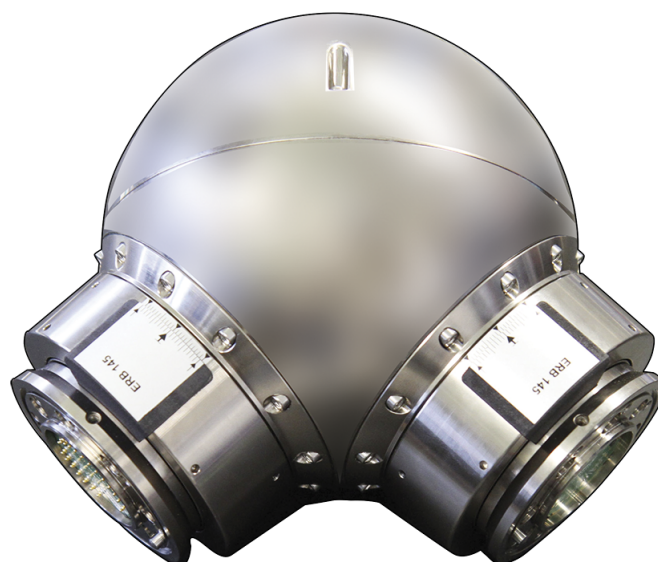


Assembly and Operating Manual

ERB

Servo-electric double-axis rotary module



Imprint

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We reserve the right to make alterations for the purpose of technical improvement.

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Dear Customer,

thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

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1 General

1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

Illustrations in this manual are provided for basic understanding and may differ from the actual product design.

In addition to these instructions, the documents listed under [Applicable documents](#) [► 5] are applicable.

1.1.1 Presentation of Warning Labels

To make risks clear, the following signal words and symbols are used for safety notes.



⚠ DANGER

Danger for persons!

Non-observance will inevitably cause irreversible injury or death.



⚠ WARNING

Dangers for persons!

Non-observance can lead to irreversible injury and even death.



⚠ CAUTION

Dangers for persons!

Non-observance can cause minor injuries.

CAUTION

Material damage!

Information about avoiding material damage.

1.1.2 Applicable documents

- General terms of business *
- "SCHUNK Motion Tool (MTS)" software manual *

The documents marked with an asterisk (*) can be downloaded on our homepage schunk.com

1.1.3 Sizes

This operating manual applies to the following sizes:

- ERB 115
- ERB 145

1.2 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Observe the ambient conditions and operating conditions, [Environmental and operating conditions](#) [▶ 8]

1.3 Scope of delivery

The scope of delivery includes

- Servo-electric double-axis rotary module ERB in the version ordered
- Assembly and Operating Manual
- Accessory pack

1.4 Accessories

The following accessories are available for the product, which must be ordered separately:

ERB 115

Designation	Amount	Ident number
Connection box with VSE 12A	1	31001158
Output board ERB 115	1	9956605
Countersunk screw M1.6x4	2	9948516
Clamping ring assembly	1	5521844
Cable for flat change system (FWS)	1	31001042
Robot base with VSE connection electronics	1	31000975
PRL base adapter for ERB 115	1	30084250
FWK 115 (PRL-plus 80) to ERB 115 adapter	1	31001089
PCM 13 PC-CAN interface, CAN to USB	1	307913
PAE 200 PCAN termination	1	31001036
FWA 115 adapter (with fastening screws)	1	31000871
FWK 115 head (with fastening screws)	1	31000870
FWK 115 head ISO flange (with fastening screws)	1	31000995
Connection box with VSE 12A	1	31001158

ERB 145

Designation	Amount	Ident number
Output board ERB 145	1	9956655
Countersunk screw M1.6x4	2	9948516
Clamping ring assembly	1	5523387
Cable for flat change system (FWS)	1	31001042
Robot base with VSE connection electronics	1	5522601
PCM 13 PC-CAN interface, CAN to USB	1	307913
PAE 200 PCAN termination	1	31001036

2 Basic safety notes

2.1 Intended use

This product was specially designed for use in the LWA lightweight arm. Installation in a different configuration is only permitted within the defined application parameters.

The manufacturer of the machine is responsible for carrying out a risk analysis and for the protective equipment resulting from the analysis.

The safety-related information contained in the "Electrical equipment of machines" standard (DIN EN 60204) must be observed. Commissioning is only permitted in compliance with EMC directives (89/336/EEC).

- The product may only be used within the scope of its technical data, [Technical data](#) [▶ 16].
- The product is intended for installation in a machine/system. The applicable guidelines must be observed and complied with.
- Appropriate use of the product includes compliance with all instructions in this manual.

2.2 Not intended use

It is not intended use if the product is used, for example, as a pressing tool, stamping tool, lifting gear, guide for tools, cutting tool, clamping device or a drilling tool.

It is forbidden to use the product outdoors, underground or in explosive atmospheres.

- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

2.3 Constructional changes

Implementation of structural changes

By conversions, changes, and reworking, e.g. additional threads, holes, or safety devices can impair the functioning or safety of the product or damage it.

- Structural changes should only be made with the written approval of SCHUNK.

2.4 Environmental and operating conditions

Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

- Make sure that the product is used only in the context of its defined application parameters, [Technical data](#) [▶ 16].
- Make sure that the product is a sufficient size for the application.
- Ensure that maintenance and lubrication intervals are observed, [Maintenance](#) [▶ 36].
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are products that are designed especially for contaminated environments.

2.5 Personnel qualification

Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

Trained electrician	Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.
Qualified personnel	Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.
Instructed person	Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.
Service personnel of the manufacturer	Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

2.6 Personal protective equipment

Use of personal protective equipment

Personal protective equipment serves to protect staff against danger which may interfere with their health or safety at work.

