SEW EURODRIVE

Operating Instructions

Safety-Related BST Brake Module (as from Build Status 12 11)

For Control Cabinet Installation

Edition 12/2019

22296611/EN

Inhaltsverzeichnis

22296611/EN – 12/2019

22296611/EN – 12/2019

22296611/EN – 12/2019

1 General information

1.1 About this documentation

The documentation at hand is the original.

This documentation is an integral part of the product. The documentation is intended for all employees who perform work on the product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the systems and their operation as well as persons who work on the product independently 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 grading and meaning of the signal words for safety notes.

Signal word	Meaning	Consequences if disregarded
⚠ **DANGER**	Imminent hazard	Severe or fatal injuries
⚠ **WARNING**	Possible dangerous situation	Severe or fatal injuries
⚠ **CAUTION**	Possible dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the product or its environment
INFORMATION	Useful information or tip: Simplifies handling of the product.	

1.2.2 Structure of section-related safety notes

Section-related safety notes do not apply to a specific action but to several actions pertaining to one subject. The hazard 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 hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

22296611/EN – 12/2019

Meaning of the hazard symbols

The hazard symbols in the safety notes have the following meaning:

Hazard symbol	Meaning
	General hazard
	Warning of dangerous electrical voltage

1.2.3 Structure of 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 limited warranty

Read the information in this documentation. This is essential for fault-free operation and fulfillment of any rights to claim under limited warranty. Read the documentation before you start working with the product.

1.4 Content of the documentation

This documentation contains additional safety-related information and conditions for operation in safety-related applications.

1.5 Applicable documentation

Observe the other applicable documentation regarding the units connected to the safety-related BST brake module.

Make sure you always use the latest documentation and software version.

Our documentation is available in various languages for download from the SEW homepage (www.sew-eurodrive.com). If you are unclear about any of the information in this documentation or if you require further information, contact SEW-EURODRIVE.

If required, you can order printed copies of the documentation from SEW-EURODRIVE.

1.6 Decimal separator in numerical values

In this document, a period is used to indicate the decimal separator.

Example: 30.5 kg

22296611/EN – 12/2019

1.7 Product names and trademarks

The brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.8 Copyright notice

22296611/EN – 12/2019

2 Safety notes

2.1 Preliminary information

The following general safety notes serve the purpose of preventing injury to persons and damage to property. They primarily apply to the use of products described in this documentation. If you use additional components, also observe the relevant warning and safety notes.

2.2 Duties of the user

As the user, you must ensure that the basic safety notes are observed and complied with. Make sure that persons responsible for the machinery and its operation as well as persons who work on the device independently have read through the documentation carefully and understood it.

As the user, you must ensure that all of the work listed in the following is carried out only by qualified specialists:

- Setup and installation
- Installation and connection
- Startup
- Maintenance and repairs
- Shutdown
- Disassembly

Ensure that the persons who work on the product pay attention to the following regulations, conditions, documentation, and information:

- National and regional safety and accident prevention regulations
- Warning and safety signs on the product
- All other relevant project planning documents, installation and startup instructions, and wiring diagrams
- Do not assemble, install or operate damaged products
- All system-specific specifications and conditions

Ensure that systems in which the product is installed are equipped with additional monitoring and protection devices. Observe the applicable safety regulations and legislation governing technical work equipment and accident prevention regulations.

22296611/EN – 12/2019

2.3 Target group

Specialist for mechanical work

Any mechanical work may be performed only by adequately qualified specialists. Specialists in the context of this documentation are persons who are familiar with the design, mechanical installation, troubleshooting, and maintenance of the product who possess the following qualifications:

- Qualification in the mechanical area in accordance with the national regulations
- Familiarity with this documentation

Specialist for electrotechnical work

Any electrotechnical work may be performed only by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons who are familiar with electrical installation, startup, troubleshooting, and maintenance of the product who possess the following qualifications:

- Qualification in the electrotechnical area in accordance with the national regulations
- Familiarity with this documentation

Additional qualification

In addition to that, these persons must be familiar with the valid safety regulations and laws, as well as with the requirements of the standards, directives, and laws specified in this documentation.

The persons must have the express authorization of the company to operate, program, parameterize, label, and ground devices, systems, and circuits in accordance with the standards of safety technology.

Instructed persons

All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately. The purpose of the instruction is to give persons the ability to perform the required tasks and work steps in a safe and correct manner.

2.4 Transport

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. If the product is damaged, it must not be assembled, installed or started up.

Observe the following notes when transporting the device:

- Ensure that the product is not subject to mechanical impact.

If necessary, use suitable, sufficiently dimensioned handling equipment.

Observe the information on climatic conditions in the chapter "Technical data" of the documentation.

22296611/EN – 12/2019

2.5 Designated use

The product is intended for use in industrial and commercial systems.

This product is designated for use as:

- A safety-related component for the functionally safe interruption of the power supply to a brake connected to the product
- A safety-related component within the meaning of the Machinery Directive 2006/42/EC
- An SRP/CS within the meaning of EN ISO 13849
- As a device for implementing a safety subfunction (of a PDS(SR)) within the meaning of EN ISO 61800-5-2

In the case of installation in electrical systems or machines, it is prohibited to start the proper operation of the product until it is determined that the machine meets the requirements stipulated in the local laws and directives.

The Machinery Directive 2006/42/EC applies in particular in the European region.

The standards given in the declaration of conformity apply to the product.

Unintended or improper use of the product may result in severe injury to persons and damage to property.

Technical data and information on the connection conditions are provided on the nameplate and in the chapter "Technical data" in the documentation. Always comply with the data and conditions.

2.5.1 Restrictions under the European WEEE Directive 2012/19/EU

You may use options and accessories from SEW-EURODRIVE exclusively in connection with products from SEW-EURODRIVE.

2.6 Electrical connection

Make sure that preventive measures and protection devices comply with the applicable regulations (e.g. EN 60204-1 or EN 61800-5-1).

You will find notes on EMC-compliant installation (shielding, grounding, arrangement of filters and routing of lines) in chapter "Measures for electromagnetic compatibility". The manufacturer of the system or machine is responsible for maintaining the limits established by EMC legislation.

2.7 Installation/assembly

Ensure that the product is installed and cooled in accordance with the regulations in the documentation.

Protect the product from excessive mechanical strain. The product and its mounted components must not protrude into the path of persons or vehicles. Ensure that no components are deformed or no insulation spaces are modified, particularly during transportation. Electrical components must not be mechanically damaged or destroyed.

Observe the notes in chapter "Mechanical installation" (→ 🗎 27) in the documentation.

22296611/EN – 12/2019

2.8 Startup/operation

Observe the safety notes in the chapters "Startup" (→ 🗎 49) and Operation in the documentation.

Depending on the degree of protection, products may have live, uninsulated, and sometimes moving or rotating parts, as well as hot surfaces during operation.

Mechanical blocking or internal protective functions of the product can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the drive-controlled machine, first disconnect the product from the supply system and then start troubleshooting.

The fact that the operation LED and other display elements are no longer illuminated does not indicate that the product has been disconnected from the supply system and no longer carries any voltage.

In the event of deviations from normal operation, switch the product off. Possible deviations are increased temperatures, noise, or vibration, for example. Determine the cause. Contact SEW-EURODRIVE if necessary.

Do not deactivate monitoring and protection devices of the machine or system, even for a test run.

Additional preventive measures may be required for applications with increased hazard potential. Be sure to check the effectiveness of the protection devices after every modification.

22296611/EN – 12/2019

3 Functional safety

3.1 Underlying standards

The safety assessment is based on the following standards and safety classes.

Safety-related BST brake module	
Safety class/underlying standard	Performance level (PL d) in accordance with EN ISO 13849-1 (applicable up to Cat. 3)

Note the version status of the respective norms on the declaration of conformity or the TÜV certificate.

3.2 TÜV certification

The following certificate is available for the safety-related BST brake module:

- Certificate of TÜV Nord Systems GmbH & Co. KG.

A copy of the TÜV certificate can be requested from SEW-EURODRIVE.

3.3 Safe condition

For the safety-related BST brake module, the safe state is defined as follows:

- The electrical power supply to the brake is interrupted reliably. The brake is applied.

The underlying safety concept is based on this.

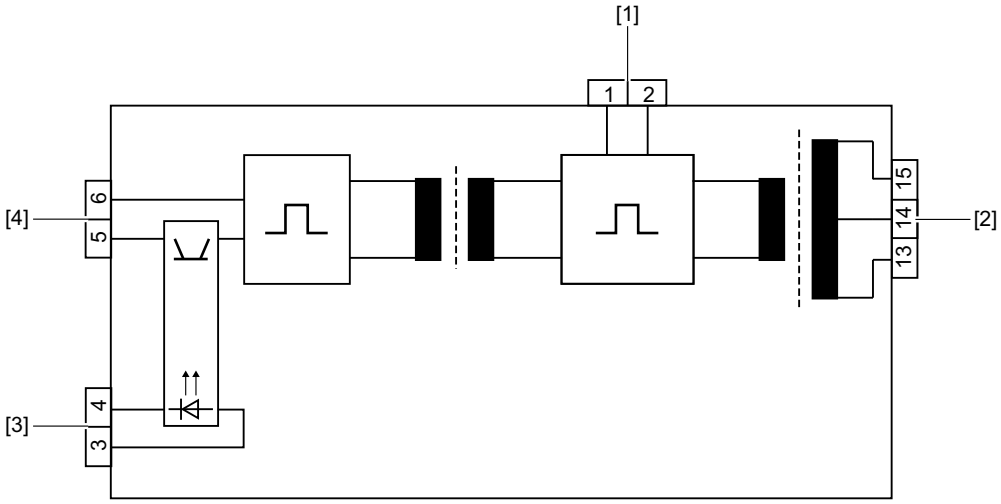
3.4 Safety concept

3.4.1 Description

- The safety-related BST brake module possesses a safety-related digital input U_{SAFE}. A safety controller connected to this input or a safety relay activates the safe state of the BST when the safety-related digital input U_{SAFE} is switched off.
- Switching U_{SAFE} off reliably prevents the activation of the power semiconductors in the safety-related BST brake module. This reliably interrupts the power supply needed to release the connected brake. The brake is applied, although the voltage supply is still present at the BST.
- Thee additional digital input U_{IN} must not be used to safely deactivate the brake. U_{SAFE} has a higher priority than U_{IN}. This means that the safe state at the BST is activated when U_{SAFE} is switched off, regardless of the switching state of U_{IN}.

22296611/EN – 12/2019

3.4.2 Block diagram BST



[1] Voltage supply input U_Z (terminal 1/2)

[2] Brake output (terminal 13/14/15)

[3] Digital input U_{IN} (terminal 3/4)

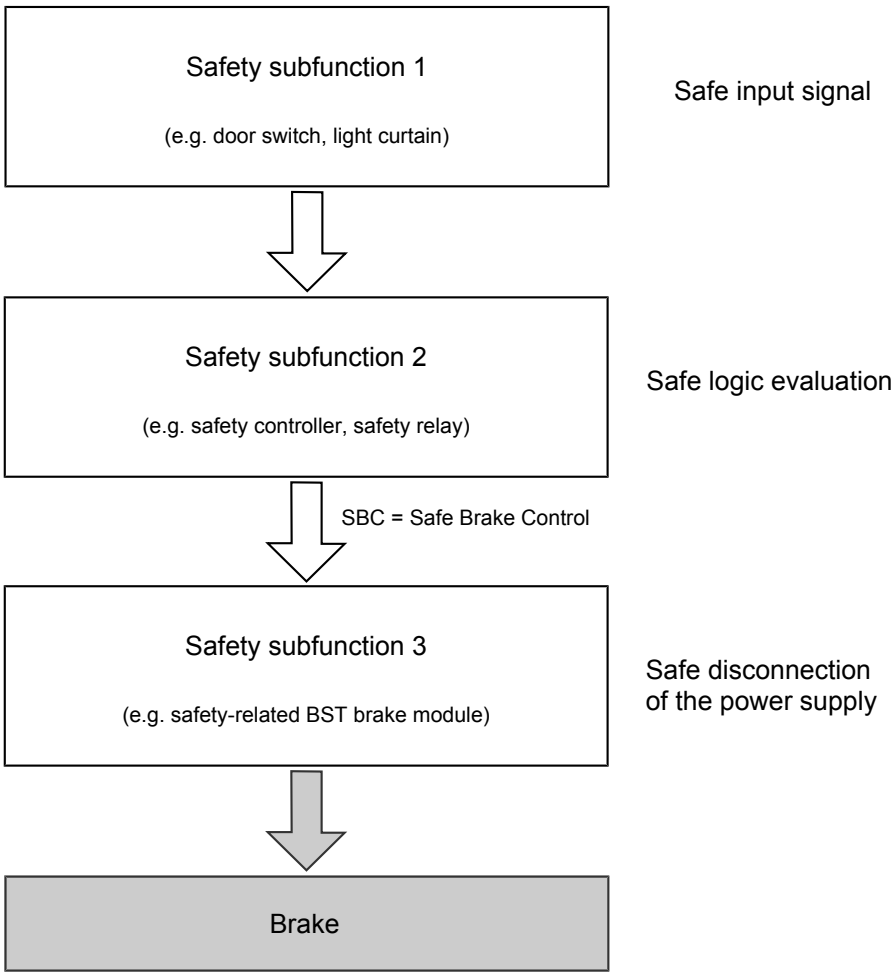
[4] Safety-related digital input U_{SAFE} (terminal 5/6)

3.5 Safety function

In the event of a safety-related request from a brake, you must ensure that the brake is applied in the entire system. To do so, you must interrupt the power supply to the brake in a safety-related manner. The safety function to be implemented consists of several safety subfunctions.

22296611/EN – 12/2019

Example system illustration



28127832075

The safety-related BST brake module performs the following safety subfunction:

- Safe disconnection of the power supply

  The safety-related BST brake module interrupts the power supply to the brake for safety reasons by deactivating the safety-related digital input U_{SAFE} at the terminals 5 and 6. The deactivation of U_{SAFE} is carried out by a safety control or a safety relay, e.g. via the output function SBC (Safe Brake Control).

⚠ WARNING

After the deactivation of the safety-related digital input U_{SAFE} and/or the digital input U_{IN}, the voltage supply to U_Z remains in the safety-related BST brake module.

Severe or fatal injuries from electric shock.

- If work is carried out on the electrical section of the brake system, the voltage supply to U_Z must be disconnected at all poles.

4 Safety requirements

4.1 Compatibility

The safety-related BST brake module can be used in combination with the following products.

4.1.1 Brakes

- **Brakes on asynchronous AC motors/servomotors**
  - The brakes/safety brakes BE03 to BE32 are permitted.
- **Brakes on synchronous servomotors**
  - The brakes/safety brakes BY2 to BY14 are permitted.
  - The brakes/safety brakes BZ05 to BZ5 are permitted.
- **Other brakes**

  Other brakes with 2/3-conductor technology are permitted, if the specification in these operating instructions are observed (e.g. chapter "Technical data" (→ 🗎 56)).

INFORMATION

Any specifications about the operating currents and power consumption of brakes are considered to be nominal values. They are based on a coil temperature of +20 °C.

As a rule, the operating currents and the power consumptions fall during standard operation due to the heating up of the brake coil. Note that the actual operating currents may be up to 25% higher at coil temperatures below +20 °C, depending on the ambient temperature.

The safety-related BST brake module has no integrated heating function. The BST is therefore not suitable when using the brake in ambient conditions that require a brake control with integrated heating function.

When selecting the BST for the brake, observe the actual operating conditions of the brake.

