Safety-Related BST Brake Module (as from Build Status 12 11)
For Control Cabinet Installation
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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.

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Meaning</th>
<th>Consequences if disregarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER</td>
<td>Imminent hazard</td>
<td>Severe or fatal injuries</td>
</tr>
<tr>
<td>WARNING</td>
<td>Possible dangerous situation</td>
<td>Severe or fatal injuries</td>
</tr>
<tr>
<td>CAUTION</td>
<td>Possible dangerous situation</td>
<td>Minor injuries</td>
</tr>
<tr>
<td>NOTICE</td>
<td>Possible damage to property</td>
<td>Damage to the product or its environment</td>
</tr>
<tr>
<td>INFORMATION</td>
<td>Useful information or tip: Simplifies handling of the product.</td>
<td></td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>SIGNAL WORD</th>
<th>Type and source of hazard.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Possible consequence(s) if disregarded.</td>
</tr>
<tr>
<td></td>
<td>• Measure(s) to prevent the hazard.</td>
</tr>
</tbody>
</table>
Meaning of the hazard symbols

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

<table>
<thead>
<tr>
<th>Hazard symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General hazard</td>
</tr>
<tr>
<td></td>
<td>Warning of dangerous electrical voltage</td>
</tr>
</tbody>
</table>

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
1 General information

Product names and trademarks

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

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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.
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.
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 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.
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.
3 Functional safety

3.1 Underlying standards

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

<table>
<thead>
<tr>
<th>Safety-related BST brake module</th>
<th>Performance level (PL d) in accordance with EN ISO 13849-1 (applicable up to Cat. 3)</th>
</tr>
</thead>
</table>

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 \( U_{\text{SAFE}} \). A safety controller connected to this input or a safety relay activates the safe state of the BST when the safety-related digital input \( U_{\text{SAFE}} \) is switched off.

- Switching \( U_{\text{SAFE}} \) 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.

- The additional digital input \( U_{\text{IN}} \) must not be used to safely deactivate the brake. \( U_{\text{SAFE}} \) has a higher priority than \( U_{\text{IN}} \). This means that the safe state at the BST is activated when \( U_{\text{SAFE}} \) is switched off, regardless of the switching state of \( U_{\text{IN}} \).
3.4.2 Block diagram BST

![Block diagram BST](image)

- [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.
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 $U_{\text{SAFE}}$ at the terminals 5 and 6. The deactivation of $U_{\text{SAFE}}$ 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 $U_{\text{SAFE}}$ and/or the digital input $U_{\text{IN}}$, 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.
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 (Uz) 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.
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.
4.3 Safe control requirements

The safe control of the BST brake module at the safety-related digital input $U_{\text{SAFE}}$ 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 $U_{\text{SAFE}}$ must be suitable for the desired safety class (see the manufacturer's documentation).
- The safety-related digital input $U_{\text{SAFE}}$ 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 $U_{\text{SAFE}}$ must not be used for feedback.
- The safety-related BST brake module does not detect any short-circuits, cross-faults, or interference voltage in the DC 24 V voltage at the safety-related digital input $U_{\text{SAFE}}$. 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 $U_{\text{SAFE}}$
  - That the safety relay/safety control detects any short-circuits, cross-faults, and interference voltage in the DC 24 V voltage at the safety-related digital input $U_{\text{SAFE}}$.
- 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 $U_{\text{SAFE}}$. 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 $U_{\text{SAFE}}$ (terminal 5/6) possesses a serial polarity protection diode and a buffer capacitor with $C = 6 \, \mu\text{F}$. 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 $U_{\text{SAFE}}$ must be max. 1 ms long. The next pulse blanking cannot reoccur earlier than after 20 ms.
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.
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 $U_{\text{SAFE}}$
  - Terminal 3/4: Digital input $U_{\text{IN}}$

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 $U_{\text{SAFE}}$ and, if applicable, the digital input $U_{\text{IN}}$ 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 $U_{\text{SAFE}}$ and, if applicable, the digital input $U_{\text{IN}}$ 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" ($\rightarrow$ 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).
5 Device structure

5.1 Nameplate and type designation

5.1.1 Type designation

The type designation is structured as follows:

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

The following figure shows an example of a nameplate.

