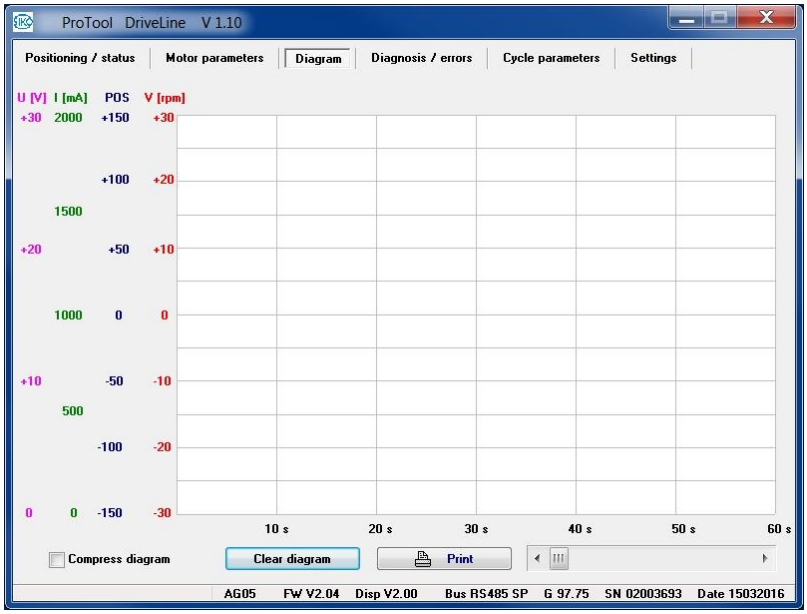
Tmp.keyfct. = temporary (not EEPROM) setting inversion of Keyfct.en.

En.tm.key = time in seconds of pressing asterisk key till menu access.

PIN chn. = PIN setting to be able to change parameters via keys and display.

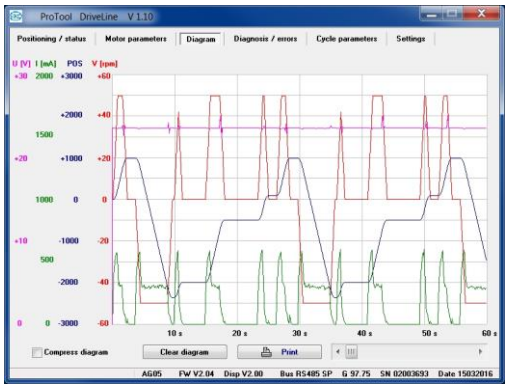
Dig. output function =	setting of the function of digital output	**Polarity =**	setting of switching logic
Dig. input 1 function =	setting of the function of digital input 1	**Polarity =**	setting of switching logic
Dig. input 2 function =	setting of the function of digital input 2	**Polarity =**	setting of switching logic
Dig. input 3 function =	setting of the function of digital input 3	**Polarity =**	setting of switching logic
Dig. input 4 function =	setting of the function of digital input 4	**Polarity =**	setting of switching logic

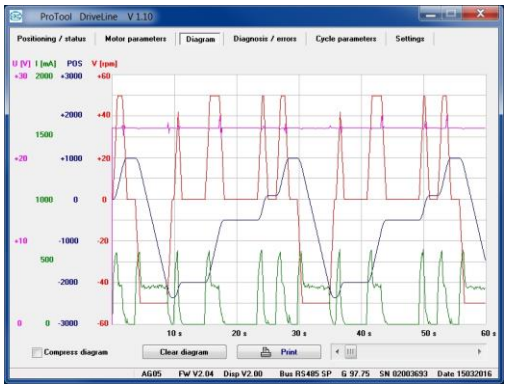
5.1.3 Diagrams



When the drive is moving, the **[Diagrams]** menu item records the respective motor voltage in V (magenta), motor current in mA (green), the position (blue) and speed (red) at intervals of 60 seconds. The maximum recording period is 15 minutes. With recordings longer than 60 seconds, the next period can be selected by clicking on the arrow [**<**] or [**>**] or moving the slider [**[]**].