22296611/EN – 12/2019

4.1.2 Frequency inverter

- **MOVIDRIVE® modular**
  - The sizes 2 – 7 are permitted in the device design 3 x AC 380 – 480 V.
  - When connecting the BST to the DC link, observe the documentation about the MOVIDRIVE® modular.
- **MOVIDRIVE® system**
  - The sizes 1 – 9 are permitted in the device design 3 x AC 380 – 500 V.
  - When connecting the BST to the DC link, observe the documentation about the MOVIDRIVE® system.
- **MOVIDRIVE® technology**
  - The sizes 1 – 6 are permitted in the device design 3 x AC 380 – 500 V.
  - When connecting the BST to the DC link, observe the documentation about the MOVIDRIVE® technology.
- **MOVIDRIVE® B**
  - The sizes 0 – 7 are permitted in the device design 3 x AC 380 – 500 V.
  - To connect the BST to MOVIDRIVE® B size 7, also use the DC link adapter 2Q DLZ12B (part number 18227295) or the DC link adapter 4Q DLZ14B (part number 18227287).
- **MOVITRAC® LTP-B**
  - The sizes 2 – 7 are permitted in the device design 3 x AC 380 – 480 V.
- **MOVITRAC® LTE-B**
  - The sizes 4 and 5 are permitted in the device design 3 x AC 380 – 480 V.
- **MOVITRAC® B**
  - The sizes 2S – 5 are permitted in the device design 3 x AC 380 – 500 V.
  - The size 0 does not have a DC link connection (U_Z) and is therefore not compatible with the BST.
- **MOVIAXIS®**
  - The BST can be connected to all supply and regenerative modules as well as capacitance and buffer modules.
  - To connect the BST to the MOVIAXIS® MXP, MXR, MXC, and MXNB, also use the BST connection set (part number 28205952).
- **Supply and regenerative power supply modules**
  - Sinusoidal supply and regenerative power supply modules.

    It is not permitted to use the BST in combination with sinusoidal supply and regenerative power supply modules.
  - Block-shaped supply and regenerative power supply modules.

    It is permitted to use the BST in combination with block-shaped supply and regenerative power supply modules.

22296611/EN – 12/2019

4.1.3 TCB thermal circuit breaker

- TCB thermal circuit breaker

  You can use the following types:

  – TCB0040 (part number 19170424)

  – TCB0063 (part number 19170432)

  – TCB0100 (part number 19170440)

  Observe here the documentation of the MOVIDRIVE® modular/system/technology application inverter.

4.2 Requirements on the installation

- Power cables (U_Z and U_B) and the control cable at the safety-related digital input U_{SAFE} must be routed separately from each other.
- The maximum cable length of the control lines at the digital input U_{IN} and at the safety-related digital input U_{SAFE} to the safety-related BST brake module is 100 m.
- The maximum cable length between the safety-related BST brake module and the connected brake is 200 m.
- The wiring must comply with EN 60204-1.
- The safety-related brake module must be protected against conductive dirt, e.g. by installing it in a control cabinet with degree of protection IP54 in accordance with IEC 60529. If conductive dirt can be excluded at the installation site, a control cabinet with lower degree of protection is permitted under observance of the applicable standards (e.g. EN 60204-1).
- Screened cables are necessary outside a closed installation space. It is essential that you apply the shielding at both ends on the housing. Route the cables so that they are protected against external damage.
- Individual conductors can be routed inside an electrical installation space. Adhere to the regulations in force for the application.
- Observe the values specified for the safety components when designing the safety circuits.
- Use only grounded voltage sources with safe electrical disconnection (PELV) in accordance with EN 61131-2 and EN 60204-1 for the DC 24 V supply voltages at the safety-related digital input U_{SAFE} and the digital input U_{IN}.

  In the event of a single fault, the DC voltage between the outputs or between any output and grounded parts must not exceed DC 60 V.

  For the group disconnection of several BST brake modules, observe the switching capacity of the safety relay and the maximum permitted voltage drop at the safety-related digital input U_{SAFE}.
- The parallel connection of several BST brake modules at the brake output (connections 13, 14, 15 on the BST) is not permitted.
- In the case of redundant brake systems, 2 brakes may be operated on a safety-related BST brake module (group deactivation). In this case, the connection technology (2- or 3-conductor connection) of both brakes must be the same. SEW-EURODRIVE recommends providing a safety-related brake module for every brake.
- The general installation regulations in chapter "Electrical installation" (→ 🗎 30) must be observed.

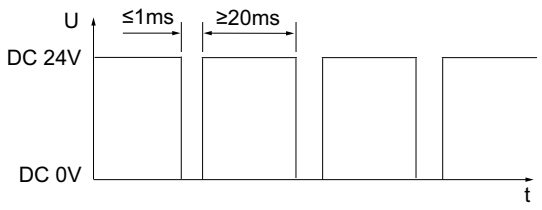
22296611/EN – 12/2019

4.3 Safe control requirements

The safe control of the BST brake module at the safety-related digital input U_{SAFE} is performed by a safety relay or a safety control. The following requirements have to be observed:

- The devices and all other safety-related subsystems must fulfill at least the safety class that is required in the overall system for the safety function.
- The electrical connection between the safety relay or safety control and the safety-related digital input U_{SAFE} must be suitable for the desired safety class (see the manufacturer's documentation).
- The safety-related digital input U_{SAFE} can be safely disconnected either at the positive pole (single channel) or at the positive and negative poles (bichannel). SEW-EURODRIVE recommends bichannel disconnection of the safety circuit.
- The DC 24 V voltage at the safety-related digital input U_{SAFE} must not be used for feedback.
- The safety-related BST brake module does not detect any short-circuits, crossfaults, or interference voltage in the DC 24 V voltage at the safety-related digital input U_{SAFE}. That is why you must make sure without fail that:
  - There is no parasitic voltage on the DC 24 V voltage at the safety-related digital input U_{SAFE}

    or
  - That the safety relay/safety control detects any short-circuits, crossfaults, and interference voltage in the DC 24 V voltage at the safety-related digital input U_{SAFE}.
- Observe the values specified for the device when designing the safety circuits.
- The switching capacity of the outputs on the safety relay or the safety control must be designed at least for the necessary input current of the safety-related digital input U_{SAFE}. **You must observe the manufacturer's information about the permissible load at the device outputs and any possibly necessary fusing. If the manufacturer provides no specific information, the device outputs must be protected with 0.6 times the nominal value of the maximum load specified by the manufacturer.**
- It is necessary to consider any measures for protection against an unexpected restart of a machine, e.g. in accordance with EN ISO 14118, in the risk assessment of that machine. Any necessary measures must be implemented in the safety circuit with the safety relay or safety control.
- The safety-related digital input U_{SAFE} (terminal 5/6) possesses a serial polarity protection diode and a buffer capacitor with C = 6 µF. These components have to be considered as load when designing the safety relay or safety control.
- Test pulses at the output of the safety relay or safety control
  - Deactivation test pulses at the safety-related digital input U_{SAFE} must be max. 1 ms long. The next pulse blanking cannot reoccur earlier than after 20 ms.

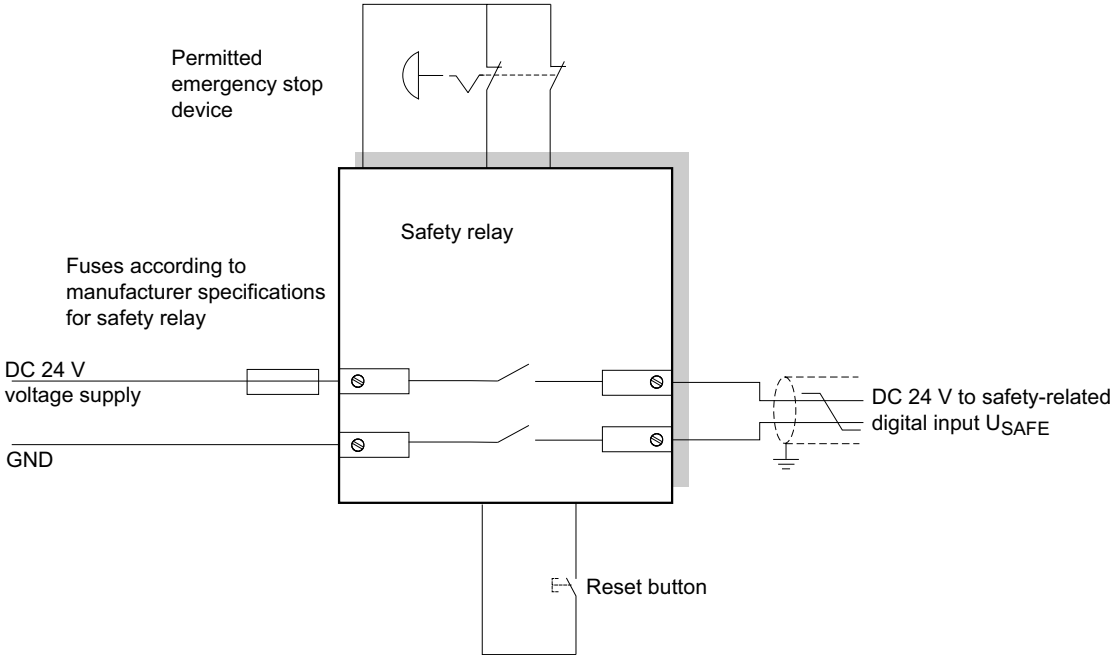


22296611/EN – 12/2019

4.3.1 Sample circuit for a "safety relay"

The following figure shows the fundamental activation of a safety relay.

Observe the information in the respective manufacturer's documentation for the design of the safety circuit.



27021597908564619

22296611/EN – 12/2019

4.4 Requirements on startup

After starting up the safety-related BST brake module, you must perform and document the following tests on the BST:

- Test both the DC 24 V voltages at the following electrical connections:
  - Terminal 5/6: Safety-related digital input U_{SAFE}
  - Terminal 3/4: Digital input U_{IN}

  You may perform the test, for example, by visual inspection or with a measurement.
- Functional test

  After a successful startup, check whether the safety-related BST brake module activates the connected brake as expected. To do so, activate the safety-related digital input U_{SAFE} and, if applicable, the digital input U_{IN} and test whether the connected brake is activated as expected. You can also observe the status change of the V1 and V2 LEDs during switching.

4.5 Requirements on the operation

- Operation is only permitted within the limits specified in the respective documentation. This applies to both the safety-related BST brake module and also to the connected devices.
- The functionality of the safety function implemented with the safety-related BST brake module must be tested at least once every year. To do so, activate the safety-related digital input U_{SAFE} and, if applicable, the digital input U_{IN} and test whether the connected brake is activated as expected. You can also observe the status change of the V1 and V2 LEDs during switching.
- Also observe the information in the "Service" (→ 🗎 53) chapter.

4.6 Approval

The system manufacturer has to perform an overall evaluation for determining the safety of a machine or system.

The effectiveness of each risk minimization must be checked. It must also be checked whether the required safety integrity (SIL and/or PL) is reached for each implemented safety function.

As proof of the achieved safety integrity, you may, for example, use the "Sistema" calculation tool from the Institute for Occupational Safety and Health (IFA) of the German Social Accident Insurance (DGUV).

22296611/EN – 12/2019

5 Device structure

5.1 Nameplate and type designation

5.1.1 Type designation

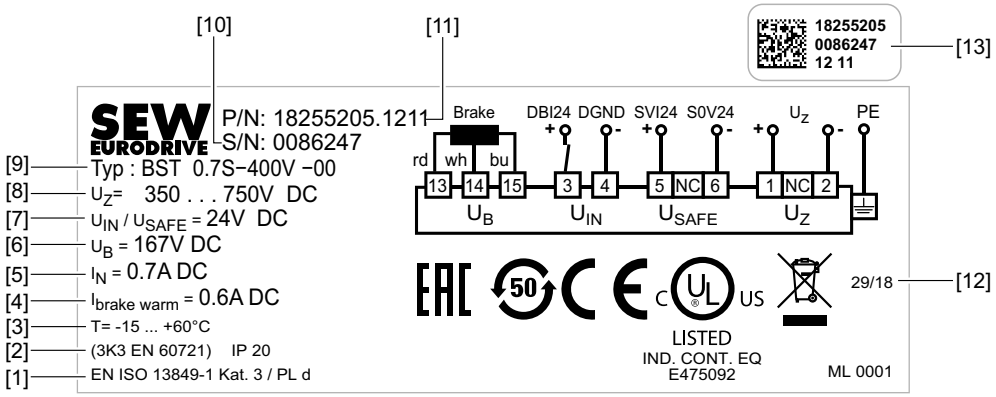
The type designation is structured as follows:

BST 0.7S-400V-00	Type designation	
BST	Series: Safety-related brake module	
0.7	Nominal output current:	
	0.6	DC 0.6 A
	0.7	DC 0.7 A
	1.2	DC 1.2 A
S	Design:	
	S	Control cabinet installation
400V	Brake voltage:	
	230 V	DC 86 V – DC 106 V (AC 230 V)
	400 V	DC 150 V – DC 184 V (AC 400 V)
	460 V	DC 171 V – DC 209 V (AC 460 V)
00	Version/design:	
	00	Design without TF/TH terminal
	0B	Design with TF/TH terminal

22296611/EN – 12/2019

5.1.2 Nameplate

The following figure shows an example of a nameplate.



45035996416617483

[1] Safety characteristics
[2] Climate class and degree of protection (IP)
[3] Ambient temperature (T)
[4] Output current ($I_{brake\ warm}$) in warm condition
[5] Nominal output current (I_N)
[6] Brake voltage (U_B)
[7] Input voltage for digital input (U_{IN}) and safety-related digital input (U_{SAFE})
[8] Voltage supply (U_Z)
[9] Type designation
[10] Serial number S/N (here: 0086247)
[11] Part number P/N (here: 18255205) and version (here: 1211)
[12] Production date (ww/yy, here: 29/18)
[13] Data matrix code with version, part number, and serial number

CE mark to state compliance with European guidelines, such as the Low Voltage Directive.

UL logo to confirm that a component is UL (Underwriters Laboratory) tested, also valid for CSA in conjunction with the register number. The UL approval is valid for the operation of the BST on approved units (e.g. frequency inverters) or drives from SEW-EURODRIVE.

The EAC logo confirms compliance with the technical regulations of the economic and customs union of Russia, Belarus, Kazakhstan, and Armenia.

The China RoHS marking declares compliance with the SJ/T 11364-2014 directive concerning the restriction of use of certain hazardous substances in electrical and electronic devices and their packaging.

Waste disposal in accordance with the WEEE Directive 2012/19/EU.

5.2 Available BST device types

The following BST device types are permitted for safety-related applications:

5.2.1 BST without TF/TH terminal

Type designation	Part number	Compatible brakes
BST 0.6S-460V-00	08299714	Brakes with a coil voltage of DC 171 V – DC 209 V (AC 460 V) and a coil power ≤ 120 W.
BST 0.7S-400V-00	13000772	Brakes with a coil voltage of DC 150 V – DC 184 V (AC 400 V) and a coil power ≤ 120 W.
BST 1.2S-230V-00	13001337	Brakes with a coil voltage of DC 86 V – DC 106 V (AC 230 V) and a coil power ≤ 120 W.

5.2.2 BST with TF/TH terminal

Type designation	Part number	Compatible brakes
BST 0.6S-460V-0B	18255191	Brakes with a coil voltage of DC 171 V – DC 209 V (AC 460 V) and a coil power ≤ 120 W.
BST 0.7S-400V-0B	18255205	Brakes with a coil voltage of DC 150 V – DC 184 V (AC 400 V) and a coil power ≤ 120 W.
BST 1.2S-230V-0B	18255213	Brakes with a coil voltage of DC 86 V – DC 106 V (AC 230 V) and a coil power ≤ 120 W.