---

- Safety characteristics
- Climate class and degree of protection (IP)
- Ambient temperature (T)
- Output current ($I_{\text{brake warm}}$) in warm condition
- Nominal output current ($I_N$)
- Brake voltage ($U_B$)
- Input voltage for digital input ($U_{\text{IN}}$) and safety-related digital input ($U_{\text{SAFE}}$)
- Voltage supply ($U_Z$)
- Type designation
- Serial number S/N (here: 0086247)
- Part number P/N (here: 18255205) and version (here: 1211)
- Production date (ww/yy, here: 29/18)
- 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

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

### 5.2.2 BST with TF/TH terminal

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

### 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
5.4 Safety-related BST brake module

The following illustration shows the structure of the BST device:

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 $U_{\text{IN}}$
6. Terminals 5/6: Connection of safety-related digital input $U_{\text{SAFE}}$
7. Terminals 1/2: Connection of voltage supply $U_{Z}$
8. PE connection
9. Retaining plate/shield plate
## 5.5 Terminal assignment

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

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.

Proceed as follows to mount the BST brake module to 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].

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.
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" (→ 218).
- 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

<table>
<thead>
<tr>
<th>Voltage supply system</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN and TT systems – voltage systems with directly grounded star point.</td>
<td>This is permitted.</td>
</tr>
<tr>
<td>IT system – voltage system with non-grounded star point.</td>
<td>This is not permitted.</td>
</tr>
<tr>
<td>Voltage system with grounded outer conductor.</td>
<td>This is not permitted.</td>
</tr>
</tbody>
</table>

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" (→ 256).
7.4 Connection lead Uz (terminal 1/2)

The connection lead Uz must meet the following conditions:

- Cable cross section: 0.75 mm² – 2.5 mm²
- 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 U₀/U = 300 V/500 V (in accordance with DIN VDE 0298).

NOTICE

Incorrect connection of the voltage supply +Uz and -Uz 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 (+Uz at terminal 1 and -Uz at terminal 2).

7.5 Fusing of the connection leads to Uz

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

SEW-EURODRIVE recommends fusing all the poles of the connection cables to Uz. 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 Uz 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 Uz:

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

7.5.1 Wiring diagrams

The following wiring diagrams show the various connection variants for the BST voltage supply to Uz.
Connection variant 1: 1 – 8 safety-related BST brake modules

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.
Electrical installation

Fusing of the connection leads to Uz
7 Electrical installation

Control cable at digital input U\textsubscript{IN} (terminal 3/4)

[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\textsubscript{IN} (terminal 3/4)

The control cable at the digital input U\textsubscript{IN} must meet the following conditions:

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

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

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

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

7.8 Brake cable U\textsubscript{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\textsubscript{B} must meet the following conditions:

- Cable cross section of 0.75 mm\textsuperscript{2} – 2.5 mm\textsuperscript{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
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 mm² – 1.5 mm²
- 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
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.

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.seweurodrive.de.
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 \( U_{\text{SAFE}} \) and the digital input \( U_{\text{IN}} \). The digital input \( U_{\text{IN}} \) 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 \( U_{\text{SAFE}} \).

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 \( U_{\text{SAFE}} \) and the digital input \( U_{\text{IN}} \). The digital input \( U_{\text{IN}} \) 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 \( U_{\text{SAFE}} \).
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 $U_{SAFE}$.
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.

<table>
<thead>
<tr>
<th>Symbol/abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Motor</td>
</tr>
<tr>
<td>3a 4a 5a</td>
<td>Brake with 3-conductor technology (with two coils)</td>
</tr>
<tr>
<td></td>
<td>• BS = accelerator coil</td>
</tr>
<tr>
<td></td>
<td>• TS = coil section</td>
</tr>
<tr>
<td>4a 5a</td>
<td>Brake with 2-conductor technology (with one coil)</td>
</tr>
<tr>
<td>3a 4a 5a</td>
<td>Auxiliary terminal strip in terminal box</td>
</tr>
<tr>
<td>WH</td>
<td>Lead color white</td>
</tr>
<tr>
<td>RD</td>
<td>Lead color red</td>
</tr>
<tr>
<td>BU</td>
<td>Lead color blue</td>
</tr>
<tr>
<td>CS..A</td>
<td>MOVISAFE® CS..A safety card</td>
</tr>
<tr>
<td>MDA</td>
<td>MOVIDRIVE® modular, system, and technology application inverters</td>
</tr>
<tr>
<td>F-DO00_P</td>
<td>Safety-related digital output 0 of the MOVISAFE® CS..A safety card, sourcing output.</td>
</tr>
<tr>
<td>F-DO00_M</td>
<td>Safety-related digital output 0 of the MOVISAFE® CS..A safety card, sinking output.</td>
</tr>
<tr>
<td>F-DO01_P</td>
<td>Safety-related digital output 1 of the MOVISAFE® CS..A safety card, sourcing output.</td>
</tr>
<tr>
<td>F-DO01_M</td>
<td>Safety-related digital output 1 of the MOVISAFE® CS..A safety card, sinking output.</td>
</tr>
<tr>
<td>DB00</td>
<td>Brake control</td>
</tr>
<tr>
<td>GND</td>
<td>Reference potential DB00.</td>
</tr>
<tr>
<td>Symbol/abbreviation</td>
<td>Meaning</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| 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. |
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

[Diagram showing wiring connections]

[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

[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.
Example 3: Connecting 2 brakes to the BST

[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

[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.
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 $U_{\text{SAFE}}$.

