Software Manual driveSTUDIO

ebmpapst

the engineer's choice

GREEN INTELLIGENCE

Contents

1 Introduction 5
1.1 Using this manual 5
1.1.1 Text conventions 5
1.1.2 Warning notices and notices 5
1.2 Safety information 6
1.2.1 General safety information 6
1.2.2 Applicable documents 6
1.2.3 Target group 6
2 Setting up and connecting 7
2.1 System requirements 7
2.2 driveSTUDIO download 7
2.3 Connecting the drive 8
3 Basic operation of the software 9
3.1 Starting driveSTUDIO 9
3.2 User interface 10
3.2.1 Menu bar 10
3.2.2 Modes 11
3.2.3 Status area 11
3.2.4 Working area 11
3.2.5 Display area 11
3.3 Establishing communication with the drive 12
3.4 [Demo] mode 12
3.5 [Parameter] mode 13
3.5.1 [Read] – [Write] – [Save EEPROM] 13
3.5.2 Tab: [Basic settings] 13
3.5.3 Tabs: [Position mode], [Velocity mode], and [Current mode] 14
3.5.4 Tab: [Parameters] 14
3.6 [Service] mode 15
3.7 Status area 16
3.8 Display area 17
3.8.1 Tab: [Monitor] 17
3.8.2 Tab: [Output window] 19

4 Error processing 20
5 Accessories 22

Disclaimer

Content of the software manual

This software manual should be viewed as part of the product. It is addressed towards all people that work with the product. ebm-papst assumes no liability for the up-to-dateness, correctness, completeness, or quality of the information provided. Liability claims towards ebm-papst which relate to damage of a material or non-material nature which was caused by use or non-use of the information presented or by the use of incorrect and incomplete information are categorically excluded insofar as there is no evidence of deliberate or grossly negligent culpability on the part of ebm-papst.

ebm-papst is always looking to advance and enhance its products. As a result, there may be deviations to the descriptions in this manual. Depending on the drive connected, the display of the software may differ from this manual.

Software version

This manual has been created with the software version driveSTUDIO v1.3.0.3.

Copyright

ebm-papst St. Georgen

GmbH & Co. KG

Hermann-Papst-Straße 1

78112 St. Georgen

Subject to change.

You can find the respective current version of this software manual in the download area of the info center on our homepage: www.ebmpapst.com

1 Introduction

1.1 Using this manual

All safety instructions listed are to be following when working with the configuration software, see chapter “General safety information” on page 6.

Read this software manual carefully before you start configuring the connected drives. Observe the warning notices in order to avoid risk of injury or product malfunction. You should also make sure to observe the operating instructions of the drive and the optional control electronics; if available, you can further relevant safety notices and information there.

1.1.1 Text conventions

In this software manual, the significance of a text is indicated by being presented in various ways:

Descriptive text is shown without a preceding symbol.

1. Actions are numbered.
2. Numbered actions must be carried out in the order specified.

- Text preceded by a dot (•) indicates a list introduced by a heading.

▶ Text preceded by an arrow (▶) indicates behavior in instructions intended to prevent a hazard or provide information. The symbol is also used to indicate individual actions.

Blue underlined text indicates a cross reference or link to a URL that can be clicked on in the PDF document.

Text in square brackets (e.g. [Save EEPROM]) indicates menus, commands, tabs, buttons, and all other text within the software.

1.1.2 Warning notices and notices

The following warning notices and notices relate to the use of the software. They are always shown before an instruction where carrying out the action could result in a hazard or material damage. In this documentation, the following **warning notices** are used:

DANGER

Hazard.

This notice indicates a hazard with a high level of risk that will directly result in death or severe bodily injury if it is not avoided.

▶ This arrow highlights a corresponding precautionary measure in order to prevent the hazard.

WARNING

Hazard.

This notice indicates a hazard with a moderate level of risk that may possibly result in death or severe bodily injury if it is not avoided.

▶ This arrow highlights a corresponding precautionary measure in order to prevent the hazard.

CAUTION

Hazard.

This notice indicates a hazard with a low level of risk that may result in light or moderate bodily injury and material damage if it is not avoided.

▶ This arrow highlights a corresponding precautionary measure in order to prevent the hazard.

Notices contain information that is particularly important at the relevant point or make the operating steps described easier. They are emphasized as follows:

NOTE

This note provides you with recommendations for use and helpful tips.

1.2 Safety information

This chapter contains general safety information on the configuration software and is intended to prevent personal injury or material damage. Also make sure to observe the safety information in the documentation for the connected drives and all other components.

1.2.1 General safety information

Always observe the following safety information, regardless of the specific operating conditions:

- Check the connections of the drives and other components (e.g. USB-RS485 adapters, cables) for possible damage at regular intervals. Replace damaged components with genuine parts immediately.
  Only use components approved by ebm-papst, see www.ebmpapst.com.
- De-energize the drives before connecting them to the computer.
- Consult the operating instructions of the drive for commissioning and service tasks. All work must be carried out by trained and authorized specialist personnel.
- The upper and lower limits (e.g. speed, current, temperature) specified in the technical data of the relevant operating instructions must be adhered to.

1.2.2 Applicable documents

This manual does not replace the detailed documentation for the connected drives. The relevant operating instructions and operating manuals for the drives, the optionally connected control electronics, and other components must therefore also be observed.

Ensure that you always use the most up-to-date version of the software and the most up-to-date manuals and other documentation. You can find them in the download area of the info center on our homepage: www.ebmpapst.com

1.2.3 Target group

All work with the driveSTUDIO software must be carried out exclusively by trained and authorized specialist personnel that are familiar with components used. In this manual, specialist personnel is understood to mean people that have received suitable instruction and that have read and understood this documentation and the applicable documents.

2 Setting up and connecting

2.1 System requirements

Requirements for the hardware:	Hard disk space < 2 MB
Supported operating systems:	Windows 7 and higher (with Microsoft .NET Framework 4.6.1)
Other:	Device driver for the USB-RS485 adapter

NOTE

The driver installation for the USB-RS485 adapter is normally carried out automatically the first time the device is connected from Windows 7 and above.

If this is not the case, you can download (www.cti-shop.com/treiber/) and install the device driver for the USB-RS485 adapter.

NOTE

Microsoft .NET Framework from version 4.6.1 and above is required to use the configuration software.

This version is already installed on the operating system Windows 10. If necessary, it must also be installed in the case of older Windows versions that are also supported:
www.microsoft.com/de-de/search?q=dotnet+framework

▶ For installation, follow the Windows instructions, including the security prompt.