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Observe the valid safety and accident prevention regulations.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear protective gloves and safety goggles when handling hazardous substances.
- Wear close-fitting protective clothing and also wear long hair in a hairnet when dealing with moving components.

2.7 Notes on safe operation

Incorrect handling of the personnel

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.

2.8 Transport

Handling during transport

Incorrect handling during transport may impair the product's safety and cause serious injuries and considerable material damage.

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

2.9 Malfunctions

Behavior in case of malfunctions

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Order appropriately trained personnel to rectify the malfunction.
- Do not recommission the product until the malfunction has been rectified.
- Test the product after a malfunction to establish whether it still functions properly and no increased risks have arisen.

2.10 Disposal

Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

2.11 Fundamental dangers

General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.
- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Do not reach into the open mechanism or movement area of the product during operation.

2.11.1 Protection during handling and assembly

Incorrect handling and assembly

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Have all work carried out by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention rules.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

- Stand clear of suspended loads and do not step into their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.

2.11.2 Protection during commissioning and operation

Falling or violently ejected components

Falling and violently ejected components can cause serious injuries and even death.

- Take appropriate protective measures to secure the danger zone.
- Never step into the danger zone during operation.

2.11.3 Protection against dangerous movements

Unexpected movements

Residual energy in the system may cause serious injuries while working with the product.

- Switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.
- The faulty actuation of connected drives may cause dangerous movements.
- Operating mistakes, faulty parameterization during commissioning or software errors may trigger dangerous movements.
- Never rely solely on the response of the monitoring function to avert danger. Until the installed monitors become effective, it must be assumed that the drive movement is faulty, with its action being dependent on the control unit and the current operating condition of the drive. Perform maintenance work, modifications, and attachments outside the danger zone defined by the movement range.
- To avoid accidents and/or material damage, human access to the movement range of the machine must be restricted. Limit/prevent accidental access for people in this area due through technical safety measures. The protective cover and protective fence must be rigid enough to withstand the maximum possible movement energy. EMERGENCY STOP switches must be easily and quickly accessible. Before starting up the machine or automated system, check that the EMERGENCY STOP system is working. Prevent operation of the machine if this protective equipment does not function correctly.

2.11.4 Protection against electric shock

Work on electrical equipment

Touching live parts may result in death.

- Work on the electrical equipment may only be carried out by qualified electricians in accordance with the electrical engineering regulations.
- Lay electrical cables properly, e. g. in a cable duct or a cable bridge. Observe standards.
- Before connecting or disconnecting electrical cables, switch off the power supply and check that the cables are free of voltage. Secure the power supply against being switched on again.
- Before switching on the product, check that the protective earth conductor is correctly attached to all electrical components according to the wiring diagram.
- Check whether covers and protective devices are fitted to prevent contact with live components.
- Do not touch the product's terminals when the power supply is switched on.

Possible electrostatic energy

Components or assembly groups may become electrostatically charged. When the electrostatic charge is touched, the discharge may trigger a shock reaction leading to injuries.

- The operator must ensure that all components and assembly groups are included in the local potential equalisation in accordance with the applicable regulations.
- While paying attention to the actual conditions of the working environment, the potential equalisation must be implemented by a specialist electrician according to the applicable regulations.
- The effectiveness of the potential equalisation must be verified by executing regular safety measurements.

2.11.5 Protection against magnetic and electromagnetic fields

Work in areas with magnetic and electromagnetic fields

Magnetic and electromagnetic fields can lead to serious injuries.

- Persons with pace-makers, metal implants, metal shards, or hearing aids require the consent of a physician before entering areas in which components of the electric drive and control systems are mounted, started up, and operated.
- Persons with pace-makers, metal implants, metal shards, or hearing aids require the consent of a physician before entering areas in which magnetic grippers or motor parts with permanent magnets are stored, repaired, or assembled.
- Do not operate high-frequency or radio devices in the proximity of electric components of the drive system and their feed lines.

If the use of such devices is necessary:

When starting up the electric drive and control system, check the machine or automated system for possible failures when such systems are used at different intervals and in different states of the control system. A special additional EMC test may be necessary if the system has a high risk potential.

2.12 Notes on particular risks



⚠ DANGER

Danger from electric voltage!

Touching live parts may result in death.

- Switch off the power supply before any assembly, adjustment or maintenance work and secure against being switched on again.
- Only qualified electricians may perform electrical installations.
- Check if de-energized, ground it and hot-wire.
- Cover live parts.



⚠ DANGER

Risk of fatal injury from suspended loads!

Falling loads can cause serious injuries and even death.

- Stand clear of suspended loads and do not step within their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.
- Wear suitable protective equipment.



⚠ WARNING

Risk of injury from objects falling and being ejected!

Falling and ejected objects during operation can lead to serious injury or death.

- Take appropriate protective measures to secure the danger zone.



⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.



⚠ WARNING

Risk of injury due to hot surfaces.

In high ambient temperatures, it is possible for the product to be exposed to excessive heat, causing the surfaces to become hot.

- Wear protective gloves.
- Allow the product to cool to at least 40°C before touching it.



⚠ WARNING

Risk of injury due to sudden movements in case of EMC malfunctions!

If the EMC directive is not observed when connecting the product, malfunctions in the control units and drives can cause unexpected machine movements.

- Observe the EMC directive when connecting the product.



⚠ WARNING

In case of overload, risk of injury due to sudden movements!

If the product is overloaded, the integrated brake will no longer function properly. This may result in sudden machine movements.

- Operate the product within the specifications defined at all times.



⚠ WARNING

In case of product malfunction, risk of injury due to sudden movements!

Electrical devices are not generally protected against failure.

- Therefore, the user is responsible for ensuring that the machine is brought into a safe state in case of product malfunction.



⚠ WARNING

Risk of injury due to sudden movements in case of electrical malfunctions!

Electrical malfunctions can lead to sudden movements in the machine.

