



EWELLIX

Ewellix Control Unit

SCU

User Manual

We pioneer motion

SCHAEFFLER

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1 About the manual

1.1 Information in this user manual

This manual provides important information on how to work with the device safely and efficiently.


The manual is part of the device, must always be kept in the device's direct proximity and should be available for personnel to read at any time. All personnel working with the device must read and understand this manual before starting any work. Strict compliance with all specified safety notes and instructions is a basic requirement for safety at work.

Moreover, the accident prevention guidelines and general safety regulations applicable at the place of use of the device must also be complied with.

Target audience and obligation to read

This user manual is intended for qualified personnel and authorized users. The user operates the product within systems and works with it. The operating authority determines who is authorized to act as a user.

We distinguish between different user groups, as the requirements for users vary depending on the activity they perform.

-  The definition of the user groups and the corresponding requirements can be found in the chapter *General safety regulations*. You may belong to one or more of these user groups, provided you meet the corresponding prerequisites.





1.2 Symbols

Safety precautions are identified by symbols and signal words as shown. The signal words indicate the severity of the hazard and the chance it could occur. Follow these safety precautions and act cautiously in order to avoid accidents, personal injury and damage to property.

The warning and hazard symbols are defined in accordance with ANSI Z535.6-2011.

1 Warning and hazard symbols

Signs and descriptions




| | |
|---|--|
|  | In case of non-compliance, death or serious injury will occur. |
|  | In case of non-compliance, death or serious injury may occur. |
|  | In case of non-compliance, minor or moderate injury may occur. |
|  | In case of non-compliance, damage or malfunctions in the product or the adjacent construction may occur. |

1.3 Signs

The warning, prohibition, and mandatory signs are defined in accordance with DIN EN ISO 7010 or DIN 4844-2.

2 Warning, prohibition, and mandatory signs

Signs and descriptions

| | |
|---|--|
|  | General warning |
|  | Electrical voltage warning |
|  | Observe the manual |
|  | General mandatory sign |
|  | Ground before use |
|  | Disconnect mains plug from electrical outlet |

1.4 Availability



A current version of this manual is available at:
<https://www.schaeffler.de/std/222B>

Ensure that this manual is always complete and legible and is available to all persons engaged in transporting, fitting, dismantling, commissioning, operating, or maintaining the product.

Keep the manual in a safe place for immediate reference.

1.5 Legal notices

The information in this manual reflects the status at the time of publication.

Unauthorized modifications to or improper use of the product are not permitted. Schaeffler accepts no liability in these cases.

1.6 Limitation of liability

All information and notes in this manual have been compiled in accordance with the applicable standards and regulations, the present status of technology and our many years of knowledge and experience.

The manufacturer is not liable for any damage resulting from:

- failure to observe this manual
- unintended use
- employment of untrained personnel
- unauthorized conversions
- technical changes
- tampering with or removal of screws
- use of unapproved spare parts

Where the device has been customized, the actual product delivered may differ from the description provided in this manual. In such cases, please contact Schaeffler, to obtain further instructions or information on safety precautions for these devices.

We reserve the right to make technical modifications to the device to improve usability.

1.7 Validity

The instructions in this manual refer to the SCU control unit with the following identification:

- manufacturer: Schaeffler
- product designation: control unit
- type designation: SCU1, SCU5, SCU9 and, by agreement: SCU4, SCU8
- year of manufacture: from 2010
- CE marking: according to technical documentation
- serial number: from L04330000

1.8 Warranty terms

The manufacturer's warranty terms apply.

1.9 Customer service

Schaeffler Customer Service is available at any time to assist with technical information and inquiries. The responsible contact person can be reached by telephone, e-mail, or via the Internet, see manufacturer's address on the back cover. Our employees are also always interested in receiving new information and practical experience. This information and experience helps us improve our products.

1.10 Images

The images in this manual may be schematic representations and may differ from the delivered device.

2 General safety regulations

This section provides an overview of all essential safety aspects for optimum personal protection as well as safe and trouble-free operation. Failure to observe this manual and the safety instructions contained herein may result in significant hazards and potentially lead to serious injury or death.

The safety program from Schaeffler details authorized users and the responsibility of individual users. The product was designed and built in accordance with the latest technical standards and accepted safety regulations. EU conformity is documented within the technical documentation.

2.1 Intended use

The product has been developed and designed for its intended use. If the product is used for a purpose other than that described, the manufacturer cannot be held liable for any resulting damage.

The control unit has been designed by Schaeffler for operating linear actuators and lifting columns. The device complies with the requirements of the medical standard IEC 60601-1. The secondary circuit of the control unit is separated from the main supply by double insulation.

The device is permitted to control the following components:

- maximum of 6 actuators for pressure or tension-stressed strokes
- linear actuators: RU, MAX10, MAX30, ECO, CAJA
- lifting columns: THG10, TLG10, CPMT1, TLT10, TFG10

2.1.1 Service life

The device is designed for a service life of 10 a (years) or 100000 operating cycles per channel.

2.1.2 User groups

To ensure safety, we specify requirements for the users of the device that must be adhered to under all circumstances. Only persons who meet these requirements are authorized to use the device.

We define user groups as all persons who operate, commission, further process, or pass on the device for further processing. Since the requirements of these user groups vary considerably depending on their role, we distinguish between the following user groups:

3 User groups

| User group | Requirements |
|---------------------|---|
| operating authority | The operating authority is the contractual partner of the executor or the reseller. The operating authority may be subject to legal conditions when acquiring the product. The operating authority ensures that the user is instructed on the authorized use of the product. |
| Executing party | The executing party is the contractual partner of the reseller or the manufacturer. They install the product in a system. They are authorized by the manufacturer of the device to use the product in accordance with the regulations and with the necessary technical expertise. |
| Technician | The technician has the professional technical training to implement the device according to its authorized use. They are familiar with the general safety regulations. |
| Reseller | The reseller passes the device on. |
| Operator | We define any other person who uses the device as an operator. The operator must have read the general safety instructions before using the device. In addition, they must be instructed in normal operation by the operating authority. |

2.1.3 Operating modes

The device is intended exclusively for intermittent operation.

2.1.4 Areas of responsibility

Different user groups have differing areas of responsibility.

Operating authority

The operating authority is responsible for the following tasks:

- Ensuring that only authorized and trained individuals work with the product.
- Determining which authorized persons are allowed to use the product.
- Instructing user groups.
- Complying with all relevant legal framework conditions and regulations.
- Protecting persons.

Processor

The processor is responsible for the following tasks:

- Creating and handing over a CE-compliant user manual for the system in which the product is installed.
- Observing safety regulations in accordance with this user manual.

Reseller

The reseller is responsible for the following tasks:

- Handing over the user manual and product to the processor.
- Handing over a CE-compliant user manual for the system in which the product is installed to the operating authority.

Technician

The technician is responsible for the following tasks:

- Observing manufacturer specifications and setting up interfaces to other devices safely.
- Installing and using the product in accordance with its intended use.
- Installing optional components and connecting cables.

Operator

The operator is responsible for the following:

- Making sure that no one is put at risk when the product is in operation.
- Operating the product under normal operating conditions.
- Responding promptly and appropriately to malfunctions.

2.1.5 Hazard areas

We distinguish between 2 hazard areas, which must be observed depending on the user group and persons involved.

4 Hazard areas

| Danger zone | Requirements |
|-------------|---|
| Persons | The danger zone includes not only the actual users but also third parties (other personnel, visitors, patients, etc.). In the event of damage, liability rests with the operator. |
| Device | The danger zone is the responsibility of the Executors and Technicians user group and includes the control unit and all attached elements. |

2.2 Usage not for the intended purpose

Any use other than for the intended purpose without the manufacturer’s written consent shall be considered unauthorized. Operation beyond the technical limits shall also be considered unauthorized.

The technical operating limits can be found in the technical data as well as on the label affixed to the device.

The device is suitable for internal use only and must not be subjected to weather conditions, strong UV radiation, or explosive atmospheric media.

Excluded applications:

- applications involving flammable mixtures of anesthetics and air
- applications involving flammable mixtures of anesthetics and oxygen or nitrous oxide
- applications in environments with elevated radiation levels

2.3 Responsibility of the owner and processor

The device has been developed by the owner or processor for commercial applications. The processor is the contracting partner of the reseller or the manufacturer. The processor installs the device into a complete system (application).

The owner or processor of the system is subject to the requirements of the Occupational Health and Environmental Act.

In addition to the safety instructions in this manual, the owner or processor must observe the following in relation to these safety regulations, accident prevention guidelines, and environmental protection regulations applicable at the system's installation site:

- Familiarize themselves with the applicable occupational health and safety regulations and, by means of a risk assessment, identify any additional hazards arising from the specific working conditions at the device's place of use. Implement the hazard assessment in the form of work instructions for operating the device.
- Confirm that the work instructions created for the system, including the device, comply with current legal requirements, and adapt the instructions accordingly
- Clearly define and assign responsibilities for installation, operation, maintenance, and cleaning.
- Ensure that all personnel handling the device have read and understood this manual..
- Provide personnel with the required protective equipment.
- Train personnel regularly and inform them about the dangers.

In addition, the owner or processors must ensure that the device is in proper working condition. They must do the following:

- Ensure that the maintenance intervals described in this manual are observed.
- Have all safety devices checked regularly to ensure their correct operation and completeness.

2.4 Personnel requirements

Operator duties:

- Ensure that only qualified and authorized personnel carry out the activities described in these instructions.
- Ensure that personal protective equipment is used.

