



## Operating Instructions



Electronic Motor  
**DRC-....-DAC**  
Direct AS-Interface Communication





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## 1 General information

### 1.1 How to use this documentation

The documentation is an integral part of the product and contains important information on operation and service. The documentation is written for all employees who assemble, install, start up, and service this product.

The documentation must be accessible and legible. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

### 1.2 Structure of the safety notes

#### 1.2.1 Meaning of signal words

The following table shows the graduation and meaning of the signal words for safety notes, warnings regarding potential risks of damage to property, and other notes.

| Signal word        | Meaning   | Consequences if disregarded                   |
|--------------------|---|---|
| <b>▲ DANGER!</b>   | Imminent hazard   | Severe or fatal injuries                      |
| <b>▲ WARNING!</b>  | Possible dangerous situation  | Severe or fatal injuries                      |
| <b>▲ CAUTION!</b>  | Possible dangerous situation  | Minor injuries                                |
| <b>NOTICE</b>      | Possible damage to property   | Damage to the drive system or its environment |
| <b>INFORMATION</b> | Useful information or tip: Simplifies handling of the drive system. |   |

#### 1.2.2 Design of the section-related safety notes

Section-related safety notes do not apply to a specific action, but to several actions pertaining to one subject. The symbols used either indicate a general hazard or a specific hazard.

This is the formal structure of a safety note for a specific section:



#### **▲ SIGNAL WORD!**

Type and source of danger.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the danger.

#### 1.2.3 Design of the embedded safety notes

Embedded safety notes are directly integrated into the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

- **▲ SIGNAL WORD!** Type and source of hazard.  
Possible consequence(s) if disregarded.  
– Measure(s) to prevent the hazard.



### **1.3 Rights to claim under warranty**

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the documentation. Therefore read the documentation before you start working with the unit.

### **1.4 Exclusion of liability**

You must comply with the information contained in this documentation to ensure safe operation and to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

### **1.5 Copyright**

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Unauthorized duplication, modification, distribution or any other use of the whole or any part of this documentation is strictly prohibited.

### **1.6 Product names and trademarks**

All product names in this documentation are trademarks or registered trademarks of their respective titleholders.



## 2 Safety notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to. Ensure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, or if you require further information, please contact SEW-EURODRIVE.

### 2.1 General information

Never install damaged products or take them into operation. Submit a complaint to the shipping company immediately in the event of damage.

During operation, DRC drive units can have live, bare and movable or rotating parts as well as hot surfaces, depending on their degree of protection.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property.

Refer to the documentation for additional information.

### 2.2 Target group

**Only qualified electricians** are authorized to install, start up or service the units or correct unit faults (observing IEC 60364 or CENELEC HD 384 or DIN VDE 0100 and IEC 60664 or DIN VDE 0110 as well as national accident prevention guidelines).

Qualified electricians in the context of these basic safety notes are all persons familiar with installation, assembly, startup and operation of the product who possess the necessary qualifications.

All persons involved in any other work, such as transportation, storage, operation and disposal, must be trained appropriately.





## 2.3 Designated use

DRC drive units are components intended for installation in electrical systems or machines.

In case of installation in machines, taking the DRC drive units into operation (i.e. start of designated operation) is prohibited until it is determined that the machine meets the requirements stipulated in EC Directive 2006/42/EC (Machinery Directive).

Startup (i.e. the start of designated use) is only permitted under observance of EMC directive 2004/108/EC (EMC Directive).

DRC drive units comply with the regulations of the Low Voltage Directive 2006/95/EC. The standards given in the declaration of conformity are applied to the DRC drive units.

You must observe the technical data and information on the connection requirements as provided on the nameplate and in the documentation.

### 2.3.1 Safety functions

DRC drive units may not perform safety functions unless these functions are described and expressly permitted.

### 2.3.2 Lifting applications

DRC drive units are not designed for use as safety devices in lifting applications.

## 2.4 Other applicable documentation

Note also the following documentation:

- "DRC Gearmotors" catalog
- Operating instructions for the gear unit (only for DRC gearmotors)

You can download or order these publications on the Internet (<http://www.sew-eurodrive.com> under the heading "Documentation").

## 2.5 Transportation, storage

Observe the notes on transportation, storage and proper handling. Comply with the requirements for climatic conditions stated in chapter "Technical Data". Tighten installed eyebolts securely. They are only designed for the weight of the DRC motor without gear unit. Mounted gear units have separate suspension attachments, which must be used according to the gear unit operating instructions when lifting the DRC gearmotor. Do not attach any additional loads. Use suitable, sufficiently rated handling equipment (e.g. rope guides) if required.



## 2.6 Installation

The units must be installed and cooled according to the regulations and specifications in the corresponding documentation.

Protect the DRC drive units from improper strain.

The following applications are prohibited unless explicitly permitted:

- Use in potentially explosive atmospheres.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc.
- Use in non-stationary applications that are subject to mechanical vibration and shock loads as stated in the documentation for DRC drive units.

Important: DRC drive units and corresponding mount-on parts must not protrude into footways.

## 2.7 Electrical connection

Working on live parts of DRC drive units is not permitted.

The drive is operated as a generator due to the kinetic energy of the system/machine. Secure the output shaft against rotation before opening the wiring compartment.

Electrical installation must be carried out in compliance with pertinent regulations (e.g. cable cross sections, fusing, protective conductor connection). For any additional information, refer to the applicable documentation.

You find notes on EMC-compliant installation, such as shielding, grounding, arrangement of filters and routing of lines, in the documentation of the DRC drive units. The manufacturer of the system or machine is responsible for maintaining the limits established by EMC legislation.

Protective measures and protection devices must comply with the regulations in force (e.g. EN 60204-1 or EN 61800-5-1).

## 2.8 Safe disconnection

DRC drive units meet all requirements for safe disconnection of power and electronics connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection to ensure reliable isolation.



## 2.9 Operation

Systems with integrated DRC drive units must be equipped with additional monitoring and protection devices according to the applicable safety guidelines, such as the law governing technical equipment, accident prevention regulations, etc. Additional protective measures may be necessary for applications with increased potential risk. Changes to DRC drive units using the operating software are permitted.



### **⚠ WARNING**

Do not touch live components and power connections immediately after separation of the DRC drive units from the supply voltage because some capacitors might still be charged.

Severe or fatal injuries.

- Wait at least for 5 minutes after the supply voltage has been switched off.

The connection boxes must be closed and screwed on before the supply voltages are connected to DRC drive units.

The unit may still be live and connected to the power supply even if the operation LEDs and other display elements are no longer illuminated.

Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive re-starting automatically. If this is not permitted for the driven machine for safety reasons, disconnect the unit from the supply system before correcting the fault.

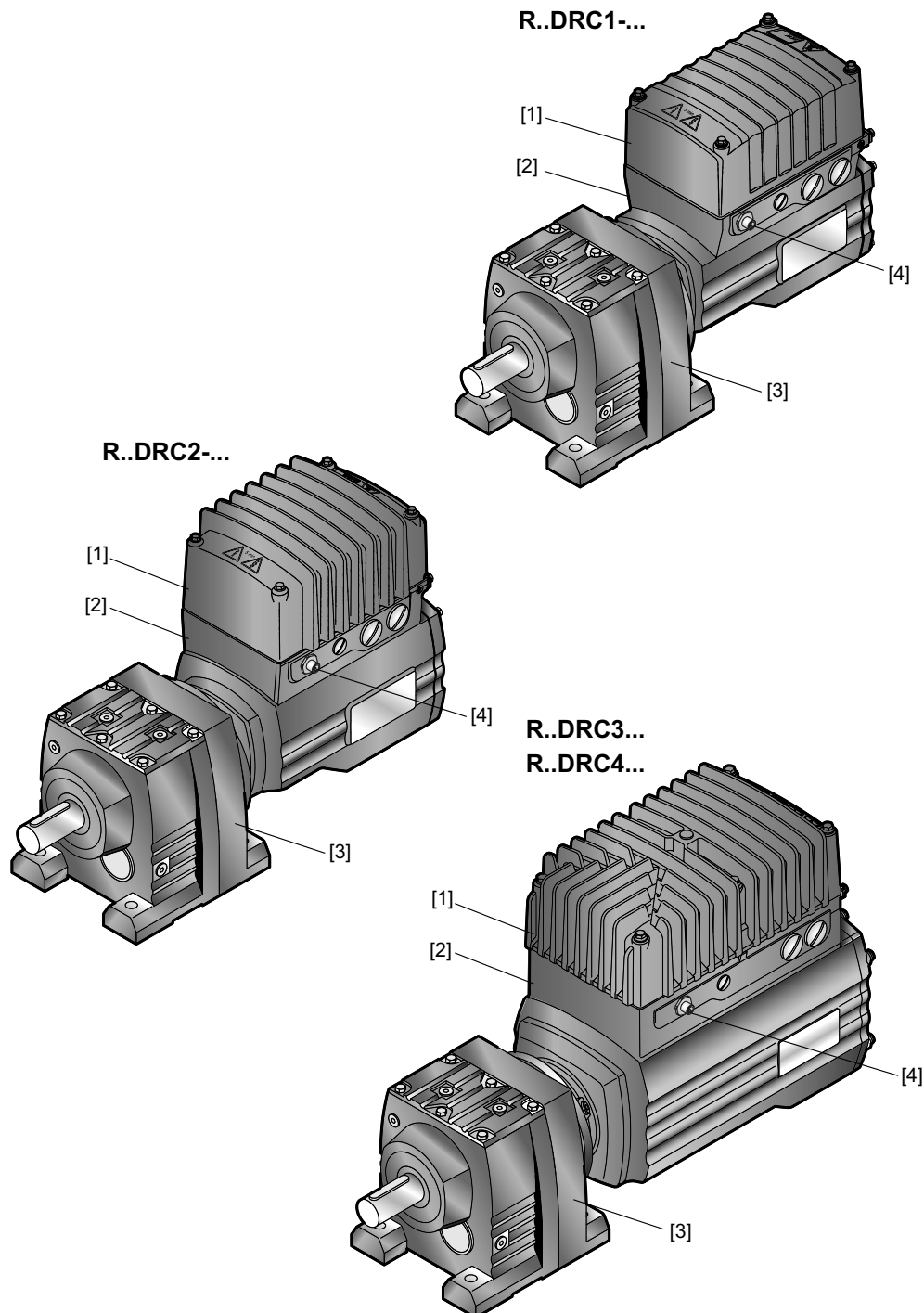
Caution: Danger of burns: The surface temperatures of DRC drive units can be more than 60 °C during operation.



### 3 Unit structure

#### 3.1 DRC drive unit

The following figure shows drive units consisting of a DRC1/DRC2/DRC3/DRC4 electronic motor and an R gear unit:



9007204016241547

- [1] Electronics cover
- [2] DRC electronic motor with connection unit
- [3] Gear unit (here: R gear unit)
- [4] AS-Interface connection

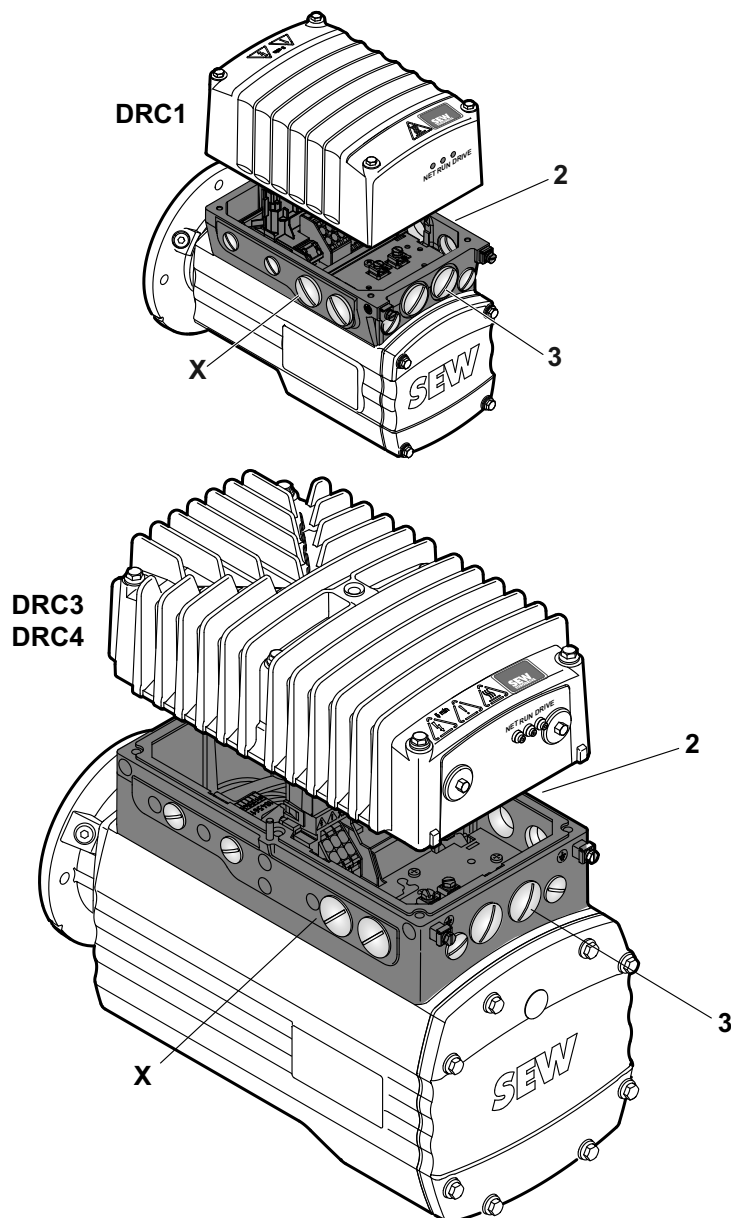


### 3.2 Cable entry positions

The DRC electronic motor is equipped with the following cable entries as standard:

- Position X + 2 + 3
  - X: 2 x M25 x 1.5 + 2 x M16 x 1.5
  - 2: 2 x M25 x 1.5 + 2 x M16 x 1.5
  - 3: 2 x M25 x 1.5 + 2 x M16 x 1.5

The following figure shows examples with DRC1 and DRC3/4 electronic motors:



18014402556352779



## Unit structure

Example nameplate and type designation of the drive unit

### 3.3 Example nameplate and type designation of the drive unit

#### 3.3.1 Nameplate

The following figure gives an example of a DRC nameplate. For the structure of the type designation, refer to chapter "Type designation".

**SEW-EURODRIVE**  
76646 Bruchsal/Germany

eff% 85,6 IE4

[2] ————

[1] ———— 01.1751709009.0001.11 Inverter duty VPWM 3~IEC61800

RF47 DRC1-005-DAC-A-ECR/IV

kW 0.55 S1 r/min 85...0.04 IP 65 TENV

Iso.Kl. 155(F) M.L. Hz 50-60 V 380...500 A 1.04  
nR 1/2000

i 23.59 MA 63 Nm Ma pk 156 Nm MBR

CLP 220 Miner.Öl/0.65 l IM M1

kg 26.000 AMB °C -20...40 1845 494 1.50 Made in Germany

9007204016689803

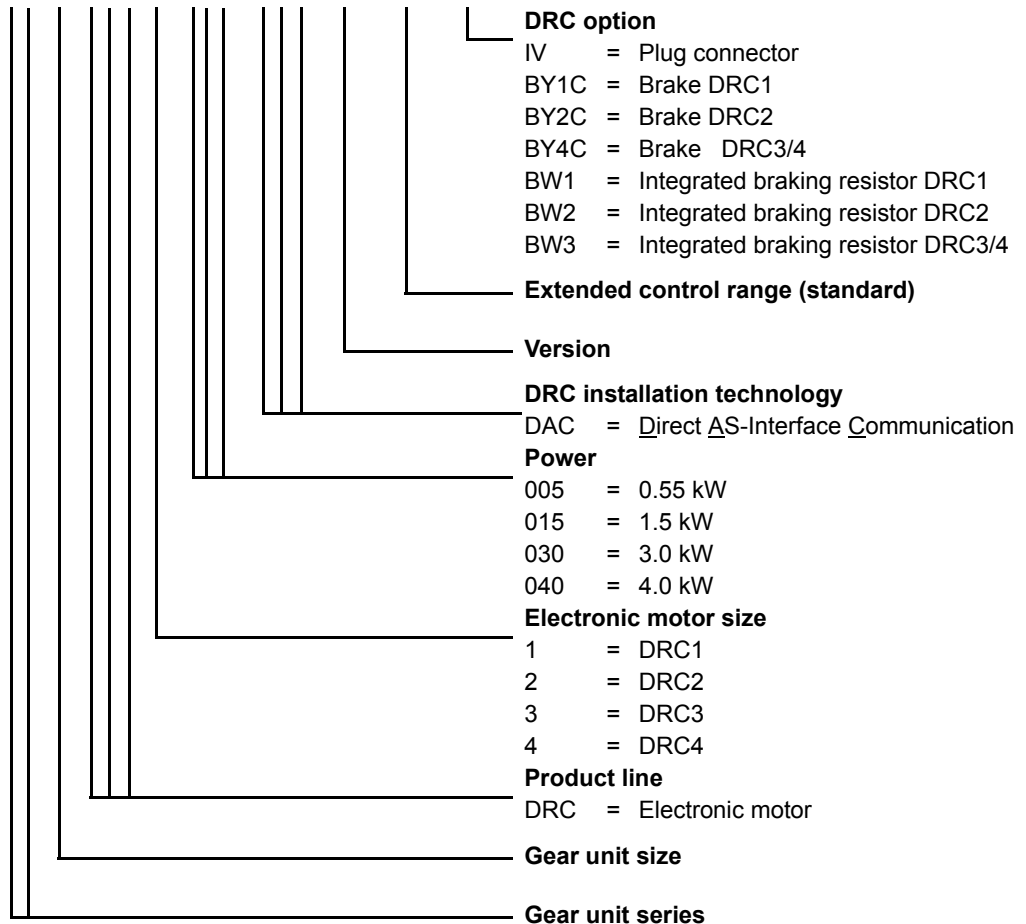
[1] Unique serial number

[2] The bar code on the nameplate (code 39) according to ISO/IEC 16388 represents the unique serial number (with a period as separator).

#### 3.3.2 Type designation

The following table shows the type designation of the DRC drive unit:

#### RF 47 DRC 1 - 005 - DAC - A - ECR / IV

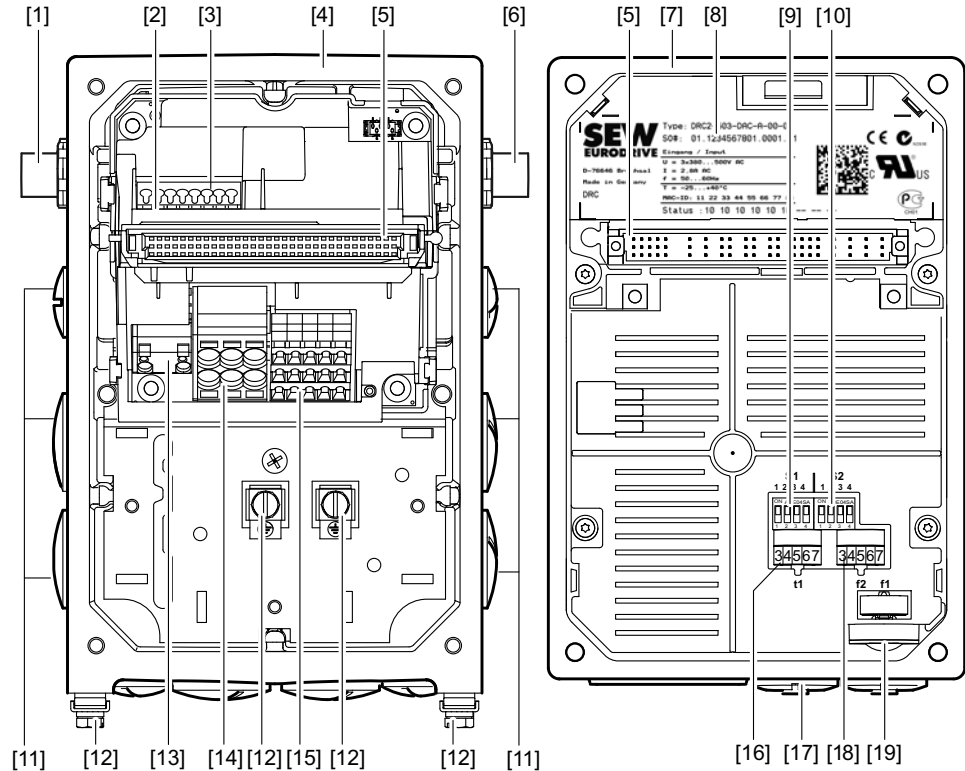




### 3.4 Electronics

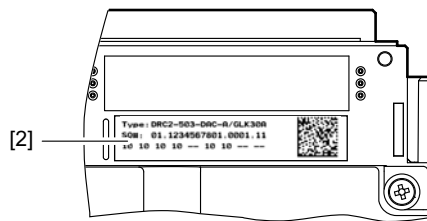
#### 3.4.1 DRC1/2 electronics cover (inside) and connection box

The following figure shows the connection box and the bottom side of the DRC1/2 electronics cover:



4762857739

- [1] AS-Interface connection
- [2] Nameplate of drive unit, see following detailed view



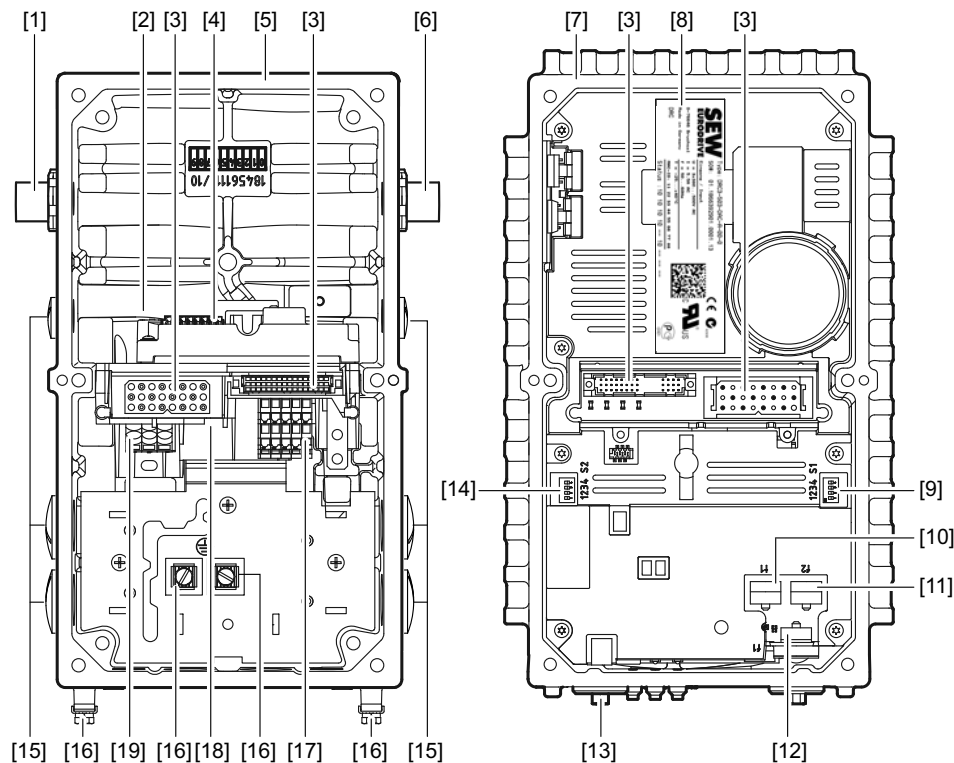
4853289611

- [3] AS-Interface terminals (wired to plug connector)
- [4] Connection box
- [5] Plug connector connection unit for DRC electronics cover
- [6] AS-Interface sensors
- [7] DRC electronics cover
- [8] Electronics cover nameplate
- [9] DIP switches S1/1 – S1/4
- [10] DIP switches S2/1 – S2/4
- [11] Cable glands
- [12] Screws for PE connection ⊕
- [13] Braking resistor connection
- [14] Line connection L1, L2, L3
- [15] Electronics terminal strips
- [16] Switch t1 for integrator ramp (green)
- [17] Diagnostic interface (underneath the gland)
- [18] Setpoint switch f2 (white)
- [19] Setpoint potentiometer f1 with screw plug



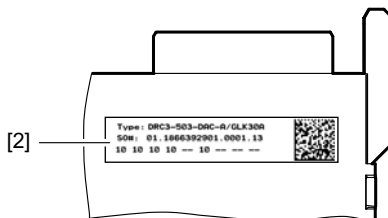
#### 3.4.2 DRC3/4 electronics cover (inside) and connection box

The following figure shows the connection box and the bottom side of the DRC3/4 electronics cover:



8588984459

- [1] AS-Interface connection
- [2] Nameplate of drive unit, see following detailed view



8585874571

- [3] Plug connector connection unit for DRC electronics cover
- [4] AS-Interface terminals (wired to plug connector)
- [5] Connection box
- [6] AS-Interface sensors
- [7] DRC electronics cover
- [8] Electronics cover nameplate
- [9] DIP switches S1/1 – S1/4
- [10] Switch t1 for integrator ramp (green)
- [11] Setpoint switch f2 (white)
- [12] Setpoint potentiometer f1 with screw plug
- [13] Diagnostic interface (underneath the gland)
- [14] DIP switches S2/1 – S2/4
- [15] Cable glands
- [16] Screws for PE connection ⊥
- [17] Electronics terminal strips
- [18] Braking resistor connection, not visible in this illustration (terminals are below the connector). For details, see chapter "Electrical installation".
- [19] Line connection L1, L2, L3





### 3.4.3 AS-Interface option

The AS-Interface option is located on the connection board in the connection box.

DRC-DAC is available with the following AS-Interface variants:

- GLK30A binary slave
- GLK31A double slave for drive with several speed setpoints and ramps

#### *GLK30A binary slave*

The GLK30A option, when connected as a slave to AS-Interface, works like a module with 4 inputs and 4 outputs.

The cyclic output bits control the DRC-DAC drive units.

The input bits transmit the status of the drive and 2 additional sensor signals to the AS-Interface master.

The acyclic parameter bits are used to select speed scaling factors.

#### *GLK31A double slave*

The GLK31A option works as a double slave on the AS-Interface according to AS-Interface specification 3.0.

Serial AS-Interface data transmission (analog profile) allows for writing and reading DRC-DAC parameters and display values.

The DRC-DAC inverter is controlled via the cyclic output bits. The coding of the data bits is specified in different function modules. The DRC-DAC inverter interprets these bits as different control and status codes. You can switch between the function modules using the acyclic parameter bits.

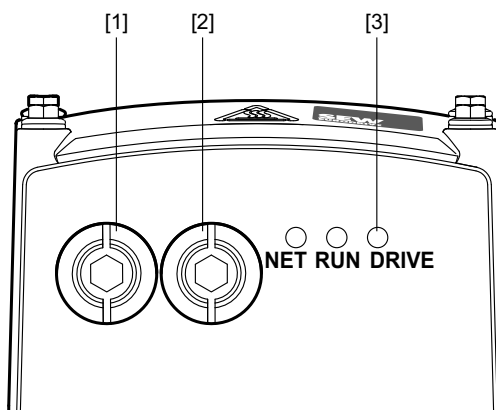
The input bits transmit the status of the drive and 2 additional sensor signals to the AS-Interface master.



#### 3.4.4 Electronics cover (outside)

DRC1/2

The following figure shows the outside of the electronics cover:

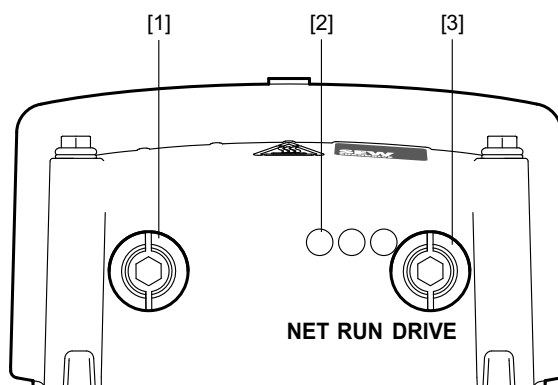


9007201622609547

- [1] Setpoint potentiometer f1 (underneath the gland)
- [2] Diagnostic interface (underneath the gland)
- [3] Status LEDs

DRC3/4

The following figure shows the outside of the electronics cover:



8963681675

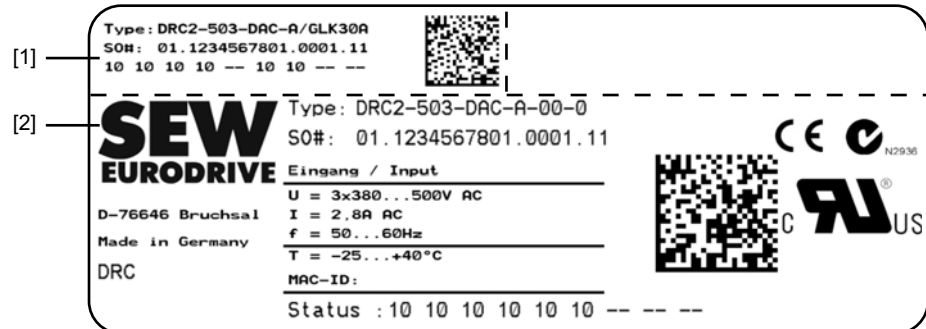
- [1] Setpoint potentiometer f1 (underneath the gland)
- [2] Status LEDs
- [3] Diagnostic interface (underneath the gland)



### 3.5 Example nameplate and type designation of electronics

#### 3.5.1 Nameplate

The following figure gives an example of a DRC nameplate. For the structure of the type designation, refer to chapter "Type designation".



9007204021010955

- [1] Nameplate of connection unit  
[2] Electronics cover nameplate

#### 3.5.2 Type designation of electronics cover

The following table shows the type designation of the electronics cover:

**D R C 1 - 5 0 3 - DAC - A - 00 - 0**

|     |   |
|-----|---|
| 1   | <b>Electronics cover variant</b>                            |
| 0   | = Without application slot                                  |
|     | <b>Design</b>   |
| 00  | = Standard  |
|     | <b>DRC version</b>  |
|     | <b>DRC installation technology</b>                          |
| DAC | = <u>D</u> irect <u>A</u> S-Interface <u>C</u> ommunication |
|     | <b>Connection type</b>                                      |
| 3   | = 3-phase (AC)  |
|     | <b>Supply voltage</b>                                       |
| 50  | = AC 380 – 500 V  |
|     | <b>Frame size</b>   |
| 1   | = DRC 1   |
| 2   | = DRC 2   |
| 3   | = DRC 3   |
| 4   | = DRC 4   |
|     | <b>Product line</b>   |
| DRC | = Electronic motor  |

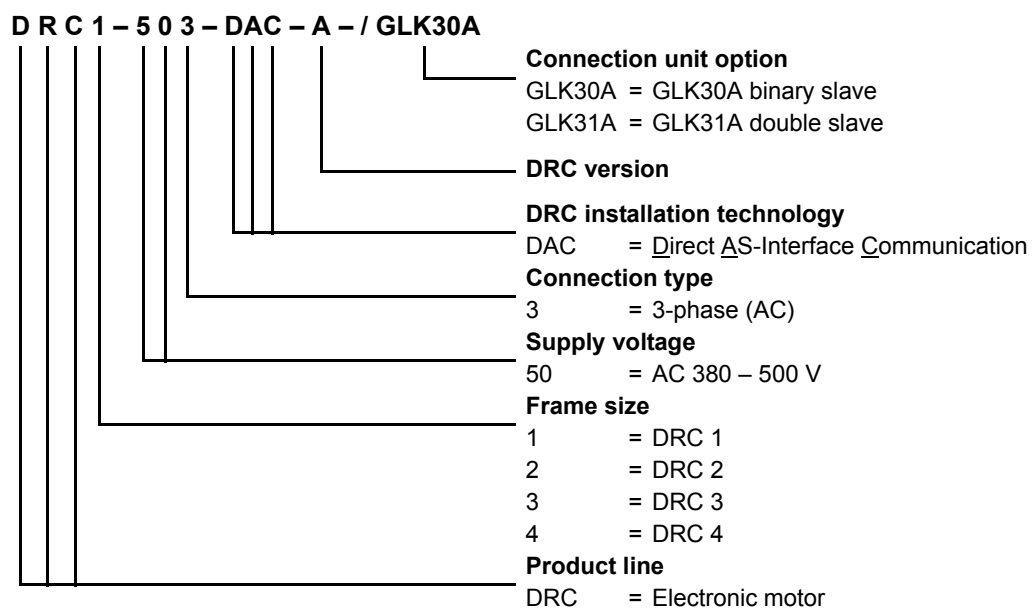


**Unit structure**

Example nameplate and type designation of electronics

**3.5.3 Type designation of connection unit**

The following table shows the type designation of the connection unit:

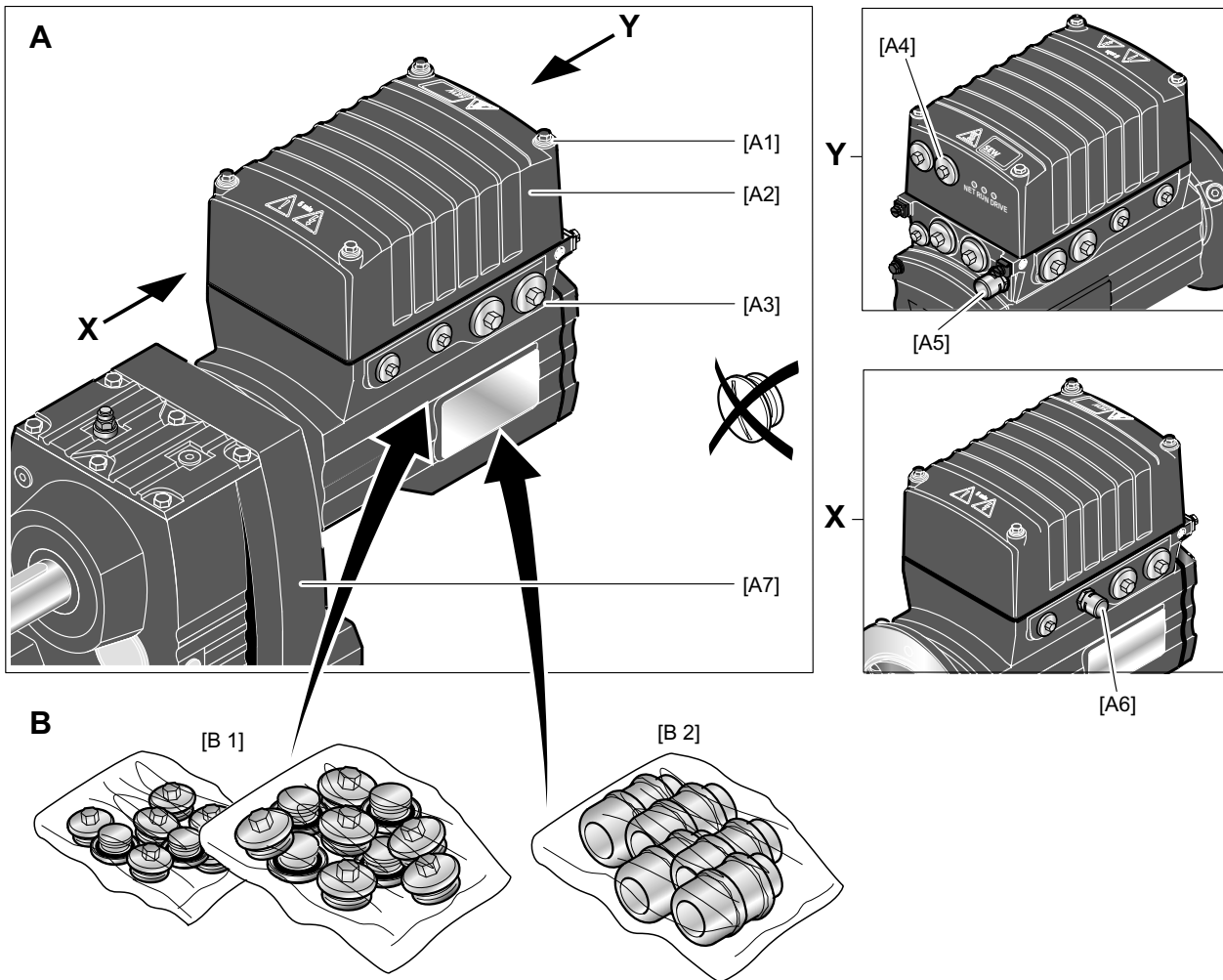




### 3.6 DRC drive units in ASEPTIC / ASEPTIC<sup>plus</sup> design

The following figure shows the additional characteristics of DRC drive units in ASEPTIC / ASEPTIC<sup>plus</sup> design:

- The ASEPTIC / ASEPTIC<sup>plus</sup> variant is delivered with screw plugs made of stainless steel as standard.
- Plastic screw plugs can be chosen instead. To achieve degree of protection IP66 and compatibility with cleaning agents, you have to replace the plastic screw plugs by suitable screw fittings made of stainless steel.



9007204020423435

All illustrations with ASEPTIC / ASEPTIC<sup>plus</sup> design are displayed with a shading (= HP200 surface protection) in this publication



## Unit structure

### DRC drive units in ASEPTIC / ASEPTICplus design

#### A Scope of delivery

- [A1] DRC1/2:  
Mounting screws for cover made of stainless steel
- DRC3/4:  
Mounting screws for cover are zinc-plated
- [A2] Surface protection OS2 to OS4 for ASEPTIC design / OS4 for ASEPTIC<sup>plus</sup> design, see chapter "Technical data and dimension sheets"
- [A3] Standard: Screw plugs made of stainless steel
- Optional: Plastic screw plugs. To achieve degree of protection IP66 and compatibility with cleaning agents, you have to replace the plastic screw plugs by suitable screw fittings made of stainless steel.
- [A4] Screw plugs in the electronics cover made of stainless steel
- [A5] Factory-installed pressure compensation fitting (M16) with mounting positions M5, M6
- [A6] Factory-installed pressure compensation fitting (M16) with mounting position M1, M2, M4, M4

Optional plug connectors (see chapter "Electrical installation") are available in connection with the ASEPTIC / ASEPTIC<sup>plus</sup> version.

- [A7] Features of gear units in ASEPTIC design
- Surface protection finish OS2 to OS4
- Features of gear units in ASEPTIC<sup>plus</sup> design
- Available for gear units with solid shaft, hollow shaft with key or TorqLOC for the following gear unit sizes: R27-87, F27-87, K37-87 and W37
  - Gear unit output shaft including all retaining parts on the output shaft, such as screws, keys, shrink disk, etc., are made of stainless steel
  - If technically possible, the oil seals on the output are configured as double oil seals made from FKM (Viton<sup>®</sup>)
  - The breather valve of the gear units is made from stainless steel
  - Surface protection finish OS4 for compatibility with common cleaning agents and disinfectants
  - All surface recesses sprayed with elastic rubber compound
  - All gear unit options can be selected
  - All mounting positions M1 to M6 are available

#### B Required screw fittings

- [B1] Screw plugs made of stainless steel <sup>1)</sup>
- [B2] Cable glands made of stainless steel <sup>1)</sup>

The required screw fittings can be ordered from SEW-EURODRIVE. For an overview, refer to chapter "Technical Data / Optional metal screw fittings".

1) Make sure to select plug seals that are compatible with the used cleaning agents



## 4 Mechanical installation

### 4.1 Installation notes



#### INFORMATION

Adhere to the safety notes during installation.



#### ⚠ WARNING

Improper installation/disassembly of DRC drive units and mount-on components.

Risk of injury.

- Adhere to the notes about installation and disassembly.
- Before releasing shaft connections, make sure that there are no active torsional moments present (tensions within the system).



#### ⚠ WARNING

Risk of injury if the drive starts up unintentionally and danger of electrical voltage.

Dangerous voltages may still be present for up to 5 minutes after disconnection from the power supply.

Severe or fatal injuries.

- Disconnect the DRC drive unit from the power supply before you start working on the unit and secure it against unintentional reconnection to the power supply.
- Secure the output shaft against rotation.
- Wait for at least 5 minutes before removing the electronics cover.

### 4.2 Required tools and resources

- Set of wrenches
- Torque wrench
- Mounting device
- Compensation elements (shims and spacing rings), if necessary
- Mounting materials for output components
- Lubricant (e.g. NOCO<sup>®</sup> Fluid)
- Standard parts are not included in the delivery

#### 4.2.1 Installation tolerances for shaft ends

The following table shows the permitted tolerances of shaft ends and flanges of the DRC motor.

| Shaft end  | Flanges   |
|--|---|
| Diameter tolerance according to EN 50347 <ul style="list-style-type: none"> <li>• ISO j6 with <math>\varnothing \leq 26</math> mm</li> <li>• Center bore in accordance with DIN 332, shape DR..</li> </ul> | Centering shoulder tolerance in accordance with EN 50347 <ul style="list-style-type: none"> <li>• ISO j6 with <math>\varnothing \leq 250</math> mm</li> </ul> |

#### 4.2.2 Tolerances for torque ratings

The specified torques must be adhered to with a tolerance of +/- 10% .



#### 4.3 Installation requirements

Check that the following conditions have been met:

- The entries on the nameplate of the DRC unit match the voltage supply system.
- The drive is undamaged (no damage caused by transportation or storage)
- Ambient temperature according to the operating instructions, nameplate and lubricant table in chapter "Technical data/lubricants".
- The drive must not be assembled in the following ambient conditions:
  - Potentially-explosive atmosphere
  - Oils
  - Acids
  - Gases
  - Vapors
  - Radiation
- For special designs: The drive is designed in accordance with the actual ambient conditions.
- Clean the output shafts and flange surfaces thoroughly to ensure they are free of anti-corrosion agents, contamination or similar. Use a commercially available solvent. Do not expose the sealing lips of the oil seals to the solvent – damage to the material.
- When the drive is installed in abrasive ambient conditions, protect the output end oil seals against wear.





## 4.4 Setting up the drive unit

### 4.4.1 Information

- Only install the DRC drive unit on a level, low-vibration, and torsionally rigid support structure.
- Observe the mounting position specified on the motor nameplate.
- Thoroughly remove any anti-corrosion agent from the shaft end. Use a commercially available solvent. Do not allow the solvent to penetrate the bearings and shaft seals – this could damage the material.
- Align the motor carefully to avoid placing any unacceptable strain on the motor shafts. Observe the permitted overhung and axial loads specified in the "DRC Gear-motors" catalog.
- Do not jolt or hammer the shaft end.
- Ensure that cooling air supply is unobstructed and that air discharged by other units does not influence cooling.
- Balance components that were subsequently mounted to the shaft with a half key (output shafts are balanced with a half key).
- Use suitable cable glands for the supply leads (use reducing adapters if necessary).
- Seal the cable entry properly.
- Thoroughly clean the sealing surfaces of the DRC cover before re-assembly.
- If the corrosion protection coating is damaged, restore the coating.
- Check whether the degree of protection specified in the operating instructions and on the nameplate is permitted in the ambient conditions on site.

#### *Change in mounting position*

Make sure to read the following information when you operate the electronic motor in a mounting position other than the one indicated in the order:

- **Adjust the position of the pressure compensation fitting, if necessary.**



## Mechanical installation

### Setting up the drive unit

#### 4.4.2 Electronics cover



#### ⚠ WARNING

Burns caused by hot surfaces.

Severe injuries.

- Let the units cool down before touching them.



#### NOTICE

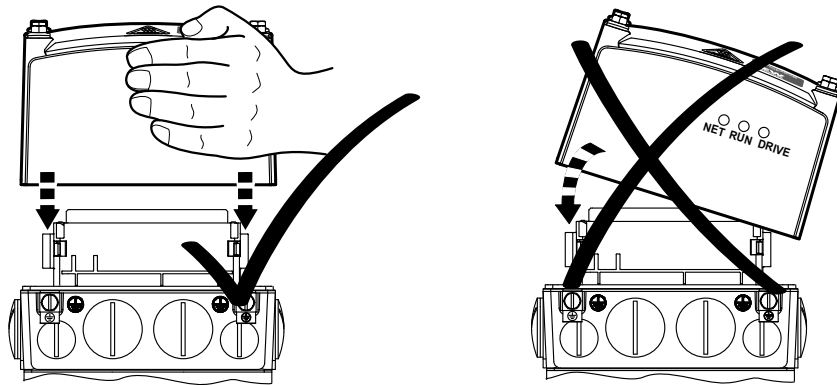
Loss of the guaranteed degree of protection.

Possible damage to property.

- When the DRC electronics cover is removed from the connection box, you have to protect it from humidity, dust or foreign particles.
- Check to see that the DRC electronics cover was mounted properly.

*Installing the electronics cover*

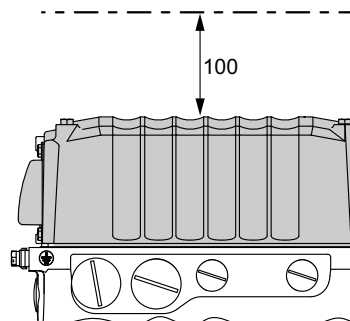
- Use only electronics covers that match the size.
- Be careful not to tilt the electronics cover when placing it on the connection box.



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*Minimum installation clearance*

Note the minimum installation clearance (see following figure) required to remove the DRC electronics cover. For detailed dimension drawings, refer to chapter "Technical Data".

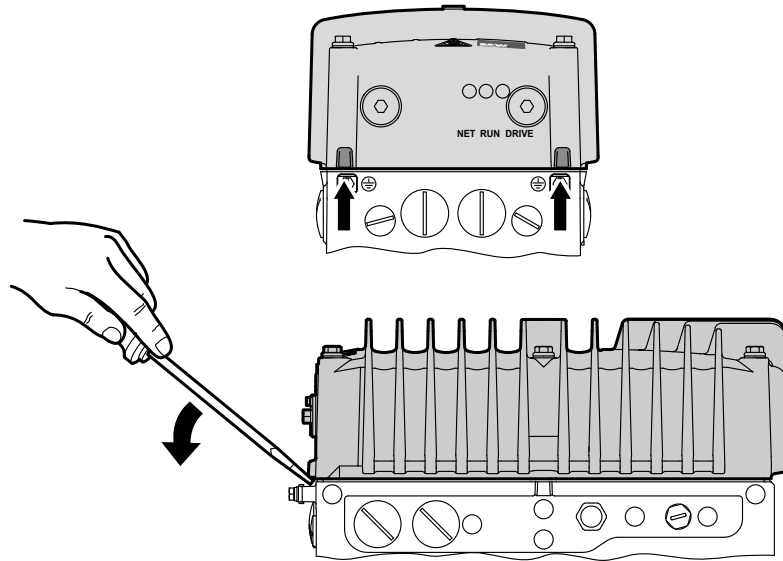


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*Removing the electronics cover*

The following figure shows how you can lever off the electronics cover in the intended places.



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**4.4.3 Installation in damp locations or in the open**

Drives are supplied in corrosion-resistant versions for use in damp areas or in the open. Repair any damage to the paint work if necessary.

Observe the notes in chapter "Drive units with optional ASEPTIC / ASEPTIC<sup>plus</sup> design".

**4.4.4 Painting drive units**

**NOTICE**

Breather valves and oil seals may be damaged during painting or re-painting.

Potential damage to property.

- Clean the surface of the drive unit and make sure it is free from grease.
- Thoroughly cover the breather valves and sealing lip of the oil seals with strips prior to painting.
- Remove the strips after painting.





#### 4.5 Tightening torques

**⚠ WARNING**

Burns caused by hot surfaces.

Severe injuries.

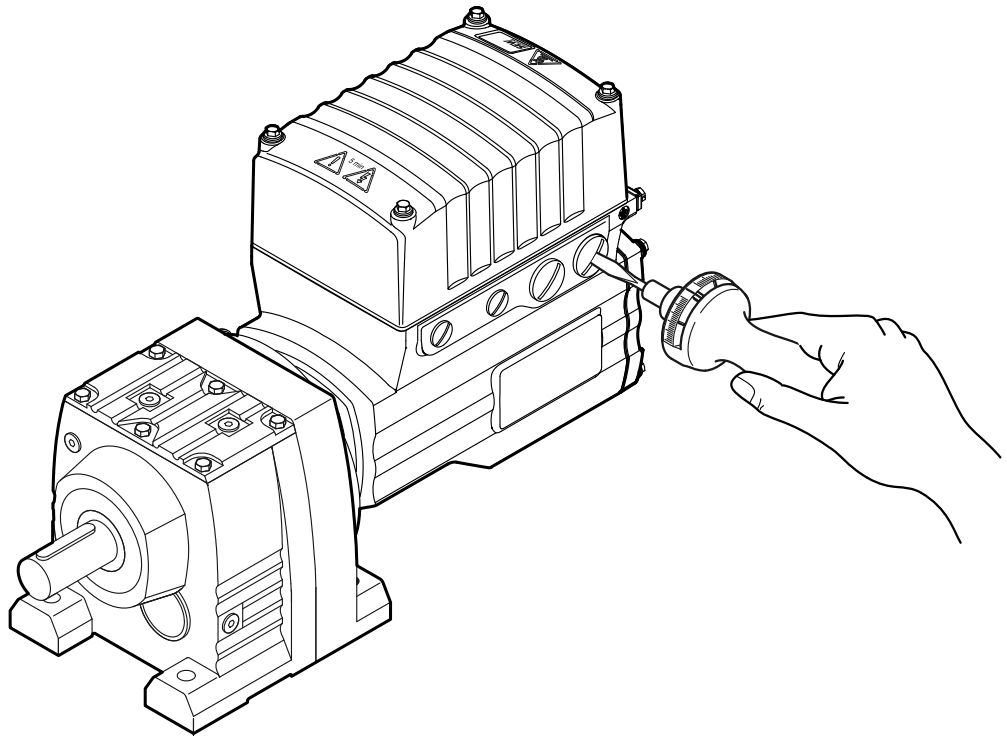
- Let the units cool down before touching them.
- 

##### 4.5.1 Blanking plugs

Tighten the plastic blanking plugs included in the delivery with 2.5 Nm:

*Example*

The following figure shows an example.



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#### 4.5.2 Cable glands

*Tightening torques*

Tighten the EMC cable glands optionally supplied by SEW-EURODRIVE to the following torques:

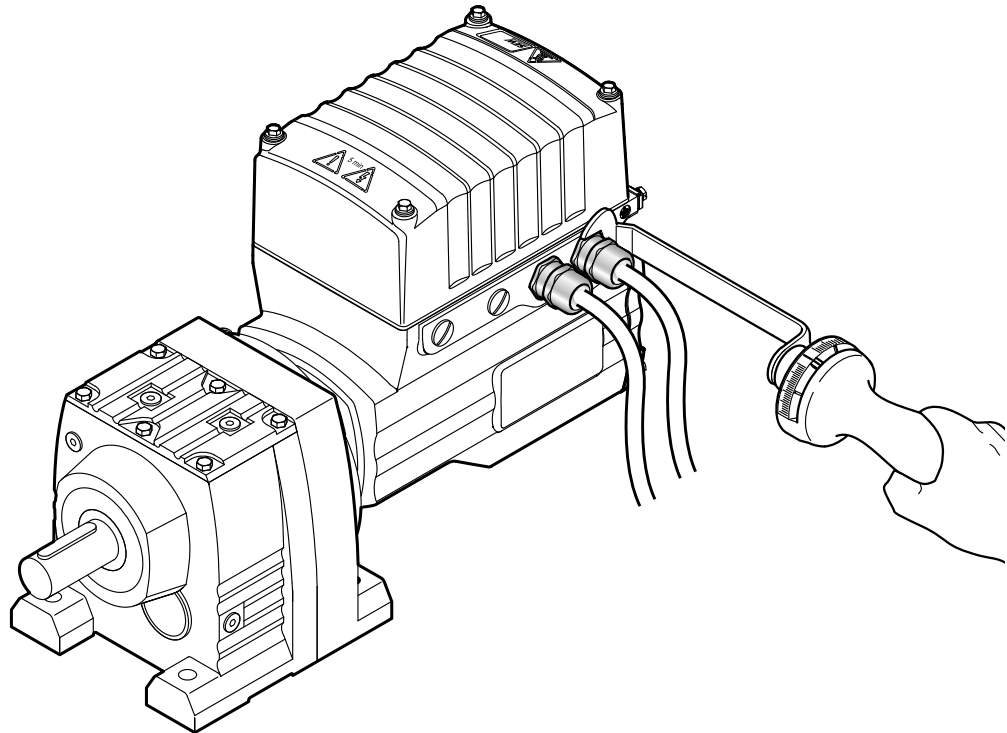
| Screw fitting                          | Part number | Contents | Size      | Outer diameter of cable | Tightening torque |
|--|-------------|----------|-----------|-------------------------|-------------------|
| EMC cable glands (nickel-plated brass) | 1820 478 3  | 10 pc    | M16 x 1.5 | 5 to 9 mm               | 4.0 Nm            |
|  | 1820 480 5  | 10 pc    | M25 x 1.5 | 11 to 16 mm             | 7.0 Nm            |
| EMC cable glands (stainless steel)     | 1821 636 6  | 10 pc    | M16 x 1.5 | 5 to 9 mm               | 4.0 Nm            |
|  | 1821 638 2  | 10 pc    | M25 x 1.5 | 11 to 16 mm             | 7.0 Nm            |

The cable retention in the cable gland must withstand the following removal force of the cable from the cable gland:

- Cable with outer diameter > 10 mm:  $\geq 160$  N
- Cable with outer diameter < 10 mm: = 100 N

*Example*

The following figure shows an example.



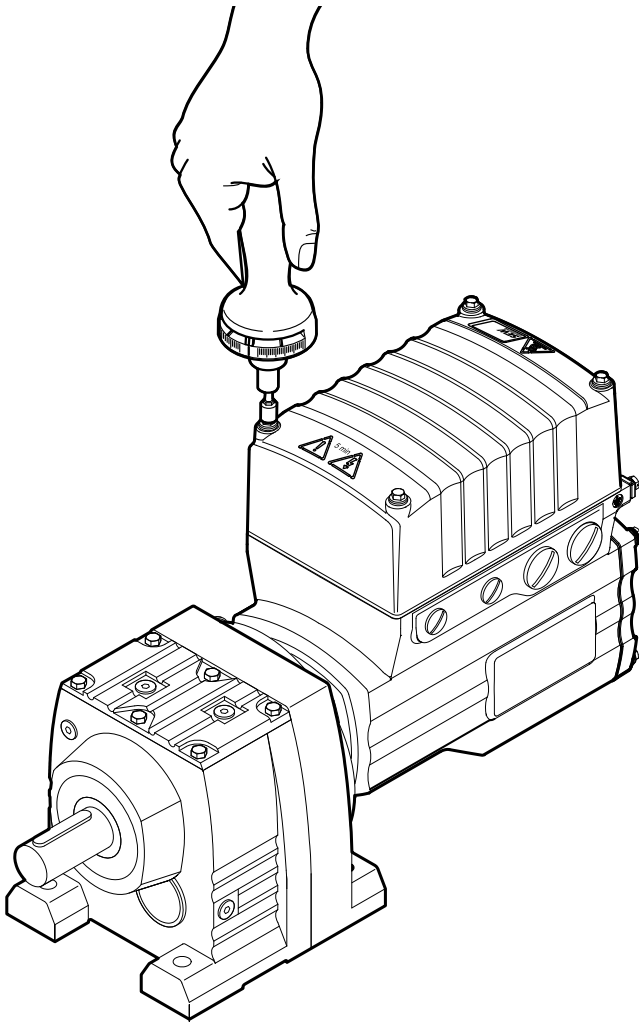
18014402561337099



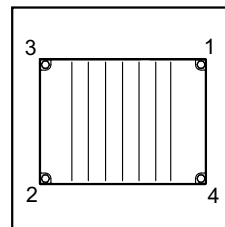
#### 4.5.3 DRC electronics cover

Proceed as follows when installing the DRC electronics cover: Insert the screws and tighten them with the tightening torque specified for that size according to the sequence shown in the picture below.

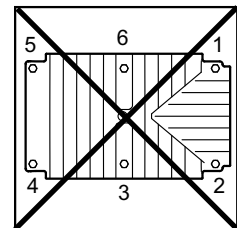
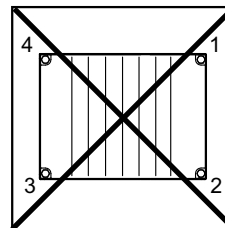
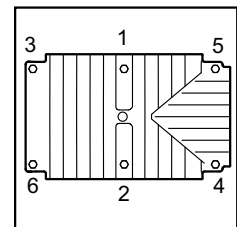
- DRC electronic motor size 1/2: 6.0 Nm
- DRC electronic motor size 3/4: 9.5 Nm



**DRC1/2**



**DRC3/4**



18014402561368203



## 4.6 Drive units with optional ASEPTIC / ASEPTIC<sup>plus</sup> design

### 4.6.1 Installation notes



#### NOTICE

Loss of degree of protection IP66 and incompatibility with cleaning agents.

Possible damage to property.

- Replace the optionally supplied plastic screw plugs with suitable stainless steel screw fittings.

Adhere to the following additional notes for DRC drive units in optional ASEPTIC / ASEPTIC<sup>plus</sup> design:

- Make sure to prevent moisture and dirt from entering the unit during installation.
- After electrical installation, make sure that the sealing and sealing surfaces are clean during assembly.
- When performing maintenance work, check the condition of the gaskets as well as the tightening torques of the screw fittings. If damaged: Consult SEW-EURODRIVE.
- When the electronics cover is opened after an operating period of  $\geq 6$  months, the gasket between the connection box and the electronics cover must always be replaced. For this purpose it is essential that you observe the chapter "Inspection and maintenance".
- Make sure to install the cables with a drip loop. Observe the permitted bending radii of the installed cables for cable routing.
- Use only stainless steel cable glands and connection glands offered by SEW-EURODRIVE, see chapter "Technical data and dimension sheets".
- You must seal unused cable bushings and plug connectors with suitable screw plugs, see chapter "Technical data and dimension sheets".

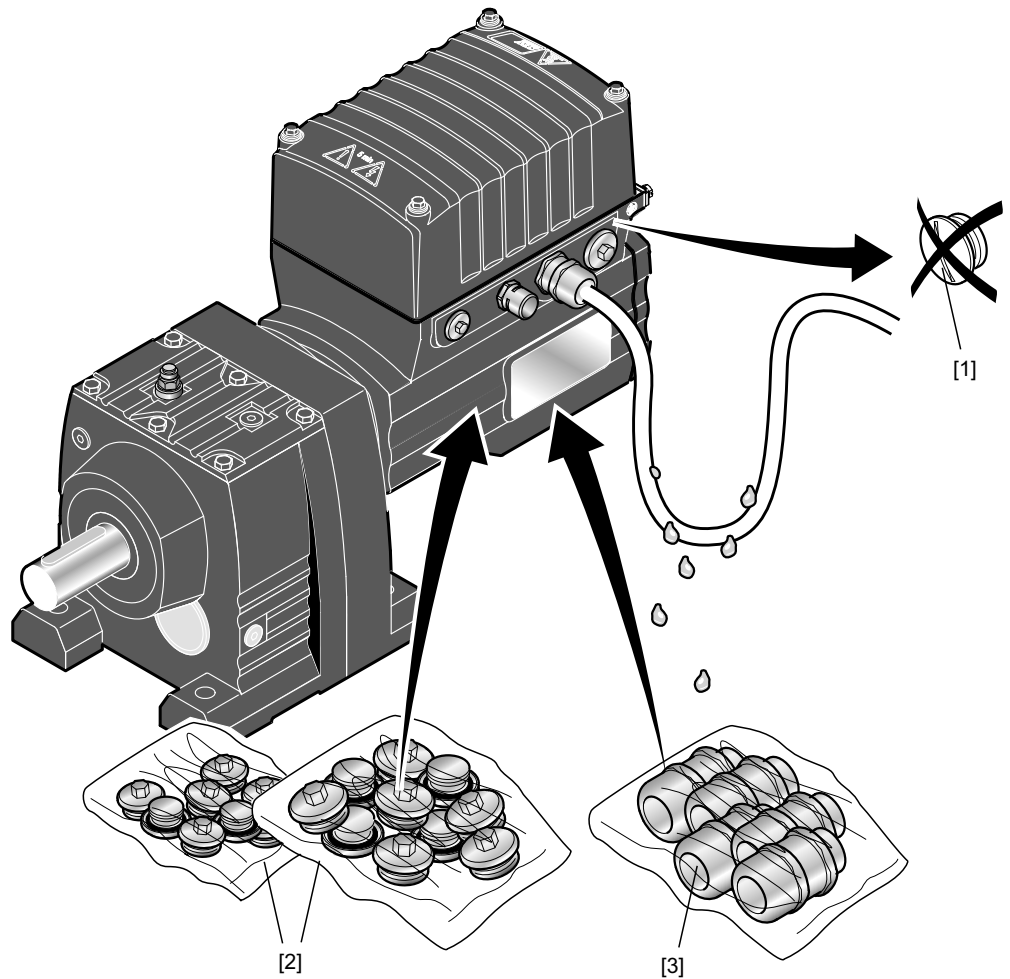


## Mechanical installation

Drive units with optional ASEPTIC / ASEPTICplus design

### Example

The following figure gives an example of a cable entry with drip loop and the replacement of the plastic screw plugs supplied as an option with suitable stainless steel screw fittings.



9007204023102219

- [1] The optionally delivered plastic screw plugs must be replaced by suitable screw plugs made of stainless steel.
- [2] Stainless steel screw plugs, if required  
(see chapter "Technical data and dimension sheets")
- [3] Required stainless steel cable glands  
(see chapter "Technical data and dimension sheets")





**Mounting positions** DRC drive units in optional ASEPTIC / ASEPTIC<sup>plus</sup> design are delivered with pressure compensation and breather valve installed according to the mounting position.

This is why DRC drive units in optional ASEPTIC / ASEPTIC<sup>plus</sup> design must only be used in the mounting position specified in the order.

- Permitted cable routing

The following cable entries are permitted for the ASEPTIC / ASEPTIC<sup>plus</sup> design depending on the mounting position and the position of the electronics cover:

| Permitted cable routing              |    | Position of electronics cover |           |           |           |
|--------------------------------------|----|-------------------------------|-----------|-----------|-----------|
|                                      |    | 0° (R)                        | 90° (B)   | 180° (L)  | 270° (T)  |
| Gearmotor mounting positions         | M1 | X / 3                         | X / 2 / 3 | 2 / 3     | X / 2 / 3 |
|                                      | M2 | X / 2 / 3                     |           |           |           |
|                                      | M3 | 2 / 3                         | X / 2 / 3 | X / 3     | X / 2 / 3 |
|                                      | M4 | X / 2                         |           |           |           |
|                                      | M5 | X / 2 / 3                     | 2 / 3     | X / 2 / 3 | X / 3     |
|                                      | M6 | X / 2 / 3                     | X / 3     | X / 2 / 3 | 2 / 3     |
| Stand-alone motor mounting positions | B5 | X / 3                         | X / 2 / 3 | 2 / 3     | X / 2 / 3 |
|                                      | V1 | X / 2                         |           |           |           |
|                                      | V3 | X / 2 / 3                     |           |           |           |

- Permitted mounting options for the DAC electronics variant

Only the mounting positions marked in gray are permitted for the DAC electronics variant in connection with the ASEPTIC / ASEPTIC<sup>plus</sup> design depending on the position of the electronics cover.

| Permitted mounting options for the DAC electronics variant |    | Position of electronics cover |         |          |          |
|--|----|-------------------------------|---------|----------|----------|
|  |    | 0° (R)                        | 90° (B) | 180° (L) | 270° (T) |
| Gearmotor mounting positions                               | M1 |                               |         |          |          |
|  | M2 |                               |         |          |          |
|  | M3 |                               |         |          |          |
|  | M4 |                               |         |          |          |
|  | M5 |                               |         |          |          |
|  | M6 |                               |         |          |          |
| Stand-alone motor mounting positions                       | B5 |                               |         |          |          |
|  | V1 |                               |         |          |          |
|  | V3 |                               |         |          |          |

- Restrictions in conjunction with GIO... application options

Application options cannot be used together with the ASEPTIC / ASEPTIC<sup>plus</sup> design in mounting position M4 (V1).

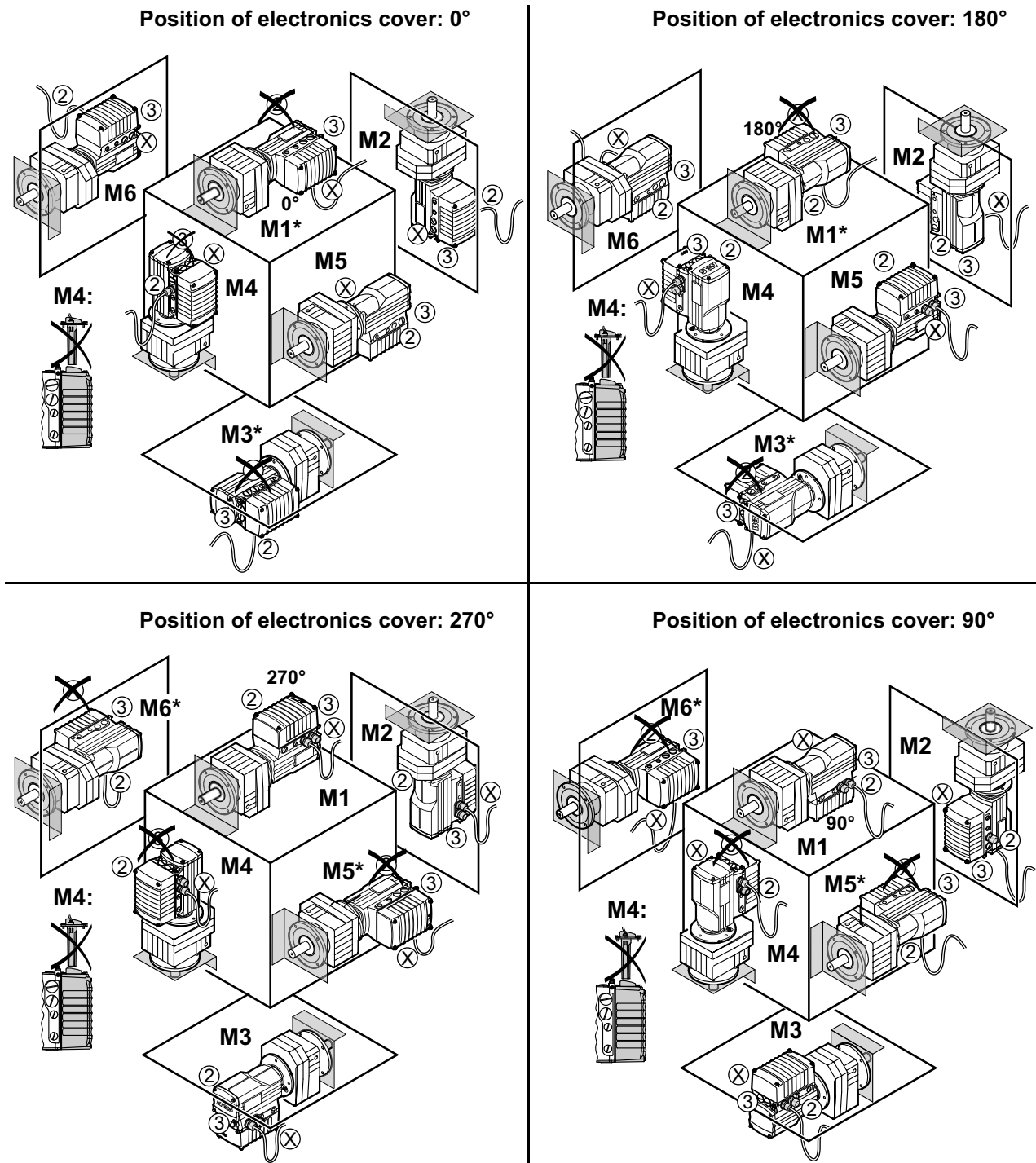


## Mechanical installation

Drive units with optional ASEPTIC / ASEPTICplus design

Mounting positions of the ASEPTIC / ASEPTICplus design

The following figure shows the position of the DRC drive unit when installed in mounting positions M1 to M6:



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\* Mounting positions M5 and M6 in connection with the DAC electronics variant  
Design for wet areas not possible.

Application options in connection with the design for wet areas and  
M4 mounting position not possible.



4.6.2 Tightening torques for optional ASEPTIC / ASEPTICplus design



**⚠ WARNING**

Burns caused by hot surfaces.

Severe injuries.

- Let the units cool down before touching them.

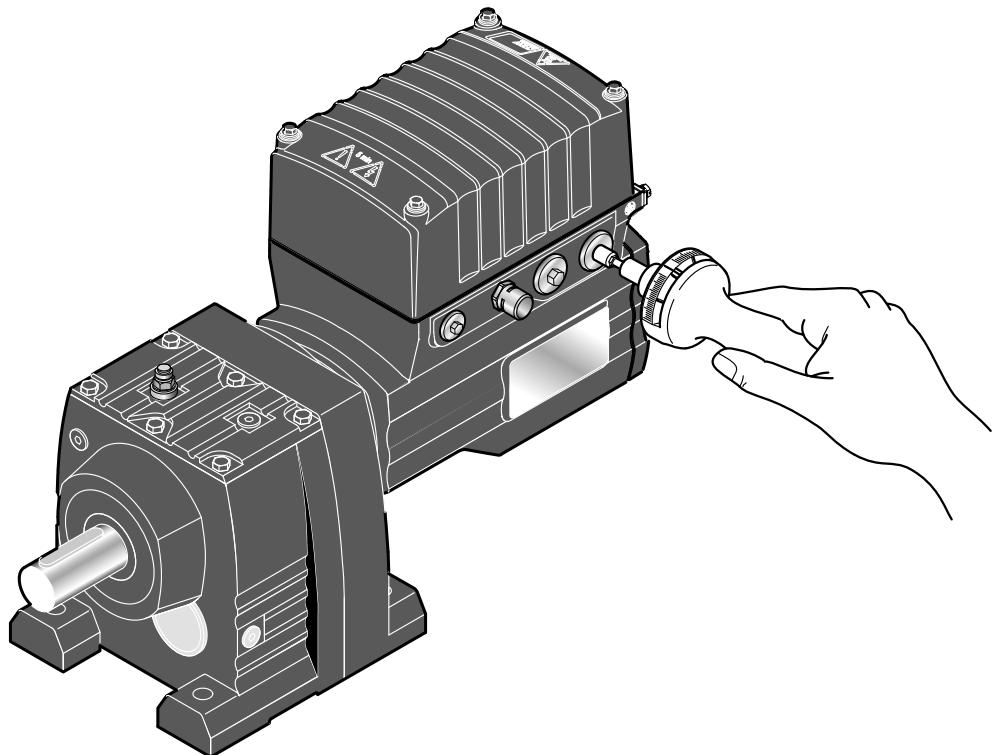
*Blanking plugs*

Tighten the blanking plugs optionally included in the delivery by SEW-EURODRIVE with 6.8 Nm:

| Type of screw fitting                               | Contents | Size      | Part number | Tightening torque |
|---|----------|-----------|-------------|-------------------|
| Screw plugs<br>Hexagon<br>(made of stainless steel) | 10 pc    | M16 x 1.5 | 1 824 734 2 | 6.8 Nm            |
|   | 10 pcs   | M25 x 1.5 | 1 824 735 0 | 6.8 Nm            |

*Example*

The following figure shows an example. The number and position of cable entries depends on the variant you have ordered.



9007204023331083



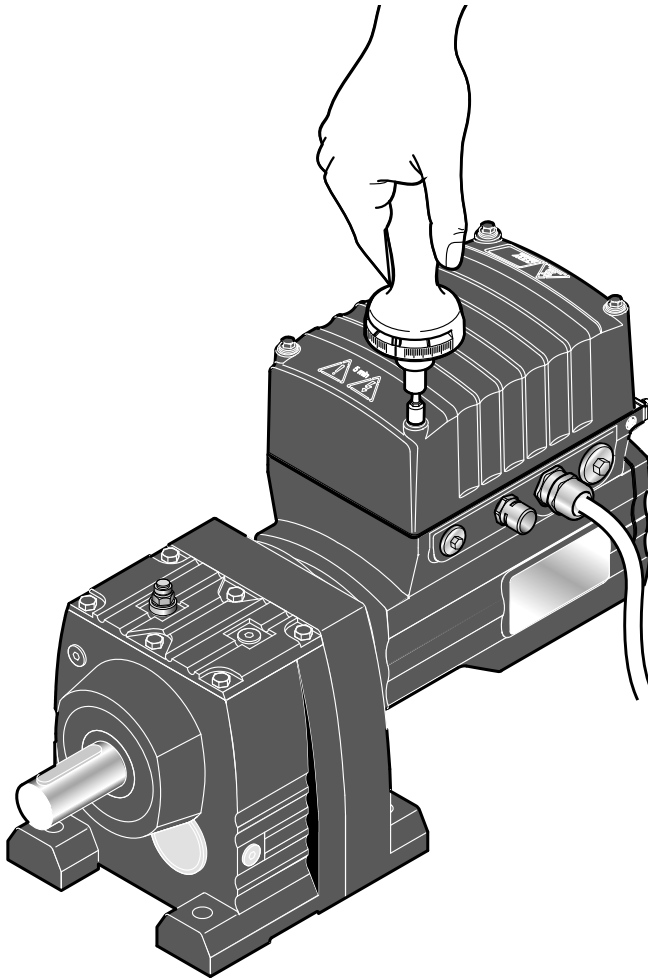
## Mechanical installation

Drive units with optional ASEPTIC / ASEPTICplus design

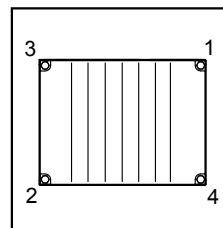
### DRC electronics cover

Proceed as follows when installing the DRC electronics cover: Insert the screws and tighten them with the tightening torque specified for that size according to the sequence shown in the picture below.

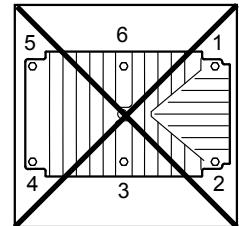
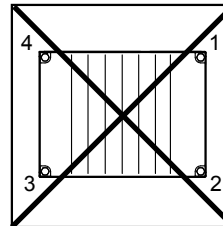
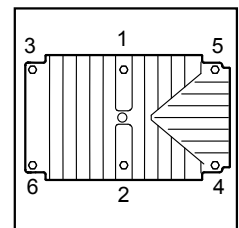
- DRC electronic motor size 1/2: 6.0 Nm
- DRC electronic motor size 3/4: 9.5 Nm



DRC1/2



DRC3/4



9007204023540747



*EMC cable glands*

Tighten the EMC cable glands optionally included in the delivery by SEW-EURODRIVE with the following tightening torques:

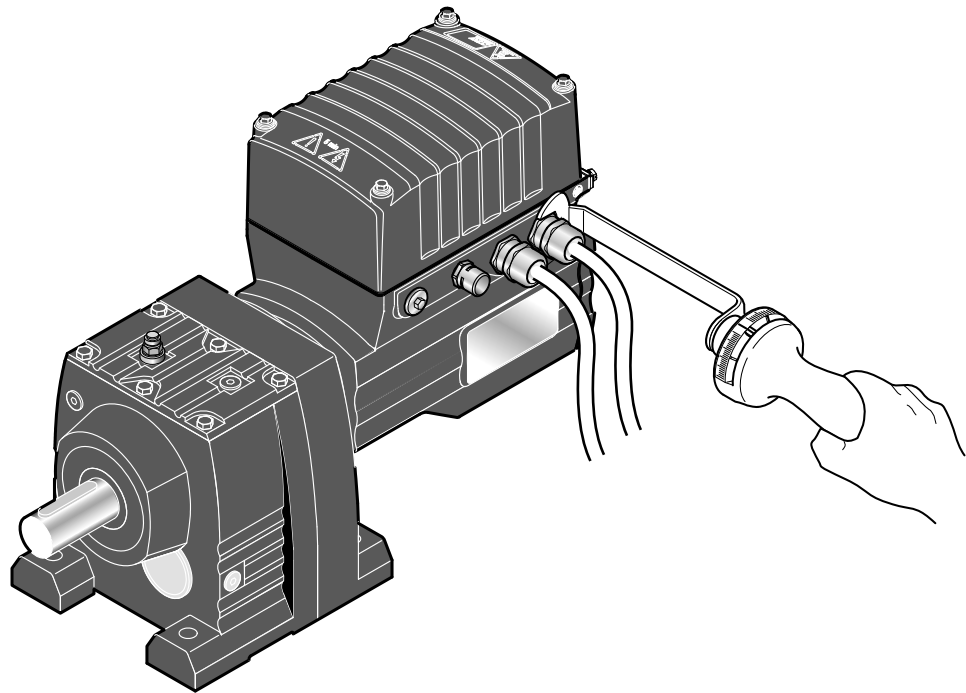
| Screw fitting                          | Part number | Contents | Size      | Outer diameter of cable | Tightening torque |
|--|-------------|----------|-----------|-------------------------|-------------------|
| EMC cable glands (nickel-plated brass) | 1820 478 3  | 10 pcs   | M16 x 1.5 | 5 to 9 mm               | 4.0 Nm            |
|  | 1820 480 5  | 10 pcs   | M25 x 1.5 | 11 to 16 mm             | 7.0 Nm            |
| EMC cable glands (stainless steel)     | 1821 636 6  | 10 pcs   | M16 x 1.5 | 5 to 9 mm               | 4.0 Nm            |
|  | 1821 638 2  | 10 pcs   | M25 x 1.5 | 11 to 16 mm             | 7.0 Nm            |

The cable retention in the cable gland must withstand the following removal force of the cable from the cable gland:

- Cable with outer diameter > 10 mm:  $\geq 160$  N
- Cable with outer diameter < 10 mm: = 100 N

*Example*

The following figure shows an example. The number and position of cable entries depends on the variant you have ordered.