- During transport and handling, do not bend any of the components or change the insulation clearance.
- To avoid damage due to electrostatic charges, do not touch the electrical components.
- Properly execute all grounding, fastening and cabling work in accordance with applicable regulations.

3 Technical data

3.1 Basic data

Designation	ERB	
	115	145
Surface	Electroless nickel coating	
Drive	2 x brushless DC servo-motors	
Holding brake	2 x permanent magnetic holding brakes, integrated	
Motor power [W]	35	170
Motor rated torque [Nm]	7	35
Transmission	100	160
Angle of rotation [°]	+170/-170	
Resolution [inc/°]	2000	
Repeatability [mm] in	±0,15	
Weight [kg]	1.8	3.9
Max. angular velocity [°/s]	72	
Max. acceleration [mm/s ²]	500	250

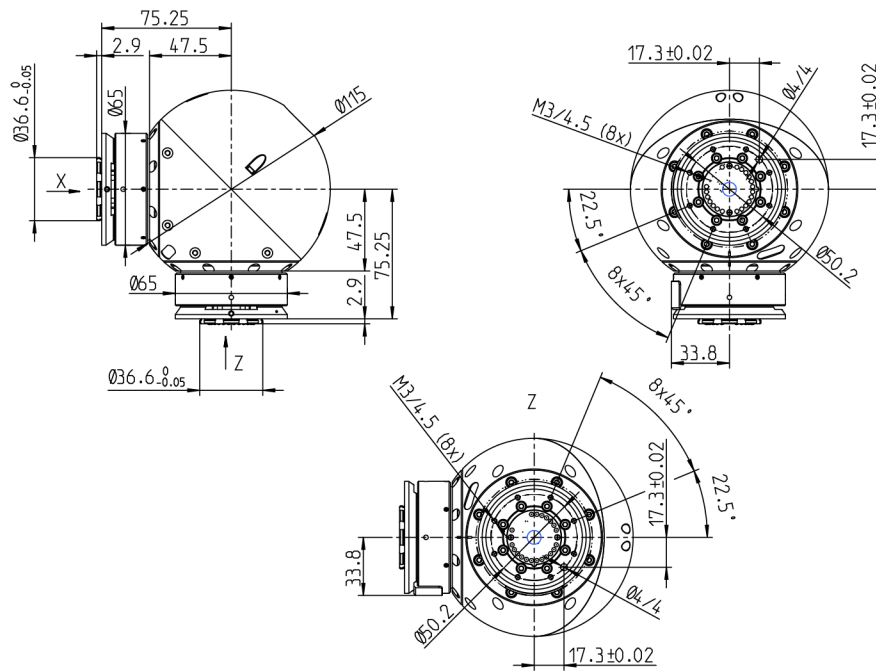
Ambient conditions and operating conditions

Ambient temperature [°C]	
min.	+10
max.	+55
Protection class IP *	54
Noise emission [dB(A)]	≤ 70

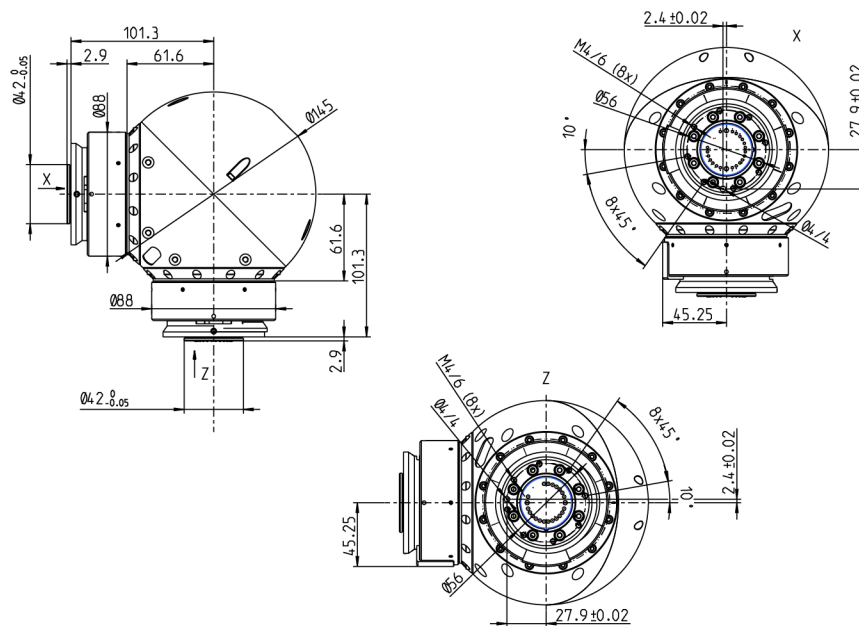
* When using suitable connecting elements.

3.2 Outer dimensions

ERB 115



ERB 145



dimensions

Maximum depth of engagement permitted for the mounting screws, see [Mechanical connection](#) [► 24].