5.3 Scope of delivery

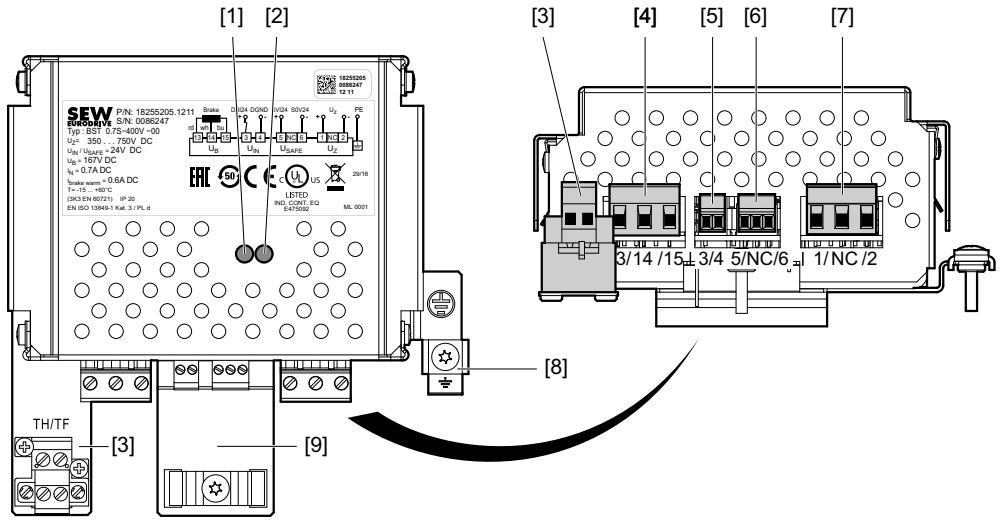
The scope of delivery includes:

- Safety-related BST brake module:
  - With mounted holding fixture for installation on a mounting rail
  - With retaining plate/shield plate
  - With mounted terminal for TF/TH motor protection (with BST-...-0B only)
- 4 attached plug connectors for terminal connections

22296611/EN – 12/2019

5.4 Safety-related BST brake module

The following illustration shows the structure of the BST device:



9007212481897611

[1] LED V1 for indicating the operating state

[2] LED V2 for indicating the operating state

[3] Terminals TF/TH 1/2: Motor protection connection (with BST-...-0B only)

[4] Terminals 13/14/15: Brake connection

[5] Terminals 3/4: Connection of digital input U_{IN}

[6] Terminals 5/6: Connection of safety-related digital input U_{SAFE}

[7] Terminals 1/2: Connection of voltage supply U_Z

[8] PE connection

[9] Retaining plate/shield plate

5.5 Terminal assignment

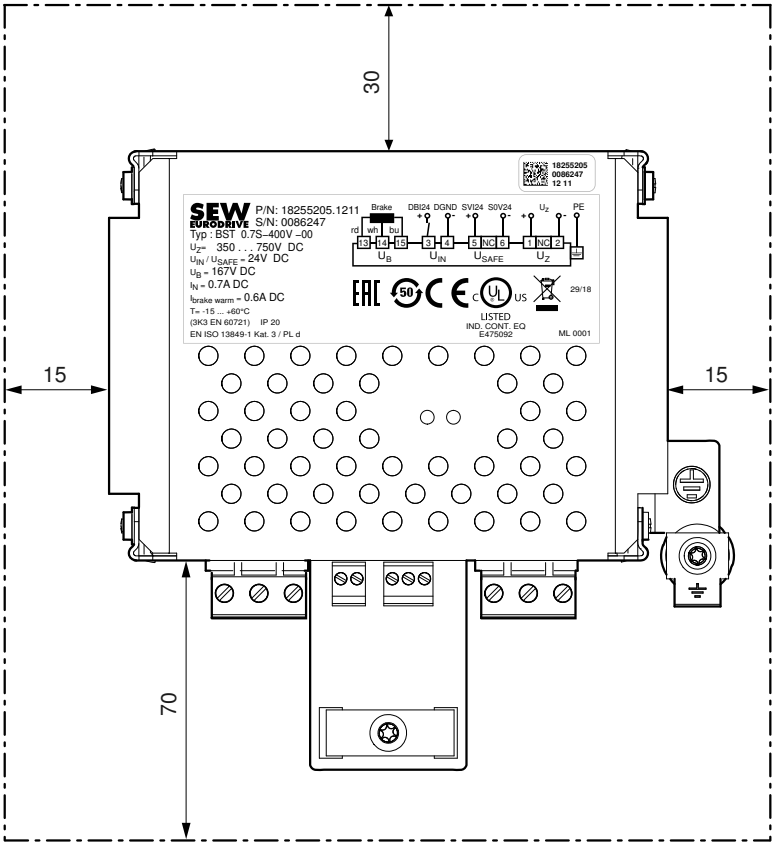
Terminal			Function
Display	Assignment		
1/NC/2 	1	$+U_Z$	Input for voltage supply
	NC	–	Not connected
	2	$-U_Z$	Reference potential for voltage supply
3/4 	3	DBI24	Input of digital input U_{IN}
	4	DGND	Reference potential for digital input U_{IN}
5/NC/6 	5	SVI24	Input of safety-related digital input U_{SAFE}
	NC	–	Not connected
	6	S0V24	Reference potential for safety-related digital input U_{SAFE}
13/14/15 	13	RD	Brake output
	14	WH	
	15	BU	
	TF/TH1		Motor protection connection (with BST-...-0B only)
	TF/TH2		
⏚			PE connection

22296611/EN – 12/2019

6 Mechanical installation

6.1 Minimum clearance and mounting position

- Leave 30 mm clearance at the top, 70 mm at the bottom, and 15 mm at the sides for adequate cooling. Make sure air circulation in the clearance is not impaired by cables or other installation equipment.
- The units must not be exposed to the warm exhaust air from other devices.
- Install the devices only vertically. Do not install the units horizontally, tilted, or upside down.

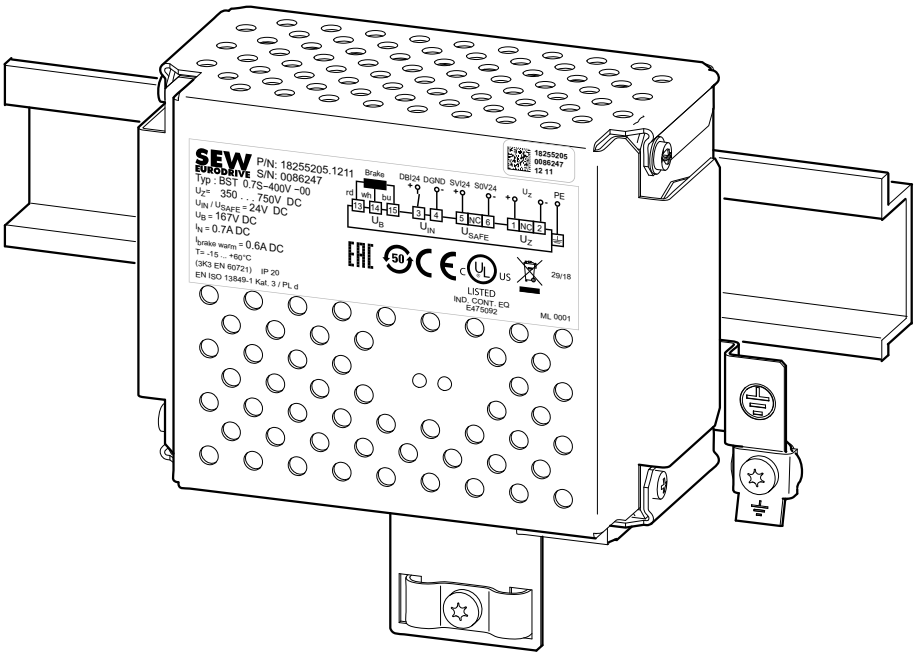


54043195665534475

Dimensions in mm.

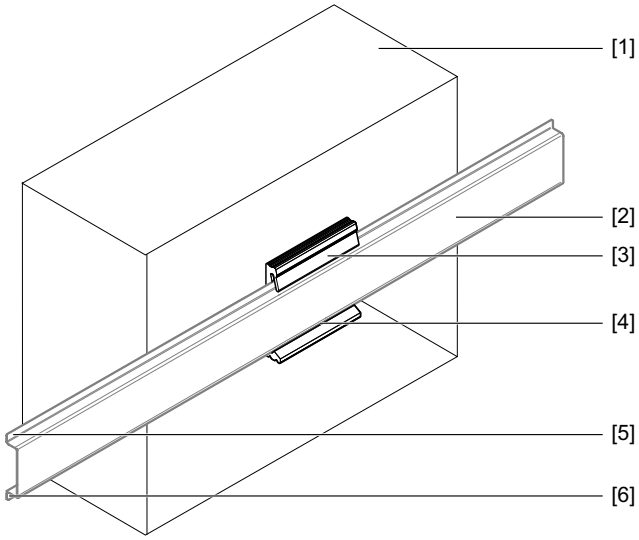
6.2 Installation of the BST brake module

The BST brake module is installed in the control cabinet on a TH 35-7.5 or TH 35-15 mounting rail in accordance with IEC 60715.



18014398646572171

Proceed as follows to mount the BST brake module to the mounting rail:



1887424139

[1]	Safety-related BST brake module	[4]	Notch, lower holding fixture of the BST
[2]	Mounting rail	[5]	Upper edge of the mounting rail
[3]	Upper holding fixture of the BST	[6]	Lower edge of the mounting rail

1. The upper holding fixture of the BST [3] is spring-loaded. First, insert the BST into the upper edge of the mounting rail [5] with the upper holding fixture only.
2. Next, press the BST simultaneously downward and towards the mounting rail until the notch [4] clicks into place on the lower rail edge [6].

   The spring on the upper holding fixture causes the lower rail edge to be pressed into the notch so that the BST [1] is secured on the mounting rail [2].

22296611/EN – 12/2019

6.3 Disassembly of the BST brake module

Proceed as follows to remove the BST brake module from the mounting rail:

1. Press down on the BST from the top. This causes the lower edge of the rail [6] to come out of the notch [4]. At the same time, remove the BST from the lower holding fixture.
2. You can remove the BST from the mounting rail once the lower lock unfastens.

22296611/EN – 12/2019

7 Electrical installation

7.1 Important notes

⚠ DANGER

After the voltage supply U_Z is deactivated, the DC link at the inverter may still carry dangerous voltage due to the charged capacitors.

Severe or fatal injuries from electric shock

- Secure the deactivated voltage supply U_Z against being accidentally switched back on.
- Wait for 10 minutes before you start work.
- Before starting work, check that the terminals of the BST are de-energized.

INFORMATION

- Observe the information in chapter "Requirements on the installation" (→ 🗎 18).
- SEW-EURODRIVE recommends using only closed cable lugs for connecting to the screws, in order to prevent litz strands from escaping.

7.2 Permitted voltage supply systems

Voltage supply system	Information
TN and TT systems – voltage systems with directly grounded star point.	This is permitted.
IT system – voltage system with non-grounded star point.	This is not permitted.
Voltage system with grounded outer conductor.	This is not permitted.

7.3 Voltage supply to U_Z

- The BST is designed for operation with the DC link voltage from SEW-EURODRIVE inverters. The DC link voltage can be supplied via one of the following variants:
  - From an individual device
  - From an axis system with a DC link connection
  - From an individual device/axis system in connection with a block-shaped supply and regenerative module
- If you wish to operate several BSTs from the same DC link, then you must observe their necessary power consumption when designing the voltage supply.
- If you operate the BST in an axis system with a voltage supply, you may connect a maximum of 16 BSTs per voltage supply.
- If you wish to operate the BST with a different voltage supply, e.g. a rectifier, you must comply in particular with the voltage range and the power consumption in accordance with chapter "Technical data" (→ 🗎 56).

22296611/EN – 12/2019

7.4 Connection lead U_Z (terminal 1/2)

The connection lead U_Z must meet the following conditions:

- Cable cross section: 0.75 mm^2 – 2.5 mm^2
- Maximum cable length: 5 m
- Minimum tightening torque: 0.5 Nm
- The DC link voltage of the frequency inverter may briefly reach up to DC 970 V. The nominal voltage of the cable must amount to at least U_0/U = 300 V/500 V (in accordance with DIN VDE 0298).

NOTICE

Incorrect connection of the voltage supply $+U_Z$ and $-U_Z$ at terminal 1/2 to the BST brake module.

BST brake module may be destroyed.

- Ensure the correct connection of the voltage supply to the BST brake module ($+U_Z$ at terminal 1 and $-U_Z$ at terminal 2).

7.5 Fusing of the connection leads to U_Z

Adhere to the country- and system-specific regulations regarding the fusing.

SEW-EURODRIVE recommends fusing all the poles of the connection cables to U_Z. In the event of a fault, the fusing protects the connection leads against a short circuit or overload.

Given compliance with VDE 0100, Part 430 and EN 60204-1, it is possible to dispense with fusing in the following cases:

- The connection lead to the safety-related BST brake module is fused by the grid fusing upstream of the voltage supply (e.g. upstream of the individual device/axis system).
- The connection lead to the safety-related BST brake module is no longer than 3 m and is designed so that the danger of a short circuit and the risk of fire or danger to persons is kept to a minimum.
- A maximum of 8 safety-related BST brake modules may be operated from a single voltage supply.

Moreover, the fusing in the connection lead U_Z can be protected against damage to the voltage supply (e.g. individual device/axis system). This case may occur, for example, if the safety-related BST brake module is destroyed by an overload.

SEW-EURODRIVE recommends the following fusing of the connection leads to U_Z:

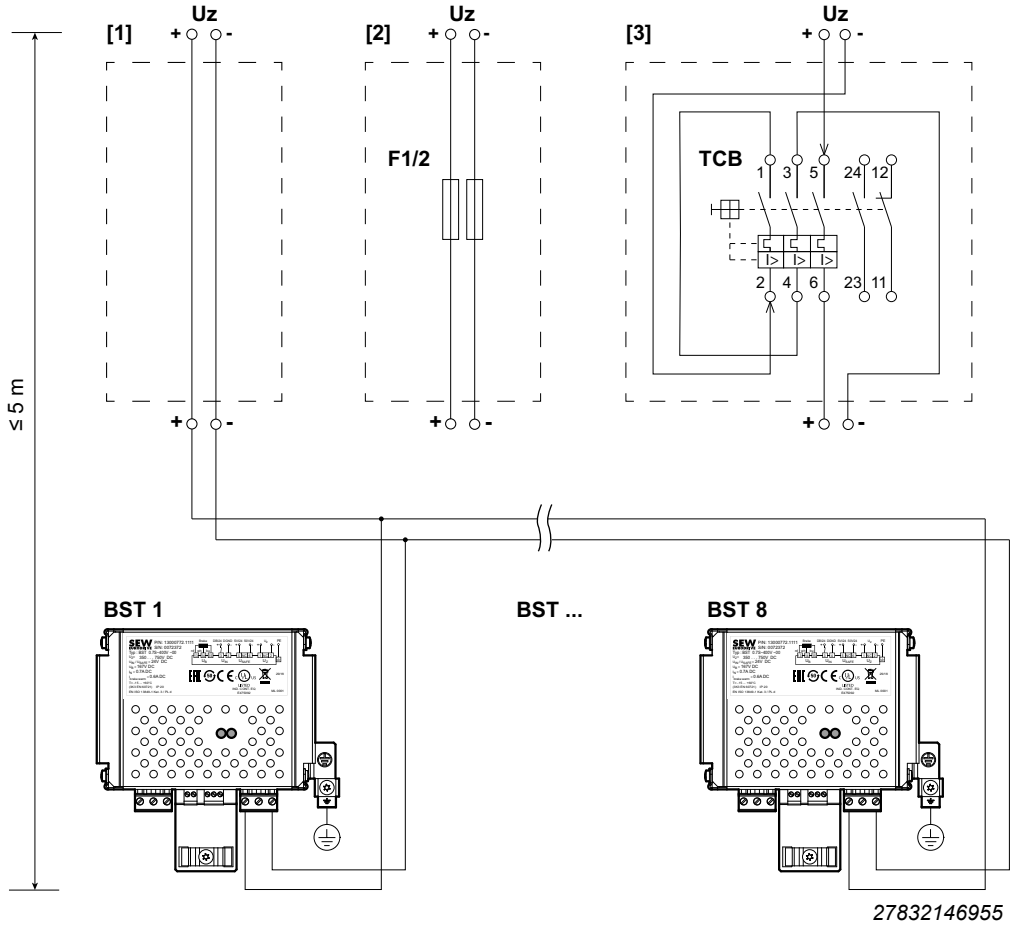
Quantity of BST brake modules	Nominal current	Nominal voltage	Utilization category/ characteristics
1 – 2	≥ 4 A	≥ DC 850 V	• gG, gR or • TCB thermal circuit breaker
3 – 4	≥ 6 A		
5 – 8	≥ 10 A		

7.5.1 Wiring diagrams

The following wiring diagrams show the various connection variants for the BST voltage supply to U_Z.