Example 1: Connecting a brake to the BST

[Diagram showing electrical connections]

[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

[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.
Example 3: Connecting 2 brakes to the BST

[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

[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.
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.
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.

<table>
<thead>
<tr>
<th>State of the input voltages</th>
<th>Switching state</th>
</tr>
</thead>
<tbody>
<tr>
<td>U_SAFE U_IN U_Z LED V1 LED V2 Brake</td>
<td></td>
</tr>
<tr>
<td>0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>0 0 1 0 0</td>
<td></td>
</tr>
<tr>
<td>0 0 1 0 0</td>
<td></td>
</tr>
<tr>
<td>0 1 1 0 0</td>
<td>Brake applied (de-energized)</td>
</tr>
<tr>
<td>1 0 0 1 0</td>
<td></td>
</tr>
<tr>
<td>1 0 1 1 0</td>
<td></td>
</tr>
<tr>
<td>1 1 0 1 1</td>
<td></td>
</tr>
<tr>
<td>1 1 1 1 1</td>
<td>Brake released (energized)</td>
</tr>
</tbody>
</table>

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 \( P \geq 70 \text{ W} \).

\( y \) Control signal to \( U_{IN}/U_{SAFE} \)

\( t_{p} \) Timeout at least 1 s

\( t_{run} \) Switch-on time
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 $P \geq 70$ W. After a maximum of 20 control pulses, you must adhere to a timeout of at least 3 minutes.

$y$ 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
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).
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
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.
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" (→ 227).
- Install the new BST on the mounting rail. Observe the chapter "Mechanical installation" (→ 227).
- 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.
## 11 Technical data

### 11.1 General technical data

<table>
<thead>
<tr>
<th>BST 1.2S-230V-00</th>
<th>BST 0.7S-400V-00</th>
<th>BST 0.6S-460V-00</th>
</tr>
</thead>
<tbody>
<tr>
<td>BST 1.2S-230V-0B</td>
<td>BST 0.7S-400V-0B</td>
<td>BST 0.6S-460V-0B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient temperature during storage</th>
<th>≥ −20 °C to ≤ +70 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature during operation</td>
<td>≥ -15 °C to ≤ +60 °C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Climate class</th>
<th>EN 60721-3-3, class 3K3</th>
</tr>
</thead>
</table>

| 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.  |

<table>
<thead>
<tr>
<th>Degree of protection</th>
<th>IP20</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Assembly</th>
<th>On TH 35-7.5 or TH 35-15 mounting rail in accordance with IEC 60175</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dimensions W × H × D</th>
<th>135 mm × 135 mm × 70 mm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>Approx. 0.79 kg</th>
</tr>
</thead>
</table>

### 11.2 General electrical data

<table>
<thead>
<tr>
<th>BST 1.2S-230V-00</th>
<th>BST 0.7S-400V-00</th>
<th>BST 0.6S-460V-00</th>
</tr>
</thead>
<tbody>
<tr>
<td>BST 1.2S-230V-0B</td>
<td>BST 0.7S-400V-0B</td>
<td>BST 0.6S-460V-0B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interference immunity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interference emission in EMC-compliant installation</td>
<td>In accordance with EN 61800-3</td>
</tr>
</tbody>
</table>
11.3 Voltage supply U_Z

<table>
<thead>
<tr>
<th>BST 1.2S-230V-00</th>
<th>BST 0.7S-400V-00</th>
<th>BST 0.6S-460V-00</th>
</tr>
</thead>
<tbody>
<tr>
<td>BST 1.2S-230V-0B</td>
<td>BST 0.7S-400V-0B</td>
<td>BST 0.6S-460V-0B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage supply U_Z</th>
<th>DC 350 V – 750 V (briefly up to DC 970 V)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(at output power ≥ 95 W, at least DC 450 V)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Depending on the brake type, 150 W (briefly up to 800 W/200 ms)</td>
</tr>
<tr>
<td>Permitted cable length</td>
<td>5 m (with fusing)</td>
</tr>
<tr>
<td></td>
<td>3 m (without fusing)</td>
</tr>
</tbody>
</table>