2.2 driveSTUDIO download

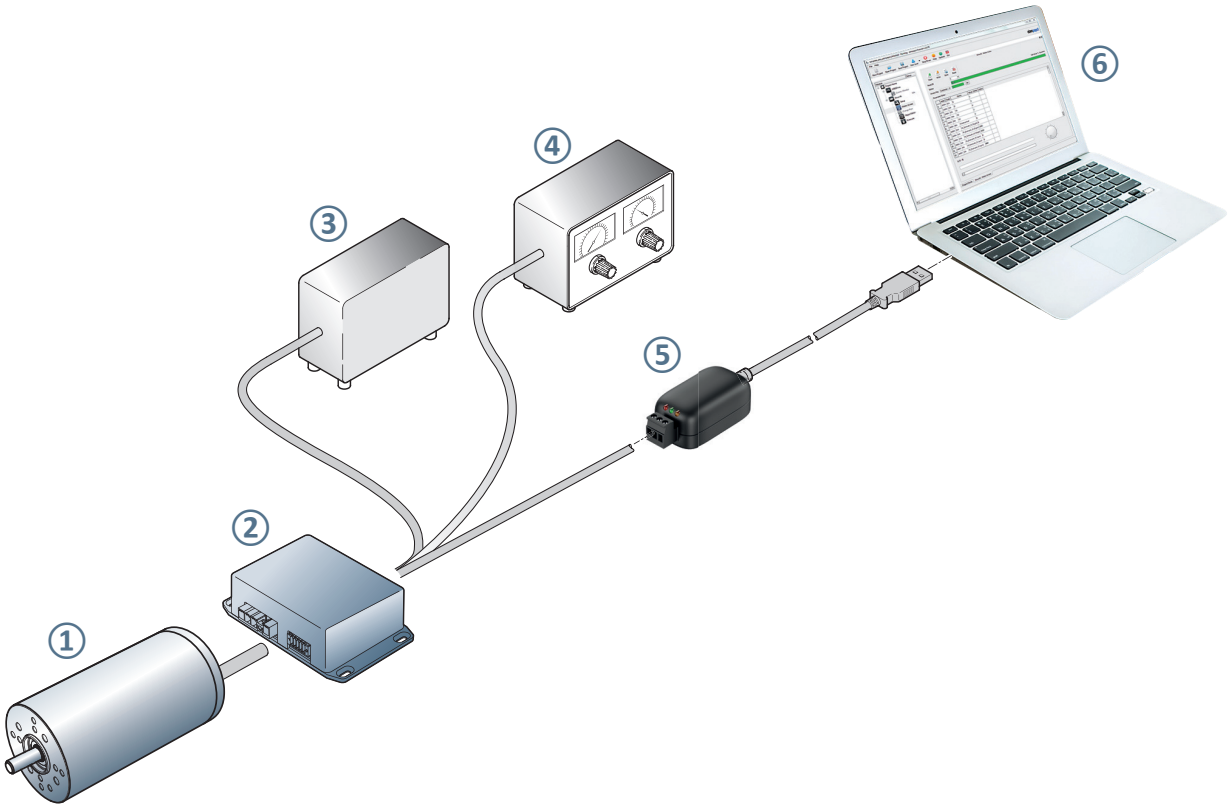
1. Download the latest version of the driveSTUDIO software in the download area of the info center on our homepage www.ebmpapst.com.
2. Unpack the downloaded zip archive in the desired directory.
3. Open the file **“DriveStudio.exe”**.
4. The driveSTUDIO software will be started.

NOTE

No administrator rights are required to run the software and can it be started immediately after unpacking the zip archive.

2.3 Connecting the drive

Connect the components as shown in the figure:



1	Drive	4	Power supply
2	**Optional:** control electronics	5	USB-RS485 adapter
3	Control	6	Computer with driveSTUDIO

DANGER

Danger to life due to electric shock when touching live parts

Mechanical installation should be performed first before electrical hookup.

- ▶ Work must only be carried out by a qualified electrician.
- ▶ Make sure that the cables are de-energized.
- ▶ Secure against renewed switch-on of the operating voltage.
- ▶ Never work on live parts.
- ▶ When replacing the interchangeable power supply, always observe the precise specifications.

3 Basic operation of the software

The driveSTUDIO software enables visualization and parametrization of various ebm-papst drives and their optional control electronics.

CAUTION

Hazard due to incorrect specifications

Values outside of the manufacturer's tolerance specifications may result in damage to the drive or other components. Furthermore, devices and machines working in the network may also be damaged as a result of the possible malfunction.

- ▶ Observe the specifications in the operating instructions for the relevant component.

3.1 Starting driveSTUDIO

1. Once you have connected the components as described in chapter "2.3 Connecting the drive" on page 8, open the file **"DriveStudio.exe"**.
2. The software is started and the welcome window is shown.

① Select language

② Start driveSTUDIO (in selected mode)