Only persons who can be expected to reliably perform their tasks are permitted. Persons whose ability to react is impaired, e.g., due to drugs, alcohol, or medication, are not permitted.

2.4.1 Qualifications

For the various areas of activity described in this manual, the following qualifications are required:

Operator

The operator has been instructed by the customer on the assigned tasks and possible hazards in the event of improper conduct.

Qualified personnel

Qualified personnel meet the following criteria:

- Product knowledge, e.g. by receiving training on how to use the product
- are fully familiar with the contents of this manual and, in particular, with all of the safety instructions
- are familiar with the relevant country-specific regulations

Qualified personnel, on the basis of their technical training, knowledge, and experience as well as familiarity with the applicable standards and regulations, are capable of performing the work assigned to them and of independently recognizing and avoiding potential hazards.

Electrically skilled person

An electrically skilled person, on the basis of their technical training, knowledge, and experience as well as familiarity with the applicable standards and regulations, is capable of performing work on electrical systems and of independently recognizing and avoiding potential hazards.

The electrically skilled person is trained for the specific place of use and is familiar with the applicable standards and regulations.

2.5 Hazards

This section lists the residual risks identified through the risk assessment.

The manufacturer has minimized the effects of existing hazards through design and protective measures. Pay attention to the residual hazards and potential countermeasures described in the following chapters, as well as to the warning notices.

Danger to life caused by electric current

Touching conductive parts poses an immediate danger to life. Damage to insulation or individual components may pose a danger to life. Therefore, observe the following:

- In an emergency, the device must be disconnected from the power supply.
- Applications in which the device is installed must have an emergency stop switch or be isolated from the mains supply on all conductors.
- Prevent the device from being exposed to water jets.
- If the insulation is damaged, immediately switch off the power supply and have the parts repaired.
- Work on the electrical system may only be carried out by electrically skilled persons.
- Before performing any work on the electrical system, disconnect the machine from the power supply.
- Before maintenance, cleaning, or repair work, disconnect the power supply and secure it against reconnection.
- Do not bypass or disable fuses. When replacing fuses, ensure the correct current rating is used.
- Keep moisture away from conductive parts to prevent short circuits.

Risk of injury due to moving components

Rotating or linearly moving components can cause serious injury. Uncontrollable, faulty, or automatic movements may be triggered by a component defect, rare errors in RAM or ROM, or a stuck button on the hand switch. Unintended movement may also occur due to battery operation, even when the mains power supply is switched off. Therefore, observe the following:

- Do not work on moving components.
- Keep your body, including hands and arms, away from moving components.
- Switch off the mains power supply and remove any batteries.
- If a button on the hand switch becomes stuck, stop the movement using the button for the opposite direction.

Risk of injury due to crushing

When colliding with solid objects, the force exerted can cause injuries.

- Make sure that there are no persons present in the danger zone during operation.
- Ensure that no objects or persons come into contact with the push or protection tube on the front and rear attachment.

Risk of injury from pinching

If the actuator runs into fixed objects, the driving force may cause personal injury.

- If the actuator is left unattended, ensure that the full stroke length is free of obstacles and that no persons are located in the stroke area.
- Alternatively, all cables can be disconnected from the mains power supply.

Risk of injury due to damaged housing

Injury due to cracks and related openings in the housing of the device or its accessories.

- If the housing is damaged due to cracks, breakage or heavy wear, stop using the device and follow the disassembly instructions.

Risk of injury and property damage due to incorrect operation

Incorrect operation can endanger persons and objects in the danger zone of the system.

- Secure the device against unintended operation.
- Before pressing any button on the operating device, make sure that you have selected the correct one.

Property damage due to incorrect cleaning

Incorrect cleaning using unsuitable liquids, a washing machine, a high-pressure cleaner, or a steam cleaner may chemically or mechanically damage and destroy the device.

- Use pH-neutral cleaning agents.
- Do not use a high-pressure cleaner, steam cleaner, washing machine, or similar cleaning equipment.
- Use only isopropyl alcohol for manual wipe disinfection.
- Inspect the housing every six months for mechanical damage, particularly cracks.

Property damage due to incorrect rechargeable battery

Using an incorrect rechargeable battery may result in malfunction or damage. The batteries used in the device are of a special type.

- Only use original rechargeable batteries from the manufacturer.
- Instruct maintenance personnel on how to open and close the battery compartment cover and replace the batteries.

2.6 Safety equipment

WARNING



Faulty safety equipment

Risk of injury from malfunctioning safety equipment

- To ensure safe operation, all functions must be in perfect working condition.
- Always verify the function of the safety equipment in accordance with the maintenance plan
- Never deactivate safety equipment.
- Safety equipment must never be bypassed or modified.

The processor determines which application requires the installation of the following safety systems:

- emergency-stop system
- operating voltage indicator
- integrated power shut-off in the Schaeffler control unit

Integration of an emergency-stop system (for certain applications)

The device is intended exclusively for installation in an application system. It does not have its own operating devices and does not have an independent emergency-stop function. Observe the following:

- Install the device so that it forms part of an emergency-stop system and can be stopped if necessary.
- The emergency-stop device must be connected in such a way that an interruption of the power supply, or restoration of the power supply after an interruption, does not pose a hazard to persons or property.
- Emergency-stop equipment must always be freely accessible.

2.6.1 Securing against reconnection

When working in hazard zones, there is a risk that the power supply could be turned on without prior authorization. Uncontrolled reconnection represents a potentially life-threatening situation for people within the danger zone.


Observe the following:

- Follow the instructions provided in this user manual on preventing uncontrolled reconnection of the power supply.
- Follow the steps described below to secure against reconnection.

Securing the product against reconnection

1. Disconnect the control unit from the power supply by unplugging the power plug and secure it against being plugged in again.
2. If the control unit is equipped with a battery, remove the battery.

2.7 Modifications to the device

-  To avoid hazardous situations and to ensure optimal performance, do not make any changes or modifications to the device that have not been specifically authorized by Schaeffler.

2.7.1 Labels

No warning labels are affixed to the control units.

Stickers and warning signs may become dirty or illegible over time or for other reasons. Please observe the following:

- Ensure that all safety instructions, warning notices, and operating instructions remain legible at all times.
- Replace damaged stickers and warning signs

Information labels

2 labels are located on the rear of the control unit:

- product label
- software parameter product label

1 label is located under the cover. This label shows the pin assignment of the inputs and outputs for linear actuators, lifting columns, switches, operating devices, and the battery.

See also

-  [About the manual \[► 5\]](#)

2.8 Spare parts

The product is not suitable for repair work. Warranty and service apply only if repairs are carried out by the manufacturer or by a service provider authorized by the manufacturer.

If the device cannot be repaired on-site by authorized personnel, it must be dismantled and sent to the manufacturer.

Safety risk due to incorrect spare parts

Incorrect or faulty spare parts can compromise safety and lead to damage, malfunctions, or complete failure. Observe the following:

- Only use original spare parts from the manufacturer.
- Spare parts in or on the device may only be replaced by the manufacturer. The device must be removed and sent to the manufacturer.

2.9 Manufacturer's declaration of EMC conformity


IEC 60601-1-2 Medical electrical equipment, Part 1-2: General requirements for basic safety and essential performance – Collateral standard: Electromagnetic disturbances – Requirements and tests


Professional healthcare facilities

Physicians' offices, dental practices, clinics, nursing facilities, outpatient surgical centers, freestanding birthing centers, multiple treatment facilities, hospitals (emergency rooms, patient rooms, intensive care, surgery rooms, except in the vicinity of RF surgical equipment, MRI systems outside a room shielded against RF signals, or an ME system for magnetic resonance imaging)


Essential performance characteristics

- Control of electromechanical linear actuators and lifting columns

 Do not install the device adjacent to or stacked with other equipment. If installation adjacent to or stacking with other equipment is necessary, observe the device to ensure normal operation in the application.

 The use of accessories, transducers, and cables other than those specified or supplied by the manufacturer of the device may result in increased electromagnetic emissions or reduced electromagnetic immunity and may cause the device to operate incorrectly.

RF communication equipment

 Portable RF communications equipment, including peripherals such as antenna cables and external antennas, must be operated with a minimum distance of 30 cm from all parts of the ME equipment. Failure to maintain this distance may impair the performance of the device.