9007204023796491



## 5 Electrical installation



### INFORMATION

Adhere to the safety notes during installation.

### 5.1 Installation planning considering EMC aspects

#### 5.1.1 Notes on arranging and routing installation components

Successful installation of decentralized drives depends on selecting the correct cables, providing correct grounding and a functioning equipotential bonding.

Always apply the **relevant standards**.

Note the following:

#### 5.1.2 EMC-compliant installation



### INFORMATION

This drive system is not designed for operation on a public low voltage supply system that supplies residential areas.

This is a product with restricted availability in accordance with IEC 61800-3. This product may cause EMC interference. In this case, it is recommended for the operator to take suitable measures.

For detailed information on EMC compliant installation, refer to the publication "Electromagnetic Compatibility in Drive Engineering" from SEW-EURODRIVE.

With respect to the EMC regulation, frequency inverters and compact drives cannot be seen as stand-alone units. They can only be evaluated in terms of EMC when they are integrated in a drive system. Conformity is declared for a described, CE-typical drive system. These operating instructions contain further information about this topic.

#### 5.1.3 Cable selection, routing and shielding



### ⚠ WARNING

Electric shock caused by faulty installation.

Severe or fatal injuries.

- Take the utmost care when installing the units.
- Observe the connection examples.

For more information on cable selection, routing and shielding, refer to chapter "Cable routing and shielding".

#### 5.1.4 Equipotential bonding

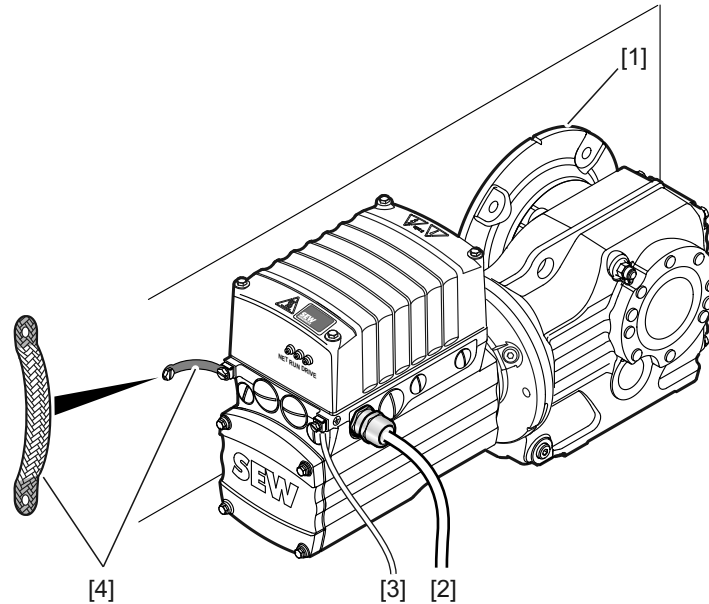
Regardless of the protective earth connection, it is essential that **low-impedance, HF-capable equipotential bonding** is provided (see also EN 60204-1 or DIN VDE 0100-540):

- Establish a connection over a wide surface area between the DRC drive unit and the mounting rail.



- To do so, use a ground strap (HF litz wire), for example, to connect the DRC drive unit and the plant's grounding point.

*Example*



9007204122337675

- [1] Conductive connection over a large area between drive unit and mounting plate
  - [2] PE conductor in the supply cable
  - [3] 2. PE conductor via separate terminals
  - [4] EMC-compliant equipotential bonding, for example using a ground strap (HF litz wire)
- Do not use the cable shield of data lines for equipotential bonding.



## 5.2 Installation instructions

### 5.2.1 Connecting power supply cables

- The rated voltage and rated frequency of the DRC drive unit must correspond with the data of the power supply system.
- Cable cross section: According to input current  $I_{line}$  at rated power (see chapter "Technical data and dimension sheets").
- Install line fuses at the beginning of the power supply cable behind the supply bus junction. Select the fuse size according to the cable cross section.
- Use only copper cables with a minimum temperature range of 85 °C as connection cable.
- DRC drive units are intended to be operated on voltage supply systems with grounded star point (TN and TT systems).

### 5.2.2 Permitted cable cross section of terminals

#### Line terminals

Adhere to the permitted cable cross sections for installation:

| Line terminals X2                           | without conductor end sleeve             | with conductor end sleeve (with or without insulating shroud) |
|---|--|---|
| Connection cross section (mm <sup>2</sup> ) | 0.5 mm <sup>2</sup> – 10 mm <sup>2</sup> | 0.5 mm <sup>2</sup> – 6 mm <sup>2</sup>                       |
| Connection cross section (AWG)              | AWG20 – AWG8                             | AWG20 – AWG10   |
| Stripping length                            | 13 mm – 15 mm                            |   |
| Current carrying capacity                   | 24 A (max. loop-through current)         |   |

#### External braking resistor terminals

Adhere to the permitted cable cross sections for installation:

| External braking resistor terminals X5      | without conductor end sleeve               | with conductor end sleeve (with or without insulating shroud) |
|---|--|---|
| Connection cross section (mm <sup>2</sup> ) | 0.08 mm <sup>2</sup> – 4.0 mm <sup>2</sup> | 0.25 mm <sup>2</sup> – 2.5 mm <sup>2</sup>                    |
| Connection cross section (AWG)              | AWG28 – AWG12                              | AWG 23 – AWG 14   |
| Stripping length                            | 8 mm – 9 mm                                |   |

#### Control terminals

Adhere to the permitted cable cross sections for installation:

| Control terminals X7                        | without conductor end sleeve               | with conductor end sleeve (without insulating shroud) | with conductor end sleeve (with insulating shroud) |
|---|--|---|--|
| Connection cross section (mm <sup>2</sup> ) | 0.08 mm <sup>2</sup> – 2.5 mm <sup>2</sup> |   | 0.25 mm <sup>2</sup> – 1.5 mm <sup>2</sup>         |
| Connection cross section (AWG)              | AWG 28 – AWG 14                            |   | AWG 23 – AWG 16                                    |
| Stripping length                            | 5 mm – 6 mm                                |   |  |
| Current carrying capacity                   | 3.5 A (max. loop-through current)          |   |  |





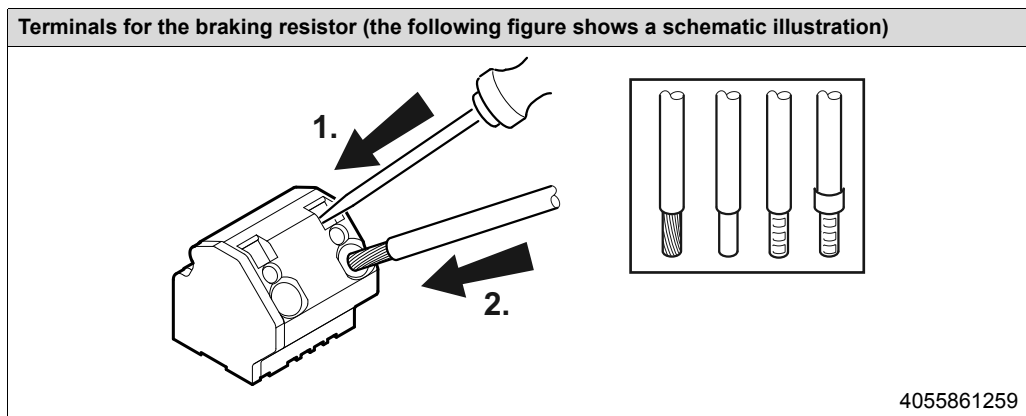
Communication terminals

Adhere to the permitted cable cross sections for installation:

| Communication terminals X1                  | Single-wire conductor (bare wire)<br>Flexible conductor (bare litz wire)  | Conductor with Conductor end sleeve without insulating shroud | Conductor with Conductor end sleeve With insulating shroud |
|---|---|---|--|
| Connection cross section (mm <sup>2</sup> ) | 0.5 – 1.5 mm <sup>2</sup>   | 0.5 mm <sup>2</sup> – 1.0 mm <sup>2</sup>                     | 0.5 mm <sup>2</sup>  |
| Connection cross section (AWG)              | AWG20 – AWG16   | AWG20 – AWG17   | AWG20  |
| Stripping length                            | 9 mm  |   |  |
| Connection                                  | Connect only single-wire conductors or flexible conductors with or without conductor end sleeve (DIN 46228 part 1, material E-CU) |   |  |

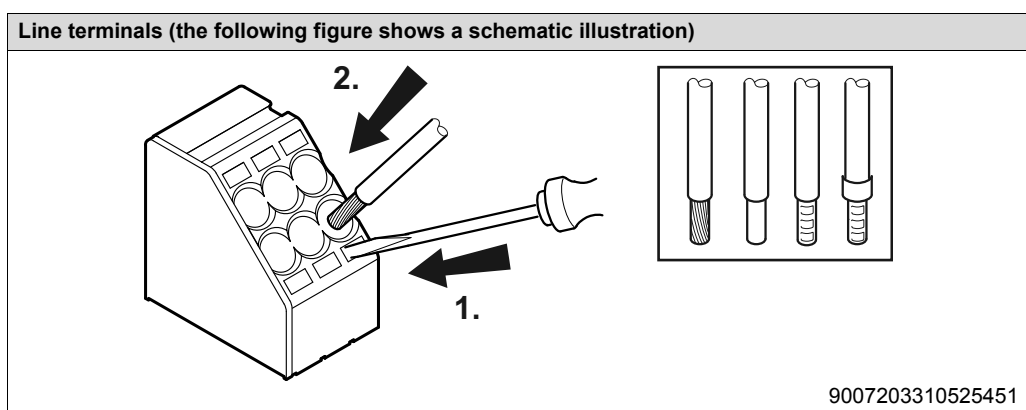
5.2.3 Terminal activation for the braking resistor

Adhere to the following sequence when activating the terminals for the braking resistor:



5.2.4 Line terminal actuation

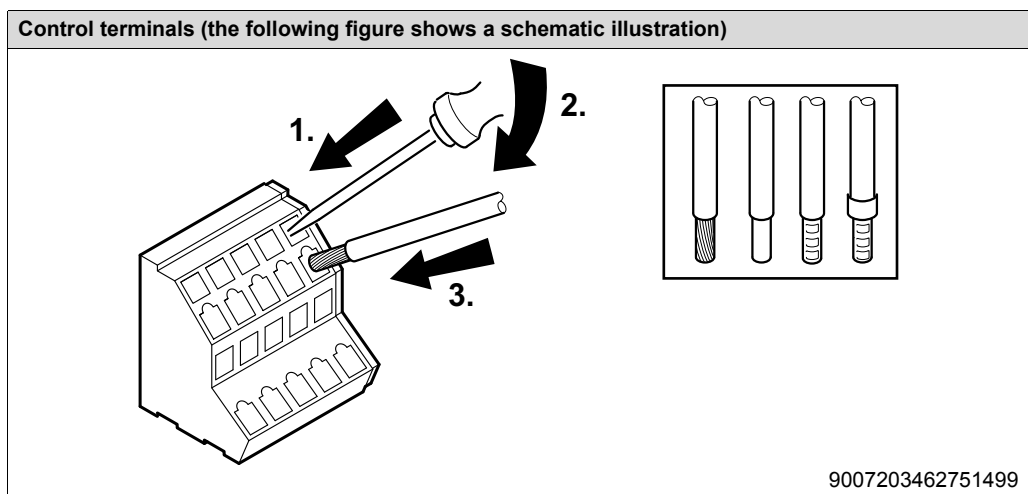
Adhere to the following sequence when activating the line terminals:





#### 5.2.5 Control terminal actuation

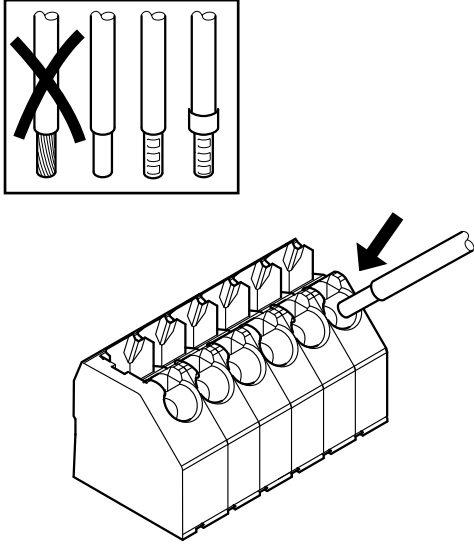
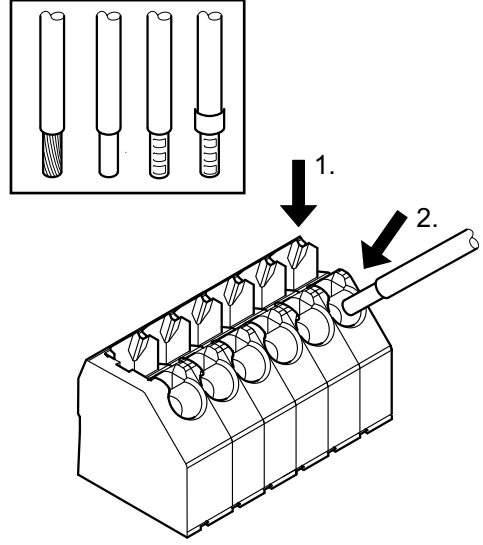
Adhere to the following sequence when activating the control terminals:

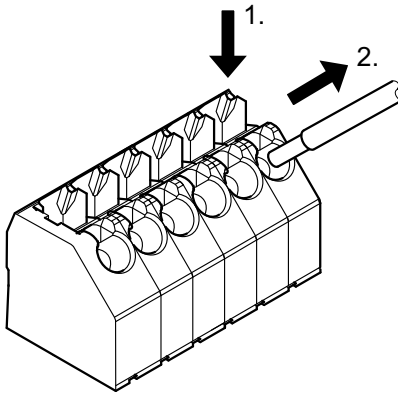




### 5.2.6 Actuating the communication terminals

Note the following information and sequence for actuating the communication terminal clamps:

| Connect the conductor without pressing the actuation button  | Connect the conductor after pressing the actuation button  |
|--|--|
|  <p style="text-align: right;">9007201633209867</p>  |  <p style="text-align: right;">9007201633229835</p>   |
| <p>Single-wire conductors and flexible conductors with conductor end sleeves can be installed directly (without tool) up to two cross section sizes below the nominal cross section.</p> | <p>You will need to press the actuation button on top to open the clamping spring for installing untreated, flexible conductors or those with a small cross section that cannot be installed directly.</p> |

| Remove the conductor after pressing the actuation button  |
|---|
|  <p style="text-align: right;">9007201633261451</p> |

Before removing the conductor, first press the actuation button on top.



#### 5.2.7 Line protection and residual current device (RCD or RCM)

##### **⚠ WARNING**

Electric shock due to incorrect RCD type

Severe or fatal injuries.



- The connected DRC drive units can cause direct current in the protective earth conductor. In cases where an earth-leakage circuit breaker is used for protection against direct or indirect contact, only a type B earth-leakage circuit breaker is permitted on the power supply side of DRC drive units.
- 
- Install the fuses at the beginning of the power supply cables behind the supply bus junction.
  - A conventional residual current device is not permitted. RCDs sensitive to universal current are permitted. During normal operation of DRC, earth-leakage currents of > 3.5 mA can occur.
  - SEW-EURODRIVE recommends to not use residual current devices. However, if a residual current device is stipulated for direct or indirect protection against contact, observe the above note.

#### 5.2.8 Line contactor

##### **NOTICE**

Damage to the DRC inverter due to jogging of the line contactor.

Damage to the DRC inverter.



- Do not use the line contactor (see wiring diagram) for jog mode but only for switching the inverter on and off. For jog mode, use the control commands.
  - Observe a minimum switch-off time of 2 s for the line contactor.
- 
- Use only a contactor of utilization category AC3 (EN 60947-4-1) as a line contactor.



5.2.9 Notes on PE connection

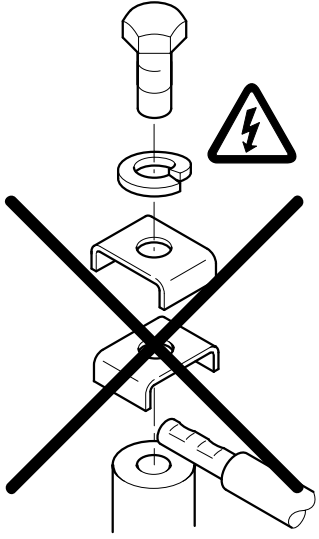
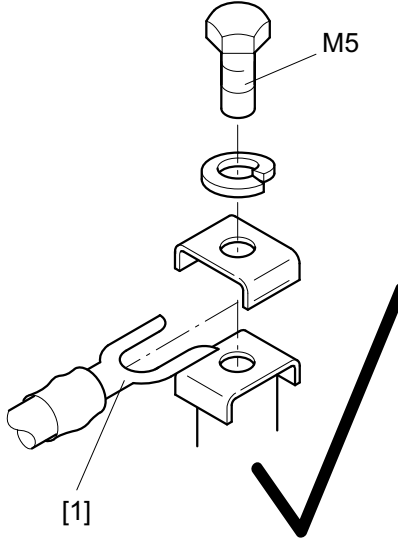
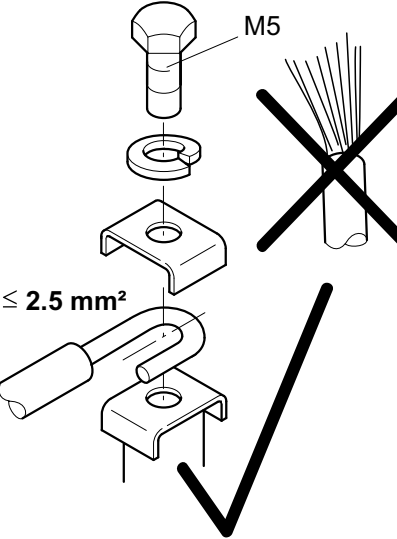


**⚠ WARNING**

Electric shock due to incorrect connection of PE.

Severe or fatal injuries.

- The permitted tightening torque for the screw is 2.0 – 2.4 Nm (18 – 21 lb.in).
- Observe the following notes regarding PE connection.

| Prohibited assembly  | Recommendation:<br>Assembly with forked cable lug<br>Permitted for all cross sections   | Assembly with solid connecting wire<br>Permitted for cross sections up to<br>Max. 2.5 mm <sup>2</sup>  |
|--|---|--|
|  <p>9007201632452235</p> |  <p>M5</p> <p>[1]</p> <p>9007201632429067</p> |  <p>M5</p> <p>≤ 2.5 mm<sup>2</sup></p> <p>9007201632413579</p> |

[1] Forked cable lug suitable for M5 PE screws

Earth-leakage currents  $\geq 3.5$  mA may occur during normal operation. To meet the requirements of EN 61800-5-1, observe the following notes:

- The protective earth (PE) connection must meet the requirements for plants with high earth-leakage currents.
- This usually means
  - installing a PE connection cable with a minimum cross section of 10 mm<sup>2</sup>
  - or installing a second PE connection cable in parallel with the original PE connection.

**5.2.10 Installation above 1000 m asl**

You can install DRC drive units at altitudes from 1000 m to a maximum of 4000 m above sea level<sup>1)</sup> provided the following conditions are met:

- The nominal continuous power is reduced due to the reduced cooling above 1000 m (see chapter "Technical data and dimension sheets").
- Above 2000 m above sea level, the air and creeping distances are only sufficient for overvoltage category II. If the installation requires overvoltage category III, you will have to install additional external overvoltage protection to limit overvoltage peaks to 1.5 kV phase-to-phase and 2.5 kV phase-to-ground.
- If safe electrical disconnection is required, it must be implemented outside the unit for altitudes of 2000 m above sea level and higher (safe electrical disconnection in accordance with EN 61800-5-1).
- At installation altitudes between 2000 m and 4000 m above sea level, the permitted rated power supply voltages are reduced as follows:
  - By 6 V per 100 m

**5.2.11 Protection devices**

- DRC drive units are equipped with integrated protection devices against overload.
- Cable protection must be implemented using external overload devices.
- Observe the relevant standards concerning cable cross section, voltage drop and installation type.

1) The maximum altitude is limited by the reduced electric strength due to the lower air density.



5.2.12 UL-compliant installation



**INFORMATION**

Due to UL requirements, the following chapters are always printed in English independent of the language of the publication:

*Power terminals*

Observe the following notes for UL-compliant installation:

- Use 75 °C copper wire only.
- DRC uses cage clamp terminals

*Short circuit current rating*

Suitable for use on a circuit capable of delivering not more than 200,000 rms symmetrical amperes when protected by 40 A, 600 V non-semiconductor fuses or 500 V minimum 40 A maximum inverse time circuit breakers.

- DRC, the max. voltage is limited to 500 V.

*Branch circuit protection*

Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.

The table below lists the permitted maximum branch circuit protection:

| Series | Non-semiconductor fuses | Inverse time circuit breakers |
|--------|-------------------------|-------------------------------|
| DRC    | 40 A / 600 V            | 500 V minimum / 40 A maximum  |

*Motor overload protection*

The DRC motor is provided with load and speed-sensitive overload protection and thermal memory retention upon shutdown or power loss.

The trip current is adjusted to 150% of the rated motor current.

*Ambient temperature*

The DRC motor is suitable for an ambient temperature of 40 °C, max. 60 °C with derated output current. To determine the output current rating at temperatures above 40 °C, the output current should be derated by 3.0% per K between 40 °C and 60 °C.

*Wiring diagrams*

For wiring diagrams, refer to chapter "Electrical installation".



### 5.3 Terminal assignment of DRC1/2



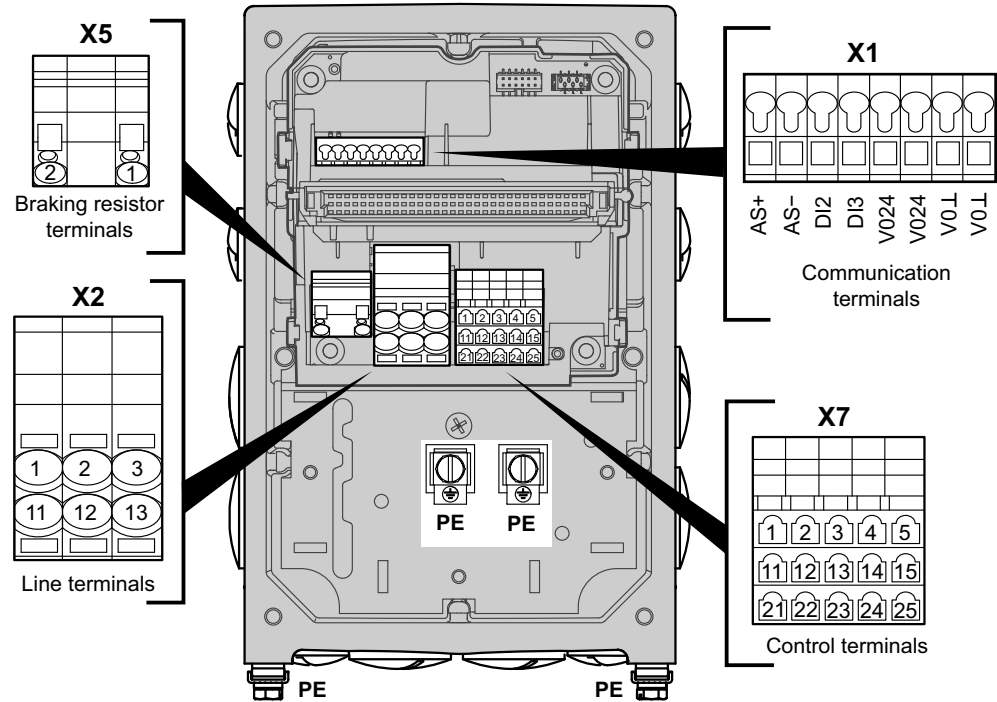
#### ⚠ WARNING

Electric shock due to regenerative operation while turning the shaft.

Severe or fatal injuries.

- Secure the output shaft against rotation when the electronics cover is removed.

The following figure shows the terminal assignment of DRC1/2-DAC:



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| Assignment                    |     |      |         |  |
|-------------------------------|-----|------|---------|--|
| Terminal                      | No. | Name | Marking | Function (permitted tightening torque)       |
| X2 line terminals             | 1   | L1   | Brown   | Line connection phase L1 – IN                |
|                               | 2   | L2   | Black   | Line connection phase L2 – IN                |
|                               | 3   | L3   | Gray    | Line connection phase L3 – IN                |
|                               | 11  | L1   | Brown   | Line connection phase L1 – OUT               |
|                               | 12  | L2   | Black   | Line connection phase L2 – OUT               |
|                               | 13  | L3   | Gray    | Line connection phase L3 – OUT               |
| ⊕                             | –   | PE   | –       | Protective earth connection (2.0 to 3.3 Nm ) |
| X5 braking resistor terminals | 1   | BW   | –       | Braking resistor connection                  |
|                               | 2   | BW   | –       | Braking resistor connection                  |





| Assignment                 |     |        |         |  |
|----------------------------|-----|--------|---------|--|
| Terminal                   | No. | Name   | Marking | Function (permitted tightening torque) |
| X7 control terminals       | 1   | STO +  | Yellow  | Input STO +                            |
|                            | 2   | STO -  | Yellow  | Input STO -                            |
|                            | 3   | K1a    | -       | Signal relays                          |
|                            | 4   | 24V_O  | -       | DC 24 V output                         |
|                            | 5   | 0V24_O | -       | 0V24 reference potential output        |
|                            | 11  | STO +  | Yellow  | Output STO + (to loop through)         |
|                            | 12  | STO -  | Yellow  | Output STO - (to loop through)         |
|                            | 13  | K1b    | -       | Signal relays                          |
|                            | 14  | 24V_O  | -       | DC 24 V output                         |
|                            | 15  | 0V24_O | -       | 0V24 reference potential output        |
|                            | 21  | n.c.   | -       | Not connected                          |
|                            | 22  | DI01   | -       | Digital input DI01                     |
|                            | 23  | DI02   | -       | Digital input DI02                     |
|                            | 24  | DI03   | -       | Digital input DI03                     |
|                            | 25  | DI04   | -       | Digital input DI04                     |
| X1 communication terminals | -   | AS+    | -       | AS-Interface data cable +              |
|                            | -   | AS-    | -       | AS-Interface data cable -              |
|                            | -   | DI2    | -       | DI2 sensor input                       |
|                            | -   | DI3    | -       | DI3 sensor input                       |
|                            | -   | VO24   | -       | DC 24 V voltage supply for sensors     |
|                            | -   | VO24   | -       | DC 24 V voltage supply for sensors     |
|                            | -   | VO ⊥   | -       | 0V24 reference potential for sensors   |
|                            | -   | VO ⊥   | -       | 0V24 reference potential for sensors   |



#### 5.4 Terminal assignment of DRC3/4

##### ⚠ WARNING

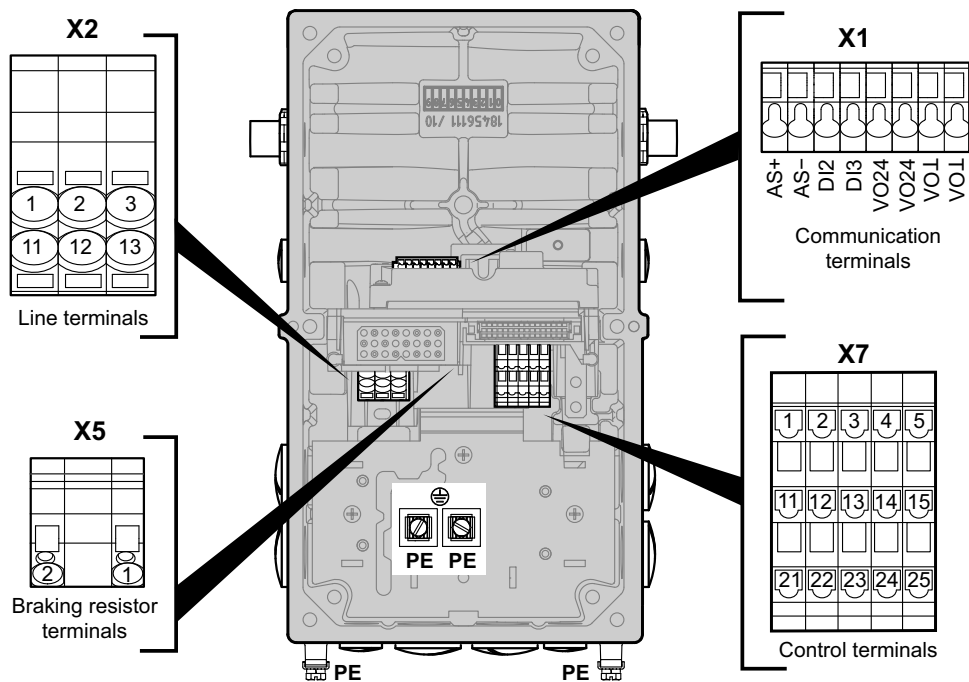


Electric shock due to regenerative operation while turning the shaft.

Severe or fatal injuries.

- Secure the output shaft against rotation when the electronics cover is removed.

The following figure shows the terminal assignment of DRC3-DAC:



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| Assignment                    |     |      |         |  |
|-------------------------------|-----|------|---------|--|
| Terminal                      | No. | Name | Marking | Function (permitted tightening torque)       |
| X2 line terminals             | 1   | L1   | Brown   | Line connection phase L1 – IN                |
|                               | 2   | L2   | Black   | Line connection phase L2 – IN                |
|                               | 3   | L3   | Gray    | Line connection phase L3 – IN                |
|                               | 11  | L1   | Brown   | Line connection phase L1 – OUT               |
|                               | 12  | L2   | Black   | Line connection phase L2 – OUT               |
|                               | 13  | L3   | Gray    | Line connection phase L3 – OUT               |
| ⊕                             | –   | PE   | –       | Protective earth connection (2.0 to 3.3 Nm ) |
| X5 braking resistor terminals | 1   | BW   | –       | Braking resistor connection                  |
|                               | 2   | BW   | –       | Braking resistor connection                  |



| Assignment                 |      |        |                    |  |
|----------------------------|------|--------|--------------------|--|
| Terminal                   | No.  | Name   | Marking            | Function (permitted tightening torque) |
| X7 control terminals       | 1    | STO +  | Yellow             | Input STO +                            |
|                            | 2    | STO -  | Yellow             | Input STO -                            |
|                            | 3    | K1a    | -                  | Signal relays                          |
|                            | 4    | 24V_O  | -                  | DC 24 V output                         |
|                            | 5    | 0V24_O | -                  | 0V24 reference potential output        |
|                            | 11   | STO +  | Yellow             | Output STO + (to loop through)         |
|                            | 12   | STO -  | Yellow             | Output STO - (to loop through)         |
|                            | 13   | K1b    | -                  | Signal relays                          |
|                            | 14   | 24V_O  | -                  | DC 24 V output                         |
|                            | 15   | 0V24_O | -                  | 0V24 reference potential output        |
|                            | 21   | n.c.   | -                  | Not connected                          |
|                            | 22   | DI01   | -                  | Digital input DI01                     |
|                            | 23   | DI02   | -                  | Digital input DI02                     |
|                            | 24   | DI03   | -                  | Digital input DI03                     |
| 25                         | DI04 | -      | Digital input DI04 |  |
| X1 communication terminals | -    | AS+    | -                  | AS-Interface data cable +              |
|                            | -    | AS-    | -                  | AS-Interface data cable -              |
|                            | -    | DI2    | -                  | DI2 sensor input                       |
|                            | -    | DI3    | -                  | DI3 sensor input                       |
|                            | -    | VO24   | -                  | DC 24 V voltage supply for sensors     |
|                            | -    | VO24   | -                  | DC 24 V voltage supply for sensors     |
|                            | -    | VO ⊥   | -                  | 0V24 reference potential for sensors   |
|                            | -    | VO ⊥   | -                  | 0V24 reference potential for sensors   |



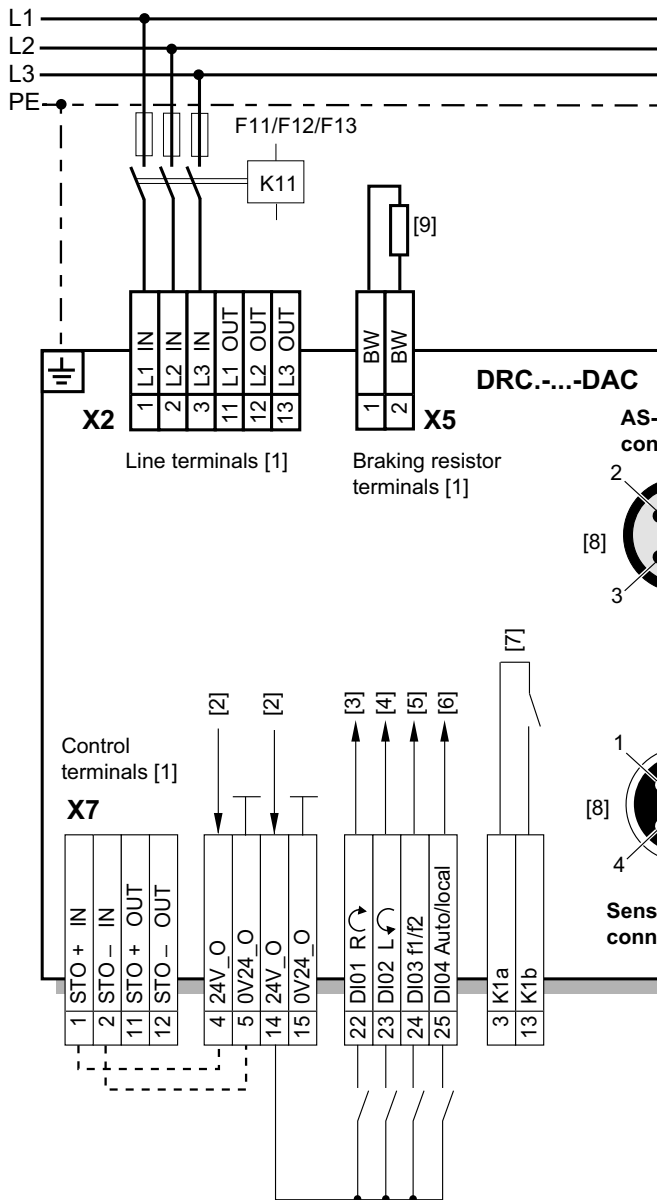
5.5 Connecting DRC drive units

**⚠ WARNING**

No safe disconnection of the DRC drive unit.

Severe or fatal injuries.

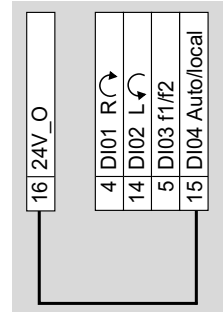
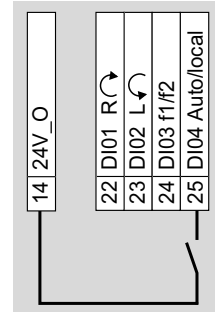
- Do not use the 24 V output (terminals 4, 5, 14, 15) for safety-related applications with DRC drive units.
- You may only jumper the STO input with 24 V when the DRC drive unit need not fulfill any safety function.



**Local mode**

Automatic mode active

Local mode active



**Terminal functions**

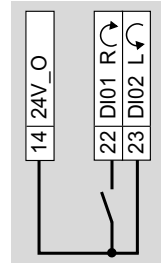
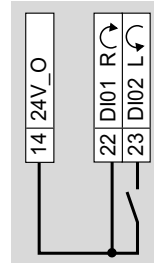
**CW/stop and CCW/stop:**

Direction of rotation

CW active

Direction of rotation

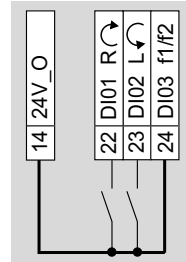
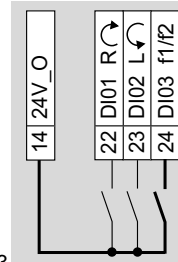
CCW active



**Functions of terminals f1/f2:**

Setpoint f1 active

Setpoint f2 active



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- [1] See chapter "Terminal assignment"
- [2] Integrated 24 V supply
- [3] CW/stop
- [4] CCW/stop
- [5] Setpoint changeover f1/f2
- [6] Automatic mode/local mode

- [7] Signal relay (contact closed = ready for operation)
- [8] Assignment see chapter "Plug connector assignment"
- [9] Braking resistor connection

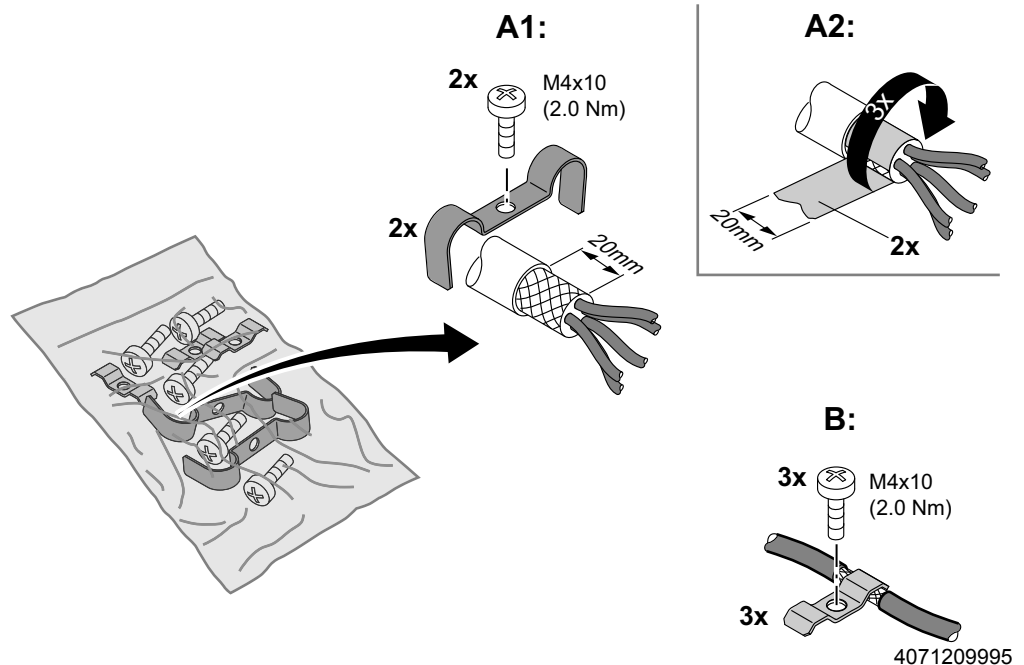


## 5.6 Cable routing and shielding

### 5.6.1 Installation material kit (part no. 1 824 826 8)

Each DRC drive unit<sup>1)</sup> is delivered with an accessory bag that contains installation material for cable shielding:

- **A1: Installation material for line cables and hybrid cables:**  
2 x shield clamps and screws<sup>2)</sup> to connect the shield of line cables or hybrid cables (outer shield).
- **A2: Conductive film:**  
2 x pieces of conductive film to wind around the braid shield. Use the conductive film if required.
- **B: Installation material for control cables and data cables:**  
3 x shield clamp with screw<sup>2)</sup> to connect the shield of control cables or data cables (STO, CAN, binary signals).



### INFORMATION

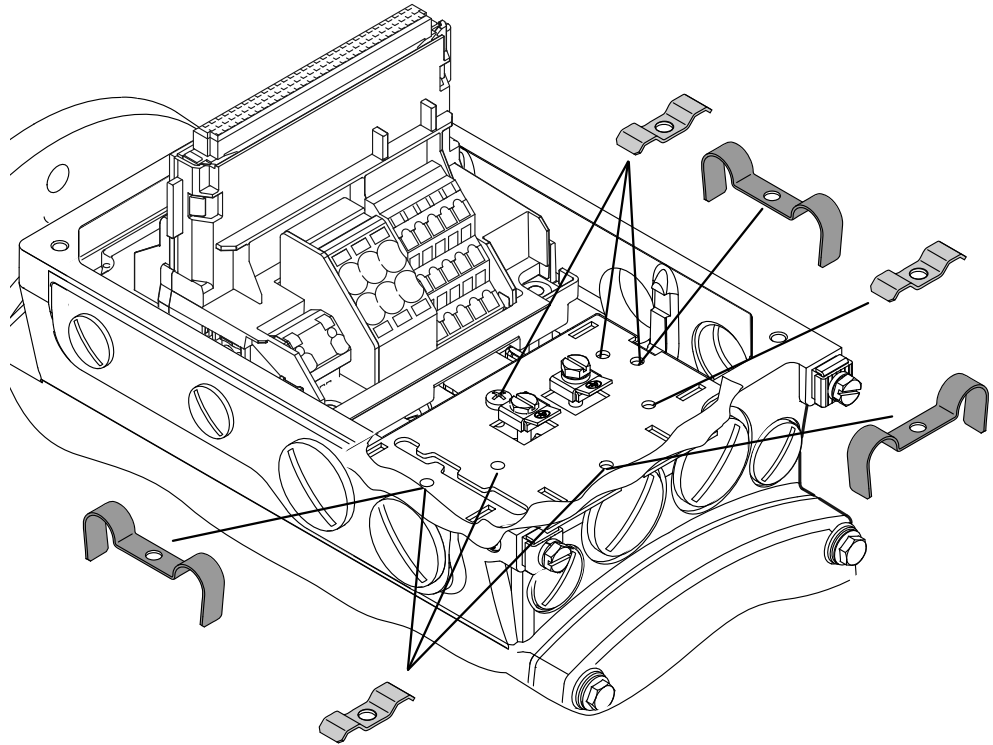
For some installation variants, you do not need all the parts of the accessory kit.

1) Exception: Not when all possible connections have been ordered as plug connectors.  
2) Self cutting, which is why the holes in the connection box do not have a thread.



#### 5.6.2 Basic mounting options for DRC1/2

The following figure shows the possible mounting options for the DRC1/2 electronics motor. The following chapters show common examples and contain important notes on cable selection and routing.

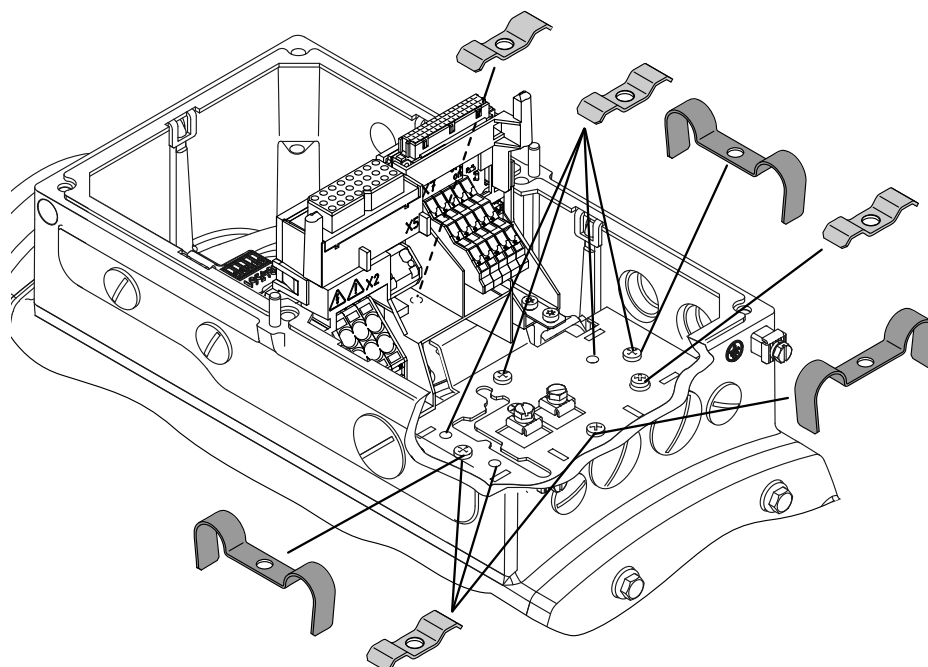


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### 5.6.3 Basic mounting options for DRC3/4

The following figure shows the possible mounting options for the DRC3/4 electronics motor. The following chapters show common examples and contain important notes on cable selection and routing.



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#### 5.6.4 Notes on cable routing and shielding

Note the following when routing and shielding the cables:

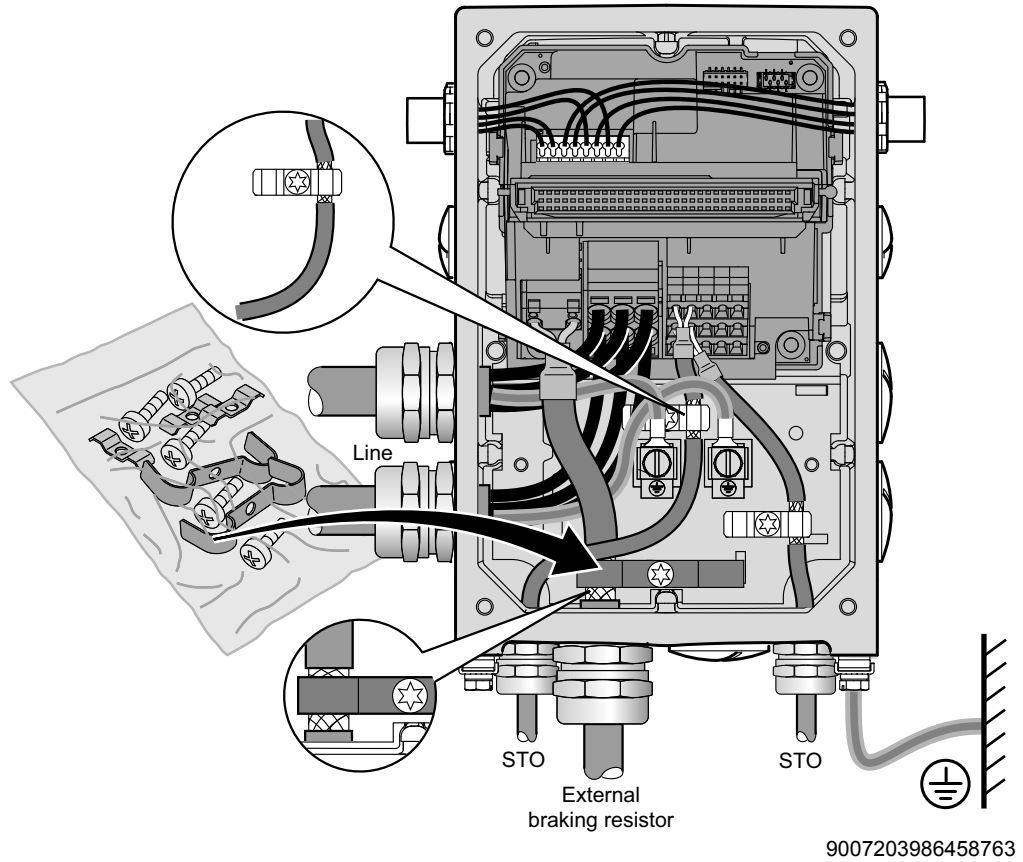
- Cable selection
  - You can use unshielded cables for the supply system connection.
  - Control cables must be shielded. Route them separately from cables that emit interference (e.g. control cables of solenoid valves, motor leads).
  - Use shielded cables for the optional external braking resistor.
  - The shield must have good EMC properties (high shield attenuation) and must not be used for mechanical protection of the cable.
- Cable shield – external braking resistor
  - Connect the cable shield of the cable for an external braking resistor to the metal housing of the unit using the shield clamps of the installation material kit. To do so, strip off the cable sheath around the shield connection surface.
- The AS-Interface data cable and sensors are generally connected using plug connectors.
- Cable shielding – Control cables
  - Connect the shields of the control cables to the metal housing of the unit using the shield clamps of the installation material kit. To do so, strip off the cable sheath around the shield connection surface.
  - As an alternative, you can use optionally available EMC cable glands to connect the shield of control cables, see chapter "EMC cable glands".
- Observe the permitted bending radii of the installed cables for cable routing.





Recommended  
cable routing for  
DRC1/2

The following figure shows the recommended cable routing:



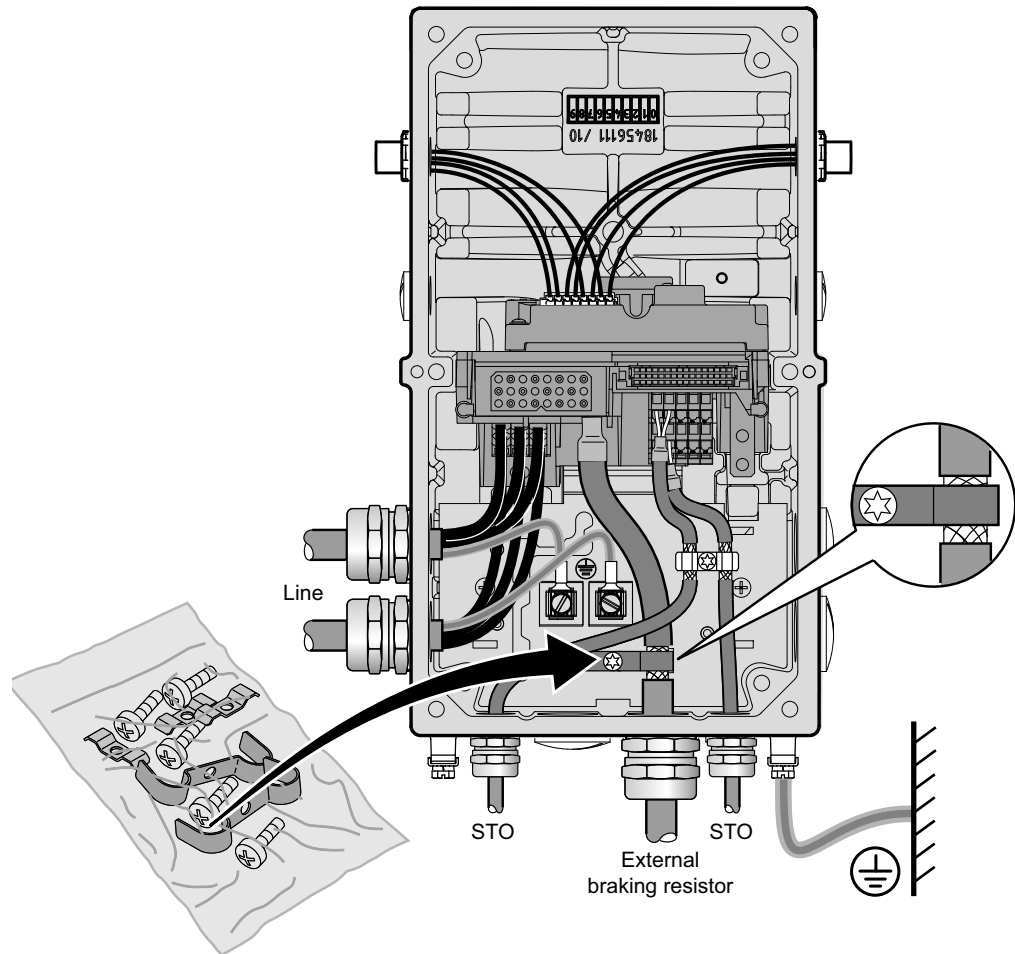


## Electrical installation

### Cable routing and shielding

*Recommended  
cable routing for  
DRC3/4*

The following figure shows the recommended cable routing:

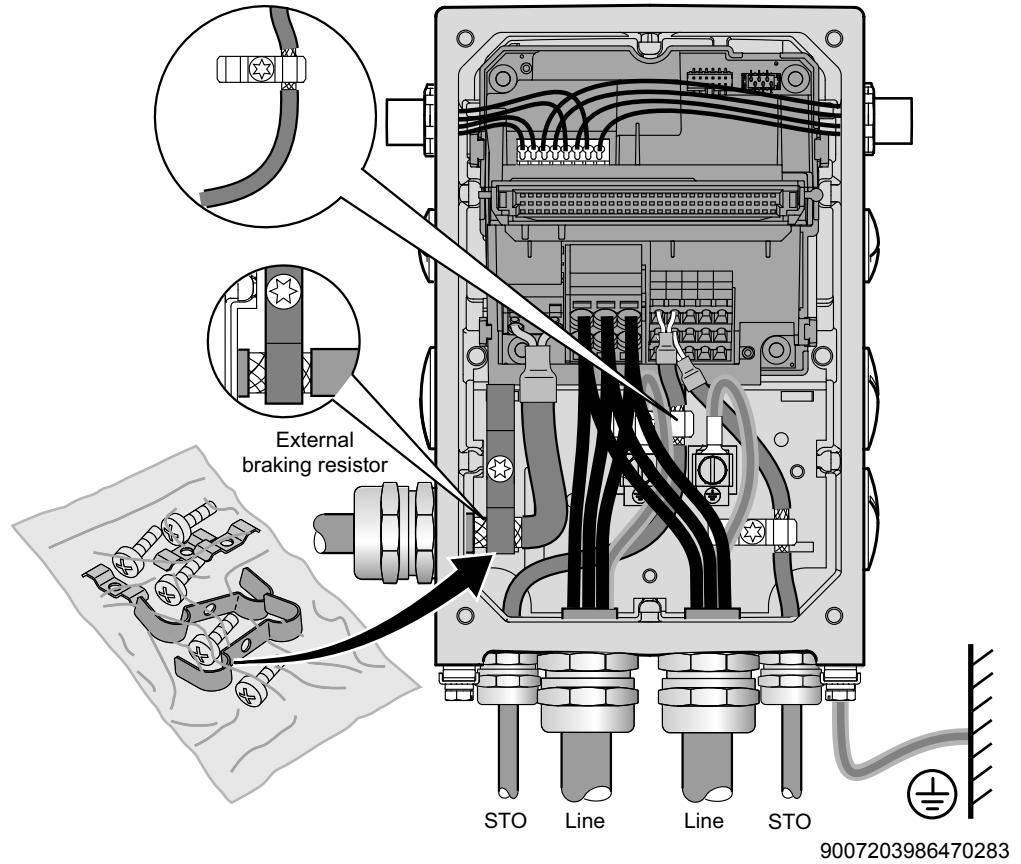


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Alternative cable routing for DRC1/2

The following figure shows the alternative cable routing:



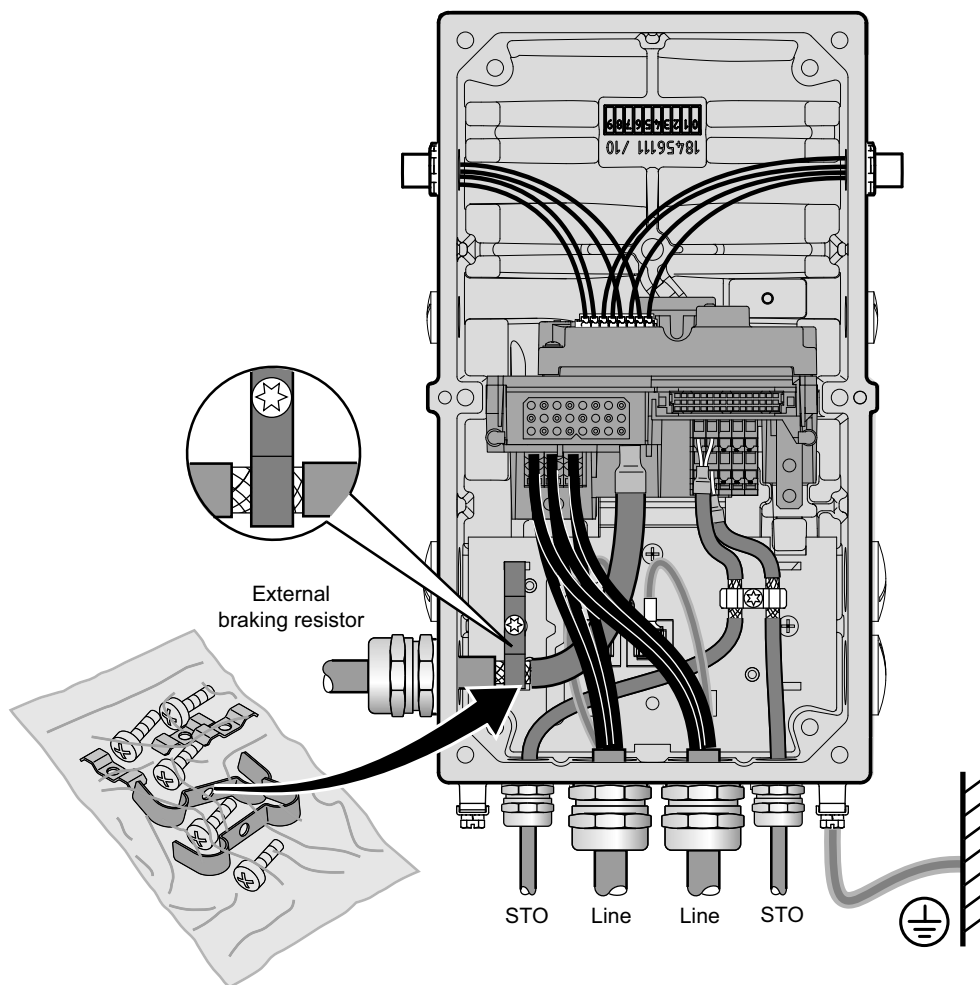


## Electrical installation

### Cable routing and shielding

*Alternative cable routing for DRC3/4*

The following figure shows the alternative cable routing:

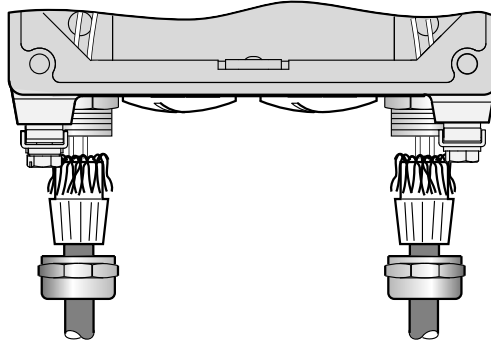




## 5.7 EMC cable glands

### 5.7.1 Cable shielding (alternative) – Control cables

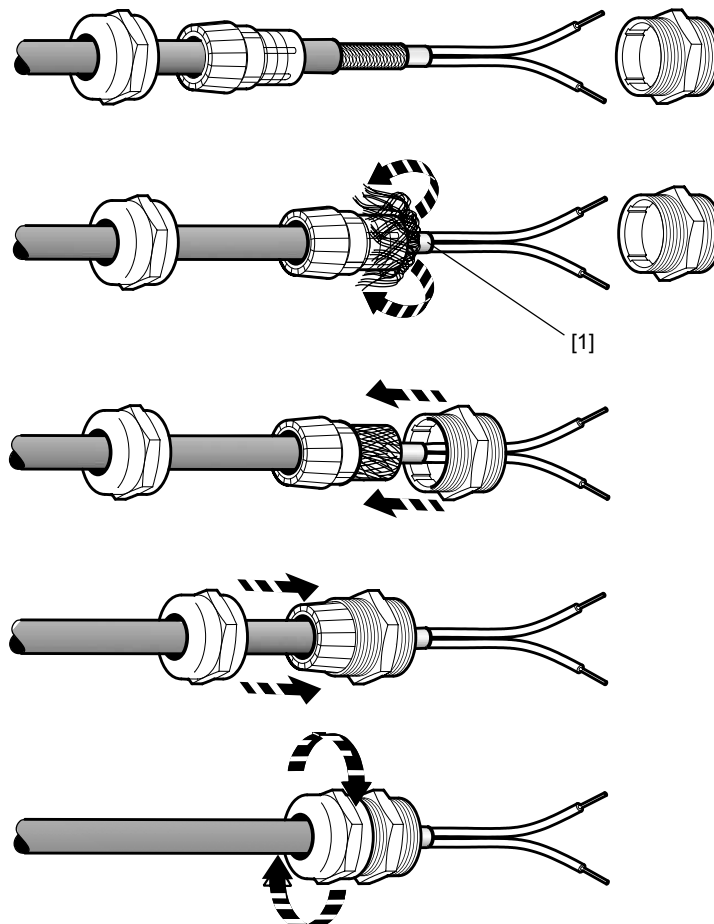
As an alternative to using shield clamps for control cables (STO, binary signals), you can use EMC cable glands, which are available as an option, to connect the shield.



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### 5.7.2 Assembly of EMC cable glands

Fit the EMC cable glands supplied by SEW-EURODRIVE according to the following figure:



[1] Important: Cut off the insulating foil, do not just fold it back.

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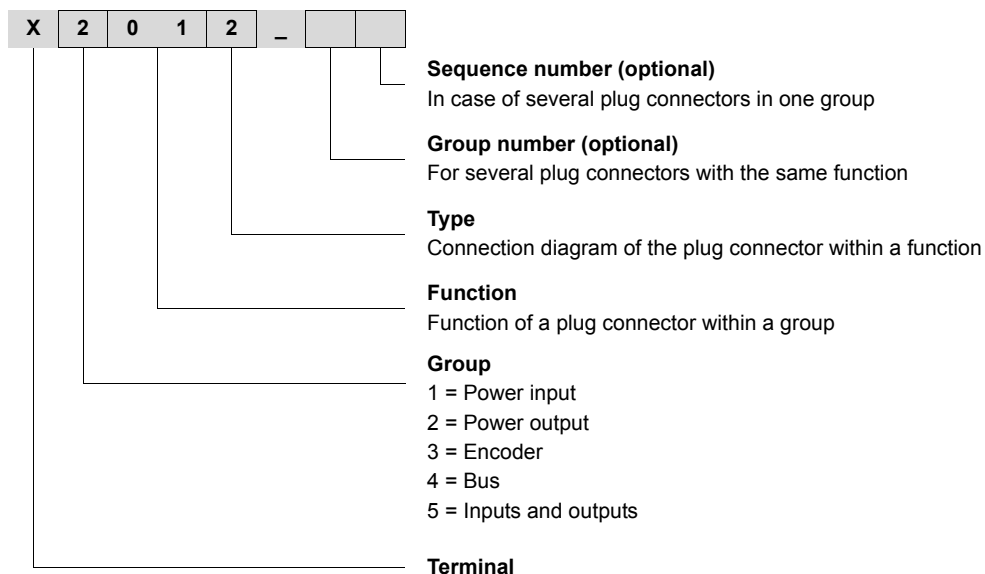


## 5.8 Plug connectors

The wiring diagrams of the plug connectors depict the contact end of the connection.

### 5.8.1 Designation key

The designation of plug connectors is specified according to the following key:




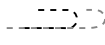
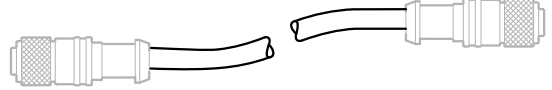
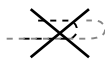
### 5.8.2 Connection cable

Connection cables are not included in the scope of delivery.

You can order prefabricated cables from SEW-EURODRIVE. They are described in the following sections. Specify the part number and length of the required cable in your order.

The number and type of required connection cables depend on the design of the units and the components to be connected. This is why not all cables in the list are actually required.

The following figures show the various cable types:

| Cables   | length          | Installation type  |
|--|-----------------|--|
|  | Fixed length    | Suitable for cable carrier installation<br>     |
|  | Variable length | Not suitable for cable carrier installation<br> |

#### Cable routing

Observe the permitted bending radii of the installed cables for cable routing. For detailed information, refer to chapter "Technical data / Dimension sheets / Plug connectors including mating connectors".



*Use of prefabricated cables with plug connectors*

SEW-EURODRIVE uses prefabricated cables for certifications, type tests and approval of the units. The cables available from SEW-EURODRIVE meet all the requirements necessary for the functions of the unit and the connected components. The units under consideration are always the basic units including all connected components and corresponding connection cables.

This is why SEW-EURODRIVE recommends to use only the prefabricated cables specified in the documentation.

When using units with integrated safety functions according to EN ISO 13849, you also have to adhere to all the conditions and requirements for the installation and routing of cables described in the documentation for the units concerning functional safety.

*Use of third-party cables with plug connectors*

If third-party cables are used – even if these cables are technically adequate – SEW-EURODRIVE does not accept any liability and cannot guarantee unit properties or functions.

When using third-party cables to connect the unit and/or unit components, make sure to comply with all applicable national regulations. Note that the technical features of the unit or system of units might be affected inadvertently when using non-SEW cables. This concerns in particular the following properties:

- Mechanical properties (such as IP degree of protection, cable carrier suitability)
- Chemical properties (such as the absence of silicone and halogen, resistance against substances)
- Thermal properties (e.g. temperature stability, heating of the unit, flammability class)
- EMC behavior (such as interference emission limit values, compliance with interference immunity values stipulated in standards)
- Functional safety (approvals according to EN ISO 13849-1)

Third-party cables not explicitly recommended by SEW-EURODRIVE must meet at least the requirements of the following standards and have been permitted according to these plug connector standards:

- IEC 60309
- IEC 61984



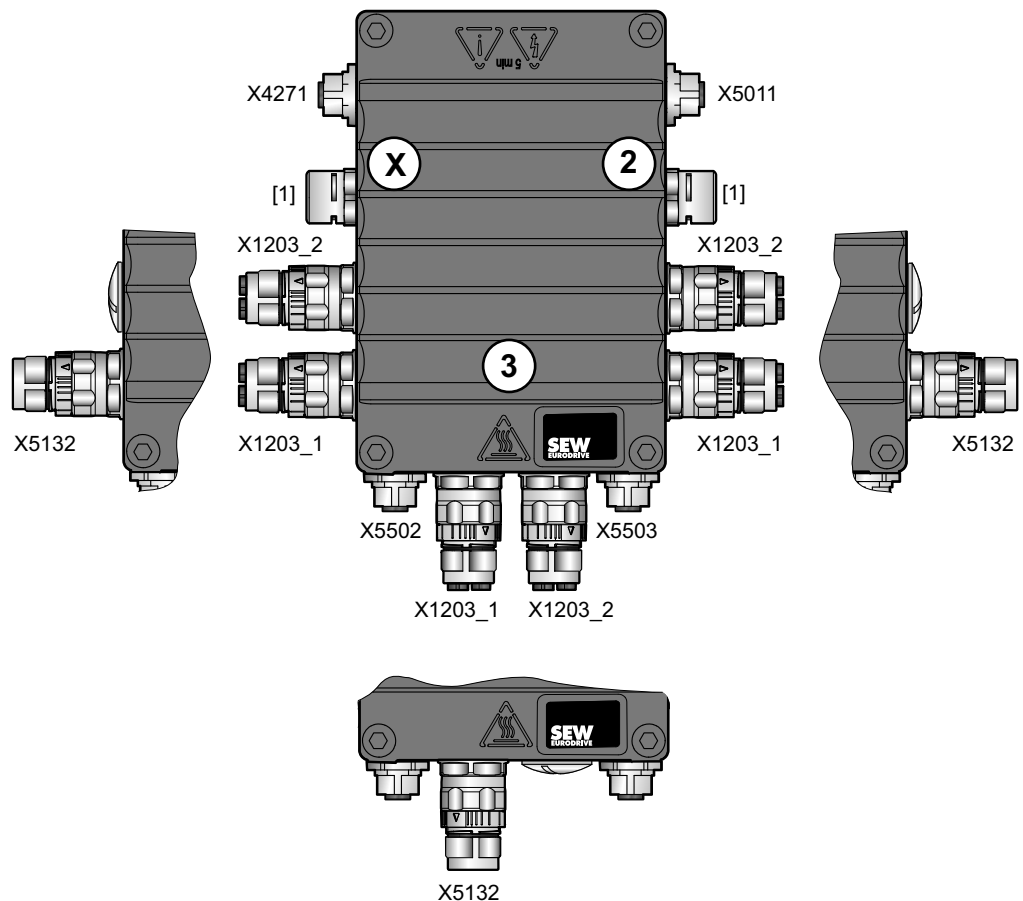
#### 5.8.3 Plug connector positions

The following figure shows possible plug connector positions. A difference is made between plug connectors with selectable position and plug connectors with fixed position:

| Plug connector  | Color  | Position    | Position                                      |
|---|--------|-------------|---|
| X5132: Digital inputs/outputs                             | –      | As required | X, 2 or 3, not together with X1203_1, X1203_2 |
| X5502: STO  | Orange | Fixed       | 3 (left)                                      |
| X5503: STO  | Orange | Fixed       | 3 (right)                                     |
| X4271: AS-Interface communication interface <sup>1)</sup> | Yellow | Fixed       | X   |
| X5011: AS-Interface sensors <sup>1)</sup>                 | Black  | Fixed       | 2   |
| X1203_1: AC 400 V connection <sup>2)</sup>                | Black  | As required | X, 2 or 3, not together with X5132            |
| X1203_2: AC 400 V connection                              | Black  | As required | X, 2 or 3, not together with X5132            |
| [1] Optional pressure compensation                        | –      | Fixed       | Depends on mounting position                  |

1) Standard scope of delivery

2) Plug connector X1203\_1 is also available separately (that is without plug connector X1203\_2).



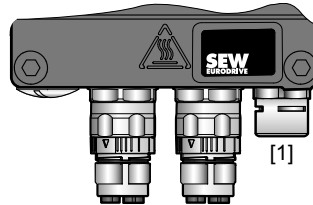
18014400955542795





#### 5.8.4 Restrictions in conjunction with pressure compensation

In connection with optional pressure compensation and mounting positions M5 and M6, the position for the STO plug connectors is occupied by the pressure compensation fitting [1]. In this case, plug connectors for STO are not possible:



9007201700846347



#### 5.8.5 Plug connector variant



#### ⚠ CAUTION

Possible damage of the right-angle connector in case of rotation without mating connector.

Irreparable damage to the thread, damage to the sealing surface.

- Do not use pliers to adjust the right-angle connector before connecting it.
- 



#### ⚠ CAUTION

Adjusting the right-angle connector too often can damage it.

Potential damage to property

- Adjust the plug connector only when installing and connecting the drive unit.
  - Do not turn the plug connector regularly once it has been installed.
- 

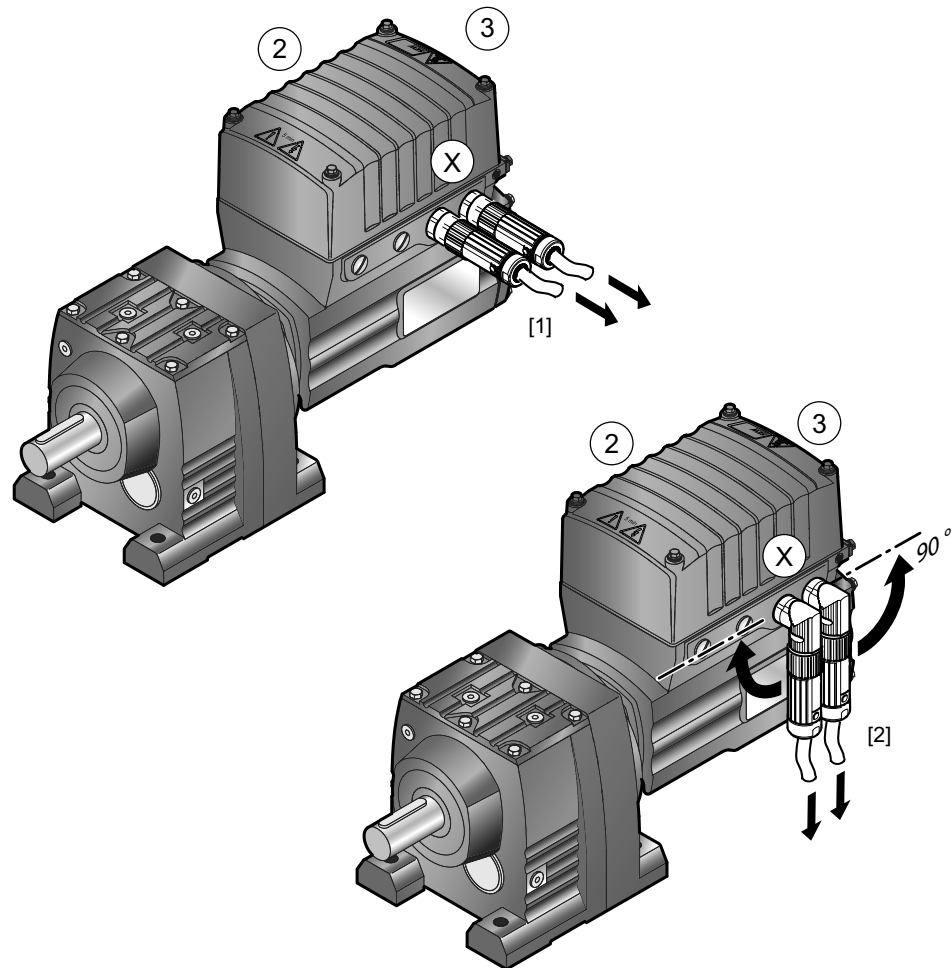
The following M23 plug connectors are available:

- [1] "Straight" plug connector
- [2] "Right-angle" plug connector

Once the mating connector has been plugged in, the "right-angle" connector can be adjusted without using additional tools.



Example



18014402582291211



### INFORMATION

The plug connector option "right-angle" cannot be used with DRC1 to DRC4 electronic motors in connection with plug connector position 3.

#### 5.8.6 Using plug connectors assembled by yourself



### INFORMATION

Power and hybrid plug connectors as well as the associated assembly tools are also available from Intercontec.



## 5.9 Plug connector assignment

### 5.9.1 X4271: AS-Interface communication interface

The following table shows information about this connection:

| Function                              |      |                             |
|---------------------------------------|------|-----------------------------|
| Connection of AS-Interface data cable |      |                             |
| Connection type                       |      |                             |
| M12, 4-pole, male, A-coded            |      |                             |
| Wiring diagram                        |      |                             |
|                                       |      |                             |
| 2384154763                            |      |                             |
| Assignment                            |      |                             |
| No.                                   | Name | Function                    |
| 1                                     | AS+  | AS-Interface data cable (+) |
| 2                                     | res. | Reserviert                  |
| 3                                     | AS-  | AS-Interface data cable (-) |
| 4                                     | res. | Reserved                    |

### 5.9.2 X5011: AS-Interface sensor connection

The following table shows information about this connection:

| Function                           |          |                                      |
|------------------------------------|----------|--------------------------------------|
| Connection of AS-Interface sensors |          |                                      |
| Connection type                    |          |                                      |
| M12, 5-pole, female, A-coded       |          |                                      |
| Wiring diagram                     |          |                                      |
|                                    |          |                                      |
| 2264816267                         |          |                                      |
| Assignment                         |          |                                      |
| No.                                | Name     | Function                             |
| 1                                  | +24V_SEN | DC 24 V voltage supply for sensors   |
| 2                                  | DI3      | DI3 sensor input                     |
| 3                                  | 0V24_SEN | 0V24 reference potential for sensors |
| 4                                  | DI2      | DI2 sensor input                     |
| 5                                  | res.     | Reserved                             |



### 5.10 Assignment of optional plug connectors



#### ⚠ WARNING

Electric shock when disconnecting or connecting voltage-carrying plug connectors.

Severe or fatal injuries

- Switch off the power supply voltage.
- Never plug or unplug plug connectors while they are energized.