22296611/EN – 12/2019

Connection variant 1: 1 – 8 safety-related BST brake modules



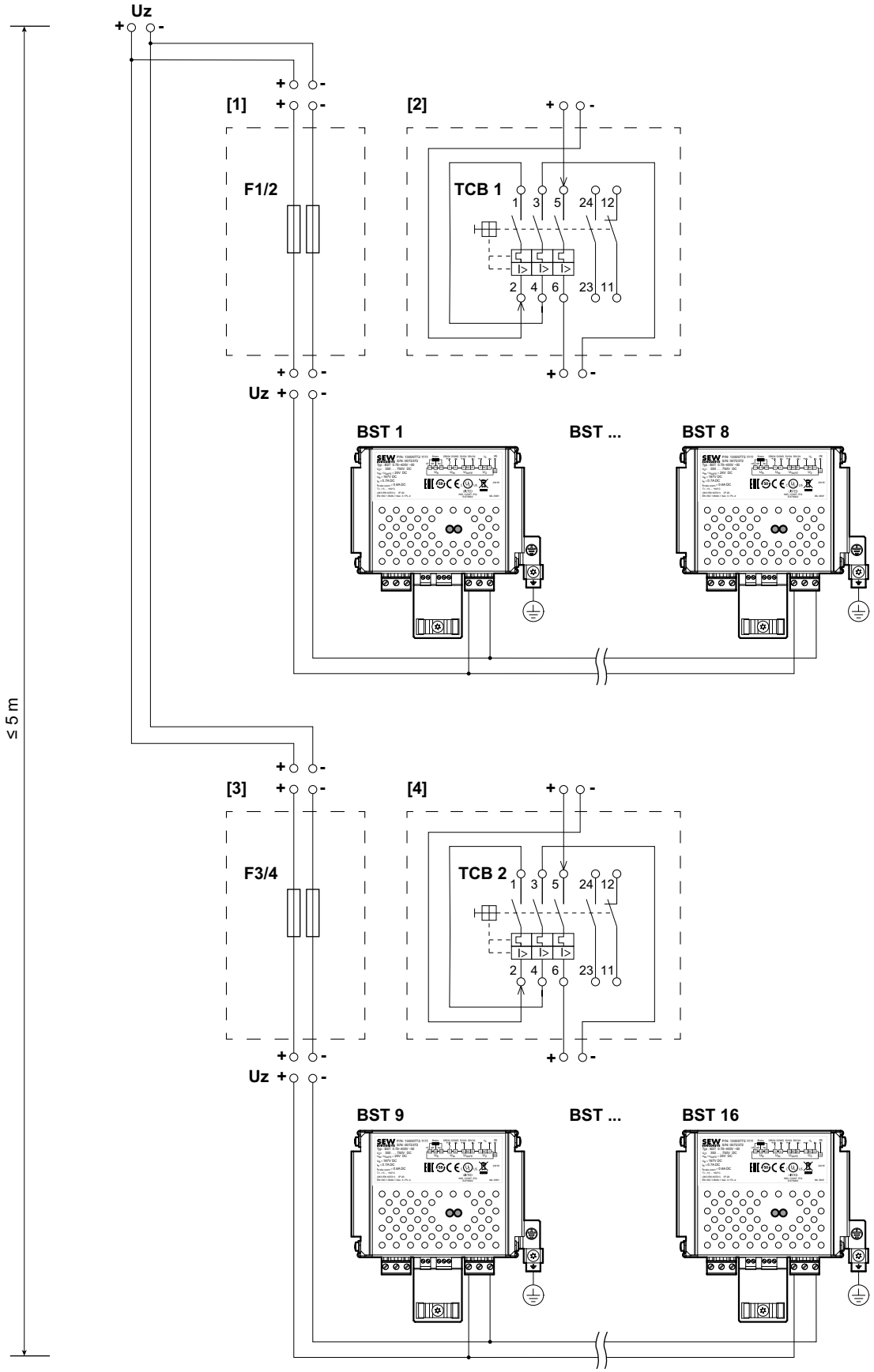
[1] Connection without fusing
[2] Connection with fusing via DC fuses F1/F2
[3] Connection with fusing via TCB thermal circuit breaker

Connection variant 2: 1 – 16 safety-related BST brake modules

INFORMATION

Note that, as from a maximum of 8 BSTs, the connection leads to U_Z must be fused again in accordance with the following wiring diagram.

22296611/EN – 12/2019



30748819339

[1] Connection of BSTs 1 – 8 with fusing via DC fuse F1/F2
[2] Connection of BSTs 1 – 8 with fusing via TCB1 thermal circuit breaker
[3] Connection of BSTs 9 – 16 with fusing via DC fuse F3/F4
[4] Connection of BSTs 9 – 16 with fusing via TCB2 thermal circuit breaker

7.6 Control cable at the digital input U_{IN} (terminal 3/4)

The control cable at the digital input U_{IN} must meet the following conditions:

- Cable cross section of 0.5 mm^2 – 1.5 mm^2
- Maximum cable length: 100 m
- Minimum tightening torque: 0.22 Nm

7.7 Control cable at safety-related digital input U_{SAFE} (terminal 5/6)

The control cable at the safety-related digital input U_{SAFE} must meet the following conditions:

- Cable cross section of 0.5 mm^2 – 1.5 mm^2
- Maximum cable length: 100 m
- Minimum tightening torque: 0.22 Nm

7.8 Brake cable U_B (terminal 13/14/15)

NOTICE

Incorrect connection of the brake cable (terminal 13/14/15) to the BST brake module.

BST brake module may be destroyed.

- Observe without fail the correct connection of the brake cable to the safety-related BST brake module (see chapter "Wiring diagrams" (→ 🗎 39)).

The brake cable U_B must meet the following conditions:

- Cable cross section of 0.75 mm^2 – 2.5 mm^2
- Maximum cable length: 200 m
- Minimum tightening torque: 0.5 Nm

Connect the brake to the safety-related BST brake module as follows:

- Brakes with two-coil system (3-conductor technology) from SEW-EURODRIVE:
  - Coil section (TS): Terminal 12 (red)/15 (blue)
  - Accelerator coil (BS): Terminal 13 (red)/14 (white)
- Brakes with single-coil system (2-conductor technology):
  - Coil: Terminal 13/15

22296611/EN – 12/2019

7.9 Motor protection TF/TH (terminal TF/TH 1/2)

The connection lead of the motor protection TF/TH must meet the following conditions:

- Cable cross section of 0.5 mm^2 – 1.5 mm^2
- Maximum cable length: 200 m
- Minimum tightening torque: 0.5 Nm

7.10 PE connection (screw M4)

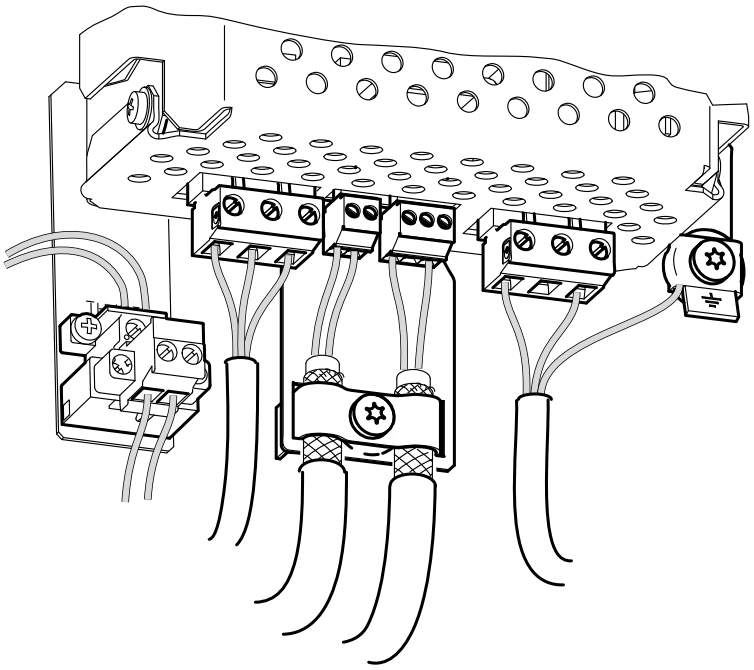
The PE connection to screw M4 must meet the following condition:

- Minimum tightening torque: 1.6 Nm

22296611/EN – 12/2019

7.11 Measures for electromagnetic compatibility

- The routing of the control cables must be EMC-compliant. Observe the following notes.
  - Observe the relevant regulations for the particular application and the information in the manufacturer's operating instructions.
  - If you connect the control cable in a 2-channel configuration, you must route the corresponding lines close to each other in equal length.
- The following figure shows the EMC-compliant installation of the control cables.



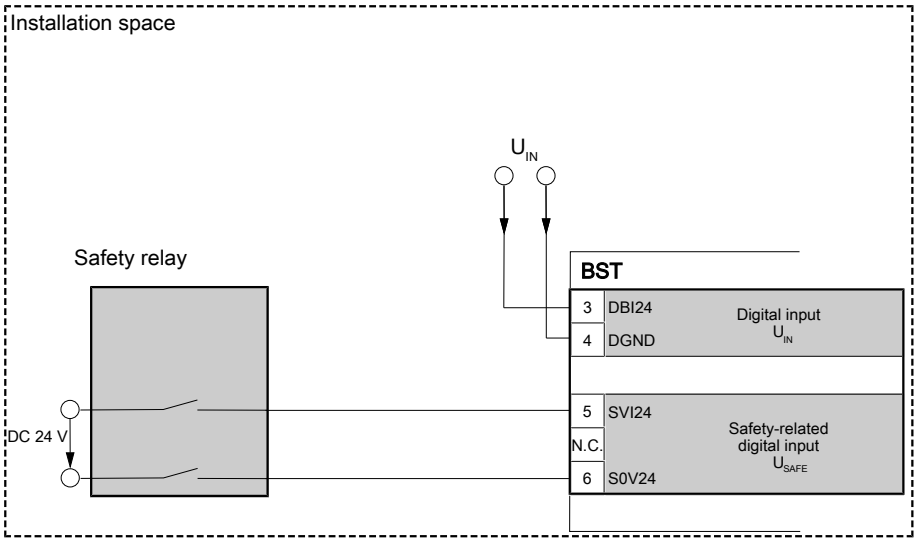
13227151115

- If you use hybrid cables, the motor and brake cables must be shielded on both sides. If the shielding is insufficient, the HF interference peaks may influence the brake cable. As a consequent fault, the safety-related BST brake module may be overloaded and the brake coil may be damaged. Therefore position the inner and outer shields of the cables correctly at the inverter and at the motor.
- Refer to the "Excerpt from Drive Engineering – Practical Implementation, EMC in Drive Engineering – EMC-Compliant Installation in Practice" manual for further information about EMC measures. You can download the document at www.sew-eurodrive.de.

22296611/EN – 12/2019

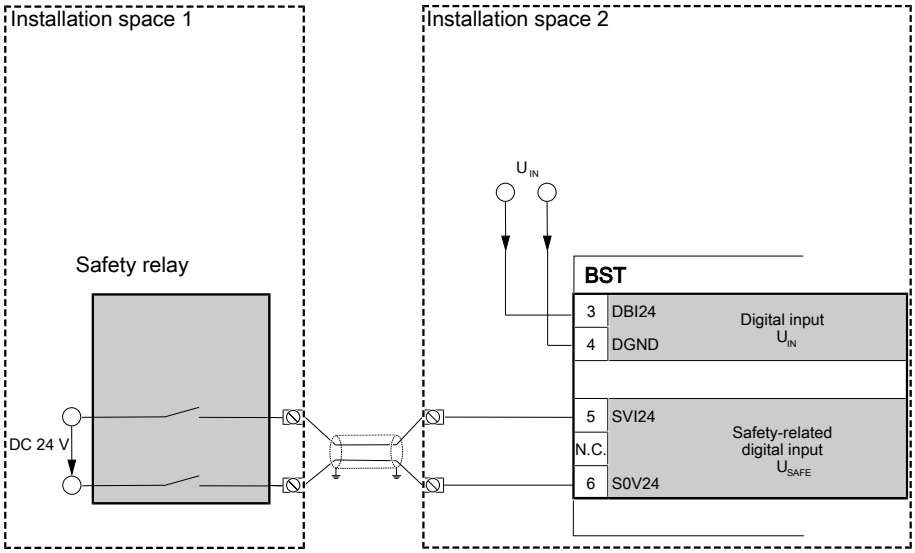
7.12 Double-pole safe disconnection

The following figure shows an example of an electrical connection inside an installation space. The control is performed separately via the safety-related digital input U_{SAFE} and the digital input U_{IN}. The digital input U_{IN} may optionally also be supplied with a constant DC 24 V voltage. This makes it possible to control the BST exclusively via the safety-related digital input U_{SAFE}.



23334035211

As an example, the following figure shows the electrical connection during installation of the safety relay in a different installation space. The control is performed separately via the safety-related digital input U_{SAFE} and the digital input U_{IN}. The digital input U_{IN} may optionally also be supplied with a constant DC 24 V voltage. This makes it possible to control the BST exclusively via the safety-related digital input U_{SAFE}.



23324304651

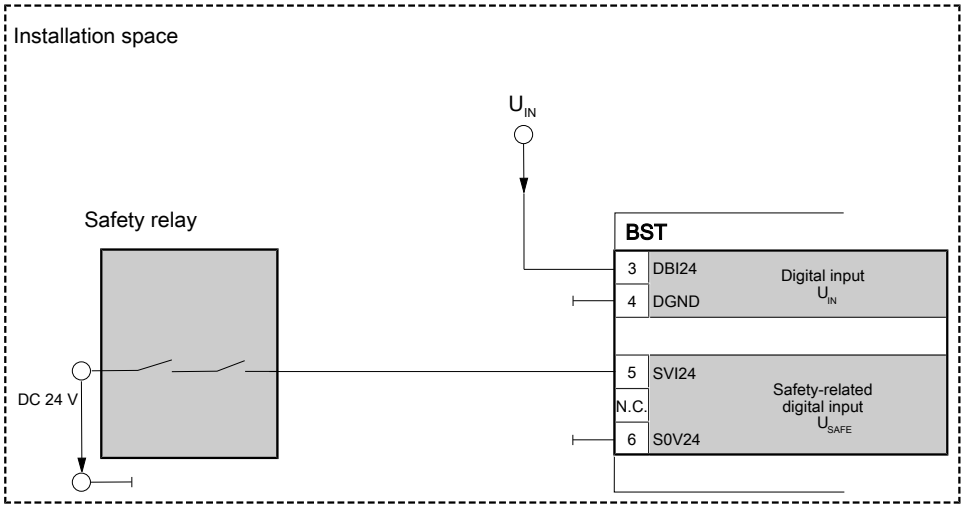
7.13 Single-pole safe disconnection

INFORMATION

The safe single-pole disconnection is permissible only if short-circuits and interference voltage at any random conductor are excluded on the safe DC 24 V voltage between the safety relay and the safety-related digital input U_{SAFE} (fault exclusion in accordance with EN ISO 13849-2).

SEW-EURODRIVE recommends disconnecting the safety-related digital input U_{SAFE} at two poles.

The following figure shows an example of an electrical connection inside an installation space. The control is performed separately via the safety-related digital input U_{SAFE} and the digital input U_{IN}. The digital input U_{IN} may optionally also be supplied with a constant DC 24 V voltage. In this case, the BST can be controlled exclusively via the safety-related digital input U_{SAFE}.



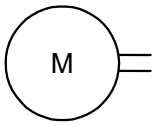
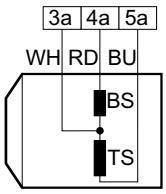
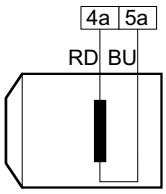
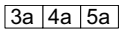
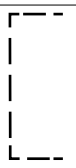
23324974731

7.14 Wiring diagrams

The following wiring diagrams show the electrical connection of the safety-related BST brake module as an example.