By [**Compress diagram**], all periods are represented in one picture without loss of detailed information. The time scale is adjusted accordingly.

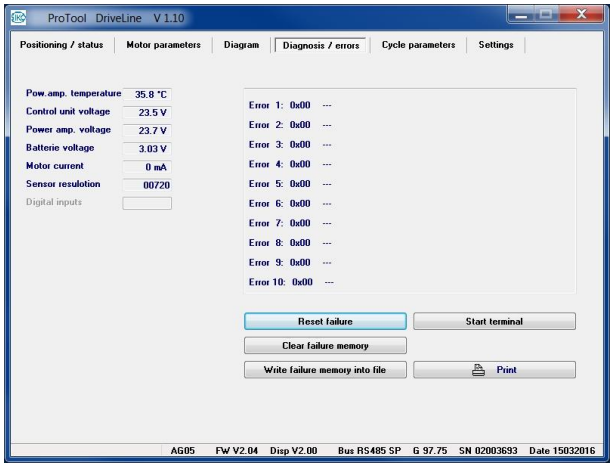




By clicking on [**Print**], the *printer setup* of the computer's operating system is called and the activated window (compressed or single period) can be printed.

By clicking on [**Delete diagram**], the complete record is deleted. Deleting is possible anytime.

5.1.4 [Diagnosis / Errors]



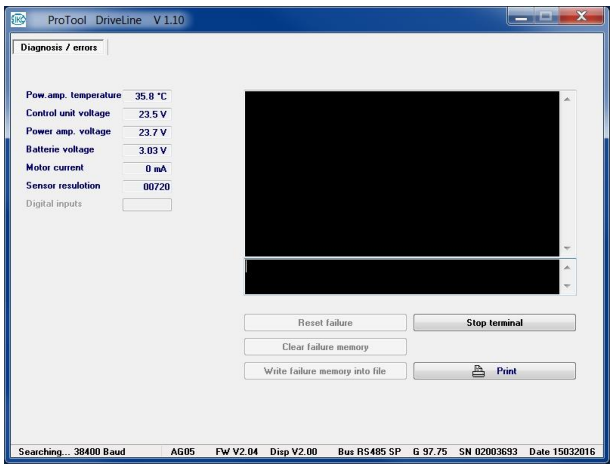
If supported by the drive type (otherwise grayed out), the **[Diagnosis / Errors]** menu item displays the **temperature of the output stage** in °C, the **voltage** of **control**, **output stage** and **battery** in V, the **motor current** in mA, and the **encoder resolution** in increments per revolution, the statuses of the **digital inputs** and the **error memory.**

By clicking on [**Reset error**], the error message can be acknowledged and the switch interlock released if the cause of the fault has been removed.

By clicking on [**Clear error memory**], the current error memory content can be deleted.

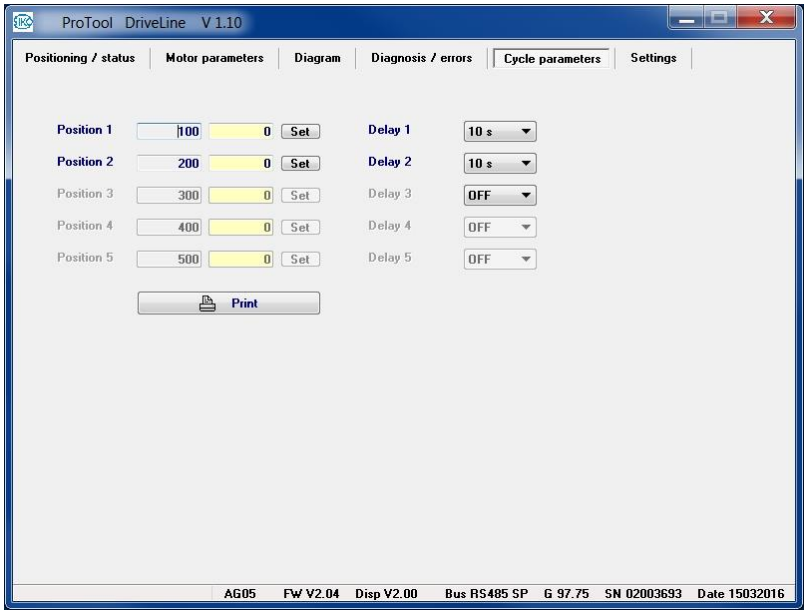
By clicking on [**Write error memory into file**], the *Save as* dialog of the computer's operating system is called and the drive's characteristics including type, firmware version, and the current error memory content is saved into a text file (.txt extension).