#### 5.10.1 X1203\_1 and X1203\_2: AC 400 V connection

The following table shows information about this connection:

| Function   |      |                          |
|--|------|--------------------------|
| AC 400 V connection for supplying the unit/for looping through   |      |                          |
| Connection type  |      |                          |
| M23, SEW insert, SpeedTec-capable, company: Intercontec, female, coding ring: black, protected against contact |      |                          |
| Wiring diagram   |      |                          |
|  |      |                          |
| 2497125387   |      |                          |
| Assignment   |      |                          |
| No.  | Name | Function                 |
| A  | L1   | Line connection phase L1 |
| B  | L2   | Line connection phase L2 |
| C  | L3   | Line connection phase L3 |
| D  | n.c. | Not connected            |
| PE   | PE   | PE connection            |
| 1  | n.c. | Not connected            |
| 2  | n.c. | Not connected            |
| 3  | n.c. | Not connected            |
| 4  | n.c. | Not connected            |
| 5  | n.c. | Not connected            |
| 6  | n.c. | Not connected            |
| 7  | n.c. | Not connected            |
| 8  | n.c. | Not connected            |
| 9  | n.c. | Not connected            |
| 10   | n.c. | Not connected            |
| SHLD   | n.c. | Not connected            |

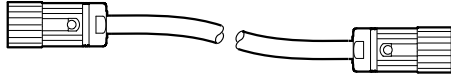

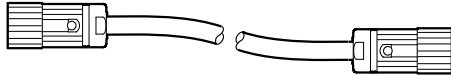


## Electrical installation

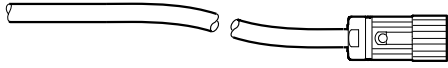




### Assignment of optional plug connectors

#### Connection cable

The following table provides an overview of the cables available for this connection:

| Connection cable  | Conformity / part number                                | Cable type                            | Length/Installation type        | Cable cross-section / operating voltage |
|---|---|---------------------------------------|---------------------------------|---|
|  <p>M23,<br/>Coding ring:<br/>black</p> <p>M23,<br/>Coding ring:<br/>black</p>   | <b>CE:</b><br><b>1 812 746 0</b>                        | HELU-KABEL®<br>TOP-FLEX® –<br>600-PVC | Variable<br><del>Variable</del> | 2.5 mm <sup>2</sup><br>/<br>AC 500 V    |
|   | <b>CE:</b><br><b>1 813 395 9</b><br><b>Halogen-free</b> | HELU-KABEL®<br>TOP-FLEX® –<br>611-PUR | Variable<br>Variable            |   |
|   | <b>UL:</b><br><b>1 815 326 7</b>                        | HELU-KABEL®<br>– JZ-602               | Variable<br><del>Variable</del> |   |
|   | <b>UL:</b><br><b>18153275</b>                           | HELU-KABEL®<br>MULTI-FLEX® –<br>512   | Variable<br>Variable            |   |
|  <p>Open</p> <p>M23,<br/>Coding ring:<br/>black</p>                            | <b>CE:</b><br><b>1 812 747 9</b>                        | HELU-KABEL®<br>TOP-FLEX® –<br>600-PVC | Variable<br><del>Variable</del> | 2.5 mm <sup>2</sup><br>/<br>AC 500 V    |
|   | <b>CE:</b><br><b>1 813 396 7</b><br><b>Halogen-free</b> | HELU-KABEL®<br>TOP-FLEX® –<br>611-PUR | Variable<br>Variable            |   |
|   | <b>UL:</b><br><b>1 815 328 3</b>                        | HELU-KABEL®<br>– JZ-602               | Variable<br><del>Variable</del> |   |
|   | <b>UL:</b><br><b>1 815 329 1</b>                        | HELU-KABEL®<br>MULTI-FLEX® –<br>512   | Variable<br>Variable            |   |
|  <p>M23,<br/>Coding ring:<br/>black</p> <p>M23,<br/>Coding ring:<br/>black</p> | <b>CE:</b><br><b>1 812 748 7</b>                        | HELU-KABEL®<br>TOP-FLEX® –<br>600-PVC | Variable<br><del>Variable</del> | 4 mm <sup>2</sup><br>/<br>AC 500 V      |
|   | <b>CE:</b><br><b>1 813 397 5</b><br><b>Halogen-free</b> | HELU-KABEL®<br>TOP-FLEX® –<br>611-PUR | Variable<br>Variable            |   |
|   | <b>UL:</b><br><b>1 815 330 5</b>                        | HELU-KABEL®<br>– JZ-602               | Variable<br><del>Variable</del> |   |
|   | <b>UL:</b><br><b>1 815 331 3</b>                        | HELU-KABEL®<br>MULTI-FLEX® –<br>512   | Variable<br>Variable            |   |



| Connection cable   | Conformity / part number                  | Cable type                            | Length/Installation type  | Cable cross-section / operating voltage |
|--|---|---------------------------------------|---|---|
|  <p>Open</p> <p>M23,<br/>Coding ring:<br/>black</p> | <b>CE:</b><br>1 812 749 5                 | HELU-KABEL®<br>TOP-FLEX® –<br>600-PVC | Variable<br> | 4 mm <sup>2</sup><br>/<br>AC 500 V      |
|  | <b>CE:</b><br>1 813 398 3<br>Halogen-free | HELU-KABEL®<br>TOP-FLEX® –<br>611-PUR | Variable<br> |   |
|  | <b>UL:</b><br>1 815 332 1                 | HELU-KABEL®<br>– JZ-602               | Variable<br> |   |
|  | <b>UL:</b><br>1 815 334 8                 | HELU-KABEL®<br>MULTI-FLEX® –<br>512   | Variable<br> |   |

Connection of  
cables with open  
end

The following table shows the conductor assignment of the cable with the following part number: 1 812 747 9, 1 813 396 7, 1 815 328 3, 1 815 329 1 , 1 812 749 5, 1 813 398 3, 1 815 332 1, and 1 815 334 8

| Signal name | Core color/designation |
|-------------|------------------------|
| L1          | Black / 1              |
| L2          | Black / 2              |
| L3          | Black / 3              |
| PE          | Green/yellow           |



## Electrical installation

### Assignment of optional plug connectors

#### 5.10.2 X5132: Digital inputs/outputs

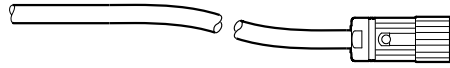
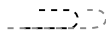
The following table shows information about this connection:

| Function   |        |  |
|--|--------|--|
| Digital inputs/outputs for: DRC  |        |  |
| Connection type  |        |  |
| M23, P insert 12-pole, SpeedTec-capable, Intercontec, female, 0°-coded |        |  |
| Wiring diagram   |        |  |
|  |        |  |
| 2264820107   |        |  |
| Assignment   |        |  |
| No.  | Name   | Function   |
| 1  | DI01   | Digital input DI01 (CW/stop)                         |
| 2  | DI02   | Digital input DI02 (CCW/stop)                        |
| 3  | DI03   | Digital input DI03 (setpoint f1/f2)                  |
| 4  | DI04   | Digital input DI04 (changeover automatic/local mode) |
| 5  | n.c.   | Not connected  |
| 6  | K1a    | Signal relay K1a                                     |
| 7  | K1b    | Signal relay K1b                                     |
| 8  | +24V_O | DC 24 V output                                       |
| 9  | 0V24_O | 0V24 reference potential                             |
| 10   | n.c.   | Not connected  |
| 11   | n.c.   | Not connected  |
| 12   | FE     | Equipotential bonding/functional ground              |





*Connection cable* The following table provides an overview of the cables available for this connection:

| Connection cable  | Conformity / part number | Length/ installation type   | Operating voltage |
|---|--------------------------|---|-------------------|
|  <p>Open</p> <p>M23, 12-pole,<br/>0°-coded</p> | CE/UL:<br>1 174 145 7    | Variable<br> | DC 60 V           |

*Connection of cables with open end*

The following table shows the conductor assignment of the cable with the following part number:

1 174 145 7

| Signal name | Color coding |
|-------------|--------------|
| DI01        | Pink         |
| DI02        | Gray         |
| DI03        | Red          |
| DI04        | Blue         |
| Reserved    | Yellow       |
| K1a         | Green        |
| K1b         | Purple       |
| +24V_O      | Black        |
| 0V24_O      | Brown        |
| Reserved    | White        |
| Reserved    | Gray/pink    |
| FE          | Red/blue     |



#### 5.10.3 X5502: STO



#### **⚠ WARNING**

No safety-related disconnection of the DRC drive unit.

Severe or fatal injuries.

- Do not use the 24 V output (pins 1 and 3) for safety-related applications with DRC drive units.
- You may only jumper the STO connection with 24 V when the DRC drive unit need not fulfill any safety function.

The following table shows information about this connection:

| Function                             |        |                          |
|--------------------------------------|--------|--------------------------|
| Connection for safe torque off (STO) |        |                          |
| Connection type                      |        |                          |
| M12, 5-pole, female, A-coded         |        |                          |
| Wiring diagram                       |        |                          |
|                                      |        |                          |
| 2264816267                           |        |                          |
| Assignment                           |        |                          |
| No.                                  | Name   | Function                 |
| 1                                    | +24V_O | DC 24 V output           |
| 2                                    | STO -  | STO - connection         |
| 3                                    | 0V24_O | 0V24 reference potential |
| 4                                    | STO +  | STO + connection         |
| 5                                    | res.   | Reserved                 |



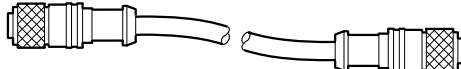
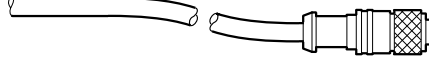
Connection cable



**INFORMATION**

Use only shielded cables for this connection and only suitable plug connectors that connect the shield with the unit in an HF-capable manner.

The following table provides an overview of the cables available for this connection:

| Connection cable  | Conformity / part number | Cable type   | Length/Installation type     | Cable cross-section / operating voltage     |
|---|--------------------------|--|------------------------------|---|
| <br>M12, 5-pole, A-coded                      M12, 5-pole, A-coded           | CE:<br>1 812 496 8       | LEONI<br>BETAflam®<br>– 145C-flex                            | Variable<br><del>-----</del> | 2 ×<br>0.75 mm <sup>2</sup><br>/<br>DC 60 V |
|   | CE / UL:<br>1 814 740 2  | HELU-<br>KABEL®<br>MULTI-<br>SPEED® –<br>500-C-PUR<br>UL/CSA | Variable<br>-----            |   |
| <br>Open    M12, 5-pole, A-coded | CE:<br>1 812 497 6       | LEONI<br>BETAflam®<br>– 145C-flex                            | Variable<br><del>-----</del> | 2 ×<br>0.75 mm <sup>2</sup><br>/<br>DC 60 V |
|   | CE / UL:<br>1 814 769 0  | HELU-<br>KABEL®<br>MULTI-<br>SPEED® –<br>500-C-PUR<br>UL/CSA | Variable<br>-----            |   |

Connection of cables with open end

The following table shows the conductor assignment of the cable with the following part number:

1 812 497 6, 1 814 769 0, 1 812 739 8 and 1 815 344 5

| Signal name | Core color/designation |
|-------------|------------------------|
| STO –       | Black / 1              |
| STO +       | Black / 2              |



## Electrical installation

### Assignment of optional plug connectors

#### 5.10.4 X5503: STO

The following table shows information about this connection:

| Function                             |       |                  |
|--------------------------------------|-------|------------------|
| Connection for safe torque off (STO) |       |                  |
| Connection type                      |       |                  |
| M12, 5-pole, male, A-coded           |       |                  |
| Wiring diagram                       |       |                  |
|                                      |       |                  |
| 2264818187                           |       |                  |
| Assignment                           |       |                  |
| No.                                  | Name  | Function         |
| 1                                    | res.  | Reserved         |
| 2                                    | STO - | STO - connection |
| 3                                    | res.  | Reserved         |
| 4                                    | STO + | STO + connection |
| 5                                    | res.  | Reserved         |

#### Connection cable



### INFORMATION

Use only shielded cables for this connection and only suitable plug connectors that connect the shield with the unit in an HF-capable manner.

The following table provides an overview of the cables available for this connection:

| Connection cable            | Conformity / part number | Cable type   | Length/Installation type | Cable cross-section / operating voltage     |
|-----------------------------|--------------------------|--|--------------------------|---|
| <p>M12, 5-pole, A-coded</p> | CE:<br>1 812 496 8       | LEONI<br>BETAflam®<br>- 145C-flex                            | Variable<br>             | 2 ×<br>0.75 mm <sup>2</sup><br>/<br>DC 60 V |
|                             | CE / UL:<br>1 814 740 2  | HELU-<br>KABEL®<br>MULTI-<br>SPEED® -<br>500-C-PUR<br>UL/CSA | Variable<br>             |   |



### 5.10.5 STO jumper plug



**⚠ WARNING**

Safety-related disconnection of the DRC drive unit is not possible when using the STO jumper plug.

Severe or fatal injuries.

- You may only jumper the STO input with 24 V when the DRC drive unit need not fulfill any safety function.



**⚠ WARNING**

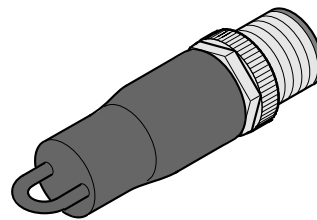
Disabling of safety-related disconnection of other drive units due to parasitic voltages when using an STO jumper.

Severe or fatal injuries.

- You may only use the STO jumper when all incoming and outgoing STO connections have been removed from the drive unit.

The STO jumper plug can be connected to the STO plug connector X5502 of the DRC drive unit. The STO jumper plug deactivates the safety functions of the DRC drive unit.

The following figure shows the STO jumper plug, part number 1 174 709 9:



36028798167876875

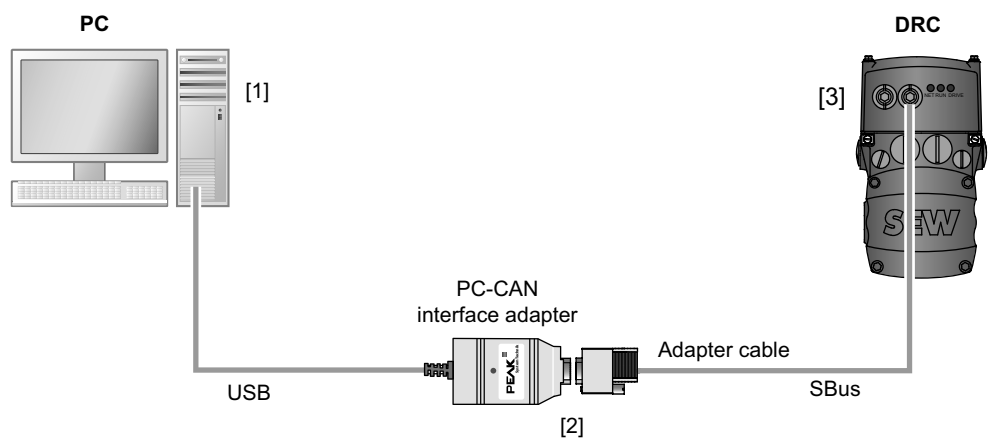


#### 5.11 PC connection

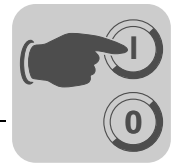
The diagnostic interface [3] can be connected to a commercially available PC/laptop [1] using one of the following options:

- [2] PC-CAN interface adapter with adapter cable
  - Part number of PC-CAN interface adapter + adapter cable: 2 821 449 8
  - Part number of PC-CAN interface adapter: 1 821 059 7
  - Part number of adapter cable: 1 812 386 4

##### 5.11.1 Connection example



9007203331142155



## 6 Startup

### 6.1 Startup notes



#### INFORMATION

It is essential to adhere to the safety notes during startup.



#### ⚠ WARNING

Risk of injury due to missing or defective protection covers.

Severe or fatal injuries.

- Install the protective covers of the system according to the instructions.
- Never start up the DRC drive unit without protective covers.



#### ⚠ WARNING

Electric shock caused by dangerous voltages in the connection box. Dangerous voltages may still be present for up to 5 minutes after disconnection from the power supply system.

Severe or fatal injuries.

- Before removing the electronics cover, switch off the power to the DRC drive units using a suitable external disconnecting device.
- Secure the drive unit against unintended re-connection to the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least 5 minutes before removing the electronics cover.



#### ⚠ WARNING

Burns caused by hot surfaces.

Severe injuries

- Let the units cool down before touching them.



#### ⚠ WARNING

Unit malfunction due to incorrect unit setting.

Severe or fatal injuries.

- Observe the startup notes.
- The installation must only be carried out by qualified personnel.
- Use only settings that are consistent with the function.



#### NOTICE

Unit error 45 or 94 due to power disconnection during the initialization phase.

Possible damage to property.

- After replacing the cover and switching on the power supply, wait at least for 15 s before disconnecting the drive from the supply system again.



#### INFORMATION

- Before startup, remove the paint protection cap from the LED displays.
- Before startup, remove paint protection film from the nameplates.
- Observe a minimum switch-off time of 2 seconds for the line contactor.



#### INFORMATION

- To ensure fault-free operation, do not disconnect or connect signal cables during operation.

## 6.2 Lifting applications



#### ⚠ WARNING

Risk of fatal injury if the hoist falls.

Severe or fatal injuries.

- The DRC drive unit is not designed for use as a safety device in lifting applications.
- Use monitoring systems and mechanical protection devices to ensure safety.

## 6.3 Prerequisites for startup

The following conditions apply to startup:

- Correct project planning for the DRC drive unit. For project planning notes, refer to the catalog.
- The DRC drive unit must be installed correctly both mechanically and electrically.
- Appropriate safety measures prevent the drives from starting up unintentionally.
- Appropriate safety measures must be taken to prevent risk of injury or damage to the machine.

### 6.3.1 Torque limiting



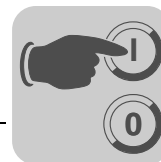
#### NOTICE

Gear unit overloaded by the motor.

Possible damage to property.

- The maximum output torque might have to be limited to the torque specified on the nameplate.
- Observe the DRC gearmotor catalog.

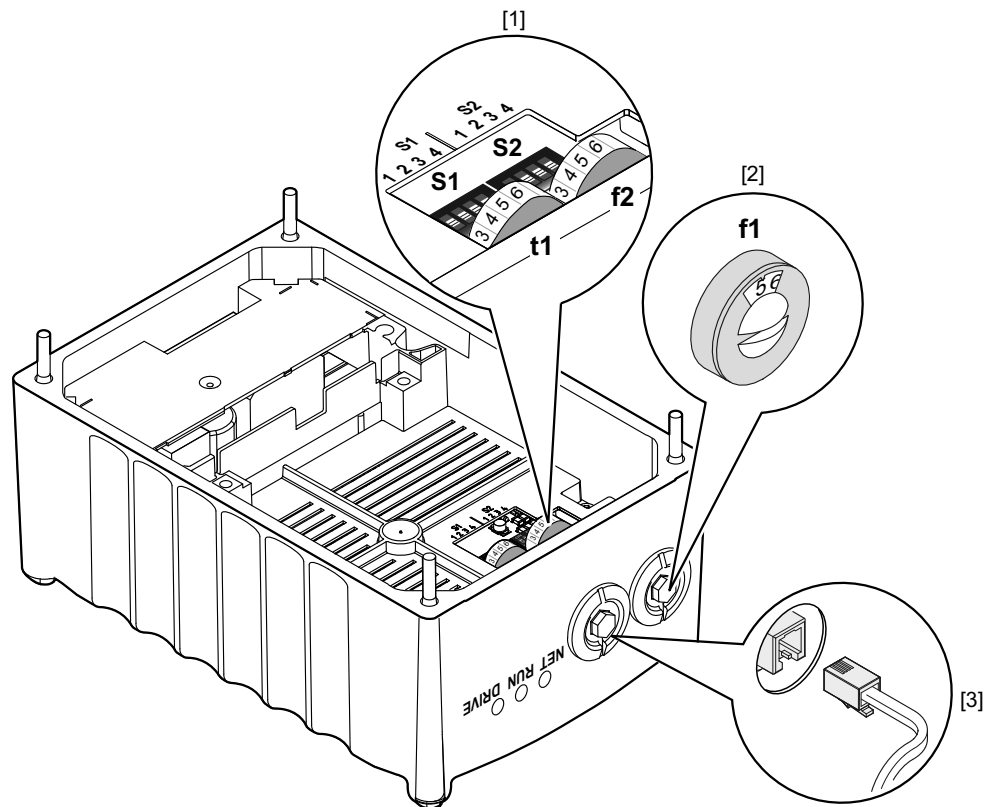




## 6.4 Description of control elements

### 6.4.1 Overview of control elements

*DRC1/2 electronic motor* The following figure gives an overview of the controls in the DRC electronics cover:



18014400900736011

- [1] DIP switches S1, S2  
Switch t1  
Switch f2
- [2] Setpoint potentiometer f1 (underneath the gland)
- [3] Diagnostic interface (underneath the gland)

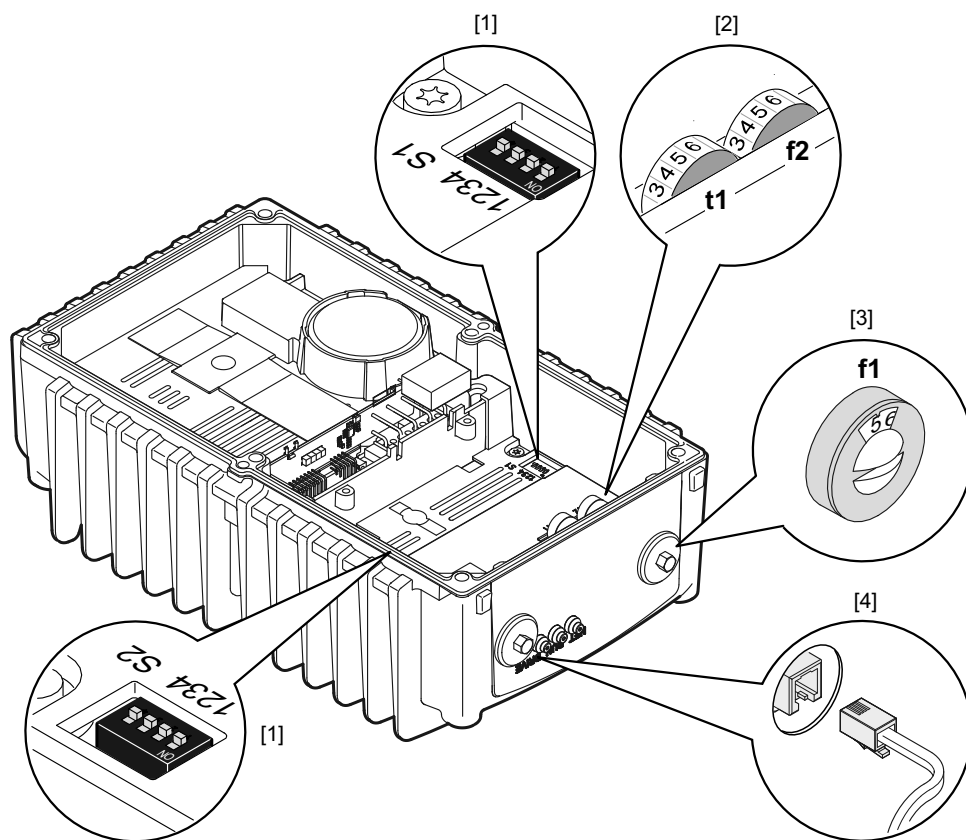


## Startup

### Description of control elements

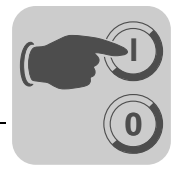
*DRC3/4 electronic motor*

The following figure gives an overview of the control elements in the DRC electronics cover:



8632369035

- [1] DIP switches S1, S2
- [2] Switch t1  
Switch f2
- [3] Setpoint potentiometer f1 (underneath the gland)
- [4] Diagnostic interface (underneath the gland)



### 6.4.2 Setpoint potentiometer f1



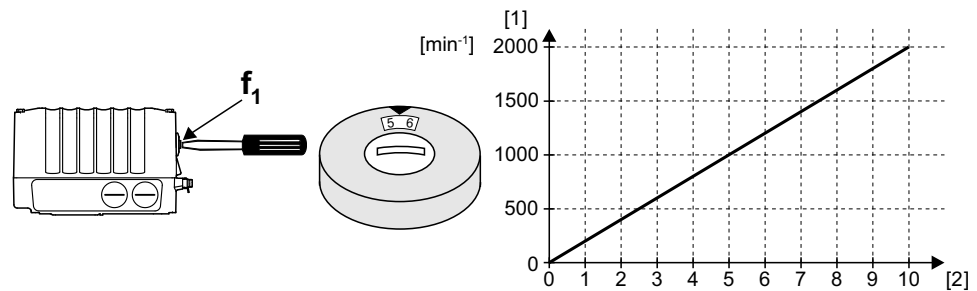
#### NOTICE

Loss of the ensured degree of protection if the screw plugs of the f1 setpoint potentiometer are not installed or not installed correctly.

Damage to the DRC electronics cover.

- Once you have set the setpoint, make sure the screw plug of the setpoint potentiometer has a seal and screw it in.

The potentiometer f1 has the following function: Setting setpoint f1:



2391261323

- [1] Motor speed  
[2] Potentiometer setting

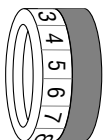
### 6.4.3 Switch f2



The switch f2 has the following function: Setting setpoint f2.

| Switch f2                       |     |     |     |     |     |     |      |      |      |      |      |
|---------------------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| Detent setting                  | 0   | 1   | 2   | 3   | 4   | 5   | 6    | 7    | 8    | 9    | 10   |
| Setpoint f2 [rpm] (Motor speed) | 200 | 250 | 300 | 450 | 600 | 750 | 1000 | 1250 | 1500 | 1800 | 2000 |

### 6.4.4 Switch t1



Use switch t1 to set the acceleration of the DRC drive unit. The ramp time t1 refers to a setpoint change in the motor speed of n = 3000 rpm.

| Switch t1        |     |     |     |     |     |   |   |   |   |   |    |
|------------------|-----|-----|-----|-----|-----|---|---|---|---|---|----|
| Detent setting   | 0   | 1   | 2   | 3   | 4   | 5 | 6 | 7 | 8 | 9 | 10 |
| Ramp time t1 [s] | 0.1 | 0.2 | 0.3 | 0.5 | 0.7 | 1 | 2 | 3 | 5 | 7 | 10 |



## 6.5 Description of DIP switches

### 6.5.1 Overview of DRC1/2 electronic motor

#### NOTICE

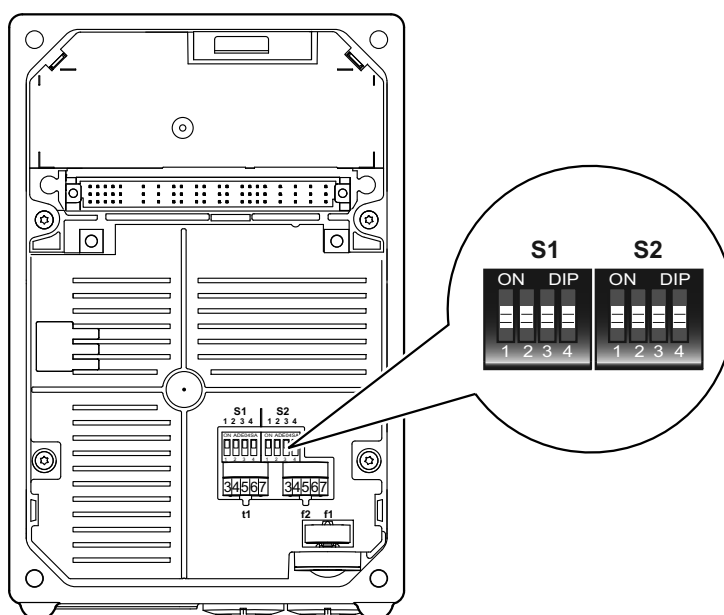


Damage to the DIP switches caused by using unsuitable tools.

Possible damage to property.

- To set the DIP switches, use only suitable tools, such as a slotted screwdriver with a blade width of no more than 3 mm.
- The force used for setting the DIP switches must not exceed 5 N.

The following figure shows the DIP switches S1 and S2:



2391265547

#### DIP switch S1

The following table shows the functions of DIP switch S1:

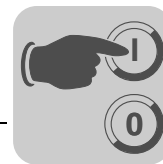
| DIP switch | S1                  |                              |          |          |
|------------|---------------------|------------------------------|----------|----------|
|            | 1                   | 2                            | 3        | 4        |
|            | PWM cycle frequency | Brake release without enable | Reserved | Reserved |
| ON         | 8 kHz               | On                           | Reserved | Reserved |
| OFF        | 4 kHz               | Off                          | Reserved | Reserved |

#### DIP switch S2

The following table shows the functions of DIP switch S2:

| DIP switch | S2           |          |                                |                                |
|------------|--------------|----------|--------------------------------|--------------------------------|
|            | 1            | 2        | 3                              | 4                              |
|            | Startup mode | Reserved | Direction of rotation reversal | Speed monitoring <sup>1)</sup> |
| ON         | Expert       | Reserved | On                             | On                             |
| OFF        | Easy         | Reserved | Off                            | Off                            |

<sup>1)</sup>The DIP switch is effective only in "Easy" mode



6.5.2 Overview of DRC3/4 electronic motor

**NOTICE**

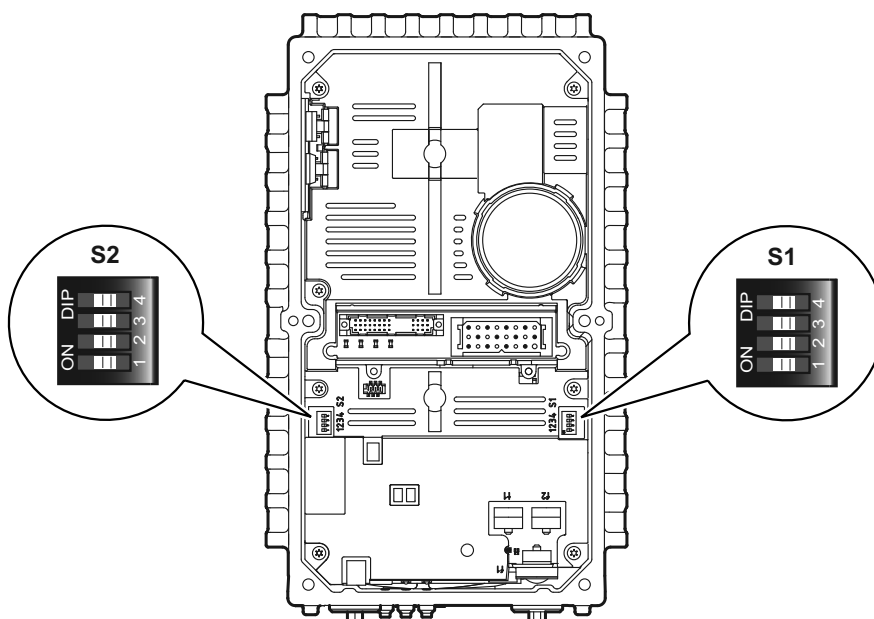


Damage to the DIP switches caused by using unsuitable tools.

Possible damage to property.

- To set the DIP switches, use only suitable tools, such as a slotted screwdriver with a blade width of no more than 3 mm.
- The force used for setting the DIP switches must not exceed 5 N.

The following figure shows the DIP switches S1 and S2:



8643570315

DIP switch S1

The following table shows the functions of DIP switch S1:

| DIP switch | S1                       |                                   |               |               |
|------------|--------------------------|-----------------------------------|---------------|---------------|
|            | 1<br>PWM cycle frequency | 2<br>Brake release without enable | 3<br>Reserved | 4<br>Reserved |
| ON         | 8 kHz                    | On                                | Reserved      | Reserved      |
| OFF        | 4 kHz                    | Off                               | Reserved      | Reserved      |

DIP switch S2

The following table shows the functions of DIP switch S2:

| DIP switch | S2                |               |                                     |                                     |
|------------|-------------------|---------------|-------------------------------------|-------------------------------------|
|            | 1<br>Startup mode | 2<br>Reserved | 3<br>Direction of rotation reversal | 4<br>Speed monitoring <sup>1)</sup> |
| ON         | Expert            | Reserved      | On                                  | On                                  |
| OFF        | Easy              | Reserved      | Off                                 | Off                                 |

<sup>1)</sup>The DIP switch is effective only in "Easy" mode



#### 6.5.3 Description of the DIP switches

DIP switch S1/1

##### Setting the maximum PWM frequency

- When DIP switch S1/1 is set to "OFF", the DRC inverter operates with a PWM frequency of 4 kHz.
- When DIP switch S1/1 is set to "ON", the DRC inverter operates with an PWM frequency of 8 kHz and switches back to 4 kHz depending on the temperature and unit utilization.

DIP switch S1/2



#### **⚠ WARNING**

Risk of fatal injury if the hoist falls.

Severe or fatal injuries.

- Do not use the function "Brake release without drive enable" for lifting applications.

##### Brake release without enable

When switch S1/2 is set to "ON", it is possible to release the brake even if there is no drive enable signal.



#### **INFORMATION**

For more information about releasing the brake without drive enable, refer to chapter "Operation".

DIP switch S2/1

##### Startup mode setting

You can select one of the following modes for starting up DRC drive units:

- Selecting "Easy" (DIP switch S2/1 = "OFF") lets you quickly and easily start up DRC drive units using DIP switches S1, S2 and switches f2, t1.
- In "Expert" mode (DIP switch S2/1 = "ON"), an extended range of parameters is available. You can use the MOVITOOLS<sup>®</sup> MotionStudio software to adjust the parameters to the application.

DIP switch S2/3

##### Direction of rotation reversal

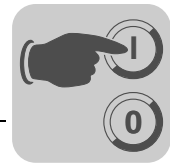
You can reverse the direction of rotation of the drive via this DIP switch.

- OFF (S2/3 = OFF): The motor turns CW with a positive setpoint and CCW with a negative setpoint.
- ON (S2/3 = ON): The motor turns CCW with a positive setpoint and CW with a negative setpoint.

DIP switch S2/4

##### Speed monitoring (only active in "Easy" mode)

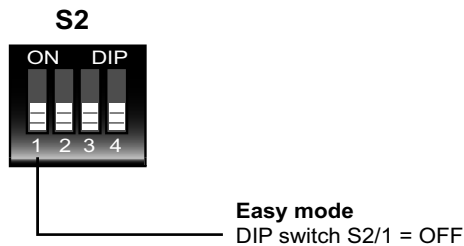
- Speed monitoring (S2/4 = "ON") protects the drive when it is blocked.
- If the drive is operated at the current limit for longer than 1 second when speed monitoring is active (S2/4 = "ON"), then speed monitoring is triggered. The DRC drive unit indicates an error on the status LED. The current limit must be reached permanently for the duration of the delay time before the monitoring function trips.



## 6.6 Startup with binary slave GLK30A in "Easy mode"

### 6.6.1 Startup steps

1. It is essential that you observe the startup instructions.
2. Disconnect all components from the voltage supply and use an external disconnecting device to avoid unintentional re-connection.
3. Make sure that the DRC drive unit is connected properly. Observe chapter "Electrical Installation".
4. Activate "Easy" mode by setting DIP switch S2/1 to OFF.

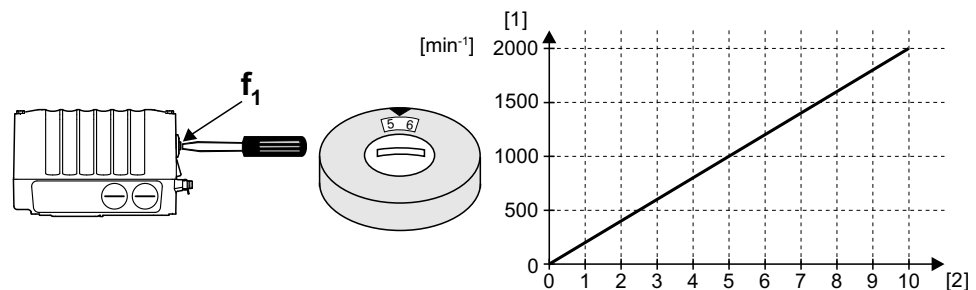


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**NOTICE** Damage to the DIP switches caused by using unsuitable tools.

Possible damage to property.

- To set the DIP switches, use only suitable tools, such as a slotted screwdriver with a blade width of no more than 3 mm.
  - The force used for setting the DIP switches must not exceed 5 N.
5. Set the 1st speed at the setpoint potentiometer f1 (active if AS-Interface bit DO2 = "0" ) (factory setting: about position 5).



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- [1] Motor speed  
[2] Potentiometer setting

6. Make sure the screw plug of the setpoint potentiometer f1 has a seal and screw it in.

**NOTICE** Loss of the ensured degree of protection if the screw plugs of the f1 setpoint potentiometer are not installed or not installed correctly.

Damage to the DRC electronics cover.

- Make sure the screw plug of the setpoint potentiometer has a seal and screw it in.



## Startup

### Startup with binary slave GLK30A in "Easy mode"

7. Set the 2nd speed at switch f2 (active if AS-Interface bit DO2 = "1" ).



| Switch f2                          |     |     |     |     |     |     |      |      |      |      |      |
|------------------------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| Detent setting                     | 0   | 1   | 2   | 3   | 4   | 5   | 6    | 7    | 8    | 9    | 10   |
| Setpoint f2 [rpm]<br>(Motor speed) | 200 | 250 | 300 | 450 | 600 | 750 | 1000 | 1250 | 1500 | 1800 | 2000 |



#### INFORMATION

During operation, the first speed is infinitely variable using the setpoint potentiometer f1 which is accessible from outside.

Speeds f1 and f2 can be set independently of each other.

8. Set the ramp time at switch t1 (ramp times in relation to a setpoint change in the motor speed of  $n = 3000$  rpm).



| Switch t1        |     |     |     |     |     |   |   |   |   |   |    |
|------------------|-----|-----|-----|-----|-----|---|---|---|---|---|----|
| Detent setting   | 0   | 1   | 2   | 3   | 4   | 5 | 6 | 7 | 8 | 9 | 10 |
| Ramp time t1 [s] | 0.1 | 0.2 | 0.3 | 0.5 | 0.7 | 1 | 2 | 3 | 5 | 7 | 10 |

9. Place the DRC electronics cover onto the connection box and screw it on.

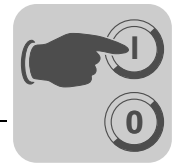
10. Switch on the following voltages.

- AS-Interface voltage
- Line voltage

11. Set the required AS-Interface address.

- With a hand-held programming device
- With an AS-Interface master (see description of master)





### 6.6.2 Assigning the slave address

DRC drive units with AS-Interface are assigned address 0 at the factory.

You have the following options for assigning the AS-Interface address of the DRC drive unit with AS-Interface (address 1 - 31):

- Addresses are assigned automatically within a configured AS-Interface system when replacing a DRC drive unit with AS-Interface.

The following requirements must be met:

- The new DRC drive unit with AS-Interface must have the address 0.
- If you replace several DRC drive units with AS-Interface, you must replace them individually (one after the other).

- Manual address assignment via the plant master

The drive units must be connected to the AS-Interface cable one after the other. Doing so prevents several DRC drive units with AS-Interface from having assigned the same address.

- Manual address assignment using a hand-held AS-Interface programming device.

When connecting the DRC drive unit with AS-Interface to the AS-Interface cable, observe the notes in chapter "Assigning the slave address using a hand-held programming device (GLK30A)".



## Startup

### Startup with binary slave GLK30A in "Easy mode"

#### 6.6.3 Data AS-Interface master → inverter

The following table shows the 4 data bits that the AS-Interface master sends to the DRC inverter via the AS-Interface:

| AS-Interface bit | Function                                |
|------------------|---|
| DO0              | CW/stop                                 |
| DO1              | CCW/stop                                |
| DO2              | Speed f2/speed f1                       |
| DO3              | Reset <sup>1)</sup> / controller enable |

1) In the event of an edge change "0" → "1" (only effective in case of an error)



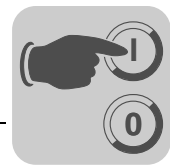
#### INFORMATION

To enable the drive, AS-Interface bit DO3 "Reset/controller enable" must be set.

#### 6.6.4 Inverter data → AS-Interface master

The following table shows the 4 data bits that the DRC inverter sends back to the AS-Interface master via the AS-Interface:

| Bit | Function   |
|-----|--|
| DI0 | Ready signal<br>0: The DRC drive is not ready for operation<br>1: The DRC drive is ready for operation |
| DI1 | Manual mode/local mode<br>0: DRC control via AS-Interface<br>1: DRC control via manual mode            |
| DI2 | Sensor input 1<br>0: The signal of sensor 1 = "0"<br>1: The signal of sensor 1 = "1"                   |
| DI3 | Sensor input 2<br>0: The signal of sensor 2 = "0"<br>1: The signal of sensor 2 = "1"                   |



### 6.6.5 Setpoint scaling via parameter bits

The following table lists the parameter bits for setpoint scaling.

Setpoint f2 and the minimum frequency are not affected by the scaling.

The following table lists the possible setpoint frequencies for setpoint potentiometer settings f1 = 2000 rpm and f1 = 1000 rpm:

| Parameter bits |    |    |    | Factor | Setpoints (motor speeds) |                          |
|----------------|----|----|----|--------|--------------------------|--------------------------|
| P3             | P2 | P1 | P0 |        | Setting<br>f1 = 2000 rpm | Setting<br>f1 = 1000 rpm |
| 1              | 1  | 1  | 1  | 1.00   | 2000                     | 1000                     |
| 1              | 1  | 1  | 0  | 1.11   | 1800                     | 900                      |
| 1              | 1  | 0  | 1  | 1.25   | 1600                     | 800                      |
| 1              | 1  | 0  | 0  | 1.43   | 1400                     | 700                      |
| 1              | 0  | 1  | 1  | 1.67   | 1200                     | 600                      |
| 1              | 0  | 1  | 0  | 2.00   | 1000                     | 500                      |
| 1              | 0  | 0  | 1  | 2.22   | 900                      | 450                      |
| 1              | 0  | 0  | 0  | 2.50   | 800                      | 400                      |
| 0              | 1  | 1  | 1  | 2.86   | 700                      | 350                      |
| 0              | 1  | 1  | 0  | 3.33   | 600                      | 300                      |
| 0              | 1  | 0  | 1  | 4.00   | 500                      | 250                      |
| 0              | 1  | 0  | 0  | 5.00   | 400                      | 200                      |
| 0              | 0  | 1  | 1  | 6.67   | 300                      | 150                      |
| 0              | 0  | 1  | 0  | 10.00  | 200                      | 100                      |
| 0              | 0  | 0  | 1  | 14.30  | 140                      | 70                       |
| 0              | 0  | 0  | 0  | 20.00  | 100                      | 50                       |

### 6.6.6 Inverter behavior depending on the AS-Interface bits

The following table shows the inverter behavior depending on the AS-Interface bits:

| Inverter behavior     | Supply system L1-L3 | AS-Interface bit |                 |                          |                                | DRIVE LED      |
|-----------------------|---------------------|------------------|-----------------|--------------------------|--------------------------------|----------------|
|                       |                     | DO0<br>CW/stop   | DO1<br>CCW/stop | DO2<br>Speed f2/speed f1 | DO3<br>Reset/controller enable |                |
| Controller inhibit    | 1                   | x                | x               | x                        | 0                              | Yellow         |
| No supply system      | 0                   | x                | x               | x                        | x                              | Off            |
| Stop                  | 1                   | 0                | 0               | x                        | 1                              | Yellow         |
| CW operation with f1  | 1                   | 1                | 0               | 0                        | 1                              | Green          |
| CCW operation with f1 | 1                   | 0                | 1               | 0                        | 1                              | Green          |
| CW operation with f2  | 1                   | 1                | 0               | 1                        | 1                              | Green          |
| CCW operation with f2 | 1                   | 0                | 1               | 1                        | 1                              | Green          |
| Stop                  | 1                   | 1                | 1               | x                        | 1                              | Flashing green |

**Key**

- 0 = No voltage
- 1 = Voltage
- x = Any



## Startup

### Startup with binary slave GLK30A in "Expert mode"

#### 6.7 Startup with binary slave GLK30A in "Expert mode"



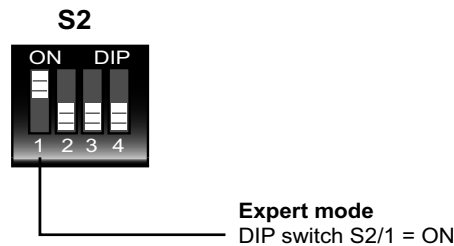
#### INFORMATION

- "Expert" startup is only necessary if parameters are to be set during startup.
- The following chapter describes the preparations made on the DRC inverter for activating Expert mode and an example for fine-tuning parameters.
- The chapter "Parameterization and diagnostics" describes how to integrate the DRC inverter in MotionStudio and provides an overview of all parameters with a detailed description.

##### 6.7.1 Startup steps

In Expert mode, individual parameters can be used in addition to the basic functionality of the DRC drive unit.

1. It is essential that you observe the startup instructions.
2. Disconnect all components from the voltage supply and use an external disconnecting device to avoid unintentional re-connection.
3. Make sure that the DRC drive unit is connected properly. Observe chapter "Electrical Installation".
4. Start up the unit in "Easy" mode.
5. Set DIP switch S2/1 to ON to activate "Expert" mode.

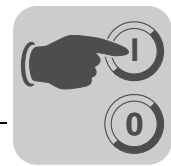


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**NOTICE** Damage to the DIP switches caused by using unsuitable tools.

Possible damage to property.

- To set the DIP switches, use only suitable tools, such as a slotted screwdriver with a blade width of no more than 3 mm.
  - The force used for setting the DIP switches must not exceed 5 N.
6. Connect the PC to the DRC inverter.
  7. Connect the DRC inverter to the voltage supply.
  8. Start MOVITOOLS® MotionStudio and integrate the DRC inverter.
  9. Specify the parameters you want to change.



10. Check whether these parameters depend on mechanical controls and disable them, if required, by adjusting the bit-coded selection box of parameter *index 10096.30*.

| Mechanical control element | Affected parameter index (command pcb)     | Bit of index 10096.30 | Effect of parameter index 10096.30 (deactivation of mechanical control elements)                   |
|----------------------------|--|-----------------------|--|
| Setpoint potentiometer f1  | 10096.35 setpoint n_f1                     | 13                    | Bit not set:<br>Setpoint f1 is set with setpoint potentiometer f1                                  |
|                            |  |                       | Bit set:<br>Setpoint f1 is set using parameters  |
| Switch f2                  | 10096.36 setpoint n_f2                     | 14                    | Bit not set:<br>Setpoint f2 is set with switch f2  |
|                            |  |                       | Bit set:<br>Setpoint f2 is set using parameters  |
| Switch t1                  | 8807.0 Ramp t11 up<br>8808.0 Ramp t11 down | 15                    | Bit not set:<br>The ramps are set with switch t1 (acceleration ramp time = deceleration ramp time) |
|                            |  |                       | Bit set:<br>The ramps are set using parameters   |

11. Change the selected parameters.

12. Check the functions of the DRC drive unit.

Optimize the parameters, if required.

13. Disconnect the PC from the DRC inverter.

14. Make sure the screw plug of the diagnostic interface has a seal and screw it in.

**NOTICE** Loss of the ensured degree of protection if the screw plug of the diagnostic interface is not installed or not installed correctly.

Damage to the DRC electronics cover.

- Make sure the screw plug of the diagnostic interface has a seal and screw it in.

15. Switch on the following voltages.

- AS-Interface voltage
- Line voltage

16. Set the required AS-Interface address.

- With a hand-held programming device
- With an AS-Interface master (see description of master)



### 6.7.2 Assigning the slave address

DRC drive units with AS-Interface are assigned address 0 at the factory.

You have the following options for assigning the AS-Interface address of the DRC drive unit with AS-Interface (address 1 - 31):

- Addresses are assigned automatically within a configured AS-Interface system when replacing a DRC drive unit with AS-Interface.

The following requirements must be met:

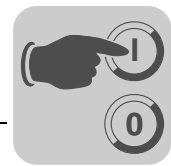
- The new DRC drive unit with AS-Interface must have the address 0.
- If you replace several DRC drive units with AS-Interface, you must replace them individually (one after the other).

- Manual address assignment via the plant master

The drive units must be connected to the AS-Interface cable one after the other. Doing so prevents several DRC drive units with AS-Interface from having assigned the same address.

- Manual address assignment using a hand-held AS-Interface programming device.

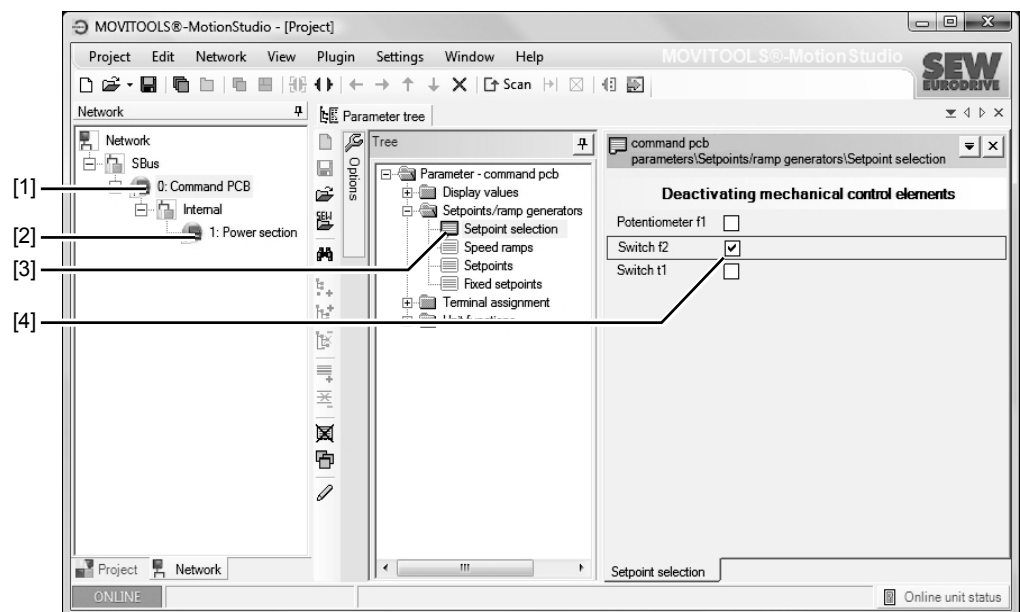
When connecting the DRC drive unit with AS-Interface to the AS-Interface cable, observe the notes in chapter "Assigning the slave address using a hand-held programming device (GLK30A)".



### 6.7.3 Example "Fine adjustment of setpoint f2 using MOVITOOLS® MotionStudio"

1. It is essential that you observe the startup instructions.
2. Activate Expert mode as described in chapter "Startup with binary slave GLK30A in "Expert" mode".
3. Connect the PC to the DRC inverter.
4. Connect the DRC inverter to the voltage supply.
5. Start MOVITOOLS® MotionStudio.
6. Create a project and network.
7. Configure the communication channel at the PC.
8. Perform an online scan.

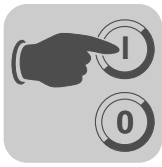
You will get the following or a similar result:



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- [1] DRC Command pcb
- [2] DRC Power section
- [3] Setpoint selection folder
- [4] Check box for switch f2

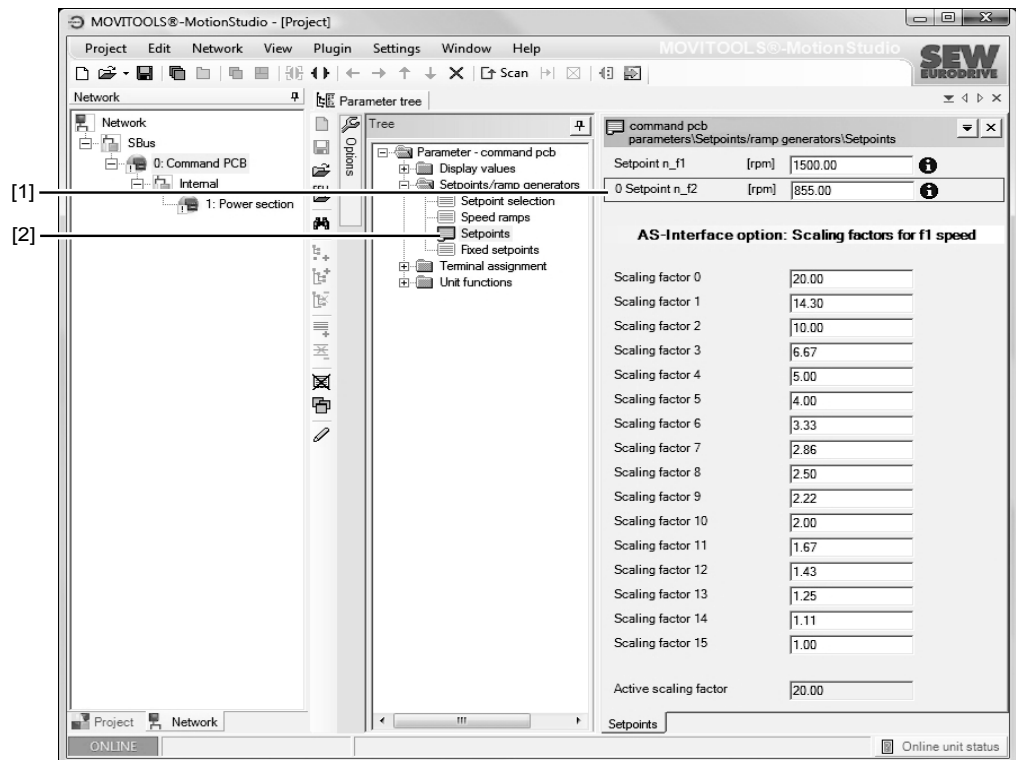
9. Open the context menu of the DRC command pcb [1] by clicking the right mouse button and select the menu item "Startup" / "Parameter tree".
10. Open the folder "Setpoint selection" [3].  
Deactivate switch f2 by ticking the check box "Switch f2" [4].
11. Open the folder "Setpoints" [2].



## Startup

### Startup with binary slave GLK30A in "Expert mode"

You will get the following or a similar result:



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Adjust the setpoint n\_f2 [1] until the application runs optimally, e.g. parameter setpoint = 855 rpm.

12. Disconnect the PC from the DRC inverter.

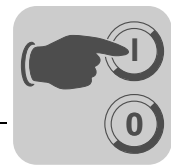
13. Make sure the screw plug of the diagnostic interface has a seal and screw it in.

**NOTICE** Loss of the ensured degree of protection if the screw plug of the diagnostic interface is not installed or not installed correctly.

Damage to the DRC electronics cover.

- Make sure the screw plug of the diagnostic interface has a seal and screw it in.





## 6.8 Assigning slave address with hand-held programming device (GLK30A)

Hand-held AS-Interface programming units offer the following functions:

- Reading out and changing an AS-Interface slave address
- Reading out the AS-Interface profile
- Reading out and changing the data and parameter bits
- Function check and test run.

When using a hand-held programming device, you need a **2-core** connection cable that fits onto the AS-interface plug connector of the DRC drive unit (see the following figure).

### 6.8.1 X4271: AS-Interface communication interface



#### NOTICE

Damage to the units caused by faulty installation

Possible damage to property

- The hand-held programming device may **only** be connected with the AS-Interface plug connector via pins 1 "AS-Interface +" and 3 "AS-Interface -". The hand-held programming device can be damaged if not connected properly.

The following table informs about this connection:

| Function                              |      |                             |
|---------------------------------------|------|-----------------------------|
| Connection of AS-Interface data cable |      |                             |
| Connection type                       |      |                             |
| M12, 4-pole, male, A-coded            |      |                             |
| Wiring diagram                        |      |                             |
|                                       |      |                             |
| 2384154763                            |      |                             |
| Assignment                            |      |                             |
| No.                                   | Name | Function                    |
| 1                                     | AS+  | AS-Interface data cable (+) |
| 2                                     | n.c. | Not connected               |
| 3                                     | AS-  | AS-Interface data cable (-) |
| 4                                     | n.c. | Not connected               |



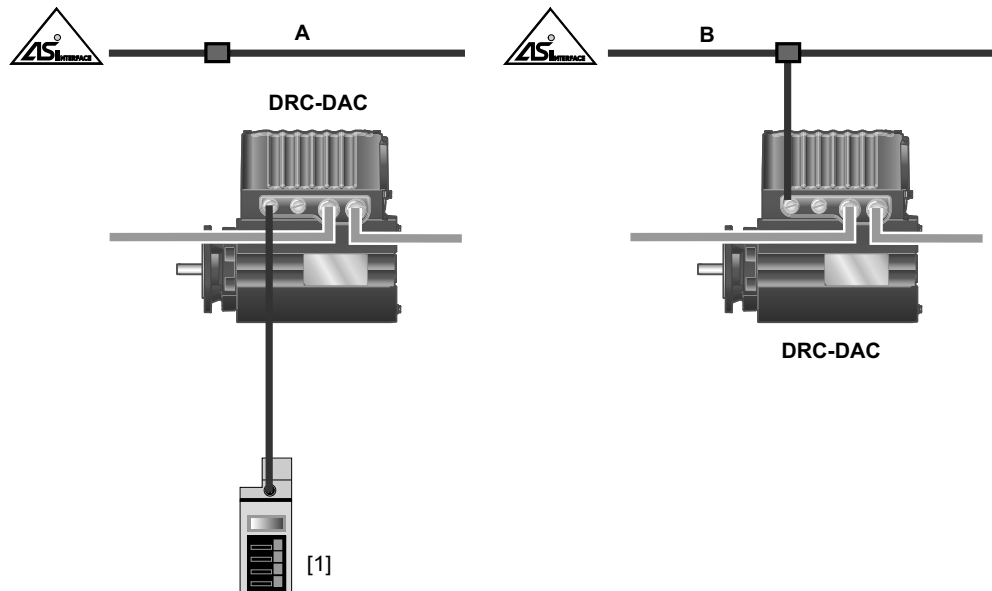
## Startup

### Assigning slave address with hand-held programming device (GLK30A)

#### 6.8.2 Example

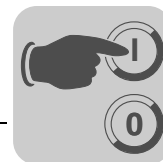
Disconnect the AS-Interface nodes from the AS-Interface network **one at a time** and assign addresses via the hand-held programming device [A].

Then reconnect the respective AS-Interface node to the AS-Interface network [B].



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[1] AS-Interface hand-held programming device



## 6.9 Startup with double slave GLK31A

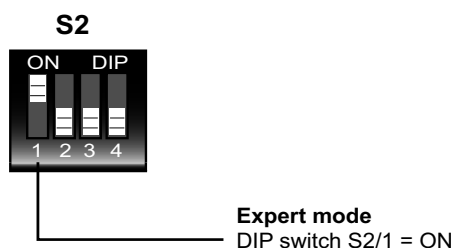


### INFORMATION

- Startup with the GLK31A double slave only makes sense in "Expert" mode.
- The following chapter describes the preparations made on the DRC inverter for activating Expert mode and an example for fine-tuning parameters.
- The chapter "Parameterization and diagnostics" describes how to integrate the DRC inverter in MotionStudio and provides an overview of all parameters with a detailed description.
- For detailed information about the function of the double slave, refer to chapter "Communication with AS-Interface double slave GLK31A".

### 6.9.1 Startup steps

1. It is essential that you observe the startup instructions.
2. Disconnect all components from the voltage supply and use an external disconnecting device to avoid unintentional re-connection.
3. Set DIP switch S2/1 to ON to activate "Expert" mode.



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**NOTICE** Damage to the DIP switches caused by using unsuitable tools.

Possible damage to property.

- To set the DIP switches, use only suitable tools, such as a slotted screwdriver with a blade width of no more than 3 mm.
  - The force used for setting the DIP switches must not exceed 5 N.
4. Make sure that the DRC drive unit is connected properly. Observe chapter "Electrical Installation".
  5. Place the DRC electronics cover onto the connection box and screw it on.
  6. Switch on the following voltages.
    - AS-Interface voltage
    - Line voltage
  7. Set the required AS-Interface address.
    - With a hand-held programming device
    - With an AS-Interface master (see description master)



## Startup

### Startup with double slave GLK31A

#### Assigning the slave address

An AS-Interface master according to the AS-Interface specification 3.0, rev. 2 in conjunction with the M4 master profile is required for controlling the GLK31A double slave.

DRC drive units with GLK31A AS-Interface option are delivered with address 0 and profile S-7.A.7.7. If you set an address > 0, the GLK31A option turns into a double slave with profiles S-7.A.7.7 (A slave) and S-7.A.F.5 (B slave). After the address assignment, the B slave automatically assumes the base address of the A slave.

You have the following options for assigning the AS-Interface address of the DRC drive unit with AS-Interface option GLK31A (address 1 - 31):

- Addresses are assigned automatically<sup>1)</sup> within a configured AS-Interface system when replacing a DRC drive unit with AS-Interface option GLK31A.

The following requirements must be met:

- The new DRC drive unit with AS-Interface option GLK31A must have the address 0.
- If you replace several DRC drive units with AS-Interface option GLK31A, you must replace them individually (one after the other).
- Manual address assignment via the plant master.

The drives must be connected to the AS-Interface cable one after the other. Doing so prevents several DRC drive units with AS-Interface option GLK31A from having assigned the same address.

- Manual address assignment using a hand-held AS-Interface programming device. Observe the notes in the next chapter when connecting the DRC drive unit with AS-Interface option GLK31A to the AS-Interface cable.

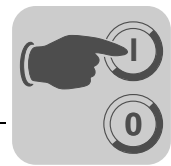


#### INFORMATION

Observe the following notes if you change the AS-Interface address of the GLK31A AS-Interface option after it has already been assigned an address (address > 0):

- The new address must not be used by another projected slave.
- The B slave must always have the same base address as the A slave.
- Only the address of the A slave must be set for the address assignment.
- After having assigned the address, the B slave automatically assumes the base address of the A slave.

1) AS-Interface master must support this function.



*Assigning the slave address using a hand-held programming device*

Hand-held AS-Interface programming devices offer the following functions:

- Reading out and changing an AS-Interface slave address
- Reading out the AS-Interface profile
- Reading out and changing the data and parameter bits
- Function check and test run.

When using a hand-held programming device, you need a **2-core** connection cable that fits onto the AS-interface plug connector of the DRC drive unit (see the following figure).

*X4271: AS-Interface communication interface*



**NOTICE**

Damage to the units caused by faulty installation

Possible damage to property

- The hand-held programming device may **only** be connected via pins 1 "AS-Interface +" and 3 "AS-Interface –" with the AS-Interface plug connector. The hand-held programming device can be damaged if not connected properly.

The following table informs about this connection:

| Function                              |      |                           |
|---------------------------------------|------|---------------------------|
| Connection of AS-Interface data cable |      |                           |
| Connection type                       |      |                           |
| M12, 4-pole, male, A-coded            |      |                           |
| Wiring diagram                        |      |                           |
|                                       |      |                           |
| 2384154763                            |      |                           |
| Assignment                            |      |                           |
| No.                                   | Name | Function                  |
| 1                                     | AS+  | AS-Interface data cable + |
| 2                                     | n.c. | Not connected             |
| 3                                     | AS–  | AS-Interface data cable – |
| 4                                     | n.c. | Not connected             |



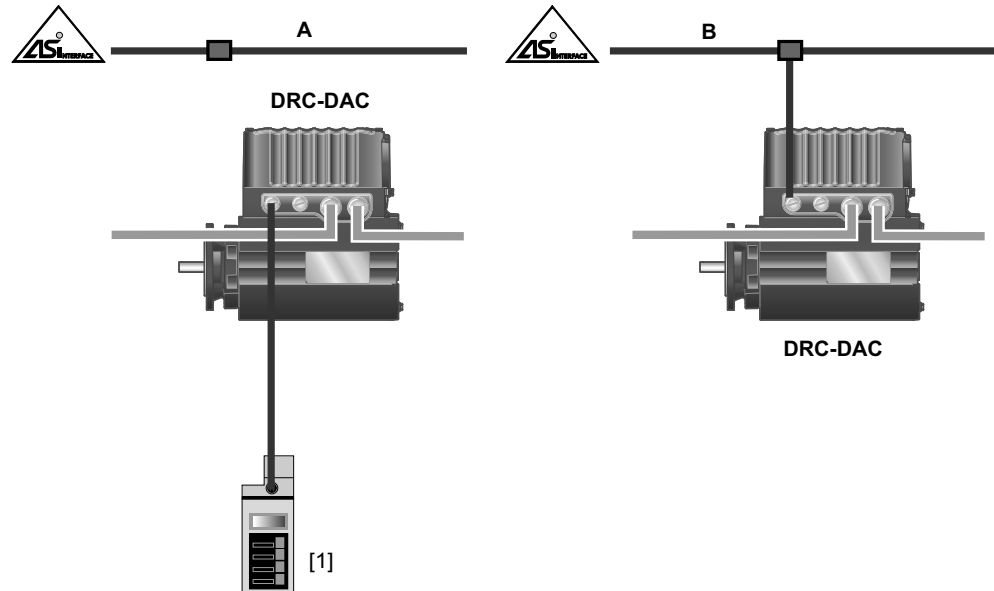
## Startup

### Startup with double slave GLK31A

#### Example

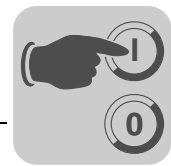
Disconnect the AS-Interface nodes from the AS-Interface network **one at a time** and assign addresses via the hand-held programming device [A].

Then reconnect the respective AS-Interface node to the AS-Interface network [B].



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[1] AS-Interface hand-held programming device



### 6.9.2 Startup and function expansion through parameterization

You can expand the basic functionality of the DRC drive unit by using parameters.

Proceed as follows:

1. It is essential that you observe the startup instructions.
2. Connect the PC to the DRC inverter.
3. Connect the DRC inverter to the voltage supply.
4. Start MOVITOOLS® MotionStudio and integrate the DRC inverter, see chapter "Operation of MOVITOOLS® MotionStudio".
5. Specify the parameters you want to change.
6. Check whether these parameters depend on mechanical controls and disable them, if required, by adjusting the bit-coded selection box of parameter *index 10096.30*.

| Mechanical control element | Affected parameter index (command pcb)     | Bit of index 10096.30 | Effect of parameter index 10096.30 (deactivation of mechanical control elements)                   |
|----------------------------|--|-----------------------|--|
| Setpoint potentiometer f1  | 10096.35 setpoint n_f1                     | 13                    | Bit not set:<br>Setpoint f1 set with setpoint potentiometer f1                                     |
|                            |  |                       | Bit set:<br>Setpoint f1 is set using parameters  |
| Switch f2                  | 10096.36 setpoint n_f2                     | 14                    | Bit not set:<br>Setpoint f2 is set with switch f2  |
|                            |  |                       | Bit set:<br>Setpoint f2 is set using parameters  |
| Switch t1                  | 8807.0 Ramp t11 up<br>8808.0 Ramp t11 down | 15                    | Bit not set:<br>The ramps are set with switch t1 (acceleration ramp time = deceleration ramp time) |
|                            |  |                       | Bit set:<br>The ramps are set using parameters   |

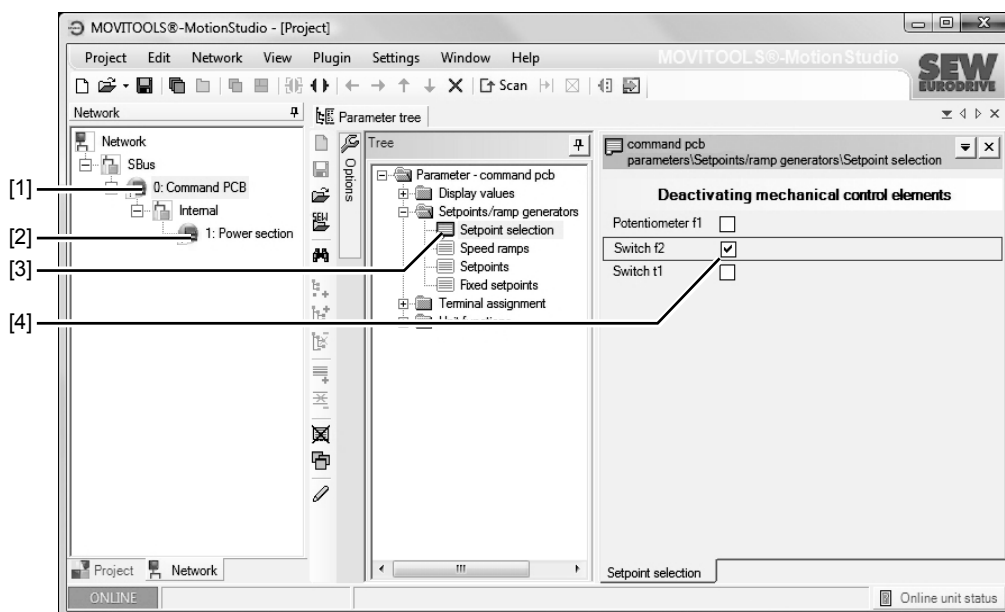
7. Change the selected parameters.
8. Check the functions of the DRC drive unit.  
Optimize the parameters, if required.
9. Disconnect the PC from the DRC inverter.
10. Make sure the screw plug of the diagnostic interface has a seal and screw it in.  
**NOTICE** Loss of the ensured degree of protection if the screw plug of the diagnostic interface is not installed or not installed correctly.  
Damage to the DRC electronics cover.
  - Make sure the screw plug of the diagnostic interface has a seal and screw it in.



### 6.9.3 Example "Fine adjustment of setpoint f2 using MOVITOOLS® MotionStudio"

1. It is essential that you observe the startup instructions.
2. Connect the PC to the DRC inverter.
3. Connect the DRC inverter to the voltage supply.
4. Start MOVITOOLS® MotionStudio.
5. Create a project and network.
6. Configure the communication channel at the PC.
7. Perform an online scan.

You will get the following or a similar result:

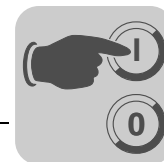


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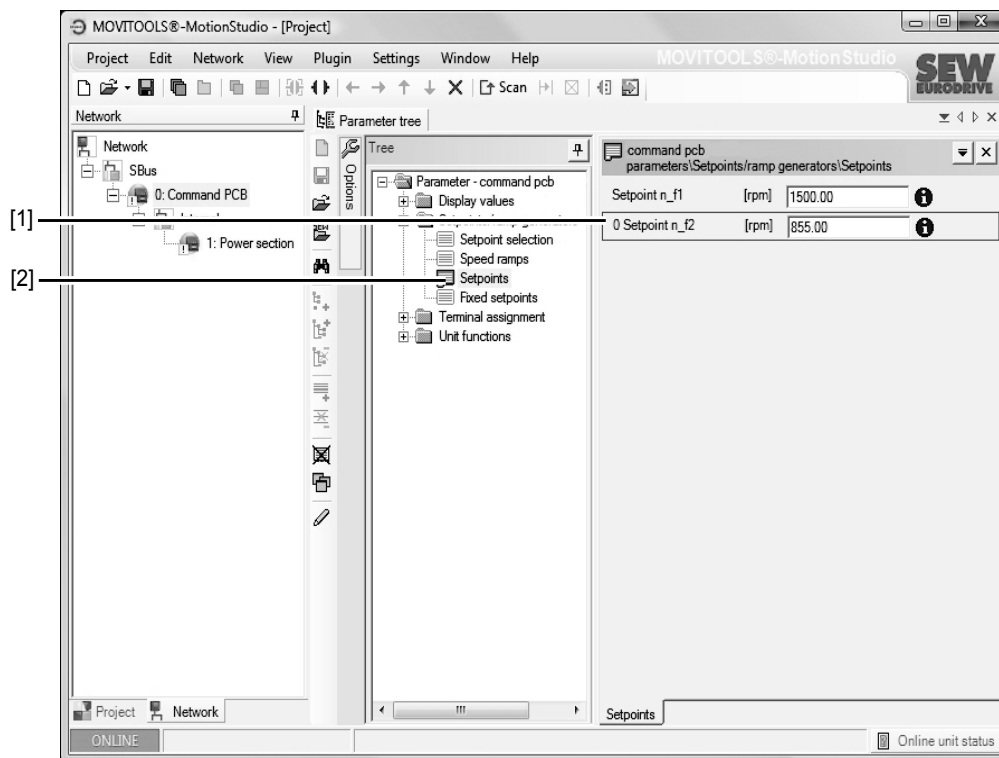
- [1] DRC Command pcb
- [2] DRC Power section
- [3] Setpoint selection folder
- [4] Check box for switch f2

8. Open the context menu of the DRC command pcb [1] by clicking the right mouse button and select the menu item "Startup" / "Parameter tree".
9. Open the folder "Setpoint selection" [3].  
Deactivate switch f2 by ticking the check box "Switch f2" [4].
10. Open the folder "Setpoints" [2].





You will get the following or a similar result:



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Adjust the setpoint n\_f2 [1] until the application runs optimally, e.g. setpoint = 855 rpm.

11. Disconnect the PC from the DRC inverter.

12. Make sure the screw plug of the diagnostic interface has a seal and screw it in.

**NOTICE** Loss of the ensured degree of protection if the screw plug of the diagnostic interface is not installed or not installed correctly.

Damage to the DRC electronics cover.

- Make sure the screw plug of the diagnostics interface has a seal and screw it in.



## 7 Operation of MOVITOOLS® MotionStudio

### 7.1 About MOVITOOLS® MotionStudio

#### 7.1.1 Tasks

The software package enables you to perform the following tasks:

- Establish communication with units
- Execute functions of the units

#### 7.1.2 Establishing communication with the units

The SEW Communication Server is integrated into the MOVITOOLS® MotionStudio software package for establishing communication with the units.

The SEW Communication Server allows you to create **communication channels**. Once the channels are established, the units communicate via these communication channels using their communication options. You can operate up to four communication channels at the same time.

MOVITOOLS® MotionStudio supports the following types of communication channels:

- Serial (RS-485) via interface adapters
- System bus (SBus) via interface adapters
- Ethernet
- EtherCAT
- Fieldbus (PROFIBUS DP/DP-V1)
- Tool Calling Interface

The available channels can vary depending on the units and its communication options.

#### 7.1.3 Executing functions of the units

The software package offers uniformity in executing the following functions:

- Parameterization (e. g. in the parameter tree of the unit)
- Startup
- Visualization and diagnostics
- Programming

The following basic components are included in the MOVITOOLS® MotionStudio software package, allowing you to use the units to execute functions:

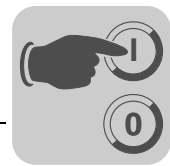
- MotionStudio
- MOVITOOLS®

## 7.2 First steps

### 7.2.1 Starting the software and creating a project

Proceed as follows to start MOVITOOLS® MotionStudio and create a project:

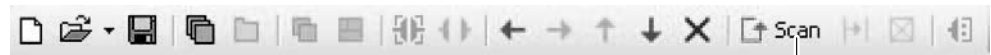
1. Start MOVITOOLS® MotionStudio from the Windows start menu via:  
 [Start]/[Programs]/[SEW]/[MOVITOOLS-MotionStudio]/[MOVITOOLS-MotionStudio]
2. Create a project with a name and directory.



### 7.2.2 Establishing communication and scanning the network

Proceed as follows to establish a communication with MOVITOOLS® MotionStudio and scan your network:

1. Set up a communication channel to communicate with your units.
2. Scan your network (unit scan). Press the [Start network scan] button [1] in the toolbar.



[1]

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### 7.2.3 Additional information



#### INFORMATION

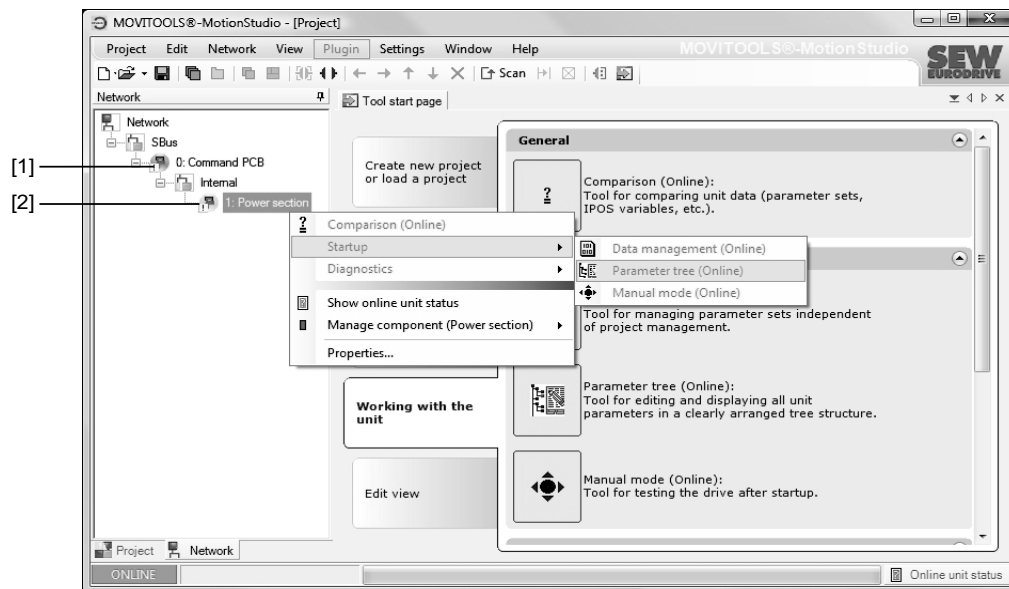
For detailed information on how to configure a communication channel, see chapter "SBus (CAN) communication via interface adapter".



### 7.2.4 Configuring units

Proceed as follows to configure a unit:

1. Select the unit in the network view.
2. Right-click to open the context menu and display the tools for configuring the unit.

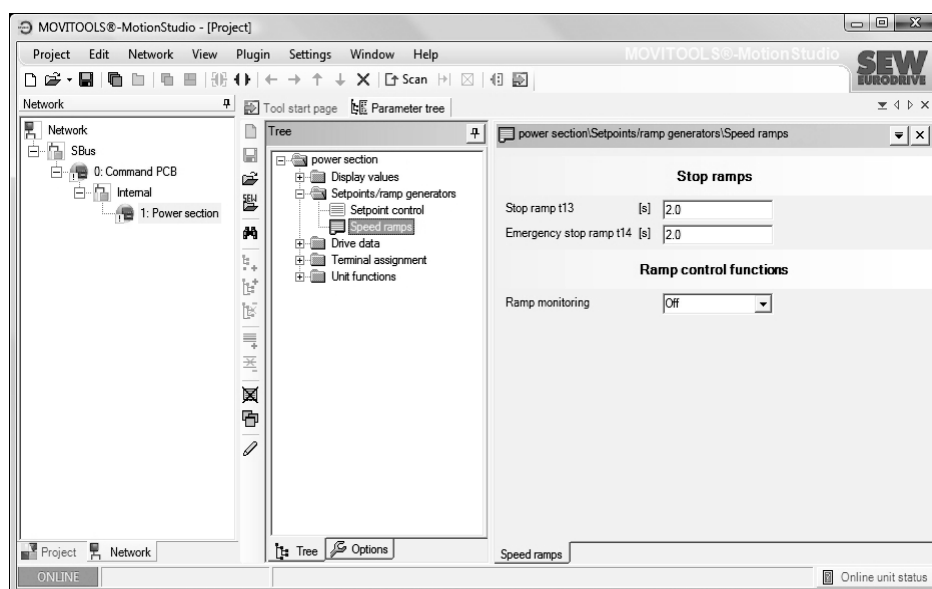


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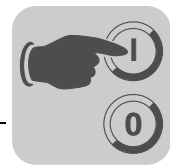
- [1] Command PCB  
[2] Power section

The example shows the context menu with the tools for a DRC power section [2]. The communication mode is set to "online" and the unit is scanned in the network view.