7.14.1 Legend for the wiring diagrams

The following symbols and abbreviations are used in the wiring diagrams.

Symbol/abbreviation	Meaning
	Motor
	Brake with 3-conductor technology (with two coils) • BS = accelerator coil • TS = coil section
	Brake with 2-conductor technology (with one coil)
	Auxiliary terminal strip in terminal box
	Control cabinet limit
WH	Lead color white
RD	Lead color red
BU	Lead color blue
CS..A	MOVISAFE® CS..A safety card
MDA	MOVIDRIVE® modular, system, and technology application inverters
F-DO00_P	Safety-related digital output 0 of the MOVISAFE® CS..A safety card, sourcing output.
F-DO00_M	Safety-related digital output 0 of the MOVISAFE® CS..A safety card, sinking output.
F-DO01_P	Safety-related digital output 1 of the MOVISAFE® CS..A safety card, sourcing output.
F-DO01_M	Safety-related digital output 1 of the MOVISAFE® CS..A safety card, sinking output.
DB00	Brake control
GND	Reference potential DB00.

22296611/EN – 12/2019

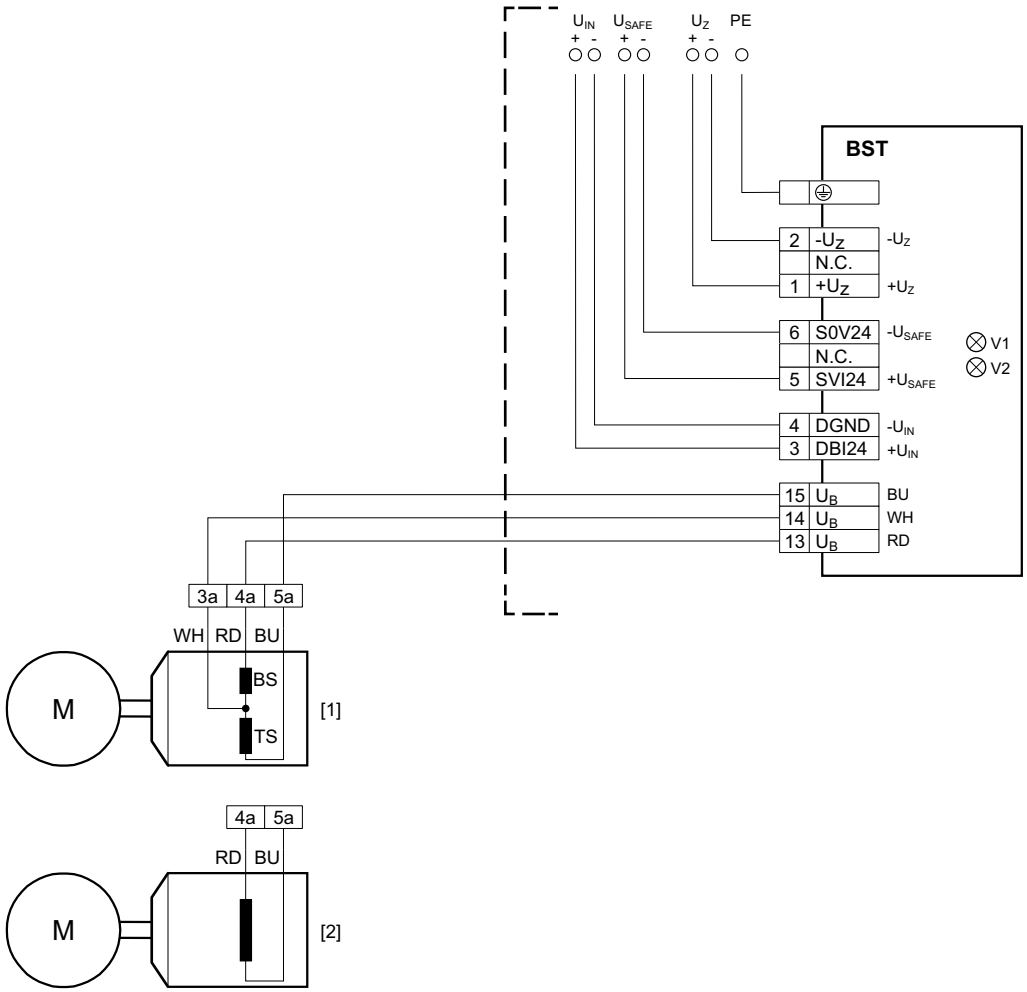
Symbol/abbre-viation	Meaning
SBC1/2	Safe Brake Control (SBC) function of the MOVISAFE® CS..A safety card. • 1: Brake 1 at F-DO00 • 2: Brake 2 at F-DO01
SBT	Safe Brake Test (SBT) function of the MOVISAFE® CS..A safety card.

22296611/EN – 12/2019

7.14.2 Brake control with two control cables

The following wiring diagrams show the recommended electrical connection in the case of separate control of the BST via the digital input U_{IN} and the safety-related digital input U_{SAFE}.

Example 1: Connecting a brake to the BST

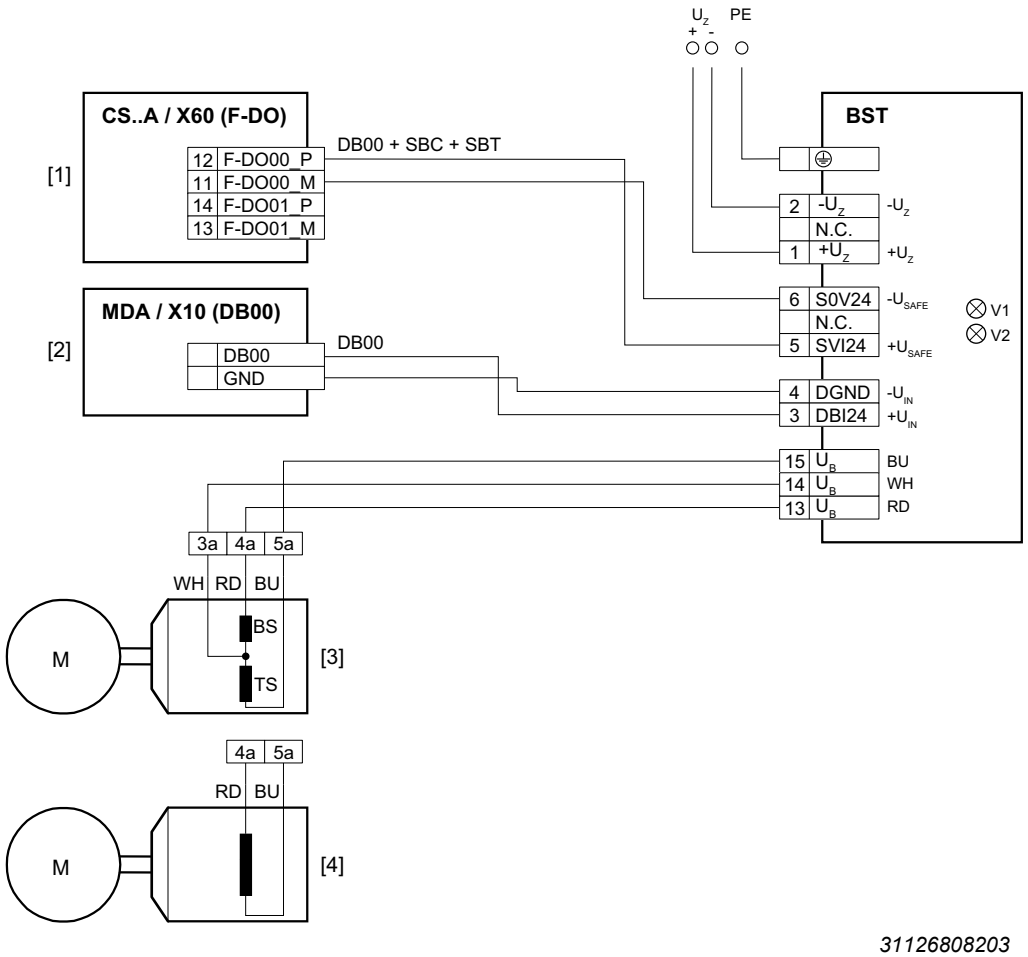


26654551563

[1] Connection of the brake with 3-conductor technology (standard)

[2] Connection of the brake with 2-conductor technology (optional). The connection of BST terminal 14 to connection 3a of the auxiliary terminal strip is omitted.

Example 2: Connecting a brake via the BST to the MOVIDRIVE® modular/system/technology with MOVISAFE® CS..A safety card

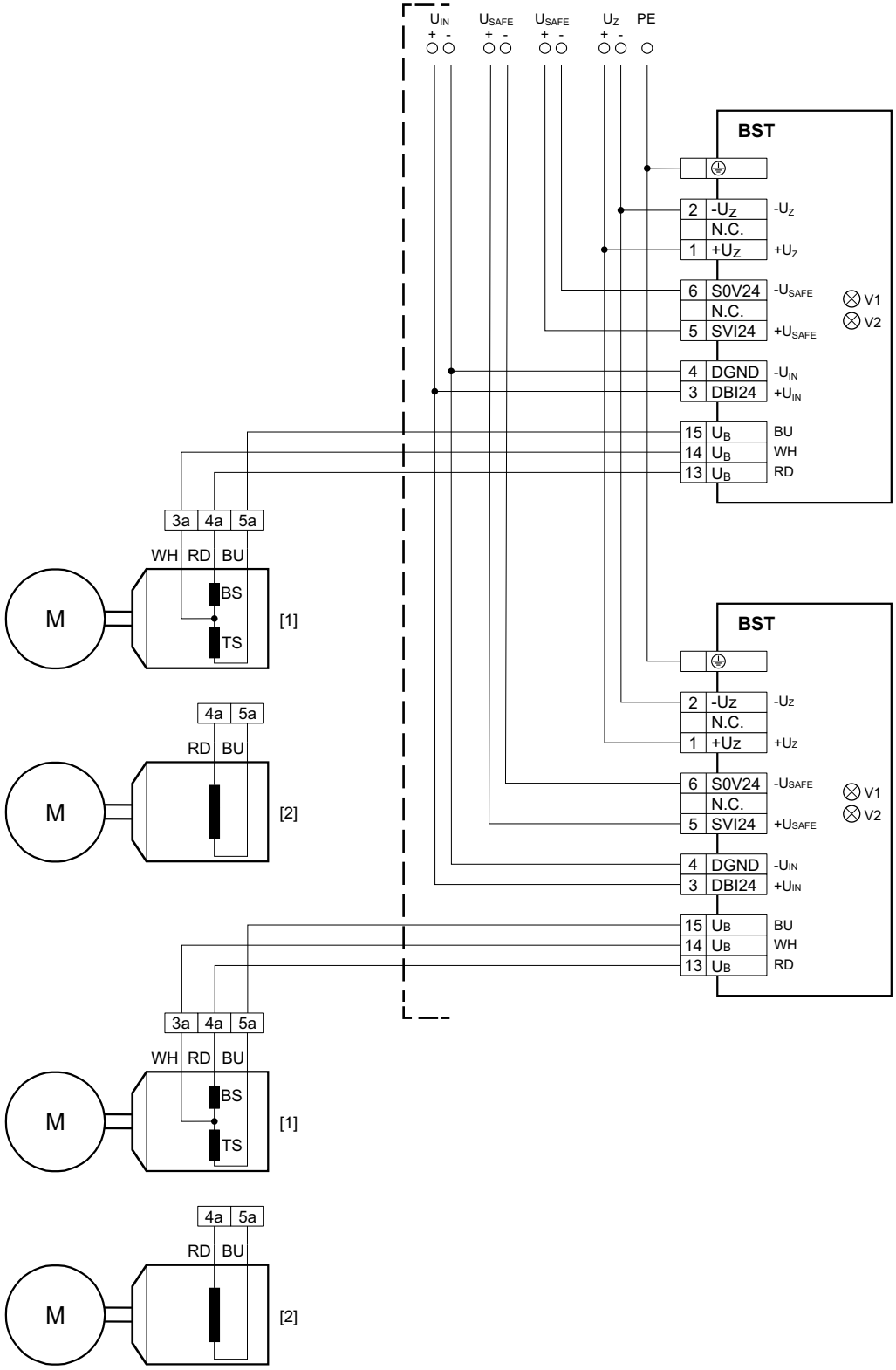


31126808203

[1] MOVISAFE® CS..A safety card
[2] MOVIDRIVE® modular, system, and technology application inverters
[3] Connection of the brake with 3-conductor technology (standard)
[4] Connection of the brake with 2-conductor technology (optional). The connection of BST terminal 14 to connection 3a of the auxiliary terminal strip is omitted.

22296611/EN – 12/2019

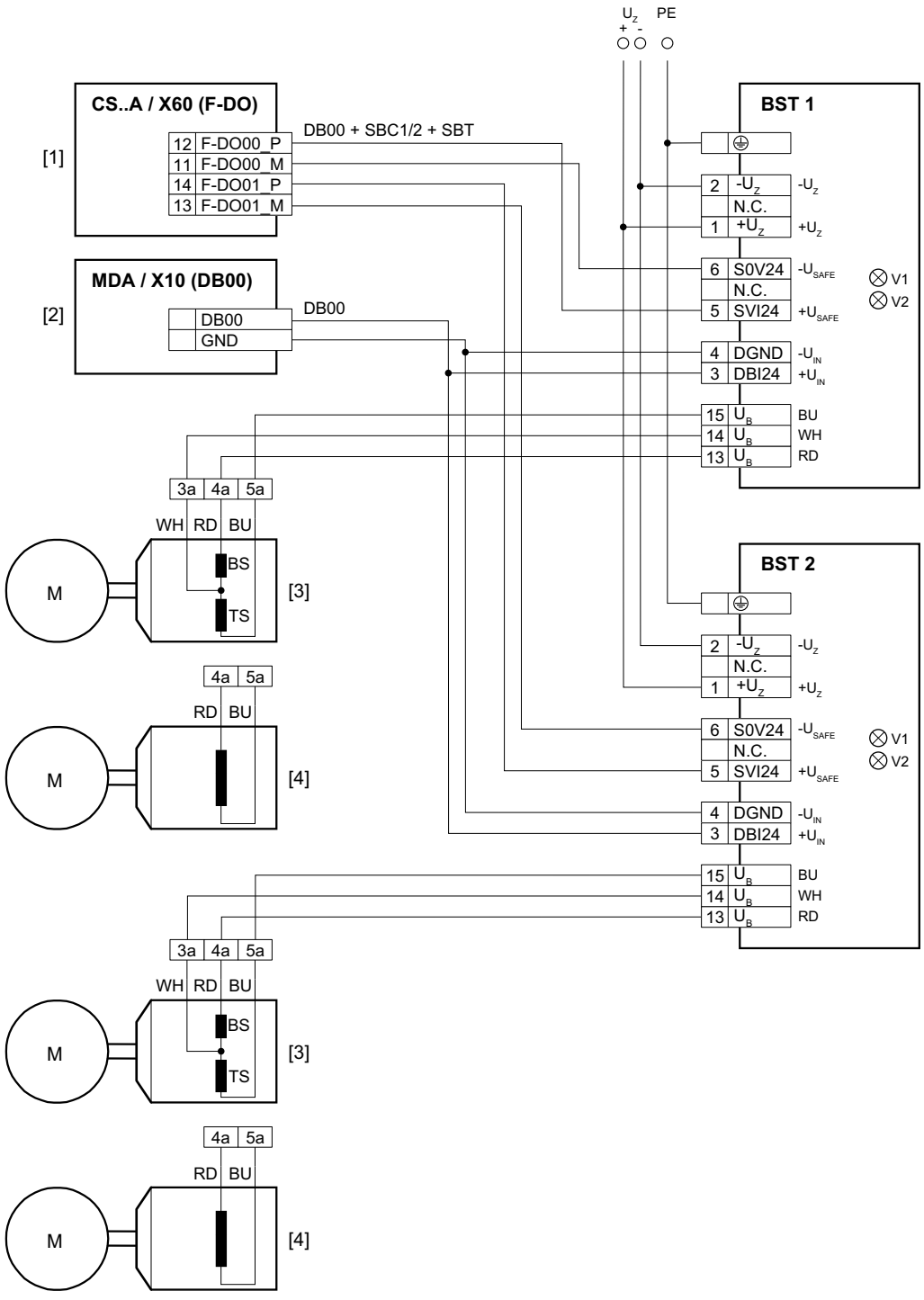
Example 3: Connecting 2 brakes to the BST



26654558603

[1] Connection of the brake with 3-conductor technology (standard)
[2] Connection of the brake with 2-conductor technology (optional). The connection of BST terminal 14 to connection 3a of the auxiliary terminal strip is omitted.