By clicking on [**Start terminal**], a *pause* is set in the PTDL and an ASCII code terminal opened. By clicking on [**Terminate terminal**], the terminal is closed and the *pause* canceled in the PTDL.



By clicking on [**Print**], the *Printer setup* of the computer's operating system is called and the activated window can be printed.

5.1.5 Cycle parameters

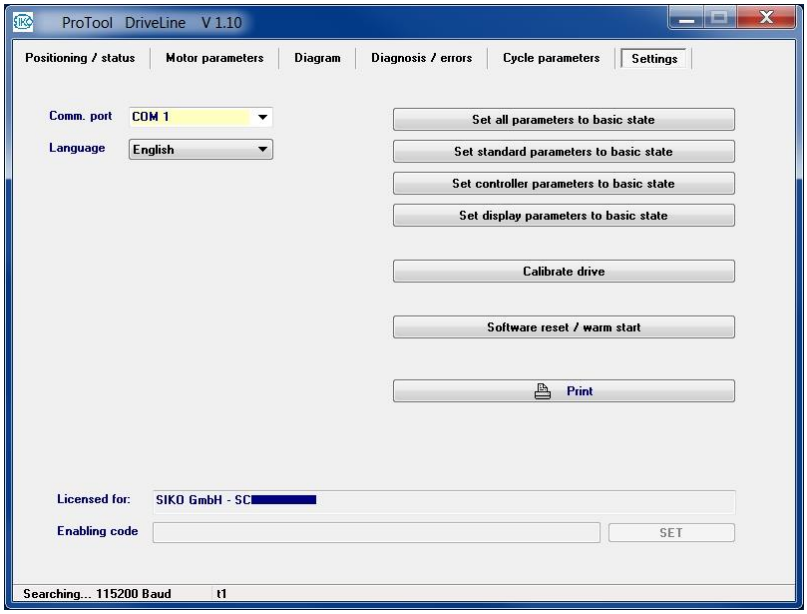


In the menu item [**Positioning / Status**] and 1st **Operating mode:** [**Positioning mode**]; 2nd **Cycle positioning** [**On / Off**] = On, a sequence of movements can be initiated based on the values set here.

⚠ WARNUNG	Actuator overload ➢ Check existing torque ➢ Tune cycle parameter and drive operating mode

For a minimum cycle, at least two value pairs from **Position** (target position) and **Delay** (stay after Inpos and drive-stands-still message) are required. A maximum of five value pairs is possible.

5.1.6 Settings



The functions of **Interface**, **Language**, **Licensed for** and **Activation code** of the [**Settings**] menu item have been described under “Getting started”.

By clicking on [**Reset all parameters to basic state**], complete reset to factory settings is triggered. By clicking on

- [Reset standard parameters to basic state]
- [Reset controller parameters to basic state]
- [Reset display parameters to basic state]

only the above parameters are set to factory settings.

By clicking on [**Calibrate drive**], the drive is set to a new actual value (see [Motor parameters], [Positioning], **Calibration value / Offset**).

By clicking on [**Software reset / Warm start**], a warm start is triggered in the drive and the application software initialized (e.g. changed COM setting is taken into account).

By clicking on [**Print**], the *printer setup* of the computer’s operating system is called and the active window can be printed.