3.3 Electrical operating data

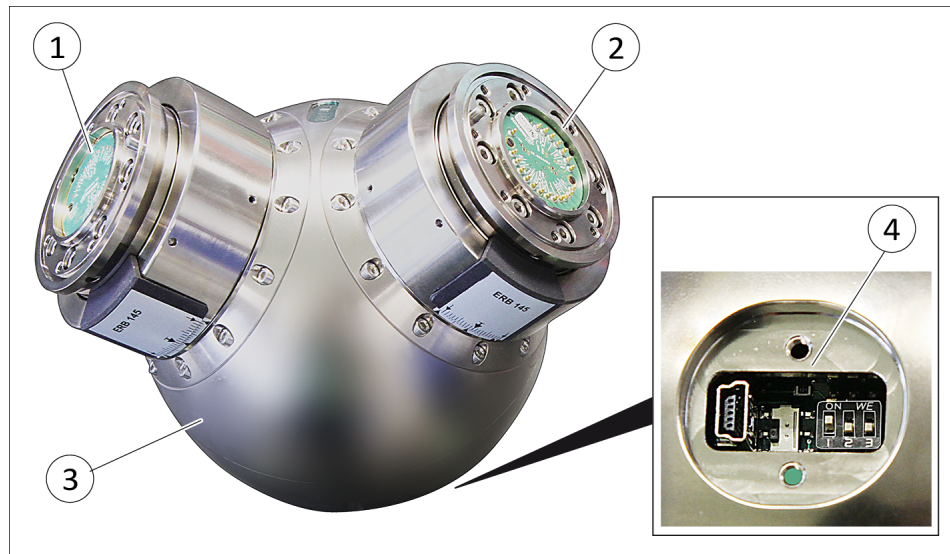
Designation	ERB	
	115	145
Drive		
Nominal voltage [VDC]	24.0 ± 5 %	
Nominal power current [A]	1.5	7.0
Max. current [A]	3.9	18.7
Electronic control unit		
Power supply [VDC]	24.0	
Nominal power current [A]	0.3	
Sensor system	Incremental encoder with absolute value function	
Interfaces	CAN bus (Log: CANopen), USB (service interface)	

3.4 Name plate

The type plate is fitted between the two flanges.

4 Design and description

4.1 Design



1	Adapter board at the output	3	Housing
2	Adapter board at the input	4	Service interface

4.2 Description

The product is a servo-electric double-axis rotary module with precision gears.

The double-axis rotary module is available in two sizes that differ with regard to dimension and some operating data.

One brushless DC servo-motor drives each axis via a Harmonic-Drive® gear. A permanent magnet holding brake for each axis brakes the motion of the drive. The rotary movements are measured by an incremental encoder. Due to internal referencing, an absolute value is determined in this way.

The entire electronic control unit is integrated into the double-axis rotary module.

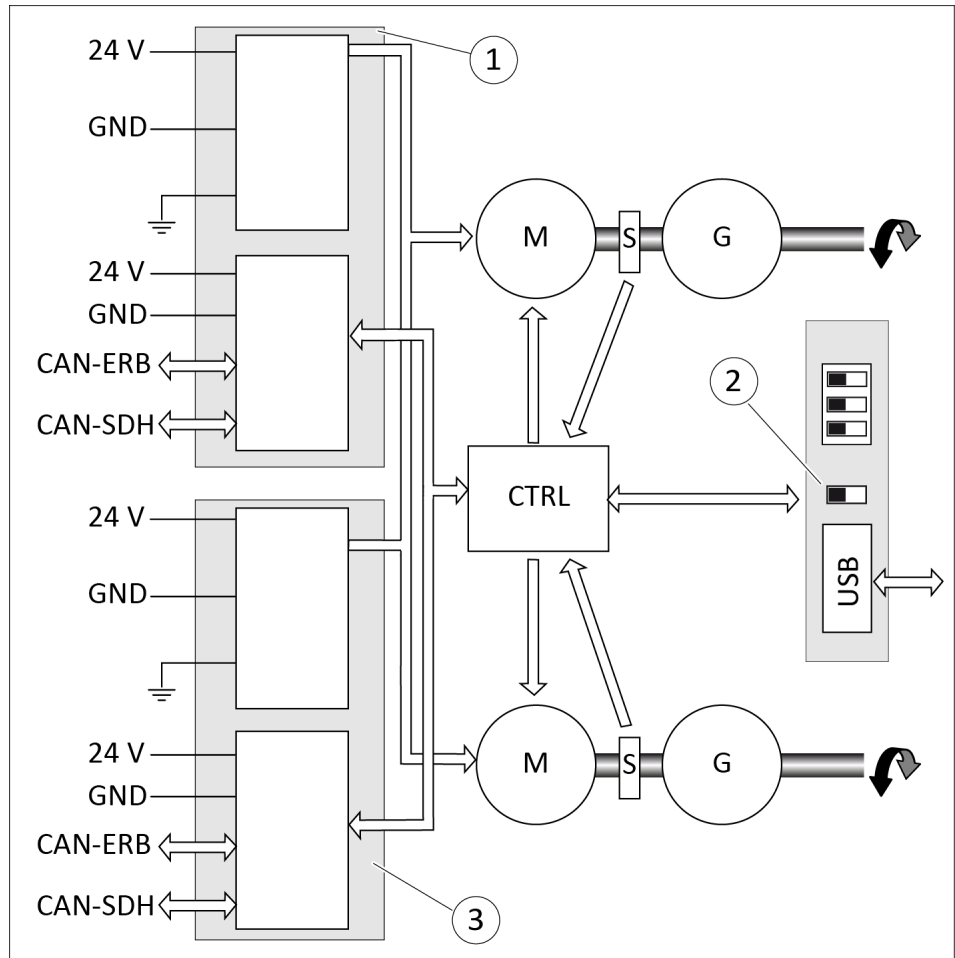
The installation of the double-axis rotary module into the lightweight arm or another application takes place using a SCHUNK flat change system or by screwing onto a suitable connector or a changing system.

A service interface with USB connection and four micro switches is found under a screwed-on cover.

Power supply and signal cables for the double-axis rotary module are connected with gold-plated spring contacts via adapter boards of the flat change system. The lines are guided internally through the double-axis rotary module. At the flat change system of the output, additional SCHUNK products, e.g. grippers, can be connected.

For multi-axis applications, several double-axis rotary modules and single-axis rotary modules can be combined.

The module is controlled via a CAN bus interface with CANopen protocol.