3. Select a tool (e.g. "Parameter tree") to configure the unit.



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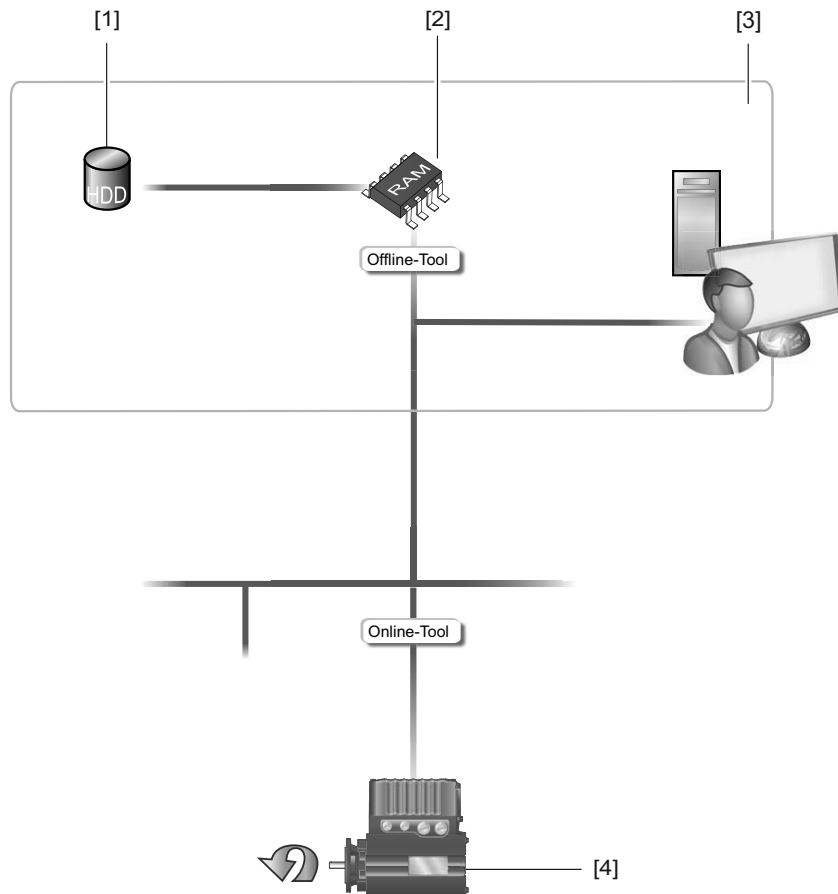
### 7.3 Connection mode

#### 7.3.1 Overview

MOVITOOLS® MotionStudio differentiates between "online" and "offline" connection mode. You determine the connection mode yourself. Depending on the selected connection mode, you can choose offline or online tools specific to your unit.

*Offline tools /  
online tools  
overview*

The following figure illustrates the two types of tools:



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- [1] Hard drive of the engineering PC
- [2] RAM of the engineering PC
- [3] Engineering PC
- [4] Unit

*Offline tools /  
online tools  
description*

The following figure illustrates the two types of tools:

| Tools         | Description  |
|---------------|--|
| Offline tools | <p>Changes made using offline tools affect <b>"ONLY"</b> the RAM [2] at first.</p> <ul style="list-style-type: none"> <li>• Save your project so that the changes can be stored on the hard disk [1] of your engineering PC [3].</li> <li>• Execute the "Download (PC-&gt;unit)" function if you want to transfer the changes to your unit [4] as well.</li> </ul> |
| Online tools  | <p>Changes made using online tools affect <b>"ONLY"</b> the unit [4] at first.</p> <ul style="list-style-type: none"> <li>• Execute the "Upload (unit-&gt;PC)" function if you want to transfer the changes to your RAM [2].</li> <li>• Save your project so that the changes can be stored on the hard disk [1] of your engineering PC [3].</li> </ul>            |



#### INFORMATION

- The "online" connection status is **NOT** a response message which informs you that you are currently connected to the unit or that your unit is ready for communication. Should you require this feedback, observe chapter "Setting the cyclical accessibility test" in the online help (or the manual) of MOVITOOLS® MotionStudio.
- Project management commands (such as "download" and "upload"), the online unit status, and the "unit scan" work independently of the set connection mode.
- MOVITOOLS® MotionStudio starts up in the connection mode that was set before the program was closed.

#### 7.3.2 Selecting the connection mode (online or offline)

Proceed as follows to set the connection mode:

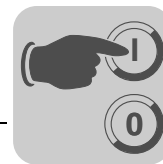
1. Select the connection mode:
  - "Switch to online mode" [1] for functions (online tools) that should directly influence the unit.
  - "Switch to offline mode" [2] for functions (offline tools) that should influence your project.



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- [1] "Switch to online mode" icon  
 [2] "Switch to offline mode" icon

2. Select the unit node.
3. Right-click to open the context menu and display the tools for configuring the unit.



## 7.4 SBus (CAN) communication via interface adapter

### 7.4.1 Engineering via interface adapter (SBus)

Since your unit supports the "SBus" communication option, you can use a suitable interface adapter for engineering.

The interface adapter is additional hardware that you can obtain from SEW-EURODRIVE. You can use it to connect your engineering PC with the respective communication option of the unit.

The following table shows you the available types of interface adapters (option):

| Interface adapter type (option)                        | Order No.   | Scope of delivery   |
|--|-------------|---|
| PC-CAN package from SEW-EURODRIVE                      | 2 821 449 8 | PC-CAN interface adapter and adapter cable for connecting PC-CAN interface adapters and DRC inverters |
| PC-CAN interface adapter from SEW-EURODRIVE            | 1 821 059 7 | The prefabricated cable included in the scope of delivery can <u>not</u> be used for DRC drive units. |
| PC-CAN interface adapter PCAN-USB ISO from PEAK-System | IPEH 002022 | Without connection cable  |
| Adapter cable  | 1 812 386 4 | Adapter cable for connecting a PC-CAN interface adapter with an DRC inverter                          |

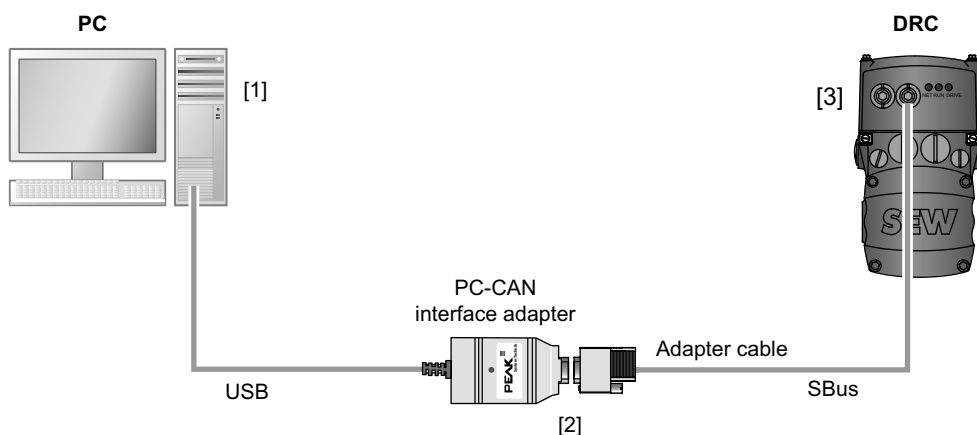
### 7.4.2 Starting up the USB-CAN interface

#### Overview

This section describes how to connect the PC-CAN interface from SEW to the SBus interface or your units and what must be considered for this.

#### Connecting the USB-CAN interface adapter to the unit

The following figure shows how the PC-CAN interface adapter [2] is connected with the unit [3] and with the PC [1] via the SBus interface [3]:



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- [1] PC
- [2] USB-CAN interface with adapter cable
- [3] DRC diagnostics interface

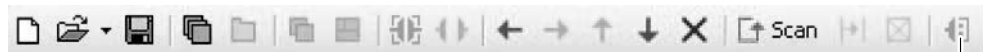


#### 7.4.3 Configuring communication settings via SBus

You need an SBus connection between your PC and the units you want to configure. You can use a USB-CAN interface for this purpose.

Proceed as follows to configure an SBus connection:

1. Click on "Configure communication connections" [1] in the toolbar.

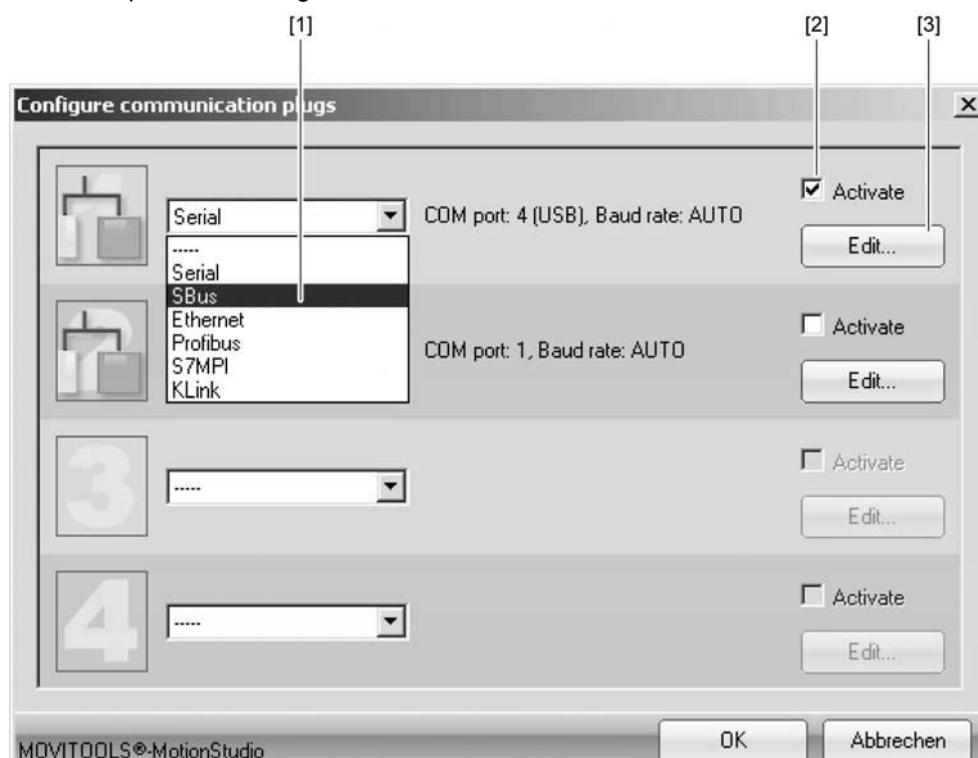


[1]

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- [1] "Configure communication connections" icon

This will open the "Configure communication connections" window.



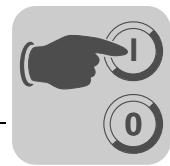
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- [1] "Type of communication" dropdown menu  
 [2] "Activate" checkbox  
 [3] [Edit] button

2. From the list [1], select "SBus" as the communication type.

In this example, the 1st communication channel is activated with "SBus" communication type [2].





3. Press the [Edit] button [3] on the right side of the "Configure communication connections" window.



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This will display the settings for the "SBus" communication type.

4. It might be necessary to change the preset communication parameters on the tab pages [Basic settings] and [Advanced settings]. When doing so, refer to the detailed description of the communication parameters.



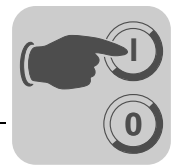
#### 7.4.4 Communication parameters for SBus

The following table describes the [Basic setting] for the SBus communication channel:

| Communication parameters | Description   | Information   |
|--------------------------|---|---|
| Baud rate                | Transmission speed with which the connected PC communicates with the unit in the network via the communication channel. | <ul style="list-style-type: none"> <li>Adjustable values (permitted total cable length):               <ul style="list-style-type: none"> <li>500 kBd (50 m) (Default)</li> <li>1 MBd (25 m)</li> </ul> </li> <li>All connected units must support the same baud rate.</li> </ul> |

The following table describes the [Advanced setting] for the SBus communication channel:

| Communication parameters | Description   | Information  |
|--------------------------|---|--|
| Parameter telegrams      | Telegram with a single parameter  | Used to transfer a <b>single parameter</b> of a unit.  |
| Multi-byte telegrams     | Telegram with several parameters  | Used to transfer the <b>complete parameter set</b> of a unit.  |
| Timeout                  | Waiting time in [ms] that the master waits for a response from the slave after it has made a request. | <ul style="list-style-type: none"> <li>Default setting:               <ul style="list-style-type: none"> <li>100 ms (parameter telegram)</li> <li>350 ms (multi-byte telegram)</li> </ul> </li> <li>Increase the value if not all units are detected during a network scan.</li> </ul> |
| Retries                  | Number of request retries after the timeout is exceeded   | Default setting: 3   |



## 7.5 Executing functions of the units

### 7.5.1 Parameterizing a unit

Units are parameterized in the parameter tree. The parameter tree displays all unit parameters, grouped into folders.

You can manage the unit parameters using the context menu and the toolbar. The following steps illustrate how to read or edit the unit parameters.

### 7.5.2 Reading or changing unit parameters

Proceed as follows to read or change unit parameters:

1. Switch to the required view (project view or network view).
2. Select the connection mode:
  - Click the "Switch to online mode" button [1] if you want to read or change parameters directly in the **unit**.
  - Click the "Switch to offline mode" button [2] if you want to read or change parameters in the **project**.

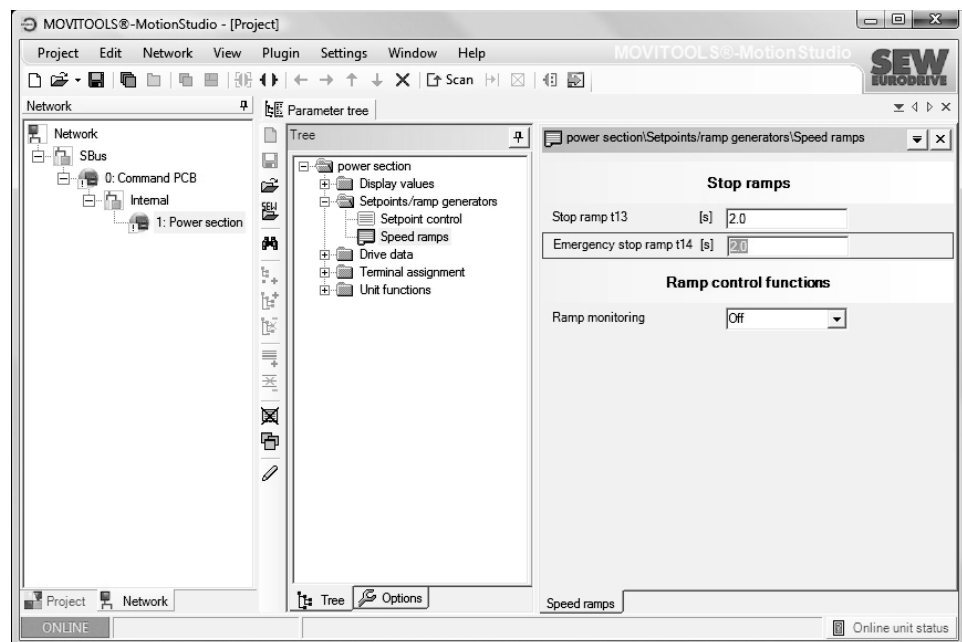


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[1] "Switch to online mode" icon

[2] "Switch to offline mode" icon

3. Select the unit you want to parameterize.
4. Open the context menu and select the [Parameter tree] command.  
This opens the "Parameter tree" view on the right.
5. Expand the "Parameter tree" to the node you require.



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6. Double-click to display a particular group of unit parameters.
7. Press the enter key to finalize any changes you make to numerical values in the input fields.



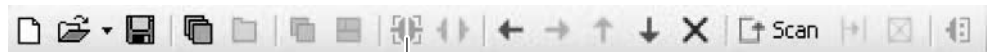
#### INFORMATION

For detailed information about the unit parameters, refer to chapter "Parameters".

#### 7.5.3 Starting up the units (online)

Do the following to start up the units (online):

1. Switch to the network view.
2. In the toolbar, click on "Switch to online mode" [1].

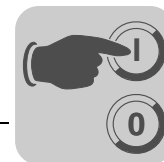


[1]

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[1] "Switch to online mode" icon

3. Select the unit you want to start up.
4. Open the context menu and select the [Startup] / [Startup] command.  
The Startup wizard opens.
5. Follow the instructions of the startup wizard. Then load the startup data into your unit.



## 8 Parameters

### 8.1 Overview of parameters of the command PCB

#### 8.1.1 Display values

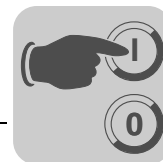
| Index  | Parameter name                        | MOVITOOLS® MotionStudio Display<br>(Range / factory setting) | MOVILINK® scaling |
|--|---------------------------------------|--|-------------------|
| <b>Command PCB parameters \ display values \ <u>unit status</u></b>      |                                       |  |                   |
| <b>Unit status</b>   |                                       |  |                   |
| 8310.0   | Operating state                       | [Text]   |                   |
| 10095.1  | Startup mode                          | [Text]   |                   |
| <b>DIP switch</b>  |                                       |  |                   |
| 9621.10, bit 0   | Setting of DIP switch S1/1            | [Bit field]  |                   |
| 9621.10, bit 1   | Setting of DIP switch S1/2            | [Bit field]  |                   |
| 9621.10, bit 2   | Setting of DIP switch S1/3            | [Bit field]  |                   |
| 9621.10, bit 3   | Setting of DIP switch S1/4            | [Bit field]  |                   |
| 9621.10, bit 4   | Setting of DIP switch S2/1            | [Bit field]  |                   |
| 9621.10, bit 5   | Setting of DIP switch S2/2            | [Bit field]  |                   |
| 9621.10, bit 6   | Setting of DIP switch S2/3            | [Bit field]  |                   |
| 9621.10, bit 7   | Setting of DIP switch S2/4            | [Bit field]  |                   |
| <b>Switch f2, t1</b>   |                                       |  |                   |
| 10096.27   | Setting of switch f2                  | 0,1,2, – 10  |                   |
| 10096.29   | Setting of switch t1                  | 0,1,2, – 10  |                   |
| <b>Command PCB parameters \ display values \ <u>analog setpoints</u></b> |                                       |  |                   |
| 10096.28   | Setting of setpoint potentiometer f1  | 0 – 10   | 1 digit = 0.001   |
| <b>Command PCB parameters \ display values \ <u>digital inputs</u></b>   |                                       |  |                   |
| 8334.0, bit 1  | Digital input DI01 status             | [Bit field]  |                   |
| 8334.0, bit 2  | Digital input DI02 status             | [Bit field]  |                   |
| 8334.0, bit 3  | Digital input DI03 status             | [Bit field]  |                   |
| 8334.0, bit 4  | Digital input DI04 status             | [Bit field]  |                   |
| 8335.0   | Digital input DI01 function           | [Text]   |                   |
| 8336.0   | Digital input DI02 function           | [Text]   |                   |
| 8337.0   | Digital input DI03 function           | [Text]   |                   |
| 8338.0   | Digital input DI04 function           | [Text]   |                   |
| <b>Command PCB parameters \ display values \ <u>digital outputs</u></b>  |                                       |  |                   |
| [Text]   | For digital output, see power section |  |                   |
| <b>Command PCB parameters \ display values \ <u>unit data</u></b>        |                                       |  |                   |
| <b>Command level</b>   |                                       |  |                   |
| –  | Unit series                           | [Text]   |                   |
| 9701.1, 9701.2, 9701.3, 9701.4, 9701.5                                   | Unit names                            | [Text]   |                   |
| 9823.1, 9823.2, 9823.3, 9823.4, 9823.5                                   | Unit signature                        | [Text]   |                   |
| 9701.53, 9701.54   | AS-Interface option firmware          | [Text]   |                   |
| 10095.39   | AS-Interface option                   | [Text]   |                   |
| 9701.30  | Command level firmware                | [Text]   |                   |
| 9701.31  | Firmware status of command level      | [Text]   |                   |
| <b>Deactivating mechanical control elements</b>                          |                                       |  |                   |
| 10096.30, bit 13   | Potentiometer f1                      | [Bit field]  |                   |
| 10096.30, bit 14   | Switch f2                             | [Bit field]  |                   |



## Parameters

### Overview of parameters of the command PCB

| Index  | Parameter name              | MOVITOOLS® MotionStudio<br>Display<br>(Range / factory setting) | MOVILINK® scaling                         |
|--|-----------------------------|---|---|
| 10096.30, bit 15   | Switch t1                   | [Bit field]   |   |
| <b>Command PCB parameters \ display values \ bus diagnostics</b> |                             |   |   |
| <b>AS-Interface option monitor</b>                               |                             |   |   |
| <b>In conjunction with AS-Interface binary slave GLK30A:</b>     |                             |   |   |
| 10095.39   | AS-Interface option         | [Text]  |   |
| 9756.1, bit 0  | AS-Interface output bit DO0 | [Bit field] CW/stop   |   |
| 9756.1, bit 1  | AS-Interface output bit DO1 | [Bit field] CCW/stop  |   |
| 9756.1, bit 2  | AS-Interface output bit DO2 | [Bit field] Speed f2/speed f1                                   |   |
| 9756.1, bit 3  | AS-Interface output bit DO3 | [Bit field] Reset/controller enable                             |   |
| 9756.1, bit 8  | AS-Interface output bit PO0 | [Bit field] Parameter bit 1                                     |   |
| 9756.1, bit 9  | AS-Interface output bit PO1 | [Bit field] Parameter bit 2                                     |   |
| 9756.1, bit 10   | AS-Interface output bit PO2 | [Bit field] Parameter bit 3                                     |   |
| 9756.1, bit 11   | AS-Interface output bit PO3 | [Bit field] Parameter bit 4                                     |   |
| 9866.1, bit 0  | AS-Interface input bit DI0  | [Bit field] Ready message                                       |   |
| 9866.1, bit 1  | AS-Interface input bit DI1  | [Bit field] Automatic/manual mode                               |   |
| 9756.1, bit 6  | AS-Interface output bit DI2 | [Bit field] Sensor output 1                                     |   |
| 9756.1, bit 7  | AS-Interface input bit DI3  | [Bit field] Sensor output 2                                     |   |
| <b>In conjunction with AS-Interface double slave GLK31A:</b>     |                             |   |   |
| 10095.39   | AS-Interface option         | [Text]  |   |
| 9756.1, bit 0  | AS-Interface output bit DO0 | [Bit field]   | Depending on the selected function module |
| 9756.1, bit 1  | AS-Interface output bit DO1 | [Bit field]   |   |
| 9756.1, bit 2  | AS-Interface output bit DO2 | [Bit field]   |   |
| 9756.1, bit 3  | AS-Interface output bit DO3 | [Bit field]   |   |
| 9756.1, bit 8  | AS-Interface output bit PO0 | [Bit field]   |   |
| 9756.1, bit 9  | AS-Interface output bit PO1 | [Bit field]   |   |
| 9756.1, bit 10   | AS-Interface output bit PO2 | [Bit field]   |   |
| 9756.1, bit 11   | AS-Interface output bit PO3 | [Bit field]   |   |
| 9866.1, bit 0  | AS-Interface input bit DI0  | [Bit field]   |   |
| 9866.1, bit 1  | AS-Interface input bit DI1  | [Bit field]   |   |
| 9866.1, bit 2  | AS-Interface output bit DI2 | [Bit field]   |   |
| 9866.1, bit 3  | AS-Interface input bit DI3  | [Bit field]   |   |



### 8.1.2 Parameters that can be changed

#### Storage location

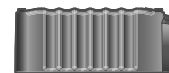


#### INFORMATION

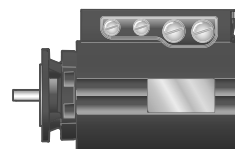
The following parameters are stored in the DRC motor.

If the motor is replaced, for example for service purposes, changes made to these parameters must be made again.

The changes remain active after changing the electronics cover.



Electronics cover



Motor

#### Setpoints/ramp generators

| Index   | Parameter name            | MOVITOOLS® MotionStudio Display<br>(Range / factory setting)                             | MOVILINK® scaling   |
|---|---------------------------|--|---------------------|
| <b>Command PCB parameters \ setpoints/ramp generators \ <u>setpoint selection</u></b> |                           |  |                     |
| <b>Deactivating mechanical control elements</b>                                       |                           |  |                     |
| 10096.30, bit 13  | Setpoint potentiometer f1 | <ul style="list-style-type: none"> <li>0 = Activated</li> <li>1 = Deactivated</li> </ul> |                     |
| 10096.30, bit 14  | Switch f2                 | <ul style="list-style-type: none"> <li>0 = Activated</li> <li>1 = Deactivated</li> </ul> |                     |
| 10096.30, bit 15  | Switch t1                 | <ul style="list-style-type: none"> <li>0 = Activated</li> <li>1 = Deactivated</li> </ul> |                     |
| <b>Command PCB parameters \ setpoints/ramp generators \ <u>speed ramps</u></b>        |                           |  |                     |
| 8807.0  | Ramp t11 up               | 0.00 – <u>1.00</u> – 60.00 [s]   | 1 digit = 0.001 s   |
| 8808.0  | Ramp t11 down             | 0.00 – <u>1.00</u> – 60.00 [s]   | 1 digit = 0.001 s   |
| <b>Only in conjunction with AS-Interface binary slave GLK31A:</b>                     |                           |  |                     |
| 10504.1   | Ramp t15 up               | 0.00 – <u>1.00</u> – 60.00 [s]   | 1 digit = 0.001 s   |
| 10504.11  | Ramp t15 down             | 0.00 – <u>1.00</u> – 60.00 [s]   | 1 digit = 0.001 s   |
| 10475.2   | Ramp t16 up               | 0.00 – <u>1.00</u> – 60.00 [s]   | 1 digit = 0.001 s   |
| 10475.1   | Ramp t16 down             | 0.00 – <u>1.00</u> – 60.00 [s]   | 1 digit = 0.001 s   |
| <b>Command PCB parameters \ setpoints/ramp generators \ <u>setpoints</u></b>          |                           |  |                     |
| 10096.35  | Setpoint n_f1             | 0.00 – <u>1500.00</u> – 2000.00 [rpm]  | 1 digit = 0.001 rpm |
| 10096.36  | Setpoint n_f2             | 0.00 – <u>200.00</u> – 2000.00 [rpm]   | 1 digit = 0.001 rpm |
| <b>Only in conjunction with AS-Interface binary slave GLK30A:</b>                     |                           |  |                     |
| 15500.0   | Scaling factor 0          | 1.0 – <u>20.0</u> – 50.0   |                     |
| 15501.0   | Scaling factor 1          | 1.0 – <u>14.3</u> – 50.0   |                     |
| 15502.0   | Scaling factor 2          | 1.0 – <u>10.0</u> – 50.0   |                     |
| 15503.0   | Scaling factor 3          | 1.0 – <u>6.67</u> – 50.0   |                     |
| 15504.0   | Scaling factor 4          | 1.0 – <u>5.00</u> – 50.0   |                     |
| 15505.0   | Scaling factor 5          | 1.0 – <u>4.00</u> – 50.0   |                     |
| 15506.0   | Scaling factor 6          | 1.0 – <u>3.33</u> – 50.0   |                     |
| 15507.0   | Scaling factor 7          | 1.0 – <u>2.86</u> – 50.0   |                     |
| 15508.0   | Scaling factor 8          | 1.0 – <u>2.25</u> – 50.0   |                     |
| 15509.0   | Scaling factor 9          | 1.0 – <u>2.22</u> – 50.0   |                     |
| 15510.0   | Scaling factor 10         | 1.0 – <u>2.00</u> – 50.0   |                     |
| 15511.0   | Scaling factor 11         | 1.0 – <u>1.67</u> – 50.0   |                     |



## Parameters

### Overview of parameters of the command PCB

| Index  | Parameter name                             | MOVITOOLS® MotionStudio Display<br>(Range / factory setting) | MOVILINK® scaling   |
|--|--|--|---------------------|
| 15512.0  | Scaling factor 12                          | 1.0 – <u>1.43</u> – 50.0                                     |                     |
| 15513.0  | Scaling factor 13                          | 1.0 – <u>1.25</u> – 50.0                                     |                     |
| 15514.0  | Scaling factor 14                          | 1.0 – <u>1.11</u> – 50.0                                     |                     |
| 15515.0  | Scaling factor 15                          | 1.0 – <u>1.00</u> – 50.0                                     |                     |
| 8967.0   | Active scaling factor (display value)      | [Text]   |                     |
| <b>Command PCB parameters \ setpoints/ramp generators \ <u>fixed setpoints</u></b> |  |  |                     |
| <b>Only in conjunction with AS-Interface double slave GLK31A:</b>                  |  |  |                     |
| 8489.0   | Fixed setpoint n0                          | – 2000.00 – <u>200.00</u> – 2000.00 [rpm]                    | 1 digit = 0.001 rpm |
| 8490.0   | Fixed setpoint n1                          | – 2000.00 – <u>750.00</u> – 2000.00 [rpm]                    | 1 digit = 0.001 rpm |
| 8491.0   | Fixed setpoint n2                          | – 2000.00 – <u>1500.00</u> – 2000.00 [rpm]                   | 1 digit = 0.001 rpm |
| 10096.31   | Fixed setpoint n3                          | – 2000.00 – <u>2000.00</u> [rpm]                             | 1 digit = 0.001 rpm |
| 10096.38   | Fixed setpoint n4                          | – 2000.00 – <u>2000.00</u> [rpm]                             | 1 digit = 0.001 rpm |
| 10096.39   | Fixed setpoint n5                          | – 2000.00 – <u>2000.00</u> [rpm]                             | 1 digit = 0.001 rpm |
| <b>Command PCB parameters \ terminal assignment \ <u>digital outputs</u></b>       |  |  |                     |
| [Text]   | For digital output DO01, see power section |  |                     |

#### Unit functions

| Index   | Parameter name  | MOVITOOLS® MotionStudio Display<br>(Range / factory setting)  | MOVILINK® scaling |
|---|-----------------|---|-------------------|
| <b>Command PCB parameters \ unit functions \ <u>setup</u></b> |                 |   |                   |
| 8594.0  | Factory setting | <ul style="list-style-type: none"> <li>• <u>0</u> = No</li> <li>• 1 = Standard</li> <li>• 2 = Delivery state</li> </ul> |                   |





## 8.2 Overview of power section parameters

### 8.2.1 Display values

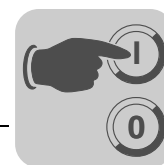
| Index   | Parameter name                                 | MOVITOOLS® MotionStudio<br>Display<br>(Range / factory setting) | MOVILINK® scaling                        |
|---|--|---|--|
| <b>Power section parameters \ display values \ <u>process values</u></b>  |  |   |  |
| <b>Actual drive values</b>  |  |   |  |
| 8318.0  | Actual speed                                   | [rpm]   | 1 digit = 0.001 rpm                      |
| 8501.0  | User display                                   | [Text]  |  |
| <b>Output currents</b>  |  |   |  |
| 8321.0  | Apparent output current                        | [%I <sub>N</sub> ]  | 1 digit = 0.001 %I <sub>N</sub>          |
| 8322.0  | Active output current                          | [%]   | 1 digit = 0.001 %                        |
| 8326.0  | Apparent output current                        | [A]   | 1 digit = 0.001 %                        |
| <b>Actual unit values</b>   |  |   |  |
| 8325.0  | DC link voltage                                | [V]   | 1 digit = 0.001 %                        |
| 8730.0  | Unit utilization                               | [%]   | 1 digit = 0.001 %                        |
| 8327.0  | Heat sink temperature                          | [°C]  | 1 digit = 1 °C                           |
| <b>Motor status</b>   |  |   |  |
| 8323.0  | Motor utilization                              | [%]   | 1 digit = 0.001 %                        |
| 9872.255  | Motor temperature                              | [°C]  | 1 digit = 10 <sup>-6</sup> °C            |
| <b>Power section parameters \ display values \ <u>unit status</u></b>     |  |   |  |
| <b>Device status</b>  |  |   |  |
| 9702.2  | Power section status                           | [Text]  |  |
| 9702.7  | Drive status                                   | [Text]  |  |
| 9702.5  | Error code                                     | [Text]  |  |
| 10071.1   | Suberror code                                  | [Text]  |  |
| 10404.5   | Error source                                   | [Text]  |  |
| <b>Statistical data</b>   |  |   |  |
| 8328.0  | Operating hours                                | [h]   | 1 digit = 1 min = 1/60 h                 |
| 8329.0  | Enable hours                                   | [h]   | 1 digit = 1 min = 1/60 h                 |
| 8330.0  | Work   | [kWh]   | 1 digit = 1Ws = 1/3600000                |
| <b>Power section parameters \ display values \ <u>digital outputs</u></b> |  |   |  |
| <b>Digital outputs</b>  |  |   |  |
| 8349.0, bit 1   | Digital output DO01 status (signal relay K1)   | [Bit field]   |  |
| 8350.0  | Digital output DO01 function (signal relay K1) | [Text]  |  |
| <b>Power section parameters \ display values \ <u>unit data</u></b>       |  |   |  |
| <b>Basic unit</b>   |  |   |  |
| 9701.10   | Unit series                                    | [Text]  |  |
| 9701.11   | Variant identification                         | [Text]  |  |
| 9701.1 – 9701.5   | Unit name                                      | [Text]  |  |
| 10204.2   | Unit variant                                   | [Text]  |  |
| 9823.1 – 9823.5   | Device signature                               | [Text]  |  |
| 8361.0  | Nominal unit current (rms)                     | [A]   | 1 digit = 0.001 %                        |
| 10079.9   | Motor size                                     | [Text]  |  |
| 9610.1  | Nominal motor torque                           | [Nm]  | 1 digit = 0.00001 Nm (10 <sup>-5</sup> ) |



## Parameters

### Overview of power section parameters

| Index   | Parameter name   | MOVITOOLS® MotionStudio Display<br>(Range / factory setting) | MOVILINK® scaling             |
|---|--|--|-------------------------------|
| <b>Basic unit firmware</b>  |  |  |                               |
| 9701.30, 9701.31  | Basic unit firmware  | [Text]   |                               |
| <b>Power section parameters \ display values \ <u>gear unit data</u></b>                      |  |  |                               |
| 10079.3   | Gear unit reduction ratio "numerator"<br>(only in connection with MOVIGEAR® drive units)   | [Text]   |                               |
| 10079.4   | Gear unit reduction ratio "denominator"<br>(only in connection with MOVIGEAR® drive units) | [Text]   |                               |
| –   | Gear unit reduction ratio<br>(only in connection with MOVIGEAR® drive units)               | [Text]   |                               |
| 10079.5   | Number of gear unit stages<br>(only in connection with MOVIGEAR® drive units)              | [Text]   |                               |
| <b>Power section parameters \ display values \ fault memory 0-4 \ <u>fault memory t-0</u></b> |  |  |                               |
| <b>Fault status</b>   |  |  |                               |
| 8366.0  | Error t-0 error code   | [Text]   |                               |
| 10072.1   | Error t-0 suberror code  | [Text]   |                               |
| 8883.0  | Error t-0 internal   | [Text]   |                               |
| 10404.6   | Source of error t-0  | [Text]   |                               |
| <b>Actual drive values</b>  |  |  |                               |
| 8401.0  | Actual speed t-0   | [rpm]  | 1 digit = 0.001 rpm           |
| 8406.0  | Apparent output current t-0  | [%]  | 1 digit = 0.001 %             |
| 8411.0  | Active output current t-0  | [%]  | 1 digit = 0.001 %             |
| 8416.0  | Unit utilization t-0   | [%]  | 1 digit = 0.001 %             |
| 8441.0  | Motor utilization t-0  | [%]  | 1 digit = 0.001 %             |
| 8421.0  | DC link voltage t-0  | [V]  | 1 digit = 0.001 %             |
| <b>Device status</b>  |  |  |                               |
| 8391.0  | Power section status t-0   | [Text]   |                               |
| 8426.0  | Operating hours t-0  | [h]  | 1 digit = 1 min = 1/60 h      |
| 8431.0  | Enable hours t-0   | [h]  | 1 digit = 1 min = 1/60 h      |
| 10083.1   | Work t-0   | [kWh]  | 1 digit = 1Ws = 1/3600000     |
| <b>Temperatures</b>   |  |  |                               |
| 8396.0  | Heat sink temperature t-0  | [°C]   | 1 digit = 1 °C                |
| 10070.1   | Motor temperature t-0  | [°C]   | 1 digit = 10 <sup>-6</sup> °C |
| <b>Power section parameters \ Display values \ Error memory 0-4 \ <u>Error memory t-1</u></b> |  |  |                               |
| <b>Fault status</b>   |  |  |                               |
| 8367.0  | Error t-1 error code   | [Text]   |                               |
| 10072.2   | Error t-1 suberror code  | [Text]   |                               |
| 8884.0  | Error t-1 internal   | [Text]   |                               |
| 10404.7   | Source of error t-1  | [Text]   |                               |
| <b>Actual drive values</b>  |  |  |                               |
| 8402.0  | Actual speed t-1   | [rpm]  | 1 digit = 0.001 rpm           |
| 8407.0  | Apparent output current t-1  | [%]  | 1 digit = 0.001 %             |
| 8412.0  | Active output current t-1  | [%]  | 1 digit = 0.001 %             |
| 8417.0  | Unit utilization t-1   | [%]  | 1 digit = 0.001 %             |
| 8442.0  | Motor utilization t-1  | [%]  | 1 digit = 0.001 %             |



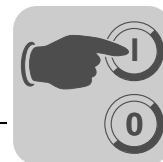
| Index  | Parameter name              | MOVITOOLS® MotionStudio<br>Display<br>(Range / factory setting) | MOVILINK® scaling             |
|--|-----------------------------|---|-------------------------------|
| 8422.0   | DC link voltage t-1         | [V]   | 1 digit = 0.001 %             |
| <b>Device status</b>   |                             |   |                               |
| 8392.0   | Power section status t-1    | [Text]  |                               |
| 8427.0   | Operating hours t-1         | [h]   | 1 digit = 1 min = 1/60 h      |
| 8432.0   | Enable hours t-1            | [h]   | 1 digit = 1 min = 1/60 h      |
| 10083.2  | Work t-1                    | [kWh]   | 1 digit = 1Ws = 1/3600000     |
| <b>Temperatures</b>  |                             |   |                               |
| 8397.0   | Heat sink temperature t-1   | [°C]  | 1 digit = 1 °C                |
| 10070.2  | Motor temperature t-1       | [°C]  | 1 digit = 10 <sup>-6</sup> °C |
| <b>Power section parameters \ Display values \ Error memory 0-4 \ Error memory t-2</b> |                             |   |                               |
| <b>Fault status</b>  |                             |   |                               |
| 8368.0   | Error t-2 error code        | [Text]  |                               |
| 10072.3  | Error t-2 suberror code     | [Text]  |                               |
| 8885.0   | Error t-2 internal          | [Text]  |                               |
| 10404.8  | Source of error t-2         | [Text]  |                               |
| <b>Input/output status</b>   |                             |   |                               |
| <b>Actual drive values</b>   |                             |   |                               |
| 8403.0   | Actual speed t-2            | [rpm]   | 1 digit = 0.001 rpm           |
| 8408.0   | Apparent output current t-2 | [%]   | 1 digit = 0.001 %             |
| 8413.0   | Active output current t-2   | [%]   | 1 digit = 0.001 %             |
| 8418.0   | Unit utilization t-2        | [%]   | 1 digit = 0.001 %             |
| 8443.0   | Motor utilization t-2       | [%]   | 1 digit = 0.001 %             |
| 8423.0   | DC link voltage t-2         | [V]   | 1 digit = 0.001 %             |
| <b>Device status</b>   |                             |   |                               |
| 8393.0   | Power section status t-2    | [Text]  |                               |
| 8428.0   | Operating hours t-2         | [h]   | 1 digit = 1 min = 1/60 h      |
| 8433.0   | Enable hours t-2            | [h]   | 1 digit = 1 min = 1/60 h      |
| 10083.3  | Work t-2                    | [kWh]   | 1 digit = 1Ws = 1/3600000     |
| <b>Temperatures</b>  |                             |   |                               |
| 8398.0   | Heat sink temperature t-2   | [°C]  | 1 digit = 1 °C                |
| 10070.3  | Motor temperature t-2       | [°C]  | 1 digit = 10 <sup>-6</sup> °C |
| <b>Power section parameters \ Display values \ Error memory 0-4 \ Error memory t-3</b> |                             |   |                               |
| <b>Fault status</b>  |                             |   |                               |
| 8369.0   | Error t-3 error code        | [Text]  |                               |
| 10072.4  | Error t-3 suberror code     | [Text]  |                               |
| 8886.0   | Error t-3 internal          | [Text]  |                               |
| 10404.9  | Source of error t-3         | [Text]  |                               |
| <b>Actual drive values</b>   |                             |   |                               |
| 8404.0   | Actual speed t-3            | [rpm]   | 1 digit = 0.001 rpm           |
| 8409.0   | Apparent output current t-3 | [%]   | 1 digit = 0.001 %             |
| 8414.0   | Active output current t-3   | [%]   | 1 digit = 0.001 %             |
| 8419.0   | Unit utilization t-3        | [%]   | 1 digit = 0.001 %             |
| 8444.0   | Motor utilization t-3       | [%]   | 1 digit = 0.001 %             |
| 8424.0   | DC link voltage t-3         | [V]   | 1 digit = 0.001 %             |
| <b>Device status</b>   |                             |   |                               |
| 8394.0   | Power section status t-3    | [Text]  |                               |



## Parameters

### Overview of power section parameters

| Index  | Parameter name              | MOVITOOLS® MotionStudio Display (Range / factory setting) | MOVILINK® scaling             |
|--|-----------------------------|---|-------------------------------|
| 8429.0   | Operating hours t-3         | [h]   | 1 digit = 1 min = 1/60 h      |
| 8434.0   | Enable hours t-3            | [h]   | 1 digit = 1 min = 1/60 h      |
| 10083.4  | Work t-3                    | [kWh]   | 1 digit = 1Ws = 1/3600000     |
| <b>Temperatures</b>  |                             |   |                               |
| 8399.0   | Heat sink temperature t-3   | [°C]  | 1 digit = 1 °C                |
| 10070.4  | Motor temperature t-3       | [°C]  | 1 digit = 10 <sup>-6</sup> °C |
| <b>Power section parameters \ Display values \ Error memory 0-4 \ Error memory t-4</b> |                             |   |                               |
| <b>Fault status</b>  |                             |   |                               |
| 8370.0   | Error t-4 error code        | [Text]  |                               |
| 10072.5  | Error t-4 suberror code     | [Text]  |                               |
| 8887.0   | Error t-4 internal          | [Text]  |                               |
| 10404.10   | Source of error t-4         | [Text]  |                               |
| <b>Actual drive values</b>   |                             |   |                               |
| 8405.0   | Actual speed t-4            | [rpm]   | 1 digit = 0.001 rpm           |
| 8410.0   | Apparent output current t-4 | [%]   | 1 digit = 0.001 %             |
| 8415.0   | Active output current t-4   | [%]   | 1 digit = 0.001 %             |
| 8420.0   | Unit utilization t-4        | [%]   | 1 digit = 0.001 %             |
| 8445.0   | Motor utilization t-4       | [%]   | 1 digit = 0.001 %             |
| 8425.0   | DC link voltage t-4         | [V]   | 1 digit = 0.001 %             |
| <b>Device status</b>   |                             |   |                               |
| 8395.0   | Power section status t-4    | [Text]  |                               |
| 8430.0   | Operating hours t-4         | [h]   | 1 digit = 1 min = 1/60 h      |
| 8435.0   | Enable hours t-4            | [h]   | 1 digit = 1 min = 1/60 h      |
| 10083.5  | Work t-4                    | [kWh]   | 1 digit = 1Ws = 1/3600000     |
| <b>Temperatures</b>  |                             |   |                               |
| 8400.0   | Heat sink temperature t-4   | [°C]  | 1 digit = 1 °C                |
| 10070.5  | Motor temperature t-4       | [°C]  | 1 digit = 10 <sup>-6</sup> °C |



## 8.2.2 Parameters that can be changed

### Storage location

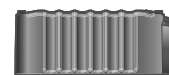


### INFORMATION

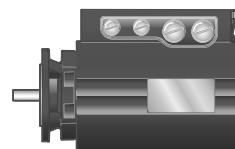
The following parameters are stored in the DRC motor.

If the motor is replaced, for example for service purposes, changes made to these parameters must be made again.

The changes remain active after changing the electronics cover.



Electronics cover



Motor

### Setpoints/ramp generators

| Index  | Parameter name          | MOVITOOLS® MotionStudio Display<br>(Range / factory setting)                  | MOVILINK® scaling   |
|--|-------------------------|---|---------------------|
| <b>Power section parameters \ setpoints/ramp generators \ <u>setpoint monitoring</u></b> |                         |   |                     |
| <b>Setpoint stop function</b>  |                         |   |                     |
| 8578.0   | Setpoint stop function  | <ul style="list-style-type: none"> <li>• 0 = Off</li> <li>• 1 = On</li> </ul> |                     |
| 8579.0   | Stop setpoint           | 160 – 500 [rpm]   | 1 digit = 0.001 rpm |
| 8580.0   | Start offset            | – 0 – 30 – 500 [rpm]  | 1 digit = 0.001 rpm |
| <b>Power section parameters \ setpoints/ramp generators \ <u>speed ramps</u></b>         |                         |   |                     |
| <b>Stop ramps</b>  |                         |   |                     |
| 8476.0   | Stop ramp t13           | 0.0 – 2.0 – 2000.0 [s]  | 1 digit = 0.001 s   |
| 8477.0   | Emergency stop ramp t14 | 0.0 – 2.0 – 2000.0 [s]  | 1 digit = 0.001 s   |
| <b>Ramp monitoring functions</b>   |                         |   |                     |
| 8928.0   | Ramp monitoring         | <ul style="list-style-type: none"> <li>• 0 = Off</li> <li>• 1 = On</li> </ul> |                     |
| <b>Power section parameters \ setpoints/ramp generators \ <u>motor potentiometer</u></b> |                         |   |                     |
| 8486.0   | Ramp t3 up              | 0.2 – 20.0 – 2000.0 [s]   | 1 digit = 0.001 s   |
| 8487.0   | Ramp t3 down            | 0.2 – 20.0 – 2000.0 [s]   | 1 digit = 0.001 s   |
| 8488.0   | Save last setpoint      | <ul style="list-style-type: none"> <li>• 0 = No</li> <li>• 1 = Yes</li> </ul> |                     |



## Drive data

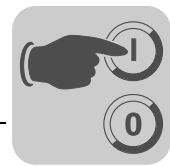
**NOTICE**

Damage to the DRC drive unit.

Potential damage to property

- Consult SEW-EURODRIVE before you change the torque limit.

| Index  | Parameter name                                 | MOVITOOLS® MotionStudio Display (Range / factory setting)   | MOVILINK® scaling               |
|--|--|---|---------------------------------|
| <b>Power section parameters \ drive data \ <u>motor parameters</u></b>     |  |   |                                 |
| <b>Motor operating mode</b>  |  |   |                                 |
| 8574.0   | Operating mode (display value)                 | <ul style="list-style-type: none"> <li>• <u>16</u> = Servo</li> <li>• 18 = Servo &amp; IPOS</li> </ul>  |                                 |
| <b>Motor direction of rotation</b>   |  |   |                                 |
| 8537.0   | Direction of rotation reversal (display value) | <ul style="list-style-type: none"> <li>• <u>0</u> = Off</li> <li>• 1 = On</li> </ul>  |                                 |
| <b>Modulation</b>  |  |   |                                 |
| 8827.0   | PWM frequency (display value)                  | <ul style="list-style-type: none"> <li>• 0 = 4 kHz</li> <li>• <u>1</u> = 8 kHz</li> </ul>   |                                 |
| <b>Power section parameters \ drive data \ <u>monitoring functions</u></b> |  |   |                                 |
| <b>Speed monitoring</b>  |  |   |                                 |
| 8557.0   | Speed monitoring                               | <ul style="list-style-type: none"> <li>• 0 = Off</li> <li>• 1 = Motor mode</li> <li>• 2 = Regenerative mode</li> <li>• <u>3</u> = Motor/regenerative</li> </ul> |                                 |
| 8558.0   | Speed monitoring delay time                    | 0.00 – <u>1.00</u> – 10.00 [s]  | 1 digit = 0.001 s               |
| <b>Power section parameters \ drive data \ <u>limit values</u></b>         |  |   |                                 |
| <b>Setpoint limits</b>   |  |   |                                 |
| 8516.0   | Minimum speed                                  | 0.0 – <u>200.0</u> – 2000.0 [rpm]   | 1 digit = 0.001 rpm             |
| 8517.0   | Maximum speed                                  | 0.0 – 200.0 – <u>2000.0</u> [rpm]   | 1 digit = 0.001 rpm             |
| <b>Drive limits</b>  |  |   |                                 |
| 8518.0   | Current limit                                  | <b>In connection with mechatronic MOVIGEAR® drive unit:</b><br>0 – <u>250</u> – 400 [%I <sub>N</sub> ]  | 1 digit = 0.001 %I <sub>N</sub> |
|  |  | <b>In conjunction with DRC electronic motor:</b><br>0 – <u>250</u> – 300 [%I <sub>N</sub> ]   | 1 digit = 0.001 %I <sub>N</sub> |
| 9951.3   | Effective current limit                        | <b>Only in connection with mechatronic MOVIGEAR® drive unit:</b><br>0 – 400 [%I <sub>N</sub> ]  | 1 digit = 0.001 %I <sub>N</sub> |
| 8688.0   | Torque limit                                   | <b>In connection with mechatronic MOVIGEAR® drive unit:</b><br>0 – <u>250</u> – 400 [%I <sub>N</sub> ]  | 1 digit = 0.001 %I <sub>N</sub> |
|  |  | <b>In conjunction with DRC electronic motor:</b><br>0 – <u>250</u> – 300 [%I <sub>N</sub> ]   | 1 digit = 0.001 %I <sub>N</sub> |



Terminal assignment

| Index  | Parameter name                                 | MOVITOOLS® MotionStudio Display (Range / factory setting)   | MOVILINK® scaling |
|--|--|---|-------------------|
| <b>Power section parameters \ terminal assignment \ <u>digital outputs</u></b> |  |   |                   |
| 8349.0, bit 1  | Digital output DO01 status (signal relay K1)   | [Bit field]   |                   |
| 8350.0   | Digital output DO01 function (signal relay K1) | <ul style="list-style-type: none"> <li>• 0 = No function</li> <li>• 1 = /Fault</li> <li>• 2 = Ready</li> <li>• 3 = Output stage ON</li> <li>• 4 = Rotating field ON</li> <li>• 5 = Brake released</li> <li>• 6 = Brake applied</li> <li>• 7 = Motor standstill</li> <li>• 8 = Reserved</li> <li>• 9 = Speed reference signal</li> <li>• 10 = Speed reference signal</li> <li>• 11 = Setpoint-actual value comparison signal</li> <li>• 12 = Current reference signal</li> <li>• 13 = I<sub>max</sub> signal</li> <li>• 14 = /Warning motor utilization 1</li> <li>• 19 = IPOS in position</li> <li>• 20 = IPOS referenced</li> <li>• 21 = IPOS output</li> <li>• 22 = /IPOS fault</li> <li>• 27 = STO – safe torque off</li> <li>• 34 = Process data bit</li> </ul> |                   |



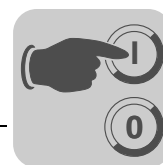
## Diagnostic functions

| Index  | Parameter name          | MOVITOOLS® MotionStudio Display (Range / factory setting)   | MOVILINK® scaling   |
|--|-------------------------|---|---------------------|
| <b>Power section parameters \ diagnostics functions \ <u>reference signals</u></b> |                         |   |                     |
| <b>Speed reference message</b>   |                         |   |                     |
| 8539.0   | Speed reference value   | 0.0 ... 1500.0 ... 2000.0 [rpm]   | 1 digit = 0.001 rpm |
| 8540.0   | Hysteresis              | 0.0 ... 100.0 ... 500.0 [rpm]   | 1 digit = 0.001 rpm |
| 8541.0   | Deceleration time       | 0.0 ... 1.0 ... 9.0 [s]   | 1 digit = 0.001 s   |
| 8542.0   | Signal = "1" if:        | <ul style="list-style-type: none"> <li>0 = <math>n &lt; n_{ref}</math></li> <li>1 = <math>n &gt; n_{ref}</math></li> </ul>  |                     |
| <b>Speed window signal</b>   |                         |   |                     |
| 8543.0   | Window center           | 0 ... 1500 ... 2000 [rpm]   | 1 digit = 0.001 rpm |
| 8544.0   | Range width             | 0 ... 2000 [rpm]  | 1 digit = 0.001 rpm |
| 8545.0   | Deceleration time       | 0 ... 1 ... 9 [s]   | 1 digit = 0.001 s   |
| 8546.0   | Signal = "1" if:        | <ul style="list-style-type: none"> <li>0 = <u>internal</u></li> <li>1 = external</li> </ul>                                 |                     |
| <b>Speed setpoint/actual value comparison</b>                                      |                         |   |                     |
| 8547.0   | Hysteresis              | 1 ... 100 ... 300 [rpm]   | 1 digit = 0.001 rpm |
| 8548.0   | Deceleration time       | 0 ... 1 ... 9 [s]   | 1 digit = 0.001 s   |
| 8549.0   | Signal = "1" if:        | <ul style="list-style-type: none"> <li>0 = <math>n &lt;&gt; n_{set}</math></li> <li>1 = <math>n = n_{set}</math></li> </ul> |                     |
| <b>Current reference signal</b>  |                         |   |                     |
| 8550.0   | Current reference value | 0 ... 100 ... 400 [%]   | 1 digit = 0.001 %   |
| 8551.0   | Hysteresis              | 0 ... 5 ... 30 [%]  | 1 digit = 0.001 %   |
| 8552.0   | Deceleration time       | 0 ... 1 ... 9 [s]   | 1 digit = 0.001 s   |
| 8553.0   | Signal = "1" if:        | <ul style="list-style-type: none"> <li>0 = <math>I &lt; I_{ref}</math></li> <li>1 = <math>I &gt; I_{ref}</math></li> </ul>  |                     |
| <b>I<sub>max</sub> signal</b>  |                         |   |                     |
| 8554.0   | Hysteresis              | 5 ... 50 [%]  | 1 digit = 0.001 %   |
| 8555.0   | Deceleration time       | 0 ... 1 ... 9 [s]   | 1 digit = 0.001 s   |
| 8556.0   | Signal = "1" if:        | <ul style="list-style-type: none"> <li>0 = <math>I = I_{max}</math></li> <li>1 = <math>I &lt; I_{max}</math></li> </ul>     |                     |

## Control functions

| Index   | Parameter name            | MOVITOOLS® MotionStudio Display (Range / factory setting)                        | MOVILINK® scaling |
|---|---------------------------|--|-------------------|
| <b>Power section parameters \ control functions \ <u>brake function</u></b> |                           |  |                   |
| 8584.0  | Brake function            | <ul style="list-style-type: none"> <li>0 = Off</li> <li>1 = <u>On</u></li> </ul> |                   |
| 9833.20   | Brake application for STO | <ul style="list-style-type: none"> <li>0 = No</li> <li>1 = <u>Yes</u></li> </ul> |                   |





Unit functions

| Power section parameters \ unit functions \ <u>setup</u>                         |   |  |
|--|---|--|
| 8594.0   | Factory setting                             | <ul style="list-style-type: none"> <li>0 = No</li> <li>1 = Standard</li> <li>2 = Delivery state</li> </ul>   |
| 8595.0   | Parameter lock                              | <ul style="list-style-type: none"> <li>0 = No</li> <li>1 = Yes</li> </ul>  |
| Power section parameters \ unit functions \ <u>error monitoring</u>              |   |  |
| Programmable responses   |   |  |
| 9729.16  | Response ext. Error                         | <ul style="list-style-type: none"> <li>0 = No response</li> <li>1 = Display only</li> <li>2 = Output stage inhibit / locked</li> <li>3 = Emergency stop / locked</li> <li>4 = Stop / locked</li> <li>5 = Output stage inhibit / waiting</li> <li>6 = Emergency stop / waiting</li> <li>7 = Stop / waiting</li> </ul> |
| 9729.4   | Line phase failure response                 | <ul style="list-style-type: none"> <li>0 = No response</li> <li>1 = Display only</li> <li>2 = Output stage inhibit / locked</li> <li>3 = Emergency stop / locked</li> <li>4 = Stop / locked</li> <li>5 = Output stage inhibit / waiting</li> <li>6 = Emergency stop / waiting</li> <li>7 = Stop / waiting</li> </ul> |
| 9729.9   | TF signal response                          | <ul style="list-style-type: none"> <li>0 = No response</li> <li>1 = Display only</li> <li>2 = Output stage inhibit / locked</li> <li>3 = Emergency stop / locked</li> <li>4 = Stop / locked</li> <li>5 = Output stage inhibit / waiting</li> <li>6 = Emergency stop / waiting</li> <li>7 = Stop / waiting</li> </ul> |
| Error acknowledgement  |   |  |
| 8617.0   | Manual reset                                | <ul style="list-style-type: none"> <li>0 = No</li> <li>1 = Yes</li> </ul>  |
| Power section parameters \ unit functions \ <u>scaling of actual speed value</u> |   |  |
| 8747.0   | Scaling factor for user display numerator   | 1 – 65535  |
| 8748.0   | Scaling factor for user display denominator | 1 – 65535  |
| 8772.0   | User unit                                   | [Text]   |
| 8773.0   | User unit                                   | [Text]   |



### 8.3 Description of command PCB parameters

#### 8.3.1 Display values

Command pcb parameters \ display values \ unit status

*Operating status* index 8310.0 The parameter indicates the current operating state.

*Startup mode* index 10095.1 This parameter shows the startup mode set with DIP switch S2/1 in plain text:

- EASY
- EXPERT

*Setting of DIP switch S1, S2* index 9621.10 The parameter indicates the setting of DIP switches S1 and S2:

| DIP switches | Bit in index 9621.10 | Functionality                      |                                    |
|--------------|----------------------|------------------------------------|------------------------------------|
| S1/1         | 0                    | PWM cycle frequency                | 0: 4 kHz<br>1: variable (8, 4 kHz) |
| S1/2         | 1                    | Release brake without drive enable | 0: Off<br>1: On                    |
| S1/3         | 2                    | res.                               | Reserved                           |
| S1/4         | 3                    | res.                               | Reserved                           |
| S2/1         | 4                    | Startup mode                       | 0: Easy<br>1: Expert               |
| S2/2         | 5                    | res.                               | Reserved                           |
| S2/3         | 6                    | Direction of rotation reversal     | 0: Off<br>1: On                    |
| S2/4         | 7                    | Speed monitoring                   | 0: Off<br>1: On                    |

Display of the DIP switch setting is independent of whether the DIP switch function is activated or deactivated.

*Setting of switch f2* index 10096.27 The parameter indicates the setting of switch f2.  
Display of the switch setting is independent of whether the switch function is activated or deactivated.

*Parameter setting of switch t1* index 10096.29 The parameter indicates the setting of switch t1.  
Display of the switch setting is independent of whether the switch function is activated or deactivated.

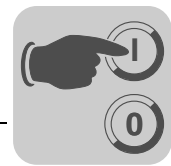
Command pcb parameters \ display values \ analog setpoints

*Setting of setpoint potentiometer f1* index 10096.28 The parameter indicates the setting of setpoint potentiometer f1.  
The display of the switch setting is independent of whether the potentiometer function is activated or deactivated.

Command pcb parameters \ display values \ digital inputs

*Digital input DI01* index 8334.0, bit 1 The parameter indicates the state of digital input DI01.

*Digital Input DI02* index 8334.0, bit 2 The parameter indicates the state of digital input DI02.



*Digital Input DI03*  
index 8334.0, bit 3

The parameter indicates the state of digital input DI03.

*Digital Input DI04*  
index 8334.0, bit 4

The parameter indicates the state of digital input DI04.

*Digital Input DI01*  
index 8335.0

The parameter indicates the function of digital input DI01.

*Digital input DI02*  
index 8336.0

The parameter indicates the function of digital input DI02.

*Digital input DI03*  
index 8337.0

The parameter indicates the function of digital input DI03.

*Digital input DI04*  
index 8338.0

The parameter indicates the function of digital input DI04.

*Command PCB parameters \ display values \ digital outputs*

*Digital output*  
DO01

For digital output DO01, see power section parameters.

*Command pcb parameters \ display values \ unit data*

*Unit series*

The parameter indicates the unit series, for example DRC.

*Unit name*  
index 9701.1 –  
9701.5

The parameter indicates the type designation of the command PCB.

*Unit signature*  
index 9823.1 –  
9823.5

The parameter is used to indicate and enter the device signature. This parameter is used to assign a name to the command PCB so you can identify it in the hardware tree or in other visualization elements.

*Firmware AS-Interface option*  
index 9701.53,  
9701.54

The parameter indicates the part number and version of the firmware used in the AS-Interface option.

*ASInterface option*  
index 10095.39

The parameter indicates the type of AS-Interface option:

| Parameter value | Type of AS-Interface option   |
|-----------------|-------------------------------|
| 0               | AS-Interface is not available |
| 3               | GLK30A binary slave           |
| 4               | GLK31A double slave           |

*Firmware command level*  
index 9701.30,  
9701.31

The parameter indicates the part number of the firmware used in the command PCB.



*Deactivation of mechanical control elements*  
index 10096.30  
bit 13 – 15

The parameter indicates disabled/enabled mechanical control elements.

*Command PCB parameters \ display values \ bus diagnostics*

*AS-Interface option index 10095.39*

The parameter indicates the type of AS-Interface option:

| Parameter value | Type of AS-Interface option   |
|-----------------|-------------------------------|
| 0               | AS-Interface is not available |
| 3               | GLK30A binary slave           |
| 4               | GLK31A double slave           |

*ASInterface output bit index 9756.1, bits 0 – 3 and bits 8 – 11*

In conjunction with AS-Interface binary slave GLK30A:

The parameters are used as AS-Interface bus monitor. They indicate the transmission of AS-Interface bits from and to the DRC inverter.

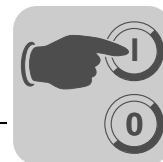
The following table shows the assignment of AS-Interface output bits:

| Index          | AS-Interface bit            | Meaning                 |
|----------------|-----------------------------|-------------------------|
| 9756.1, bit 0  | AS-Interface output bit DO0 | CW operation/stop       |
| 9756.1, bit 1  | AS-Interface output bit DO1 | CCW operation/stop      |
| 9756.1, bit 2  | AS-Interface output bit DO2 | Speed f2/speed f1       |
| 9756.1, bit 3  | AS-Interface output bit DO3 | Reset/controller enable |
| 9756.1, bit 8  | AS-Interface output bit PO0 | Parameter bit 1         |
| 9756.1, bit 9  | AS-Interface output bit PO1 | Parameter bit 2         |
| 9756.1, bit 10 | AS-Interface output bit PO2 | Parameter bit 3         |
| 9756.1, bit 11 | AS-Interface output bit PO3 | Parameter bit 4         |

In conjunction with AS-Interface double slave GLK31A:

The parameters are used as AS-Interface bus monitor. They indicate the transmission of AS-Interface bits from and to the DRC inverter. The meaning of the AS-Interface data bits depends on the selected function module (see chapter "Function modules").

| Index          | AS-Interface bit            | Meaning                                   |
|----------------|-----------------------------|---|
| 9756.1, bit 0  | AS-Interface output bit DO0 | Depending on the selected function module |
| 9756.1, bit 1  | AS-Interface output bit DO1 |   |
| 9756.1, bit 2  | AS-Interface output bit DO2 |   |
| 9756.1, bit 3  | AS-Interface output bit DO3 |   |
| 9756.1, bit 8  | AS-Interface output bit PO0 |   |
| 9756.1, bit 9  | AS-Interface output bit PO1 |   |
| 9756.1, bit 10 | AS-Interface output bit PO2 |   |
| 9756.1, bit 11 | AS-Interface output bit PO3 |   |



*AS-Interface input bit index 9866.1, bits 0 – 3 and index 9756.1, bits 6 – 7*

In conjunction with AS-Interface binary slave GLK30A:

The parameters are used as AS-Interface bus monitor. They indicate the transmission of AS-Interface bits from and to the DRC inverter.

The following table shows the assignment of the AS-Interface input bits:

| Index         | AS-Interface bit           | Meaning               |
|---------------|----------------------------|-----------------------|
| 9866.1, bit 0 | AS-Interface input bit DI0 | Ready signal          |
| 9866.1, bit 1 | AS-Interface input bit DI1 | Automatic/manual mode |
| 9756.1, bit 6 | AS-Interface input bit DI2 | Sensor output 1       |
| 9756.1, bit 7 | AS-Interface input bit DI3 | Sensor output 2       |

In conjunction with AS-Interface double slave GLK31A:

The parameters are used as AS-Interface bus monitor. They indicate the transmission of AS-Interface bits from and to the DRC inverter. The meaning of the AS-Interface data bits depends on the selected function module (see chapter "Function modules").

| Index         | AS-Interface bit           | Meaning                                   |
|---------------|----------------------------|---|
| 9866.1, bit 0 | AS-Interface input bit DI0 | Depending on the selected function module |
| 9866.1, bit 1 | AS-Interface input bit DI1 |   |
| 9866.1, bit 2 | AS-Interface input bit DI2 |   |
| 9866.1, bit 3 | AS-Interface input bit DI3 |   |



### 8.3.2 Setpoints/ramp generators

Command PCB parameters \ setpoints/ramp generators \ setpoint selection

Deactivation of mechanical control elements  
index 10096.30,  
bits 13 – 15

Use this bit-coded selection box to deactivate the mechanical control elements of the DRC inverter.

The parameter is set at the factory so that all mechanical control elements are effective.

| Bit | Meaning                                       | Information  |   |
|-----|---|--------------|---|
| 13  | Deactivation of the setpoint potentiometer f1 | Bit not set: | Setpoint potentiometer f1 active  |
|     |   | Bit set:     | Setpoint potentiometer f1 not active<br>Setting the setpoint and the maximum speed using parameters |
| 14  | Deactivating switch f2                        | Bit not set: | Switch f2 active  |
|     |   | Bit set:     | Switch f2 not active<br>Setting the setpoint and the minimum speed using parameters                 |
| 15  | Deactivating switch t1                        | Bit not set: | Switch t1 active  |
|     |   | Bit set:     | Switch t1 not active<br>Setting the ramp times using parameters                                     |

Command PCB parameters \ setpoints/ramp generators \ speed ramps

Ramp t11 up  
index 8807.0

Use this parameter to set acceleration ramp "t11 up".

- Unit: [s]
- Setting range: 0 – 1 – 60 s

The ramp times refer to a setpoint step change of  $\Delta n = 3000$  rpm.

In conjunction with AS-Interface double slave GLK31A, the parameter is used to set the acceleration ramp for function modules 1, 5, 7 of the double slave.

Ramp t11 down  
index 8808.0

Use this parameter to set deceleration ramp "t11 down".

- Unit: [s]
- Setting range: 0 – 1 – 60 s

The ramp times refer to a setpoint step change of  $\Delta n = 3000$  rpm.

In conjunction with AS-Interface double slave GLK31A, the parameter is used to set the deceleration ramp for function modules 1, 5, 7 of the double slave.

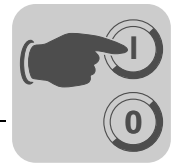
Ramp t15 up index  
10504.1

Only in conjunction with AS-Interface double slave GLK31A:

Use this parameter to set acceleration ramp "t15 up" (depending on which function module is active).

- Unit: [s]
- Setting range: 0 – 1 – 60 s

The ramp times refer to a setpoint step change of  $\Delta n = 3000$  rpm.



- Ramp t15 down**  
index 10504.11
- Only in conjunction with AS-Interface double slave GLK31A:  
Use this parameter to set deceleration ramp "t15 down" (depending on which function module is active).
- Unit: [s]
  - Setting range: 0 – 1 – 60 s
- The ramp times refer to a setpoint step change of  $\Delta n = 3000$  rpm.
- Ramp t16 up** index 10475.2
- Only in conjunction with AS-Interface double slave GLK31A:  
Use this parameter to set acceleration ramp "t16 up" (depending on which function module is active).
- Unit: [s]
  - Setting range: 0 – 1 – 60 s
- The ramp times refer to a setpoint step change of  $\Delta n = 3000$  rpm.
- Ramp t16 down**  
index 10475.1
- Only in conjunction with AS-Interface double slave GLK31A:  
Use this parameter to set deceleration ramp "t16 down" (depending on which function module is active).
- Unit: [s]
  - Setting range: 0 – 1 – 60 s
- The ramp times refer to a setpoint step change of  $\Delta n = 3000$  rpm.
- Command PCB parameters \ setpoints/ramp generators \ setpoints**
- Setpoint n\_f1**  
index 10096.35
- Use this parameter to set setpoint "n\_f1".
- Unit: [rpm]
  - Setting range: 0 – 1500 – 2000 rpm
- The setpoint "n\_f1" is valid if
- setpoint potentiometer f1 is deactivated, i.e. when parameter 10096.30, bit 13 = "1"
  - parameter 10096.34 terminal configuration = "0"
  - the signal "0" is present at terminal f1 / f2.
- Setpoint n\_f2**  
index 10096.36
- Use this parameter to set setpoint "n\_f2".
- Unit: [rpm]
  - Setting range: 0 – 200 – 2000 rpm
- The setpoint n\_f2 is valid if
- switch f2 is deactivated, i.e. when parameter 10096.30, bit 14 = "1"
  - parameter 10096.34 terminal configuration = "0"
  - the signal "1" is present at terminal f1 / f2.
- Scaling factor 0 – 15** index 15500.0–15515.0
- Only in conjunction with AS-Interface binary slave GLK30A:  
Use these parameters to set the scaling factors.



The scaling factors are factors of the setpoint speed. The setpoint scaling affects only the setpoint set using setpoint potentiometer f1.

The current scaling factor is determined by the parameter bits, see chapter "Setpoint scaling via parameter bits".

*Active scaling factor index 8967.0*

Only in conjunction with AS-Interface binary slave GLK30A:

The parameter indicates the current scaling factor for the setpoint speed.

*Command PCB parameters \ setpoints/ramp generators \ fixed setpoints*

*Fixed setpoint*

Only in conjunction with AS-Interface double slave GLK31A:

*n0 – n5*

Use these parameters to set fixed setpoints n0 – n5 (depending on which function module is active).

*index 8489.0 –*

*8491.0, 10096.31,*

*10096.38,*

*10096.39*

The sign of the fixed setpoint and the function selected at outputs DO0 – DO3 determine the direction of rotation of the motor.

| Sign of the fixed setpoint (n0 – n5) | Selected function (DO0 – DO3) | Direction of rotation Drive |
|--------------------------------------|-------------------------------|-----------------------------|
| Positive (n > 0)                     | Clockwise rotation            | Clockwise rotation          |
| Positive (n > 0)                     | Counterclockwise rotation     | Counterclockwise rotation   |
| Negative (n < 0)                     | Clockwise rotation            | Counterclockwise rotation   |
| Negative (n < 0)                     | Counterclockwise rotation     | Clockwise rotation          |

### 8.3.3 Terminal assignment

*Command PCB parameters \ terminal assignment \ digital outputs*

*Digital output*

For digital output DO01, see power section parameters.

*DO01*

### 8.3.4 Unit functions

*Command pcb parameters \ unit functions \ setup*

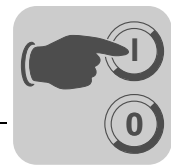
*Factory setting*

If you set this parameter to "Delivery state", all parameters that have a factory setting and can not be set using DIP switches t1 / f2 or setpoint potentiometer f1 are reset to their factory setting values.

*index 8594.0*

For those parameters that can be set using switches t1 / f2 or setpoint potentiometer f1 during startup in "Easy mode", the setting of the mechanical setting element becomes active when the factory setting "Delivery state" is selected.





## 8.4 Description of power section parameters

### 8.4.1 Display values

Power section parameters \ display values \ process values

|   |  |
|---|--|
| <i>Actual speed<br/>index 8318.0</i>                | The parameter indicates the motor speed: <ul style="list-style-type: none"> <li>• Unit: [rpm]</li> <li>• Resolution +/- 0.2 rpm</li> </ul>   |
| <i>User display<br/>index 8501.0</i>                | The user display is defined by the following parameters: <ul style="list-style-type: none"> <li>• 8747.0 Scaling factor for user display numerator</li> <li>• 8748.0 Scaling factor for user display denominator</li> <li>• 8772.0/8773.0 User-defined unit</li> <li>• Unit: [Text]</li> </ul> |
| <i>Apparent output<br/>current<br/>index 8321.0</i> | The parameter indicates the apparent current: <ul style="list-style-type: none"> <li>• Unit: [% I<sub>N</sub>]</li> </ul>  |
| <i>Active output cur-<br/>rent index 8322.0</i>     | The parameter indicates the active current. The display value is positive when torque is applied in the positive direction of rotation; negative when torque is applied in negative direction of rotation. <ul style="list-style-type: none"> <li>• Unit: [% I<sub>N</sub>]</li> </ul>         |
| <i>Apparent output<br/>current<br/>index 8326.0</i> | The parameter indicates the apparent output current: <ul style="list-style-type: none"> <li>• Unit: [A]</li> </ul>   |
| <i>DC link voltage<br/>index 8325.0</i>             | The parameter indicates the voltage measured in the DC link circuit: <ul style="list-style-type: none"> <li>• Unit: [V]</li> </ul>   |
| <i>Unit utilization<br/>index 8730.0</i>            | The parameter indicates the unit utilization Ixt: <ul style="list-style-type: none"> <li>• Unit: [%]</li> </ul>  |
| <i>Heat sink tempera-<br/>ture index 8327.0</i>     | The parameter indicates the heat sink temperature of the power section: <ul style="list-style-type: none"> <li>• Unit: [°C]</li> </ul>   |
| <i>Motor utilization<br/>index 8323.0</i>           | The parameter indicates the motor utilization calculated using motor model and current. <ul style="list-style-type: none"> <li>• Unit: [%]</li> </ul>  |
| <i>Motor temperature<br/>index 9872.255</i>         | The parameter indicates the measured motor temperature. <ul style="list-style-type: none"> <li>• Unit: [°C]</li> </ul>   |



*Power section parameters \ display values \ unit status*

*Status of power section  
index 9702.2*

The parameter indicates the status of the power section:

- 0 = Not ready
- 1 = Ready, output stage inhibited
- 2 = Ready, output stage enabled

*Drive status  
index 9702.7*

The parameter indicates the operating state of the power section:

- 0 = Inhibited
- 1 = Controller inhibit
- 2 = System error
- 3 = No enable
- 6 = Enabled
- 7 = Rapid stop
- 8 = Integrator stop
- 9 = Emergency stop
- 11 = Limit switch operation
- 12 = Pos. operation
- 15 = Reference travel
- 18 = Release brake
- 19 = Apply brake

*Error and error code  
index 9702.5*

The parameter indicates a pending error with error number in plain text.

*Error and suberror code  
index 10071.1*

The parameter provides detailed information on the error of an error group.

*Error source  
index 10404.5*

The parameter indicates the error source of a pending error:

- 0 = No error
- 1 = Power section
- 2 = Command PCB

*Operating hours  
index 8328.0*

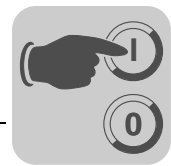
The parameter indicates the total number of hours for which the inverter has been connected to the supply system or an external DC 24 V supply.

- Storage cycle every 15 min
- Unit: [h]

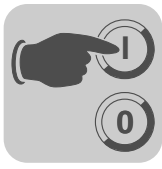
*Enable hours  
index 8329.0*

The parameter indicates the total number of hours for which the power section was in ENABLE operating state:

- Storage cycle every 15 min
- Unit: [h]



|  |   |
|--|---|
| <i>Energy index 8330.0</i>   | <p>The parameter indicates the total of active electrical energy the motor has consumed:</p> <ul style="list-style-type: none"> <li>• Storage cycle every 15 min</li> <li>• Unit: [kWh]</li> </ul>  |
| <br>   |   |
| <i>Power section parameters \ display values \ digital outputs</i> |   |
| <i>Digital output DO01 index 8349.0, bit 1</i>                     | <p>The parameter indicates the present state of digital output DO01 (e.g. signal relay K1) of the basic unit.</p>   |
| <i>Digital output DO01 index 8350.0</i>                            | <p>The parameter indicates the current function assignment of digital output DO01 (e.g. signal relay K1) of the basic unit.</p>   |
| <br>   |   |
| <i>Power section parameters \ display values \ unit data</i>       |   |
| <i>Unit series index 9701.10</i>                                   | <p>The parameter indicates the unit series, for example "DRC".</p>  |
| <i>Variant ID index 9701.11</i>                                    | <p>The parameter indicates the unit generation, for example "B".</p>  |
| <i>Unit name index 9701.1, 9701.2, 9701.3, 9701.4, 9701.5</i>      | <p>The parameter indicates the type designation of the power section.</p>   |
| <i>Unit variant index 10204.2</i>                                  | <p>The parameter indicates the DRC installation technology, e.g.:</p> <ul style="list-style-type: none"> <li>• DBC = <u>D</u>irect <u>B</u>inary <u>C</u>ommunication</li> <li>• DAC = <u>D</u>irect <u>A</u>S-Interface <u>C</u>ommunication</li> <li>• DSC = <u>D</u>irect <u>S</u>Bus <u>C</u>ommunication</li> <li>• SNI = <u>S</u>ingle Line <u>N</u>etwork <u>I</u>nstallation</li> </ul> |
| <i>Unit signature index 9823.1, 9823.2, 9823.3, 9823.4, 9823.5</i> | <p>The parameter is used to indicate and enter the unit signature. This parameter is used to assign a name to the power section so you can identify it in the hardware tree or in other visualization elements.</p>   |
| <i>Nominal unit current (rms) index 8361.0</i>                     | <p>The parameter indicates the nominal unit current (rms value).</p> <ul style="list-style-type: none"> <li>• Unit: [A]</li> </ul>  |
| <i>Motor size index 10079.9</i>                                    | <p>The parameter indicates the size of the DRC drive unit.</p>  |
| <i>Nominal motor torque index 9610.1</i>                           | <p>The parameter indicates the available continuous torque of the motor.</p> <ul style="list-style-type: none"> <li>• Unit: [Nm × 10<sup>-5</sup>]</li> </ul>   |
| <i>Basic unit firmware index 9701.30</i>                           | <p>The parameter indicates the part number of the firmware used in the power section.</p>   |



*Status of basic unit firmware*  
*index 9701.31*

The parameter indicates the status of the firmware used in the power section.