Example 4: Connecting 2 brakes via the BST to the MOVIDRIVE® modular/system/technology with MOVISAFE® CS..A safety card



31126802699

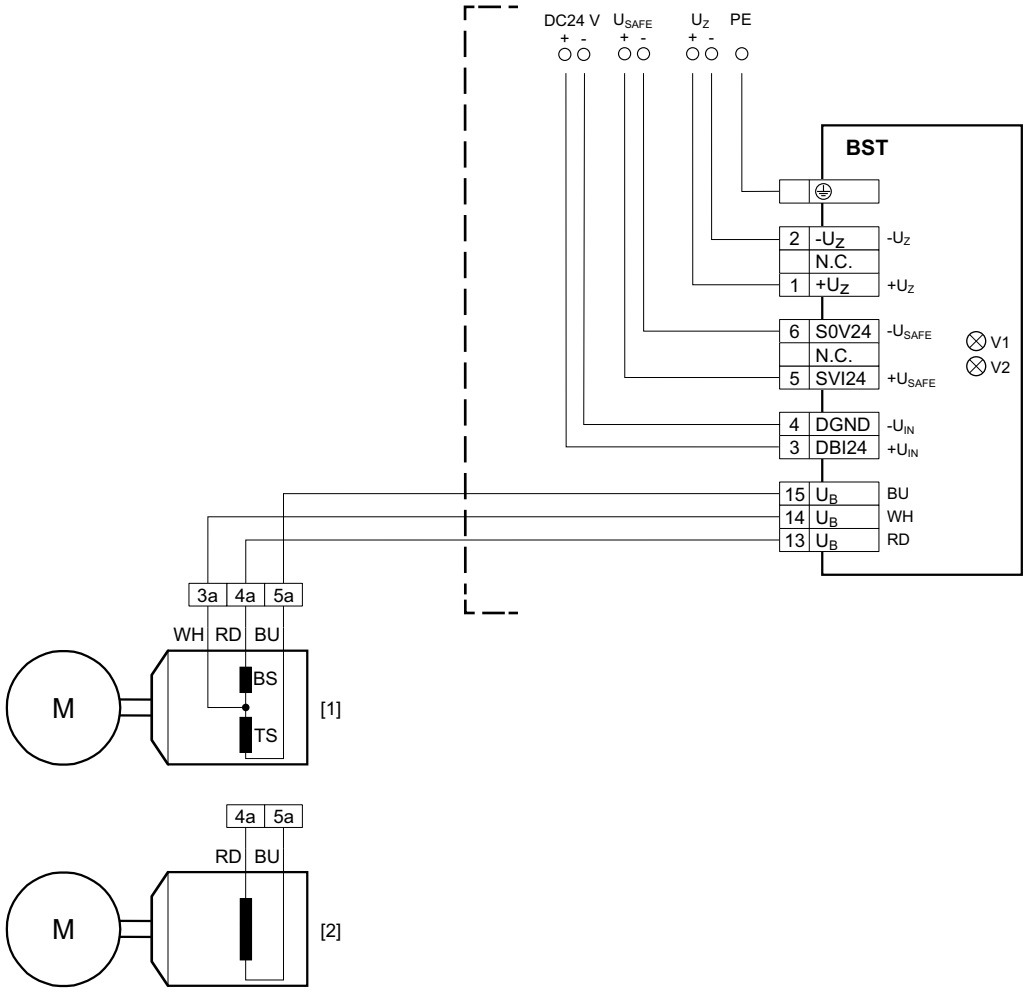
[1] MOVISAFE® CS..A safety card
[2] MOVIDRIVE® modular, system, and technology application inverters
[3] Connection of the brake with 3-conductor technology (standard)
[4] Connection of the brake with 2-conductor technology (optional). The connection of BST terminal 14 to connection 3a of the auxiliary terminal strip is omitted.

22296611/EN – 12/2019

7.14.3 Brake control with one control cable

The following wiring diagrams show the electrical connection in the case of control of the BST via the safety-related digital input U_{SAFE}.

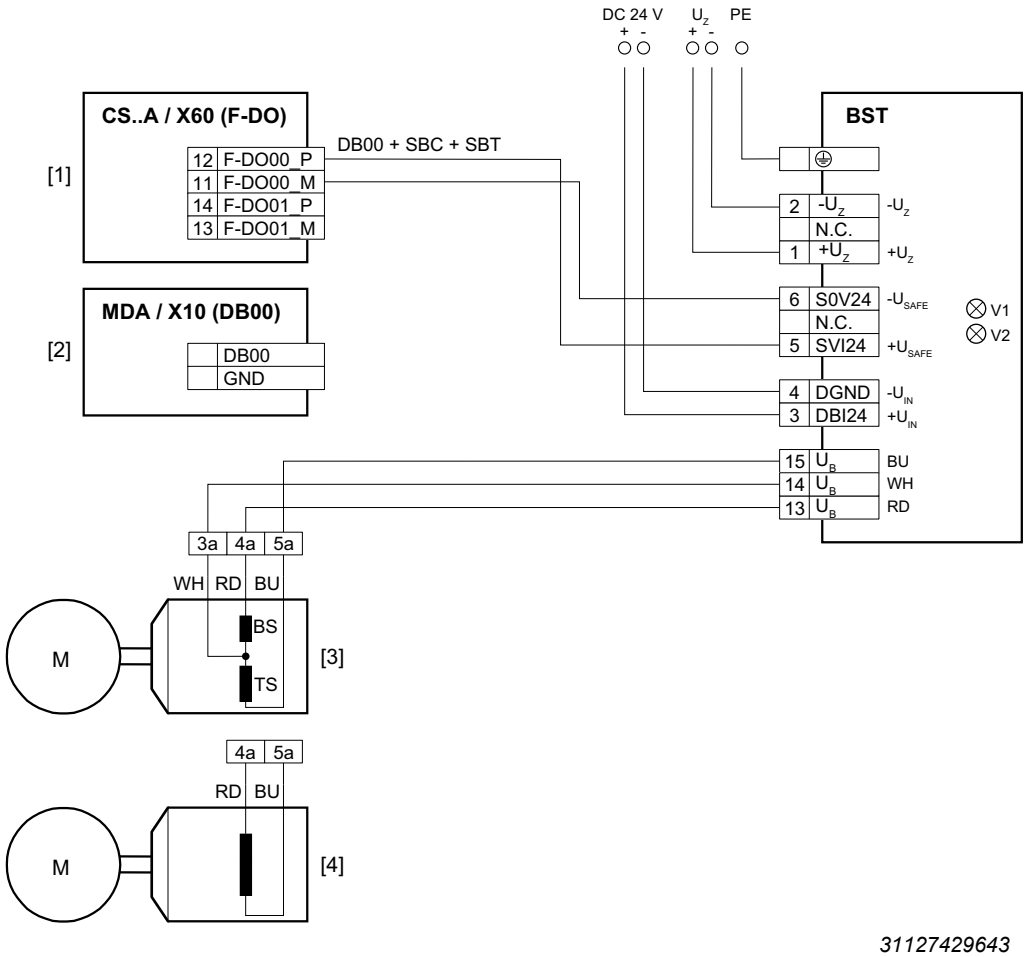
Example 1: Connecting a brake to the BST



26656125707

[1] Connection of the brake with 3-conductor technology (standard)
[2] Connection of the brake with 2-conductor technology (standard)

Example 2: Connecting a brake via the BST to the MOVIDRIVE® modular/system/technology with MOVISAFE® CS..A safety card

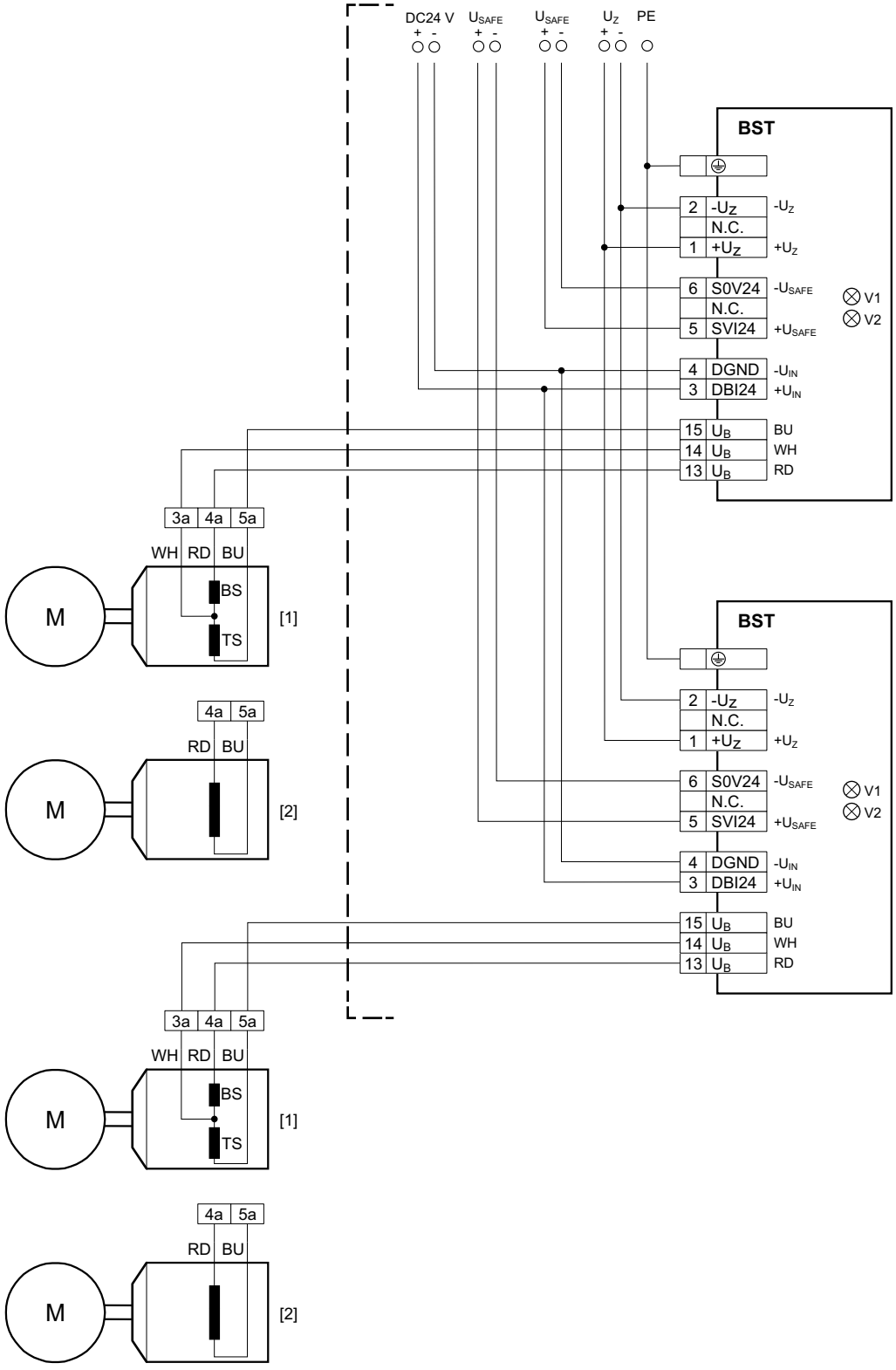


31127429643

[1] MOVISAFE® CS..A safety card
[2] MOVIDRIVE® modular, system, and technology application inverters
[3] Connection of the brake with 3-conductor technology (standard)
[4] Connection of the brake with 2-conductor technology (optional). The connection of BST terminal 14 to connection 3a of the auxiliary terminal strip is omitted.

22296611/EN – 12/2019

Example 3: Connecting 2 brakes to the BST

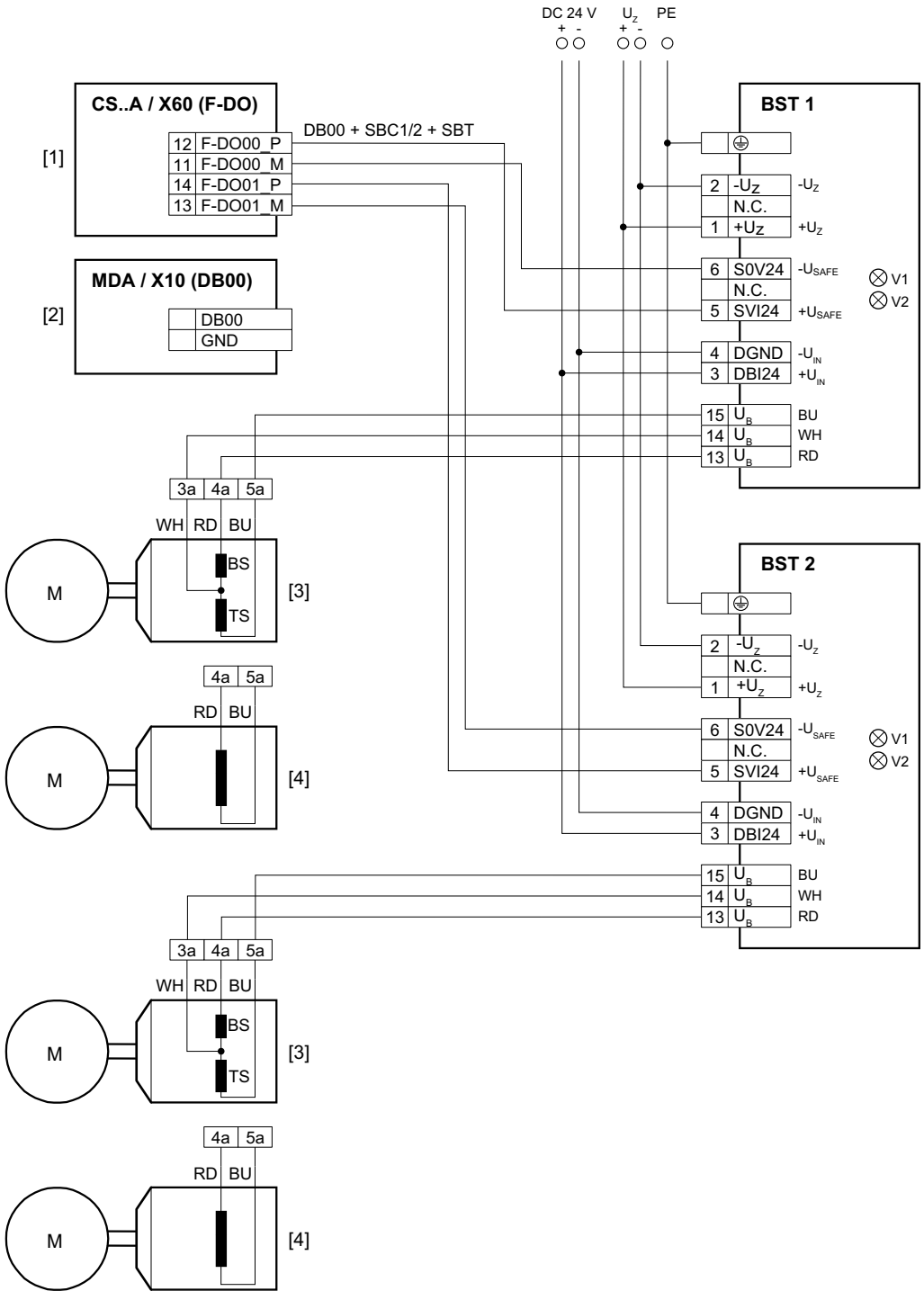


26656132491

[1] Connection of the brake with 3-conductor technology (standard)

[2] Connection of the brake with 2-conductor technology (optional). The connection of BST terminal 14 to connection 3a of the auxiliary terminal strip is omitted.