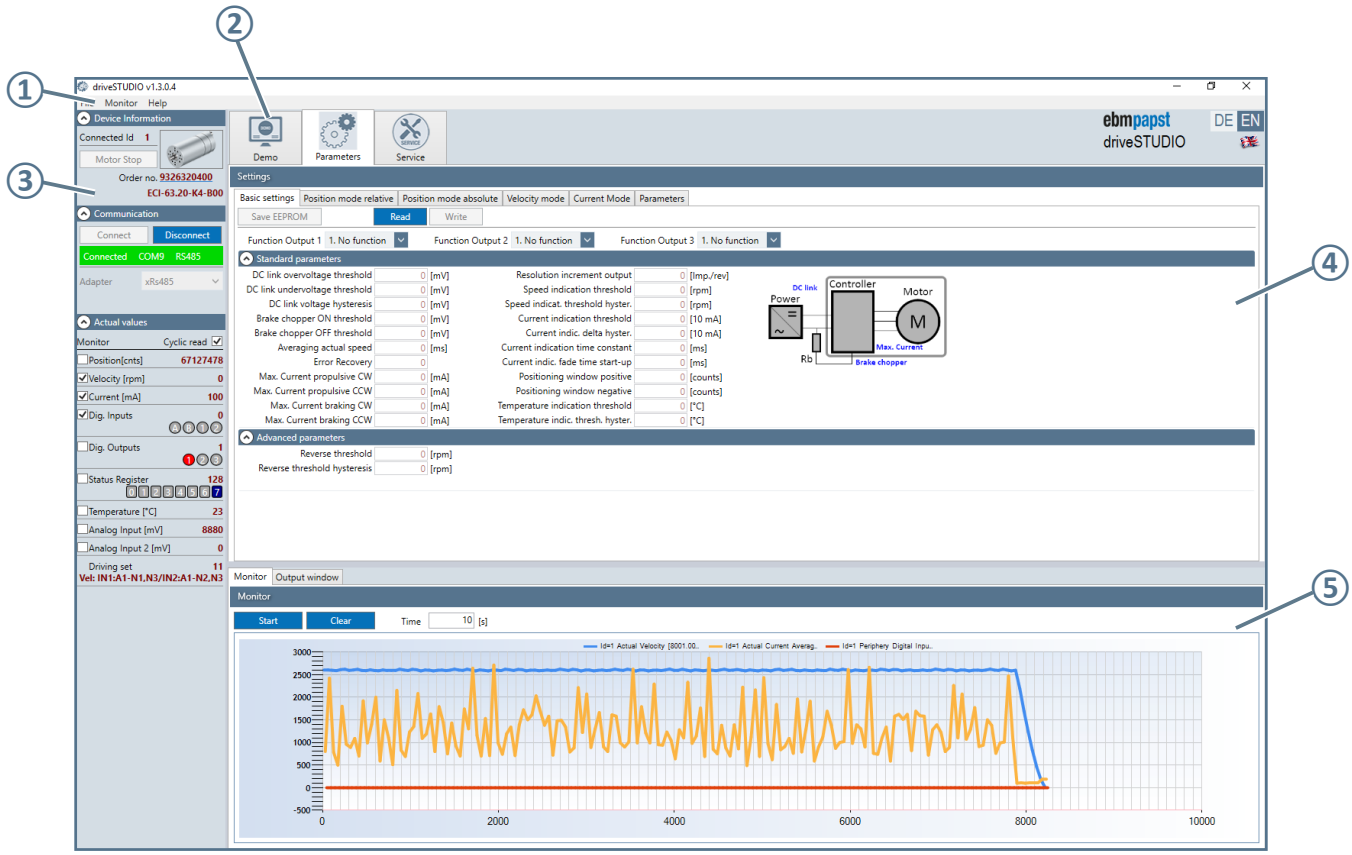
③ Show/do not show welcome window on startup

NOTE

- ▶ If you have unchecked the box [Show Welcome window on startup], you can reactivate this again by selecting [File] > [Settings...] > [Program] in the menu bar and checking [Show Welcome window on startup] again. This setting depends on the version and is saved separately in the system.

3.2 User interface

The driveSTUDIO user interface is divided into the following areas:



1 Menu bar (see chapter "3.2.1 Menu bar")

2 Modes (see chapter "3.2.2 Modes")

3 Status area (see chapter "3.2.3 Status area")

4 Working area (see chapter "3.2.4 Working area")

5 Display area (see chapter "3.2.5 Display area")

3.2.1 Menu bar

The following menus are available in the menu bar:

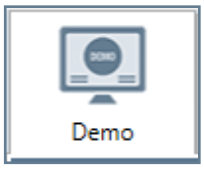
[File]	
[Open project]	An Explorer window is opened to enable you to select a previously saved project (proj file).
[Save project]	Saves the current parameter specifications from the tab of the same name by overwriting the previous file (proj file).
[Project save as...]	An Explorer window is opened to enable you to save the current parameter specifications as a proj file. File path and name can be chosen freely.
[Settings...]	**Only active when the connection to the drive has been lost!** Specification of the device interface (communication) to be used and whether the welcome window is shown/not shown.
[Exit]	Closes the software without saving.

[Monitor]	
[Export to chart-file (.chart)...]	Export of the current curve progression as a chart file (e.g. to be displayed again later in driveSTUDIO). File path and name can be chosen freely.
[Export to text-file (.txt)...]	Export of the current curve progression as a txt file (e.g. to be taken over in another program). File path and name can be chosen freely.
[Copy chart to clipboard]	Copies the current curve progression to the clipboard (e.g. to be inserted in a graphics program).
[Save chart as image-file...]	Saves the current curve progression as a JPEG file. File path and name can be chosen freely.
[Import chart-file (.chart)..].	Import of a curve progression (chart file) that is reproduced in the display area in the [Monitor] tab.

[Help]	
[Login...]	Opens the dialog box to allow you to enter a password for the higher user level.
[About...]	Opens the dialog with information on the software version and the manufacturer.

3.2.2 Modes

The following modes are available to you:



The current temperature, speed, and the current draw are displayed in the [Demo] mode. Manual actuation of the drive is possible via the service interface.

All [Parameters] can be adapted in this mode. You can find a detailed description of the individual parameters in the document “Parameters & Reference Sets” (item no. HAB 100173389 -000).

The [Service] mode enables you to reset the drive to factory settings or carry out a firmware update, for example.

3.2.3 Status area

In the status area, the following information is provided in three groups that can be expanded and hidden:

Group	
[Device Information]	In addition to the device ID, displays further device-specific information for the connected drive, such as the order number.
[Communication]	You can [Verbinden] or [Trennen] the drive (if properly connected, as described in chapter “2.3 Connecting the drive” on page 8) here. Information on which interface the drive is connected to and which adapter is being used is displayed.
[Actual values]	The current status values for the drive are shown here. The check boxes are used to determine which values are charted in the [Monitor] display area.

3.2.4 Working area

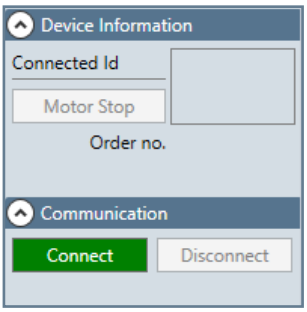
The working area shows the relevant selected mode with tabs and groups that can be expanded/hidden.

3.2.5 Display area

The display area includes two tabs:

Tab	
[Monitor]	Charts the measured values from the drive graphically. Under [Aktual values], up to three values can be selected for this purpose using the check boxes.
[Output window]	Information, errors, and warnings are listed here with a time stamp. Communication between the software and drive is documented.