*Power section parameters \ Display values \ Error memory 0-4 \ Error memory t-0-4*

There are 5 error memories (t-0 – t-4). The errors are stored in a chronological sequence with the most recent error event being stored in error memory t-0. If there are more than 5 errors, the error event of longest standing, stored in t-4, is deleted.

Programmable error responses: see chapter "Unit functions/error monitoring".

The following information available at the time of the error is stored and can be used for detailed diagnostics:

- State of digital inputs / digital outputs
- Actual speed
- Apparent output current
- Active current
- Unit utilization
- Motor utilization
- DC link voltage
- Power section status
- Operating hours
- Enable hours
- Work
- Heat sink temperature
- Motor temperature
- Electronics temperature

*Error t-0 – 4 error code*  
*index 8366.0, 8367.0, 8368.0, 8369.0, 8370.0*

The parameter shows the error group with error number and in plain text.

*Error t-0 – 4 sub-error code*  
*index 10072.1, 10072.2, 10072.3, 10072.4, 10072.5*

The parameter provides detailed information on the error of an error group.

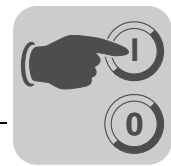
*Error t-0 – 4 internal*  
*index 8883.0, 8884.0, 8885.0, 8886.0, 8887.0*

The parameter provides detailed information on the error – can only be evaluated by SEW-EURODRIVE.

*Source of error t-0 – 4*  
*index 10404.6, 10404.7, 10404.8, 10404.9, 10404.10*

The parameter indicates the error source:

- 0 = No error
- 1 = Power section



- 2 = Command PCB

*Actual speed t-0 – 4 index 8401.0, 8402.0, 8403.0, 8404.0, 8405.0*

The parameter indicates the actual motor speed at the time of the error.

- Unit [rpm]

*Apparent output current t-0 – 4 index 8406.0, 8407.0, 8408.0, 8409.0, 8410.0*

The parameter indicates the apparent output current in percent of the nominal unit current at the time of the error.

- Unit [%]

*Active output current t-0 – 4 index 8411.0, 8412.0, 8413.0, 8414.0, 8415.0*

The parameter indicates the active output current in percent of the nominal unit current at the time of the error.

- Unit [%]

*Unit utilization t-0 – 4 index 8414.0, 8417.0, 8418.0, 8419.0, 8420.0*

The parameter indicates the unit utilization Ixt at the time of the error.

- Unit: [%]

*Motor utilization t-0 – 4 index 8441.0, 8442.0, 8443.0, 8444.0, 8445.0*

The parameter indicates the motor utilization calculated using the motor model and the current at the time of the error.

- Unit: [%]

*DC link voltage t-0 – 4 index 8421.0, 8422.0, 8423.0, 8424.0, 8425.0*

The parameter indicates the voltage measured in the DC link at the time of the error.

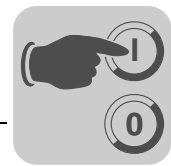
- Unit: [V]



## Parameters

### Description of power section parameters

|   |   |
|---|---|
| <p><i>Power section status t-0 – 4</i><br/>index 8391.0,<br/>8392.0, 8393.0,<br/>8394.0, 8395.0</p>   | <p>The parameter indicates the operating state of the power section at the time of the error:</p> <ul style="list-style-type: none"> <li>• 0 = Inhibited</li> <li>• 1 = Controller inhibit</li> <li>• 2 = System error</li> <li>• 3 = No enable</li> <li>• 6 = Enabled</li> <li>• 7 = Rapid stop</li> <li>• 8 = Integrator stop</li> <li>• 9 = Emergency stop</li> <li>• 11 = Limit switch operation</li> <li>• 12 = Pos. operation</li> <li>• 15 = Reference travel</li> <li>• 18 = Release brake</li> <li>• 19 = Apply brake</li> </ul> |
| <p><i>Operating hours t-0 – 4</i><br/>index 8426.0,<br/>8427.0, 8428.0,<br/>8429.0, 8430.0</p>        | <p>The parameter indicates the total number of hours for which the inverter has been connected to the supply system at the time of the error.</p> <ul style="list-style-type: none"> <li>• Storage cycle every 15 min</li> <li>• Unit: [h]</li> </ul>   |
| <p><i>Enable hours t-0 – 4</i><br/>index 8431.0,<br/>8432.0, 8433.0,<br/>8434.0, 8435.0</p>           | <p>The parameter indicates the total number of hours for which the power section was in ENABLE operating state at the time of the error.</p> <ul style="list-style-type: none"> <li>• Storage cycle every 15 min</li> <li>• Unit: [h]</li> </ul>  |
| <p><i>Work t-0 – 4</i><br/>index 10083.1,<br/>10083.2, 10083.3,<br/>10083.4, 10083.5</p>              | <p>The parameter indicates the total of active electrical energy the motor has consumed at the time of the error.</p> <ul style="list-style-type: none"> <li>• Storage cycle every 15 min</li> </ul>  |
| <p><i>Heat sink temperature t-0 – 4</i><br/>index 8396.0,<br/>8397.0, 8398.0,<br/>8399.0, 8400.0</p>  | <p>The parameter indicates the heat sink temperature of the power section at the time of the error.</p> <ul style="list-style-type: none"> <li>• Unit: [°C]</li> </ul>  |
| <p><i>Motor temperature t-0 – 4</i><br/>index 10070.1,<br/>10070.2, 10070.3,<br/>10070.4, 10070.5</p> | <p>The parameter indicates the motor temperature measured at the time of the error.</p> <ul style="list-style-type: none"> <li>• Unit: [°C]</li> </ul>  |



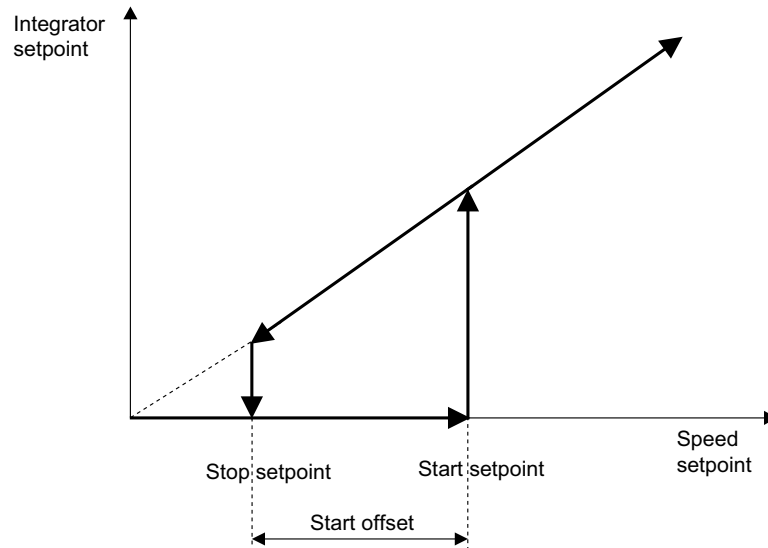
### 8.4.2 setpoints/ramp generators

Power section parameters \ setpoints/ramp generators \ setpoint monitoring

Setpoint stop function index 8578.0;  
stop setpoint index 8579.0; start offset index 8580.0

If the setpoint stop function is activated, the inverter is enabled when the speed setpoint is larger than the stop setpoint + start offset.

Inverter enable is revoked when the speed setpoint falls below the stop setpoint.



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Power section parameters \ setpoints/ramp generators \ speed ramps

Stop ramp t13 index 8476.0

This parameter is used to set stop ramp t13:

- Unit: [s]
- Setting range: 0 –  $\underline{2}$  – 2000 s

The stop ramp is active in the event of a power failure or an error (parameterizable error responses).

Emergency stop ramp t14 index 8477.0

This parameter is used to set emergency stop ramp t14:

- Unit: [s]
- Setting range: 0 –  $\underline{2}$  – 2000 s

The emergency stop ramp is activated in the event of an error (parameterizable error responses).

The system monitors whether the drive reaches zero speed within the set time. After the set time expires, the output stage is inhibited and the brake (if installed) is applied even if zero speed has not yet been reached.

Ramp monitoring index 8928.0

This parameter is used to activate ramp monitoring:

- Setting range: YES / NO

If you set the deceleration ramps to a value that is much shorter than can be physically achieved in the system, the rotating drive will be stopped once the monitoring time has expired.

The respective ramp time also has to be increased, if the ramp timeout is definitely triggered by a preset ramp that cannot be traveled. This parameter is an additional monitoring function for speed monitoring. However, it only applies to the deceleration ramp. This means the parameter can be used to monitor the deceleration ramp, stop ramp or emergency stop ramp if speed monitoring is not desired.



## Parameters

### Description of power section parameters

#### Power section parameters \ setpoints/ramp generators \ motor potentiometer

Ramp t3 up/down  
index 8486.0,  
8467.0

These parameters are used to set ramp t3:

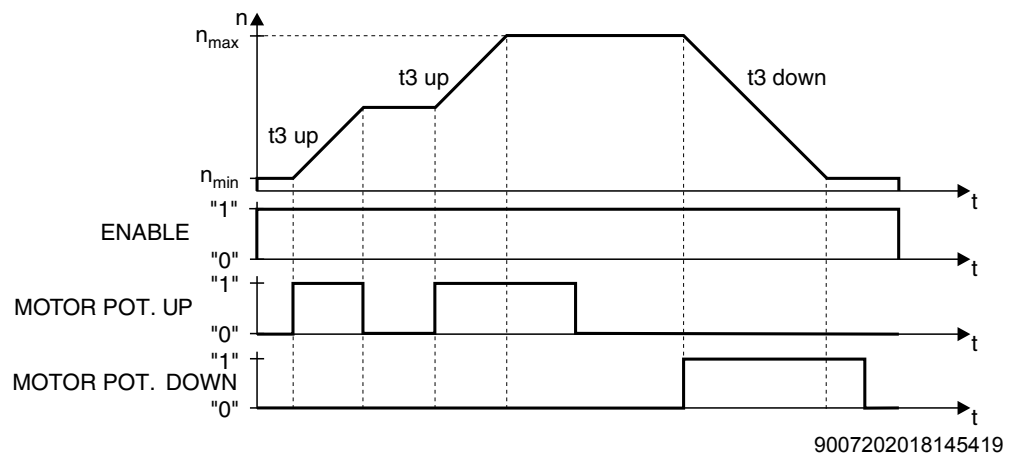
- Unit: [s]
- Setting range: 0.2 – 20 – 2000 s

The ramp is active when the terminal assignment in the command PCB was configured to motor potentiometer right or motor potentiometer left.

The ramp times refer to a setpoint step change of  $\Delta n = 3000$  rpm.

Save last setpoint  
index 8488.0

- **ON**: If MOTOR POT UP and MOTOR POT DOWN = "0," the last applicable motor potentiometer setpoint is stored in the non-volatile memory 2 s afterwards. The last motor potentiometer setpoint takes effect again after power off and power on.
- **OFF**: Following power off/power on or after withdrawal of the enable signal, the inverter starts with minimum speed index 8516.0.



#### 8.4.3 Drive data

##### Power section parameters \ drive data \ motor parameters

Operating mode  
index 8574.0

The parameter indicates the set operating mode:

- 16 = Servo
- 18 = Servo & IPOS

Direction of  
rotation reversal  
index 8537.0

The parameter indicate whether direction of rotation reversal was activated via DIP switches.

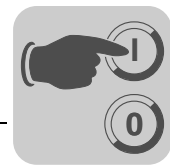
- **OFF**: The motor turns CW for a positive setpoint and CCW for a negative setpoint.
- **ON**: The motor turns CCW for a positive setpoint and CW for a negative setpoint.

PWM frequency  
index 8827.0

The parameter shows the nominal cycle frequency at the inverter output that is set via DIP switches. The cycle frequency can change automatically depending on the unit utilization:

- 0 = 4 kHz
- 1 = 8 kHz





*Power section parameters \ drive data \ monitoring functions*

The following monitoring functions have been implemented to monitor what happens to drive-specific parameters in the specific application and to be able to react in case of impermissible deviations. You can set the response to triggered monitoring functions under "Unit functions/error monitoring".

*Speed monitoring  
index 8557.0*

This parameter is used to activate speed monitoring.

Setting range:

- OFF
- MOTOR MODE
- REGENERAT. MODE
- MOTOR / REGENERATIVE

The speed required by the setpoint can only be achieved if there is sufficient torque available to meet the load requirements. Once the current limit (index 8518.0) has been reached, the unit assumes that the torque has reached its maximum and the desired speed cannot be reached. The speed monitoring function trips if this state persists for the specified delay time (index 8558.0).

*Delay time for  
speed monitoring  
index 8558.0*

This parameter is used to set the delay time for speed monitoring:

- Setting range: 0 – 1 – 10 s

The set current limit can be reached briefly during acceleration, deceleration, or load peaks. You can prevent the speed monitoring from responding too sensitively by setting the delay time accordingly. The current limit must be reached permanently for the duration of the delay time before the monitoring function trips.

*Power section parameters \ drive data \ limit values*

*Minimum speed  
index 8576.0*

This parameter is used to set the speed value, the lower limit of which must not be exceeded even when zero is selected as the setpoint.

- Setting range: 0 – 2000 rpm

*Minimum speed  
index 8517.0*

This parameter is used to set the speed value, which cannot be exceeded by a setpoint specification:

- Setting range: 0 – 2000 rpm

If  $n_{\min} > n_{\max}$  is set, then  $n_{\max}$  applies.

*Current limit  
index 8518.0*

This parameter is used to set the current limit:

- Setting range: 0 – 250 – 300 %  $I_N$

The user specifies the current limit in %  $I_N$  based on the continuous apparent current of the power section. The actually effective current limit calculated by the unit can be lower to protect the gear unit. It is shown in the parameter "effective current limit".



Torque limit  
index 8688.0



### NOTICE

Damage to the DRC drive unit.

Potential damage to property

- Consult SEW-EURODRIVE before you change the torque limit.

This parameter is used to set the torque limit:

- Setting range: 0 – 250 – 300 %

The parameter limits the maximum torque of the motor. It acts on the setpoint of the motor torque ( $k_T \times I_{N\_inverter}$ ).

#### 8.4.4 Terminal assignment

Power section parameters \ terminal assignment \ digital outputs

Digital output  
DO01 (signal relay  
K1) index 8349.0,  
bit 1

The parameter indicates the status of digital output DO01.

Digital output  
DO01 (signal relay  
K1) index 8350.0



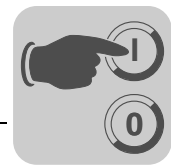
### INFORMATION

The binary signals are only valid if the inverter has signaled "ready" after it has been switched on and if no error message has been issued. Binary signals have "0" status while the unit is being initialized.

Several terminals can be assigned the same function.

This parameter is used to specify the assignment of digital output DO01 (signal relay K1). You can program the digital output to the following functions:

| Function                         | Digital output has  |   |
|----------------------------------|---|---|
|                                  | "0" signal  | "1" signal  |
| 0 = No function                  | Always "0" signal   | –   |
| 1 = /Fault                       | Collective fault signal   | –   |
| 2 = Ready                        | Not ready   | Ready for operation   |
| 3 = Output stage ON              | Unit inhibited  | Unit enabled and motor energized  |
| 4 = Rotating field ON            | No rotating field   | Rotating field  |
| 5 = Brake released <sup>1)</sup> | In conjunction with mechatronic MOVIGEAR® drive unit:<br>DynaStop® is activated | In conjunction with mechatronic MOVIGEAR® drive unit:<br>DynaStop® is deactivated |
|                                  | In conjunction with DRC electronic motor:<br>Brake applied                      | In conjunction with DRC electronic motor:<br>Brake released                       |



| Function  | Digital output has   |  |
|---|--|--|
|   | "0" signal   | "1" signal   |
| <b>6 = Brake applied<sup>1)</sup></b>                     | <b>In conjunction with mecha-<br/>tronic MOVIGEAR® drive unit:</b><br>DynaStop® is deactivated | <b>In conjunction with mecha-<br/>tronic MOVIGEAR® drive unit:</b><br>DynaStop® is activated |
|   | <b>In conjunction with DRC elec-<br/>tronic motor:</b><br>Brake released                       | <b>In conjunction with DRC elec-<br/>tronic motor:</b><br>Brake applied                      |
| <b>7 = Motor standstill</b>                               | Motor is running   | Motor is at standstill   |
| <b>8 = Reserved</b>                                       | –  | –  |
| <b>9 = Speed reference signal</b>                         | $n > n_{ref}$ ( $n < n_{ref}$ )  | $n < n_{ref}$ ( $n > n_{ref}$ )  |
| <b>10 = Speed reference signal</b>                        | Speed is outside (within) speed<br>window  | Speed is within (outside) speed<br>window  |
| <b>11 = Setpoint/actual value compar-<br/>ison signal</b> | $n < n_{set}$ ( $n = n_{set}$ )  | $n = n_{set}$ ( $n > n_{set}$ )  |
| <b>12 = Current reference signal</b>                      | $I > I_{ref}$ ( $I < I_{ref}$ )  | $I < I_{ref}$ ( $I > I_{ref}$ )  |
| <b>13 = I<sub>max</sub> signal</b>                        | $I < I_{max}$ ( $I = I_{max}$ )  | $I = I_{max}$ ( $I < I_{max}$ )  |
| <b>14 = /Warning motor utilization 1</b>                  | 100% prewarning of motor pro-<br>tection in parameter set 1                                    | –  |
| <b>19 = IPOS in position</b>                              | Position not reached   | Position reached   |
| <b>20 = IPOS referenced</b>                               | No referencing   | Referencing finished   |
| <b>21 = IPOS output</b>                                   | Depends on IPOS program  |  |
| <b>22 = /IPOS fault</b>                                   | IPOS program error message   | –  |
| <b>27 = STO – safe torque off</b>                         | Not active   | Active   |
| <b>34 = Process data bit</b>                              | Bit not set  | Bit set  |

1) Controlled by the inverter The "Brake released" and "Brake applied" signals are intended to be passed on to a master controller.



### 8.4.5 Diagnostic functions

#### Power section parameters \ diagnostics functions \ reference signals

The following reference values are used for detecting and reporting certain operating states. All signals of this parameter group can be output via virtual digital outputs.

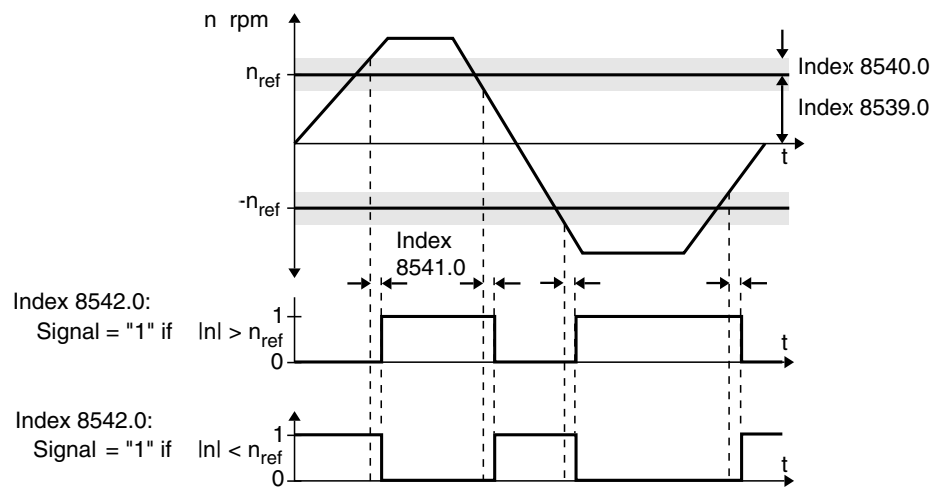


#### INFORMATION

The signals are only valid if the inverter has signaled "ready" after switch-on and no error is indicated.

#### Speed reference signal

Signal if the speed is less than or greater than the set reference speed.



9007202042180875

#### Speed reference value index 8539.0

Setting range: 0 – 1500 – 6000 rpm

#### Hysteresis index 8540.0

Setting range: 0 – 100 – 500 rpm

#### Delay time index 8541.0

Setting range: 0 – 1 – 9 s

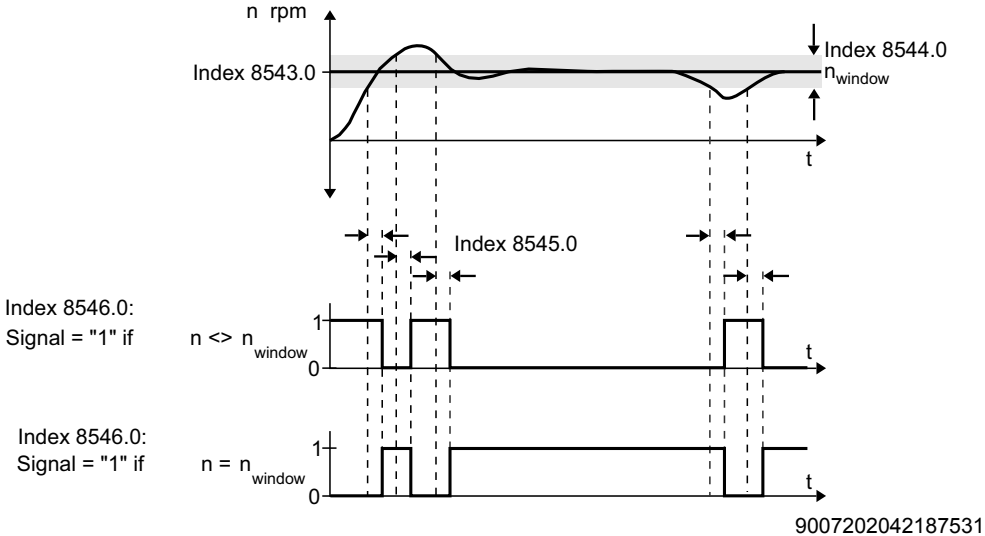
#### Signal = "1" if: Index 8542.0

$\underline{n} < n_{ref} / n > n_{ref}$



Speed window signal

Signals whether the speed is within or outside the set window range.



9007202042187531

Window center index 8543.0      Setting range: 0 – 1500 – 6000 rpm

Range width index 8544.0      Setting range: 0 – 6000 rpm

Delay time index 8545.0      Setting range: 0 – 1 – 9 s

Signal = "1" if: Index 8546.0      Setting range: WITHIN / OUTSIDE

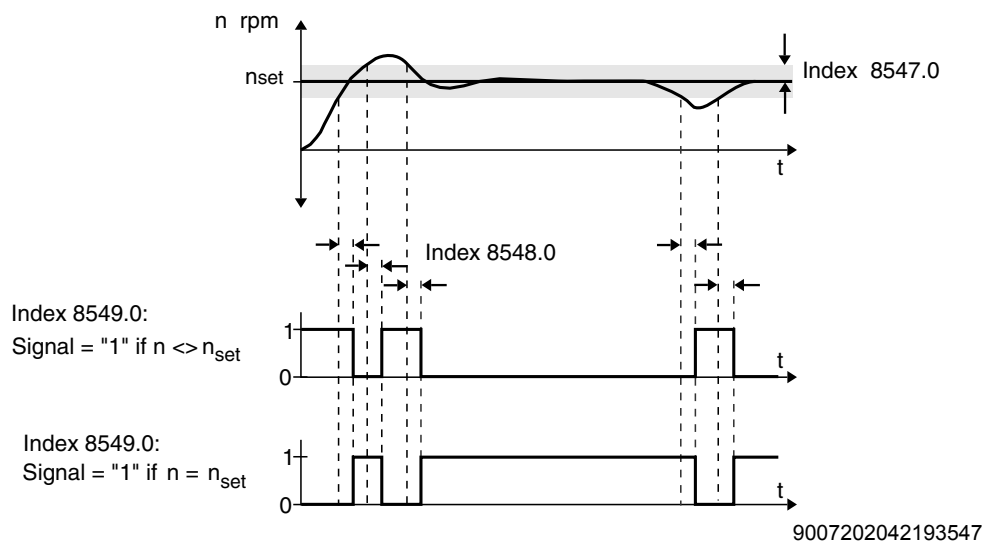


## Parameters

### Description of power section parameters

Speed setpoint /  
actual value  
comparison

Signal if the speed is equal to or not equal to the setpoint speed.



Hysteresis  
index 8547.0

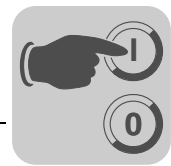
Setting range: 1 – 100 – 300 rpm

Delay time index  
8548.0

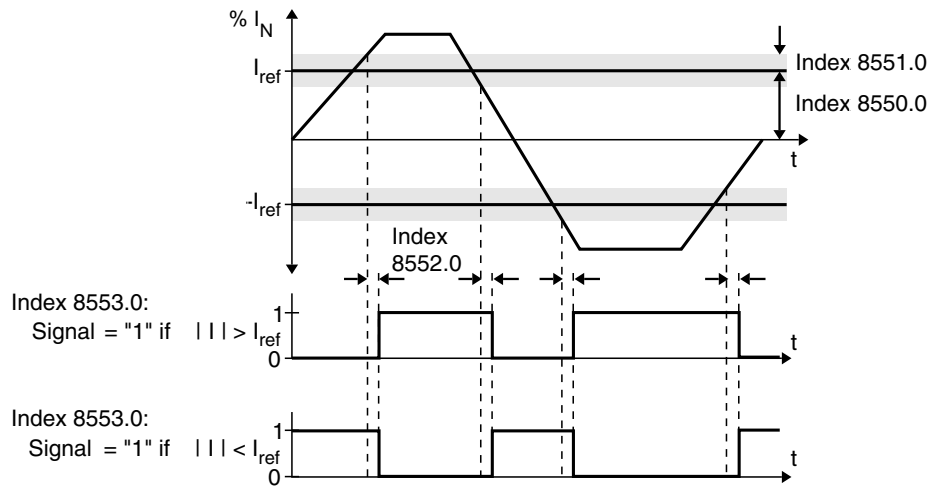
Setting range: 0 – 1 – 9 s

Signal = "1" if:  
Index 8549.0

Setting range:  $n = n_{setpt} / n <> n_{setpt}$



**Current reference signal** Signal if the output current is greater than or less than the reference value.



9007202042199819

**Current reference value index 8550.0** Setting range: 0 – 100 – 400 %  $I_N$

**Hysteresis index 8551.0** Setting range: 0 – 5 – 30 %  $I_N$

**Delay time index 8552.0** Setting range: 0 – 1 – 9 s

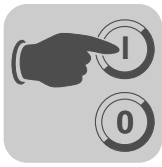
**Signal = "1" with index 8553.0**  $|I| < I_{ref} / |I| > I_{ref}$

**I<sub>max</sub> signal** Signal if the inverter has reached the current limitation.

**Hysteresis index 8554.0** Setting range: 5 – 50 %  $I_N$

**Delay time index 8555.0** Setting range: 0 – 1 – 9 s

**Signal = "1" with index 8556.0**  $|I| < I_{max} / |I| = I_{max}$



### 8.4.6 Control functions

Power section parameters \ control functions \ brake functions

*Brake function  
index 8584.0*

This function gives users the option to choose between electrically holding the load and mechanical brake application in hold status.



#### INFORMATION

- The brake is **always** applied when /CONTROL.INHIBIT = 0.
- When "STO – safe torque off" is activated, the brake is applied (not safety-related) as set in parameter "Index 9833.20 – brake application for STO".

The parameter defines whether the brake is applied or not when the enable signal is withdrawn (enable = "0").

- 0 = OFF: The drive decelerates along the set ramp. When the speed is "0", the brake remains open and the drive generates a holding torque.
- 1 = ON: The drive decelerates along the set ramp. When the speed is "0", the brake is applied.

*Brake application  
for STO  
index 9833.20*

The parameter defines whether the brake is applied or not (not safety-related) when STO (safe torque off) is triggered.

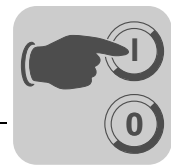
- 0 = NO: The brake status remains unchanged when STO is triggered.
- 1 = YES: The brake is applied when STO is triggered.



#### INFORMATION

Note the information about permitted "emergency braking operations" in chapter "Technical Data".





### 8.4.7 Unit functions

Power section parameters \ unit functions \ setup

Factory setting  
index 8594.0

Parameter 8594.0 is used to reset the factory settings stored in the EEPROM for almost all parameters.

Setting range:

- 0 = No
- 1 = Standard
- 2 = Delivery status

The following data is not reset when "standard" is selected:

- IPOS program
- Speed control
- Limits
- Serial communication SBus 1
- Speed task 1 / 2
- Error memory
- Statistical data

The "delivery state" setting also resets the data listed above.

Once the data has been reset, parameter 8594.0 automatically reverts to "NO".

Parameter lock  
index 8595.0

Setting range: ON / OFF

Setting parameter 8595.0 to "ON" prevents any change to the parameters (except for index 8617.0 manual reset and the parameter lock itself). This makes sense, for example, after the drive settings have been optimized. Index 8595.0 must be set to "OFF" to enable changes to parameters again.



#### INFORMATION

The parameter lock also acts on the SBus interface and on IPOS<sup>plus®</sup>.

Power section parameters \ unit functions \ error monitoring

#### ⚠ WARNING

Risk of injury if the drive unit starts up automatically.

Severe or fatal injuries.

- Error messages can be automatically reset depending on the programmed error response, i.e. the drive units receive the current process output data from the controller again as soon as the error is corrected.  
If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the supply system before correcting the error.



The following responses can be programmed:

| Response        | Description  |
|-----------------|--|
| [0] NO RESPONSE | The error is not displayed, and there is no error response. The signaled error is ignored. |



| Response                           | Description   |
|------------------------------------|---|
| [1] DISPLAY ONLY                   | The error is displayed and the error output is set (if programmed). The unit performs no other error responses. The error can be reset (fieldbus, auto reset).  |
| [2] OUTPUT STAGE INHIBIT / LOCKED  | The inverter switches off immediately and issues an error message. The output stage is inhibited and the brake (if installed) is applied. The ready signal is revoked and the error output is set, if programmed. A restart is only possible after an error reset during which the inverter is reinitialized.   |
| [3] EMERGENCY STOP / LOCKED        | The drive is braked along the set emergency stop ramp t14. Once the stop speed is reached, the output stage is inhibited and the brake (if installed) is applied. The error is signaled immediately. The ready signal is revoked and the error output is set, if programmed. A restart is only possible after an error reset during which the inverter is reinitialized.  |
| [4] STOP / LOCKED                  | The drive is braked along the set stop ramp t13. Once the stop speed is reached, the output stage is inhibited and the brake (if installed) is applied. The error is signaled immediately. The ready signal is revoked and the error output is set, if programmed. A restart is only possible after an error reset during which the inverter is reinitialized.  |
| [5] OUTPUT STAGE INHIBIT / WAITING | The inverter switches off immediately and issues an error message. The output stage is inhibited and the brake (if installed) is applied. The error is signaled via the terminal, if programmed. The ready signal is removed. The drive restarts without unit re-initialization if the error is rectified by an internal procedure or by an error reset.  |
| [6] EMERGENCY STOP / WAITING       | The drive is braked along the set emergency stop ramp t14. Once the stop speed is reached, the output stage is inhibited and the brake (if installed) is applied. The error is signaled immediately. The error is signaled via the terminal, if programmed. The ready signal is removed. The drive restarts without unit re-initialization if the error is rectified by an internal procedure or by an error reset. |
| [7] STOP / WAITING                 | The drive is braked along the set stop ramp t13. Once the stop speed is reached, the output stage is inhibited and the brake (if installed) is applied. The error is signaled immediately. The error is signaled via the terminal, if programmed. The ready signal is removed. The drive restarts without unit re-initialization if the error is rectified by an internal procedure or by an error reset.           |

*Response ext.  
error  
index 9729.16*

Factory setting: EMERGENCY STOP / WAITING

The error is only triggered in the ENABLED inverter status. Index 9729.16 is used to program the error response that is triggered by an input terminal that is programmed to "/EXT. ERROR".

*Line phase failure  
response  
index 9729.4*

Factory setting: DISPLAY ONLY

The supply system input phases are monitored for failure of a single phase. If a phase failure is detected in two phases, then the DC link will be de-energized, which corresponds to a supply system disconnection.

Since the supply system input phases cannot be monitored directly, monitoring has to be done indirectly via the DC link ripple, which increases drastically if one phase fails. The DC link voltage is monitored at a time interval  $D_t = 1$  ms for dropping below a minimum voltage level that depends on the rated supply voltage of the unit.

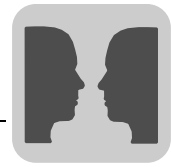
The result is the following nominal guide value for detecting a phase failure:

- 50 Hz system: approx.  $t_{max} = 3.0$  s
- 60 Hz system: approx.  $t_{max} = 2.5$  s

The programmed response is activated when a line phase failure is detected.

*Temperature sen-  
sor trip response  
index 9729.9*

Factory setting: EMERGENCY STOP / WAITING



Index 9729.9 is used to program the error response which is triggered by the temperature sensor monitoring function of the TF or TH which may be installed in the motor winding.

*Manual reset  
index 8617.0*

Setting range: YES / NO

YES: The pending error is reset. Index 8617.0 automatically reverts to NO after the reset. Activating the manual reset does not have any effect if there is no error present.

NO: No reset.

*Power section parameters \ unit functions \ scaling of actual speed value*

*Scaling factor for  
user display  
numerator  
index 8747.0*

Setting range: 1 – 65535

Actual speed scaling defines a user-specific display parameter "index 8501.0 user display". For example, the user display is to be shown in 1/s.

This requires a scaling factor of 1/60. This means the numerator scaling factor has to be set to 1 and the denominator scaling factor to 60. The scaling unit 1/s is entered in "index 8772.0/8773.0 user-defined unit".

*Scaling factor for  
user display  
denominator  
index 8748.0*

Setting range: 1 – 65535

Actual speed scaling defines a user-specific display parameter "index 8501.0 user display". For example, the user display is to be shown in 1/s.

This requires a scaling factor of 1/60. This means the numerator scaling factor has to be set to 1 and the denominator scaling factor to 60. The scaling unit 1/s is entered in "index 8772.0/8773.0 user-defined unit".

*User-defined unit  
index 8772.0,  
8773.0*

Factory setting: rpm.

Max. 8 ASCII characters; displayed in "index 8501.0 user display".



## 9 Communication with AS-Interface double slave GLK31A

### 9.1 Functional description

#### 9.1.1 Operating principle

An AS-Interface master according to AS-Interface specification 3.0, rev. 2 in conjunction with the M4 master profile is required for controlling the GLK31A double slave.

On delivery, the GLK31A option has address 0 and profile S-7.A.7.7. If you set an address > 0, the GLK31A option turns into a double slave with profiles S-7.A.7.7 (A-slave) and S-7.A.7.5 (B-slave).

You must not connect more than 31 of those slaves to one AS-Interface branch.

#### 9.1.2 A-slave, meaning of the AS-Interface data and parameter bits

The AS-Interface master transmits data bits and parameter bits to the GLK31A option (A-slave). The GLK31A option forwards 4 data bits and 3 parameter bits via SBus communication to the DRC inverter without interpretation.

The DRC inverter contains several function modules (assignment tables) that assign specific drive functions to the data bits. For information on the assignment of functions, refer to chapter "Function modules".

#### Parameter bits

- 3 of the acyclic parameter bits (P2 – P0) are used for switching between the individual function modules. These parameter bits determine the meaning of the data bits.
- In the extended address mode, the fourth parameter bit is not available for the user.
- Parameter selection between the function modules is also possible during operation and with enabled DRC inverter. The meaning of the data bits might change in this case.
- The parameter input bits are not used.

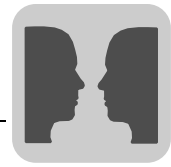
#### Data bits

The following table show the assignment of the digital input data bits of the A-slave (cycle time: max 10 ms):

| Parameter bits (A-slave)                |   | Function of the input data bits (A-slave)                                    |                 |  |             |
|---|---|--|-----------------|--|-------------|
| (P2 P1 P0 <sub>bin</sub> )              | Function module   | Bit 4 (DI3)  | Bit 3 (DI2)     | Bit 2 (DI1)  | Bit 1 (DI0) |
| 010 <sub>bin</sub> – 111 <sub>bin</sub> | 2 <sub>hex</sub> – 7 <sub>hex</sub><br>(2 <sub>hex</sub> + 6 <sub>hex</sub> = reserved) | Status Sensor 2  | Status Sensor 1 | DRC status according to chapter "Description of data bits, function modules" |             |
| 000 <sub>bin</sub> – 001 <sub>bin</sub> | 0 <sub>hex</sub> – 1 <sub>hex</sub><br>(0 <sub>hex</sub> = reserved)                    | DRC status according to chapter "Description of data bits, function modules" |                 |  |             |

Parameter bits P2 – P0 are used for selecting the function modules.

- When function modules 2<sub>hex</sub> – 7<sub>hex</sub> are selected, data bits DI0 and DI1 are transmitted from the slave to the master according to the DRC status word. Data bits DI2 and DI3 contain the state of sensor inputs DI2 and DI3.
- When function modules 0<sub>hex</sub> – 1<sub>hex</sub> are selected, all 4 data bits DI0 – DI3 are transmitted from the slave to the master according to the DRC status word. The state of the sensor inputs is not transmitted.



### 9.1.3 Function of the B-slave

The B-slave is used to transmit various status and control words between the AS-Interface master and the DRC inverter.

The use of serial AS-Interface data transmission (analog profile) makes it possible to write and read DRC parameters and display values.

- According to profile S-7.A.F.5, the AS-Interface master acyclically transmits several data bytes to the GLK31A option (B-slave).
- The microcontroller of the GLK31A option processes these signals and transmits them according to the MOVILINK<sup>®</sup> protocol (parameter telegram) via the SBus interface of the inverter.
- The DRC inverter transmits the response telegram to the GLK31A option via the SBus interface.
- The GLK31A option converts the response telegram and transmits it to the AS-Interface master via serial AS-Interface data transmission (analog profile).

For communication via the SBus interface, the acyclical parameter transmission of the B-slave has a higher priority than the cyclical control word of the A-slave. Due to the cycle time on the AS-Interface, at least one process data protocol is performed between the parameter transmissions.

Communication via the B-slave is always performed acyclically. Transmission of parameters via the internal SBus interface requires a corresponding parameter call of the AS-Interface master in conjunction with a higher-level controller.



## 9.2 Function modules

The drive-specific functions of the cyclic data bits are assigned in the DRC inverter. This chapter describes this function assignment.

The AS-Interface parameter bits P2 – P0 are used for switching between the drive functions. They determine the meaning of the data bits. Switching between the function modules is also possible during operation and with enabled DRC inverter. The meaning of the data bits might change in this case.

### 9.2.1 Description of parameter bits

The following table shows the function assignment of the data bits to the selected function module (AS-Interface parameter bits).

| AS-Interface parameter bits<br>(A-slave)<br>(P2 P1 P0 <sub>bin</sub> ) |                  | Function of the data bits  |
|--|------------------|--|
|  | Function module  |  |
| 111 <sub>bin</sub>   | 7 <sub>hex</sub> | Binary mode (default),<br>control compatible with SEW binary slave   |
| 110 <sub>bin</sub>   | 6 <sub>hex</sub> | Reserved   |
| 101 <sub>bin</sub>   | 5 <sub>hex</sub> | 6 fixed setpoints with the ramps t11 up and t11 down<br>Status reports<br>Ramp switchover between the function modules 4 <sub>hex</sub> and 5 <sub>hex</sub> |
| 100 <sub>bin</sub>   | 4 <sub>hex</sub> | 6 fixed setpoints with the ramps t15 up and t15 down<br>Status reports<br>Ramp switchover between the function modules 5 <sub>hex</sub> and 4 <sub>hex</sub> |
| 011 <sub>bin</sub>   | 3 <sub>hex</sub> | 3 fixed setpoints with the ramps t16 up and t16 down<br>3 fixed setpoints with the ramps t15 up and t15 down   |
| 010 <sub>bin</sub>   | 2 <sub>hex</sub> | Reserved   |
| 001 <sub>bin</sub>   | 1 <sub>hex</sub> | 6 fixed setpoints with the ramps t11 up and t11 down<br>Extended diagnostics<br>No sensor inputs   |
| 000 <sub>bin</sub>   | 0 <sub>hex</sub> | Reserved   |

- When function modules 2<sub>hex</sub> – 7<sub>hex</sub> are selected, data bits DI0 and DI1 are transmitted from the slave to the master according to the DRC status word. Data bits DI2 and DI3 contain the state of sensor inputs DI2 and DI3.
- When function modules 0<sub>hex</sub> – 1<sub>hex</sub> are selected, all 4 data bits DI0 – DI3 are transmitted from the slave to the master according to the DRC status word. The state of the sensor inputs is not transmitted.



### INFORMATION

If the AS-Interface master selects the parameter bits with a reserved function, the DRC drive changes to "Stop".

There is no feedback in this case. This is why all the input data in the DRC status word is set to "0" (not ready).



### 9.2.2 Description of the data bits, function modules

Function module  
 $7_{hex}$

The cyclic operation with the function module  $7_{hex}$  represents a function compatible with the SEW binary slave (without scaling function).

The GLK31A option is like an I/O module with 4 input and 4 output data bits.

The DRC drive is controlled via output data bits.

The output and input data bits of the A-slave are assigned the following functions:

| <b>Output data AS-Interface master → GLK31A option</b>   |   |
|--|---|
| <b>Function module <math>7_{hex}</math> (AS interface parameter bits = <math>111_{bin}</math>)</b> |   |
| <b>Data bit (A-slave)</b>  | <b>Function</b>                         |
| DO0  | CW / stop                               |
| DO1  | CCW / stop                              |
| DO2  | Setpoint changeover f1/f2               |
| DO3  | Reset <sup>1)</sup> / controller enable |

1) In the event of an edge change "0" → "1" (only effective in case of an error)

| <b>Input data GLK31A option → AS-Interface master</b>  |   |
|--|---|
| <b>Function module <math>7_{hex}</math> (AS interface parameter bits = <math>111_{bin}</math>)</b> |   |
| <b>Data bit (A-slave)</b>  | <b>Function</b>   |
| DI0  | Ready signal<br>0: Drive is not ready for operation<br>1: Drive is ready for operation  |
| DI1  | Manual mode, local mode / automatic mode<br>0: Drive controlled via AS-Interface<br>1: Drive controlled manually / via local mode |
| DI2  | Sensor input 1<br>0: Signal of sensor 1 = "0"<br>1: Signal of sensor 1 = "1"  |
| DI3  | Sensor input 2<br>0: Signal of sensor 2 = "0"<br>1: Signal of sensor 2 = "1"  |



## Communication with AS-Interface double slave GLK31A Function modules

**Function module 5<sub>hex</sub>** The cyclic operation with function module 5<sub>hex</sub> allows for selecting 6 fixed setpoints with ramps t11 up and t11 down.

The output data bits are binary coded and interpreted as 16 different control codes.

The output and input data bits of the A-slave are assigned the following functions:

| Output data AS-Interface master → GLK31A option                                      |                   |   |
|--|-------------------|---|
| Function module 5 <sub>hex</sub> (AS interface parameter bits = 101 <sub>bin</sub> ) |                   |   |
| Data bit (A-slave)   |                   | Function  |
| 0000 <sub>bin</sub>  | 0 <sub>dec</sub>  | Stop<br>Stop ramp t13 (8476.0)  |
| 0001 <sub>bin</sub>  | 1 <sub>dec</sub>  | Stop/inhibit<br>Ramp t11 down (8808.0)  |
| 0010 <sub>bin</sub>  | 2 <sub>dec</sub>  | CW operation, fixed setpoint n0 (8489.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 0011 <sub>bin</sub>  | 3 <sub>dec</sub>  | CCW operation, fixed setpoint n0 (8489.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 0100 <sub>bin</sub>  | 4 <sub>dec</sub>  | CW operation, fixed setpoint n1 (8490.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 0101 <sub>bin</sub>  | 5 <sub>dec</sub>  | CCW operation, fixed setpoint n1 (8490.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 0110 <sub>bin</sub>  | 6 <sub>dec</sub>  | CW operation, fixed setpoint n2 (8491.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 0111 <sub>bin</sub>  | 7 <sub>dec</sub>  | CCW operation, fixed setpoint n2 (8491.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 1000 <sub>bin</sub>  | 8 <sub>dec</sub>  | CW operation, fixed setpoint n3 (1096.31)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 1001 <sub>bin</sub>  | 9 <sub>dec</sub>  | CCW operation, fixed setpoint n3 (1096.31)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 1010 <sub>bin</sub>  | 10 <sub>dec</sub> | CW operation, Fixed setpoint n4 (10096.38)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 1011 <sub>bin</sub>  | 11 <sub>dec</sub> | CCW operation, Fixed setpoint n4 (10096.38)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 1100 <sub>bin</sub>  | 12 <sub>dec</sub> | CW operation, fixed setpoint n5 (10096.39)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 1101 <sub>bin</sub>  | 13 <sub>dec</sub> | CCW operation, fixed setpoint n5 (10096.39)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 1110 <sub>bin</sub>  | 14 <sub>dec</sub> | <b>In conjunction with mechatronic MOVIGEAR® drive unit:</b><br>Deactivating DynaStop® without drive enable<br>(only if DIP switch S1/2 = "ON")<br><b>In conjunction with DRC electronic motor:</b><br>Brake release without drive enable<br>(only if DIP switch S1/2 = "ON") |
| 1111 <sub>bin</sub>  | 15 <sub>dec</sub> | Stop<br>Reset (only effective in case of an error)<br>Stop ramp t13 (8476.0)  |

| Input data GLK31A option → AS-Interface master                                       |  |
|--|--|
| Function module 5 <sub>hex</sub> (AS interface parameter bits = 101 <sub>bin</sub> ) |  |
| Data bit (A-slave)   | Function   |
| DI0  | Ready signal<br>0: Drive is not ready for operation<br>1: Drive is ready for operation |
| DI1  | Enable<br>0: Motor not running<br>1: Motor is running                                  |
| DI2  | Sensor input 1<br>0: Signal of sensor 1 = "0"<br>1: Signal of sensor 1 = "1"           |
| DI3  | Sensor input 2<br>0: Signal of sensor 2 = "0"<br>1: Signal of sensor 2 = "1"           |

**Function module 4<sub>hex</sub>** The cyclic operation with function module 4<sub>hex</sub> allows for selecting 6 fixed setpoints with ramps t15 up and t15 down.





This operation is identical to the operation with function module 5<sub>hex</sub>, however, ramps t15 up and t15 down are used.

This means switching between function modules 4<sub>hex</sub> and 5<sub>hex</sub> realizes a switching between the ramps during operation. This ramp switchover can be used for a load-dependent optimization of the application.

The output and input data bits of the A-slave are assigned the following functions:

| Output data AS-Interface master → GLK31A option                                      |                   |   |   |
|--|-------------------|---|---|
| Function module 4 <sub>hex</sub> (AS interface parameter bits = 100 <sub>bin</sub> ) |                   |   |   |
| Data bit (A-slave)   |                   | Function  |   |
| 0000 <sub>bin</sub>  | 0 <sub>dec</sub>  | Stop  | Stop ramp t13 (8476.0)                      |
| 0001 <sub>bin</sub>  | 1 <sub>dec</sub>  | Stop/inhibit  | Ramp t15 down (10504.11)                    |
| 0010 <sub>bin</sub>  | 2 <sub>dec</sub>  | CW operation, fixed setpoint n0 (8489.0)  | Ramps t15 up (10504.1), t15 down (10504.11) |
| 0011 <sub>bin</sub>  | 3 <sub>dec</sub>  | CCW operation, fixed setpoint n0 (8489.0)   | Ramps t15 up (10504.1), t15 down (10504.11) |
| 0100 <sub>bin</sub>  | 4 <sub>dec</sub>  | CW operation, fixed setpoint n1 (8490.0)  | Ramps t15 up (10504.1), t15 down (10504.11) |
| 0101 <sub>bin</sub>  | 5 <sub>dec</sub>  | CCW operation, fixed setpoint n1 (8490.0)   | Ramps t15 up (10504.1), t15 down (10504.11) |
| 0110 <sub>bin</sub>  | 6 <sub>dec</sub>  | CW operation, fixed setpoint n2 (8491.0)  | Ramps t15 up (10504.1), t15 down (10504.11) |
| 0111 <sub>bin</sub>  | 7 <sub>dec</sub>  | CCW operation, fixed setpoint n2 (8491.0)   | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1000 <sub>bin</sub>  | 8 <sub>dec</sub>  | CW operation, fixed setpoint n3 (1096.31)   | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1001 <sub>bin</sub>  | 9 <sub>dec</sub>  | CCW operation, fixed setpoint n3 (1096.31)  | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1010 <sub>bin</sub>  | 10 <sub>dec</sub> | CW operation, Fixed setpoint n4 (10096.38)  | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1011 <sub>bin</sub>  | 11 <sub>dec</sub> | CCW operation, Fixed setpoint n4 (10096.38)   | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1100 <sub>bin</sub>  | 12 <sub>dec</sub> | CW operation, fixed setpoint n5 (10096.39)  | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1101 <sub>bin</sub>  | 13 <sub>dec</sub> | CCW operation, fixed setpoint n5 (10096.39)   | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1110 <sub>bin</sub>  | 14 <sub>dec</sub> | <b>In conjunction with mechatronic MOVIGEAR® drive unit:</b><br>Deactivating DynaStop® without drive enable<br>(only if DIP switch S1/2 = "ON")<br><br><b>In conjunction with DRC electronic motor:</b><br>Brake release without drive enable<br>(only if DIP switch S1/2 = "ON") |   |
| 1111 <sub>bin</sub>  | 15 <sub>dec</sub> | Stop<br>Reset (only effective in case of an error)  | Stop ramp t13 (8476.0)                      |

| Input data GLK31A option → AS-Interface master                                       |  |
|--|--|
| Function module 4 <sub>hex</sub> (AS interface parameter bits = 100 <sub>bin</sub> ) |  |
| Data bit (A-slave)   | Function   |
| DI0  | Ready signal<br>0: Drive is not ready for operation<br>1: Drive is ready for operation |
| DI1  | Enable<br>0: Motor not running<br>1: Motor is running                                  |
| DI2  | Sensor input 1<br>0: Signal of sensor 1 = "0"<br>1: Signal of sensor 1 = "1"           |
| DI3  | Sensor input 2<br>0: Signal of sensor 2 = "0"<br>1: Signal of sensor 2 = "1"           |

Function module  
3<sub>hex</sub>

The cyclic operation with function module 3<sub>hex</sub> allows for selecting 3 fixed setpoints with ramps t16 up and t16 down as well as 3 fixed setpoints with ramps t15 up and t15 down.



The output data bits are binary coded and interpreted as 16 different control codes.

The output and input data bits of the A-slave are assigned the following functions:

| <b>Output data AS-Interface master → GLK31A option</b>                                   |                   |  |   |
|--|-------------------|--|---|
| <b>Function module 3<sub>hex</sub> (AS interface parameter bits = 011<sub>bin</sub>)</b> |                   |  |   |
| <b>Data bit (A-slave)</b>  |                   | <b>Function</b>                                    |   |
| 0000 <sub>bin</sub>  | 0 <sub>dec</sub>  | Stop   | Stop ramp t13 (8476.0)                      |
| 0001 <sub>bin</sub>  | 1 <sub>dec</sub>  | Stop/inhibit                                       | Ramp t16 down (10475.1)                     |
| 0010 <sub>bin</sub>  | 2 <sub>dec</sub>  | CW operation, fixed setpoint n0 (8489.0)           | Ramps t16 up (10475.2), t16 down (10475.1)  |
| 0011 <sub>bin</sub>  | 3 <sub>dec</sub>  | CCW operation, fixed setpoint n0 (8489.0)          | Ramps t16 up (10475.2), t16 down (10475.1)  |
| 0100 <sub>bin</sub>  | 4 <sub>dec</sub>  | CW operation, fixed setpoint n1 (8490.0)           | Ramps t16 up (10475.2), t16 down (10475.1)  |
| 0101 <sub>bin</sub>  | 5 <sub>dec</sub>  | CCW operation, fixed setpoint n1 (8490.0)          | Ramps t16 up (10475.2), t16 down (10475.1)  |
| 0110 <sub>bin</sub>  | 6 <sub>dec</sub>  | CW operation, fixed setpoint n2 (8491.0)           | Ramps t16 up (10475.2), t16 down (10475.1)  |
| 0111 <sub>bin</sub>  | 7 <sub>dec</sub>  | CCW operation, fixed setpoint n2 (8491.0)          | Ramps t16 up (10475.2), t16 down (10475.1)  |
| 1000 <sub>bin</sub>  | 8 <sub>dec</sub>  | CW operation, fixed setpoint n3 (1096.31)          | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1001 <sub>bin</sub>  | 9 <sub>dec</sub>  | CCW operation, fixed setpoint n3 (1096.31)         | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1010 <sub>bin</sub>  | 10 <sub>dec</sub> | CW operation, Fixed setpoint n4 (10096.38)         | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1011 <sub>bin</sub>  | 11 <sub>dec</sub> | CCW operation, Fixed setpoint n4 (10096.38)        | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1100 <sub>bin</sub>  | 12 <sub>dec</sub> | CW operation, fixed setpoint n5 (10096.39)         | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1101 <sub>bin</sub>  | 13 <sub>dec</sub> | CCW operation, fixed setpoint n5 (10096.39)        | Ramps t15 up (10504.1), t15 down (10504.11) |
| 1110 <sub>bin</sub>  | 14 <sub>dec</sub> | Stop/inhibit                                       | Ramp t15 down (10504.11)                    |
| 1111 <sub>bin</sub>  | 15 <sub>dec</sub> | Stop<br>Reset (only effective in case of an error) | Stop ramp t13 (8476.0)                      |

| <b>Input data GLK31A option → AS-Interface master</b>                                    |  |
|--|--|
| <b>Function module 3<sub>hex</sub> (AS interface parameter bits = 011<sub>bin</sub>)</b> |  |
| <b>Data bit (A-slave)</b>  | <b>Function</b>  |
| DI0  | Ready signal<br>0: Drive is not ready for operation<br>1: Drive is ready for operation |
| DI1  | Enable<br>0: Motor not running<br>1: Motor is running                                  |
| DI2  | Sensor input 1<br>0: Signal of sensor 1 = "0"<br>1: Signal of sensor 1 = "1"           |
| DI3  | Sensor input 2<br>0: Signal of sensor 2 = "0"<br>1: Signal of sensor 2 = "1"           |



**Function module 1<sub>hex</sub>** Cyclic operation with function module 1<sub>hex</sub> allows for selecting 6 fixed setpoints and for extended error diagnostics.

The output data during the operation with function module 1<sub>hex</sub> correspond to the output data during operation with function module 5<sub>hex</sub>. The input data during operation with function module 1<sub>hex</sub> are interpreted as different status codes.

| Output data AS-Interface master → GLK31A option                                      |                   |   |
|--|-------------------|---|
| Function module 1 <sub>hex</sub> (AS interface parameter bits = 001 <sub>bin</sub> ) |                   |   |
| Data bit (A-slave)   |                   | Function  |
| 0000 <sub>bin</sub>  | 0 <sub>dec</sub>  | Stop<br>Stop ramp t13 (8476.0)  |
| 0001 <sub>bin</sub>  | 1 <sub>dec</sub>  | Stop/inhibit<br>Ramp t11 down (8808.0)  |
| 0010 <sub>bin</sub>  | 2 <sub>dec</sub>  | CW operation, fixed setpoint n0 (8489.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 0011 <sub>bin</sub>  | 3 <sub>dec</sub>  | CCW operation, fixed setpoint n0 (8489.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 0100 <sub>bin</sub>  | 4 <sub>dec</sub>  | CW operation, fixed setpoint n1 (8490.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 0101 <sub>bin</sub>  | 5 <sub>dec</sub>  | CCW operation, fixed setpoint n1 (8490.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 0110 <sub>bin</sub>  | 6 <sub>dec</sub>  | CW operation, fixed setpoint n2 (8491.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 0111 <sub>bin</sub>  | 7 <sub>dec</sub>  | CCW operation, fixed setpoint n2 (8491.0)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 1000 <sub>bin</sub>  | 8 <sub>dec</sub>  | CW operation, fixed setpoint n3 (1096.31)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 1001 <sub>bin</sub>  | 9 <sub>dec</sub>  | CCW operation, fixed setpoint n3 (1096.31)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 1010 <sub>bin</sub>  | 10 <sub>dec</sub> | CW operation, Fixed setpoint n4 (10096.38)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 1011 <sub>bin</sub>  | 11 <sub>dec</sub> | CCW operation, Fixed setpoint n4 (10096.38)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 1100 <sub>bin</sub>  | 12 <sub>dec</sub> | CW operation, fixed setpoint n5 (10096.39)<br>Ramps t11 up (8807.0), t11 down (8808.0)  |
| 1101 <sub>bin</sub>  | 13 <sub>dec</sub> | CCW operation, fixed setpoint n5 (10096.39)<br>Ramps t11 up (8807.0), t11 down (8808.0)   |
| 1110 <sub>bin</sub>  | 14 <sub>dec</sub> | <b>In conjunction with mechatronic MOVIGEAR® drive unit:</b><br>Deactivating DynaStop® without drive enable signal (only when DIP switch S1/2 = "ON")<br><b>In conjunction with DRC electronic motor:</b><br>Releasing the brake without drive enable signal (only when DIP switch S1/2 = "ON") |
| 1111 <sub>bin</sub>  | 15 <sub>dec</sub> | Stop<br>Reset (only effective in case of an error)<br>Stop ramp t13 (8476.0)  |

| Input data GLK31A option → AS-Interface master                                       |                   |   |
|--|-------------------|---|
| Function module 1 <sub>hex</sub> (AS interface parameter bits = 001 <sub>bin</sub> ) |                   |   |
| Data bit (A-slave)   |                   | Function  |
| 0000 <sub>bin</sub>  | 0 <sub>dec</sub>  | Not ready   |
| 0001 <sub>bin</sub>  | 1 <sub>dec</sub>  | Ready for operation – automatic mode                  |
| 0010 <sub>bin</sub>  | 2 <sub>dec</sub>  | Ready – manual mode / local mode                      |
| 0011 <sub>bin</sub>  | 3 <sub>dec</sub>  | Enable/motor running – automatic mode                 |
| 0100 <sub>bin</sub>  | 4 <sub>dec</sub>  | Enable/motor running – manual mode / local mode       |
| 0101 <sub>bin</sub>  | 5 <sub>dec</sub>  | Reserved  |
| 0110 <sub>bin</sub>  | 6 <sub>dec</sub>  | Reserved  |
| 0111 <sub>bin</sub>  | 7 <sub>dec</sub>  | Reserved  |
| 1000 <sub>bin</sub>  | 8 <sub>dec</sub>  | Error, DC link voltage too high<br>Error code 07      |
| 1001 <sub>bin</sub>  | 9 <sub>dec</sub>  | Phase failure error<br>Error code 06                  |
| 1010 <sub>bin</sub>  | 10 <sub>dec</sub> | Error, overcurrent output stage<br>Error code 01      |
| 1011 <sub>bin</sub>  | 11 <sub>dec</sub> | Error, thermal overload output stage<br>Error code 11 |
| 1100 <sub>bin</sub>  | 12 <sub>dec</sub> | Error, thermal overload motor<br>Error code 84        |
| 1101 <sub>bin</sub>  | 13 <sub>dec</sub> | Error, thermal overload brake coil<br>Error code 89   |
| 1110 <sub>bin</sub>  | 14 <sub>dec</sub> | Speed monitoring error<br>Error code 08               |
| 1111 <sub>bin</sub>  | 15 <sub>dec</sub> | Other error   |



### 9.3 Transmitting individual parameters via AS-Interface

#### 9.3.1 MOVILINK® parameter channel

The MOVILINK® parameter channel enables access to all drive parameters of the DRC inverter regardless of the bus in use. It is also used for parameter access of the AS-Interface master to the DRC inverter via the GLK31A AS-Interface slave. The following figure shows the structure of the MOVILINK® parameter channel:



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The request and response frames of the MOVILINK® parameter channel have the same structure.

#### Addressing byte

The addressing byte specifies the MOVILINK® telegram destination, see also the "Parameters" chapter:

- 0: Command PCB
- 1: Power section

#### Management byte

Management byte 1 coordinates the parameterization process. It provides important service parameters of the executed service.

| Management byte 1 |                            |   |
|-------------------|----------------------------|---|
| Bit               | Meaning                    | Value   |
| 0 – 3             | Service executed           | 0000 <sub>bin</sub> No service<br>0001 <sub>bin</sub> Read parameter<br>0010 <sub>bin</sub> Write parameter<br>0011 <sub>bin</sub> Write parameter volatile<br>0110 <sub>bin</sub> Read default |
| 4 – 5             | Length of data/error bytes | 11 <sub>bin</sub> 4 bytes   |
| 6                 | Handshake bit              | 0: Not used for unit variants with GLK31A option  |
| 7                 | Status bit                 | 0: No error while executing service<br>1: Error while executing service, see bytes 4 – 7  |

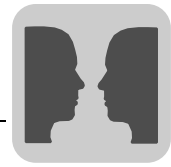
- Bits 0 – 3 specify the service to be executed.
- Bits 4 and 5 specify the data length of the write service.
- Handshake bit 6 is used as an acknowledgement bit for cyclic transmission. This bit is not used for the parameter transmission with the GLK31A option.
- Status bit 7 indicates whether the service was carried out properly or whether errors occurred.

#### Index addressing

Byte 2 / subindex, byte 3 / high index, and byte 4 / low index specify the parameter to be read or written via the parameter channel. The parameters of the inverter are addressed using the same index in all communication interfaces.

#### Data range

The data is located in bytes 5 – 8 of the MOVILINK® parameter channel. This means a maximum of 4 bytes per service can be transmitted across the parameter channel. The data is always right-justified. This means byte 8 contains the least significant data byte (LSB data) whereas byte 5 is the most significant data byte (MSB data).



**Incorrect service execution**

If an error occurs during service execution, status bit 7 in the management byte will be set to "1".

If status bit 7 signals an error, the error code is send back in structured form in the data range (bytes 5 – 8) of the response telegram.



↔ Status bit = 1: Incorrect execution of service

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The following table shows the values and their meaning for the elements "Error Class", "Error Code", "Additional Code High" and "Additional Code Low":

| Element               | Value                   | Meaning/note  |
|-----------------------|-------------------------|---|
| Error class           | 0x08                    | Error type according to EN 50170<br>For unit variants with GLK31A, the error class is = 0x08. |
| Error code            | 0x0                     | Error code<br>For unit variants with GLK31A, the error code is = 0x00.                        |
| Additional code High: | 0x0                     | For unit variants with GLK31A, the addition code low is = 0x00.                               |
| Additional code low:  | 0x00 / 0                | No error  |
|                       | 0x10 / 16               | Illegal index   |
|                       | 0x11 / 17               | Function/parameter not implemented  |
|                       | 0x12 / 18               | Read-only access  |
|                       | 0x13 / 19               | Parameter lock activated  |
|                       | 0x15 / 21               | Parameter value too high  |
|                       | 0x16 / 22               | Parameter value too small   |
|                       | 0x1B / 27               | Parameter protected against access  |
|                       | 0x1C / 28               | Controller inhibit required to change the parameter.  |
| 0x1D / 29             | Invalid parameter value |   |



#### 9.3.2 CTT2 protocol via AS-Interface

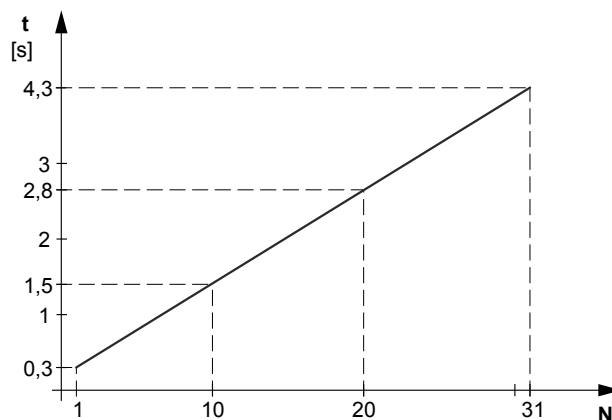
You can use the GLK31A double slave to exchange MOVILINK<sup>®</sup> parameters between an AS-Interface master and a DRC inverter.

The B-slave with slave profile S-7.A.F.5 uses the CTT2 protocol. For a description of the profile, refer to the appendix of the "Complete AS-Interface Specification Version 3.0, Revision 2, July 9, 2008".

#### Transmission time for a parameter

System-related transmission times occur during data exchange between the DRC B-slave and the AS-Interface master using the CTT2 protocol. These transmission times mainly depend on the number of slaves in the AS-Interface network.

The following diagram shows the connection between the transmission time for a MOVILINK<sup>®</sup> parameter and the number of AS-Interface slave addresses:



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**t** Transmission time for a parameter  
**N** Number of AS-Interface slave addresses

SEW-EURODRIVE recommends to add a safety factor to those values.

Controlling the DRC inverter via the cyclical data bits of the A-slave continues even during the transmission of parameters of the B-slave.



CTT2 services

The GLK31A double slave supports the following acyclical services and the corresponding response telegrams of the CTT2 protocol:

| Code                |                    | Service/<br>response telegram | Followed by  | Recommended use  |
|---------------------|--------------------|-------------------------------|--|--|
| 0x10 <sub>hex</sub> | 16 <sub>dec</sub>  | Read request                  | Index, length  | Reading out:<br><ul style="list-style-type: none"> <li>Index "0x00<sub>hex</sub>" = "ID object"</li> <li>Index "0x01<sub>hex</sub>" = "diagnosis"</li> </ul> |
| 0x50 <sub>hex</sub> | 80 <sub>dec</sub>  | Read response OK              | Data   |  |
| 0x90 <sub>hex</sub> | 144 <sub>dec</sub> | Read response not OK          | Standard error code  |  |
| 0x11 <sub>hex</sub> | 17 <sub>dec</sub>  | Write request                 | Index, length, data  |  |
| 0x51 <sub>hex</sub> | 81 <sub>dec</sub>  | Write response OK             | –  |  |
| 0x91 <sub>hex</sub> | 145 <sub>dec</sub> | Write response not OK         | Standard error code  |  |
| 0x1D <sub>hex</sub> | 29 <sub>dec</sub>  | Exchange request              | Index<br>Length when reading<br>Length when writing<br>Read data<br>Written data | Parameterization<br>DRC inverter<br><ul style="list-style-type: none"> <li>Index "0x02<sub>hex</sub>" = "MOVILINK parameter channel"</li> </ul>              |
| 0x5D <sub>hex</sub> | 93 <sub>dec</sub>  | Exchange response OK          | Read data  |  |
| 0x9D <sub>hex</sub> | 157 <sub>dec</sub> | Exchange response not OK      | Error object   |  |

To check the communication between the AS-Interface master and the AS-Interface slave, SEW-EURODRIVE recommends to read out the "ID object" with the "Read request" service.

The indexes 0x00<sub>hex</sub> "ID object" and 0x01<sub>hex</sub> "Diagnosis" are only permitted in conjunction with the CTT2 service "Read request" 0x10<sub>hex</sub>.

For parameterization of the DRC inverter, use the "Exchange request" service.

Alternatively, you can use the "Write request" and "Read request" services for parameterization. However, you have to program fixed wait times when programming the higher-level controller to compensate for transmission times for parameters.

The following chapters describe the individual CTT2 services.

A prerequisite for the transmission of DRC parameters using CTT2 services is a basic knowledge of the CTT2 and MOVILINK<sup>®</sup> protocols.



## Communication with AS-Interface double slave GLK31A

### Transmitting individual parameters via AS-Interface

#### Reading out an ID object

To check whether the communication between AS-Interface master and GLK31A option is error-free, read out the ID object using the "read request" service.

Select index  $0x00_{\text{hex}}$  and length  $0x06_{\text{hex}}$ .

- If this service is properly transmitted to the double slave, the GLK31A double slave replies with the response telegram  $0x50_{\text{hex}}$  "Read response OK" and the data.
- If errors occur, the GLK31A double slave sends the response telegram  $0x90_{\text{hex}}$  "Read response not OK" (for error codes, refer to the AS-Interface specification).

"Read request" service:

| CTT2 service |       |        |
|--------------|-------|--------|
| Code         | Index | Length |
| 0x10         | 0x00  | 0x06   |

Code 0x10 = Read request  
 Index 0x00 = ID object  
 Length 0x06 = Length of the ID object

The slave replies after the system-related transmission times for parameters.

"Read response OK" response telegram:

| CTT2 service |                |               |                |               |              |                  |
|--------------|----------------|---------------|----------------|---------------|--------------|------------------|
| Code         | Vendor ID High | Vendor ID Low | Device ID High | Device ID Low | Output/input | Firmware version |
| 0x50         | 0x00           | 0x0A          | 0x00           | 0x0A          | 0x00         | 0x01             |

Code 0x50 = Read response OK  
 Vendor ID high 0x00 = High value of the vendor ID  
 Vendor ID low 0x0A = Low value of the vendor ID  
 => Vendor ID =  $0x000A_{\text{hex}} = 10_{\text{dec}}$   
 Device ID high 0x00 = High value of the device ID  
 Device ID low 0x0A = Low value of the device ID  
 => Device ID =  $0x000A_{\text{hex}} = 10_{\text{dec}}$   
 Output/input 0x00 = No inputs and outputs  
 Firmware version 0x01





MOVILINK®  
parameter  
exchange with  
"Exchange  
request"

Executing the CTT2 service "Exchange request" 0x1D, the AS-Interface master sends a telegram with the DRC parameter data to the double slave and receives the response data immediately with the response telegram.

Select index 0x02<sub>hex</sub> and length 0x09<sub>hex</sub>.

- If this service has been executed correctly, the GLK31A double slave sends the response telegram 0x5D<sub>hex</sub> "Exchange response OK" and the read data.
- If errors occur, the GLK31A double slave sends the response telegram 0x9D<sub>hex</sub> "Exchange response not OK" (for the error code, refer to the AS-Interface specification).
- If the response data of the DRC inverter are not available yet, the GLK31A double slave sends a response with error code "Busy" = "4" after the read access.

**Example:**

Changing the fixed setpoint value n4 (parameter 10096.38) to 1000 rpm:

"Exchange request" service:

| CTT2 service |       |             |              | MOVILINK® protocol |            |           |            |           |          |      |      |          |
|--------------|-------|-------------|--------------|--------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Read length | Write length | Addressing         | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x1D         | 0x02  | 0x09        | 0x09         | 0x00               | 0x32       | 0x26      | 0x27       | 0x70      | 0x00     | 0x0F | 0x42 | 0x40     |

Code 0x1D = Exchange request  
 Index 0x02 = MOVILINK® parameter service  
 Read length 0x09 = Length of the MOVILINK® response  
 Write length 0x09 = Length of the MOVILINK® request  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter  
 Subindex 0x26 = Subindex of parameter fixed setpoint n4 (10096.38) 38<sub>dec</sub> = 0x26  
 High index 0x27 = High value of the index  
 Low index 0x70 = Low value of the index  
 => Index of the parameter = 10096<sub>dec</sub> = 0x2770<sub>hex</sub>  
 The value 0x2770<sub>hex</sub> is written on the high index and low index bytes.  
 Data MSB 0x00 The internal scaling of the DRC inverter is 1000 times higher than the real scaling.  
 Data 0x0F  
 Data 0x42 The scaling factor then is 1 000 000<sub>dec</sub> = 0xF4240.  
 Data LSB 0x40 This value is written to the 4 data bytes.



## Communication with AS-Interface double slave GLK31A

### Transmitting individual parameters via AS-Interface

The slave replies after the system-related transmission times for parameters.

"Exchange response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x5D         | 0x00                           | 0x32       | 0x26      | 0x27       | 0x70      | 0x00     | 0x00 | 0x00 | 0x00     |

Code 0x5D = Exchange request OK  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter  
 Subindex 0x26 = Subindex of parameter fixed setpoint n4 (10096.38)  $38_{\text{hex}} = 0x26$   
 High index 0x27 = High value of the index  
 Low index 0x70 = Low value of the index  
 => Index of the parameter =  $10096_{\text{dec}} = 0x2770_{\text{hex}}$   
 The value  $0x2770_{\text{hex}}$  is written on the high index and low index bytes.  
 If the MOVILINK<sup>®</sup> service has been executed correctly, the data value is  $0_{\text{dec}} = 0x0$   
 Data MSB 0x00  
 Data 0x00  
 Data 0x00  
 Data LSB 0x00



MOVILINK®  
parameter  
exchange with  
"Write request"  
and "Read  
request"

For the MOVILINK® parameter exchange, you can also use the "Write request" and "Read request" service instead of the recommended "Exchange request".

"Write request"

Execute the CTT2 service 0x11<sub>hex</sub> "Write request" to read and write a DRC parameter.

Select index 0x02<sub>hex</sub>.

Select length 0x09<sub>hex</sub>. This is the length of a MOVILINK® frame in bytes.

- If this service is transmitted to the double slave correctly, the GLK31A double slave replies with the response telegram 0x51<sub>hex</sub> "Read response OK".
- If an error occurs or if an incorrect index or length have been selected, the GLK31A double slave sends the response telegram 0x91<sub>hex</sub> "Write response not OK" instead (for the error code, refer to the AS-Interface specification).

**Example:**

Changing the fixed setpoint value n4 (parameter 10096.38) to 1000 rpm:

"Write request" service:

| CTT2 service |       |        | MOVILINK® protocol |            |           |            |           |          |      |      |          |
|--------------|-------|--------|--------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Length | Addressing         | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x11         | 0x02  | 0x09   | 0x00               | 0x32       | 0x26      | 0x27       | 0x70      | 0x00     | 0x0F | 0x42 | 0x40     |

- Code 0x11 = Write request
- Index 0x02 = MOVILINK® parameter service
- Length 0x09 = Length of the MOVILINK® protocol
- Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored
- Management 0x32 = Write parameter
- Subindex 0x26 = Subindex of parameter fixed setpoint n4 (10096.38) 38<sub>dec</sub> = 0x26
- High index 0x27 = High value of the index
- Low index 0x70 = Low value of the index
- => Index of the parameter = 10096<sub>dec</sub> = 0x2770<sub>hex</sub>
- The value 0x2770<sub>hex</sub> is written on the high index and low index bytes.
- Data MSB 0x00 The internal scaling of the DRC inverter is 1000 times higher than the real scaling.
- Data 0x0F The scaling factor then is 1 000 000<sub>dec</sub> = 0xF4240.
- Data 0x42 This value is written to the 4 data bytes.
- Data LSB 0x40

The slave replies after the system-related transmission times for parameters.

"Write response OK" response telegram:

| CTT2 service |
|--------------|
| Code         |
| 0x51         |

- Code 0x51 = Write response OK



#### "Read request"

Once the CTT2 service "Write request" has been executed correctly, you can use the service 0x10<sub>hex</sub> "Read request" to call the response telegram of the CTT2 service previously executed.

Select index 0x02<sub>hex</sub> and length 0x09<sub>hex</sub>.

- If this service is properly transmitted to the double slave, the GLK31A double slave replies with the response telegram 0x50<sub>hex</sub> "Read response OK" and the data.
- If errors occur, the GLK31A double slave sends the response telegram 0x90<sub>hex</sub> "Read response not OK" (for error codes, refer to the AS-Interface specification).
- If the response data of the DRC inverter are not available yet, the GLK31A double slave sends a response with error code "Busy" = "4" after the read access. The AS-Interface master must read the data again.

#### Example:

Request and OK response of the DRC inverter concerning the previous change of the fixed setpoint value n4 (parameter 10096.38)

"Read request" service:

| CTT2 service |       |        |
|--------------|-------|--------|
| Code         | Index | Length |
| 0x10         | 0x02  | 0x09   |

Code 0x10 = Read request  
 Index 0x02 = MOVILINK<sup>®</sup> parameter service  
 Length 0x09 = Length of the MOVILINK<sup>®</sup> protocol

The slave replies after the system-related transmission times for parameters.