11.4 Brake output U_B

<table>
<thead>
<tr>
<th>BST 1.2S-230V-00</th>
<th>BST 0.7S-400V-00</th>
<th>BST 0.6S-460V-00</th>
</tr>
</thead>
<tbody>
<tr>
<td>BST 1.2S-230V-0B</td>
<td>BST 0.7S-400V-0B</td>
<td>BST 0.6S-460V-0B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Brake voltage U_B (Terminal 13/15)</th>
<th>DC 86 V – 106 V (AC 230 V)</th>
<th>DC 150 V – 184 V (AC 400 V)</th>
<th>DC 171 V – 209 V (AC 460 V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal output current I_N (Terminal 13/15)</td>
<td>DC 1.2 A</td>
<td>DC 0.7 A</td>
<td>DC 0.6 A</td>
</tr>
<tr>
<td>Output current I_{brake,warm} (Terminal 13/15)</td>
<td>DC 1.0 A</td>
<td>DC 0.6 A</td>
<td>DC 0.5 A</td>
</tr>
<tr>
<td>With P_A = 120 W, the nominal output current reduces in warm condition.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceleration current I_a (Terminal 13/14)</td>
<td>Depending on the brake type: 4 – 8.5 times the holding current of the brake</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Maximum output power P_A | 120 W |
| Maximum power loss P_V | 30 W |
| Permitted cable length | 200 m |
11.5 Safety-related digital input $U_{SAFE}$

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

11.6 Digital input $U_{IN}$

**INFORMATION**

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

<table>
<thead>
<tr>
<th></th>
<th>BST 1.2S-230V-00</th>
<th>BST 0.7S-400V-00</th>
<th>BST 0.6S-460V-00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BST 1.2S-230V-0B</td>
<td>BST 0.7S-400V-0B</td>
<td>BST 0.6S-460V-0B</td>
</tr>
<tr>
<td>Properties</td>
<td>DC 24 V signal level in accordance with EN 61131-2, Type 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal level</td>
<td>• Logical &quot;0&quot; = input LOW: DC −3 V to +5 V (&lt; 2 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Logical &quot;1&quot; = input HIGH: DC +15 V to +30 V (&gt; 2 mA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference ground</td>
<td>GND</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input current</td>
<td>&gt; 20 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance (U$_{IN}$ to ground)</td>
<td>&gt; 100 kΩ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input capacitance</td>
<td>&lt; 120 µF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permitted cable length</td>
<td>100 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>BST response time</th>
<th>Switching time of the brake</th>
</tr>
</thead>
<tbody>
<tr>
<td>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 $U_B$.</td>
<td>20 ms</td>
</tr>
<tr>
<td>• Brakes from SEW-EURODRIVE with two-coil system (3-conductor technology): For the brake, use the brake reaction time $t_{\mu3}$ for high-speed excitation. You can find the times in the documentation for the particular brake.</td>
<td></td>
</tr>
<tr>
<td>• Brakes with single-coil system (2-conductor technology): Use the brake reaction time for the brake that is specified in the brake documentation.</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>BST response time</th>
<th>Switching time of the brake</th>
</tr>
</thead>
<tbody>
<tr>
<td>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 $U_B$.</td>
<td>$\leq$ 6 ms</td>
</tr>
<tr>
<td>• Brakes from SEW-EURODRIVE with two-coil system (3-conductor technology): For the brake, use the brake application time $t_{\mu j}$ for cut-off in the AC circuit. You can find the times in the documentation for the particular brake.</td>
<td></td>
</tr>
<tr>
<td>• Brakes with single-coil system (2-conductor technology): Use the brake application time for the brake that is specified in the brake documentation.</td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>BST response time</th>
<th>Switching time of the brake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration from the deactivation of the DC 24 V voltage at the digital input $U_{IN}$ until the deactivation of the brake voltage $U_B$</td>
<td>$\leq$ 6 ms</td>
</tr>
<tr>
<td></td>
<td>• Brakes from SEW-EURODRIVE with two-coil system (3-conductor technology):</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>• Brakes with single-coil system (2-conductor technology):</td>
</tr>
<tr>
<td></td>
<td>Use the brake application time for the brake that is specified in the brake documentation.</td>
</tr>
</tbody>
</table>

11.9 Safety characteristics of BST brake modules

<table>
<thead>
<tr>
<th>Characteristic values in accordance with EN ISO 13849-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification</td>
</tr>
<tr>
<td>System structure</td>
</tr>
<tr>
<td>Probability of dangerous failure per hour (PFH value)</td>
</tr>
<tr>
<td>Mission time/service life</td>
</tr>
<tr>
<td>Safe state</td>
</tr>
<tr>
<td>Safety subfunction</td>
</tr>
</tbody>
</table>
11.10 Dimension drawing of BST in control cabinet design

11.10.1 Dimension drawings BST-...-00

Dimensions in mm.