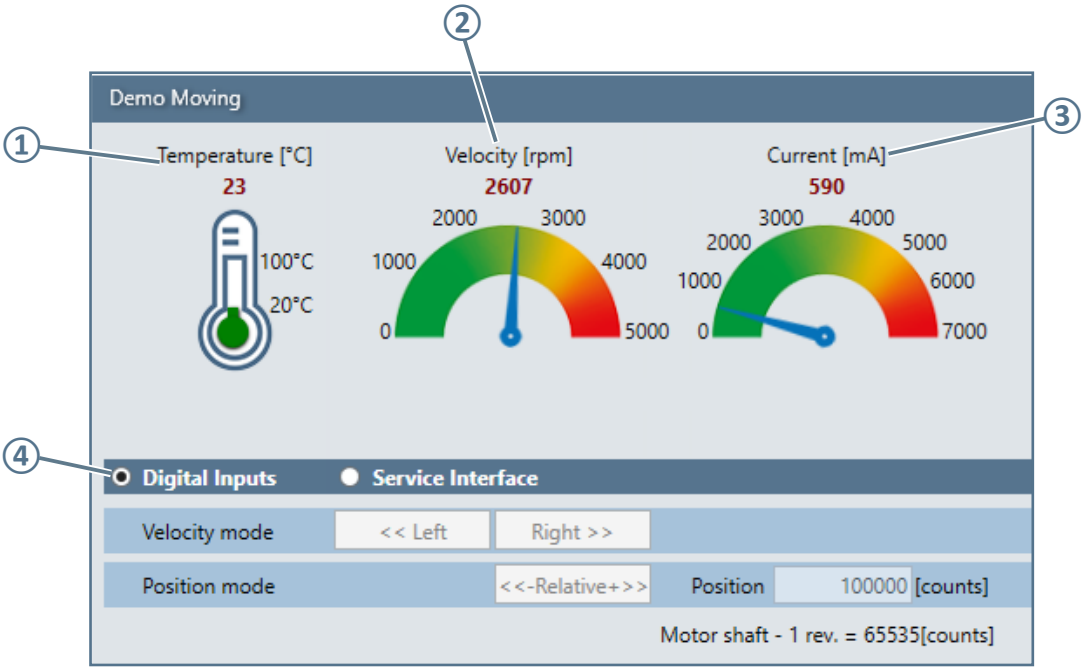
3.3 Establishing communication with the drive



1. Ensure that the drive has been connected and supplied with power, as described in chapter "2.3 Connecting the drive" on page 8.
2. Open the software driveSTUDIO.
3. In the status area, click on [Connect] in the [Communication] group.
   If an error message appears here, the interface has not been defined correctly, for example. You can find help concerning this in the chapter "4 Error processing" on page 20.
4. The current values for the drive are displayed in the status area.

3.4 [Demo] mode

In the [Demo] mode, you can find information concerning the current temperature, speed, and current draw for the connected drive. You have the option to actuate the drive via [Digital Inputs] or manually control it via the [Service Interface] here.

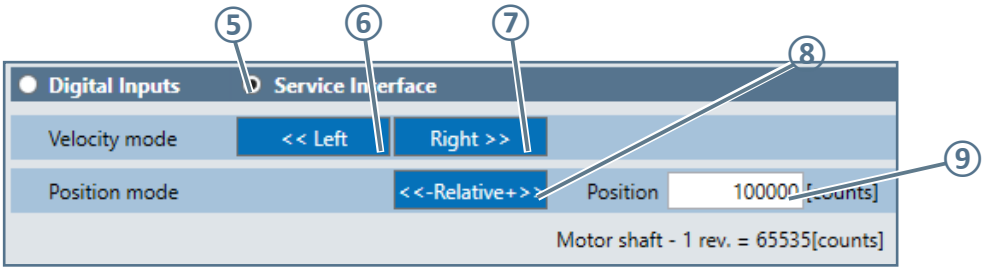


1 Temperature display

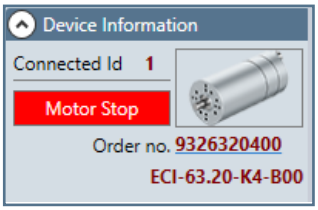
2 Speed display

3 Torque-forming current

4 Actuation via [Digital Inputs]

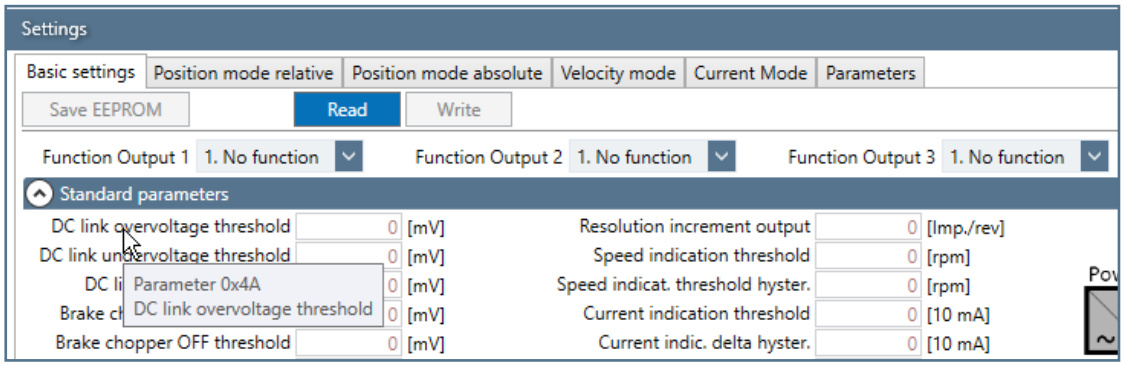


If the actuation via [Service Interface] is active, the button [Motor Stop] becomes active in the status area in the [Device Information] group.



3.5 [Parameter] mode

The [Parameter] mode includes various tabs that you can use to configure your drive as desired. Tool tips are shown when you move over individual parameters with the mouse cursor.



3.5.1 [Read] – [Write] – [Save EEPROM]

In order to read out and modify parameters in the tabs and then to save them in the drive, proceed as follows:

1. In the working area, click on [Read]; the values previously saved in the drive are displayed.
2. Modify the parameters as desired. Modified parameters are highlighted in yellow.
   You can find a detailed description of the individual parameters in the document "Parameters & Reference Sets" (item no. HAB 100173389 -000).
3. In order to be able to take over and test the parameters in the drive, click on [Write].
   The parameters are taken over in the drive.
4. The parameters in the drive are permanently overwritten only once you have clicked on [Save EEPROM].

NOTE

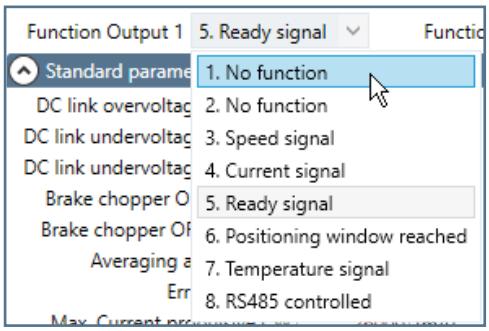
The [Read], [Write], and [Save EEPROM] functions have to be performed **separately for each tab**.