5 Guidance and manufacturer's declaration – electromagnetic emissions (Table 1 – IEC 60601-1-2)

| Emissions test | Compliance | Electromagnetic environment – guidance |
|---|----------------|--|
| The control unit SCU is intended for use in the electromagnetic environment specified below. The customer or the user of the SCU control unit must ensure that it is used in such an environment. | | |
| RF emissions, CISPR 11 | Group 1 | The SCU control unit uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause interference in nearby electronic equipment. |
| RF emissions, CISPR 11 | Class B | The SCU control unit is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies residential buildings. |
| Harmonic emissions, IEC 61000-3-2 | Not applicable | |
| Voltage fluctuations/flicker, IEC 61000-3-3 | Not applicable | |

6 Guidance and manufacturer's declaration – Electromagnetic immunity (Table 2 – IEC 60601-1-2)


| Immunity test | IEC 60601 test level | Compliance level | Electromagnetic environments – guidance |
|---|--|--|--|
| The control unit SCU is intended for use in the electromagnetic environment specified below. The customer or the user of the SCU control unit must ensure that it is used in such an environment. | | | |
| Electrostatic discharge (ESD), IEC 61000-4-2 | ±8 kV contact discharge ±2 kV, ±4 kV, ±8 kV, ±15 kV air discharge | ±8 kV contact discharge | The flooring should consist of wood, concrete, or ceramic tiles. If floors are covered with synthetic material, the relative humidity should be at least 30 %. |
| Electrical fast transients/bursts, IEC 61000-4-4 | ±2 kV, 100 kHz for power supply lines ±1 kV, 100 kHz for input lines and output lines | ±2 kV, 5 kHz and 100 kHz for power supply lines ±1 kV, 100 kHz for input lines and output lines | The quality of the supply voltage should correspond to that of a typical commercial or hospital environment. Not applicable to DC and I/O if cable length < 3 m |

| Immunity test | IEC 60601 test level | Compliance level | Electromagnetic environments - guidance |
|---|---|---|---|
| Surge immunity, IEC 61000-4-5 | ±0.5 kV, ±1 kV line to line ±0.5 kV, ±1 kV, ±2 kV line to ground | ±0.5 kV, ±1 kV line to line ±0.5 kV, ±1 kV, ±2 kV line to ground | The quality of the supply voltage should correspond to that of a typical commercial or hospital environment. Not applicable to DC and I/O if cable length < 3 m |
| Voltage dips, short interruptions, and voltage variations on power supply lines, IEC 61000-4-11 | 0 % U _T for 0.5 cycles, at 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° 0 % U _T for 1 cycle, at 0° 0 % U _T for 250/300 cycles, 0° 0 % U _T for 25/30 cycles, 0° | 0 % U _T for 0.5 cycles, at 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° 0 % U _T for 1 cycle, at 0° 0 % U _T for 250/300 cycles, 0° 0 % U _T for 25/30 cycles, 0° | The quality of the supply voltage should correspond to that of a typical commercial or hospital environment. Not applicable to DC and I/O if cable length < 3 m If the user of the SCU control unit needs to maintain operation during a mains power interruption, Schaeffler recommends operating the SCU control unit using an uninterruptible power supply or a battery. |
| Power frequency magnetic field 50/60 Hz, IEC 61000-4-8 | 30 A/m | 30 A/m | If distortions occur, it may be necessary to position the SCU control unit further away from sources of power frequency magnetic fields or to install magnetic shielding. The power frequency magnetic field should be measured at the intended installation site to ensure that it is sufficiently low. |

U_T is the a.c. mains voltage prior to the application of the test level.

7 Guidance and manufacturer's declaration – Electromagnetic immunity (Table 4 – IEC 60601-1-2)

| Immunity test | IEC 60601 test level | Compliance level | Electromagnetic environments - guidance |
|---|--|--|--|
| Portable and mobile RF communication equipment should not be used closer to any part of the control unit, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. | | | |
| Conducted RF, IEC 61000-4-6 | 3 V root mean square 150 kHz ... 80 MHz | 10 V root mean square 150 kHz ... 80 MHz | If the measured field strength ¹⁾ at the location where the control unit is used exceeds the applicable RF compliance level, the control unit should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the control unit. |
| | 6 V root mean square 150 kHz ... 80 MHz | 10 V root mean square 150 kHz ... 80 MHz | |
| Radiated RF, IEC 61000-4-3 | 10 V/m 80 MHz ... 2.7 GHz 80 % AM at 1 kHz | 10 V/m 80 MHz ... 2.7 GHz 80 % AM at 1 kHz | The minimum distance is calculated using the following equation: • $E = (6/d) \cdot \sqrt{P}$ E = immunity test level in V/m d = minimum distance in m P = max. power in watts (W) |

| Immunity test | IEC 60601 test level | Compliance level | Electromagnetic environments – guidance |
|--|---|---|---|
| Proximity fields from RF wireless communication equipment, IEC 61000-4-3 | 27 V/m 380 MHz ... 390 MHz 50 % PM 18 Hz | 27 V/m 380 MHz ... 390 MHz 50 % PM 18 Hz | Maximum output power and separation distance of RF wireless equipment (tested at 30 cm): <ul style="list-style-type: none"> TETRA 400: max. 1.8 W GMRS 460, FRS 460: max. 2 W LTE Band 13 and 17: max. 0.2 W GSM 800/900: max. 2 W TETRA 800: max. 2 W iDEN 820: max. 2 W CDMA 850: max. 2 W LTE Band 5: max. 2 W GSM 1800/1900: max. 2 W CDMA 1900: max. 2 W DECT: max. 2 W LTE Band 1, 3, 4, and 25: max. 2 W UMTS: max. 2 W Bluetooth: max. 2 W RFID 2450: max. 2 W LTE Band 7: max. 2 W WLAN 802.11 a/n: max. 0.2 W Interference may occur in the vicinity of equipment marked with the following symbol:  |
| | 28 V/m 430 MHz ... 470 MHz FM ±5 kHz deviation, 1 kHz sine | 28 V/m 430 MHz ... 470 MHz FM ±5 kHz deviation, 1 kHz sine | |
| | 9 V/m 704 MHz ... 787 MHz 50 % PM 217 Hz | 9 V/m 704 MHz ... 787 MHz 50 % PM 217 Hz | |
| | 28 V/m 800 MHz ... 960 MHz 50 % PM 18 Hz | 28 V/m 800 MHz ... 960 MHz 50 % PM 18 Hz | |
| | 28 V/m 1700 MHz ... 1990 MHz 50 % PM 217Hz | 28 V/m 1700 MHz ... 1990 MHz 50 % PM 217Hz | |
| | 28 V/m 2400 MHz ... 2570 MHz 50 % PM 217Hz | 28 V/m 2400 MHz ... 2570 MHz 50 % PM 217Hz | |
| | 9 V/m 5100 MHz ... 5800 MHz 50 % PM 217 Hz | 9 V/m 5100 MHz ... 5800 MHz 50 % PM 217 Hz | |

1) The field strengths from fixed transmitters, such as base stations for radio (cellular and cordless) telephones, mobile two-way radios, amateur radio, AM and FM broadcast transmitters, and television broadcast transmitters, cannot be determined precisely on a theoretical basis. To determine the specific level of electromagnetic exposure, an electromagnetic site survey should be performed. If the measured field strength at the location where the control unit is used exceeds the above permissible RF compliance level, the control unit must be monitored to ensure correct operation. If abnormal performance is observed, additional measures may be necessary, such as a different alignment or relocating the control unit.

8 Guidance and manufacturer’s declaration – Electromagnetic immunity (Table 6 – IEC 60601-1-2)

| Maximum rated output power of the transmitter | Separation distance according to frequency of transmitter | | |
|---|---|--|---------------------|
| | 150 kHz ... < 80 MHz outside ISM bands and amateur radio bands | 150 kHz ... < 80 MHz within ISM bands and amateur radio bands | 80 MHz ... 2.5 GHz |
| | $d = 0.35 \sqrt{P}$ | $d = 0.35 \sqrt{P}$ | $d = 0.35 \sqrt{P}$ |
| W | m | m | m |

The control unit is intended for use in an electromagnetic environment in which RF disturbances are controlled. The customer or user of the control unit can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communication equipment (transmitters) and the control unit, as recommended below, according to the maximum output power of the communication equipment.

| | | | |
|------|------|------|------|
| 0.01 | 0.04 | 0.12 | 0.06 |
| 0.1 | 0.13 | 0.38 | 0.19 |
| 1 | 0.40 | 1.2 | 0.60 |
| 10 | 1.3 | 3.8 | 1.9 |
| 100 | 4.0 | 12 | 6.0 |

For transmitters with a maximum output power not listed above, the recommended separation distance d in m can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power of the transmitter in W according to the manufacturer’s specifications.

Results and deviations

There are no deviations.

9 Result

| Measure | Requirement | Result | Assessment |
|----------|---|--|------------|
| Emission | Class | Class B | - |
| | Group 1 or 2 | Group 1 | - |
| | CISPR 11, CISPR 14-1, etc. | CISPR 11 | - |
| | Conducted RF | - | P |
| | Radiated RF | - | P |
| | Disturbance power /if applicable) | - | - |
| | Harmonic distortion according to IEC 61000-3-2 (Class A, B, C, D) | Class A | P |
| | Voltage fluctuations and flicker according to IEC 61000-3-3 | - | P |
| Immunity | Electrostatic discharges | IEC 61000-4-2 | P |
| | Radiated RF EM fields | IEC 61000-4-3 | P |
| | Radiated RF EM fields and wireless proximity fields | IEC 61000-4-3 | P |
| | Electrical fast transients and bursts | IEC 61000-4-4 | P |
| | Surges | IEC 61000-4-5 | P |
| | Conducted disturbances, induced by RF fields | IEC 61000-4-6 | P |
| | Voltage dips and interruptions | IEC 61000-4-11 (for EUT AC 120 V, 60 Hz) | P |
| | Power frequency magnetic fields | IEC 61000-4-8 | P |

Maintenance of safety and performance

Maintenance of the control unit is required to ensure essential performance over the expected product service life. No modifications due to EMC effects are permitted after approval of the final application.

Do not modify the final application after installation for EMC-related reasons. The product has been tested with regard to actual radio frequency conditions in Europe.

Final application environment

Depending on the final application and the environment, EMC tests (immunity and emission) are required in order to meet the standards.