Schematic diagram

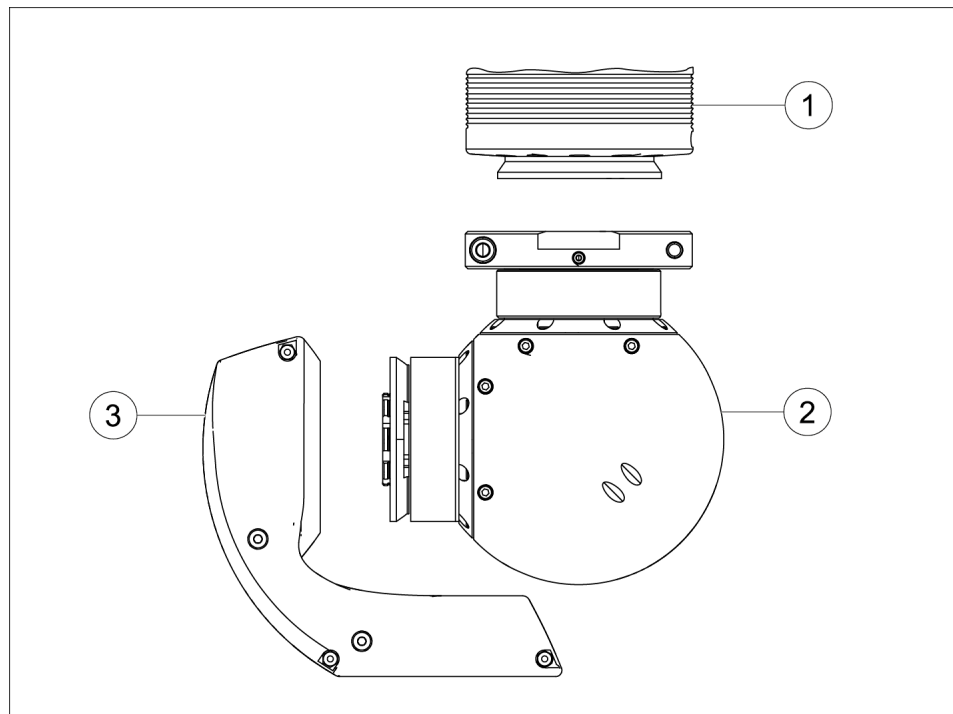
1	Adapter board at the input	M	DC servo-motor with power electronics and permanent magnet holding brakes
2	Service interface	S	Incremental shaft encoder
3	Adapter board at the output	USB	USB connection
CTRL	Electronic control unit	CAN_ ERB	CAN bus for double-axis rotary modules
G	Gear	CAN_ SDH	CAN bus for gripper modules

During installation or servicing, the configuration of the double-axis rotary module can be adjusted using the MTS software (Motion Tool SCHUNK). Defined settings are secured by multiple levels of password protection.

5 Assembly and settings

The double-axis rotary module can be mounted on SCHUNK connecting elements, SCHUNK flat change systems or connection elements designed by the operator. SCHUNK recommends using SCHUNK accessories for assembly.

The following illustration shows an example of a configuration with SCHUNK accessories.



Example configuration

1	Gripper, 5-finger hand, or similar	3	Connector 90°
2	Double-axis rotary module		

The FWA adapter is already integrated into the gripper. The clamping ring (accessory) is firmly fastened to the double-axis rotary module using two radial screws. The FWK part is integrated into the connector in this application. A clamping ring is required on this side. In the following, the assembly is described with FWS SCHUNK flat change system.

5.1 Installing and connecting

NOTE

The described procedure also applies when other SCHUNK accessories are used. When a SCHUNK connector is used, this also takes on the function of the clamping ring. When a SCHUNK gripper and a SCHUNK connector are used, the electrical connection is already integrated.

- Mount the FWK head on the input side of the rotary module. To do so, align the FWK head to the centering pin and insert it.
- Secure FWK head with 8 M3 screws.
- Screw together the clamping ring and secure with lateral cylindrical screws.
- Loosen the clamping ring at the output side of the rotary module.
- At the output side of the rotary module, align the FWA adapter to the centering pin and insert.
- Secure FWA adapter with 4 M6 screws.
- Screw together the clamping ring and secure with lateral cylindrical screws.

CAUTION

Risk of operational malfunction due to torn or pinched lines!

Electrical lines that are too short or installed incorrectly may become pinched or torn by the movement of the product.

- Factor in operating movements when connecting the product.
-

CAUTION

Risk of operational malfunction due to short circuit or incorrect connections!

Faulty electrical connections may cause malfunction and damage.

- Before connecting, ensure that the electrical lines are de-energized.
 - Ensure correct assignment of the electrical connection elements, e.g. terminals, connectors.
-

CAUTION**Permanent damage to the electronics possible!**

- If the power supply is separated, carry out potential equalization between the two supply voltages (join the grounds).
- Only the positive pole may be switched off; the GND motor cable must always remain connected.

The electrical connection of the rotary module is established via the adapter boards of the flat change system.

- Solder both motor power supply lines on the marked area of the soldering surfaces on the input and output side.
- Plug the JST connector of the signal lines into the JST socket.

NOTE

The terminals not shown in the illustration and the two-pronged socket on the adapter boards have no function.

A suitable power supply unit with adequate power reserves must be used for the voltage supply. Make sure the dimensions of the cable cross-section are adequate when cabling.

The CAN bus must be terminated at the last of the consecutive rotary modules [Settings on the service interface](#) [► 28].

5.2 Connections

5.2.1 Mechanical connection

CAUTION

Risk of damage when using screws that are too long!

The product may become damaged if the maximum permitted depth of engagement is exceeded.

- Observe the maximum depth of engagement permitted for the mounting screws.

CAUTION

Risk of damage when using unsuitable connecting elements!

Unsuitable components can result in damage to the product.

- SCHUNK recommends using SCHUNK connecting elements.

Evenness of the mounting surface

The values apply to the whole mounting surface to which the product is mounted.