---

Operating Instructions – Safety-Related BST Brake Module (as from Build Status 12 11)
11.10.2 Dimension drawings BST-...-0B

Dimensions in mm.

Operating Instructions – Safety-Related BST Brake Module (as from Build Status 12 11)
<table>
<thead>
<tr>
<th>Address list</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Argentina</strong></td>
</tr>
<tr>
<td><strong>Assembly</strong></td>
</tr>
<tr>
<td>Sales</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Australia</strong></td>
</tr>
<tr>
<td><strong>Assembly</strong></td>
</tr>
<tr>
<td>Sales</td>
</tr>
<tr>
<td>Service</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Sydney</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Austria</strong></td>
</tr>
<tr>
<td><strong>Assembly</strong></td>
</tr>
<tr>
<td>Sales</td>
</tr>
<tr>
<td>Service</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Bangladesh</strong></td>
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<tr>
<td>Sales</td>
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<td><strong>Belarus</strong></td>
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<tr>
<td>Sales</td>
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<tr>
<td><strong>Belgium</strong></td>
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<tr>
<td><strong>Assembly</strong></td>
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<td>Sales</td>
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<tr>
<td>Service</td>
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<td></td>
</tr>
<tr>
<td><strong>Service Competence Center</strong></td>
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<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
</tr>
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<td><strong>Brazil</strong></td>
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<tr>
<td><strong>Production</strong></td>
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<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Bulgaria</strong></td>
</tr>
<tr>
<td>Sales</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
### 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 Enconas 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

- 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, 8th 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

- X'An
  - SEW-EURODRIVE (X'An) Co., Ltd.
  - No. 12 Jinye 2nd Road
  - X'An High-Technology Industrial Development Zone
  - X'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
## Address List

### Colombia
- **Assembly**
  - Bogota: SEW-EURODRIVE COLOMBIA LTDA.
  - Tel.: +57 1 54750-50
- **Sales**
  - Calle 17 No. 132-18
  - Interior 2 Bodega 6, Manzana B
  - Santafé de Bogotá
  - Tel.: +57 1 54750-44
- **Service**
  - Tel.: http://www.sew-eurodrive.com.co
  - sew@sew-eurodrive.com.co

### Croatia
- **Sales**
  - Zagreb: KOMPEKS d. o. o.
  - Tel.: +385 1 4613-158
- **Service**
  - Zeleni dol 10
  - 10 000 Zagreb
  - Tel.: +385 1 4613-158
  - kompeks@inet.hr

### Czech Republic
- **Assembly**
  - Hostivice: SEW-EURODRIVE CZ s.r.o.
  - Tel.: +420 255 709 601
  - Fax: +420 235 350 613
  - http://www.sew-eurodrive.cz
  - sew@sew-eurodrive.cz
- **Service**
  - Drive Service
  - Hotline / 24 Hour Service
  - Tel.: +420 800 739 739 (800 SEW SEW)

### Denmark
- **Assembly**
  - Copenhagen: SEW-EURODRIVEA/S
  - Tel.: +45 43 96 8500
  - Fax: +45 43 9565-09
  - http://www.sew-eurodrive.dk
  - sew@sew-eurodrive.dk

### Egypt
- **Sales**
  - Cairo: Copam Egypt for Engineering & Agencies
  - Tel.: +202 44812673 / 79 (7 lines)
  - Fax: +202 44812685
  - http://www.copam-egypt.com
  - copam@copam-egypt.com

### Estonia
- **Sales**
  - Tallin: ALAS-KUUL AS
  - Tel.: +372 6593230
  - Fax: +372 6593231
  - http://www.alas-kuul.ee
  - veiko.soots@alas-kuul.ee

### Finland
- **Assembly**
  - Hollola: SEW-EURODRIVE OY
  - Tel.: +358 201 589-300
  - Fax: +358 3 780-6211
  - http://www.sew-eurodrive.fi
  - sew@sew.fi
- **Service**
  - Hollola: SEW-EURODRIVE OY
  - Tel.: +358 201 589-300
  - Fax: +358 3 780-6211
  - http://www.sew-eurodrive.fi
  - sew@sew.fi
  - Tornio: SEW-EURODRIVE Oy
  - Tel.: +358 201 589 300
  - Fax: +358 3 780 6211
  - http://www.sew-eurodrive.fi
  - sew@sew.fi