Medical electrical equipment

- Emission: DIN EN 60601-1-2
- Immunity: DIN EN 60601-1-2

Industrial environments (generic standards)

- Emission: DIN EN 61000-6-2
- Immunity: EN 61000-6-4

Residential, commercial, and light-industrial environments (generic standards):

- Emission: EN 61000-6-3
- Immunity: DIN EN IEC 61000-6-1


3 Scope of delivery

The scope of delivery comprises:

- 1 control unit
- cover
- optional: mains cable
- 2 sealing stoppers ZDV-160307-0008, pre-assembled in factory
- 3 or 4 sealing stoppers ZDV-160308-0015, preinstalled at the factory, for optional rechargeable battery connection
- User manual
- optional: rechargeable battery

3.1 Checking for transport damage

1. Check the product immediately upon delivery for any damage during transit.
2. Do not accept delivery, or only accept it with reservation, if transport damage is found.
3. Record the extent of damage on the transport documents or the carrier's delivery note.
4. Report any damage during transit promptly as a complaint to the carrier.

 Report any damage as soon as it is discovered. Claims for damages can only be made within the applicable claim period stipulated by the transport company.

Upon delivery, check the product for cracks in the housing. If cracks are present in the housing, the protection code (IP) in accordance with IEC 60529 is no longer ensured. Return the product to the manufacturer.

3.2 Check for defects

1. Check the product immediately upon delivery for any visible defects.
2. Check the product for completeness immediately upon delivery.
3. Report any defects promptly to the distributor of the product.
4. Do not put damaged products into operation.

4 Product description

4.1 Control unit

The control unit controls up to 6 connected linear actuators or lifting columns. Functions of the control program are activated via hand switches or other operating devices. The manufacturer configures the control unit prior to delivery.

The control unit is operated with at least 1 operating device and 1 linear actuator or 1 lifting column. The DC design requires a DC voltage source.

The operating voltage indicator shows whether the device is supplied with power.

In the standard configuration, the control unit works in a single-fault safe manner. The device monitors safety-relevant electronic components and switches to a safe state in the event of a defect. Movements of the linear actuator are then not possible until the fault has been resolved. The maximum fault tolerance time is 1 s.

A connected linear actuator or lifting column without an internal limit switch or internal thermoswitch reduces the fail-safe capability of the system. Linear actuators or lifting columns without an internal limit switch are shut down in the event of overcurrent. If no thermoswitch is present, a defect may result in overheating and damage.

If an operating device without first failure safety is connected, the first failure safety mechanism of the system is impaired.

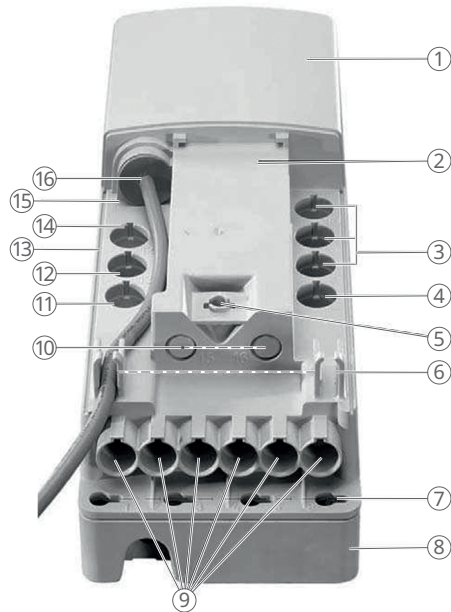
The control unit provides functional first failure safety. All essential functions are monitored. Exceptions are possible.

Functions, plug layouts, and options of the control unit are configured at the factory according to requirements. Subsequent modification is not possible.

10 Overview of variants

| Series | Design | Protection class | Notice |
|------------|--------|---------------------|---|
| SCU1 | DC | – | – |
| SCU5, SCU9 | AC | Protection class I | Connection to protection earth |
| SCU4, SCU8 | | Protection class II | <ul style="list-style-type: none"> no connection to protection earth with double insulation |

1 Control unit SCU, without cover



001CE2B9

| | | | |
|----|---|----|--|
| 1 | Housing | 2 | Product label for software |
| 3 | Connection for operating devices | 4 | Connection for external limit switches |
| 5 | Cover mounting | 6 | Cable guides |
| 7 | Mounting holes | 8 | Rechargeable battery |
| 9 | Connection for linear actuators and lifting columns | 10 | Not assigned |
| 11 | Not assigned | 12 | Optional: connection for rechargeable battery |
| 13 | Operating voltage indicator | 14 | Communication interface |
| 15 | Optional: ground connection | 16 | Mains connection, optional: connection for DC voltage source |

2 Control unit SCU, with cover



001DBF11

| | | | |
|---|--------------------------|---|-------|
| 1 | Housing | 2 | Cover |
| 3 | Locking button for cover | | |

DC design

A smoothed power supply with rectifier and smoothing capacitor is suitable as a DC voltage source. During operation, the permissible rated voltage for linear actuators must not be exceeded.

The cover protects cable connections from being pulled out accidentally.

The control unit has an electronic lock function. With a suitable operating device and corresponding function buttons, individual control unit functions can be locked or enabled. The signal is transmitted to the control unit. The lock function controls locking and unlocking of the control unit. There is no hazard from multiple operating devices being used simultaneously. Locked functions are indicated by a yellow LED.

Software with integrated over current cut off switches off the control unit in the event of overload and protects connected linear actuators. The shutoff thresholds for the linear actuator are parameterized by Schaeffler at the factory.

Software with integrated overtemperature shutdown protects components from overheating by switching off the linear actuators, thereby preventing damage to the control units.

4.2 Operating elements

Schaeffler operating elements are available.

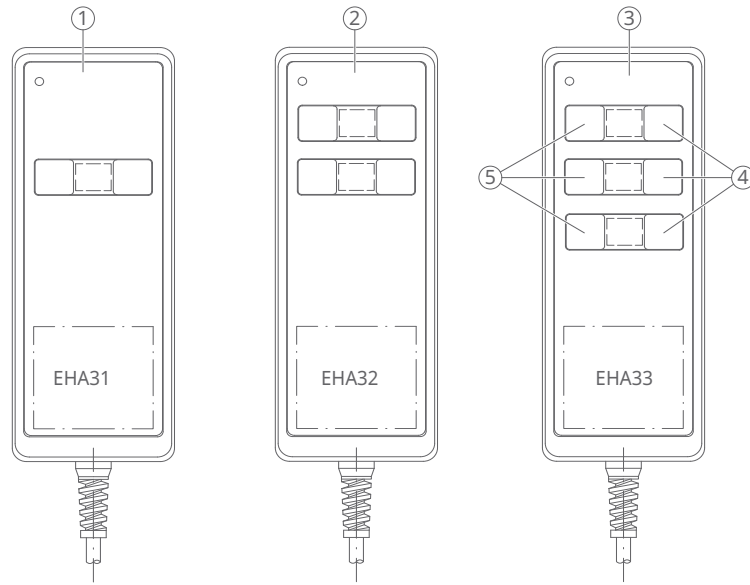
- Hand switch EHA3
- Foot switch STJ
- Desk switch STE

3 Hand switch EHA3



001CA32C

4 Manual switch in standard configuration



001CE259

| | | | |
|---|-------------------------------|---|-------------------------------|
| 1 | Manual switch for 1 actuator | 2 | Manual switch for 2 actuators |
| 3 | Manual switch for 3 actuators | 4 | Retract actuator |
| 5 | Extend actuator | | |

5 Foot switch STJ



001CA32F

6 Desk switch STE



4.3 Options

Refer to the type designation options on the type plate.

Battery

The control unit is equipped with a battery connection or a preinstalled rechargeable battery. An unused battery connection is fitted with a sealing stopper at the factory. Rechargeable batteries are available as spare parts or accessories.

Seal any unused connecting socket with the sealing stopper supplied at the factory to ensure IPX4 protection. Observe special requirements for handling rechargeable batteries. Use only batteries approved by the manufacturer.

Limit switch

The connection for the limit switch is available on all control units. The manufacturer configures the limit switch functions at the factory. Limit switches perform various functions. The connecting socket is fitted with a sealing stopper at the factory.



Seal any unused connecting socket with the sealing stopper supplied at the factory to ensure IPX4 protection.

Ground connection

The optional ground connection can be used to connect system components to earth (PE). This may also be beneficial for improving EMC performance.

The maximum tightening torque for the hexagon screw is $M_A = 0.8 \text{ Nm}$.

11 Protection earth and function earth

| Type | Description | Marking on the housing |
|------|--|---|
| SCU5 | The types cannot be connected to protection earth. The controls are connected via a 2-conductor mains cable without grounding. | - |
| SCU9 | The types are defined as protection class I. Use a 3-conductor mains cable and connect the green-yellow conductor to the ground terminal on the housing. |  |
| SCU1 | The types have a ground terminal for function earth on the housing. |  |

4.4 Accessories

Rechargeable battery

Approved batteries or rechargeable batteries are screw-mounted on the underside of the control unit.

The control unit can only be operated with a battery if the corresponding option has been selected.

Operating device

In addition to the hand switch, other operating devices are available as accessories upon request.

The operating devices trigger a function in the control unit. This function depends on the type of control unit and its parameterization. Typically, the function enables extension and retraction of the actuator.

The operating devices are not included in the scope of delivery and must be ordered separately. Only operating devices approved for the respective control unit may be used.

Mains cable

Order mains cables with country-specific plugs and the appropriate protection class for the control unit. Use only Schaeffler mains cables with the designation ZKA-160XXX-XXXX. Permissible plug types are Schuko, SEV, UK, UL, and UL for medical applications. The special power cable for the DC control unit is permanently installed at the factory and is intended for the DC design.