Requirements for evenness of the mounting surface (Dimensions in mm)

Edge length	Permissible unevenness
< 100	< 0.02
> 100	< 0.05

5.2.2 Electrical connection

The rotary module is equipped with separate 24 V connections for the motor voltage and the logic voltage.

Separate voltage supply from the power unit (motor) and electronic control unit ensures that the electronic control unit will continue to work when the drive is switched off.

If the logic voltage of the motor voltage is disconnected, the power unit can be switched off separately, for instance with low battery voltage or by using the emergency off function. However, the rotary module remains active on the bus system and can therefore be contacted by the control system.

For the supply of the power unit (motor), a sufficiently dimensioned power supply unit must be used.

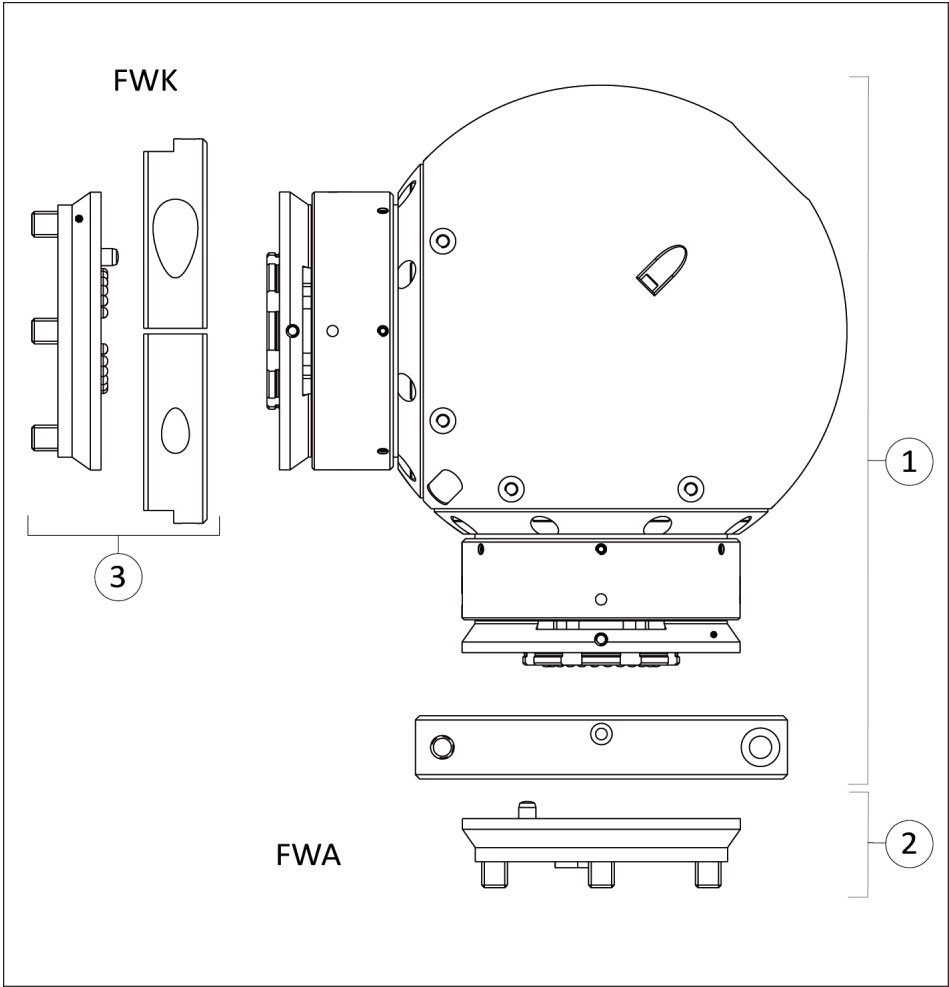
Make sure the dimensions of the cable cross-section are adequate when cabling.

If several rotary modules are linked, e.g. on a robot arm, the CAN bus must be terminated at the last of the consecutive rotary modules, [Settings on the service interface](#) [▶ 28].

5.3 FWS flat change system

NOTE

The FWS flat change system is available as an accessory to the ERB 115 and ERB 145 double-axis rotary modules.

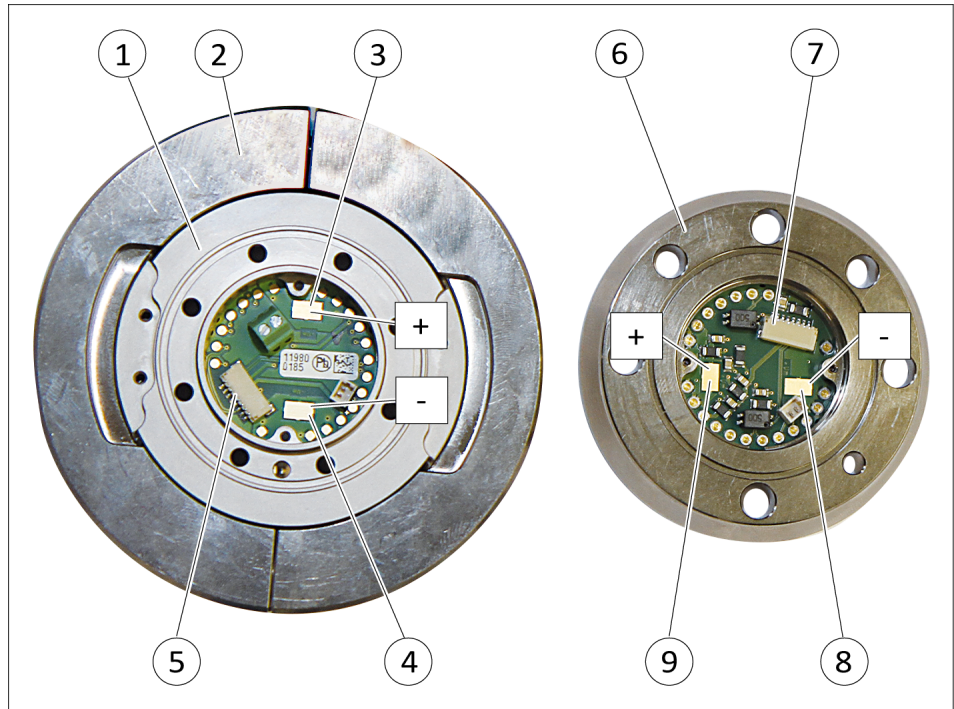


Connection to the flat change system

1	ERB double-axis rotary module	3	FWK head (input side)
2	FWA adapter (output side)		

The FWS flat change system is made up of two mounting kits:

- FWK head with clamping ring, flange, adapter board, centering pins, seal and screws
- FWA adapter with flange, adapter board, centering pin, seal and screws



FWK flat change system

1	FWK head (input side)	6	FWA adapter (output side)
2	Clamping ring	7	JST socket
3	Soldering surface +24 V UMotor	8	GND UMotor soldering surface
4	GND UMotor soldering surface	9	Soldering surface +24 V UMotor
5	JST socket		

NOTE

Mounting screws and O-rings are attached to the flat change system.

Mounting screws of the flat change system

Designation	FWK	FWA
Size	M3 (x8)	M6 (x4)
Tightening torque [Nm]	1.2	9.6

Secure mounting screws with screw fastening (e.g. Loctite 242).

Pin assignment JST plug

Pin	Assignment	Recommended cable cross-section [mm ²]	Wire color
1	RS232 TX SDH	0.14	Yellow
2	RS232 RX SDH	0.14	Brown
3	CAN High SDH	0.14	Green
4	CAN Low SDH	0.14	White
5	GND Electronic control unit	0.5	Yellow
6	+24 V electronic control unit	0.5	Brown
7	CAN High ERB	0.14	Green
8	CAN Low ERB	0.14	White

Soldering surfaces

Designation	Assignment	Recommended cable cross-section [mm ²]	Wire color
- UM	GND U _{Motor}	1.5	Black
+ UM	+24 V U _{Motor}	1.5	Red

5.4 Settings on the service interface

The USB port and the service interface microswitches are installed and protected under a screwed-on cover.

NOTE

Only actuate the DEFAULT and BOOT microswitches when the double-axis rotary module is de-energized.

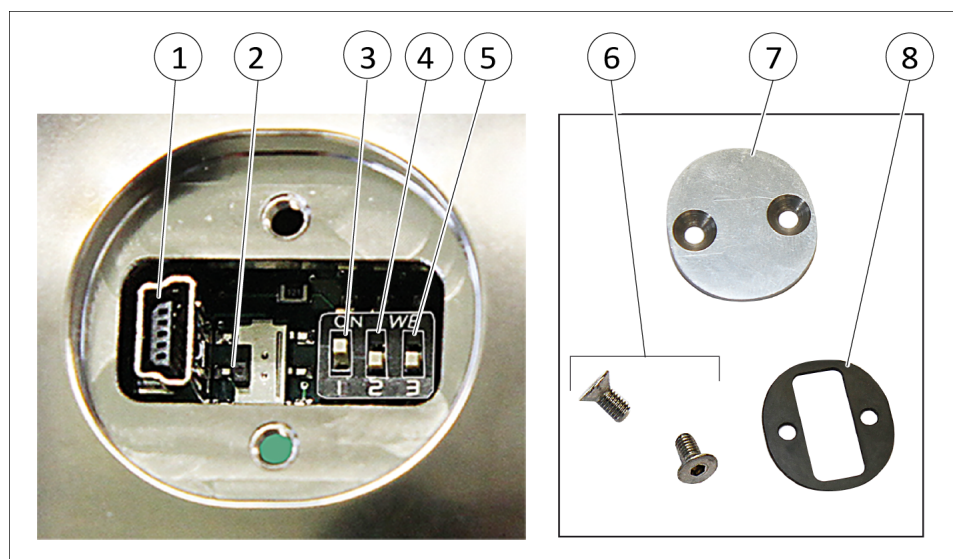
NOTE

The microswitches are very small. To operate them safely, use a suitable tool and if necessary, a flashlight.

- Remove two hexagon socket screws from the cover.
- Remove the cover with seal. If necessary, remove the cover with a suitable tool (small screwdriver).
- Adjust the microswitches as desired.
- After adjusting, replace the cover with seal.
- Screw two hexagon socket screws into the cover.

NOTE

The current design is described. The description of the previous design can be sent upon request.



Service interface

Item	Designation	Function
1	USB port	USB port for commissioning and service
2	SW 1	Switch-over for USB socket to drive 1 or drive 2
3	SW 2	CAN bus termination: ON: CAN bus termination active OFF: CAN bus not terminated (standard)
4	SW 3	BOOT: ON: Setting for firmware update OFF: Operation of configuration via CAN Bus (standard) NOTE Only operate the microswitch if the rotary module is deenergized.
5	SW4	DEFAULT: ON: Reset interface to parameterization mode, USB socket active OFF: retain current settings (standard) NOTE Only operate the microswitch if the rotary module is deenergized.
6	Cover	-
7	Hexagon socket screws	-
8	Seal	-

When resetting to parameterization mode (SWK, default position), the following DEFAULT values are set:

Interface	SCHUNK USB (RS232), SMP SCHUNK MOTION Protocol
Baud rate	9600
ERB 115	
Input side address	3
Output side address	4
ERB 145	
Input side address	7
Output side address	8

Only the USB service interface is active immediately after resetting. With the Motion Tool Schunk (MTS) configuration and commissioning tool, the communication type can be switched to CANopen or CAN (SMP).