### France
- **Production**
  - Hagenau: SEW-USOCOME
  - 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
  - Tel.: +33 3 87 29 38 00
  - sew@sew.fi

### Germany
- **Drive Service**
  - Tel.: +420 800 739 739 (800 SEW SEW)
  - Service
  - Tel.: +420 255 709 632
  - Fax: +420 235 368 218

### Production Assembly
- Karkkila: SEW Industrial Gears Oy
  - Tel.: +358 201 589-300
  - Fax: +358 201 589-310
  - http://www.sew-eurodrive.fi
  - sew@sew.fi

### Production Assembly
- Holzheim: SEW-USOCOME
  - Tel.: +33 3 88 73 67 00
  - Fax: +33 3 88 73 66 00
  - http://www.usocome.com
  - sew@usocome.com
Address list

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## Germany

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<tr>
<td>Ulm</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG</td>
<td>+49 7348 9885-09</td>
<td>+49 7348 9885-90</td>
<td><a href="mailto:dc-ulm@sew-eurodrive.de">dc-ulm@sew-eurodrive.de</a></td>
</tr>
<tr>
<td>Würzburg</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG</td>
<td>+49 931 27886-60</td>
<td>+49 931 27886-66</td>
<td><a href="mailto:dc-wuerzburg@sew-eurodrive.de">dc-wuerzburg@sew-eurodrive.de</a></td>
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### Drive Service Hotline / 24 Hour Service

Tel. 0 800 SEWHELP

Tel. 0 800 7394357

## Great Britain

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<tbody>
<tr>
<td>Normanton</td>
<td>SEW-EURODRIVE Ltd.</td>
<td>+44 1924 893-855</td>
<td>+44 1924 893-702</td>
<td><a href="http://www.sew-eurodrive.co.uk">http://www.sew-eurodrive.co.uk</a></td>
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<td></td>
<td>DeVilliers Way</td>
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<td><a href="mailto:info@sew-eurodrive.co.uk">info@sew-eurodrive.co.uk</a></td>
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### Drive Service Hotline / 24 Hour Service

Tel. 01924 896911

## Greece

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<tr>
<td></td>
<td>12, K. Mavromichali Street</td>
<td></td>
<td></td>
<td><a href="mailto:info@boznos.gr">info@boznos.gr</a></td>
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<tr>
<td></td>
<td>P.O. Box 80136</td>
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<td></td>
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<tr>
<td></td>
<td>18545 Piraeus</td>
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## Hungary

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<tbody>
<tr>
<td>Budapest</td>
<td>SEW-EURODRIVE Kft.</td>
<td>+36 1 437 06-58</td>
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<td><a href="http://www.sew-eurodrive.hu">http://www.sew-eurodrive.hu</a></td>
</tr>
<tr>
<td></td>
<td>Csillaghegyi út 13.</td>
<td></td>
<td></td>
<td><a href="mailto:office@sew-eurodrive.hu">office@sew-eurodrive.hu</a></td>
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<td></td>
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## Iceland

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<tr>
<td>Reykjavik</td>
<td>Varma &amp; Vélarverk ehf.</td>
<td>+354 585 1070</td>
<td>+354 585(1071</td>
<td><a href="http://www.varmaverk.is">http://www.varmaverk.is</a></td>
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<tr>
<td></td>
<td>Knarrarvogi 4</td>
<td></td>
<td></td>
<td><a href="mailto:vov@vov.is">vov@vov.is</a></td>
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<tr>
<td></td>
<td>104 Reykjavik</td>
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## India

### Registered Office Assembly

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<th>Email</th>
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<tr>
<td>Vadodara</td>
<td>SEW-EURODRIVE India Private Limited</td>
<td>+91 265 3045200</td>
<td>+91 265 3045300</td>
<td><a href="http://www.seweurodriveindia.com">http://www.seweurodriveindia.com</a></td>
</tr>
<tr>
<td></td>
<td>Plot No. 4, GIDC</td>
<td></td>
<td></td>
<td><a href="mailto:salesvadodara@seweurodriveindia.com">salesvadodara@seweurodriveindia.com</a></td>
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<td>POR Ramangamdi - Vadodara - 391 243</td>
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### Assembly Sales Service

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<tbody>
<tr>
<td>Chennai</td>
<td>SEW-EURODRIVE India Private Limited</td>
<td>+91 44 37188888</td>
<td>+91 44 37188811</td>
<td><a href="mailto:saleschennai@seweurodriveindia.com">saleschennai@seweurodriveindia.com</a></td>
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<tr>
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<td>Plot No. K3/1, Sipcot Industrial Park Phase II</td>
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<td></td>
<td>Kancheepuram Dist, Tamil Nadu</td>
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### Pune