"Read response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |            |           |            |           |          |      |      |
|--------------|--------------------------------|------------|------------|-----------|------------|-----------|----------|------|------|
|              | Code                           | Addressing | Management | Sub-index | High index | Low index | MSB data | Data | Data |
| 0x50         | 0x00                           | 0x32       | 0x26       | 0x27      | 0x70       | 0x00      | 0x00     | 0x00 | 0x00 |

Code 0x50 = Read response OK  
 Management 0x32 = Write parameter => no MOVILINK<sup>®</sup> error  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Subindex 0x26 = Subindex of parameter fixed setpoint n4 (10096.38) 38<sub>dec</sub> = 0x26  
 High index 0x27 = High value of the index  
 Low index 0x70 = Low value of the index  
 => Index of the parameter = 10096<sub>dec</sub> = 0x2770<sub>hex</sub>  
 The value 0x2770<sub>hex</sub> is written on the high index and low index bytes.  
 Data MSB 0x00 If the MOVILINK<sup>®</sup> service has been executed correctly, the data byte value is  
 Data 0x00 0x0 = 0<sub>dec</sub>  
 Data 0x00  
 Data LSB 0x00



### 9.3.3 Using the "Exchange request" service (example)

This example illustrates how to change individual parameters of the DRC inverter using the CTT2 service "Exchange request" 0x1D. You can use this service as an alternative to the "Read request" and "Write request" services to read or write DRC parameters.

First, check the communication by reading out the "ID object" using the "Read request" service.

Next, all you have to do is execute a "Request" service. The AS-Interface response telegram 0x5D already includes the MOVILINK® response of the DRC inverter.

The following parameters of the DRC inverter are to be changed:

- Ramp t11 up and t11 down to 0.5 s
- Fixed setpoint value n0 to 1000 rpm

In addition, the heat sink temperature is to be read.

#### Checking the communication

Read out the ID object correctly to check proper communication between AS-Interface master and GLK31A.

"Read request" service:

| CTT2 service |       |        |
|--------------|-------|--------|
| Code         | Index | Length |
| 0x10         | 0x00  | 0x06   |

- Code 0x10 = Read request
- Index 0x00 = ID object
- Length 0x06 = Length of the ID object

The slave replies after the system-related transmission times for parameters.

"Read response OK" response telegram:

| CTT2 service |                |               |                |               |              |                  |
|--------------|----------------|---------------|----------------|---------------|--------------|------------------|
| Code         | Vendor ID High | Vendor ID Low | Device ID High | Device ID Low | Output/input | Firmware version |
| 0x50         | 0x00           | 0x0A          | 0x00           | 0x0A          | 0x00         | 0x01             |

- Code 0x50 = Read response OK
- Vendor ID high 0x00 = High value of the vendor ID
- Vendor ID low 0x0A = Low value of the vendor ID  
=> Vendor ID = 0x000A<sub>hex</sub> = 10<sub>dec</sub>
- Device ID high 0x00 = High value of the device ID
- Device ID low 0x0A = Low value of the device ID  
=> Device ID = 0x000A<sub>hex</sub> = 10<sub>dec</sub>
- Output/input 0x00 = No inputs and outputs
- Firmware version 0x01



## Communication with AS-Interface double slave GLK31A

### Transmitting individual parameters via AS-Interface

#### Deactivating mechanical control elements

You have to deactivate the mechanical control elements because the parameters of the DRC inverter are to be set via AS-Interface. To do so, write the value  $65535_{\text{dec}} = 0xFFFF$  to parameter  $10096.30$ .

"Exchange request" service:

| CTT2 service |       |             |              | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|-------|-------------|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Read length | Write length | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x1D         | 0x02  | 0x09        | 0x09         | 0x00                           | 0x32       | 0x1E      | 0x27       | 0x70      | 0x00     | 0x00 | 0xFF | 0xFF     |

|                     |   |
|---------------------|---|
| Code 0x1D =         | Exchange request  |
| Index 0x02 =        | MOVILINK <sup>®</sup> parameter service   |
| Read length 0x09 =  | Length of the MOVILINK <sup>®</sup> response  |
| Write length 0x09 = | Length of the MOVILINK <sup>®</sup> request   |
| Addressing 0x00 =   | Addressing the command PCB because this is where the parameter is stored                                  |
| Management 0x32 =   | Write parameter   |
| Subindex 0x1E =     | Subindex of the parameter   |
| High index 0x27 =   | High value of the index   |
| Low index 0x70 =    | Low value of the index  |
|                     | => Index of the parameter = $10096_{\text{dec}} = 0x2770_{\text{hex}}$                                    |
|                     | The value $0x2770_{\text{hex}}$ is written to the bytes high index and low index.                         |
| Data MSB 0x00       | The parameter must be set to $65535_{\text{dec}} = 0xFFFF$ to deactivate the mechanical control elements. |
| Data 0x00           |   |
| Data 0xFF           | This value is written to the 4 data bytes.  |
| Data LSB 0xFF       |   |

When the GLK31A double slave receives the service "Exchange request" 0x1D, it sends the MOVILINK<sup>®</sup> protocol to the DRC inverter. Once the DRC inverter receives the MOVILINK<sup>®</sup> response, the GLK31A double slave sends the response "Exchange response OK" to the AS-Interface master. This means another "Read request" service of the AS-Interface master is not required.

The slave replies after the system-related transmission times for parameters.

"Exchange response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |  |
|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|--|
| Code         | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |  |
| 0x5D         | 0x00                           | 0x32       | 0x1E      | 0x27       | 0x70      | 0x00     | 0x00 | 0x00 | 0x00     |  |

|                   |  |
|-------------------|--|
| Code 0x5D =       | Exchange request OK  |
| Addressing 0x00 = | Addressing the command PCB because this is where the parameter is stored                                   |
| Management 0x32 = | Write parameter  |
| Subindex 0x1E =   | Subindex of the parameter  |
| High index 0x27 = | High value of the index  |
| Low index 0x70 =  | Low value of the index   |
|                   | => Index of the parameter = $10096_{\text{dec}} = 0x2770_{\text{hex}}$                                     |
|                   | The value $0x2770_{\text{hex}}$ is written to the bytes high index and low index.                          |
| Data MSB 0x00     | If the MOVILINK <sup>®</sup> service has been executed correctly, the data value is $0_{\text{dec}} = 0x0$ |
| Data 0x00         |  |
| Data 0x00         |  |
| Data LSB 0x00     |  |



Setting ramp t11  
up

Set the ramp time of ramp t11 up (parameter 8807.0) to 0.5 s.

"Exchange request" service:

| CTT2 service |       |             |              | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|-------|-------------|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Read length | Write length | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x1D         | 0x02  | 0x09        | 0x09         | 0x00                           | 0x32       | 0x00      | 0x22       | 0x67      | 0x00     | 0x00 | 0x01 | 0xF4     |

Code 0x1D = Exchange request  
 Index 0x02 = MOVILINK<sup>®</sup> parameter service  
 Read length 0x09 = Length of the MOVILINK<sup>®</sup> response  
 Write length 0x09 = Length of the MOVILINK<sup>®</sup> request  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x22 = High value of the index  
 Low index 0x67 = Low value of the index  
 => Index of parameter = 8807<sub>dec</sub> = 0x2267<sub>hex</sub>  
 The value 0x2267<sub>hex</sub> is written to the high index and low index.  
 Data MSB 0x00 Specify the ramp time of the DRC inverter in ms in order to set the ramp time to 0.5 s = 500 ms (500 ms  $\triangle$  500<sub>dec</sub> = 0x1F4).  
 Data 0x00 This value is written to the 4 data bytes.  
 Data 0x01  
 Data LSB 0xF4

When the GLK31A double slave receives the service "Exchange request" 0x1D, it sends the MOVILINK<sup>®</sup> protocol to the DRC inverter. Once the DRC inverter receives the MOVILINK<sup>®</sup> response, the GLK31A double slave sends the response "Exchange response OK" to the AS-Interface master. This means another "Read request" service of the AS-Interface master is not required.

The slave replies after the system-related transmission times for parameters.

"Exchange response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x5D         | 0x00                           | 0x32       | 0x00      | 0x22       | 0x67      | 0x00     | 0x00 | 0x00 | 0x00     |

Code 0x5D = Exchange request OK  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x22 = High value of the index  
 Low index 0x67 = Low value of the index  
 => Index of parameter = 8807<sub>dec</sub> = 0x2267<sub>hex</sub>  
 The value 0x2267<sub>hex</sub> is written to the high index and low index.  
 Data MSB 0x00 If the MOVILINK<sup>®</sup> service has been executed correctly, the data value is 0<sub>dec</sub> = 0x0  
 Data 0x00  
 Data 0x00  
 Data LSB 0x00

Setting ramp t11  
down

Set the ramp time of ramp t11 down (8808.0) to 0.5 s. The ramp time for ramp t11 down is set in the same way as the ramp time for ramp t11 up.

Ramp t11 down has index 8808<sub>dec</sub> = 0x2268 and subindex 0.



## Communication with AS-Interface double slave GLK31A

### Transmitting individual parameters via AS-Interface

Setting the fixed setpoint  $n_0$

Set the fixed setpoint  $n_0$  (parameter 8489.0) to 1000 rpm.

"Exchange request" service:

| CTT2 service |       |             |              | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|-------|-------------|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Read length | Write length | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x1D         | 0x02  | 0x09        | 0x09         | 0x00                           | 0x32       | 0x00      | 0x21       | 0x29      | 0x00     | 0x0F | 0x42 | 0x40     |

Code 0x1D = Exchange request  
 Index 0x02 = MOVILINK<sup>®</sup> parameter service  
 Read length 0x09 = Length of the MOVILINK<sup>®</sup> response  
 Write length 0x09 = Length of the MOVILINK<sup>®</sup> request  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x21 = High value of the index  
 Low index 0x29 = Low value of the index  
 => Index of parameter =  $8489_{dec} = 0x2129_{hex}$   
 The value  $0x2129_{hex}$  is written to bytes high index and low index.  
 Data MSB 0x00 The internal scaling of the DRC inverter is 1000 times higher than the real scaling.  
 Data 0x0F The scaling factor then is  $1\ 000\ 000_{dec} = 0xF4240$ .  
 Data 0x42 This value is written to the 4 data bytes.  
 Data LSB 0x40

When the GLK31A double slave receives the service "Exchange request" 0x1D, it sends the MOVILINK<sup>®</sup> protocol to the DRC inverter. Once the DRC inverter receives the MOVILINK<sup>®</sup> response, the GLK31A double slave sends the response "Exchange response OK" to the AS-Interface master. This means another "Read request" service of the AS-Interface master is not required.

The slave replies after the system-related transmission times for parameters.

"Exchange response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |  |
|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|--|
| Code         | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |  |
| 0x5D         | 0x00                           | 0x32       | 0x00      | 0x21       | 0x29      | 0x00     | 0x00 | 0x00 | 0x00     |  |

Code 0x5D = Exchange request OK  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x21 = High value of the index  
 Low index 0x29 = Low value of the index  
 => Index of parameter =  $8489_{dec} = 0x2129_{hex}$   
 The value  $0x2129_{hex}$  is written to bytes high index and low index.  
 Data MSB 0x00 If the MOVILINK<sup>®</sup> service has been executed correctly, the data value is  $0_{dec} = 0x0$   
 Data 0x00  
 Data 0x00  
 Data LSB 0x00





Reading out the heat sink temperature

Read the heat sink temperature from parameter 8327.0 as follows:

"Exchange request" service:

| CTT2 service |       |             |              | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|-------|-------------|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Read length | Write length | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x1D         | 0x02  | 0x09        | 0x09         | 0x01                           | 0x31       | 0x00      | 0x20       | 0x87      | 0x00     | 0x00 | 0x00 | 0x00     |

Code 0x1D = Exchange request  
 Index 0x02 = MOVILINK<sup>®</sup> parameter service  
 Read length 0x09 = Length of the MOVILINK<sup>®</sup> response  
 Write length 0x09 = Length of the MOVILINK<sup>®</sup> request  
 Addressing 0x01 = Addressing the power section because this is where the parameter is stored.  
 Management 0x31 = Read parameter  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x20 = High value of the index  
 Low index 0x87 = Low value of the index  
 => Index of the parameter = 8327<sub>dec</sub> = 0x2087<sub>hex</sub>  
 The value 0x2087<sub>hex</sub> is written to the bytes high index and low index.  
 Data MSB 0x00 The value 0x00 is written to the data when the DRC parameters are read.  
 Data 0x00  
 Data 0x00  
 Data LSB 0x00

When the GLK31A double slave receives the service "Exchange request" 0x1D, it sends the MOVILINK<sup>®</sup> protocol to the DRC inverter. Once the DRC inverter receives the MOVILINK<sup>®</sup> response, the GLK31A double slave sends the response "Exchange response OK" to the AS-Interface master. This means another "Read request" service of the AS-Interface master is not required.

The slave replies after the system-related transmission times for parameters.

"Exchange response OK" response telegram:

| CTT2 service |  | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |  |
|--------------|--|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|--|
| Code         |  | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |  |
| 0x5D         |  | 0x01                           | 0x31       | 0x00      | 0x20       | 0x87      | 0x00     | 0x00 | 0x00 | 0x14     |  |

Code 0x5D = Exchange request OK  
 Addressing 0x01 = Addressing the power section because this is where the parameter is stored.  
 Management 0x31 = Read parameter, no MOVILINK<sup>®</sup> error  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x20 = High value of the index  
 Low index 0x87 = Low value of the index  
 => Index = 8893<sub>dec</sub> = 0x2087<sub>hex</sub>  
 The value 0x2087<sub>hex</sub> is written to the bytes high index and low index.  
 Data MSB 0x00 When the MOVILINK<sup>®</sup> service has been executed correctly, the data bytes transmit the heat sink temperature, e.g. 20 °C  $\triangle$  0x14.  
 Data 0x00  
 Data 0x00  
 Data LSB 0x14 The unscaled heat sink temperature is stored in the DRC inverter. The value 0x14 corresponds to a temperature of 20 °C.



#### 9.3.4 Using "Read request" and "Write request" services (example)



#### INFORMATION

- Make sure that "Expert mode" is active.
- Refer to the "Startup" chapter.

This example illustrates how to change individual parameters of the DRC inverter using the CTT2 services "Write request" 0x11 and "Read request" 0x10.

The following parameters of the DRC inverter are to be changed:

- Ramp t11 up and t11 down to 0.5 s
- Fixed setpoint value n0 to 1000 rpm

In addition, the heat sink temperature is to be read.

#### Checking the communication

Read out the ID object correctly to check proper communication between AS-Interface master and GLK31A.

"Read request" service:

| CTT2 service |       |        |
|--------------|-------|--------|
| Code         | Index | Length |
| 0x10         | 0x00  | 0x06   |

Code 0x10 = Read request  
 Index 0x00 = ID object  
 Length 0x06 = Length of the ID object

The slave replies after the system-related transmission times for parameters.

"Read response OK" response telegram:

| CTT2 service |                |               |                |               |              |                  |
|--------------|----------------|---------------|----------------|---------------|--------------|------------------|
| Code         | Vendor ID High | Vendor ID Low | Device ID High | Device ID Low | Output/input | Firmware version |
| 0x50         | 0x00           | 0x0A          | 0x00           | 0x0A          | 0x00         | 0x01             |

Code 0x50 = Read response OK  
 Vendor ID high 0x00 = High value of the vendor ID  
 Vendor ID low 0x0A = Low value of the vendor ID  
 => Vendor ID = 0x000A<sub>hex</sub> = 10<sub>dec</sub>  
 Device ID high 0x00 = High value of the device ID  
 Device ID low 0x0A = Low value of the device ID  
 => Device ID = 0x000A<sub>hex</sub> = 10<sub>dec</sub>  
 Output/input 0x00 = No inputs and outputs  
 Firmware version 0x01



*Deactivating the mechanical control elements*

You have to deactivate the mechanical control elements because the parameters of the DRC inverter are to be set via AS-Interface. To do so, write the value  $65535_{dec} = 0xFFFF$  to parameter *10096.0*.

"Write request" service:

| CTT2 service |       |        | MOVILINK® protocol |            |           |            |           |          |      |      |          |
|--------------|-------|--------|--------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Length | Addressing         | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x11         | 0x02  | 0x09   | 0x00               | 0x32       | 0x1E      | 0x27       | 0x70      | 0x00     | 0x00 | 0xFF | 0xFF     |

- Code 0x11 = Write request
- Index 0x02 = MOVILINK® parameter service
- Length 0x09 = Length of the MOVILINK® protocol
- Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored
- Management 0x32 = Write parameter
- Subindex 0x1E = Subindex of the parameter
- High index 0x27 = High value of the index
- Low index 0x70 = Low value of the index  
=> Index of the parameter =  $10096_{dec} = 0x2770_{hex}$   
The value  $0x2770_{hex}$  is written to the bytes high index and low index.
- Data MSB 0x00 The parameter must be set to  $65535_{dec} = 0xFFFF$  to deactivate the mechanical control elements.
- Data 0x00
- Data 0xFF This value is written to the 4 data bytes.
- Data LSB 0xFF

The slave replies after the system-related transmission times for parameters.

"Write response OK" response telegram:

| CTT2 service |
|--------------|
| Code         |
| 0x51         |

- Code 0x51 = Write response OK

Once the GLK31A double slave has correctly received the data, it immediately sends the response 0x51 "Write response OK" to the master. At the same time, the MOVILINK® protocol is sent to the DRC inverter.

The response of the DRC protocol is evaluated with the "Read request" service as follows to make sure that the [MOVIGEAR® / DRC]® inverter has changed parameter *10096.0*.

"Read request" service:

| CTT2 service |       |        |
|--------------|-------|--------|
| Code         | Index | Length |
| 0x10         | 0x02  | 0x09   |

- Code 0x10 = Read request
- Index 0x02 = MOVILINK® parameter service
- Length 0x09 = Length of the MOVILINK® protocol



## Communication with AS-Interface double slave GLK31A

### Transmitting individual parameters via AS-Interface

The slave replies after the system-related transmission times for parameters.

"Read response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x50         | 0x00                           | 0x32       | 0x1E      | 0x27       | 0x70      | 0x00     | 0x00 | 0x00 | 0x00     |

Code 0x50 = Read response OK  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter => no MOVILINK<sup>®</sup> error  
 Subindex 0x1E = Subindex of the parameter  
 High index 0x27 = High value of the index  
 Low index 0x70 = Low value of the index  
 => Index of the parameter = 10096<sub>dec</sub> = 0x2770<sub>hex</sub>  
 The value 0x2770<sub>hex</sub> is written to the bytes high index and low index.  
 Data MSB 0x00 If the MOVILINK<sup>®</sup> service has been executed correctly, the data byte value is  
 Data 0x00 0x0 = 0<sub>dec</sub>  
 Data 0x00  
 Data LSB 0x00



Setting ramp t11  
up

Set the ramp time of ramp t11 up (parameter 8807.0) to 0.5 s.

"Write request" service:

| CTT2 service |       |        | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|-------|--------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Length | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x11         | 0x02  | 0x09   | 0x00                           | 0x32       | 0x00      | 0x22       | 0x67      | 0x00     | 0x00 | 0x01 | 0xF4     |

Code 0x11 = Write request  
 Index 0x02 = MOVILINK<sup>®</sup> parameter service  
 Length 0x09 = Length of the MOVILINK<sup>®</sup> protocol  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x22 = High value of the index  
 Low index 0x67 = Low value of the index  
 => Index of parameter = 8807<sub>dec</sub> = 0x2267<sub>hex</sub>  
 The value 0x2267<sub>hex</sub> is written to the bytes high index and low index.  
 Data MSB 0x00 Specify the ramp time of the DRC inverter in ms in order to set the ramp time to  
 Data 0x00 0.5 s = 500 ms (500 ms  $\underline{\Delta}$  500<sub>dec</sub> = 0x1F4).  
 Data 0x01 This value is written to the 4 data bytes.  
 Data LSB 0xF4

The slave replies after the system-related transmission times for parameters.

"Write response OK" response telegram:

| CTT2 service |  |
|--------------|--|
| Code         |  |
| 0x51         |  |

Code 0x51 = Write response OK

Once the GLK31A double slave has correctly received the data, it immediately sends the response 0x51 "Write response OK" to the master. At the same time, the MOVILINK<sup>®</sup> protocol is sent to the DRC inverter.

The response of the DRC protocol is evaluated with the "Read request" service as follows to make sure that the [MOVIGEAR<sup>®</sup> / DRC]<sup>®</sup> inverter has changed parameter 8807.0.

"Read request" service:

| CTT2 service |       |        |
|--------------|-------|--------|
| Code         | Index | Length |
| 0x10         | 0x02  | 0x09   |

Code 0x10 = Read request  
 Index 0x02 = MOVILINK<sup>®</sup> parameter service  
 Length 0x09 = Length of the MOVILINK<sup>®</sup> protocol



## Communication with AS-Interface double slave GLK31A

### Transmitting individual parameters via AS-Interface

The slave replies after the system-related transmission times for parameters.

"Read response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x50         | 0x00                           | 0x32       | 0x00      | 0x22       | 0x67      | 0x00     | 0x00 | 0x00 | 0x00     |

Code 0x50 = Read response OK  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter => no MOVILINK<sup>®</sup> error  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x22 = High value of the index  
 Low index 0x67 = Low value of the index  
 => Index of parameter = 8807<sub>dec</sub> = 0x2267<sub>hex</sub>  
 The value 0x2267<sub>hex</sub> is written to the bytes high index and low index.  
 Data MSB 0x00 If the MOVILINK<sup>®</sup> service has been executed correctly, the data byte value is  
 Data 0x00 0x0 = 0<sub>dec</sub>  
 Data 0x00  
 Data LSB 0x00

#### Setting ramp t11 down

Set ramp t11 down (parameter 8808.0) to 0.5 s. The ramp time for ramp t11 down is set in the same way as the ramp time for ramp t11 up.

Ramp t11 down has index 8808<sub>dec</sub> = 0x2268 and subindex 0.



Setting the fixed setpoint n0

Set the fixed setpoint n0 (parameter 8489.0) to 1000 rpm.

"Write request" service:

| CTT2 service |       |        | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|-------|--------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Length | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x11         | 0x02  | 0x09   | 0x00                           | 0x32       | 0x00      | 0x21       | 0x29      | 0x00     | 0x0F | 0x42 | 0x40     |

- Code 0x11 = Write request
- Index 0x02 = MOVILINK<sup>®</sup> parameter service
- Length 0x09 = Length of the MOVILINK<sup>®</sup> protocol
- Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored
- Management 0x32 = Write parameter
- Subindex 0x00 = Subindex of the parameter
- High index 0x21 = High value of the index
- Low index 0x29 = Low value of the index  
=> Index of parameter = 8489<sub>dec</sub> = 0x2129<sub>hex</sub>  
The value 0x2129<sub>hex</sub> is written to bytes high index and low index.
- Data MSB 0x00 The internal scaling of the DRC inverter is 1000 times higher than the real scaling.
- Data 0x0F
- Data 0x42 The scaling factor then is 1 000 000<sub>dec</sub> = 0xF4240.
- Data LSB 0x40 This value is written to the 4 data bytes.

The slave replies after the system-related transmission times for parameters.

"Write response OK" response telegram:

| CTT2 service |  |
|--------------|--|
| Code         |  |
| 0x51         |  |

- Code 0x51 = Write response OK

Once the GLK31A double slave has correctly received the data, it immediately sends the response 0x51 "Write response OK" to the master. At the same time, the MOVILINK<sup>®</sup> protocol is sent to the DRC inverter.

The response of the DRC protocol is evaluated with the "Read request" service as follows to make sure that the [MOVIGEAR<sup>®</sup> / DRC]<sup>®</sup> inverter has changed parameter 8489.0.

"Read request" service:

| CTT2 service |       |        |
|--------------|-------|--------|
| Code         | Index | Length |
| 0x10         | 0x02  | 0x09   |

- Code 0x10 = Read request
- Index 0x02 = MOVILINK<sup>®</sup> parameter service
- Length 0x09 = Length of the MOVILINK<sup>®</sup> protocol



## Communication with AS-Interface double slave GLK31A

### Transmitting individual parameters via AS-Interface

The slave replies after the system-related transmission times for parameters.

"Read response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x50         | 0x00                           | 0x32       | 0x00      | 0x21       | 0x29      | 0x00     | 0x00 | 0x00 | 0x00     |

Code 0x50 = Read response OK  
 Addressing 0x00 = Addressing the command PCB because this is where the parameter is stored  
 Management 0x32 = Write parameter => no MOVILINK<sup>®</sup> error  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x21 = High value of the index  
 Low index 0x29 = Low value of the index  
 => Index of parameter = 8489<sub>dec</sub> = 0x2129<sub>hex</sub>  
 The value 0x2129<sub>hex</sub> is written to bytes high index and low index.  
 Data MSB 0x00 If the MOVILINK<sup>®</sup> service has been executed correctly, the data byte value is  
 Data 0x00 0x0 = 0<sub>dec</sub>  
 Data 0x00  
 Data LSB 0x00





Reading out the  
heat sink  
temperature

Read the heat sink temperature from parameter 8327.0 as follows:

"Write request" service:

| CTT2 service |       |        | MOVILINK® protocol |            |           |            |           |          |      |      |          |
|--------------|-------|--------|--------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Index | Length | Addressing         | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x11         | 0x02  | 0x09   | 0x01               | 0x31       | 0x00      | 0x20       | 0x87      | 0x00     | 0x00 | 0x00 | 0x00     |

Code 0x11 = Write request  
 Index 0x02 = MOVILINK® parameter service  
 Length 0x09 = Length of the MOVILINK® protocol  
 Addressing 0x01 = Addressing the power section because this is where the parameter is stored.  
 Management 0x31 = Read parameter  
 Subindex 0x00 = Subindex of the parameter  
 High index 0x20 = High value of the index  
 Low index 0x87 = Low value of the index  
 => Index of the parameter =  $8327_{dec} = 0x2087_{hex}$   
 The value  $0x2087_{hex}$  is written to the bytes high index and low index.  
 Data MSB 0x00 The value 0x00 is written to the data when the DRC parameters are read.  
 Data 0x00  
 Data 0x00  
 Data LSB 0x00

The slave replies after the system-related transmission times for parameters.

"Write response OK" response telegram:

| CTT2 service |  |
|--------------|--|
| Code         |  |
| 0x51         |  |

Code 0x51 = Write response OK

Once the GLK31A double slave has correctly received the data, it immediately sends the response 0x51 "Write response OK" to the master. At the same time, the MOVILINK® protocol is sent to the DRC inverter.

The "Read request" service must be executed to obtain the value of the parameter read out by the DRC inverter.

"Read request" service:

| CTT2 service |       |        |
|--------------|-------|--------|
| Code         | Index | Length |
| 0x10         | 0x02  | 0x09   |

Code 0x10 = Read request  
 Index 0x02 = MOVILINK® parameter service  
 Length 0x09 = Length of the MOVILINK® protocol



## Communication with AS-Interface double slave GLK31A

### Transmitting individual parameters via AS-Interface

The slave replies after the system-related transmission times for parameters.

"Read response OK" response telegram:

| CTT2 service | MOVILINK <sup>®</sup> protocol |            |           |            |           |          |      |      |          |
|--------------|--------------------------------|------------|-----------|------------|-----------|----------|------|------|----------|
| Code         | Addressing                     | Management | Sub-index | High index | Low index | MSB data | Data | Data | LSB data |
| 0x50         | 0x01                           | 0x31       | 0x00      | 0x20       | 0x87      | 0x00     | 0x00 | 0x00 | 0x14     |

|                   |   |
|-------------------|---|
| Code 0x50 =       | Read response OK  |
| Addressing 0x01 = | Addressing the power section because this is where the parameter is stored.   |
| Management 0x31 = | Read parameter => no MOVILINK <sup>®</sup> error  |
| Subindex 0x00 =   | Subindex of the parameter   |
| High index 0x20 = | High value of the index   |
| Low index 0x87 =  | Low value of the index<br>=> Index of the parameter = 8893 <sub>dec</sub> = 0x2087 <sub>hex</sub><br>The value 0x2087 <sub>hex</sub> is written to the bytes high index and low index.  |
| Data MSB 0x00     | When the MOVILINK <sup>®</sup> service has been executed correctly, the data bytes transmit the heat sink temperature, e.g. 20 °C $\underline{\Delta}$ 0x14.<br>The unscaled heat sink temperature is stored in the DRC inverter. The value 0x14 corresponds to a temperature of 20 °C. |
| Data 0x00         |   |
| Data 0x00         |   |
| Data LSB 0x14     |   |



## 10 Operation

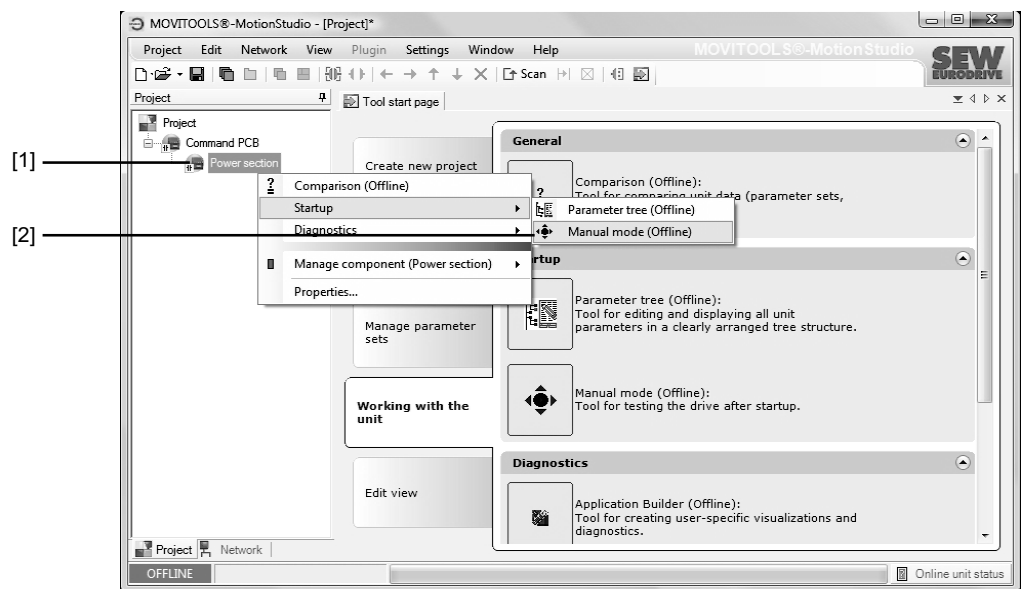
### 10.1 Manual operation with MOVITOOLS® MotionStudio

For manual operation of the DRC drive unit, you can use the manual operation function of the MOVITOOLS® MotionStudio software.

1. First, connect the PC to the DRC inverter.
2. Start MOVITOOLS® MotionStudio and integrate the DRC inverter in MOVITOOLS® MotionStudio.

Refer to the chapter "Operating MOVITOOLS® MotionStudio" for more information.

3. Once the DRC inverter is successfully integrated, open the context menu in the DRC power section [1] by clicking on the right mouse button and select the menu item "Startup" / "Manual mode" [2].



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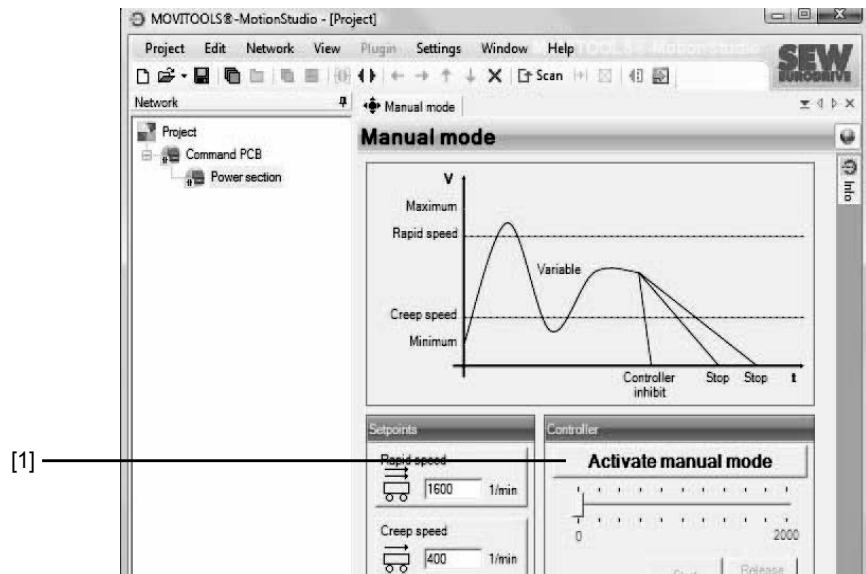
The "Manual mode" window opens.



### 10.1.1 Activating/deactivating manual mode

#### Activation

Manual mode can only be activated when the DRC drive unit is inhibited.



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To activate manual mode, click the [Activate manual mode] button [1].

Manual mode remains active even after an error reset.

#### Deactivation



#### ⚠ WARNING

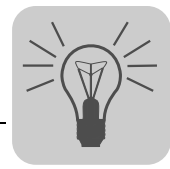
Risk of injury if the drive starts up unintentionally.

Severe or fatal injuries.

- Before deactivating manual mode, take measures to prevent the drive unit from starting up unintentionally, e.g. activating "STO".
- Take additional safety precautions depending on the application to avoid injury to people and damage to machinery.

Manual mode is deactivated:

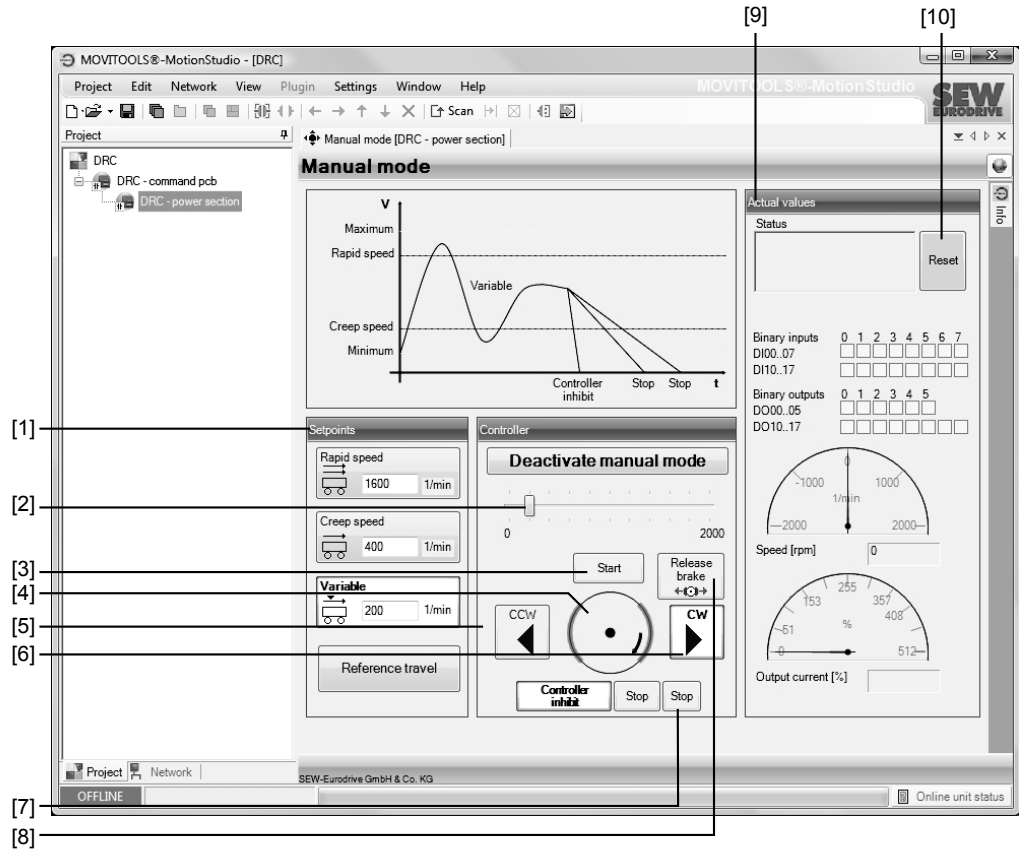
- When you click on the [Deactivate manual mode] button
- Or when you close the "Manual mode" window
- Or when you set parameter 8594.0 to "delivery condition"



### 10.1.2 Control in manual mode

Manual mode window

Once manual mode has been successfully activated, you can control the DRC drive unit using the controls in the "Manual mode" window of MOVITOOLS® MotionStudio.



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#### Controller

1. Set the variable setpoint speed with the slide control [2] in the "Control" group.
2. Use the buttons [CW] [6] or [CCW] [5] to specify the direction of rotation.
3. Click on the [Start] button [3] to enable the DRC drive unit.

The motor axis [4] displayed in the "Control" group symbolizes the direction of rotation and the speed of the motor.

4. Use the [Stop] button [7] to stop the drive.

As an alternative, you can enter the setpoints for rapid and creep speed or the variable speed setpoint directly in the "Setpoints" group [1].

The direction of rotation is determined by the sign (positive = CW operation, negative = CCW operation).

First enter the setpoint, then press <ENTER> and click on the button that contains the setpoint input field in order to enable the DRC drive unit.

The group "Actual values" [9] displays the following actual values of the DRC drive unit:

- Status of the DRC inverter
- Motor speed in [rpm]
- Output current of the DRC inverter in [%] of  $I_N$

#### Brake

On DRC drive units with a brake, you can release the brake even without drive enable signal by enabling the "Brake release" checkbox [8].

**10.1.3 Reset in manual mode**

If an error occurs at the DRC inverter, you can reset the error by clicking on the [Reset] button [10].

**10.1.4 Timeout monitoring in manual mode**

Timeout monitoring is active during manual mode to prevent uncontrolled operation of the DRC drive unit in case of communication problems.

If communication between MOVITOOLS<sup>®</sup> MotionStudio and the DRC inverter is interrupted longer than this timeout interval, the enable signal for the DRC drive unit is withdrawn. Manual mode remains active.



## 10.2 Local mode

### 10.2.1 Activating local mode



#### INFORMATION

Local mode can only be activated when the drive is not enabled.

When setting the signal at digital input DI04 to "1", digital inputs DI01 to DI03 are used for local mode with the following functions:

| Digital input | Functionality   |   |
|---------------|---|---|
|               | Easy mode<br>(see chapter "Startup")  | In conjunction with expert mode and deactivated controls f1/f2<br>(see chapter "Startup")   |
| DI01          | CW/stop   |   |
| DI02          | CCW/stop  |   |
| DI03          | Setpoint selection<br>"0" = Setpoint potentiometer f1 active<br>"1" = Setpoint switch f2 active | Setpoint selection<br>"0" = Setpoint n_f1 active (parameter 10096.35, factory set to 1500 rpm)<br>"1" = Setpoint n_f2 active (parameter 10096.36, factory set to 200 rpm) |
| DI04          | Switching between local mode / automatic mode   |   |

### 10.2.2 Deactivating local mode

#### ⚠ WARNING

Risk of injury if the drive starts up unintentionally.

Severe or fatal injuries.

- Before deactivating local mode, take measures to prevent the drive unit from starting up unintentionally, e.g. activating "STO".
- Take additional safety precautions depending on the application to avoid injury to people and damage to machinery.



### 10.2.3 Error reset in local mode

An error can be reset in local mode as follows:

An error is reset when you have set digital inputs DI01 and DI02 to "1" and a rising edge occurs at digital input DI03 = "0" → "1".



### 10.3 Releasing the brake without drive enable signal

#### 10.3.1 Notes



#### ⚠ WARNING

Risk of fatal injury if the hoist falls.

Severe or fatal injuries.

- Never use the function "Releasing the brake without drive enable signal" for hoist applications.



5 minutes

#### ⚠ WARNING

Electric shock caused by dangerous voltages in the connection box. Dangerous voltages may still be present for up to 5 minutes after disconnection from the power supply system.

Severe or fatal injuries.

- Before removing the electronics cover, de-energize the DRC drive units via a suitable external disconnection device.
- Secure the drive unit against unintended re-connection of the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least 5 minutes before removing the electronics cover.



#### ⚠ WARNING

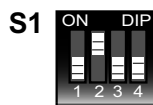
Burns caused by hot surfaces.

Severe injuries

- Let the units cool down before touching them.

#### 10.3.2 Activating the function

Set DIP switch S1/2 to "ON" (also see "Startup" chapter). This makes it possible to release the brake even without drive enable signal and when the unit is in controller inhibit state.



Brake release  
without enable

**OFF** = function deactivated  
**ON** = function activated

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### 10.3.3 Functional description of automatic mode (bus mode) with binary slave GLK30A

When switch S1/2 is set to "ON", it is possible to release the brake even without a drive enable signal.

The brake can be released under the following conditions by setting the AS-Interface bit DO2 "speed f2/speed f1":

| Status of AS-Interface bits |            |             |                    | Enable status                    | Error status         | Brake function   |
|-----------------------------|------------|-------------|--------------------|----------------------------------|----------------------|--|
| DO0 (R)                     | DO1 (L)    | DO2 (f2/f1) | DO3 (Reset/enable) |                                  |                      |  |
| "1"<br>"0"                  | "0"<br>"1" | "0"         | "1"                | Enabled                          | No unit error        | The brake is controlled by the DRC inverter, setpoint f1 effective |
| "1"<br>"0"                  | "0"<br>"1" | "1"         | "1"                | Enabled                          | No unit error        | The brake is controlled by the DRC inverter, setpoint f2 effective |
| "1"                         | "1"        | "0"         | "1"                | No enable signal                 | No unit error        | The brake is controlled by the DRC inverter                        |
| "0"                         | "0"        | "0"         | "1"                | No enable signal                 | No unit error        | Brake applied  |
| "1"                         | "1"        | "1"         | "1"                | No enable signal                 | No unit error        | Brake applied  |
| "0"                         | "0"        | "1"         | "0"                | <b>Controller inhibit or STO</b> | <b>No unit error</b> | <b>Brake is released for manual operation</b>                      |
| All states possible         |            |             |                    | Error                            | Unit error           | Brake applied  |

#### Setpoint selection

Setpoints are selected depending on the AS-Interface bit DO2 "Speed f2/Speed f1".

| Enable status | AS-Interface bit | Easy mode (see chapter "Startup") | In conjunction with expert mode and deactivated controls f1/f2 (see chapter "Startup") |
|---------------|------------------|-----------------------------------|--|
| Enabled       | DO2 = "0"        | Setpoint potentiometer f1 active  | Setpoint n_f1 active (parameter 10096.35, factory set to 1500 rpm)                     |
| Enabled       | DO2 = "1"        | Setpoint switch f2 active         | Setpoint n_f2 active (parameter 10096.36, factory set to 200 rpm)                      |

#### LED display

The DRIVE LED flashes periodically when the brake has been released for manual operation.

**Operation**Releasing the brake without drive enable signal

---

**10.3.4 Functional description automatic mode (bus mode) with GLK31A double slave**

When switch S1/2 is set to "ON", it is possible to release the brake even without a drive enable signal.

**INFORMATION**



Brake release is controlled via the data bits of the A-slave, see chapter "Communication with AS-Interface double slave/function modules".

---



### 10.3.5 Functional description of local mode

If DIP switch S1/2 is set to "ON" and local mode is activated with DI04, the brake can be released under the following conditions by setting the signal at DI03:

| Terminal status   |   |               |                                    | Unit status                                | Error status             | Brake function   |
|---|---|---------------|------------------------------------|--|--------------------------|--|
| DI01<br>R  | DI02<br>L  | DI03<br>f1/f2 | DI04 auto-<br>matic/loc<br>al mode |  |                          |  |
| "1"<br>"0"  | "0"<br>"1"  | "0"           | "1"                                | Enabled                                    | No unit error            | The brake is controlled by the DRC inverter, setpoint f1 |
| "1"<br>"0"  | "0"<br>"1"  | "1"           | "1"                                | Enabled                                    | No unit error            | The brake is controlled by the DRC inverter, setpoint f2 |
| "1"<br>"0"  | "1"<br>"0"  | "0"           | "1"                                | No enable signal                           | No unit error            | The brake is controlled by the DRC inverter              |
| "0"<br>"1"  | "0"<br>"1"  | "0"           | "1"                                | No enable signal                           | No unit error            | Brake applied  |
| "1"<br>"0"  | "1"<br>"0"  | "1"           | "1"                                | No enable signal                           | No unit error            | The brake is controlled by the DRC inverter              |
| "0"<br>"1"  | "0"<br>"1"  | "1"           | "1"                                | <b>Control-<br/>ler inhibit<br/>or STO</b> | <b>No<br/>unit error</b> | <b>Brake is released for<br/>manual operation</b>        |
| All states possible   |   |               | "1"                                | Error                                      | Unit error               | Brake applied  |

#### Setpoint selection

Setpoints are selected depending on the AS-Interface bit DO2 "Speed f2/Speed f1".

| Enable status | AS-Inter-<br>face bit | Easy mode<br>(see chapter "Startup") | In conjunction with expert mode<br>and deactivated controls f1/f2<br>(see chapter "Startup") |
|---------------|-----------------------|--------------------------------------|--|
| Enabled       | DO2 = "0"             | Setpoint potentiometer f1 active     | Setpoint n_f1 active (parameter 10096.35, factory set to 1500 rpm)                           |
| Enabled       | DO2 = "1"             | Setpoint switch f2 active            | Setpoint n_f2 active (parameter 10096.36, factory set to 200 rpm)                            |

#### LED display

The DRIVE LED flashes periodically when the brake has been released for manual operation.

#### WARNING

Risk of injury if the drive starts up unintentionally.

Severe or fatal injuries.

- Before deactivating local mode, take measures to prevent the drive unit from starting up unintentionally, e.g. activating "STO".
- Take additional safety precautions depending on the application to avoid injury to people and damage to machinery.





## 11 Service

### NOTICE



Improper handling of DRC drive units may lead to damage.

Possible damage to property

- Note that only qualified personnel is permitted to repair drives from SEW-EURODRIVE.
- Consult the SEW-EURODRIVE Service department.

### 11.1 Malfunctions of the mechanical DRC drive

#### 11.1.1 Malfunctions of the DRC motor

| Malfunctions   | Possible cause               | Remedy  |
|--|------------------------------|---|
| Motor heats up excessively and trips an error  | Overload                     | Measure power, use larger motor or reduce load, if necessary, check travel profile  |
|  | Ambient temperature too high | Observe permitted temperature range   |
|  | Insufficient cooling         | Clean the drive   |
| Running noise on motor   | Bearing damage               | <ul style="list-style-type: none"> <li>• Consult SEW-EURODRIVE Service</li> <li>• Replace motor</li> </ul>  |
|  | Vibration of rotating parts  | Rectify cause, possible imbalance   |
| Oil leaks in the connection box or at the motor/flange gasket (only with gearmotors) | Internal seal defective      | <ul style="list-style-type: none"> <li>• Consult SEW-EURODRIVE</li> <li>• Have seal changed by SEW-EURODRIVE Service or a qualified technician trained by SEW-EURODRIVE.</li> </ul> |



11.1.2 Brake malfunctions

| Malfunctions           | Possible cause   | Remedy   |
|------------------------|--|--|
| Brake does not release | Electronics cover faulty   | <ul style="list-style-type: none"> <li>Consult SEW-EURODRIVE Service</li> <li>Replace electronics cover</li> </ul>   |
|                        | Max. permitted working air gap exceeded because brake lining worn down | <ul style="list-style-type: none"> <li>Consult SEW-EURODRIVE</li> <li>Have brake lining replaced by SEW-EURODRIVE Service or a qualified technician trained by SEW-EURODRIVE</li> </ul>  |
|                        | Brake defective  | <ul style="list-style-type: none"> <li>Consult SEW-EURODRIVE</li> <li>Have brake replaced by SEW-EURODRIVE Service or a qualified technician trained by SEW-EURODRIVE</li> </ul>         |
| Motor does not brake   | Brake lining worn  | <ul style="list-style-type: none"> <li>Consult SEW-EURODRIVE</li> <li>Have brake lining replaced by SEW-EURODRIVE Service or a qualified technician trained by SEW-EURODRIVE</li> </ul>  |
|                        | Incorrect braking torque.  | <ul style="list-style-type: none"> <li>Consult SEW-EURODRIVE</li> <li>Have braking torque changed by SEW-EURODRIVE Service or a qualified technician trained by SEW-EURODRIVE</li> </ul> |
|                        | Oil leakage (only with gearmotors)                                     | <ul style="list-style-type: none"> <li>Consult SEW-EURODRIVE</li> <li>Have leakage remedied by SEW-EURODRIVE Service or a qualified technician trained by SEW-EURODRIVE</li> </ul>       |

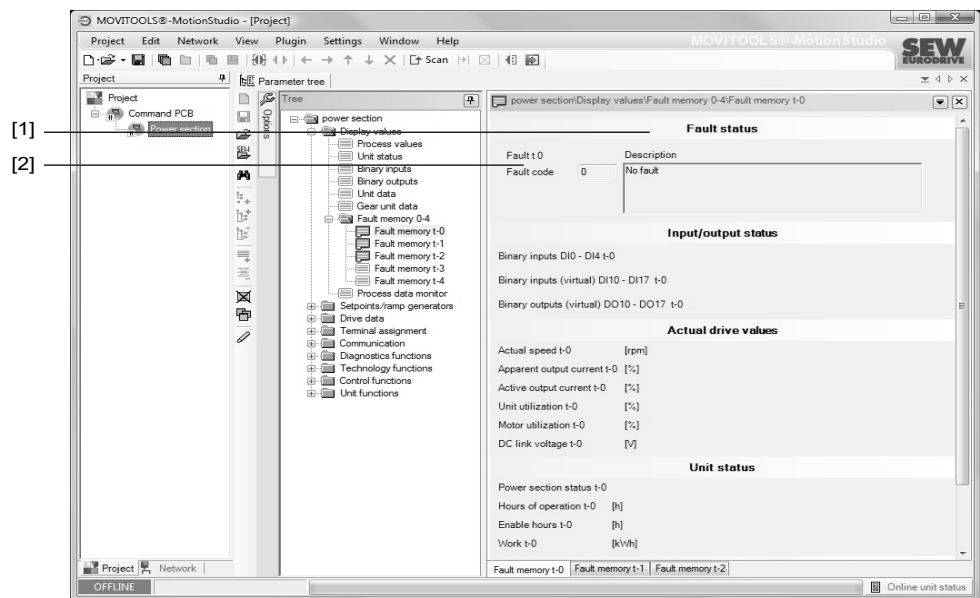


## 11.2 Evaluating error messages

### 11.2.1 MOVITOOLS® MotionStudio

The following section shows a sample evaluation of an error message in MOVITOOLS® MotionStudio:

1. In MOVITOOLS® MotionStudio, open the DRC parameter tree (power section). Observe chapter "Operation of MOVITOOLS® MotionStudio".
2. In the parameter tree, select the following node (here for error memory t-0, for example):
  - Power section parameters / display values / error memory 0-4 / error memory t-0 [2]
3. In the error status group [1], you can read out error messages:



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- [1] Error messages group  
 [2] Power section parameters / display values / error memory 0-4 / error memory t-0



### 11.3 Switch-off responses

There are 4 switch-off responses depending on the error; the inverter remains blocked in error status:

#### 11.3.1 Output stage inhibit (immediate switch-off)

The unit can no longer decelerate the drive; the output stage goes to high resistance in the event of a fault. The brake, if installed, is applied immediately.

#### 11.3.2 Stop

The drive is decelerated with stop ramp t13. When the stop speed is reached, the brake is applied immediately, if installed. The output stage then goes to high resistance.

#### 11.3.3 Emergency stop

The drive is decelerated using emergency stop ramp t14. When the stop speed is reached, the brake is applied immediately, if installed. The output stage then goes to high resistance.

#### 11.3.4 Standard stop

The drive is decelerated with the set standard ramp. When the stop speed is reached, the brake is applied immediately, if installed. The output stage then goes to high resistance.

### 11.4 Reset of error messages

An error message can be acknowledged:

- By switching the power off and on again
- Via the controller/PLC: Send "reset command"



#### **⚠ WARNING**

Eliminating the cause of the problem or performing a reset may result in the drive re-starting automatically.

Severe or fatal injuries.

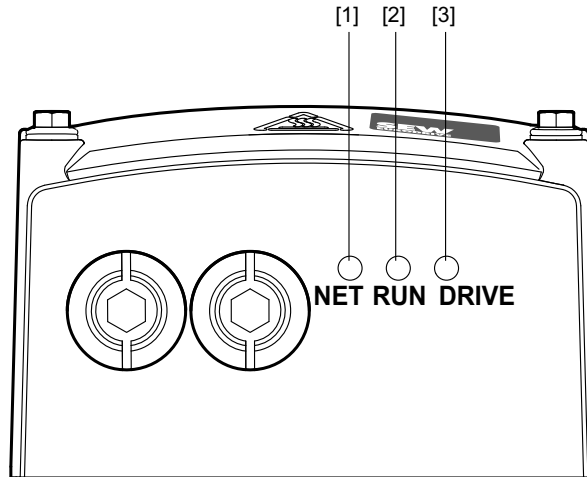
- Prevent the drive from starting up inadvertently, for example by activating STO.



## 11.5 Description of status and operating displays

### 11.5.1 LEDs

The following figure shows the DRC LEDs:



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- [1] NET LED
- [2] RUN LED
- [3] "DRIVE" status LED

### 11.5.2 "NET" LED

| "NET" LED in conjunction with binary slave GLK30A |                    |                     |  |
|---|--------------------|---------------------|--|
| LED color   | LED status         | Operating state     | Description  |
| -   | Off                | Not ready           | No 24 V supply at AS-Interface connection  |
| Green   | On                 | Ready for operation | <ul style="list-style-type: none"> <li>• Normal operation</li> <li>• 24 V supply at AS-Interface connection OK</li> <li>• Communication established</li> </ul> |
| Red   | On                 | Not ready           | Communication interrupted or slave address set to 0  |
| Red/green   | Flashing regularly | Not ready           | Communication interrupted or peripheral error  |
| Yellow  | On                 | Ready for operation | Manual mode/local mode active  |

| "NET" LED in conjunction with double slave GLK31A |                    |                     |  |
|---|--------------------|---------------------|--|
| LED color   | LED status         | Operating state     | Description  |
| -   | Off                | Not ready           | No 24 V supply at AS-Interface connection  |
| Green   | On                 | Ready for operation | <ul style="list-style-type: none"> <li>• Normal operation</li> <li>• 24 V supply at AS-Interface connection OK</li> <li>• Communication established</li> </ul> |
| Red   | On                 | Not ready           | Communication error at A- or B-slave   |
| Red   | Flashing regularly | Not ready           | Protocol error, no CTT3 communication with A-slave or no CTT2 communication with B-slave   |
| Yellow/red  | Flashing regularly | Not ready           | Slave address = 0  |
| Red/green   | Flashing regularly | Not ready           | Peripheral error at A- or B-slave. There is no communication between GLK31A and the DRC inverter.  |
| Yellow  | On                 | Ready for operation | Manual mode/local mode active  |





### 11.5.3 "RUN" LED

| RUN LED      |                         |                          |  |
|--------------|-------------------------|--------------------------|--|
| LED color    | LED status              | Operating state          | Description  |
| -            | Off                     | Not ready                | No line voltage<br>→ Check supply cable and line voltage for interruption.   |
| Yellow       | Flashing steadily       | Not ready                | Initialization phase   |
| Green        | Flashing steadily       | Not ready                | Power section parameters are being loaded or firmware is being updated   |
| Green        | Steady light            | Ready for operation      | System ready   |
| Yellow       | Steady light            | Ready but unit inhibited | "STO" signal detected, safe stop<br>→ Check voltage at STO terminal  |
| Green/yellow | With alternating colors | Ready but timeout        | Cyclical data exchange – communication interrupted (error 47 or 67).<br>→ No SBus/SNI connection between DRC inverter and controller. Check and establish connection, especially terminating resistor.<br>→ EMC influence Check shielding of data lines and improve, if necessary.<br>→ Protocol time between the individual telegrams is longer than the set time (timeout interval). Shorten telegram cycle. |
| Red          | Steady light            | Error                    | Possible errors:<br><ul style="list-style-type: none"> <li>• CPU error (17, 37)</li> <li>• NV memory error (25)</li> <li>• Error while transmitting parameters (97)</li> <li>• IPOS error (10)</li> <li>• Boot synchronization error (40, 41)</li> <li>• Safety error (119)</li> </ul> → More detailed diagnostic information via Drive LED.   |

### 11.5.4 "DRIVE" status LED

| DRIVE LED    |   |   |  |
|--------------|---|---|--|
| LED color    | LED status                                      | Operating state   | Description  |
| -            | Off   | Not ready   | No line voltage  |
| Yellow       | Flashing steadily                               | Not ready   | Initialization phase or line voltage not OK.   |
| Yellow       | Flashing briefly at regular intervals           | Ready for operation   | <b>In conjunction with mechatronic MOVIGEAR® drive unit:</b><br>Deactivating DynaStop® without drive enable active<br><br><b>In conjunction with DRC electronic motor:</b><br>Brake release without drive enable signal active |
| Yellow       | Steady light                                    | Ready but unit inhibited                                    | Line voltage OK, output stage inhibited  |
| Yellow       | 2 x flashing, pause                             | Ready but manual mode/local mode without unit enable signal | Line voltage OK  |
| Green/yellow | With alternating colors                         | Ready but timeout   | Communication interrupted during cyclical data exchange (error 43, 46, or 47)  |
| Green        | Steady light                                    | Unit enabled  | Motor in operation   |
| Green        | Flashing evenly, fast                           | Current limit active  | Drive operating at current limit   |
| Green        | Flashing steadily                               | Ready for operation   | Line voltage OK but no enable signal. Output stage is energized.   |
| Green/red    | With alternating colors<br>(2 x green, 2 x red) | Ready for operation   | Displayed error is pending. Output stage is energized.   |
| Yellow/red   | With alternating colors<br>(2 x green, 2 x red) | Ready for operation   | Displayed error is pending. Output stage inhibited.  |



## Service

### Description of status and operating displays

| DRIVE LED |                                |                       |  |
|-----------|--------------------------------|-----------------------|--|
| LED color | LED status                     | Operating state       | Description  |
| Red       | Steady light                   | Fault 40              | Boot synchronization error   |
|           |                                | Fault 41              | Watchdog option error  |
|           |                                | Fault 116             | MOVI-PLC® timeout  |
|           |                                | Fault 119             | Safety error   |
| Red       | Flashing slowly                | Fault 08              | Speed monitoring error   |
|           |                                | Fault 26              | External terminal error  |
|           |                                | Fault 30              | Emergency stop timeout error   |
|           |                                | Fault 15              | Encoder error  |
|           |                                | Fault 16              | Incorrect startup  |
|           |                                | Fault 45              | Initialization error<br>Incorrect motor/inverter assignment                    |
|           |                                | Fault 50              | Internal voltage supply too low  |
|           |                                | Errors 17, 18, 37, 53 | CPU error  |
|           |                                | Fault 25              | NV memory error  |
|           |                                | Error 27, 29          | "Limit switch" error   |
|           |                                | Fault 39              | "Reference travel" error   |
|           |                                | Fault 42              | Positioning lag error  |
|           |                                | Fault 94              | Checksum error   |
|           |                                | Fault 97              | Parameter transmission error   |
|           |                                | Errors 10, 32, 77     | IPOS error   |
| Fault 123 | Positioning interruption error |                       |  |
| Red       | 2x flashing, break             | Fault 07              | DC link voltage too high   |
| Red       | 3x flashing, break             | Fault 01              | Overcurrent in output stage  |
|           |                                | Fault 11              | Overtemperature of heat sink or electronics                                    |
| Red       | 4x flashing, break             | Fault 31              | TF trip  |
|           |                                | Fault 44              | Ixt utilization/UL monitoring  |
|           |                                | Fault 52              | Machine control error  |
| Red       | 5x flashing, break             | Fault 89              | <b>Only in conjunction with DRC electronic motor:</b><br>Brake overtemperature |
| Red       | 6x flashing, break             | Fault 06              | Line phase failure   |



## 11.6 Error table

| Error code      | Description                                 | Switch-off response           | Cause/solution   |
|-----------------|---|-------------------------------|--|
| <b>Fault 01</b> | Overcurrent in output stage                 | Output stage inhibit / locked | Short circuit on inverter output.<br>→ Check the connection between the inverter output and the motor as well as the motor winding for short circuits.<br>Reset error by switching the unit off or via error reset function.   |
| <b>Fault 06</b> | Line phase failure                          | Parameterizable               | Check the supply system cable for phase failure.<br>Reset error by switching the unit off or via error reset function  |
| <b>Fault 07</b> | DC link voltage too high                    | Output stage inhibit/waiting  | <ul style="list-style-type: none"> <li>Ramp time too short → Extend ramp time</li> <li>Faulty braking resistor connection → Check braking resistor connection and correct it, if necessary</li> <li>Invalid voltage range of the supply input voltage → Check supply input voltage for permitted voltage range</li> </ul> Reset error by switching the unit off or via error reset function. |
| <b>Fault 08</b> | Speed monitoring error                      | Output stage inhibit/waiting  | Speed monitoring has tripped, load on the drive too high<br>→ Reduce the load on the drive<br>→ Extend the n-monitoring delay time<br>→ Check current and torque limits<br>→ Deactivate speed monitoring<br>Reset error by switching the unit off or via error reset function.   |
| <b>Fault 10</b> | IPOS error                                  | Output stage inhibit / locked | Faulty IPOS program (e.g. invalid command)<br>→ Correct program<br>Reset error by switching the unit off or via error reset function.  |
| <b>Fault 11</b> | Overtemperature of heat sink or electronics | Emergency stop/waiting        | → Clean the heat sink<br>→ Lower the ambient temperature<br>→ Prevent heat build-up<br>→ Reduce the load on the drive<br>Reset error by switching the unit off or via error reset function.  |
| <b>Fault 15</b> | Encoder error                               | Output stage inhibit / locked | <ul style="list-style-type: none"> <li>Loose encoder plug connection → check encoder plug connector on connection board</li> <li>Encoder defective → contact SEW Service</li> </ul>  |
| <b>Fault 16</b> | Incorrect startup                           | Output stage inhibit / locked | Encoder not calibrated<br>→ Contact SEW Service  |
| <b>Fault 17</b> | CPU error                                   | Output stage inhibit / locked | Reset error by switching the unit off or via error reset function.<br>Consult SEW Service if the error recurs.   |
| <b>Fault 18</b> | CPU error                                   | Output stage inhibit / locked | Reset error by switching the unit off or via error reset function.<br>Consult SEW Service if the error recurs.   |
| <b>Fault 25</b> | NV memory error                             | Output stage inhibit / locked | Error while accessing NV memory<br>Set the delivery status and re-parameterize the unit.<br>Consult SEW Service if the error re-occurs.  |
| <b>Fault 26</b> | External terminal error                     | Parameterizable               | External error signal read-in at programmable terminal<br>→ Rectify external error<br>→ Reset error by switching the unit off or via error reset function.   |
| <b>Fault 27</b> | "Limit switch" error                        | Output stage inhibit / locked | <ul style="list-style-type: none"> <li>A limit switch was reached in positioning mode → Check travel range</li> <li>Wire breakage / both limit switches missing or inverted → Check wiring</li> </ul>  |
| <b>Fault 29</b> | "Limit switch" error                        | Emergency stop/waiting        | <ul style="list-style-type: none"> <li>A limit switch was reached in positioning mode → Check travel range</li> <li>Wire breakage / both limit switches missing or inverted → Check wiring</li> </ul>  |
| <b>Fault 30</b> | Emergency stop timeout error                | Output stage inhibit/waiting  | <ul style="list-style-type: none"> <li>Emergency stop ramp too short → Extend emergency stop ramp</li> <li>Drive overloaded → Check project planning</li> </ul>  |



| Error code      | Description  | Switch-off response           | Cause/solution   |
|-----------------|--|-------------------------------|--|
| <b>Fault 31</b> | TF trip  | Parameterizable               | Thermal overload of the motor or short circuit/wire breakage of the temperature sensor.<br>→ Lower the ambient temperature<br>→ Prevent heat build-up<br>→ Reduce the load on the drive<br>Leave the motor to cool for at least one minute before you reset the error by switching off the unit or via error reset function.<br>Consult SEW Service if the error recurs.   |
| <b>Fault 32</b> | IPOS error   | Output stage inhibit / locked | Faulty IPOS program (e.g. invalid command)<br>→ Correct program<br>Reset error by switching the unit off or via error reset function.  |
| <b>Fault 37</b> | CPU error  | Output stage inhibit / locked | Reset error by switching the unit off or via error reset function.<br>Consult SEW Service if the error recurs.   |
| <b>Fault 39</b> | "Reference travel" error   | Output stage inhibit / locked | The reference cam is missing or does not switch<br>→ Check reference cam<br>Limit switches are connected incorrectly<br>→ Check limit switch connection<br>Reference travel type was changed during reference travel<br>→ Check reference travel type setting and required parameters.   |
| <b>Fault 40</b> | Boot synchronization error   | Output stage inhibit / locked | Command PCB defective or connection to command PCB interrupted.<br>→ Contact SEW Service   |
| <b>Fault 41</b> | Watchdog option error  | Output stage inhibit / locked | Command PCB defective or connection to command PCB interrupted.<br>→ Contact SEW Service<br>Option defective or connection to option interrupted.<br>→ Check whether an option is installed<br>→ Replace the option  |
| <b>Fault 42</b> | Lag error positioning  | Output stage inhibit/waiting  | <ul style="list-style-type: none"> <li>Emergency stop ramp too short → Extend emergency stop ramp</li> <li>P-component of positioning controller too small → Increase P-component</li> <li>Value of lag error tolerance too small<br/>→ Increase lag error tolerance<br/>→ Check whether mechanical components can move freely</li> </ul>  |
| <b>Fault 43</b> | Timeout – manual operation via any interface                             | Parameterizable               | <ul style="list-style-type: none"> <li>Connection between unit and PC interrupted → Check and re-establish connection.</li> </ul>  |
| <b>Fault 44</b> | Ixt utilization / UL monitoring  | Output stage inhibit/waiting  | Output stage overload<br>→ Reduce the load on the drive<br>Reset error by switching the unit off or via error reset function.  |
| <b>Fault 45</b> | Initialization error<br>Motor-inverter assignment incorrect              | Output stage inhibit / locked | <ul style="list-style-type: none"> <li>Hardware defective → Contact SEW Service.</li> <li>Incorrect motor/inverter assignment → Replace electronics.</li> </ul>  |
| <b>Fault 46</b> | Timeout – internal SBus connection between command PCB and power section | Emergency stop/waiting        | <ul style="list-style-type: none"> <li>Contact SEW Service.</li> </ul>   |
| <b>Fault 47</b> | Communication interrupted during cyclical data exchange.                 | Parameterizable               | <p><b>Power section error</b></p> <ul style="list-style-type: none"> <li>No SBus connection between DRC inverter and controller. Check and establish connection, especially terminating resistor.</li> <li>EMC influence Check shielding of data lines and improve, if necessary.</li> <li>Protocol period between the individual telegrams is longer than the set time (timeout time). Shorten telegram cycle.</li> </ul> <p><b>Command PCB error</b></p> <ul style="list-style-type: none"> <li>Connection to AS-Interface master interrupted → Check and re-establish connection.</li> <li>Connection between AS-Interface option and command PCB interrupted → Contact SEW Service.</li> </ul> |
| <b>Fault 50</b> | Internal voltage supply too low  | Output stage inhibit / locked | <ul style="list-style-type: none"> <li>Hardware defective → Contact SEW Service.</li> </ul>  |



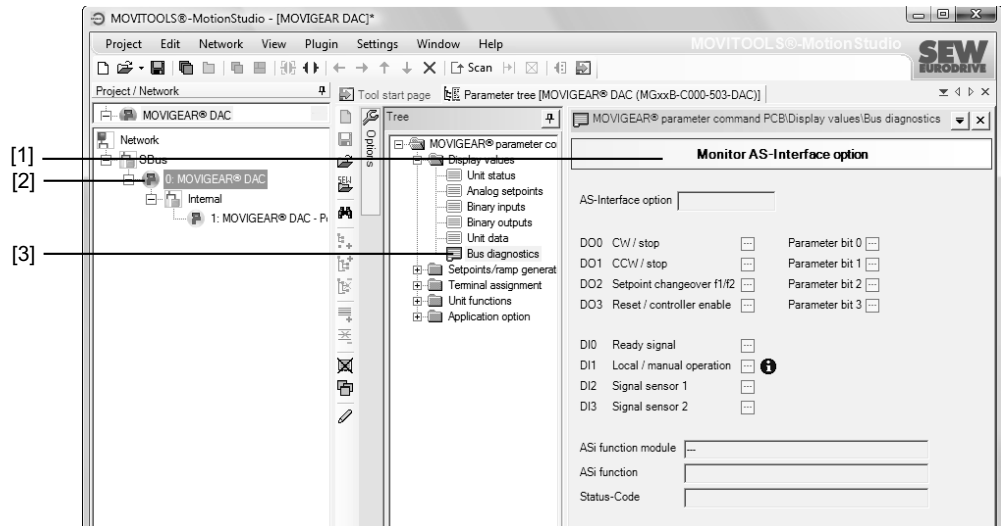
| Error code       | Description  | Switch-off response           | Cause/solution  |
|------------------|--|-------------------------------|---|
| <b>Fault 52</b>  | Machine control error  | Output stage inhibit / locked | <ul style="list-style-type: none"> <li>• Operation without encoder a speed that is too low → Increase speed</li> <li>• Load too high in controlled operation → Reduce load on the drive</li> </ul> Reset error by switching the unit off or via error reset function.<br>Consult SEW Service if the error recurs. |
| <b>Fault 53</b>  | CPU error  | Output stage inhibit / locked | Reset error by switching the unit off or via error reset function.<br>Consult SEW Service if the error recurs.  |
| <b>Fault 77</b>  | IPOS error   | Output stage inhibit / locked | Faulty IPOS program (e.g. invalid command)<br>→ Correct program<br>Reset error by switching the unit off or via error reset function.   |
| <b>Fault 89</b>  | <b>Only in conjunction with DRC electronic motor:</b><br>Brake overtemperature | Output stage inhibit / locked | Brake coil not sufficient to dissipate the regenerative energy.<br>→ Use braking resistor   |
|                  |  |                               | Wrong size of braking resistor selected.<br>→ Use larger braking resistor   |
| <b>Fault 94</b>  | Checksum error   | Output stage inhibit / locked | NV memory defective.<br>→ Contact SEW Service   |
| <b>Fault 97</b>  | Parameter transmission error   | Output stage inhibit / locked | Error during data transmission<br>→ Repeat copying process<br>Set the delivery status and re-parameterize the unit.   |
| <b>Fault 116</b> | MOVI-PLC® timeout  | Emergency stop/waiting        | Timeout in communication with higher-level controller   |
| <b>Fault 119</b> | Safety error   | Output stage inhibit / locked | Safety hardware faulty<br>→ Contact SEW Service   |
| <b>Fault 123</b> | Positioning interruption error   | Stop / waiting                | Target monitoring when interrupted positioning process is resumed.<br>Target would be overrun.<br>→ Perform positioning process without interruption until it is complete.  |



### 11.7 AS-Interface bus monitor

The following section shows a sample evaluation of an error message in MOVITOOLS® MotionStudio:

1. In MOVITOOLS® MotionStudio, open the DRC parameter tree of the command BCB [1]. Observe chapter "Operation of MOVITOOLS® MotionStudio".
2. Select the following node in the parameter tree
  - Command PCB parameters / display values / bus diagnostics [3]



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The "Monitor AS-Interface Option" group [1] serves as bus monitor of the AS-Interface and shows the transmission of AS-Interface bits from and to the DRC inverter.

| AS-Interface option monitor     |                             |                            |   |                 |
|---------------------------------|-----------------------------|----------------------------|---|-----------------|
| Index                           | Parameter name              | GLK30A meaning             | GLK31A meaning                            |                 |
| 10095.39                        | AS-Interface option         | GLK30A                     | GLK31A                                    |                 |
| <b>AS-Interface output bits</b> |                             |                            |   |                 |
| 9756.1, bit 0                   | AS-Interface output bit DO0 | CW operation/stop          | Depending on the selected function module |                 |
| 9756.1, bit 1                   | AS-Interface output bit DO1 | CCW operation/stop         |   |                 |
| 9756.1, bit 2                   | AS-Interface output bit DO2 | Speed f2/speed f1          |   |                 |
| 9756.1, bit 3                   | AS-Interface output bit DO3 | Reset/controller enable    |   |                 |
| 9756.1, bit 8                   | AS-Interface output bit PO0 | Parameter bit 1            |   |                 |
| 9756.1, bit 9                   | AS-Interface output bit PO1 | Parameter bit 2            |   |                 |
| 9756.1, bit 10                  | AS-Interface output bit PO2 | Parameter bit 3            |   |                 |
| 9756.1, bit 11                  | AS-Interface output bit PO3 | Parameter bit 4            |   |                 |
| <b>AS-Interface input bits</b>  |                             |                            |   |                 |
| 9866.1, bit 0                   | AS-Interface input bit DI0  | Ready signal               | Depending on the selected function module |                 |
| 9866.1, bit 1                   | AS-Interface input bit DI1  | Automatic/manual mode      |   |                 |
| 9756.1, Bit 6 <sup>1)</sup>     | 9866.1, Bit 2 <sup>2)</sup> | AS-Interface input bit DI2 |   | Sensor output 1 |
| 9756.1, Bit 7 <sup>1)</sup>     | 9866.1, Bit 3 <sup>2)</sup> | AS-Interface input bit DI3 |   | Sensor output 2 |

- 1) GLK30A
- 2) GLK31A



## 11.8 Unit replacement



### ⚠ WARNING

Electric shock caused by dangerous voltages in the connection box. Dangerous voltages may still be present for up to 5 minutes after disconnection from the power supply system.

Severe or fatal injuries.

- Before removing the electronics cover, switch off the power to the DRC drive units using a suitable external disconnecting device.
- Secure the drive unit against unintended re-connection to the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least 5 minutes before removing the electronics cover.

### 11.8.1 Replacing the electronics cover



### NOTICE

Unit error 45 or 94 due to power disconnection during the initialization phase.

Possible damage to property.

- After replacing the cover and switching on the power supply, wait at least for 15 s before disconnecting the drive from the supply system again.

1. Observe the safety notes!
2. Remove the screws and take off the electronics cover from the connection box.
3. Compare the data on the nameplate of the previous electronics cover with the data on the nameplate of the new electronics cover.



### INFORMATION

Always replace the electronics cover with an electronics cover with the same part number.

4. Set all the controls (e.g. DIP switches, see "Startup" chapter) on the new electronics cover in the same way as the controls of the previous electronics cover.
5. Place the new electronics cover onto the connection box and screw it on.
6. Supply voltage to the drive.
7. Check the functions of the new electronics cover.



#### 11.8.2 Replacing the motor

1. Observe the safety notes!
2. When you replace the motor including the electronics cover, you also have to carry out the steps described in chapter "Replacing the electronics cover".
3. Disassemble the motor. Also observe chapter "Mechanical Installation" and the operating instructions of the gear unit, if applicable.
4. Compare the data on the nameplate of the old motor with the nameplate data of the new motor..



#### INFORMATION

Always replace the motor with a motor that has the same properties.

5. Mount the motor. Also observe chapter "Mechanical Installation" and the operating instructions of the gear unit, if applicable.
6. Perform the installation according to the "Electrical Installation" chapter.
7. Place the electronics cover onto the connection box and screw it on.
8. Supply voltage to the drive.
9. Parameters that can be changed are saved in the motor (see "Parameters" chapter). This means you have to change these parameters again when you replace the motor.



#### INFORMATION

If you only replace the electronics cover, the parameter changes are preserved.

10. Check the functions of the new motor.

### 11.9 SEW-EURODRIVE Service

#### 11.9.1 Sending in a unit for repair

If a fault cannot be rectified, please contact the SEW-EURODRIVE Electronics Service (see "Address List").

When you contact the SEW Electronics Service, always quote the digits on the status label so that our service personnel can assist you more effectively.

#### Provide the following information when sending the unit in for repair:

- Serial number (see nameplate)
- Type designation
- Unit variant
- Short description of the application (application, control mode, etc.)
- Nature of the fault
- Accompanying circumstances
- Your own presumptions as to what has happened
- Any unusual events preceding the problem, etc.





## 11.10 Shutdown

To shut down the DRC drive unit, de-energize it using appropriate measures.



### **⚠ WARNING**

Electric shock due to charged capacitors.

Severe or fatal injuries.

- Before removing the electronics cover, switch off the power to the DRC drive units using a suitable external disconnecting device.
- Secure the drive unit against unintended re-connection to the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least 5 minutes before removing the electronics cover.

## 11.11 Storage

Observe the following instructions when shutting down or storing DRC drive units:

- If you shut down and store the DRC drive unit for a longer period, you must close open cable entries and cover contacts with protective caps.
- Make sure that the unit is not subject to mechanical impact during storage.

Observe the notes on storage temperature in the "Technical Data" chapter.

## 11.12 Extended storage

### 11.12.1 Electronics

If the unit is stored for a long time, connect it to the supply system voltage for at least 5 minutes every 2 years. Otherwise, the unit's service life may be reduced.

*Procedure in case maintenance has been neglected*

Electrolytic capacitors are used in the inverters. They are subject to aging effects when de-energized. This effect can damage the capacitors if the unit is connected using the nominal voltage after a longer period of storage. If you have not performed maintenance regularly, SEW-EURODRIVE recommends that you increase the line voltage slowly up to the maximum voltage. This can be done, for example, by using a variable transformer for which the output voltage has been set according to the following overview. After you have completed the regeneration process, the unit can be used immediately or stored again for an extended period with maintenance.

The following stages are recommended:

AC 400/500 V units:

- Stage 1: AC 0 V to AC 350 V within a few seconds
- Stage 2: AC 350 V for 15 minutes
- Stage 3: AC 420 V for 15 minutes
- Stage 4: AC 500 V for 1 hour



### **11.13 Disposal**

Observe the applicable regulations: Dispose of the following materials in accordance with the regulations in force:

- Aluminum scrap
  - Housing parts
- Steel scrap:
  - Shafts
  - Rolling bearing
  - Flange rings
- Electronics scrap (circuit boards)
- Plastic (housing), sheet metal, copper, etc.