5 Transport and storage

NOTICE



Damage due to improper transport

Improper transport may result in significant property damage.

- Proceed with caution when unloading the packaged goods, during delivery, and during transport to the destination.
- Observe the symbols and instructions on the packaging.
- Do not remove the product from the packaging until immediately before installation.
- Observe the ambient conditions for return transport to the manufacturer.

5

5.1 Transport

Observe the safety regulations for transport.

Requirements for packaging

Each individual packaged part must be packed appropriately for the anticipated transport conditions. Only environmentally friendly materials may be used for the packaging.

The packaging is intended to protect the individual components from transport damage, corrosion, and other types of damage until assembly.

1. Do not destroy the packaging and only remove it shortly before assembly.
2. Keep the packaging in case the product needs to be returned to the manufacturer ►28 | 5.3.

Packaging material consists of valuable raw materials, most of which can be effectively recycled and reused.

If the packaging is to be disposed of following intact delivery, the following instructions must be observed and complied with:

3. Dispose of packaging material in an environmentally responsible manner.
4. Observe the locally applicable disposal regulations.

5.2 Storage

Observe the safety regulations for the storage.

1. Store the product in its original packaging and avoid mechanical shocks.
2. If the storage period is ≥ 3 months, regularly check the general condition of all packaging components.
3. Follow any additional storage instructions detailed on the packaging.

Control unit with battery or rechargeable battery

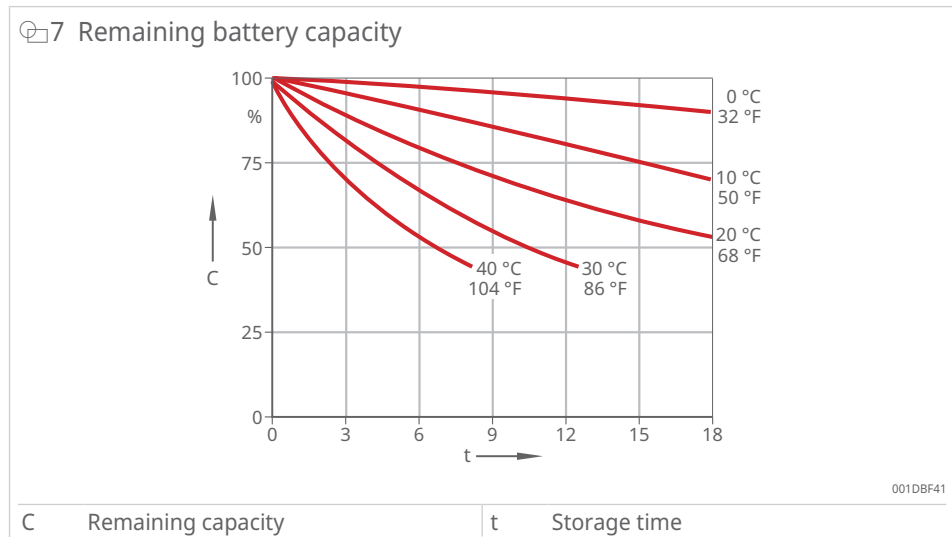
- Batteries are charged by the manufacturer prior to delivery.
- Batteries discharge over time.
- Ambient temperature affects the discharge time.
- Complete discharge will damage the rechargeable battery.
- Hydrogen gas is generated when charging rechargeable batteries.

- ✓ Rechargeable battery is stored for more than 3 months.
- 4. Ensure that the rechargeable battery is charged only in a well-ventilated area.
- 5. Charge the rechargeable battery every 4 months and for 12 h prior to shipment.
- 6. Store the rechargeable battery for a maximum of 10 months at ambient temperature $\vartheta < +20\text{ °C}$.
 - » Remaining battery capacity $\geq 70\%$

12 Remaining battery capacity

| ϑ_{stor} °C | | Remaining capacity % | | | |
|---------------------------------|----|-------------------------|----------|----------|-----------|
| > | ≤ | 1 month | 3 months | 6 months | 12 months |
| 0 | 5 | 96 | 93 | 90 | 80 |
| 5 | 20 | 92 | 90 | 80 | 65 |
| 20 | 30 | 90 | 80 | 65 | 50 |
| 30 | 40 | 83 | 70 | 50 | - |

ϑ_{stor} °C Bearing temperature



5.3 Return to the manufacturer

Proceed as follows for return transport:

1. Dismantle the device if necessary.
2. Pack the device in its original packaging.
3. Observe the safety instructions for transport and storage.
4. Send to the manufacturer. The address is provided on the back of this operating manual.

6 Installation

⚠ DANGER



Damaged plugs or damaged mains cables

Danger to life from electric current

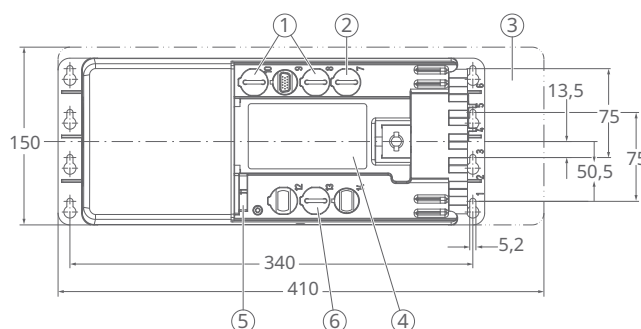
- ▶ Never touch a damaged power plug or a damaged mains cable while the device is in operation, as it is supplied with AC 120/230 V.
- ▶ Ensure that the power supply is switched off before removing a defective plug from the socket. Check the mains cable regularly for damage.

This section contains all information required for the installation, connection, and commissioning of the control unit.

When installing and aligning the control unit, the following points must be observed:

- The power plug of the power cable must remain accessible at all times.
- The mains cables, DC cables, and rechargeable battery cables must not be bent or crushed.
- The connection cables to the actuators must not be crushed or bent.
- The control unit must be placed on a flat surface. If the housing is bent during installation, the IP protection rating is no longer ensured.
- The control unit must be properly positioned and must not become loose due to shocks or vibrations.

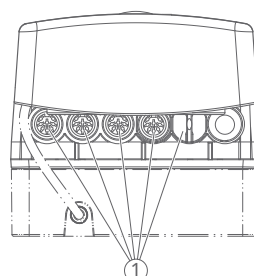
8 Connecting diagram



001DBFD1

| | | | |
|---|--|---|--|
| 1 | 3 connections for operating devices HD15 | 2 | Connection for end switches HD15 |
| 3 | Additional free space for installation | 4 | Software data plate |
| 5 | Mains connection | 6 | Battery connection, D-Sub 9-pin (optional) |

9 Connections with DIN 8 socket





001DBFF1

| | |
|---|--------------|
| 1 | DIN-8 socket |
|---|--------------|

6.1 Connecting the operating units

1. Carefully connect the HD15 plug of the operating device in the correct position to the corresponding socket on the device.
2. Make sure that you have used the correct port.
3. Repeat steps 1 and 2 as required for an additional operating device.


 If no external battery is used, the port must be fitted with the factory-supplied sealing stopper to ensure a degree of protection in accordance with IPX4. Please observe the special requirements for handling rechargeable batteries. Only batteries approved by the manufacturer may be used.


 If no end switch is used, the port must be fitted with the factory-supplied sealing stopper to ensure a degree of protection in accordance with IPX4.

6.2 Connecting actuators

Depending on the number of actuators operated with the control unit, they must be connected as follows:

- 1 actuator: connecting socket 1
 - 2 actuators: connecting sockets 1 and 2
 - 3 actuators: connecting sockets 1 to 3
 - ...
 - 6 actuators: connecting sockets 1 to 6
- ✓ Only actuators approved by the manufacturer may be connected. Contact Schaeffler to ensure that the actuator used with this control unit is approved.
1. Insert the actuator plug into the corresponding connecting socket of the control unit.
 2. Check that the letter on the cable marker clip on the actuator matches the letter on the label of the corresponding socket.

 A degree of protection in accordance with IPX4 is only guaranteed if all unused ports are closed off with a sealing stopper.

 Do not extend the motor cable, as this may impair pulse generator signals.

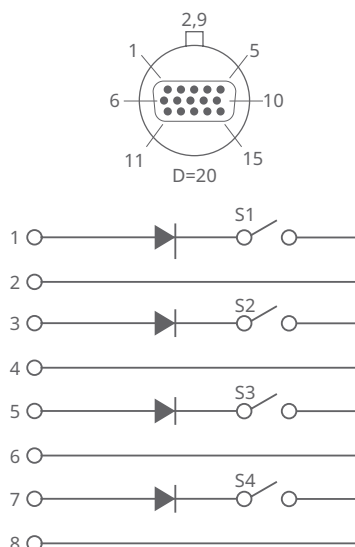
6.3 Connecting the mains cable to the device

- Insert the mains cable (accessory) into the corresponding port of the device.

6.4 Connecting end switches

- ✓ The corresponding option must be parameterized at the factory.
- ✓ To ensure safe operation, use positively driven contacts only.
- ✓ Normally open contacts are required to enable movement.
- ✓ A diode is required to monitor the line to the limit switches (first failure safety). With appropriate parameterization, DC 24 V signals (e.g., from a PLC) can be processed by the device.
- Insert the actuator plug into the corresponding connecting socket of the device.