3.5.2 Tab: [Basic settings]

The basic configuration of the drive is set here and the digital outputs are defined. You can find a detailed description of the parameters in the document "Parameters & Reference Sets" (item no. HAB 100173389 -000).

[Function Output 1 - 3]

The digital outputs offer the following options:

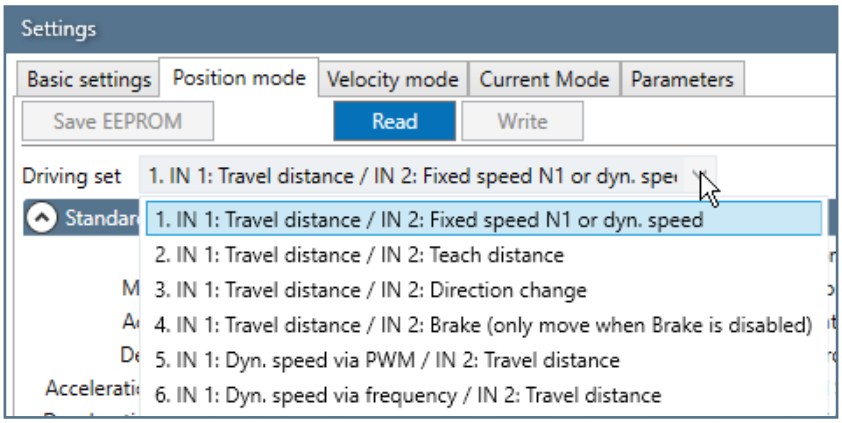


- [1. No function]
- [2. No function]
- [3. Speed signal]
- [4. Current signal]
- [5. Ready signal]
- [6. Positioning window reached]
- [7. Temperature signal]
- [8. RS485 controlled]

3.5.3 Tabs: [Position mode], [Velocity mode], and [Current mode]

Depending on the application, you can either control the regulation of the drive using [Position mode], [Velocity mode], or [Current mode].

The behaviour of the drive can be defined by selecting the reference set. You can find a detailed description of the parameters and reference sets in the document "Parameters & Reference Sets" (item no. HAB 100173389 -000).



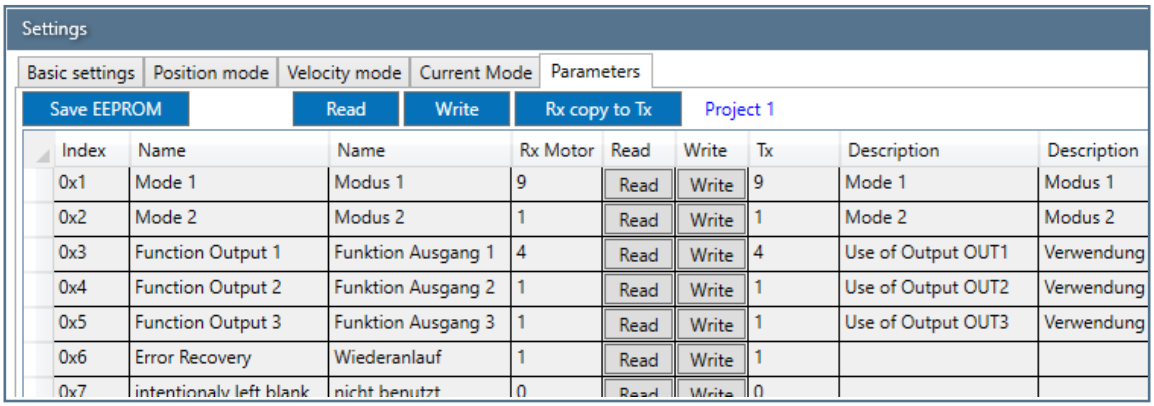
3.5.4 Tab: [Parameters]

In the [Parameters] tab, all parameters available for the drive are listed. **Individual parameters** can be read out and written again using the buttons [Read] and [Write] in the rows.

The **[Rx] column shows the values saved in the drive**; **the values to be written are entered in column [Tx]**.

If you would like to modify **multiple parameters** using the [Parameters] tab, proceed as follows:

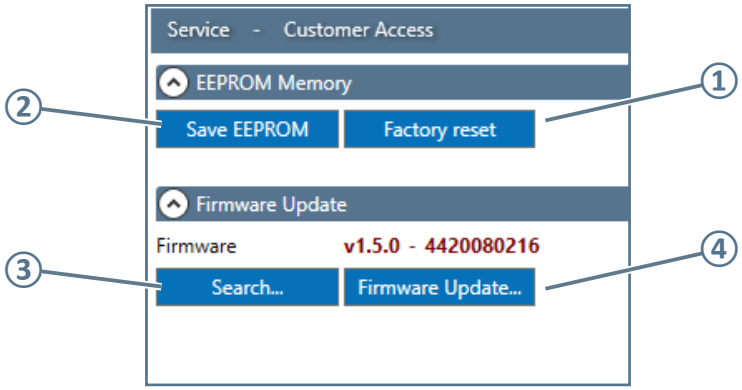
1. [Read] out the values saved in the drive; column [Rx] is filled.
2. **Transfer the values with [Rx copy to Tx]**; column [Tx] is filled.
3. Modify the values in column [Tx] and transfer them to the drive using the function [Write].
4. Finally, run the function [Save EEPROM].



Index	Name	Name	Rx Motor	Read	Write	Tx	Description	Description
0x1	Mode 1	Modus 1	9	Read	Write	9	Mode 1	Modus 1
0x2	Mode 2	Modus 2	1	Read	Write	1	Mode 2	Modus 2
0x3	Function Output 1	Funktion Ausgang 1	4	Read	Write	4	Use of Output OUT1	Verwendung
0x4	Function Output 2	Funktion Ausgang 2	1	Read	Write	1	Use of Output OUT2	Verwendung
0x5	Function Output 3	Funktion Ausgang 3	1	Read	Write	1	Use of Output OUT3	Verwendung
0x6	Error Recovery	Wiederanlauf	1	Read	Write	1		
0x7	intentionaly left blank	nicht benutzt	0	Read	Write	0		

3.6 [Service] mode

The [Service] mode offers the option to do a [Factory reset] and carry out a [Firmware Update].