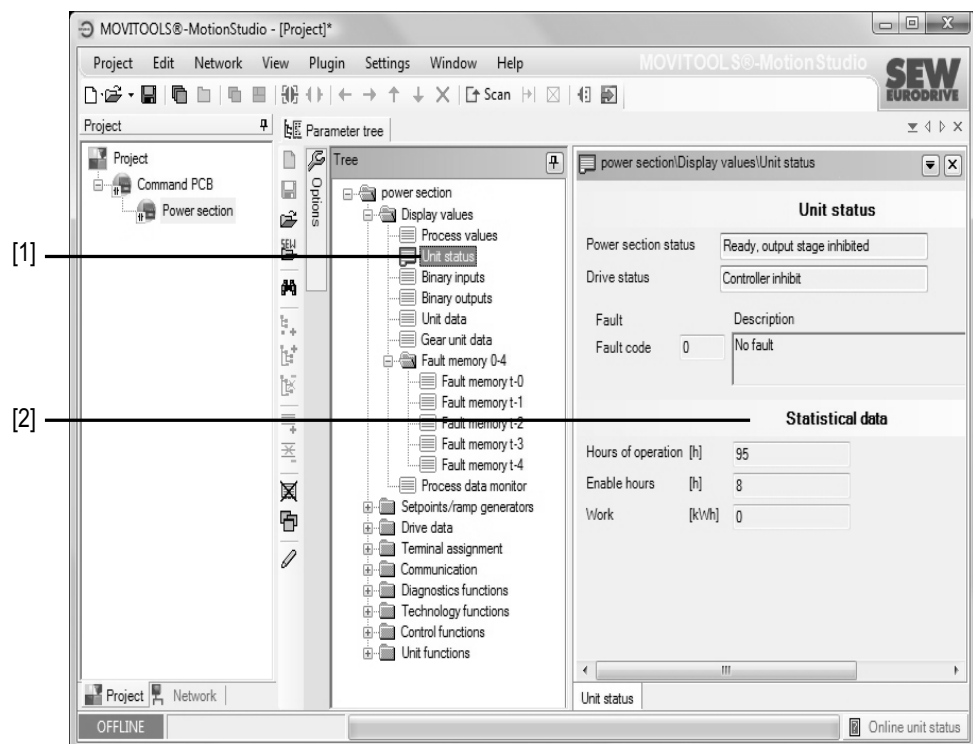
## 12 Inspection and maintenance

### 12.1 Determining the operating hours

#### 12.1.1 About MOVITOOLS® MotionStudio

To facilitate inspection and maintenance planning, you can read out the performed operating hours of DRC drive units. Proceed as follows to determine the performed hours of operation:

1. In MOVITOOLS® MotionStudio, open the DRC parameter tree. See chapter "Configuration and diagnostics".
2. In the parameter tree, select the node "DRC power section parameters / display values / unit status" [1].
3. In the statistics data group [2], you can read out the performed hours of operation:



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- [1] Power section parameters / display values / unit status  
[2] Statistics data group



## 12.2 Inspection and maintenance intervals

### 12.2.1 Motor

The following table shows the inspection intervals for DRC motors:

| Time interval   | What to do?  | Who is permitted to perform the work?                                 |
|---|--|---|
| Every 3,000 hours of operation, at least every 6 months                             | Check running noise for possible bearing damage  | Qualified personnel at customer site                                  |
|   | In the event of a bearing damage: Have the bearing replaced by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE.  | SEW-EURODRIVE Service<br>Qualified personnel trained by SEW-EURODRIVE |
| Recommendation:<br>Every 10,000 hours of operation <sup>1)</sup>                    | Have the motor inspected by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE.   | SEW-EURODRIVE Service   |
|   |  | Qualified personnel trained by SEW-EURODRIVE                          |
| When the electronics cover is removed after an operating period of $\geq 6$ months. | When the electronics cover is opened after an operating period of $\geq 6$ months, the gasket between the connection box and the electronics cover must always be replaced. The 6-month period can be shortened by harsh ambient/operating conditions, e.g. cleaning with aggressive chemicals or frequent temperature fluctuations. | Qualified personnel at customer site                                  |
| Each time the electronics cover is removed  | Visual inspection of the gasket between connection box and electronics cover<br>Replace the gasket if it is damaged or separating from the connection box.   | Qualified personnel at customer site                                  |
| Varying (depending on external factors)   | Touch up or renew the surface protection/anticorrosion coating.  | Qualified personnel at customer site                                  |

1) Wear times are influenced by many factors. The system manufacturer must calculate the required inspection/maintenance intervals individually in accordance with the project planning documents.



12.2.2 Brake

The following table shows the inspection intervals for DRC brakes:

| If used as a holding brake: |  |  |
|-----------------------------|--|--|
| Time interval               | What to do?  | Who is permitted to perform the work?        |
| Every 2 years <sup>1)</sup> | Have the brake inspected by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE. | SEW-EURODRIVE Service                        |
|                             |  | Qualified personnel trained by SEW-EURODRIVE |

1) Wear times are influenced by many factors. The system manufacturer must calculate the required inspection/maintenance intervals individually in accordance with the project planning documents.

| If used as a holding brake with braking work done in case of emergency braking operations |      |  |                   |  |
|---|------|--|-------------------|--|
| Time interval   |      | What to do?  |                   | Who is permitted to perform the work?        |
| Every 3,000 hours of operation, every 2 years at the latest <sup>1)</sup>                 |      | Have the brake inspected by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE. |                   | SEW-EURODRIVE Service                        |
|   |      |  |                   | Qualified personnel trained by SEW-EURODRIVE |
| After this much braking work has been done: <sup>1)</sup>                                 |      | Have wear parts replaced by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE. |                   | SEW-EURODRIVE Service                        |
| Brake   | DRC  | Braking torque [Nm]  | Braking work [MJ] |  |
| BY1C  | DRC1 | 7 / 2.5  | 40                |  |
| BY2C  | DRC2 | 14 / 7   | 65                |  |
| BY4C  | DRC3 | 28 / 14  | 85                |  |
| BY4C  | DRC4 | 40   | 55                |  |
| BY4C  | DRC4 | 20   | 85                | Qualified personnel trained by SEW-EURODRIVE |

1) Wear times are influenced by many factors. The system manufacturer must calculate the required inspection/maintenance intervals individually in accordance with the project planning documents.



### 12.3 Inspection and maintenance work

#### 12.3.1 Preliminary work regarding inspection and maintenance

Observe the following notes before you start with inspection/maintenance work on the DRC motor.



#### **⚠ WARNING**

Danger of falling hoist.

Severe or fatal injuries.

- Secure or lower the hoist before you carry out any work (risk of falling).



#### **⚠ WARNING**

Risk of injury if the drive starts up unintentionally.

Electric shock caused by dangerous voltages in the connection box. Dangerous voltages may still be present for up to 5 minutes after disconnection from the power supply system.

Severe or fatal injuries.

- Before removing the electronics cover, de-energize the DRC drive units via a suitable external disconnection device.
- Secure the drive unit against unintended re-connection of the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least 5 minutes before removing the electronics cover.



#### **⚠ WARNING**

Burns caused by hot surfaces.

Severe injuries.

- Let the units cool down before touching them.



#### **NOTICE**

Damage to the DRC drive unit

Potential damage to property

- Note that only the SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE is allowed to carry out maintenance work on the motor or the brake.



### 12.3.2 Replacing the output oil seal

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. Remove the DRC drive unit from the system.
3. **IMPORTANT:** Oil seals with a temperature below 0 °C may get damaged during installation.  
Potential damage to property.
  - Store oil seals at ambient temperatures over 0 °C.
  - Warm up the oil seals before you install them, if necessary.
4. When changing the oil seal, ensure that there is a sufficient grease reservoir between the dust lip and protective lip, depending on the type of gear unit.
5. If you use double oil seals, fill one-third of the gap with grease.
6. Do not install the oil seal on the same track.
7. Touch up or renew the surface protection/anticorrosion coating.

### 12.3.3 Painting the drive unit

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. **IMPORTANT:** Breather valves and oil seals may be damaged during painting or re-painting.  
Potential damage to property.
  - Clean the surface of the drive unit and make sure it is free from grease.
  - Thoroughly cover the breather valves and sealing lip of the oil seals with strips prior to painting.
  - Remove the strips after painting.

### 12.3.4 Cleaning the drive unit

Observe the notes in chapter "Preliminary work for inspection and maintenance".

Excessive dirt, dust or shavings can have a negative impact on the function of synchronous motors; in extreme cases, these factors can cause the motor to break down.

For this reason, you must clean the drives at regular intervals (after one year at the latest) to ensure a sufficiently large area for heat dissipation.

Insufficient heat dissipation can have unwanted consequences. The bearing service life is reduced through operation at impermissibly high temperatures (bearing grease degrades).

### 12.3.5 Connection cables

Observe the notes in chapter "Preliminary work for inspection and maintenance".

Check the connection cable for damage at regular intervals and replace if necessary.



#### 12.3.6 Replacing the gasket between connection box and electronics cover

*Spare part kit*

The gasket is available as spare part from SEW-EURODRIVE.

| Contents | Part number  |  |
|----------|--|--|
|          | DRC1-... electronic motor<br>DRC2-... electronic motor | DRC3-... electronic motor<br>DRC4-... electronic motor |
| 1 pcs    | 2 821 162 6  | 2 821 165 0  |
| 10 pcs   | 2 821 163 4  | 2 821 166 9  |
| 50 pcs   | 2 821 164 2  | 2 821 167 7  |

*Steps*

#### NOTICE

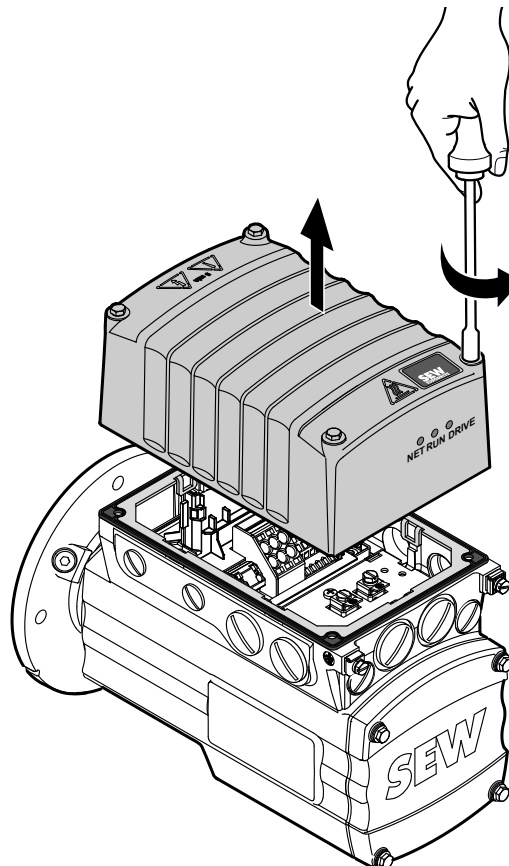
Loss of the guaranteed degree of protection.

Possible damage to property.

- When the electronics cover is removed from the connection box, you have to protect it from humidity, dust or foreign particles.
- Make sure that the electronics cover is mounted properly.



1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. Loosen the screws of the electronics cover and remove it.



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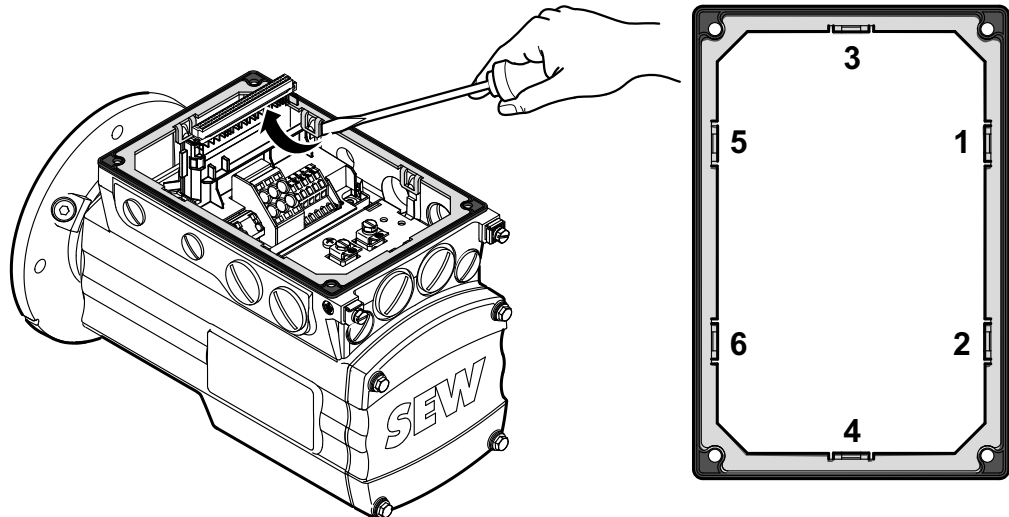


3. **NOTICE** Loss of the guaranteed degree of protection.

Possible damage to property.

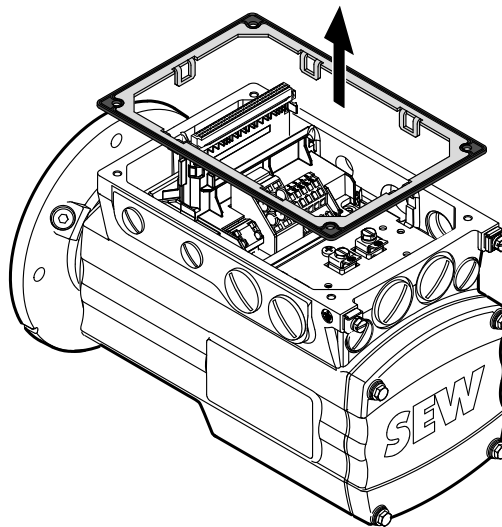
- Make sure not to damage the sealing surfaces when removing the gasket.

4. Loosen the used gasket by levering it off the retaining cams. This becomes easier when you keep to the sequence shown in the figure below.



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5. Remove the used gasket completely from the connection box.



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## Inspection and maintenance

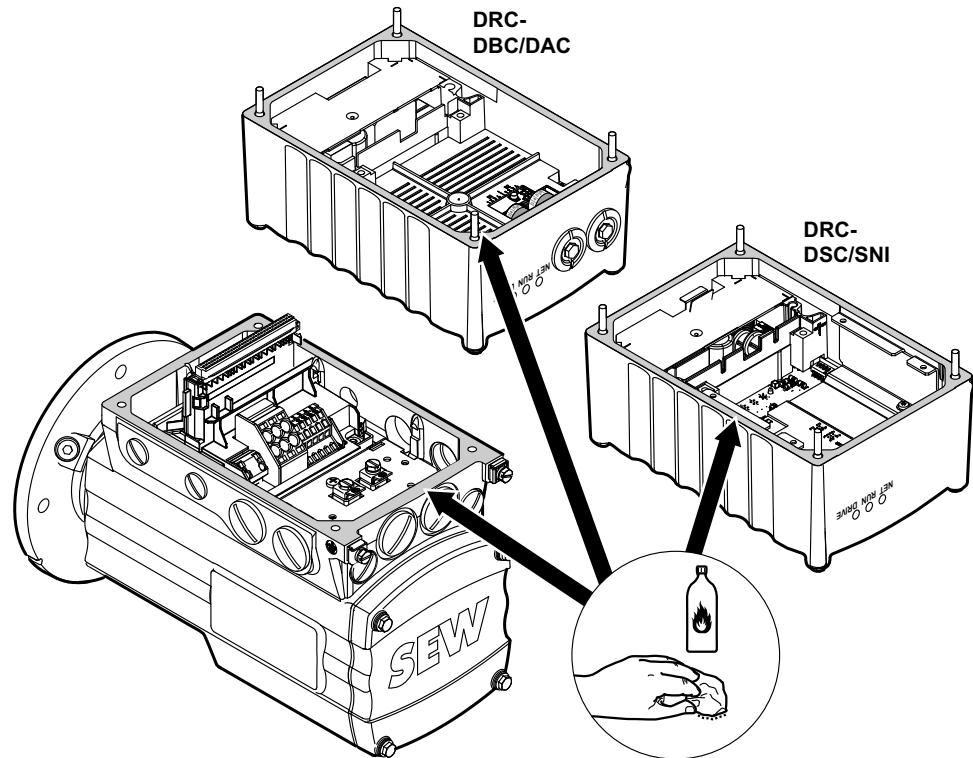
### Inspection and maintenance work

6. **▲ CAUTION:** Risk of injury due to sharp edges.

Cuts.

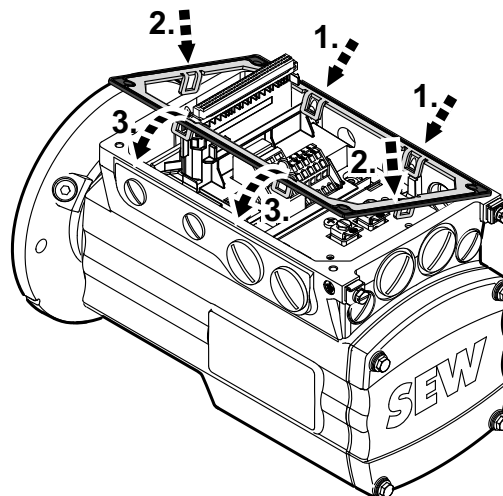
- Use protective gloves for cleaning.
- Work may only be carried out by qualified personnel.

Clean the sealing surfaces of the connection box and the electronics cover carefully.



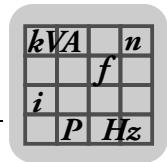
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7. Place the new gasket on the connection box and fix it in position with the retaining cams. This becomes easier when you keep to the sequence shown in the figure below.



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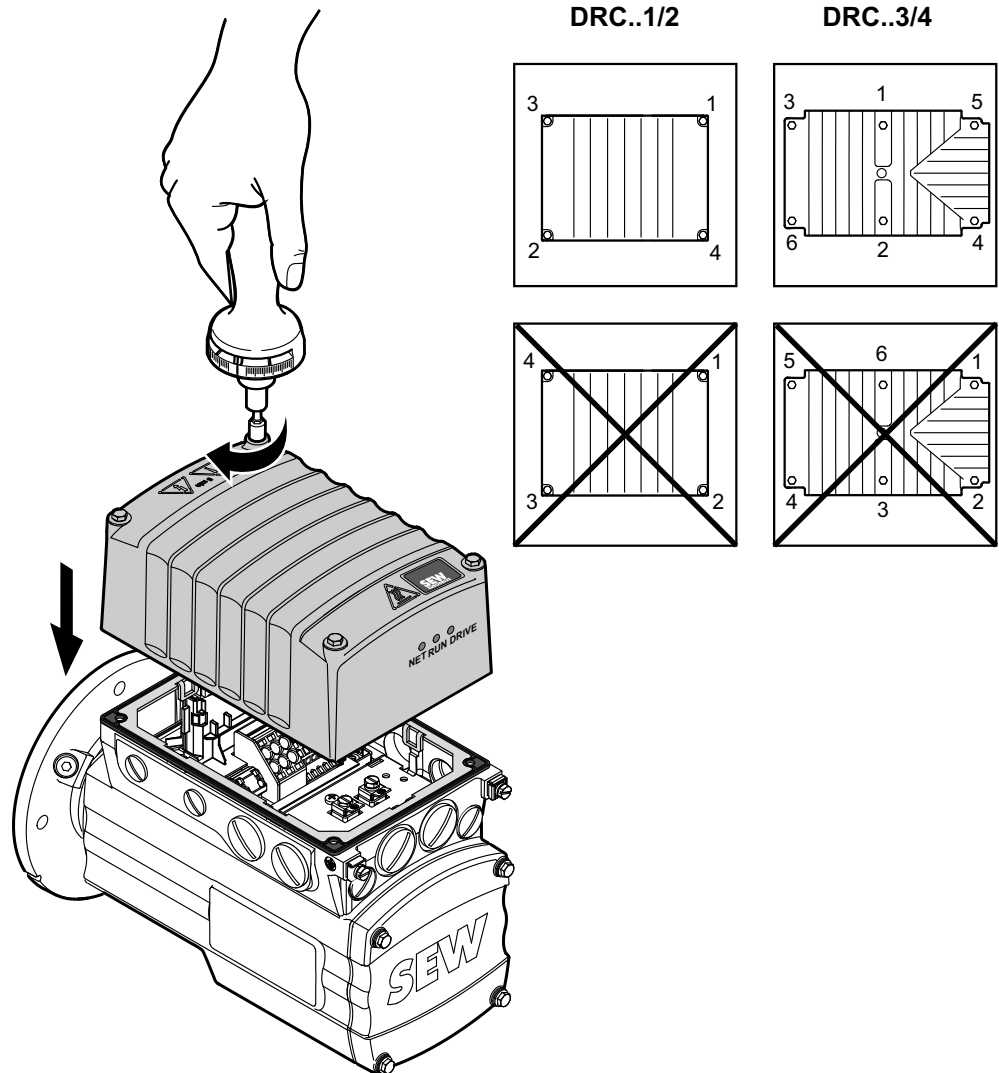
8. Check the installation and startup of the drive unit using the applicable operating instructions.



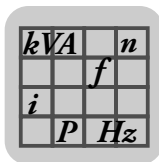
9. Place the electronics cover on the connection box again and fasten it.

Proceed as follows when installing the DRC electronics cover: Insert the screws and tighten them with the tightening torque specified for that size according to the sequence shown in the picture below.

- DRC electronic motor size 1/2: 6.0 Nm
- DRC electronic motor size 3/4: 9.5 Nm.



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## 13 Technical data and dimension sheets

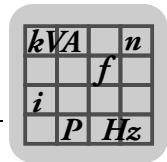
### 13.1 Technical data

#### 13.1.1 General technical data of DRC

| DRC type                               |                 | DRC1   | DRC2  | DRC3   | DRC4   |
|--|-----------------|--|---|--|--|
| Supply voltages<br>Permitted range     | $V_{line}$      | 3 x AC 380 V -5 % to AC 500 V +10 %  |   |  |  |
| Line frequency                         | $f_{line}$      | 50 Hz ... 60 Hz  |   |  |  |
| Input current                          | $I_N$           | 1.04 A   | 2.8 A   | 5.3 A  | 6.3 A  |
|  | $I_{max}$       | 2.6 A  | 7.0 A   | 13.25 A                                      | 11.8 A                                       |
| Nominal output current                 | $I_{N motor}$   | 1.3 A  | 3.4 A   | 6.8 A  | 7.8 A  |
| Current carrying capacity of terminals |                 | See operating instructions, chapter "Electrical Installation / Installation instructions / Permitted cable cross section of terminals"   |   |  |  |
| Motor power S1                         | $P_{Mot}$       | <b>0.55 kW</b><br>0.75 HP  | <b>1.5 kW</b><br>2.0 HP                       | <b>3.00 kW</b><br>4.0 HP                     | <b>4.00 kW</b><br>5.4 HP                     |
| Nominal motor speed                    | $n_N$           | 2000 rpm   | 2000 rpm                                      | 2000 rpm                                     | 2000 rpm                                     |
| Nominal motor torque                   | $M_N$           | 2.65 Nm  | 7.20 Nm                                       | 14.3 Nm                                      | 19.1 Nm                                      |
| Maximum motor torque                   | $M_{max}$       | 6.6 Nm to<br>2000 rpm  | 18.0 Nm to<br>1500 rpm                        | 35.8 Nm to<br>1500 rpm                       | 36.2 Nm to<br>1800 rpm                       |
| Mass moment of inertia of the motor    | $J_{mot}^{1)}$  | 1.416 kgm <sup>2</sup> ×<br>10 <sup>-4</sup>   | 3.6226 kgm <sup>2</sup> ×<br>10 <sup>-4</sup> | 16.85 kgm <sup>2</sup> ×<br>10 <sup>-4</sup> | 23.23 kgm <sup>2</sup> ×<br>10 <sup>-4</sup> |
|  | $J_{mot}^{2)}$  | 2.031 kgm <sup>2</sup> ×<br>10 <sup>-4</sup>   | 5.3266 kgm <sup>2</sup> ×<br>10 <sup>-4</sup> | 20.55 kgm <sup>2</sup> ×<br>10 <sup>-4</sup> | 26.93 kgm <sup>2</sup> ×<br>10 <sup>-4</sup> |
| PWM frequency                          |                 | 4 / 8 kHz  |   |  |  |
| External braking resistor              | $R_{min}$       | 100 Ω  | 100 Ω   | 68 Ω   | 68 Ω   |
| Interference immunity                  |                 | EN 61800-3; 2. Environment (industrial environment)  |   |  |  |
| Interference emission                  |                 | EN 61800-3 category C2 (class A group 2 of EN 55011)   |   |  |  |
| Climate class                          |                 | EN 60721-3-3, class 3K3  |   |  |  |
| Storage temperature                    | $\vartheta_S$   | -25 °C to +70 °C (EN 60721-3-3)  |   |  |  |
| Proof of mechanical strength           |                 | According to EN 61800-5-1  |   |  |  |
| Degree of protection                   | IP              | Standard: IP 65 according to EN 60529<br>(DRC housing closed and all cable glands sealed)<br><br>With optional ASEPTIC / ASEPTIC <sup>plus</sup> design: IP 66 according to EN 60529<br>(DRC housing closed and all cable glands sealed)   |   |  |  |
| Operating mode                         |                 | S1, DB (EN 60034-1)  |   |  |  |
| Type of cooling                        |                 | Self-cooling to DIN 41751 and EN 61800-5-1   |   |  |  |
| Signaling functions                    |                 | Display elements on housing to indicate the unit state   |   |  |  |
| Installation altitude                  | h               | Up to h ≤ 1000 m without restrictions.<br>The following restrictions apply to heights ≥ 1000 m:<br>• From 1000 m to max. 4000 m:<br>– $I_N$ reduction by 1% per 100 m<br>• From 2000 m to max. 4000 m:<br>– $V_N$ reduced by AC 6 V per 100 m<br><br>Over 2000 m only overvoltage category II, external measures are required for overvoltage category III.<br>Overvoltage categories according to EN 60664-1. |   |  |  |
| Mass                                   | m <sup>1)</sup> | 12.40 kg   | 17.20 kg                                      | 34.6 kg                                      | 38.6 kg                                      |
|  | m <sup>2)</sup> | 13.00 kg   | 18.23 kg                                      | 36.5 kg                                      | 40.5 kg                                      |
| Required preventive measures           |                 | Grounding the unit   |   |  |  |

1) Without brake

2) With brake



### 13.1.2 Ambient temperature of DRC

| DRC type   |               | DRC1  | DRC2 | DRC3 | DRC4 |
|--|---------------|---|------|------|------|
| Ambient temperature                                    | $\vartheta_A$ | -25 °C to +60 °C                                  |      |      |      |
| $I_{N \text{ motor}}$ reduction<br>Ambient temperature |               | 3 % $I_{N \text{ motor}}$ per K at 40 °C to 60 °C |      |      |      |

### 13.1.3 Current carrying capacity of terminals and plug connectors

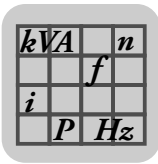
| Current carrying capacity of terminals and plug connectors |    |                                   |
|--|----|-----------------------------------|
| Supply system terminals                                    | X2 | 24 A (max. loop-through current)  |
| Control terminals  | X7 | 3.5 A (max. loop-through current) |

### 13.1.4 Digital inputs / signal relays

| Digital inputs / signal relays |                 |   |
|--------------------------------|-----------------|---|
| Input type                     | DI01 to<br>DI04 | Isolated via optocoupler; PLC-compatible to EN 61131-2<br>(digital inputs type 1)<br>$R_i \approx 3.0 \text{ k}\Omega$ , $I_E \approx 10 \text{ mA}$ , sampling cycle $\leq 5 \text{ ms}$ |
| Number of inputs               |                 | 4   |
| Signal level                   |                 | +15 to +30 V = "1" = Contact closed<br>-3 to +5 V = "0" = Contact open  |
| Signal relays<br>Contact data  | K1a<br>K1b      | Response time $\leq 15 \text{ ms}$<br>DC 24 V / 50 mA / DC 12 to IEC 60947-5-1<br>(only SELV or PELV circuits)  |
| Signaling function             |                 | N.O. contact for ready signal    Contact closed:<br>– with voltage present<br>– if no fault was detected<br>– after completion of self-testing phase (when<br>unit is turned on)          |

### 13.1.5 Internal voltage supply 24V\_O

| Internal voltage supply for non-safety-related enable signal via STO input |        |   |
|--|--------|---|
| Voltage supply   | +24V_O | DC 24 V to EN 61131-2, interference voltage proof and short circuit proof |
|  | 0V24_O |   |
| Permitted total current  |        | 60 mA   |
| Required current for STO-IN supply   |        | 30 mA   |



13.1.6 Derating factors

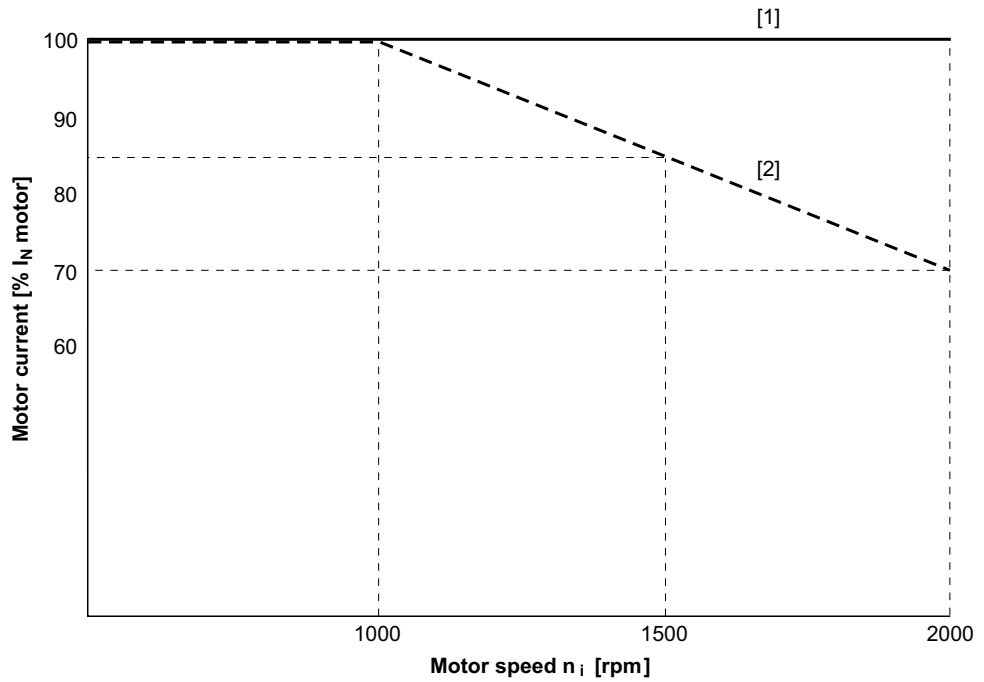
Affected unit variants

The table shows the unit variants for which you have to/do not have to use the additional  $I_{N \text{ motor}}$  reduction in the following chapter:

| $I_{N \text{ motor}}$ reduction   |   |
|---|---|
| not required  | Required  |
| DRC1 (all variants)   | –   |
| DRC2..DSC without application option<br>DRC2..SNI without application option<br>DRC2..DBC | DRC2..DSC with application option<br>DRC2..SNI with application option<br>DRC2..DAC |
| DRC3 (all variants)   | –   |
| DRC4..DSC without application option<br>DRC4..SNI without application option<br>DRC4..DBC | DRC4..DSC with application option<br>DRC4..SNI with application option<br>DRC4..DAC |

$I_{N \text{ motor}}$  reduction

The following figure shows the  $I_{N \text{ Motor}}$  reduction depending on the motor speed:



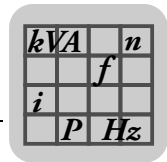
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- [1] Ambient temperature  $\leq 35^\circ\text{C}$
- [2] Ambient temperature =  $40^\circ\text{C}$



**INFORMATION**

Derating is based on typical operating conditions with a supply voltage of 24 V (AS-Interface electronics supply, signal level of digital inputs, input voltage of STO input).



13.1.7 Technical data of AS-Interface

| AS-Interface                           |   |   |
|--|---|---|
| <b>AS-Interface electronics supply</b> | TI. AS +<br>TI. AS -<br>$I_E$ only AS-Interface:  | 29.5 V – 31.6 V<br>(AS-Interface power supply to EN 50295)<br>$\leq 50 \text{ mA}^1$                              |
| <b>Control input</b>                   | TI. AS +<br>TI. AS -  | Connection of the AS-interface data line<br>Connection of the AS-interface data line                              |
| <b>Sensor connection</b>               | TI. DI2<br>TI. DI3<br>TI. V024<br>TI. V0⊥   | External sensor input<br>External sensor input<br>24 V for sensor supply<br>Reference potential for sensor supply |
| Sensor inputs                          | PLC-compatible in accordance with EN 61131-2<br>$R_i$ about 3.0 k $\Omega$<br>$I_E$ about 10 mA |   |
| Signal level                           | +15 V to +30 V<br>–3 V to +5 V  | "1"<br>"0"  |
| Maximum sensor cable length            | 15 m  |   |

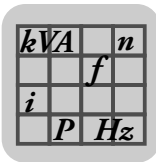
1) The current increases by the demand of the connected sensors (max. sensor current 75 mA).

AS-Interface  
GLK30A binary  
slave

| AS-Interface GLK30A         |  |
|-----------------------------|--|
| <b>Protocol variant</b>     | AS-Interface binary slave with a S-7.F profile "four bit I/O mode slave" |
| <b>AS-Interface profile</b> | S-7.F  |
| <b>I/O configuration</b>    | 7 <sub>hex</sub>   |
| <b>ID code</b>              | F <sub>hex</sub>   |
| <b>ext. ID code 2</b>       | E <sub>hex</sub>   |
| <b>ext. ID code 1</b>       | F <sub>hex</sub>   |
| <b>Address</b>              | 1 to 31 (factory setting: 0), can be changed as often as required        |

AS-Interface  
GLK31A double  
slave

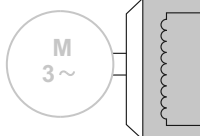
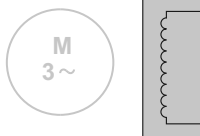
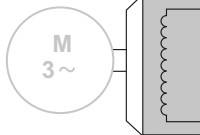
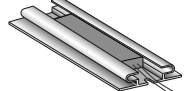
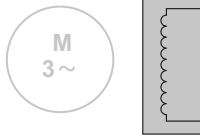
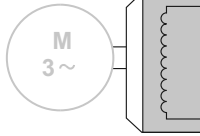
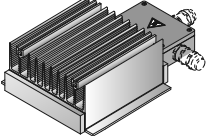
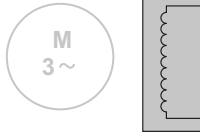
| AS-Interface GLK31A         | Slave A   | Slave B          |
|-----------------------------|---|------------------|
| <b>Protocol variant</b>     | AS-Interface double slave in extended address mode<br>AS-Interface specification V3.0, rev.02 in conjunction with M4 master profile |                  |
| <b>AS-Interface profile</b> | S-7.A.7.7   | S-7.A.5.F        |
| <b>I/O configuration</b>    | 7 <sub>hex</sub>  | 7 <sub>hex</sub> |
| <b>ID code</b>              | A <sub>hex</sub>  | A <sub>hex</sub> |
| <b>ext. ID code 2</b>       | 7 <sub>hex</sub>  | 5 <sub>hex</sub> |
| <b>ext. ID code 1</b>       | 7 <sub>hex</sub>  | 7 <sub>hex</sub> |
| <b>Function</b>             | 4DI/4DO cyclical<br>4PDI/3PDO   | Serial acyclic   |
| <b>Address</b>              | 1 to 31 (factory setting: 0), can be changed as often as required   |                  |



### 13.2 Braking resistors

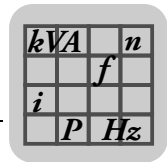
#### 13.2.1 Overview

The DRC electronics motor is equipped with 2 brake choppers. The following table shows their possible use in regenerative mode:

| Application                                | Drive                                      | Dissipation of regenerative energy   |               |  |
|--|--|--|---------------|--|
|  |  | Brake chopper 1  | Brake chopper |  |
| Very small amount of regenerative energy   | DRC electronic motor <u>with</u> brake     | Brake coil<br>                 | +             | -  |
|  | DRC electronic motor <u>without</u> brake  | Brake coil <sup>1)</sup><br>   |               |  |
| Small amount of regenerative energy        | DRC electronic motor <u>with</u> brake     | Brake coil<br>                | +             | Integrated braking resistor<br> |
|  | DRC electronic motor <u>without</u> brake  | Brake coil <sup>1)</sup><br> |               |  |
| Medium/large amount of regenerative energy | DRC electronic motor <u>with</u> brake     | Brake coil<br>               | +             | External braking resistor<br>   |
|  | DRC1 electronic motor <u>without</u> brake | Brake coil <sup>1)</sup><br> |               |  |

1) Also for motors without brake, a brake coil (without brake disk) is always integrated to dissipate regenerative energy.



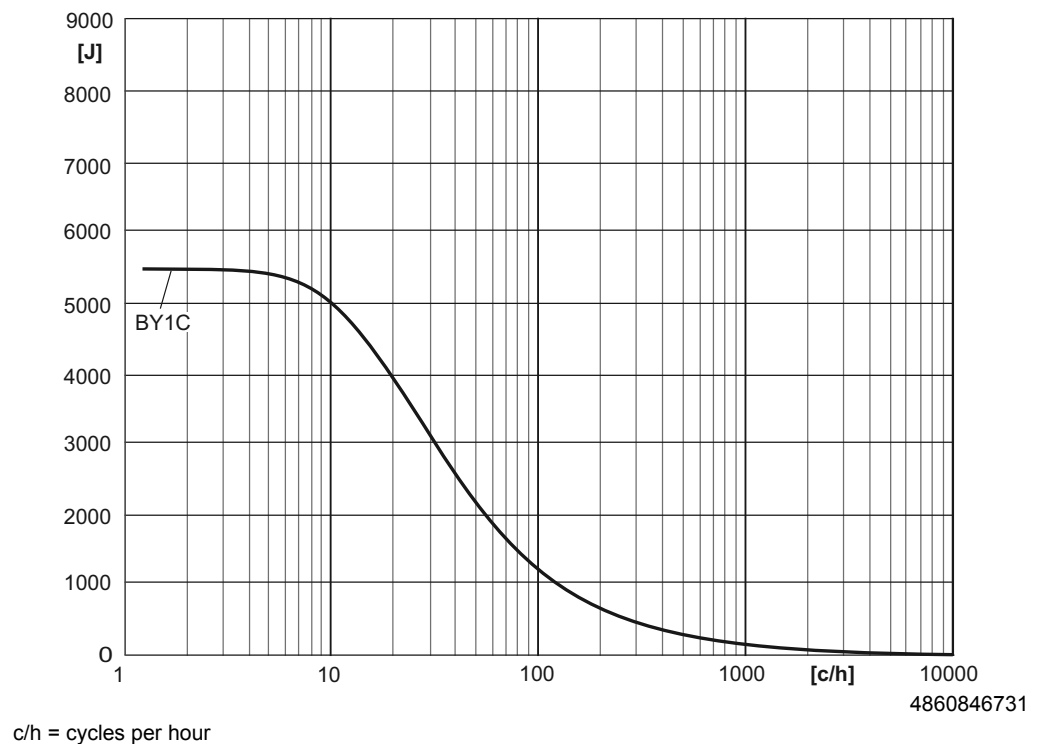


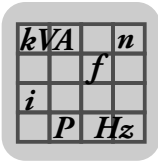
### 13.2.2 4Q operation with integrated brake coil

- In 4Q operation, the brake coil can be used as a braking resistor.
- The brake coil (without brake disk) is also integrated in motors without a brake.
- Brake voltage is generated internally within the unit, which means it is grid-independent.
- 4Q operation with only the integrated brake coil is recommended for applications with very small amounts of regenerative energy.
- If the amount of regenerated energy is too high for the application, you can use an additional internal or external braking resistor.

#### BY1C (DRC1)

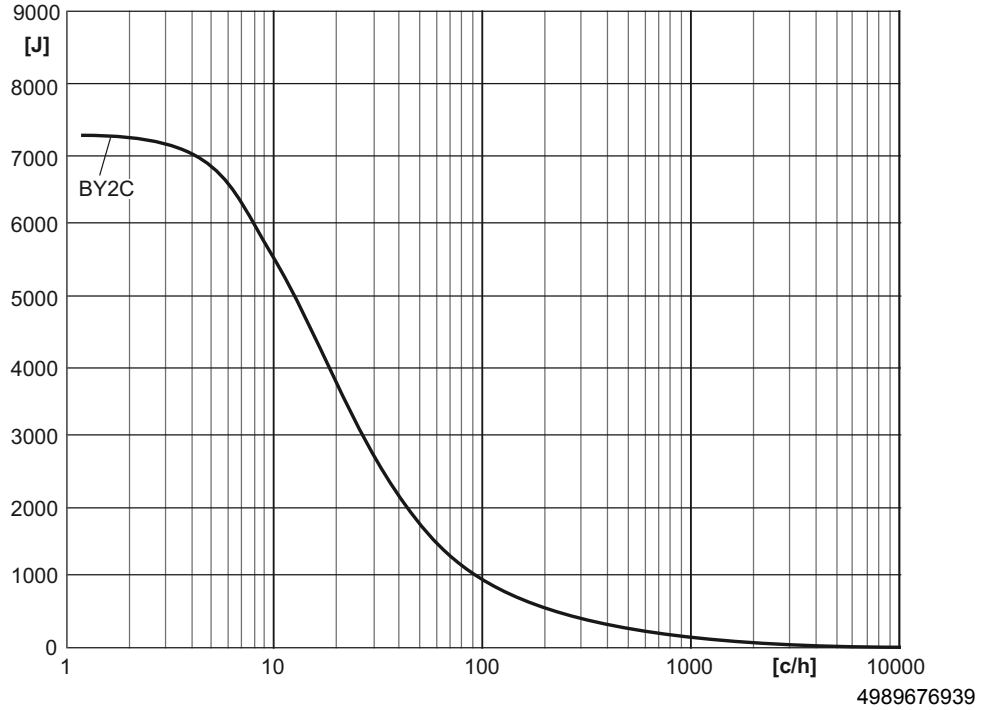
The following figure shows the permitted regenerative load on the BY1C brake coil (DRC1):





**BY2C (DRC2)**

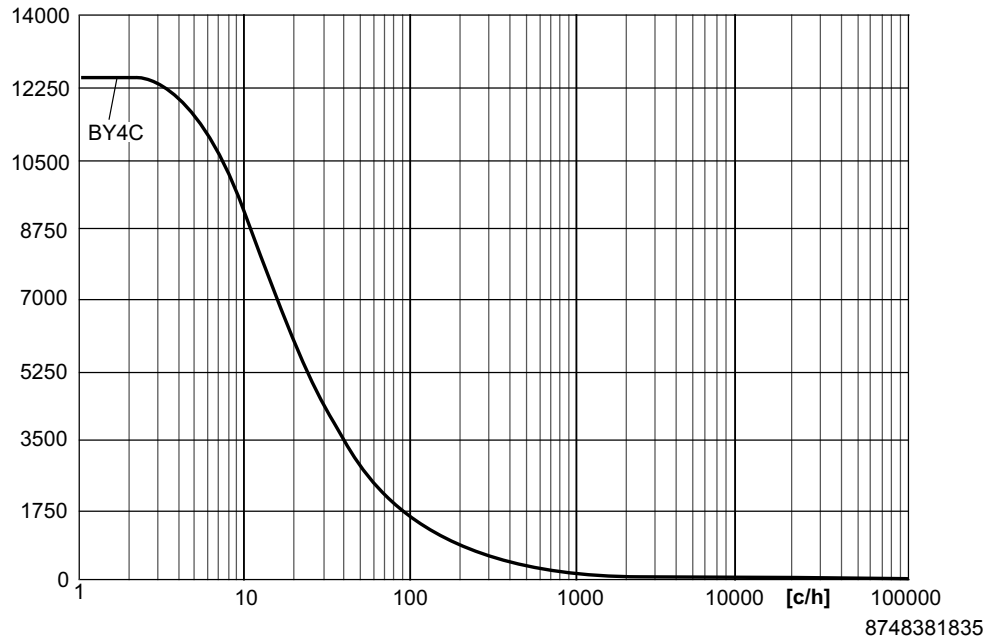
The following figure shows the permitted regenerative load on the BY2C brake coil (DRC2):



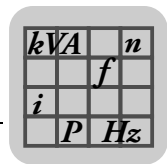
c/h = cycles per hour

**BY4C (DRC3/4)**

The following figure shows the permitted regenerative load on the BY4C brake coil (DRC3/4):



c/h = cycles per hour



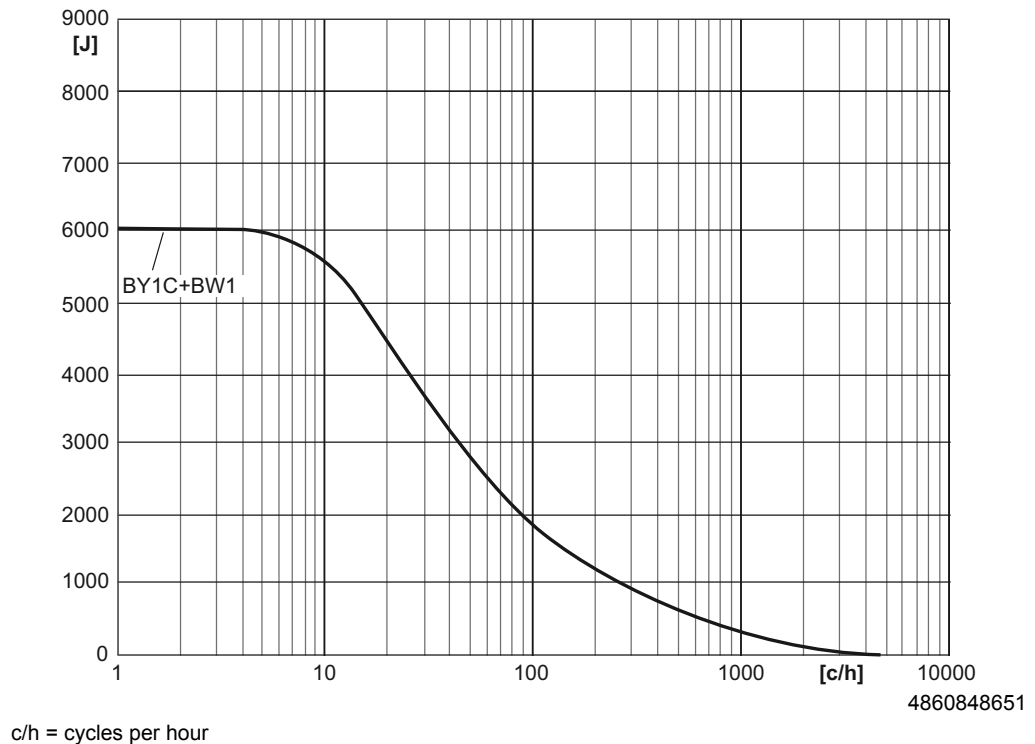
### 13.2.3 4Q operation with integrated brake coil and integrated braking resistor

- 4Q operation with integrated braking resistor is recommended for applications in which the level of regenerative energy is low.
- The resistor protects itself (reversible) against regenerative overload by changing abruptly to high resistance and no longer consuming any more energy. The inverter then trips with overvoltage error.
- If the amount of regenerated energy is too high for the application, you can use an external braking resistor as an alternative.

*BY1C brake coil  
and integrated  
BW1 braking resistor (DRC1)*

#### Regenerative load capacity for a brake ramp of 10 s

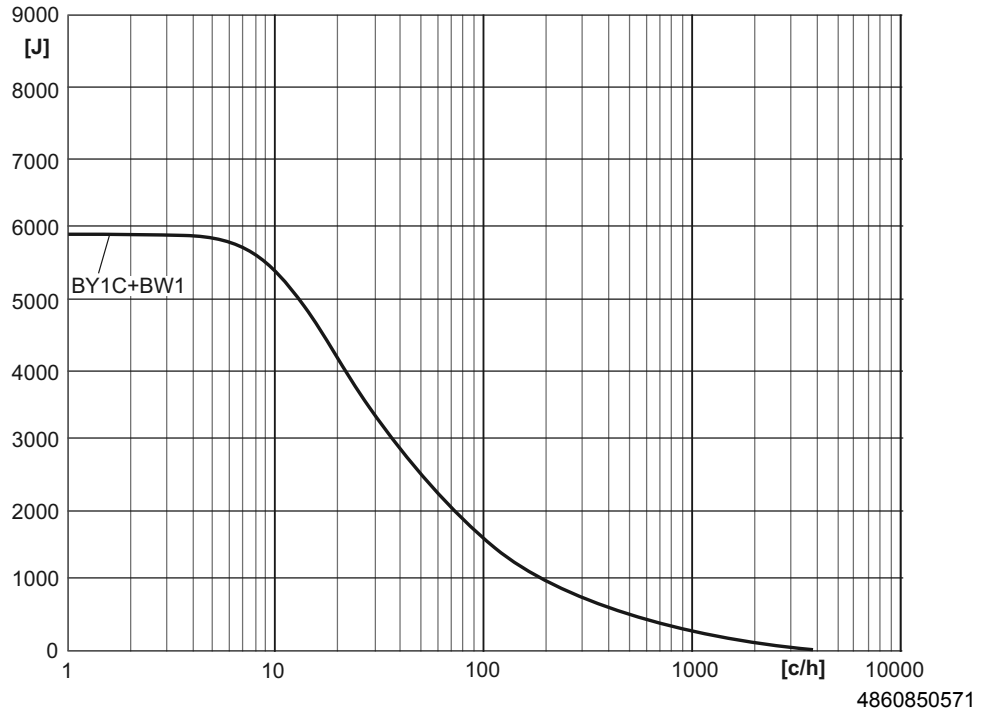
The following figure shows the permitted regenerative energy load of the BY1C brake coil in combination with the integrated BW1 braking resistor for a brake ramp of 10 s:



|     |    |
|-----|----|
| kVA | n  |
| f   |    |
| i   |    |
| P   | Hz |

#### Regenerative load capacity for a brake ramp of 4 s

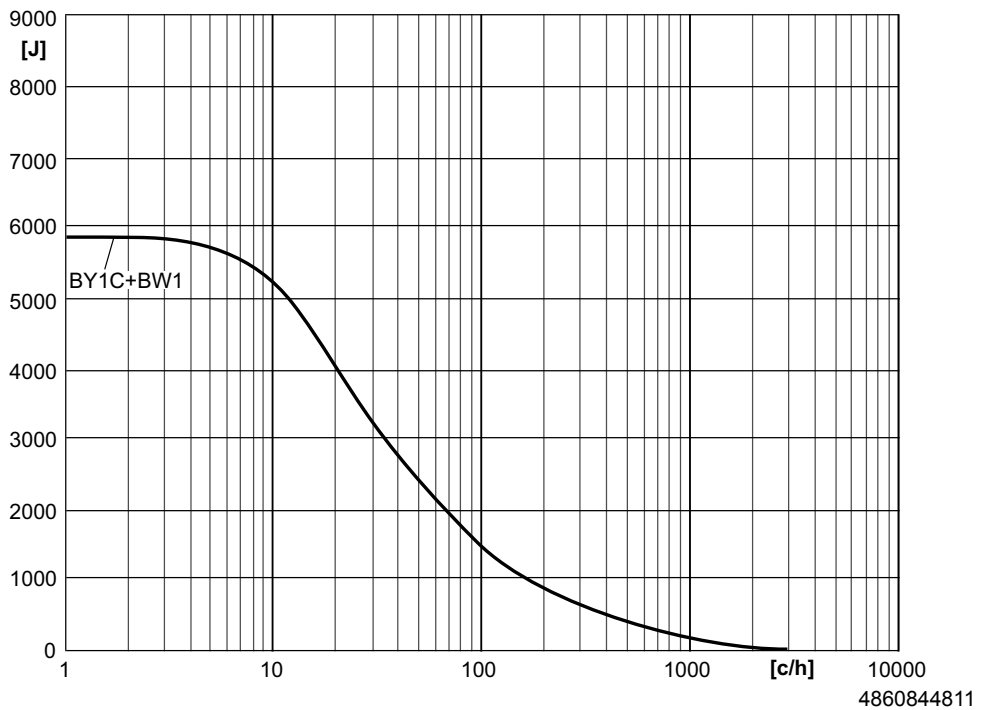
The following figure shows the permitted regenerative energy load of the BY1C brake coil in combination with the integrated BW1 braking resistor for a brake ramp of 4 s:



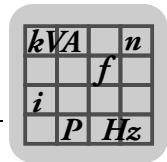
c/h = cycles per hour

#### Regenerative load capacity for a brake ramp of 0.2 s

The following figure shows the permitted regenerative energy load of the BY1C brake coil in combination with the integrated BW1 braking resistor for a brake ramp of 0.2 s:



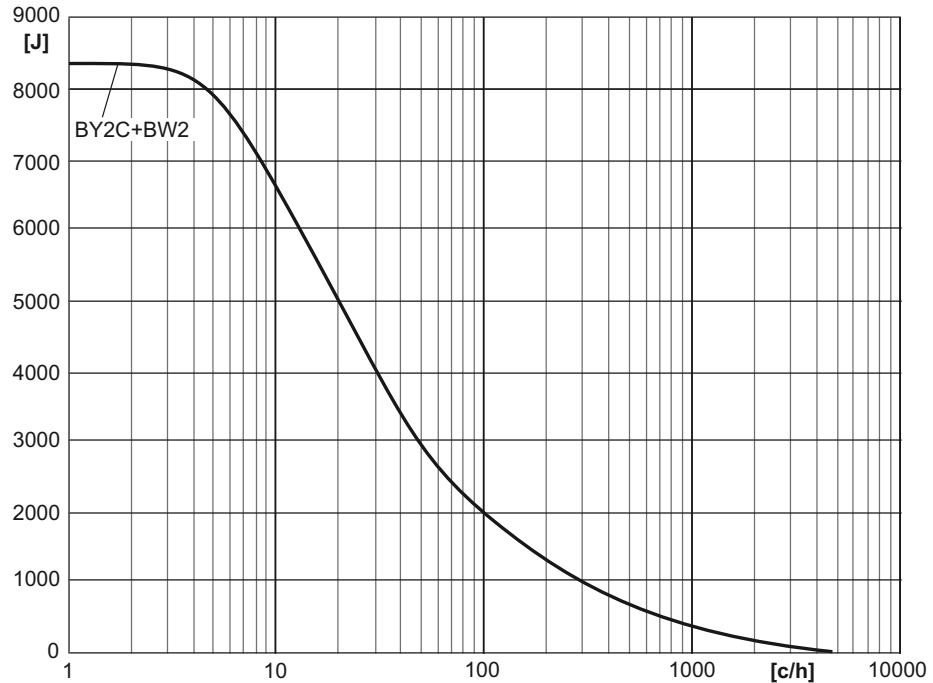
c/h = cycles per hour



BY2C brake coil  
and integrated  
BW2 braking resistor (DRC2)

**Regenerative load capacity for a brake ramp of 10 s**

The following figure shows the permitted regenerative energy load of the BY2C brake coil in combination with the integrated BW2 braking resistor for a brake ramp of 10 s:

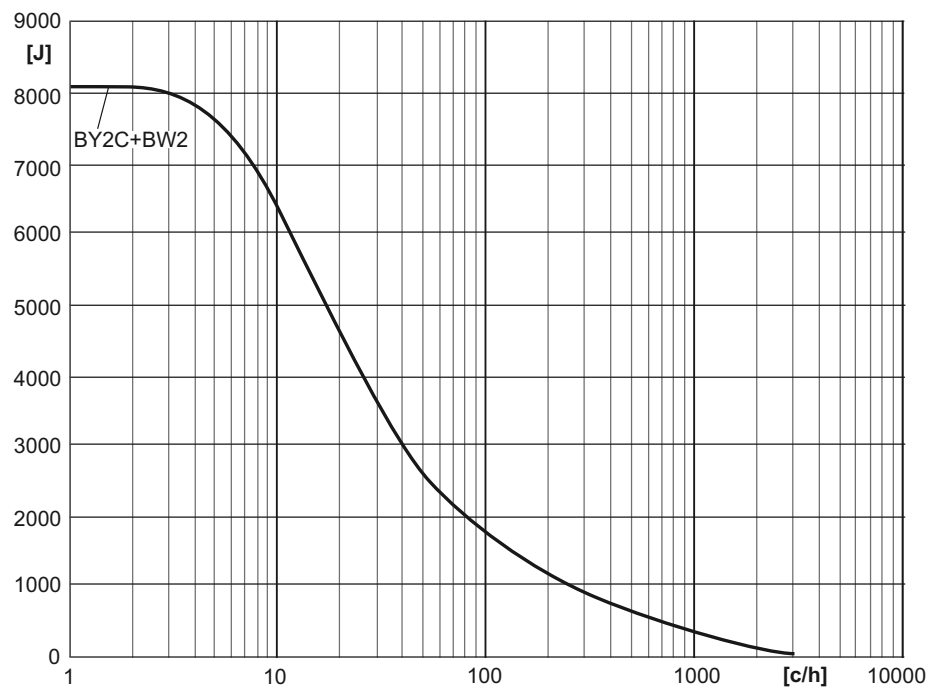


4989684619

c/h = cycles per hour

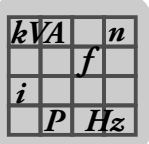
**Regenerative load capacity for a brake ramp of 4 s**

The following figure shows the permitted regenerative energy load of the BY2C brake coil in combination with the integrated BW2 braking resistor for a brake ramp of 4 s:



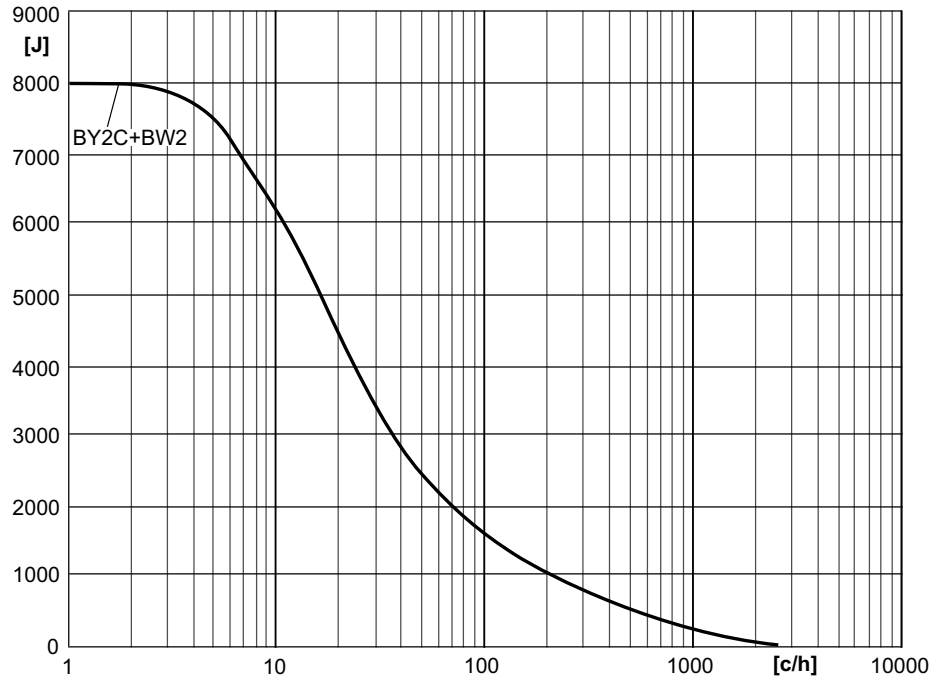
4989686923

c/h = cycles per hour



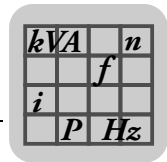
#### Regenerative load capacity for a brake ramp of 0.2 s

The following figure shows the permitted regenerative energy load of the BY2C brake coil in combination with the integrated BW2 braking resistor for a brake ramp of 0.2 s:



4990713227

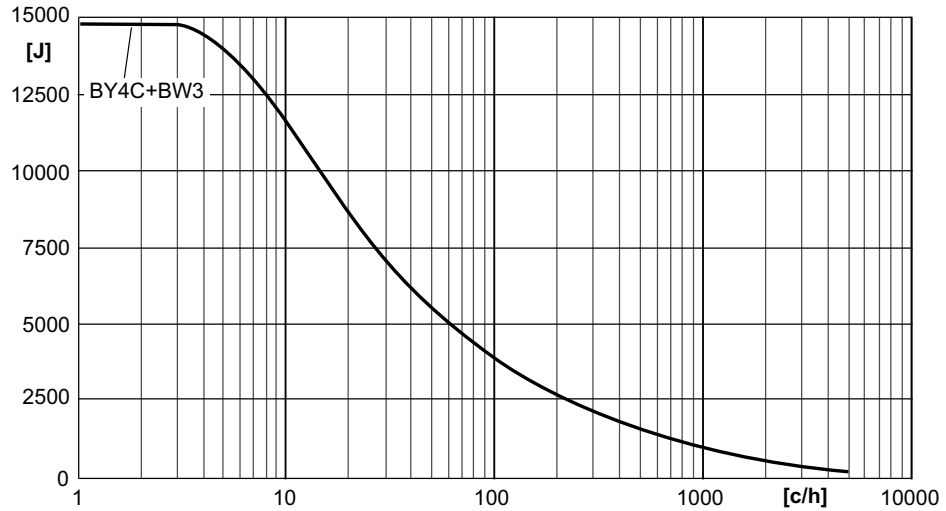
c/h = cycles per hour



Brake coil BY4C  
and integrated  
braking resistor  
BW3 (DRC3/4)

**Regenerative load capacity for a brake ramp of 10 s**

The following figure shows the permitted regenerative energy load of the BY4C brake coil in combination with the integrated BW3 braking resistor for a brake ramp of 10 s:

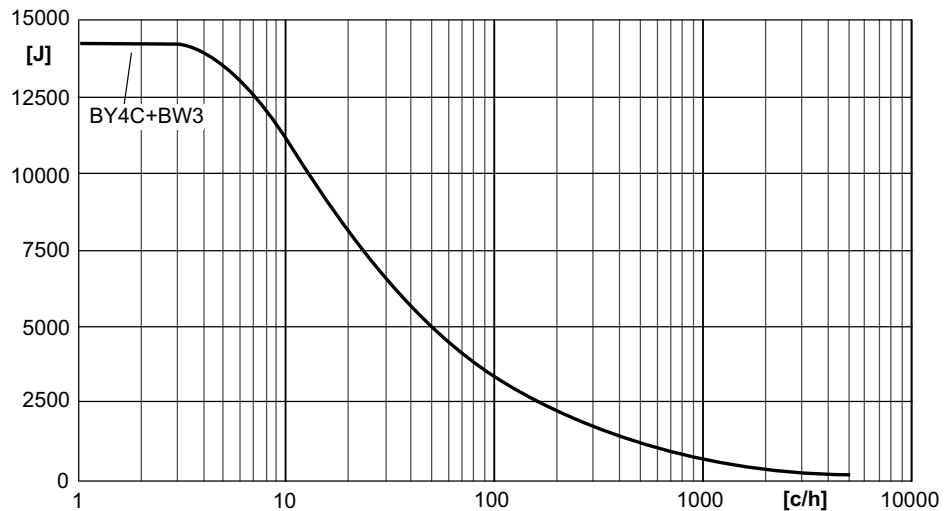


8748996363

c/h = cycles per hour

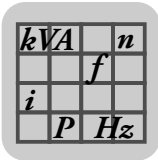
**Regenerative load capacity for a brake ramp of 4 s**

The following figure shows the permitted regenerative energy load of the BY4C brake coil in combination with the integrated BW3 braking resistor for a brake ramp of 4 s:



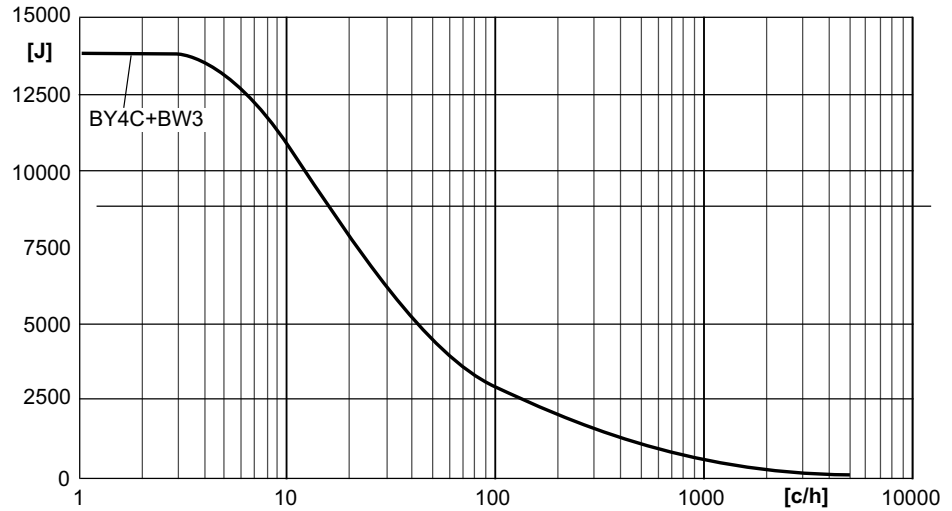
8748994443

c/h = cycles per hour



#### Regenerative load capacity for a brake ramp of 0.2 s

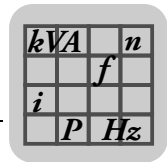
The following figure shows the permitted regenerative energy load of the BY4C brake coil in combination with the integrated BW3 braking resistor for a brake ramp of 0.2 s:



c/h = cycles per hour

8748992523



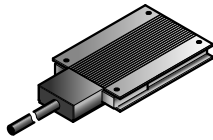


13.2.4 4Q operation with integrated brake coil and external braking resistor

4Q operation with external braking resistor is necessary for applications with a large amount of regenerative energy.

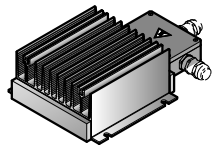
The following tables show the external braking resistors that are available for DRC electronic motors.

BW...-.../K-1.5

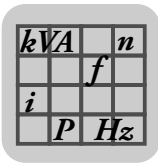


|                                 | BW100-005/K-1.5                     | BW150-003/K-1.5  |
|---------------------------------|-------------------------------------|------------------|
| <b>Part number</b>              | 0 828 286 2                         | 0 828 2927       |
| <b>Function</b>                 | Dissipating the regenerative energy |                  |
| <b>Degree of protection</b>     | IP65                                | IP65             |
| <b>Resistance</b>               | 100 Ω                               | 150 Ω            |
| <b>Power</b><br>in S1, 100% cdf | 200 W                               | 100 W            |
| <b>Dimensions W x H x D</b>     | 252 x 15 x 80 mm                    | 146 x 15 x 80 mm |
| <b>Cable length</b>             | 1.5 m                               | 1.5 m            |

BW...-...-T



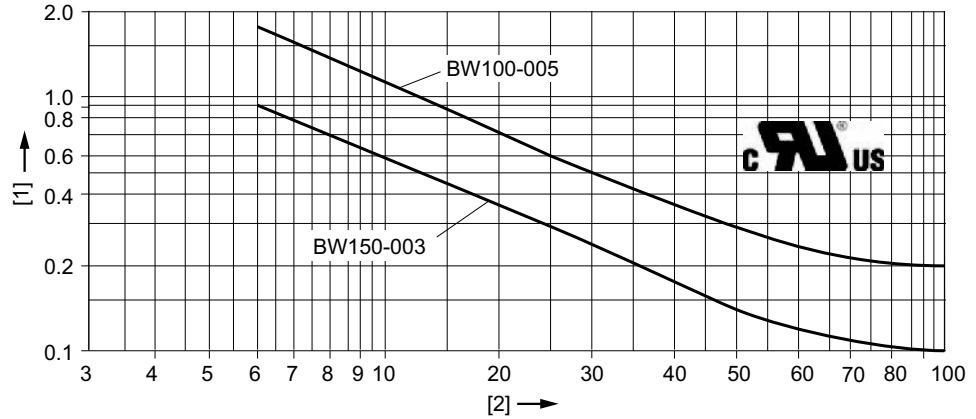
|                                       | BW150-006-T   | BW100-009-T          | BW68-006-T           | BW68-012-T           |
|---------------------------------------|---|----------------------|----------------------|----------------------|
| <b>Part number</b>                    | 1 796 956 5   | 1 796 957 3          | 1 797 000 8          | 1 797 001 6          |
| <b>Function</b>                       | Dissipating the regenerative energy   |                      |                      |                      |
| <b>Degree of protection</b>           | IP66  | IP66                 | IP66                 | IP66                 |
| <b>Resistance</b>                     | 150 Ω   | 100 Ω                | 68 Ω                 | 68 Ω                 |
| <b>Power</b><br>in S1, 100% cdf       | 600 W   | 900 W                | 600 W                | 1200 W               |
| <b>Dimensions W x H x D</b>           | 285 x 75 x<br>174 mm  | 435 x 75 x<br>174 mm | 285 x 75 x<br>174 mm | 635 x 75 x<br>174 mm |
| <b>Prescribed connection cables</b>   | Shielded cables with a thermal resistance of $T_{amb} \geq 90^\circ\text{C}$ (194 °F) |                      |                      |                      |
| <b>Maximum permitted cable length</b> | 15 m  | 15 m                 | 15 m                 | 15 m                 |



13.2.5 Technical data of BW100-005/K-1.5 and BW150-003/K-1.5

Power diagrams

The following figure shows the rating diagrams of the braking resistors BW100-005/K-1.5, BW150-003/K-1.5:

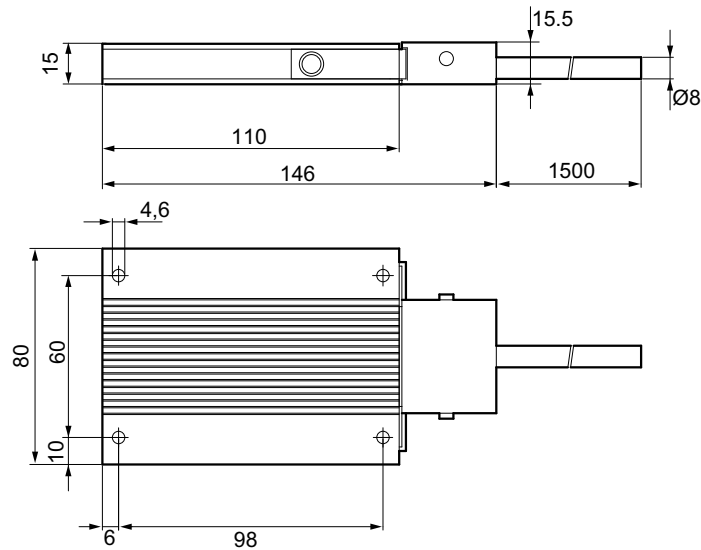


9007204104879499

- [1] Power in kW
- [2] Cyclic duration factor cdf in %

Dimension drawing of BW150-003/K-1.5

The following figure shows the dimensions of the external braking resistor BW150-003/K-1.5:

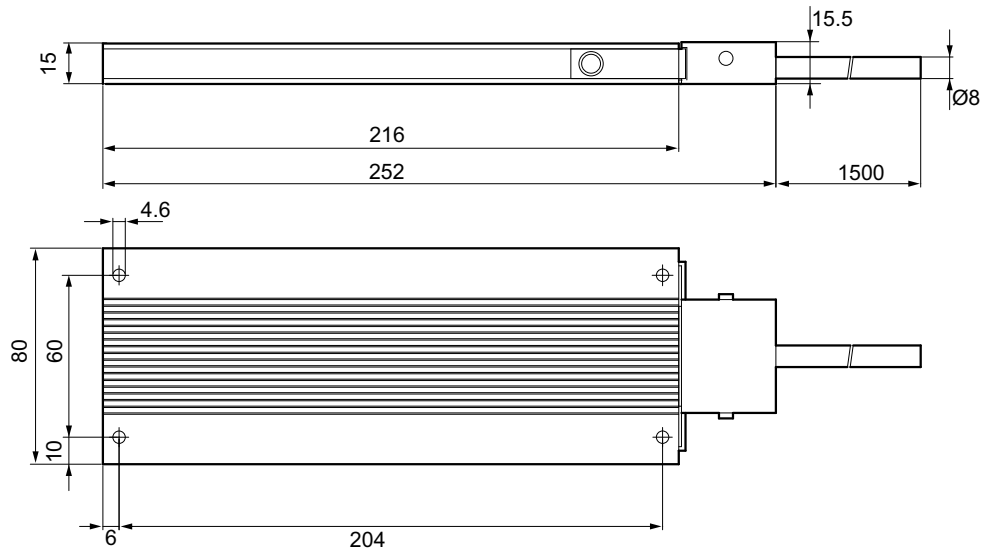


4850134027

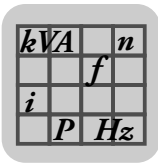
|       |       |
|-------|-------|
| $kVA$ | $n$   |
| $i$   | $f$   |
| $P$   | $H_z$ |

Dimension drawing  
of BW100-005/K-  
1.5

The following figure shows the dimensions of the external braking resistor BW100-005/K-1.5:



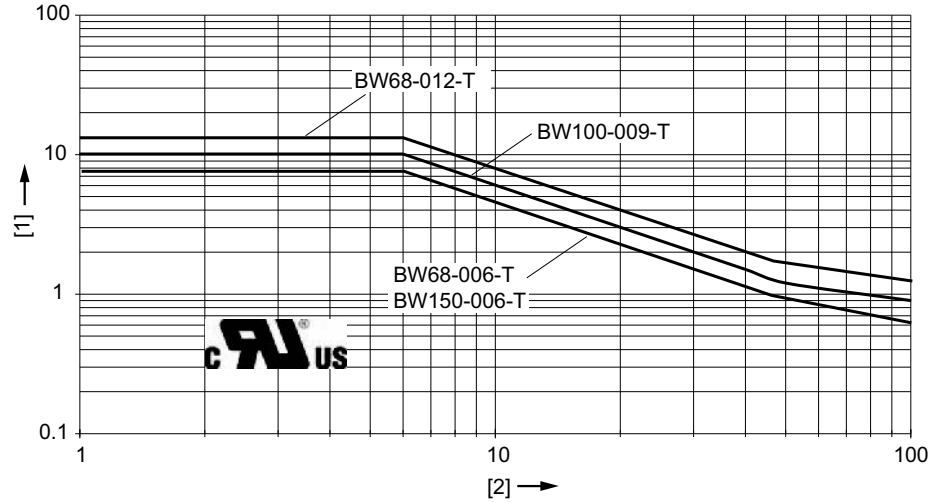
4850166795



13.2.6 Technical data of BW150-006-T, BW100-009-T, BW068-006-T, and BW068-012-T

Power diagrams

The following figure shows the rating diagrams of the braking resistors BW150-006-T, BW100-009-T, BW068-006-T, and BW068-012-T:

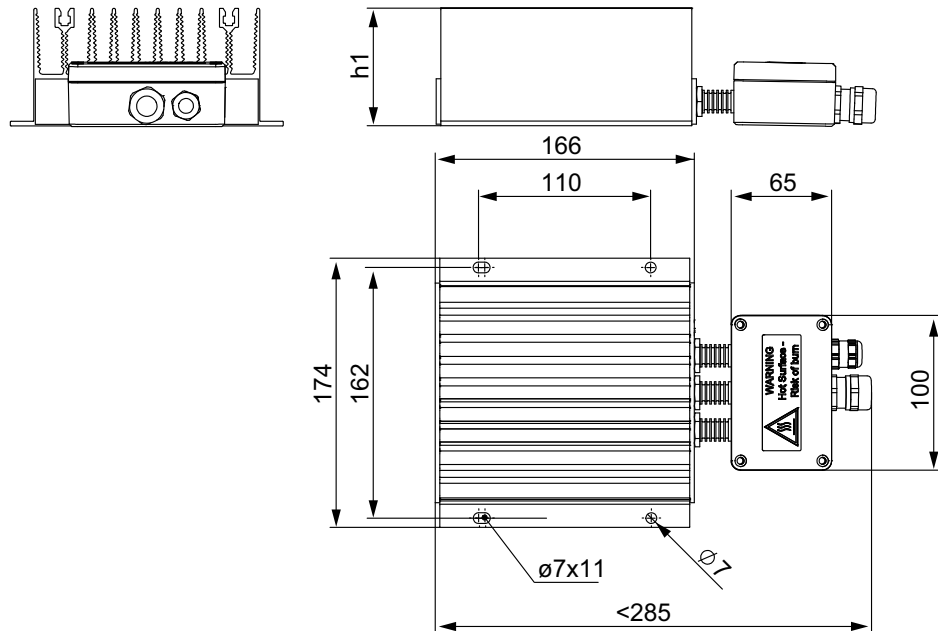


9007204104980491

- [1] Power in kW
  - [2] Cyclic duration factor cdf in %
- cdf = cyclic duration factor of the braking resistor, based on a cycle time of 120 s.