10 Connecting diagram for end switches



001DF818

| Function | Pin | Stranded wire color (ZKA-160627-2500) |
|--|-----|---------------------------------------|
| DC 24 V (common) | 1 | White/yellow |
| | 3 | White/green |
| | 5 | Gray/pink |
| | 7 | Black |
| Switch 1 | 2 | Brown/green |
| Switch 2 | 4 | Red/blue |
| Switch 3 | 6 | Purple |
| Switch 4 | 8 | Red |
| Optional: External power supply for binary outputs | 9 | Blue |
| Binary output 1, DC 22 V ... DC 40 V, 1 A | 10 | Pink |
| Binary output 2, DC 22 V ... DC 40 V, 1 A | 11 | Gray |
| GND for binary outputs | 12 | Yellow |
| DC 20 V ... DC 40 V, max. 50 mA | 13 | Green |
| DC 5 V, pulsed | 14 | Brown |
| GND | 15 | White |

6.5 Connecting the battery

NOTICE

Deformed plug pins



Risk of property damage to the device. Deformed plug pins can cause a short circuit and damage the battery.

- Ensure that plugs are freely accessible.
- Ensure that all cables are secured and protected.

✓ The optional connection for a rechargeable battery must be available.

1. Under-floor battery: Screw the under-floor battery to the underside of the device.
2. Other approved battery packs: Fasten the batteries in the correct orientation at a suitable location.
3. Check the battery plug for damage.
4. Insert the battery plug into the corresponding port of the device.

6.6 Installing the cover

- ✓ All required connectors must be plugged in and all unused connections are closed off with sealing stoppers.
- Place the cover onto the rear of the device until the latch in the cover engages.



If the cover cannot be fitted correctly, the connectors may not be fully inserted. The cover can only be removed using a tool.

6.7 Connecting the ground wire

NOTICE

Risk of damage to the housing

The nut must not be tightened excessively, as this may damage the housing and compromise the degree of protection in accordance with IPX4.

- Observe a tightening torque of 1 to 2 Nm.



The ground wire must be securely connected and exhibit a sufficiently low transfer resistance. The connection must not come loose under any circumstances.

- ✓ For protection class I devices only.
- Connect the cable shoe to the ground point using the nut on the ground wire screw.

6.8 Installing the device

- ✓ The device must be screw-mounted on the application.
- Secure the device so that the required minimum of 4 fastening screws cannot loosen or slip through the screw holes.

6.9 Connecting the device to the power supply

1. For the AC design: Insert the mains plug into the socket.
2. For the DC design: Connect the stranded wires of the DC cable to a suitable power source. The DC power supply must be protected against short circuits and similar faults.

7 Commissioning

Before commissioning the device, carry out the installation check.

Verify the following before initial start-up:

- All steps in the Installation chapter have been carried out.
- The mains plug is freely accessible.
- The ready-for-operation indicator is illuminated.
- All unused ports are closed off with a sealing stopper.

Then carry out a comprehensive function test:

- Ensure that the plugs for the operating devices and the end switches are identical.
- Ensure that the plugs, operating devices, and end switches function correctly.

Commissioning the device:

- Press the corresponding button on the operating device.

7.1 Initial commissioning

Before initial commissioning, inspections and measurements must be carried out and documented by a professional electrician:

- visual inspection
- function check of the operating features and safety features
- leakage current test
- measurement of insulation resistance

After completing the installation check, start the device or system. Ensure that all functions work correctly. After the installation check, initialize the system and perform a comprehensive function check.

All plugs for operating devices and limit switches must be identical. Verify function by means of a function check.

7.2 Performing initialization

The procedure applies to standard parameters. Correct operation of the system requires error-free initialization.

Connecting the operating device

1. Insert the plug of the operating device (HD15) into the socket of the control in the correct orientation.

Connecting the actuator

- ✓ Letter on the cable marker clip on the actuator matches the letter on the product label of the connecting socket.
2. Insert the DIN-8 plug into the connecting socket of the SCU control unit.
3. If multiple actuators of the same type are used, connect the actuators according to the desired function.

Connecting the supply voltage

- ✓ AC version is used
- 4. Connect the country-specific mains cable, in the correct orientation, to the corresponding connecting socket of the SCU control unit.
- ✓ DC version is used, voltage source is short-circuit-proof and fused
- 5. Connect the cable wires to a suitable voltage source, polarity: red + and blue –

Initializing the system

- 6. Press and hold the Up and Down buttons on the first level of the operating device simultaneously for 5 s.
 - › An intermittent audible signal confirms the operation sequence.
- 7. Move all actuators connected to the control unit to the retracted position by pressing the Down button.
 - » Initialization is complete. Repeat initialization if actuators are added, removed, or replaced.

Testing initialization

- ✓ System is correctly initialized
- 8. Move all actuators.
- 9. Check whether the stored positions correspond to the actuator stroke height.
 - » No audible signal is heard and the speed of the actuators corresponds to the specifications in the data sheet.

7.3 Storing the actuator position

The current stroke for all connected and initialized actuators is stored in the control unit. The control unit confirms the process with a short audible signal.

- ✓ Suitable operating device connected
- ✓ Initialization completed
- 1. Move actuators to the desired position
- 2. Press the memory button and the desired position button within the next 2 s

Checking actuator positions

- ✓ Actuator position successfully stored
- ✓ Maximum total power is not exceeded
- 3. Press and hold the position button
 - » Actuators move to the stored position.

8 Operation

DANGER



Damaged plugs or damaged mains cables

Danger to life from electric current

- Never touch a damaged power plug or a damaged mains cable while the device is in operation, as it is supplied with AC 120/230 V.
- Ensure that the power supply is switched off before removing a defective plug from the socket. Check the mains cable regularly for damage.

CAUTION



Incorrect operation

Risk of property damage and personal injury due to incorrect operation

- Ensure that the operating unit cannot be actuated unintentionally.

This chapter is aimed at users and operating authorities. It contains all information required for safe and trouble-free use of the device during normal operation.


In normal operation, the device analyzes signals from an operating device in order to trigger the pushing or lifting movements with the corresponding actuator.

Preconditions for operation

The device controls 1 to 5 actuators. The safety cover must be closed and the power supply ensured.

The optional battery enables operation without connection to the power supply.

The battery must be sufficiently charged for operation. The following table provides an overview:

 13 Battery status in various operating modes with corresponding LED indication

| Operating mode | LED indicator | Charge status |
|--|--|---|
| Control via mains power or DC power supply | Lights up green | Full |
| | Flashes green | Charging |
| Control only powered by the battery | Lights up green when a button on the operating unit is pressed. | Full |
| | Lights up orange and an acoustic signal sounds for 5 s when a button on the operating unit is pressed. | Weak. One full stroke with one actuator is still possible (approx. 2 min) |
| | Flashes orange and an acoustic signal sounds when a button on the operating unit is pressed. | Very weak. Only movement in the counter-load direction is possible |

Operation

Operation is performed using an operating device.

- ✓ The preconditions for operation must be met.

1. Press the corresponding button on the operating device to retract or extend the associated actuator.
2. If the movement does not stop as soon as the button is released, immediately press the button for the opposite direction to stop the movement.

The connection to the operating device (DC 5 V) and to the actuator (DC 24 V) is established via safety extra-low voltage.

Switching off the device

3. Remove the device's plug from the socket or disconnect the battery.

9 Troubleshooting

The following section describes possible causes of malfunctions and the necessary measures for restoring functionality.

If malfunctions occur frequently, shorten the maintenance intervals.

If a malfunction cannot be rectified with the measures described, contact Schaeffler Service.

Authorized personnel

- The measures described here may be carried out by the operator unless otherwise specified.
- Some tasks may only be performed by qualified personnel; this will be explicitly stated in the relevant fault description.
- Work on the electrical system may only be carried out by trained, electrically skilled persons.

Safety instructions

DANGER



Risk of serious or fatal injuries from live components and moving parts

Serious or fatal injuries may be caused by contact with live components and by unexpected actuator movements.

- Switch off the power supply and secure it against unintentional reconnection before performing any work on the system.

DANGER



Risk of fatal injury from unauthorized reconnection of the power supply

Risk of fatal injury to persons in the hazard area due to moving parts or electric shock if the power supply is switched on without authorization during work on the system and causes the system to restart.

- Before starting work, switch off the system and secure it against reconnection.

DANGER



Risk of injury and property damage due to improper troubleshooting

The device is not designed for repair work. Improper troubleshooting may result in injury or property damage.

- Do not loosen screws on the device.
- Do not open the device.
- If malfunctions cannot be resolved by following the instructions below, disassemble the actuator and return it to Schaeffler for repair.

Procedure in the event of malfunctions

As a general rule:

1. In the event of malfunctions that could pose a direct danger to persons or property: Switch off the control system or the actuator immediately and secure it against being switched back on.
2. Determine cause of malfunction.
3. Depending on the type of malfunction: Have the malfunction rectified by qualified personnel.
4. Inform the persons responsible on site about the malfunction.