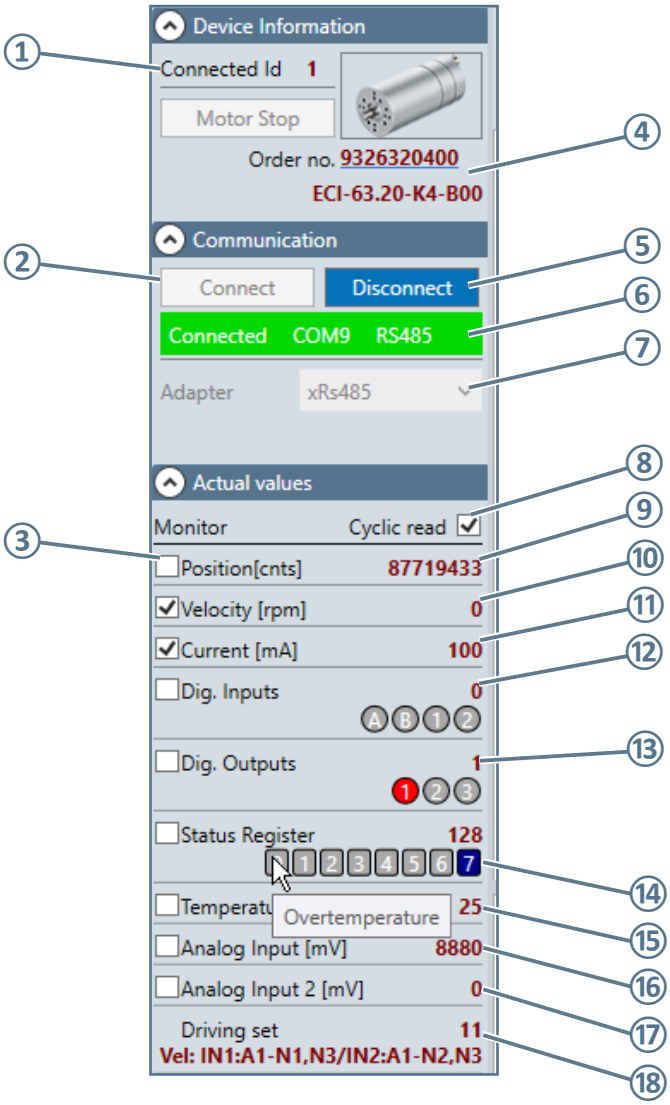
1. Write factory settings in the drive
2. Saves parameters in the drive
3. Opens an Explorer window to allow you to select a firmware update file (.bin)
4. Opens a dialog to start the firmware update

NOTE

When a [Factory reset] is performed the internal memory of the drive is set to factory settings, all changes made to the parameters made in the interim are lost.

3.7 Status area

The status area is made up of three expandable groups [Device Information], [Communication], and [Actual values].
Tool tips are shown when you move e.g. over the symbols of the [Status Register] with the mouse cursor.



1	[Connected Id] = drive communication address	10	Display of current speed
2	Establishes communication with the drive	11	Display of torque-forming current
3	When checked = value is shown graphically with [Monitor]	12	Display of digital input signals
4	Display of order number & item number	13	Display of digital output signals
5	Interrupts communication with the drive	14	Display of status register
6	Display of status and interface and adapter used	15	Display of current temperature
7	Adapter selection field	16	Display of current for analog input
8	Checked = values are updated (approx. every second) Not checked = values are not updated	17	Display of current for analog input 2
9	Counts the increments when the drive turns	18	Display of reference set (for description see the document "Parameters & Reference Sets" (item no. HAB 100173389 -000))

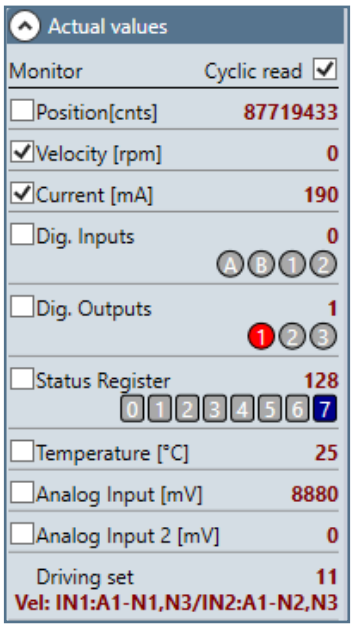
3.8 Display area

The display area includes two tabs [Monitor] and [Output window].

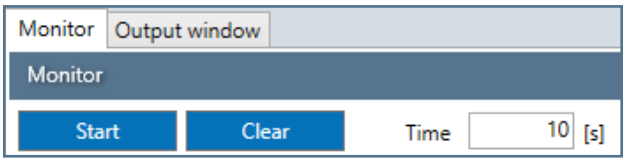
3.8.1 Tab: [Monitor]

To chart a new curve progression (with a maximum of three values), proceed at follows:

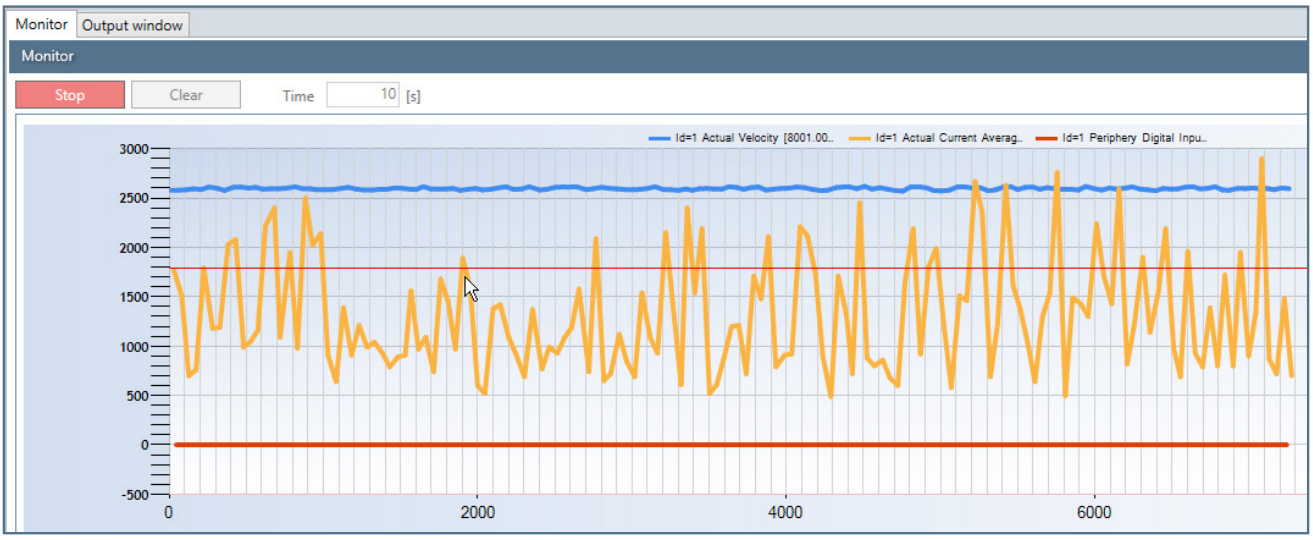
1. Define the values that are to be shown in the curve progression (maximum three values) under [Actual values] by checking the relevant value in the check box.
   Example: [Velocity], [Current], [Dig. Inputs]