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<td>+91 21 35 628700</td>
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### Sales Service

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## Indonesia

### Sales

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<td>PT. Serumpun Indah Lestari</td>
<td>+62 61 687 1221</td>
<td>+62 61 6871429</td>
<td><a href="mailto:serumpunindah@yahoo.com">serumpunindah@yahoo.com</a></td>
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### Jakarta

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<td>PT. Cahaya Sukses Abadi</td>
<td>+62 21 65310599</td>
<td>+62 21 65310600</td>
<td><a href="mailto:csajkfit@cbn.net.id">csajkfit@cbn.net.id</a></td>
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<td>+62 21 2921-8899</td>
<td>+62 21 2921-8988</td>
<td><a href="mailto:aplindo@indosat.net.id">aplindo@indosat.net.id</a></td>
<td><a href="http://www.aplindo.com">http://www.aplindo.com</a></td>
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<td>Jl. Sukosemolo No. 63, Galaksi Bumi Permai G6 No. 11, Surabaya 60111</td>
<td>+62 31 5990128</td>
<td>+62 31 5962666</td>
<td><a href="mailto:sales@trigri.co.id">sales@trigri.co.id</a></td>
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<td>Jl. Raden Saleh 43A Kav. 18, Surabaya 60174</td>
<td>+62 31 5458589</td>
<td>+62 31 5317220</td>
<td><a href="mailto:sianhwa@sby.centrin.net.id">sianhwa@sby.centrin.net.id</a></td>
<td><a href="http://www.cvmultimas.com">http://www.cvmultimas.com</a></td>
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<td>Dublin</td>
<td>Alperton Engineering Ltd.</td>
<td>48 Moyle Road, Dublin Industrial Estate, Glasnevin, Dublin 11</td>
<td>+353 1 830-6277</td>
<td>+353 1 830-6458</td>
<td><a href="mailto:info@alperton.ie">info@alperton.ie</a></td>
<td><a href="http://www.alperton.ie">http://www.alperton.ie</a></td>
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<tr>
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<td>Liraz Handasa Ltd.</td>
<td>Ahofer Str 34B / 228, 58858 Holon</td>
<td>+972 3 5599511</td>
<td>+972 3 5599512</td>
<td>+972 3 5599511</td>
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<td>Via Bernini, 12, 20020 Solaro (Milano)</td>
<td>+39 02 96 980229</td>
<td>+39 02 96 980 999</td>
<td><a href="mailto:milano@sew-eurodrive.it">milano@sew-eurodrive.it</a></td>
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<td>SEW-EURODRIVE SARL</td>
<td>Ivory Coast, Rue des Pécheurs, Zone 3, 26 BP 916 Abidjan 26</td>
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<td>+225 21 25 30 47</td>
<td><a href="mailto:info@sew-eurodrive.ci">info@sew-eurodrive.ci</a></td>
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<td>SEW-EURODRIVE JAPAN CO., LTD</td>
<td>250-1, Shimoman-no, Iwata, Shizuka 438-0818</td>
<td>+81 538 373811</td>
<td>+81 538 373814</td>
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<td>SEW-EURODRIVE LLP</td>
<td>291-291A, Tole bi street, 050031, Almaty</td>
<td>+7 (727) 350 5156</td>
<td>+7 (727) 350 5156</td>
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<td>Representative office in Uzbekistan, 96A, Sharaf Rashidov street, Tashkent, 100084</td>
<td>+998 71 2359411</td>
<td>+998 71 2359412</td>
<td>+998 71 2359412</td>
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<td></td>
<td>Ulaanbaatar</td>
<td>IM Trading LLC</td>
<td>Olympic street 28B/3, Sukhbaatar district, Ulaanbaatar 14230, MN</td>
<td>+976-77109997</td>
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<td>B. P. 80484, Bourj Hammoud, Beirut</td>
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<td>DB MINING &amp; INDUSTRIAL SUPPLIES CC</td>
<td>+264 64 462 738</td>
<td>+264 64 462 734</td>
<td><a href="mailto:anton@dbminingnam.com">anton@dbminingnam.com</a></td>
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# Address list

## New Zealand

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<th>Website</th>
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</thead>
<tbody>
<tr>
<td>Assembly</td>
<td>Auckland</td>
<td>SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland</td>
<td>+64 9 2745627</td>
<td><a href="http://www.sew-eurodrive.co.nz">http://www.sew-eurodrive.co.nz</a></td>
<td><a href="mailto:sales@sew-eurodrive.co.nz">sales@sew-eurodrive.co.nz</a></td>
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<tr>
<td>Sales</td>
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<tr>
<td>Service</td>
<td>Christchurch</td>
<td>SEW-EURODRIVE NEW ZEALAND LTD. 30 Lodestar Avenue, Wigram Christchurch</td>
<td>+64 3 384-6251</td>
<td>+64 3 384-6455</td>
<td><a href="mailto:sales@sew-eurodrive.co.nz">sales@sew-eurodrive.co.nz</a></td>
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## Nigeria