14 Malfunction

| Malfunction | Possible cause | Remedy |
|---|--|---|
| Actuator no longer moves | No supply voltage or incorrect supply voltage | <ul style="list-style-type: none"> ▶ Check the operating voltage on the product label of the control unit ▶ Check the mains voltage at the socket |
| Actuator no longer moves | Missing plug contact, operating voltage indicator does not light up | <ul style="list-style-type: none"> ▶ Check the power plug of the control unit ▶ Insert the power plug into the mains socket ▶ Check the supply voltage and replace the fuse if necessary ▶ Check the plug of the operating device (HD15) and insert if necessary ▶ Check the plug of the actuator (DIN 8) and insert if necessary |
| Actuator no longer moves | Actuator not automatically detected | <ul style="list-style-type: none"> ▶ Initialize system manually |
| Actuator no longer moves | Functions of the control unit are blocked | <ul style="list-style-type: none"> ▶ Use a new operating device. |
| Actuator no longer moves | Control unit overheated, operating voltage indicator does not light up | <ul style="list-style-type: none"> ▶ Pull the power plug of the control unit out of the mains socket ▶ Wait 30 min ▶ Insert the power plug into the mains socket » thermal protection resets after cooling » in case of overheating: contact Customer Service |
| Actuator no longer moves | Actuator faulty | <ul style="list-style-type: none"> ▶ Perform troubleshooting in accordance with the actuator user manual ▶ If defective: replace the actuator and contact Customer Service ▶ Initialize system manually |
| Actuator no longer moves | Service life exceeded | <ul style="list-style-type: none"> ▶ Check whether the control unit is over 10 a (years) old or has performed more than 100000 operating cycles » if exceeded: replace the control unit and contact Customer Service |
| Control unit works, but operation without mains connection is not possible | Control unit not equipped for operation with a rechargeable battery | <ul style="list-style-type: none"> ▶ Remove the cover. ▶ Check whether a connection is present for a rechargeable battery (13). |
| | Rechargeable battery not correctly inserted | <ul style="list-style-type: none"> ▶ Check whether the cable for the rechargeable battery is correctly inserted into the connection for the rechargeable battery (13). ▶ If unsure: remove the sealing ring to facilitate insertion. Reinstall the sealing ring after insertion. |
| | Rechargeable battery discharged | <ul style="list-style-type: none"> ▶ Connect the control unit to the mains voltage. › operating voltage indicator lights up ▶ Check whether the operating device LED indicator is flashing green › rechargeable battery is charging ▶ Leave the control unit connected for at least 12 h » LED indicator is solid green, rechargeable battery is fully charged. |
| Actuator moves slowly. Control unit emits an audible signal while the actuator is moving. | Actuator is not initialized | <ul style="list-style-type: none"> ▶ Initialize the system |
| Actuator with increased current consumption, unusual noises, or unintended movement | Damage or defect in the control unit | <ul style="list-style-type: none"> ▶ Take the control unit out of operation ▶ Contact the manufacturer |
| Actuator defective; must be replaced | Actuator position does not match the control unit counter | <ul style="list-style-type: none"> ▶ Initialize the system ▶ When using stored positions, after initialization check whether the stored positions correspond to the actuator stroke height. |
| Control unit performs incorrect or no function | Incorrect parameter set in the control unit for the linear actuator | <ul style="list-style-type: none"> ▶ Check the product label of the SCU control unit and SCP parameter set ▶ Check the product label of the linear actuator ▶ Contact the manufacturer |

9.1 Startup after correcting a malfunction

The device is not designed to be repaired by the customer. In any case, please contact Schaeffler.

Once the malfunction has been corrected:

- ▶ Before restarting, carry out the steps described in the Assembly and Commissioning sections.

10 Maintenance

DANGER



Electric shock

Risk of serious injury or death due to improper maintenance

- Work on electrical systems may only be carried out by professional electricians.

DANGER



Unintentional restart

Risk of serious injury or death due to unauthorized persons reconnecting the power supply in the hazard area

- Before beginning any work, disconnect the product from the power supply.
- Secure the product against unintentional activation.

Maintenance work and repairs may only be carried out by qualified personnel.

Maintenance includes all activities required to keep the device in a functional condition. These activities include inspections, replacement of consumable materials, and cleaning.

The device (without battery) is maintenance-free for the duration of its service life.

1. Inspect the connection cable, controller, housing, and operating unit for damage on a regular basis. A damaged housing does not provide IP protection. Damaged cables may cause a short circuit.
2. Devices with battery: If the battery is weak, connect the device to the mains supply or a DC power source for 12 h. Complete discharge will destroy the batteries.
3. Devices with preinstalled under-floor battery: Connect the device to the mains supply or a DC power source for 12 h every 6 weeks.

Cleaning and disinfection

NOTICE



Risk of property damage due to water jets

Property damage

- Ensure that the device is not damaged by water jets. The device is protected against spray water in accordance with IPX4, but not against water jets. Do not expose the device to water jets.

Observe the following points during cleaning and disinfection:

- The wash water, including any added chemicals, must be pH-neutral.
- Acidic or alkaline wash water can destroy metallic and synthetic parts.
- Hand disinfection must be carried out using isopropyl alcohol only.

10.1 Performing maintenance

The maintenance tasks required for optimal and trouble-free operation are described in the following sections.

- If increased wear is detected during regular inspections, shorten the maintenance intervals according to the actual signs of wear.
- If the operating devices and accessories are used outside the specified ambient conditions, inspect the product once a month for changes such as oxidation, deposits, or cracks.
- Check the functionality of the operating devices (press the up or down push-buttons) to verify the correct direction of movement of the actuator. If the force required to actuate a push-button changes significantly, this may be a warning sign of unintended movement. In this case, replace the operating device immediately.

The products are maintenance-free throughout their service life. Damaged housings no longer provide the specified IP protection. Damaged cables can lead to short circuits or unintended movements. In accordance with applicable regulations, safety inspections must be carried out on site at regular intervals:

- Regularly check power cables and housings for wear.
- Measure and verify grounding and leakage currents annually.
- Inspect the housing, membranes, keyboards, and connected cables for signs of mechanical damage at regular intervals (every 6 months).
- In the event of damage, disconnect the operating devices from the control unit or linear actuator and replace all defective parts.
- Every six months, check the operating devices by monitoring the linear actuators during inwards movement and outwards movement.
- Regularly check the following:
 - plugs
 - housings
 - cables
 - protective foil/keyboards (with symbols)
 - leakage currents
 - function

This regular inspection includes checking all functions and safety measures, as well as verifying that the buttons and membrane are still undamaged.

Replace the hand switch, foot switch, or desk switch immediately if you notice any of the following:

- slow response of the linear actuator
- no tactile noise (no clicking)
- loose switch

10.2 Performing inspection and measurement

- To be carried out by a professional electrician.
- To be conducted according to the applicable standards and regulations.
- Complete documentation is required.

Complete the following entries in the maintenance log:

- Name of the executing entity (company, department)
- Names of the responsible personnel
- Identification of the operating switch/system (type, serial number, inventory number) and the respective accessories
- Completed inspections and readings
- scope and results of the inspections
- Measurement method, measuring device, measured values
- Overall assessment/review of all functions compared to specifications
- Date and signature of the inspector: for IT applications, personal coding is an acceptable alternative.

10.3 Actions to carry out after maintenance

After completing maintenance work, carry out the following steps before returning the product to service:

1. Check that all previously loosened screw connections are securely tightened.
2. Ensure that all tools, materials, and other equipment used have been removed from the work area.
3. Clean the work area and remove any contamination such as liquids, processing materials, or similar substances.
4. Ensure that all safety features of the system are functioning satisfactorily.
5. Check all functions against the product specifications.
6. Document the inspections in the maintenance log.

11 Decommissioning

This chapter is intended for technicians and persons involved in further processing. It contains all information required to decommission the device.

The device must be taken out of operation in the following sequence:

1. AC design: Remove the device's plug from the socket.
DC design: Disconnect the DC cable from the DC power source.
2. Remove the cover by turning the locking button to the open position using a coin or a large screwdriver.
3. Remove the connectors of the components connected to the device.

12 Disassembling

Observe all safety regulations.

Authorized personnel

- Disassembly may only be carried out qualified technical personnel.
- Work on the electrical system may only be carried out by trained, electrically skilled persons.

Safety instructions

DANGER



Risk of serious or fatal injuries from live components and moving parts

Serious or fatal injuries may be caused by contact with live components and by unexpected actuator movements.

- Switch off the power supply and secure it against unintentional reconnection before performing any work on the system.

WARNING



Risk of severe injury from improper disassembly

Stored residual energy, sharp-edged components, pins, and corners on individual parts or on the required tools can cause severe injuries if disassembly is performed improperly.

- Ensure sufficient space for disassembly before starting work.
- Exercise caution when working with exposed, sharp-edged components.
- Ensure that the disassembly area is clean and tidy. Avoid loosely stacked components or parts and tools lying on the floor which may pose a hazard.
- Disassemble components properly in accordance with applicable local regulations.
- Secure components to prevent them from falling or tipping over.
- Contact Schaeffler with any questions or concerns.

Disassembling the device

- ✓ Switch off the device before disassembly.
- ✓ Disconnect all plug connections.
- Loosen and remove the fastening screws.
- » The device can then be prepared for transport, storage, or disposal.

13 Disposal

Observe the local regulations for disposal.

Observe the disposal regulations for rechargeable batteries in particular.

Dismantling instructions and shipping requirements can be found in the corresponding sections.

14 Technical data

Additional information:



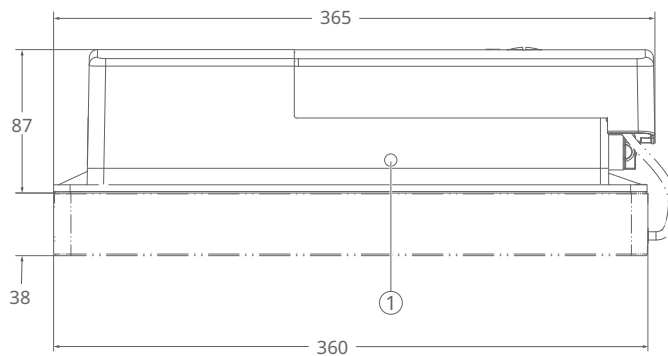
LA 1 | Lifting and Actuating Systems | <https://www.schaeffler.de/std/222AE>

For further information, contact Schaeffler.