Example 4: Connecting 2 brakes via the BST to the MOVIDRIVE® modular/system/technology with MOVISAFE® CS..A safety card



31127435147

[1] MOVISAFE® CS..A safety card
[2] MOVIDRIVE® modular, system, and technology application inverters
[3] Connection of the brake with 3-conductor technology (standard)
[4] Connection of the brake with 2-conductor technology (optional). The connection of BST terminal 14 to connection 3a of the auxiliary terminal strip is omitted.

22296611/EN – 12/2019

8 Startup

8.1 Operating states

8.1.1 Brake

Releasing the brake

The brake is released when all the following input voltages are applied to the safety-related BST brake module:

- DC 24 V voltage at the safety-related digital input U_{SAFE}.
- DC 24 V voltage at the digital input U_{IN}.
- Voltage supply U_Z.

Application of the brake

The brake is applied when one of the following three input voltages is disconnected at the safety-related BST brake module:

- DC 24 V voltage at the safety-related digital input U_{SAFE}.
- DC 24 V voltage at the digital input U_{IN}.
- Voltage supply U_Z.

INFORMATION

- **The safety-related disconnection of the brake is performed exclusively via the safety-related digital input U_{SAFE}.**
- The voltage supply to U_Z is not provided for the regular actuation of the brake. For this purpose, use the digital inputs U_{SAFE} and U_{IN}.

8.1.2 LED display

The LEDs V1 and V2 indicate the operating state of the two digital inputs. The LED display is independent of the voltage supply U_Z.

- **LED V1 (orange)**

  Indicates the state of the safety-related digital input U_{SAFE}.
- **LED V2 (green)**

  Indicates the state of the digital input U_{IN}, depending on U_{SAFE}.

INFORMATION

- The states of LED V1 and LED V2 must not be regarded as safety-relevant.
- The fact that the LED V1 and LED V2 are no longer illuminated does not indicate that the safety-related BST brake module is de-energized and the brake is applied.
- If LED V1 and LED V2 are not illuminated, the voltage supply U_Z might still be present at the BST.

22296611/EN – 12/2019

8.1.3 State diagram

The following diagram shows the switching state of the LEDs (V1, V2) and of the brake, depending on the input voltages.

- "0": Input voltage is not present/LED is off.
- "1": Input voltage is present/LED lights up.

State of the input voltages			Switching state		
U_{SAFE}	U_{IN}	U_Z	LED V1	LED V2	Brake
0	0	0	0	0	Brake applied (de-energized)
0	0	1	0	0	
0	1	0	0	0	
0	1	1	0	0	
1	0	0	1	0	
1	0	1	1	0	
1	1	0	1	1	
1	1	1	1	1	Brake released (energized)

8.2 Control of the brake module

NOTICE

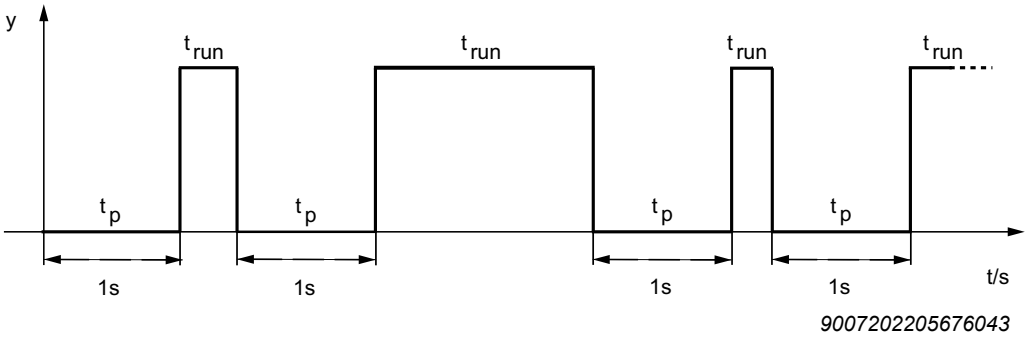
The activation of the safety-related BST brake module does not comply with the necessary timeout.

BST brake module may be destroyed.

- Comply with the required timeouts in the activation of the safety-related brake module.

8.2.1 Operating mode: Automatic mode

In automatic mode, a timeout of at least 1 second must be complied with after disconnection of the brake given a brake coil power of P ≥ 70 W.



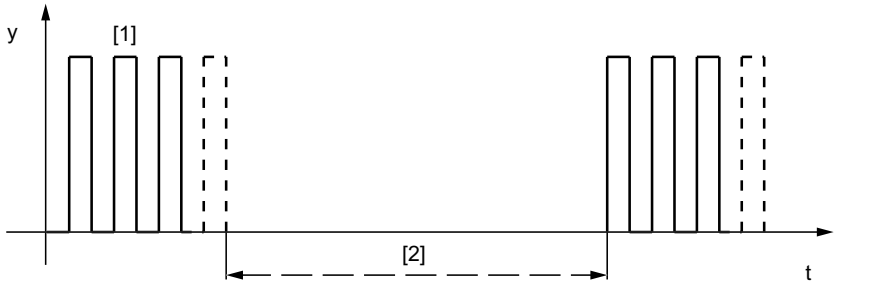
9007202205676043

y Control signal to U_{IN}/U_{SAFE}
t_p Timeout at least 1 s
t_{run} Switch-on time

22296611/EN – 12/2019

8.2.2 Operating mode: Setup mode or jog mode

In setup mode or jog mode, timeouts of less than 1 second are possible with a brake coil power of P ≥ 70 W. After a maximum of 20 control pulses, you must adhere to a timeout of at least 3 minutes.



9007202205775243

y Control signal to U_{IN}/U_{SAFE}
[1] Max. 20 control pulses
[2] Timeout of at least 180 s after 20 control pulses at the latest

22296611/EN – 12/2019

9 Response times

Response times play a decisive role in the design and execution of safety functions of systems and machines. In order to match the response time of a safety function, always take the entire system from the sensor (command device) to the actuator into account. The following response times are of particular importance in connection with the safety-related BST brake module:

- Connected sensors
- Communication/F-communication (cycle time, watchdog)
- Processing time, safety control/safety relay
- Safety-related brake module
- Switching time of the brake

Establish the response sequence for the safety function with the safety-related BST brake module and determine the maximum response time, considering the relevant manufacturer data. Observe in particular the information in the safety documentation of the used components.

For detailed information about the response times, see chapter "Technical data" (→ 🗎 56).

22296611/EN – 12/2019

10 Service

10.1 Modification/changes to the device

It is not permitted to make any modifications or changes to the device. If required, contact SEW-EURODRIVE Service.

INFORMATION

The safety certification and any right to claim under warranty from SEW-EURODRIVE become void if the user modifies the device (e.g. replacing components, welding parts).

10.2 Electronics Service by SEW-EURODRIVE

If you are unable to rectify a fault, contact SEW-EURODRIVE Service. For the addresses, refer to www.sew-eurodrive.com.

When contacting SEW-EURODRIVE Service, always specify the following information so that our service personnel can assist you more effectively:

- Information on the device type on the nameplate (e.g. type designation, serial number, part number, product key, purchase order number)
- Brief description of the application
- Fault message on the status display
- Nature of the fault
- Accompanying circumstances
- Any unusual events preceding the problem

22296611/EN – 12/2019

10.3 Waste disposal

Dispose of the product and all parts separately in accordance with their material structure and the national regulations. Put the product through a recycling process or contact a specialist waste disposal company. If possible, divide the product into the following categories:

- Iron, steel or cast iron
- Stainless steel
- Magnets
- Aluminum
- Copper
- Electronic parts
- Plastics

The following materials are hazardous to health and the environment. These materials must be collected and disposed of separately.

- Oil and grease

  Collect used oil and grease separately according to type. Ensure that the used oil is not mixed with solvent. Dispose of used oil and grease correctly.
- Screens
- Capacitors

Waste disposal according to WEEE Directive 2012/19/EU

This product and its accessories may fall within the scope of the country-specific application of the WEEE Directive. Dispose of the product and its accessories according to the national regulations of your country.

For further information, contact the responsible SEW-EURODRIVE branch or an authorized partner of SEW-EURODRIVE.

22296611/EN – 12/2019

10.4 Device replacement

Before replacing the device, compare the data on the nameplate of the previous BST with the nameplate data on the new BST. The type designation must be identical on both devices.

To replace a safety-related BST brake module, proceed as follows:

- Switch off the voltage supply U_Z.
- **⚠ DANGER!**
  After the voltage supply U_Z is deactivated, the DC link at the inverter may still carry dangerous voltage due to the charged capacitors.

  Severe or fatal injuries from electric shock.

  – Secure the deactivated voltage supply U_Z against being accidentally switched back on.

  – Wait for 10 minutes before you start work.

  – **Before starting work**, check that the terminals of the BST are de-energized.
- **⚠ CAUTION!**
  The surfaces of the safety-related BST brake module can become very hot during operation.

  Risk of burns.

  – Let the BST cool down before you start working on it.
- Disconnect all terminals.
- Remove the PE connection, the shield terminals, and the TF/TH terminals (in the BST-...-0B only) and disconnect the respective connection cables.
- Remove the old BST from the mounting rail. In the process, observe the information in chapter "Mechanical installation" (→ 🗎 27).
- Install the new BST on the mounting rail. Observe the chapter "Mechanical installation" (→ 🗎 27).
- Connect the respective connection cables to the PE connection, the shield connection, and the TF/TH connections (in the BST-...-0B only) again.
- Position all terminals again.
- Perform a functional check.

22296611/EN – 12/2019

11 Technical data

11.1 General technical data

	BST 1.2S-230V-00 BST 1.2S-230V-0B	BST 0.7S-400V-00 BST 0.7S-400V-0B	BST 0.6S-460V-00 BST 0.6S-460V-0B
Ambient temperature during storage	≥ −20 °C to ≤ +70 °C		
Ambient temperature during operation	≥ -15 °C to ≤ +60 °C		
Climate class	EN 60721-3-3, class 3K3		
Installation height h	• Up to h ≤ 1000 m above sea level, no restrictions. • At h ≥ 1000 m, the following restrictions apply: The BST brake module must be handled as an auxiliary device and so as a system component of the deployed inverter. You must observe and implement the specifications of the deployed inverter. An additional power reduction of the BST brake module as a system component need not be taken into account.		
Degree of protection	IP20		
Assembly	On TH 35-7.5 or TH 35-15 mounting rail in accordance with IEC 60175		
Dimensions W × H × D	135 mm × 135 mm × 70 mm		
Weight	Approx. 0.79 kg		

11.2 General electrical data

	BST 1.2S-230V-00 BST 1.2S-230V-0B	BST 0.7S-400V-00 BST 0.7S-400V-0B	BST 0.6S-460V-00 BST 0.6S-460V-0B
Interference immunity	In accordance with EN 61800-3		
Interference emission in EMC-compliant installation			

22296611/EN – 12/2019

11.3 Voltage supply U_Z

	BST 1.2S-230V-00 BST 1.2S-230V-0B	BST 0.7S-400V-00 BST 0.7S-400V-0B	BST 0.6S-460V-00 BST 0.6S-460V-0B
Voltage supply U_Z	DC 350 V – 750 V (briefly up to DC 970 V) (at output power ≥ 95 W, at least DC 450 V)		
Power consumption	Depending on the brake type, 150 W (briefly up to 800 W/200 ms)		
Permitted cable length	5 m (with fusing) 3 m (without fusing)		

11.4 Brake output U_B

	BST 1.2S-230V-00 BST 1.2S-230V-0B	BST 0.7S-400V-00 BST 0.7S-400V-0B	BST 0.6S-460V-00 BST 0.6S-460V-0B
Brake voltage U_B (Terminal 13/15)	DC 86 V – 106 V (AC 230 V)	DC 150 V – 184 V (AC 400 V)	DC 171 V – 209 V (AC 460 V)
Nominal output current I_N (Terminal 13/15)	DC 1.2 A	DC 0.7 A	DC 0.6 A
Output current I_{brake_warm} (Terminal 13/15)	DC 1.0 A	DC 0.6 A	DC 0.5 A
	With P_A = 120 W, the nominal output current reduces in warm condition.		
Acceleration current I_B (Terminal 13/14)	Depending on the brake type: 4 – 8.5 times the holding current of the brake		
Maximum output power P_A	120 W		
Maximum power loss P_V	30 W		
Permitted cable length	200 m		

22296611/EN – 12/2019

11.5 Safety-related digital input U_{SAFE}

	BST 1.2S-230V-00 BST 1.2S-230V-0B	BST 0.7S-400V-00 BST 0.7S-400V-0B	BST 0.6S-460V-00 BST 0.6S-460V-0B
Properties	DC 24 V signal level in accordance with EN 61131-2		
Signal level	• Logical "0" = input LOW: < 6 V • Logical "1" = input HIGH: > 10 V		
Reference ground	GND		
Input current	Minimum < 0.6 mA (not switched) Minimum > 13 mA (switched) Maximum < 50 mA		
Resistance (U_{SAFE} to ground)	> 100 kΩ		
Input capacity with polarity protection diode uncoupled	< 6 µF (typically 4.7 µF)		
Permitted cable length	100 m		

11.6 Digital input U_{IN}

INFORMATION

The digital input U_{IN} is not compatible with test pulses on the DC 24 V voltage.

	BST 1.2S-230V-00 BST 1.2S-230V-0B	BST 0.7S-400V-00 BST 0.7S-400V-0B	BST 0.6S-460V-00 BST 0.6S-460V-0B
Properties	DC 24 V signal level in accordance with EN 61131-2, Type 1		
Signal level	• Logical "0" = input LOW: DC −3 V to +5 V (< 2 mA) • Logical "1" = input HIGH: DC +15 V to +30 V (> 2 mA)		
Reference ground	GND		
Input current	> 20 mA		
Resistance (U_{IN} to ground)	> 100 kΩ		
Input capacitance	< 120 µF		
Permitted cable length	100 m		

22296611/EN – 12/2019

11.7 Response time until release of the brake

The response time until the release of the brake via the safety-related digital input U_{SAFE} or the digital input U_{IN} consists of the total of the following times:

- BST response time
- Switching time of the brake

BST response time		Switching time of the brake
Duration from the activation of the DC 24 V voltage at the safety-related digital input U_{SAFE} or at the digital input U_{IN} until the activation of the brake voltage U_B.	20 ms	• Brakes from SEW-EURODRIVE with two-coil system (3-conductor technology): For the brake, use the brake reaction time $t_{1,II}$ for high-speed excitation. You can find the times in the documentation for the particular brake. • Brakes with single-coil system (2-conductor technology): Use the brake reaction time for the brake that is specified in the brake documentation.

11.8 Response time until application of the brake

11.8.1 Application of the brake via the safety-related digital input U_{SAFE}

The response time until the application of the brake via the safety-related digital input U_{SAFE} consists of the total of the following times:

- BST response time
- Switching time of the brake

BST response time		Switching time of the brake
Duration from the deactivation of the DC 24 V voltage at the safety-related digital input U_{SAFE} until the deactivation of the brake voltage U_B.	≤ 6 ms	• Brakes from SEW-EURODRIVE with two-coil system (3-conductor technology): For the brake, use the brake application time $t_{2,I}$ for cut-off in the AC circuit. You can find the times in the documentation for the particular brake. • Brakes with single-coil system (2-conductor technology): Use the brake application time for the brake that is specified in the brake documentation.

22296611/EN – 12/2019

11.8.2 Application of the brake via the digital input U_{IN}

The response time until the application of the brake via the digital input U_{IN} consists of the total of the following times:

- Response time of the BST
- Switching time of the brake

BST response time		Switching time of the brake
Duration from the deactivation of the DC 24 V voltage at the digital input U_{IN} until the deactivation of the brake voltage U_B	≤ 6 ms	• Brakes from SEW-EURODRIVE with two-coil system (3-conductor technology): For the brake, use the brake application time $t_{2,II}$ for cut-off in the DC and AC circuit. You can find the times in the documentation for the particular brake. • Brakes with single-coil system (2-conductor technology): Use the brake application time for the brake that is specified in the brake documentation.