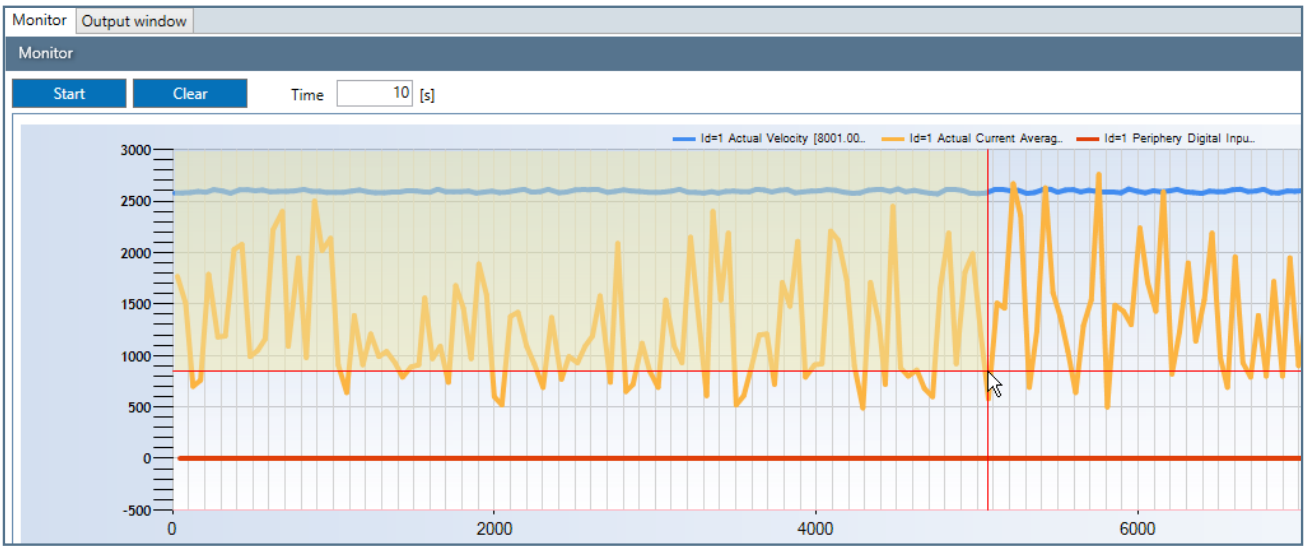
2. [Start] the charting of the curve progression. The [Time] value defines the scaling of the curve progression.



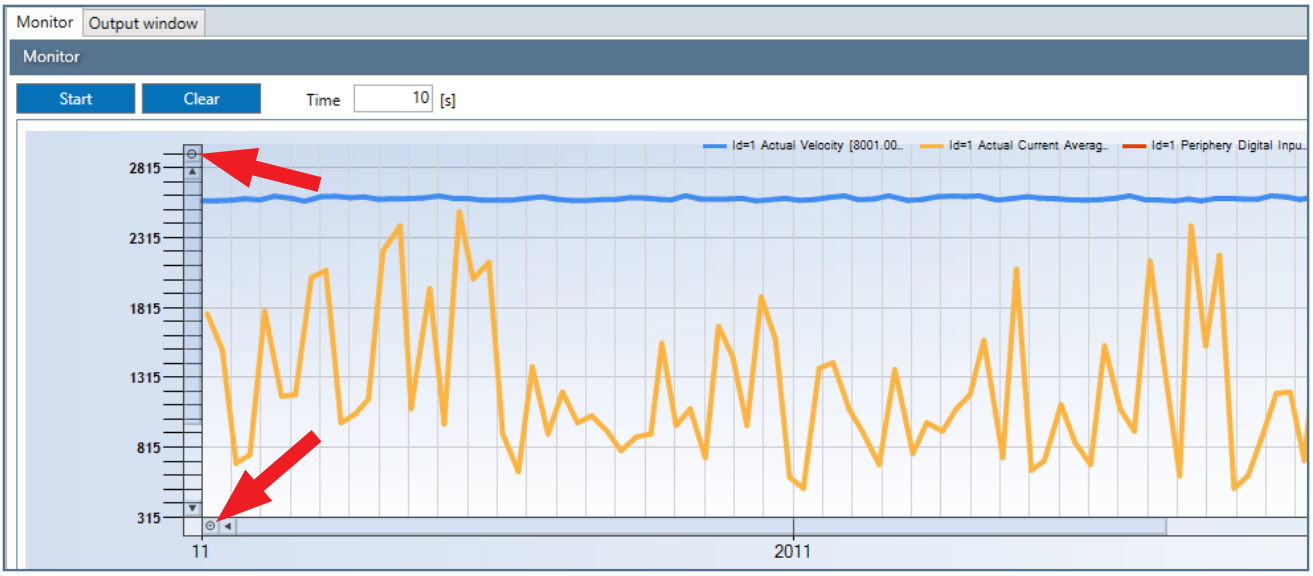
3. The curve progression is charted. To stop, click on [Stop].



4. If you would like to expand a certain area, press and hold the left mouse button to drag a rectangle over the desired area in the curve progression.



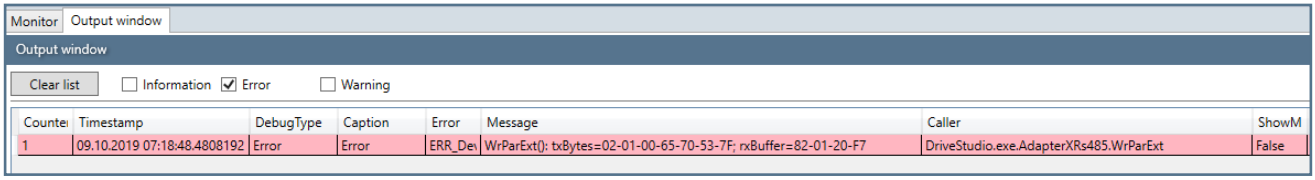
5. To zoom out of the image section, click on the small circles in the scale.