Benefits

- compact control unit for 6 actuators
- first failure safety
- overload protection and overtemperature protection
- approved for medical applications
- easy to clean
- low standby current
- RS232 interface

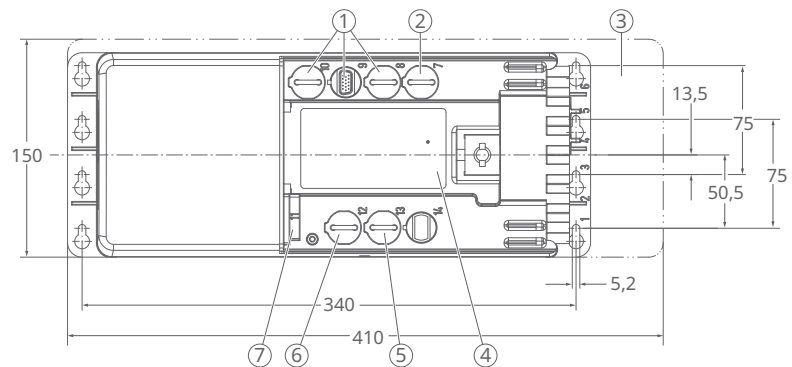
11 Dimensions, with rechargeable battery and cover



001DC021

1 Operating voltage indicator

12 Dimensions and connections, without cover



001DC031

| | | | |
|---|---|---|-------------------------------|
| 1 | Connection for 3 operating devices | 2 | Connection for limit switches |
| 3 | Additional space for installation | 4 | Software product label |
| 5 | Optional: connection for rechargeable battery | 6 | Communication interface |
| 7 | Mains connection | | |

15 Technical data

| Feature | | Unit | SCU1 | SCU5 | SCU9 |
|--------------------------------------|----|------|---------------------------|---------------------------|---------------------------|
| Actuator connecting sockets (DIN 8) | | - | 6 | 3 or 6 | 3 or 6 |
| Operation device sockets (HD15) | | - | 3 | 3 | 3 |
| Battery connecting sockets (D-sub 9) | | - | 1 | 1 | 1 |
| Limit switch connecting sockets | | - | 4 | 4 | 4 |
| First failure safety | | - | Yes | Yes | Yes |
| Pulse generator | | - | Yes | Yes | Yes |
| Input voltage | AC | V | - | 120 | 230 |
| | DC | V | 24 | - | - |
| Frequency | | Hz | - | 60 | 50 |
| max. input current | | A | 0.8 | 4.3 | 4.3 |
| Standby power | | W | 0.8 | 4.3 | 4.3 |
| Output voltage | DC | V | 24 | 24 | 24 |
| | | A | 30 | 18 | 18 |
| max. output current | | A | 30 | 18 | 18 |
| Duty cycle: intermittent | | min | ON: 1 min / OFF: 9 min | ON: 1 min / OFF: 9 min | ON: 1 min / OFF: 9 min |
| Duty cycle: short time | | min | 2 | 2 | 2 |
| Ambient temperature | | °C | +5 ... +40 | +5 ... +40 | +5 ... +40 |
| Humidity | | % | 5 ... 85 | 5 ... 85 | 5 ... 85 |
| Protection code (IP) | | - | IPX4 | IPX4 | IPX4 |
| Approvals | | - | EN 60601-1 UL 60601-1 | EN 60601-1 UL 60601-1 | EN 60601-1 UL 60601-1 |
| Weight without rechargeable battery | | kg | 1.2 | 3.8 | 3.8 |
| Weight with rechargeable battery | | kg | 4.2 | 6.8 | 6.8 |

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16 Suitable linear actuators, lifting columns, and operating devices

| Linear system | | Control unit | | | |
|------------------|---------------------------------------|--------------|------|------|---|
| | | SCU1 | SCU5 | SCU9 | |
| Linear actuator | RU20, RU21, RU22 | ✓ | ✓ | ✓ | |
| | RU23, RU24, RU25 | ✓ | ✓ | ✓ | |
| | MAX10, MAX30 | ✓ | ✓ | ✓ | |
| | ECOMAG: ECO4F, ECO5F, ECO8F, ECO9F | ✓ | ✓ | ✓ | |
| | CAJA35C | ✓ | ✓ | ✓ | |
| Lifting column | THG10 | ✓ | ✓ | ✓ | |
| | TLG10 | ✓ | ✓ | ✓ | |
| | TLT10 | ✓ | ✓ | ✓ | |
| | TFG10 | ✓ | ✓ | ✓ | |
| Operating device | M | EHA3 | ✓ | ✓ | ✓ |
| | F | STJ | ✓ | ✓ | ✓ |
| | T | STE | ✓ | ✓ | ✓ |

- M Hand switch
 F Foot switch
 T Desk switch
 ✓ suitable
 - not suitable

14.1 Ambient conditions

Transport and storage

The product may only be transported and stored in its original packaging under the following ambient conditions:

- dry and dust-free environment, not outdoors
- protected from sunlight and UV radiation
- chemically non-aggressive environment
- temperature: +5 °C to +40 °C
- humidity: 5 % to 85 %, non-condensing
- air pressure: 700 hPa to 1060 hPa

If additional storage instructions are printed on the packaging that go beyond the requirements listed here, those instructions must also be observed.

Operation

The product may only be operated under the following ambient conditions:

- indoor use only
- temperature: +5 °C to +40 °C
- humidity: 5 % to 85 %, non-condensing
- air pressure: 700 hPa to 1060 hPa
- max. altitude above sea level: 3000 m (MOPP)
- supply network with overvoltage category II
- pollution degree 2

14.2 Product label

The type plate contains the following Information:

13 Product label SCU

The image shows a rectangular product label for an Ewellix SCU. The label contains the following information:

- 1**: SCU96-003230-0000 (Type key)
- 2**: EWELLIX (Manufacturer)
- 3**: 50Hz (Frequency)
- 4**: 3,4A (Electricity consumption)
- 5**: Int. 10%, 1min/9min (Duty cycle)
- 6**: N°S00064288 (Serial number)
- 7**: IPX4 (Protection code)
- 8**: INPUT: 230V~ (Input voltage)
- 9**: OUTPUT: 24V= (Output voltage)
- 10**: P189006V2B4 (Software number and version)
- 11**: 18A (Maximum output current)
- 12**: BJ: 03.23 (Manufacturer address)
- 13**: BJ: 03.23 (Date of manufacture)
- 14**: Disposal notice symbol (crossed-out trash can)
- 15**: CE mark
- 16**: Observe the manual symbol (book with 'i')
- 17**: UL mark
- 18**: Use in indoor environments symbol (house with arrow)
- 19**: Made by Ewellix Bulgaria EOOD (Designation of origin)

| | | | |
|----|----------------------------------|----|-----------------------------|
| 1 | Type key | 2 | Manufacturer |
| 3 | Frequency | 4 | Electricity consumption |
| 5 | Duty cycle (on/off time) | 6 | Serial number |
| 7 | Protection code (IP) | 8 | Input voltage |
| 9 | Output voltage | 10 | Software number and version |
| 11 | maximum output current | 12 | Manufacturer address |
| 13 | Date of manufacture (month/year) | 14 | Disposal notice |
| 15 | CE | 16 | Observe the manual |
| 17 | UL | 18 | Use in indoor environments |
| 19 | Designation of origin | | |

001DC061

14.3 Declaration of conformity

SCU |

<https://www.schaeffler.de/std/2289>

15 Replacement parts and accessories

15.1 Spare parts

Spare parts not included in the scope of delivery.

17 Replacement parts

| Component | | Order code |
|------------------|---------------------------------------|-----------------|
| Sealing stopper | For unused actuator connection socket | ZDV-160307-0008 |
| Sealing stoppers | For operation device sockets | ZDV-160308-0015 |

15.2 Accessories

18 Mains cable (mains supply to control unit)

| Designation | Plug | Country | Drawing | Length | Order number |
|-----------------------------------|----------------------------------|---------|-----------------|--------|--------------|
| | | | | m | |
| Mains cable, straight, 3-pin | Schuko | Euro | ZKA-160637-3500 | 3.5 | 0118821 |
| Mains cable, straight, 3-pin | SEV | CH | ZKA-160638-3500 | 3.5 | 0118822 |
| Mains cable, straight, 3-pin, SJT | UL/CSA (NEMA 5-15P) | USA/CAN | ZKA-160639-3500 | 3.5 | 0105588 |
| Mains cable, straight, 3-pin, SJT | UL, for medical use (NEMA 5-15P) | USA/CAN | ZKA-160640-3500 | 3.5 | 0118823 |
| Mains cable, straight, 3-pin | British plug | UK | ZKA-160609-3500 | 3.5 | 0105631 |

15

Connection for external communication

A separate manual describes the RS232 serial interface of the control unit. The order designation indicates whether the interface is included as an option.

BA 140-02 | RS232 interface | EWELLIX SCU Control Unit |
<https://www.schaeffler.de/std/2221>

19 Accessories, miscellaneous

| Designation | Drawing | Order number |
|--------------------------|-----------------|--------------|
| Battery pack 2.7 Ah | ZBA-160208-0400 | 0118806 |
| Battery holder 4.5 Ah | ZBA-160207-1000 | 0126155 |
| Removable battery 4.5 Ah | ZBA-160209 | 0126154 |

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