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<td>Sales</td>
<td>Lagos</td>
<td>Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omoile GRA Ikeja Lagos-Nigeria</td>
<td>+234-701-821-9200-1</td>
<td>bolaji.adekunle@greenpeg ltd.com</td>
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## Norway

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<tbody>
<tr>
<td>Assembly</td>
<td>Moss</td>
<td>SEW-EURODRIVE A/S Solgaard skog 71</td>
<td>+47 69 24 10 20</td>
<td>+47 69 24 10 40</td>
<td><a href="http://www.sew-eurodrive.no">http://www.sew-eurodrive.no</a> <a href="mailto:sew@sew-eurodrive.no">sew@sew-eurodrive.no</a></td>
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## Pakistan

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<td>Karachi</td>
<td>Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi</td>
<td>+92 21 452 9369</td>
<td>+92-21-454 7365</td>
<td><a href="mailto:seweurodrive@cyber.net.pk">seweurodrive@cyber.net.pk</a></td>
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<td>+595 991 519695</td>
<td>+595 21 3285539</td>
<td><a href="mailto:sewpy@sew-eurodrive.com.py">sewpy@sew-eurodrive.com.py</a></td>
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<td>P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205</td>
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<td><a href="mailto:mech_drive_sys@ptcerna.com">mech_drive_sys@ptcerna.com</a> <a href="http://www.ptcerna.com">http://www.ptcerna.com</a></td>
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## Poland

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<td>Assembly</td>
<td>Łódź</td>
<td>SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź</td>
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<td>Tel. +48 42 293 0030 Fax +48 42 293 0043 24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) <a href="mailto:serwis@sew-eurodrive.pl">serwis@sew-eurodrive.pl</a></td>
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## Portugal

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<tr>
<td>Assembly</td>
<td>Coimbra</td>
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<td>+351 231 20 9670</td>
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## Romania

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<tbody>
<tr>
<td>Sales</td>
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<td>+40 21 230-7170</td>
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</table>
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  - Jurong Industrial Estate
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  - Fax +82 31 492-8056
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  - master.korea@sew-eurodrive.com

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**Operating Instructions – Safety-Related BST Brake Module (as from Build Status 12 11)**

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sew@sew-eurodrive.com.tr
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**Ukraine**

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<tr>
<td>Sales</td>
<td>Dnipropetrovsk SEW-EURODRIVE, LLC Robochya str., bld. 23-B, office 409 49008 Dnipro</td>
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<tr>
<td>Service</td>
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**United Arab Emirates**

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<thead>
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<td></td>
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<tr>
<th>Assembly</th>
<th>Montevideo SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esquina Corumbe CP 12000 Montevideo</th>
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<tr>
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**USA**

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<th>Production</th>
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<td>Assembly</td>
<td>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 <a href="http://www.seweurodrive.com">http://www.seweurodrive.com</a> <a href="mailto:ctslyman@seweurodrive.com">ctslyman@seweurodrive.com</a></td>
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</tr>
<tr>
<td>Midwest Region SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373</td>
<td></td>
</tr>
<tr>
<td>Southwest Region SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237</td>
<td></td>
</tr>
<tr>
<td>Western Region SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544</td>
<td></td>
</tr>
<tr>
<td>Wellford SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385</td>
<td></td>
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<tr>
<td>Tel. +1 864 439-7537 Fax +1 864 661 1167 <a href="mailto:IGOOrders@seweurodrive.com">IGOOrders@seweurodrive.com</a></td>
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**Vietnam**

<table>
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<tr>
<th>Sales</th>
<th>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</th>
</tr>
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<tbody>
<tr>
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<td>Tel. +84 937 299 700 <a href="mailto:huytam.pham@sew-eurodrive.com">huytam.pham@sew-eurodrive.com</a></td>
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<tr>
<td>Hanoi MICO LTD Quang Tri - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam</td>
<td></td>
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<tr>
<td></td>
<td>Tel. +84 4 3938666 Fax +84 4 3938 6888 <a href="mailto:nam_ph@migroup.com.vn">nam_ph@migroup.com.vn</a> <a href="http://www.migroup.com.vn">http://www.migroup.com.vn</a></td>
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**Zambia**

Representation: South Africa
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