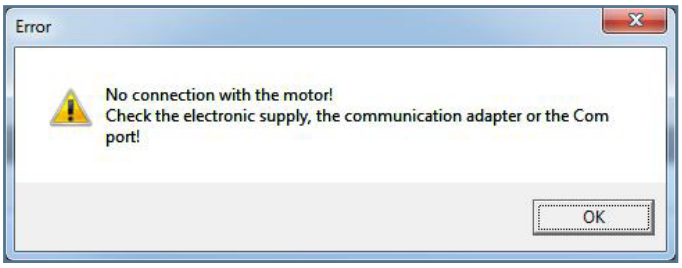
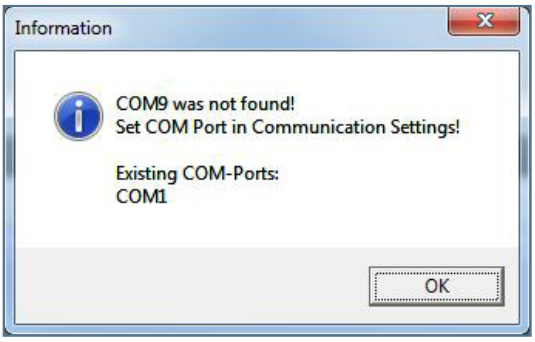
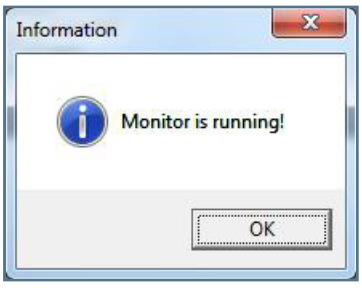
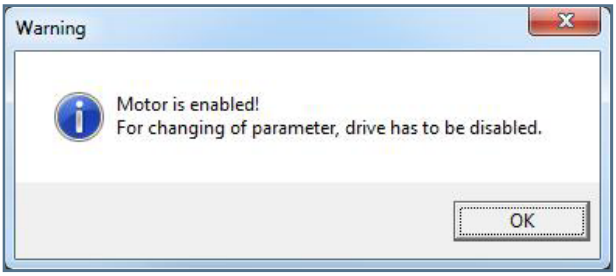
6. Click on [Clear] to delete the curve progression. You can save the curve progression in various formats beforehand, see chapter “3.2.1 Menu bar” on page 10.

3.8.2 Tab: [Output window]

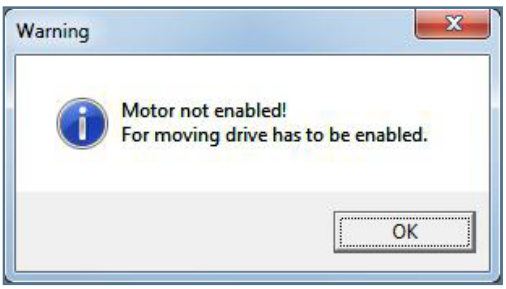
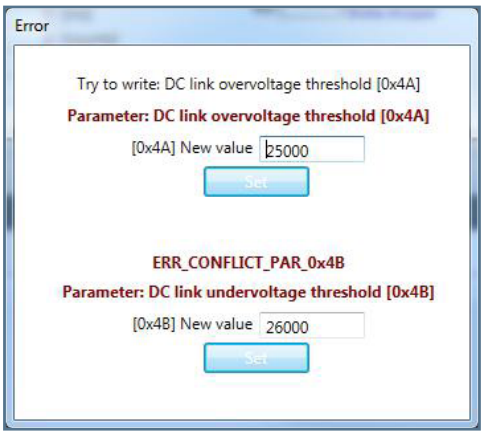
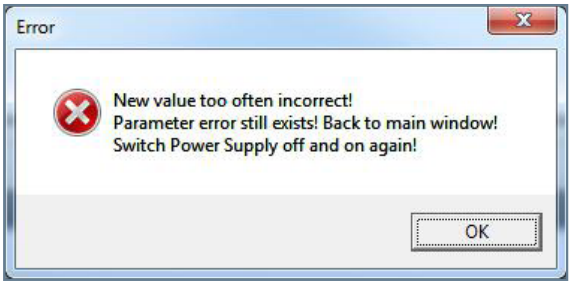
In the [Output window] tab, communication (via the USB-RS485 adapter) between the drive and software is documented. You can determine which messages are recorded by placing a check mark in the [Information], [Error], or [Warning] check boxes. Click on [Clear list] to delete the progression.



4 Error processing

Error message	Cause	Solution
	• No power supply	▸ Check line voltage and restore power supply
	• Incorrect interface specification	▸ Menu bar [File] > [Settings...] > [Communication] > [Connection String] > select different COM port
	• In the [Monitor] tab, the charting has been started; the [Read] function has been run	▸ [Monitor] tab > [Stop] charting
	• [Write] function has been run even though input A or B is active	▸ Deactivate inputs

Error processing

Error message	Cause	Solution
	• Actuation via [Service Interface] is active and the function [Left] or [Right] has been run even though input A or B is not active	▸ Activate inputs
	• Both parameters have been written incorrectly; prompt to modify the values	▸ Resolve parameter conflict
	• If 3 attempts have been made to [Write] incorrect parameters, the dialog appears	▸ Incorrectly written parameters are deleted

5 Accessories

Designation	Order number	Description
USB-RS485 adapter	914 0000 403	USB interface adapter
driveSTUDIO Parameters & Reference Sets	HAB 100173389 -000	Detailed description of all parameters and reference sets

Notes

ITEM_number · ÄND_NR· 2019-10-10

ebmpapst

the engineer's choice

ebm-papst St. Georgen GmbH & Co. KG
Hauptverwaltung

Hermann-Papst-Straße 1
78112 St. Georgen
GERMANY
Phone +49 7724 81-0
Fax +49 7724 81-1309
info2@de.ebmpapst.com

ebm-papst St. Georgen GmbH & Co. KG
Werk 7 Lauf

Industriestraße 9
91207 Lauf a. d. Pegnitz
GERMANY
Phone +49 9123 945-0
Fax +49 9123 945-145
info4@de.ebmpapst.com