6 Commissioning

Commissioning is carried out via CAN bus.

The CAN bus must be terminated at the last of the consecutive rotary modules [Settings on the service interface](#) [► 28].

There are various options available for configuration:

- Configuration via service interface. This option is always available, even after installation.
- Commissioning and configuration via CAN bus. The addresses must be known for this.

The following describes the configuration via the service interface.

6.1 Configuration via the USB service interface

CAUTION

Danger of damage to the product!

The service interface is not designed to operate the product. Operating via the service interface may cause damage to the product.

- Only use the service interface to configure the product.

The service interface is equipped with a plug in USB Mini B format. Commercial cables for the respective connections may be used.

The addresses of the rotary modules in the CAN bus system set at the production facility are listed in the "Service interface" table.

Every address must be unique in the CAN bus system.

A complete set of suitable values is factory set and integrated into the storage for all rotary modules for use in typical applications. These values do not require modification if the user has no need.

NOTE

All factory-set default values are presented in the accompanying set of parameters.

System requirements

- PC (laptop, etc.)
- Operating system: "Windows XP" or higher
- Configuration and commissioning tool "Motion Tool SCHUNK"
- USB interface (USB 2.0)
- USB plug cable to mini-USB plug included in the scope of delivery
- Optional: CAN bus interface, e.g. USB/CAN adapter

Recommended sequence for the essential commissioning steps:

- Check system requirements.
- Check electrical connections (power supply and communication interface).
- Start configuration and commissioning tool "Motion Tool SCHUNK".
- Switch off the power supply.
- Remove the cover of the service interface.
- Connect USB cable to the USB port.
- With SW 1 microswitch, select the desired drive.
- Switch microswitch SW 4 DEFAULT to "ON" position.
- Switch power supply on and then off again after a few seconds.
- Switch microswitch SW 4 DEFAULT to "OFF" position.
- Switch on the power supply.
- Install the driver software from the MTS directory when using the configuration and commissioning tool Motion Tool SCHUNK for the first time.
- Select the interface.
- Search for the connected double-axis rotary modules with the F3 key (or using the menu item Search Module/Bus). Each drive is shown in a separate window.
- Open parameter page that contains multiple tables.

6.2 Setting parameters

Operating parameters for the rotary module can be changed depending on which user is logged in.

NOTE

In general, no change of the operating parameters is required. The parameters stored in the rotary module were verified by the manufacturer.

User administration

Access to the various rotary module parameters is restricted by means of a four-level user management system:

User	Description
User	<p>Standard user</p> <p>Always activated after switching on the rotary module</p> <p>Full operation of the rotary module possible</p> <p>Parameterization is only possible for the most important parameters</p>
Profi	<p>Profi user</p> <p>Full range of functions such as "Users"; can also change additional parameters</p> <p>NOTE</p> <p>Incorrect parameterization can result in unanticipated rotary module behavior. However, the rotary module cannot be destroyed.</p>
Advanced	<p>Advanced user</p> <p>Full range of functions such as "Profi"; can also change additional parameters</p> <p>ATTENTION</p> <p>Incorrect operation or incorrect parameterization can lead to the destruction of the electronics or the motor.</p>
Root	Only for SCHUNK personnel

For additional information, see "MTS software manual".

6.3 Parameterization mode (DEFAULT function)

NOTE

For additional information on the DEFAULT function and DEFAULT values, see "MTS software manual".

The DEFAULT function will reset the rotary module to the parameterization mode.

- Switch off the power supply.
- Switch DEFAULT microswitch to "ON" position.
- Switch power supply on and then off again after a few seconds.
 - ✓ This resets the rotary module to DEFAULT values.
- Switch DEFAULT microswitch to "OFF" position.

For DEFAULT values see [Settings on the service interface](#) [▶ 28].

6.4 Updating firmware

A firmware update is only required in exceptional cases and can only be performed after consultation with the SCHUNK service department.

7 Functional description

The rotary module is controlled via the CAN bus interface during operation.

CAUTION

Danger of damage to the product!

The service interface is not designed to operate the product. Operating via the service interface may cause damage to the product.

- Only use the service interface to configure the product.

The USB port is only to be used as a service interface for the following functions:

- Parameterization of the rotary module
- Updating firmware
- Setting the zero point
- Error diagnostics

8 Troubleshooting

8.1 Communication interrupted

Possible cause	Corrective action
Faulty termination of CAN bus	Check whether the termination settings are correct (termination at the beginning and end of the bus)
	Perform a measurement between the CAN_H and CAN_L (set value: 60 Ω)
	Check whether the microswitch is correctly switched to the position for termination

8.2 Product is not reacting, not moving or stops suddenly

Possible cause	Corrective action
The power supply for the drive or the electronic control unit has malfunctioned	Check the power supply
Communication has been connected incorrectly	Check the signal communication lines
Supply cable is defective	Check supply cables for damage; replace if necessary

8.3 Unusual noise during operation

Possible cause	Corrective action
Mechanical damage	Send the product to SCHUNK for repair

9 Maintenance, cleaning and repair

9.1 Maintenance

This product does not require maintenance.

9.2 Cleaning

Clean the surface of the product when necessary.

The general rule is:

- Only use solvent-free, water-based cleaning agents.
- The cleaning agent may not be flammable.
- Do not use steam, coolant or high-pressure cleaners.
- Do not allow the cleaning agent to penetrate into electrical or mechanical equipment.

9.3 Repair

CAUTION

Material damage due to improper use of the product!

The mechanics and electronics may become damaged when disassembling the product.

- Have the product repaired only by SCHUNK.

The components of the product are adapted to each other. Repairs are only possible at the manufacturer.

For repair or replacement, send the product repair order to SCHUNK together with a repair order.