Dimension drawing of BW150-006-T / BW068-006-T

The following figure shows the dimensions of the external braking resistors BW150-006-T and BW068-006-T

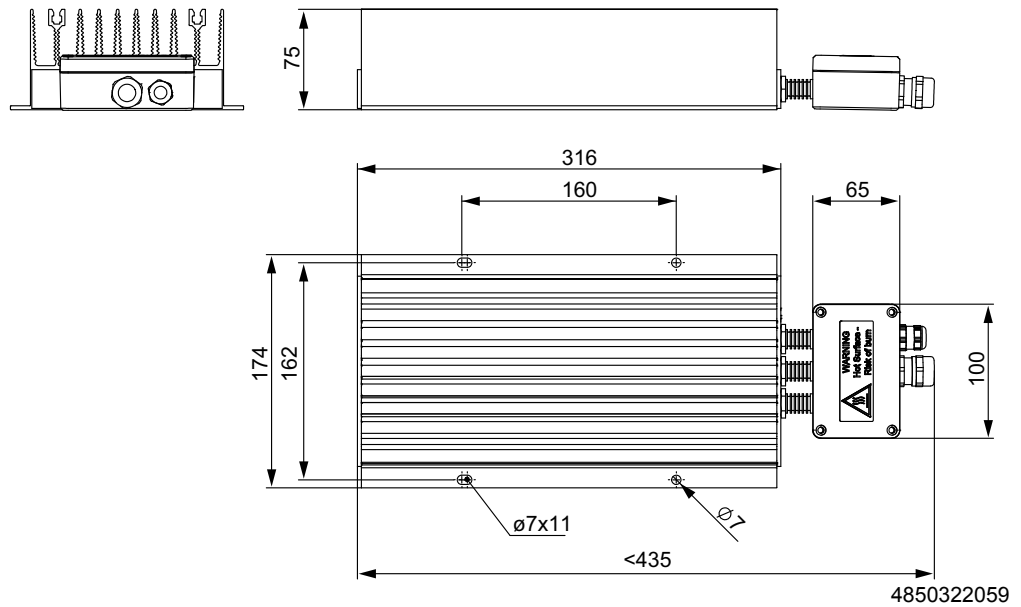


4850243339

|       |       |
|-------|-------|
| $kVA$ | $n$   |
|       | $f$   |
| $i$   |       |
| $P$   | $H_z$ |

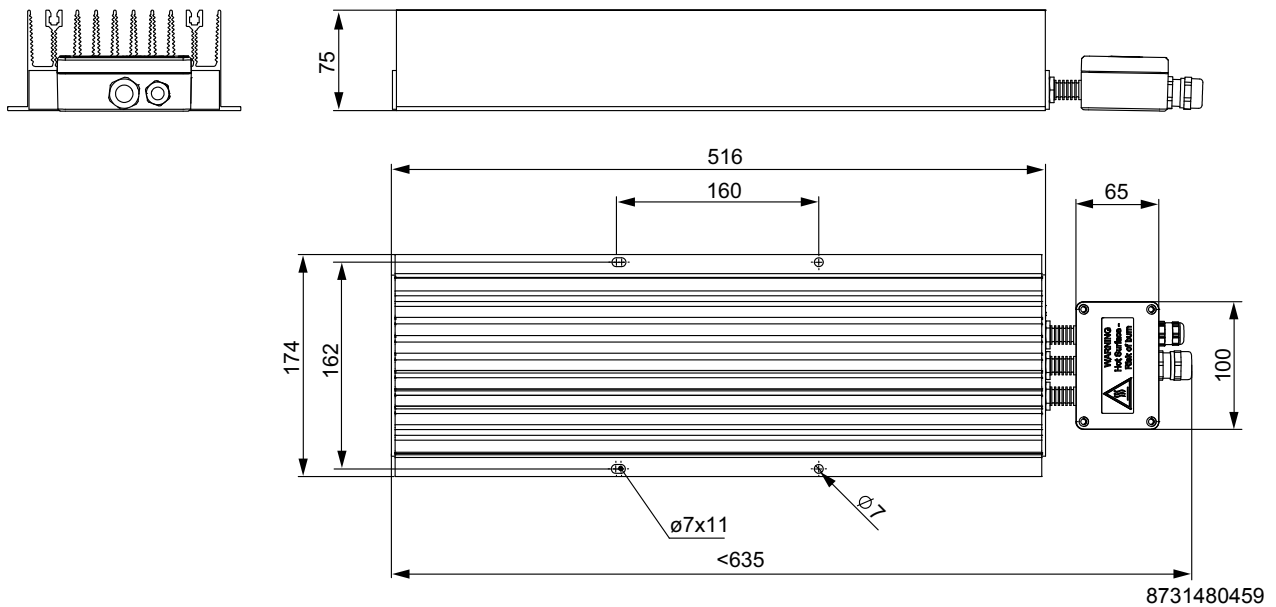
Dimension drawing  
of BW100-009-T

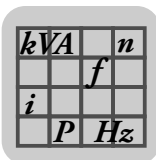
The following figure shows the dimensions of the external braking resistor BW100-009-T:



Dimension drawing  
of BW068-012-T

The following figure shows the dimensions of the external braking resistor BW068-012-T:





### 13.3 Technical data of the brake

#### 13.3.1 Braking work, braking torque

| Type        | Braking torque | Braking work per emergency braking operation | Max. number of emergency braking operations <sup>1)</sup> | Braking work until maintenance |
|-------------|----------------|--|---|--------------------------------|
|             | [Nm]           | [kJ]   |   | [MJ]                           |
| BY1C (DRC1) | 7              | 5  | 10 / h  | 40                             |
|             | 2.5            | 5  | 10 / h  | 40                             |
| BY2C (DRC2) | 14             | 15   | 10 / h  | 65                             |
|             | 7              | 15   | 10 / h  | 65                             |
| BY4C (DRC3) | 28             | 17   | 10 / h  | 85                             |
|             | 14             | 17   | 10 / h  | 85                             |
| BY4C (DRC4) | 40             | 10.5   | 10 / h  | 55                             |
|             | 20             | 10.5   | 10 / h  | 85                             |

1) Emergency braking means that the brake is applied at high speed instead of decelerating the drive along a ramp and applying the brake only after reaching the stop speed. This can occur in case of a controller inhibit signal, a drive fault (depending on the set fault response), or STO (depending on the parameter settings).

#### NOTICE



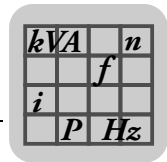
Damage to the DRC drive unit

Potential damage to property

- Note that only the SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE is permitted to carry out maintenance/inspection work on the brake or to change the braking torque.

#### 13.3.2 Response and application times

| Type        | Braking torque | Response time $t_1$ | Application time $t_2$ |
|-------------|----------------|---------------------|------------------------|
|             | [Nm]           | [ms]                | [ms]                   |
| BY1C (DRC1) | 7              | 100                 | 200                    |
|             | 2.5            |                     | 400                    |
| BY2C (DRC2) | 14             | 100                 | 200                    |
|             | 7              |                     | 250                    |
| BY4C (DRC3) | 28             | 100                 | 200                    |
|             | 14             |                     | 200                    |
| BY4C (DRC4) | 40             | 100                 | 200                    |
|             | 20             |                     | 200                    |



### 13.4 ASEPTIC / ASEPTIC<sup>plus</sup> variants

#### 13.4.1 Surface protection

The properties of OS2 – OS4 in connection with ASEPTIC variants or OS4 in connection with ASEPTIC<sup>plus</sup> variants are listed in chapter "Surface protection".

#### 13.4.2 Cleaning

**Do not mix cleaning and disinfecting agents under any circumstances.**

**Never mix acids and chloralkalis, as poisonous chlorine gas will result.**

**Strictly observe the safety instructions of the cleaning agent manufacturer.**

#### 13.4.3 Sealing material

*Resistance to cleaning agents*

The sealing material used in DRC motors has been tested for resistance to cleaning agents.

Resistance to the following cleaning agents was proven in the tests performed by the company ECOLAB<sup>®</sup>:

| Alkaline and chlorinated alkaline foam cleaning agents |                           |                         |
|--|---------------------------|-------------------------|
| Designation  | Application concentration | Application temperature |
| P3-topax 12  | 5%                        | 40 °C                   |

| Acid foam cleaning agents |                           |                         |
|---------------------------|---------------------------|-------------------------|
| Designation               | Application concentration | Application temperature |
| P3-topax 56               | 5%                        | 40 °C                   |
| P3-topax 58               | 5%                        | 40 °C                   |

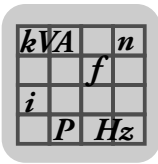
| TFC cleaner      |                           |                         |
|------------------|---------------------------|-------------------------|
| Designation      | Application concentration | Application temperature |
| P3-topactive 200 | 4%                        | 40 °C                   |
| P3-topactive 500 | 4%                        | 40 °C                   |

| Disinfectant |                           |                         |
|--------------|---------------------------|-------------------------|
| Designation  | Application concentration | Application temperature |
| P3-topax 990 | 5%                        | 23 °C                   |

|          |   |       |
|----------|---|-------|
| DI water | – | 40 °C |
|----------|---|-------|

**Product specifications:**

- P3-topax 19 Alkaline foam cleaning agent
- P3-topax 56 Acid foam cleaning agent based on phosphoric acid
- P3-topax 58 Acid foam cleaning agent based on organic acids
- P3-topactive 200 Alkaline cleaning agent for operational cleaning as TFC application
- P3-topactive 500 Acid cleaning agent for operational cleaning as TFC application
- P3-topax 990 Alkaline foam disinfectant based on alkylamine acetate
- DI water Demineralized water



## 13.5 Surface protection

### 13.5.1 General information

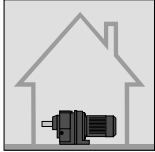
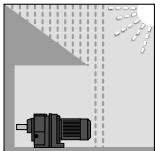
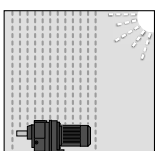
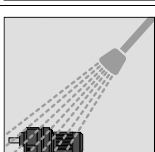
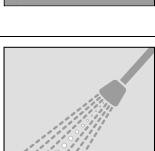
SEW-EURODRIVE offers the following optional protective measures for DRC motors that are operated under special ambient conditions.

- OS surface protection

Special optional protective measures are also available for the gear unit / motor, see "DRC Gearmotors" catalog.

### 13.5.2 Surface protection

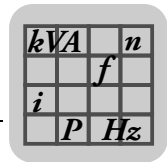
Instead of standard surface protection, DRC motors can be equipped with OS1 to OS4 surface protection as an option. The special procedure Z can also be performed in addition. Special measure Z means that large contour recesses are filled with rubber before painting.

| Surface protection   | Ambient conditions  | Application examples   |
|--|---|--|
| <b>Standard</b><br> | Suitable for machines and systems in buildings and rooms indoors with neutral atmospheres.<br>Similar to corrosivity category <sup>1)</sup> : <ul style="list-style-type: none"> <li>• C1 (negligible)</li> </ul>   | <ul style="list-style-type: none"> <li>• Machines and systems in the automobile industry</li> <li>• Conveyor systems in logistics areas</li> <li>• Conveyor systems at airports</li> </ul> |
| <b>OS1</b><br>     | Suited for environments prone to condensation and atmospheres with low humidity or contamination, such as applications outdoors under roof or with protection.<br>Similar to corrosivity category: <ul style="list-style-type: none"> <li>• C2 (low)</li> </ul>   | <ul style="list-style-type: none"> <li>• Systems in saw mills</li> <li>• Hall gates</li> <li>• Agitators and mixers</li> </ul>   |
| <b>OS2</b><br>    | Suited for environments with high humidity or mean atmospheric contamination, such as applications outdoors subject to direct weathering.<br>Similar to corrosivity category: <ul style="list-style-type: none"> <li>• C3 (moderate)</li> </ul>   | <ul style="list-style-type: none"> <li>• Funiculars and chair-lifts</li> <li>• Applications in gravel plants</li> </ul>  |
| <b>OS3</b><br>    | Suited for environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasionally acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load.<br>Similar to corrosivity category: <ul style="list-style-type: none"> <li>• C4 (high)</li> </ul> | <ul style="list-style-type: none"> <li>• Sewage treatment works</li> <li>• Port cranes</li> <li>• Mining applications</li> </ul>   |
| <b>OS4</b><br>    | Suitable for environments with permanent humidity or severe atmospheric or chemical contamination. Regular acidic and caustic wet cleaning, also with chemical cleaning agents.<br>Similar to corrosivity category <sup>2)</sup> : <ul style="list-style-type: none"> <li>• C5-1 (very high)</li> </ul>                   | <ul style="list-style-type: none"> <li>• Drives in malting plants</li> <li>• Wet areas in the beverage industry</li> <li>• Conveyor belts in the food industry</li> </ul>                  |

1) According to DIN EN ISO 12 944-2

2) According to DIN EN ISO 12944-2, classification of ambient conditions





### 13.5.3 Resistance of OS4 surface treatment to cleaning agents

SEW-EURODRIVE has had the resistance of the base coat and top coat of the OS4 surface coating independently tested and certified for cleaning agents and disinfectants from leading manufacturers.

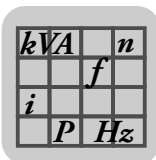
Providing these recommended cleaning agents and disinfectants are used and that the specified cleaning intervals, temperatures and cleaning schedules are complied with, the best possible results can be achieved with ASEPTIC gearmotors in terms of service life and performance.

The following prerequisites were applied to the testing cycle:

- The testing cycle (1500 cycles) simulated daily cleaning according to product-specific instructions for a time period of five years.
- Evaluation took place approximately 7 days after regeneration.
- Evaluation of visual changes (color, degree of lustre) and changes in protective properties according to DIN EN ISO 4628-1.
- OS4 coating system on steel or aluminum base.
- Cleaning agents supplied by Henkel-ECOLAB®

| Cleaning agents         | Product specification  | Major ingredients                        | Concentration | Load cycle | Test temperature | Decorative changes <sup>1)</sup> | Changes in protective properties <sup>1)</sup> |
|-------------------------|--|--|---------------|------------|------------------|----------------------------------|--|
| <b>P3-topax 19</b>      | Alkaline foam cleaning agent   | Alkalis, surfactants, complexing agents  | 3%            | 20 min     | 60 °C            | 1                                | 0  |
| <b>P3-topax 56</b>      | Acid foam cleansing agent  | Acids, surfactants, inhibitors           | 3%            | 20 min     | 60 °C            | 4                                | 0  |
| <b>P3-topax 58</b>      | Acid foam cleaning agent based on organic acids                            | Surfactants, organic acids               | 5%            | 20 min     | 60 °C            | 0                                | 0  |
| <b>P3-topax 66</b>      | Alkaline foam cleansing agent and disinfectant based on active chlorine    | Alkalis, active chlorine, surfactants    | 5%            | 20 min     | 60 °C            | 2                                | 0  |
| <b>P3-topax 68</b>      | Alkaline foam cleansing agent with active chlorine (suitable for aluminum) | Alkalis, active chlorine, surfactants    | 5%            | 20 min     | 60 °C            | 1                                | 0  |
| <b>P3-topax 99</b>      | Alkaline foam disinfectant   | Basis: Salts, organic acids              | 2%            | 20 min     | 60 °C            | 3                                | 0  |
| <b>P3-topactive 200</b> | Alkaline cleansing agent for operational cleansing as TFC application      | Alkalis, surfactants, complexing agents  | 4%            | 20 min     | 60 °C            | 1                                | 0  |
| <b>P3-topactive 500</b> | Acid cleansing agent for operational cleansing as TFC application          | Inorganic acids, surfactants             | 3%            | 20 min     | 60 °C            | 4                                | 0  |
| <b>P3-oxonia</b>        | Disinfectant for closed systems  | Basis: Hydrogen peroxide                 | 1%            | 30 min     | 60 °C            | 1                                | 0  |
| <b>P3-oxonia active</b> | Disinfectant for closed systems  | Basis: Hydrogen peroxide, peracetic acid | 3%            | 10 min     | 20 °C            | 0                                | 0  |
| <b>P3-topactive DES</b> | Foam and TFC-capable disinfectant  | Basis: Peracetic acid, surfactants       | 3%            | 30 min     | 20 °C            | 0                                | 0  |
| <b>P3-oxysan ZS</b>     | Disinfectant for closed systems  | Basis: Peroxide compounds                | 1%            | 30 min     | 20 °C            | 0                                | 0  |

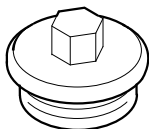
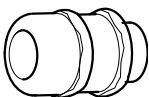

1) Assessment: 0 = No change, to 5 = Very severe changes



### 13.6 Screw fittings

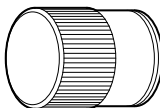
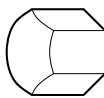
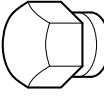
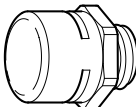
The following tables show the screw connections available from SEW-EURODRIVE:

#### 13.6.1 Cable glands / screw plugs

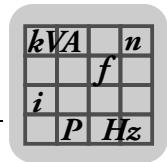
| Type of screw fitting                               | Figure  | Contents | Size      | Tightening torque <sup>1)</sup> | Part number |
|---|---|----------|-----------|---------------------------------|-------------|
| Screw plugs<br>Hexagon<br>(made of stainless steel) |  | 10 pcs   | M16 x 1.5 | 6.8 Nm                          | 1 824 734 2 |
|   |   | 10 pcs   | M25 x 1.5 | 6.8 Nm                          | 1 824 735 0 |
| EMC cable gland<br>(nickel-plated brass)            |  | 10 pcs   | M16 x 1.5 | 4 Nm                            | 1 820 478 3 |
|   |   | 10 pcs   | M25 x 1.5 | 7 Nm                            | 1 820 480 5 |
| EMC cable gland<br>(made of stainless steel)        |  | 10 pcs   | M16 x 1.5 | 4 Nm                            | 1 821 636 6 |
|   |   | 10 pcs   | M25 x 1.5 | 7 Nm                            | 1 821 638 2 |

1) The specified torques must be adhered to with a tolerance of +/- 10%.

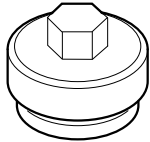
#### 13.6.2 Screw fittings: plug connectors/pressure compensation

| Type of screw fitting   | Figure  | Contents | Size      | Tightening torque <sup>1)</sup> | Part number |
|---|---|----------|-----------|---------------------------------|-------------|
| M23 plug<br>(made of stainless steel)   |  | 1 pcs    | M23 x 1.5 | Tighten fully                   | 1 909 455 8 |
| M12 plug<br>for plug connectors with male thread<br>(made of stainless steel)   |  | 10 pcs   | M12 x 1.0 | 2.3 Nm                          | 1 820 279 9 |
| M12 plug<br>for plug connectors with female thread<br>(made of stainless steel) |  | 10 pcs   | M12 x 1.0 | 2.3 Nm                          | 1 820 227 6 |
| Pressure compensation fitting<br>(made of stainless steel)                      |  | 1 pcs    | M16 x 1.5 | 4 Nm                            | 1 820 409 0 |

1) The specified torques must be adhered to with a tolerance of +/- 10%.



13.6.3 Screw fittings: diagnostic interface / potentiometer

| Type of screw fitting  | Figure  | Contents | Size      | Tightening torque <sup>1)</sup> | Part number |
|--|---|----------|-----------|---------------------------------|-------------|
| Screw plug<br>Hexagon<br>For f1 potentiometer<br>And diagnostic interface<br>(made of stainless steel) |  | 10 pcs   | M24 x 1.5 | 6.8 Nm                          | 1 824 107 7 |

1) The specified torques must be adhered to with a tolerance of +/- 10%.

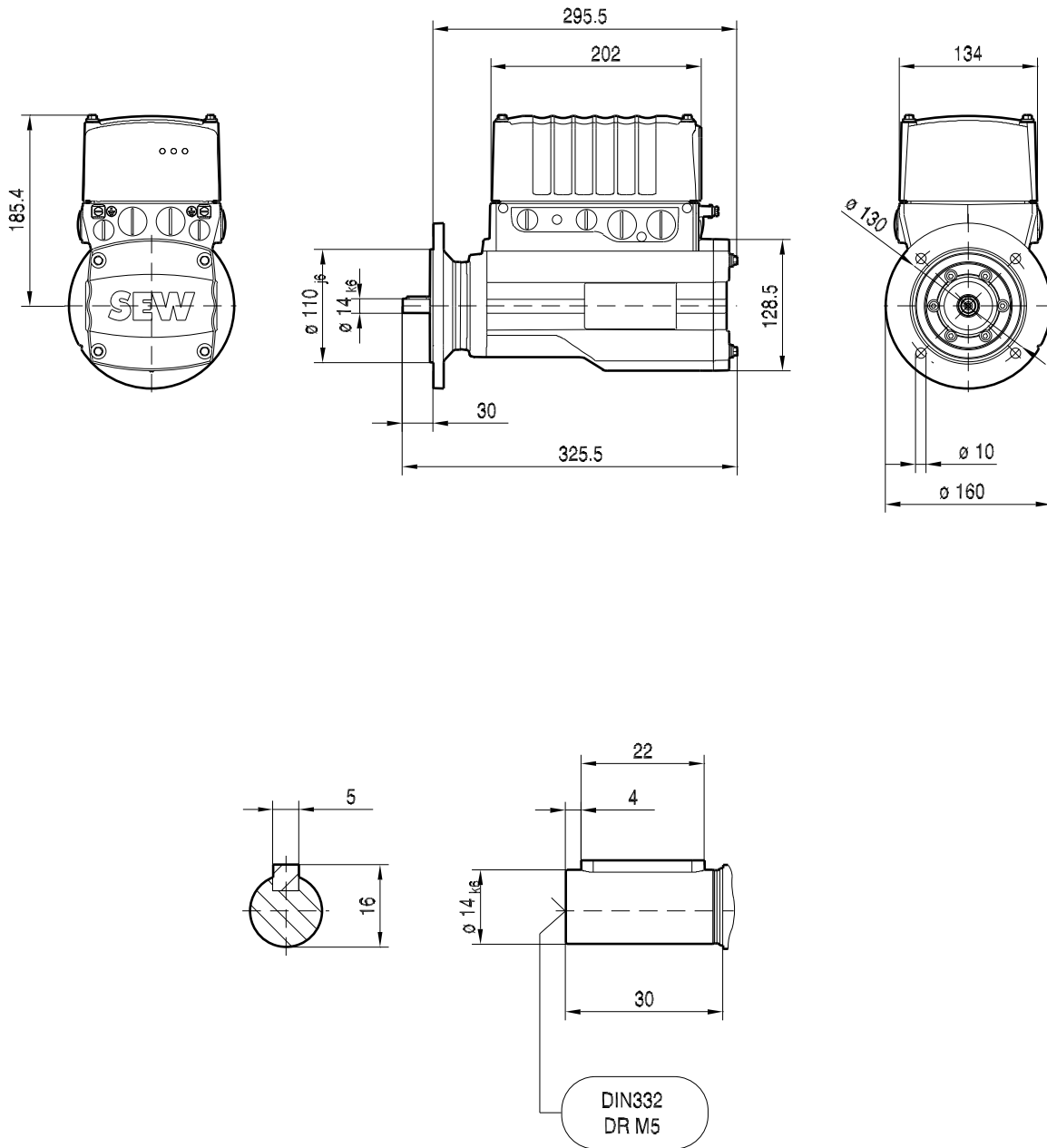
|     |    |
|-----|----|
| kVA | n  |
| f   |    |
| i   |    |
| P   | Hz |

13.7 Dimension drawings

13.7.1 DRC1 with IEC flange<sup>1)</sup>

DRC1

08 104 00 12



8733045515

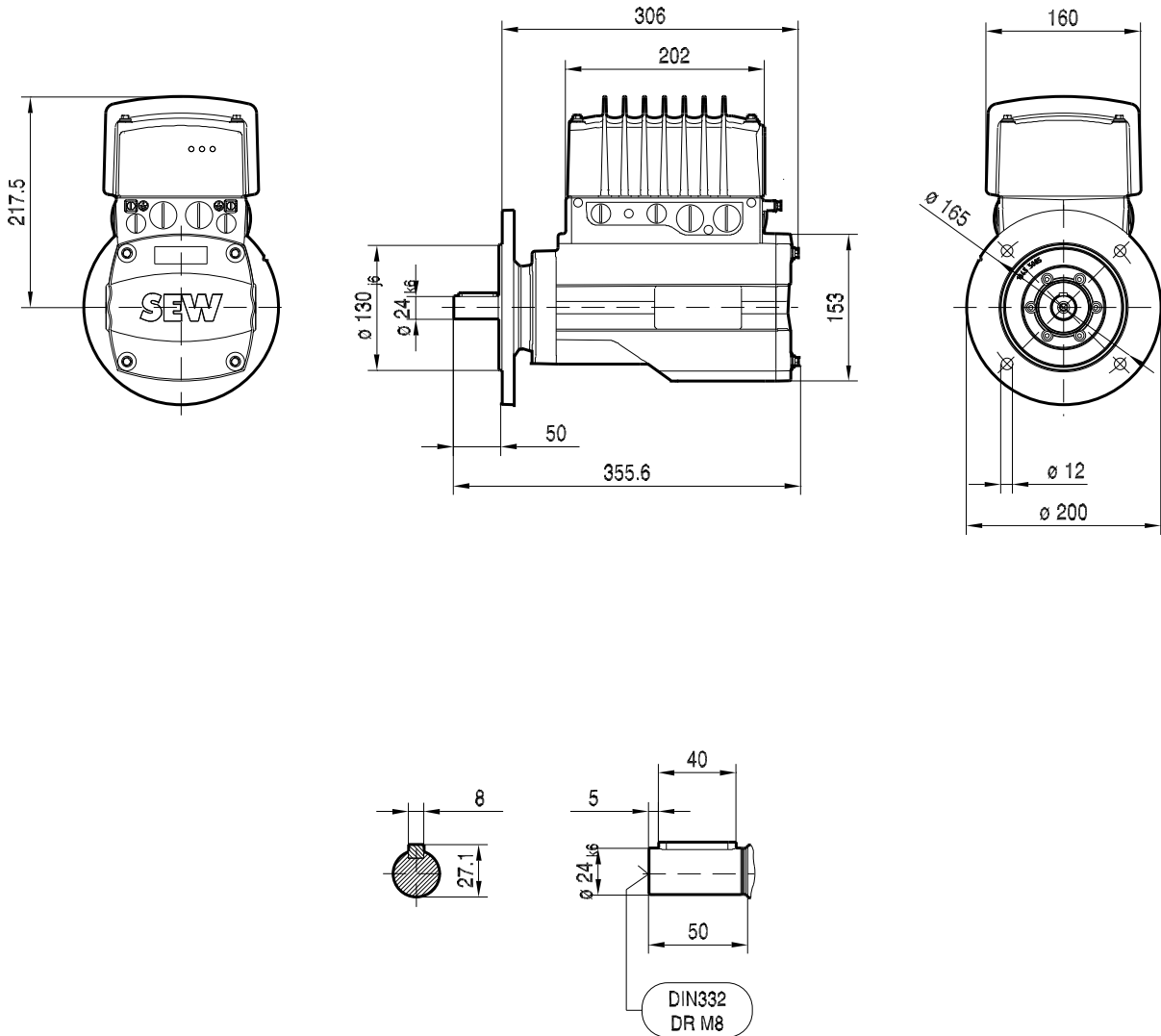
1) For gearmotor dimension sheets, refer to the "DRC Gearmotors" catalog

|       |       |
|-------|-------|
| $kVA$ | $n$   |
|       | $f$   |
| $i$   |       |
| $P$   | $H_z$ |

13.7.2 DRC2 with IEC flange<sup>1)</sup>

**DRC2**

08 105 00 12



8733039755

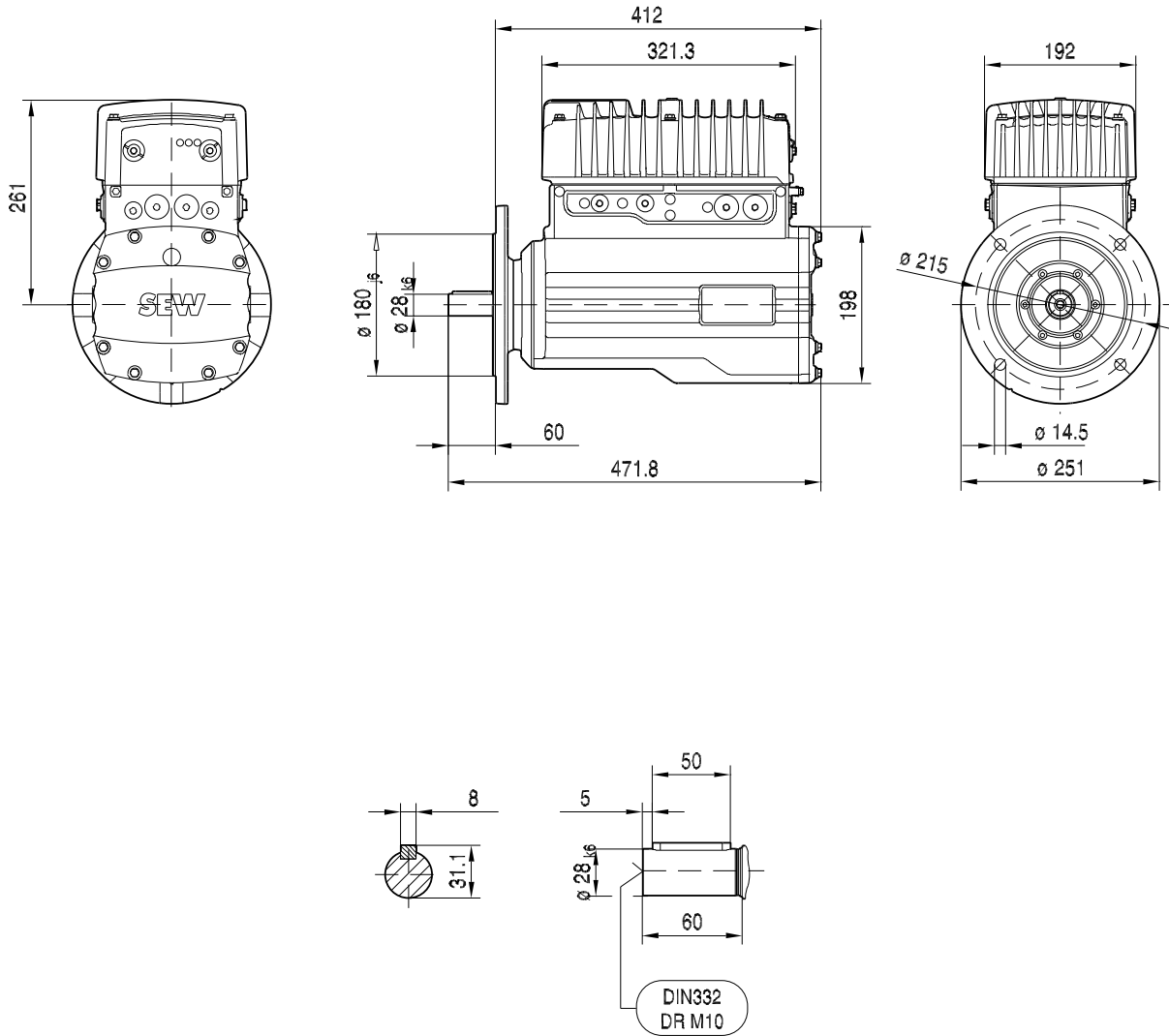
1) For gearmotor dimension sheets, refer to the "DRC Gearmotors" catalog

|     |    |
|-----|----|
| kVA | n  |
| f   |    |
| i   |    |
| P   | Hz |

13.7.3 DRC3/4 with IEC flange<sup>1)</sup>

**DRC3/DRC4**

08 309 00 13



8733041675

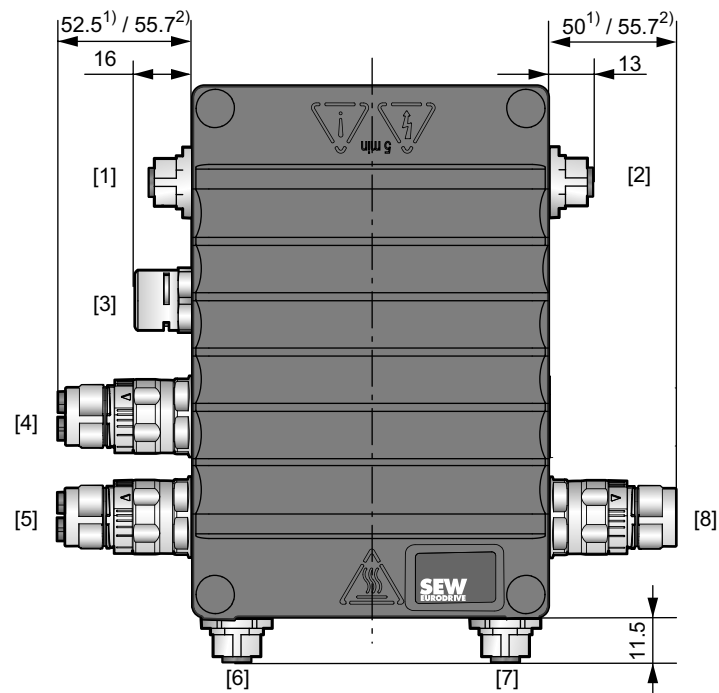
1) For gearmotor dimension sheets, refer to the "DRC Gearmotors" catalog

### 13.7.4 Plug connectors



#### INFORMATION

- The following figure shows an example of the additional dimensions of the optional plug connectors for a possible plug connector configuration.
- For more information, refer to chapter "Electrical Installation / Plug connector positions".



27021600405170827

- 1) "Straight" plug connector variant  
2) "Right-angle" plug connector variant

#### Key

|     |  |
|-----|--|
| [1] | X4271: AS-Interface communication interface  |
| [2] | X5011: AS-Interface sensors  |
| [3] | Pressure compensation fitting in connection with the optional package for wet areas (MOVIGEAR®) / ASEPTIC variant (DRC). |
| [4] | X1203_2: AC 400 V connection   |
| [5] | X1203_1: AC 400 V connection   |
| [6] | X5502: STO – IN  |
| [7] | X5503: STO – OUT   |
| [8] | X5132: Digital inputs/outputs  |

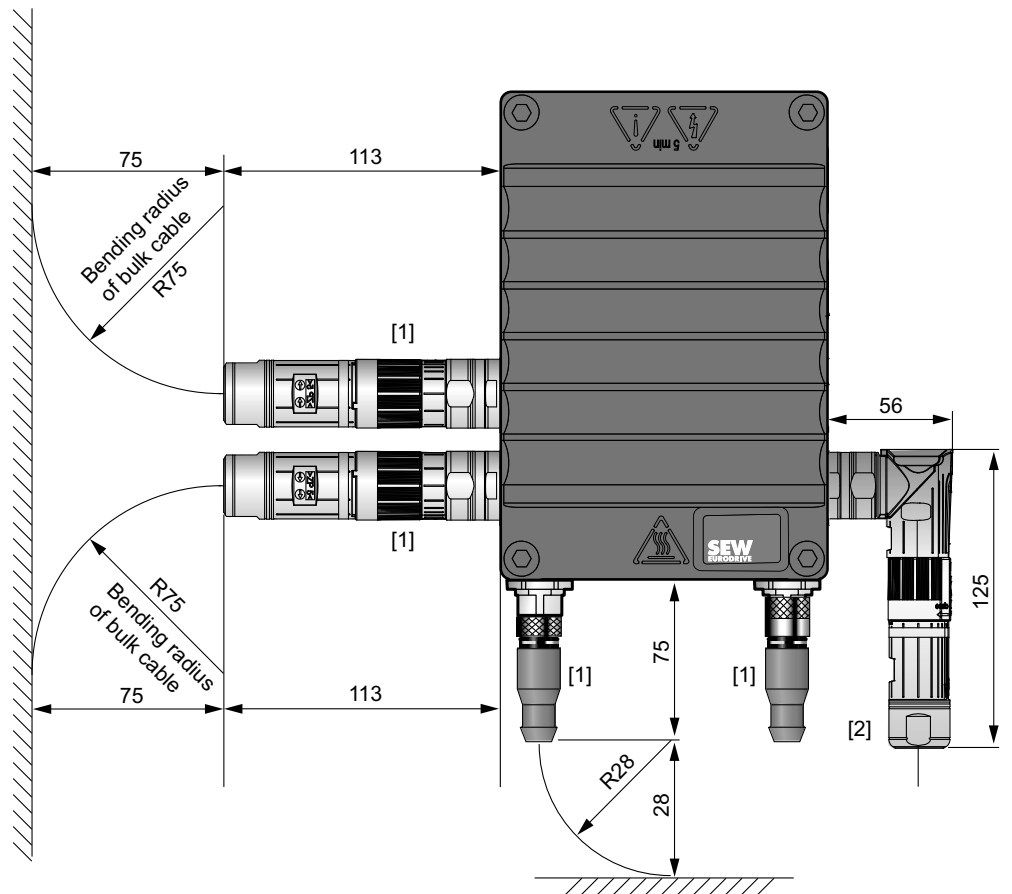


#### 13.7.5 Plug connectors including mating connectors



#### INFORMATION

- The following figure shows the additional dimensions / bending radii of the optional plug connectors including mating connector in connection with prefabricated cables from SEW-EURODRIVE.
- For more information, refer to chapter "Electrical Installation / Plug connector positions".



9007204039096587

- [1] "Straight" plug connector  
 [2] "Right-angle" plug connector





14 EC declaration of conformity

EC Declaration of Conformity



901340111

**SEW-EURODRIVE GmbH & Co KG**  
 Ernst-Blickle-Straße 42, D-76646 Bruchsal



declares under sole responsibility that the

electronic motors of the series           DRC1  
   DRC2  
   DRC3  
   DRC4

possibly in connection with  
 gear units of the series                   R.; RES  
   F.  
   K.; KES  
   W..  
   S..  
   H..

are in conformity with

|                                      |                            |           |
|--------------------------------------|----------------------------|-----------|
| <b>Machinery Directive</b>           | <b>2006/42/EC</b>          | <b>1)</b> |
| <b>Low Voltage Directive</b>         | <b>2006/95/EC</b>          |           |
| <b>EMC Directive</b>                 | <b>2004/108/EC</b>         | <b>4)</b> |
| <b>Applied harmonized standards:</b> | <b>EN ISO 13849-1:2008</b> | <b>5)</b> |
|                                      | <b>EN 61800-5-1:2007</b>   |           |
|                                      | <b>EN 61800-3:2004</b>     |           |

- 1) The products are intended for installation in machines. Startup is prohibited until it has been established that the machinery into which these products are to be incorporated complies with the provisions of the aforementioned Machinery Directive.
- 4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. The assessment was verified for a typical system constellation, but not for the individual product.
- 5) All safety-relevant requirements of the product-specific documentation (operating instructions, manual, etc.) must be met over the entire product life cycle.

|          |          |   |       |
|----------|----------|---|-------|
|          |          |  |       |
| Bruchsal | 15.10.13 | Johann Soder  |       |
| Place    | Date     | Managing Director Technology  | a) b) |

a) Authorized representative for issuing this declaration on behalf of the manufacturer  
 b) Authorized representative for compiling the technical documents

9347856907





## 15 Address list

| Germany  |  |   |   |
|--|--|---|---|
| <b>Headquarters</b><br><b>Production</b><br><b>Sales</b>         | <b>Bruchsal</b>                                | SEW-EURODRIVE GmbH & Co KG<br>Ernst-Blickle-Straße 42<br>D-76646 Bruchsal<br>P.O. Box<br>Postfach 3023 • D-76642 Bruchsal | Tel. +49 7251 75-0<br>Fax +49 7251 75-1970<br><a href="http://www.sew-eurodrive.de">http://www.sew-eurodrive.de</a><br><a href="mailto:sew@sew-eurodrive.de">sew@sew-eurodrive.de</a> |
| <b>Production / Industrial Gears</b>                             | <b>Bruchsal</b>                                | SEW-EURODRIVE GmbH & Co KG<br>Christian-Pähr-Str. 10<br>D-76646 Bruchsal  | Tel. +49 7251 75-0<br>Fax +49 7251 75-2970  |
| <b>Service Competence Center</b>                                 | <b>Mechanics / Mechatronics</b>                | SEW-EURODRIVE GmbH & Co KG<br>Ernst-Blickle-Straße 1<br>D-76676 Graben-Neudorf  | Tel. +49 7251 75-1710<br>Fax +49 7251 75-1711<br><a href="mailto:sc-mitte@sew-eurodrive.de">sc-mitte@sew-eurodrive.de</a>   |
|  | <b>Electronics</b>                             | SEW-EURODRIVE GmbH & Co KG<br>Ernst-Blickle-Straße 42<br>D-76646 Bruchsal   | Tel. +49 7251 75-1780<br>Fax +49 7251 75-1769<br><a href="mailto:sc-elektronik@sew-eurodrive.de">sc-elektronik@sew-eurodrive.de</a>   |
| <b>Drive Technology Center</b>                                   | <b>North</b>                                   | SEW-EURODRIVE GmbH & Co KG<br>Alte Ricklinger Straße 40-42<br>D-30823 Garbsen (near Hannover)                             | Tel. +49 5137 8798-30<br>Fax +49 5137 8798-55<br><a href="mailto:sc-nord@sew-eurodrive.de">sc-nord@sew-eurodrive.de</a>   |
|  | <b>East</b>                                    | SEW-EURODRIVE GmbH & Co KG<br>Dänkritzer Weg 1<br>D-08393 Meerane (near Zwickau)  | Tel. +49 3764 7606-0<br>Fax +49 3764 7606-30<br><a href="mailto:sc-ost@sew-eurodrive.de">sc-ost@sew-eurodrive.de</a>  |
|  | <b>South</b>                                   | SEW-EURODRIVE GmbH & Co KG<br>Domagkstraße 5<br>D-85551 Kirchheim (near München)  | Tel. +49 89 909552-10<br>Fax +49 89 909552-50<br><a href="mailto:sc-sued@sew-eurodrive.de">sc-sued@sew-eurodrive.de</a>   |
|  | <b>West</b>                                    | SEW-EURODRIVE GmbH & Co KG<br>Siemensstraße 1<br>D-40764 Langenfeld (near Düsseldorf)                                     | Tel. +49 2173 8507-30<br>Fax +49 2173 8507-55<br><a href="mailto:sc-west@sew-eurodrive.de">sc-west@sew-eurodrive.de</a>   |
|  | <b>Drive Service Hotline / 24 Hour Service</b> |   |   |
| Additional addresses for service in Germany provided on request! |  |   |   |

| France  |                 |  |  |
|---|-----------------|--|--|
| <b>Production</b><br><b>Sales</b><br><b>Service</b> | <b>Hagenau</b>  | SEW-USOCOME<br>48-54 route de Soufflenheim<br>B. P. 20185<br>F-67506 Hagenau Cedex                       | Tel. +33 3 88 73 67 00<br>Fax +33 3 88 73 66 00<br><a href="http://www.usocome.com">http://www.usocome.com</a><br><a href="mailto:sew@usocome.com">sew@usocome.com</a> |
| <b>Production</b>                                   | <b>Forbach</b>  | SEW-USOCOME<br>Zone industrielle<br>Technopôle Forbach Sud<br>B. P. 30269<br>F-57604 Forbach Cedex       | Tel. +33 3 87 29 38 00   |
| <b>Assembly</b><br><b>Sales</b><br><b>Service</b>   | <b>Bordeaux</b> | SEW-USOCOME<br>Parc d'activités de Magellan<br>62 avenue de Magellan - B. P. 182<br>F-33607 Pessac Cedex | Tel. +33 5 57 26 39 00<br>Fax +33 5 57 26 39 09  |
|   | <b>Lyon</b>     | SEW-USOCOME<br>Parc d'affaires Roosevelt<br>Rue Jacques Tati<br>F-69120 Vaulx en Velin                   | Tel. +33 4 72 15 37 00<br>Fax +33 4 72 15 37 15  |
|   | <b>Nantes</b>   | SEW-USOCOME<br>Parc d'activités de la forêt<br>4 rue des Fontenelles<br>F-44140 Le Bignon                | Tel. +33 2 40 78 42 00<br>Fax +33 2 40 78 42 20  |



| France  |                         |   |   |
|---|-------------------------|---|---|
|   | <b>Paris</b>            | SEW-USOCOME<br>Zone industrielle<br>2 rue Denis Papin<br>F-77390 Verneuil l'Etang   | Tel. +33 1 64 42 40 80<br>Fax +33 1 64 42 40 88   |
| Additional addresses for service in France provided on request! |                         |   |   |
| Algeria   |                         |   |   |
| <b>Sales</b>  | <b>Algiers</b>          | REDUCOM Sarl<br>16, rue des Frères Zaghounne<br>Bellevue<br>16200 El Harrach Alger  | Tel. +213 21 8214-91<br>Fax +213 21 8222-84<br>info@reducom-dz.com<br>http://www.reducom-dz.com                 |
| Argentina   |                         |   |   |
| <b>Assembly<br/>Sales</b>                                       | <b>Buenos Aires</b>     | SEW EURODRIVE ARGENTINA S.A.<br>Ruta Panamericana Km 37.5, Lote 35<br>(B1619IEA) Centro Industrial Garín<br>Prov. de Buenos Aires                             | Tel. +54 3327 4572-84<br>Fax +54 3327 4572-21<br>sewar@sew-eurodrive.com.ar<br>http://www.sew-eurodrive.com.ar  |
| Australia   |                         |   |   |
| <b>Assembly<br/>Sales<br/>Service</b>                           | <b>Melbourne</b>        | SEW-EURODRIVE PTY. LTD.<br>27 Beverage Drive<br>Tullamarine, Victoria 3043  | Tel. +61 3 9933-1000<br>Fax +61 3 9933-1003<br>http://www.sew-eurodrive.com.au<br>enquires@sew-eurodrive.com.au |
|   | <b>Sydney</b>           | SEW-EURODRIVE PTY. LTD.<br>9, Sleigh Place, Wetherill Park<br>New South Wales, 2164   | Tel. +61 2 9725-9900<br>Fax +61 2 9725-9905<br>enquires@sew-eurodrive.com.au                                    |
| Austria   |                         |   |   |
| <b>Assembly<br/>Sales<br/>Service</b>                           | <b>Wien</b>             | SEW-EURODRIVE Ges.m.b.H.<br>Richard-Strauss-Strasse 24<br>A-1230 Wien   | Tel. +43 1 617 55 00-0<br>Fax +43 1 617 55 00-30<br>http://www.sew-eurodrive.at<br>sew@sew-eurodrive.at         |
| Belarus   |                         |   |   |
| <b>Sales</b>  | <b>Minsk</b>            | SEW-EURODRIVE BY<br>RybalkoStr. 26<br>BY-220033 Minsk   | Tel.+375 17 298 47 56 / 298 47 58<br>Fax +375 17 298 47 54<br>http://www.sew.by<br>sales@sew.by                 |
| Belgium   |                         |   |   |
| <b>Assembly<br/>Sales<br/>Service</b>                           | <b>Brussels</b>         | <b>SEW-EURODRIVE n.v./s.a.</b><br>Researchpark Haasrode 1060<br>Evenementenlaan 7<br>BE-3001 Leuven   | Tel. +32 16 386-311<br>Fax +32 16 386-336<br>http://www.sew-eurodrive.be<br>info@sew-eurodrive.be               |
| <b>Service Competence Center</b>                                | <b>Industrial Gears</b> | <b>SEW-EURODRIVE n.v./s.a.</b><br>Rue de Parc Industriel, 31<br>BE-6900 Marche-en-Famenne   | Tel. +32 84 219-878<br>Fax +32 84 219-879<br>http://www.sew-eurodrive.be<br>service-wallonie@sew-eurodrive.be   |
| Brazil  |                         |   |   |
| <b>Production<br/>Sales<br/>Service</b>                         | <b>São Paulo</b>        | SEW-EURODRIVE Brasil Ltda.<br>Avenida Amâncio Gaiolli, 152 - Rodovia Presidente Dutra Km 208<br>Guarulhos - 07251-250 - SP<br>SAT - SEW ATENDE - 0800 7700496 | Tel. +55 11 2489-9133<br>Fax +55 11 2480-3328<br>http://www.sew-eurodrive.com.br<br>sew@sew.com.br              |



| Brazil  |                   |   |   |
|---|-------------------|---|---|
| Assembly<br>Sales<br>Service                                    | <b>Rio Claro</b>  | SEW-EURODRIVE Brasil Ltda.<br>Rodovia Washington Luiz, Km 172<br>Condomínio Industrial Conpark<br>Caixa Postal: 327<br>13501-600 – Rio Claro / SP                               | Tel. +55 19 3522-3100<br>Fax +55 19 3524-6653<br>montadora.rc@sew.com.br  |
|   | <b>Joinville</b>  | SEW-EURODRIVE Brasil Ltda.<br>Rua Dona Francisca, 12.346 – Pirabeiraba<br>89239-270 – Joinville / SC  | Tel. +55 47 3027-6886<br>Fax +55 47 3027-6888<br>filial.sc@sew.com.br   |
|   | <b>Indaiatuba</b> | SEW-EURODRIVE Brasil Ltda.<br>Estrada Municipal Jose Rubim, 205<br>Rodovia Santos Dumont Km 49<br>13347-510 - Indaiatuba / SP   | Tel. +55 19 3835-8000<br>sew@sew.com.br   |
| Bulgaria  |                   |   |   |
| Sales   | <b>Sofia</b>      | BEVER-DRIVE GmbH<br>Bogdanovetz Str.1<br>BG-1606 Sofia  | Tel. +359 2 9151160<br>Fax +359 2 9151166<br>bever@bever.bg   |
| Cameroon  |                   |   |   |
| Sales   | <b>Douala</b>     | Electro-Services<br>Rue Drouot Akwa<br>B.P. 2024<br>Douala  | Tel. +237 33 431137<br>Fax +237 33 431137<br>electrojamba@yahoo.fr  |
| Canada  |                   |   |   |
| Assembly<br>Sales<br>Service                                    | <b>Toronto</b>    | SEW-EURODRIVE CO. OF CANADA LTD.<br>210 Walker Drive<br>Bramalea, ON L6T 3W1  | Tel. +1 905 791-1553<br>Fax +1 905 791-2999<br><a href="http://www.sew-eurodrive.ca">http://www.sew-eurodrive.ca</a><br>l.watson@sew-eurodrive.ca |
|   | <b>Vancouver</b>  | SEW-EURODRIVE CO. OF CANADA LTD.<br>Tilbury Industrial Park<br>7188 Honeyman Street<br>Delta, BC V4G 1G1  | Tel. +1 604 946-5535<br>Fax +1 604 946-2513<br>b.wake@sew-eurodrive.ca  |
|   | <b>Montreal</b>   | SEW-EURODRIVE CO. OF CANADA LTD.<br>2555 Rue Leger<br>Lasalle, PQ H8N 2V9   | Tel. +1 514 367-1124<br>Fax +1 514 367-3677<br>a.peluso@sew-eurodrive.ca  |
| Additional addresses for service in Canada provided on request! |                   |   |   |
| Chile   |                   |   |   |
| Assembly<br>Sales<br>Service                                    | <b>Santiago</b>   | SEW-EURODRIVE CHILE LTDA.<br>Las Encinas 1295<br>Parque Industrial Valle Grande<br>LAMPA<br>RCH-Santiago de Chile<br>P.O. Box<br>Casilla 23 Correo Quilicura - Santiago - Chile | Tel. +56 2 75770-00<br>Fax +56 2 75770-01<br><a href="http://www.sew-eurodrive.cl">http://www.sew-eurodrive.cl</a><br>ventas@sew-eurodrive.cl     |
| China   |                   |   |   |
| Production<br>Assembly<br>Sales<br>Service                      | <b>Tianjin</b>    | SEW-EURODRIVE (Tianjin) Co., Ltd.<br>No. 46, 7th Avenue, TEDA<br>Tianjin 300457   | Tel. +86 22 25322612<br>Fax +86 22 25323273<br>info@sew-eurodrive.cn<br><a href="http://www.sew-eurodrive.cn">http://www.sew-eurodrive.cn</a>     |
|   | <b>Suzhou</b>     | SEW-EURODRIVE (Suzhou) Co., Ltd.<br>333, Suhong Middle Road<br>Suzhou Industrial Park<br>Jiangsu Province, 215021   | Tel. +86 512 62581781<br>Fax +86 512 62581783<br>suzhou@sew-eurodrive.cn  |



| China  |  |   |  |
|--|--|---|--|
|  | <b>Guangzhou</b>                                       | SEW-EURODRIVE (Guangzhou) Co., Ltd.<br>No. 9, JunDa Road<br>East Section of GETDD<br>Guangzhou 510530                         | Tel. +86 20 82267890<br>Fax +86 20 82267922<br>guangzhou@sew-eurodrive.cn  |
|  | <b>Shenyang</b>  | SEW-EURODRIVE (Shenyang) Co., Ltd.<br>10A-2, 6th Road<br>Shenyang Economic Technological Development Area<br>Shenyang, 110141 | Tel. +86 24 25382538<br>Fax +86 24 25382580<br>shenyang@sew-eurodrive.cn   |
|  | <b>Wuhan</b>   | SEW-EURODRIVE (Wuhan) Co., Ltd.<br>10A-2, 6th Road<br>No. 59, the 4th Quanli Road, WEDA<br>430056 Wuhan                       | Tel. +86 27 84478388<br>Fax +86 27 84478389<br>wuhan@sew-eurodrive.cn  |
|  | <b>Xi'An</b>   | SEW-EURODRIVE (Xi'An) Co., Ltd.<br>No. 12 Jinye 2nd Road<br>Xi'An High-Technology Industrial Development Zone<br>Xi'An 710065 | Tel. +86 29 68686262<br>Fax +86 29 68686311<br>xian@sew-eurodrive.cn   |
| Additional addresses for service in China provided on request! |  |   |  |
| Colombia   |  |   |  |
| <b>Assembly<br/>Sales<br/>Service</b>                          | <b>Bogotá</b>  | SEW-EURODRIVE COLOMBIA LTDA.<br>Calle 22 No. 132-60<br>Bodega 6, Manzana B<br>Santafé de Bogotá                               | Tel. +57 1 54750-50<br>Fax +57 1 54750-44<br><a href="http://www.sew-eurodrive.com.co">http://www.sew-eurodrive.com.co</a><br>sew@sew-eurodrive.com.co |
| Croatia  |  |   |  |
| <b>Sales<br/>Service</b>                                       | <b>Zagreb</b>  | KOMPEKS d. o. o.<br>Zeleni dol 10<br>HR 10 000 Zagreb   | Tel. +385 1 4613-158<br>Fax +385 1 4613-158<br>kompeks@inet.hr   |
| Czech Republic   |  |   |  |
| <b>Sales<br/>Assembly<br/>Service</b>                          | <b>Hostivice</b>                                       | SEW-EURODRIVE CZ s.r.o.<br>Floriánova 2459<br>253 01 Hostivice  | Tel. +420 255 709 601<br>Fax +420 235 350 613<br><a href="http://www.sew-eurodrive.cz">http://www.sew-eurodrive.cz</a><br>sew@sew-eurodrive.cz         |
|  | <b>Drive Service<br/>Hotline / 24 Hour<br/>Service</b> | HOT-LINE +420 800 739 739 (800 SEW SEW)   | <b>Servis:</b><br>Tel. +420 255 709 632<br>Fax +420 235 358 218<br>servis@sew-eurodrive.cz   |
| Denmark  |  |   |  |
| <b>Assembly<br/>Sales<br/>Service</b>                          | <b>Copenhagen</b>                                      | SEW-EURODRIVEA/S<br>Geminivej 28-30<br>DK-2670 Greve  | Tel. +45 43 9585-00<br>Fax +45 43 9585-09<br><a href="http://www.sew-eurodrive.dk">http://www.sew-eurodrive.dk</a><br>sew@sew-eurodrive.dk             |
| Egypt  |  |   |  |
| <b>Sales<br/>Service</b>                                       | <b>Cairo</b>   | Copam Egypt<br>for Engineering & Agencies<br>33 El Hegaz ST, Heliopolis, Cairo  | Tel. +20 2 22566-299 +1 23143088<br>Fax +20 2 22594-757<br><a href="http://www.copam-egypt.com/">http://www.copam-egypt.com/</a><br>copam@datum.com.eg |
| Estonia  |  |   |  |
| <b>Sales</b>   | <b>Tallin</b>  | ALAS-KUUL AS<br>Reti tee 4<br>EE-75301 Peetri küla, Rae vald, Harjumaa  | Tel. +372 6593230<br>Fax +372 6593231<br>veiko.soots@alas-kuul.ee  |



| Finland   |                   |  |   |
|---|-------------------|--|---|
| <b>Assembly<br/>Sales<br/>Service</b>                       | <b>Hollola</b>    | SEW-EURODRIVE OY<br>Vesimäentie 4<br>FIN-15860 Hollola 2   | Tel. +358 201 589-300<br>Fax +358 3 780-6211<br><a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a><br>sew@sew.fi   |
| <b>Service</b>  | <b>Hollola</b>    | SEW-EURODRIVE OY<br>Keskikankaantie 21<br>FIN-15860 Hollola  | Tel. +358 201 589-300<br>Fax +358 3 780-6211<br><a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a><br>sew@sew.fi   |
| <b>Production<br/>Assembly</b>                              | <b>Karkkila</b>   | SEW Industrial Gears Oy<br>Valurinkatu 6, PL 8<br>FI-03600 Karkkila, 03601 Karkkila  | Tel. +358 201 589-300<br>Fax +358 201 589-310<br>sew@sew.fi<br><a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a>  |
| Gabon   |                   |  |   |
| <b>Sales</b>  | <b>Libreville</b> | ESG Electro Services Gabun<br>Feu Rouge Lalala<br>1889 Libreville<br>Gabun   | Tel. +241 741059<br>Fax +241 741059<br>esg_services@yahoo.fr  |
| Great Britain   |                   |  |   |
| <b>Assembly<br/>Sales<br/>Service</b>                       | <b>Normanton</b>  | SEW-EURODRIVE Ltd.<br>DeVilliers Way<br>Trident Park<br>Normanton<br>West Yorkshire<br>WF6 1GX                                     | Tel. +44 1924 893-855<br>Fax +44 1924 893-702<br><a href="http://www.sew-eurodrive.co.uk">http://www.sew-eurodrive.co.uk</a><br>info@sew-eurodrive.co.uk  |
| <b>Drive Service Hotline / 24 Hour Service</b>              |                   |  | Tel. 01924 896911   |
| Greece  |                   |  |   |
| <b>Sales</b>  | <b>Athens</b>     | Christ. Boznos & Son S.A.<br>12, K. Mavromichali Street<br>P.O. Box 80136<br>GR-18545 Piraeus                                      | Tel. +30 2 1042 251-34<br>Fax +30 2 1042 251-59<br><a href="http://www.boznos.gr">http://www.boznos.gr</a><br>info@boznos.gr  |
| Hong Kong   |                   |  |   |
| <b>Assembly<br/>Sales<br/>Service</b>                       | <b>Hong Kong</b>  | SEW-EURODRIVE LTD.<br>Unit No. 801-806, 8th Floor<br>Hong Leong Industrial Complex<br>No. 4, Wang Kwong Road<br>Kowloon, Hong Kong | Tel. +852 36902200<br>Fax +852 36902211<br>contact@sew-eurodrive.hk   |
| Hungary   |                   |  |   |
| <b>Sales<br/>Service</b>                                    | <b>Budapest</b>   | SEW-EURODRIVE Kft.<br>H-1037 Budapest<br>Kunigunda u. 18   | Tel. +36 1 437 06-58<br>Fax +36 1 437 06-50<br><a href="http://www.sew-eurodrive.hu">http://www.sew-eurodrive.hu</a><br>office@sew-eurodrive.hu   |
| India   |                   |  |   |
| <b>Registered Office<br/>Assembly<br/>Sales<br/>Service</b> | <b>Vadodara</b>   | SEW-EURODRIVE India Private Limited<br>Plot No. 4, GIDC<br>POR Ramangamdi • Vadodara - 391 243<br>Gujarat                          | Tel. +91 265 3045200, +91 265 2831086<br>Fax +91 265 3045300, +91 265 2831087<br><a href="http://www.seweurodriveindia.com">http://www.seweurodriveindia.com</a><br>salesvadodara@seweurodriveindia.com |



| India           |                 |  |  |
|-----------------|-----------------|--|--|
| <b>Assembly</b> | <b>Chennai</b>  | SEW-EURODRIVE India Private Limited  | Tel. +91 44 37188888   |
| <b>Sales</b>    |                 | Plot No. K3/1, Sipcot Industrial Park Phase II   | Fax +91 44 37188811  |
| <b>Service</b>  |                 | Mambakkam Village<br>Sriperumbudur - 602105<br>Kancheepuram Dist, Tamil Nadu                                 | saleschennai@seweurodriveindia.com   |
| Ireland         |                 |  |  |
| <b>Sales</b>    | <b>Dublin</b>   | Alperton Engineering Ltd.  | Tel. +353 1 830-6277   |
| <b>Service</b>  |                 | 48 Moyle Road<br>Dublin Industrial Estate<br>Glasnevin, Dublin 11  | Fax +353 1 830-6458<br>info@alperton.ie<br>http://www.alperton.ie                  |
| Israel          |                 |  |  |
| <b>Sales</b>    | <b>Tel-Aviv</b> | Liraz Handasa Ltd.   | Tel. +972 3 5599511  |
|                 |                 | Ahofer Str 34B / 228<br>58858 Holon  | Fax +972 3 5599512<br>http://www.liraz-handasa.co.il<br>office@liraz-handasa.co.il |
| Italy           |                 |  |  |
| <b>Assembly</b> | <b>Solaro</b>   | SEW-EURODRIVE di R. Blicke & Co.s.a.s.   | Tel. +39 02 96 9801  |
| <b>Sales</b>    |                 | Via Bernini,14   | Fax +39 02 96 980 999  |
| <b>Service</b>  |                 | I-20020 Solaro (Milano)  | http://www.sew-eurodrive.it<br>sewit@sew-eurodrive.it                              |
| Ivory Coast     |                 |  |  |
| <b>Sales</b>    | <b>Abidjan</b>  | SICA   | Tel. +225 21 25 79 44  |
|                 |                 | Société Industrielle & Commerciale pour<br>l'Afrique<br>165, Boulevard de Marseille<br>26 BP 1173 Abidjan 26 | Fax +225 21 25 88 28<br>sicamot@aviso.ci   |
| Japan           |                 |  |  |
| <b>Assembly</b> | <b>Iwata</b>    | SEW-EURODRIVE JAPAN CO., LTD   | Tel. +81 538 373811  |
| <b>Sales</b>    |                 | 250-1, Shimoman-no,  | Fax +81 538 373855   |
| <b>Service</b>  |                 | Iwata<br>Shizuoka 438-0818   | http://www.sew-eurodrive.co.jp<br>sewjapan@sew-eurodrive.co.jp                     |
| Kazakhstan      |                 |  |  |
| <b>Sales</b>    | <b>Almaty</b>   | ТОО "СЕВ-ЕВРОДРАЙВ"  | Тел. +7 (727) 334 1880   |
|                 |                 | пр.Райымбека, 348<br>050061 г. Алматы<br>Республика Казахстан  | Факс +7 (727) 334 1881<br>http://www.sew-eurodrive.kz<br>sew@sew-eurodrive.kz      |
| Kenya           |                 |  |  |
| <b>Sales</b>    | <b>Nairobi</b>  | Barico Maintenances Ltd  | Tel. +254 20 6537094/5   |
|                 |                 | Kamutaga Place<br>Commercial Street<br>Industrial Area<br>P.O.BOX 52217 - 00200<br>Nairobi                   | Fax +254 20 6537096<br>info@barico.co.ke   |
| Latvia          |                 |  |  |
| <b>Sales</b>    | <b>Riga</b>     | SIA Alas-Kuul  | Tel. +371 6 7139253  |
|                 |                 | Katlakalna 11C<br>LV-1073 Riga   | Fax +371 6 7139386<br>http://www.alas-kuul.com<br>info@alas-kuul.com               |



| Lebanon   |                     |   |  |
|---|---------------------|---|--|
| <b>Sales Lebanon</b>  | <b>Beirut</b>       | Gabriel Acar & Fils sarl<br>B. P. 80484<br>Bourj Hammoud, Beirut  | Tel. +961 1 510 532<br>Fax +961 1 494 971<br>ssacar@inco.com.lb  |
|   |                     | After Sales Service   | service@medrives.com   |
| <b>Sales Jordan /<br/>Kuwait / Saudi Ara-<br/>bia / Syria</b> | <b>Beirut</b>       | Middle East Drives S.A.L. (offshore)<br>Sin El Fil.<br>B. P. 55-378<br>Beirut   | Tel. +961 1 494 786<br>Fax +961 1 494 971<br>info@medrives.com<br>http://www.medrives.com                        |
|   |                     | After Sales Service   | service@medrives.com   |
| Lithuania   |                     |   |  |
| <b>Sales</b>  | <b>Alytus</b>       | UAB Irseva<br>Statybininku 106C<br>LT-63431 Alytus  | Tel. +370 315 79204<br>Fax +370 315 56175<br>irmantas@irseva.lt<br>http://www.sew-eurodrive.lt                   |
| Luxembourg  |                     |   |  |
| <b>Assembly<br/>Sales<br/>Service</b>                         | <b>Brussels</b>     | <b>SEW-EURODRIVE n.v./s.a.</b><br>Researchpark Haasrode 1060<br>Evenementenlaan 7<br>BE-3001 Leuven   | Tel. +32 16 386-311<br>Fax +32 16 386-336<br>http://www.sew-eurodrive.lu<br>info@sew-eurodrive.be                |
| Madagascar  |                     |   |  |
| <b>Sales</b>  | <b>Antananarivo</b> | Ocean Trade<br>BP21bis. Andraharo<br>Antananarivo.<br>101 Madagascar  | Tel. +261 20 2330303<br>Fax +261 20 2330330<br>oceanrabp@moov.mg   |
| Malaysia  |                     |   |  |
| <b>Assembly<br/>Sales<br/>Service</b>                         | <b>Johor</b>        | SEW-EURODRIVE SDN BHD<br>No. 95, Jalan Seroja 39, Taman Johor Jaya<br>81000 Johor Bahru, Johor<br>West Malaysia                                       | Tel. +60 7 3549409<br>Fax +60 7 3541404<br>sales@sew-eurodrive.com.my  |
| Mexico  |                     |   |  |
| <b>Assembly<br/>Sales<br/>Service</b>                         | <b>Quéretaro</b>    | SEW-EURODRIVE MEXICO SA DE CV<br>SEM-981118-M93<br>Tequisquiapan No. 102<br>Parque Industrial Quéretaro<br>C.P. 76220<br>Quéretaro, México            | Tel. +52 442 1030-300<br>Fax +52 442 1030-301<br>http://www.sew-eurodrive.com.mx<br>scmexico@seweurodrive.com.mx |
| Mongolia  |                     |   |  |
| <b>Sales</b>  | <b>Ulan Bator</b>   | SEW-EURODRIVE Representative Office Mon-<br>golia<br>Olympic street 8,<br>2nd floor Juulchin corp bldg.,<br>Sukhbaatar district,<br>Ulaanbaatar 14253 | Tel. +976-70009997<br>Fax +976-70009997<br>http://www.sew-eurodrive.mn<br>sew@sew-eurodrive.mn                   |
| Morocco   |                     |   |  |
| <b>Sales<br/>Service</b>                                      | <b>Mohammedia</b>   | SEW-EURODRIVE SARL<br>2 bis, Rue Al Jahid<br>28810 Mohammedia   | Tel. +212 523 32 27 80/81<br>Fax +212 523 32 27 89<br>sew@sew-eurodrive.ma<br>http://www.sew-eurodrive.ma        |





| Namibia   |                            |  |  |
|---|----------------------------|--|--|
| <b>Sales</b>                                      | <b>Swakopmund</b>          | DB Mining & Industrial Services<br>Einstein Street<br>Strauss Industrial Park<br>Unit1<br>Swakopmund   | Tel. +264 64 462 738<br>Fax +264 64 462 734<br>sales@dbmining.in.na  |
| Netherlands                                       |                            |  |  |
| <b>Assembly</b><br><b>Sales</b><br><b>Service</b> | <b>Rotterdam</b>           | SEW-EURODRIVE B.V.<br>Industrieweg 175<br>NL-3044 AS Rotterdam<br>Postbus 10085<br>NL-3004 AB Rotterdam  | Tel. +31 10 4463-700<br>Fax +31 10 4155-552<br>Service: 0800-SEWHELP<br><a href="http://www.sew-eurodrive.nl">http://www.sew-eurodrive.nl</a><br>info@sew-eurodrive.nl |
| New Zealand                                       |                            |  |  |
| <b>Assembly</b><br><b>Sales</b><br><b>Service</b> | <b>Auckland</b>            | SEW-EURODRIVE NEW ZEALAND LTD.<br>P.O. Box 58-428<br>82 Greenmount drive<br>East Tamaki Auckland   | Tel. +64 9 2745627<br>Fax +64 9 2740165<br><a href="http://www.sew-eurodrive.co.nz">http://www.sew-eurodrive.co.nz</a><br>sales@sew-eurodrive.co.nz                    |
|   | <b>Christchurch</b>        | SEW-EURODRIVE NEW ZEALAND LTD.<br>10 Settlers Crescent, Ferrymead<br>Christchurch  | Tel. +64 3 384-6251<br>Fax +64 3 384-6455<br>sales@sew-eurodrive.co.nz   |
| Nigeria   |                            |  |  |
| <b>Sales</b>                                      | <b>Lagos</b>               | EISNL Engineering Solutions and Drives Ltd<br>Plot 9, Block A, Ikeja Industrial Estate ( Ogba Scheme)<br>Adeniyi Jones St. End<br>Off ACME Road, Ogba, Ikeja, Lagos<br>Nigeria | Tel. +234 (0)1 217 4332<br>team.sew@eisnl.com<br><a href="http://www.eisnl.com">http://www.eisnl.com</a>   |
| Norway  |                            |  |  |
| <b>Assembly</b><br><b>Sales</b><br><b>Service</b> | <b>Moss</b>                | SEW-EURODRIVE A/S<br>Solgaard skog 71<br>N-1599 Moss   | Tel. +47 69 24 10 20<br>Fax +47 69 24 10 40<br><a href="http://www.sew-eurodrive.no">http://www.sew-eurodrive.no</a><br>sew@sew-eurodrive.no                           |
| Pakistan  |                            |  |  |
| <b>Sales</b>                                      | <b>Karachi</b>             | Industrial Power Drives<br>Al-Fatah Chamber A/3, 1st Floor Central Commercial Area,<br>Sultan Ahmed Shah Road, Block 7/8,<br>Karachi   | Tel. +92 21 452 9369<br>Fax +92-21-454 7365<br>seweurodrive@cyber.net.pk   |
| Paraguay  |                            |  |  |
| <b>Sales</b>                                      | <b>Fernando de la Mora</b> | SEW-EURODRIVE PARAGUAY S.R.L<br>De la Victoria 112, Esquina nueva Asunción<br>Departamento Central<br>Fernando de la Mora, Barrio Bernardino                                   | Tel. +595 991 519695<br>Fax +595 21 3285539<br>sew-py@sew-eurodrive.com.py   |
| Peru  |                            |  |  |
| <b>Assembly</b><br><b>Sales</b><br><b>Service</b> | <b>Lima</b>                | SEW DEL PERU MOTORES REDUCTORES S.A.C.<br>Los Calderos, 120-124<br>Urbanizacion Industrial Vulcano, ATE, Lima  | Tel. +51 1 3495280<br>Fax +51 1 3493002<br><a href="http://www.sew-eurodrive.com.pe">http://www.sew-eurodrive.com.pe</a><br>sewperu@sew-eurodrive.com.pe               |
| Poland  |                            |  |  |
| <b>Assembly</b><br><b>Sales</b><br><b>Service</b> | <b>Lodz</b>                | SEW-EURODRIVE Polska Sp.z.o.o.<br>ul. Techniczna 5<br>PL-92-518 Łódź   | Tel. +48 42 676 53 00<br>Fax +48 42 676 53 49<br><a href="http://www.sew-eurodrive.pl">http://www.sew-eurodrive.pl</a><br>sew@sew-eurodrive.pl                         |



| Poland                                |                        |   |   |
|---------------------------------------|------------------------|---|---|
|                                       | <b>Service</b>         | Tel. +48 42 6765332 / 42 6765343<br>Fax +48 42 6765346  | Linia serwisowa Hotline 24H<br>Tel. +48 602 739 739<br>(+48 602 SEW SEW)<br>serwis@sew-eurodrive.pl   |
| Portugal                              |                        |   |   |
| <b>Assembly<br/>Sales<br/>Service</b> | <b>Coimbra</b>         | SEW-EURODRIVE, LDA.<br>Apartado 15<br>P-3050-901 Mealhada                                     | Tel. +351 231 20 9670<br>Fax +351 231 20 3685<br><a href="http://www.sew-eurodrive.pt">http://www.sew-eurodrive.pt</a><br>infosew@sew-eurodrive.pt        |
| Romania                               |                        |   |   |
| <b>Sales<br/>Service</b>              | <b>Bucharest</b>       | Sialco Trading SRL<br>str. Brazilia nr. 36<br>011783 Bucuresti                                | Tel. +40 21 230-1328<br>Fax +40 21 230-7170<br>sialco@sialco.ro   |
| Russia                                |                        |   |   |
| <b>Assembly<br/>Sales<br/>Service</b> | <b>St. Petersburg</b>  | ZAO SEW-EURODRIVE<br>P.O. Box 36<br>RUS-195220 St. Petersburg                                 | Tel. +7 812 3332522 +7 812 5357142<br>Fax +7 812 3332523<br><a href="http://www.sew-eurodrive.ru">http://www.sew-eurodrive.ru</a><br>sew@sew-eurodrive.ru |
| Senegal                               |                        |   |   |
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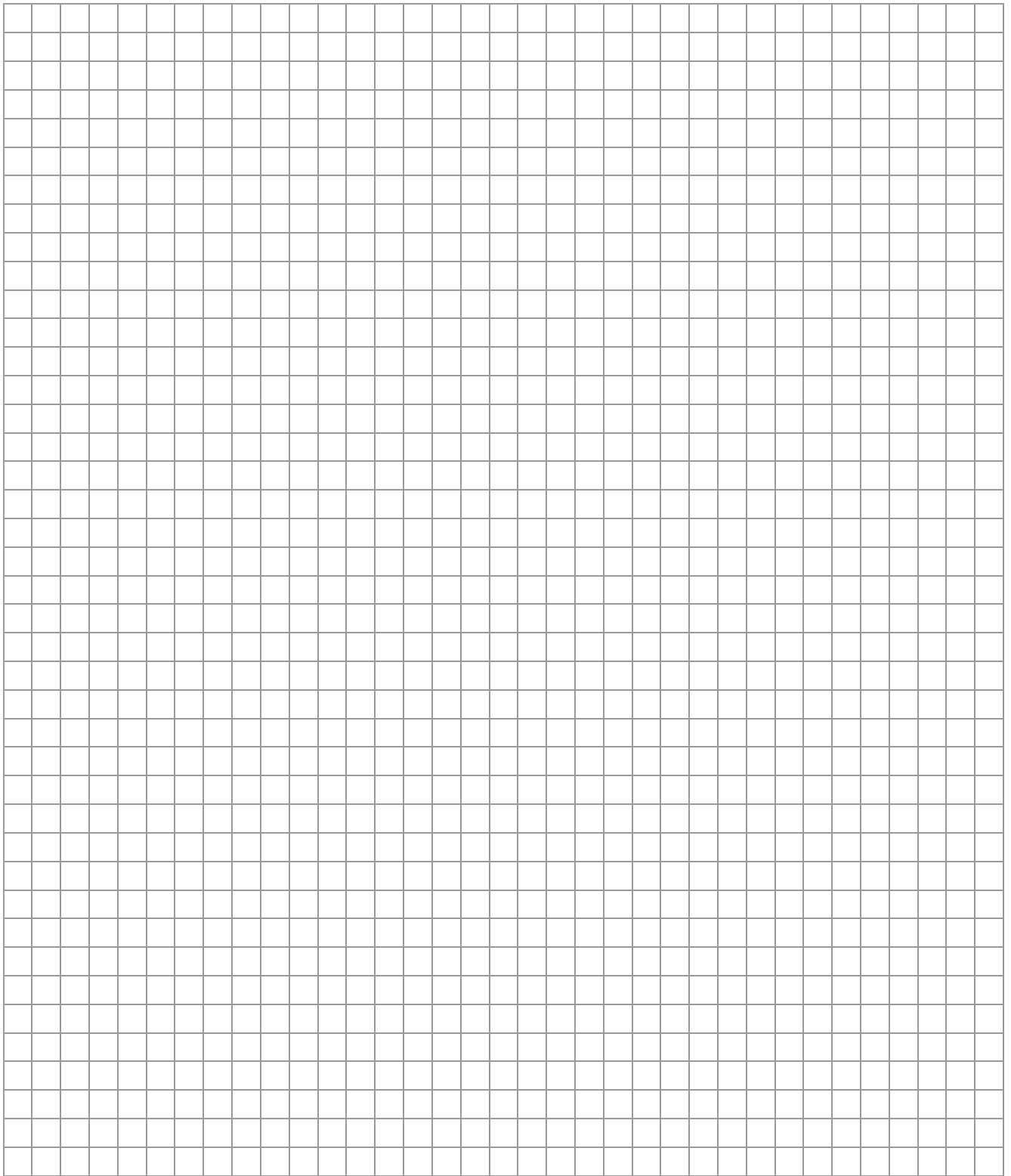
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