11.9 Safety characteristics of BST brake modules

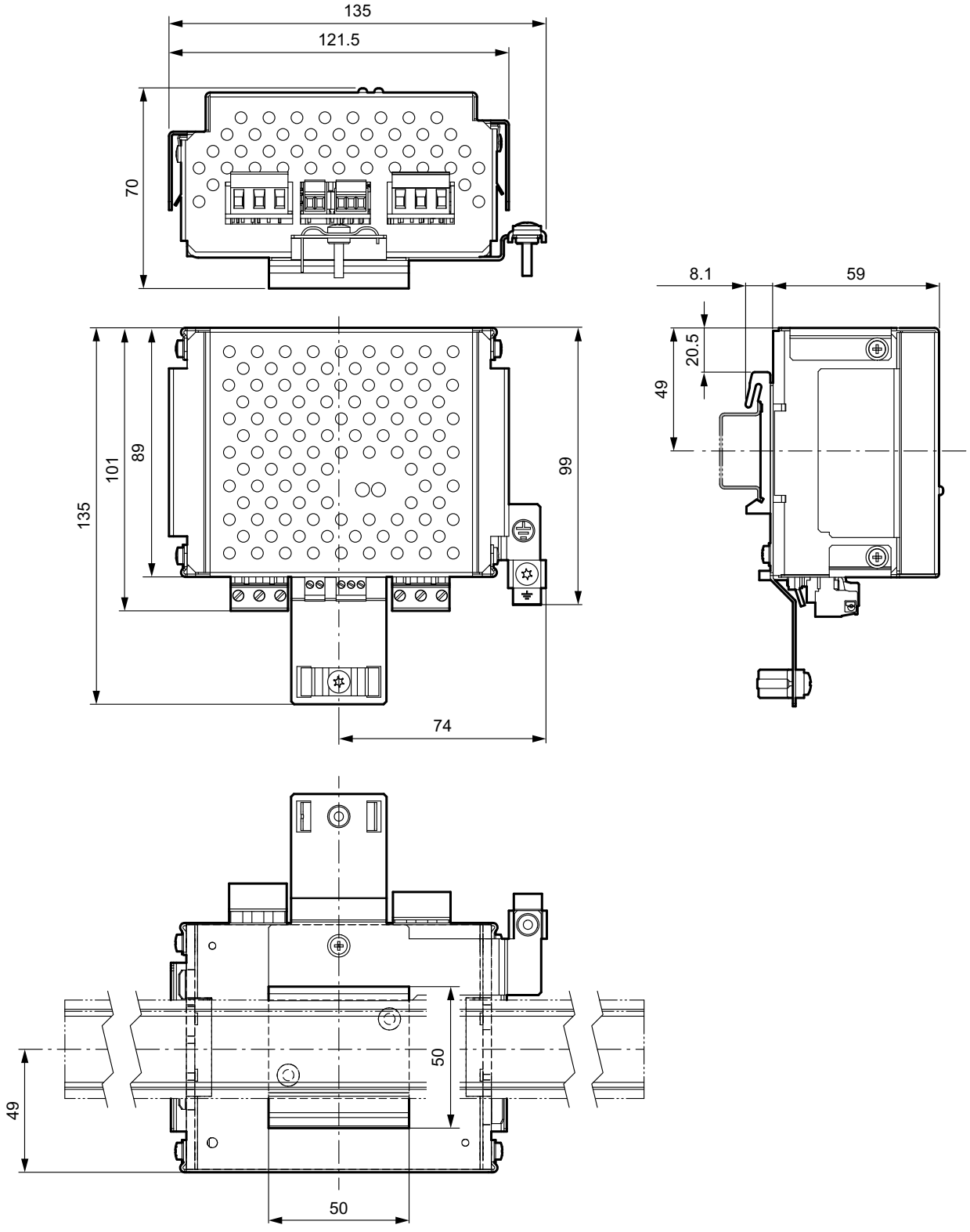
	Characteristic values in accordance with EN ISO 13849-1
Classification	PL d
System structure	Category 3
Probability of dangerous failure per hour (PFH value)	0 (fault exclusion)
Mission time/service life	20 years
Safe state	The electrical power supply to the brake is interrupted reliably. The brake is applied.
Safety subfunction	Safe disconnection of the power supply.

22296611/EN – 12/2019

11.10 Dimension drawing of BST in control cabinet design

11.10.1 Dimension drawings BST-...-00

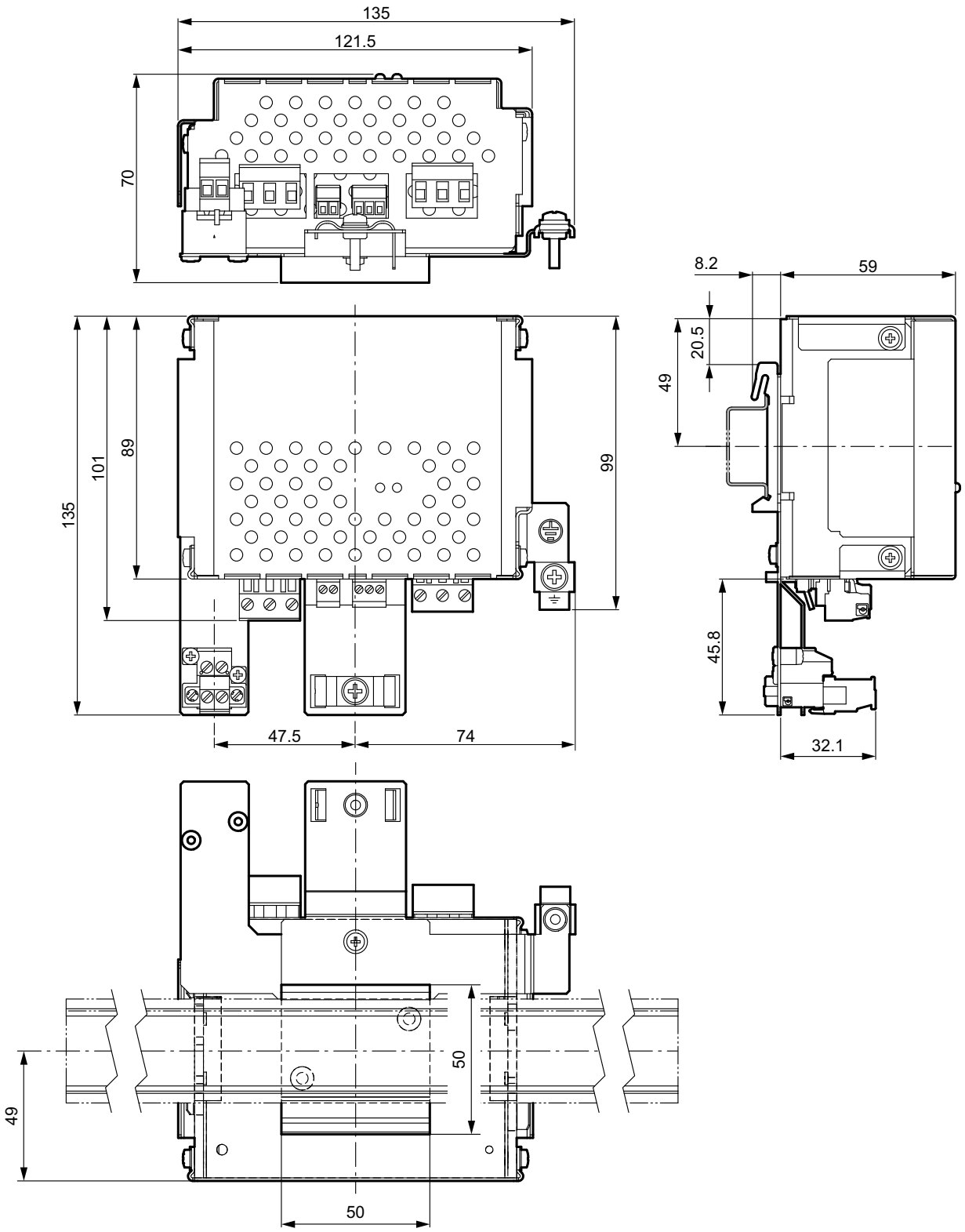
Dimensions in mm.



18014398643297675

11.10.2 Dimension drawings BST-...-0B

Dimensions in mm.



9007212306589323

22296611/EN – 12/2019

12 Address list

Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar
Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
Austria			
Assembly Sales Service	Vienna	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Straße 24 1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at
Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
Belarus			
Sales	Minsk	Foreign unitary production enterprise SEW-EURODRIVE RybalkoStr. 26 220033 Minsk	Tel. +375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by
Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue du Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-IG@sew-eurodrive.be
Brazil			
Production Sales Service	São Paulo	SEW-EURODRIVE Brasil Ltda. Estrada Municipal José Rubim, 205 – Rodovia Santos Dumont Km 49 Indaiatuba – 13347-510 – SP	Tel. +55 19 3835-8000 sew@sew.com.br
Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Jvl / Ind Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

22296611/EN – 12/2019

Cameroon			
Sales	Douala	SEW-EURODRIVE S.A.R.L. Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 02 10 Fax +237 233 39 02 10 sew@sew-eurodrive-cm
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2001 Ch. de l'Aviation Dorval Quebec H9P 2X6	Tel. +1 514 367-1124 Fax +1 514 367-3677 n.paradis@sew-eurodrive.ca
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA Las Encinas 1295 Parque Industrial Valle Grande LAMPA Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co,. Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

22296611/EN – 12/2019

Colombia			
Assembly Sales Service	Bogota	SEW-EURODRIVE COLOMBIA LTDA. Calle 17 No. 132-18 Interior 2 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co
Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
Czech Republic			
Assembly Sales Service	Hostivice	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline / 24 Hour Service	+420 800 739 739 (800 SEW SEW)	Service Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Copenhagen	SEW-EURODRIVEA/S Geminivej 28-30 2670 Greve	Tel. +45 43 95 8500 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies Building 10, Block 13005, First Industrial Zone, Obour City Cairo	Tel. +202 44812673 / 79 (7 lines) Fax +202 44812685 http://www.copam-egypt.com copam@copam-egypt.com
Estonia			
Sales	Tallin	ALAS-KUUL AS Loomäe tee 1, Lehmja küla 75306 Rae vald Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
	Tornio	SEW-EURODRIVE Oy Lossirannankatu 5 95420 Tornio	Tel. +358 201 589 300 Fax +358 3 780 6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi
France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	Forbach	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00

22296611/EN – 12/2019

France			
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 Fax +33 4 74 99 60 15
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Gabon			
Representation: Cameroon			
Germany			
Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	Bruchsal	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str. 10 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Hamburg	SEW-EURODRIVE GmbH & Co KG Hasselbinnen 11 22869 Schenefeld	Tel. +49 40 298109-60 Fax +49 40 298109-70 tb-hamburg@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de

22296611/EN – 12/2019

Germany			
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911
Greece			
Sales	Athens	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyí út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavík	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
Sales Service	Gurgaon	SEW-EURODRIVE India Private Limited Drive Center Gurugram Plot no 395, Phase-IV, UdyogVihar Gurugram , 122016 Haryana	Tel. +91 99588 78855 salesgurgaon@seweurodriveindia.com
Indonesia			
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id

22296611/EN – 12/2019

Indonesia			
	Jakarta	PT. Agrindo Putra Lestari JL.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com
Ireland			
Sales Service	Dublin	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperton.ie info@alperton.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE S.a.s. di SEW S.r.l. & Co. Via Bernini,12 20020 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pêcheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 21 21 81 05 Fax +225 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp
Kazakhstan			
Sales Service	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz
	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230, MN	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com
Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb

22296611/EN – 12/2019

Lebanon			
Sales (Jordan, Kuwait , Saudi Arabia, Syria)	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com
Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
Representation: Belgium			
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexico			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230, MN	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
Morocco			
Sales Service Assembly	Bouskoura	SEW-EURODRIVE Morocco SARL Parc Industriel CFCIM, Lot. 55/59 27182 Bouskoura Grand Casablanca	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
Namibia			
Sales	Swakopmund	DB MINING & INDUSTRIAL SUPPLIES CC Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

22296611/EN – 12/2019

New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 30 Lodestar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omole GRA Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpegltd.com bolaji.adekunle@greenpegltd.com
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk
Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py
Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Av. da Fonte Nova, n.º 86 3050-379 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

22296611/EN – 12/2019

Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» 188660, Russia, Leningrad Region, Vsevolozhsky District, Korabselki, Aleksandra Nevskogo str. building 4, block 1 P.O. Box 36 195220 St. Petersburg	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 http://www.senemeca.com senemeca@senemeca.sn
Serbia			
Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	Bernolákovo	SEW-Eurodrive SK s.r.o. Priemyselná ulica 6267/7 900 27 Bernolákovo	Tel.+421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 248-7289 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE KOREA CO., LTD. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com

22296611/EN – 12/2019

South Korea			
	Busan	SEW-EURODRIVE KOREA CO., LTD. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981
Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd Simunye street Matsapha, Manzini	Tel. +268 7602 0790 Fax +268 2 518 5033 charles@cgtrading.co.sz www.cgtradingswaziland.com
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn
Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRIVE Ana Merkez Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

22296611/EN – 12/2019

Ukraine			
Assembly Sales Service	Dnipropetrovsk	SEW-EURODRIVE, LLC Robochya str., bld. 23-B, office 409 49008 Dnipro	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
United Arab Emirates			
Drive Technology Center	Dubai	SEW-EURODRIVE FZE PO Box 263835 Jebel Ali Free Zone – South, P.O. Box Dubai, United Arab Emirates	Tel. +971 (0)4 8806461 Fax +971 (0)4 8806464 info@sew-eurodrive.ae
Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
USA			
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	Tel. +1 864 439-7537 Fax +1 864 661 1167 IGOrders@seweurodrive.com
	Additional addresses for service provided on request!		
Vietnam			
Sales	Ho Chi Minh City	SEW-EURODRIVE PTE. LTD. RO at Hochiminh City Floor 8, KV I, Loyal building, 151-151 Bis Vo Thi Sau street, ward 6, District 3, Ho Chi Minh City, Vietnam	Tel. +84 937 299 700 huytam.phan@sew-eurodrive.com
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn
Zambia			
Representation: South Africa			

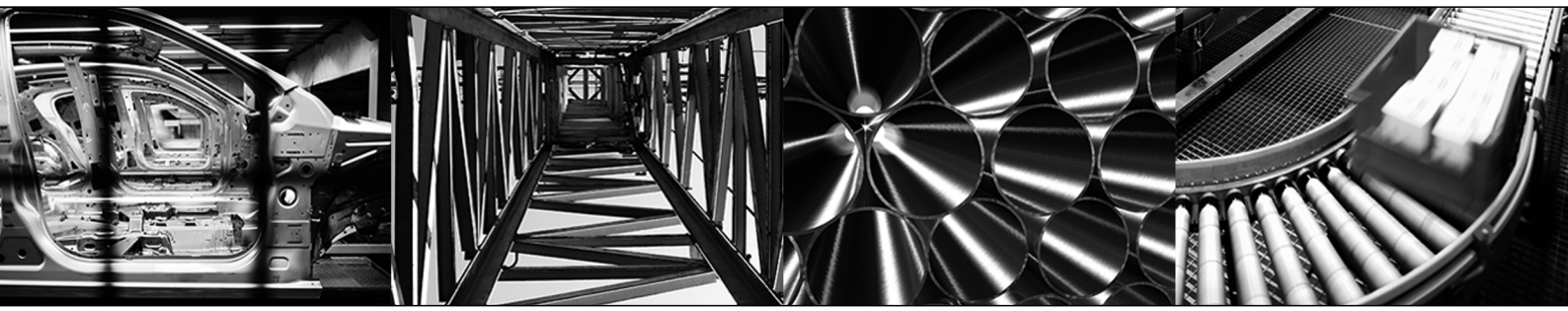
22296611/EN – 12/2019

Index

22296611/EN – 12/19

22296611/EN – 12/19

22296611/EN – 12/19



SEW-EURODRIVE
Driving the world

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Str. 42
76646 BRUCHSAL
GERMANY
Tel. +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com
➞ **www.sew-eurodrive.com**